Water Levels and Artesian Pressures in Observation Wells in the United States in 1951

Part 6. Southwestern States and Territory of Hawaii

Prepared under the direction of A. N. SAYRE, *Chief, Ground Water Branch*

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1196

Prepared in cooperation with the States of Arizona, California, Nevada, and New Mexico, the Territory of Hawaii, and other agencies

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1954

UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, *Secretary*

GEOLOGICAL SURVEY

W. E. Wrather, *Director*

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price $1 (paper cover)

PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Arizona, California, Nevada, New Mexico, the Territory of Hawaii, and other agencies, by personnel of the Water Resources Division under the direction of:

C. G. Paulsen_____Chief Hydraulic Engineer
A. N. Sayre_____Chief, Ground Water Branch
S. F. Turner_____District Engineer (Ground Water), Tucson, Ariz.
J. F. Poland_____District Geologist (Ground Water), Long Beach, Calif.
D. A. Davis_____District Geologist (Ground Water), Honolulu, Hawaii
T. W. Robinson__District Engineer (Ground Water), Carson City, Nev.
C. S. Conover__District Engineer (Ground Water), Albuquerque, N. Mex.

CONTENTS

WATER LEVELS AND ARTESIAN PRESSURES IN OBSERVATION WELLS IN THE UNITED STATES IN 1951

Part 6. SOUTHWESTERN

Introduction

By A. N. Sayre

The publication of records of water levels and artesian pressures annually in the United States was begun by the Geological Survey in 1935. Prior to 1940 the records for each year were published in a single volume--1935, 777; 1936, 817; 1937, 840; 1938, 845; 1939, 886. Since 1940 records have been published in six volumes, covering the northeastern, southeastern, north-central, south-central, northwestern, and southwestern sections of the country. Hawaii is included in the southwestern section. The following table gives the numbers of Water-Supply Papers from 1940 through 1951.

Year	North-eastern (1)	South-eastern (2)	North-central (3)	South-central (4)	North-western (5)	South-western (6)
1940	906	907	908	909	910	911
1941	936	937	938	939	940	941
1942	944	945	946	947	948	949
1943	986	987	988	989	990	991
1944	1016	1017	1018	1019	1020	1021
1945	1023	1024	1025	1026	1027	1028
1946	1071	1072	1073	1074	1075	1076
1947	1096	1097	1098	1099	1100	1101
1948	1126	1127	1128	1129	1130	1131
1949	1156	1157	1158	1159	1160	1161
1950	1165	1166	1167	1168	1169	1170
1951	1191	1192	1193	1194	1195	1196

The objectives of the observation-well program are to provide a day-to-day evaluation of available ground-water supplies, to facilitate the prediction of trends in ground-water levels that will indicate the probable status of important ground-water supplies in the future, to delineate present or potential areas of detrimentally high or low ground-water levels, to aid in the prediction of the base flow of streams, to determine the several forces that act on a ground-water body, and to demonstrate the interplay of those forces in the ground-water regimen, to furnish information for use in basic research, and to provide long-term continuous records of fluctuations of water levels in representative wells. These selected records serve as a framework to which many short-term records collected during an intensive investigation may be related.

Water levels in wells are seldom stationary but move up or down a fraction of an inch or many feet within a short time. Water-table wells may be influenced by direct recharge from precipitation, withdrawals from wells or springs, evapotranspiration by vegetation, evaporation from the soil, and by changes in atmospheric pressure. Artesian wells are influenced over large areas by changes in the rate of pumping from other wells, changes in atmospheric pressure, earthquakes, ocean tides, earth tides, and by recharge from precipitation, although the recharge may not be noticeable immediately. When accurate comparisons of water levels are made it is desirable to apply corrections for these influences, several of which may be compensating or additive depending upon the conditions at those particular times.

Water-level measurements are given in feet with reference to land-surface datum or sea-level datum. Land-surface datum is a precise datum plane that is approximately at land surface

at each well. Mean sea level (msl) is the datum plane on which the national network of precise levels is based. When some measurements in a table are above and others are below the plane of reference, a plus (+) or minus (-) sign is placed immediately preceding the first entry in each column. Readings between minus signs are below the plane of reference and those between plus signs are above the plane of reference.

For the most part, discussions of precipitation in this report are based on data furnished by the United States Weather Bureau.

Measurements of water levels and artesian pressures in wells were made under the direction of the district supervisors of the Ground Water Branch in the several States. Verda M. Dougherty edited the reports; Rodney Hart edited the illustrations; and Penn Livingston had general charge of the nation-wide observation-well program. This volume was typed by Jean B. Evans.

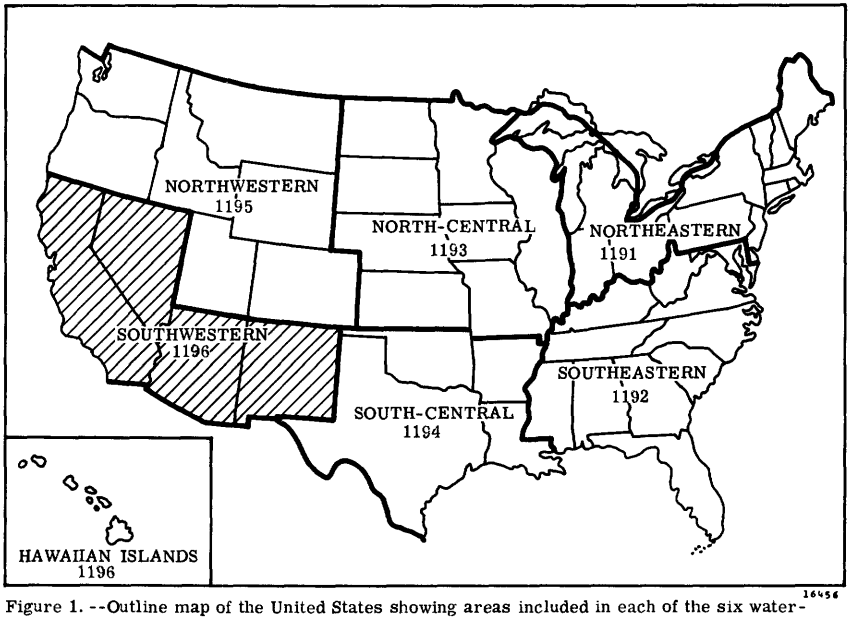

Figure 1. --Outline map of the United States showing areas included in each of the six water-supply papers on water levels and artesian pressures in observation wells in 1951. The shaded area indicates the States included in this volume.

ARIZONA

By L. C. Halpenny and R. L. Cushman

Scope of Water-Level Program

The observation-well program in Arizona was continued in 1951 principally in cooperation with the State Land Department. During 1951 water-level measurements were made in more than 1,500 wells. The measurements made in a few representative wells are tabulated in this report to show typical fluctuations of the water tables in the ground-water basins of the State. In comparing this report with the 1950 water-level report, it will be apparent that many wells for which water-level measurements were previously reported do not appear in this report. Some wells have been reclassified to project wells and water-level measurements in them will be released with project reports. Those who wish to obtain water-level measurements from observation wells not included in this report, can obtain them by consulting the open files of the U. S. Geological Survey, Ground Water Branch, at Tucson and Phoenix. The water-level measurement program is most intensive in the irrigated areas of central and southern Arizona, where the seasonal water-level fluctuations are large and, in general, of more concern to the people of Arizona. The inventory of wells includes more than 4,000 used irrigation wells. The rate of discharge in gallons per minute was measured in more than 500 of these wells. The library of samples of drill cuttings from deep wells was added to greatly during 1951. Permeability tests were made on selected samples of these drill cuttings, but for the most part only a mechanical analysis and mineral identification of each sample were made. Cuts from these samples are being stored for future reference in cooperation with the State Land Department, the University of Arizona, and the Museum of Northern Arizona. Geophysical and hydrologic studies of the aquifers in the Salt River Valley were continued in 1951, with special reference to the water-bearing character of deep aquifers. Similar work was done near Chiu Chuischu, on the Papago Indian Reservation, for the Bureau of Indian Affairs and in the Picacho-Redrock area for the Arizona Power Commission. A program of investigation of the springs along the Mogollon Rim was started. The springs were sampled for quality; temperatures were recorded; discharge measurements were made. The geology of the Navajo and Hopi Indian Reservations have been under study since 1948 at the request of the Bureau of Indian Affairs. For location of observation wells see figures 2 to 15. The index to the maps is shown on figure 15.

The following reports on ground-water resources of Arizona were prepared and released by the Geological Survey in 1951:
Geology and ground-water resources of the Ranegras Plain area, Yuma County, by D. G. Metzger. Pumpage and ground-water levels in Arizona, 1950, by S. F. Turner and R. L. Cushman. Preliminary report on the ground-water resources of the Navajo and Hopi Indian Reservations, by L. C. Halpenny. Water supply of the central Arizona area, answers to 24 questions, by S. F. Turner and others. Jurassic stratigraphy of the Navajo country, by J. M. Harshbarger, C. A. Repenning, and R. L. Jackson. A geologic and geophysical reconnaissance of the Doney Park-Black Bill Park area, Ariz., with reference to ground water, by J. H. Feth.

Acknowledgments

Many irrigation districts, power companies, and individuals cooperated in furnishing the information contained in this report. The following organizations were particularly helpful in furnishing data on which the figures for pumpage were based: Arizona Edison Electric Company, Citizens Utilities Company, city of Tucson, Duncan Utilities Company, Eloy Light and Power Company, Gila Water Commissioner, Goodyear Farms, Maricopa County Municipal Water Conservation District, Mohawk Municipal Water Conservation District, Rural Electrification Administration, Roosevelt Irrigation District, Roosevelt Water Conservation District, Salt River Valley Water Users' Association, Central Arizona Light and Power Company, San Carlos Irrigation District, Tucson Gas and Electric Company, U. S. Bureau of Indian Affairs, and U. S. Bureau of Reclamation.

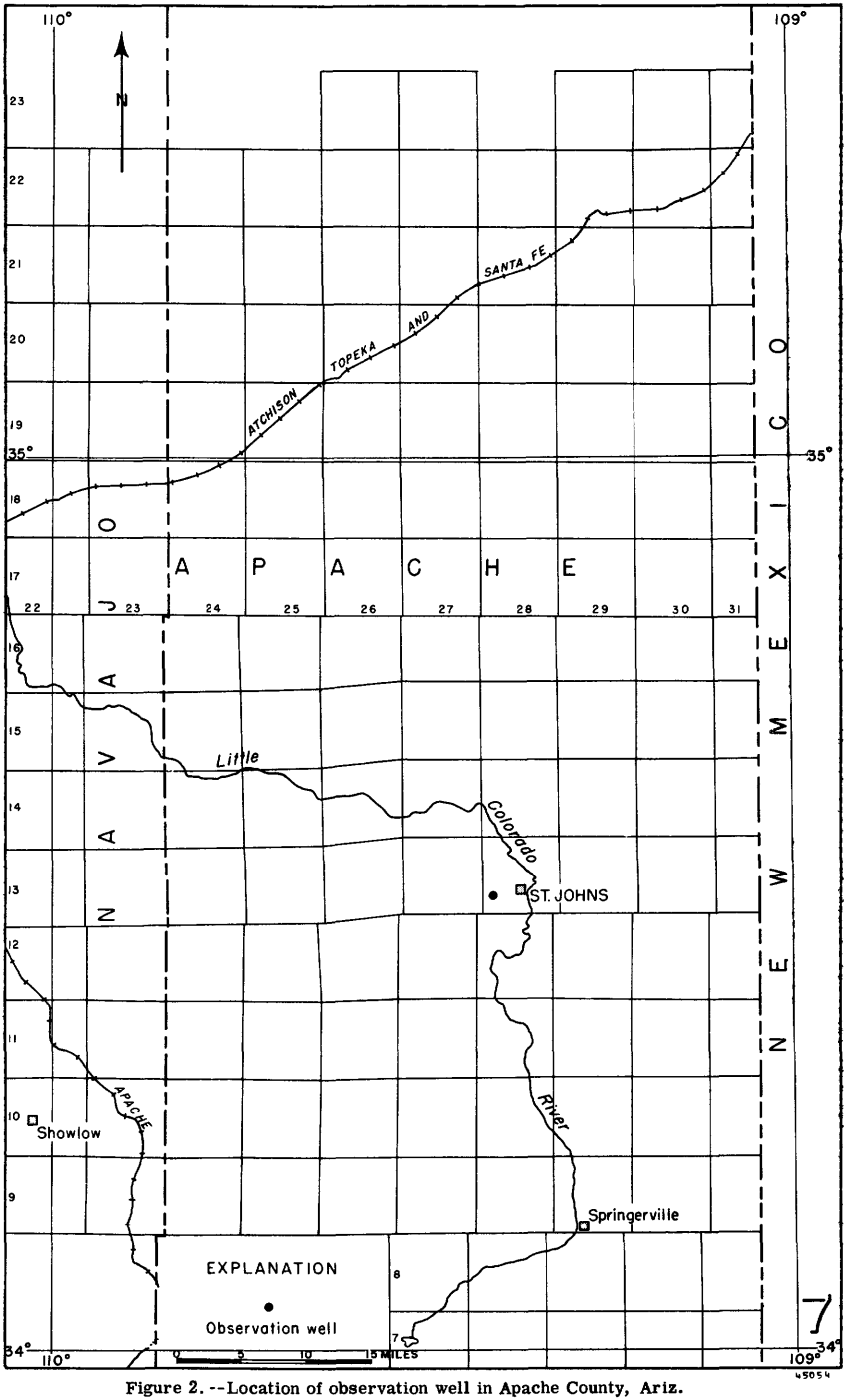

Figure 2.--Location of observation well in Apache County, Ariz.

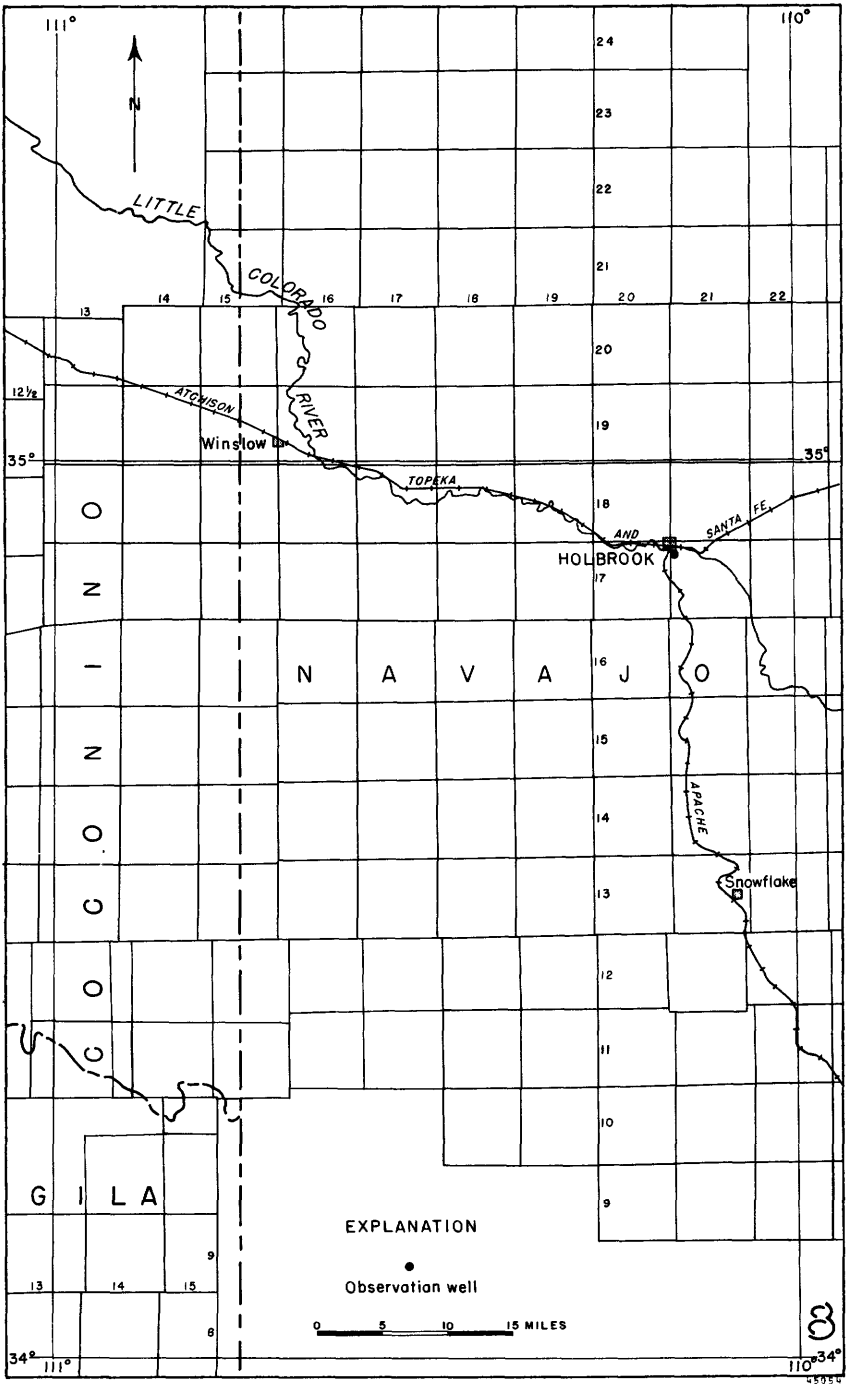

Figure 3. --Location of observation well in Navajo County, Ariz.

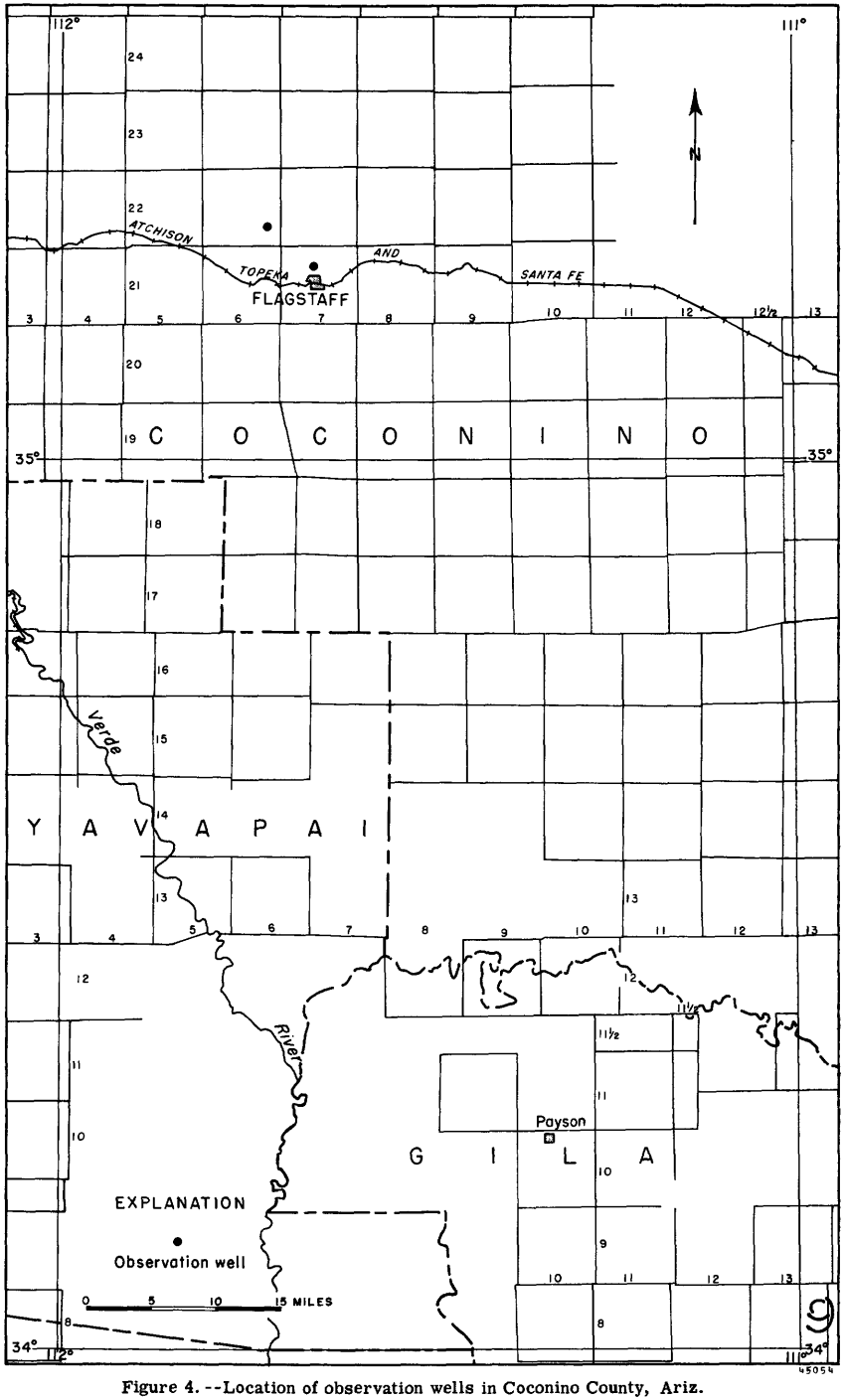

Figure 4. --Location of observation wells in Coconino County, Ariz.

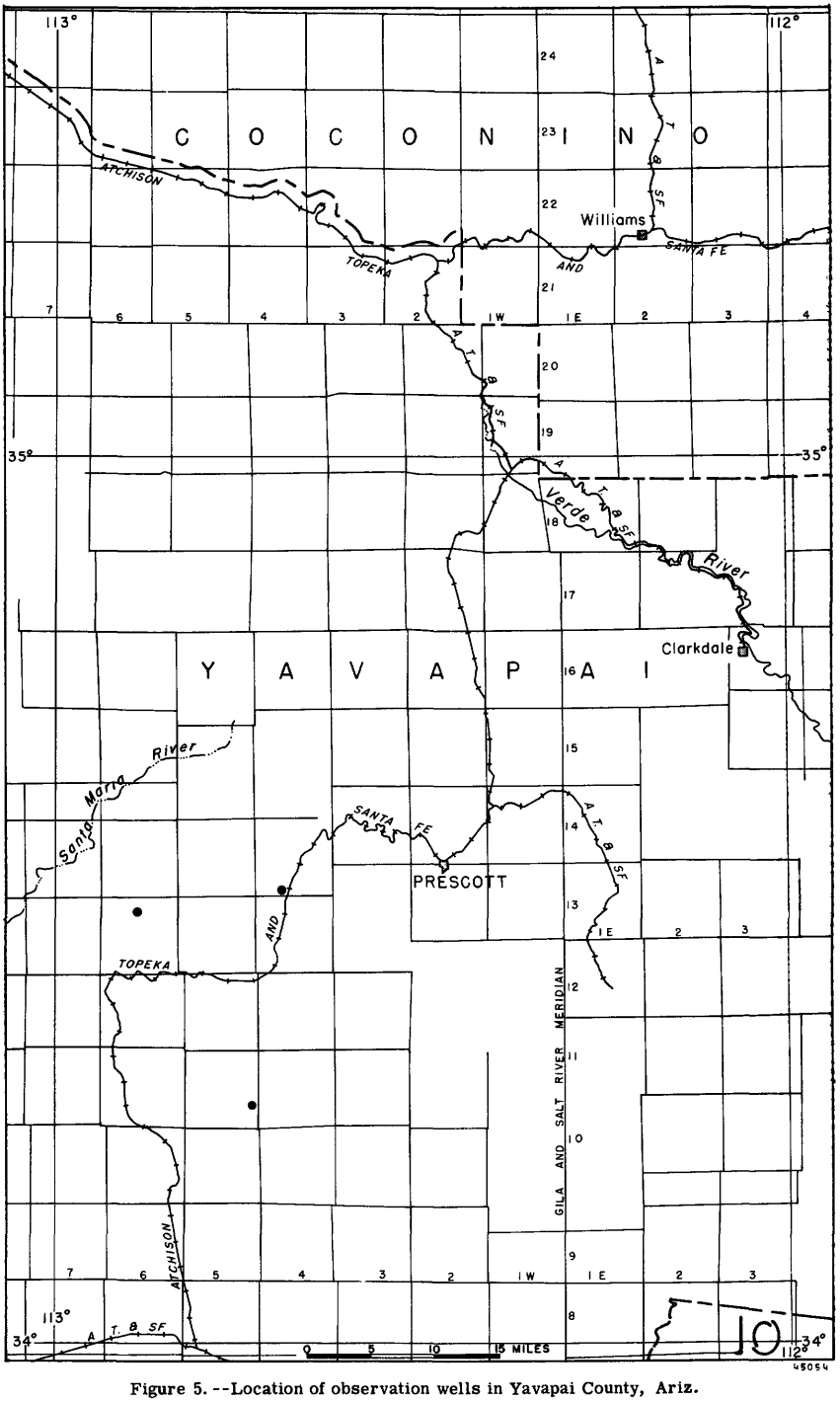

Figure 5. --Location of observation wells in Yavapai County, Ariz.

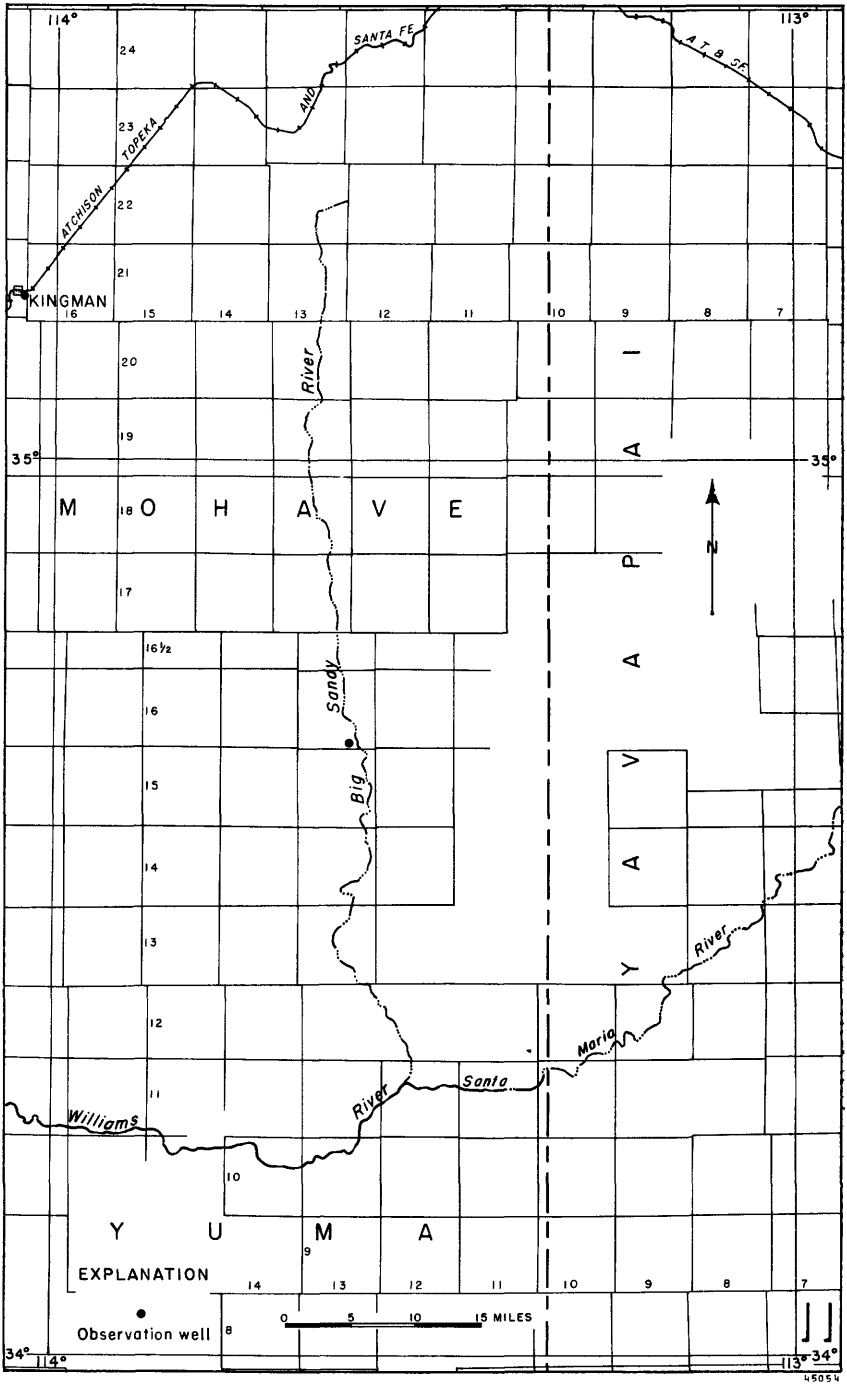

Figure 6. --Location of observation wells in Mohave County, Ariz.

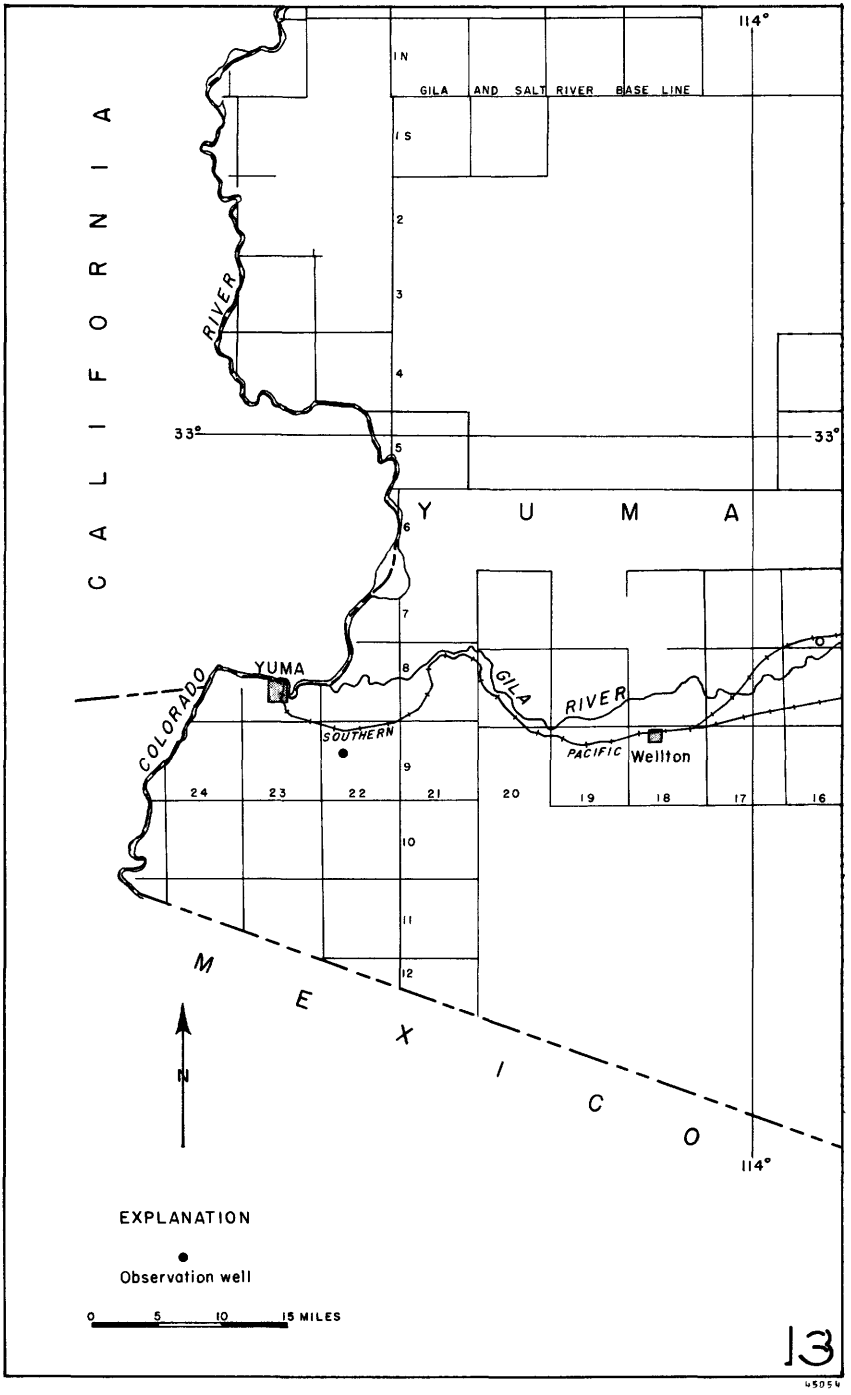

Figure 7. --Location of observation well in Yuma County, Ariz.

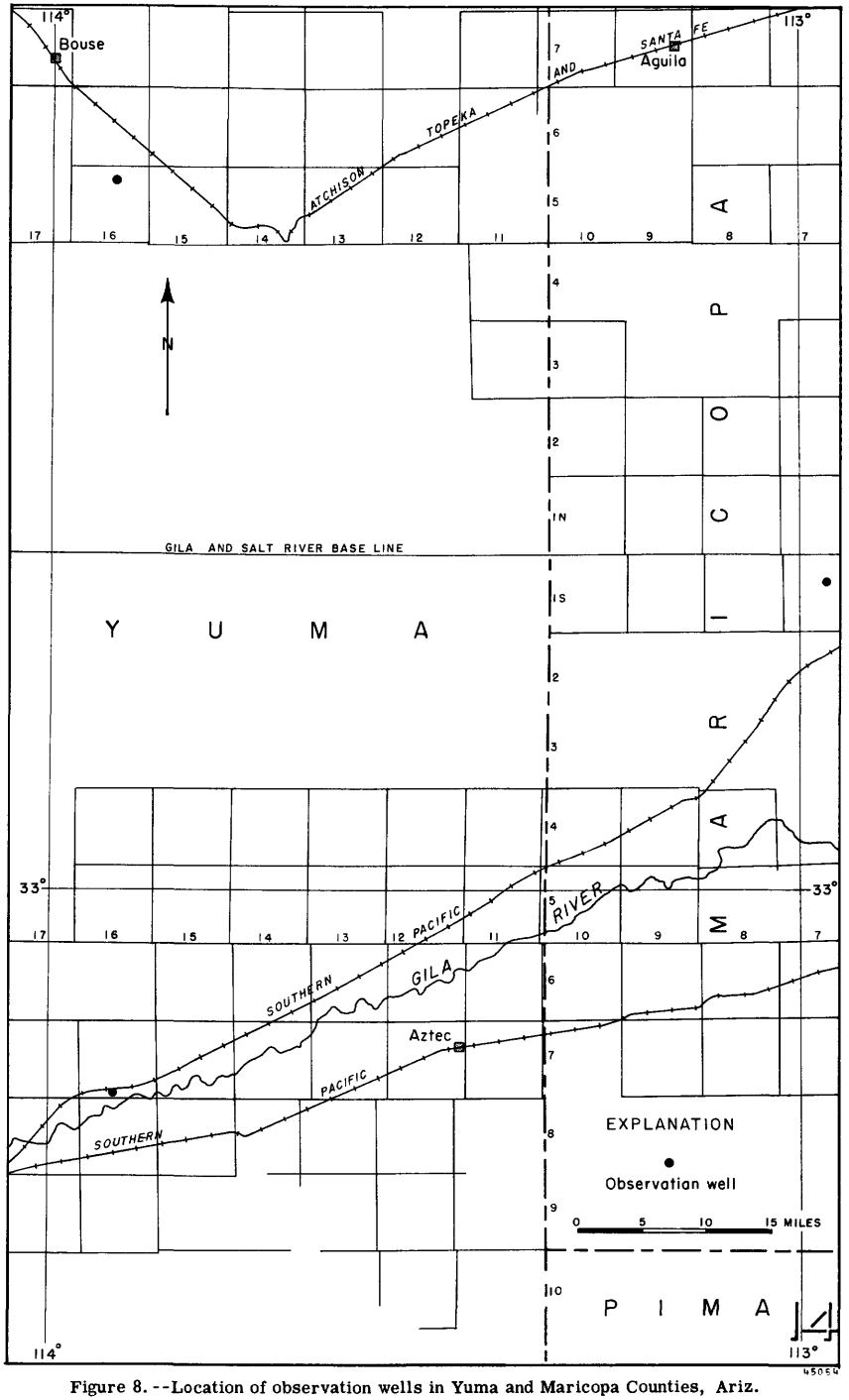

Figure 8.--Location of observation wells in Yuma and Maricopa Counties, Ariz.

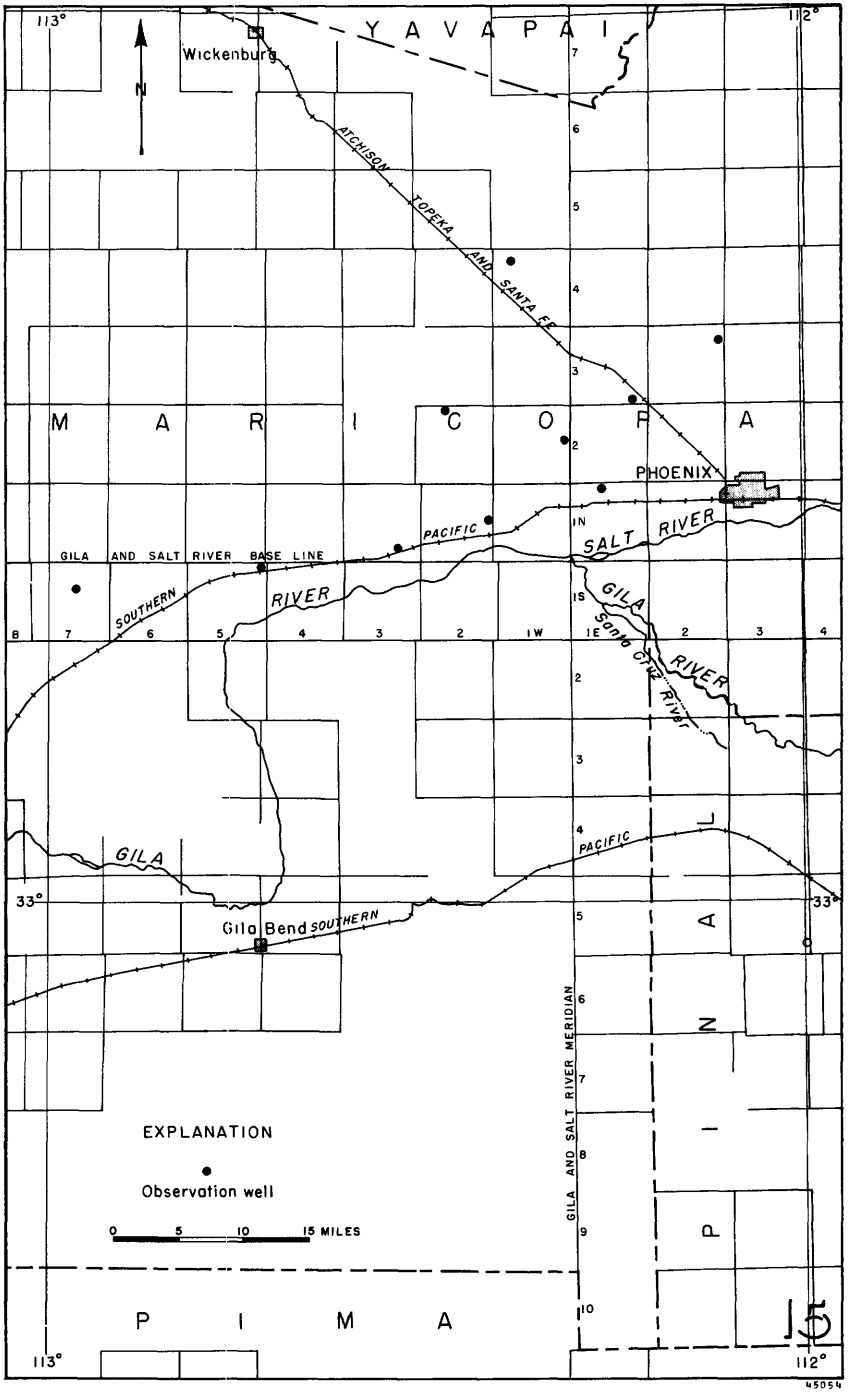

Figure 9.--Location of observation wells in Maricopa County, Ariz.

302263 O - 54 - 2

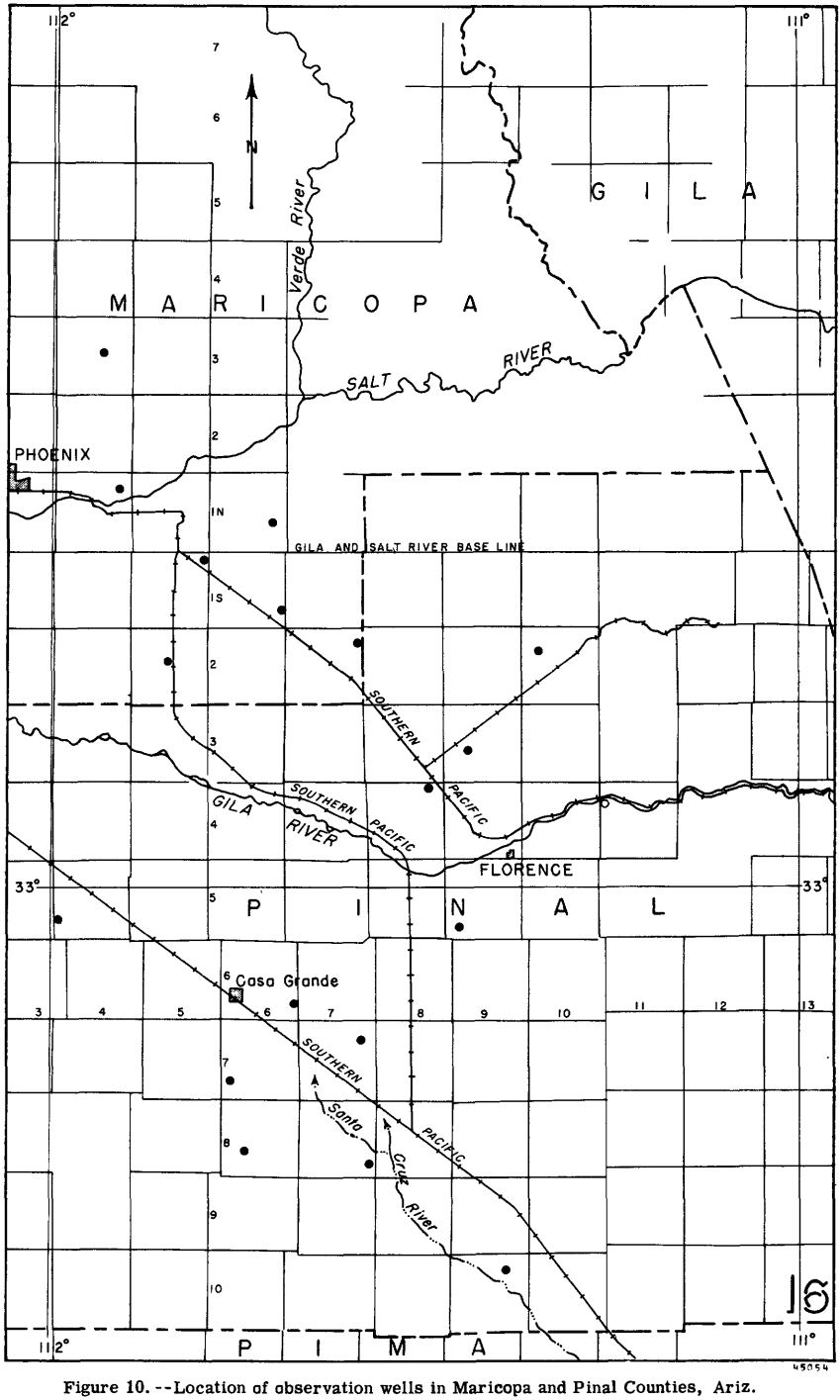

Figure 10.--Location of observation wells in Maricopa and Pinal Counties, Ariz.

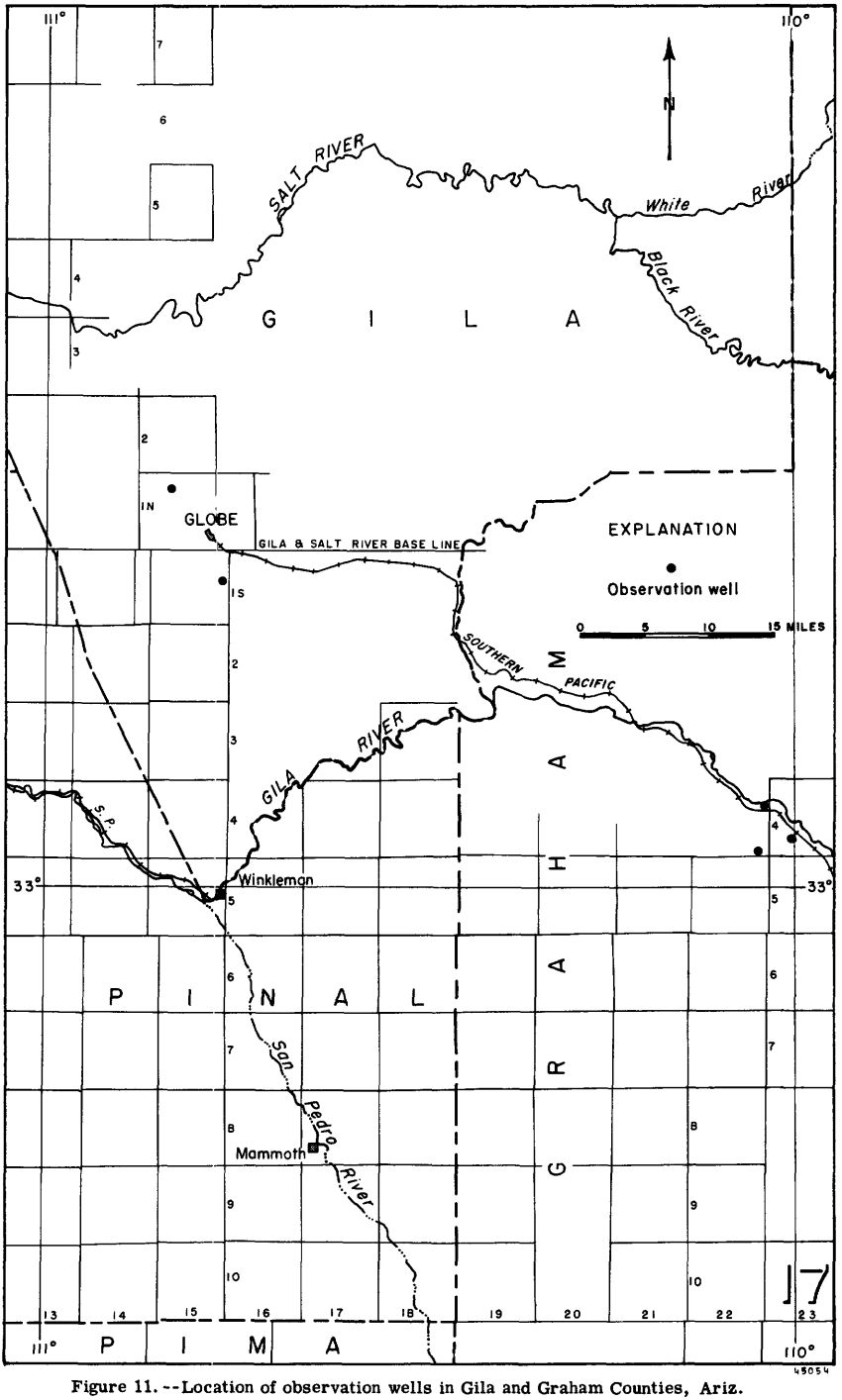

Figure 11.--Location of observation wells in Gila and Graham Counties, Ariz.

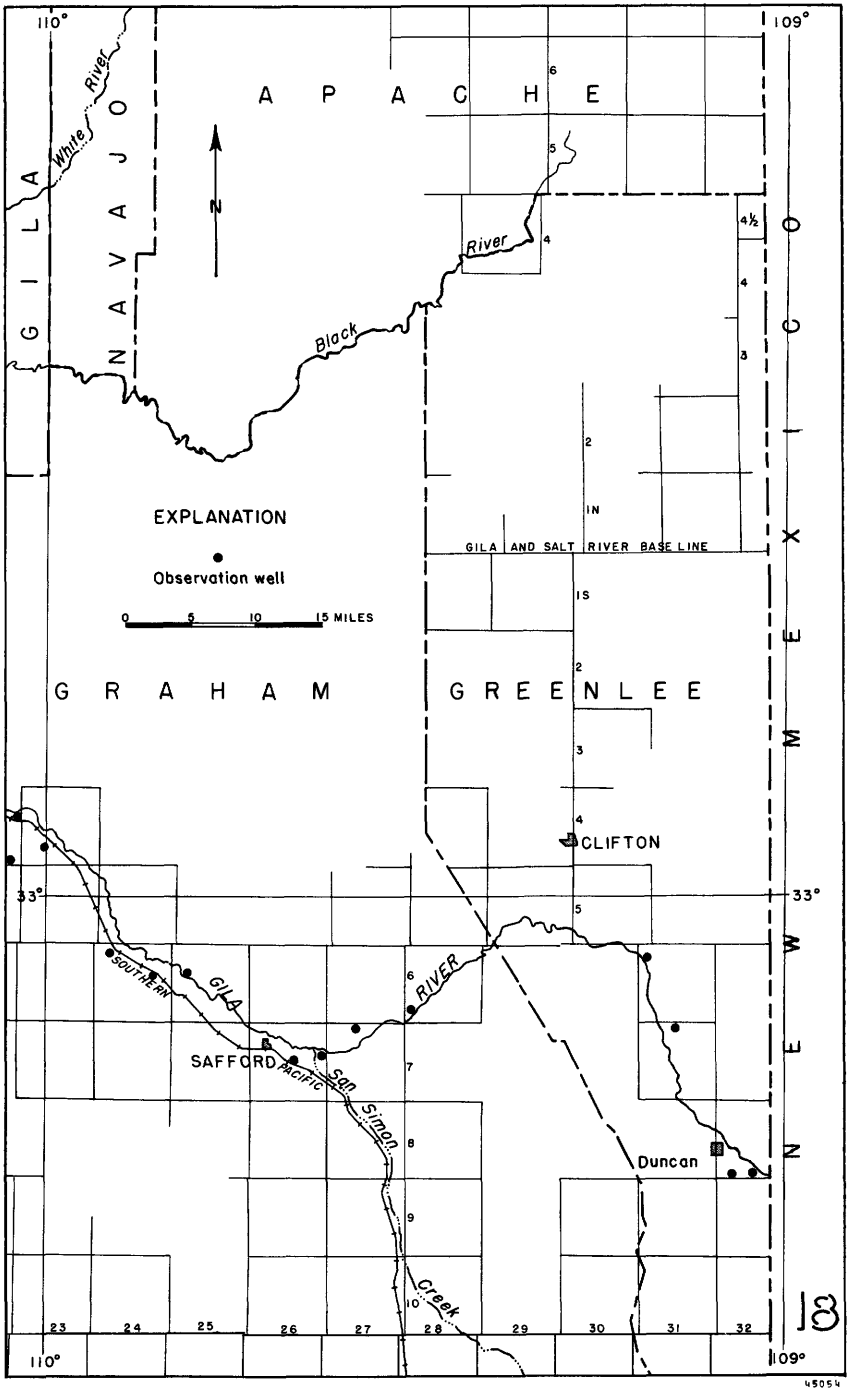

Figure 12.--Location of observation wells in Graham and Greenlee Counties, Ariz.

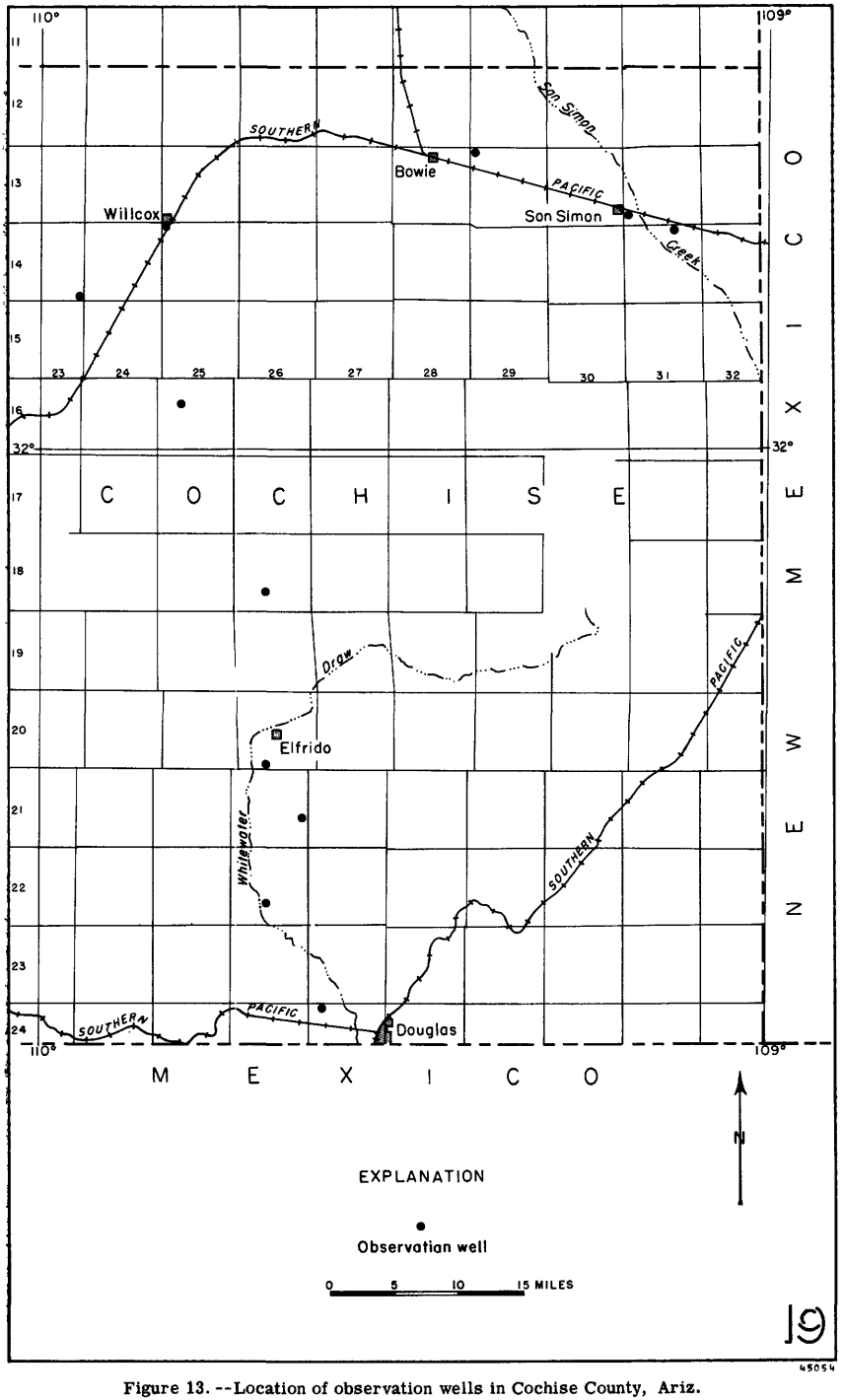

Figure 13. --Location of observation wells in Cochise County, Ariz.

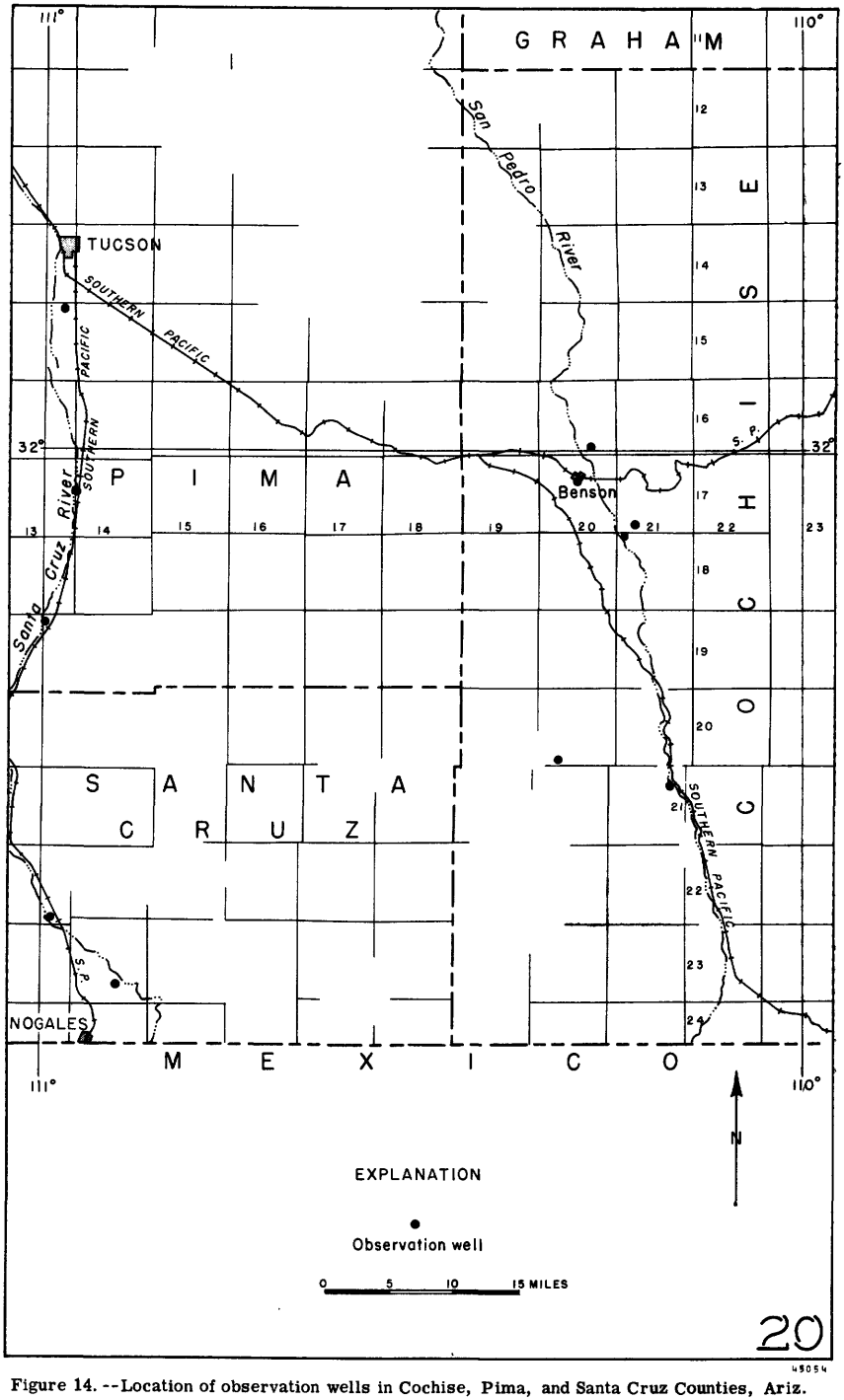

Figure 14. --Location of observation wells in Cochise, Pima, and Santa Cruz Counties, Ariz.

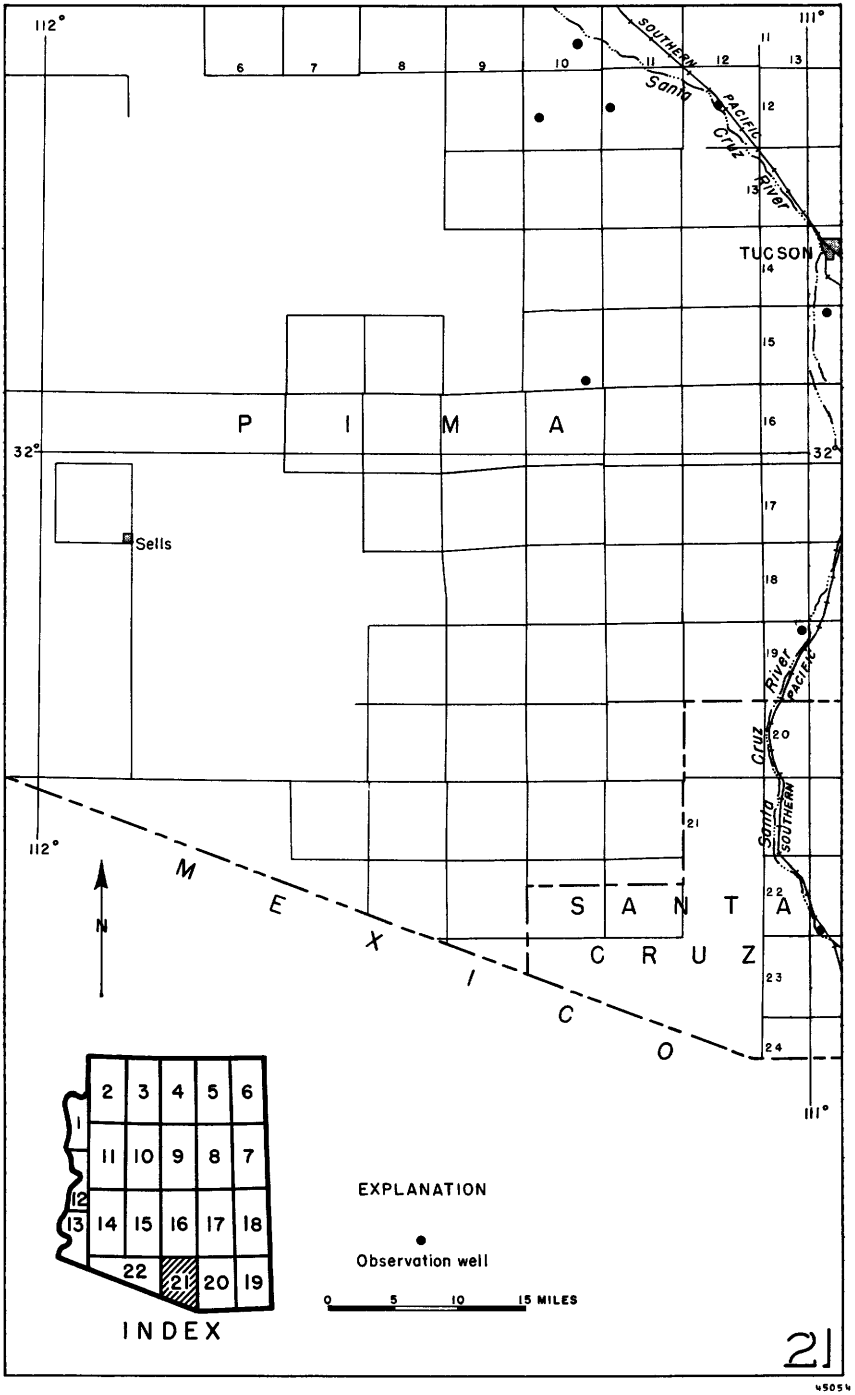

Figure 15.--Location of observation wells in Pima and Santa Cruz Counties, Ariz.

Interpretation of Water-Level Fluctuations

Apache County.--Water levels in wells generally showed a slight decline during 1951, although a few rises were observed. Precipitation at Springerville during the year amounted to 8.07 inches, approximately 63 percent of normal.

Cochise County.--Artesian pressures in the deep wells of the Pomerene-Benson-St. David area in the San Pedro River valley showed in general little or no net change in 1951. The water level in well (D-17-20)10ccc graphed in figure 16 showed a rise in pressure during the latter part of the year. However, it is believed that this rise is the result of less pumping in this vicinity and not a regional gain in ground-water storage. Net changes in water levels in wells tapping the shallow nonartesian system showed local rises and declines but nothing to indicate a regional trend. The graph of well (D-16-20)34acd shows a decline in the vicinity of this well probably caused by increased pumping from nearby irrigation wells. (See fig. 16.) Water levels in wells in the Fort Huachuca-Charleston area upstream along the San Pedro River indicated that little or no net change occured in 1951. This area is one in which the principal draft on ground water is for domestic and stock use. Hydrographs shown in figure 16 for wells (D-20-20)32cdb and (D-21-21)11aad are typical for the area. Fluctuations of water levels in the deep wells of the San Simon and Bowie areas of the San Simon Basin showed a continued lowering of pressure in the artesian aquifers during 1951. The net average decline of the pressure in 1951 was about $1\frac{1}{2}$ feet near the town of San Simon, and less than a quarter of a foot in wells in the vicinity of Bowie. The decline in water level near Bowie shown in figure 16 for well (D-13-29)6ccc represents a local condition caused by increased pumping of the well for irrigation. The well formerly was equipped with a windmill and supplied water for stock. Several deep wells were drilled in the Bowie area in 1951 to irrigate large tracts of newly cleared land. It is reported that several thousand acres probably will be cleared and cultivated within the next year or two in the Bowie area. The hydrograph for well (D-13-31)30cdc shows water-level fluctuations that are typical of the water-table wells near the town of San Simon. (See fig. 16.) In recent years several water-table wells were drilled for irrigation in this area, and pumping of these wells is slowly lowering the water table in their vicinity. The hydrograph for well (D-14-31)3bca shows the pressure changes in the artesian system in the more heavily pumped area of the San Simon Basin in the vicinity of the town of San Simon. (See fig. 16.) Ground-water levels in the Willcox Basin continued to decline due to pumping of wells for irrigation. In the irrigated area northwest of Willcox, the declines ranged from a fraction of a foot in the southern and northern parts to a maximum of $4\frac{1}{2}$ feet in the center of the area. The average decline was about $1\frac{1}{4}$ feet. In the vicinity of Willcox Playa the water table was lowered about half a foot. In the Kansas Settlement area, east of the playa, water levels in artesian wells declined about half a foot in 1951. Water-level fluctuations in two wells (D-14-23)36baa and (D-14-25)6cac are shown graphically in figure 17. The first well is on the west side of the playa and the second well is near the town of Willcox. Pumpage in the Willcox Basin in 1951 reached a record high of 38,000 acre-feet. There were approximately 170 irrigation wells operated during 1951. Water levels in wells in the irrigated area of the Douglas Basin reached a record low in 1951, with an average net decline of about 2 feet. In local areas of concentrated pumping, near Elfrida, McNeal, and Double Adobe, net water-level declines in wells were as much as $5\frac{1}{2}$ feet in 1951. In the general area of heavy pumping, the average net decline was about 3 feet. Near Douglas, along the International Boundary, the net decline averaged about 1 foot. Pumping for municipal, industrial, and agricultural uses caused this decline. Pumpage in the Douglas Basin in 1951 amounted to about 38,000 acre-feet from approximately 270 irrigation wells. Precipitation at Willcox was 13.57 inches in 1951, or 1.73 inches above normal. Monthly amounts of precipitation at Willcox are shown graphically in figure 17 for the years 1942-51.

Coconino County.--Water levels rose during 1951 in most of the wells that were measured, the gains ranging from a few hundredths to as much as 8 feet. Slight declines of water levels in three wells also were recorded. The U. S. Weather Bureau at Flagstaff reported a total of 25.79 inches of precipitation during the year, considerably above normal and more than twice as much as occurred in 1950.

Gila County.--Water levels in shallow wells along Pinal Creek fluctuated with no pronounced trend until near the end of the year. At that time the water levels rose sharply in response to recharge occurring as a result of seepage from flows in Pinal Creek. Precipitation at Globe was 18.62 inches in 1951, 3.49 inches above normal. In the month of August, 5.28 inches of rain fell, or 2.70 inches more than normal for the month. Water levels in deeper aquifers upstream along Pinal Creek from Globe showed little or no net change in ground-water storage.

Graham County.--An average net water-level decline of $4\frac{1}{2}$ feet was measured in wells in the cultivated portion of Safford Valley in 1951. In general, the water table was depressed to the lowest level in the period of record 1940-51. The net declines in individual wells ranged from a quarter of a foot to 16 feet. The average net decline of water table by areas are: San Jose-Safford area, 8 feet; Safford-Pima area, 6 feet; Pima-Cork area, 4 feet; Cork-Geronimo area, 1 foot, and Pima-Eden area, 3 feet. The stage of the underflow of the Gila River into

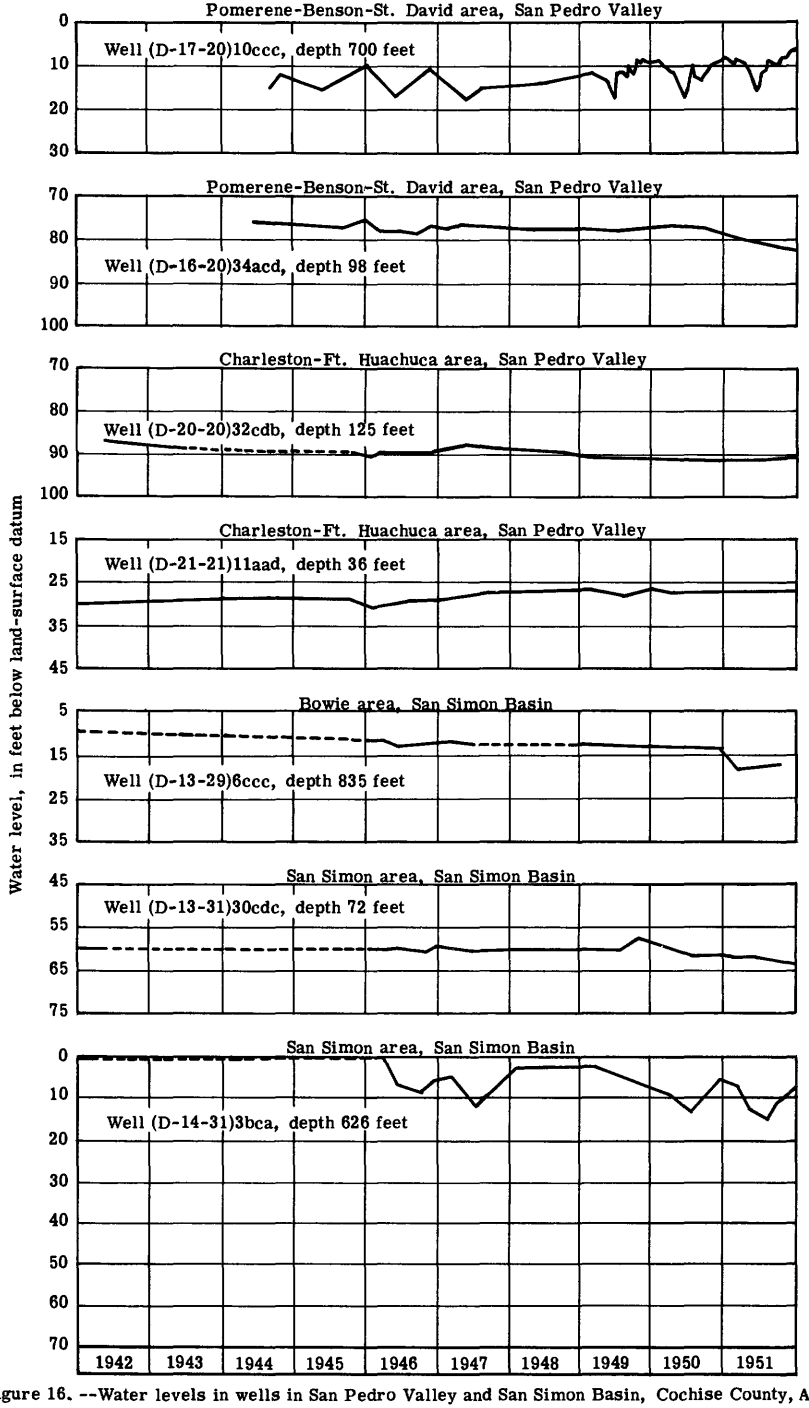

Figure 16. --Water levels in wells in San Pedro Valley and San Simon Basin, Cochise County, Ariz.

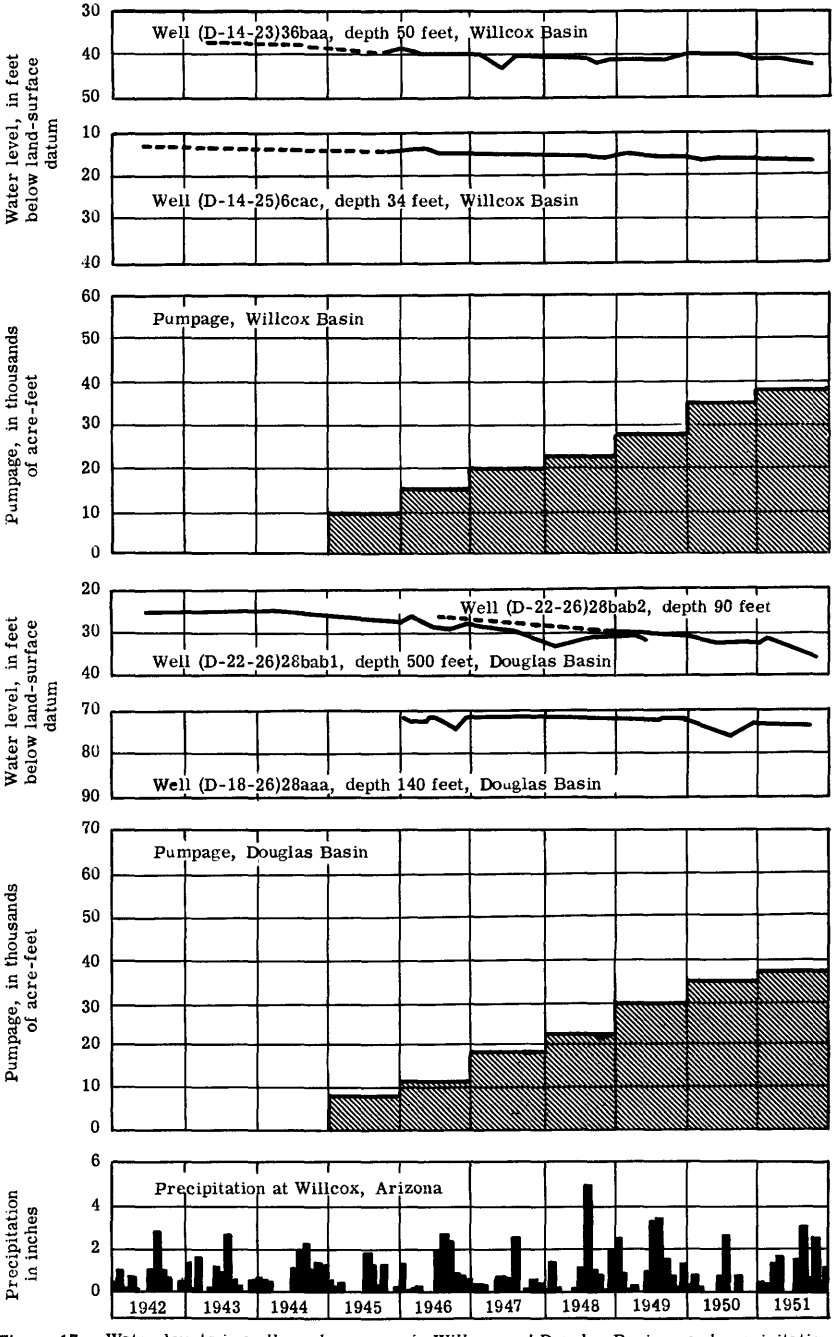

Figure 17.--Water levels in wells and pumpage in Willcox and Douglas Basins, and precipitation at Willcox, Cochise County, Ariz.

Safford Valley is indicated by the decline of water level in well (D-6-28)31aac, shown graphically in figure 18. The water level in this well had a net decline of about 7 feet in 1951, and at the end of the year was at the lowest level during the period of record shown on the graph. The decline in water level in well (D-7-26)22bac, graphed in figure 18, indicates that a 10-foot thickness of the aquifer was dewatered in the vicinity of that well in 1951. The 4-foot decline in water level in 1951 in well (D-6-24)5acc is representative of the declines in the Pima-Cork area. The average stage of the water level in this well for the year 1951 was lower than the average for any previous year of record. The stage of the underflow of the Gila River leaving the cultivated portion of the valley is indicated by the water level in well (D-4-22)13acc, shown graphically in figure 18. Precipitation in the vicinity of Safford amounted to 9.26 inches in 1951, or approximately normal for the area. The decline in ground-water levels in the Safford Valley in 1951 can be attributed principally to a reduced rate of recharge and to large-scale pumping. Pumpage in Safford Valley reached a record high of 125,000 acre-feet in 1951. The supply of surface water available for irrigation was the smallest in the period 1940-51, and this deficiency was made up by pumping from wells. The following table is a summary of the quantities used from ground and surface-water sources. The information on surface water was taken from annual reports of the Gila Water Commissioner.

Year	Ground Water (acre-feet)	Surface Water (acre-feet)	Total (acre-feet)
1940	24,600	99,693	124,293
1941	8,685	151,300	159,985
1942	18,900	172,005	190,905
1943	35,000	121,569	156,569
1944	52,000	128,027	180,027
1945	35,000	148,675	183,675
1946	115,000	69,909	184,909
1947	100,000	51,978	151,978
1948	110,000	39,848	149,848
1949	40,000	167,790	207,790
1950	90,000	68,504	158,504
1951	125,000	26,389	151,389

Greenlee County.--Water levels in wells in Duncan Valley between the Arizona-New Mexico line and Sheldon lowered a net average of $1\frac{1}{4}$ feet in 1951. (See fig. 19.) The maximum lowering was $2\frac{1}{2}$ feet in wells near the State line. Water-level declines decreased from the State line downstream to Sheldon. From Sheldon downstream to the narrows below York, water levels in wells rose a net average of 1 foot. The rise in water level increased from about zero near Sheldon to a maximum of $1\frac{1}{2}$ feet downstream from York. Precipitation at Duncan amounted to 9.21 inches in 1951. In 1951, approximately 33,000 acre-feet of water was pumped from wells for irrigation in the Duncan Valley, not including Virden Valley, New Mexico. This is a record high for the valley. The amount of pumpage was larger because of the small amount of surface water available for irrigation. Less surface water was available for irrigation in the valley in 1951 than in any year in the period 1940-51. There were about 70 irrigation wells in use in the valley during 1951.

Maricopa County.--As may be seen from the graphs in figure 20, water levels throughout most of the Salt River Valley continued to decline during 1951. In the Queen Creek-Higley-Gilbert area the downward trend of water levels continued at about the same rate as in the several preceding years, the average decline amounting to about 9 feet. The total average decline since 1940 has been approximately 52 feet, of which more than 40 feet has occurred since 1946. In the Tempe-Mesa-Chandler area the average water level decline during 1951 was more than 7 feet, making a total decline of about 43 feet since 1940. The rate of decline during 1951 was approximately the same as in the immediately preceding years. There was a continued decline in water levels in the Phoenix-Glendale-Tolleson area, although there the rate of decline was not quite so rapid as it has been in previous years. Total average decline for 1951 was slightly less than 3 feet and the total decline in this area since 1940 has amounted to approximately 34 feet. Of this amount, more than 27 feet has occurred since 1946. In the Litchfield-Beardsley-Marinette area average water levels showed a very slight rise, the first reversal of the downward trend since 1938. Heavy rains in late August and early September resulted in floods along the Agua Fria River and New River, both of which traverse this area and the slight rise of the water table may have resulted from both abnormal recharge along the stream courses and from decreased pumping for irrigation. In the Liberty-Buckeye-Hassayampa area there was practically no change in average water levels from the previous year, the decline amounting to less than a tenth of a foot. The water table in this area is now slightly lower than it has been at any time since 1930 and is approximately 12 feet below the high peak that was reached during 1945. Cumulative net changes of average water level in the entire Salt River Valley area since 1930 are shown graphically in figure 21. A graph also shows the amount of water pumped for irrigation each year since 1933. The water levels continued to decline about the same rate as in the previous year even though the amount of water pumped for irrigation, 1,910,000 acre-feet, exceeded any prior year's withdrawal. This pumpage was

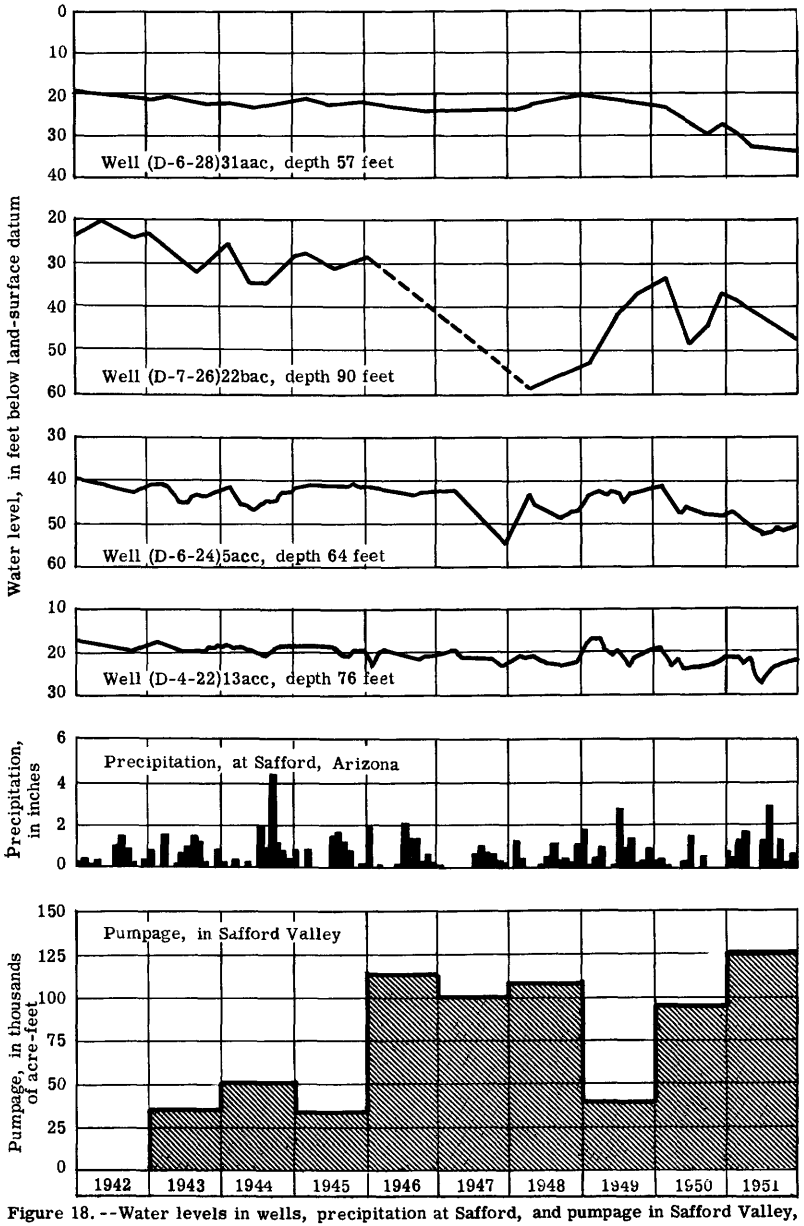

Figure 18.--Water levels in wells, precipitation at Safford, and pumpage in Safford Valley, Graham County, Ariz.

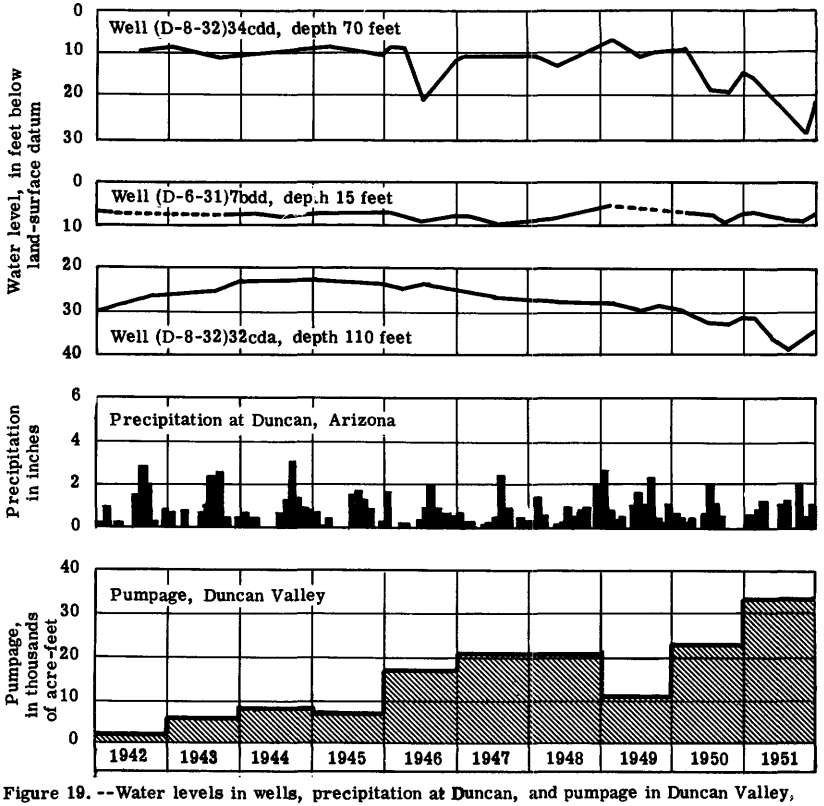

Figure 19. --Water levels in wells, precipitation at Duncan, and pumpage in Duncan Valley, Greenlee County, Ariz.

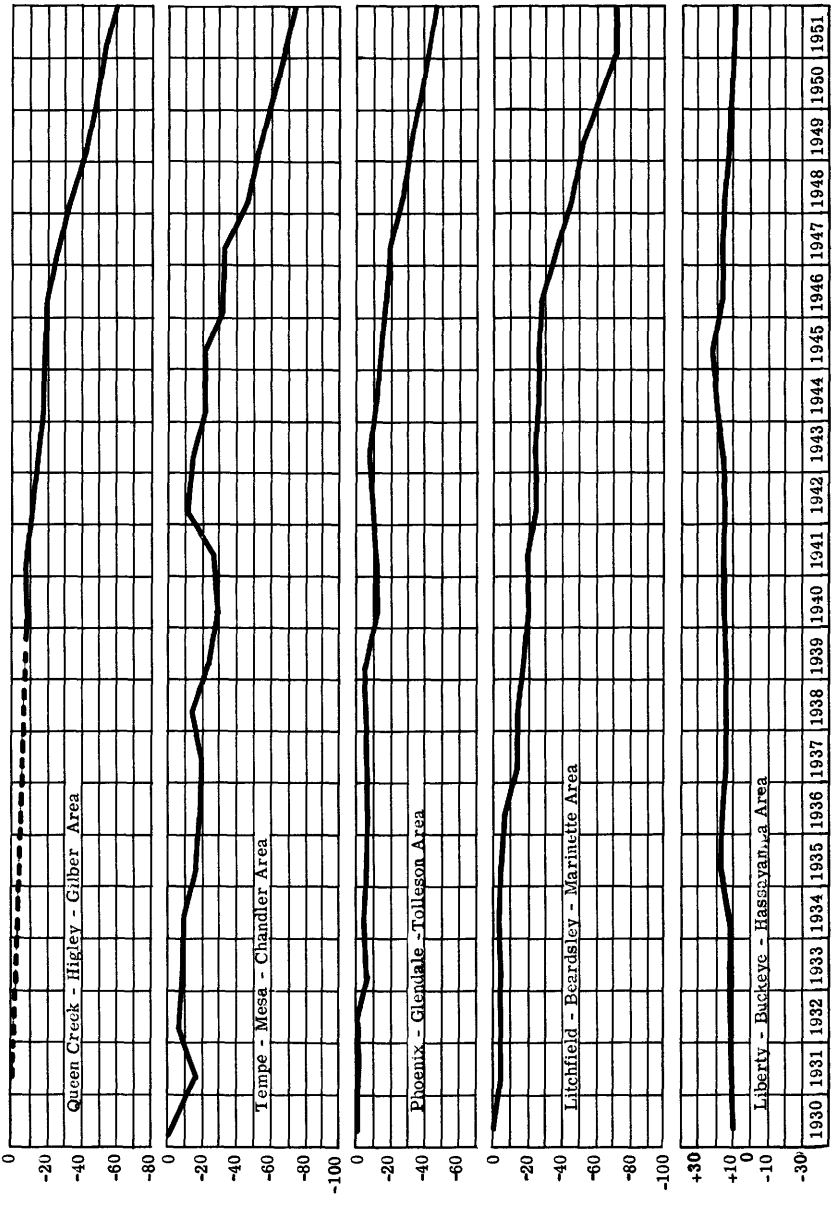

Figure 20.--Cumulative net changes of average water level in various parts of Salt River Valley, Maricopa County, Ariz.

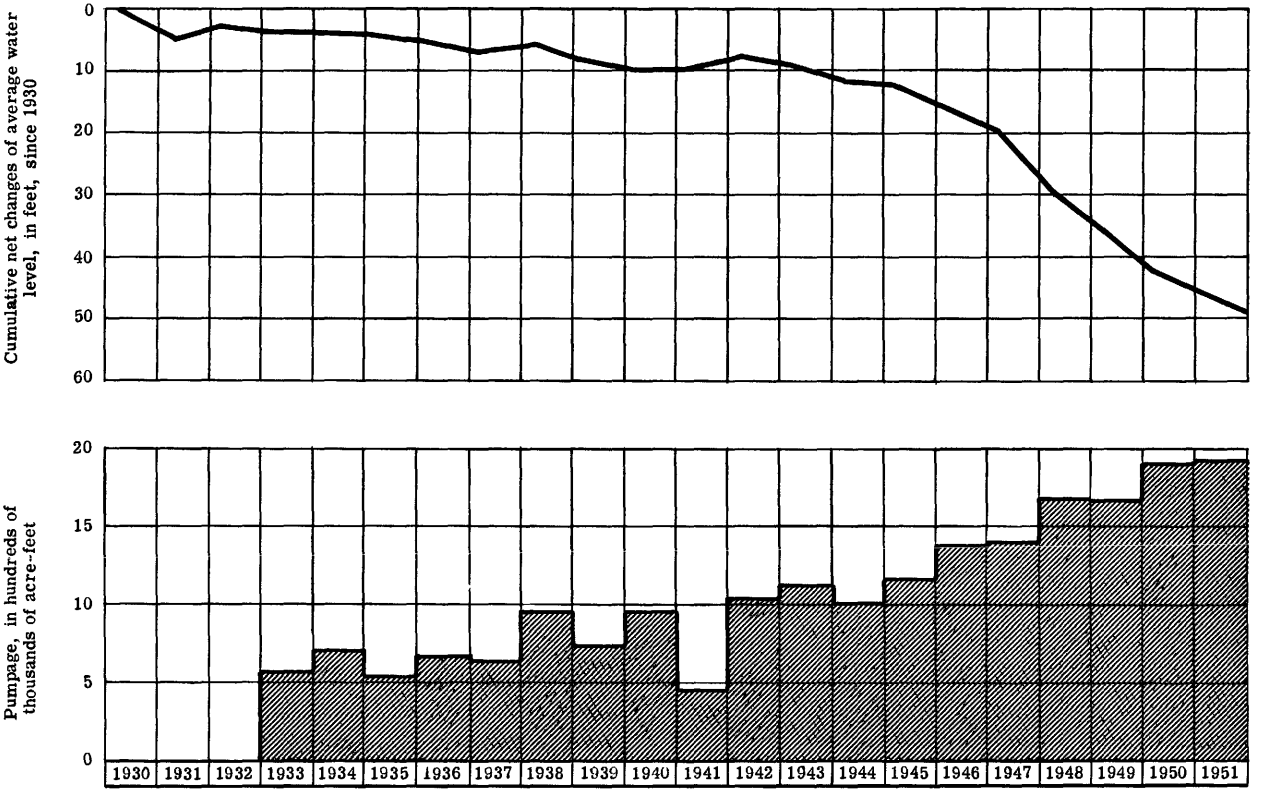

Figure 21. --Cumulative net changes of average water level and pumpage for irrigation in Salt River Valley, Maricopa County, Ariz.

greater than in 1950, when the previous high mark was established. The increase in pumpage is attributed to continued expansion of cultivation. Rainfall at Phoenix during 1951 amounted to 12.82 inches, about 5 inches above normal. The above-normal rainfall probably prevented an acceleration in the rate of decline of water levels throughout most of the area because less irrigation water per acre was needed than during previous years.

Mohave County.--Water-level fluctuations in wells in the Big Sandy Valley near Wikieup were largely seasonal during 1951, but there were indications that the downward trend of previous years was being slowed or reversed. In the vicinity of Kingman ground-water levels continued to decline about 1 foot a year, a trend that has been evident through the period of record, 1944-51. Precipitation at Kingman amounted to 14.24 inches, or 4.15 inches above normal. Much of the precipitation was recorded during the last 5 months of the year. In areas of shallow depth to water, such as along the Big Sandy River, recharge resulting from the above-normal rainfall had reached the water table by the end of the year.

Navajo County.--Fluctuations of water levels during 1951 were slight in the wells measured in Navajo County. The number of slight declines exceeded the number of gains considerably, but there was not enough change to indicate any definite trend. Weather records show that precipitation during the year was not far below normal.

Pima County.--The water table beneath most of the irrigated areas of Pima County was depressed to a record low in 1951 as a result of continued large-scale pumping of ground-water, primarily for irrigation. The net decline amounted to about 4 feet in 1951 in the Tucson-Cortaro area of the Santa Cruz River valley. The hydrograph for well (D-12-12)16bad shown in figure 22 is typical of the maximum water-level fluctuation in wells in this area. In the Avra-Marana irrigated area the net average lowering of the water table was about 2 feet in 1951. In the northern part of that area the net lowering in some wells was as much as 4 feet, while in the southern part, where less pumping occurred, the net lowering was less than 1 foot. Well (D-15-10)35aaa, the water-level fluctuations of which are graphed in figure 22, reflects ground-water conditions in the relatively undeveloped section in the extreme southern end of the Avra-Marana area. Water levels in wells in the irrigated areas along Rillito Creek and Pantano Wash lowered between $1\frac{1}{2}$ and 4 feet during the year. Water-level declines in the Tucson-Continental area ranged from $3\frac{1}{2}$ to $5\frac{1}{2}$ feet, with an average decline of about $3\frac{3}{4}$ feet. The largest declines were near the southern end of the area. Well (D-17-14)18cab, the water-level fluctuations of which are graphed in figure 22, is about in the center of the Tucson-Continental area. Well (D-15-13)2cca, also in this area, represents fluctuations in the Tucson city well field south of Tucson. Pumpage in Pima County increased about 60,000 acre-feet in 1951 to a record high of 240,000 acre-feet. Approximately 35,000 acre-feet of this amount was withdrawn for industrial and domestic use in the Tucson metropolitan area. Water needed for newly cultivated land and for more intensive cultivation of the older irrigated areas accounted for most of the increased pumpage in 1951.

Pinal County.--The average net decline amounted to $7\frac{1}{4}$ feet in 1951 in the irrigated area of the Santa Cruz and Gila River valleys of Pinal County. The water table declined to the lowest stage on record. Declines averaged about 6 feet in the Casa Grande-Florence area, with net declines of as much as 10 feet southwest of Coolidge. Net declines averaged about 2 feet on the Gila Indian Reservation near Sacaton. Water-level declines averaged $8\frac{1}{2}$ feet in the Maricopa Stanfield area in 1951. Declines of more than 15 feet were not uncommon in the southern and western parts of this area. Water-level declines averaged about $7\frac{1}{2}$ feet in the Eloy area with local depressions of as much as 12 feet in the central and southern part of the area. (See fig. 23.) The least and greatest depth to water, respectively, in the irrigated portions of these areas at the end of 1951 were: Casa Grande-Florence area, 30 feet, just downstream from Ashurst-Hayden Dam, and 140 feet, about 7 miles south of Coolidge; Maricopa-Stanfield area, 35 feet, about 2 miles northwest of Maricopa, and 300 feet, about 5 miles southwest of Stanfield; and Eloy area, 75 feet, about 12 miles west of Eloy, and 240 feet, about 5 miles south of Eloy. Pumpage in 1951 in the Santa Cruz and Gila River valley of Pinal County amounted to 1,030,000 acre-feet, a new record high. Pumpage in that part of the Queen Creek area within Pinal County amounted to about 100,000 acre-feet, but this pumpage is included in the total for the Salt River Valley. The San Carlos Project, made up in part by the Casa Grande-Florence area and in part by lands on the Gila Indian Reservation, had less surface water available for use than in any year of the 12-year period 1940-51. The low ground-water levels reduced the pump discharges greatly in the project area, thereby causing the quantity available to be less than the total required. The lack of surface water, and the inability to supplement the supply by pumping from wells, resulted in some lands in the project not receiving enough water to mature the crops.

Santa Cruz County.--Ground water levels in the Santa Cruz River valley of Santa Cruz County were lowered in 1951 by continued large-scale pumping of wells for irrigation. Local depressions in the water table of as much as 6 feet were measured in centers of concentrated ground-water withdrawal. In areas of less pumping, the declines were as small as half a foot. Figure 24 shows graphs of water-level fluctuations in wells (D-22-13)35dcd and (D-23-14)27baa. The first well is in an area more heavily pumped than the second well, and the large water-level fluctuations caused by the heavier pumping can be readily seen in comparing the two graphs. Precipitation at Nogales amounted to 18.88 inches, or 2.97 inches above normal. Rains coming

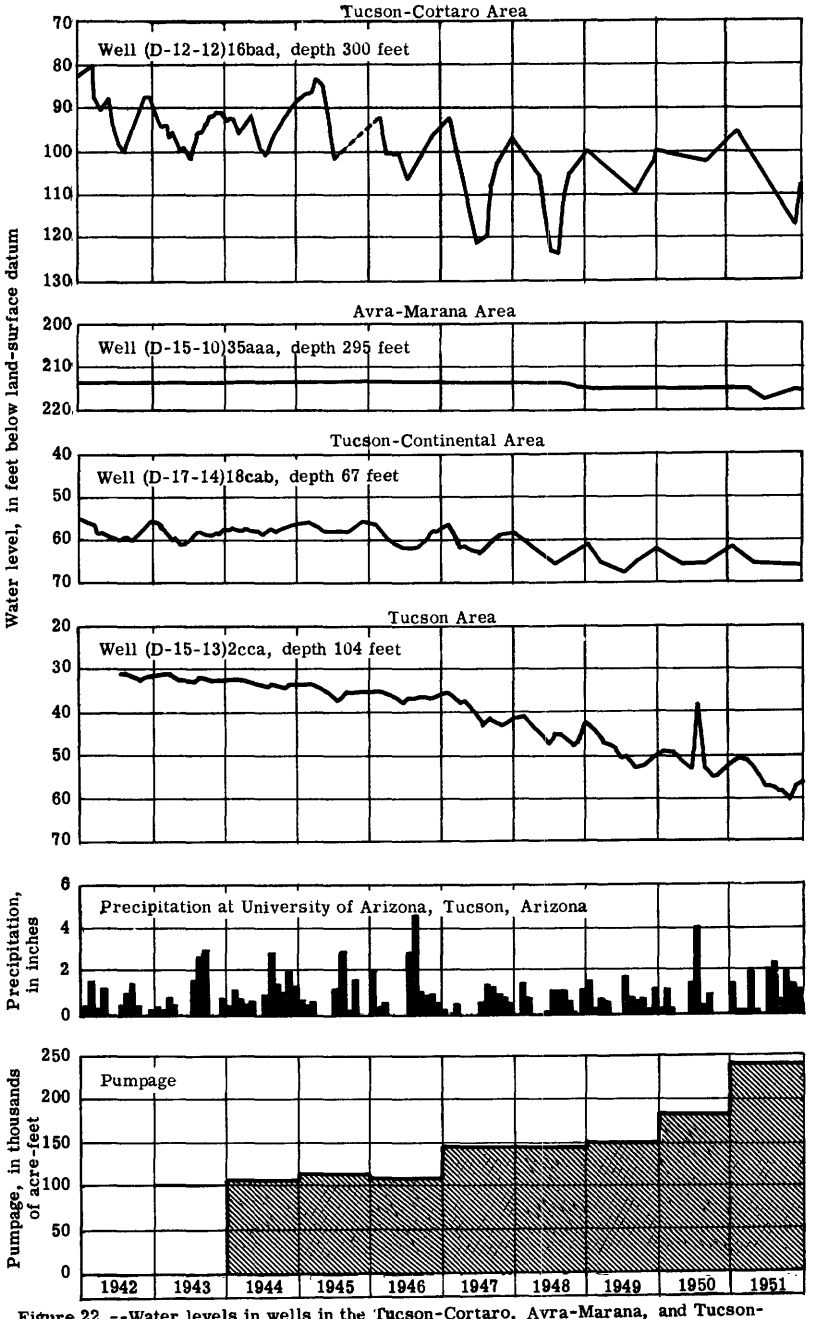

Figure 22.--Water levels in wells in the Tucson-Cortaro, Avra-Marana, and Tucson-Continental areas, precipitation at Tucson, and pumpage, Pima County, Ariz.

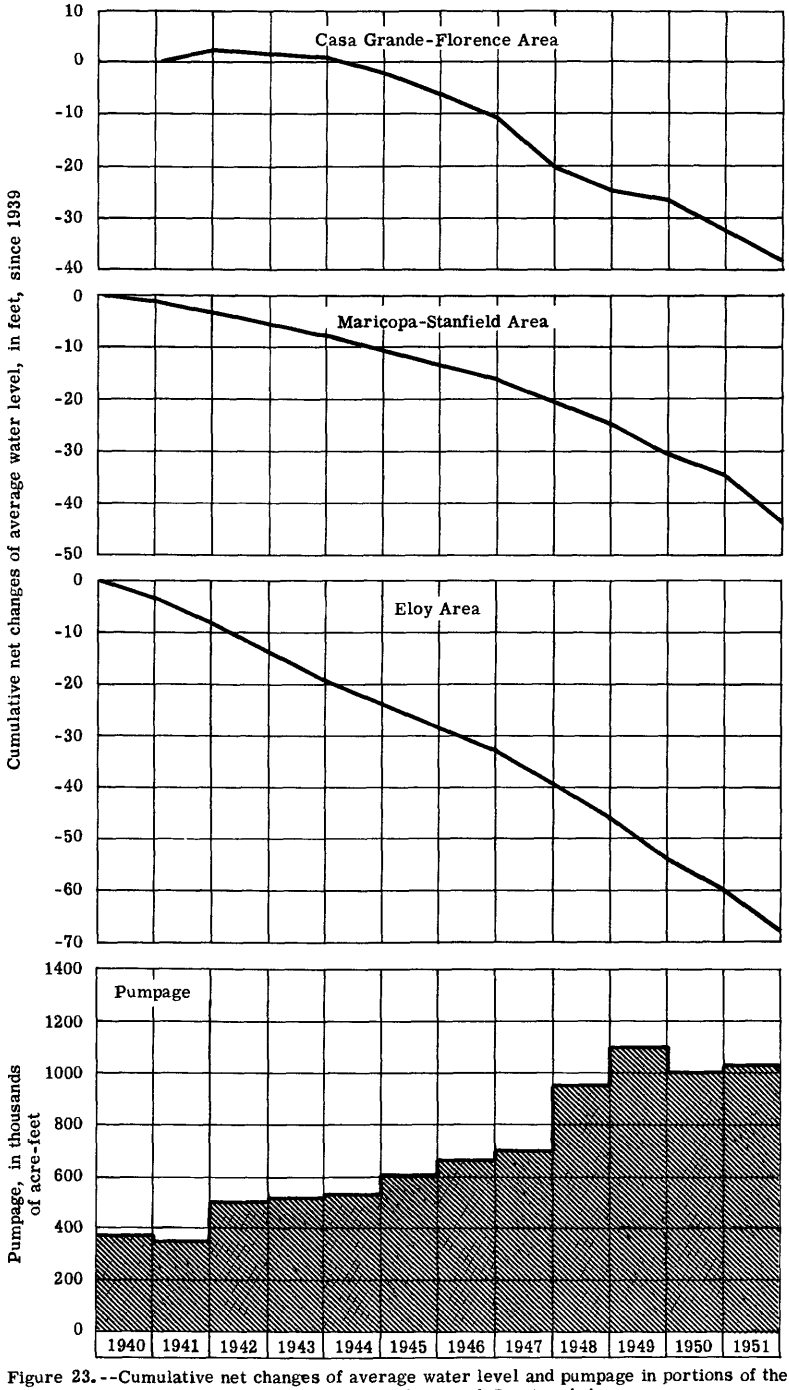

Figure 23.--Cumulative net changes of average water level and pumpage in portions of the Santa Cruz Basin within Pinal County, Ariz.

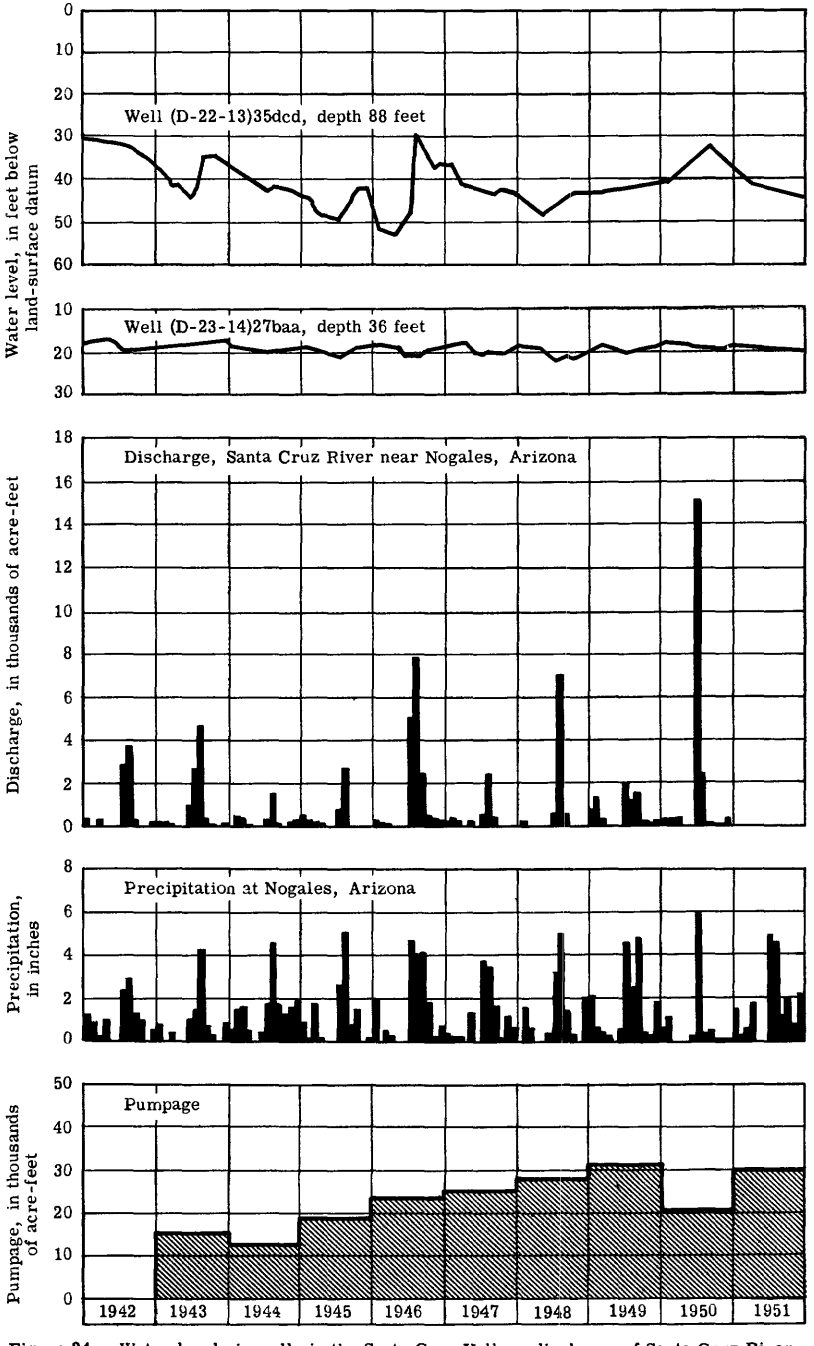

Figure 24. --Water levels in wells in the Santa Cruz Valley, discharge of Santa Cruz River near Nogales, precipitation at Nogales, and pumpage in Santa Cruz County, Ariz.

at opportune times reduced the overall requirement of ground water for irrigation. Pumpage in Santa Cruz County amounted to about 30,000 acre-feet in 1951.

Yavapai County.--There was a substantial recovery during 1951 of water levels in many of the wells measured in this county. Rises of 3 feet or more were numerous, and in some cases the water stood at higher levels than at any time since 1948. Recoveries were particularly noticeable in Peeples Valley and Skull Valley. The wells in Chino Valley showed less fluctuation than in other parts of the county.

Yuma County.--There were no large fluctuations in water levels in wells measured in the Ranegras Plain area of northern Yuma County in 1951, nor was there a consistent trend in water levels. In general, in the majority of the wells measured, the water-level trend was downward, due in part to the previous years of drought. The magnitude of the average decline in 1951 was about a tenth of a foot. Fluctuations in water level in well (B-5-16)10ddd, shown graphically in figure 25, are typical of water-table fluctuations in northern Yuma County. Water levels in wells in the Gila River valley of southern Yuma County generally declined during 1951. The net decline of the water level in most wells measured in the Wellton-Mohawk area of the Gila valley was about half a foot. Water levels in a few wells west of the town of Wellton rose slightly because of recharge that was not offset by pumpage from wells for irrigation. Pumpage in the Wellton-Mohawk valley is least west of Wellton. Total pumpage for the Wellton-Mohawk valley amounted to about 50,000 acre-feet in 1951. In the South Gila Valley and in the Yuma Mesa area, ground-water levels continued to rise in response to added recharge from heavy applications of water for irrigation. Fluctuations in water levels in well (C-9-22)17ddd, shown in figure 25, are typical for the area. Pumpage from wells in Yuma County amounted to 127,000 acre-feet in 1951.

Well-Numbering System

Wells are numbered in accordance with the Bureau of Land Management system of land subdivision. The first digit of a well number indicates the township, the second the range, and the third the section in which the well is situated. The lower-case letters--a, b, c, and d--following the section number indicate the well location within the section; the first letter denotes the quarter section (160-acre tract), the second the quarter-quarter section (40-acre tract), and the third the quarter-quarter-quarter section (10-acre tract). The letters are assigned in a counterclockwise direction, beginning in the northeast quarter. If the location is known within a 10-acre tract, three lower-case letters are shown in the well number. When there is more than one well in the smallest significant tract, consecutive numbers beginning with 1 are added as suffixes. The land survey of Arizona is based on the Gila and Salt River Base Line and Meridian, which divide the State into four quadrants. These quadrants are designated by the capital letters A, B, C, and D. All lands north and east of the base point are in A quadrant; those north and west are in the B quadrant, and so on through C and D quadrants. (See fig. 26.) For example, well number (D-4-5)19 designates the well as being in sec. 19, T. 4 S., R. 5 E., in the southeast quadrant.

Pumpage

Pumpage of ground water for irrigation in 1951 exceeded the previous record high of 1950 by more than 300,000 acre-feet. The following table contains records of pumpage for the 7-year period 1945-51. A change has been made in the table by no longer including records of pumpage for the New Mexico portion of the Duncan-Virden Valley. This change slightly reduces the previously reported totals for the years 1946-50. The table indicates that about 3,680,000 acre-feet of ground water was pumped from the principal ground-water basins in the State in 1951. However, ground-water pumpage was not included in the following areas: San Simon Valley, Upper San Pedro Valley, Lower San Pedro Valley, Aravaipa area, Cactus Flat area, St. Johns area, Snowflake-Taylor area, Hunt area, Woodruff area, Joseph City area, Chino Valley and Long Valley, Skull Valley and Peeples Valley, Date Creek area, Big Sandy Valley and Valentine area, Bouse area, Parker area. It is estimated that pumpage for irrigation in these areas was 75,000 acre-feet in 1951. The total pumpage in the State during 1951 was approximately 3,750,000 acre-feet.

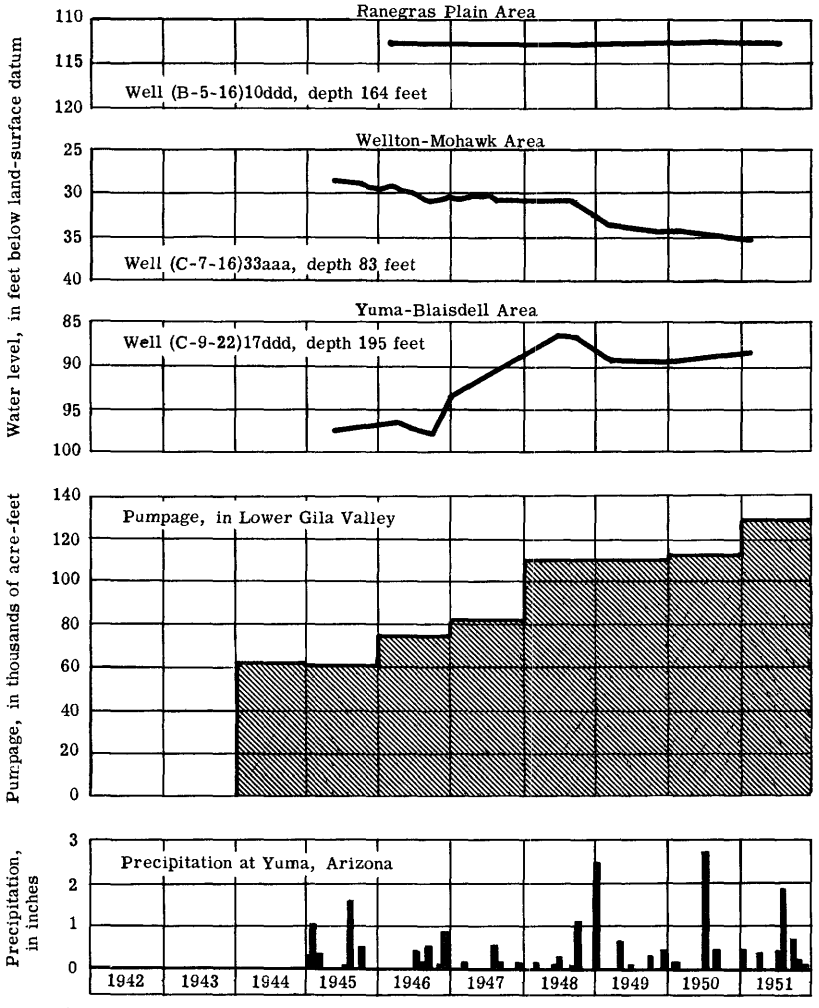

Figure 25. --Water levels in wells in Ranegras Plain, Wellton-Mohawk, and Yuma-Blaisdell areas, pumpage in Lower Gila Valley, and precipitation at Yuma, Yuma County, Ariz.

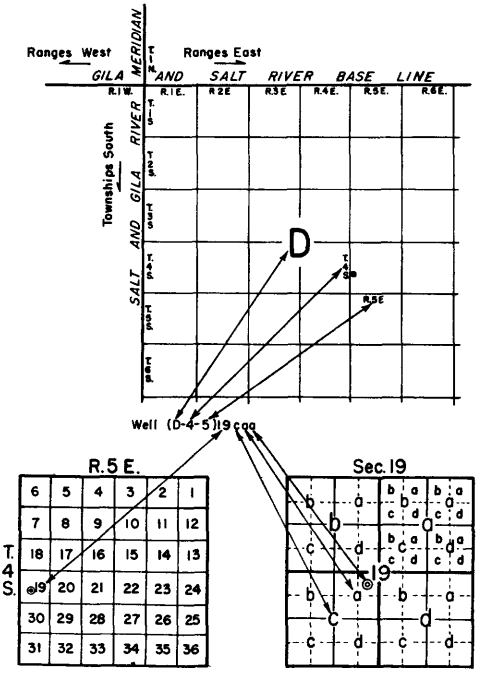

Figure 26.--Sketch showing well-numbering system in Arizona

Pumpage, in thousands of acre-feet, from wells in principal ground-water areas of Arizona

	1946	1947	1948	1949	1950	1951
Cochise County:						
San Simon Basin a/	5.8	(b)	(b)	(b)	(b)	(b)
Willcox Basin	15.5	20.0	23.0	28.0	35.0	38.0
Douglas Basin	12.5	17.0	22.0	30.0	35.0	38.0
Graham County:						
Safford Valley	115.0	100.0	110.0	40.0	90.0	125.0
Greenlee County:						
Duncan Valley c/	17.0	21.0	21.0	11.0	23.0	33.0
Maricopa County:						
Salt River Valley area d/	1,360.0	1,406.0	1,670.0	1,644.0	1,852.0	1,910.0
Gila Bend area	33.3	40.5	60.8	67.0	59.0	(
Dendora area	6.7	6.7	1.9	5.0	6.0	(110.0
Pima County:						
Part of Santa Cruz River Basin	108.0	145.0	145.0	150.0	180.0	240.0
Pinal County:						
Part of Santa Cruz and Gila River basin	660.0	700.0	950.0	1,100.0	1,000.0	1,030.0
Santa Cruz County:						
Part of Santa Cruz River Basin	24.0	25.0	28.0	31.0	21.0	30.0
Yuma County:						
Wellton-Mohawk area	38.0	43.0	50.0	45.0	46.0	50.0
South Gila Valley	32.0	35.0	54.0	56.0	56.0	62.0
Other e/	4.0	4.0	5.0	8.0	9.0	15.0
Total	2,437.0	2,563.2	3,140.0	3,215.0	3,412.0	3,681.0

a/ Includes Bowie area; b/ Not determined; c/ Does not include Virden Valley, N. Mex.; d/ Includes Queen Creek area, Maricopa and Pinal Counties; e/ For 1946-51 represents Gila River Valley above Wellton-Mohawk area.

Well Descriptions and Water-Level Measurements

(Water levels are in feet below land-surface datum unless otherwise indicated.)

Apache County

(A-13-28)29ca. Formerly 6716. E. L. Johns. Drilled domestic water-table well in gravel, diameter 12 inches, depth 50 feet. Highest water level 8.43, Aug. 7, 1950; lowest 24.35, June 11, 1947. Records available: 1944-51. Feb. 26, 11.44; Aug. 7, 12.69.

Cochise County

(D-13-29)6ccc. Formerly 4200. A. R. Spikes. Drilled stock and irrigation artesian well in sand and gravel, diameter 6 inches, reported depth 835 feet. Land-surface datum is about 3,675 feet above msl. Highest water level 9.49, May 2, 1941; lowest 18.70, Mar. 8, 1951. Records available: 1941-42, 1944, 1946-47, 1949-51. Mar. 8, 18.70; Oct. 18, 17.85.

(D-13-31)30cdc. Formerly 4366. Elmer Franklin. Drilled domestic water-table well in sand and gravel, diameter 4 inches, depth 72 feet. Land-surface datum is about 3,610 feet above msl. Highest water level 58.70, Nov. 2, 1949; lowest 63.20, Oct. 18, 1951. Records available: 1940-42, 1944, 1946-51. Mar. 8, 62.67; May 26, 62.63; Oct. 18, 63.20.

(D-14-23)36baa. Formerly 1700. Fay Proctor. Drilled domestic and stock water-table well in sand and gravel, diameter 6 inches, depth 50 feet. Land-surface datum is about 4,210 feet above msl. Highest water level 36.05, May 13, 1942; lowest 42.93, June 11, 1947. Records available: 1942, 1944-51. Mar. 30, 40.70; May 28, 40.57; Aug. 1, 41.59; Oct. 16, 41.92.

(D-14-25)6cac. Formerly 1776. E. T. Dunlap. Formerly Dunlap Auto Court. Drilled domestic water-table well in sand and gravel, diameter 6 inches, depth 34 feet. Land-surface datum is about 4,166 feet above msl. Highest water level 12.00, May 14, 1942; lowest 16.34, Mar. 7, 1950. Records available: 1942, 1944-51. Feb. 19, 15.77; May 28, 15.91; July 24, 16.21; Oct. 4, 16.33.

(D-14-31)3bca. Formerly 4600. Paul Barnes. Drilled unused artesian well in sand and clay, diameter 5 inches, depth 626 feet. Highest water level +0.40, Apr. 30, 1941; lowest 15.39, Aug. 28, 1951. Records available: 1941-42, 1946-51. Mar. 8, 6.79; May 26, 12.90; Aug. 28, 15.39; Oct. 17, 11.07. Measurement discontinued.

(D-16-20)34acd. Formerly 305. L. A. Scott. Drilled domestic and stock water-table well in sand and gravel, diameter 6 inches, depth 98 feet. Highest water level 70.42, June 12, 1941; lowest 82.09, Dec. 19, 1951. Records available: 1941-42, 1944-51. Apr. 11, 79.98, nearby well being pumped; Dec. 19, 82.09.

(D-16-25)16add. Formerly 1956. W. D. Wear. Formerly State of Arizona. Drilled stock water-table well in sand and gravel, diameter 6 inches, depth 65 feet. Land-surface datum is about 4,190 feet above msl. Highest water level 33.99, June 7, 1944; lowest 38.30, Aug. 30, 1948. Records available: 1942, 1944-51. Feb. 20, 36.68, pumping; May 30, 36.28; July 31, 38.76, pumping; Oct. 15, 37.64.

(D-17-20)10ccc. Formerly 477. City of Benson. Drilled unused artesian well in sand and gravel, diameter 4 inches, reported depth 700 feet. Highest water level 6.17, Dec. 28, 1951; lowest 1975, June 18, 1950. Records available: 1944-51.

Daily highest water level, below land-surface datum, from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.11	8.22	9.41	9.13	8.90	12.97	16.03	10.75	8.40	9.06	....	7.34
2	8.13	8.45	9.38	9.79	8.45	13.49	16.23	9.81	9.27	8.81	7.70	7.45
3	8.63	8.42	....	9.77	8.36	13.83	16.19	9.78	9.89	8.93	7.57	7.33
4	8.58	8.84	....	9.72	8.95	13.28	16.20	9.73	9.99	8.99	7.26	7.18
5	8.28	8.79	....	9.49	9.07	13.54	15.75	9.64	9.67	9.71	7.82	7.06
6	8.25	8.39	....	8.98	10.18	13.54	14.45	9.44	10.55	9.90	7.81	7.09
7	8.55	8.76	....	8.58	10.41	13.50	14.35	9.46	10.99	9.57	7.55	6.94
8	8.52	8.07	....	8.50	10.10	13.16	15.39	10.58	10.65	9.86	7.58	6.81
9	8.37	9.05	....	8.50	10.55	13.93	15.77	10.70	11.04	10.56	7.56	6.45
10	8.31	9.00	9.55	9.35	11.00	13.86	16.05	10.73	11.37	10.16	7.65	7.05
11	8.06	9.63	9.04	9.00	11.37	13.66	16.05	12.04	10.97	10.29	7.33	6.70
12	8.06	9.17	9.26	8.92	10.92	13.61	15.66	12.38	10.42	10.40	7.06	6.76
13	8.20	9.10	8.96	9.84	11.43	14.56	15.55	12.72	11.30	10.75	7.63	6.92
14	8.32	9.34	8.63	11.00	10.48	13.85	14.52	....	10.75	10.87	7.35	6.78
15	8.44	9.37	9.20	9.75	10.15	14.19	13.11	12.11	11.25	10.60	6.71	6.53
16	8.17	9.25	10.10	9.87	10.36	14.84	....	11.12	11.18	10.21	6.92	6.78
17	8.08	9.24	9.65	10.37	10.03	14.57	....	11.33	11.55	10.58	6.90	6.79
18	8.04	9.25	9.88	9.76	10.86	14.16	....	11.76	10.90	9.81	6.77	6.59
19	7.96	9.51	10.34	10.45	11.37	14.38	....	11.92	11.36	10.35	6.70	6.46
20	8.06	9.20	9.79	9.61	11.93	15.15	11.80	11.09	12.01	9.91	6.75	6.51
21	8.25	9.23	10.44	9.25	11.55	15.49	11.67	11.01	11.41	10.15	6.52	6.41
22	8.22	9.19	10.12	8.93	12.20	15.65	12.35	10.41	11.84	9.75	6.50	6.21
23	8.43	10.06	9.65	9.16	11.74	16.04	11.83	10.30	11.61	9.50	6.74	6.92
24	8.53	9.38	10.32	8.98	11.75	16.06	11.05	10.04	12.40	9.90	7.09	6.58
25	8.30	9.18	10.39	9.65	11.87	15.16	10.12	10.00	12.25	9.36	6.84	6.25

(D-17-20)10ccc--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	8.17	9.13	10.00	9.80	12.40	15.32	9.81	9.23	11.66	9.17	7.05	6.22
27	8.34	8.94	9.35	9.56	13.35	15.88	9.73	9.02	11.33	8.87	7.11	6.54
28	7.94	9.11	8.78	9.95	13.22	15.85	9.85	8.43	10.75	8.55	7.02	6.17
29	8.33		8.65	9.80	13.41	16.12	10.60	8.46	10.85	8.59	6.95	6.30
30	8.03		8.92	9.06	12.72	16.08	10.77	8.21	9.80	8.21	7.42	6.22
31	8.20		8.71		13.30		10.72	8.21		8.03		6.30

(D-17-21)32bad. Formerly 599. Boquillas Cattle Co. Drilled domestic and stock artesian well in sand and gravel, diameter 6 inches, reported depth 520 feet, cased to 500. Highest water level 16.92, Dec. 9, 1946; lowest 21.51, Apr. 6, 1950. Records available: 1944-51. Apr. 11, 21.19.

(D-18-21)6aab. Formerly 745. Walter Haymore. Drilled domestic water-table well in sand and gravel, diameter 4 inches, depth 60 feet. Highest water level 27.42, June 8, 1945; lowest 35.80, Sept. 22, 1947. Records available: 1944-51. Apr. 11, 31.87.

(D-18-26)28aaa. Formerly 2375. Frank Geers. Formerly Frank Jeans. Drilled stock water-table well in sand and gravel, diameter 6 inches, depth 140 feet. Land-surface datum is 4,267.8 feet above msl. Highest water level 70.65, Dec. 21, 1949; lowest 75.05, Sept. 7, 1950. Records available: 1946-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31, 1946	70.77	Dec. 11, 1946	70.92	Feb. 9, 1949	b71.94	Feb. 28, 1950	72.12
Mar. 27	71.41	Aug. 27, 1947	71.11	July 8	71.86	Sept. 7	a75.05
May 2	71.77	Sept. 23	71.13	Aug. 2	71.81	Dec. 13	72.40
June 13	70.80	Oct. 23	71.17	Oct. 12	70.94	Feb. 21, 1951	72.81
July 25	70.82	Mar. 27, 1948	71.30	Dec. 21	70.65	Oct. 15	72.73
Oct. 15	a73.30	Oct. 13	71.51	Feb. 9, 1950	72.04		

a Pumping.
b Pumped recently.

(D-20-20)32cdb. Formerly 950. Lon Hunt. Drilled unused water-table well in sand and gravel, diameter 6 inches, depth 125 feet. Highest water level 86.17, Apr. 2, 1941; lowest 91.99, Dec. 19, 1950. Records available: 1941-43, 1945-51. Apr. 12, 91.98.

(D-20-26)33add. Formerly 2709. Frank Sproul. Formerly F. O. Mackey. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 64 feet, perforations 24-64. Land-surface datum is 4,124.2 feet above msl. Highest water level 22.46, May 27, 1942; lowest 40.69, July 24, 1951. Records available: 1942, 1944-51. Feb. 26, 35.64; May 29, 37.12; July 24, 40.69; Oct. 12, 39.48.

(D-21-21)11aad. Formerly 1074. J. L. Parker. Dug unused water-table well in sand and gravel, diameter 4 feet, depth 36 feet. Highest water level 26.90, Dec. 9, 1949; lowest 30.69, Apr. 9, 1941. Records available: 1941, 1944-51. Apr. 12, 27.28.

(D-21-26)24baa. Formerly 3001. McNeal Cemetery. Drilled domestic water-table well in sand and gravel, diameter 8 inches, depth 136 feet. Land-surface datum is 4,195.8 feet above msl. Highest water level 112.00, Jan. 31, 1946; lowest 121.90, June 24, 1949. Records available: 1946-51. Feb. 27, 117.74, pumping; May 30, 118.54, pumping; July 25, 118.64; Oct. 15, 119.14.

(D-22-26)28bab2. Formerly 3388. J. E. Brophy. Drilled irrigation water-table well in sand and gravel, diameter 8 inches, depth 90 feet. Highest water level 26.42, July 25, 1946; lowest 35.55, Oct. 15, 1951. Records available: 1946-47, 1949-51. Feb. 27, 31.92; Oct. 15, 35.55.

(D-24-27)5bdb. Formerly 3804. Fred Price. Formerly L. E. Harris. Dug stock water-table well in sand and gravel, diameter 8 feet, depth 82 feet. Land-surface datum is about 3,996 feet above msl. Highest water level 54.30, May 26, 1942; lowest 60.48, Oct. 11, 1949. Records available: 1942, 1944-51. Feb. 27, 58.44; Oct. 16, 59.04.

Coconino County

(A-21-7)9ddc. Formerly 2401. Pinewood Dairy. Dug stock water-table well in gravel, diameter 4 feet, depth 25 feet. Highest water level 11.93, June 5, 1945; lowest 19.34, Oct. 15, 1948. Records available: 1944-51. Feb. 25, 15.88; Aug. 5, 17.06.

(A-22-6)26aaa. Formerly 2612. City of Flagstaff. Drilled unused water-table well in Coconino sandstone, diameter 16 inches, reported depth 1,021 feet. Highest water level 129.68, Sept. 28, 1945; lowest 130.99, Aug. 5, 1951. Records available: 1944-51. Feb. 25, 130.70; Aug. 5, 130.99.

Gila County

(A-1-15)9aad. Formerly 51. Kenneth Hoopes. Drilled unused water-table well in sand and gravel, diameter 12 inches, depth 160 feet. Highest water level 62.63, May 25, 1945; lowest 90.40, Oct. 3, 1950. Records available: 1945-51. Jan. 10, 87.17; Feb. 21, 87.84; Apr. 19, 88.50; May 8, 88.10; July 2, 88.72; Sept. 5, 82.93; Nov. 13, 83.65.

(D-1-15)13bad. Formerly 52. Schniffen. Drilled unused water-table well in sand and gravel, diameter 6 inches, depth 105 feet. Highest water level 3.50, May 5, 1949; lowest 38.87, Apr. 11, 1951. Records available: 1946-51. Jan. 10, 35.00; Mar. 6, 36.90; Apr. 11, 38.87; May 8, 34.96; July 2, 28.86; Sept. 5, 35.34; Nov. 13, 28.97.

Graham County

(D-4-22)13acc. Formerly 51. Aubrey Rabb. Formerly Bert Hinton. Drilled irrigation water-table well in sand and gravel, diameter 10 inches, depth 76 feet. Land-surface datum is 2,641.0 feet above msl. Highest water level 14.31, Mar. 18, 1941; lowest 27.63, July 30, 1951. Records available: 1939-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	21.85	Apr. 30	22.75	July 30	27.63	Oct. 29	23.36
Feb. 26	21.59	May 28	21.63	Sept. 3	24.86	Nov. 26	23.08
Mar. 26	21.40	June 25	24.78	Oct. 1	23.77	Dec. 24	22.64

(D-4-22)35ddd. Formerly 60. Pat Hinton. Drilled stock water-table well in sand and gravel, diameter 6 inches, depth 75 feet. Land-surface datum is 2,859.5 feet above msl. Highest water level 17.08, Feb. 11, 1943; lowest 39.36, Mar. 29, 1940. Records available: 1939-44, 1946-51. Mar. 6, 29.85; May 22, 30.65, pumped recently.

(D-4-23)29adc. Formerly 91. Ben Montierth. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 83 feet, cased to 83, perforations 53-73. Land-surface datum is 2,705.7 feet above msl. Highest water level 46.10, May 18, 1941; lowest 63.23, Feb. 15, 1948. Records available: 1940-51. Mar. 6, 60.88.

(D-6-24)5acc. Formerly 273. Eldon Palmer. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 64 feet. Land-surface datum is 2,779.6 feet above msl. Highest water level 38.93, May 29, 1941; lowest 54.67, Dec. 28, 1947. Records available: 1940-51.

Jan. 29	47.30	June 25	50.96	Oct. 1	50.84	Nov. 26	50.84
Feb. 26	47.00	July 30	51.38	29	51.04	Dec. 24	50.61
May 28	50.58	Sept. 3	51.25				

(D-6-24)13cbb. Formerly 289. W. J. Preston. Drilled domestic water-table well in sand and gravel, diameter 5 inches, depth 48 feet. Land-surface datum is 2,828.8 feet above msl. Highest water level 29.15, May 28, 1942; lowest 44.43,. Apr. 30, 1948. Records available: 1939-40, 1942-51. Mar. 5, 42.55; May 22, 43.92.

(D-6-25)17ddd. Formerly 320. Vance Marshall. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 46 feet. Land-surface datum is 2,821.6 feet above msl. Highest water level 10.77, May 26, 1941; lowest 18.27, Oct. 11, 1950. Records available: 1939-46, 1948-50. No measurement made in 1951.

(D-6-28)31aac. Formerly 454. J. W. Earven. Formerly Brown Canal Co. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 57 feet. Highest water level 17.14, Apr. 16, 1941; lowest 32.81, May 23, 1951. Records available: 1940-51. Mar. 6, 29.56; May 23, 32.81.

(D-7-26)13dcd. Formerly 592. E. M. Claridge. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 80 feet, cased to 80, perforations 35-70. Land-surface datum is about 2,962 feet above msl. Highest water level 11.73, May 25, 1942; lowest 51.02, Apr. 28, 1948. Records available: 1940-51. Mar. 6, 37.10, nearby well being pumped.

(D-7-26)22bac. Formerly 623. Lee Johns. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 90 feet, cased to 90. Land-surface datum is 2,950.3 feet above msl. Highest water level 20.27, May 25, 1942; lowest 58.23, Apr. 28, 1948. Records available: 1940-51. Mar. 6, 38.27.

(D-7-27)4dad. Formerly 674. Zelma Clonts. Formerly O. H. Clonts. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 81 feet, cased to 81, perforations 10-60. Land-surface datum is about 3,012 feet above msl. Highest water level 9.32, Apr. 16, 1941; lowest 29.74, July 22, 1947. Records available: 1940-50. No measurement made in 1951.

Greenlee County

(D-6-31)7bdd. Formerly 5. Warner Foote. Driven observation water-table well in sand and gravel, diameter 1 inch, depth 15 feet. Land-surface datum is 3,452.2 feet above msl. Highest water level 4.78, Mar. 1, 1949; lowest 9.03, July 23, 1947. Records available: 1941-51. Mar. 7, 6.67.

(D-7-31)4bcc. Formerly 31. Barney and Frazier. Formerly J. C. Merritt. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 75 feet. Land-surface datum is 3,544.4 feet above msl. Highest water level 24.25, May 5, 1941; lowest 33.31, Dec. 28, 1950. Records available: 1939-43, 1945-51. Mar. 7, 33.16; May 24, 32.58; Nov 5, 33.14.

(D-8-32)32cda. Formerly 122. Lavar Merrill. Formerly O. Christensen. Drilled domestic water-table well in sand and gravel, diameter 4 inches, depth 110 feet. Land-surface datum is 3,716.0 feet above msl. Highest water level 22.68, Mar. 15, 1945; lowest 38.56, Aug. 27, 1951. Records available: 1939-51. Mar. 7, 31.80; May 24, 36.08; Aug. 27, 38.56; Nov. 5, 36.19.

(D-8-32)34cdd. Formerly 133. Floyd McDaniels. Drilled irrigation water-table well in sand and gravel, diameter 18 inches, depth 70 feet. Land-surface datum is about 3,687 feet above msl. Highest water level 6.60, Mar. 1, 1949; lowest 21.00, July 4, 1946. Records available: 1939-43, 1945-51. Mar. 7, 17.36.

Maricopa County

(A-1-1)4aaa. Formerly 3053. Isabell-Hartner Ranches. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 158 feet. Land-surface datum is about 1,025 feet above msl. Highest water level 54.93, Jan. 14, 1946; lowest 98.32, Nov. 5, 1951. Records available: 1946-51. Feb. 14, 86.48; Nov. 5, 98.32.

(A-1-4)11bcb. Formerly 1502. J. B. House. Drilled domestic water-table well in sand and gravel, diameter 6 inches, depth 201 feet. Highest water level 36.75, Feb. 21, 1946; lowest 68.32, Nov. 7, 1951. Records available: 1946-51. Feb. 7, 62.30; Nov. 7, 68.32.

(A-1-6)23daa. Formerly 851. Logan Stillwell. Drilled domestic water-table well in sand and gravel, diameter 10 inches, depth 328 feet, perforations 308 to 328. Land-surface datum is 1,375.7 feet above msl. Highest water level 229.20, Mar. 19, 1946; lowest 300.83, Nov. 21, 1951. Records available: 1946, 1948-51. Feb. 8, 284.02; Nov. 21, 300.83.

(A-3-1)35baa. Formerly 2856. Otis Cook. Drilled domestic water-table well in sand and gravel, diameter 6 inches, depth 217 feet. Highest water level 54.47, Mar. 20, 1946; lowest 94.50, Nov. 5, 1951. Records available: 1946-51. Feb. 15, 87.39; Nov. 5, 94.50.

(A-3-2)12caa. Formerly 2582. John M. Jacobs. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 417 feet, perforations 179-390. Land-surface datum is 1,309.7 feet above msl. Highest water level 253.96, Feb. 21, 1949; lowest 290.50, Dec. 12, 1950. Records available: 1948-51. Feb. 15, 286.47.

(A-3-4)15ddd. Formerly 1711. David and Leona Gooze. Drilled unused water-table well in sand and gravel, diameter 6 inches, depth 193 feet, uncased. Highest water level 165.82, Mar. 24, 1946; lowest 170.22, Nov. 13, 1951. Records available: 1946-51. Jan. 25, 166.95; Nov. 13, 170.22.

(B-1-2)13acd. Formerly 4100. Roosevelt Irrigation District. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 155 feet, perforations 40-130. Land-surface datum is 958.9 feet above msl. Highest water level 39.0, Apr. 30, 1928; lowest 73.25, Mar. 27, 1950. Records available: 1928-31, 1934-41, 1944-45, 1947-51. Feb. 1, 66.54; Nov. 8, 65.40.

(B-1-3)34bbb. Formerly 4401. Roosevelt Irrigation District. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 200 feet, perforations 74-176. Land-surface datum is 916.7 feet above msl. Highest water level 55.24, Feb. 13, 1947; lowest 66.86, Dec. 15, 1950. Records available: 1928-51. Feb. 1, 60.44.

(B-2-1)13cba. Formerly 3489. R. E. McMurchy. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 143 feet. Highest water level 58.56, June 27, 1946; lowest 108.22, Dec. 21, 1950. Records available: 1946-51. Feb. 13, 102.12; Nov, 15, 104.66.

(B-2-2)4dcb. Formerly 4002. Maricopa County Municipal Water Conservation District No. 1. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 500 feet, perforations 204-484. Highest water level 183.7, May 17, 1940; lowest 238.10, Nov. 15, 1951. Records available: 1940-42, 1946-51. Feb. 14, 226.16; Nov. 15, 238.10.

(B-4-1)8daa. Formerly 3686. Maricopa County Municipal Water Conservation District No 1. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 500 feet, perforations 182-484. Land-surface datum is about 1,335 feet above msl. Highest water level 180.0, Nov. 28, 1938; lowest 227.27, Nov. 14, 1951. Records available: 1938, 1940-42, 1944, 1946-51. Feb. 13, 223.63; Nov. 14, 227.27.

(C-1-5)1aab. Formerly 5506. Charles Yokum. Drilled stock water-table well in sand gravel, diameter 6 inches, depth 185 feet. Highest water level 62.77, Oct. 25, 1946; lowest 78.69, June 16, 1949. Records available: 1946-51. Feb. 2, 72.12; Nov. 8, 76.83.

(C-1-7)15bbb. Formerly 6564. Lee C. Underdown. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 650 feet, perforations 164-254. Highest water level 178.22, Mar. 4, 1949; lowest 179.69, Jan. 26, 1951. Records available: 1949-51. Jan. 26, 179.69.

(D-1-5)1bbb. Formerly 1208. Salt River Valley Water Users' Association. Drilled domestic water-table well, in sand and gravel, diameter 16 inches, depth 180 feet. Land-surface datum is 1,222.2 feet above msl. Highest water level 67.20, Feb. 18, 1946; lowest 140.78, Nov. 6, 1951. Records available: 1945-51. Feb. 6, 120.25; Nov. 6, 140.78.

(D-1-6)25aaa. Formerly 136. Roosevelt Water Conservation District. Drilled domestic water-table well in sand and gravel, diameter 18 inches, depth 223 feet. Land-surface datum is 1,324.1 feet above msl. Highest water level 92.76, May 26, 1941; lowest 134.24, Nov. 23, 1951. Records available: 1939-51. Feb. 8, 128.14; Nov. 23, 134.24.

(D-2-5)15bbb. Formerly 1310. L. S. Breckler. Drilled domestic water-table well in sand and gravel, diameter 6 inches, depth 200 feet. Land-surface datum is 1,214.0 feet above msl. Highest water level 40.2, Mar 23, 1945; lowest 85.87, Nov. 7, 1951. Records available: 1945-51. Feb. 6, 77.58; Nov. 7, 85.87.

(D-2-7)12ddd. Formerly 701. L. M. Mecham. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 600 feet, perforations 250-585. Highest water level 177.00, Feb. 28, 1948; lowest 214.47, Nov. 21, 1951. Records available: 1948-51. Feb. 9, 200.90; Nov. 21, 214.47.

Mohave County

(B-16-13)34dd. Formerly 904. Dr. A. E. Carter. Dug domestic and stock water-table well in sand and gravel, diameter 4 feet, depth 20 feet. Highest water level 13.76, Oct. 1, 1945; lowest 18.50, Aug. 3, 1951. Records available: 1945-51. Feb. 24, 16.58; Aug. 3, 18.50.

(B-21-17)24cd. Formerly 1302. E. A. Kier. Drilled domestic water-table well in sand and gravel, diameter 6 inches, depth 120 feet. Highest water level 101.46, Aug. 14, 1944; lowest 109.75, Aug. 2, 1951. Records available: 1944-51. Feb. 24, 107.16; Aug. 2, 108.75.

Navajo County

(A-17-21)7bb. Formerly 7653. Arizona State Highway Department. Drilled unused water-table well in Coconino sandstone, diameter 10 inches, depth 110 feet. Land-surface datum is about 5,110.5 feet above msl. Highest water level 39.51, June 3, 1948; lowest 40.59, Aug. 5, 1950. Records available: 1944-51. Feb. 26, 40.21; Aug. 6, 40.58.

Pima County

(D-11-10)22add. Formerly 457. Tom Greenfield. Formerly T. J. Smith. Drilled domestic and irrigation water-table well in sand and gravel, diameter 20 inches, reported depth 600 feet, cased to 600, perforations 145-582. Highest water level 140.66, Feb. 28, 1940; lowest 163.68, Sept. 26, 1950. Records available: 1940, 1942, 1945-48, 1950-51. Dec. 28, 162.24.

(D-12-10)20ddc. Formerly 1505. B. Wong. Drilled domestic water-table well in sand and gravel, diameter 7 inches, depth 222 feet. Highest water level 184.79, Apr. 15, 1940; lowest 194.39, July 16, 1951. Records available: 1940, 1942, 1944-51. Feb. 28, 188.50; July 16, 194.39, nearby well being pumped.

(D-12-11)18ddd. Formerly 1430. J. E. Glover. Drilled domestic and stock water-table well in sand and gravel, diameter 10 inches, depth 218 feet. Highest water level 189.37, June 13, 1941; lowest 204.62, Sept. 26, 1950. Records available: 1940-42, 1944-47, 1949-51. July 16, 204.34; Dec. 27, 201.84.

(D-12-12)16bad. Formerly 1337. Cortaro Water Users Association. Formerly Cortaro Farms. Drilled unused water-table well in sand and gravel, diameter 24 inches to 18 inches. Reported depth 300 feet, cased to 292, perforations 75-285. Highest water level 74.71, Feb. 20, 1940; lowest 123.33, Aug. 25, 1948. Records available: 1939-51. Feb. 28, 94.29; Dec. 17, 117.22.

(D-15-10)35aaa. Formerly 6410. State of Arizona. Formerly C. W. Van Camp. Drilled unused water-table well in sandand gravel, diameter 6 inches, depth 295 feet. Highest water level 212.17, Oct. 7, 1948; lowest 214.84, Dec. 26, 1951. Records available; 1940-42, 1944, 1946-51. May 14, 214.52; July 12, 214.73; Dec. 26, 214.84.

(D-15-13)2cca. Formerly 6612. City of Tucson. Dug and drilled unused water-table well in sand and gravel, diameter 12 inches, depth 104 feet. Highest water level 31.70, July 29, 1942; lowest 60.51, Oct. 25, 1951. Records available: 1942-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	51.56	Apr. 25	53.29	July 27	57.56	Oct. 25	60.51
Feb. 27	51.18	May 25	54.85	Aug. 27	58.55	Nov. 28	57.88
Mar. 26	51.77	June 25	57.28	Sept. 25	58.88	Dec. 21	56.90

(D-17-14)18cab. Formerly 8686. Arizona State Highway Department. Dug unused water-table well in sand and gravel, diameter 36 inches, depth 67 feet. Highest water level 52.16, Jan. 2, 1940; lowest 67.36, July 27, 1949. Records available: 1939-51. Jan. 18, 61.36; May 24, 65.36; Sept. 5, dry; Dec. 18, 65.91.

(D-19-13)3baa. Formerly 10477. Owner's No. W1. Farmers Investment Co. Formerly Intercontinental Ranch Co. Dug and drilled irrigation water-table well in sand and gravel, diameter 96 to 10 inches, depth 246 feet, cased to 246, perforations 42-224. Highest water level 47.44, Oct. 3, 1939; lowest 75.13, Jan. 18, 1951. Records available: 1939-51. Jan. 18, 75.13.

Pinal County

(D-2-10)8ccc. Formerly 35. E. M. Little. Drilled unused water-table well in sand and gravel, diameter 8 inches, depth 437 feet. Highest water level 396.82, Jan. 22, 1946; lowest 411.72, Feb. 28, 1941. Records available: 1939-51. Feb. 8, 400.48; Nov. 21, 401.25.

(D-3-9)20aaa. Formerly 69. Elmer C. Von Glahn. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 600 feet, perforations 285-585. Highest water level 222.70, Feb 17, 1949; lowest 254.20, Nov. 21, 1951. Records available: 1942, 1948-51. Feb. 9, 244.64; Nov. 21, 254.20.

(D-4-8)2ccc. Formerly 278. Arizona Ranches, Inc. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 237 feet. Land-surface datum is 1,530.5 feet above msl. Highest water level 157.96, June 12, 1941; lowest 190.14, Nov. 21, 1951. Records available: 1941-51. Feb. 9, 182.70; Nov. 21, 190.14.

(D-4-11)7cca. Formerly 341. Bureau of Indian Affairs well 7. Drilled unused water-table well in sand and gravel, diameter 20 inches, reported depth 162 feet, cased to 80. Land-surface datum is 1,560.4 feet above msl. Highest water level 15.30, June 29, 1943; lowest 44.14, Nov. 24, 1948. Records available: 1942-51. Feb. 6, 30.60; June 21, 35.94; Sept. 7, 35.73; Dec. 28, 36.19.

(D-5-4)30cbb. Formerly 618. Harrison & Harris. Formerly Fugua. Drilled domestic water-table well in sand and gravel, diameter 14 inches, depth 188 feet. Land-surface datum is 1,242.7 feet above msl. Highest water level 81.05, Mar. 13, 1942; lowest 130.79, Dec. 28, 1951. Records available: 1942-51. Feb. 2, 126.82; Dec. 28, 130.79.

(D-5-9)29ada. Formerly 437. Bureau of Indian Affairs well 76. Drilled unused water-table well, diameter 16 inches, reported depth 616 feet, perforations 134-440. Land-surface datum is 1,520.0 feet above msl. Highest water level 114.24, Feb. 6, 1944; lowest 164.30, Sept. 7, 1951. Records available: 1942-51. Feb. 6, 153.10; June 21, 161.68; Sept. 7, 164.30:

(D-6-6)25ddd. Formerly 991. H. L. Early. Formerly Mrs. Emma Pennington. Drilled irrigation water-table well in sand and gravel, diameter 16 inches, depth 171 feet. Land-surface datum is 1,438.3 feet above msl. Highest water level 39.00, Apr. 18, 1940; lowest 85.22, Sept. 14, 1951. Records available: 1940-51. Feb. 5, 80.60; Sept. 14, 85.22.

(D-7-6)30add. Formerly 1489. A. R. Chapman. Formerly Albert Steinfeld. Dug and drilled unused water-table well in sand and gravel, diameter 20 inches, depth 100 feet. Land-surface datum is 1,443.6 feet above msl. Highest water level 52.64, Mar. 12, 1942; lowest 87.80, Sept. 11, 1951. Records available: 1942-51. Feb. 13, 82.23; June 26, 86.33; Sept. 11, 87.80.

(D-7-7)11cdd. Formerly 1405. E. C. Grasty. Formerly S. C. McFarland. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 460 feet, perforations 100-430. Land-surface datum is 1,498.2 feet above msl. Highest water level 85.93, Mar. 11, 1942; lowest 164.07, July 27, 1949. Records available: 1942-51. Feb. 5, 146.25.

(D-8-6)29acc. Formerly 1716. Leon Zagouies. Formerly Smith-Thornburg Co. Drilled unused water-table well in sand and gravel, diameter 20 inches, depth 282 feet, perforations 75-208. Land-surface datum is 1,501.2 feet above msl. Highest water level 63.89, Sept. 12, 1941; lowest 105.35, Sept. 12, 1951. Records available: 1941-51. Feb. 13, 88.44; June 26, 100.03;Sept. 12. 105.35; Dec. 27, 94.15.

(D-8-7)25ddd. Formerly 1795. R. E. Hamilton. Formerly Jack Pretzer, Jr. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 997 feet. Land-surface datum is 1,614.8 feet above msl. Highest water level 124.47, Mar. 24, 1941; lowest 217.44, Aug. 25, 1948. Records available: 1940-51. Feb. 16, 207.62

(D-10-9)10dba. Formerly 2354. H. H. Cake. Drilled domestic water-table well in sand and gravel, diameter 8 inches, depth 188 feet. Land-surface datum is about 1,798 feet above msl. Highest water level 143.36, July 3, 1941; lowest 168.85, Sept. 10, 1951. Records available: 1941-51. Feb. 15, 164.83; Sept. 10, 168.85.

Santa Cruz County

(D-22-13)35dcd. Formerly 915. T. T. Pendleton. Drilled irrigation water-table well in sand and gravel, diameter 20 inches, depth 88 feet. Highest water level 16.01, Oct. 25, 1939; lowest 53.04, May 7, 1946. Records available: 1939-51. Jan. 18, 37.44; Apr. 25, 41.20; Dec. 10, 44.41.

(D-23-14)27baa. Formerly 1513. Ramon Michelena. Formerly Dines Nelson. Dug unused water-table well in sand and gravel, diameter 5 feet, depth 36 feet, concrete casing to 9, open hole 9-36. Highest water level 16.78, Mar. 26, 1941; lowest 21.80, July 28, 1948. Records available: 1939-51. Jan. 18, 18.30; Mar. 1, 18.44; Dec. 18, 19.44.

Yavapai County

(B-11-5)25dab. Formerly 27. Mr. Towne. Drilled unused water-table well in sand and gravel, diameter 8 inches, depth 212 feet. Highest water level 26.35, July 2, 1946; lowest 40.80, Aug. 4, 1951. Records available: 1946, 1948-49, 1951. May 5, 37.85; Aug. 4, 40.80.

(B-13-6)9dd. Formerly 466. J. S. Reagan. Dug irrigation water-table well in sand and gravel, diameter 6 feet, depth 22 feet. Highest water level 13.98, Jan. 17, 1945; lowest 17.97, Aug. 4, 1951. Records available: 1945-49, 1951. Mar. 5, 14.28; Aug. 4, 17.97.

(B-14-4)33ab. Formerly 634. Mr. Sine. Formerly M. A. Wiser. Drilled unused water-table well in sand and gravel, diameter 16 inches, depth 73 feet. Highest water level 11.03, Apr. 14, 1945; lowest 17.64, Aug. 4, 1951. Records available: 1944-49, 1951. Mar. 5, 14.44; Aug. 4, 17.64.

Yuma County

(B-5-16)10ddd. Formerly 632. Crowder Cattle Co. Drilled unused water-table well in sand and gravel, diameter 16 inches, depth 164 feet. Highest water level 112.60, Feb. 21, 1946; lowest 112.91, July 31, 1951. Records available: 1946, 1948-51. Feb. 23, 112.85; July 31, 112.91.

(C-7-16)33aaa. Formerly 680. Mohawk Municipal Water Conservation District. Drilled unused water table well in sand and gravel, diameter 20 inches, depth 83 feet. Highest water level 28.30, May 3, 1945; lowest 35.28, Feb. 21, 1951. Records available: 1945-51. Feb. 21, 35.28.

(C-9-22)17ddd. Formerly 1520. Archie J. Griffin. Drilled unused water-table well in sand and gravel, diameter 16 inches, depth 195 feet. Land-surface datum is 210.5 feet above msl. Highest water level 83.32, Feb. 21, 1951; lowest 97.63, Sept. 5, 1946. Records available: 1945-51. Feb. 21, 83.32.

CALIFORNIA

By J. A. Arney, A. A. Garrett, E. F. LeRoux,
M. B. Scott, and H. D. Wilson, Jr.

Scope of Water-Level Program

This report shows the progress made in 1951 in the measurement of water levels in California by the Geological Survey in cooperation or collaboration with several other Federal, State, and local agencies. Also, it reviews the general scope of certain other water-level programs in the State in which the Geological Survey did not participate, but concerning which general information is available.

The following table indicates the distribution of observation wells and the scope of water-level measurements covered by this report, arranged by counties in alphabetical sequence. As the table shows, the report covers 3,812 water-level measurements during 1951 in 468 observation wells distributed in 8 of the 58 counties in the State. One of these eight counties, San Joaquin is in the central part; the other seven are in the southern part of the State, south of the Tehachapi Mountains. For two of the eight, San Diego and Santa Barbara Counties, the water-level measurements in this report cover all the principal ground-water areas; for the other six counties only scattered basins or areas are covered.

Distribution of observation wells in California in 1951

(for which water-level records are given in this report)

County	Number of observation wells			Number of wells with recording gages
	Established during 1951*	Discontinued in 1951	At year end	
Kern County:				
Antelope Valley, part	0	1	2	0
Los Angeles County:				
Antelope Valley, part	1	43	103	0
San Gabriel River basin	0	0	1	1
Coastal plain	0	4	8	0
Orange County:				
Coastal plain	0	1	16	0
Riverside County:				
San Jacinto Valley	0	0	8	0
San Bernardino County:				
Mojave River basin	1	0	77	0
Santa Ana River basin	0	1	7	0
San Diego County:				
San Luis Rey River basin	0	0	14	0
San Dieguito River basin	0	0	5	0
San Diego River basin	4	2	22	0
Sweetwater River basin	0	0	1	0
Otay River basin	0	0	1	0
Tia Juana River basin	0	0	4	0
San Joaquin County:				
Mokelumne River basin	0	0	24	0
Santa Barbara County:				
Carpinteria basin	0	0	20	0
Goleta basin	0	0	21	1
Santa Ynez Valley	9	3	80	4
San Antonio Valley	0	0	4	0
Santa Maria Valley	2	1	40	0
Cuyama Valley	0	0	10	0
The State	17	56	468	6

*Includes wells established prior to 1951 but for which water-level records are renewed or are given for the first time in this report.

In addition to this program in which the Geological Survey participated, measurements of water level were made by several agencies. The Division of Water Resources in the Department of Public Works, State of California, measured water levels in about 100 wells in the Temecula Basin, about 50 wells in the Elsinore area, and about 75 wells in the Tia Juana River basin. The California Water and Telephone Company also measured 71 wells monthly and operated 3 recording gages in the Tia Juana River basin. The Division of Water Resources made measurements in 1,288 wells in Ventura County. This agency also operated recording gages in 21 wells. In addition, the Ventura County Water Survey measured from 1,200 to 1,400 wells monthly; the Santa Clara Water Conservation District measured 10 wells weekly, 25 wells monthly, and operated 18 recording gages; the Farmers Irrigation District measured 11 wells monthly; the Santa Paula Water Works District measured 5 wells monthly; the Soil Conservation Service operated 2 recording gages in Zone 3 near Moorpark; and the Thermal Belt Mutual Water Company measured 1 well monthly. The Soil Conservation Service, U. S. Department of Agriculture, measured 35 wells monthly in Tehachapi Valley and 11 monthly in Cummings Valley, in Kern County. In San Bernardino County, the San Bernardino County Flood Control District measured 47 wells monthly and 28 wells semiannually in the Mojave River basin, 10 wells semiannually in Morongo Valley, and 102 wells semiannually in the area from Yucca Valley to Twentynine Palms. The program of the Soil Conservation Service in the Imperial Valley was brought to a close in July. One water-level measurement was made in each of 105 wells, 19 springs, and 42 flowing wells, the latter being made with a mercury manometer. In the Coachella Valley, quarterly measurements of water levels in 45 wells were made by the Coachella Valley County Water District. The Division of Water Resources assembled from various agencies records of water levels in wells in the South Coastal Basin and in Antelope Valley. These assembled records for 1947 have been published in the Division's Bulletin 39-P which continues the series beginning with Bulletin 39, published in 1932.

Precipitation

The following summary of precipitation in California for the calendar year 1951 is taken from the annual report of climatological data issued by the U. S. Weather Bureau:

In 1951 light precipitation characterized the late winter period of February and March. Warm weather was notable throughout the Central Valley and southern California in September. Heavy rains brought precipitation above normal in northern California during October and November. Unusually wet, cold weather throughout the State and heavy snowfalls in the Sierra Nevada characterized December. Drought in southern California during March was detrimental to growing farm crops and resulted in heavy irrigation. By April the lack of adequate precipitation in northern California had reached serious proportions and had resulted in considerable deterioration of grains and grasses. Heavy rains in the Imperial Valley in August brought damage to roads and irrigation canal systems. The lack of early rains in October permitted harvesting of a large proportion of the sugar beet crop in the Sacramento Valley. Rains during November and December generally benefited grasses and other growing crops but interrupted harvesting operations. Heavy rains and flooding in December resulted in losses to property in the Los Angeles and San Francisco Bay areas.

Where there is a marked seasonal range in precipitation, such as prevails throughout California and the remainder of the Pacific Coast region, ground-water storage generally is greatest and natural ground-water levels are highest during or somewhat after the height of the wet season, but during the following dry season the unconfined ground-water storage is depleted by natural discharge and water levels recede in wells. This depletion continues until soil-moisture deficiencies have been replenished by the first rains of the next wet season. Thus, for the climatic conditions of California the ground-water level is related less closely to precipitation within the calendar year than to precipitation within a "water year" which spans one wet season and the following dry season--that is, which ends in mid-autumn. For this treatment of climatic conditions and for the following summary treatment of runoff, the water year is taken as ending September 30, which is the most practicable average date for near-maximum depletion of unconfined ground-water storage and near-minimum runoff.

The following table shows the monthly distribution of State-wide average precipitation in California for the 55-year period ending with 1951. The very marked seasonal range in precipitation is apparent. Of the 23.79 inches total for the 12 months, about 80 percent falls during the 5 months November-March, and less than 4 percent falls during the 4 summer months June-September.

State-wide average monthly and yearly precipitation, 1897-1951

Month	Inches	Percent of yearly total	Month	Inches	Percent of yearly total
October	1.30	5.5	April	1.69	7.1
November	2.45	10.3	May	.94	4.0
December	3.87	16.3	June	.32	1.3
January	4.60	19.3	July	.08	.3
February	4.38	18.4	August	.10	.4
March	3.65	15.4	September	.41	1.7
Total	20.25	85.2		3.54	14.8
The year				23.79	100.0

The following table shows the precipitation during the water year ending September 30, 1951, at 15 representative stations in the State, expressed both in inches and in percentage of the average for the 60 years ending September 30, 1950. The 15-station average was 94 percent of the 60-year average, and the median of the group was 90 percent of the 60-year average. However, at 7 of the stations the total for the year was greater than average. The regional distribution of the rainfall over the State is well illustrated by this table. That is, for the northern coast ranges and the Sierra Nevada, the rainfall was 20 to 40 percent above average whereas for the southern part of the State the rainfall was considerable below average. For this southern area, 1951 was the sixth consecutive year in which rainfall was below average, with 1944 and 1945 being only slightly above average. Thus, for the past 6 to 8 years ground-water replenishment in the area covered by this report has been below average and ground-water storage has been depleted. The extent of the depletion in many of the basins in the State is shown by the records of water levels in the ensuing sections of this report.

Precipitation and relative wetness for year ending September 30, 1951, and percent of 60-year average at 15 representative stations

Province	Station and county	Precipitation, 1950-1951	
		Inches	Percent of 60-year average
Northern Coast Ranges	Eureka, Humboldt	46.72	121
Coast Ranges of central and southern California	San Francisco, San Francisco	24.52	121
	San Luis Obispo, San Luis Obispo	15.21	72
	Santa Barbara, Santa Barbara	10.06	56
	Los Angeles, Los Angeles	7.97	55
	San Bernardino, San Bernardino	9.63	58
	San Diego, San Diego	6.73	67
	Cuyamaca, San Diego	27.09	70
Great Valley (California Trough)	Red Bluff, Tehama	20.77	90
	Stockton, San Joaquin	16.60	120
	Fresno, Fresno	10.15	108
Sierra Nevada	Nevada City, Nevada	71.02	143
	West Point, Calaveras	53.22	135
Great Basin (Southwestern Bolson province)	Indio, Riverside	2.50	74
	Needles, San Bernardino	5.68	126

Runoff

The runoff in the northern and central California streams during the water year ending September 30, 1951, was above normal. Representative of the runoff in the northern and and central parts of the State is the year's total for Trinity River at Lewiston, in the north coastal drainage, which was 165 percent of normal; and for the combined flow of Sacramento and San Joaquin Rivers and tributaries, 125 percent; and for Kings River at Piedra in the southern Sierra drainage, 107 percent. The records from the following three gaging stations in southern California show that the runoff was below normal throughout that part of the State during 1951. These gaging stations are: Santa Ana River, near Mentone; Santa Ysabel Creek near Mesa Grande; and the Arroyo Seco, near Pasadena. For the water-year 1950-51, the runoff as recorded at these three stations was 43 percent, 9 percent, and 16 percent, respectively, of normal. The runoff measured at the gaging station on the Santa Ana River is affected by regulation at Big Bear Lake.

Interpretation of Water-Level Fluctuations

Coastal plain. --In the coastal plain in Los Angeles and Orange Counties for 1951 no program of water-level measurement was undertaken by the Geological Survey. However, extensive programs for periodic measurements of observation wells are being continued by several local agencies--in Orange County chiefly by the Orange County Flood Control District and in Los Angeles County chiefly by the Los Angeles County Flood Control District, the San Gabriel Valley Protective Association, the city of Long Beach and the California Division of Water Resources. For the observation wells tabulated in this report the water-level measurements in addition to those made by the Geological Survey have been furnished by one or more of these agencies. In 1951, as a part of its continuing program with the Orange County Flood Control District and the Orange County Water District, the Geological Survey prepared a third annual progress report dealing with salt-water contamination along the coast in Orange County. The collection and analysis of well-water samples and the determination of field permeability by

means of pumping tests along the coast made up a large part of the field work. In this report, records are included for 24 wells in the main coastal basin in Los Angeles and Orange Counties, and in the so-called West Basin Southwest of the Newport-Inglewood uplift in Los Angeles County. Of the 29 wells for which records for 1950 were included in Water-Supply Paper 1170 all except five appear in this report. These are wells 2S/15-34H1, 3S/13-8L2, 3S/13-18G2, 3S/14-36M1, and 4S/13-33D1. All are in Los Angeles County; all except 3S/13-8L2 are in the West Basin. For two wells in this report, Nos. 4S/10-22L2 and 4S/11-19K1, in Orange County, several measurements made during the year by the Geological Survey supplement the records obtained from local agencies.

Records published by the United States Weather Bureau for three rainfall stations in the coastal plain of Los Angeles and Orange Counties--Los Angeles at the north edge, Long Beach near the southwest edge, and Santa Ana near the southeast edge--suggest that rainfall in this area in the calendar year 1951 was 91 percent of normal. However, in the water year ending September 30, 1951, rainfall was only about 59 percent of normal. This difference resulted chiefly from a series of storms in December 1951 which brought the rainfall well above normal for that month and considerably above that for December of the previous year. Because it spans the rainy season, use of the water year gives a more consistent approach to the relation of rainfall to runoff and to ground-water replenishment. However, because water-level records are tabulated in the annual reports on a calendar year basis, the following table summarizes rainfall records not only for the 1950-51 water year but for the 1951 calendar year as well.

Average rainfall, in inches, for three stations in the coastal plain of Los Angeles and Orange Counties

Month and year	1950-1951	Normal	Departure from normal	Percent of normal
October 1950	0.10	0.64	-0.54	16
November	1.62	.97	+ .65	167
December	.08	2.82	-2.74	3
January 1951	2.49	2.52	- .03	99
February	1.37	3.20	-1.83	43
March	.68	2.43	-1.75	28
April	1.70	1.00	+ .70	170
May	.10	.36	- .26	28
June	0	.06	- .06	0
July	0	.01	- .01	0
August	.18	.04	+ .14	450
September	.09	.21	- .12	43
The water year 1950-51	8.41	14.26	-5.85	59
October	.44	.64	- .20	69
November	.91	.97	- .06	94
December	5.02	2.82	+2.20	178
The calendar year 1951	12.98	14.26	-1.28	91

In the following table, water levels at year-end are compared to the year-end levels of 1950 and to those of the low-water year 1936. The data are tabulated separately in two groups: the main coastal basin in Orange County and the main coastal basin in Los Angeles County. Within the main coastal basin 14 index wells in Orange County show a net drop of 2.9 feet in the year 1951 and a net drop of 17.6 feet since 1936; 4 index wells in Los Angeles County show a net drop of 13 feet in 1951 and a net drop of 27 feet since 1936. For 1951, average changes of water level within the West Basin of Los Angeles County are not reported because measurements on most of the wells previously used to compute these changes were discontinued by local agencies.

Summary of water-level fluctuations in observation wells in the coastal plain in Los Angeles and Orange Counties

Well	Water level at end of December, in feet above (+) or below(-) sea level[a]			Net rise (+) or decline (-) in water level, in feet	
	1936	1950	1951	1936-51	1950-51
Orange County					
3S/11-36Q2	+18.2	+0.9	c-1.6	-19.8	-2.5
4S/10-22L2	+10.2	-2.9	-6.3	-16.5	-3.4
4S/11-19K1	+10.9	-3.4	c-8.1	-19.0	-4.7
5S/10-9D1	+10.0	-1.7	d-8.9	-18.9	-7.2
5S/11-2E1	++4.4	-17.0	-14.5	-18.9	+2.5

Well	Water level at end of December, in feet above(+) or below (-) sea level[a]			Net rise (+) or decline(-) in water level, in feet	
	1936	1950	1951	1936-51	1950-51
5S/11-16D2	+ 2.0	-11.5	-13.5	-15.5	- 2.0
5S/11-25P1	+ 3.5	- 8.8	-13.0	-16.5	- 4.2
5S/11-28A1	+ .6	-32.5	e-30.2	-30.8	+ 2.3
5S/11-29C4[b]	----	-10.1	-11.7	----	- 1.6
5S/12-12P1	+ .9	- 9.7	-13.3	-14.2	- 3.6
6S/10- 1E1	+ .2	-16.2	c-21.9	-22.1	- 5.7
6S/10- 1L2	+17.1	+10.6	f+ 8.6	- 8.5	- 2.0
6S/10- 5C1	+ 3.5	- 8.1	c-11.9	-15.4	- 3.8
6S/11-13G2	+ .8	- 2.7	- 4.6	- 5.4	- 1.9
I-9F1	- 1.8	-21.3	-26.0	-24.2	- 4.7
Averages	5.8	- 8.9	-11.8	-17.6	- 2.9
Los Angeles County					
2S/12-13A1	+133.5	+121.5	+103.8	-29.7	-17.7
3S/12- 8L3	+62.6	+48.8	h+44.9	-17.7	- 3.9
4S/11- 5D1	+14.5	g+12.1	+ 7.5	- 7.0	- 4.6
4S/12- 8P1	-14.2	-41.6	h-68.6	-54.4	-27.0
Averages	49.1	35.2	21.9	-27.2	-13.3

a Chiefly interpolated
b Excluded from averages
c Measurement Dec. 31
d Measurement Dec. 11
e Measurement Dec. 13
f Measurement Dec. 14
g Measurement Dec. 28
h Measurement Dec. 31

Antelope Valley.--The greatest observed decline in water levels during 1951 was in a small area about 10 miles northeast of Lancaster where levels were as much as 24 feet below those of 1950. Here, water levels generally were more than 200 feet below land surface. In the areas northwest of Fairmont, southeast of Palmdale, and near the south end of Rogers Lake, levels declined in general only 0.5 to 3 feet. Elsewhere throughout the valley, declines of water level on the order of 7 to 10 feet were common. For the valley as a whole, based on the change in water levels for 66 wells that were measured late in the year in both 1950 and 1951, the overall decline was about 6.2 feet. The principal recharge to Antelope Valley is from precipitation on the valley floor and surface runoff from the San Gabriel Mountains. The two primary sources of surface runoff to the valley area are Rock Creek and Little Rock Creek, both of which have been measured continously since 1931. The combined average annual runoff from these two streams for the period 1931-51 was about 28,100 acre-feet. During the water year 1950-51 the total flow from these two streams was only 1,810 acre-feet.

Mojave River Basin.--A program of water-level observations in the Mojave River basin was begun in 1930 by the Division of Water Resources, State Department of Public Works. In the following year the program was continued by the Geological Survey. The wells are measured in mid-May and late in November. As in the preceding Water-Supply Papers the tabulations of water-level measurements in the Mojave River basin are here segregated into three sub-areas. In all, records are published for 18 wells, 21 wells, and 26 wells, in the upper, middle, and lower basins, respectively. Of the 71 wells tabulated in Water-Supply Paper 1170, records for 59 are included in this report. Records for wells 5/3W-3D1, 8/4W-20N1, 9/2E-3A2, 9/3E-19P1, and 9/3W-10R1, not in Water-Supply Paper 1170 are included. The Mojave River, originating in the San Bernardino Mountains, flows northward discharging onto the great alluvial plain. As the river emerges from the mountains much of the surface runoff is quickly absorbed into the alluvium, with long reaches of the river channel being dry during parts of most years. About 15 miles to the north are the Granite Mountains through which the river has cut a deep narrow channel at Victorville, and which form the northern boundary of the upper sub-basin. The precipitation on the valley floor of the Mojave basins is very little; therefore, the principal recharge to the area is runoff from the San Bernardino Mountains. The average annual runoff into the upper basin during the period of record, 1931-51 was about 63,500 acre-feet, while the outflow measured at the lower narrows near Victorville for the period 1932-51 averaged 59,100 acre-feet. The residual of 4,400 acre-feet represents the average net amount of water retained in the upper basin and, in the absence of any change in storage, this would be the average amount of water consumed. During the year 1950-51 the Mojave River discharged 2,200 acre-feet into the upper basin, all of which was absorbed into the alluvial fill. Within the same year 20,800 acre-feet of ground-water discharge left the basin at the lower narrows, resulting in a loss of

18,600 acre-feet from the basin. A diversion of 2,100 acre-feet from Deep Creek for irrigation in the upper basin was made during the current year. Probably little or none of this flow reached the ground-water table for recharge. The five wells reported dry during the year are all in the upper basin, near the Mojave River and all within 6 miles of the south boundary of the basin. Based on records taken late in the year for 10 wells in the central to northern part of the basin, the average drop in water level in that area during the year was only 0.6 foot. The middle sub-basin is a long irregular narrow river valley extending from the Victorville Narrows to Daggett, which widens to about 6 miles in the vicinity of Hinkley Valley. During the period 1932-51 the average annual surface inflow to this sub-basin amounted to 59,100 acre-feet at Victorville Narrows, and the average surface outflow measured at Barstow several miles upstream from Daggett amounted to 20,000 acre-feet. During the current water year 1950-51 some 20,800 acre-feet entered the middle basin, and there was no surface outflow. All wells except 10/2W-30N1, reported in 1950, are included in this report. Two wells, 8/4W-20N1 and 9/3W-10R1, were not measured in 1950. The average change of water level for the year for the reach from Bryman to Barstow was a drop of 0.8 foot, based on the levels in 15 wells measured in November of both 1950 and 1951. In the middle part of the basin, however, the average change in water level at four wells was a rise of 1.0 foot during the year. In the area from Barstow to Daggett water level measurements in three wells suggest an average drop of nearly 3 feet. At Daggett the river discharges onto a broad triangular shaped flood plain extending toward Newberry. North across the valley from Newberry the river enters a narrow confining canyon. During the period 1931-51, the annual surface inflow into the lower basin measured at Barstow amounted to 26,000 acre-feet, while the average annual outflow has been estimated to be about 6,000 acre-feet at Afton. During the current year of 1950-51 there was no surface inflow into the basin and probably very little outflow from the basin. For the lower basin 24 wells measured in 1950 are tabulated in this report. Two additional wells in the central part of the basin, 9/2E-3A2 and 9/3E-19P1, are also included. Based on levels in 10 wells, the average drop during 1951 for the area from Daggett to about the centerline of R. 2 E. was 2.1 feet. For the remainder of the basin, from the centerline of R. 2 E. eastward to Troy, measurements of water level in 11 wells suggest somewhat erratic conditions, in which the change for the year ranged from a drop of 2.4 feet to a rise of 2.3 feet. However, the average of the 11 suggests that no material change in water level occurred during the year.

Mokelumne River basin.--The East Bay Municipal Utility District continued the program of monthly measurements of water level in selected observation wells in the Mokelumne area, in the central part of the Great Valley. Records for 24 of these wells have been used as an index to changes in ground-water storage, and they have been published by the Geological Survey since 1935. Of the original 24 wells, 7 have been destroyed or abandoned because of lowering water table. However, 7 nearby wells have been added, so that currently records for 24 wells are being published.

The following table shows the average yearly water-level changes in the index wells and the fluctuations in yearly rainfall, beginning with 1947. The accumulated changes begin with 1934, as tabulated in the report for 1945 and as shown in graphic form in the report for 1949. It is noted that rainfall at the three stations in 1951 was 107 percent of the 40-year average, a moderate decrease from that of 1950 which was 125 percent of average.

Average yearly rise or decline of water levels in observation wells and yearly rainfall in the Mokelumne area, 1947-51

Year	Number of wells	Water level		Rainfall[a]	
		Yearly rise (+) or decline (-) (feet)	Accumulated rise (+) or decline (-)[b] (feet)	Excess (+) or deficiency (-) (inches)	Accumulated excess (+) or deficiency (-)[b] (inches)
1947	21	-2.80	-4.53	-14.69	+8.56
1948	21	- .78	-5.31	- .89	+7.67
1949	20	- .85	-6.16	-10.39	-2.72
1950	24	+1.71	-4.45	+ 9.52	+6.80
1951	24	- .88	-5.33	+ 2.72	+9.52

a Average of rainfall at Electra, West Point, and Twin Lakes, 1906-45. Average yearly rainfall at the 3 stations in this 40-year period was 38.74 inches.

b Accumulation dates from Jan. 1, 1934.

The following table shows the average change in water levels in 1951 during the periods of increasing and of diminishing withdrawals for irrigation. This table shows the recharge early in 1951 was insufficient to offset the withdrawals for irrigation, as indicated by the average decline of about 0.3 foot. During the last half of the year this decline continued so that the average net change for the year was a decline of 0.9 foot.

Seasonal changes in water level, in feet, in 24 observation wells in the Mokelumne area, 1951

Period	Greatest rise	Greatest recession	Average change
Jan. 1 to May 31 (increasing withdrawal for irrigation)	+6.11	-7.66	-0.33
June 1 to Dec. 31 (diminishing withdrawal)	+7.62	-7.54	- .55
The year	+2.30	-4.85	- .88

San Gabriel River Basin.--A recording gage was in operation throughout 1951 at well 1S/10-18, the index well at Baldwin Park, for the upper San Gabriel Valley, for which records are available since 1903. During 1951, the water level ranged from a high of 259.05 feet above sea level on March 7 to a low of 245.38 feet on November 20. The high level on March 7 was 70.0 feet below the highest observed level of 329.1 feet on May 19, 1916, and the low of November 20 was 11.7 feet below the previous low of 257.1 feet on November 30, 1931. The basin-wide lowering of the water table in recent years has had a very marked effect on the surface outflow from the basin as shown by the flow in Mission Creek near Montebello. The flow of Mission Creek, one of the three principal streams receiving ground-water discharge from the San Gabriel Valley, originates as ground-water seepage into the stream bed within about one mile above Whittier Narrows and it reflects the changes in the elevation of the ground-water table in the basin above. Using Mission Creek as an index, the surface flow for the water year of 1930-31 was 11,820 acre-feet and for the water year of 1950-51 was only 6,700 acre-feet.

San Diego County.--During 1951 water levels were observed in 38 wells in San Diego County, in 8 of which the ground-water table dropped below the bottom of the well in late fall. The average decline in 1951 measured in the 30 other wells was 2.6 feet. The flow in Santa Ysabel Creek, which discharges into the San Dieguito River, has been measured at a gaging station near Mesa Grande since 1912. This stream with one of the longest records in San Diego County is used as an index of runoff from the coastal slope in the county. The average annual runoff for the period 1937-51 was 13,700 acre-feet, while the runoff for the 1950-51 water year was only 807 acre-feet.

In the reach of the San Luis Rey River Basin from Bonsall northeast to the Monserate narrows, water levels declined 1.4 feet during the year, based on an average of the measurements from five wells. Well 10/3W-1C, which showed a drop of 9.3 feet in 1951, was excluded from the average. In that part of the basin between Oceanside and San Luis Rey, water levels declined about 3 feet during 1951. Locally however, presumably owing to heavy pumping, levels during the seasonal low in 1951 were as much as 19 feet below levels of 1950. Well 10/3W-15 on the Gird Ranch, because of its long water-level record, previously has been used to determine long-term changes in water level in this basin. Late in 1950 and through 1951, however, this well was dry.

Five wells in the San Dieguito River basin, all in the San Pasqual Valley, were measured in 1951. Four of them were measured late in the year of both 1950 and 1951. The average change in water level for this Valley during 1951, as reflected by these four wells, was a drop of 1.6 feet.

Of the 20 wells measured in 1950 in the San Diego River basin, 6 were dry throughout 1951 and water-level measurements were made in the remaining 14 wells. Well 16/2W-16 was destroyed. Measurements were made in nine of the wells late in both 1950 and 1951. The average drop of water levels during 1951 at five of these nine wells was about 3 feet. Three wells in the basin, 15/1E-17B1, 15/1E-17H6, and 15/1E-20B1, show an average recovery of 1.9 feet, probably owing in part to the use of Colorado River water in the area.

Records for four wells in the Tia Juana River basin are tabulated in this report. All are within about 4 miles of the coast. Of the four, all of which were measured in October 1950, two were dry late in 1951, and the two other wells with measurements made in October 1951 suggest an average local decline of about 3.0 feet in water level during the year.

San Bernardino Area.--Of the eight wells in the San Bernardino area for which measurements were tabulated in last year's report, all except 1S/3W-16L1 were measured in 1951. Well 1S/3W-17C1 was measured weekly by the Gage Canal Co. and well 1S3W-20B1 was measured about semimonthly by the Geological Survey. The other five were measured less frequently by either the city of San Bernardino or the San Bernardino Valley Water Conservation District. The March high level for the year at well 1S/3W-17C1, which reflects the recharge to the ground water body from flow in the Santa Ana River, was about 14.5 feet below that of last year. Also, the low level for the year, which occurred in November, was more than 13 feet below the previous year's low, more than 21 feet below the low water of 1936, and about 77 feet below the

levels of 1892-93. The average decline in water level since last year, based on five of the seven wells that were measured late in the year, was about 10 feet. All of the seven wells measured are in the Bunker Hill Basin which is separated from the Rialto-Colton Basin by the Bunker Hill dike. This dike, or structural zone, acts as a reasonably complete hydraulic barrier, resulting in pressure levels substantially above land surface in deeper wells northeast of the dike. That the overlying clays and silty clays are not entirely impervious is indicated to a degree by the existence of perennial flow in Warm Creek, and to a lesser extent by flow in the Santa Ana River. The total average flow in these streams, plus that in the Meeks and Daley Canal, measured at stations near the Bunker Hill dike, for the 5-month period of June through October, is 13,720 acre-feet for the years 1939-51. Except for the effluent from the city of San Bernardino sewage plant into Warm Creek and the discharge into the creek of ground water from some wells that are allowed to flow through a part of each year, the normal flow for this five-month period is made up of natural ground-water seepage. Although the sewage effluent has been deducted from the five-month average, it was not thought feasible to attempt to evaluate the magnitude of stream gain owing to discharging wells. The peak flow of record for the five-month period was about 20,130 acre-feet in 1945. In 1951 the flow for this same period was 6,370 acre-feet which was le ss than a third of the corresponding flow in 1945 and a decrease of 1,710 acre-feet since 1950.

San Jacinto Valley. --Measurements in the San Jacinto Valley by both the Geological Survey and the Riverside County Flood Control and Conservation District are tabulated for six wells. At well 4/2W-7J1 in the Lakeview area, the water level during the seasonal low period was at least 1.3 feet below that of 1950 and 71 feet below the level of 1904. In the Perris area the water level at well 4/3W-32E1 declined about 1.3 feet during the year. As suggested by measurements on well 72 (Water-Supply Paper 468, p. 75) prior to 1920, levels here have dropped about 38 feet since the seasonal low in 1905. Of the six wells tabulated in this report the average decline for five during the year was about 2 feet. Well 3/2W-35Q1 which showed a drop of 18.5 feet was exclu ded from the average. A large portion of the recharge to the basin is from the San Jacinto River and its tributaries. The surface inflow into the basin at the mouth of the canyon has been measured since 1922. Although the mean runoff for the 30-year period ending in 1951 was 16,300 acre-feet per year, the aggregate runoff for the 5-year period 1946-51 was 7,520 acre-feet including a runoff of only 54 acre-feet in the water year 1950-51. Since 1916 the outflow from the basin has been measured at the gaging station on the San Jacinto River at a point about 1 mile above its mouth at Lake Elsinore. The mean flow at this station for the 30-year period 1922-51 was 12,600 acre-feet per year. Since 1946 the total outflow from the basin was only 654 acre-feet, and no flow occurred during the water year 1950-51. In 1951, Lake Elsinore was dry from the early part of August until the storm periods which began late in December. This is the first instance on record in which the lake has been dry, although very low stages occurred in 1810, 1830, 1839, 1861, 1867, and 1883. There is some regulation on the South Fork of the San Jacinto River by Lake Hemet, and on the main stream by Railroad Canyon Reservoir, about 3 miles upstream from Lake Elsinore.

Santa Barbara County. --The investigation of the ground-water resources of Santa Barbara County was continued during 1951 in cooperation with the Santa Barbara County Water Agency. Monthly water-level measurements were made in 175 wells. Recording gages were operated on five wells. Earlier measurements covering the period 1941 through 1948 have been published in U. S. Geological Survey water-supply papers and through 1950 have been released locally in duplicated form. Water-Supply Paper 1068 contains tabulated descriptions for 2,246 wells in existence in 1942 in the various ground-water basins of the county. The same publication also contains many water-level measurements made prior to 1942 by the city of Santa Barbara, Santa Maria Valley Water Conservation District, San Joaquin Power Division of the Pacific Gas and Electric Co., Union Sugar Co., Union Oil Co., U. S. Geological Survey, and other organizations and individuals. Measurements of water levels in wells along the Santa Ynez River by the Ground Water Branch, and of river discharge at miscellaneous measuring sites by the Surface Water Branch of the Geological Survey, were begun in 1950 for the purpose of augmenting available basic data essential to planning the operation of Cachuma Reservoir, under construction by the U. S. Bureau of Reclamation. Measurements of the discharge of springs and small streams in the Santa Ynez Mountains near the site of the Tecolote Tunnel were continued in 1951 by the Surface Water Branch, and a report on the 1950 measurements was released. In 1951 water-level measurements were made by the city of Santa Maria and the Santa Maria Valley Water Conservation District, in addition to those made by the Geological Survey, and are included in this report.

The climate in Santa Barbara County is characterized by a short rainy season which coincides with the winter months and a dry season in the summer when nearly all the rivers and streams are dry. Nearly all of the water for irrigation purposes is derived from wells. In most areas, domestic supplies also are derived from underground reservoirs. The city of Santa Barbara and the Montecito County Water District are largely dependent on surface storage accumulated behind Gibraltar and Juncal dams in the head-waters of the Santa Ynez River. The city of Santa Barbara and Montecito supplement their surface supplies with a number of emergency wells which were drilled during periods of drought. As the population and the total agricultural acreage have increased during the past decade, more and more ground water has been withdrawn. Replenishment of the underground reservoirs is almost totally dependent upon the amount of precipitation that percolates to the ground-water reservoirs by direct penetration, by

seepage from streams, or by underground transfer from outlying recharge areas. Each year since 1944 precipitation has been below average and replenishment of the reservoirs has been inadequate. As a result, withdrawals from storage have been made in many of the ground-water basins of the county. (See figures 27and 28.)

Precipitation in Santa Barbara County occurs principally as rainfall which, in any one year, varies greatly from place to place because of the alinement of the several mountain ranges. The average annual precipitation throughout the county ranges from about 6 inches in the Cuyama Valley to about 30 inches or more in the higher parts of the Santa Ynez and the San Rafael Mountains. As computed from data published by the U. S. Weather Bureau, precipitation for the water year ending September 30, 1951, was below normal for the seventh consecutive year at most stations in the county. For example, at Santa Barbara in the southeast corner of the county 10.06 inches (7.82 inches below the 84-year average) was recorded, and at Santa Maria in the northwest corner of the county 8.66 inches (5.29 inches below the 66-year average) was recorded. For the water year 1950-51 the average rainfall at nine stations maintained by the Geological Survey was approximately 11 inches--about 56 percent of the average for the water year 1943-44, the most recent year of nearly normal rainfall. Figures 27 and 28 show precipitation at three stations and water-level fluctuations in 10 selected wells throughout the county. Replenishment of ground water in each of the several ground-water basins in the county is roughly related to the precipitation, as illustrated graphically by the long-term hydrograph of figure 28. On this graph the periods of "wet years" are seen to be coincident with rising water levels, indicating replenishment to the reservoir. Conversely, periods of below normal rainfall, such as the period since 1944, are coincident with declining water levels and are indicative of depletion of storage.

Water levels in representative wells throughout the Carpinteria Basin declined during 1951 by varying amounts that ranged from 1.3 feet to 24.8 feet. Wells nearest the ocean, in both the area of confined water and the area of unconfined water, showed the smallest declines. In that portion of the confined-water area west of Carpinteria Creek and north of Highway 101 the average drop in water levels was about 7 feet. The greatest declines in water levels were observed in the recharge area and confined-water area east of Carpinteria Creek. Water levels in the confined-water area showed a drop of about 10 feet and the maximum water-level decline noted for the basin occurred in a well in the recharge area of Moses Mesa. Water levels throughout the basin reached a peak in 1951 just prior to the pumping season which began about March or April. In most wells these 1951 peak levels were below the peak levels of the preceding year, and in many wells the water levels of March and April were the lowest March and April water levels for the period of record. Because water levels declined steadily during the pumping season, October and November were marked by the occurrence of record low water levels in several wells in the Carpinteria basin. During 1951 the Geological Survey collected and tested 20 water samples from wells in the basin along the coast where pumping levels are many feet below sea level. Despite record low water levels in several wells through the basin, it was found that samples from only two wells near the west end of the basin are suggestive of a slight trend towards increased chloride concentration. To obtain information regarding sea water encroachment, an expansion of the sampling program in the suspect area is being planned. The hydrograph of well 4/25-27Q2 (fig. 27) is representative of ground-water fluctuations in the confined-water area of the main water body near the eastern end of the alluvial plain. It can be seen that the downward trend of water levels that began in 1946 continued through 1951. Since 1945 the recovery peak each spring has been lower than the recovery peak of the preceding year, because of 7 years of deficient precipitation and an increased rate of pumping.

In the Goleta Basin, as in the Carpinteria Basin, the peak water levels of 1951 were generally below the peak levels of the previous year, and at the end of the pumping season water levels in many wells were the lowest since the start of record in 1941. Throughout the southern third of the basin along the coast, periodic sampling of water in five wells since 1941 has thus far revealed no increase in chloride content, although many water levels in this area are well below sea level. In the confined-water area that extends beneath nearly all the central alluvial plain, the 1951 year-end water levels ranged from 1.3 feet above to 7.3 feet below year-end levels of 1950. Water levels near the western limits of the area of confined water showed a slight over-all rise at the end of the year, whereas the water levels near the recharge area showed relatively large over-all declines. Within the recharge area itself year-end water levels were as much as 10.9 feet lower than year-end levels of 1950. The hydrographs of wells 4/28-17H11 and 4/28-9A3 (fig. 27) show water-level fluctuations in the area of confined water and the recharge area, respectively. They show that the net decline in water levels since the start of record in 1941 was about 30 feet for well 4/28-17H11 and about 25 feet for well 4/28-9A3, nearly all of which has occurred since 1945, the beginning of the current drought. The depletion of storage in the Goleta Basin has been continous since 1945, as indicated by the average decline in water levels of approximately 3 feet per year since that time.

Year-end measurements of water levels in wells on the Santa Ynez upland show declines from less than 1 foot in a well near the rock barrier which separates the upland from the river to more than 6 feet in a well near the northern recharge area. Well 6/30-6A1, whose hydrograph appears on figure 27, is centrally located and is therefore considered an index to the average of the water-level fluctuations throughout the upland. In the 10-year period of record the hydro-

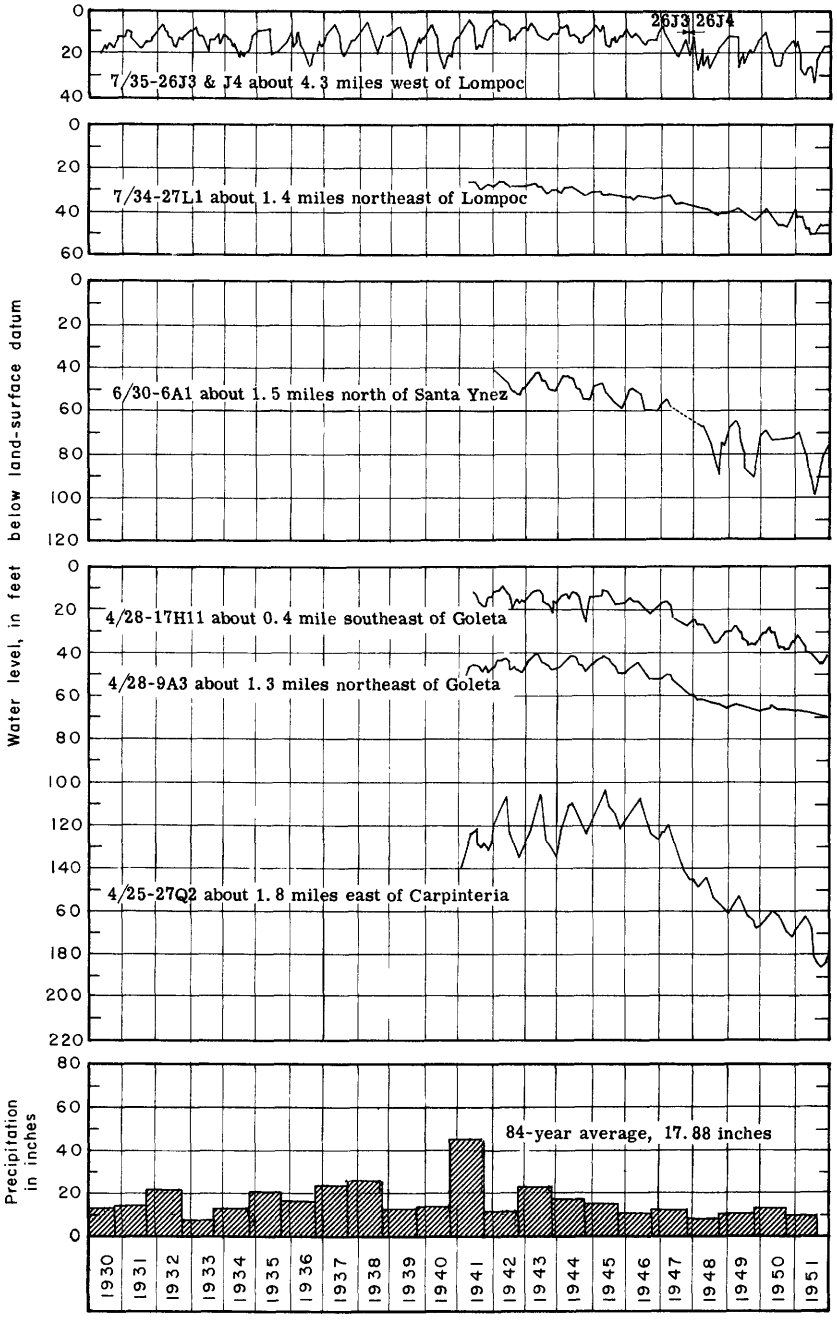

Figure 27. --Water-levels in 6 wells in Santa Barbara County, and precipitation by water years at Santa Barbara, California.

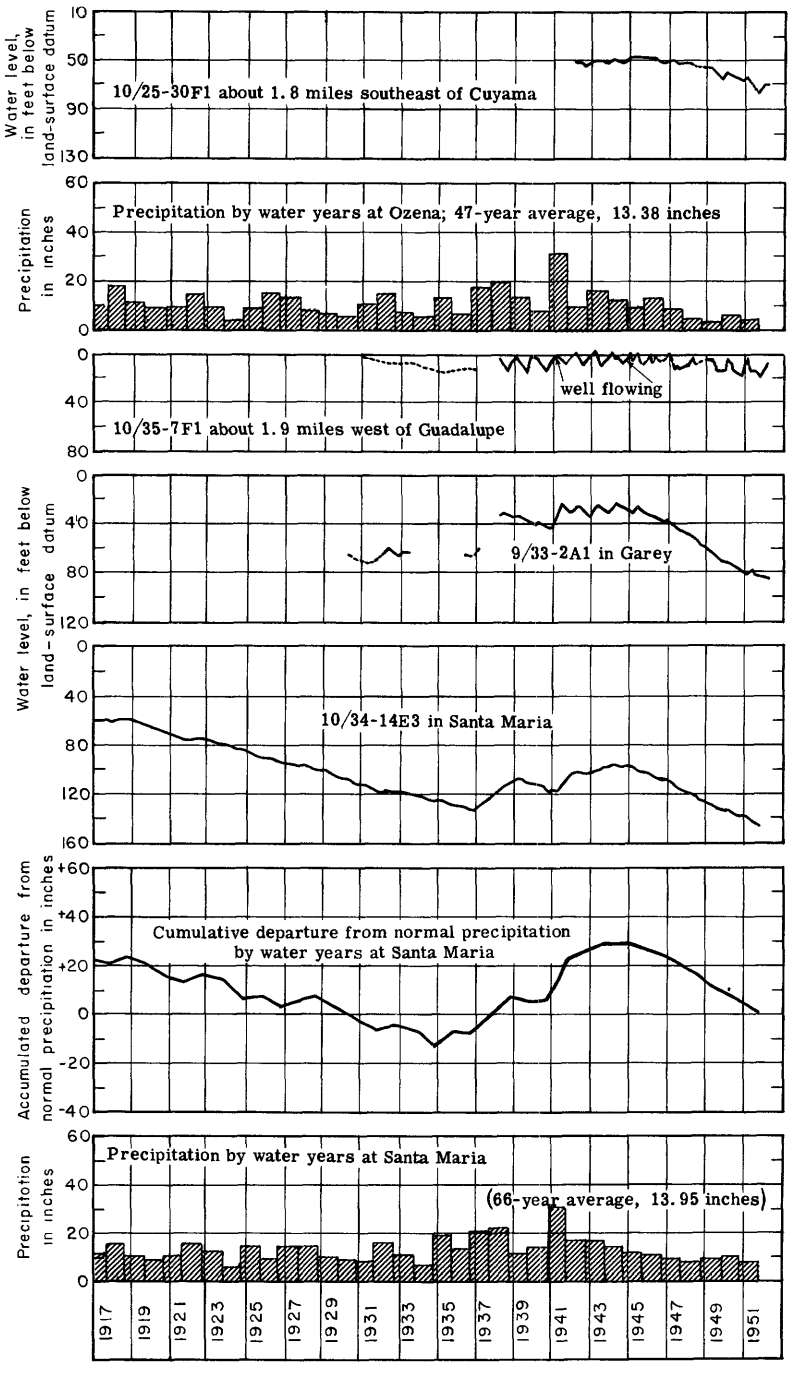

Figure 28. --Water levels in 4 wells in Santa Barbara County, and precipitation by water years at Ozena and Santa Maria and accumulated departure of precipitation from average at Santa Maria, California.

graph shows that the water level in well 6/30-6A1 had an over-all decline of about 33 feet, or an average 3.3 feet per year, which approximates the decline 3.12 feet observed in 1951. For 3 consecutive years there has been little or no flow in the Santa Ynez River to recharge, by influent seepage, the adjacent alluvial deposits between San Lucas Bridge and Robinson Bridge. Water levels in December 1951 averaged about 1.3 feet lower than the levels of December 1950. Declines ranged from about 0.4 foot to about 3.6 feet for 14 representative wells along the river. From 1945 to the end of 1951 the ground-water decline has averaged about 1 foot a year. A hydrograph of wells 7/35-26J3 and 7/35-26J4, shown in figure 27, represents water-level fluctuations for the main water-bearing zone in an area of confined water in the Lompoc plain, and the hydrograph of well 7/34-27L1, shown on the same figure, represents water-level fluctuations for the main water-bearing zone in a water-table area. A study of the hydrographs shows that the amplitude of the water-level fluctuations in the confined-water area is greater than the amplitude of water-level fluctuations in the water-table area. The long-term hydrograph shows that between 1930 and 1947 there was little net change of deep-water levels, but that since 1947 the water level has declined some 6 or 7 feet. Over-all decline from the highest level of record, in 1941, to the end of 1951 was about 11 feet. Water levels in most of the 53 wells measured monthly on the Lompoc plain showed an over-all decline between December 1950 and December 1951, but in a recharge area along the southern fringe of the plain, between Rodeo Canyon and San Miguelito Canyon, the 1951 year-end water levels were 1 to 4 feet higher than the 1950 year-end levels, as indicated by measurements in four observation wells within that area. In the river reach between The Narrows and a point about 1 mile downstream water-level declines during 1951 ranged from about $1\frac{1}{2}$ feet in a well in The Narrows to about $3\frac{1}{2}$ feet in a well about a mile downstream. In the eastern half of the plain, four shallow observation wells along the river, remained dry throughout 1951; elsewhere four additional shallow observation wells became dry. In the confined-water area of the main water-bearing zone the net changes of water levels in individual wells at year-end 1951 ranged from about $2\frac{1}{2}$ feet lower to about $7\frac{1}{2}$ feet higher than the levels at the end of 1950. The wide fluctuation in these wells is thought to be caused by localized pumping affecting the pressure head. Small declines were noted in nearly all wells measured on the northwestern part of the plain, and shallow wells adjacent to deep wells in this area had slightly greater declines in water levels than the corresponding adjacent deep wells. The average decline for the shallow wells in this area was about $1\frac{1}{2}$ feet as compared to an average decline of about three-quarters of a foot for the deep wells. In the San Antonio Valley the Geological Survey established four observation wells in December 1943 to serve as an index to the water-level fluctuations. Two of the four wells penetrate the fine-grained deposits that form the valley fill or younger alluvial deposits. Between December 1950 and December 1951 each of the four wells showed only slight net changes. The largest single agricultural district in Santa Barbara County is the broad alluvial plain adjacent to the Santa Maria River, and this, together with the elevated terrace areas to the north and south and the smaller alluvial plain adjacent to the Sisquoc River, forms the Santa Maria Valley area. Water levels throughout the valley have been declining since 1944, and the downward trend continued through 1951. During the drought years, the heavy withdrawals of ground water have exceeded the recharge to such an extent that average yearly declines of as much as 9.7 feet (in the Sisquoc area) have been noted. On the alluvial plain of the Santa Maria River west of Fugler's Point, the average yearly decline since 1944 was about 8 feet. The average yearly declines in the confined-water area near the coast were relatively small in comparison with those in the unconfined-water area in the extreme east and southeast. The smallest average yearly decline noted in this area, 1.4 feet per year since 1944, occurred in well 10/35-7F1, whose hydrograph appears in figure 28. The hydrograph shows an over-all drop in water levels of about 11 feet in an area where, prior to the drought years, some wells flowed intermittently. From the smaller average yearly declines along the coast, the declines range progressively larger to the extreme average yearly declines noted in the southeast part of the area, with the average yearly decline since 1944 for the whole valley area being about 5.3 feet per year. The long-term hydrograph (1917-51) of well 10/34-14E3, in the unconfined-water area, shows that the lowest level recorded occurred November 11, 1951 when the water level was more than 153 feet below land-surface datum and 95 feet below the highest level of December 22, 1918, which was 58.67 feet.

In the extreme northeastern part of Santa Barbara County, between the Caliente Range on the north and the Sierra Madre on the south, lies the semiarid Cuyama Valley, the most recently developed agricultural area in the county. Prior to 1946, there was no electric power in the Cuyama Valley and irrigation was not intensively practiced. Consequently, as indicated by the hydrograph of well 10/25-30F1, little net change was noted in water levels between 1941, the beginning of record and 1946. Since 1946, however, the rapid increase in the rate of pumping together with below-normal precipitation has caused a decline of water levels throughout the valley that ranges from less than 1 foot per year in well 10/27-12R1 near the western end of the valley to more than 8 feet per year in well 9/24-19Q1 near the Cuyama Ranger Station in the eastern part. Changes in water levels between December 1950 and December 1951 showed little departure from the average yearly declines. In both the recharge area along the river, several miles above the area of concentrated withdrawals for irrigation, and in the area of concentrated withdrawals itself, the water levels at year-end 1951 were the lowest for the period of record.

Other Investigations by the Geological Survey

The cooperative investigation with the State Division of Water Resources is concerned chiefly with the surface and subsurface geologic features of the ground-water basins of the State. Work in the Napa, Sonoma, and Santa Rosa Valleys and adjoining areas was continued. A

reconnaissance report on ground-water conditions in several small valleys in Lake County was completed. Collection of basic data was continued for that part of the west side of the San Joaquin Valley in Fresno and Kings Counties. The investigation in Solano County is financed wholly with Federal funds. Collection of basic data was completed by the end of 1951 and a comprehensive report on the geology and ground-water resources of the area with special reference to usable ground-water storage capacity was begun. The cooperative investigation with the San Bernardino County Flood Control District of the ground-water underflow across the San Jacinto fault, west of San Bernardino, was continued.

Well-Numbering System

The well-numbering system shows the locations of wells according to the rectangular system of public-land surveys. Water-Supply Paper 991 contains a cross-reference table of previous numbers and location symbols. For well 9/12-21D1, in Antelope Valley in Kern County, the segment of the number preceding the hyphen indicates the township and range(T. 9N., R. 12W.) Letters indicating cardinal directions appear in this part of the symbol if a basin or area spans two or more quadrants of a particular base and meridian. The digits between the hyphen and the letter indicates the section (Sec. 21), and the letter indicates the 40-acre block within the section as shown by the accompanying diagram. Within the 40-acre tract, the wells are numbered serially as indicated by the final digit of the symbol. Thus, well 9/12-21D1 was the first well listed by the Geological Survey in the $NW\frac{1}{4}NW\frac{1}{4}$ sec. 21, township 9 north, range 12 west.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

For a well whose location is known only approximately, the symbol is shortened to the designation of township, range, and section only. Two or more such wells in a single section would be differentiated by the use of a lower-case letter following the section number--for example, wells 10/3W-1 and 10/3W-1a in the San Luis Rey River basin in San Diego County. For areas which have never been subdivided by public-land surveys, the rectangular system has been projected, commonly after private surveys or after projections made by local officials for purposes of land assessment.

Well Descriptions and Water-Level Measurements

(Water levels are in feet below land-surface datum unless otherwise indicated.)

Kern County

Antelope Valley
Measurements supplied by the Los Angeles County Flood Control District.

9/13-20H1. Harry White. Records available: 1921-51. Jan. 30, 90.25; Apr. 19, 91.1; June 12, 92.75; Sept. 18, 95.2.

9/15-25D1. H. W. Hunter. Drilled well, diameter 8 inches, reported depth 334 feet. Records available: 1948-51. Jan. 31, 229.7; Apr. 18, 230.4; June 12, 228.9; Sept. 18, 229.2; Dec. 19, 231.25.

Los Angeles County

Antelope Valley
Measurements supplied by the Los Angeles County Flood Control District
for wells marked with asterisk.

5/9-6B1. Diameter 12 inches. Records available: 1940-51. Nov. 5, 52.63.

5/9-28A1. R. C. Weiss. Records available: 1947-51. Nov. 5, dry. Measurement discontinued.

5/10-6N1. * Little Rock Irrigation District. Records available: 1938, 1940-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	107.75	June 11	119.1	Aug. 6	121.5	Nov. 6	116.05
Apr. 19	111.4	July 2	114.7	Oct. 2	119.8	Dec. 11	115.80
May 15	110.5						

5/10-7E1. * Calavalley. Unused irrigation well, diameter 16 inches. Records available: 1938, 1940-51. Apr. 23, 148.0.

5/10-12B1. Ed Sanner. Dug domestic well, depth 70 feet. Records available: 1940-41, 1943-51. Nov. 5, dry at 55 feet.

5/10-21J1. Unused well, diameter 18 inches, depth 35 feet. Records available: 1945-51. Nov. 5, 22.79. Measurement discontinued.

5/10-26B1. R. J. Darling. Unused well, diameter 10 inches. Records available: 1940-42, 1945-51. Nov. 5, 57.49.

5/11-4E1. * Sam Yellen. Records available: 1948-51. Dec. 11, 168.55.

5/11-9Q1. * Unused well, diameter 10 inches. Records available: 1940-46, 1948-51. Dec. 11, 54.35.

5/11-10R1. * Unused well, diameter 16 inches. Records available: 1927-28, 1930, 1932, 1937-51.

Jan. 30	102.3	May 15	103.2	Aug. 6	103.8	Nov. 6	104.8
Feb. 27	102.9	June 11	103.75	Oct. 2	104.4	Dec. 7	105.1
Apr. 23	102.8	July 2	104.25				

5/11-12Q1. * Wheelock. Irrigation well, diameter 6 inches, depth 392 feet. Records available: 1940-51. Dec. 11, 158.6.

6/8-10N2. W. G. Baguet. Records available: 1947-48, 1950-51. Nov. 8, 29.22.

6/8-18D1. Huff. Records available: 1939-41, 1944-51. Nov. 8, 160.89.

6/8-32P1. M. B. Scofield. Records available: 1940-45, 1948, 1950-51. Nov. 8, 188.10.

6/9-4H2. Wilsona School. Records available: 1949-51. Nov. 8, 124.78.

6/9-31R1. Barlow. Unused well, diameter 17 inches. Records available: 1940-51. Nov. 5, 44.08; Dec. 28, 43.24.

6/10-9E1. Irrigation and domestic well. Records available: 1940-43, 1945-46, 1948-51. Nov. 5, 195.04.

6/10-9Q1. N. C. & O. C. Riley. Irrigation and domestic well. Records available: 1940-48, 1950-51. Nov. 5, 151.86.

6/10-10Q1. Unused well, depth 169 feet. Records available: 1943-51. Nov. 5, 76.15.

6/10-20P1. Mrs. Johnson. Unused well, diameter 10 inches. Records available: 1940-51. Nov. 5, 217.33; Dec. 27, 212.02.

6/10-27B1. Irrigation well. Records available: 1940-41, 1943-51. Nov. 5, 154.72.

6/11-4C1. Lyons Bros. Records available: 1942-43, 1945-46, 1948-49, 1951. Nov. 6, 115.60.

6/11-8E1. Palmdale Irrigation District. Records available: 1942-44, 1946-51. Nov. 6, 215.70.

6/11-9F1. Elmer Benson. Irrigation well. Records available: 1940-43, 1945-47, 1949-51. Nov. 6, 219.80.

6/11-12M1. E. J. Ball. Records available: 1941-43, 1945-51. Nov. 6, 223.69.

6/11-12Q1. E. J. Ball. Records available: 1941-51. Nov. 6, 218.26.

6/11-18P1. Elmer Richardson. Records available: 1940-41, 1947-51. Nov. 6, 252.39.

6/11-26J1. L. A. Hudson. Records available: 1947, 1949-51. Nov. 6, 148.84.

6/12-24C1. Palmdale Irrigation District. Records available: 1950-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	267.25	May 15	272.65	Aug. 6	276.45	Nov. 6	276.10
Feb. 27	266.50	June 11	274.90	Sept. 5	277.70	Dec. 6	276.8
Apr. 23	268.20	July 2	275.30	Oct. 2	278.20		

6/13-12J1. * Glick. Records available: 1940-51. Dec. 11, 253.0.

7/9-17N1. Ernest Koch. Drilled irrigation well, diameter 14 inches. Records available: 1945-48, 1950-51. Nov. 7, 163.04.

7/9-28M1. Records available: 1948-51. Nov. 7, 150.58.

7/10-5N3. Ella E. Cunningham. Drilled irrigation well, depth 980 feet. Records available: 1945-47, 1949-51. Nov. 7, 158.36.

7/10-6R1. Mrs. Jessie Hollingsworth. Irrigation and domestic well, diameter 7 inches, reported depth 1,500 feet. Records available: 1945-51. Nov. 7, 159.80.

7/10-12H1. McCavern. Records available: 1944-51. June 28, 145.08; July 30, 157.13; Aug. 29, 149.64; Oct. 1, 150.97; Oct. 30, 151.10; Nov. 28, 149.43; Dec. 27, 149.94.

7/10-21A1. Unused well, diameter 12 inches. Records available: 1943-51. Nov. 7, 182.95.

7/10-30G1. E. J. Ball. Records available: 1940-43, 1946-47, 1949-51. Nov. 6, 217.57.

7/10-31N1. H. O. Bakken. Irrigation well, diameter 12 inches, depth 365 feet. Records available: 1940-41, 1943, 1945-48, 1950-51. Nov. 6, 224.59.

7/11-1Q1. H. L. Gordon. Records available: 1943-46, 1948-51. Nov. 7, 158.76.

7/11-8P1. Mae Avery. Records available: 1933-51. Nov. 6, 79.47.

7/11-16B1. Domestic well. Records available: 1943-51. Nov. 6, 115.01.

7/11-19N1. Irrigation well. Records available: 1943-51. Nov. 6, 169.07.

7/11-23L1. Barnes. Domestic well. Records available: 1940-43, 1945-51. Nov. 6, 158.79.

7/11-24C1. Stevenson. Records available: 1944-51.

Feb. 28	159.18	May 28	163.38	Aug. 29	170.67	Nov. 28	170.85
Mar. 30	159.98	June 28	165.04	Oct. 1	171.95	Dec. 27	168.74
Apr. 26	161.78	July 30	170.89	30	170.47		

7/11-27F1. James N. Provonyance. Records available: 1940-41, 1943, 1947-48, 1950-51. Nov. 6, 192.80.

7/11-28E1. Leshin. Irrigation well. Records available: 1943, 1945-51. Nov. 6, 193.35.

7/11-28L1. Records available: 1937-51. Nov. 6, 163.60.

7/12-4P2. * Unused well, diameter 3 inches. Records available: 1940-51. Jan.. 30, 14.55; Apr. 18, 15.3; June 11, 18.6; Sept. 17, 20.3; Dec. 3, 20.4.

7/12-15F1. * A. H. Powell. Ninth and Elm Sts., Lancaster. Records available: 1942-51

Jan. 31	63.4	Apr. 19	67.4	July 2	78.7	Sept. 5	85.24
Feb. 27	62.7	June 11	77.1	Aug. 6	79.55	Nov. 24	81.25

7/12-15F2. * Tenth and Date Sts., Lancaster. Unused well, diameter 16 inches depth 372 feet. Records available: 1943-45, 1947-51. Dec. 18, 78.4.

7/12-22J1. * F. La Horgue. Domestic well, diameter 8 inches, depth 255 feet. Records available: 1942-51. Feb. 27, 123.2; Apr. 23, 125.7; May 15, 128.65; June 11, 129; July 2, 129.5; Aug. 6, 133.7; Sept. 5, 134.6.

7/12-29P1. * Irrigation well. Records available: 1939-43, 1945-47, 1949-51. Dec. 11, 166.4.

7/12-34E1.* G. Lane. Records available: 1941, 1944, 1947-51. Dec. 7, 228.75.

7/13-3D1.* F. Gorrindo. Records available: 1945-51. Dec. 5, 95.1.

7/13-3D2.* F. Gorrindo. Unused well, diameter 14 inches. Records available: 1945-51. Dec. 5, 62.35.

7/13-9N1.* Edward Dunham. Records available: 1950-51. Dec. 5, 119.0.

7/13-11D1.* Records available: 1942-51. Dec. 6, 6.95.

7/13-17D1.* G. Faro. Records available: 1937, 1939-45, 1947-48, 1950-51. Dec. 7, 244.2

7/13-21J2.* L. H. Benson. Records available: 1942-45, 1947-51. Dec. 11, 117.9.

7/13-27N1.* A. F. Godde. Irrigation well. Records available: 1941-43, 1945-51. Dec. 18, 171.9.

7/13-35E1.* George Lane. Records available: 1937-51. Dec. 18, 222.0.

7/14-10F1.* F. A. Ullman. Domestic well, diameter 10 inches, depth 250 feet. Records available: 1942-43, 1945-51. Jan. 31, 199.5; Apr. 23, 200.2; June 11, 200.8; Nov. 27, 214.1.

8/9-4N2. U S Army Reservation. Diameter 6 inches, depth 245 feet. Records available 1941-51. Nov. 7, 16.75.

8/9-4P1. U S Army Reservation. Records available: 1941-43, 1945-51. Nov. 7, 26.77.

8/9-6N1. U S Army Reservation. Diameter 5 inches. Records available: 1941-51. Nov. 7, 13.53.

8/10-2P1. U S Army Reservation. Unused well, depth 75 feet. Records available: 1941-51. Nov. 7, 26.60.

8/10-8R3. J. G. Walsh. Records available: 1947-51. Oct. 1, 43.50; Oct. 30, 42.06; Dec. 27, 38.42.

8/10-9M1. J. M. Hamilton. Records available: 1921-51. Oct. 30, dry.

8/10-9N1. Drilled well, diameter 12 inches. Land-surface datum is 2,311 feet above msl. Records available: 1951. Dec. 27, 35.22.

8/10-19Q1. Union Trust & Savings Bank. Records available: 1939-48, 1950-51. Nov. 7, 124.41.

8/10-32N1. John Demuth. Records available: 1948-51. June 28, 85.74; July 30, 90.02; Aug. 29, 88.67; Oct. 30, 91.21; Nov. 7, 87.50; Nov. 28, 86.65; Dec. 27, 86.33.

8/11-8P1. Records available: 1945-51. Nov. 7, dry at 27 feet.

8/11-20L1 Unused well, diameter 12 inches. Records available: 1943-47, 1949-51. Nov. 7, dry.

8/12-4K1.* Records available: 1943-47, 1949-51. Dec. 4, 22.9.

8/12-20B1.* Unused well, diameter 6 inches. Records available: 1941-51. Dec. 4, 31.5.

8/12-22D1.* Records available: 1940-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	7.6	May 15	11.52	Aug. 6	23.25	Nov. 6	29.4
Feb. 27	7.85	June 11	13.55	Sept. 5	31.5	Dec. 4	24.05
Apr. 18	9.6	July 2	15.15	Oct. 3	33.3		

8/12-22M1.* Unused well, diameter 6 inches. Records available: 1943-51. Dec. 4, 18.0.

8/12-22M2. * Stock well, diameter 6 inches. Records available: 1943-51. Dec. 4, 19.15.

8/12-22R1. * I. B. Wibigler. Records available: 1941-51. Dec. 4, 38.7.

8/12-24R1. Records available: 1941-51. Nov. 7, 19.84.

8/13-7H1. * Lone Butte Ranch. Records available: 1940-44, 1946-51. Dec. 5, 146.85.

8/13-20M1. * O. T. Kelly & Son. Diameter 16 inches, depth 600 feet. Records available: 1945-51. Dec. 5, 151.05.

8/13-22K1. * A. G. Andrews. Irrigation well, reported depth 475 feet. Records available: 1942-43, 1945-51. Dec. 6, 97.85.

8/13-23M1. * A. G. Andrews. Irrigation and domestic well. Records available: 1942-43, 1945-48, 1950-51. Dec. 6, 93.6.

8/13-32N1. * Pedro Lizarraga. Irrigation well, diameter 16 inches, depth 570 feet. Records available: 1945-51. Dec. 5, 143.8.

8/13-33Q2. * Records available: 1946-51. Dec. 5, 103.7.

8/14-2R1. * Unused well, diameter 14 inches. Records available: 1942-43, 1945-51. Dec. 19, 179.7.

8/14-12A1. * H. G. Ranch No. 1. Irrigation well, reported depth 570 feet. Records available: 1940-51. Dec. 19, 161.65.

8/14-12D1. * H. G. Ranch No. 1. Irrigation well. Records available: 1939-40, 1942-51. Dec. 19, 168.6.

8/14-14R1. * Unused well, diameter 16 inches. Records available: 1943-51. Dec. 19, 178.6.

8/14-17Q1. * Marl Craven-Tibola. Records available: 1946-51. Dec. 3, 165.0.

8/14-25C2. * Domestic well, diameter 10 inches. Records available: 1945, 1947-51. Dec. 7, 162.9.

8/14-25D1. * Records available: 1946, 1948-51. Dec. 27, 174.7.

8/15-10P1. Scott. Domestic well. Records available: 1945-48, 1950. No measurement made in 1951.

8/15-17R1. * Canfield. Records available: 1946-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	112.4	Apr. 18	112.84	Aug. 6	113.55	Nov. 21	114.48
Feb. 27	112.3	June 12	113.35	Sept. 18	113.75	Dec. 4	114.85
Mar. 27	112.4	July 2	113.4	Oct. 3	113.98		

8/15-24B2. * Charles L. Schneider. Records available: 1946-51. Jan. 30, 147.8; Apr. 18, 147.9; June 11, 148.7.

8/15-27R1. * I. T. Brandt. Domestic well. Records available: 1945-51. Jan. 30, 144.1; Apr. 18, 143.7; June 11, 143.9; Sept. 18, 144.5; Dec. 3, 147.2.

8/15-33G1. * Correll. Records available: 1946-51. Jan. 31, 209.8; Nov. 21, 210.3.

8/15-36M1. * Fairmont School. Records available: 1943-45, 1947, 1949-51. Dec. 3, 89.5.

8/16-5N1. * Carpy (International Harvester Co.) Records available: 1942-51. Jan. 30, 146.75; Apr. 18, 197; June 11, 197.1; Sept. 18, 197.45; Nov. 27, 197.78.

8/16-14L1. Snyder. Domestic well, diameter 10 inches. Records available: 1945-47, 1949-50. No measurement made in 1951.

9/12-16N1. * Chevron Gas Station. Records available: 1950-51.

Jan. 30	64.95	May 15	70.2	Aug. 6	72.85	Nov. 6	70.00
Feb. 27	64.70	June 11	70.5	Sept. 5	74.30	Dec. 4	69.50
Apr. 23	65.20	July 2	70.85	Oct. 3	74.50		

San Gabriel River Basin

1S/10-18. Baldwin Park. Drilled water-table observation well, in sand and gravel in alluvial deposits, diameter 16 inches, depth 200 feet, perforations 74-174 feet. Land-surface datum is 387.1 feet above msl. Highest water level 56.0 below lsd, May 19, 1916; lowest 141.62 below lsd, Nov. 20, 1951. Records available: 1903-51.

Daily mean water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	128.36	128.20	128.03	128.65	129.94	131.21	133.47	136.05	138.41	140.10	141.24	141.23
2	128.35	128.19	128.04	128.71	129.94	131.30	133.56	136.14	138.45	140.15	141.25	141.20
3	128.33	128.17	128.02	128.77	129.94	131.41	133.63	136.23	138.50	140.19	141.26	141.16
4	128.33	128.15	127.99	128.83	129.94	131.50	133.70	136.32	138.55	140.24	141.28	141.12
5	128.34	128.13	127.98	128.86	129.95	131.58	133.77	136.41	138.60	140.30	141.31	141.10
6	128.37	128.12	127.97	128.86	129.97	131.66	133.86	136.50	138.66	140.34	141.32	141.07
7	128.41	128.10	127.95	128.87	129.99	131.72	133.93	136.58	138.72	140.40	141.35	141.05
8	128.44	128.09	127.96	128.90	130.00	131.81	134.03	136.68	138.78	140.45	141.38	141.01
9	128.48	128.09	127.97	128.94	130.01	131.87	134.12	136.78	138.84	140.52	141.39	140.97
10	128.51	128.09	127.99	128.99	130.03	131.94	134.21	136.87	138.90	140.58	141.41	140.94
11	128.52	128.08	128.00	129.05	130.07	132 02	134.30	136.96	138.98	140.63	141.42	140.91
12	128.53	128.06	128.01	129.11	130.08	132.09	134.38	137.05	139.05	140.70	141.43	140.88
13	128.54	128.05	128.00	129.18	130.11	132.17	134.47	137.15	139.10	140.76	141.46	140.86
14	128.50	128.05	127.98	129.24	130.16	132.25	134.56	137.22	139.17	140.81	141.48	140.84
15	128.45	128.04	128.04	129.30	130.17	132.33	134.64	137.30	139.22	140.84	141.51	140.80
16	128.43	128.05	128.07	129.36	130.20	132.41	134.72	137.38	139.28	140.89	141.54	140.76
17	128.41	128.05	128.11	129.42	130.24	132.49	134.81	137.45	139.34	140.92	141.56	140.73
18	128.38	128.05	128.16	129.46	130.28	132.57	134.90	137.51	139.40	140.95	141.58	140.69
19	128.37	128.05	128.13	129.52	130.32	132.64	135.00	137.58	139.46	140.98	141.60	140.66
20	128.36	128.06	128.23	129.58	130.37	132.70	135.07	137.65	139.52	141.03	141.62	140.64
21	128.34	128.07	128.25	129.62	130.43	132.77	135.16	137.72	139.58	141.07	141.57	140.62
22	128.31	128.08	128.28	129.68	130.47	132.84	135.25	137.79	139.64	141.11	141.52	140.57
23	128.30	128.10	128.31	129.73	130.53	132.90	135.33	137.86	139.70	141.13	141.48	140.54
24	128.28	128.08	128.33	129.79	130.59	132.97	135.41	137.93	139.76	141.16	141.45	140.52
25	128.26	128.06	128.37	129.84	130.66	133.05	135.48	138.00	139.81	141.20	141.40	140.50
26	128.26	128.04	128.41	129.89	130.73	133.10	135.55	138.07	139.86	141.22	141.37	140.46
27	128.25	128.04	128.45	129.91	130.81	133.16	135.63	138.14	139.91	141.22	141.34	140.42
28	128.25	128.04	128.50	129.93	130.91	133.23	135.71	138.22	139.96	141.23	141.30	140.39
29	128.21		128.54	129.93	130.95	133.32	135.79	138.29	140.01	141.23	141.28	140.35
30	128.21		128.57	129.94	131.03	133.39	135.90	138.33	140.06	141.24	141.26	140.32
31	128.21		128.61		131.12		135.95	138.37		141.24		140.29

Coastal plain

2S/12-13A1. Lycan Bros. Near Montebello. Drilled unused water-table well in Gaspur water-bearing zone of Recent age, diameter 8 inches, depth 85 feet. Land-surface datum is 181 feet above msl. Highest water level 17.51 below lsd, Aug. 4, 1941; lowest 79.67 below lsd Nov. 28, 1951. Records available: 1928-51. Records furnished by San Gabriel Valley Protective Association.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	59.50	Apr. 4	56.65	July 4	63.17	Oct. 3	74.48
10	59.47	11	56.83	11	64.05	10	75.10
17	59.30	18	57.12	18	64.98	17	75.79
24	58.90	25	57.58	25	66.05	24	76.54
31	58.49	May 2	57.84	Aug. 1	67.02	31	77.95
Feb. 7	57.84	9	57.90	8	67.99	Nov. 14	79.14
14	57.30	16	58.21	15	69.07	21	79.50
21	57.00	23	58.67	22	70.08	28	79.67
28	56.83	30	59.27	29	71.21	Dec. 5	79.53
Mar. 7	56.46	June 6	60.06	Sept. 5	71.60	12	79.26
14	56.03	13	60.90	12	72.20	19	78.84
21	56.10	20	61.69	19	72.92	26	78.29
28	56.37	27	62.37	26	73.76		

3S/12-8L3. Los Angeles County Farm. Near Downey. Drilled unused artesian well in Gaspur water-bearing zone of Recent age, diameter 8 inches, depth 248 feet. Land-surface datum is 92 feet above msl. Highest water level 14.13 below lsd, Mar. 13, 1930; lowest 55.19 below lsd, July 30, 1951. Records available: 1930-51. Records furnished by San Gabriel Valley Protective Association.

3S/12-8L3 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan 2	43.09	Apr. 2	46.70	July 9	53.54	Oct. 8	53.57
8	43.65	9	44.64	16	53.29	15	52.88
15	42.38	16	46.10	23	54.17	27	52.21
22	42.00	23	47.23	30	55.19	29	51.25
29	41.94	30	44.63	Aug. 6	54.91	Nov. 5	51.09
Feb. 5	42.05	May 7	46.41	13	54.35	12	50.39
12	42.28	14	46.93	20	54.47	19	50.78
19	43.02	21	49.50	27	54.82	26	48.82
26	42.30	28	50.97	Sept. 3	52.62	Dec. 3	48.23
Mar. 5	42.03	June 11	51.70	10	53.34	10	47.67
12	42.94	18	51.38	17	53.42	17	47.60
19	44.94	25	51.74	24	53.40	24	47.29
26	45.70	July 2	52.29	Oct. 1	53.07	31	47.08

3S/14-3K1. Southern California Water Co., Yukon plant well 1. Near Inglewood. Drilled public-supply artesian well in sand and gravel deposits of Pleistocene age, diameter 16 inches, depth 652 feet, perforations 368-414, 538-552, 562-578. Land-surface datum is 74 feet above msl. Highest water level 97 below lsd, Feb. 1, 1942; lowest 168 below lsd, Sept. 14, 1950. Records available: 1941-51. Records furnished by Southern California Water Co.

Jan. 7	152	Apr. 7	144	July 7	156	Oct. 7	158
14	152	14	140	14	157	14	158
21	154	21	141	21	158	21	158
28	152	28	146	28	159	28	159
Feb. 7	150	May 7	145	Aug. 7	154	Nov. 7	159
14	149	14	146	14	154	14	154
21	148	21	148	21	155	21	153
28	145	28	150	28	153	28	152
Mar. 7	148	June 7	149	Sept. 7	154	Dec. 7	151
14	144	14	154	14	155	14	153
21	145	21	155	21	156	21	149
28	146	28	154	28	157	28	145

3S/14-21B1. Southern California Water Co., Rosecrans plant well 1. Near Hawthorne. Drilled public-supply artesian well in sand and gravel deposits of Pleistocene age, diameter 16 inches, depth 500 feet. Land-surface datum is 63 feet above msl. Highest water level 66 below lsd, May 1, 1931; lowest 125 below lsd, July 28, Aug. 7, 14, 21, and 28, 1951. Records available: 1931-37, 1939-51. Records furnished by Southern California Water Co.

Jan 1	108.5	Apr. 7	112	July 7	122	Oct. 7	121
7	109	14	113	14	123	14	122
14	109	21	115	21	124	21	121
21	109	28	114	28	125	28	121
28	109	May 7	114	Aug. 7	125	Nov. 7	119
Feb. 14	109	14	119	14	125	14	119
21	111	21	119	21	125	21	115
28	112	28	120	28	125	28	115
Mar. 7	111	June 7	120	Sept. 7	122	Dec. 7	113
14	111	14	121	14	124	14	113
21	114	21	119	21	124	21	113
28	115	28	120	28	124	28	113

4S/11-5D1. V. Capovilla. Near Norwalk. Drilled domestic artesian well in deposits of Pleistocene age, diameter 10 inches, depth 270 feet. Land-surface datum is 44.7 feet above msl. Highest water level 3.41 below lsd, Mar. 17, 1933; lowest 74.68 below lsd, July 24, 1951. Records available: 1930-51. Records furnished by Orange County Flood Control District.

Jan. 23	30.37	Apr. 20	53.17	July 24	74.68	Oct. 23	59.27
Feb. 20	35.49	May 22	59.32	Aug. 21	72.48	Nov. 23	52.25
Mar. 23	50.78	June 25	62.37	Sept. 24	65.43	Dec. 20	38.91

4S/12-8P1. Montana Land Co. Near Signal Hill. Drilled unused artesian well in gravel in lowermost part of Silverado water-bearing zone of Pleistocene age, diameter 14 inches, depth 714 feet, perforations 698-714. Land-surface datum is 68.28 feet above msl. Highest water level 0.2 above lsd, July 30, 1903; lowest 145.40 below lsd, Aug. 13, 1951. Records available: 1903, 1914-19, 1923-51. Records furnished by city of Long Beach.

4S/12-8P1 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	110.08	Apr. 9	117.80	July 9	136.62	Oct. 8	141.89
8	110.49	16	119.28	16	138.87	15	141.59
15	109.20	23	120.30	23	141.39	22	141.05
22	109.16	30	119.62	30	143.85	29	139.23
29	110.17	May 7	120.65	Aug. 6	144 72	Nov. 5	138.05
Feb. 5	110.81	14	120.68	13	145.40	12	137.04
12	110.05	21	121.70	20	145.02	19	136.55
19	111.48	28	123.53	27	145.34	26	135.12
26	112.51	June 4	126.40	Sept. 3	142.50	Dec. 3	133.34
Mar. 5	112.96	11	128.93	10	142.17	10	131.17
12	114.29	18	131.27	17	143.97	17	130.53
19	117.89	25	132.41	24	142.38	24	128.61
26	118.84	July 2	134.26	Oct. 1	141.48	31	137.03
Apr. 2	119.53						

4S/13-14L1. Southern California Edison Co., Ltd. In Long Beach. Drilled unused artesian well in Gaspur water-bearing zone of Recent age, diameter 10 inches, depth 114 feet, perforations 90-116. Land-surface datum is 28.55 feet above msl. Highest water level 20.62 below lsd, Apr. 5, 1941; lowest 35.96 below lsd, Nov. 5, 1951. Records available: 1930-51. Records furnished by city of Long Beach.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	33.58	Apr. 9	34.04	July 9	35.48	Oct. 8	35.88
8	33.49	16	34.16	16	35.71	15	35.88
15	33.42	23	34.30	23	35.59	22	35.88
22	33.35	30	34.08	30	35.59	29	35.81
29	33.86	May 7	34.17	Aug. 6	35.72	Nov. 5	35.96
Feb. 5	34.08	14	34.11	13	35.88	12	35.94
12	33.86	21	34.11	20	35.57	19	35.89
19	34.27	28	34.44	27	35.53	26	35.82
26	33.90	June 4	34.72	Sept. 3	35.78	Dec. 3	35.75
Mar. 5	33.63	11	34.61	10	35.99	10	35.64
12	33.59	18	34.51	17	35.69	17	35.54
19	33.74	25	34.59	24	35.67	24	35.50
26	33.94	July 2	34.91	Oct. 1	35.79	31	35.35
Apr. 2	34.17						

4S/13-23G2. City of Long Beach. Drilled unused artesian well in gravel in Silverado water-bearing zone of Pleistocene age, diameter 26 to 16 inches, depth 1,074 feet, perforations 650-900. Land-surface datum is 24.50 feet above msl. Highest water level 52.93 below lsd, Feb. 6, 1939; lowest 117.32 below lsd, Aug. 14, 1951. Records available: 1932-51. Records furnished by city of Long Beach.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	101.20	Apr. 3	107.25	July 3	113.65	Oct. 2	114.76
9	102.24	10	104.00	10	116.20	9	116.60
16	100.88	17	105.59	17	116.10	16	114.21
23	99.63	24	108.13	24	115.52	23	114.13
30	98.55	May 1	105.79	31	116.38	30	112.88
Feb. 2	99.30	8	108.64	Aug. 7	117.09	Nov. 6	114.36
13	99.55	15	109.80	14	117.32	13	113.20
20	102.02	22	111.48	21	115.53	20	113.43
27	101.05	29	111.23	28	113.90	27	109.63
Mar. 6	99.55	June 5	112.18	Sept. 4	114.07	Dec. 4	107.20
13	101.74	12	113.02	11	111.90	11	106.40
20	105.53	19	112.98	18	114.40	18	104.72
27	107.07	26	111.80	25	113.03		

Orange County

Measurements supplied by Orange County Flood Control District unless otherwise indicated.

3S/11-36Q2. M. Del Giorgio. Near Buena Park. Drilled unused artesian well in deposits of Pleistocene age, diameter 12 inches, depth 666 feet, perforations at intervals 500-650. Land-surface datum is 91.58 feet above msl. Highest water level 48.02 below lsd, Mar. 28, 1945; lowest 122.74 below lsd, July 30, 1951. Records available: 1930-51.

3S/11-36Q2 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	91.00	Mar. 12	95.90	May 28	111.75	Nov. 5	106.99
15	90.17	19	98.90	June 18	112.40	13	105.68
22	87.92	26	105.90	July 9	117.16	Dec. 3	98.29
Feb. 5	89.15	Apr. 2	110.30	30	122.74	10	96.91
13	90.59	9	112.00	Sept. 11	114.42	17	95.35
19	93.50	16	109.00	17	115.75	25	94.37
26	93.10	30	98.04	Oct. 15	113.25	31	93.21
Mar. 5	91.40	May 7	103.66	29	113.19		

4S/10-22L2. Halderman & Callens. Near Anaheim. Drilled irrigation artesian and water-table well in sand and gravel of Pleistocene age, diameter 16 inches, depth 475 feet, perforations 140-158, 370-401, 410-457. Land-surface datum is 136 feet above msl. Highest water level 97.16 below lsd, May 3, 1945; lowest 153.70 below lsd, Sept. 14, 1951. Records available: 1928-51.

Jan. 2	g139.15	Feb. 27	g139.86	Apr. 30	g139.00	Nov. 9	148.29
11	136.63	Mar. 13	136.52	Aug. 31	g148.72	Dec. 11	143.45
26	136.87	28	g138.21	Sept. 14	153.70	28	142.48
Feb. 9	136.85	Apr. 12	141.27				

g By Geological Survey.

4S/11-19K1. Los Alamitos Sugar Co. Near Los Alamitos. Drilled unused artesian well in deposits of Pleistocene age, diameter 12 inches, depth 448 feet, perforations 440-460. Land-surface datum is 28.50 feet above msl. Highest water level, flowing 1901; lowest 63.66 below lsd, July 30, 1951. Records available: 1901, 1903, 1929-51. Measurements by city of Long Beach except as noted.

Jan. 2	g32.09	Mar. 26	49.20	June 29	g55.57	Oct. 1	53.27
2	31.85	Apr. 2	52.08	July 2	54.14	8	52.15
8	35.37	9	48.07	9	58.48	15	52.32
15	38.50	16	46.56	16	59.28	22	51.67
22	38.76	23	46.83	23	62.37	29	49.19
26	g39.20	30	g43.45	30	63.66	Nov. 5	48.35
29	39.22	30	43.43	Aug. 6	62.15	12	46.36
Feb. 5	41.13	May 7	43.58	13	61.63	19	45.28
12	43.52	14	46.77	20	60.88	26	42.62
19	46.01	21	50.36	27	60.74	Dec. 3	41.45
26	45.30	28	51.08	31	g57.84	10	40.10
27	g45.52	June 4	52.81	Sept. 3	56.88	17	39.30
Mar. 5	45.18	11	52.85	10	55.48	24	37.82
12	44.44	18	53.81	17	54.79	31	36.61
19	47.45	25	54.74	24	54.15		

g By Geological Survey.

5S/10-9D1. Julio Martinez. Near Garden Grove. Drilled public-supply artesian well in Gaspur water-bearing zone of Recent age, diameter 12 inches, depth 250 feet. Land-surface datum is 74.7 feet above msl. Highest water level 17.9 below lsd, June 13, 1922; lowest 88.05 below lsd, Aug. 10, 1951. Records available: 1922, 1924-25, 1927-28, 1930-51.

Jan. 11	76.35	Apr. 12	81.81	July 12	86.84	Nov. 9	86.18
Feb. 9	78.36	May 8	81.06	Aug. 10	88.05	Dec. 11	83.58
Mar. 13	80.13						

5S/10-28B1. John Sturtevant. Near Santa Ana. Drilled unused artesian well in deposits of Pleistocene age, diameter 10 inches, depth 122 feet. Land-surface datum is 45.1 feet above msl. Highest water level 23.90 below lsd, Jan. 12, 1945; lowest 71.92 below lsd, Aug. 12, 1949. Records available: 1935-51.

Jan. 12	50.18	Apr. 13	59.20	Sept. 18	67.28	Nov. 15	59.13
Feb. 15	61.96	Aug. 14	69.18	Oct. 11	61.93	Dec. 13	53.70

5S/11-2E1. Western Trust & Savings Bank. Near Westminster. Drilled irrigation artesian well in deposits of Pleistocene age, diameter 12 inches, depth 517 feet. Land-surface datum is 47.98 feet above msl. Highest water level 22.31 below lsd, May 19, 1930; lowest 81.77 below lsd, Sept. 14, 1951. Records available: 1929-51.

Jan 9	69.12	Apr. 12	74.07	Sept. 14	81.77	Nov. 8	71.94
Feb. 8	73.40	May 4	70.05	Oct. 9	78.26	Dec. 7	64.98
Mar. 9	70.78	June 12	79.58				

5S/11-16D2. Anaheim Sugar Co. Near Seal Beach. Drilled unused artesian well in deposits of Pleistocene age, diameter 10 inches, depth 400 feet. Land-surface datum is 16.62 feet above msl. Highest water level 0.70 feet above lsd, Feb. 7, 1930; lowest 46.05 below lsd, Aug. 8, 1951. Records available: 1929-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	27.68	Apr. 4	40.45	July 4	40.17	Oct. 3	37.21
10	35.49	11	37.39	11	40.45	10	38.91
17	36.42	18	37.36	18	44.19	17	38.92
24	39.47	25	37.47	25	44.61	24	38.41
31	41.39	May 2	34.21	Aug. 1	45.44	31	38.90
Feb. 7	42.62	9	34.58	8	46.05	Nov. 7	38.30
14	45.34	16	36.96	15	44.29	14	36.24
21	45.52	23	36.75	22	42.56	21	34.52
28	45.20	30	38.21	29	42.02	28	33.06
Mar. 7	44.55	June 6	37.90	Sept. 5	40.25	Dec. 5	32.29
14	43.50	13	38.49	12	39.24	12	32.02
21	43.57	20	38.91	19	39.27	19	31.45
28	41.69	27	38.52	26	38.46	26	30.30

5S/11-25P1. E. J. Lecrivain. Near Huntington Beach. Drilled domestic artesian well in deposits of Pleistocene age, diameter 12 inches, depth 150 feet. Land-surface datum is 48 feet above msl. Highest water level 33.90 below lsd, Feb. 25, 1932; lowest 69.58 below lsd, Feb. 15, 1951. Records available: 1930-51.

Jan. 12	57.87	Apr. 13	65.04	Aug. 14	68.12	Nov. 15	64.03
Feb. 15	69.58	May 10	61.74	Sept. 18	66.10	Dec. 13	61.70
Mar. 15	68.25	June 15	65.10	Oct. 11	65.57		

5S/11-28A1. A. Ruoff. Near Huntington Beach. Drilled irrigation artesian well in deposits of Pleistocene age, diameter 10 inches, depth 453 feet. Land-surface datum is 7.13 feet above msl. Highest water level 15.18 above lsd, May 23, 1945; lowest 50.60 below lsd, Feb. 15, 1951. Records available: 1930-51.

Feb. 15	50.60	May 10	39.31	Aug. 14	47.94	Nov. 15	42.66
Mar. 15	48.28	June 15	40.60	Sept. 18	44.61	Dec. 13	37.93
Apr. 13	43.20	July 13	44.07	Oct. 11	44.79		

5S/11-29C4. Sunset Land & Water Co. Near Sunset Beach. Drilled unused artesian well in deposits of Pleistocene age, diameter 7 inches, depth 157 feet. Land-surface datum is 7.90 feet above msl. Highest water level 1.96 above lsd, Feb. 2, 1942; lowest 29.50 below lsd, Aug. 14, 1951. Records available: 1941-51.

Jan. 12	21.35	Apr. 13	25.57	July 13	27.28	Oct. 11	28.01
Feb. 15	29.82	May 10	18.28	Aug. 14	29.50	Nov. 15	25.32
Mar. 15	29.73	June 15	25.98	Sept. 18	27.65	Dec. 13	22.18

5S/12-12P1. U. S. Government Naval Depot. Near Seal Beach. Drilled unused artesian well in deposits of Pleistocene age, diameter 12 inches, depth 185 feet. Land-surface datum is 15.97 feet above msl. Highest water level 6.26 below lsd, Mar. 13, 1933; lowest 34.66 below lsd, Aug. 23, 1951. Records available: 1930-51. Records furnished by city of Long Beach.

Jan. 5	25.70	Apr. 19	31.38	July 26	34.61	Oct. 25	33.48
26	29.70	May 4	30.41	Aug. 23	34.66	Nov. 8	32.72
Feb. 16	32.43	24	31.45	Sept. 6	33.92	29	32.32
Mar. 9	32.81	June 21	32.27	27	33.17	Dec. 13	30.16
29	33.32	July 5	32.65				

6S/10-1E1. Frank Ey. Near Costa Mesa. Drilled irrigation artesian well in deposits of Pleistocene age, depth 300 feet. Land-surface datum is 34.17 feet above msl. Highest water level 14.54 below lsd, Jan. 17, 1942; lowest 84.00 below lsd, July 16, 1951. Records available: 1930-51.

Jan. 2	50.76	Apr. 2	77.13	July 2	66.35	Oct. 8	65.17
8	51.43	9	70.53	9	75.42	15	64.22
15	51.43	16	68.83	16	84.00	22	63.83
22	52.68	23	66.49	23	81.38	29	62.68
29	54.63	30	64.20	30	78.72	Nov. 5	63.24
Feb. 5	58.83	May 7	63.38	Aug. 6	77.12	13	61.10
13	63.51	14	62.61	13	74.72	19	61.21
19	68.03	21	62.76	20	70.29	26	59.74
26	78.47	28	62.82	Sept. 4	67.65	Dec. 3	57.40
Mar. 5	77.53	June 4	64.03	11	66.72	10	58.86
12	78.53	11	64.71	17	67.17	17	58.07
19	81.03	18	64.77	24	67.68	24	57.32
26	83.40	25	64.88	Oct. 1	63.42	31	56.05

6S/10-1L2. I. A. W. Henry. Near Santa Ana. Drilled unused artesian well in deposits of Pleistocene age, diameter 2½ inches, depth 143 feet. Land-surface datum is 39.65 feet above msl. Highest water level flowing, 1904; lowest 35.44 below lsd, Aug. 16, 1949. Records available: 1904, 1921-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 16	28.52	Apr. 13	30.44	July 17	30.56	Oct. 16	30.89
Feb. 16	30.45	May 15	30.44	Aug. 16	30.34	Nov. 15	31.18
Mar. 16	31.21	June 19	31.20	Sept. 20	30.29	Dec. 14	31.01

6S/10-5C1. Robert Gisler. Near Huntington Beach. Drilled irrigation artesian well in water-bearing zone and underlying deposits of Pleistocene age, diameter 14 inches, depth 209 feet. perforations 85-92, 126-144, 165-184. Land-surface datum is 19.24 feet above msl. Highest water level 4.18 below lsd, Jan. 17, 1942; lowest 48.00 below lsd, Feb. 13, 1951. Records available: 1931-51.

Jan. 2	27.72	Apr. 9	39.00	June 11	36.48	Sept. 17	38.14
8	29.32	16	37.29	18	36.71	Oct. 1	37.29
15	31.25	23	36.19	25	36.90	8	36.46
22	34.57	30	34.39	July 23	41.68	29	35.67
29	39.54	May 7	34.12	Aug. 6	43.29	Dec. 3	33.77
Feb. 5	44.60	14	35.01	13	42.61	10	33.07
13	48.00	21	35.50	20	41.94	17	32.06
Mar. 5	45.54	28	34.93	Sept. 4	39.57	24	31.73
26	42.25	June 4	36.36	11	38.71	31	31.06
Apr. 2	42.00						

6S/11-13G2. Surf Land & Water Co. Drilled unused artesian well in water-bearing zone, diameter 12 inches, depth 154 feet. Land-surface datum is 2.85 feet above msl. Highest water level 1.65 above lsd, Apr. 21, 1941; lowest 17.09 below lsd, Feb. 21, 1951. Records available: 1930-51.

Jan. 3	7.09	Apr. 4	13.93	July 4	10.38	Oct. 3	9.78
10	7.42	11	12.58	11	10.33	10	9.52
17	8.56	18	11.68	18	10.86	17	9.30
24	9.51	25	10.38	25	11.14	24	9.11
31	12.41	May 2	10.64	Aug. 1	11.45	31	9.05
Feb. 7	14.62	9	10.09	8	11.45	Nov. 7	8.88
14	15.19	16	9.86	15	11.47	14	9.03
21	17.09	23	10.21	22	11.20	21	9.15
28	16.90	30	10.05	29	11.07	28	9.04
Mar. 7	15.63	June 6	9.85	Sept. 5	10.75	Dec. 5	8.68
14	15.58	13	10.18	12	10.33	12	8.47
21	15.87	20	10.42	19	10.31	19	7.85
28	14.54	27	10.43	26	10.39	26	7.67

I-9F1. The Irvine Co, Near Santa Ana. Drilled irrigation artesian well in deposits of Pleistocene age, diameter 20 to 10 inches, depth 1,208 feet. Land-surface datum is 51 feet above msl. Highest water level 23.62 below lsd, Apr. 18, 1945; lowest 102.83 below lsd, July 25, 1951. Records available: 1932-51.

Jan. 17	70.22	Apr. 4	95.79	July 25	102.83	Oct. 17	90.02
Feb. 7	31.14	18	92.95	Aug. 8	98.38	24	90.96
21	87.47	May 2	92.37	22	95.50	31	87.70
28	91.57	9	89.39	Sept. 5	95.79	Nov. 7	86.40
Mar. 7	92.24	23	91.14	12	95.01	14	85.05
14	93.91	June 20	93.87	19	93.00	Dec. 26	78.64
28	95.21	July 4	94.02	Oct. 10	89.99		

Riverside County

Santa Ana River Basin, San Jacinto Valley
Measurements furnished by Riverside County Flood Control and Conservation District are marked with an asterisk.

3/2W-35Q1. I. E. Facemire. Land-surface datum is 1,428 feet above msl. Records available: 1921-51. Feb. 2, 23.46*; Aug. 7, 52.00.

4/2W-7J1. P. W. Perine. Formerly Albert McDonald. Land-surface datum is 1,445 feet above msl. Records available: 1904-44, 1946-51.

Jan. 25	96.18*	Mar. 29	96.69	May 29	98.77	June 27	98.95
Feb. 28	96.40	Apr. 26	97.64*	29	98.27*	Aug. 1	100.71
Mar. 9	95.69*	27	97.62	June 22	98.73*		

4/3W-32E1. James Malcom. Records available: 1929-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	64.98*	May 24	65.53*	Aug. 7	65.80	Nov. 8	66.25*
Mar. 15	65.10*	June 21	65.75*	29	66.04*	Dec. 4	66.27*
Apr. 24	65.33*	July 27	65.95*				

4/4W-1L1. B. H. LeCont. Domestic well, diameter 12 inches, depth 93 feet. Records available: 1914-51. Feb. 1, 45.16*; Aug. 7, 45.34.

5/1W-2N1. J. A. Barger. Domestic well, diameter 7 inches, depth 140 feet. Records available: 1905-51. Aug. 7, dry at 110.6 feet.

5/2W-24A1. L. Wilhelm. Unused domestic well, diameter 7 inches, depth 120 feet. Records available: 1914-50. No measurement made in 1951.

5/2W-27E2. Fred Harvey. In Winchester. Domestic well, diameter 9 inches. Records available: 1930-51.

Jan. 17	40.03*	June 21	41.38*	Aug. 7	42.05	Nov. 8	43.01*
Apr. 25	40.85*	July 27	41.84*	29	42.16*	Dec. 4	43.33*

6/3W-4A2. Menefee School. Land-surface datum is 1,438 feet above msl. Records available: 1925-34, 1936, 1938-51. Jan. 17, 65.43*; Apr. 24, 66.64*; Aug. 7, 67.80.

San Bernardino County

Mojave River Basin

3/3W-6E1. Mike Spranger. Drilled well, diameter 12 inches. Records available: 1929-32, 1935-51. May 3 and Nov. 26, dry.

3/3W-6E2. Records available: 1948-51. May 3, 51.40; Nov. 26, 57.27.

3/4W-12J1. Dug well, diameter 36 inches, depth 26 feet. Olive. Records available: 1929-51. May 3 and Nov. 26, dry.

3/4W-13B1. Olive. Dug well. Records available: 1922-33, 1935-43, 1945-51. May 3, 84.81; Nov. 26, dry.

3/4W-13B2. Records available: 1951. Nov. 26, 96.54.

4/3W-1M1. E. D. S. Pope. Drilled unused irrigation well. Records available: 1930-33, 1935-43, 1945-51. Nov. 27, 210.05.

4/3W-6B1. A. J. Lintner. Records available: 1931-32, 1934-51. May 3, 60.49; Nov. 26, 61.77.

4/3W-6D1. A. W. Phillips. Drilled domestic well, diameter 10 inches, depth 100 feet. Records available: 1917, 1930-51. May 3, 61.46; Nov. 26, 62.83.

4/3W-17M1. Arrowhead Reservoir & Power Co. Driven observation well, diameter 2 inches, depth 26 feet. Records available: 1905, 1916, 1922-23, 1930-49, 1951. May 3, dry; Nov 26, dry.

4/3W-18E1. C. O. Evans. Drilled irrigation well, diameter 12 inches, depth 100 feet. Records available: 1930-32, 1935, 1938-51. May 3, dry; Nov. 26, dry.

4/3W-19G1. G. W. McLister. Drilled domestic well, diameter 10 inches. Records available: 1917, 1931-32, 1935-37, 1939-51. May 3, 45.66.

4/3W-19R1. Arrowhead Reservoir & Power Co. Driven observation well, diameter 2 inches, depth 45 feet. Records available: 1905, 1907, 1930-51. May 3, dry; Nov. 26, dry.

4/3W-20L1. J. M. Allison. Drilled unused well, diameter 10 inches. Records available: 1923, 1930-51. May 3 and Nov. 26, dry at 40.5 feet.

4/3W-21A1. W. O. Wade. Dug and drilled irrigation well, depth 650 feet. Records available: 1917, 1923, 1930-42, 1944-50. No measurement made in 1951.

4/3W-30E1. A. W. Cole. Dug and drilled irrigation well. Records available: 1917, 1930-32, 1934-51. May 3, 53.95.

5/3W-3D1. Dick Lewis. Records available: 1948-49, 1951. Nov. 27, 74.36.

5/3W-13D1. Eva V. Case. Records available: 1948-51. May 4, 89.63; Nov. 27, 89.78.

5/3W-18F1. J. D. Humiston. Records available: 1917, 1923, 1930-32, 1935, 1937-51. Nov. 27, 111.78.

5/3W-22A1. Jack Rothwell. Records available: 1948-51. May 4, 90.92.

5/3W-24N1. Douglas. Records available: 1948-51. May 4, 90.73; Nov. 27, 91.13.

5/4W-10M1. In Victorville. Records available: 1930-32, 1935, 1937-51. May 4, 45.08; Nov. 27, 45.33.

5/4W-11P1. Lee Saul. Records available: 1931-32, 1935, 1937-51. May 4, 55.69, Nov. 27, 56.04.

5/4W-11P2. Lee Saul. Records available: 1931-32, 1935-45, 1947-51. Nov. 27, 49.46.

5/4W-35A1. A. Sorenson. On Verde Ranch. Records available: 1917, 1930-31, 1945, 1948-51. May 3, 5.32; Nov. 26, 0.76.

5/4W-36N1. Verde Ranch. Records available: 1917, 1930-45, 1947-50. No measurement made in 1951.

6/3W-28R1. Irene McCarthy. Records available: 1948-51. Nov. 27, 128.39.

7/4W-30C1. Owner unknown. Records available: 1930-32, 1935-51. May 4, 57.87; Nov. 27, 58.62.

8/3W-4M1. Everett Swing. Records available: 1930-33, 1939-51. May 9, 14.50; Nov. 27, 16.14.

8/4W-2Q1. Owner unknown. Records available: 1930-32, 1934-51. May 16, 24.97; Nov. 27, dry.

8/4W-12Q1. Holcomb Bros. Records available: 1931-32, 1935-37, 1939-41, 1943-51. Nov. 27, 11.58.

8/4W-20N1. Lord. Records available: 1930-32, 1934-47, 1951. Nov. 27, 18.60.

8/4W-31D1. F. H. Merrell. Records available: 1930-32, 1939-51. May 16, 46.27; Nov. 27, 46.22.

8/4W-31R1. Owner unknown. Records available: 1930-32, 1934-48, 1950-51. May 4, 15.64; Nov. 27, 17.30.

9/1W-10D2. R. E. Hettick. Records available: 1945-51. Nov. 28, 15.77.

9/1W-10M1. Greystone Auto Camp. Records available: 1930, 1932, 1935, 1938-47, 1949-51. Nov. 28, 60.07.

9/1W-13B1. F. Ryerse. Records available: 1925-28, 1930-32, 1935, 1938-51. May 10, 44.65; Nov. 28, 47.35.

9/2W-19B1. Shobel. Records available: 1930-32, 1935, 1937-51. May 16, 68.18; Nov. 30, 70.21.

9/3W-10P1. Owner unknown. Records available: 1930-32, 1934-51. May 16, 90.90; Nov. 27, 91.36.

9/3W-10R1. Osborn. Records available: 1930-32, 1935-47, 1951. Nov. 27, 27.90.

9/3W-14D1. Bullock. Records available: 1930-32, 1934-51. May 16, 29.40; Nov. 27, 31.79.

9/3W-28A1. J. Slagill. Records available: 1930-36, 1938-51. May 16, 26.55; Nov. 27, 28.70.

9/3W-34R1. Nellie Storey. Records available: 1930-33, 1935-36, 1938-42, 1944-45, 1947-51. May 16, 126.88; Nov. 27, 127.12.

10/1W-31C1. Nelson. Records available: 1930-32, 1935, 1938-51. May 9, 50.46; Nov. 28, 50.65.

10/2W-19P1. Loftus. Records available: 1930-33, 1935, 1937-45, 1947-51. May 16, 69.81; Nov. 28, 70.60.

10/2W-30N1. J. Rich. Records available: 1930-50. No measurement made in 1951.

10/3W-32C1. Owner unknown. Records available: 1931-32, 1934, 1936-51. May 16, 58.60; Nov. 27, 58.83.

11/3W-28R1. S. F. Edwards. Records available: 1930-32, 1935-40, 1944-51. May 16, 27.31; Nov. 27, 27.64.

11/3W-34F1. Owner unknown. Records available: 1930-32, 1934-51. May 16, 34.90; Nov. 27, 35.12.

8/3E-3E1. C. W. Beaverstock. Records available: 1930-32, 1935-51. May 10, 5.93; Nov. 29, 7.40.

8/3E-3F1. Owner unknown. Records available: 1930-32, 1935-51. May 10, 22.27; Nov. 29, 22.39.

8/3E-4B1. Lyle Graham. Records available: 1930-32, 1935-51. May 10, 2.90; Nov. 29, 4.21.

8/3E-4B2. Lyle Graham. Records available: 1922, 1930-32, 1935-36, 1938-51. May 2, 1950, 3.70; Nov. 10, 5.92; May 10, 1951, 5.23; Nov. 29, 4.80.

8/4E-7E1. Bodine. Records available: 1919, 1922, 1930-32, 1938-48, 1950. No measurement made in 1951.

8/4E-9C1. Records available: 1947-51. May 9, dry; Nov. 29, 1.21.

8/4E-12L1. Mojave Camp Service Station. Records available: 1930, 1932, 1935-45, 1947-51. May 9, 31.02; Nov. 29, 30.75.

9/1E-12D1. Owner unknown. Records available: 1930, 1932, 1934-35, 1937-45, 1947-51. May 9, 49.05; Nov. 28, 50.32.

9/1E-13E1. Owner unknown. Records available: 1925-28, 1930-51. May 9, 71.10; Nov. 29, 72.04.

9/1E-13E2. Owner unknown. Records available: 1925-27, 1930-33, 1935-51. May 10, 71.28; Nov. 29, 73.02.

9/1E-18E1. B. A. Funk. Records available: 1925-28, 1930-32, 1934-50. No measurement made in 1951.

9/1E-24D1. Owner unknown. Records available: 1930, 1932-51. May 10, 75.03; Nov. 29, 77.35.

9/2E-3A1. Bruce McCormick. Records available: 1919, 1922, 1930-35, 1937-51. May 9, 19.30; Nov. 28, dry at 22.1 feet.

9/2E-3A2. Bruce McCormick. Records available: 1931-35, 1937-49, 1951. May 9, 23.00; Nov. 28, 26.14.

9/2E-4D1. Records available: 1930-32, 1934-35, 1937-51. May 9, 23.50; Nov. 28, 25.22.

9/2E-8J1. Annie Escholtz. Records available: 1919, 1925, 1928, 1930-33, 1935-45, 1947-51. May 10, 44.14; Nov. 29, 44.66.

9/2E-12N1. Hunter. Records available: 1919, 1924-27, 1930-35, 1937-51. May 10, 7.47; Nov. 29, 8.00.

9/2E-14N1. Scobel & Haimut. Records available: 1919, 1922, 1930, 1932-33, 1935, 1938-48. No measurement made in 1951.

9/2E-14N2. Scobel & Haimut. Records available: 1925, 1927-28, 1930-35, 1937-51. May 10, 24.93; Nov. 29, 22.94.

9/2E-14N3. Scobel & Haimut. Records available: 1924-28, 1930-33, 1935, 1937-51. May 10, 20.73; Nov. 29, 21.32.

9/2E-18F1. Owner unknown. Records available: 1924-28, 1930-40, 1942-43, 1945-51. May 10, 59.10; Nov. 29, 60.35.

9/3E-3D1. Owner unknown. Records available: 1919, 1926, 1930-35, 1937-51. May 9, 41.72; Nov. 28, 42.85.

9/3E-12E1. B. Nicholas. Records available: 1922, 1930-33, 1935, 1937-44, 1946-51. May 9, 27.95; Nov. 28, 28.39.

9/3E-19E1. Records available: 1919, 1922, 1930-32, 1935, 1938-48, 1949-51. May 10, 5.47. Measurement discontinued.

9/3E-19P1. Frey. Records available: 1930-43, 1951. May 10, 1.89; Nov. 29, 2.29.

9/3E-34D1. Clinkenbeard. Records available: 1919, 1922, 1930-32, 1934-43, 1945, 1947-51. May 9, 31.06; Nov. 28, 31.27.

9/4E-31K1. A. M. Monroe. Records available: 1930-32, 1935-51. May 10, 13.13; Nov. 29, 13.65.

10/2E-32P1. Yermo Mutual Water Co. Records available: 1919-20, 1922, 1924, 1929-51. May 9, 32.05; Nov. 28, 33.00.

10/3E-34E2. G. M. Bond. Records available: 1947-51. May 9, 8.42; Nov. 28, 9.84.

Santa Ana River Basin, San Bernardino Area

1N/4W-36F1. G. M. Cooley. Records furnished by city of San Bernardino. Records available: 1900, 1904, 1906, 1914-51. Jan. 5, 68.2; Mar. 6, 64.7; July 11, 66.9; Nov. 28, 73.3.

1S/3W-3N1. R. C. Gerber. Records furnished by city of San Bernardino. Records available: 1920-51. Jan. 4, 141.2; Mar. 6, 140.1; May 7, 141.9; July 10, 145.4; Sept. 25, 153.4; Nov. 27, 156.6.

1S/3W-17C1. Williams well. Records furnished by Gage Canal Co. Records available: 1892-94, 1896, 1898-1951.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	59.02	Apr. 7	57.62	July 7	63.87	Oct. 6	70.53
13	59.03	14	57.62	14	64.45	13	70.87
20	58.53	21	58.36	21	65.45	20	71.36
27	59.03	28	58.45	28	66.12	27	71.62
Feb. 3	58.86	May 5	58.70	Aug. 4	66.70	Nov. 3	72.62
10	58.78	12	59.20	11	67.20	10	72.88
17	58.62	19	59.53	18	67.70	17	73.12
24	58.28	26	59.87	25	68.28	24	73.45
Mar. 3	57.95	June 2	60.20	Sept. 1	68.78	Dec. 1	73.45
9	57.86	9	62.20	8	69.35	8	73.36
17	57.80	16	62.45	15	69.70	15	73.20
24	57.53	23	63.12	22	69.78	22	72.62
31	57.45	30	63.53	29	70.20	29	72.03

1S/3W-20B1. Emmet Martin. Records available: 1900, 1904, 1906-7, 1909, 1912, 1914-51.

Jan. 2	65.77	Apr. 12	67.5*	July 13	70.7*	Oct. 1	73.64
10	65.4*	May 1	68.14	30	71.38	4	73.6*
31	66.07	10	68.3*	Aug. 8	71.8*	Nov. 1	74.27
Feb. 16	62.8*	28	68.88	28	72.53	14	74.4*
28	66.39	June 15	69.6*	29	72.66	26	74.61
Mar. 9	66.6*	27	70.09	Sept. 7	72.8*	Dec. 2	74.7*
Apr. 2	70.10						

* By San Bernardino Valley Water Conservation District.

1S/3W-28E1. George Hinckley. Records furnished by San Bernardino Valley Water Conservation District. Records available: 1900, 1904, 1906, 1909, 1912, 1914-51. Jan. 11, 70.6; Feb. 16, 70.6; Mar. 7, 71.5; Apr. 10, 72.7; May 9, 72.3; June 15, 75.1; July 16, 74.9; dry after July 16.

1S/3W-32C1. W. H. Martin. Records furnished by San Bernardino Valley Water Conservation District. Records available: 1900, 1906, 1909, 1912, 1914-51. Jan. 8, 76.3; Mar. 7, 76.4; May 10, 76.7; July 16, 79.4; Sept. 7, 81.4; Nov. 9, 81.8.

1S/4W-4J1. W. J. Walsh. Records furnished by city of San Bernardino. Records available: 1915-51. Mar. 9, 29.60; May 10, 30.80; dry at 34 feet after July.

San Diego County

San Luis Rey River Basin

10/3W-1. On San Luis Rey Ranch. Records available: 1923-34, 1937-51. Jan. 3, dry; Apr. 5, 8.03; July 17 and Oct. 8, dry.

10/3W-1a. On San Luis Rey Ranch. Records available: 1937-51. Jan. 3, 8.92; Apr. 5, 8.13; July 17, 9.84; Oct. 8, 13.81.

10/3W-1b. On San Luis Rey Ranch. Records available: 1937-51. Jan. 3, 7.54; Apr. 5, 6.94; July 17, 8.60; Oct. 8, 12.58.

10/3W-1c. Fallbrook Public Utility District observation well. On San Luis Rey Ranch. Records available: 1939-51. Jan. 3, 11.23; Apr. 5, 11.42; July 17, 15.50; Oct. 8, 20.00.

10/3W-15. On Gird Ranch. Records available: 1923-34, 1937-51. Jan. 3, Apr. 5, July 17, and Oct. 8, dry.

10/3W-20P3. Bonsall School. Records available: 1920-24, 1937-51. Jan. 3, 13.16; Apr. 5, 12.95; July 17, 13.10; Oct. 8, 14.21.

10/3W-29C2. F. M. Sickler. Records available: 1948-51. Jan. 3, 12.03; Apr. 5, 11.55; July 17, 12.26; Oct. 8, 12.88.

10/3W-30. Fallbrook Public Utility District observation well. On property of San Diego County Water Co. Records available: 1939-51. Jan. 3, 16.95; Apr. 5, 16.83; July 17, 17.09; Oct. 8, 17.82.

11/4W-9F1. City of Oceanside observation well. On Williams Ranch. Measurements by city of Oceanside. Records available: 1940-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	40.43	Apr. 9	41.18	July 9	43.77	Nov. 12	46.60
Feb. 19	40.93	May 7	41.27	Aug. 6	44.89	Dec. 17	46.35
Mar. 12	39.77	June 11	43.22	Sept. 10	45.43		

11/4W-18. Carlsbad Mutual Water Co. Records available: 1939-51. Jan. 15, 35.70; Apr. 2, 53.20; July 2, 55.24; Oct. 8, 55.05.

11/5W-13a. City of Oceanside. Records available: 1937-51.

Jan. 13	27.75	Apr. 9	35.58	July 9	39.25	Nov. 12	31.25
Feb. 19	25.79	May 7	31.17	Aug. 6	35.88	Dec. 17	29.50
Mar. 12	27.37	June 11	36.42	Sept. 10	31.83		

11/5W-13b. City of Oceanside. Records available: 1937-51.

Jan. 13	27.83	Apr. 9	30.00	July 9	35.08	Nov. 12	31.75
Feb. 19	26.46	May 7	30.83	Aug. 6	36.00	Dec. 17	30.00
Mar. 12	26.33	June 11	33.37	Sept. 9	33.00		

11/5W-13c. City of Oceanside. Records available: 1937-51

Jan. 13	24.17	Apr. 9	28.00	July 9	31.08	Nov. 12	27.58
Feb. 19	23.17	May 7	26.33	Aug. 6	30.08	Dec. 17	26.33
Mar. 12	23.67	June 11	28.60	Sept. 10	26.75		

11/5W-15. City of Oceanside. Records available: 1939-51.

Jan. 13	17.96	Apr. 9	21.08	July 9	23.75	Nov. 12	21.25
Feb. 19	17.33	May 7	19.83	Aug. 6	23.36	Dec. 17	20.50
Mar. 12	17.58	June 11	22.46	Sept. 10	21.50		

San Dieguito River Basin

12/1W-31H2. City of San Diego. Records available: 1929-51. Mar. 23, 11.03; July 9, 12.24; Oct. 1. 13.46.

12/1W-33. H. G. Fenton. Records available: 1926-51. Mar. 23, 17.92; July 9, 18.86; Oct. 1, 19.40.

12/1W-33a. F. B. Gierman. Records available: 1943-51. Mar. 23, 4.04; July 9, 4.99; Oct. 1, 5.30.

12/1W-35K1. San Pasqual Academy. Formerly June Chase. Records available: 1945-51. Mar. 23, 17.07: July 9, 22.66.

12/1W-36D1. Jorgenson. Records available: 1945-51. Mar. 23, 23.89; July 9, 23.58; Oct. 1, 27.30.

San Diego River Basin

14/1W 36R1. City of San Diego. Records available: 1948-51. Mar. 22, 39.37; July 20, 40.21; Oct. 11, 41.10.

15/1E-2R2. San Diego County. Records available: 1949-51. Mar. 22, 18.90; July 20, and Oct. 11, dry.

15/1E-7. San Diego Products Co. Records available: 1932-51. Mar. 22, 18.90; July 20, and Oct. 11, dry.

15/1E-10. Foster Dairy. Records available: 1948-51. Mar. 22, 36.27; July 20, 38.50; Oct. 11, 39.07.

15/1E-16C1. Pratt test well. Records available: 1937-49, 1951. Mar. 22, July 20, and Oct. 11, dry.

15/1E-17a. On Dr. Irey Ranch. Records available: 1927-33, 1935, 1937-49, 1951. Mar. 22, July 20, and Oct. 11, dry.

15/1E-17b. In County Yard. Records available: 1927-34, 1937-49, 1951. Mar. 22, July 20, and Oct. 11, dry.

15/1E-17B1. On Truttman Ranch. Records available: 1937-51. Mar. 22, 40.98; July 20, 42.27; Oct. 11, 41.68.

15/1E-17H6. Irrigation District Well Co. Records available: 1929-32, 1934-51. Mar. 22, 40.97; July 20, 42.52; Oct. 11, 41.98.

15/1E-19D1. Davidson & Brown. Records available: 1937-51. Mar. 22, July 20, and Oct. 11, dry.

15/1E-20B1. De Matteo. Records available: 1948-51. Mar. 22, 40.50; July 20, 40.54; Oct. 11, 40.36.

15/1W-13N2. Riverview well 3. Records available: 1930, 1934-51. Mar. 22, July 20, and Oct. 11, dry.

15/1W-13R5. Mr. Levi. Records available: 1927-49, 1951. Mar. 22, July 20, and Oct. 11, dry.

15/1W-23H3. City of San Diego. Records available: 1946-51. Mar. 2, July 20, and Oct. 11, dry.

15/1W-24b. E. G. Squires. Records available: 1950-51. July 20, 34.29; Oct. 11, 34.88.

15/1W-24D7. Riverview well 2. Records available: 1937-51. Mar. 22, 25.73; July 20, 32.49; Oct. 11, 33.75.

15/1W-27. On County Farm. Records available: 1927-51. Mar. 22, 19.76; July 20, 21.64; Oct. 11, 22.47.

15/1W-28. Dr. Good. Records available: 1915, 1919-51. Mar. 22, 18.44; July 20, 21.60; Oct. 11, 20.65.

16/2W-16a. Mr. Jaussaud. Records available: 1937-51. Mar. 22, 20.73; July 20, 22.50; and Oct. 11, dry.

16/3W-22. H. Tatreau. Records available: 1922-51. Mar. 22, July 20, and Oct. 11, dry.

16/3W-23. S. H. McIntosh. Records available: 1927-51. Mar. 22, 13.19; July 20, 14.49; Oct. 11, 15.33.

16/3W-24. R. I. Officer. Records available: 1925-33, 1937-51. Mar. 22, 14.86; July 20, 15.73; Oct. 11, 17.05.

Sweetwater River Basin

17/1W-19a. California Water and Telephone Co. Records available: 1943-51. Mar. 20, 30.59; July 18, 29.15; Oct. 9, 28.19.

Otay River Basin

18/2W-22. G. W. St. Clair. Records available: 1916-51. Mar. 20, 30.49; July 18, 34.58; Oct. 9, 38.14.

Tia Juana River Basin

18/2W-33. Hewitt Bros. Hog Ranch. Records available: 1927-51. Mar. 20, 19.71; July 18, 21.01; Oct. 9, dry.

18/2W-34. P. Vanderpool. Records available: 1927-51. Mar. 20, 19,07; July 18, 21.50; Oct. 9, 23.89.

18/2W-34a. C. Iguchi. Records available: 1927-51. Mar. 20, 17.94; July 18 and Oct. 9, dry.

19/2W-4. At Nestor Bridge. Records available: 1933-51. Mar. 20, 17.53; July 18, 18.68; Oct. 9, 20.71.

San Joaquin County

Mokelumne River Basin

Measurements were made by the East Bay Municipal Utility District

3N/6-3K11. F. B. Mills Estate. Near Lodi. Drilled irrigation water-table well in Victor formation, diameter 12 inches, depth 120 feet. Land-surface datum is 41.03 feet above msl. Highest water level 11.62 below lsd, Jan. 2, 1951; lowest 21.55 below lsd, Apr. 1, 1948. Records available: 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	11.62	Apr. 2	12.70	Aug. 31	14.72	Nov. 1	14.96
Feb. 1	12.02	May 1	12.52	Oct. 1	14.40	30	15.41
Mar. 1	12.09	Aug. 1	14.24				

3N/6-17D11. A Delu. Drilled irrigation water-table well in Victor formation, diameter 12 inches, depth 93 feet. Land-surface datum is 23.80 feet above msl. Highest water level 10.41 below lsd, Apr. 2, 1951; lowest 21.79 below lsd, Sept. 1, 1950. Records available: 1949-51.

Jan. 2	13.79	Apr. 2	10.41	July 2	14.94	Nov. 1	16.69
Feb. 1	12.13	May 1	10.46	Aug. 31	19.73	30	15.64
Mar. 1	10.82	June 1	11.46	Oct. 1	18.15		

3N/6-25R11. E. E. Morse Estate. Drilled domestic water-table well in Victor formation, diameter 10 inches, depth 93 feet. Land-surface datum is 40.55 feet above msl. Highest water level 29.59 below lsd, Jan. 3, 1951; lowest 36.14 below lsd, Oct. 4, 1950. Records available: 1948-51. Jan. 3, 29.59; Oct. 3, 33.10.

3N/6-36R2. Leland W. Bunch. Drilled domestic water-table well in Victor formation, diameter 8 inches, depth 85 feet. Land-surface datum is 37.97 feet above msl. Highest water level 11.72 below lsd, Apr. 8, 1938; lowest 33.32 below lsd, Oct. 5, 1949. Records available: 1926-29, 1935-51.

3N/6-36R2 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	26.96	Apr. 2	23.65	July 2	b26.88	Oct. 3	28.49
Feb. 1	24.90	May 1	b24.91	Aug. 1	27.52	Nov. 1	28.04
Mar. 3	24.05	June 1	a25.74	31	28.93	30	26.81

a Pumping.
b Pumped recently.

3N/7-3C1. Jacob Knoll. Drilled observation water-table well in Victor formation, diameter 8 inches, depth 48 feet, cased to 48, perforations 38-48. Land-surface datum is 80.45 feet above msl. Highest water level 25.31 below lsd, June 2, 1943; lowest 39.80 below lsd, Feb. 1, 1950. Records available: 1935-51.

Jan. 4	35.65	Apr. 2	35.14	July 2	33.80	Oct. 4	37.73
Feb. 1	35.34	May 1	33.65	Aug. 1	35.62	Nov. 1	38.30
Mar. 1	34.96	June 1	30.86	31	36.92	30	38.57

3N/7-6M8. R. E. and Ruth F. Coker. Cherokee Lane near Southern Pacific Railroad, Lodi. Drilled observation water-table well in Victor formation, diameter 4 inches, depth 40 feet, cased to 40, perforations 30-40. Land-surface datum is 53.35 feet above msl. Highest water level 17.82 below lsd, Apr. 30, 1943; lowest 30.78 below lsd, Apr. 1, 1948. Records available: 1935-51.

Jan. 3	25.15	Apr. 2	24.06	July 2	25.00	Oct. 3	27.29
Feb. 1	24.34	May 1	25.49	Aug. 1	26.47	Nov. 1	27.49
Mar. 1	23.71	June 1	24.65	31	27.09	30	27.13

3N/7-7M1. J. and Rachel K. Goetken. Cherokee Lane. Drilled irrigation water-table well in Victor formation, diameter 10 inches, depth 49 feet. Land-surface datum is 52.63 feet above msl. Highest water level 24.51 below lsd, Apr. 6, 1938; lowest 42.52 below lsd, May 1, 1950. Records available: 1935-51.

Jan. 3	36.11	Apr. 2	35.04	July 2	39.00	Oct. 3	36.67
Feb. 1	35.02	May 1	40.47	Aug. 1	38.66	Nov. 1	35.64
Mar. 1	33.94	June 1	38.57	31	38.19	30	34.75

3N/7-10L3. Edward Preszler. Drilled observation water-table well in Victor formation, diameter 10 inches, depth 57 feet, cased to 57, perforations 47-57. Land-surface datum is 72.59 feet above msl. Highest water level 35.33 below lsd, Jan. 12, 1939; lowest 52.39 below lsd, Sept. 2, 1947. Records available: 1935-51.

Jan. 4	48.69	Apr. 2	47.82	July 2	42.64	Oct. 3	46.17
Feb. 1	48.30	May 1	47.37	Aug. 1	42.99	Nov. 1	47.20
Mar. 1	48.17	June 1	42.58	31	43.82	30	48.05

3N/7-10L4. Edward Preszler. Drilled observation water-table well in Victor, Arroyo Seco and Laguna formations, diameter 12 to 10 inches, depth 190 feet, cased to 190. Land-surface datum is 72.37 feet above msl. Highest water level 35.13 below lsd, Jan. 12, 1939; lowest 60.49 below lsd, May 1, 1950. Records available: 1935-51.

Jan. 4	48.38	Apr. 2	47.98	July 2	55.66	Oct. 3	53.27
Feb. 1	47.50	May 1	57.39	Aug. 1	58.92	Nov. 1	51.10
Mar. 1	46.53	June 1	b55.73	31	56.89	30	49.46

b Pumped recently.

3N/7-15P11. Raymond Mettler. Drilled domestic water-table well in Victor formation, diameter 6 inches, reported depth 80 feet. Land-surface datum is 66.90 feet above msl. Highest water level 47.46 below lsd, Jan. 13, 1948; lowest 64.19 below lsd, Aug. 1, 1950. Records available: 1948-51.

Jan. 4	53.65	Apr. 2	50.39	July 2	c68.26	Oct. 3	57.45
Feb. 1	50.26	May 1	55.44	Aug. 1	c61.69	Nov. 1	55.83
Mar. 1	51.04	June 1	54.77	31	59.37	30	54.34

c Nearby well being pumped.

3N/7-18N12. Joe Garnero. Drilled domestic water-table well in Victor formation, diameter 6 inches, depth 78 feet. Land-surface datum is 47.44 feet above msl. Highest water level 30.14 below lsd, Feb. 3, 1947; lowest 44.40 below lsd, Aug. 1, 1950. Records available: 1946-51.

3N/7-18N12 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	35.37	Apr. 2	33.74	Aug. 31	38.96	Nov. 1	35.09
Feb. 1	34.51	May 1	37.56	Oct. 3	36.38	30	33.87
Mar. 1	33.62	July 2	40.38				

3N/7-27F3. John F. Heitzmann. Drilled observation water-table well in Victor formation, diameter 8 inches, depth 91 feet, cased to 62. Land-surface datum is 59.42 feet above msl. Highest water level 26.12 below lsd, Mar. 31, 1943; lowest 56.19 below lsd, Sept. 1, 1949. Records available: 1935-51.

Jan. 3	52.12	Apr. 2	48.76	July 2	52.82	Oct. 3	55.18
Feb. 1	51.10	May 1	49.26	Aug. 1	54.07	Nov. 1	54.04
Mar. 1	49.68	June 1	50.04	31	55.60	30	52.69

4N/6-12R11. A. T. Carlson. Drilled domestic and irrigation water-table well in Victor, Arroyo Seco, and Laguna formations, diameter 8 inches, reported depth 150 feet. Land-surface datum is 57.95 feet above msl. Highest water level 39.22 below lsd, Apr. 1, 1949; lowest 52.50 below lsd, Aug. 1, 1950, Aug. 31, 1951. Records available: 1948-51.

Jan. 2	43.74	Apr. 2	40.50	July 2	46.31	Oct. 3	47.34
Feb. 1	42.51	May 1	41.00	Aug. 1	51.36	Nov. 1	45.66
Mar. 1	41.19	June 1	b45.02	31	52.50	30	44.06

b Pumped recently.

4N/6-13J11. Dorothy Woodworth. Drilled domestic water-table well in Victor formation, diameter 6 inches, depth 74 feet. Land-surface datum is 59.43 feet above msl. Highest water level 40.18 below lsd, Apr. 1, 1949; lowest 52.83 below lsd, Sept. 1, 1950. Records available: 1948-51.

Jan. 2	44.21	Apr. 2	41.24	July 2	47.48	Oct. 3	47.03
Feb. 1	43.19	May 1	41.42	Aug. 1	50.01	Nov. 1	45.57
Mar. 1	41.50	June 1	41.30	31	50.34	30	44.14

4N/6-34R1. E. M. Smith. Drilled unused water-table well in Victor formation, diameter 10 inches, reported depth 18 feet. Land-surface datum is 43.28 feet above msl. Highest water level 2.60 below lsd, June 14, 1935; lowest dry at 18.5, Apr. 3, 1950. Records available: 1926-29, 1935-51.

Jan. 2	9.84	Apr. 2	11.95	July 2	11.38	Oct. 1	11.72
Feb. 1	10.54	May 1	9.99	Aug. 1	11.95	Nov. 1	11.89
Mar. 1	11.20	June 1	9.68	31	12.31	30	8.66

4N/6-36D1. D. D. Smith and S. H. and I. Zimmerman. Drilled unused water-table well in Victor formation, diameter 6 inches, depth 35 feet. Land-surface datum is 49.90 feet above msl. Highest water level 15.02 below lsd, Mar. 31, 1943; lowest dry at 35, May 1, 1946. Records available: 1926-29, 1935-51.

Jan. 2	20.61	Apr. 2	20.79	July 2	24.53	Oct. 1	22.49
Feb. 1	20.76	May 1	c27.22	Aug. 1	24.50	Nov. 1	22.57
Mar. 1	20.32	June 1	22.59	31	23.26	30	22.58

c Nearby well being pumped.

4N/7-15B3. Robert L. Carter. Drilled observation water-table well in Victor formation, diameter 8 inches, depth 85 feet, cased to 69. Land-surface datum is 92.05 feet above msl. Highest water level 32.11 below lsd, Sept. 1, 1939; lowest 67.48 below lsd, Nov. 30, 1951. Records available: 1935-51.

Jan. 4	62.63	Apr. 2	59.24	July 2	62.72	Oct. 4	66.58
Feb. 1	61.56	May 1	59.89	Aug. 1	65.30	Nov. 1	65.53
Mar. 1	60.06	June 1	60.46	31	67.03	30	67.48

4N/7-22Q4. Adolphus Eddlemon. Drilled observation water-table well in Victor formation and underlying unclassified sand and gravel, diameter 10 inches, depth 51 feet, cased to 51, perforations 39-49. Land-surface datum is 83.61 feet above msl. Highest water level 35.95 below lsd, Apr. 30, 1943; lowest dry at 50, July-Nov. 1949, June-Dec., 1950, July-Nov., 1951. Records available: 1935-51.

Jan. 4	48.54	Apr. 2	45.66	July 2	(f)	Oct. 4	(f)
Feb. 1	47.49	May 1	46.42	Aug. 1	(f)	Nov. 1	(f)
Mar. 1	46.47	June 1	c48.33	31	(f)	30	48.18

c Nearby well being pumped.
f Dry.

4N/7-22Q5. Adolphus Eddlemon. Drilled observation artesian well in Victor, Arroyo Seco, and Laguna formations, diameter 10 inches, depth 266 feet, cased at 0-79 and 129-149. Land-surface datum is 83.83 feet above msl. Highest water level 36.34 below lsd, Mar. 31, 1943; lowest 60.06 below lsd, July 3, 1950. Records available: 1935-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	48.03	Apr. 2	46.83	July 2	57.57	Oct. 4	51.98
Feb. 1	46.97	May 1	51.89	Aug. 1	59.43	Nov. 1	50.53
Mar. 1	46.00	June 1	c55.69	31	58.40	30	48.01

c Nearby well being pumped.

4N/7-27P1. Frank and Leonard W. Buck. Drilled observation water-table well in Victor formation, diameter 10 inches, depth 49 feet, cased to 49, perforations 39-49. Land-surface datum is 81.20 feet above msl. Highest water level 24.60 below lsd, June 3, 1938; lowest 37.43 below lsd, Sept. 7, 1949. Records available: 1935-51.

Jan. 4	30.62	Apr. 2	31.35	July 2	34.01	Oct. 4	35.92
Feb. 1	30.51	May 1	32.51	Aug. 1	35.64	Nov. 1	35.79
Mar. 1	30.30	June 1	31.83	31	36.31	30	35.57

4N/7-30E4. Charles Weber. Drilled unused water-table well in Victor formation, diameter 6 inches, depth 76 feet. Land-surface datum is 57.18 feet above msl. Highest water level 26.35 below lsd, Jan. 4, 1944; lowest 43.95 below lsd, Sept. 1, 1950. Records available: 1941-51.

Jan. 2	35.97	Apr. 2	33.16	July 2	40.36	Oct. 3	36.96
Feb. 1	34.82	May 1	36.00	Aug. 1	39.66	Nov. 1	36.00
Mar. 1	33.54	June 1	38.24	31	40.24	30	35.04

4N/7-31M3. Charles H. Woest. Drilled domestic water-table well in Victor formation, diameter 6 inches, depth 50 feet. Land-surface datum is 57.78 feet above msl. Highest water level 15.94 below lsd, June 3, 1938; lowest 32.73 below lsd, Apr. 1, 1948. Records available: 1935-51.

Jan. 2	22.20	Apr. 2	23.77	July 2	24.97	Oct. 3	25.43
Feb. 1	21.77	May 1	27.92	Aug. 1	26.60	Nov. 1	25.84
Mar. 1	22.32	June 1	22.56	31	26.06	30	25.99

4N/7-31N5. Jacob Goehring. Drilled observation water-table well in alluvium, diameter 4 inches, depth 25 feet, cased to 25, perforations 15-25. Land-surface datum is 44.12 feet above msl. Highest water level 1.73 below lsd, Apr. 30, 1943; lowest 14.63 below lsd, Mar. 1, 1948. Records available: 1935-51.

Jan. 3	7.24	Apr. 2	8.40	July 2	7.27	Oct. 3	9.29
Feb. 1	6.85	May 1	7.62	Aug. 1	8.60	Nov. 1	9.80
Mar. 1	7.95	June 1	5.25	31	9.00	30	10.98

4N/7-34G1. John J. Schmiedt. Drilled observation water-table well in alluvium, diameter 8 inches, depth 30 feet, cased to 30, perforations 20-30. Land-surface datum is 57.50 feet above msl. Highest water level 2.22 below lsd, June 2, 1941; lowest 12.39 below lsd, Mar. 1, 1948. Records available: 1935-51.

Jan. 4	4.63	Apr. 2	5.70	Aug. 1	10.27	Nov. 1	10.05
Feb. 1	0.45	June 1	6.05	31	10.51	30	9.84
Mar. 1	4.92	July 2	7.95	Oct. 4	10.33		

Santa Barbara County

Carpinteria Basin

4/25-19F4. M. F. Lewis. Near Carpinteria. Drilled domestic and irrigation artesian well in older alluvium and Casitas formation, diameter 8 inches, depth 250 feet. Land-surface datum is 106 feet above msl. Highest water level 77.10 below lsd, May 27, 1943; lowest 123.40 below lsd, Mar. 22, 1950. Records available: 1941-51.

Jan. 31	110.22	Apr. 23	108.68	July 30	116.98	Nov. 26	118.53
Feb. 28	108.15	May 25	108.88	Sept. 25	117.70	Dec. 24	115.96
Mar. 29	107.01	June 26	111.80	Oct. 31	119.16		

4/25-19J5. Lyman & Young. Drilled unused artesian well in alluvium, diameter 8 inches, depth 100 feet. Land surface datum is about 55 feet above msl. Highest water level 39.41 below lsd, Apr. 23, 1942; lowest 92.95 below lsd, Sept. 25, 1951. Records available: 1941-51

4/25-19J5 --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	75.77	Apr. 23	c76.07	July 30	85.26	Oct. 31	92.81
Feb. 28	73.77	May 25	79.92	Aug. 30	87.89	Nov. 26	89.42
Mar. 29	72.54	June 26	c82.80	Sept. 25	92.95	Dec. 24	85.37

c Nearby well being pumped.

4/25-20L4. Carpinteria County Water District. Drilled recharge water-table well in alluvium and Casitas formation, diameter 10 inches, depth 264 feet, cased to 254, perforations 62-254. Land-surface datum is about 111 feet above msl. Highest water level 128.83 below lsd, May 23, 1949; lowest 153.17 below lsd, Sept. 25, 1951. Records available: 1949-51.

Jan. 31	132.96	Apr. 23	136.14	July 30	144.84	Oct. 31	149.26
Feb. 28	130.54	May 25	134.58	Aug. 30	149.64	Nov. 26	148.09
Mar. 29	136.91	June 26	140.26	Sept. 25	153.17	Dec. 24	142.54

4/25-20Q2. J. B. Romero. Drilled unused artesian well in alluvium, diameter 10 inches, reported depth 250 feet, measured depth 188 feet. Land-surface datum is about 41 feet above msl. Highest water level 19.34 below lsd, Apr. 30, 1942; lowest 85.72 below lsd, Sept. 30, 1949. Records available: 1941-51.

Jan. 31	62.79	Apr. 23	c85.20	July 30	81.20	Oct. 31	76.44
Feb. 28	61.22	May 25	66.77	Aug. 30	82.16	Nov. 26	74.25
Mar. 29	61.31	June 26	71.32	Sept. 25	c89.85	Dec. 24	71.71

c Nearby well being pumped.

4/25-21R1. Ben Moore. Drilled unused water-table well in Casitas formation, diameter 12 inches, depth 468 feet, cased to 434, perforations 82-90, 120-150, 170-176, 240, 289-304, 314-318, 341, 356-386, 412-416. Land-surface datum is about 127 feet above msl. Highest water level 64.47 below lsd, June 5, 1945; lowest 126.08 below lsd, Nov. 26, 1951. Records available: 1941-51.

Jan. 31	118.10	Apr. 23	117.60	July 30	119.68	Oct. 31	125.25
Feb. 28	117.70	May 25	117.87	Aug. 30	120.99	Nov. 26	126.08
Mar. 29	117.27	June 26	118.54	Sept. 25	122.53	Dec. 24	125.86

4/25-26A1. Moses Mesa Associates Co. Drilled unused water-table well in Casitas formation, diameter 10 inches, depth 480 feet, cased to 480, perforations 228-480. Land-surface datum is about 412 feet above msl. Highest water level 230.09 below lsd, Feb. 8, 1946; lowest 369.70 below lsd, Oct. 31, 1951. Records available: 1946-51.

Jan. 31	327.44	Apr. 23	337.07	July 30	354.79	Oct. 31	369.70
Feb. 28	323.81	May 25	330.15	Aug. 30	c360.66	Nov. 26	365.50
Mar. 29	323.51	June 26	346.92	Sept. 25	359.05	Dec. 24	356.13

c Nearby well being pumped.

4/25-26C2. Shepard Mesa Mutual Water Co. Drilled unused water-table well in Casitas formation, diameter 10 inches, depth 450 feet. Land-surface datum is about 432 feet above msl. Highest water level 226.10 below lsd, May 6, 1946; lowest 353.99 below lsd, Nov. 26, 1951. Records available: 1946-51.

Jan. 31	332.25	Apr. 23	343.50	July 30	c349.25	Oct. 31	353.64
Feb. 28	330.62	May 25	342.09	Aug. 30	c350.86	Nov. 26	353.99
Mar. 29	335.68	June 26	c347.25	Sept. 25	352.48	Dec. 24	352.99

c Nearby well being pumped.

4/25-27Q2. A. F. Heimlich. Drilled unused artesian well in Casitas formation, diameter 10 inches, depth 198 feet. Land-surface datum is about 127 feet above msl. Highest water level 92.86 below lsd, Apr. 30, 1945; lowest 175.42 below lsd, Sept. 25, 1951. Records available: 1941-51.

Jan. 31	156.87	Apr. 23	151.68	July 30	169.43	Oct. 31	175.19
Feb. 28	155.34	May 25	156.47	Aug. 30	173.86	Nov. 26	174.91
Mar. 29	154.08	June 26	158.91	Sept. 25	175.42	Dec. 24	170.30

4/25-27R2. W. H. Yule. Drilled irrigation artesian well in Casitas formation, diameter 12 to 10 inches, depth 421 feet, cased to 421, perforations 295-310, 350-378, 392-420. Land-surface datum is about 132 feet above msl. Highest water level 94.96 below lsd, Apr. 30, 1945; lowest 182.23 below lsd, Sept. 25, 1951. Records available: 1941-51.

Jan. 31	161.07	May 25	162.68	Sept. 25	182.23	Nov. 26	178.24
Feb. 28	159.03	July 30	174.79	Oct. 31	181.33	Dec. 24	173.72
Mar. 29	158.10						

4/25-28J1. W. C. and C. A. Catlin. Drilled domestic and irrigation water-table well in alluvium, diameter 12 inches, depth 175 feet, cased to 175, perforations 59-175. Land-surface datum is about 89 feet above msl. Highest water level 23 below lsd, June 1919; lowest 122.85 below lsd, Nov. 7, 1949. Records available: 1919, 1930, 1937-38, 1940-50. No measurement made in 1951.

4/25-28M1. Mrs. A. Baylor. Drilled unused artesian well in alluvium, diameter 2 inches, depth 152 feet. Land-surface datum is about 57 feet above msl. Highest water level 19.84 below lsd, Apr. 30, 1945; lowest dry Aug. 30 - Sept. 25, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	75.52	Apr. 23	82.18	July 30	95.35	Oct. 31	95.61
Feb. 28	73.35	May 25	83.07	Aug. 30	(f)	Nov. 26	91.66
Mar. 29	75.31	June 26	90.34	Sept. 25	(f)	Dec. 24	86.40

f Dry.

4/25-29D1. H. Sturmer. Drilled domestic and irrigation artesian well in alluvium, diameter 12 inches, depth 147 feet. Land-surface datum is about 17 feet above msl. Highest water level 1.48 below lsd, Apr. 23, 1942; lowest 57.28 below lsd, Sept. 25, 1951. Records available: 1928-29, 1938, 1941-51.

Jan. 31	37.24	Apr. 23	39.44	Aug. 30	53.42	Nov. 26	51.19
Feb. 28	35.64	May 25	40.95	Sept. 25	57.28	Dec. 24	47.21
Mar. 29	35.50	June 26	47.94	Oct. 31	54.37		

4/25-29L1. A. P. Salzgeber. Holly Ave and Third St., Carpinteria. Drilled unused artesian well in alluvium, diameter 2 inches, depth 110 feet. Land-surface datum is about 18 feet above msl. Highest water level 24.07 below lsd, Feb. 28, 1951; lowest 51.24 below lsd, Sept. 25, 1951. Records available: 1950-51.

Jan. 31	25.38	Apr. 23	36.60	July 30	43.40	Oct. 31	43.18
Feb. 28	24.07	May 25	33.74	Aug. 30	47.16	Nov. 26	38.97
Mar. 29	24.26	June 25	39.60	Sept. 25	51.24	Dec. 24	34.95

4/25-29R1. Carpinteria Union High School. Drilled unused artesian well in alluvium, diameter 10 inches, depth 176 feet. Land-surface datum is about 32 feet above msl. Highest water level 8.67 below lsd, Apr. 23, 1942; lowest 66.33 below lsd, Sept. 25, 1951. Records available: 1941-51.

Jan. 31	42.64	Apr. 23	40.51	July 30	65.33	Oct. 31	63.68
Feb. 28	41.16	May 25	57.96	Aug. 30	65.51	Nov. 26	54.52
Mar. 29	41.71	June 26	54.74	Sept. 25	66.33	Dec. 24	49.13

4/25-30D1. Sandyland Beach Club. Drilled domestic artesian well in alluvium, diameter 10 inches, depth 210 feet. Land-surface datum is about 7 feet above msl. Highest water level flowing, May 6, 1938; lowest 48.73 below lsd, Nov. 26, 1951. Records available: 1938, 1941-51

Jan. 31	20.11	Apr. 23	24.50	July 30	b46.70	Oct. 31	43.77
Feb. 28	18.13	May 25	b31.71	Aug. 30	34.86	Nov. 26	48.73
Mar. 29	17.07	June 26	30.98	Sept. 25	35.62	Dec. 24	29.97

b Pumped recently.

4/25-30D2. State Highway Department. Drilled unused water-table well in alluvium, diameter 8 inches, depth 93 feet. Land-surface datum is about 18 feet above msl. Highest water level 25.25 below lsd, Mar. 29, 1951; lowest 41.39 below lsd, Sept. 25, 1951. Records available: 1949-51.

Jan. 31	28.54	Apr. 23	30.79	July 30	39.76	Oct. 31	40.71
Feb. 28	26.38	May 25	37.35	Aug. 30	41.20	Nov. 26	38.19
Mar. 29	25.25	June 26	35.65	Sept. 25	41.39	Dec. 24	34.91

4/25-34F2. T. H. Canfield. Drilled gravel-packed unused water-table well in Santa Barbara formation, diameter 12 inches, depth 563 feet, cased to 563, perforated 83-563. Land-surface datum is 154.1 feet above msl. Highest water level 125.50 below lsd, June 2, 1949; lowest 135.98 below lsd Apr. 23, 1951. Records available: 1949-51.

Jan. 31	131.60	May 25	134.01	Aug. 30	134.54	Nov. 26	135.19
Feb. 28	133.63	June 26	133.78	Sept. 25	134.65	Dec. 24	135.22
Apr. 23	135.98	July 30	134.29	Oct. 31	135.13		

4/25-35B1. E. R. Dickover. Formerly R. Nichols. Drilled domestic water-table well in Casitas formation, diameter 12 inches, depth 140 feet. Land-surface datum is about 139 feet above msl. Highe st water level 19.18 below lsd, Mar. 8, 1945; lowest 134.18 below lsd, Sept. 25, 1951. Records available: 1941-51. Jan. 31, 100.10; June 26, 106.68; July 30, 131.70, pumped recently; Sept. 25, 134.18; Oct. 31, 132.44; Nov. 26, 124.39; Dec. 24, 117.54.

4/26-23A2. Frank Wymond. Drilled domestic and irrigation artesian well in Casitas formation, diameter 10 inches, depth 330 feet. Land-surface datum is about 63 feet above msl. Highest water level 45.44 below lsd, Apr. 25, 1950; lowest 85.00 below lsd, Apr. 23, 1951. Records available: 1941, 1947-51. Feb. 28, 53.52; Mar. 29, 62.89; Apr. 23, 85.00; June 26, 64.04; Sept. 25, 76.58; Nov. 26, 56.97; Dec. 24, 55.50.

4/26-24F2. A. F. Thurmond. Drilled irrigation artesian well in alluvium, diameter 12 inches, depth 200 feet, perforations 20-148. Land-surface datum is about 11 feet above msl. Highest water level 2.13 below lsd, Mar. 19, 1942; lowest 33.97 below lsd, Sept. 25, 1951. Records available: 1938, 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	15.05	Apr. 23	28.48	July 30	28.18	Oct. 31	33.93
Feb. 28	14.27	May 25	27.29	Aug. 30	30.35	Nov. 26	27.80
Mar. 29	20.19	June 26	24.58	Sept. 25	33.97	Dec. 24	18.03

Goleta Basin

4/27-21B1. City of Santa Barbara. Victoria and Rancheria Sts. Drilled unused artesian well in older alluvium and Santa Barbara formation, diameter 16 inches, depth 454 feet, perforations 145-350. Land-surface datum is about 68 feet above msl. Highest water level 37.04 below lsd, Feb. 2, 1948; lowest 99.58 below lsd, Oct. 18, 19, 1951. Records available: 1948-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	88.80	90.02	87.53	89.42	91.08	93.50	96.33	98.11	97.02	98.47	96.51	89.37
2	88.84	90.02	87.55	89.50	90.92	93.55	96.42	98.13	96.88	98.39	96.10	89.23
3	88.86	89.81	87.70	89.59	90.78	93.57	96.52	98.17	96.90	98.44	95.60	89.00
4	88.90	89.63	87.68	89.61	90.68	93.63	96.60	98.21	96.97	98.48	95.21	88.59
5	88.97	89.49	87.66	89.69	90.63	93.80	96.61	98.25	97.05	98.60	94.86	88.54
6	89.11	89.42	87.70	89.76	90.62	93.92	96.67	98.29	97.17	98.76	94.47	88.37
7	89.20	89.37	87.55	89.84	90.69	94.00	96.72	.....	97.32	98.79	94.13	88.32
8	89.17	89.31	87.37	89.85	90.76	94.09	96.77	.....	97.36	98.86	93.85	88.09
9	89.18	89.22	87.23	89.87	90.89	94.18	96.85	.....	97.43	98.96	93.58	87.86
10	89.29	89.13	87.20	89.89	91.06	94.24	96.88	.....	97.50	99.09	93.32	87.61
11	89.26	88.92	87.09	89.92	91.23	94.23	96.89	98.44	97.55	99.13	93.06	87.31
12	89.27	88.82	86.94	89.98	91.39	94.26	97.01	98.38	97.64	99.15	92.76	87.09
13	89.48	88.79	86.59	90.05	91.52	94.43	97.10	98.21	97.81	99.22	92.59	86.98
14	89.65	88.64	86.60	90.07	91.59	94.62	97.19	98.07	97.91	99.34	92.37	86.94
15	89.55	88.43	86.71	90.20	91.75	94.77	97.24	98.01	97.99	99.38	92.23	86.70
16	89.51	88.28	86.83	90.33	92.00	94.83	97.28	97.97	98.15	99.42	92.18	86.41
17	89.65	88.08	86.93	90.43	92.08	94.93	97.36	97.95	98.21	99.48	92.02	86.27
18	89.67	87.84	87.18	90.57	92.15	95.03	97.44	97.76	98.24	99.58	91.83	85.96
19	89.67	87.72	87.45	90.63	92.19	95.13	97.51	97.58	98.31	99.58	91.62	85.75
20	89.75	87.56	87.59	90.67	92.31	95.24	97.53	97.42	98.43	99.49	91.48	85.73
21	89.83	87.44	87.79	90.77	92.38	95.35	97.56	97.30	98.49	99.50	91.37	85.64
22	89.81	87.43	87.95	90.79	92.57	95.45	97.63	97.15	98.57	99.55	91.19	85.39
23	89.81	87.42	88.15	90.80	92.74	95.52	97.73	96.99	98.63	99.43	91.03	85.17
24	89.86	87.50	88.29	90.84	92.85	95.59	97.77	96.88	98.75	99.24	90.99	85.05
25	89.89	87.55	88.37	90.86	92.93	95.65	97.81	96.82	98.81	99.21	90.82	84.97
26	89.88	87.52	88.48	90.95	93.00	95.75	97.89	96.87	98.85	99.11	90.53	84.82
27	89.95	87.52	88.65	91.12	93.10	95.86	97.99	96.95	98.92	98.64	90.30	84.60
28	89.98	87.58	88.84	91.07	93.19	95.97	98.02	97.02	98.85	98.17	90.07	84.34
29	89.86		89.07	91.07	93.23	96.10	98.10	97.16	.....	97.73	89.87	84.00
30	89.84		89.17	91.14	93.28	96.26	98.12	97.40	.....	97.32	89.66	83.81
31	89.96		89.25		93.39		98.12	97.21		96.97		83.81

4/28-2N2. County of Santa Barbara. Tuckers Grove. Drilled unused water-table well in Santa Barbara formation, diameter 6 inches, depth 100 feet. Land-surface datum is 177.65 feet above msl. Highest water level 14.71 below lsd, May 6, 1945; lowest 61.34 below lsd, Nov. 26, 1951. Records available: 1943-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	52.83	Apr. 23	54.17	July 30	55.95	Oct. 31	57.92
Feb. 28	53.33	May 25	54.74	Aug. 30	56.54	Nov. 26	61.34
Mar. 29	53.81	June 26	55.36	Sept. 25	56.99	Dec. 24	45.79

4/28-3E2. Peter Cavalletto. Near Goleta. Drilled unused water-table well in alluvium, diameter 8 inches, depth 75 feet. Land-surface datum is 116.73 feet above msl. Highest water level 8.57 below lsd, Apr. 12, 1941: lowest 45.17 below lsd, Oct. 22, 1948. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	13.72	Apr. 23	28.35	July 30	31.66	Oct. 31	(f)
Feb. 28	13.19	May 25	14.02	Aug. 30	(f)	Nov. 26	32.92
Mar. 29	13.01	June 26	26.20	Sept. 25	(f)	Dec. 24	25.60

f Dry.

4/28-3M3. L. W. Fowler. Cathedral Oaks Road and Patterson Ave. Drilled unused water-table well in alluvium, diameter 8 inches, depth 171 feet. Land-surface datum is 118.40 feet above msl. Highest water level 113.01 below lsd, Dec. 26, 1947; lowest 145.24 below lsd, Sept. 30, 1949. Records available: 1947-51.

Jan. 31	127.10	Apr. 23	c142.39	July 30	137.09	Oct. 31	134.95
Feb. 28	124.76	May 25	c142.45	Aug. 30	135.23	Nov. 26	136.07
Mar. 29	124.04	June 26	c141.24	Sept. 25	135.41	Dec. 24	133.55

c Nearby well being pumped.

4/28-3Q2. A. J. Haverland. Old San Marcos Pass Road and Cathedral Oaks Road. Drilled unused artesian well in Santa Barbara formation, diameter 12 inches, depth 360 feet, cased to 360, perforations 126-360. Land-surface datum is 120.57 feet above msl. Highest water level 84.69 below lsd, Jan. 27, 1948; lowest 154.64 below lsd, Sept. 25, 1951. Records available: 1941, 1943-51.

Jan. 31	c143.55	Apr. 23	c146.13	July 30	c155.88	Oct. 31	152.59
Feb. 28	140.57	May 25	c149.25	Aug. 30	c155.69	Nov. 26	151.19
Mar. 29	143.74	June 26	c151.27	Sept. 25	154.64	Dec. 24	149.62

c Nearby well being pumped.

4/28-4Q2. R. S. Rowe. Drilled unused artesian well in Santa Barbara formation, diameter 12 inches, depth 325 feet, perforations 243-258, 290-310. Land-surface datum is 88.45 feet above msl. Highest water level 61.24 below lsd, Apr. 30, 1945; lowest 117.92 below lsd, June 6, 1950. Records available: 1941-51.

Jan. 31	105.03	Apr. 23	c117.20	July 30	113.33	Oct. 31	115.89
Feb. 28	103.75	May 25	c116.64	Aug. 30	c120.16	Nov. 26	114.22
Mar. 29	102.61	June 26	c119.70	Sept. 25	c120.75	Dec. 24	112.56

c Nearby well being pumped.

4/28-5R4. F. J. Ewing. Fairview Road and Stow Canyon Road. Drilled irrigation artesian well in Santa Barbara formation, diameter 12 inches, depth 154 feet. Land-surface datum is 53.95 feet above msl. Highest water level 40.00 below lsd, June 1937; lowest 72.93 below lsd, Oct. 31, 1951. Records available: 1937-38, 1941, 1943-51.

Jan. 31	67.67	Apr. 23	67.39	Aug. 30	b72.04	Nov. 26	72.54
Feb. 28	67.35	May 25	67.31	Sept. 25	71.76	Dec. 24	72.38
Mar. 29	66.95	June 26	69.05	Oct. 31	72.93		

b Pumped recently.

4/28-9A3. L. M. Cavaletto. Southern Pacific Railroad and Patterson Ave. Drilled unused water-table well in Santa Barbara formation, diameter 12 inches, depth 125 feet. Land-surface datum is 84.10 feet above msl. Undated entries are highest and lowest between dates of observation. Highest water level 38.60 below lsd, Mar. 1943; lowest 69.95 below lsd Nov.26, 1951. Records available: 1941-51.

	67.51	Mar. 29	66.60	May	67.54	Aug. 30	68.91
	67.16		67.03	June 28	68.33		69.06
Jan. 31	67.35		65.56		68.54	Sept. 26	69.05
	67.46	Apr. 23	67.00		68.11	Oct. 25	69.84
	67.02		67.63	July 30	68.54	Nov. 26	69.95
Feb. 28	67.20		69.79		68.99	27	69.72
	67.31	May 25	67.58		68.54	Dec. 24	69.34
	66.61		68.32				

4/28-9E1. A. T. Spaulding. Fairview Road and Encina Road. Drilled domestic artesian well in Santa Barbara formation,diameter 12 inches, depth 310 feet. Land-surface datum is 43.58 feet above msl. Highest water level 27.64 below lsd, June 7, 1941; lowest 75.52 below lsd, Sept. 25, 1951. Records available: 1941, 1943-51. Feb. 28, 67.62; Mar. 29, 68.87; Apr. 23, 71.65; July 30, 73.35; Sept. 25, 75.52; Nov. 26, 74.45; Dec. 24, 73.66.

4/28-10A1. John S. Greene. Turnpike Road and Loma Abaja Creek. Drilled unused water-table well in Santa Barbara formation, diameter 8 inches, depth 154 feet. Land-surface datum is 121.59 feet above msl. Highest water level 93.30 below lsd, May 2, 1944; lowest 142.34 below lsd, Sept. 25, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	136.73	Apr. 23	136.77	July 30	138.75	Oct. 31	140.03
Feb. 28	138.68	May 25	136.22	Aug. 30	139.03	Nov. 26	140.39
Mar. 29	135.34	June 27	136.88	Sept. 25	142.34	Dec. 24	139.31

4/28-10F1. J. S. Edwards. Patterson Ave. and Maria Ygnacio Creek. Drilled domestic and irrigation artesian well in Santa Barbara formation, diameter 12 inches, depth 459 feet, cased to 459, perforations 72-198, 312-459. Land-surface datum is 79.90 feet above msl. Highest water level 56.44 below lsd, Apr. 28, 1943; lowest 98.55 below lsd, Oct. 31, 1951. Records available: 1932-33, 1937-38, 1941-51.

Jan. 31	92.77	May 25	91.97	Aug. 30	97.29	Nov. 26	97.22
Feb. 28	92.27	June 26	95.43	Oct. 31	98.55	Dec. 24	96.35
Mar. 29	92.00						

4/28-10K2. W. G. Troup. Southern Pacific Railroad and San Marcos Pass Road. Drilled domestic and irrigation artesian well in alluvium, diameter 10 inches, depth 215 feet. Land-surface datum is 85.47 feet above msl. Highest water level 82.90 below lsd, Apr. 24, 1942; lowest 141.57 below lsd, Aug. 30, 1951. Records available: 1941-51.

Jan. 31	119.82	Apr. 23	123.76	July 30	128.24	Oct. 31	134.90
Feb. 28	119.72	May 25	123.44	Aug. 30	141.57	Nov. 26	129.60
Mar. 29	120.14	June 26	140.84	Sept. 25	131.30	Dec. 24	128.02

4/28-11K4. Giovanni Cavalli. Drilled irrigation artesian well in Santa Barbara formation, diameter 12 inches, depth 297 feet. Land-surface datum is about 67 feet above msl. Highest water level 67.72 below lsd, Mar. 7, 1947; lowest 108.90 below lsd, Aug. 30, 1951. Record available: 1947-51.

Jan. 31	99.72	Apr. 23	101.25	July 30	108.10	Oct. 31	108.47
Feb. 28	100.04	May 25	99.36	Aug. 30	108.90	Nov. 26	107.82
Mar. 29	99.82	June 26	103.19	Sept. 25	108.29	Dec. 24	107.25

4/28-16F2. John Begg. U. S. Highway 101 and Goleta Beach Road. Drilled unused artesian well in Santa Barbara formation, diameter 6 inches, depth 148 feet. Land-surface datum is about 22 feet above msl. Highest water level 26.26 below lsd, June 3, 1944; lowest 98.85 below lsd, Apr. 23, 1951. Records available: 1941, 1943-51.

Jan. 31	56.85	Apr. 23	98.85	July 30	c86.46	Oct. 31	81.57
Feb. 28	62.46	May 25	81.17	Aug. 30	91.95	Nov. 26	69.52
Mar. 29	76.07	June 26	82.25	Sept. 25	85.03	Dec. 24	65.03

c Nearby well being pumped.

4/28-16F3. John Begg. U. S. Highway 101 and Goleta Beach Road. Dug unused water-table well in alluvium, diameter 6 feet, depth 22 feet. Land-surface datum is about 22 feet above msl. Highest water level 6.90 below lsd, May 14, 1941; lowest 19.58 below lsd, Dec. 24, 1951. Records available: 1941, 1943-51.

Jan. 31	18.49	Apr. 23	18.80	July 30	19.10	Oct. 31	19.53
Feb. 28	18.51	May 25	18.91	Aug. 30	19.24	Nov. 26	19.45
Mar. 29	18.71	June 26	19.04	Sept. 25	19.30	Dec. 24	19.58

4/28-16R1. Pacific Lighting Corp. Drilled domestic and industrial water-table well in alluvium and Santa Barbara formation, diameter 10 inches, depth 140 feet, perforated 37-47, 67-97, 107-138. Land-surface datum is about 24 feet above msl. Highest water level 7.77 below lsd, Apr. 30, 1945; lowest 41.30 below lsd, Mar. 29, 1951. Records available: 1941, 1945-51.

Jan. 31	35.01	Apr. 23	37.78	Aug. 30	39.40	Nov. 26	37.72
Feb. 28	36.62	May 25	40.78	Sept. 25	39.55	Dec. 24	36.47
Mar. 29	41.30	July 30	39.40	Oct. 31	37.68		

4/28-17H3. Elmo Little. Mathews Ave. and Fairview Road. Drilled domestic water-table well in alluvium, diameter 12 inches, depth 12 feet. Land-surface datum is about 11 feet above msl. Highest water level 1.49 below lsd, Mar. 1, 1944; lowest dry Sept. 25-Dec. 24, 1951. Records available: 1941-51.

Jan. 31	9.64	Apr. 23	10.03	July 30	11.06	Oct. 31	(f)
Feb. 28	9.91	May 25	10.09	Aug. 30	11.30	Nov. 26	(f)
Mar. 29	8.62	June 26	10.43	Sept. 25	(f)	Dec. 24	(f)

f Dry.

4/28-17H11. Mrs. L. Oakley and Mrs. M. Bonetti. Nectarine Ave. and San Jose Creek. Drilled domestic and irrigation artesian well in Santa Barbara formation, diameter 6 inches, depth 119 feet. Land-surface datum is about 10 feet above msl. Highest water level 9.97 below lsd, Apr. 24, 1942; lowest 44.67 below lsd, Sept. 24, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	31.56	Apr. 23	39.40	Aug. 30	43.75	Nov. 26	42.40
Feb. 28	33.68	May 25	39.37	Sept. 24	44.67	Dec. 24	39.18
Mar. 29	35.20	June 27	41.34	Oct. 31	44.31		

4/28-18G2. T. B. Bishop Co. Drilled unused artesian well in Santa Barbara formation, diameter 16 inches, depth 395 feet, cased to 395, perforations 123-139, 159-179, 199-255, 275-395. Land-surface datum is about 7 feet above msl. Highest water level 19.80 below lsd, Mar. 27, 1945; lowest 45.99 below lsd, Aug. 2, 1949. Records available: 1941-51.

Jan. 31	35.74	Apr. 23	33.47	July 30	34.10	Oct. 31	34.01
Feb. 28	34.44	May 25	32.36	Aug. 30	34.11	Nov. 26	33.03
Mar. 29	33.49	June 26	33.74	Sept. 25	34.40	Dec. 24	32.30

4/29-13K2. T. B. Bishop Co. Drilled unused artesian well in Santa Barbara formation, diameter 12 inches, depth 378 feet, cased to 330, perforations 108-111, 129-132, 150-153, 171-174, 192-195, 204-225, 232-238, 253-259, 267-330. Land-surface datum is about 24 feet above msl. Highest water level 41.25 below lsd, Mar. 20, 1945; lowest 55.59 below lsd, Sept. 28, 1950. Records available: 1941-51. Measurement discontinued. Jan. 31, 54.14; Mar. 2, 54.73; Mar. 29, 53.14; Apr. 23, 53.88; May 25, 53.32.

4/29-14A3. Frank Baker. Glen Annie Road and Southern Pacific Railroad. Drilled domestic and irrigation water-table well in Santa Barbara formation, diameter 12 inches, depth 126 feet. Land-surface datum is about 51 feet above msl. Highest water level 71.40 below lsd, Apr. 30, 1945; lowest 87.46 below lsd, July 30, 1951. Records available: 1941-51.

Jan. 31	82.85	Apr. 23	84.33	July 30	87.46	Oct. 31	84.43
Feb. 28	83.11	May 25	83.80	Aug. 30	c84.82	Nov. 26	84.24
Mar. 29	83.54	June 26	c84.65	Sept. 25	84.82	Dec. 24	83.74

c Nearby well being pumped.

Santa Ynez River Valley

6/30-6A1. Sam Torrence. Near Santa Ynez. Telephone Road and Baseline Ave. Drilled irrigation water-table well in terrace deposits, diameter 16 inches, depth 262 feet, perforations 42-260. Land-surface datum is about 669 feet above msl. Highest water level 42.02 below lsd, Apr. 8, 1943; lowest 100.26 below lsd, June 27, 1951. Records available: 1942-51. Jan. 26, 70.65; Feb. 27, 76.63; June 27, 100.26; Oct. 30, 80.23; Nov. 29, 77.77; Dec. 27, 75.63.

6/30-7K1. Mrs. W. Anderson. Santa Ynez. Drilled public supply water-table well in terrace deposits, diameter 10 inches, depth 70 feet. Land-surface datum is about 614 feet above msl. Highest water level 38.22 below lsd, Mar. 3, 1944; lowest 55.47 below lsd, Nov. 29, 1951. Records available: 1941-51.

Jan. 26	51.75	June 27	a68.70	Aug. 28	c48.25	Nov. 29	55.47
Feb. 27	49.97	July 27	47.83	Oct. 30	a51.19	Dec. 27	55.35

a Pumping.
c Nearby well being pumped.

6/30-9N1. San Lucas Ranch. Near Santa Ynez. Drilled stock water-table well in Paso Robles (?) formation, diameter 8 inches, depth 160 feet. Land-surface datum is 653 feet above msl. Highest water level 30.71 below lsd, Sept. 1, 1944; lowest 36.11 below lsd, Nov. 29, 1951. Records available: 1941-51. May 29, 35.38; June 27, 35.46, pumping; July 27, 35.60, pumping; Aug. 28, 35.65, pumping; Oct. 30, 36.03, pumping; Nov. 29, 36.11; Dec. 27, 36.09.

6/30-21B1. Rancho Juan y Lolita. Near Santa Ynez. Drilled irrigation water-table well in river channel deposits, diameter 12 inches, depth 58 feet. Land-surface datum is about 495 feet above msl. Highest water level 11.80 below lsd, Apr. 5, 1949; lowest 24.17 below lsd, Sept. 21, 1951. Records available: 1933, 1941, 1948-51. Jan. 26, 20.87; Feb. 27, 23.38; Sept. 21, 24.17; Oct. 30, 22.86; Nov. 29, 22.52; Dec. 27, 21.81.

6/30-29E1. Rancho Juan y Lolita. Near Santa Ynez. Drilled unused water-table well in alluvium, diameter 10 inches, depth 52 feet. Land-surface datum is about 461 feet above msl. Highest water level 7.9 below lsd, Mar. 10, 1941; lowest 24.00 below lsd, May 20, 21, 1951. Records available: 1933-51.

6/30-29E1 --Continued.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	22.96	23.27	23.47	23.71	23.88	22.85	20.94	20.90	21.04	.....	22.15	22.83
2	22.97	23.28	23.48	23.72	23.88	22.26	20.95	20.94	21.05	21.50	22.18	22.85
3	23.00	23.29	23.49	23.72	23.89	21.60	20.98	20.95	21.07	21.51	22.20	22.86
4	23.01	23.29	23.49	23.73	23.89	21.06	20.99	20.76	21.09	21.53	22.22	22.88
5	23.02	23.31	23.50	23.74	23.91	20.71	21.01	20.60	21.11	21.55	22.23	22.89
6	23.03	23.32	23.52	23.74	23.91	20.57	21.03	20.55	21.13	21.57	22.27	22.92
7	23.04	23.33	23.52	23.75	23.91	20.53	21.04	20.55	21.14	21.58	22.29	22.94
8	23.05	23.33	23.53	23.75	23.92	20.53	21.05	20.57	21.16	21.60	22.31	22.98
9	23.06	23.34	23.53	23.76	23.93	20.54	21.06	20.63	21.16	21.63	22.34	22.99
10	23.06	23.35	23.55	23.76	23.92	20.57	21.08	20.70	21.18	21.65	22.36	23.00
11	23.06	23.36	23.56	23.77	23.93	20.60	21.09	20.76	21.18	21.67	22.38	23.01
12	23.08	23.36	23.56	23.77	23.94	20.63	21.08	20.82	21.19	21.69	22.40	23.03
13	23.10	23.37	23.55	23.78	23.94	20.69	21.11	20.87	21.21	21.72	22.42	23.04
14	23.11	23.38	23.56	23.78	23.95	20.75	21.12	20.92	21.22	21.74	22.44	23.07
15	23.10	23.38	23.57	23.79	23.97	20.86	21.12	20.96	21.23	21.76	22.46	23.09
16	23.11	23.38	23.57	23.80	23.97	20.89	21.12	20.99	21.25	21.78	22.49	23.11
17	23.13	23.39	23.58	23.80	23.98	20.95	21.12	21.02	21.27	21.81	22.53	23.13
18	23.14	23.40	23.60	23.81	23.99	21.00	21.12	21.04	21.28	21.83	22.54	23.15
19	23.14	23.41	23.60	23.81	23.99	21.05	21.12	21.06	21.29	21.85	22.56	23.15
20	23.14	23.41	23.61	23.82	24.00	21.08	21.11	21.07	21.31	21.86	22.57	23.18
21	23.17	23.41	23.61	23.82	24.00	21.05	21.11	21.08	21.32	21.88	22.60	23.20
22	23.17	23.42	23.62	23.82	23.97	21.03	21.09	21.07	21.34	21.90	22.62	23.22
23	23.18	23.43	23.63	23.83	23.90	21.00	20.95	20.98	21.36	21.93	22.64	23.24
24	23.20	23.44	23.64	23.83	23.86	20.97	20.85	20.94	21.38	21.95	22.65	23.25
25	23.20	23.45	23.65	23.83	23.83	20.95	20.82	20.92	21.39	21.97	22.69	23.27
26	23.21	23.44	23.67	23.85	23.80	20.93	20.81	20.93	21.41	21.99	22.71	23.28
27	23.22	23.47	23.67	23.85	23.71	20.92	20.82	20.94	21.42	22.04	22.74	23.30
28	23.23	23.47	23.67	23.85	23.56	20.91	20.84	20.96	21.44	22.06	22.76	23.31
29	23.24		23.69	23.86	23.39	20.91	20.87	20.99	.....	22.07	22.78	23.32
30	23.25		23.70	23.87	23.23	20.92	20.89	21.01	.....	22.10	22.81	23.30
31	23.26		23.71		23.08		20.91	21.02		22.13		23.34

6/31-2K1. Sam de la Cuesta. Near Ballard. Drilled domestic and irrigation water-table well in alluvium, diameter 10 inches, depth 75 feet. Land-surface datum is about 627 feet above msl. Highest water level 23.02 below lsd, Jan. 9, 1942; lowest 49.60 below lsd, Sept. 21, 1951. Records available: 1942, 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	39.33	Apr. 24	44.68	Sept. 21	49.60	Nov. 29	45.00
Feb. 27	38.92	June 27	a51.17	Oct. 30	47.13	Dec. 27	44.10
Mar. 28	44.78						

a Pumping.

6/31-13D1. Mrs. W. E. Parker. Near Santa Ynez. Refugio Pass Road and State Highway 150. Drilled domestic water-table well in Paso Robles formation, diameter 10 inches, depth 170 feet. Land-surface datum is about 608 feet above msl. Highest water level 102.58 below lsd, Mar. 9, 1942; lowest 120.64 below lsd, Dec. 30, 1949. Records available: 1941-51.

Jan. 26	119.06	Apr. 24	112.27	July 27	112.85	Nov. 29	112.91
Feb. 27	111.99	May 29	112.46	Aug. 28	a130.20	Dec. 27	113.01
Mar. 28	112.06	June 27	108.09	Oct. 30	113.19		

a Pumping.

6/31-16N2. H. G. Peterson. Near Solvang. Drilled irrigation water-table well in river channel deposits, diameter 16 inches, depth 47 feet. Land-surface datum is about 368 feet above msl. Highest water level 5.93 below lsd, May 1, 1941; lowest 23.01 below lsd, Oct. 30, 1951. Records available: 1941-42, 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 18, 1949	18.47	Nov. 15, 1950	17.12	Sept. 21, 1951	22.39	Nov. 29, 1951	22.28
Oct. 24	19.27	Apr. 3, 1951	12.01	Oct. 30	23.01	Dec. 27	19.65
Oct. 25	19.36	Aug. 28	22.87				

6/31-17F1. John R. Orton. Near Buellton. Dug domestic water-table well in alluvium, diameter 12 inches, depth 43 feet. Land-surface datum is about 362.90 feet above msl. Highest water level 14.80 below lsd, Apr. 9, 1941; lowest 29.68 below lsd, July 27, 1951. Records available: 1931-51. Pumped recently.

6/31-17F1. --Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	22.03	Apr. 24	21.15	July 27	29.68	Oct. 30	27.93
Feb. 27	21.76	May 29	25.97	Aug. 28	26.38	Nov. 29	26.75
Mar. 28	20.40	June 27	26.62	Sept. 21	26.62	Dec. 27	26.50

6/31-21H2. Petan Dairy Ranch. Near Solvang. Santa Ynez River and Alisal Road. Drilled unused water-table well in alluvium, diameter 8 inches, depth 13 feet. Land-surface datum is about 407 feet above msl. Highest water level 0.70 below lsd, Mar. 7, 1941; lowest 12.59 below lsd, Nov. 29, 1951. Records available: 1931-51.

Jan. 26	11.64	Apr. 24	11.84	July 27	11.94	Oct. 30	12.44
Feb. 27	11.57	May 29	11.90	Aug. 28	12.15	Nov. 29	12.59
Mar. 28	11.63	June 27	12.34	Sept. 21	12.25	Dec. 27	12.15

6/32-6K1. Mrs. Minnie Barker. Near Buellton. Drilled domestic and stock water-table well in alluvium, diameter 12 inches, depth 74 feet. Land-surface datum is about 390 feet above msl. Highest water level 10.50 below lsd, July 9, 1932; lowest 21.25 below lsd, May 2, 1949. Records available: 1932-34, 1941-51.

Feb. 27	20.39	July 27	b22.53	Sept. 21	a25.47	Nov. 29	a22.93
Apr. 24	18.98	Aug. 28	b32.25	Oct. 30	a22.84	Dec. 27	19.75
June 27	a25.87						

a Pumping.
b Pumped recently.

6/32-9A1. Owen E. Hollister. Near Buellton. Drilled domestic water-table well in alluvium, diameter 8 inches, depth 58 feet. Highest water level 26.20 below lsd, Jan. 21, 1942; lowest 37.69 below lsd, Aug. 6, 1942. Records available: 1932-51.

Jan. 29	31.58	Apr. 24	34.98	July 27	33.90	Oct. 30	32.75
Feb. 27	31.24	May 29	32.04	Aug. 28	33.35	Nov. 29	32.25
Mar. 28	34.25	June 27	34.19	Sept. 21	33.42	Dec. 27	31.78

6/32-11A1. William Hunt. Near Buellton. Drilled unused water-table well in Paso Robles (?) formation, diameter 8 inches, depth 125 feet. Land-surface datum is 341.88 feet above msl. Highest water level 43.12 below lsd, Jan. 18, 1950; lowest 47.84 below lsd, Sept.21, 1951. Records available: 1950-51.

Mar. 28	44.57	May 29	46.57	Aug. 28	47.20	Nov. 5	47.69
30	44.59	June 27	45.96	Sept. 21	47.84	29	47.20
Apr. 24	46.74	July 27	46.77	Oct. 30	47.73	Dec. 27	47.69

6/32-11N1. Doty and Mercer. Near Buellton. Drilled domestic water-table well in alluvium, diameter 8 inches, depth 50 feet. Land-surface datum is 332.74 feet above msl. Highest water level 29.21 below lsd, June 17, 1941; lowest 35.72 below lsd, Oct. 27, 1949, Nov. 17, 1950. Records available: 1932, 1941, 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1949	35.72	Apr. 3, 1951	35.08	Aug. 29, 1951	32.08	Nov. 28, 1951	35.44
Mar. 16, 1950	33.66	June 1	33.30	Sept. 24	33.45	Dec. 5	a36.96
Nov. 17	35.72	July 26	31.88	Oct. 11	34.62	26	35.61
Jan 15, 1951	31.94	Aug. 13	32.35	29	35.02		

a Pumping.

6/32-12J2. A. Bodine. In Buellton. Drilled unused water-table well in Paso Robles formation, diameter 6 inches, depth 126 feet. Land-surface datum is about 356.96 feet above msl. Highest water level 22.98 below lsd, Sept. 11, 1941; lowest 38.47 below lsd, Sept. 28, 1949. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	33.05	Apr. 24	33.88	July 27	35.03	Oct. 30	34.43
Feb. 27	35.22	May 29	34.38	Aug. 28	35.42	Nov. 29	34.58
Mar. 28	35.65	June 27	33.70	Sept. 21	35.20	Dec. 27	34.91

6/32-16P3. Channing Peake. Near Buellton. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 70 feet. Land-surface datum is about 293 feet above msl. Highest water level 41.82 below lsd, Feb. 24, 1943; lowest 50.18 below lsd, Oct. 29, 1951. Records available: 1941-51. Jan. 26, 47.94; Feb. 26, 45.96; Mar. 27, 53.68; Oct. 29, 50.18; Nov. 28, 49.69; Dec. 26, 49.27.

6/32-18H1. T. J. Donovan. Near Buellton. Drilled domestic and stock water-table well in alluvium, diameter 8 inches, depth 50 feet. Land-surface datum is about 266 feet above msl. Highest water level 25.80 below lsd, Oct. 18, 1941; lowest 40.16 below lsd, Nov. 28, 1951. Records available: 1932-42, 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7, 1949	39.42	Nov. 13, 1950	a40.02	Aug. 29, 1951	40.11	Nov. 5, 1951	40.11
27	39.81	Apr. 30, 1951	36.84	Sept. 24	39.66	28	40.16
Mar. 15, 1950	34.89	June 1	37.86	Oct. 29	40.04	Dec. 26	39.67

a Pumping.

6/33-8J1. Hollister Estate. Near Lompoc. Drilled domestic water-table well in alluvium, diameter 10 inches, depth 62 feet. Land-surface datum is about 202 feet above msl. Highest water level 42.89 below lsd, June 5, 1941; lowest 52.14 below lsd, Sept. 24, 1951. Records available: 1941-42, 1949-51.

Oct. 28, 1949	49.76	Apr. 4, 1951	49.82	Sept. 24, 1951	52.14	Nov. 28, 1951	51.82
Mar. 17, 1950	45.75	July 26	51.45	Oct. 29	52.00	Dec. 26	51.53
Nov. 13	50.30	Aug. 29	51.98	Nov. 7	51.95		

6/33-9P1. Hollister Estate. Drilled unused water-table well in alluvium, diameter 16 inches, depth 83 feet. Land-surface datum is about 200 feet above msl. Highest water level 21.8 below lsd, Apr. 3, 1941; lowest 54.61 below lsd, Nov. 30, 1950. Records available: 1932-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	47.21	Apr. 24	c58.31	July 26	c59.25	Oct. 29	47.63
Feb. 26	c52.67	May 28	c59.72	Aug. 29	50.89	Nov. 28	47.26
Mar. 27	c54.91	June 28	c58.79	Sept. 24	48.83	Dec. 26	46.64

c Nearby well being pumped.

6/33-11L1. William Rennie. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 80 feet, cased to 62, perforations 35-62. Land-surface datum is about 204 feet above msl. Highest water level 3.04 below lsd, Feb. 24, 1950; lowest 17.04 below lsd, Sept. 24, 1951. Records available: 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1949	9.26	Mar. 16, 1950	5.03	Sept. 24, 1951	17.04	Nov. 28, 1951	16.46
Jan. 9, 1950	7.97	Nov. 15	12.36	Oct. 29	14.67	Dec. 27	14.17
Feb. 24	3.04	Apr. 4, 1951	a21.96	Nov. 7	14.81		

a Pumping.

6/34-1P1. Hollister Estate. Near Lompoc. Santa Rosa Road and Salsipuedes Creek. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 164 feet, cased to 164 feet, perforations 54-72, 127-162 feet. Land-surface datum is about 154 feet above msl. Highest water level 39.63 below lsd, Mar. 17, 1950; lowest 45.41 below lsd, July 26, 1951. Records available: 1949-51.

Oct. 28, 1949	42.61	Nov. 15, 1950	42.52	July 26, 1951	45.41	Oct. 29, 1951	43.76
Jan. 6, 1950	40.91	Apr. 4, 1951	43.94	Aug. 29	43.92	Dec. 26	43.95
Mar. 17	39.63						

6/34-2A6. Hattie Madsen. Near Lompoc. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 185 feet, cased to 185 feet, perforations 56-66, 107-178 feet. Land-surface datum is 129.96 feet above msl. Highest water level 39.73 below lsd, Mar. 9, 1950; lowest 44.72 below lsd, July 6, 1949. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	41.88	July 27	44.50	Sept. 21	44.07	Nov. 29	43.88
Feb. 27	41.76	Aug. 28	44.14	Oct. 30	44.02	Dec. 27	43.67
June 28	43.30						

6/34-4F3. City of Lompoc. West Olive and O Sts. Drilled unused water-table well in alluvium, diameter 16 inches, depth 81 feet, perforations 60-77. Land-surface datum is about 95 feet above msl. Highest water level 49.01 below lsd, Jan. 29, 1951; lowest 58.17 below lsd, Apr. 24, 1951. Records available: 1950-51.

Jan. 29	49.01	Apr. 24	58.17	July 26	55.88	Oct. 29	52.82
Feb. 26	49.93	May 28	56.30	Aug. 29	54.56	Nov. 28	52.11
Mar. 27	54.56	June 28	54.26	Sept. 24	53.92	Dec. 26	51.47

6/34-6C2. Bank of America. Near Lompoc. Ocean Ave. and Legge Ave. Drilled domestic and stock artesian well in Careaga sand, diameter 12 inches, depth 185 feet, perforations 115-155. Land-surface datum is 99.80 feet above msl. Highest water level 47.88 below lsd, Feb. 24, 1943; lowest 76.78 below lsd, Apr. 24, 1951. Records available: 1930-39, 1943-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	b63.49	Apr. 24	76.78	Aug. 29	b71.20	Nov. 28	63.66
Feb. 26	b67.81	May 28	66.88	Sept. 21	68.25	Dec. 26	62.12
Mar. 27	70.82	July 26	b72.02	Oct. 29	65.32		

b Pumped recently.

6/34-12F2. Hollister Estate. Near Lompoc. Santa Rosa Road and Salsipuedes Creek. Drilled unused water-table well in alluvium, diameter 6 inches, depth 50 feet. Land-surface datum is about 151 feet above msl. Highest water level 35.71 below lsd, Oct. 30, 1942; lowest 40.18 below lsd, Dec. 26, 1951. Records available: 1942, 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 28, 1949	38.55	Apr. 4, 1951	38.82	Sept. 24, 1951	38.49	Nov. 28, 1951	39.79
Mar. 17, 1950	38.31	July 26	36.52	Oct. 29	39.23	Dec. 26	40.18
Nov. 14	38.49	Aug. 29	37.85	Nov. 7	39.20		

7/31-23P1. F. L. Mattei. In Los Olivos. Drilled domestic and irrigation water-table well in Paso Robles formation, diameter 8 inches, depth 141 feet. Land-surface datum is about 827 feet above msl. Highest water level 8.09 below lsd, Aug. 7, 1942; lowest 65.46 below lsd, Oct. 30, 1951. Records available: 1942-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	53.76	May 29	57.22	Aug. 28	64.06	Nov. 29	64.61
Feb. 27	54.32	June 27	60.95	Oct. 30	65.46	Dec. 27	61.80
Apr. 24	56.08						

7/31-25L1. Dr. Ina M. Richter and Mrs. Virginia Lee. Near Los Olivos. Drilled domestic water-table well in Paso Robles formation, diameter 12 inches, depth 200 feet. Land-surface datum is about 806 feet above msl. Highest water level 55.83 below lsd, Apr. 27, 1944; lowest 88.73 below lsd, Dec. 27, 1951. Records available: 1942-51.

Jan. 26	84.39	Apr. 24	86.06	July 27	b87.55	Nov. 29	88.63
Feb. 27	b88.38	May 29	b87.35	Aug. 28	88.01	Dec. 27	88.73
Mar. 28	85.18	June 27	87.73	Oct. 30	88.40		

b Pumped recently.

7/31-36G2. Laura Grossi. Near Ballard. Roblar Ave and Grand (Refugio) Ave. Drilled unused water-table well in Paso Robles formation, diameter 8 inches, depth 127 feet. Land-surface datum is about 731 feet above msl. Highest water level 30.65 below lsd, Jan. 31, 1947; lowest 52.30 below lsd, Aug. 28, 1951. Records available: 1947-51.

Jan. 26	47.47	Apr. 24	49.10	July 27	50.66	Oct. 30	52.18
Feb. 27	47.51	May 29	49.89	Aug. 28	52.30	Nov. 29	51.56
Mar. 28	d48.93	June 27	51.27	Sept. 21	52.24	Dec. 27	51.17

d Nearby well pumped recently.

7/31-36L2. D. B. Kilbourne. Near Ballard. Baseline Ave. and Grand (Refugio) Ave. Drilled domestic and irrigation water-table well in Paso Robles formation, diameter 12 inches, depth 230 feet. Land-surface datum is about 715 feet above msl. Highest water level 16.54 below lsd, Apr. 7, 1943; lowest 49.03 below lsd, Aug. 28, 1951. Records available: 1942-51.

Jan. 26	42.05	Apr. 24	44.20	July 27	47.23	Nov. 29	45.83
Feb. 27	40.43	May 29	44.99	Aug. 28	49.03	Dec. 27	44.61
Mar. 28	44.22	June 27	48.03	Oct. 30	48.34		

7/33-30C1. John Valla. Near Lompoc. Orcutt Road and State Highway 150. Drilled unused water-table well in Paso Robles formation, diameter 8 inches, depth 183 feet. Land-surface datum is about 233 feet above msl. Highest water level 150.41 below lsd, Feb. 1, 1946; lowest 155.38 below lsd, Dec. 27, 1951. Records available: 1941-51.

Jan. 29	154.39	Apr. 24	c154.65	July 27	c155.00	Oct. 30	155.30
Feb. 27	154.46	May 29	c154.77	Aug. 28	c155.06	Nov. 29	155.32
Mar. 28	150.25	June 27	c154.85	Sept. 21	c155.18	Dec. 27	155.38

c Nearby well being pumped.

7/34-9H3. U. S. Geol. Survey, Union Oil Co., Purisima Lease. Near Lompoc. Drilled observation water table well in Orcutt formation, diameter 8 inches, depth 103 feet, cased to 103. Land-surface datum is about 275 feet above msl. Highest water level 9.32 below lsd, Oct, 10, 1948, Sept. 3, 1949; lowest 11.36 below lsd, Dec. 11, 1951. Records available: 1948-51.

7/34-9H3 --Continued.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.14	10.24	10.21	10.30	10.31	10.48	10.63	10.87	11.01	11.25	.....	11.30
2	10.14	10.30	10.21	10.31	10.34	10.51	10.64	10.87	11.04	11.26	11.27	11.29
3	.....	10.37	10.21	10.29	10.37	10.51	10.65	10.87	11.05	11.24	11.27	11.29
4	10.28	10.40	10.27	10.27	10.37	10.51	10.66	10.89	11.06	11.21	11.26	11.28
5	10.28	10.37	10.31	10.26	10.37	10.51	10.68	10.92	11.06	11.20	11.24	11.24
6	10.30	10.34	10.32	10.26	10.37	10.53	10.69	10.94	11.06	11.20	11.23	11.23
7	10.33	10.33	10.33	10.30	10.38	10.56	10.70	10.95	11.07	11.19	11.22	11.23
8	10.35	10.33	10.36	10.32	10.40	10.57	10.71	10.94	11.06	11.19	11.22	11.26
9	10.33	10.33	10.35	10.33	10.41	10.57	10.72	10.94	11.05	11.20	11.22	11.30
10	10.31	10.32	10.35	10.34	10.41	10.59	10.71	10.94	11.05	11.20	11.21	11.34
11	10.27	10.30	10.35	10.33	10.41	10.60	10.71	10.94	11.03	11.21	11.21	11.36
12	10.25	10.28	10.38	10.33	10.41	10.58	10.72	10.94	11.02	.....	11.21	11.31
13	10.25	10.28	10.36	10.33	10.42	10.56	10.72	10.94	11.02	.....	11.20	11.27
14	10.30	10.27	10.31	10.33	10.41	10.56	10.74	10.94	11.03	.....	11.21	11.27
15	10.34	10.25	10.29	10.32	10.41	10.57	10.77	10.94	11.06	.....	11.21	11.27
16	10.33	10.23	10.27	10.32	10.42	10.59	10.79	10.94	11.07	.....	11.21	11.28
17	10.33	10.23	10.25	10.32	10.44	10.60	10.79	10.95	11.10	.....	11.21	11.29
18	10.31	10.24	10.25	10.33	10.45	10.60	10.74	10.95	11.13	.....	11.24	11.26
19	10.30	10.25	10.25	10.32	10.45	10.60	10.72	10.95	11.14	.....	11.26	11.20
20	10.30	10.27	10.27	10.32	10.44	10.60	10.88	10.95	11.15	.....	11.24	11.18
21	10.30	10.25	10.29	10.33	10.43	10.60	10.86	10.95	11.15	.....	11.24	11.18
22	10.32	10.21	10.29	10.35	10.43	10.61	10.86	10.95	11.18	.....	11.24	11.19
23	10.31	10.19	10.30	10.37	10.43	10.62	10.86	10.95	11.18	.....	11.24	11.21
24	10.30	10.18	10.30	10.37	10.46	10.63	10.87	10.96	11.18	.....	11.24	11.21
25	10.27	10.18	10.29	10.33	10.47	10.63	10.86	10.95	11.18	.....	11.27	11.21
26	10.24	10.20	10.28	10.33	10.45	10.63	10.86	10.94	11.19	.....	11.32	11.21
27	10.22	10.21	10.27	10.34	10.45	10.63	10.86	10.93	11.21	.....	11.35	11.25
28	10.22	10.21	10.26	10.35	10.45	10.63	10.86	10.93	11.23	.....	11.35	11.28
29	10.21		10.27	10.31	10.45	10.62	10.86	10.93	11.24	.....	11.33	11.26
30	10.21		10.29	10.30	10.45	10.62	10.87	10.94	11.25	.....	11.32	11.20
31	10.21		10.30		10.46		10.87	10.98		.....		11.19

7/34-12E1. U. S. Geol. Survey, Union Oil Co., Purisima Lease. Near Lompoc. Drilled observation water-table well in Careaga sand, diameter 8 to 6 inches, depth 385 feet, cased to 385, perforated 345-385 feet. Land-surface datum is 385.83 feet above msl. Highest water level 301.70 below lsd, June 25, 1949; lowest 303.55 below lsd, Nov. 25, 1951. Records available: 1949-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	302.83	302.48	302.73	302.91	302.92	302.94	.....	303.23	303.34	303.41	303.22
2	.....	.....	302.51	302.69	302.87	302.90	302.95	.....	303.17	303.25	303.43	303.34
3	.....	.....	302.79	302.57	302.82	302.83	303.00	.....	303.12	303.18	303.33	303.29
4	.....	.....	302.68	302.57	302.82	302.83	302.98	.....	303.12	303.18	303.25	303.14
5	.....	.....	302.65	302.67	302.84	302.90	302.98	.....	303.16	303.23	303.25	303.14
6	302.72	.....	302.69	302.78	302.88	302.99	303.00	.....	303.17	303.31	303.31	303.25
7	302.69	.....	302.80	302.83	302.91	302.94	303.01	.....	303.14	303.25	303.29	303.36
8	302.59	.....	302.68	302.83	302.86	302.94	303.01	.....	303.09	303.27	303.29	303.50
9	302.55	.....	302.64	302.77	302.84	303.00	302.98	.....	303.09	303.33	303.32	303.47
10	302.53	.....	302.67	302.74	302.83	302.98	302.95	.....	303.03	303.37	303.28	303.36
11	302.42	.....	302.89	302.74	302.87	302.85	302.96	303.02	303.00	303.28	303.30	303.20
12	302.42	.....	302.69	302.80	302.89	302.83	303.03	303.04	303.02	303.20	303.29	303.16
13	302.76	.....	302.50	302.75	302.75	302.83	303.07	303.04	303.12	303.23	303.29	303.16
14	302.71	.....	302.50	302.71	302.75	302.86	303.09	303.04	303.19	303.28	303.23	303.29
15	302.53	.....	302.58	302.74	302.80	302.96	303.04	303.03	303.17	303.28	303.19	303.47
16	302.53	.....	302.55	302.79	302.90	302.93	303.04	303.05	303.26	303.28	303.25	303.33
17	302.57	.....	302.55	302.81	302.84	302.93	303.04	303.04	303.28	303.29	303.37	303.33
18	302.50	.....	302.61	302.74	302.82	302.94	303.03	303.02	303.22	303.34	303.31	303.07
19	302.55	.....	302.74	302.71	302.81	302.93	303.02	303.02	303.26	303.20	303.22	303.07
20	302.59	.....	302.73	302.73	302.80	302.95	303.02	303.01	303.27	303.11	303.23	303.16
21	302.66	.....	302.72	302.88	302.79	302.94	303.02	303.01	303.27	303.11	303.25	303.32
22	302.56	.....	302.68	302.86	302.76	302.94	303.03	303.04	303.17	303.27	303.29	303.37
23	302.52	.....	302.70	302.81	302.81	302.92	303.07	303.05	303.17	303.29	303.23	303.28
24	302.49	302.47	302.66	302.76	302.92	302.90	.....	303.06	303.25	303.09	303.30	303.29
25	302.38	302.59	302.62	302.69	302.85	302.91	.....	303.01	303.28	303.10	303.55	303.35

7/34-12E1 --Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	302.35	302.48	302.60	302.77	302.78	302.92	.....	303.00	303.28	303.27	303.46	303.48
27	302.40	302.49	302.61	302.88	302.77	302.91	.....	302.97	303.25	303.35	303.37	303.46
28	302.45	302.55	302.66	302.65	302.81	302.91	.....	302.97	303.25	303.25	303.31	303.31
29	302.44		302.75	302.65	302.83	302.93	.....	303.06	303.27	303.21	303.27	303.06
30	302.44		302.67	302.70	302.83	302.95	.....	303.24	303.31	303.26	303.30	302.99
31	302.64		302.68		302.88		.....	303.26		303.36		303.17

7/34-14F1. Walter F. Ziesche. Near Lompoc. Drilled unused water-table well in Paso Robles formation, diameter 12 inches, depth 250 feet. Land-surface datum is 268.32 feet above msl. Highest water level 194.94 below lsd, Oct. 23, 1947; lowest 199.19 below lsd, Sept. 21, 1951. Records available: 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	197.94	Apr. 24	198.08	July 27	198.65	Oct. 30	199.05
Feb. 26	197.95	May 28	198.26	Aug. 28	198.83	Nov. 29	199.09
Mar. 27	197.99	June 27	198.45	Sept. 21	199.19	Dec. 27	199.07

7/34-21E1. U. S. Geol. Survey, Camp Cooke Military Reservation.Near Lompoc. Drilled observation artesian well in Orcutt sand, diameter 8 inches, depth 145 feet, cased to 145, perforations 73-93. Land-surface datum is about 82 feet above msl. Highest water level 17.97 below lsd, Apr. 1, 1949; lowest 25.02 below lsd, Aug. 10, 1951. Records available: 1948-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21.74	21.62	22.37	23.23	23.83	23.87	24.35	24.97	24.95	24.59	.....	.....
2	21.71	21.73	22.43	23.25	23.84	23.93	24.31	24.98	24.91	24.58	24.27	.....
3	21.66	21.74	22.42	23.25	23.83	23.92	24.32	24.99	24.84	24.60	24.17	.....
4	21.66	21.76	22.35	23.30	23.89	23.91	24.35	25.01	24.83	24.60	24.11	.....
5	21.68	21.75	22.33	23.40	23.92	23.91	24.33	25.01	24.84	24.54	24.10	.....
6	21.70	21.64	22.39	23.46	23.84	23.99	24.31	24.98	24.84	24.42	24.10	.....
7	21.67	21.58	22.37	23.51	23.77	24.03	24.32	24.97	24.84	24.36	24.14	.....
8	21.65	21.59	22.35	23.55	23.77	24.07	24.39	24.98	24.82	24.32	24.18	.....
9	21.67	21.65	22.35	23.53	23.80	24.13	24.41	24.99	24.76	24.37	24.23	.....
10	21.65	21.70	22.40	23.52	23.83	24.07	24.43	25.02	24.70	24.43	24.22	.....
11	21.61	21.75	22.40	23.59	23.91	23.98	24.46	24.98	24.71	24.46	24.21	.....
12	21.63	21.79	22.29	23.63	23.97	23.98	24.51	24.92	24.78	24.48	24.13	.....
13	21.75	21.86	22.26	23.67	23.87	23.97	24.53	24.86	24.87	24.42	24.13	.....
14	21.65	21.94	22.34	23.69	23.85	23.98	24.57	24.86	24.85	24.33	24.15	.....
15	21.55	21.97	22.47	23.74	23.88	24.03	24.59	24.88	24.83	24.30	24.18	.....
16	21.54	22.02	22.52	23.78	23.99	24.11	24.61	24.90	24.79	24.37	24.25	.....
17	21.44	22.15	22.56	23.81	24.01	24.14	24.65	24.93	24.70	24.46	24.26	.....
18	21.37	22.17	22.64	23.86	24.06	24.12	24.68	24.97	24.67	.....	24.14	.....
19	21.37	22.23	22.67	23.87	23.99	24.15	24.73	24.98	24.70	.....	24.06	.....
20	21.36	22.23	22.69	23.92	23.89	24.22	24.76	24.94	24.73	.....	24.08	.....
21	21.33	22.25	22.73	24.00	23.85	24.26	24.79	24.95	24.75	.....	24.11	.....
22	21.25	22.29	22.76	23.95	23.86	24.28	24.82	24.96	24.70	.....	24.06	23.58
23	21.21	22.39	22.82	23.92	23.87	24.31	24.81	24.96	24.66	.....	23.99	23.47
24	21.21	22.43	22.87	23.96	23.81	24.32	24.83	24.96	24.65	.....	24.04	23.43
25	21.26	22.45	22.93	23.95	23.75	24.29	24.84	24.94	24.64	.....	24.03	23.43
26	21.35	22.39	22.96	24.05	23.74	24.30	24.88	24.93	24.63	.....	23.93	23.39
27	21.33	22.43	23.01	23.93	23.75	24.35	24.89	24.89	24.63	.....	23.93	23.35
28	21.28	22.39	23.06	23.81	23.74	24.38	24.91	24.89	24.63	.....	23.95	23.34
29	21.22		23.12	23.80	23.74	24.41	24.94	24.92	24.66	.....	.....	23.25
30	21.29		23.14	23.79	23.74	24.43	24.96	24.96	23.63	.....	.....	23.25
31	21.48		23.19		23.75		24.95	24.93		.....		23.28

7/34-22H1. H. E. Harris. Near Lompoc. Rucker Crossing of Santa Ynez River. Drilled domestic artesian well in alluvium and Orcutt formation, diameter 12 inches, depth 208 feet, cased to 193 feet, perforations 87-100, 167-190. Land-surface datum is about 97 feet above msl. Highest water level 20.80 below lsd, Mar. 7, 1941; lowest 31.75 below lsd, May 28, 1951. Records available: 1941-42, 1946-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	37.33	Apr. 24	29.29	July 27	29.98	Oct. 30	29.04
Feb. 26	27.40	May 28	31.75	Aug. 28	29.21	Nov. 29	28.93
Mar. 27	29.35	June 28	30.32	Sept. 21	29.22	Dec. 27	28.73

7/34-22Q4. U. S. Geol. Survey, A. Scolari property. Near Lompoc. Rucker Crossing Road and North A St. Drilled observation water-table well in alluvium, diameter 2 inches, depth 24 feet, cased to 24, screened 21-24. Land-surface datum is 82.72 feet above msl. Highest water level 17.10 below lsd, Apr. 1, 1949; Dry from Oct. 28, 1950 through Dec. 26, 1951. Records available: 1947-51.

7/34-26C2. J. Maxwell Wilson. Near Lompoc. State Highway 150 and Orcutt Road. Drilled unused water-table well in alluvium and Paso Robles formation, diameter 16 inches, reported depth 150 feet. Land-surface datum is about 110 feet above msl. Highest water level 35.83 below lsd, July 27, 1951; lowest 36.34 below lsd, May 29, 1951. Records available: 1951.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	35.97	May 29	36.34	Aug. 28	35.96	Nov. 29	35.99
Mar. 28	35.89	June 27	36.17	Sept. 21	35.94	Dec. 27	36.22
Apr. 24	36.03	July 27	35.83	Oct. 30	35.92		

7/34-27A4. U. S. Geol. Survey, L. H. Schuyler property. Near Lompoc. North A St. and Santa Ynez River. Drilled observation water-table well in alluvium, diameter 2 inches, depth 30 feet. Land-surface datum is 70.19 feet above msl. Highest water level 11.47 below lsd, Sept. 25, 1947; lowest Dry Aug. 28, 1950 through Dec. 26, 1951. Records available: 1947-51.

7/34-27J3. U. S. Geol. Survey, L. H. Schuyler property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 26 feet. Land-surface datum is 86.18 feet above msl. Highest water level 13.05 below lsd, Mar. 15, 1944; lowest Dry Aug. 31, 1949 through Feb. 8, 1950, June 5, 1950 through Dec. 26, 1951. Records available: 1943-45, 1947-51.

7/34-27L1. Mrs. Susan Van Clief. Near Lompoc. North Ave. and A St. Drilled irrigation water-table well in alluvium, diameter 12 inches, depth 66 feet. Land-surface datum is about 97 feet above msl. Highest water level 25.68 below lsd, Apr. 25, 1941; lowest 48.75 below lsd, May 29, 1951. Records available: 1941-51.

Jan. 30	40.28	Apr. 24	45.45	July 26	48.68	Oct. 29	44.45
Feb. 26	41.16	May 29	48.75	Aug. 29	45.66	Nov. 28	44.03
Mar. 27	45.36	June 28	48.57	Sept. 24	45.06	Dec. 26	43.34

7/34-28H2. T. M. Parks. Near Lompoc. Central Ave. and H St. Drilled unused water-table well in alluvium, diameter 6 inches, depth 78 feet. Land-surface datum is 89.55 feet above msl. Highest water level 21.74 below lsd, Mar. 10, 1943; lowest 43.14 below lsd, May 28, 1951. Records available: 1930-39, 1942-51.

Jan. 30	33.86	May 28	43.14	Aug. 29	38.93	Nov. 28	37.25
Feb. 26	37.29	June 28	40.08	Sept. 24	40.55	Dec. 26	35.91
Apr. 24	41.19	July 26	41.08	Oct. 29	37.71		

7/34-28R1. W. A. Burpee. Formerly A. C. Zvolanek. Near Lompoc. North Ave and H St. Drilled unused artesian well in alluvium, diameter 12 inches, depth 146 feet, cased to 146, perforations 106-146. Land-surface datum is 69.68 feet above msl. Highest water level 2.09 below lsd, Apr. 23, 1941; lowest 24.31 below lsd, Mar. 27, 1951. Records available: 1930-51.

Jan. 30	14.78	Apr. 24	22.10	July 26	21.68	Oct. 25	18.51
Feb. 26	18.33	May 29	22.17	Aug. 29	20.05	Nov. 28	18.06
Mar. 27	24.31	June 28	20.79	Sept. 24	19.75	Dec. 26	17.07

7/34-28R2. U. S. Geol. Survey, A. C. Zvolanek property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 16 feet. Land-surface datum is 69.50 feet above msl. Highest water level 2.70 below lsd, Mar. 2, 1944; lowest Dry June 28, 1951 through Dec. 26, 1951. Records available: 1943-51. Jan. 30, 15.25; Feb. 26, 15.42; Mar. 27, 15.79; Apr. 24, 15.89; May 29, 17.44.

7/34-29E4. W. H. Sanor. Near Lompoc. Central Ave. and Floradale Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 176 feet. Land-surface datum is 67.71 feet above msl. Highest water level 18.48 below lsd, Dec. 29, 1946; lowest 42.26 below lsd, Mar. 27, 1951. Records available: 1945-51.

Jan. 30	28.78	June 28	32.30	Sept. 24	30.79	Nov. 28	29.03
Feb. 26	33.22	July 26	37.90	Oct. 29	28.89	Dec. 26	27.04
Mar. 27	42.26						

7/34-29E5. U. S. Geol. Survey, W. H. Sanor property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 26 feet, cased to 27 feet. Land-surface datum is 67.74 feet above msl. Highest water level 18.21 below lsd, Oct. 12, 1945; lowest Dry June 28-Dec. 31, 1951. Records available: 1945-51. Jan. 30, 23.80; Feb. 26, 24.21; Mar. 27, 24.67; Apr. 24, dry; May 28, 25.25; June 28, July 26, Aug. 29, Sept. 24, Oct. 29, Nov. 28, Dec. 26, dry.

7/34-30L2. Union Sugar Co. Near Lompoc. Legge Ave. and Central Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 194 feet, perforations 119-134, 148-178. Land-surface datum is 59.05 feet above msl. Highest water level 8.40 below lsd, Apr. 18, 1941; lowest 40.63 below lsd, July 6, 1949. Records available: 1930-35, 1941-42, 1945-51. Jan. 30, 26.98; Feb. 26, 31.46. Measurement discontinued.

7/34-30L3. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 27 feet, cased to 27 feet. Land-surface datum is 58.79 feet above msl. Highest water level 15.83 below lsd, Dec. 29, 1946; lowest Dry May 28-Sept. 24, 1951. Records available: 1945-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	22.74	Mar. 27	c24.87	Sept. 24	26.18	Nov. 28	24.59
Feb. 26	23.60	Apr. 24	c26.41	Oct. 29	25.20	Dec. 26	23.79

c Nearby well being pumped.

7/34-30L4. Union Sugar Co. Near Lompoc. Legge Ave. and Central Ave. Drilled irrigation artesian well in alluvium, diameter 14 inches. Land-surface datum is about 59 feet above msl. Highest water level 23.25 below lsd, Dec. 26, 1951; lowest 32.63 below lsd, Aug. 29, 1951. Records available: 1951. Aug. 29, 32.63; Sept. 24, 27.69; Oct. 29, 26.30; Nov. 28, 25.33; Dec. 26, 23.25.

7/34-30R1. Mrs. E. Manfrina. Near Lompoc. Ocean Ave. and Floradale Ave. Dug unused water-table well in alluvium, diameter 10 inches, depth 30 feet, cased to 30. Land-surface datum is 66.81 feet above msl. Highest water level 9.65 below lsd, May 5, 1941; lowest 28.87 below lsd, Oct. 29, 1951. Records available: 1930-51.

Jan. 30	23.65	Apr. 24	26.02	July 26	25.55	Oct. 29	28.87
Feb. 26	23.64	May 28	26.95	Aug. 29	28.34	Nov. 28	28.12
Mar. 27	24.21	June 28	25.08	Sept. 24	26.04	Dec. 26	25.86

7/34-31C2. Union Sugar Co. Near Lompoc. Ocean Ave. and Legge Ave. Drilled irrigation artesian well in alluvium, diameter 14 inches. Land-surface datum is 64.72 feet above msl. Highest water level 8.56 below lsd, Apr. 16, 1941; lowest 46.38 below lsd, Sept. 24, 1948. Records available: 1941, 1947-51.

Jan. 29	29.41	July 26	40.57	Sept. 24	30.85	Nov. 28	27.64
May 28	28.97	Aug. 29	34.09	Oct. 29	28.45	Dec. 26	25.60
June 28	36.50						

7/34-31C3. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 28 feet. Land-surface datum is 64.68 feet above msl. Highest water level 13.68 below lsd, Apr. 29, 1949; lowest 21.97 below lsd, Dec. 26, 1951. Records available: 1947-51.

Jan. 29	20.70	May 28	17.52	Aug. 29	19.27	Nov. 28	21.69
Feb. 26	c20.43	June 28	17.90	Sept. 24	20.47	Dec. 26	21.97
Mar. 27	19.33	July 26	19.54	Oct. 29	21.25		

c Nearby well being pumped.

7/34-32A1. Mrs. May Clemmens. Near Lompoc. Pine Ave. and Thirteenth Road. Drilled irrigation artesian well in alluvium, diameter 12 inches, depth 180 feet, cased to 175, perforations 147-174. Land-surface datum is about 79 feet above msl. Highest water level 17.6 below lsd, Apr. 11, May 2, 1941; lowest 43.57 below lsd, July 27, 1949. Records available: 1939-42, 1947-51.

Jan. 30	35.78	June 28	42.80	Sept. 24	38.32	Nov. 28	35.99
Feb. 26	42.34	July 26	43.48	Oct. 29	36.66	Dec. 26	34.77
May 28	43.56	Aug. 29	40.64				

7/34-32A4. U. S. Geol. Survey, O. F. Benn property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 31 feet. Land-surface datum is 79.28 feet above msl. Highest water level 24.21 below lsd, Dec. 31, 1947; lowest Dry July 27, 1950- Jan. 30, 1951, Mar. 27 -Dec. 31, 1951. Records available: 1947-51. Feb. 26, 29.44.

7/34-32P5. U. S. Geol. Survey, J. Bodger & Sons property. Near Lompoc. Ocean Ave. and Bailey Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 37 feet. Land-surface datum is 77.60 feet above msl. Highest water level 24.47 below lsd, Feb. 1, 1949; lowest 35.50 below lsd, May 28, 1951. Records available: 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	31.27	Apr. 24	35.44	July 26	34.66	Oct. 29	34.22
Feb. 26	33.20	May 28	35.50	Aug. 29	34.54	Nov. 28	33.95
Mar. 27	34.20	June 28	34.76	Sept. 24	34.44	Dec. 26	33.79

7/34-34H1. Mrs. Margaret Balaam. Lompoc. Pine Ave. and First St. Drilled irrigation water-table well in alluvium, diameter 12 inches, depth 160 feet, perforations 118-156. Land-surface datum is 112.10 feet above msl. Highest water level 33.46 below lsd, May 8, 1941; lowest 56.71 below lsd, July 26, 1951. Records available: 1941-51.

Jan. 30	48.80	July 26	56.71	Sept. 24	55.42	Nov. 28	54.02
Feb. 26	51.23	Aug. 29	56.11	Oct. 29	54.90	Dec. 26	53.28
June 28	56.23						

7/34-34H2. U. S. Geol. Survey, Mary Skaarup property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 50 feet. Land-surface datum is 111.95 feet above msl. Highest water level 35.00 below lsd, Mar. 15, 29, 1944; lowest Dry several times 1945-51. Records available: 1943-51. June 28, 47.92; July 26, 48.08. Measurement discontinued.

7/34-35F2. Valla Bros. Near Lompoc. Drilled unused water-table well in alluvium, diameter 15 inches, depth 140 feet, perforations 30-54, 96-136. Land-surface datum is 100.33 feet above msl. Highest water level 9.53 below lsd, Mar. 6, 1941; lowest 32.92 below lsd, Nov. 29, 1951. Records available: 1930-51.

Jan. 29	30.34	Apr. 24	c35.76	July 27	c34.30	Oct. 30	32.52
Feb. 27	32.14	May 29	c34.99	Aug. 28	c35.15	Nov. 29	32.92
Mar. 28	c33.11	June 27	c32.70	Sept. 21	c33.37	Dec. 27	32.72

c Nearby well being pumped.

7/34-35F6. U. S. Geol. Survey, M. Schuyler property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 54 feet, cased to 55 feet. Land-surface datum is 119.46 feet above msl. Highest water level 35.91 below lsd, Feb. 23, 1944; lowest Dry several times 1945-51. Records available: 1943-51. Dry in 1951.

7/34-35F16. M. Schuyler. Near Lompoc. North First St. and College Ave. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 173 feet, cased to 170, perforations 119-170. Land-surface datum is 119.5 feet above msl.. Highest water level 45.48 below lsd, Mar. 3, 1950; lowest 61.15 below lsd, July 26, 1951. Records available: 1947-51.

Jan. 30	52.61	June 28	58.60	Sept. 24	58.04	Nov. 28	56.23
Feb. 27	53.39	July 26	61.15	Oct. 29	57.04	Dec. 26	55.47
May 29	59.95	Aug. 29	58.83				

7/34-35K2. Mrs. M. McDonald. Near Lompoc. State Highway 150. Drilled unused water-table well in alluvium, diameter 10 inches, depth 28 feet. Land-surface datum is 96.01 feet above msl. Highest water level 4.67 below lsd, Mar. 13, Apr. 10, 1941; lowest 19.98 below lsd, May 4, 1950. Records available: 1930-51.

Jan. 29	15.30	Apr. 24	17.06	July 27	16.94	Oct. 30	17.12
Feb. 27	15.51	May 29	19.13	Aug. 28	17.15	Nov. 29	17.11
Mar. 28	16.11	June 27	16.96	Sept. 21	17.19	Dec. 27	17.00

7/35-20J1. Department of the Army, Camp Cooke Military Reservation. Near Surf. Drilled unused artesian well in alluvium, diameter 6 inches, depth 108 feet. Land-surface datum is 19.07 feet above msl. Highest water level 5.07 below lsd, Mar. 17, 1941; lowest 31.27 below lsd, July 15, 1930. Records available: 1930-51.

Jan. 29	10.37	Apr. 24	10.81	July 26	11.67	Oct. 29	11.70
Feb. 26	10.36	May 28	10.85	Aug. 29	11.78	Nov. 28	11.52
Mar. 27	10.45	June 28	11.23	Sept. 24	11.71	Dec. 26	11.20

7/35-22F2. U. S. Geol. Survey, Department of the Army, Camp Cooke Military Reservation. Near Lompoc. Drilled observation water-table well in river channel deposits, diameter 2 inches, depth 11 feet. Land-surface datum is 19.12 feet above msl. Highest water level 4.03 Feb. 7, 1950; lowest 6.28 below lsd, Oct. 21, 1948: Records available: 1947-51.

Jan. 29	5.38	Apr. 24	5.05	July 26	5.28	Oct. 29	5.71
Feb. 26	5.16	May 28	4.99	Aug. 29	5.90	Nov. 28	5.49
Mar. 27	4.87	June 28	5.00	Sept. 24	5.41	Dec. 26	5.31

7/35-22J1. Union Sugar Co. Near Lompoc. Ocean Ave. and Renwick Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 185 feet, perforations 133-180. Land-surface datum is 32.04 feet above msl. Highest water level 6.80 below lsd, Apr. 10, 1941; lowest 24.03 below lsd, Apr. 24, 1951. Records available: 1930-35, 1941-42, 1945-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	14.02	Apr. 24	24.03	Aug. 29	20.09	Nov. 28	15.81
Feb. 26	16.11	June 28	21.47	Sept. 24	18.60	Dec. 26	15.07
Mar. 27	20.48	July 26	b24.58	Oct. 29	19.72		

b Pumped recently.

7/35-22M1. Department of the Army, Camp Cooke Military Reservation. Near Lompoc. Drilled irrigation artesian well in alluvium, diameter 12 inches, depth 180 feet. Land-surface datum is 28.84 feet above msl. Highest water level 8.61 below lsd, Mar. 31, 1949; lowest 18.51 below lsd, July 27, 1950. Records available: 1947-51.

Jan. 29	10.37	Mar. 27	12.81	Aug. 29	14.11	Nov. 28	12.73
Feb. 26	10.62	Apr. 24	14.16	Oct. 29	12.94	Dec. 26	11.61

7/35-22M2. U. S. Geol. Survey, Department of the Army, Camp Cooke Military Reservation. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 22 feet. Land-surface datum is 28.20 feet above msl. Highest water level 9.03 below lsd, Aug. 28, 1950; lowest 14.95 below lsd, Dec. 31, 1949, Oct. 21, 1948. Records available: 1947-51.

Jan. 29	12.15	Apr. 24	13.18	July 26	c12.31	Oct. 29	13.16
Feb. 26	12.49	May 28	c9.25	Aug. 29	11.65	Nov. 28	12.98
Mar. 27	12.84	June 28	c11.62	Sept. 24	c12.87	Dec. 26	13.37

c Nearby well being pumped.

7/35-23E2. Union Sugar Co. Near Lompoc. Ocean Ave. and Union Sugar Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 212 feet, perforated 170-190. Land-surface datum is 36.59 feet above msl. Highest water level 12.60 below lsd, Apr. 10, 1941; lowest 33.06 below lsd, July 27, 1949. Records available: 1930-35, 1941-43, 1945-51. Jan. 29, 18.35; Feb. 26, 19.69; May 28, 22.65; Sept. 24, 23.63; Nov. 28, 19.92; Dec. 26, 19.39.

7/35-23E4. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Ocean Ave. and Union Sugar Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 28 feet. Land-surface datum is 36.90 feet above msl. Highest water level 13.69 below lsd, Feb. 7, 1950; lowest 22.67 below lsd, July 22, 1948. Records available: 1947-51.

Jan. 29	19.74	Apr. 24	c19.74	July 26	c20.41	Oct. 29	c20.62
Feb. 26	19.66	May 28	19.82	Aug. 29	c20.60	Nov. 28	20.62
Mar. 27	c19.74	June 28	c19.82	Sept. 24	20.59	Dec. 26	20.63

c Nearby well being pumped.

7/35-23J2. Union Sugar Co. Near Lompoc. Central Ave. and Artesia Ave. Drilled irrigation artesian well in alluvium, diameter 12 inches, depth 158 feet. Land-surface datum is 43.93 feet above msl. Highest water level 15.70 below lsd, Feb. 7, 1950; lowest 29.92 below lsd, Aug. 26, 1948. Records available: 1947-51. Jan. 29, 17.69; Mar. 27, 26.27, nearby well being pumped; Apr. 24,26.09 Sept. 24, 23.73; Nov. 28, 20.62; Dec. 26, 19.68.

7/35-23J3. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Drilled observation water-table well in alluvium, diameter 2 inches, depth 32 feet, cased to 32 feet. Land-surface datum is 43.43 feet above msl. Highest water level 18.67 below lsd, Mar. 2, 1950; lowest 26.56 below lsd, Oct. 29, 1951. Records available: 1947-51.

Jan. 29	19.94	Apr. 24	23.45	July 26	c26.88	Oct. 29	26.56
Feb. 26	c21.63	May 28	c24.41	Aug. 29	c26.48	Nov. 28	24.81
Mar. 27	23.23	June 28	c22.17	Sept. 24	26.19	Dec. 26	23.11

c Nearby well being pumped.

7/35-23N2. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Ocean Ave. and Renwick Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 17 feet. Land-surface datum is 32.72 feet above msl. Highest water level 10.80 below lsd, Apr. 3, 1947; lowest 15.52 below lsd, Sept. 24, 1951. Records available: 1945-51.

Jan. 29	13.84	Apr. 24	13.29	July 26	14.66	Oct. 29	15.36
Feb. 26	13.89	May 28	c14.97	Aug. 29	15.48	Nov. 28	15.08
Mar. 27	14.78	June 28	14.60	Sept. 24	15.52	Dec. 26	14.86

c Nearby well being pumped.

7/35-24J2. U. S. Geol. Survey, T. M. Parks property. Near Lompoc. Central Ave. and Douglass Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 33 feet. Land-surface datum is 58.98 feet above msl. Highest water level 24.38 below lsd, June 29, 1950; lowest Dry July 27-Dec. 31, 1949, Feb. 26-Mar. 27, Dec. 26, 1951. Records available: 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	28.78	Apr. 24	28.55	July 26	c26.37	Oct. 29	28.47
Feb. 26	(f)	May 28	28.32	Aug. 29	26.94	Nov. 28	29.13
Mar. 27	(f)	June 28	26.05	Sept. 24	27.45	Dec. 26	(f)

c Nearby well being pumped.
f Dry.

7/35-25F6. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Central Ave. and De Wolf Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 19 feet. Land-surface datum is 47.70 feet above msl. Highest water level 6.09 below lsd, May 2, 1946; lowest 15.90 below lsd, Nov. 28, 1951. Records available: 1945-51.

Jan. 20	13.16	Apr. 24	8.39	July 26	13.90	Oct. 29	15.72
Feb. 26	13.41	May 28	12.95	Aug. 29	14.95	Nov. 28	15.90
Mar. 27	c13.97	June 28	12.23	Sept. 24	15.36	Dec. 26	15.83

c Nearby well being pumped.

7/35-26F1. Union Sugar Co. Near Lompoc. Central Ave. and Union Sugar Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 186 feet, perforations 117-176. Land-surface datum is 36.84 feet above msl. Highest water level 0.32 below lsd, Apr. 7, 1941; lowest 27.09 below lsd, July 6, 1949. Records available: 1941, 1947-51. Jan. 29, 10.87; Feb. 26, 21.85; Oct. 29, 16.26; Nov. 28, 13.35; Dec. 26, 12.45.

7/35-26F3. U. S. Geol. Survey, Union Sugar Co. property. Near Lompoc. Union Sugar Ave. and Central Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 18 feet. Land-surface datum is 34.70 feet above msl. Highest water level 8.09 below lsd, July 26, 1951; lowest 13.29 below lsd, July 27, 1949. Records available: 1947-51.

Jan. 29	9.85	Apr. 24	c10.29	July 26	c8.09	Oct. 29	9.27
Feb. 26	11.12	May 28	c9.10	Aug. 29	c9.88	Nov. 28	9.72
Mar. 27	c9.01	June 28	c8.11	Sept. 24	c8.71	Dec. 26	9.93

c Nearby well being pumped.

7/35-26J4. County of Santa Barbara, Artesia School District. Near Lompoc. Artesia Ave. and Central Ave. Drilled public-supply artesian well in alluvium, diameter 8 inches, depth 141 feet, perforations 132-140. Land-surface datum is 40.86 feet above msl. Highest water level 10.37 below lsd, Jan. 31.1950; lowest 33.63 below lsd, July 26, 1951. Records available: 1947-51.

Jan 29	13.25	Apr. 24	30.10	July 26	33.63	Oct. 29	18.64
Feb. 26	b24.63	May 28	b26.94	Aug. 29	22.79	Nov. 28	15.24
Mar. 27	29.65	June 28	26.02	Sept. 24	20.07	Dec. 26	14.99

b Pumped recently.

7/35-27C2. Southern Pacific Railroad. Near Lompoc. Southern Pacific Railroad and Renwick Ave. Drilled unused artesian well in alluvium, diameter 15 inches, depth 118 feet. Land-surface datum is 32.42 feet above msl. Highest water level 3.2 below lsd, Aug. 5, 1930, June 8, 1931; lowest 22.03 below lsd, Sept. 24, 1948. Records available: 1930-32, 1941-49. No measurement made in 1951.

7/35-35A3. Gus Aquistapace. Near Lompoc. Ocean Ave. and Artesia Ave. Drilled irrigation artesian well in Orcutt (?) formation, diameter 14 inches, depth 100 feet, cased to 98, perforations 78-92. Land-surface datum is 45.58 feet above msl. Highest water level 9.82 below lsd, Mar. 31, 1949; lowest 25.81 below lsd, July 27, 1950. Records available: 1947-51.

Jan. 29	12.99	June 28	23.64	Sept. 24	20.47	Nov. 28	15.54
Feb. 27	16.83	July 26	24.81	Oct. 29	18.33	Dec. 26	14.59
Apr. 24	23.57	Aug. 29	23.75				

7/35-35A4. U. S. Geol. Survey, Gus Aquistapace property. Near Lompoc. Ocean Ave. and Artesia Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 23 feet. Land-surface datum is 45.88 feet above msl. Highest water level 7.14 below lsd, Mar. 31, 1949; lowest 16.95 below lsd, Oct. 29, 1951. Records available: 1947-51.

Jan. 29	13.50	Apr. 24	14.17	July 26	16.62	Oct. 29	16.95
Feb. 26	12.82	May 28	c15.78	Aug. 29	16.16	Nov. 28	16.25
Mar. 27	c15.09	June 28	16.19	Sept. 24	16.69	Dec. 26	15.83

c Nearby well being pumped.

7/35-35C2. Department of the Army, Camp Cooke Military Reservation. Near Lompoc. Ocean Ave. Drilled irrigation artesian well in Orcutt formation, diameter 16 inches, depth 122 feet, perforations 77-112. Land-surface datum is 36.37 feet above msl. Highest water level 0.43 below lsd, Mar. 31, 1949; lowest 10.42 below lsd, May 28, 1951. Records available: 1947-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	2.72	Apr. 24	8.73	July 26	10.08	Oct. 29	6.27
Feb. 26	4.16	May 28	10.42	Aug. 29	8.88	Nov. 28	4.88
Mar. 27	8.04	June 28	9.10	Sept. 24	7.20	Dec. 26	4.14

7/35-35C4. U. S. Geol. Survey, Department of the Army, Camp Cooke. Near Lompoc. Ocean Ave. and Union Sugar Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 9 feet, cased to 9 feet. Land-surface datum is 36.68 feet above msl. Highest water level 1.89 below lsd, May 28, 1951; lowest 4.79 below lsd, Feb. 26, 1951. Records available: 1947-51.

Jan. 29	4.65	Apr. 24	3.20	July 26	2.69	Oct. 29	3.30
Feb. 26	4.79	May 28	1.89	Aug. 29	2.79	Nov. 28	4.38
Mar. 27	4.53	June 28	2.50	Sept. 24	3.44	Dec. 26	4.30

7/35-36J6. Denholm Seed Co. Near Lompoc. Ocean Ave. and Douglass Ave. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 102 feet. Land-surface datum is 58.50 feet above msl. Highest water level 20.55 below lsd, Mar. 31, 1949; lowest 38.15 below lsd, July 27, 1950. Records available: 1947-51. Jan. 29, 27.39; June 28, 33.75; Aug. 29, 33.80; Sept. 24, 30.61; Oct. 29, 27.53; Nov. 28, 25.97; Dec. 26, 24.94.

7/35-36J7. U. S. Geol. Survey, Denholm Seed Co. property. Near Lompoc. Ocean Ave. and Douglass Ave. Drilled observation water-table well in alluvium, diameter 2 inches, depth 32 feet. Land-surface datum is 58.50 feet above msl. Highest water level 21.20 below lsd, Mar.31, 1949; lowest 31.32 below lsd, July 27, 1950. Records available: 1947-51.

Jan. 29	25.65	Apr. 24	c31.47	July 26	c31.40	Oct. 29	27.07
Feb. 26	c30.23	May 28	c30.84	Aug. 29	28.95	Nov. 28	26.02
Mar. 26	c31.49	June 28	29.77	Sept. 24	28.20	Dec. 26	25.26

c Nearby well being pumped.

San Antonio Valley

8/32-30K2. John Parma. Los Alamos, U. S. Highway 101 and Den St. Drilled unused artesian well in alluvium, diameter 16 inches, depth 100 feet. Land-surface datum is about 555 feet above msl. Highest water level 1.16 above lsd, Feb. 29, 1944; lowest 8.62 below lsd, July 28, 1951. Records available: 1943-51.

Jan. 30	4.16	Apr. 26	4.28	July 28	8.62	Oct. 30	7.03
Feb. 27	3.64	May 29	5.35	Aug. 29	7.49	Nov. 27	6.59
Mar. 28	3.92	June 27	6.78	Sept. 25	7.49	Dec. 28	6.31

8/33-20K1. Virginia Barca Estate. Near Los Alamos. Drilled unused artesian well in alluvium and Paso Robles formation, diameter 16 inches, depth 351 feet, perforations 10-97, 215-235. Land-surface datum is about 410 feet above msl. Highest water level 4.27 below lsd, Feb. 29, 1944; lowest 38.15 below lsd, Apr. 29, 1947. Records available: 1943-51.

Jan. 30	25.44	Apr. 26	24.68	July 28	c38.71	Oct. 30	25.65
Feb. 27	25.46	May 29	c36.52	Aug. 29	c38.43	Nov. 27	25.31
Mar. 28	24.87	June 27	c38.26	Sept. 25	25.80	Dec. 28	24.75

8/33-20R1. Virginia Barca Estate. Near Los Alamos. Drilled domestic water table-well in alluvium, diameter 10 inches, depth 75 feet. Land-surface datum is about 410 feet above msl. Highest water level 21.20 below lsd, Jan. 30, 1947; lowest 36.32 below lsd, Sept. 27, 1950. Records available: 1943-51.

Jan. 30	23.36	Apr. 26	23.04	July 28	c33.91	Oct. 30	23.87
Feb. 27	23.97	May 29	b36.26	Aug. 29	c33.69	Nov. 27	23.71
Mar. 28	b32.47	June 27	c34.63	Sept. 25	b27.36	Dec. 28	a28.66

a Pumping.
b Pumped recently.
c Nearby well being pumped.

8/34-23B1. Josephine Harris Estate. Near Los Alamos. Harris-Los Alamos Road and State Highway 1. Drilled unused artesian well in alluvium, diameter 12 inches, depth 150 feet. Land-surface datum is about 310 feet above msl. Highest water level 12.19 below lsd, Feb. 29, 1944; lowest 18.20 below lsd, Sept. 25, 1951. Records available: 1943-51.

Jan. 30	16.16	Apr. 26	c17.22	July 28	c19.56	Oct. 30	17.76
Feb. 27	16.61	May 29	c17.68	Aug. 29	c19.08	Nov. 27	17.56
Mar. 28	c17.66	June 27	c18.94	Sept. 25	18.20	Dec. 28	17.34

c Nearby well being pumped.

Santa Maria Valley

9/32-7N1. Valerio Tognazzini. Near Sisquoc. State Highway 140 and Pacific Coast Railway. Drilled irrigation water-table well in Paso Robles formation, diameter 16 inches, depth 204 feet, perforations 82-97, 105-145, 162-185. Land-surface datum is about 422 feet above msl. Highest water level 34.62 below lsd, Apr. 27, 1944; lowest 113.95 below lsd, Oct. 30, 1951. Records available: 1924, 1930, 1932-33, 1938-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	g105.80	Apr. 26	109.89	July 1	g111.33	Oct. 30	113.95
30	105.87	May 29	110.93	Sept. 25	112.92	Nov. 27	112.17
Feb. 27	106.78	June 27	110.96	Oct. 1	g112.70	Dec. 28	111.94
Apr. 1	g113.10						

g By Santa Maria Valley Water Conservation District.

9/32-17G1. Caldrone Estate. Near Sisquoc. Tepusquet Creek Road and State Highway 140. Drilled domestic water-table well in alluvium and Paso Robles formation, diameter 6 inches, depth 107 feet. Land-surface datum is about 447 feet above msl. Highest water level 11.22 below lsd, Apr. 5, 1943; lowest 66.33 below lsd, June 1, 1950. Records available: 1941-51.

Jan. 30	60.00	Apr. 26	62.80	July 27	b60.30	Oct. 30	65.00
Feb. 27	59.40	May 29	64.95	Aug. 29	63.82	Nov. 27	66.18
Mar. 28	59.04	June 27	62.52	Sept. 25	64.51	Dec. 28	a69.76

a Pumping.
b Pumped recently.

9/33-2A1. Santa Maria Realty Co. In Garey. Wicks Ave. and Andrews Ave. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 12 inches, depth 168 feet. Land-surface datum is 378.72 feet above msl. Highest water level 23.62 below lsd, June 4, 1941; lowest 83.37 below lsd, Dec. 28, 1951. Records available: 1930-33, 1936, 1938-51.

Jan. 1	g76.22	Apr. 26	79.30	July 27	81.23	Oct. 30	82.77
30	79.40	June 27	80.11	Aug. 29	82.33	Nov. 27	83.08
Feb. 27	79.32	July 1	g80.16	Oct. 1	g82.42	Dec. 28	83.37
Apr. 1	g81.62						

g By Santa Maria Valley Water Conservation District.

9/33-15D1. South Basin Oil Co. Near Garey. Drilled domestic and stock water-table well in Paso Robles formation, diameter 8 inches, depth 374 feet, perforations 348-350. Land-surface datum is about 582 feet above msl. Highest water level 318.09 below lsd, Jan. 29, 1947; lowest 352.04 below lsd, Nov. 29, 1950. Records available: 1947-50. No measurement made in 1951.

9/34-3N3. City of Santa Maria well 3. Drilled public supply water-table well in Orcutt formation, diameter 16 inches, depth 226 feet, cased to 222, perforations 162-188. Land-surface datum is about 253 feet above msl. Measurements by the city of Santa Maria. Highest water level 143.4 below lsd, Mar. 31, Apr. 30, 1933; lowest 175.40 below lsd, Oct. 1950. Records available: 1933-51. June 5, 166.0; Sept. 10, 167.3.

9/34-6K2. Associated Oil Co. Near Orcutt. Highway 1 and Casmalia Road. Drilled unused water-table well in Orcutt formation, diameter 12 inches, depth 139 feet. Land-surface datum is about 161 feet above msl. Highest water level 59.22 below lsd, Mar 26, 1942; lowest 74.75 below lsd, Dec. 28, 1951. Records available: 1942, 1951.

Mar. 28	71.71	June 27	74.36	Sept. 25	74.42	Nov. 27	74.30
Apr. 26	71.12	July 28	74.74	Oct. 30	74.25	Dec. 28	74.75
May 29	74.24	Aug. 29	74.18				

9/34-8K1. C. Muscio. Near Orcutt. Casmalia Road and Orcutt-Casmalia Road. Drilled domestic and irrigation water-table well in Orcutt and Paso Robles formations, diameter 14 inches, depth 231 feet. Land-surface datum is about 257 feet above msl. Highest water level 144.54 below lsd, Jan. 30, 1947; lowest 175.26 below lsd, Dec. 28, 1951. Records available: 1942, 1947-51. Jan. 30, 161.17; Feb. 27, 163.16; Apr. 26, 163.95; Dec. 28, 175.26.

10/33-7P1. P. T. Bonetti. Suey Road and Main St. Drilled irrigation water-table well in alluvium and Paso Robles formations, diameter 18 inches, depth 365 feet, cased to 330 feet. Land-surface datum is about 260 feet above msl. Highest water level 123.58 below lsd, Dec. 28, 1951; lowest 132.72 below lsd, Oct. 30, 1951. Records available: 1951. Mar. 28, 127.18; Oct. 30, 132.72; Nov. 27, 126.51; Dec. 28, 123.58.

10/33-18G1. La Brea Securities Co., well 8. Near Santa Maria. Suey Road and Santa Maria Valley Railroad. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 436 feet, cased to 424, perforations 132-142, 288-320, 336-340, 408-422. Land-surface datum is about 273 feet above msl. Measurements by Santa Maria Valley Water Conservation District. Highest water level 66.75 below lsd, July 1, 1943; lowest 132.10 below lsd, Apr. 1, 1951. Records available: 1939-51. Jan. 1, 131.80; Apr. 1, 132.10; July 1, 134.10, pumped recently; Oct. 1, 134.30, pumped recently.

10/33-19B1. Owen T. Rice. Near Santa Maria. Battles Road and East Stowell Road. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 307 feet, perforations 92-97, 116-125, 190-215, 238-248. Land-surface datum is about 275 feet above msl. Highest water level 73.31 below lsd, Sept 2, 1943; lowest 157.46 below lsd, June 27, 1951. Records available: 1927, 1929-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	g137.70	Apr. 1	g143.50	July 1	g153.10	Oct. 1	bg150.50
30	136.71	26	140.73	27	157.24	30	146.67
Feb. 27	138.17	May 29	154.16	Aug. 29	155.44	Nov. 27	143.00
Mar. 28	142.51	June 27	157.46	Sept. 25	156.16	Dec. 28	145.00

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

10/33-21N2. Frank Costa Jr. Near Santa Maria. Santa Maria Valley Railroad and State Highway 140. Drilled domestic water-table well in Paso Robles formation, diameter 16 inches, depth 215 feet. Land-surface datum is about 307 feet above msl. Highest water level 67.14 below lsd, June 29, 1944; lowest 140.92 below lsd, Sept. 25, 1951. Records available: 1930, 1944-51.

Jan. 30	128.96	May 29	136.17	Aug. 29	140.52	Nov. 27	139.28
Mar. 28	132.98	July 27	139.37	Sept. 25	140.92	Dec. 28	137.68

10/33-27G1. W. C. Adam. Near Santa Maria. State Highway 140 and Pacific Coast Railway. Drilled stock and irrigation water-table well in Paso Robles formation, diameter 16 inches, depth 272 feet, perforations 140-180, 240-260. Land-surface datum is about 338 feet above msl. Measurements by Santa Maria Valley Water Conservation District. Highest water level 26.00 below lsd, July 1, 1938; lowest 119.50 below lsd, July 1, 1951. Records available: 1929-33, 1936, 1938-51. Jan. 1, 104.95; Apr. 1, 108.70; July 1, 119.50; Oct. 1, 123.70, pumped recently.

10/33-27K1. L. H. Adam. Near Santa Maria. State Highway 140 and Pacific Coast Railway. Drilled unused water-table well in alluvium and Paso Robles formation, diameter 12 inches, depth 300 feet. Land-surface datum is 345 feet above msl. Highest water level 25.08 below lsd, May 19, 1941; lowest 109.56 below lsd, Sept. 27, 1950. Records available: 1941-51.

Jan. 30	107.08	Apr. 26	98.77	July 27	103.62	Oct. 30	103.82
Feb. 27	98.37	May 29	108.10	Aug. 29	105.03	Nov. 27	101.54
Mar. 28	c94.73	June 27	101.47	Sept. 25	104.90	Dec. 28	100.05

c Nearby well being pumped.

10/33-28A1. Joe Soares. Near Santa Maria. Drilled irrigation water-table well in Paso Robles formation, diameter 18 inches, depth 374 feet, perforations 100-215, 242-335. Land-surface datum is about 325 feet above msl. Highest water level 31.99 below lsd, July 1, 1938; lowest 114.52 below lsd, Sept. 25, 1951. Records available: 1929-51.

Jan. 1	g102.80	Apr. 1	g103.97	Sept. 25	114.52	Oct. 30	112.99
30	102.24	26	103.02	Oct. 1	bg125.30	Nov. 27	109.90
Feb. 27	103.48	July 1	bg115.55				

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

10/33-33H1. E. L. Sargent. Near Santa Maria. Sisquoc Road and Bradley Canyon Road. Drilled domestic and stock water-table well in Paso Robles formation, diameter 16 inches, depth 290 feet, perforations 204-232, 245-250, 270-280. Land-surface datum is about 402 feet above msl. Highest water level 179.50 below lsd, Jan. 29, 1947; lowest 216.48 below lsd, Nov. 27, 1951. Records available: 1947-51.

Jan. 30	210.00	Apr. 26	211.92	July 27	b213.86	Oct. 30	216.02
Feb. 27	211.09	May 29	212.53	Aug. 29	214.62	Nov. 27	216.48
Mar. 28	211.22	June 27	213.17	Sept. 25	215.23	Dec. 28	a215.83

a Pumping.
b Pumped recently.

10/34-2R1. Gracio Apalatequi. Near Santa Maria. U. S. Highway 101 and Donovan Road. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 14 inches, depth 294 feet, cased to 284 feet, perforations 106-130, 180-190, 221-226. Land-surface datum is about 230 feet above msl. Highest water level 69.16 below lsd, June 1, 1943; lowest 136.16 below lsd, July 27, 1951. Records available: 1929-30, 1933, 1938-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	g121.60	Apr. 1	g124.60	July 1	bg148.70	Oct. 29	128.79
30	121.03	26	124.01	27	136.16	Nov. 27	126.64
Feb. 27	121.84	May 29	128.08	Sept. 25	130.17	Dec. 28	124.71
Mar. 28	123.39	June 27	134.36	Oct. 1	g129.60		

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

10/34-4R1. Gerald Donovan. Near Santa Maria. Donovan Road and North Blosser Road. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 192 feet, cased to 182, perforations 90-108, 133-174, 182-184. Land-surface datum is about 192 feet above msl. Highest water level 72.89 below lsd, Mar. 1, 1945; lowest 122.50 below lsd, Oct. 30, 1951. Records available: 1930, 1942, 1945-51. Jan. 30, 113.46; Feb. 27, 113.91; Apr. 26, 115.61; Aug. 29, 121.44; Oct. 30, 122.50; Nov. 27, 122.12; Dec. 28, 120.73.

10/34-6N1. Grisingher & Signorelli. Near Santa Maria. State Highway 166 and Bonita Road. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 190 feet. Land-surface datum is about 152 feet above msl. Highest water level 48.40 below lsd, Apr. 1, 1943; lowest 96.01 below lsd, Sept. 25, 1951. Records available: 1930, 1934, 1936-51.

Jan. 1	g81.47	Mar. 28	83.09	May 29	86.15	Oct. 1	g90.38
30	79.94	Apr. 1	g83.45	July 1	g88.48	Nov. 27	88.65
Feb. 27	81.27	26	83.89	Sept. 25	96.01	Dec. 28	86.77

g By Santa Maria Valley Water Conservation District.

10/34-9F1. Mrs. A. E. Preisker. Near Santa Maria. State Highway 166 and North Blosser Road. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 224 feet, perforations 130-147, 160-210, 217-221. Land-surface datum is about 189 feet above msl. Highest water level 70.62 below lsd, Apr. 1, 1944; lowest 111.70 below lsd, Apr. 1, 1951. Records available: 1942-51. Jan. 1, 110.47; Apr. 1, 111.70; July 1, 117.40, pumped recently; Oct. 1, 119.20, pumped recently. Measurements by Santa Maria Valley Water Conservation District.

10/34-14E3. City of Santa Maria. Santa Maria Valley Railroad and U. S. Highway 101. Drilled unused water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 160 feet, cased to 182 feet, perforations 87-109, 164-181. Land-surface datum is about 225 feet above msl. Highest water level 58.67 below lsd, Dec. 22, 1918; lowest 153.96 below lsd, Nov. 11, 1951. Records available: 1917-51.

Jan. 7	g138.79	Apr. 1	g138.83	July 22	g145.15	Oct. 14	g151.88
14	g138.67	8	g139.10	27	b145.14	21	g153.13
21	g138.52	15	g139.40	29	g144.69	28	g152.50
28	g138.48	26	139.73	Aug. 5	g148.38	30	146.45
30	138.44	29	g139.73	12	g146.00	Nov. 4	g152.10
Feb. 4	g138.29	May 29	141.34	19	g148.08	11	g153.96
11	g138.23	June 3	g141.23	26	g147.04	18	g153.08
18	g138.27	10	g141.37	29	145.78	25	g150.04
25	g138.44	17	g141.85	Sept. 2	g148.63	27	146.20
27	138.50	24	g142.13	9	g147.38	Dec. 2	g150.81
Mar. 4	g138.44	27	142.98	16	g149.00	9	g150.38
11	g138.40	July 1	g142.54	23	g150.17	16	g147.88
18	g138.44	8	g143.17	25	146.07	23	g147.19
25	g138.65	15	g143.63	Oct. 7	g151.06	28	145.52
28	138.74						

b Pumped recently.
g By City of Santa Maria.

10/34-20H1. Ulisse Tognazzini. Near Santa Maria. State Highway 166, Casmalia Road and Santa Maria Railroad. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 246 feet, cased to 242 feet, perforations 90-130, 140-176, 196-238. Land-surface datum is about 182 feet above msl. Highest water level 66.57 below lsd, Mar. 1, 1945; lowest 106.50 below lsd, Sept. 25, 1951. Records available: 1930, 1942, 1944-51.

Jan. 30	97.39	May 29	102.21	Sept. 25	106.50	Nov. 27	105.53
Feb. 27	98.03	June 27	103.46	Oct. 30	106.35	Dec. 28	104.20
Mar. 28	99.11	Aug. 29	106.28				

10/34-22R1. George J. Wheat. Near Santa Maria. Stowell Road and U. S. Highway 101. Drilled industrial water-table well in alluvium and Paso Robles formation, diameter 16 inches, depth 252 feet, cased to 245 feet, perforations 118-242. Land-surface datum is about 217 feet above msl. Highest water level 93.19 below lsd, Mar. 1, 1945; lowest 135.37 below lsd, Aug. 29, 1951. Records available: 1931, 1934, 1938-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	g126.70	Apr. 1	g129.25	July 1	g132.60	Oct. 1	g134.10
30	127.72	26	130.23	27	133.09	30	135.29
Feb. 27	128.51	May 29	131.33	Aug. 29	135.37	Nov. 27	134.96
Mar. 28	128.99	June 27	132.81	Sept. 25	135.19		

g By Santa Maria Valley Water Conservation District.

10/34-23H1. Marion B. Rice. Near Santa Maria. Stowell Road and South Nance Road. Drilled irrigation water-table well in alluvium and Paso Robles formation, diameter 18 inches, depth 218 feet, cased to 208. Land-surface datum is about 242 feet above msl. Highest water level 100.65 below lsd, Apr. 1, 1943; lowest 151.92 below lsd, Oct. 1, 1951. Records available: 1929-30, 1933, 1938-51. Jan. 1, 145.90; Apr. 1, 146.25; Apr. 26, 147.84; July 1, 155.75, pumped recently; Oct. 1, 151.92. Measurements by Santa Maria Valley Water Conservation District.

10/34-31F1. Union Sugar Co. Near Betteravia. Betteravia-Santa Maria Road and Casmalia Road. Drilled irrigation water-table well in Orcutt formation, diameter 10 inches, depth 175 feet. Land-surface datum is about 179 feet above msl. Highest water level 75.95 below lsd, Apr. 25, 1945; lowest 106.32 below lsd, Jan. 30, 1951. Records available: 1942, 1944-51. Jan. 30, 106.32; Oct. 30, 105.30; Nov. 27, 105.27; Dec. 28, 105.05.

10/35-7F1. M. J. Ellis. Near Guadalupe. Drilled domestic and irrigation artesian well in alluvium and Paso Robles formation, diameter 12 inches, depth 249 feet, perforated 140-145, 200-225. Land-surface datum is about 48 feet above msl. Highest water level flowing, Dec. 30, 1943, Feb. 29, 1944; lowest 20.08 below lsd, July 27, 1951. Records available: 1929-36, 1938-51.

Jan. 1	g6.53	Apr. 1	g13.10	July 27	20.08	Oct. 30	11.86
30	5.94	26	12.05	Sept. 25	15.69	Nov. 27	8.88
Feb. 27	9.28	July 1	bg23.20	Oct. 1	g15.20	Dec. 28	8.55

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

10/35-7G3. John Jenkins. Near Guadalupe. Drilled unused artesian well in alluvium and Paso Robles formation, diameter 16 inches, depth 286 feet. Land-surface datum is about 53 feet above msl. Highest water level 3.24 below lsd, Feb. 29, 1944; lowest 29.64 below lsd, July 27, 1951. Records available: 1942-51.

Jan. 30	15.37	Apr. 26	22.04	July 27	29.64	Oct. 30	21.70
Feb. 27	19.04	May 29	26.03	Aug. 29	27.60	Nov. 27	19.72
Mar. 28	c26.13	June 27	28.20	Sept. 25	26.26	Dec. 28	17.87

c Nearby well being pumped.

10/35-9F1. Waller-Franklin Seed Co. Near Guadalupe. State Highway 166 and Southern Pacific Railroad. Drilled irrigation artesian well in alluvium, diameter 12 inches, depth 198 feet. Land-surface datum is about 88 feet above msl. Highest water level 13.61 below lsd, May 19, 1942; lowest 52.33 below lsd, June 27, 1951. Records available: 1930, 1933, 1935-36, 1938-51.

Jan. 1	g30.90	May 29	45.40	Aug. 29	46.57	Oct. 30	39.50
30	34.25	June 27	52.33	Sept. 25	45.44	Nov. 27	35.68
Feb. 27	35.22	July 1	g44.70	Oct. 1	g45.90	Dec. 28	34.39
Apr. 1	g43.90	27	52.18				

g By Santa Maria Valley Water Conservation District.

10/35-9N1. Agnes King. At Guadalupe. Drilled irrigation artesian well in Paso Robles formation, diameter 16 inches, depth 285 feet. Land-surface datum is about 87 feet above msl. Measurements by Santa Maria Valley Conservation District. Highest water level 13.30 below lsd, Apr. 1, 1945; lowest 51.35 below lsd, Oct. 1, 1951. Records available: 1930, 1938-51. Jan. 1, 33.05, pumped recently; Apr. 1, 53.80, pumped recently; July 1, 50.00, pumped recently; Oct. 1, 51.35.

10/35-12M1. E. and G. Le Roy. Near Santa Maria. State Highway 166 and Bonita Road. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 210 feet, perforations 133-148, 173-185. Land-surface datum is about 138 feet above msl. Highest water level 23.43 below lsd, Jan. 23, 1924; lowest 79.29 below lsd, Aug. 29, 1951. Records available: 1924, 1927, 1930-32, 1938-51.

Jan. 1	g67.77	Apr. 1	g74.20	Aug. 29	79.29	Nov. 27	73.19
30	65.45	July 1	g62.60	Oct. 1	g79.02	Dec. 28	71.57

g By Santa Maria Valley Water Conservation District.

10/35-21B1. Mathison & Shaw. Near Guadalupe. Corralillos Canyon Road and Southern Pacific Railroad. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 310 feet, perforations 102-118, 134-136, 145-175, 246-248, 251-300. Land-surface datum is about 94 feet above msl. Highest water level 7.85 below lsd, Feb. 29, 1944; lowest 44.07 below lsd, Oct. 1, 1951. Records available: 1938-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	bg31.46	Apr. 26	31.87	Oct. 1	g44.07	Nov. 27	27.75
30	28.22	July 1	bg43.97	30	b34.80	Dec. 28	b26.86
Apr. 1	bg39.00						

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

10/35-24B1. Union Sugar Co. Near Santa Maria. Corralillos Canyon Road and Ray Road. Drilled irrigation artesian well in alluvium and Paso Robles formation, diameter 16 inches, depth 290 feet, perforations 122-153, 169-175, 178-288. Land-surface datum is about 144 feet above msl. Highest water level 42.55 below lsd, Feb. 29, 1944; lowest 83.61 below lsd, July 27, 1951. Records available: 1934, 1938-51.

Jan. 1	g70.65	Apr. 1	g76.20	Aug. 29	81.52	Oct. 30	79.26
30	69.06	26	74.48	Sept. 25	81.38	Nov. 27	76.81
Feb. 27	70.93	July 1	g79.00	Oct. 1	g70.70	Dec. 28	75.33
Mar. 28	75.68	27	83.61				

g By Santa Maria Valley Water Conservation District.

11/34-19Q1. Frank Silva. Near Santa Maria. Drilled domestic water-table well in Orcutt and Paso Robles formations, diameter 6 inches, depth 315 feet. Land-surface datum is about 305 feet above msl. Highest water level 223.77 below lsd, Jan. 30, 1947; lowest 254.12 below lsd, Aug. 29, 1951. Records available: 1947-51.

Jan 30	238.80	Apr. 26	245.37	July 27	252.59	Oct. 30	248.75
Feb. 27	237.56	May 29	a248.58	Aug. 29	254.12	Nov. 27	246.07
Mar. 28	b242.82	June 27	b248.81	Sept. 25	249.95	Dec. 28	a244.38

a Pumping.
b Pumped recently.

11/34-30Q1. Mary Bolton. Near Santa Maria. Bonita Road and Guadalupe-Nipomo Road. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 180 feet. Land-surface datum is about 148 feet above msl. Highest water level 34.59 below lsd, May 16, 1941; lowest 84.42 below lsd, Nov. 27, 1951. Records available: 1930, 1933, 1936, 1938-51.

Jan. 1	g75.00	Apr. 1	g73.65	Sept. 25	84.18	Nov. 27	84.42
30	77.62	May 29	83.69	Oct. 1	g84.20	Dec. 28	83.74
Mar. 28	77.87	July 1	bg78.83				

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

11/34-34J1. L. O. Fox. Near Santa Maria. Drilled domestic and stock water-table well in alluvium, diameter 8 inches, depth 103 feet. Land-surface datum is about 209 feet above msl. Highest water level 62.37 below lsd, Apr. 30, 1942; lowest 105.00 below lsd, Oct. 20, 1948. Records available: 1930, 1942, 1947-51.

Jan. 30	96.87	Apr. 26	101.95	Aug. 29	102.63	Nov. 27	99.24
Feb. 27	99.26	May 29	97.39	Sept. 25	101.49	Dec. 28	98.35
Mar. 28	97.16	June 27	97.39	Oct. 29	102.32		

11/35-20E1. Union Sugar Co. Near Guadalupe. Southern Pacific Railroad and Oso Flaco Lake Road. Drilled irrigation artesian well in Paso Robles formation, diameter 18 inches, depth 525 feet, cased to 444, perforations 150-444. Land-surface datum is about 49 feet above msl. Highest water level flowing, Feb. 29, 1944; lowest 29.50 below lsd, Apr. 1, 1941. Records available: 1938-51.

Jan. 1	g9.17	Apr. 26	18.16	July 27	b31.04	Oct. 30	14.09
30	8.09	May 29	17.17	Aug. 29	17.15	Nov. 27	11.54
Feb. 27	10.75	June 27	16.14	Sept. 25	16.60	Dec. 28	10.06
Apr. 1	bg49.00	July 1	g17.00	Oct. 1	g17.00		

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

11/35-25H1. M. J. Mendoza. Near Santa Maria. Bonita Road and Guadalupe-Nipomo Road. Drilled unused water-table well in alluvium, diameter 16 inches, depth 129 feet. Land-surface datum is about 135 feet above msl. Highest water level 33.42 below lsd, June 29, 1944; lowest 61.27 below lsd, Dec. 28, 1951. Records available: 1942, 1944-51.

Jan. 30	58.17	Apr. 26	58.15	July 27	59.26	Oct. 30	60.59
Feb. 27	57.86	May 29	58.55	Aug. 29	59.64	Nov. 27	61.04
Mar. 28	58.34	June 27	58.87	Sept. 25	60.08	Dec. 28	61.27

11/35-26M2. Sam Tognazzini. Near Guadalupe. Oso Flaco Lake Road and Guadalupe-Nipomo Road. Drilled unused artesian well in alluvium and Paso Robles formation, diameter 14 inches, depth 324 feet, perforations 112-125, 254-280, 300-320. Land-surface datum is about 106 feet above msl. Highest water level 28.92 below lsd, Nov. 29, 1944; lowest 65.99 below lsd, July 26, 1950. Records available: 1930, 1944-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	47.00	Apr. 26	56.82	July 27	64.89	Oct. 30	c62.44
Feb. 27	49.70	May 29	c64.45	Aug. 29	c67.73	Nov. 27	53.74
Mar. 28	c62.43	June 27	c64.92	Sept. 25	c64.68	Dec. 28	51.68

c Nearby well being pumped.

11/35-28M1. Union Sugar Co. Near Guadalupe. Oso Flaco Lake Road and Southern Pacific Railroad. Drilled irrigation artesian well in Paso Robles formation, diameter 16 inches, depth 376 feet, perforations 235-239, 272-276, 300-372. Land-surface datum is about 77 feet above msl. Measurements by Santa Maria Valley Water Conservation District. Highest water level 11.09 below lsd, Dec. 30, 1943; lowest 43.70 below lsd, Oct. 1, 1951. Records available: 1934, 1938-51. Jan. 1, 27.10; Apr. 1, 41.60; July 1, 41.30; Oct. 1, 43.70.

11/35-33G1. H. E. Pezzoni. Near Guadalupe. Southern Pacific Railroad and Guadalupe-Nipomo Road. Drilled irrigation artesian well in alluvium, diameter 10 inches, depth 141 feet. Land-surface datum is about 91 feet above msl. Highest water level 16.49 below lsd, Feb. 29, 1944; lowest 48.90 below lsd, Aug. 29, 1951. Records available: 1930, 1933-34, 1938-51.

Jan. 1	g43.87	Mar. 28	45.03	July 1	bg50.35	Oct. 30	43.40
30	35.32	Apr. 1	g46.50	Aug. 29	48.90	Nov. 27	40.15
Feb. 27	38.40	May 29	48.41	Oct. 1	bg49.30	Dec. 28	38.57

b Pumped recently.
g By Santa Maria Valley Water Conservation District.

11/35-35A1. Elmer A. Runels. Near Guadalupe. Bonita Road and Nipomo-Guadalupe Road. Drilled irrigation artesian well in alluvium, diameter 16 inches, depth 195 feet, perforations 125-189. Land-surface datum is about 123 feet above msl. Measurements by Santa Maria Valley Water Conservation District. Highest water level 24.50 below lsd, Feb. 24, 1925; lowest 67.23 below lsd, Oct. 1, 1951. Records available: 1925, 1930, 1938-51. Jan. 1, 59.07; Apr. 1, 62.40; July 1, 66.20; Oct. 1, 67.23.

Cuyama Valley

7/24-13C2. Ventura County, Apache School District. Near Camp Ozena at Apache School. Drilled domestic water-table well in alluvium, diameter 8 inches, depth 165 feet. Land-surface datum is about 3,418 feet above msl. Highest water level 36.95 below lsd, Jan. 26, 1950; lowest 47.23 below lsd, May 28, 1951. Records available: 1950-51.

Jan. 29	39.98	May 28	47.23	Aug. 28	b48.22	Nov. 26	44.01
Mar. 27	43.69	June 26	41.44	Sept. 24	42.89	Dec. 27	44.23
Apr. 26	40.74	July 27	41.85	Oct. 29	43.52		

b Pumped recently.

8/24-8L1. Hickey Bros. Land Co. Drilled unused water-table well in alluvium and older continental deposits, diameter 12 inches, depth 290 feet. Land-surface datum is about 3,050 feet above msl. Highest water level 127.96 below lsd, Jan. 26, 1950; lowest 149.55 below lsd, Dec. 27, 1951. Records available: 1950-51.

Jan. 29	142.30	May 28	c140.09	Aug. 28	c144.07	Nov. 26	148.67
Feb. 26	143.20	June 26	141.35	Sept. 24	c143.87	Dec. 27	149.55
Apr. 25	c140.30	July 26	c142.66	Oct. 29	146.58		

c Nearby well being pumped.

9/24-19Q1. Sam Knittle. Drilled unused water-table well in alluvium, diameter 6 inches, depth 90 feet. Land-surface datum is 2,784.19 feet above msl. Highest water level 16.13 below lsd, May 30, 1944; lowest 74.44 below lsd, Dec. 27, 1951. Records available: 1941-51.

Jan. 29	71.75	June 26	72.59	Sept. 24	73.12	Nov. 26	73.60
Mar. 27	72.66	July 26	72.18	Oct. 29	74.15	Dec. 27	e74.44
May 28	69.90	Aug. 28	73.54				

e Estimated.

9/24-33M1. Walter C. Barnes. Drilled unused water-table well in older continental deposits, diameter 12 inches, depth 233 feet. Land-surface datum is about 3,049 feet above msl. Highest water level 170.81 below lsd, May 1, 1950; lowest 185.97 below lsd, Dec. 27, 1951. Records available: 1950-51.

Jan. 29	178.28	Apr. 25	180.18	July 26	182.36	Oct. 29	184.64
Feb. 26	178.93	May 28	180.94	Aug. 28	183.17	Nov. 26	185.29
Mar. 27	179.53	June 26	181.59	Sept. 24	183.82	Dec. 27	185.97

10/25-21G1. E. H. Mettler. Near Cuyama. Cuyama River and State Highway 166. Drilled irrigation water-table well in alluvium and older continental deposits, diameter 16 to 10 inches, depth 657 feet, cased to 657, perforations 108-348, 354-655. Land-surface datum is about 2,357 feet above msl. Highest water level 77.41 below lsd, Jan. 29, 1947; lowest 106.80 below lsd, Nov. 28, 1950. Records available: 1947-51. Jan. 29, 96.85; Feb. 26, 97.30; Nov. 26, 106.30; Dec. 27, 105.96.

10/25-30F1. Adolph Kirschenmann. Drilled irrigation water-table well in alluvium and older continental deposits, diameter 16 inches, depth 376 feet, cased to 374, perforations 124-160, 170-187, 196-202, 229-232, 241-250, 265-268, 274-313, 332-370. Land-surface datum is about 2,311 feet above msl. Highest water level 47.36 below lsd, Apr. 24, 1945; lowest 78.92 below lsd, Sept. 24, 1951. Records available: 1941-51. Jan. 29, 61.94; Feb. 26, 65.78; Apr. 25, 71.76; Sept. 24, 78.92; Oct. 29, 73.72; Dec. 27, 69.46.

10/26-9R2. H. S. Russell. Near Cuyama. Drilled unused water-table well in alluvium and older continental deposits, diameter 14 inches, depth 380 feet, cased to 338, perforations 33-54, 97-111, 118-131, 155-168, 175-212. Land-surface datum is about 2,135 feet above msl. Highest water level 21.36 below lsd, Feb. 26, 1947; lowest 44.84 below lsd, May 31, 1950. Records available: 1942, 1947-51. Jan. 29, 26.83; Feb. 26, 31.43; Apr. 25, 40.96; Nov. 26, 42.64; Dec. 27, 34.80.

10/26-22A1. W. C. Ramelli. Drilled unused artesian well in alluvium and older continental deposits, diameter 12 inches, depth 423 feet, cased to 423, perforations 103-115, 124-145, 176-187, 208-237-250-305, 327-343, 355-391, 402-423. Land-surface datum is about 2,200 feet above msl. Highest water level 0.51 above lsd, Mar. 1, 1944; lowest 32.60 below lsd, July 25, 1950. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	9.09	Apr. 25	22.84	July 27	30.85	Oct. 29	11.64
Feb. 26	14.50	May 28	22.46	Aug. 28	30.05	Nov. 26	8.88
Mar. 27	15.40	June 26	25.66	Sept. 24	26.60	Dec. 27	8.02

10/27-11C1. A. P. Anderson. Near Cuyama. Drilled domestic and irrigation water-table well in alluvium and older continental deposits, diameter 14 inches, depth 378 feet, plugged back to 127, perforations 36-117. Land-surface datum is about 1,963 feet above msl. Highest water level 23.94 below lsd, June 17, 1942; lowest 33.69 below lsd, Aug. 28, 1950. Records available: 1942, 1947-51. Jan. 29, 25.35; Apr. 25, 29.57; May 28, 31.29; June 26, 33.53; Oct. 29, 29.58; Nov. 26, 27.20; Dec. 27, 26.46.

10/27-12R1. William Kirschenmann Estate. Drilled domestic and irrigation water-table well in alluvium, diameter 12 inches, depth 131 feet, cased to 131, perforations 53-128. Land-surface datum is about 2,036 feet above msl. Highest water level 38.58 below lsd, Apr. 28, 1942; lowest 53.41 below lsd, Sept. 23, 1948. Records available: 1941-51.

Jan. 29	45.00	Apr. 25	47.30	July 26	46.52	Oct. 29	46.19
Feb. 26	45.17	May 28	47.46	Aug. 28	b46.75	Nov. 26	46.24
Mar. 27	46.50	June 26	46.98	Sept. 24	46.35	Dec. 27	46.08

b Pumped recently.

HAWAII

By D. A. Davis and K. J. Takasaki

Scope of Water-Level Program

Measurement of water levels and determination of chloride content of water in observation wells was continued in 1951 as a part of ground-water investigations carried on in Hawaii in cooperation with the Hawaii Division of Hydrography. Measurements were made in 103 wells. (See figures 29 to 33.) In addition, 423 chloride determinations were made in 105 wells. A recording gage was maintained on one well. On the island of Oahu, the Honolulu Board of Water Supply made measurements in 87 wells. The Board maintained recording gages on 15 wells.

Precipitation

Total precipitation throughout the islands in 1951 was somewhat higher than normal, but the excess was principally the result of unusually heavy rainfall over much of the area during March, October, and December. During the period April through July, rainfall on all the islands was substantially below normal. The following table shows the percentage of normal monthly rainfall in the ground-water recharge area near Honolulu during 1951. The figures were compiled by the Honolulu Board of Water Supply and are based on the records of ten stations in the recharge area. Rainfall records in the area for the 10-year period ending in 1951 are shown graphically in figure 34.

Percentage of normal rainfall in Honolulu area, 1951

Month	Percentage of normal rainfall	Month	Percentage of normal rainfall	Month	Percentage of normal rainfall
January	97	May	45	September	59
February	102	June	24	October	144
March	387	July	45	November	76
April	72	August	105	December	155
Percentage of normal					109

Pumpage

Total pumpage in Hawaii was in excess of 178,000 million gallons in 1951, or about 9,000 million gallons greater than in 1950. The increase was the result of heavier pumping for the irrigation of sugar cane to offset deficient rainfall during the period of April through July. The approximate average pumping rate for the Territory was 480 million gallons per day. On Oahu the approximate rate was 320 million gallons per day. Pumpage data for Maui are incomplete, but the available information indicates that the pumping rate on Maui Isthmus exceeded 130 million gallons per day. In addition to the ground water pumped, 57,000 million gallons were delivered to the Maui Isthmus from East Maui through the ditches of the East Maui Irrigation Company. See tables on page 120 for pumpage from wells and tunnels in 1951.

Interpretation of Water-Level Fluctuations

During 1951 water levels in observation wells on Oahu continued to show the slow but definite upward trend which began in 1947 following the low stages of 1945 and 1946. This slow rise indicates the effects of several years of near-normal rainfall and of reduced pumping since 1945. Fluctuations in water levels during the year followed closely the normal annual pattern in which the highest stages generally occur during winter or early spring months and lowest stages during summer and autumn months. This pattern apparently reflects the usual high rainfall of winter and early spring and heavy pumping of ground water in the summer. In the basal ground-water aquifers water-level changes in a single year are not nearly so significant as long-period trends. Except in areas 1 (St. Louis Heights) and 8 (Kahuku) the basal ground-water level in each area in Oahu showed a net rise during 1951. The greatest rise was in area 6 (Pearl Harbor). These gains were consistent with the general rise in water levels. Although there were net losses in areas 1 and 8, the trend in these areas was either upward or nearly level.

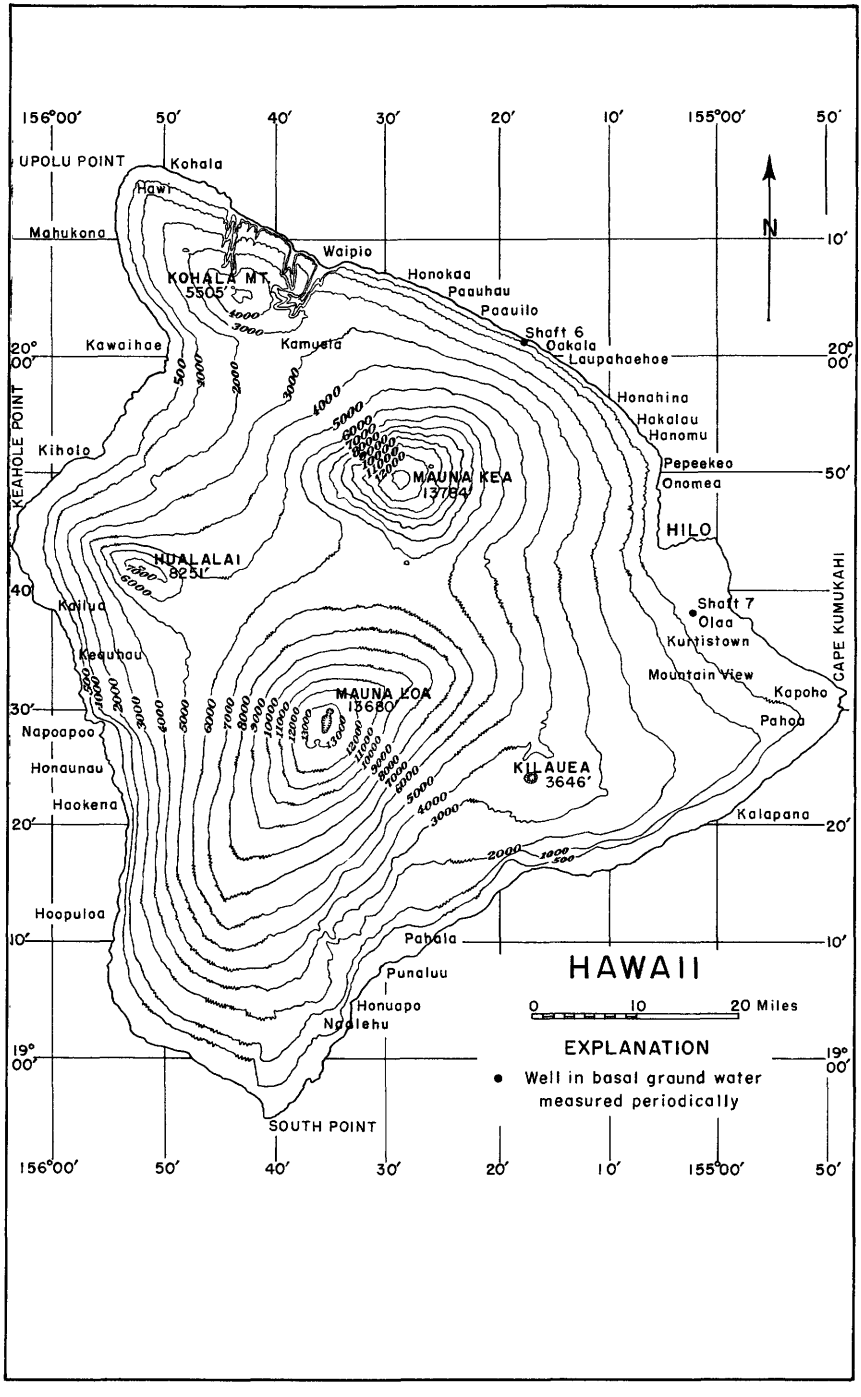

Figure 29. --Location of observation wells on Island of Hawaii.

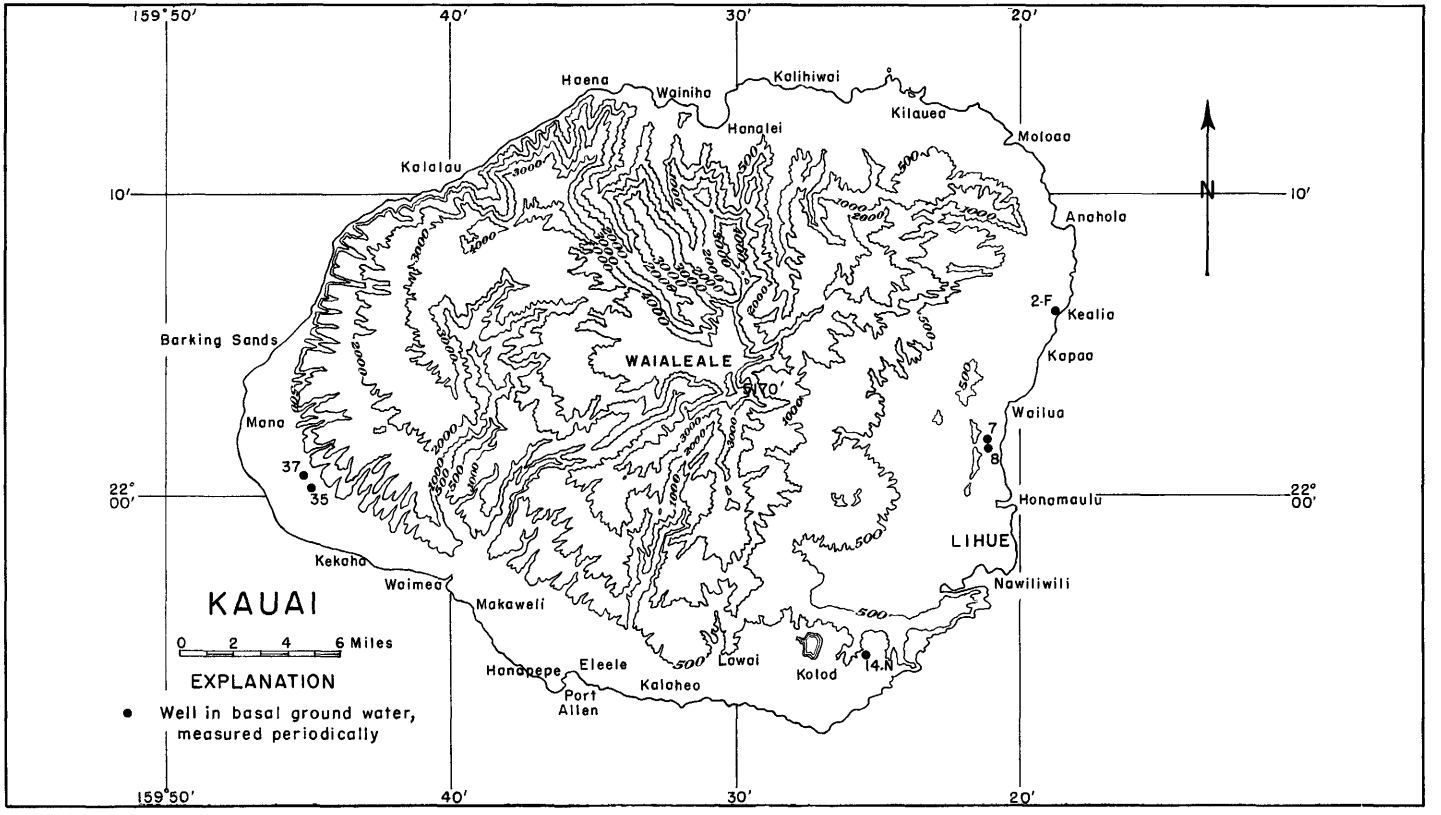

Figure 30. --Location of observation wells on Island of Kauai.

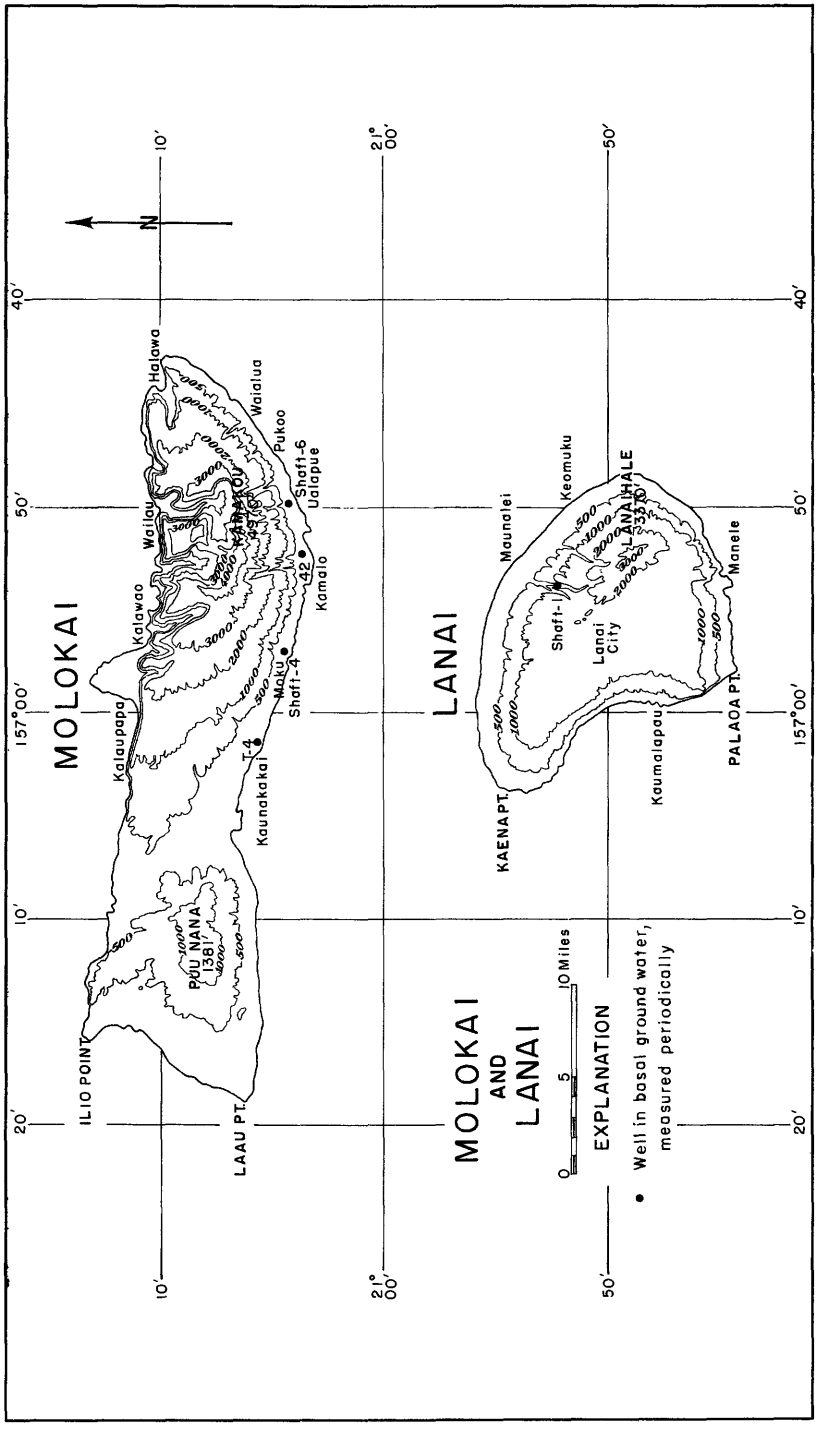

Figure 31.--Location of observation wells on Islands of Molokai and Lanai.

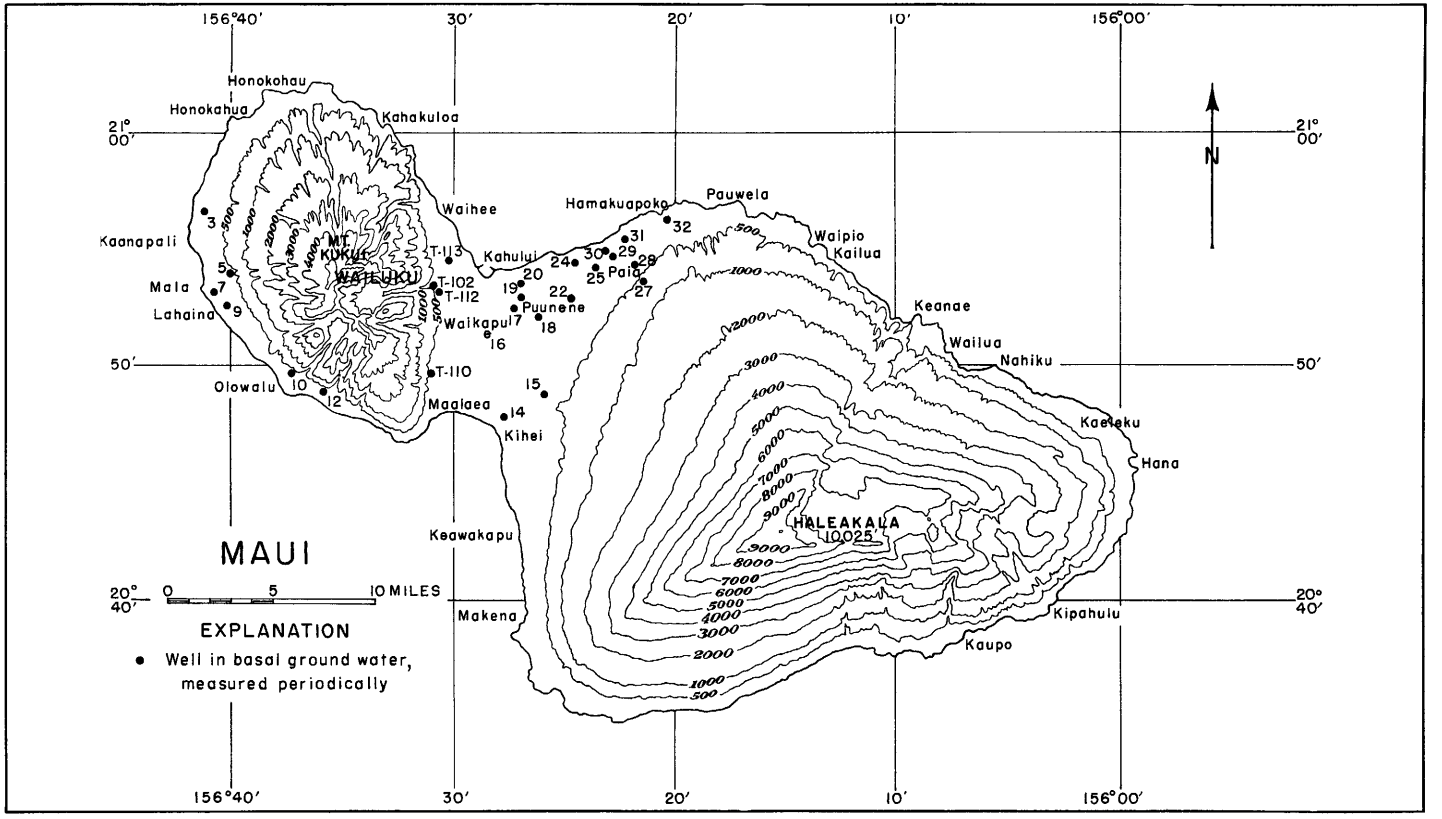

Figure 32.--Location of observation wells on Island of Maui.

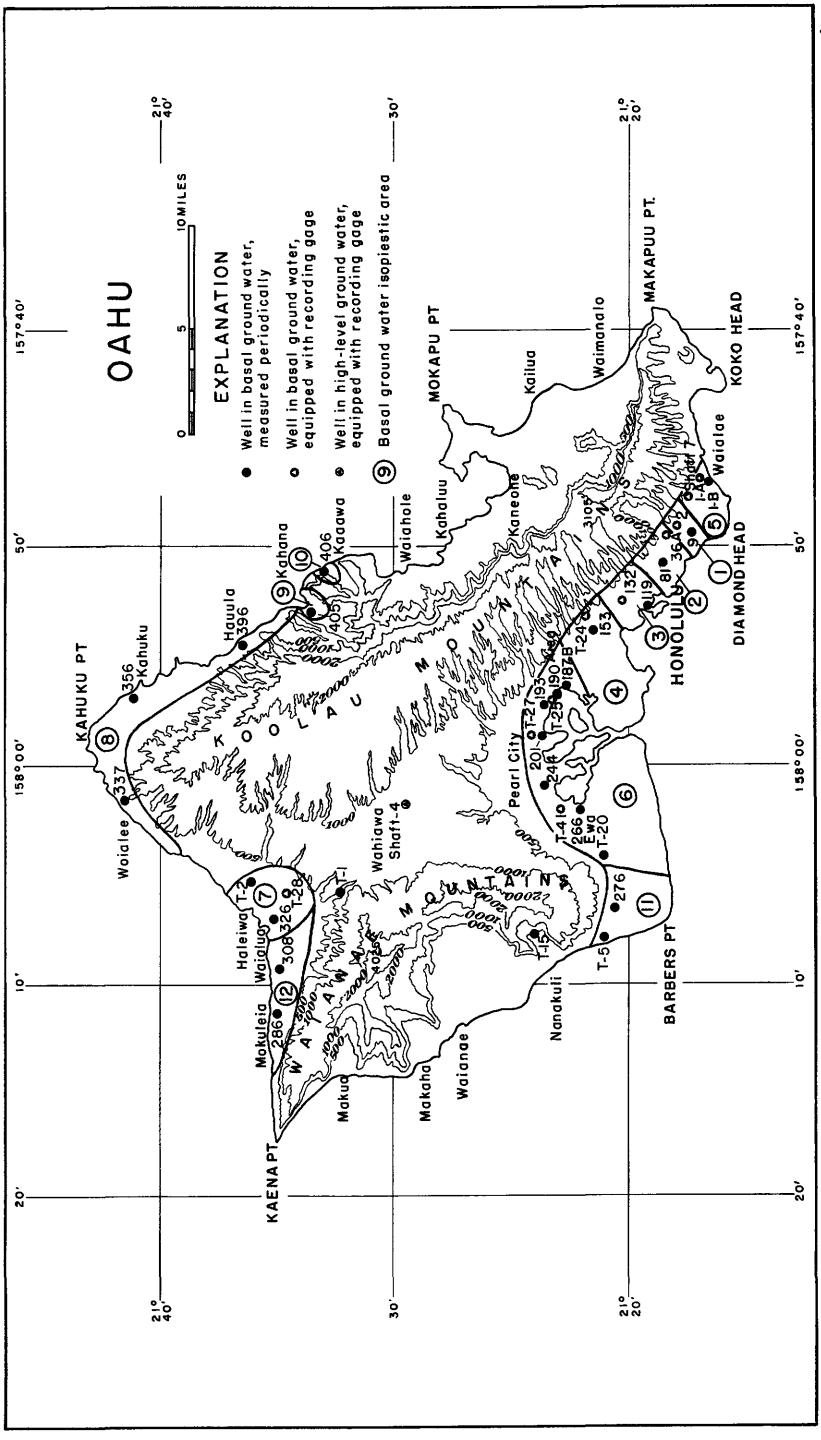

Figure 33.--Location of observation wells on Island of Oahu.

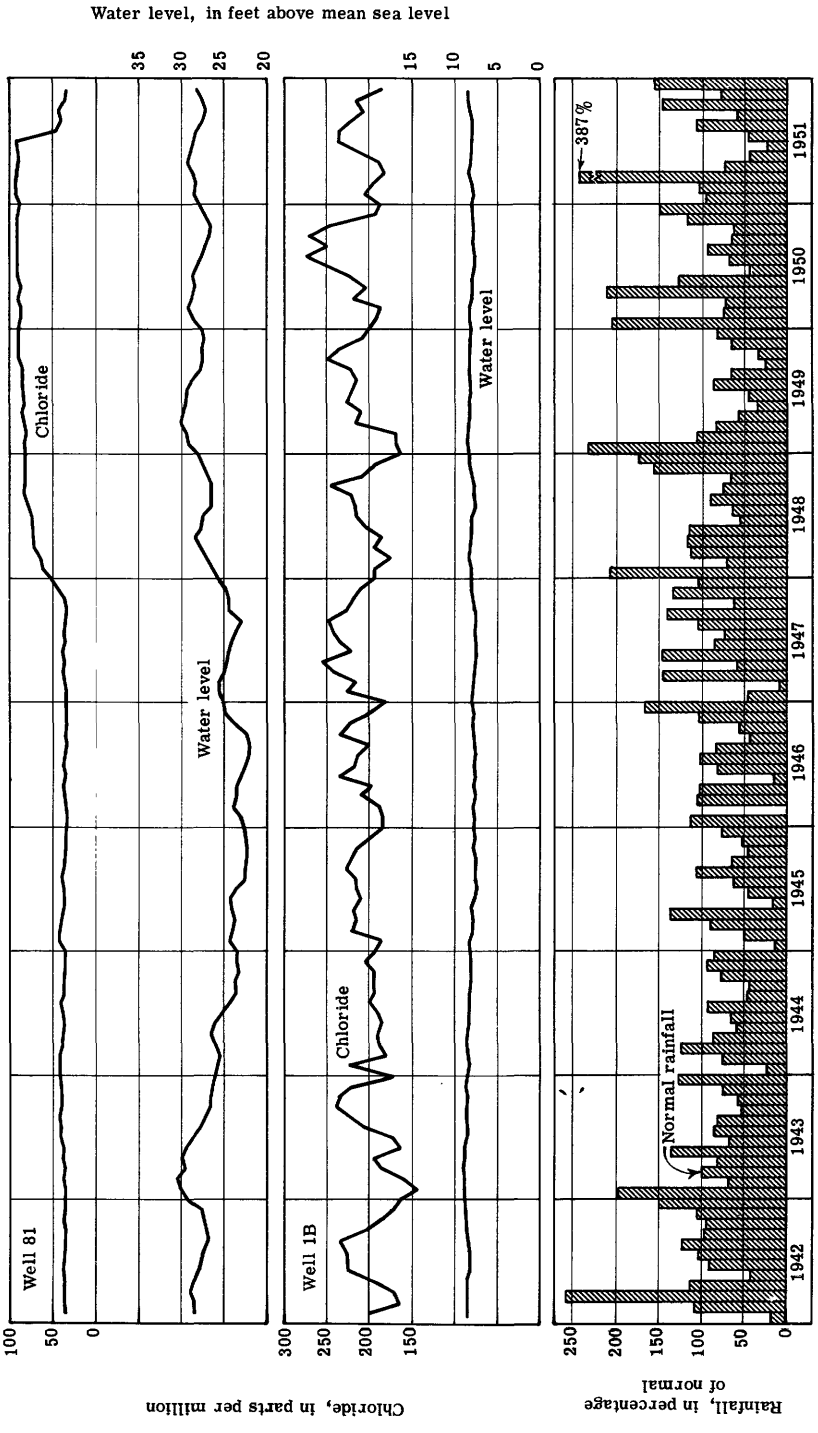

Figure 34. --Water levels and chlorides of two observation wells in Honolulu and the rainfall in the Honolulu area for the 10-year period ending in 1951.

Records of chloride content of water in wells on Oahu during 1951 suggest that an upward trend observed in a number of wells during the past several years may have begun to level off. The most striking example of a change is found in the record for well 81 which showed a decrease of about 50 percent in chloride content at midyear (figures 34 and 35). In observation wells on Maui the water levels for 1951 showed little change over the previous year, but chloride content of water in the wells was generally lower than in 1950. Water levels on Molokai maintained a generally level trend or were higher than in the previous year. Water levels in shaft 7 on the southern part of the Island of Hawaii fluctuated considerably, but the average level for the year was but little different from those of previous years. On Kauai the water levels were slightly lower than in 1950, but chloride content of the wells also was lower.

Month of high and low heads in artesian area and net gain or loss in static head, in feet, as shown by typical wells on the Island of Oahu, 1951

Area	Name	Well	High	Low	Net gain or loss
1	St. Louis Heights	2	January	June	-0.48
2	Makiki-Pacific Heights	36A	December	August	+1.67
3	Kapalama	132	December	August	+1.75
4	Moanalua	T-24	December	February	+1.70
5	Wilhelmina Rise	Shaft 7	November	February	+.24
6	Pearl Harbor	201	December	February	+2.21
6	Pearl Harbor	244	December	February	+3.62
6	Pearl Harbor	266	December	August	+4.54
7	Waialua	326	March	July	+.20
8	Kahuku	356	March	July	-.09
8	Kahuku	396	April	September	-.04
9	Kahana	405	April	February	+.40
10	Kaaawa	406	June	February	+.97
11	Gilbert	T-5	March	June	+.52
12	Mokuleia	286	December	June	+.59
		308	December	June	+.86

Lowest head in 1926, 1950, and 1951 and net change in head 1926-51, in feet above sea level, in observation wells on Oahu

Area	Name	Well	1926	1950	1951	Net change 1926-51
1	St. Louis Heights	2	20.88	24.60	24.47	+3.59
2	Makiki-Pacific Heights	36A	j23.52	26.85	27.68	+4.16
3	Kapalama	132	24.84	25.52	26.53	+1.69
4	Moanalua	T-24	j24.00	22.82	23.75	-.25
6	Pearl Harbor	201	17.09	17.09	18.10	+1.01
6	Pearl Harbor	244	17.27	19.27	20.87	+3.60
6	Pearl Harbor	266	15.75	17.14	19.42	+3.67
7	Waialua	326	10.34	10.42	10.80	+.46
8	Kahuku	356	13.05	9.77	9.59	-3.46
8	Kahuku	396	18.78	17.42	18.46	-.32
12	Mokuleia	308	17.55	18.12	18.31	+.76

j Estimated from well 83.
j Estimated from well 144.

Acknowledgments

On Kauai the records for well 35 were furnished by the Kekaha Sugar Company. Water levels in shaft 7 on the Island of Hawaii were furnished by the Olaa Sugar Company. The Wailuku Sugar Co. supplied the water levels and chloride data for Maui test holes 113, 112, 110, and 102. For Oahu, data for wells 1A, 2, 36A, and 132, shaft 7, and test holes 24, 25, 27, 28, and 41 were obtained from the records of the Honolulu Board of Water Supply. Observations on Oahu test holes 1 and 2 were made by the Waialua Sugar Company.

Well-Numbering System

Beginning with number 1 at some point on each island drilled wells are numbered consecutively as they occur in geographic sequence around the island. Single wells, separated from others and pumped separately, are numbered individually. A group of closely spaced wells used to supply a central pumping plant is included under a single number with each individual of the group distinguished by a letter. In some areas certain numbers are left unassigned for the purpose of designating new drilled wells. Holes drilled especially for test or observation purposes

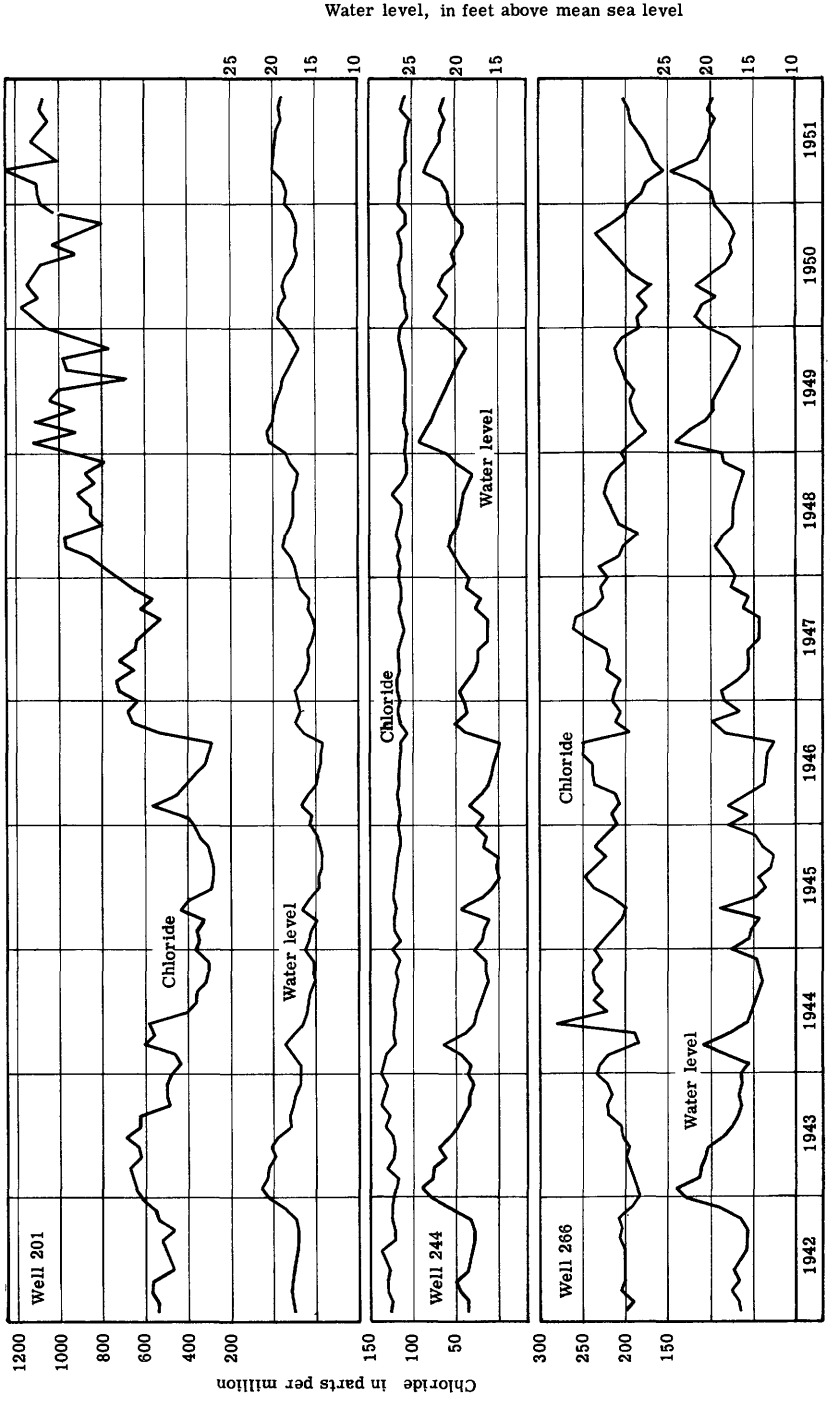

Figure 35.--Chloride and water levels in wells 201, 244, and 266 near Pearl Harbor, 1942-51.

302263 O - 54 - 8

are called test borings. Test borings on each island are numbered beginning with "1" and are distinguished by a "T" before each number. Test borings existing before numbering was begun were numbered in a geographic sequence, but new borings are numbered consecutively as they are drilled irrespective of location. Shaft-type wells are high-capacity installations designed especially for the development of basal ground water. This type of well consists of a vertical or inclined shaft at the bottom of which drilled holes, tunnels, or a sump supply water to the pumps.

Well Descriptions and Water-Level Measurements

(Water levels are in feet above msl; chloride in parts per million)

Island of Hawaii

Shaft 6. Kaiwiki Sugar Co. At Ookala. Lat. 20°01'05", long. 155°17'15". Dug domestic and irrigation water-table well in Hamakua basalt,* size 6 by 6 feet, vertical depth of 30-degree inclined shaft 300 feet; two infiltration tunnels, size 4 by 6 feet, total length 650 feet. Land-surface datum is 300 feet above msl. Records furnished by Kaiwiki Sugar Co. Records available: 1937-49. * Basalt of Hamakua volcanic series.

Shaft 7. Olaa Sugar Co. At Olaa. Lat. 19°37'50", long. 155°02'00". Dug domestic and irrigation water-table well in Kahuku basalt,* size 10 by 10 feet, depth 203 feet; three infiltration tunnels, total length 48 feet. Land-surface datum is 220 feet above msl. Highest water level 25.86 above msl, Mar. 6, 1949; lowest 12.61 above msl, July 13, 1945. Records available: 1936-51. Records furnished by Olaa Sugar Co. * Basalt of Kahuku volcanic series.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	14.32	Apr. 7	16.74	July 7	13.78	Oct. 6	13.82
13	13.94	14	16.65	14	13.69	13	13.71
20	13.61	21	16.44	21	13.65	20	13.77
27	13.94	28	16.19	28	13.00	27	15.36
Feb. 3	14.11	May 5	16.02	Aug. 4	13.53	Nov. 3	18.11
10	14.04	12	15.69	11	13.57	10	16.03
17	14.03	19	15.69	18	13.48	17	15.27
24	16.03	26	15.61	25	13.53	24	15.18
Mar. 3	16.28	June 2	15.61	Sept. 1	13.68	Dec. 1	15.53
10	16.44	9	14.53	8	13.66	8	16.01
17	17.41	16	14.19	15	13.75	15	16.43
24	17.53	23	14.19	22	13.79	22	16.44
31	16.53	30	14.15	29	13.69	29	16.36

Island of Kauai

2F. Lihue Plantation Co., Ltd. At Kealia. Lat. 22°06'05", long. 159°18'40". Drilled domestic and irrigation artesian well in basalt, diameter 12 inches, depth 213 feet, cased to 95. Land-surface datum is 8.05 feet above msl. Highest water level 11.17 above msl, Nov. 20, 1940; lowest 9.15 above msl, July 26, 1946. Records available: 1937-51. Chloride in ppm: Feb. 14, 45; Apr. 26, 40; May 22, 43; July 20, 39; Nov. 7, 38; Dec. 14, 40.

7. Lihue Plantation Co., Ltd. At Wailua. Lat. 22°01'30", long. 159°20'55". Drilled unused artesian well in basalt, diameter 8 inches, depth 240 feet, cased to 60. Land-surface datum is 12 feet above msl. Records available: 1937-51. Chloride in ppm: Feb. 16, 148; May 22, 155; July 26, 159; Sept. 15, 155; Nov. 7, 161; Dec. 14, 161.

8. Lihue Plantation Co., Ltd. At Wailua. Lat. 22°01'25", long. 159°20'50". Drilled unused well in basalt, diameter 10 inches, depth 250 feet, cased to 60. Land-surface datum is 11.95 feet above msl. Highest water level 12.99 above msl, Oct. 16, 1941; lowest 7.54 above msl, Apr. 26, 1951. Records available: 1937-51.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 16	8.86	121	July 26	8.70	113
Apr. 26	7.54	111	Nov. 7	8.82	123
May 22	8.59	113	Dec. 14	8.77	106

14N. Grove Farm Co., Ltd. Formerly Koloa Sugar Co. In Mahaulepu. Lat. 20°54'45", long. 159°25'20". Drilled unused well in basalt, diameter 12 inches, depth 532 feet, cased to 315. Land-surface datum is 86.02 feet above msl. Highest water level 31.52 above msl, July 28, 1939; lowest 28.0 above msl. Oct. 25, 1934. Records available: 1937-50. No measurement made in 1951.

35. Kekaha Sugar Co. Near Kekaha. Lat. 22°00'10", long. 159°44'50". Drilled irrigation artesian well in Waimea Canyon basalt,* diameter 12 inches, depth 245 feet, cased to 168. Land-surface datum is 7.82 feet above msl. Highest water level 11.32 above msl, Dec. 20, 1937; lowest 7.63 above msl, Apr. 17, 1944. Records available: 1937-51. Records furnished by Kekaha Sugar Co. * Basalt of Waimea Canyon volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Jan. 15	10.71	194	July 17	10.32	204
Feb. 15	10.30	200	Aug. 16	10.40	222
Mar. 15	10.80	278	Sept. 18	10.40	249
Apr. 16	10.38	253	Nov. 16	10.39	278
May 18	10.58	216	Dec. 20	10.39	219
June 14	10.30	222			

37. Kekaha Sugar Co. Near Kekaha. Lat. 22°00'45", long. 159°45'20". Drilled irrigation artesian well in Waimea Canyon basalt,* diameter 12 inches, depth 262 feet, cased to 188. Land-surface datum is 9.98 feet above msl. Highest water level 11.08 above msl, Feb. 15, 1943; lowest 7.93 above msl, June 14, 1947. Records available: 1937-50. Records furnished by Kekaha Sugar Co. No measurement made in 1951. * Basalt of Waimea Canyon volcanic series.

Island of Lanai

Shaft 1. Hawaiian Pineapple Co. In Maunalei Canyon. Lat. 20°52'45", long. 156°53'45". Dug domestic and irrigation water-table well in Lanai basalt,* size 7 by 6 feet, vertical depth of 30-degree inclined shaft 293 feet; infiltration tunnel 1.4 feet above msl, length 536 feet. Land-surface datum is 294 feet above msl. Highest water level 2.83 above msl. Oct. 1943; lowest 2.30 above msl, Aug. 1, 1937. Records available: 1936-50. No measurement made in 1951. Records furnished by Hawaiian Pineapple Co. * Basalt of Lanai volcanic series.

Island of Maui

T-102. Wailuku Sugar Co. Formerly U. S. Geol. Survey. Lat. 20°53'09", long. 156°31'27". Drilled observation water-table well in Wailuku basalt,* diameter 6 inches, depth 475 feet, cased to 20, $\frac{3}{4}$-inch pipe inserted to 465. Land-surface datum is 453.90 feet above msl. Highest water level 36.6 above msl, Oct. 20, 1942; lowest 19.0 above msl, Oct. 15, 1948. Records available: 1940-51. Records furnished by Wailuku Sugar Co. * Basalt of Wailuku volcan c series.

Jan. 17	25.8	15	July 18	23.6	21
Feb. 16	26.4	15	Aug. 15	24.7	18
Mar. 16	26.8	17	Sept. 14	23.1	18
Apr. 17	27.4	15	Oct. 17	20.8	18
May 16	25.9	20	Nov. 15	23.2	17
June 15	24.7	19	Dec. 19	24.8	28

T-110. Wailuku Sugar Co. Near Puu Hele. Lat. 20°49'20", long. 156°31'01". Drilled observation water-table well in Wailuku basalt,* diameter $\frac{3}{4}$ inch, depth 325 feet, cased to 313, perforated 309 to 313. Land-surface datum is 312.67 feet above msl. Highest water level 8.9 above msl, Sept. 15, 1950; lowest 5.2 above msl, Nov. 19, 1942. Records available: 1939-51. Records furnished by Wailuku Sugar Co. *Basalt of Wailuku volcanic series.

Jan. 17	6.2	136	July 18	5.7	131
Feb. 16	6.1	145	Aug. 15	5.8	135
Mar. 16	6.3	145	Sept. 14	6.0	135
Apr. 17	6.0	137	Oct. 17	6.0	134
May 16	5.8	145	Nov. 15	5.9	130
June 15	5.8	145	Dec. 19	6.0	224

T-112. Wailuku Sugar Co. At Wailuku. Lat. 20°53'07", long. 156°30'47". Drilled observation water-table well in Wailuku basalt,* diameter $1\frac{1}{2}$ inches, depth 477 feet. Land-surface datum is 457.07 feet above msl. Highest water level 31.55 above msl, Oct. 16, 1947; lowest 19.6 above msl, Oct. 15, 1948. Records available: 1946-51. Records furnished by Wailuku Sugar Co. * Basalt of Wailuku volcanic series.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 17	24.90	Apr. 17	a26.50	July 18	a21.60	Oct. 17	a19.00
Feb. 16	25.55	May 16	a24.75	Aug. 15	a23.10	Nov. 15	a22.15
Mar. 16	25.95	June 15	a23.40	Sept. 14	a21.20	Dec. 19	a23.95

a Pumping.

T-113. Wailuku Sugar Co. At Wailuku Mill. Lat. 20°53'55", long. 156°30'05". Drilled observation artesian well in basalt, diameter 1½ inches, depth 705 feet, cased. Land-surface datum is 181.09 feet above msl. Highest water level 18.6 above msl, Nov. 14, 1947; lowest 16.6 above msl, Oct. 15, 1948. Records available: 1946-51. Records furnished by Wailuku Sugar Co.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Jan. 17	17.7	68	July 18	18.1	68
Feb. 16	18.2	68	Aug. 15	18.2	70
Mar. 16	17.4	68	Sept. 14	18.3	68
Apr. 17	18.5	70	Oct. 17	18.0	68
May 16	18.3	68	Nov. 15	17.9	67
June 15	18.3	71	Dec. 19	18.3	115

Island of Molokai

T-4. County of Maui In Kaunakakai. Lat. 21°05'42", long. 157°05'20". Drilled observation water-table well in East Molokai basalt,* diameter 6 inches, depth 21 feet, cased to 5. Land-surface datum is 15.38 feet above msl. Highest water level 3.27 above msl, Dec. 1, 1950; lowest 2.03 above msl, Aug. 3, 1947. Records available: 1947-51. Jan. 21, 2.53; Mar. 19, 2.69; May 19, 2.36; Nov. 8, 2.69; Dec. 13, 2.63. *Basalt of East Molokai volcanic series.

Shaft 4. Molokai Ranch Co. Lat. 21°04'20", long. 157°57'00". Dug public-supply water-table well in East Molokai basalt,*size 4 by 4 feet, depth 38 feet, lined with concrete; two infiltration tunnels, total length 229 feet. Land-surface datum is 37.64 feet above msl. Nonrecording gage installed Nov. 1951. Highest water level 2.57 above msl, Dec. 19, 1947; lowest 1.77 above msl, Aug. 26, 1948. Records available: 1947-51. Jan. 21, 2.15; Mar. 19, 2.38; May 19, 1.99; Aug. 14, 2.07; Nov. 8, 2.07; Dec. 13, 2.33.* Basalt of East Molokai volcanic series.

Shaft 6. County of Maui. At Ualapue. Lat. 21°04'00", long. 156°50'00". Dug public-supply water-table well in East Molokai basalt,*size 4 by 6 feet, depth 42 feet, lined with concrete; two infiltration tunnels, total length 214 feet. Land-surface datum is 43.71 feet above msl. Nonrecording gage installed Nov. 1951. Highest water level 6.05 above msl, Jan. 19, 1950; lowest 4.73 above msl, Aug. 26, 1948. Records available: 1938-51. Jan. 21, 5.25; Mar. 19, 5.61; May 19, 5.34; Aug. 14, 5.46; Nov. 8, 5.46; Dec. 13, 5.44. *Basalt of East Molokai volcanic series.

42. County of Maui. At Kamalo. Lat. 21°03'30", long. 156°52'25". Dug public-supply water-table well in East Molokai basalt,* size 4 by 4 feet, depth 40 feet, lined with boulders. Land-surface datum is 43.23 feet above msl. Nonrecording gage installed Nov. 1951. Highest water level 5.40 above msl, Dec. 5, 1950; lowest 4.10 above msl, May 19, 1951. Records available: 1938-51. Jan. 21, 4.91; Mar. 19, 5.20; May 19, 4.10; Aug. 14, 4.69; Nov. 8, 4.97; Dec. 13, 4.90. Basalt of East Molokai volcanic series.

Island of Oahu

1A. B. P. Bishop Estate. At Waialae Golf Links, Honolulu. Lat. 21°16'45", long. 157°46'45". Drilled unused artesian well in basalt of Koolau volcanic series, diameter 4 inches, depth 131 feet, cased. Land-surface datum is 18 feet above msl. Highest water level 9.10 above msl, Feb. 4, 1940; lowest 7.55 above msl, June 14, 1946. Records available: 1933-44, 1947-51. Records furnished by Honolulu Board of Water Supply.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	8.06	Mar. 28	8.42	June 13	8.04	Oct. 24	8.46
10	8.04	Apr. 4	8.36	July 4	8.07	Nov. 7	8.54
17	8.08	11	8.45	18	8.08	14	8.51
24	8.08	25	8.03	25	8.14	21	8.50
31	8.03	May 2	8.05	Aug. 8	8.19	28	8.48
Feb. 7	8.04	9	8.05	15	8.21	Dec. 3	8.52
14	7.98	16	8.03	22	8.25	5	8.48
21	8.13	18	7.98	Sept. 26	8.40	12	8.45
28	8.09	23	8.02	Oct. 3	8.38	19	8.47
Mar. 7	8.16	30	8.06	17	8.43	26	8.40
21	8.27	June 6	8.03				

1B. B. P. Bishop Estate. At Waialae Golf Links, Honolulu. Lat. 21°16'45", long. 157°46'50". Drilled domestic and irrigation artesian well in Koolau basalt,*diameter 8 inches, depth 120 feet, cased. Land-surface datum is 18.22 feet above msl. Highest water level 8.94 above msl, Jan. 27, 1943; lowest 6.45 above msl, Oct. 20, 1933. Records available: 1919, 1929-34, 1936-51. * Basalt of Koolau volcanic series.

1B--Continued.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 5	7.92	204	Aug. 29	7.97	222
27	8.00	195	Sept. 26	8.25	207
Mar. 27	8.27	181	Oct. 25	8.40	215
Apr. 26	8.08	189	Nov. 28	8.52	185
June 20	8.03	234	Dec. 21	8.43	180
July 18	8.02	234			

2. B. P. Bishop Estate. Kalei Road, Honolulu. Lat. 21°17'50", long. 157°48'55". Drilled unused artesian well in basalt of Koolau volcanic series, diameter 8 inches, cased. Land-surface datum is 37 feet above msl. Highest water level 31.55 above msl, Jan. 28, 1940; lowest 19.66 above msl, Sept. 14, 1944. Records available: 1916, 1919, 1923, 1926, 1929-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	e26.87	27.26	26.13	e25.84	25.34	24.90	24.75	25.21	25.57	25.86	26.22	25.98
2	e26.94	27.19	26.09	e25.83	25.39	24.93	24.80	25.18	25.65	25.85	26.26	25.94
3	e27.01	27.22	26.06	e25.82	25.40	24.95	24.84	25.18	25.72	25.78	26.25	25.88
4	27.09	27.33	26.04	e25.81	25.35	24.95	24.93	25.19	25.67	25.74	26.25	25.87
5	27.15	27.32	26.10	25.80	25.28	24.90	24.95	25.25	25.66	25.72	26.28	25.88
6	27.05	27.23	26.14	25.74	25.28	24.92	24.93	25.29	25.57	25.68	26.27	25.81
7	27.11	27.05	26.10	25.73	25.21	24.85	24.96	25.34	25.55	25.77	26.34	25.83
8	27.21	26.94	26.02	25.75	25.14	24.80	24.99	25.47	25.58	25.85	26.31	25.85
9	27.17	e26.88	25.96	25.70	25.03	24.77	24.95	25.52	25.62	25.84	26.36	25.87
10	27.23	e26.82	25.94	25.70	24.99	24.80	24.80	25.47	25.62	25.86	26.34	25.93
11	27.19	e26.75	26.03	25.66	25.00	24.87	24.76	25.43	25.56	25.83	26.33	26.03
12	27.21	e26.68	26.01	25.63	24.95	24.83	24.72	25.52	25.58	25.82	26.32	26.22
13	27.24	e26.61	26.33	25.61	24.92	24.79	24.67	25.56	25.55	25.80	26.29	26.32
14	27.25	e26.55	26.24	25.59	24.87	24.69	24.70	25.49	25.55	25.86	26.25	26.30
15	27.27	26.49	26.14	25.59	24.78	24.74	24.70	25.42	25.51	25.92	26.21	26.32
16	27.32	26.45	26.05	25.56	24.78	24.76	24.77	25.36	25.56	25.88	26.18	26.33
17	27.33	26.43	26.04	25.52	24.83	24.77	24.82	25.35	25.58	25.81	26.16	26.38
18	27.35	26.45	26.01	e25.51	24.87	24.70	24.86	25.46	25.51	25.75	26.15	26.41
19	27.37	26.57	25.95	e25.50	24.86	24.60	24.93	25.54	25.53	25.73	26.17	26.42
20	27.28	26.59	25.86	25.48	24.90	24.50	25.07	25.57	25.55	25.80	26.21	26.43
21	27.28	26.55	25.85	25.43	24.90	24.49	25.09	25.55	25.68	25.83	26.20	26.43
22	27.42	26.49	25.87	25.41	24.91	24.47	25.13	25.54	25.72	25.88	26.18	26.40
23	27.36	26.42	25.93	25.39	24.90	24.49	25.12	25.49	25.72	25.87	26.16	26.36
24	27.31	26.35	25.90	25.36	24.89	24.58	25.08	25.50	25.79	25.89	26.14	26.37
25	27.30	26.30	25.89	25.35	24.82	24.60	25.04	25.53	25.77	25.89	26.10	26.41
26	27.30	26.28	e25.89	25.35	24.82	24.55	25.00	25.55	25.74	25.92	26.09	26.33
27	27.26	26.22	e25.89	25.33	24.89	24.55	25.01	25.57	25.74	26.01	26.08	26.28
28	27.26	26.16	e25.88	25.33	24.91	24.55	25.10	25.50	25.77	26.04	26.02	26.26
29	27.28		e25.87	25.33	24.84	24.55	25.21	25.48	25.77	26.14	25.97	26.25
30	27.23		e25.86	25.37	24.93	24.62	25.25	25.52	25.82	26.19	25.97	26.25
31	27.26		e25.85		24.96		25.21	25.57		26.21		26.32

e Estimated.

9. J. J. Gouveia. Kapahulu Ave. and Olu St., Honolulu. Lat. 21°17'10", long. 157°49'00". Drilled industrial artesian well in Koolau basalt,* diameter 6 inches, depth 270 feet, cased to 256. Land-surface datum is 16.08 feet above msl. Highest water level 30.92 above msl, Feb. 16, 1940; lowest 18.40 above msl, Aug. 17, 1926. Records available: 1921, 1923-51.

* Basalt of Koolau volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 5	26.87	61	Aug. 27	25.77	58
27	26.33	61	Sept. 25	25.47	59
Mar. 27	26.14	61	Oct. 25	25.67	61
Apr. 25	25.37	58	Nov. 26	26.07	62
June 20	25.37	59	Dec. 20	26.49	60
July 18	25.07	58			

36A. Honolulu Board of Water Supply. Wilder Ave. and Clement St., Honolulu. Lat. 21°18'10", long. 157°49'45". Drilled unused artesian well in basalt of Koolau volcanic series, diameter 12 inches, depth 395 feet, cased. Land-surface datum is 43 feet above msl. Highest water level 33.35 above msl, Mar. 11, 1938; lowest 22.41 above msl, Oct. 13, 1945. Records available: 1924, 1929-32, 1934, 1949-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.53	28.81	28.52	e29.22	29.40	29.25	28.67	27.90	27.69	27.85	27.96	29.17
2	28.52	28.80	28.52	e29.20	e29.40	29.21	28.66	27.89	27.72	27.85	27.99	29.24
3	28.55	28.78	28.52	e29.25	e29.40	29.22	28.60	27.86	27.77	27.82	28.02	29.25
4	28.55	28.79	28.52	e29.30	e29.39	29.24	28.58	27.83	27.77	27.82	28.07	29.28
5	28.54	28.80	28.54	29.34	e29.39	29.17	28.60	27.82	27.77	27.80	28.12	29.33
6	28.56	28.82	28.56	e29.41	e29.38	29.11	28.57	27.81	27.75	27.81	28.14	29.37
7	28.60	28.83	28.60	29.48	e29.38	29.10	28.54	27.80	27.75	27.87	28.14	29.41
8	28.62	28.79	28.60	29.52	e29.37	29.08	28.53	27.83	27.74	27.87	28.16	29.46
9	28.62	28.75	28.61	29.52	e29.37	29.05	28.49	27.81	27.75	27.87	28.19	29.53
10	28.59	28.67	28.61	29.50	e29.36	29.04	28.45	27.82	27.76	27.89	28.21	29.54
11	28.58	28.62	28.64	29.48	e29.36	29.05	28.40	27.80	27.77	27.87	28.28	29.55
12	28.59	28.59	28.65	29.45	e29.35	29.06	28.38	27.81	27.78	27.87	28.32	29.57
13	28.59	28.59	28.73	29.42	e29.35	29.05	e28.38	27.80	27.77	27.88	28.34	29.59
14	28.62	28.57	28.80	29.40	e29.34	29.02	e28.37	27.81	27.75	27.88	28.39	29.64
15	28.61	28.52	28.79	29.42	e29.34	29.01	e28.36	27.80	27.73	27.87	28.39	29.68
16	28.64	28.53	e28.85	29.43	e29.33	29.04	28.36	27.78	27.76	27.87	28.42	29.74
17	28.69	28.52	e28.91	29.45	e29.33	29.08	28.32	27.73	27.78	27.84	28.47	29.76
18	28.72	28.50	e28.97	29.50	e29.32	29.04	28.27	27.74	27.81	27.81	28.57	29.76
19	28.72	28.54	e29.03	29.50	e29.32	29.06	28.25	27.75	27.77	27.82	28.66	29.81
20	28.75	28.51	e29.09	29.51	e29.31	28.99	28.24	27.76	27.78	27.84	28.72	29.85
21	28.79	28.56	29.2	29.52	e29.31	28.95	28.21	27.73	27.79	27.88	28.77	29.84
22	28.81	28.54	29.20	29.52	e29.30	28.90	28.20	27.73	27.75	27.88	28.84	29.85
23	28.81	28.53	29.24	29.50	29.30	28.87	28.17	27.72	27.78	27.88	e28.88	29.91
24	28.83	28.52	29.23	29.49	29.33	28.89	28.14	27.70	27.77	27.87	e28.92	29.95
25	28.83	28.49	29.14	29.46	29.35	28.86	28.13	27.70	27.76	27.87	e28.96	29.99
26	28.85	28.52	29.08	29.45	29.36	28.80	28.08	27.71	27.77	27.87	e29.00	30.03
27	28.84	28.55	29.04	29.46	29.36	28.77	28.05	27.71	27.79	27.88	e29.04	30.03
28	28.86	28.52	e29.10	29.42	29.37	28.73	28.04	27.71	27.78	27.89	e29.08	30.05
29	28.84		e29.16	29.36	29.30	28.69	28.04	27.70	27.78	27.92	29.13	30.09
30	28.84		e29.22	29.37	29.30	28.66	27.99	27.68	27.83	27.92	29.13	30.14
31	28.85		e29.27		29.28		27.94	27.68		27.94		30.19

e Estimated.

81. A. Young. Young and Victoria Sts., Honolulu. Lat. 21°18'20", long. 157°50'55". Drilled domestic artesian well in Koolau basalt,*diameter 8 inches, depth 505 feet, cased to 475. Land-surface datum is 18.04 feet above msl. Highest water level 33.04 above msl, Feb. 28, 1938; lowest 21.99 above msl, Aug. 28, 1946. Records available: 1923-24, 1926, 1929-51.
* Basalt of Koolau volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 5	28.43	94	Aug. 27	27.33	40
27	28.29	95	Sept. 25	27,13	43
Mar. 27	28.80	92	Oct. 25	27.53	38
Apr. 25	29.33	91	Nov. 26	28.13	36
June 20	28.63	93	Dec. 20	30.25	52
July 18	28.03	43			

119. Honolulu Gas Co. At Honolulu Gas Works, Honolulu. Lat. 21°19'05", long. 157°52'25". Drilled industrial artesian well in Koolau basalt,*diameter 8 inches, depth 682 feet, cased to 613. Land-surface datum is 4.22 feet above msl. Highest water level 32.55 above msl, Mar. 16, 1933; lowest 19.96 above msl, July 28, 1945. Records available: 1923-51. * Basalt of Koolau volcanic series.

Feb. 5	26.04	425	Aug. 27	25.44	395
27		413	Sept. 25	25.04	413
Mar. 27	26.51	408	Oct. 25	25.14	421
Apr. 25	27.34	412	Nov. 26	26.54	421
June 20	26.14	389	Dec. 20	27.86	410
July 18	25.84	400			

132. B. P. Bishop Estate. At old Kamehameha School, Honolulu. Lat. 21°20'05", long. 157°52'25". Drilled unused artesian well in basalt of Koolau volcanic series, diameter 12 to 10 inches, depth 346 feet, cased to 265. Land-surface datum is 43 feet above msl. Highest water level 32.60 above msl, Mar. 7, 1938; lowest 21.57 above msl, July 2, 1946. Records available: 1924, 1926, 1928-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Date	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	27.13	27.29	27.35	28.14	28.41	27.91	27.61	26.49	26.68	26.84	27.06	28.02
2	27.16	27.26	27.31	28.17	28.35	27.88	27.54	26.57	26.76	26.79	27.05	28.08
3	27.16	27.28	27.31	28.20	28.34	27.90	27.42	26.56	26.83	26.79	27.11	28.07
4	27.19	27.33	27.35	28.17	28.30	27.93	27.51	26.54	26.83	26.72	27.18	28.09
5	27.13	27.36	27.43	28.18	28.30	27.89	27.51	26.62	26.77	26.70	27.12	28.10
6	27.13	27.40	27.46	28.15	28.35	27.82	27.42	26.64	26.73	26.74	27.11	28.11
7	27.20	27.32	27.45	28.20	28.30	27.85	27.38	26.63	26.70	26.87	27.15	28.10
8	27.22	27.27	27.41	28.32	28.28	27.82	27.42	26.62	26.72	26.89	27.17	28.16
9	27.24	27.21	27.35	28.36	28.30	27.82	27.35	26.56	26.75	26.91	27.23	28.25
10	27.20	27.24	27.40	28.34	28.35	27.85	27.23	26.54	26.77	26.88	27.32	28.28
11	27.16	27.26	27.49	28.36	28.35	27.84	27.18	26.53	26.72	27.82	27.36	28.28
12	27.14	27.25	27.50	28.35	28.34	27.85	27.14	26.61	26.70	26.81	27.39	28.31
13	27.15	27.22	27.57	28.27	28.39	27.86	27.15	26.64	26.66	26.82	27.42	28.35
14	27.19	27.11	27.68	28.18	28.38	27.81	27.12	26.64	26.62	26.86	27.41	28.37
15	27.23	27.11	27.63	28.26	28.33	27.77	27.25	26.61	26.63	26.87	27.40	28.42
16	27.23	27.15	27.60	28.36	28.22	27.80	27.25	26.62	26.70	26.86	27.43	28.47
17	27.26	27.22	27.63	28.33	28.19	27.85	27.17	26.59	26.71	26.82	27.51	28.47
18	27.31	27.28	27.67	28.33	28.20	27.84	27.05	26.60	26.65	26.77	27.61	28.47
19	27.28	27.29	27.69	28.31	28.21	27.79	27.04	26.66	26.73	26.75	27.70	28.48
20	27.32	27.28	27.70	28.25	28.23	27.70	27.01	26.68	26.74	26.86	27.74	28.51
21	27.37	27.30	27.76	28.23	28.25	27.66	26.95	26.62	26.74	26.92	27.76	28.46
22	27.41	27.31	27.79	28.30	28.15	27.63	26.97	26.59	26.72	26.88	27.81	28.50
23	27.40	27.30	27.79	28.36	28.12	27.64	26.97	26.59	26.75	26.86	27.84	28.56
24	27.38	27.27	27.84	28.37	28.08	27.70	26.91	26.62	26.73	26.85	27.91	28.61
25	27.36	27.35	27.95	28.32	28.05	27.72	26.80	26.63	26.77	26.84	27.94	28.64
26	27.34	27.35	27.99	28.28	28.02	27.66	26.72	26.70	26.80	26.84	27.94	28.60
27	27.35	27.32	28.03	28.26	28.01	27.60	26.71	26.70	26.79	26.96	27.96	28.63
28	27.38	27.33	28.04	28.30	28.02	27.55	26.70	26.65	26.76	27.03	27.98	28.67
29	27.35		28.06	28.39	28.00	27.52	26.79	26.66	26.81	27.06	27.94	28.74
30	27.31		28.07	28.43	28.01	27.52	26.75	26.66	26.87	27.08	27.95	28.79
31	27.32		28.08		27.99		26.65	26.61		27.04		28.84

153. Sam Damon Estate. Moanalua Gardens, Honolulu. Lat. 21°21'05", long.157°53'40". Drilled domestic and irrigation artesian well in Koolau basalt,*diameter 10 inches, cased. Land-surface datum is 20.38 feet above msl. Highest water level 31.88 above msl, Apr. 1917; lowest 19.39 above msl, Sept. 26, 1945. Records available: 1910-51. *Basalt of Koolau volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 5	23.99	57	Aug. 27	24.15	56
26	24.17	58	Sept. 25	24.21	57
Mar. 27	25.09	57	Oct. 25	24.22	59
Apr. 25	25.34	57	Nov. 26	25.09	57
June 20	24.80	57	Dec. 20	25.37	58
July 17	24.56	56			

187B. U. S. Navy. At Aiea. Lat. 21°22'40", long. 157°56'05". Drilled industrial artesian well in Koolau basalt,*diameter 12 inches, depth 173 feet, cased to 143. Land-surface datum is 9.93 feet above msl. Highest water level 25.06 above msl, Feb. 23, 1937; lowest 15.06 above msl, Aug. 19, 1945. Records available: 1923, 1928-51. *Basalt of Koolau volcanic series.

Feb. 5	20.84	126	Aug. 27	21.34	115
26	21.37	130	Sept. 25	21.37	118
Mar. 27	22.69	128	Oct. 25	21.49	101
Apr. 25	22.48	122	Nov. 26	22.70	127
June 19	21.98	119	Dec. 20	23.01	116
July 16	21.75	119			

190. U. S. Navy. Formerly C. B. Cooper. At McGraw Peninsula. Lat. 21°22'47", long. 157°56'38". Drilled unused artesian well in Koolau basalt,* diameter 6 inches, depth 300 feet, cased to 200. Land-surface datum is 22.73 feet above msl. Highest water level 25.41 above msl, Feb. 23, 1937; lowest 15.38 above msl, Aug. 24, 1945. Records available: 1910, 1918-19, 1929-51. *Basalt of Koolau volcanic series.

190--Continued.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 5	20.85	232	Aug. 27	21.11	231
26	21.37	234	Sept. 25	21.42	239
Apr. 25	22.48	239	Oct. 25	21.22	246
June 19	21.92	239	Nov. 26	22.67	244
July 23	21.53	245	Dec. 20	23.14	236

193. L. L. McCandless Estate. In Waimalu Valley. Lat. 21°23'37", long. 157°56'52". Drilled domestic artesian well in Koolau basalt,*diameter 10 inches, depth 363 feet, cased to 61. Land-surface datum is 13.05 feet above msl. Highest water level 28.88 above msl, Mar. 1916; lowest 14.65 above msl, Sept. 25, 1945. Records available: 1902, 1910-51.*Basalt of Koolau volcanic series.

Feb. 5	19.98	260	Aug. 27	20.45	281
26	20.40	266	Sept. 25	20.41	287
Mar. 27	21.76	249	Oct. 25	20.43	303
Apr. 25	21.57	250	Nov. 26	21.78	287
June 19	21.04	261	Dec. 20	22.01	277
July 16	20.82	267			

201. B. P. Bishop Estate. At Pearl City. Lat. 21°23'35", long. 157°58'20". Drilled irrigation artesian well in Koolau basalt,* diameter 12 inches, depth 336 feet, cased to 58. Land-surface datum is 9.17 feet above msl. Highest water level 31.21 above msl, Feb. 1916; lowest 14.18 above msl, Aug. 28, 1946. Records available: 1910-51. *Basalt of Koolau volcanic series.

Feb. 5	18.10	1100	Aug. 27	18.80	1050
26	18.42	1100	Sept. 25	18.98	1090
Mar. 27	19.84	1240	Oct. 25	18.82	1070
Apr. 25	19.87	1000	Nov. 26	20.06	1090
June 19	19.43	1130	Dec. 20	20.39	1130
July 20	19.17	1090			

244. B. P. Bishop Estate. At Waipahu. Lat. 21°23'18", long. 158°00'32". Drilled domestic artesian well in Koolau basalt,*diameter 12 inches, depth 225 feet, cased to 58. Land-surface datum is 10.47 feet above msl. Highest water level 30.02 above msl, Feb. 1916; lowest 14.80 above msl, July 26, 1945. Records available: 1910-21, 1923-51. *Basalt of Koolau volcanic series.

Feb. 5	20.87	113	Aug. 27	21.17	103
26	21.53	113	Sept. 25	21.67	111
Mar. 27	23.51	111	Oct. 25	21.17	109
Apr. 25	23.05	107	Nov. 26	23.07	110
June 19	21.67	109	Dec. 20	24.39	105
July 16	21.67	107			

266. Hawaii Meat Co. Formerly Honouliuli Ranch. At Honouliuli. Lat. 21°21'55", long. 158°01'52". Drilled irrigation artesian well in Koolau basalt,* diameter 12 inches. Land-surface datum is 12.66 feet above msl. Highest water level 29.16 above msl, Apr. 1918; lowest 12.54 above msl, Sept. 24, 1945. Records available: 1910-51. *Basalt of Koolau volcanic series.

Feb. 5	19.71	181	Aug. 27	19.42	196
26	21.66	174	Sept. 25	20.34	198
Mar. 27	24.33	155	Oct. 25	19.56	203
Apr. 25	21.78	163	Nov. 26	22.01	183
June 19	20.16	178	Dec. 20	24.08	162
July 16	20.07	187			

276. Ewa Plantation Co. At Gilbert. Lat. 21°20' 16", long. 158°06'35". Drilled battery of four irrigation artesian wells in Koolau basalt,* diameter 12 inches, average depth 160 feet, cased. Land-surface datum is 40.58 feet above msl. Highest water level 16.7 above msl, Feb. 1909; lowest 11.51 above msl, Oct. 1945. Records available: 1905, 1908-51. *Basalt of Koolau volcanic series.

Jan.	12.73	526	July	12.41	573
Feb.	12.75	543	Aug.	12.30	576
Mar.	13.57	488	Sept.	12.66	559
Apr.	13.24	550	Oct.	12.61	575
May	12.72	566	Nov.	13.10	547
June	12.30	568	Dec.	13.33	513

286. Waialua Agricultural Co. At Kawaihapai. Lat. 21°34'46", long. 158°10'49". Drilled unused artesian well in Waianae basalt,* diameter 1 inch, depth 447 feet, cased to 447, perforated 410-447. Land-surface datum is 11.54 feet above msl. Highest water level 18.91 above msl, Jan. 25, 1939; lowest 16.34 above msl, June 26, 1936. Records available: 1929-51.
* Basalt of Waianae volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 6	17.27	151	Aug. 29	17.47	148
23	17.45	151	Sept. 20	17.47	145
Mar. 28	17.52	155	Oct. 24	17.53	150
Apr. 26	17.29	145	Nov. 27	17.79	145
June 21	17.14	146	Dec. 19	18.11	144
July 17	17.21	145			

308. J. F. Mendonca. At Mokuleia. Lat. 21°34'35", long. 158°09'11". Drilled irrigation artesian well in Waianae basalt,* diameter 10 to 8 inches, depth 548 feet, cased to 440 feet. Land-surface datum is 8.46 feet above msl. Highest water level 20.64 above msl, Oct. 26, 1939; lowest 16.81 above msl, July 25, 1927. Records available: 1924-51. *Basalt of Waianae volcanic series.

Feb. 6	18.61	109	Aug. 29	18.81	105
23	18.77	105	Sept. 20	19.21	108
Mar. 28	18.88	106	Oct. 24		109
Apr. 26	18.61	105	Nov. 27	19.72	100
June 21	18.31	106	Dec. 19	19.92	98
July 17	18.61	107			

326. Waialua Agricultural Co. At Waialua. Lat. 21°34'56", long. 158°06'52". Drilled irrigation artesian well in Koolau basalt,*diameter 8 inches, depth 201 feet, cased to 114. Land-surface datum is 6.19 feet above msl. Highest water level 13.35 above msl, Dec. 1914; lowest 9.19 above msl, Apr. 24, 1946. Records available: 1911-21, 1924-51. *Basalt of Koolau volcanic series.

Feb. 6	11.29	103	Aug. 29	10.97	103
23	11.57	106	Sept. 20	11.10	103
Mar 28	12.04	108	Oct. 24	11.13	105
Apr. 26	11.29	102	Nov. 27	11.81	108
June 21	10.83	102	Dec. 19	11.99	111
July 17	10.80	101			

337. Territory of Hawaii. Formerly Waialee Training School for Boys. At Waialee. Lat. 21°41'30", long. 158°01'25". Drilled unused artesian well in Koolau basalt,* diameter 8 inches, depth 63 feet, cased to 36. Land-surface datum is 21.45 feet above msl. Highest water level 15.60 above msl, Nov. 14, 1932; lowest 11.70 above msl, May 27, 1947. Records available: 1929-51. *Basalt of Koolau volcanic series.

Feb. 6	12.91	49	Aug. 29	14.15	29
23	13.05	87	Sept. 20	14.07	54
Mar. 28	13.07	94	Oct. 24	14.33	118
Apr. 26	12.95	127	Nov. 27	14.55	120
June 21	13.54	125	Dec. 19	14.02	113
July 17	14.00	122			

356. Kahuku Plantation Co. At Kahuku. Lat. 21°40'54", long. 157°57'04". Drilled industrial artesian well in Koolau basalt,* diameter 12 inches, depth 420 feet, cased to 156. Land-surface datum is 8.83 feet above msl. Highest water level 12.12 above msl, Jan. 1916; lowest 9.28 above msl, July 23, 1947. Records available: 1908, 1911-1918, 1921, 1924-51. *Basalt of Koolau volcanic series.

Feb. 6	10.73	314	Aug. 29	10.36	512
23	11.85	359	Sept. 20	10.29	535
Mar. 28	12.93	396	Oct. 24	10.38	535
Apr. 26	10.84	445	Nov. 27	12.63	144
June 21	9.61	512	Dec. 19	12.72	272
July 17	9.59	556			

396. Kahuku Plantation Co. At Hauula. Lat. 21°36'22", long. 157°54'36". Drilled domestic and irrigation artesian well in Koolau basalt,*diameter 8 inches, cased. Land-surface datum is 10.36 feet above msl. Highest water level 24.98 above msl, June 1918; lowest 17.02 above msl, May 28, 1946. Records available: 1911-19, 1921, 1924-51. *Basalt of Koolau volcanic series.

Feb. 6	19.36	71	Aug. 29	18.79	74
23	19.06	72	Sept. 20	18.46	77
Mar. 28	20.64	71	Oct. 24	18.56	77
Apr. 26	20.74	67	Nov. 27	19.40	76
June 21	19.18	73	Dec. 19	19.47	76
July 17	18.87	75			

405. M. E. Foster Estate. At Kahana. Lat. 21°33'27", long. 157°52'44". Drilled domestic artesian well in Koolau basalt,*diameter 10 inches, depth 441 feet, cased to 177. Land-surface datum is 5.76 feet above msl. Highest water level 21.07 above msl, July 25, 1938; lowest 14.90 above msl, Oct. 28, 1948. Records available: 1936-51. *Basalt of Koolau volcanic series.

Date	Water level	Chloride ppm	Date	Water level	Chloride ppm
Feb. 6	16.76	40	Aug. 29	18.26	40
23	16.72	41	Sept. 20	17.66	39
Mar. 28	17.91	38	Oct. 24	17.26	41
Apr. 26	19.16	38	Nov. 27	17.36	40
June 21	18.76	40	Dec. 19	17.16	40
July 17	18.56	42			

406. Mrs. F. M. Swanzy. At Kaaawa. Lat. 21°32'41", long. 157°51'00". Drilled irrigation artesian well in Koolau basalt,* diameter 9 inches, cased. Land-surface datum is 10.27 feet above msl. Highest water level 18.37 above msl, July 25, 1938; lowest 12.35 above msl, Aug. 27, 1946. Records available: 1929-51. *Basalt of Koolau volcanic series.

Feb. 6	14.61	243	Aug. 29	16.17	234
23	14.55	249	Sept. 20	15.82	247
Mar. 28	15.40	243	Oct. 24	15.69	256
Apr. 26	16.29	245	Nov. 27	15.55	246
June 21	16.55	238	Dec. 19	15.36	244
July 17	16.49	231			

T-1. Waialua Agricultural Co. Kaukonahua Gulch. Lat. 21°32'15", long. 158°05'40". Drilled observation water-table well in Waianae basalt,* diameter 1 inch, depth 291 feet, cased to 291, lower end perforated. Land-surface datum is 273.61 feet above msl. Highest water level 19.85 above msl, July 1, 1941; lowest 13.08 above msl, Feb. 28, 1949. Records available; 1938-51. Records furnished by Waialua Agricultural Co.*Basalt of Waianae volcanic series.

Feb. 3	16.08	41	Aug. 4	17.23	21
May 2	15.58	31	Nov. 6	17.73	31
June 6	15.78	31	Dec. 7	17.48	21
July 3	16.08	31			

T-2. Waialua Agricultural Co. Near Anahulu Canyon. Lat. 21°35'52", long. 158°05'16". Drilled observation water-table well in Koolau basalt,* diameter $\frac{3}{4}$ inch, depth 344 feet, cased to 344, perforated 340 to 344. Land-surface datum is 341.88 feet above msl. Highest water level 14.08 above msl, Apr. 1, 1943; lowest 4.36 above msl, May 2, 1950. Records available: 1938-51. Records furnished by Waialua Agricultural Co. *Basalt of Koolau volcanic series.

Feb. 3	5.41	125	Aug. 4	5.21	166
May 2	5.41	73	Nov. 6	5.66	52
June 6	4.91	135	Dec. 7	8.01	73
July 3	5.21	145			

T-15. Honolulu Suburban Water System. In Nanakuli Valley. Lat. 21°23'50", long. 158°07'20". Drilled observation water-table well in Waianae basalt,* diameter $\frac{3}{4}$ inch, depth 489 feet, cased. Land-surface datum is 478.64 feet above msl. Highest water level 3.14 above msl, Feb. 25, 1943; lowest 1.60 above msl, July 3, 1946. Records available: 1940-51. * Basalt of Waianae volcanic series.

Jan. 26	2.00	96	Aug. 28	2.22	92
Feb. 26	2.03	96	Sept. 26	2.39	93
Mar. 30	2.50	96	Oct. 26	2.40	94
Apr. 27	2.51	93	Nov. 28	2.49	94
June 18	2.48	91	Dec. 21	2.73	94
July 20		96			

T-20. U. S. Navy. Near Ewa. Lat. 21°21'36", long. 158°03'45". Drilled observation artesian well in Koolau basalt,*diameter 6 inches, depth 137 feet, cased to 9. Land-surface datum is 139.50 feet above msl. Highest water level 19.28 above msl, Jan. 28, 1943; lowest 15.98 above msl, Aug. 29, 1947. Records available: 1942-51. *Basalt of Koolau volcanic series.

Jan. 26	17.07	215	Aug. 28	16.58	204
Feb. 26	17.23	204	Sept. 26	16.97	197
Mar. 27	18.11	215	Oct. 26	17.07	216
Apr. 27	18.04	211	Nov. 28	18.02	221
June 18	17.28	211	Dec. 21	18.10	205
July 23	17.08	202			

T-24. Honolulu Board of Water Supply. In Manaiki Gulch. Lat. 21°21'27", long. 157°53'10". Drilled observation artesian well in basalt of Koolau volcanic series, diameter 12 inches, depth 115 feet, cased to 66. Land-surface datum is 58.40 feet above msl. Highest water level 25.56 above msl, Dec. 31, 1951; lowest 22.78 above msl, Oct. 7, 1950. Records available 1945-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	23.90	23.96	24.18	25.22	25.28	25.00	24.73	24.23	24.02	24.23	24.51	24.95
2	23.94	23.93	24.19	25.25	25.30	25.00	24.75	24.22	24.03	24.23	24.56	24.99
3	23.98	23.91	24.21	25.29	25.30	25.04	24.69	24.19	24.10	24.22	24.62	25.02
4	23.98	23.93	24.23	25.32	25.28	25.04	24.68	24.17	24.15	24.18	24.67	24.99
5	23.96	23.96	24.26	25.30	25.25	25.00	24.72	24.18	24.14	24.16	24.71	24.98
6	23.95	23.98	24.32	25.29	25.26	24.91	24.71	24.19	24.12	24.12	24.75	24.94
7	23.97	23.94	24.33	25.32	25.29	24.95	24.70	24.17	24.07	24.19	24.78	24.91
8	24.00	23.88	24.33	25.36	25.26	24.93	24.69	24.21	24.03	24.22	24.81	24.91
9	24.02	23.85	24.33	25.38	25.21	24.89	24.68	24.22	24.07	24.21	24.85	24.98
10	24.02	23.81	24.32	25.38	25.19	24.90	24.72	24.21	24.07	24.20	24.89	24.99
11	24.02	23.81	24.34	25.42	25.19	24.94	24.65	24.17	24.04	24.17	24.94	25.03
12	24.02	23.81	24.38	25.43	25.16	25.93	24.58	25.19	24.02	24.13	24.98	25.02
13	24.00	23.82	24.50	25.43	25.17	24.91	24.55	24.22	24.00	24.12	25.00	25.05
14	23.99	23.79	24.58	25.42	25.20	24.88	24.52	24.20	23.98	24.16	24.99	25.08
15	24.07	23.76	24.60	25.43	25.19	24.87	24.52	24.18	23.96	24.18	24.99	25.09
16	24.07	23.75	24.66	25.45	25.16	24.86	24.54	24.15	24.00	24.17	24.98	25.14
17	e24.08	23.75	24.70	25.44	25.15	24.87	24.51	24.10	24.02	24.11	24.96	25.19
18	24.10	24.78	24.72	25.43	25.12	24.87	24.46	24.11	23.98	24.05	24.99	25.19
19	24.05	23.79	24.74	25.43	25.10	24.84	24.45	24.15	24.00	24.04	25.01	25.25
20	24.05	23.90	24.77	25.40	25.12	24.82	24.44	24.16	24.04	24.05	25.01	25.31
21	24.06	24.01	24.82	25.35	25.16	24.79	24.39	24.13	24.06	24.10	24.99	25.31
22	24.08	24.03	24.86	25.34	25.13	24.76	24.40	24.12	24.08	24.15	24.98	25.32
23	24.08	24.06	24.92	25.35	25.09	24.73	24.39	24.09	24.13	25.18	25.02	25.35
24	e24.08	24.04	24.92	25.33	25.09	24.78	24.36	24.08	24.19	24.20	25.03	25.41
25	24.08	24.07	25.00	e25.30	25.05	24.80	24.33	24.08	24.18	24.19	25.05	25.45
26	24.08	24.13	25.05	25.28	25.02	24.78	24.31	24.10	24.15	24.17	25.06	25.48
27	24.06	24.13	25.08	25.24	25.05	24.76	24.28	24.14	24.13	24.19	25.06	25.48
28	24.06	24.15	25.09	25.24	25.07	24.74	24.29	24.10	24.13	24.26	25.05	25.48
29	24.05		25.15	25.27	25.05	24.73	24.32	24.05	24.12	24.33	25.00	25.50
30	24.03		25.18	25.29	25.03	24.70	24.30	24.01	24.18	24.39	24.96	25.54
31	24.00		25.20		25.02		24.25	23.99		24.46		25.56

e Estimated.

T-25. Honolulu Board of Water Supply. In Waimalu Valley, near Pearl Harbor. Lat. 21°23'35", long. 157°56'48". Drilled observation artesian well in basalt of Koolau volcanic series, diameter 12 inches, depth 177 feet, cased to 42. Land-surface datum is 24.40 feet above msl. Highest water level 20.55 above msl, Dec. 31, 1951; lowest 17.27 above msl, Oct. 28, 1949. Records available: 1945-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.72	18.35	18.87	20.20	19.90	19.66	19.52	19.07	18.90	19.15	19.67	19.72
2	18.73	18.38	18.90	20.18	19.85	19.75	19.46	19.06	19.00	19.05	19.93	19.77
3	18.65	18.55	18.93	e20.12	19.85	19.85	19.42	19.03	19.25	e19.02	19.97	19.65
4	18.62	18.60	18.97	e20.06	19.80	19.77	19.60	19.03	19.20	e18.98	20.00	19.55
5	18.56	18.55	19.10	20.00	19.90	19.72	19.50	19.10	19.02	e18.94	20.01	19.50
6	18.60	18.50	19.15	20.00	20.08	19.67	19.48	19.09	18.97	18.90	20.03	19.40
7	18.70	18.40	19.08	20.10	19.95	19.65	19.48	19.20	18.94	19.10	20.06	19.37
8	18.58	18.30	19.08	20.22	19.85	19.65	19.51	19.20	18.99	18.95	e20.06	19.60
9	18.57	18.27	19.08	20.15	19.72	19.66	19.45	19.10	19.15	18.92	e20.07	19.70
10	18.55	18.35	19.10	20.25	19.72	19.73	19.40	19.12	18.92	18.90	20.08	19.67
11	18.55	18.49	19.45	20.32	19.70	19.68	19.33	19.15	18.85	18.85	20.12	19.75
12	18.57	18.35	19.45	20.32	19.75	19.63	19.27	19.22	18.83	18.80	20.12	19.80
13	18.71	18.30	e19.50	20.25	19.85	19.57	19.32	19.12	18.85	18.85	20.12	19.87
14	18.70	18.25	e19.55	20.25	19.82	19.53	19.30	19.06	18.87	19.00	20.02	19.93
15	18.62	18.18	e19.60	20.26	19.77	e19.51	19.33	19.06	18.90	18.85	19.93	19.92
16	18.67	18.23	e19.65	20.20	19.73	e19.49	19.30	19.03	19.00	18.80	19.92	20.06
17	18.70	18.42	19.70	20.16	19.70	e19.47	19.27	18.95	18.85	18.72	19.95	20.15
18	18.67	18.50	19.70	20.10	19.65	e19.46	19.23	19.00	18.72	18.92	19.97	20.13
19	18.65	18.52	19.68	19.99	19.75	e19.45	19.17	19.10	18.73	18.70	19.95	20.17
20	18.72	18.64	19.65	19.95	19.95	e19.44	19.20	19.06	18.82	18.77	19.95	20.18

T-25--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
21	18.71	18.70	e19.70	19.95	19.85	e19.43	19.17	18.97	18.90	18.80	19.92	20.20
22	18.67	18.72	e19.75	20.05	19.80	e19.42	19.27	18.95	19.05	18.97	19.93	20.21
23	18.72	18.72	e19.80	19.92	19.70	19.41	19.21	18.95	19.22	18.95	19.95	20.25
24	18.62	18.82	e19.85	19.82	19.65	19.52	19.16	18.97	19.08	18.92	19.95	20.28
25	18.50	18.88	e19.90	19.78	19.63	19.50	19.11	e18.97	19.95	18.85	20.00	20.30
26	18.55	18.90	e19.95	19.75	19.75	19.45	19.09	e18.96	18.87	18.92	19.97	20.20
27	18.69	18.87	e20.00	19.70	19.90	19.47	19.07	e18.96	18.92	19.50	19.90	20.10
28	18.71	18.87	e20.05	19.80	19.80	19.42	19.14	18.95	19.00	19.65	19.80	20.15
29	18.56		e20.10	19.99	19.70	19.41	19.23	18.93	19.06	19.70	19.65	20.26
30	18.45		e20.15	19.90	19.71	19.42	19.15	18.90	19.23	19.80	19.55	20.28
31	18.41		20.20		19.70		19.08	18.87		19.75		20.55

e Estimated.

T-27. Honolulu Board of Water Supply. At Pearl City. Lat. 21°23'55", long. 157°58'30". Drilled observation water-table well in basalt of Koolau volcanic series, diameter 12 inches, depth 71 feet, cased to 60. Land-surface datum is 47.00 feet above msl. Highest water level 22.20 above msl, Feb. 15, 1949; lowest 17.86 above msl, Oct. 25, 1948. Records available: 1946-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	19.60	e19.33	19.57	21.37	21.42	21.08	20.75	20.27	19.90	20.22	20.82	21.02
2	19.66	e19.29	19.60	21.40	21.37	20.99	20.75	20.28	19.95	20.15	21.12	21.12
3	19.72	19.25	19.63	21.45	21.37	21.09	20.68	20.25	20.15	20.05	21.17	21.07
4	19.75	19.36	19.68	21.43	21.37	21.06	20.75	20.22	20.23	19.95	21.23	20.95
5	19.80	19.35	19.72	21.40	21.42	20.97	20.85	20.26	20.12	19.85	21.27	20.90
6	19.82	19.30	19.76	21.42	21.55	20.88	20.83	20.25	20.07	19.92	21.35	20.82
7	19.86	19.17	19.80	21.45	21.52	20.83	20.77	20.26	20.02	20.15	21.42	20.81
8	19.85	19.08	19.83	21.55	21.42	20.83	20.83	20.27	20.01	20.12	21.43	20.95
9	19.88	19.02	19.85	21.62	21.32	20.83	20.77	20.24	20.08	20.02	21.47	21.08
10	19.90	19.06	19.90	21.58	21.26	20.87	20.95	20.18	20.04	19.97	21.53	21.12
11	19.85	19.16	19.96	21.65	21.20	20.87	20.63	20.17	19.95	19.90	21.57	21.16
12	19.75	19.10	20.03	21.68	21.16	20.82	20.57	20.25	19.93	19.85	21.55	21.22
13	19.73	19.00	20.07	21.72	21.30	20.80	20.55	20.21	19.87	19.87	21.50	21.32
14	19.75	18.90	20.65	21.72	21.37	20.76	20.53	20.15	19.87	20.07	21.47	21.37
15	19.70	18.83	20.73	21.75	21.30	20.75	20.57	20.12	19.88	20.02	21.43	21.42
16	19.65	18.82	20.72	21.76	21.21	20.77	20.56	20.09	19.96	19.90	21.37	21.49
17	19.65	18.93	20.74	21.70	21.17	20.85	20.50	20.08	19.92	19.82	21.33	21.56
18	19.65	19.06	20.75	21.67	21.11	20.90	20.45	20.12	19.86	19.75	21.42	21.57
19	19.60	19.11	20.76	21.64	21.12	20.83	20.44	20.17	19.93	19.77	21.37	21.62
20	19.57	19.20	20.77	21.57	21.25	20.77	20.43	20.17	20.01	19.90	21.30	21.67
21	19.64	19.33	20.83	21.56	21.26	20.73	20.41	20.10	20.12	20.06	21.23	21.70
22	19.64	19.42	20.95	21.63	21.20	20.70	20.46	20.05	20.25	20.12	21.24	21.70
23	19.64	19.47	20.97	21.60	21.12	20.70	20.45	20.02	20.40	20.11	21.25	21.72
24	19.63	19.50	20.98	21.49	21.09	20.77	20.37	20.03	20.37	20.10	21.27	21.75
25	19.58	19.55	21.05	21.40	21.08	20.80	20.34	20.03	20.25	20.10	21.35	21.80
26	19.56	19.58	21.19	21.35	21.06	20.77	20.31	20.08	20.15	19.77	21.32	21.80
27	19.60	19.57	21.25	21.30	21.17	20.76	20.27	20.10	20.10	19.95	21.23	21.80
28	19.66	19.57	21.26	21.30	21.20	20.73	20.30	20.04	20.07	20.27	21.17	21.80
29	19.58		21.30	21.42	21.13	20.72	20.38	20.00	20.07	20.46	21.10	21.85
30	19.41		21.33	21.45	21.15	20.68	20.40	19.97	20.17	20.60	21.00	21.85
31	e19.37		21.37		21.17		20.32	19.93		20.73		21.90

e Estimated.

T-28. Honolulu Board of Water Supply. In Halemano Gulch, near Waialua. Lat. 21°34'40", long. 158°06'07". Drilled observation water-table well in basalt of Koolau volcanic series, diameter 12 inches, depth 60 feet, cased to 39. Land-surface datum is 35 feet above msl. Highest water level 12.15 above msl, Mar. 28, 1951; lowest 9.53 above msl, June 12, 1947. Records available: 1947-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.78	11.32	11.46	12.04	11.63	11.21	11.39	11.00	11.10	11.15	.....	11.87
2	11.76	11.26	11.48	12.01	11.56	11.18	11.22	10.97	11.3	11.12	12.13	11.94
3	11.73	11.22	11.47	11.97	11.51	11.35	11.18	10.98	.....	11.08	12.16	11.79
4	11.70	11.31	11.49	11.95	11.43	11.30	11.13	10.99	.....	11.06	12.16	11.57
5	11.66	11.27	11.49	11.93	11.46	11.18	11.18	11.17	11.26	11.04	12.16	11.52

T-28--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	11.62	11.28	11.55	11.91	11.64	11.12	11.08	11.10	11.21	11.09	12.17	11.49
7	11.58	11.27	11.63	11.90	11.61	11.06	11.05	11.03	11.14	11.32	12.19	11.47
8	11.50	11.23	11.66	11.94	11.49	11.02	11.12	11.04	11.16	11.27	12.18	11.68
9	11.46	11.15	11.68	11.22	11.46	11.02	11.10	11.03	11.31	11.10	12.18	11.86
10	11.44	11.13	11.69	11.91	11.42	11.12	10.99	11.05	11.23	11.05	12.19	11.95
11	11.44	11.14	11.81	11.90	11.35	11.11	10.93	11.06	11.17	11.01	12.20	12.00
12	11.43	11.08	11.87	11.87	11.33	11.10	10.89	11.20	11.19	11.02	12.18	11.96
13	11.42	11.06	11.93	11.84	11.49	11.17	10.85	11.18	11.14	11.21	12.12	11.97
14	11.37	11.03	.....	11.83	11.44	11.20	10.88	11.11	11.18	.....	12.02	11.99
15	11.31	11.03	.....	11.86	11.34	11.13	11.00	11.07	11.14	11.28	11.84	12.04
16	11.31	11.02	11.98	11.82	11.27	11.10	11.00	11.06	11.25	11.15	11.74	12.05
17	11.35	11.07	12.00	11.73	11.26	11.25	10.96	11.05	11.18	11.10	11.90	12.05
18	11.38	11.18	11.97	11.66	11.26	11.17	10.96	11.08	11.12	11.05	12.01	12.04
19	11.39	11.24	11.95	11.64	11.27	11.06	10.95	11.23	11.12	11.05	11.88	12.04
20	11.36	11.31	11.90	11.67	11.50	11.02	10.96	11.14	11.11	11.25	11.76	12.03
21	11.38	11.4	11.87	11.71	11.39	10.99	11.03	11.08	11.16	11.34	11.77	12.02
22	11.44	.....	11.93	11.74	11.30	11.00	11.21	11.05	11.18	11.24	11.87	12.04
23	11.50	11.57	12.00	11.63	11.30	11.06	11.17	.....	11.32	11.14	11.93	12.03
24	11.51	11.54	11.99	11.51	11.28	11.17	11.06	.....	11.21	11.07	11.99	12.01
25	11.52	11.52	12.00	11.49	11.25	11.15	11.02	.....	11.06	11.06	12.03	12.01
26	11.48	11.52	12.02	11.46	11.21	11.11	11.01	.....	11.00	11.08	11.94	12.01
27	11.46	11.49	12.07	11.45	11.30	11.07	10.98	.....	10.96	11.4	11.83	11.99
28	11.43	11.46	12.15	11.39	11.25	11.08	11.00	.....	10.95	.....	11.78	12.00
29	11.38		12.12	11.55	11.21	11.04	11.16	.....	10.97	.....	11.73	12.01
30	11.34		12.10	11.60	11.32	11.27	11.13	.....	11.13	.....	11.71	12.01
31	11.35		12.06		11.32		11.07	11.05		.....		12.00

T-41. Honolulu Board of Water Supply. Near Waipahu. Lat. 21°22'45", long. 158°01'50". Drilled observation artesian well in basalt of Koolau volcanic series, diameter 12 inches, depth 113 feet, cased to 92. Land-surface datum is 84 feet above msl. Highest water level 25.08 above msl, Apr. 2, 1951; lowest 17.06 above msl, Oct. 28, 1949. Records available 1949-51. Records furnished by Honolulu Board of Water Supply.

Daily mean water level above msl from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21.50	20.13	21.87	25.05	22.50	21.45	21.25	20.12	19.47	20.90	e23.39	22.50
2	21.80	20.02	21.88	25.08	22.50	21.25	21.20	20.05	20.00	20.51	e23.80	23.20
3	22.00	20.10	21.90	25.00	22.50	21.90	20.87	19.77	21.10	20.32	23.83	22.65
4	22.18	20.80	22.00	24.90	22.40	21.60	21.60	19.75	20.75	20.17	24.00	22.20
5	22.23	20.60	22.00	24.75	22.55	21.25	22.30	20.10	20.25	19.83	24.12	21.95
6	22.27	20.30	22.10	24.70	23.20	21.05	21.75	20.12	20.05	20.55	24.22	21.75
7	22.33	20.10	22.35	24.70	22.90	20.92	21.25	19.93	19.87	21.40	24.08	21.80
8	22.37	20.00	22.45	24.93	22.35	20.80	21.55	19.90	19.80	20.85	24.40	22.60
9	22.40	20.05	22.52	24.55	22.15	20.75	21.30	19.80	20.20	20.30	24.45	23.15
10	22.42	20.10	22.58	24.20	21.95	21.30	20.93	19.85	20.10	20.00	24.50	23.10
11	21.75	20.65	22.65	24.10	21.85	21.20	20.70	20.00	19.75	19.80	24.52	23.35
12	21.05	20.50	22.72	24.05	21.80	20.90	20.57	20.45	19.87	19.85	23.95	23.45
13	20.85	20.10	23.10	24.00	22.50	20.75	20.47	20.30	19.55	20.55	23.45	e23.67
14	21.40	19.75	23.50	23.80	22.50	20.63	20.42	20.04	19.52	21.40	23.20	e23.89
15	21.15	19.65	23.68	24.20	22.15	20.70	20.85	19.90	19.52	20.85	22.90	24.11
16	20.70	19.55	23.77	24.00	21.85	20.77	20.85	19.80	19.80	20.30	22.60	24.25
17	20.55	19.77	23.87	23.70	21.75	21.35	20.55	19.76	19.85	20.05	23.10	24.37
18	20.40	20.35	23.93	23.55	21.60	21.30	20.43	19.85	19.65	20.00	23.65	24.42
19	20.30	20.55	23.97	23.50	21.55	21.00	20.37	20.35	20.25	19.80	23.10	24.50
20	20.25	20.95	24.01	23.35	22.25	20.85	20.33	20.35	20.85	20.50	22.50	24.62
21	20.95	21.35	23.96	23.25	22.15	20.75	20.32	20.00	21.42	21.25	22.20	24.67
22	20.80	e21.54	24.07	23.75	21.77	20.67	20.75	19.85	21.70	20.90	22.75	24.73
23	21.20	e21.73	24.30	23.50	21.65	20.65	20.75	19.77	22.05	20.50	22.65	24.76
24	21.05	21.92	24.43	23.10	21.50	21.25	20.45	19.75	22.05	20.30	23.10	24.82
25	21.00	22.00	24.55	22.70	21.40	21.15	20.35	19.75	21.25	20.20	23.57	24.86
26	20.97	22.08	24.72	22.48	21.40	20.85	20.25	20.10	20.75	20.05	23.00	24.91
27	21.05	22.00	24.83	22.40	22.10	20.75	20.18	20.20	20.45	20.80	22.45	24.93
28	21.50	21.91	24.90	22.50	22.00	20.67	20.15	19.92	20.35	21.75	22.13	24.90
29	21.00		24.98	23.00	21.65	20.63	20.60	19.76	20.33	e22.16	21.92	24.92
30	20.55		25.00	22.85	22.25	20.60	20.65	19.67	20.90	e22.57	21.85	24.93
31	20.28		25.02		22.00		20.30	19.53		e22.98		24.96

e Estimated.

Shaft 4. U. S. Army. Near Wahiawa. Lat. 21°29'30", long. 158°01'45". Dug domestic high-level water-table well in Koolau basalt,* size 7 by 7 feet, vertical depth of 30-degree inclined shaft 563 feet, lined with concrete in upper part, pump chamber at bottom of shaft. Highest water level 284.13 above msl, Sept. 4, 1937; lowest 273.17 above msl, Mar. 11, 1946. Records available: 1936-51. *Basalt of Koolau volcanic series.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	279.89	Mar. 20	279.48	June 12	281.87	Aug. 21	282.88
9	279.86	27	279.65	19	282.07	Sept. 18	282.73
16	279.71	Apr. 3	279.59	26	282.32	25	282.64
23	279.73	10	279.79	July 3	282.52	Oct. 9	282.48
30	279.62	17	279.98	10	282.58	30	282.27
Feb. 6	279.59	24	280.12	17	282.75	Nov. 6	282.02
13	279.43	May 1	280.42	24	282.78	20	281.76
20	279.56	8	280.61	31	282.83	27	281.63
27	279.43	22	281.12	Aug. 7	282.87	Dec. 4	281.44
Mar. 6	279.50	29	281.42	14	282.90	25	281.20
13	279.58	June 5	281.63				

Shaft 7. Honolulu Board of Water Supply. 16th and Claudine Sts., Honolulu. Lat. 21°17'20", long. 157°47'35". Dug public-supply water-table well in basalt of Koolau volcanic series, size 8 by 8 feet, vertical depth of 30-degree inclined shaft 150 feet, pump chamber and sump at bottom of shaft, shaft and chamber lined with concrete; infiltration tunnel, size 5 by 7 feet, length 67 feet. Land-surface datum is 160.00 feet above msl. Highest water level 10.43 above msl, Oct. 29, 1937; lowest 8.79 above msl, June 6, 1947. Records available: 1945-51. Records furnished by Honolulu Board of Water Supply.

Jan. 3	9.28	Apr. 11	9.38	July 11	9.22	Oct. 17	9.50
10	9.24	18	9.30	18	9.25	24	9.52
17	9.24	25	9.26	25	9.30	31	9.56
31	9.21	May 2	9.25	Aug. 1	9.32	Nov. 7	9.61
Feb. 7	9.17	9	9.23	8	9.34	14	9.60
14	9.17	16	9.21	15	9.37	21	9.58
21	9.22	23	9.22	22	9.41	28	9.55
28	9.26	30	9.19	29	9.43	Dec. 5	9.54
Mar. 7	9.24	June 6	9.19	Sept. 5	9.48	12	9.54
14	9.39	13	9.22	12	9.48	19	9.50
21	9.38	20	9.23	19	9.48	26	9.48
28	9.54	27	9.24	26	9.48	31	9.48
Apr. 4	9.46	July 4	9.24				

Pumpage, in millions of gallons, from wells and tunnels in the Territory of Hawaii, 1951

Island of Hawaii			Island of Kauai		
Hamakua Mill Co.			County of Kauai		
Paauilo well (shaft 5)		671	Hanapepe Water Works	69	
			Waimea Water Works	106	
Hawaiian Agricultural Co.			Kekaha shaft	27	202
Pahala shaft (shaft 8)		635			
			Kekaha Sugar Co.		
Hutchinson Sugar Plantation Co.			Well 9 (27)	75	
Honuapo well (10)		e800	Wells K-1 to K-5 (32)	568	
			Wells M-1 to M-12 (45)	1,164	
Kaiwiki Sugar Co.			Kekaha pump	730	
Domestic tunnel (shaft 6)	e65		Mana pump	182	
Cane-cleaning plant tunnel (shaft 6)	390	455	Waiawa pump	227	
			Well 16 (55)	0	2,946
Kohala Sugar Co.					
Hoea pump (shaft 2)	802		Lihue Plantation		
Kohala pump (shaft 4)	1,735		Domestic shaft	e500	
Waikane pump (shaft 1)	415		Kealia wells (2)	e150	
Honokane tunnel	1,772		Hanamaulu shaft	e3	653
Halaula domestic well	176	4,900			
			Olokele Sugar Co.		
Olaa Sugar Co.			Domestic shaft		e500
Olaa shaft (shaft 7)		721	Total		1/ 4,301
Pepeekeo Sugar Co.		e105			
Total		8,287			

Pumpage, in millions of gallons, from wells and tunnels in the Territory of Hawaii, 1951--Continued

Island of Lanai		
Hawaiian Pineapple Co.		
Tunnel 1	107	
Shaft 2	46	
Well 1	0	
2	15	
3 (Kapano)	0	
4 (Soules Bench)	0	
5 (Waiakeakua)	3	171
Total		171
Island of Maui		
Hawaiian Commercial and Sugar Co.		
Pump 1 (14)	550	
2 (25)	3,327	
3A-C (15)	5,425	
4 (24)	2,003	
5 (19)	2,181	
6 (18)	4,651	
7 (16)	5,369	
8 (17)	4,261	
9 (22)	3,412	
Central Power Plant (20)	1,798	
Pump 11A-B (32)	605	
12 (31)	919	
13A-B (29)	3,886	
16 A, B, D (30)	1,961	
17 (28)	2,220	
18A-B (27)	3,121	45,689
Maui Pineapple Co.		
Kahului Cannery (13)		e250
Wailuku Sugar Co.		
Wailuku shaft		1,352
Total		2/47,291
Island of Molokai		
County of Maui		
Conant-Kawela (shaft 4) and Kamilolaa (dug well 30)	26	
Kalae tunnel (tunnel 5)	3	
Kamalo well (dug well 42)	5	
Ualapue well (shaft 6)	19	53
California Packing Corp.		
Kualapuu (15)		35
Total		88
Island of Oahu		
Ewa Plantation Co.		
Pump 1 (268)	0	
2 (257)	858	
3 (264)	3,121	
4 (264)	2,728	
5 (259)	1,745	
6 (259)	2,315	
7 (263)	2,339	
8 (270)	542	
10 (276)	2,122	
11 (276)	1,226	
12 (276)	991	
13 (276)	31	
15 (shaft 3)	2,157	
16 (shaft 3)	3,442	
20 (dug well 20)	498	
21 (dug well 21)	332	
Pump 22 (dug well 22)	292	
23 (dug well 23)	1,334	
24 (dug well 24)	469	
25 (254)	278	26,820
California Packing Corp.		
Kunia well (330-5)		7
Hawaiian Electric Co.		
Tunnel (shaft 8)	2,553	
Wells (199-1)	2,125	
Kaluaoopu Spring	4,378	9,056
Honolulu Board of Water Supply		
Kalihi station (shaft 6)	3,797	
Waialae station (shaft 7)	157	
Halawa station (shaft 12)	1,564	
Kaimuki station (7)	1,664	
Beretania station (88)	2,943	
Kalihi station (128)	1,588	11,713
Honolulu Suburban Water System		
Aiea (190-1-B)	31	
Pearl City (shaft 9)	131	
Waipahu (241)	146	
Nanakuli (dug well 16)	2	
Lualualei (shaft 2)	48	
Waialua (well 333)	121	
Hauula (394)	28	
Kaaawa (shaft 10)	31	
Haiku tunnel	427	
Kahaluu tunnel	618	
Waimanalo		
City and County tunnel	59	
Plantation tunnel	36	
Waialee Training School Sunset Beach (337-1&2) and School Pump (337-1&2)	37	
Waianae		
City and County tunnel	1,260	
Other tunnels	208	3,183
Kahuku Plantation Co.		
Pump 1 (353)	1,113	
2 (341)	1,661	
3 (362)	1,540	
5 (352)	1,901	
6 (362-1)	256	
7 (363)	251	
8 (357)	279	
12 (361)	113	
14 (338)	e510	
15 (348)	215	
17 (362)	107	
20 (377)	819	
23 (387)	111	
25 (373)	137	
26 (392)	220	
27 (396)	20	
Mill pump (355)	e696	9,949
Oahu Sugar Co.		
Waipahu Section		
Pump 1 (247)	1,163	
2 (249)	1,724	
3 (249)	1,075	
4 (248)	838	
5 (274)	3,044	

Pumpage, in millions of gallons, from wells and tunnels in the Territory of Hawaii, 1951--Continued

Island of Oahu--Continued		
Pump 6 & 6B (239)	2,586	
7 (246)	3,339	
8 (Waikele Spring)	1,959	
9 (Waiawa Spring)	88	
Aiea Section		
Pump 2 (196)	7	
3 (186)	1,260	
4 (197)	2,678	
5 & 5B (189)	1,340	
6 (Kalawao Spring	920	
16 (199-1)[3]		
21 & 21B (shaft 13)	1,301	23,322
Private wells in Honolulu	[4]	3,827
Territory Hospital, Kaneohe (416)		e100
U. S. Army		
Schofield (shaft 4)		953
U. S. Navy		
Aiea (shaft 5)	587	
Red Hill (shaft 11)	3,505	
Barbers Point (shaft 14)	501	
Aiea wells (187)	1	
Wahiawa Radio Station (330-2)	0	
Pearl City wells	1,048	
Lualualei tunnel	133	
Waiawa shaft	6,132	11,907

Island of Oahu--Continued		
Wahiawa Water Co. (330-3, 330-6)		551
Waialua Agricultural Co.		
Pump 1	665	
2 (322 A to I)	2,139	
2A (322 J to N)	1,825	
3 (331)	3,222	
4 (334)	1,631	
5 (285)	990	
6 (298, 299, &301)	188	
7 (324)	666	
8 (329)	258	
9 (327)	205	
10 (323)	1,905	
11 (296)	63	
12 (332)	197	
13 (328)	198	
15 (317)	35	
16 (316)	85	
Mill (319)	2,876	17,148
Waimano Home		
(196-1)	72	
(196-1B)	23	95
Total		118,631
Grand Total		178,769

e Estimated.

1 Pumpage for McBryde Sugar Co. not included. Three pumps in Hanapepe and one in Lawai Valley pump both surface water and ground water. It is not possible to separate groundwater draft from the surface water.

2 Does not include pumpage from Pioneer Mill Co. which normally is more than 10,000 million gallons.

3 Pumpage from Pump 16 (199-1) included with that of Hawaiian Electric Co.

4 Reported by Honolulu Board of Water Supply. Included pumpage from wells belonging to military establishments in Honolulu.

NEVADA

By J. L. Poole and O. J. Loeltz

Scope of Water-Level Program

The observation-well program in Nevada was continued in 1951 in cooperation with the State Engineer. Measurements were made in 291 wells, 12 of which were equipped with recording gages. Measurements of water levels and artesian pressures were made in almost all the observation wells in March and September. Measurements were made monthly and quarterly in some areas of large withdrawals. Reconnaissance studies of several undeveloped valleys were continued. The following reports were published in 1951:

State of Nevada Water Resources Bulletin No. 12, Contributions to the Hydrology of Eastern Nevada:

Ground water in Goshute and Antelope Valleys, Elko County, by T. E. Eakin, G. B. Maxey, and T. W. Robinson.
Ground water in the vicinity of Elko, by J. C. Fredericks and O. J. Loeltz.
Ground water in Ruby Valley, Elko and White Pine Counties, by T. E. Eakin and G. B. Maxey.
Ground water in Clover and Independence Valleys, Elko County, by T. E. Eakin and G. B. Maxey.
Ground water in Railroad, Hot Creek, Reveille, Kawich, and Penoyer Valleys, Nye, Lincoln, and White Pine Counties, by G. B. Maxey and T. E. Eakin.

(Mimeographed report) Ground water in the vicinity of Verdi, Washoe County, by T. W. Robinson, O. J. Loeltz, and J. L. Poole.

Precipitation

In 1951, precipitation averaged 8.25 inches for the State, or about 95 percent of normal. Northwestern Nevada received above-normal precipitation. Northeastern and southern Nevada received about 90 percent of normal precipitation. The quantity of snow-stored water was from 10 to 15 percent above average in northern Nevada, and considerably below average in eastern and southern Nevada. Snow-stored water on April 1 in the Spring Mountains west of Las Vegas was only 10 percent of the past 10-year average. This was reflected in near-drought conditions in the vicinity of Las Vegas during the summer of 1951.

Pumpage

The following table is a summary of the withdrawals of ground water for the year 1951. Actual withdrawals are somewhat larger than indicated; stock and domestic wells are not included.

County and Area	Withdrawals, in acre-feet	County and Area	Withdrawals, in acre-feet
Clark		Humboldt	
Las Vegas	a34,100	Paradise	1,400
Muddy River	3,300	Quinn River	1,000
Douglas		Lander	
Carson	3,000	Buffalo	800
Antelope	400	Reese River	600
Elko		Lincoln	
City of Elko	1,500	Meadow	3,500
Esmeralda		Vicinity of Caliente	1,100
Fish Lake	3,000	Pahranagat	1,000
Eureka		Lyon	
Crescent	800	Carson River	1,500
Diamond	4,300		

302263 O - 54 - 9

County and area	Withdrawals, in acre-feet	County and area	Withdrawals, in acre-feet
Nye		Washoe	
Pahrump	b18,000	Truckee Meadows	1,700
Big Smoky	1,200		
		White Pine	
Pershing		Steptoe	600
Buena Vista	600	White River	1,700
Total			85,100

a Includes 1,000 to 1,500 acre-feet discharged by springs owned by the Las Vegas Land and Water Co.

b Includes 5,000 to 6,000 acre-feet discharged by springs.

Withdrawals from Las Vegas Valley have ranged from 22,100 acre-feet in 1941 to 34,400 acre-feet in 1948, 33,800 acre-feet in 1950 and 34,100 in 1951. Ground-water withdrawal in Pahrump Valley, including 5,000 to 6,000 acre-feet discharged by springs, was 18,000 acre-feet, as compared with 14,500 acre-feet in 1950. Pumpage in Pahrump Valley in 1950 was but little more than 70 percent of the 5-year average. The annual withdrawal has averaged about 18,000 acre-feet during the past 5 years. Use of ground water in other parts of Nevada has increased. Several wells are in use for irrigation, fish-rearing, mining, and other purposes, but the amount of ground water discharged by each is usually less than 500 acre-feet annually.

Interpretation of Water-Level Fluctuations

Ground-water levels in many of the valleys of northern and western Nevada were above average stages in March 1951 because of above-normal runoff of the larger streams during the fall and winter of 1950. In September 1951, they were near normal stages. In central, eastern, and southern Nevada, water levels were generally below normal in March and September because of below-normal precipitation in 1950. In southern Nevada, water levels in many wells were at their lowest in September. Continuation of the drought and large withdrawals of ground water were the principal reasons why many record low stages of water level were observed.

In Las Vegas Valley artesian pressures in 15 selected observation wells averaged 0.85 foot lower in August 1951 than in August 1950. Because artesian pressures of three of the wells were increased substantially by reduction in pumpage in 1951, the decline of 0.85 foot is not representative of the average decline in the valley. Records from other wells in the valley indicate that the decline is much closer to the average annual rate of 1.70 feet. It appears that unless withdrawals are substantially reduced, the trend of artesian pressures will continue downward. In Pahrump Valley, Clark and Nye Counties, artesian pressures in and near areas of ground-water withdrawals generally were 1 to 2 feet lower in August 1951 than in August 1950. As long as the annual rate of withdrawal is about 18,000 acre-feet, artesian pressures will continue to decline. The rising water table in the lower parts of both Las Vegas and Pahrump Valleys is owing to recharge from withdrawals of artesian water.

Acknowledgments

Many power companies, municipalities, industrial firms, and individuals cooperated in furnishing information on pumpage. The Soil Conservation Service, Department of Agriculture, measured the observation wells in Paradise Valley, Humboldt County.

Well-Numbering System

The number assigned to a well in this report is both an identification and location number. It is based on the Mount Diablo base and meridian network of surveys established by the General Land Office (now Bureau of Land Management). The first numeral of a well number indicates the township. If the township is south of Mount Diablo base the letter "S" appears before the township number. The second numeral, separated from the township number by a slant, is the range number east of Mount Diablo meridian. The third numeral, separated from the range number by a dash, is the section number. One of the first four letters of the alphabet following the section number denotes the quarter section, the second letter the quarter-quarter section, and a third letter the quarter-quarter-quarter section, or 10-acre tract if known. The letters are assigned in a counterclockwise order, "a" designating the northeast quadrant. Where more than one well is in the same subdivision consecutive numbers beginning with 1 are assigned in the order in which the well data was first recorded. Thus, well number S19/60-4dab1 is used to designate the first well selected in the $NW\frac{1}{4}NE\frac{1}{4}SE\frac{1}{4}$ sec. 4, T. 19 S., R. 60 E. Similarly, well number 12/23-22ac3 is used to designate the third well recorded in the $SW\frac{1}{4}NE\frac{1}{4}$ sec. 22, T. 12 N., R. 23 E.

Well Descriptions and Water-Level Measurements

(When some measurements in a table are above and others are below the plane of reference appropriate signs will be placed to indicate a change; readings that are between minus (-) signs will be considered to be below the plane of reference; and those between plus (+) signs will be considered as above the plane of reference. A plus or minus sign will be placed immediately preceding the first entry in each column of each mixed table.)

Clark County

Indian Spring Valley

S16/56-9bc2. Tim Harnedy. Drilled domestic and irrigation well in alluvium of Quaternary age, diameter 8 inches, depth 582 feet. Highest water level 2.75 below lsd, Feb. 15, 1950; lowest 6.70 below lsd, Aug. 5, 1949. Records available: 1946-51. Feb. 13, 4.29; May 7, 5.89; Aug. 7, 4.17.

Las Vegas Valley

S16/57-24c1. U. S. Bureau of Land Management. Drilled unused well in alluvium of Quaternary age, diameter 4 inches, depth 151 feet. Highest water level 122.81 below lsd, Aug. 7, 1951; lowest 124.09 below lsd, Mar. 18, 1946. Records available: 1946-51. Feb. 13, 122.95; May 7, 122.92; Aug. 7, 122.81; Nov. 5, 122.88.

S17/59-34a1. Desert Game Refuge. Drilled unused well in alluvium of Quaternary age, diameter 12 inches, depth 150 feet. Highest water level 22.87 below lsd, Feb. 28, 1947; lowest 24.19 below lsd, Aug. 9, 1945. Records available: 1945-51. Feb. 26, 23.04; May 14, 23.34; Aug. 6, 23.79; Nov. 8, 23.48.

S17/59-20bc1. U. S. Bureau of Land Management. Drilled stock well in alluvium of Quaternary age, diameter 6 inches, depth 300 feet. Highest water level 27.36 below lsd, May 14, 1951; lowest 31.01 below lsd, Sept. 12, 1944. Records available: 1944-51. Feb. 26, 27.47; May 14, 27.36; Aug. 6, 27.64; Nov. 8, 27.63.

S19/60-4dab1. P. J. Goumond (State Engineer No. 450). Drilled irrigation artesian well, diameter 16 inches, depth 780 feet. Highest water level 30.40 above lsd, Apr. 5, 1946; lowest 0.73 above lsd, Aug. 27, 1951. Records available: 1946, 1948-51. Feb. 21, +13.00; May 14, +5.50; Aug. 27, +0.73; Nov. 13, +2.55.

S19/60-9bcc1. P. J. Goumond (State Engineer No. 427). Drilled unused artesian well, diameter 10 inches, depth 830 feet, cased to 140. Highest water level 43.65 below lsd, June 3, 1944; lowest 78.13 below lsd, Sept. 28, 1951. Records available: 1944-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	66.82	66.15	.....	.....	.....	.....	74.98	76.10	76.78	76.76	77.30	74.74
2	66.83	66.05	68.99	.....	.....	.....	75.20	76.12	77.54	76.18	77.44	75.36
3	66.76	65.95	69.30	.....	.....	.....	75.22	76.90	77.60	76.04	.....	74.66
4	66.72	65.83	69.51	.....	74.61	.....	75.04	76.27	76.94	75.64	.....	74.55
5	66.72	65.79	69.06	72.92	74.02	.....	74.60	76.98	75.92	75.82	.....	74.47
6	66.81	66.93	69.30	72.54	74.80	74.60	75.36	77.02	76.94	75.86	77.47	74.85
7	66.66	67.07	69.38	.....	74.96	74.78	76.14	76.23	76.91	75.72	76.98	74.01
8	66.49	.....	69.86	.....	74.20	74.70	.....	76.38	76.00	76.15	76.48	73.89
9	67.55	.....	69.98	.....	74.03	74.78	.....	76.04	77.52	76.18	77.04	74.55
10	67.61	.....	69.98	.....	73.92	74.72	.....	76.44	76.45	76.32	76.98	73.62
11	66.61	.....	70.43	.....	73.78	74.82	.....	76.30	77.63	75.66	76.89	73.55
12	66.64	67.62	69.62	73.00	74.09	75.52	.....	75.90	77.10	76.04	76.83	74.13
13	66.74	67.87	69.43	72.44	74.90	75.00	76.30	.....	77.14	75.44	76.96	73.32
14	66.60	67.87	69.62	73.78	74.31	.....	76.40	.....	76.18	75.40	76.54	73.64
15	66.43	67.78	70.56	74.01	74.18	74.80	75.64	.....	76.96	75.30	76.14	74.11
16	66.35	68.56	71.15	74.10	74.06	74.94	74.59	.....	77.63	75.36	75.97	73.17
17	66.44	68.18	71.14	73.40	74.18	75.76	74.72	.....	77.81	76.15	75.96	73.22
18	66.50	68.01	71.15	73.50	74.20	75.14	75.10	.....	77.85	76.23	76.50	72.76
19	66.70	68.27	71.15	73.50	.....	75.09	75.90	.....	77.22	76.19	76.36	72.44
20	66.57	68.20	71.14	73.40	.....	75.88	76.25	76.42	77.14	75.30	76.98	73.68
21	66.45	68.04	71.10	73.68	.....	75.40	75.69	77.23	77.24	77.34	77.21	72.97
22	66.25	69.13	72.21	74.42	.....	74.26	76.54	76.40	77.16	77.72	75.47	72.68
23	66.30	68.48	71.78	74.38	.....	73.86	75.78	76.37	77.18	77.06	75.00	73.21
24	66.26	68.49	71.76	74.34	.....	73.68	75.78	76.50	77.24	77.82	75.72	72.50
25	66.20	68.75	71.78	74.00	73.26	74.43	75.81	76.58	77.22	77.46	75.25	73.32

S19/60-9bcc1--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	66.07	68.51	71.54	74.58	73.25	74.44	75.66	77.30	77.30	77.22	75.97	73.40
27	66.03	69.46	71.94	.....	74.04	74.30	75.90	76.67	77.32	76.80	75.22	72.32
28	66.08	69.01	72.85	.....	73.84	74.49	75.90	76.63	78.13	76.76	75.83	73.00
29	66.02		71.50	.....	.....	74.77	76.55	69.44	77.38	76.71	75.03	73.32
30	66.04		71.84	.....	.....	74.75	76.74	77.30	77.38	76.74	74.90	73.90
31	66.14		72.35		.....		75.98	76.76		76.92		72.58

S19/60-27bdc1. U. S. Geol.Survey (State Engineer No. 554). Drilled observation artesian well, diameter 5 inches, depth 905 feet, cased to 84. Land-surface datum is 2,360.8 feet above msl. Highest water level 46.9 above lsd, June 3, 1946; lowest 15.5 above lsd, Sept. 12, 27-28, 1951. Records available: 1946-51. Measurements before Mar. 14 and after Dec. 10 are mercury manometer readings.

Daily noon water level above lsd from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	....	....	20.3	....	17.9	17.5	16.5	16.9	16.5	17.4	18.2
2	22.4	....	21.3	20.3	....	18.0	17.2	16.5	16.9	17.1	17.2	18.2
3	....	....	....	20.3	19.3	18.1	17.3	16.9	16.9	17.1	17.2	18.2
4	....	....	....	20.3	19.3	18.2	17.5	17.2	16.5	17.3	17.2	18.2
5	....	24.2	....	20.0	19.3	18.1	17.7	17.3	16.3	17.3	17.3	18.4
6	....	....	....	20.0	19.0	18.2	17.7	17.3	16.3	17.4	17.2	18.2
7	....	....	....	20.0	19.0	18.2	17.7	17.4	16.1	16.9	17.2	18.2
8	21.7	....	22.9	20.2	19.0	18.2	17.4	17.5	16.0	16.9	17.3	18.1
9	....	....	....	20.2	19.0	18.0	17.3	17.5	16.0	16.9	17.5	18.1
10	....	....	....	20.3	18.7	18.0	17.5	17.2	15.9	16.8	17.5	18.1
11	....	....	....	20.0	18.9	18.0	17.7	16.8	15.8	17.2	17.6	....
12	....	23.8	....	19.9	18.7	18.1	17.6	16.9	15.5	17.0	17.7	....
13	....	....	....	20.1	18.7	18.1	17.7	16.9	15.9	16.8	17.8	....
14	....	....	21.9	20.1	18.3	18.5	17.3	16.9	16.1	16.8	17.8	....
15	23.6	....	22.3	20.0	18.5	18.9	17.0	17.0	16.0	16.6	17.8	....
16	....	....	22.3	20.0	18.6	19.0	16.7	17.0	16.0	16.5	17.7	....
17	....	....	20.7	20.0	....	18.3	17.3	....	16.0	16.6	17.8	18.1
18	....	....	20.3	20.8	18.6	17.5	17.7	....	16.0	16.7	17.7	....
19	....	23.6	20.7	19.3	18.6	17.5	17.3	....	15.8	16.8	17.7	....
20	....	....	20.9	19.7	18.8	17.5	17.6	17.6	15.8	17.1	17.8	....
21	....	....	21.0	19.7	18.3	17.5	17.3	17.5	15.8	16.7	17.5	18.9
22	23.8	....	21.1	19.6	18.4	17.4	16.9	17.5	15.7	16.6	17.5	....
23	....	....	20.9	19.7	18.5	....	16.5	17.7	15.8	....	17.6	....
24	....	....	20.9	19.7	18.5	....	16.9	17.3	15.8	....	17.7	....
25	....	....	21.0	19.7	18.7	....	16.7	17.0	16.0	17.0	17.7	....
26	....	21.9	21.5	19.7	18.8	....	16.3	16.9	16.0	17.0	17.9	....
27	....	....	21.2	....	18.6	....	16.7	17.0	15.5	17.4	18.0	....
28	....	....	20.8	....	18.3	....	16.6	16.5	15.5	17.3	18.0	19.5
29	22.2		20.7	....	18.2	18.2	16.5	17.0	15.8	17.4	18.0	....
30	....		20.7	....	18.2	17.7	16.3	16.8	16.5	17.7	18.0	....
31	....		20.3		18.2		16.4	16.8		17.7		....

S19/60-33baa1. U. S. Geol. Survey (State Engineer No. 555). Drilled observation artesian well, diameter 8 inches, depth 1,008 feet, cased to 93. Land-surface datum is 2,406.6 feet above msl. Highest water level 28.80 above lsd, Oct. 17, 1946; lowest 5.96 below lsd, Sept. 29, 1951. Records available: 1946-51.

Daily noon water level above or below lsd from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	+1.30	....	....	-1.86	-2.79	-3.58	....	-5.06	-5.23	-5.41	-4.77	-3.40
2	1.27	....	+1.77	1.95	2.80	3.55	....	5.03	5.22	4.86	5.05	3.38
3	1.28	....	1.55	1.95	2.75	3.53	....	5.02	5.26	4.67	5.01	3.34
4	1.27	....	1.17	1.97	2.79	3.52	....	5.00	5.36	4.41	5.00	3.27
5	1.27	+2.23	1.25	1.99	2.80	3.57	....	4.95	5.45	4.43	5.13	3.12
6	1.22	2.70	1.32	1.86	2.84	3.27	-4.20	4.96	5.34	4.35	5.21	3.30
7	1.26	2.16	1.20	1.97	2.85	3.44	....	4.96	5.50	4.65	5.10	3.58
8	1.48	2.10	1.17	1.82	....	....	....	4.96	5.64	4.62	4.81	3.64
9	1.42	1.93	1.21	1.72	....	....	....	4.99	5.55	4.78	4.67	3.62
10	1.37	1.90	1.33	1.94	3.12	....	....	5.01	5.56	4.76	4.56	3.51
11	1.42	2.13	....	1.97	2.94	....	....	5.01	5.78	4.42	4.44	3.40
12	1.46	2.23	....	1.98	2.92	....	....	5.02	5.95	4.52	4.36	3.22
13	1.62	1.73	....	2.17	2.92	....	4.47	4.90	5.89	4.67	4.42	3.16
14	1.65	....	.32	2.15	3.00	....	4.52	4.97	5.72	4.67	4.24	3.27
15	2.17	....	+.22	2.23	2.98	3.26	4.62	4.97	5.60	4.67	4.31	3.27

S19/60-33baa1--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
16	+2.32	....	....	-2.26	-3.05	-3.16	-4.60	-4.92	-5.60	-4.80	-4.37	-3.13
17	1.85	....	....	2.29	3.02	3.46	4.22	4.92	5.68	4.88	4.30	3.11
18	....	....	....	2.46	3.30	....	4.20	....	5.69	4.94	4.20	3.04
19	....	+1.40	....	2.44	3.32	....	....	....	5.93	4.84	4.29	....
20	....	....	....	2.32	2.92	....	4.32	....	5.91	4.73	4.46	....
21	....	....	....	2.55	3.19	....	4.40	4.62	5.94	4.99	4.61	....
22	2.44	....	-0.84	2.73	3.19	3.71	4.68	4.40	5.90	5.32	4.39	2.48
23	2.45	....	1.03	2.52	3.18	3.52	4.83	4.44	5.86	5.55	4.04	2.31
24	1.94	....	1.04	2.70	3.16	3.33	4.73	4.80	5.90	5.04	3.95	2.24
25	1.83	....	1.04	2.77	3.11	3.26	4.73	5.01	5.85	5.13	3.92	2.24
26	1.87	1.16	.71	2.88	3.04	....	4.84	5.07	5.88	5.16	3.81	2.31
27	1.87	....	.98	2.78	3.12	....	4.86	5.19	5.88	4.84	3.71	2.18
28	1.80	....	1.19	2.67	3.29	....	4.86	5.14	5.89	4.67	3.64	2.01
29	1.90		1.38	2.69	3.61	3.58	4.89	5.10	5.96	4.54	3.62	2.12
30	2.33		1.18	2.78	3.67	....	5.02	5.13	5.35	4.58	3.52	2.23
31	....		1.44		3.58		5.12	5.24		4.67		2.30

S20/60-2ddd1. Arthur E. Gray (State Engineer No. 553). Drilled unused artesian well, diameter 10 inches, depth 707 feet, 10-inch casing 0-92, 8-inch casing 0-700. Highest water level 59.58 below lsd, Apr. 21, 1947; lowest 73.05 below lsd, Nov. 8, 1951. Records available: 1947-51. Feb. 26, 69.65; May 11, 70.58; Aug. 6, 72.40; Nov. 8, 73.05.

S20/60-36dbb1. M. D. Kidder (State Engineer No. 18). Drilled unused artesian well, diameter 8 inches, depth 385 feet, 8-inch casing to 262 feet, 6-inch casing to 345 feet, 4-inch casing to 381 feet. Land-surface datum is 2,228.2 feet above msl. Highest water level 3.00 below lsd, summer 1925; lowest 59.83 below lsd, Aug. 14, 1951. Records available: 1925, 1927, 1931-32, 1935-36, 1938-41, 1945-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	51.42	50.81	50.96	52.49	53.54	56.13	58.34	59.46	58.40	56.96	55.83	53.93
2	51.26	50.60	50.51	52.72	54.08	56.38	58.67	59.31	58.09	57.02	56.10	54.04
3	51.43	50.53	51.25	52.70	53.63	56.50	56.78	58.68	58.14	57.36	55.60	53.92
4	51.25	50.58	51.08	52.31	53.70	56.44	58.72	57.55	58.68	57.44	55.68	54.05
5	51.24	50.67	50.81	52.50	54.03	56.36	58.70	58.10	58.83	57.38	55.91	53.88
6	51.54	50.85	51.12	51.81	53.44	56.70	58.90	59.00	58.80	.....	55.49	53.92
7	51.27	51.04	50.84	52.12	54.22	56.70	59.02	59.23	59.04	.....	55.57	53.83
8	50.92	51.01	51.06	52.60	54.41	57.10	58.77	59.38	58.74	.....	55.78	.....
9	50.99	51.15	50.93	52.94	54.55	57.01	58.83	59.34	58.60	.....	55.74	.....
10	50.87	51.85	51.57	53.00	54.50	56.87	58.89	59.40	58.61	57.16	55.69	53.80
11	50.76	51.28	51.17	53.08	.....	57.14	59.09	59.45	58.61	57.18	55.13	53.50
12	50.70	51.32	51.20	53.22	.....	57.33	59.12	59.20	58.99	57.37	55.40	53.47
13	50.84	51.75	51.68	53.16	.....	57.45	59.20	59.62	59.02	57.22	55.53	53.57
14	50.78	51.71	51.30	53.22	.....	57.52	59.23	59.83	59.20	57.06	55.48	.....
15	50.56	51.51	51.60	53.18	.....	57.50	59.11	59.69	59.06	57.16	55.30	.....
16	50.70	51.53	52.10	53.50	.....	57.64	59.02	59.66	58.78	57.16	55.37	53.50
17	50.68	51.76	52.04	53.64	54.50	57.35	58.80	.....	59.08	57.22	55.32	53.52
18	50.48	51.79	51.60	53.66	54.60	57.77	59.22	.....	59.06	57.17	55.01	53.29
19	50.56	51.75	51.98	53.45	54.70	57.92	59.12	.....	59.26	57.04	54.99	53.05
20	50.56	51.53	52.10	52.93	54.54	58.89	58.98	59.43	58.90	56.93	54.59	53.43
21	50.62	51.50	52.12	52.90	54.36	58.05	59.23	58.91	59.38	56.92	54.89	53.70
22	50.50	51.48	51.65	53.33	54.26	58.09	59.21	58.24	58.90	57.11	54.21	53.38
23	50.71	51.51	52.56	53.04	54.42	58.02	59.35	.....	58.48	56.74	54.10	53.21
24	50.84	51.62	52.48	53.80	54.91	57.63	59.42	58.56	58.80	56.56	54.07	53.20
25	50.90	51.43	52.26	53.20	55.00	57.95	59.48	.....	58.94	56.57	54.14	53.29
26	50.77	51.63	52.38	53.58	.....	58.05	59.18	.....	59.05	56.47	54.00	53.41
27	50.78	51.36	53.00	53.84	.....	58.06	59.23	58.82	58.90	56.43	54.34	53.27
28	50.71	51.09	53.05	53.08	.....	58.05	58.88	57.72	58.24	56.32	53.86	53.14
29	50.90		52.65	52.82	.....	58.40	57.79	57.38	57.18	56.52	54.13	53.07
30	50.54		52.33	53.43	56.09	58.65	58.97	57.67	56.91	56.05	54.05	53.93
31	50.68		52.30		.....		59.22	57.98		56.10		53.09

S20/61-3acc1. Frank Allen (State Engineer No. 316). Drilled unused artesian well, diameter 8 inches, depth 300 feet. Highest water level 15.30 below lsd, Apr. 25, 1946; lowest 42.40 below lsd, Aug, 24, 1951. Records available: 1944-51. Feb. 27, 31.53; May 16, 36.65; Aug. 24, 42.40; Nov. 16, 42.01.

S20/61-5b1. M. Armstrong. Drilled irrigation and domestic well, diameter 10 inches, depth 267 feet. Highest water level 38.96 below lsd, Feb. 28, 1945; lowest 43.95 below lsd, Aug. 23, 1951. Records available: 1944-51. Feb. 26, 43.24; May 11, 43.18; Aug. 23, 43.95; Nov. 8, 43.77.

S20/61-16bdb1. J. R. Atwater (State Engineer No. 208). Drilled irrigation and domestic artesian well, diameter 8 inches, depth 386 feet. Highest water level 1.18 above lsd, Mar. 29, 1945; lowest 16.12 below lsd, Aug. 23, 1951. Records available: 1944-51. Feb. 26, 12.25; May 11, 13.87; Aug. 23, 16.12; Nov. 8, 15.52.

S20/61-18bcc1. Sky Haven Airport (State Engineer No. 505). At southeast corner of hangar. Drilled irrigation and domestic artesian well, diameter 6 inches, depth 412 feet. Highest water level 1.84 below lsd, Jan. 23, 1945; lowest 21.94 below lsd, Aug. 6, 1951. Records available: 1944-51. Feb. 26, 16.13; May 11, 19.14; Aug. 6, 21.94; Nov. 8, 20.77.

S20/61-19abd1. Splane Estate (State Engineer No. 5). Drilled domestic and irrigation artesian well, diameter 10 inches, depth 260 feet. Land-surface datum is 2,175.5 feet above msl. Highest water level 24.8 above lsd, Jan. 18, 1942; lowest 4.28 below lsd, Aug. 6, 1951. Records available: 1939-51. Feb. 26, +3.44; May 17, -1.02; Aug. 6, -4.28; Nov. 3, -2.33.

S20/61-22cbc1. Jack Moore and C. E. Bell (State Engineer No. 461). Drilled unused artesian well, diameter 8 inches, depth 385 feet, cased to 75. Highest water level 3.92 below lsd, Apr. 28, 1945; lowest 17.10 below lsd, Aug. 3, 1948. Records available: 1944-51. Feb. 28, 8.62; May 16, 10.40; Aug. 24, 16.34; Nov. 8, 12.60.

S20/61-27cbc1. Clyde Caskey (State Engineer No. 336). Drilled unused well, diameter 6 inches. Highest water level 5.60 below lsd, Feb. 26, 1946; lowest 18.79 below lsd, Aug. 17, 1949. Records available: 1944-51. Feb. 14, 7.15; May 11, 10.05; Aug. 23, 18.16; Nov. 8, 12.77.

S20/61-28aba1. A Zaugg. Dug stock water-table well, diameter 5 feet, depth 10 feet. Highest water level 7.44 below lsd, Apr. 27, 1951; lowest 9.75 below lsd, Sept. 28, 1945. Records available: 1945-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	7.95	Apr. 27	7.44	July 20	8.05	Oct. 18	8.88
Feb. 14	7.85	May 14	7.58	Aug. 23	8.58	Nov. 8	8.82
Mar. 22	7.67	June 25	7.89	Sept. 21	8.79	Dec. 21	8.52

S20/61-28dac1. J. A. Haggard (State Engineer No. 199). Drilled domestic and irrigation well, diameter 6 inches, depth 805 feet. Land-surface datum is 2,044 feet above msl. Highest water level 57.3 above lsd, Jan. 18, 1942; lowest 12.2 above lsd, Aug. 24, 1951. Records available: 1940-51. Feb. 26, +26.9; May 21, +19.3; Aug. 24, +12.2; Nov. 13, +19.5.

S20/61-28dac4. J. A. Haggard. Drilled unused artesian well, diameter 8 inches, reported depth 368 feet. Land-surface datum is 2,044 feet above msl. Highest water level 21.8 above lsd, Jan. 24, 1943, Jan.17, 1944; lowest 3.8 above lsd, July 24, 1946. Records available: 1940-51. Feb. 26, +18.8; May 21, +12.3; Aug. 24, +5.7; Nov. 13, +12.5.

S20/61-29dbb1. John Papus (State Engineer No. 380). Drilled unused artesian well, diameter 8 inches, depth 475 feet, 8-inch casing to 400, 6-inch casing to 475. Land-surface datum is 2,094 feet above msl. Highest water level 36.8 above lsd, Jan. 28, 1946; lowest 19.1 above lsd, Aug. 17, 1949. Records available: 1943-51. Feb. 14, +31.9; May 11, +24.7; Aug. 23, +21.1; Nov. 8, +26.8.

S20/61-30bbb2. City of Las Vegas (State Engineer No. 110). Drilled municipal artesian well, diameter 8 inches, depth 830 feet. Land-surface datum is 2,201 feet above msl. Highest water level flowing, Jan. 28, 1946; lowest 23.22 below lsd, Aug. 23, 1951. Records available: 1945-51. Feb. 14, 17.22; May 11, 20.09; Aug. 23, 23.22; Nov. 8, 21.48.

S20/61-30bcc1. U. S. Geol. Survey. Drilled test and observation water-table well, diameter 2 inches, depth 24 feet, cased to 20. Highest water level 20.15 below lsd, May 16, 1946; lowest 24.90 below lsd, Nov. 10, 1950. Records available: 1946-51. Feb. 14, 23.60; May 11, 23.70; Aug. 23, dry; Nov. 8, dry.

S20/61-33ccd1. Clark County Hospital (State Engineer No. 202). Drilled unused artesian well, diameter 8 inches, depth 386 feet. Highest water level 30.3 above lsd, Feb. 20, 1950; lowest 9.2 above lsd, Aug. 10, 1950. Records available: 1950-51. Feb. 26, +28.7; May 15, +23.2; Aug. 23, +13.1; Nov. 15, +23.2.

S20/61-34adc1. S. W. Craner (State Engineer No. 47). Drilled domestic and irrigation artesian well, diameter 8 inches, depth 354 feet, cased to 178. Highest water level 41.4 above lsd, Dec. 21, 1940; lowest 16.2 above lsd, Aug. 21, 1944. Records available: 1939-51. Feb. 27, +31.9; May 14, +30.9; Aug. 21, +23.0; Nov. 15, +25.6.

S20/61-35ddc2. Estella Beam (State Engineer No. 368). Drilled unused artesian well, diameter 8 to 6 inches, depth 418 feet, 8-inch casing to 81 feet, 6-inch casing to 310 feet. Highest water level 38.4 above lsd, Feb. 16, 1951; lowest 20.8 above lsd, Sept. 11-16, 1949. Records available: 1945-51. Measurements from Jan. 12 to Mar. 15 are mercury manometer readings.

Daily noon water level above lsd from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	36.5	37.3	....	....	33.7	30.5	25.7	24.0	24.7	25.9	29.5	32.5
2	36.7	....	35.9	....	33.5	30.2	25.5	23.4	24.7	25.9	29.7	32.6
3	36.9	....	....	....	33.2	30.1	25.5	23.4	24.9	26.0	29.8	32.7
4	36.9	....	....	....	32.9	29.9	25.7	23.7	24.6	26.2	29.7	32.9
5	37.1	....	....	35.6	32.8	29.9	24.9	23.4	24.6	26.2	29.7	33.0
6	37.3	....	....	35.7	32.8	29.7	24.9	22.8	24.7	26.2	29.8	32.7
7	....	....	....	35.6	32.8	29.4	24.6	23.7	24.6	26.5	30.4	32.7
8	....	37.2	37.2	35.3	32.7	29.6	24.2	23.6	23.9	26.5	30.7	....
9	....	....	....	35.7	32.7	29.3	24.5	23.7	24.0	26.5	30.7	....
10	....	....	....	35.6	32.7	29.0	24.3	23.2	24.6	26.9	30.6	33.7
11	....	....	....	34.9	32.7	29.0	23.8	23.0	24.2	27.0	30.4	....
12	37.6	....	...	34.7	33.1	28.7	23.8	23.2	24.3	27.3	30.5	....
13	....	....	....	34.8	31.9	28.3	23.8	23.5	24.2	27.2	30.9	....
14	....	....	....	34.8	32.0	28.3	23.7	23.3	23.9	26.7	30.9	....
15	....	....	36.4	34.8	31.8	27.8	23.7	23.1	24.0	27.1	31.0	....
16	....	38.4	....	34.7	32.2	27.5	24.5	23.1	23.9	27.3	31.0	....
17	....	....	....	34.2	31.9	27.0	23.1	23.2	23.9	27.6	31.2	34.3
18	38.0	....	....	33.7	31.9	27.2	23.3	23.0	24.5	27.6	30.9	....
19	....	....	....	33.3	31.7	26.8	23.2	22.8	24.3	27.7	31.3	....
20	....	....	....	33.5	31.5	26.8	23.2	22.8	24.2	27.7	31.3	....
21	....	....	....	33.7	31.7	26.9	22.7	23.1	24.3	27.2	31.2	34.7
22	....	....	36.1	33.5	31.9	26.9	22.7	23.5	24.5	....	31.2	....
23	....	36.7	36.1	33.5	31.8	26.7	22.7	23.9	24.5	....	31.3	....
24	....	....	36.0	33.6	31.7	26.3	22.7	23.7	24.6	27.9	31.5	....
25	37.2	....	35.7	33.4	31.7	26.7	22.7	23.7	24.7	....	31.7	....
26	....	....	35.7	33.3	31.5	26.5	22.7	23.7	24.7	....	31.9	....
27	....	....	35.7	33.2	31.4	26.3	22.7	23.6	25.0	....	32.1	....
28	....	....	35.7	33.2	31.1	26.2	22.7	24.2	25.4	....	32.2	35.0
29	....		35.5	33.2	31.0	25.7	23.1	24.9	25.5	....	32.4	....
30	....		....	33.4	30.5	25.7	23.4	24.9	25.5	28.8	32.5	....
31	....		....		30.3		....	24.9		29.0		....

S20/61-36bbb1. A. C. Delkin (State Engineer No. 393). Drilled domestic and irrigation well, diameter 8 inches, depth 325 feet, cased to 300. Highest water level 37.3 above lsd, Jan. 26, 1945; lowest 13.7 above lsd, Aug. 14, 1947. Records available: 1944-51. Feb. 16, +21.3; May 15, +18.4; Aug. 8, +14.3, pumped recently; Nov. 13, +18.7.

S20/62-3bbd1. Las Vegas Army Air Field. Drilled unused well, diameter 8 inches, depth 242 feet, cased to 200, perforated 120-200. Highest water level 50.17 below lsd, May 27, 1948; lowest 60.00 below lsd, July 27, 1945. Records available: 1945, 1947-51. Feb. 21, 55.63; May 16, 56.93, nearby well pumping; Aug. 24, 58.24; Nov. 16, 58.51.

S20/62-19bcc1. Byron Thornton (State Engineer No. 443). Drilled domestic and irrigation well, diameter 8 inches, depth 150 feet. Highest water level 29.58 below lsd, May 5, 1945; lowest 34.83 below lsd, Nov. 16, 1951. Records available: 1945-51. Feb. 27, 33.08; May 10, 32.95; Aug. 24, 34.57; Nov. 16, 34.83.

S20/62-33ccc1. U. S. Geol. Survey. Drilled test and observation water-table well, diameter 1 inch, depth 42 feet, cased to 42. Highest water level 18.82 below lsd, May 15, 1951; lowest 25.32 below lsd, Dec. 28, 1945. Records available: 1945-51. Feb. 21, 19.61; May 15, 18.82; Aug. 23, 19.62; Nov. 15, 18.86.

S21/61-3abb2. W. S. Park (State Engineer No. 238). Drilled domestic and irrigation artesian well, diameter 4 inches, depth 807 feet. Highest water level 40.4 above lsd, Mar. 6, 1944; lowest 10.5 above lsd, Aug. 21, 1951. Records available: 1944-51. Feb. 27, +36.6; May 14, +29.3; Aug. 21, +10.5; Nov. 15, +24.5.

S21/61-4aad1. Opaco Lumber Co. (State Engineer No. 386). Drilled unused artesian well, diameter 10 inches, depth 793 feet, cased to 770, perforations 338-438 and 642-770. Highest water level 46.5 above lsd, Feb. 19, 1948; lowest 17.0 above lsd, Aug. 21, 1944. Records available: 1944-51. Feb. 15, +46.1; May 15, +37.1; Aug. 23, +25.4; Nov. 15, +38.3.

S21/61-7acc2. Kimball & Williams (State Engineer No. 155). Drilled domestic and irrigation artesian well, diameter 6 inches, depth 355 feet. Land-surface datum is 2,179.4 feet above msl. Highest water level 20.6 above lsd, Jan. 24, 1943; lowest 8.62 below lsd, Aug. 10, 1951. Records available: 1940-51. Feb. 8, 3.12; May 15, 5.26; Aug. 10, 8.62; Nov. 13, 7.08.

S21/61-15bbb1. T. T. Schofield. Dug domestic and irrigation water-table well, diameter 5 feet, depth 9 feet. Highest water level 5.34 below lsd, Nov. 14, 1951; lowest 7.94 below lsd, Sept. 16, 1945. Records available: 1945-51. Feb. 27, 5.37; May 14, 5.38; Aug. 21, 5.62; Nov. 14, 5.34.

S21/61-18bcc1. Henry Deadrich (State Engineer No. 29). Drilled unused artesian well, diameter 8 inches, depth 292 feet. Highest water level 21.45 below lsd, Nov. 21, 1930; lowest 52.07 below lsd, Sept. 27, 1951. Records available: 1930, 1938-42, 1946-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	47.87	47.67	47.59	48.19	.....	49.75	50.68	51.40	51.63	51.71	51.28	49.37
2	47.91	47.63	47.57	48.17	.....	49.75	50.72	51.42	51.65	51.66	51.35	.....
3	47.88	47.55	47.70	48.14	48.75	49.76	50.75	51.43	51.65	51.66	51.27	.....
4	47.88	47.46	47.63	48.11	48.75	49.75	50.80	51.35	51.66	51.67	51.19	50.19
5	47.92	47.41	47.51	48.19	.....	49.76	50.79	50.34	51.71	51.76	51.19	50.30
6	48.00	47.51	47.57	48.24	.....	49.79	50.92	51.35	51.74	51.76	51.15	50.33
7	47.92	47.54	47.63	48.19	.....	49.85	50.93	51.39	51.81	51.69	51.07	50.36
8	47.76	47.56	47.67	48.20	.....	49.90	50.94	51.10	51.81	51.69	51.04	50.34
9	47.76	47.57	47.58	48.25	.....	49.92	50.93	51.14	51.81	51.69	51.06	50.27
10	47.75	47.57	47.69	.....	48.05	49.95	50.93	51.49	51.79	51.65	51.03	50.23
11	47.72	47.51	47.82	.....	48.91	49.93	51.03	51.52	51.74	51.63	50.96	50.32
12	47.69	47.53	47.79	48.37	.....	49.93	51.12	51.62	51.85	51.62	50.96	50.07
13	47.88	47.71	47.66	48.36	.....	50.01	51.16	51.60	51.86	51.61	50.99	50.18
14	47.85	47.73	47.72	48.31	.....	50.09	51.17	51.65	51.93	51.59	50.95	50.17
15	47.72	47.72	47.74	48.37	49.07	.....	51.19	51.82	51.94	51.52	50.94	50.07
16	47.59	47.59	47.69	.....	49.07	50.15	51.24	.....	51.95	51.48	51.01	.....
17	47.68	47.60	47.89	.....	49.04	50.17	51.20	.....	51.93	51.62	50.96	50.06
18	47.54	47.59	47.97	.....	49.10	50.26	51.21	.....	51.92	51.66	50.85	49.99
19	47.54	47.61	47.91	48.50	49.11	50.28	51.25	.....	51.94	51.59	50.81	49.80
20	47.68	47.69	47.89	48.46	.....	50.28	50.99	51.71	51.94	51.53	50.70	50.30
21	47.68	47.57	47.88	48.52	.....	50.29	51.01	51.73	52.00	51.54	50.70	50.09
22	47.58	47.57	47.89	.....	.....	50.38	51.07	51.68	51.98	51.57	50.69	50.04
23	47.60	47.69	48.04	.....	.....	50.40	51.09	51.63	51.93	51.57	50.64	49.95
24	47.62	47.73	48.04	.....	49.30	50.40	51.09	51.65	51.99	51.45	50.65	49.87
25	47.62	47.68	47.99	.....	49.32	50.45	51.17	51.70	51.99	51.45	50.71	49.93
26	47.56	47.68	47.93	48.61	.....	50.46	51.19	51.68	52.02	51.50	50.63	49.98
27	47.53	47.62	48.03	48.63	.....	50.50	51.38	51.70	52.07	51.50	50.53	49.91
28	47.55	47.71	48.18	.....	49.47	50.52	51.43	51.74	52.03	51.40	50.51	49.80
29	47.53		48.14	.....	49.54	50.61	51.35	51.60	51.92	51.34	50.49	49.76
30	47.57		48.00	.....	49.59	50.59	51.30	51.61	51.88	51.29	50.25	49.72
31	47.64		.....		49.65		51.37	51.63		51.30		49.81

S21/61-21bbb1. Moe Sedway (State Engineer No. 123). Drilled domestic and irrigation artesian well, diameter 6 inches, depth 850 feet, cased to 600. Highest water level 61.1 above lsd, Dec. 20, 1942; lowest 9.7 above lsd, Aug. 20, 1951. Records available: 1940-51. Feb. 8, +21.7; May 4, +13.6; Aug. 20, +9.7; Nov. 13, +17.1.

S21/61-21dcd1. W. N. Connell. Dug unused water-table well, diameter 5 feet, depth 22 feet. Highest water level 19.00 below lsd, Mar. 9, 1945; lowest 21.65 below lsd, Sept. 20, 1951. Records available: 1944-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	20.90	Apr. 19	20.47	July 23	21.12	Oct. 17	21.42
Feb. 15	20.65	May 14	20.50	Aug. 20	21.24	Nov. 14	21.42
Mar. 22	20.52	June 22	20.66	Sept. 20	21.65	Dec. 21	21.30

S21/61-22ccc1. A. P. Baker (State Engineer No. 117). Drilled unused artesian well, diameter 6 inches, depth 500 feet. Land-surface datum is 2,070.8 feet above msl. Highest water level 35.7 above lsd, Dec. 20, 1942; lowest 15.1 above lsd, Aug. 8, 1950. Records available: 1940-51. Feb. 15, +24.7; May 14, +23.2; Aug. 21, +19.5; Nov. 14, +21.40.

S21/61-29dac1. F. M. Ferguson (State Engineer No. 94). Drilled unused artesian well, diameter 6 inches, depth 280 feet. Measurement discontinued after May 4, 1951. Replaced by S21/61-29dda1. Highest water level 3.29 above lsd, Apr. 6, 1944; lowest 4.45 below lsd, May 4, 1951. Records available: 1944-51. Feb. 8, 3.58; May 4, 4.45. Measurement discontinued.

S21/61-29dda1. F. M. Ferguson (State Engineer No. 93). Drilled unused artesian well, diameter 6 inches, depth 260 feet. Replaces S21/61-29dac1. Highest water level 2.75 above lsd, Feb. 24, 1945; lowest 4.89 below lsd, Aug. 21, 1951. Records available: 1944-46, 1950-51. May 4, 4.40; Aug. 21, 4.89; Nov. 21, 4.59.

S21/61-33bac1. Clark County Airport (State Engineer No. 39). Drilled unused artesian well, diameter 6 inches, depth 222 feet. Land-surface datum is 2,189.8 feet above msl. Highest water level 2.80 above lsd, Feb. 18, 1939; lowest 9.65 below lsd, Apr. 22, 1948. Records available: 1938-51. Feb. 15, 4.47; May 4, 5.55; Aug. 21, 7.14; Nov. 14, 5.93.

S21/61-34ccc1. Public domain. Dug unused water-table well, diameter 5 feet, depth 25 feet. Highest water level 23.03 below lsd, Apr. 30, 1945; lowest 25.11 below lsd, Aug. 10, 1949. Records available: 1944-51. Feb. 15, 24.60; May 4, 24.34; Aug. 21, dry; Nov. 14, dry.

S21/61-34dcc1. Fred Nagamatsu (State Engineer No. 74). Drilled unused well, diameter 6 inches. Highest water level 3.69 below lsd, Feb. 28, 1945; lowest 10.50 below lsd, Aug. 21, 1951. Records available: 1944-51. Feb. 15, 6.77; May 5, 7.63; Aug. 21, 10.50; Nov. 14, 8.49.

S21/61-36adc2. U. S. Geol. Survey. Drilled test and observation water-table well, diameter $1\frac{1}{2}$ inches, depth 20 feet. Highest water level 9.79 below lsd, May 6, 1949; lowest 12.04 below lsd, Nov. 14, 1951. Records available: 1946-51. Feb. 27, 11.21; May 14, 10.86; Aug. 23, 11.91; Nov. 14, 12.04.

S21/62-7bac2. S. Barbee (State Engineer No. 286). Drilled domestic and irrigation artesian well, diameter 8 inches, depth 225 feet. Highest water level 4.20 above lsd, Feb. 26, 1949; lowest 1.19 below lsd, Aug. 23, 1951. Records available: 1945-51. Feb. 21, +2.82; May 15, +1.55; Aug. 23, -1.19; Nov. 14, +1.15.

S21/62-21cbc2. L. E. Billman (State Engineer No. 430). Drilled unused artesian well, diameter 8 inches, depth 500 feet. Highest water level 61.2 above lsd, Dec. 22, 1944; lowest 29.2 above lsd, Aug. 13, 1948. Records available: 1944-51. Feb. 21, +33.2; May 16, +34.7; Aug. 23, +33.4; Nov. 14, +34.6.

S21/62-27aad1. U. S. Geol. Survey. Drilled test and observation water-table well, diameter 3 inches, depth 12 feet. Highest water level 4.24 below lsd, Feb. 28, 1946; lowest 5.05 below lsd, Aug. 19, 1947. Records available: 1945-51. Feb. 21, 4.33; May 16, 4.28; Aug. 23, 4.76; Nov. 15, 4.50.

S21/62-29ccc1. J. R. Bond (State Engineer No. 134). Drilled domestic and irrigation artesian well, diameter 6 inches, depth 404 feet. Highest water level 18.4 above lsd, Aug. 25, 1944; lowest 2.70 above lsd, Aug. 15, 1947. Records available: 1944-51. Feb. 21, +7.60; May 16, +8.30; Aug. 23, +5.09; Nov. 14, +5.85.

S22/61-4bcc1. Fitzpatrick (State Engineer No. 41). Drilled unused well, diameter 8 inches, depth 355 feet. Highest water level 74.4 below lsd, Jan. 25, 1939; lowest 85.33 below lsd, Oct. 13, 1951. Records available: 1938-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	81.72	81.83	82.15	82.63	82.68	83.47	83.33	83.89	84.06	84.00	83.58	82.98
2	81.78	81.78	82.11	82.41	82.81	83.52	83.38	83.60	83.94	.....	83.69	83.13
3	81.77	81.76	82.26	82.27	82.87	83.52	83.40	83.48	84.11	.....	83.53	82.84
4	81.78	81.88	82.19	82.24	82.84	83.25	83.48	83.58	84.13	.....	.....	82.76
5	81.94	81.96	82.13	82.21	82.74	83.28	83.56	83.50	.....	.....	.....	82.61
6	82.11	81.92	82.18	82.48	82.88	83.90	83.80	83.60	.....	.....	83.44	82.74
7	82.13	81.88	82.27	82.45	82.98	83.58	.....	83.42	84.75	.....	83.46	82.91
8	81.95	81.89	82.39	82.43	82.89	83.29	.....	83.54	84.59	.....	83.38	82.99
9	81.98	82.16	82.30	82.30	82.89	83.30	.....	83.45	84.76	.....	83.41	82.71
10	81.94	82.21	82.46	82.42	82.91	83.08	.....	83.47	84.60	84.93	83.35	82.51

S22/61-4bcc1--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	81.90	82.17	82.43	.....	82.74	83.21	.....	83.67	84.50	84.71	83.31	82.30
12	82.00	82.23	82.37	82.41	82.76	83.09	.....	83.94	.....	85.09	83.09	82.27
13	82.18	82.06	82.14	82.37	82.74	83.21	.....	83.94	.....	85.33	83.13	82.41
14	82.12	81.94	82.26	82.51	82.70	83.38	.....	84.97	83.96	85.22	83.05	.....
15	82.01	81.75	82.51	82.65	82.64	83.30	.....	84.13	84.07	84.56	83.32	.....
16	81.77	81.71	82.58	82.71	82.60	83.37	.....	84.96	83.96	84.33	83.43	.....
17	81.81	81.73	82.64	82.54	82.75	83.52	.....	84.80	85.12	84.19	83.42	82.55
18	81.66	81.62	82.44	82.82	82.71	83.41	.....	.....	84.54	84.12	83.37	82.46
19	81.68	81.88	82.58	82.55	82.81	83.21	.....	.....	84.31	83.98	83.32	82.27
20	81.80	81.71	82.67	82.67	82.96	83.23	83.61	84.47	84.18	83.81	83.24	82.24
21	81.79	81.93	82.69	82.43	83.12	83.19	83.57	84.28	84.14	83.87	83.24	82.19
22	81.85	82.12	82.75	82.50	.....	83.21	83.65	84.07	.....	83.96	83.25	82.07
23	81.97	82.20	82.87	82.58	.....	.....	83.53	84.06	.....	83.85	83.40	81.96
24	81.83	82.26	82.92	82.67	82.97	.....	83.42	83.95	83.95	83.79	83.08	.....
25	81.69	82.20	82.90	82.49	82.96	.....	83.56	83.94	83.92	83.82	83.14	.....
26	81.64	82.19	82.70	82.68	.....	.....	83.35	84.02	84.03	84.03	83.06	.....
27	81.57	82.15	82.67	82.70	.....	.....	83.45	84.14	.....	84.01	82.98	.....
28	81.65	82.22	82.85	82.60	.....	.....	83.48	84.11	.....	83.87	82.93	81.77
29	81.60		82.92	82.44	.....	83.36	83.39	84.09	.....	83.70	82.90	81.72
30	81.62		82.64	82.50	.....	83.33	83.36	84.12		83.63	82.86	81.66
31	81.74		82.67		83.49		83.48	84.12		83.62		81.85

S22/61-9cbb1. Daisy Bell (State Engineer No 42). Drilled unused water-table well, diameter 10 inches, depth 127 feet. Highest water level 92.62 below lsd, Jan. 24, 1945; lowest 97.85 below lsd, Nov. 15, 1951. Records available: 1944-51. Feb. 8, 97.20; May 4, 97.43; Aug. 21, 97.65; Nov. 15, 97.85.

S22/61-16ccc1. Dalton Buck. Drilled unused well, diameter 10 inches. Highest water level 83.63 below lsd, Sept. 22, 1944; lowest 87.97 below lsd, Nov. 15, 1951. Records available: 1944-51. Feb. 8, 87.38; May 4, 87.46; Aug. 21, 87.77; Nov. 15, 87.97.

Pahrump Valley
(See Nye County)

S21/54-10aac1. Bowman (State Engineer No. 22). Drilled unused well, diameter 14 inches, depth 800 feet, cased to 472, perforations 100-450. Highest water level 25.99 below lsd, Jan. 5, 1945; lowest 36.92 below lsd, Sept. 12, 1951. Records available: 1944-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.72	30.55	29.88	33.39	34.68	33.14	35.09	35.14	.....	33.97	33.48	32.57
2	30.83	30.42	30.02	33.37	34.51	.....	35.22	35.21	.....	34.17	33.60	32.68
3	30.75	30.29	30.20	33.31	34.43	32.93	35.18	35.60	36.50	33.75	33.40	32.10
4	30.72	30.14	29.98	33.33	34.37	32.03	35.36	35.68	36.73	34.36	33.30	32.03
5	30.77	30.08	29.88	33.17	34.07	31.95	35.57	35.44	36.68	34.08	33.38	31.88
6	30.85	30.19	30.03	33.42	34.01	31.91	35.72	35.13	36.83	34.07	33.35	32.10
7	30.69	30.16	30.75	33.60	33.36	32.05	35.73	35.72	36.90	34.29	33.21	32.13
8	30.51	30.24	30.77	33.71	32.77	32.40	35.68	35.92	36.82	34.32	33.20	32.09
9	30.60	30.16	30.69	33.81	32.69	32.84	35.68	35.98	36.48	34.29	33.25	32.02
10	30.49	30.02	30.92	33.50	32.52	32.80	35.33	36.06	36.48	34.12	33.17	31.87
11	30.41	30.06	31.23	33.51	32.62	.....	35.48	36.12	36.43	34.28	33.10	31.78
12	30.60	30.07	31.16	33.78	32.45	.....	35.71	36.09	36.92	34.70	33.01	31.60
13	30.81	30.26	30.91	34.02	32.25	.....	35.45	36.18	36.62	34.89	33.20	31.55
14	30.66	30.25	31.05	34.17	32.18	32.81	35.33	36.14	36.70	35.14	33.08	31.85
15	30.42	30.03	31.48	34.31	32.23	32.62	35.27	36.23	36.69	34.58	33.18	31.75
16	30.33	30.05	31.71	34.38	32.16	32.57	35.42	36.39	36.48	34.53	33.26	31.45
17	30.48	30.11	32.24	34.43	32.00	32.42	35.74	36.42	36.12	34.59	33.19	31.61
18	30.33	30.05	32.46	34.55	31.98	.....	35.97	36.44	36.04	34.65	33.04	31.27
19	30.35	30.28	32.36	34.54	31.92	32.66	36.03	36.50	35.35	34.04	32.91	31.14
20	30.53	30.16	32.52	34.66	31.84	32.67	35.38	36.44	34.99	33.80	32.88	31.62
21	30.47	29.97	32.56	34.80	32.11	32.69	35.47	36.42	34.94	.....	32.45	31.73
22	30.37	30.00	32.64	34.56	31.98	32.78	35.43	36.39	35.21	34.02	32.39	31.56
23	30.44	30.16	32.88	34.62	32.41	33.76	35.35	36.49	35.11	33.90	32.31	31.42
24	30.42	30.21	32.88	34.77	32.44	33.91	35.74	36.56	34.87	33.46	32.40	31.40
25	30.31	30.12	32.84	34.52	31.89	33.53	35.60	36.51	34.77	33.51	32.43	31.50
26	30.19	30.11	32.87	34.87	31.75	33.92	35.58	36.24	34.65	33.70	.....	31.56
27	30.22	30.08	33.04	34.90	31.75	34.22	35.81	36.22	34.65	33.66	32.16	31.38
28	30.52	30.17	33.18	34.71	31.78	34.55	35.92	36.61	34.69	33.55	32.60	31.25
29	30.31		33.12	34.55	32.23	35.03	35.28	36.25	34.15	33.52	32.65	31.16
30	30.36		33.27	34.70	32.58	35.05	35.77	36.46	34.06	33.47	32.62	31.03
31	30.53		.....		32.61		34.65	.....		33.57		31.32

Douglas County

Carson Valley

12/20-17ba1. John Helwinkel Jr. Drilled irrigation water-table well in alluvium of Quaternary age, diameter 18 inches, depth 365 feet. Highest water level 8.82 below lsd, July 9, 1949; lowest 19.47 below lsd, Mar. 30, 1950. Records available: 1948-51. Apr. 2, 18.40; Sept. 6, 14.90; Oct. 17, 15.94.

13/20-8ca1. C. W. Godecke. Drilled irrigation well, diameter 18 to 12 inches, depth 300 feet. Highest water level 0.35 below lsd, Mar. 30, 1950; lowest 3.96 below lsd, Sept. 26, 1950. Records available: 1942, 1948-51. Apr. 2, 1.67; Oct. 17, 2.96.

13/20-29aab1. H. F. Dangberg Co. Drilled irrigation artesian well, diameter 12 inches, reported depth 320 feet, reported plugged at 125. Highest water level 0.10 above lsd, May 11, 1948; lowest 4.04 below lsd, Aug. 15, 1950. Records available: 1948-51. Apr. 2, 2.21.

13/20-31bd1. H. Dangberg. Drilled irrigation water-table well in alluvium of Quaternary age, diameter 16 inches, depth 413 feet, cased to 400, perforations 60-400. Highest water level 2.12 below lsd, Dec. 19, 1950; lowest 7.52 below lsd, Aug. 15, 1950. Records available: 1950-51. Apr. 2, 3.43; Oct. 17, 3.42.

13/20-32dc1. Mack Land & Cattle Co. Drilled irrigation water-table well in alluvium of Quaternary age, diameter 18 inches, reported depth 420 feet. Highest water level 7.83 below lsd, May 24, 1950; lowest 10.09 below lsd, Nov. 4, 1949. Records available: 1948-51. Apr. 2, 10.00; Oct. 17, 9.69.

14/19-25ba1. Carson Indian Agency. Drilled irrigation water-table well in alluvium of Quaternary age, diameter 12 inches, depth 239 feet. Highest water level 10.82 below lsd, Apr. 2, 1951; lowest 20.09 below lsd, Aug. 3, 1948. Records available: 1946, 1948-51. Apr. 2, 10.82; Oct. 17, 18.55.

Elko County

Clover Valley

34/63-21a1. Leslie Davis. Dug unused water-table well, diameter 9 feet, cribbed with concrete. Highest water level 12.49 below lsd, Apr. 25, 1950; lowest 12.58 below lsd, Aug. 25, 1948, Mar. 27, 1951. Records available: 1948-51. Mar. 27, 12.58; Sept. 13, 12.55.

35/62-26b1. Lloyd Higley. Dug irrigation water-table well, size 6 by 7 feet, reported depth 10 feet, cribbed with wood. Highest water level 4.98 below lsd, Mar. 27, 1951; lowest 7.89 below lsd, Sept. 14, 1949. Records available: 1948-51. Mar. 27, 4.98; Sept. 13, 6.70.

35/62-27b1. U. S. Geol. Survey. Drilled test and observation well, diameter 6 inches, depth 286 feet, cased to 197. Highest water level 6.65 below lsd, Mar. 27, 1951; lowest 9.78 below lsd, Dec. 21, 1949. Records available: 1949-51. Mar. 27, 6.65; Sept. 13. 7.98.

35/62-27b2. U. S. Geol. Survey. Adjacent to well 35/62-27b1. Drilled observation water-table well, diameter 1 inch, depth 15 feet. Highest water level 7.15 below lsd, June 22, 1950; lowest 9.77 below lsd, Dec. 21, 1949. Records available: 1949-51. Mar. 27, 7.60; Sept. 13, 7.83.

Goshute-Antelope Valley

34/66-8a1. Owner unknown. Unused water-table well, depth 30 feet. Highest water level 19.00 below lsd, June 25, 1948; lowest 21.39 below lsd, Sept. 14, 1949. Records available: 1948-51. Mar. 27, 19.17; Sept. 12, 21.00. Measurement discontinued.

34/67-6a2. Western Pacific Railroad Co. Shafter. Drilled industrial water-table well, diameter 16 inches, reported depth 250 feet. Highest water level 26.85 below lsd, Mar. 27, 1951; lowest 30.51 below lsd, Mar. 28, 1949. Records available: 1948-51. Mar. 27, 26.85; Sept. 12, 29.89, nearby well pumped recently.

34/67-16d1. Utah Construction Land and Cattle Co. Dug stock water-table well, depth 58 feet. Highest water level 42.97 below lsd, Sept. 13, 1950; lowest 44.07 below lsd, June 25, 1948. Records available: 1948-50. No measurement made in 1951.

Humboldt River Valley

(See also Humboldt, Lander, and Pershing Counties)

33/52-27d1. Carlin Town Government. Drilled unused water-table well, diameter 20 inches, depth 500 feet, cased to 125. Highest water level 2.77 below lsd, Feb. 20, 1951; lowest 8.75 below lsd, Oct. 28, 1947. Records available: 1938-51.

33/52-27d1--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 19	3.07	Apr. 19	3.51	July 20	4.84	Sept. 19	5.95
Feb. 20	2.77	May 20	4.27	Aug. 19	5.47	Oct. 19	6.15
Mar. 18	2.90	June 19	4.51	Sept. 13	6.81	Dec. 22	6.57

33/53-20d2. C. E. Lee. Dug domestic water-table well, diameter 24 inches, depth 18 feet. Replaces 33/53-20d1, which was destroyed January 1951. Highest water level 10.60 below lsd, June 28, 1951; lowest 13.90 below lsd, Dec. 26, 1951. Records available: 1951.

Mar. 27	12.30	June 28	10.60	Sept. 13	13.42	Nov. 26	13.80
Apr. 28	11.30	July 28	10.90	28	13.20	Dec. 26	13.90
May 28	12.40	Aug. 30	13.30	Oct. 26	13.60		

35/56-1b1. Moffat. Dug stock water-table well in alluvium of Quaternary age, diameter 36 inches, depth 10 feet. Highest water level 1.20 below lsd, July 1, 1944; lowest 7.80 below lsd, Jan. 28, 1948. Records available: 1944-51.

Jan. 26	5.05	Apr. 28	3.60	Aug. 30	5.60	Oct. 26	5.50
Feb. 25	4.90	May 28	3.80	Sept. 13	5.41	Nov. 26	6.10
Mar. 22	3.80	June 28	4.30	28	5.60	Dec. 26	5.70
27	3.80	July 28	5.20				

35/56-30c1. Fernald. Dug unused water-table well, depth 20 feet. Highest water level 5.20 below lsd, May 28, 1950; lowest 16.20 below lsd, Jan. 26, 1950. Records available: 1938-51.

Jan. 26	12.20	May 28	6.60	Aug. 30	14.50	Oct. 26	14.20
Feb. 25	11.40	June 28	6.40	Sept. 13	13.94	Nov. 26	15.15
Mar. 22	11.40	July 28	10.00	28	15.50	Dec. 26	16.10
Apr. 28	8.00						

37/59-26a1. Deeth. Dug unused water-table well, diameter 4 feet, depth 14 feet. Highest water level 3.30 below lsd, Mar. 21, 1942; lowest 10.20 below lsd, Nov. 26, 1949. Records available: 1938-51.

Jan. 26	7.60	Apr. 28	4.00	July 28	5.15	Oct. 26	7.50
Feb. 25	6.30	May 28	3.80	Aug. 30	8.50	Nov. 26	7.70
Mar. 22	5.40	June 28	4.40	Sept. 28	8.60	Dec. 26	8.30
27	5.40						

Lamoille Valley

33/56-8d1. Moffat. Known as Ten Mile Well. Dug domestic water-table well, diameter 42 inches, reported depth 12 feet, cribbed with concrete. Highest water level 4.40 below lsd, May 28, 1945; lowest 9.60 below lsd, Sept.19, 1949. Records available: 1944-51.

Jan. 26	7.70	Apr. 28	7.80	July 28	8.10	Oct. 26	9.40
Feb. 25	8.00	May 28	7.20	Aug. 30	8.90	Nov. 26	7.70
Mar. 22	7.90	June 28	7.85	Sept. 28	8.95	Dec. 26	8.10

33/57-22d1. Sutacha. Drilled unused water-table well, diameter 18 inches, depth 60 feet. Highest water level 33.50 below lsd, May 28, 1949; lowest 44.00 below lsd, May 28, 1951. Records available: 1948-51.

Jan. 26	34.80	Apr. 28	38.70	July 28	38.60	Oct. 26	38.30
Feb. 25	35.35	May 28	44.00	Aug. 30	38.70	Nov. 26	38.40
Mar. 22	38.90	June 28	40.10	Sept. 28	38.40	Dec. 26	38.60

33/58-5a1. George Ogilvie. Dug domestic water-table well, diameter 24 inches, depth 10 feet. Highest water level 1.00 below lsd, July 1, 1942; lowest 9.70 below lsd, Jan. 15, 1942. Records available: 1934-51.

Jan. 26	6.90	Apr. 28	5.90	July 28	4.30	Oct. 26	6.30
Feb. 25	6.65	May 28	2.60	Aug. 30	6.90	Nov. 26	6.50
Mar. 22	5.20	June 28	4.30	Sept. 28	7.20	Dec. 26	6.80

33/58-7a1. Lytton Lane No. 2. Drilled unused water-table well, diameter 3 inches, depth 8 feet. Highest water level flowing, June 1, 1935; lowest 6.3 below lsd, Sept. 15, 1942. Records available: 1934-51.

33/58-7a1--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	e3.30	Apr. 28	3.70	July 28	5.00	Oct. 26	1.05
Feb. 25	3.15	May 28	2.40	Aug. 30	e5.50	Nov. 26	4.20
Mar. 22	3.60	June 28	2.30	Sept. 28	e3.30	Dec. 26	e3.80

e Estimated.

33/58-18c1. John Patterson. Dug unused water-table well, diameter 5 feet, depth 13 feet. Highest water level 1.0 below lsd, May 15, 1938; lowest 12.5 below lsd, Mar. 1, 1935. Records available: 1934-51.

Jan. 26	4.90	Apr. 28	2.65	July 28	2.30	Oct. 26	3.30
Feb. 25	4.30	May 28	2.90	Aug. 30	2.65	Nov. 26	3.30
Mar. 22	3.00	June 28	3.40	Sept. 28	2.80	Dec. 26	3.20

33/58-19ad1. H. Conrad. Known as Lamoille Church. Dug domestic water-table well, diameter 4 feet, depth 16 feet. Highest water level 0.60 below lsd, July 1, 1936; lowest 15.10 below lsd, Dec. 15, 1940. Records available: 1934-51.

Jan. 26	10.50	Apr. 28	11.20	July 28	5.00	Oct. 26	8.20
Feb. 25	10.50	May 28	1.40	Aug. 30	7.00	Nov. 26	12.20
Mar. 22	11.40	June 28	1.50	Sept. 28	7.30	Dec. 26	13.10

33/58-30a1. Joe Sutacha. Known as Charles Well. Dug unused water-table well, diameter 42 inches, depth 24 feet. Highest water level 1.50 below lsd, Apr. 28, 1947; lowest 26.0 below lsd, Feb. 1, 1941. Records available: 1934-51.

Jan. 26	13.10	Apr. 28	11.10	July 28	5.90	Oct. 26	16.50
Feb. 25	14.40	May 28	6.10	Aug. 30	9.90	Nov. 26	18.70
Mar. 22	16.70	June 28	3.50	Sept. 28	10.20	Dec. 26	18.90

34/57-18a1. U. S. Bureau of Land Management. Known as Dry Lake Well. Drilled stock water-table well, reported depth 148 feet. Highest water level 38.15 below lsd, Mar. 29, 1945; lowest 58.35 below lsd, May 28, 1951. Records available: 1944-51.

Jan. 26	46.65	Apr. 28	55.25	July 28	48.05	Oct. 26	47.65
Feb. 25	46.65	May 28	58.35	Aug. 30	45.55	Nov. 26	41.35
Mar. 22	47.00	June 28	54.95	Sept. 28	47.35	Dec. 26	45.55

35/58-3cb1. Randolph. Dug unused water-table well, diameter 5 feet, depth 8 feet. Highest water level flowing, June 1, 1943; lowest 8.75 below lsd, Sept. 4, 1934. Records available: 1934-51.

Jan. 26	e7.30	Apr. 28	j0.00	July 28	5.90	Sept. 28	6.35
Feb. 25	7.10	May 28	j0.00	Aug. 30	6.10	Oct. 26	6.60
Mar. 22	3.00	June 28	3.90	Sept. 13	6.73	Nov. 26	6.70

e Estimated.
j Adjacent field being irrigated.

Ruby Valley

28/59-9c1. Owner unknown. Dug stock water-table well, size 4 by 4 feet, depth 44 feet. Highest water level 37.27 below lsd, July 7, 1948; lowest 38.63 below lsd, June 10, 1949. Records available: 1948-49, 1951. Sept. 13, 37.42.

31/60-4a1. Owner unknown. Drilled stock water-table well, diameter 8 inches, depth 20 feet. Highest water level 2.96 below lsd, June 14, 1950; lowest 7.44 below lsd, Sept. 15, 1949. Records available: 1948-51. Sept. 13, 6.85.

31/60-16c1. Owner unknown. Drilled stock water-table well, diameter 8 inches, depth 35 feet. Highest water level 4.98 below lsd, June 14, 1950; lowest 10.90 below lsd, Sept. 15, 1949. Records available: 1948-51. Sept. 13, 10.02.

32/60-29c1. U. S. Geol. Survey. Drilled test and observation well, diameter 6 inches, depth 202 feet, cased to 137. Highest water level 1.38 below lsd, Mar. 28, 1951; lowest 4.38 below lsd, Sept. 15, 1949. Records available: 1949-51. Mar. 28, 1.38; Sept. 13, 3.81

32/60-29c2. U. S. Geol. Survey. Adjacent to well 32/60-29c1. Driven observation water-table well, diameter 1½ inches, depth 15 feet, cased to 15. Highest water level 3.65 below lsd, Mar. 28, 1951; lowest 6.95 below lsd, Sept. 15, 1949. Records available: 1949-51. Mar. 28, 3.65; Sept. 13, 6.35.

33/60-35d1. Owner unknown. Dug stock water-table well, diameter 14 inches, cased with oil drums. Highest water level 4.80 below lsd, June 10, 1949; lowest 7.77 below lsd, Sept. 14, 1949. Records available: 1948-51. Mar. 28, 5.06; Sept. 13, 7.09.

Esmeralda County

Fish Lake Valley

1S/35-21a1. Rex B. Clark. Drilled stock water-table well, diameter 13 inches. Highest water level 13.12 below lsd, Mar. 21, 1950; lowest 14.08 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 3, 13.50; Sept. 10, 14.08.

1S/35-28a1. Rex B. Clark. Drilled stock water-table well, diameter 16 inches, depth 624 feet, cased to 600, perforations 150-600. Highest water level 25.45 below lsd, Jan. 21, 1948; lowest 29.92 below lsd, Sept. 10, 1951. Records available: 1945-51. Mar. 16, 29.06; Sept. 10, 29.92.

2S/35-15c1. O. Z. D. Davis. Drilled domestic water-table well, diameter 6 inches, depth 50 feet. Highest water level 44.57 below lsd, Nov. 11, 1949; lowest 45.20 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 44.86; Sept. 10, 45.20.

2S/35-28d1. E. L. Cord. Cord No. 3. Circle L Ranch. Drilled irrigation water-table well, diameter 12 inches, reported depth 110 feet. Highest water level 46.2 below lsd, July 20, 1945; lowest 56.64 below lsd, Sept. 20, 1950. Records available: 1945, 1949-50. No measurement made in 1951.

2S/35-33a1. E. L. Cord. Cord No. 1. Circle L Ranch. Drilled irrigation water-table well, diameter 12 inches, depth 120 feet. Highest water level 51.91 below lsd, Dec. 12, 1946; lowest 62.47 below lsd, Nov. 30, 1949. Records available: 1946-47, 1949. No measurement made in 1951.

2S/35-33a9. E. L. Cord. Cord No. 13. Drilled irrigation water-table well, diameter 14 to 8 inches, depth 1,010 feet, cased to 800, perforations 150-800, casing reported collapsed at 355 feet. Highest water level 53.46 below lsd, Sept 20, 1950; lowest 53.65 below lsd, Mar. 22, 1950. Records available: 1950. No measurement made in 1951.

2S/35-34b2. E. L. Cord. Cord No. 5. Drilled irrigation water-table well, diameter 12 inches, reported depth 100 feet. Highest water level 11.33 below lsd, Dec. 15, 1945; lowest 19.15 below lsd, Nov. 9, 1949. Records available: 1942, 1944-47, 1949. No measurement made in 1951.

3S/35-3b2. F. J. Willeman. Drilled domestic and irrigation water-table well, reported depth 720 feet. Highest water level 22.05 below lsd, Oct. 11, 1949; lowest 23.54 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 22.77; Sept. 10, 23.54.

3S/35-4a2. Sigurd Folwick. Drilled unused water-table well, diameter 14 to 8 inches, reported depth 124 feet, cased to 124, perforations 70-124. Highest water level 46.51 below lsd, Nov. 10, 1949; lowest 48.88 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 47.90; Sept. 10, 48.88.

3S/35-4a3. Sigurd Folwick. Drilled unused water-table well, diameter 13 inches, depth 76 feet. Highest water level 45.46 below lsd, Mar. 16, 1951; lowest 47.90 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 45.46; Sept. 10, 47.90.

3S/35-4d3. Sigurd Folwick. Drilled irrigation water-table well, diameter 14 inches, reported depth 132 feet, perforations 70-132. Highest water level 44.95 below lsd, Mar. 22, 1950; lowest 46.67 below lsd, Sept. 10, 1951. Records available: 1950-51. Mar. 16, 45.95; Sept. 10, 46.67.

3S/35-14c1. C. Parkinson. Drilled irrigation water-table well, diameter 12 inches, reported depth 79 feet. Highest water level 22.24 below lsd, Nov. 29, 1949; lowest 23.55 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 23.35; Sept. 10, 23.55.

3S/35-14c2. C. Parkinson. Drilled irrigation water-table well, diameter 12 inches. Highest water level 29.85 below lsd, Mar. 16, 1951; lowest 30.45 below lsd, Sept. 10, 1951. Records available: 1950-51. Mar. 16, 29.85; Sept. 10, 30.45.

3S/35-14c4. U. S. Bureau of Land Management. Drilled unused water-table well, diameter 12 inches. Highest water level 38.60 below lsd, Jan. 21, 1948; lowest 41.60 below lsd, Sept. 10, 1951. Records available: 1945, 1947-51. Mar. 16, 40.74; Sept. 10, 41.60.

3S/35-25b1. Bar 99 Ranch. Drilled irrigation water-table well, diameter 14 inches, reported depth 123 feet. Highest water level 3.30 below lsd, Mar. 21, 1950; lowest 11.46 below lsd, Sept. 10, 1951. Records available: 1949-51. Mar. 16, 3.96; Sept. 10, 11.46.

3S/35-26a3. Bar 99 Ranch. Drilled unused water-table well, diameter 12 inches, reported depth 125 feet. Highest water level 11.15 below lsd, Jan. 21, 1948; lowest 17.20 below lsd, Aug. 21, 1948. Records available: 1946-51. Mar. 16, 13.56; Sept. 10, 16.35.

Tonopah and vicinity

3/40-2c1. Miller's Mill. Dug unused water-table well, size 8 by 5 feet, depth 61 feet, cribbed with wood. Highest water level 39.15 below lsd, Aug. 4, 1948, Mar. 30, 1949, Mar. 22, 1950; lowest 39.33 below lsd, Sept. 19, 1950. Records available: 1948-51. Mar. 12, 39.26; Sept. 11, 39.26.

Eureka County

Antelope Valley

16/51-7d1. Bartholemae Corp. Dug stock water-table well, diameter 6 feet, depth 29 feet. Highest water level 25.28 below lsd, June 19, 1950; lowest 25.54 below lsd, Sept. 19, 1950. Records available: 1949-51. Mar. 13, 25.29; Sept. 11, 25.35.

18/51-34d1. Bartholemae Corp. Drilled stock water-table well, diameter 6 inches, depth 134 feet. Highest water level 94.03 below lsd, Sept. 19, 1950, Mar. 15, 1951; lowest 94.09 below lsd, June 19, 1950. Records available: 1949-51. Mar. 15, 94.03; Sept. 11, 93.06.

Crescent Valley

29/48-3d1. U. S. Geol. Survey. Drilled observation water-table well, diameter 4 inches, depth 8 feet, cased to 8. Land-surface datum is 4,721.1 feet above msl. Highest water level 3.64 below lsd, Mar. 15, 1949; lowest 5.65 below lsd, Aug. 8, 1948. Records available: 1948-51. Sept. 14, 5.20.

29/48-34c1. Dan Filippini. Drilled stock water-table well, diameter 6 inches. Land-surface datum is 4,731.3 feet above msl. Highest water level 6.08 below lsd, Mar. 15, 1949; lowest 7.70 below lsd, Sept. 13, 1950. Records available: 1948-51. Mar. 29, 7.18, pumped recently; Sept. 14, 7.55.

30/49-6a1. U. S. Geol. Survey. Drilled observation water-table well, diameter 4 inches, depth 9 feet, cased to 9. Land-surface datum is 4,712.1 feet above msl. Highest water level 2.61 below lsd, Mar. 15, 1949; lowest 4.95 below lsd, Sept. 15, 1948. Records available: 1948-51. Mar. 29, 3.00; Sept. 14, 4.81.

31/49-5c1. Wm. Connelly. Beowawe. Dug domestic water-table well, diameter 4 feet, depth 10 feet. Land-surface datum is 4,698.3 feet above msl. Highest water level 6.58 below lsd, Mar. 29, 1951; lowest 7.69 below lsd, Sept. 9, 1949. Records available: 1948-51. Mar. 29, 6.58; Sept. 14, 7.60.

Diamond Valley

19/53-5a1. A. C. Florio. Drilled stock water-table well, diameter 6 inches. Highest water level 176.27 below lsd, Mar. 15, 1951; lowest 180.04 below lsd, Sept. 13, 1949. Records available: 1947-51. Mar. 15, 176.27; Sept. 11, 177.08.

19/53-13b1. Owner unknown. In Eureka. Dug unused water-table well, size 4 by 6 feet, depth 19 feet. Highest water level 14.74 below lsd, July 14, 1948; lowest dry Sept. 11, 1951. Records available: 1948-51. Mar. 15, 15.10; Sept. 11, dry.

20/53-15b1. U. S. Bureau of Land Management. Dug stock water-table well, diameter 4 feet, reported depth 99 feet, cribbed with concrete. Highest water level 71.75 below lsd, Apr. 30, 1948; lowest 76.49 below lsd, Mar. 24, 1949. Records available: 1947-51. Mar. 15, 74.77; Sept. 11, 74.70.

20/53-31d1. A. C. Florio. Drilled stock well, diameter 6 inches. Highest water level 158.12 below lsd, June 16, 1949; lowest 165.90 below lsd, Sept. 13, 1949. Records available: 1947-51. Mar. 15, 158.55; Sept. 11, 159.30.

21/53-5c1. A. C. Florio. Drilled stock water-table well, diameter 4 feet, depth 42 feet. Highest water level 28.72 below lsd, June 15, 1948; lowest 28.98 below lsd, Sept. 13, 1949. Records available: 1947-51. Mar. 15, 28.87; Sept. 11, 28.92.

22/54-33d1. A. L. Jones. Drilled irrigation well, diameter 12 inches, depth 191 feet, cased to 190, perforations 15-25 and 144-190. Highest water level 5.93 below lsd, Dec. 16, 1949; lowest 7.68 below lsd, Sept. 11, 1951. Records available: 1949-51. Mar. 15, 6.73; Sept. 11, 7.68.

Kobeh Valley

21/49-17b1. Pete Etchegaray. Drilled stock water-table well, diameter 6 inches, depth 60 feet. Highest water level 40.78 below lsd, Sept. 13, 1949; lowest 42.85 below lsd, Sept. 11, 1951. Records available: 1948-51. Mar. 13, 42.10; Sept. 11, 42.85.

Humboldt County

Grass Valley

(See also Pershing County)

35/37-28b1. U. S. Bureau of Land Management. Button sage well. Drilled unused water-table well, diameter 12 inches, depth 73 feet. Land-surface datum is 4,300 feet above msl. Highest water level 33.90 below lsd, June 4, 1946; lowest 38.83 below lsd, Sept. 24, 1951. Records available: 1946-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	37.96	July 27	38.20	Sept. 20	38.82	Oct. 29	38.55
Feb. 28	37.68	Aug. 28	38.72	24	38.83	Nov. 21	38.67
July 23	38.39						

35/37-14d3. Kenneth Eddie. Ranch headquarters. Drilled irrigation water-table well, diameter 12 inches, depth 107 feet. Land-surface datum is 4,318 feet above msl. Highest water level 33.12 below lsd, Feb. 28, 1951; lowest 47.12 below lsd, Sept. 13, 1949. Records available: 1946-51.

Jan. 11	40.44	July 23	38.98	Sept. 20	42.91	Oct. 29	43.78
Feb. 28	33.12	27	40.60	24	43.00	Nov. 21	44.92
Mar. 30	35.32	Aug. 28	42.37				

35/37-34a2. Owner unknown. Drilled unused water-table well, diameter 10 inches, depth 83 feet. Land-surface datum is 4,301.5 feet above msl. Highest water level 17.68 below lsd, May 16, 1946; lowest 23.71 below lsd, Sept. 20, 1951. Records available: 1946-51.

Jan. 11	21.96	July 23	22.76	Sept. 20	23.71	Oct. 29	22.96
Feb. 28	21.64	Aug. 28	23.69	24	23.66	Nov. 21	22.81

Humboldt River Valley

(See also Elko, Lander, and Pershing Counties)

35/36-14c1. Charles Hilyer. Ranch headquarters. Drilled domestic and stock water-table well, diameter 12 inches, depth 18 feet. Land-surface datum is 4,236.3 feet above msl. Highest water level 7.38 below lsd, Mar. 29, 1951; lowest 12.69 below lsd, Dec. 15, 1949. Records available: 1947, 1949-51.

Jan. 11	11.39	May 14	8.08	Aug. 28	11.47	Oct. 29	12.30
Feb. 28	8.80	July 23	10.35	Sept. 18	11.83	Nov. 21	12.57
Mar. 29	7.38	27	10.19	24	11.92		

35/37-2b1. Henry Harrar. Drilled stock water-table well, diameter 8 inches, depth 21 feet. Land-surface datum is 4,257.8 feet above msl. Highest water level 2.05 below lsd, Mar. 29, 1951; lowest 7.60 below lsd, Dec. 16, 1949. Records available: 1947-51.

Jan. 11	5.89	July 27	5.40	Sept. 18	6.95	Oct. 29	7.19
Mar. 29	2.05	Aug. 28	6.62	24	6.87	Nov. 21	7.04
July 23	5.18						

35/37-8d2. D. H. McNinch. Drilled unused water-table well, diameter 16 inches, depth 77 feet. Land-surface datum is 4,301 feet above msl. Highest water level 54.92 below lsd, May 14, 1951; lowest 58.75 below lsd, Dec. 21, 1948. Records available: 1947-51.

Jan. 11	57.26	May 14	54.92	Aug. 28	57.68	Oct. 29	58.40
Feb. 28	56.10	July 23	56.91	Sept. 18	57.97	Nov. 21	58.63
Mar. 29	55.40	27	56.23	24	58.14		

36/38-16c1. George Hay Co. Drilled irrigation water-table well, diameter 12 inches, depth 55 feet. Land-surface datum is 4,291.6 feet above msl. Highest water level 15.08 below lsd, May 14, 1951; lowest 19.54 below lsd, Nov. 22, 1950. Records available: 1947-51.

Jan. 11	17.58	May 14	15.08	Aug. 28	18.82	Oct. 29	21.53
Mar. 7	15.78	July 23	17.61	Sept. 19	18.54	Nov. 21	19.53
29	15.95	27	17.00	24	19.24		

36/40-19d1. Diamond S Ranch. Drilled irrigation water-table well, diameter 14 inches, depth 51 feet. Highest water level 12.70 below lsd, June 29, 1950; lowest 23.90 below lsd, Apr. 8, 1949. Records available: 1949-51. Jan. 11, 19.54; Mar. 30, 16.21; July 27, 13.14; Sept. 19, 16.17.

36/40-30aa1. Diamond S Ranch. Drilled unused water-table well, diameter 6 inches, depth 101 feet. Highest water level 24.28 below lsd, July 27, 1951; lowest 35.82 below lsd, Feb. 23, 1950. Records available: 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	28.97	July 23	24.44	Sept. 19	26.98	Oct. 29	29.62
Mar. 7	24.93	27	24.28	24	27.28	Nov. 21	30.68
30	24.58	Aug. 28	25.53				

37/38-33d1. George Hay Co. Dug unused water-table well, diameter 36 inches, depth 16 feet. Land-surface datum is 4,294.6 feet above msl. Highest water level 9.86 below lsd, June 28, 1951; lowest 14.17 below lsd, Oct. 28, 1948. Records available: 1947-51.

Jan. 11	12.24	Mar. 30	10.71	July 23	11.87	Sept. 19	12.95
27	11.78	May 7	10.03	27	11.39	Oct. 29	13.39
Feb. 17	11.92	16	9.96	Aug. 9	10.75	30	13.27
Mar. 7	11.06	June 28	9.86	28	12.53	Nov. 21	13.09
29	10.70	July 18	10.88	Sept. 7	12.69	30	13.22

37/39-33d1. Bullhead Ranch. Drilled stock water-table well, diameter 12 inches, depth 24 feet. Land-surface datum is 4,309.5 feet above msl. Highest water level 1.87 below lsd, Mar. 7, 1951; lowest 9.40 below lsd, Oct. 1, 1947. Records available: 1947, 1949-51.

Jan. 11	7.17	July 27	6.90	Sept. 19	8.93	Oct. 29	8.32
Mar. 7	1.87	Aug. 28	7.89	24	8.57	Nov. 21	8.98
July 23	4.91						

Paradise Valley

37/38-2a1. U. S. Bureau of Land Management. Drilled stock well, diameter 6 inches, depth 79 feet. Land-surface datum is 4,335 feet above msl. Highest water level 30.17 below lsd, Nov. 29, 1946; lowest 36.67 below lsd, Nov. 24, 1950. Records available: 1945-51.

Jan. 31	36.30	Apr. 30	36.51	July 16	35.98	Oct. 30	36.33
Feb. 26	36.58	May 16	36.42	Aug. 9	36.03	Nov. 30	36.29
Mar. 28	36.31	June 28	36.03				

38/39-28d1. Cordoza. Drilled stock water-table well, diameter 8 inches, depth 30 feet. Land-surface datum is 4,312 feet above msl. Highest water level 10.13 below lsd, May 27, 1949; lowest 14.22 below lsd, Sept. 13, 1949. Records available: 1947-51.

Jan. 31	11.93	Apr. 30	11.10	Aug. 9	12.59	Oct. 30	12.80
Feb. 17	11.64	July 17	11.53	Sept. 7	13.46	Nov. 30	12.30
Mar. 28	11.38						

39/39-3c1. Gerhard Miller, Sr. Ranch headquarters. Dug stock and domestic water-table well, diameter 8 feet, depth 22 feet. Land-surface datum is 4,342 feet above msl. Highest water level 7.67 below lsd, July 31, 1951; lowest 15.81 below lsd, Sept. 14, 1948. Records available: 1947-51. Jan. 9, 12.70; July 31, 7.67; Aug. 23, 9.75; Oct. 30, 11.09; Nov. 30, 11.07.

39/39-11b1. George Miller, Sr. Drilled unused water-table well, diameter 8 inches, depth 15 feet. Land-surface datum is 4,334 feet above msl. Highest water level 6.62 below lsd, July 26, 1951; lowest 9.95 below lsd, Sept. 15, 1949. Records available: 1947-51.

Jan. 1	8.36	Jan. 25	7.93	Aug. 4	7.35	Aug. 27	8.43
2	8.35	26	7.81	5	7.38	28	8.43
3	8.27	27	7.65	6	7.41	29	8.44
4	8.25	28	7.54	7	7.47	30	8.46
5	8.22	29	7.41	8	7.51	Sept. 1	8.47
6	8.22	30	7.44	9	7.58	2	8.48
7	8.22	31	7.44	10	7.71	3	8.49
8	8.20	Feb. 1	7.44	11	7.86	4	8.50
9	8.18	2	7.40	12	7.98	5	8.50
10	8.14	3	7.38	13	8.06	6	8.52
11	8.10	4	7.28	14	8.12	7	8.54
12	8.05	5	7.05	15	8.12	8	8.56
13	8.01	6	6.86	16	8.12	9	8.58
14	8.00	7	6.85	17	8.14	10	8.59
15	7.94	July 26	6.62	18	8.18	11	8.60

39/39-11b1--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 16	7.92	July 27	6.67	Aug. 19	8.22	Sept. 12	8.60
17	7.83	28	6.79	20	8.24	13	8.62
18	7.83	29	6.94	21	8.27	14	8.63
19	7.84	30	7.05	22	8.30	15	8.65
20	7.88	31	7.13	23	8.31	16	8.65
21	7.88	Aug. 1	7.21	24	8.36	17	8.66
22	7.97	2	7.31	25	8.39	18	8.67
23	7.97	3	7.35	26	8.40	19	8.68
24	7.95						

39/39-16d1. Dwight C. Vedder. Drilled stock water-table well, diameter 12 inches, depth 46 feet. Land-surface datum is 4,331.7 feet above msl. Highest water level 3.82 below lsd, May 28, 1951; lowest 10.69 below lsd, Sept. 14, 1948. Records available: 1947-51.

Jan. 17	9.22	Apr. 12	5.55	July 17	6.67	Oct. 30	8.95
Feb. 27	8.72	May 28	3.82	Aug. 23	8.59	Nov. 30	8.85
Mar. 15	8.32	June 20	5.13				

39/39-24b1. Dwight C. Vedder. Drilled domestic water-table well, diameter 6 inches, depth 24 feet. Land-surface datum is 4,333.9 feet above msl. Highest water level 3.30 below lsd, Apr. 5, 1946; lowest 9.50 below lsd, Sept. 19, 1950. Records available: 1945-51.

Jan. 17	8.00	Apr. 12	7.30	July 17	7.97	Oct. 30	7.67
Feb. 27	7.56	May 17	5.73	Aug. 23	8.42	Nov. 30	8.46
Mar. 15	7.51	June 20	6.12				

39/39-33c1. Owner unknown. Formerly Godcheaux Land and Cattle Co. Drilled stock water-table well, diameter 12 inches, depth 37 feet. Land-surface datum is 4,318.2 feet above msl. Highest water level 4.15 below lsd, Apr. 25, 1946; lowest 9.60 below lsd, Sept. 13, 1949, Sept. 19, 1950. Records available: 1945-51.

Jan. 17	8.67	Apr. 30	4.82	July 17	6.30	Oct. 30	8.99
Feb. 26	8.26	May 16	4.51	Aug. 29	7.88	Nov. 30	8.46
Mar. 28	7.99						

40/39-10d1. Owner unknown. Formerly C. L. Lewis. Drilled unused water-table well, diameter 12 inches, depth 55 feet. Land-surface datum is 4,422 feet above msl. Highest water level 39.91 below lsd, June 22, 1951; lowest 55.02 below lsd, July 23, 1947. Records available: 1945-51.

Jan. 30	45.91	Apr. 30	42.04	June 22	39.91	Oct. 16	46.56
Feb. 28	43.53	May 24	40.50	Aug. 22	42.95	Nov. 29	46.01
Mar. 30	42.61						

40/39-26b1. Henry McCleary Timber Co. Drilled domestic well, diameter 16 inches, reported depth 300 feet. Land-surface datum is 4,360 feet above msl. Highest water level 3.43 below lsd, Apr. 25, 1946; lowest 12.12 below lsd, Jan. 30, 1951. Records available: 1945-51.

Jan. 30	12.12	Mar. 30	4.22	June 22	4.70	Aug. 22	7.94
Feb. 28	5.34	May 24	3.47	July 31	7.22	Oct. 16	8.65

41/40-6c1. Joe Boggio. Drilled unused water-table well, diameter 16 inches, depth 55 feet. Land-surface datum is 4,458 feet above msl. Highest water level 2.20 below lsd, Feb. 12, 1951; lowest 11.5 below lsd, Aug. 25, 1947. Records available: 1945-51.

Feb. 12	2.20	Apr. 30	3.08	July 18	5.78	Oct. 5	9.02
28	3.49	May 24	3.32	Aug. 22	7.95	Nov. 28	9.60
Mar. 30	3.82	June 22	4.86				

41/40-22d1. Ernest Gondra. Drilled domestic water-table well, diameter 7 inches, depth 41 feet. Highest water level 5.63 below lsd, June 16, 1950; lowest 11.82 below lsd, Jan. 31, 1949. Records available: 1947-51.

Jan. 30	7.41	Apr. 30	7.10	July 30	7.95	Oct. 8	9.84
Feb. 28	8.15	May 21	5.89	Aug. 29	9.41	Nov. 29	10.34
Mar. 21	5.80	June 22	6.55				

41/40-30a1. Shelton School. Drilled domestic water-table well, diameter 8 inches, depth 27 feet. Land-surface datum is 4,414 feet above msl. Highest water level 1.17 below lsd, Apr. 30, 1951; lowest 10.95 below lsd Oct. 25, 1948. Records available: 1945-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	6.17	Apr. 30	1.17	July 30	6.70	Oct. 8	9.42
Feb. 28	2.83	May 24	1.76	Aug. 29	8.25	Nov. 29	7.16
Mar. 30	2.93	June 22	3.68				

42/39-25c1. U. S. Bureau of Land Management. Dug unused water-table well, diameter 5½ feet, depth 18 feet. Land-surface datum is 4,523 feet above msl. Highest water level 2.50 below lsd, Apr. 30, 1951; lowest 9.90 below lsd, Oct. 20, 1949. Records available: 1945-51.

Feb. 12	5.66	Apr. 30	2.50	July 18	5.62	Oct. 5	4.07
28	5.15	May 29	3.80	Aug. 29	7.69	Nov. 28	4.15
Mar. 30	4.43	June 29	4.10				

42/40-14c1. J. M. Freeman. Drilled domestic and stock water-table well, diameter 12 inches, depth 13 feet. Land-surface datum is 4,606 feet above msl. Highest water level 3.90 below lsd, Apr. 29, 1949; lowest 9.76 below lsd, Sept. 23, 1947. Records available: 1946-51.

Jan. 22	8.62	Apr. 30	5.67	July 31	7.95	Oct. 5	9.00
Feb. 28	8.32	May 22	5.66	Aug. 27	7.81	Nov. 28	8.66
Mar. 22	7.61	June 19	5.93				

42/40-18a1. E. C. Lye. Drilled irrigation water-table well, diameter 12 inches, depth 53 feet, reported cased to 64 feet. Land-surface datum is 4,614 feet above msl. Highest water level 4.82 below lsd, Apr. 30, 1951; lowest 14.60 below lsd, Mar. 18, 1947. Records available: 1945-51.

Jan. 22	11.43	Apr. 30	4.82	July 18	7.03	Oct. 5	10.38
Feb. 28	7.25	May 29	4.87	Aug. 22	8.23	Nov. 28	12.47
Mar. 22	6.62	June 29	6.32				

Quinn River Valley

42/37-33b2. Hassenyager. Formerly T. C. Barber and A. L. Varnes. Drilled irrigation water-table well, diameter 18 inches, depth 95 feet. Highest water level 36.54 below lsd, Apr. 21, 1948; lowest 40.42 below lsd, July 18, 1948. Records available: 1948-51. Mar. 29, 38.72; July 26, 38.60; Sept. 18, 38.67.

43/37-4c2. Owner unknown. Formerly Norris & Collins. Drilled unused water-table well, diameter 6 inches, depth 42 feet. Land-surface datum is 4,230 feet above msl. Highest water level 31.96 below lsd, Aug. 26, 1948; lowest 34.11 below lsd, Mar. 29, 1951. Records available: 1947-51. Mar. 29, 34.11; July 26, 32.65; Sept. 18, 33.37.

43/37-28a1. Elmo Bowly. Formerly Middaugh. Dug and drilled irrigation water-table well, size 5 by 6 feet to 12 feet, 12 inches to 57 feet. Land-surface datum is 4,234 feet above msl. Highest water level 8.13 below lsd, Nov. 5, 1947; lowest 12.18 below lsd, Sept. 18, 1951. Records available: 1946-51. Mar. 29, 10.70; Sept. 18, 12.18.

43/37 34d1. A. E. Hosack. Dug and drilled unused water table well, size 4 by 4 feet to 17 feet, 12 inches to 52 feet. Land-surface datum is 4,270 feet above msl. Highest water level 40.08 below lsd, Sept. 16, 1947; lowest 47.75 below lsd, Sept. 18, 1951. Records available: 1947-51. Mar. 29, 43.88; July 26, 45.43; Sept. 18, 47.75.

Lander County

Reese River Valley

27/43-33cd1. Owner unknown. Watts. Drilled unused well, diameter 6 inches, depth 114 feet. Land-surface datum is 4,810 feet above msl. Highest water level 12.36 below lsd, Apr. 22, 1948; lowest 14.44 below lsd, Mar. 16, 1951. Records available: 1947-51. Mar. 16, 14.44; Sept. 19, 13.65.

30/42-24cc1. U. S. Bureau of Land Management. Drilled stock water-table well, diameter 6 inches, depth 54 feet. Land-surface datum is 4,634 feet above msl. Highest water level 10.30 below lsd, Mar. 16, 1949; lowest 12.15 below lsd, Sept. 14, 1950. Records available: 1947-51. Mar. 16, 10.67; May 29, 11.04; Sept. 19, 12.08.

30/43-9aa1. Copper Canyon Mining Co. Drilled unused well, diameter 12 inches, depth 201 feet, cased to 192. Land-surface datum is 4,767 feet above msl. Highest water level 134.56 below lsd, May 22, 1947; lowest 138.27 below lsd, Mar. 16, 1951. Records available: 1947-51. Mar. 16, 138.27; Sept. 19, 136.95.

30/44-18ad1 Copper Canyon Mining Co. Drilled unused well, diameter 12 inches, depth 329 feet, cased to 300. Land-surface datum is 4,609 feet above msl. Highest water level 5.25 below lsd, Mar. 16, 1951; lowest 6.44 below lsd, Sept. 19, 1951. Records available: 1947-51. Mar. 16, 5.25; Sept. 19, 6.44.

30/44-22cb1. Owner unknown. Dillon. Drilled unused water-table well, diameter 6 inches, depth 80 feet. Land-surface datum is 4,676 feet above msl. Highest water level 26.64 below lsd, Nov. 8, 1947; lowest 27.68 below lsd, Sept. 19, 1951. Records available: 1947-51. Mar. 16, 27.58; Sept. 19, 27.68

30/45-4bd1. Martin Jenkins Ranch. Drilled domestic and stock well, diameter 6 inches, depth 40 feet. Land-surface datum is 4,613 feet above msl. Highest water level 18.17 below lsd, June 23, 1949; lowest 19.94 below lsd, Sept. 19, 1951. Records available: 1947-51. Mar. 16, 19.76; Sept. 19, 19.94.

30/45-18aa1. U S. Bureau of Land Management. Dug stock water-table well, size 4 by 4 feet, reported depth 60 feet. Land-surface datum is 4,635 feet above msl. Highest water level 23.69 below lsd, Jan. 8, 1948; lowest 25.45 below lsd, Sept. 14, 1950. Records available: 1947-51. Mar. 16, 24.10; Sept. 19, 25.14.

Humboldt River Valley
(See also Elko, Humboldt, and Pershing Counties)

32/45-2a1. E. Marvel. Drilled unused water-table well, diameter 6 inches, depth 65 feet. Land-surface datum is 4,515 feet above msl. Highest water level 4.16 below lsd, May 22, 1947; lowest 6.36 below lsd, Aug. 25, 1948. Records available: 1946-51. Mar. 16, 4.78; Sept. 19, 4.62.

32/45 9ab1. Owner unknown. Drilled unused water-table well, diameter 4 inches, uncased. Land-surface datum is 4,509 feet above msl. Highest water level 6.47 below lsd, Apr. 9, 1946; lowest 10.29 below lsd, Oct. 24, 1947. Records available: 1946-51. Mar. 16, 7.25; Sept. 19, 9.50.

32/45-11d1. U. S. Geol. Survey. Drilled test and observation well, diameter 6 inches, depth 197 feet, cased to 171. Highest water level 6.15 below lsd, Mar. 16, 1951; lowest 9.48 below lsd, Sept 9, 1949. Records available: 1949-51. Mar. 16, 6.15.

32/45-11d2. U. S. Geol. Survey. Adjacent to well 32/45-11d1. Drilled test and observation water-table well, diameter 2 inches, depth 24 feet, cased to 24, perforations 20-24. Highest water level 6.17 below lsd, Mar. 16, 1951; lowest 9.12 below lsd, Dec. 1, 1949. Records available: 1949-51. Mar. 16, 6.17.

32/45-20b1. R. M. Clark. Drilled domestic water-table well, diameter 6 inches, depth 14 feet. Land-surface datum is 4,509 feet above msl. Highest water level 5.93 below lsd, Mar. 20, 1947; lowest 8.64 below lsd, Sept. 19, 1951. Records available: 1946-51. Mar. 16, 6.58; Sept. 19, 8.64.

32/45-22c1. Owner unknown. Drilled observation water-table well, diameter 2 inches, depth 6 feet, uncased. Highest water level 3.07 below lsd, Mar. 16, 1951; lowest 5.45 below lsd, Oct. 24, 1947. Records available: 1946-51. Mar. 16, 3.07; Sept. 19, 4.85.

32/46-10d1. U. S. Bureau of Reclamation. Dug stock water-table well, size 8 by 10 feet, depth 10 feet, cribbed with wood. Highest water level 2.38 below lsd, Apr. 11, 1946; lowest 6.64 below lsd, Sept. 9, 1947. Records available: 1945-51. Mar. 16, 3.28; Sept. 14, 6.22.

32/46-11d1. U. S. Bureau of Reclamation. Dug stock water-table well, size 4 by 5 feet, depth 13 feet. Land-surface datum is 4,543 feet above msl. Highest water level 3.77 below lsd, Apr. 11, 1946; lowest 9.50 below lsd, Oct. 24, 1947. Records available: 1945-51. Mar. 16, 5.12; Sept. 14, 8.27.

32/46-16d1. U. S. Bureau of Reclamation. Drilled observation water-table well, diameter 2 inches, depth 11 feet. Land-surface datum is 4,538 feet above msl. Highest water level 5.07 below lsd, Apr. 11, 1946; lowest 7.61 below lsd, Sept. 14, 1950. Records available: 1946-51. Mar. 16, 5.60.

32/46-27ba1. Southern Pacific Co. Drilled unused well, diameter 12 inches, depth 431 feet. Land-surface datum is 4,560 feet above msl. Highest water level 19.30 below lsd, Mar. 16, 1951; lowest 19.89 below lsd, Aug. 15, 1950. Records available: 1947-51. Mar. 16, 19.30; Sept. 14, 19.88.

32/46-31bb1. Humboldt Petroleum Co. Drilled oil test well, diameter 6 inches, reported depth 126 feet. Land-surface datum is 4,529 feet above msl. Highest water level 11.25 below lsd, Mar. 16, 1951; lowest 12.19 below lsd, Sept. 19, 1949. Records available: 1947-51. Mar. 16, 11.25; Sept. 19, 11.89.

Lincoln County

Lake Valley

(See also White Pine County)

3/66-23d1. U. S. Bureau of Land Management. Drilled stock well, diameter 6 inches. Highest water level 41.10 below lsd, Sept. 13, 1951; lowest 43.21 below lsd, Sept. 6, 1949. Records available: 1946-51. Mar. 14, 41.18; Sept. 13, 41.10.

9/65-1b1. Fred Twisselman. Formerly McCulloch. Drilled irrigation well, diameter 12 inches, depth 165 feet. Highest water level 23.64 below lsd, Apr. 16, 1947; lowest 37.93 below lsd, Mar. 14, 1951. Records available: 1947-51. Mar. 14, 37.93; Sept. 13, 37.15.

Meadow Valley

1S/68-28c1. C. Ronnow. Drilled irrigation well, diameter 12 inches, reported depth 75 feet. Highest water level 44.03 below lsd, Apr. 25, 1946; lowest 49.29 below lsd, Sept. 27, 1948. Records available: 1945-51. Mar. 14, 44.14.

1S/68-32a2. Paul Edwards Estate. Ranch headquarters. Drilled unused water-table well in alluvium of Quaternary age, diameter 12 inches, reported depth 50 feet. Land-surface datum is 4,785.2 feet above msl. Highest water level 32.13 below lsd, Apr. 14, 1946; lowest 39.57 below lsd, Sept. 27, 1948. Records available: 1946-51. Mar. 14, 34.23; Sept. 12, 36.20.

1S/68-33b1. Lafe Matthews Estate. Drilled irrigation well in alluvium of Quaternary age, diameter 10 inches, reported depth 120 feet, cased to 80, perforations 60-80. Land-surface datum is 4,784.7 feet above msl. Highest water level 30.32 below lsd, Apr. 24, 1946; lowest 37.23 below lsd, Sept. 12, 1950. Records available: 1946-51. Mar. 14, 31.80; Sept. 11, 35.30.

2S/67-24d1. Duffin. Dug unused water-table well in alluvium of Quaternary age, size 4 by 4 feet, depth 10 feet, cribbed with wood. Land-surface datum is 4,677.6 feet above msl. Highest water level 3.45 below lsd, Mar. 21, 1949; lowest 6.17 below lsd, Sept. 13, 1951. Records available: 1946-51. Mar. 14, 4.56; Sept. 13, 6.17.

2S/68-5c1. Stock yard well. Dug stock water-table well in alluvium of Quaternary age, size 8 by 8 feet, depth 12 feet. Land-surface datum is 4,733.8 feet above msl. Highest water level 10.55 below lsd, Apr. 5, 1946; lowest 13.90 below lsd, Sept. 13, 1951. Records available: 1946-47, 1949-51. Mar. 14, 11.52; Sept. 13, 13.90.

2S/68-7a2. P. Findlay. Drilled domestic water-table well in alluvium of Quaternary age, diameter 4 inches, reported depth 40 feet, cased to 40. Land-surface datum is 4,726.5 feet above msl. Highest water level 17.16 below lsd, Apr. 14, 1946; lowest 21.30 below lsd, Sept. 12, 1950. Records available: 1946-51. Mar. 14, 18.55.

2S/68-8b1. Lory Free. Drilled irrigation well in alluvium of Quaternary age, diameter 10 inches, reported depth 88 feet. Land-surface datum is 4,721.7 feet above msl. Highest water level 12.09 below lsd, Apr. 14, 1946; lowest 18.57 below lsd, Sept. 12, 1950. Records available: 1946-51. Mar. 14, 13.15; Sept. 13, 17.65.

2S/68-8b5. U. S. Geol. Survey. Drilled observation well in alluvium of Quaternary age, diameter 8 inches, depth 110 feet, cased to 110. Highest water level 10.72 below lsd, Mar. 20, 1950; lowest 15.23 below lsd, Sept. 13, 1951. Records available: 1949-51. Mar. 14, 11.55; Sept. 13, 15.23.

3S/67-2a1. Grant Lee. Drilled irrigation well in alluvium of Quaternary age, diameter 10 inches, depth 220 feet, cased to 180. Land-surface datum is 4,605.1 feet above msl. Highest water level 16.03 below lsd, Mar. 16, 1946; lowest 21.57 below lsd, Apr. 27, 1948. Records available: 1946, 1948-51. Mar. 14, 18.28; Sept. 12, 20.75.

3S/67-28c2. U. S. Geol. Survey. Drilled observation artesian well in alluvium of Quaternary age, diameter 6 inches, depth 172 feet, cased to 161. Highest water level 2.71 above lsd, Sept. 19, 1949; lowest 1.45 above lsd, Sept. 12, 1951. Records available: 1946-51. Mar. 14, +2.03; Sept. 12, +1.45.

3S/67-33b1. U. S. Geol. Survey. Drilled observation water-table well in alluvium of Quaternary age, diameter 6 inches, depth 10 feet. Land-surface datum is 4,472.3 feet above msl. Highest water level 0.84 below lsd, Dec. 13, 1946; lowest 6.04 below lsd, Sept. 25, 1947. Records available: 1946-51. Mar. 14, 2.12; Sept. 12, 6.20. Measurement discontinued.

Meadow Valley Wash

4S/67-4c1. Joe Allec. Drilled domestic well, diameter 8 inches, depth 35 feet. Highest water level 9.54 below lsd, Apr. 25, 1948; lowest 15.50 below lsd, Sept. 12, 1951. Records available: 1946-51. Mar. 14, 12.49; Sept. 12, 15.50. Measurement discontinued.

Pahranagat Valley

4S/60-2d1. Wells-Stewart Land and Livestock Co. Drilled unused well, diameter 10 inches, reported depth 150 feet. Highest water level 40.77 below lsd, Dec. 17, 1946; lowest 53.68 below lsd, Sept. 13, 1951, Records available: 1946, 1948-51. Mar. 14, 42.74; Sept. 13, 53.68, nearby well being pumped.

4S/60-2d2. Wells-Stewart Land and Livestock Co. Drilled irrigation well, diameter 12 to 11 inches, reported depth 471 feet, cased to 471, perforations 50-199. Highest water level 42.28 below lsd, Sept. 20, 1949; lowest 46.95 below lsd, Mar. 14, 1951. Records available: 1949-51. Mar. 14, 46.95.

4S/60-34a2. W. U. Schofield, Jr. Drilled unused well, diameter 10 inches, reported depth 96 feet, cased to 96, perforations 60-96. Highest water level 58.12 below lsd, Aug. 8, 1946; lowest 64.31 below lsd, Feb. 19, 1948. Records available: 1946, 1948-51. Mar. 14, 61.35; Sept. 13, 61.43.

5S/60-10b1. Owner unknown. Drilled unused well, diameter 5 inches, depth 81 feet. Highest water level 63.82 below lsd, Mar. 22, 1949; lowest 74.19 below lsd, Dec. 17, 1946. Records available: 1945-46, 1948-51. Mar. 14, 64.03; Sept. 13, 64.17.

6S/61-18d2. Gardner Chism. Drilled unused well, diameter 6 inches, depth 41 feet. Highest water level 5.55 below lsd, Mar. 14, 1951; lowest 8.41 below lsd, Sept. 20, 1949. Records available: 1946-51. Mar. 14, 5.55; Sept. 13, 7.12.

6S/61-30d1. L. and E. Wadsworth. Drilled unused well, diameter 6 inches, depth 39 feet. Highest water level 14.32 below lsd, Sept. 13, 1951; lowest 16.82 below lsd, Mar. 22, 1949. Records available: 1946-51. Mar. 14, 16.66; Sept. 13, 14.32.

6S/61-32d4. Kirk Buffum. Drilled domestic well, diameter 6 inches, reported depth 57 feet. Highest water level 14.72 below lsd, Mar. 21, 1950; lowest 21.68 below lsd, Mar. 14, 1951. Records available: 1946, 1948-51. Mar. 14, 21.68; Sept. 13, 18.95.

7S/61-5d1. Harvey Frehner. Alamo. Drilled unused well, diameter 6 inches. Highest water level 12.17 below lsd, Mar. 21, 1950; lowest 14.70 below lsd, Sept. 13, 1951. Records available: 1946-51. Mar. 14, 14.65; Sept. 13, 14.70.

8S/61-2c1. J. H. Hail. Drilled irrigation well, diameter 10 inches, depth 92 feet, sand-filled to 30 feet. Highest water level 19.37 below lsd, Mar. 21, 1950, lowest 24.85 below lsd, Sept. 30, 1948. Records available: 1946-51. Mar. 14, 23.02; Sept. 13, 23.39.

8S/61-24d1. Bill Grieves. Dug unused water-table well, size 4 by 4 feet. Highest water level 3.38 below lsd, Mar. 2, 1950; lowest 7.85 below lsd, Sept. 30, 1948. Records available: 1946-51. Mar. 14, 3.41; Sept. 13, 6.52.

8S/62-31b1. John Richards. Drilled unused well, diameter 10 inches, depth 66 feet. Highest water level 18.60 below lsd, Apr. 18, 1947; lowest 20.51 below lsd, Sept. 30, 1948. Records available: 1945-48, 1950-51. Mar. 14, 20.32; Sept. 13, 20.12.

Lyon County

Carson River Valley

17/22-35b1. R. H. Conklin. Drilled irrigation well, diameter 16 inches. Highest water level 19.78 below lsd, Dec. 21, 1950; lowest 27.80 below lsd, Aug. 15, 1949. Records available: 1949-50. No measurement made in 1951.

18/25-31a1. Southern Pacific Co. Appian. Drilled unused well, diameter 6 inches. Highest water level 30.59 below lsd, Dec. 21, 1950; lowest 36.05 below lsd, Mar. 30, 1950. Records available: 1949-51. Jan. 4, 31.14; Mar. 26, 30.94; Sept. 6, 34.37.

Mason Valley

11/25-11a1. McDonald. Drilled irrigation well, diameter 12 inches, reported depth 247 feet. Highest water level 62.33 below lsd, Aug. 19, 1948; lowest 67.75 below lsd, Mar. 30, 1950. Records available: 1948-51. Mar. 26, 67.71; Sept. 6, 60.62.

11/25-11b1. Judd. Drilled domestic and stock well, diameter 6 inches, reported depth 75 feet. Highest water level 26.65 below lsd, Sept. 6, 1951; lowest 39.27 below lsd, Mar. 30, 1950. Records available: 1948-51. Mar. 26, 38.98; Sept. 6, 26.65.

14/25-28d1. School District. Drilled unused well, diameter 6 inches, depth 38 feet. Highest water level 2.43 below lsd, June 16, 1950; lowest 6.00 below lsd, Mar. 26, 1951. Records available: 1947-51. Mar. 26, 6.00; Sept. 6, 3.60.

15/25-26c1. Mason Valley Ranch. Drilled unused well, diameter 8 inches, depth 49 feet. Highest water level 5.64 below lsd, Apr. 24, 1948; lowest 7.35 below lsd, Aug. 20, 1948. Records available: 1945, 1947-51. Mar. 26, 4.75; Sept. 6, 5.65.

Unnamed Valley

16/21-29c1. Owner unknown. Drilled unused water-table well, diameter 4 inches, depth 59 feet. Highest water level 51.31 below lsd, Nov. 13, 1947; lowest 52.30 below lsd, Sept. 6, 1951. Records available: 1947-51. Mar. 26, 52.23; Sept. 6. 52.30.

Smith Valley

10/24-4cd1. Herb Rountree. Drilled irrigation well, diameter 14 to 12 inches, depth 250 feet. Land-surface datum is 4,910 feet above msl. Highest water level 59.61 below lsd, Nov. 2, 1948; lowest 73.64 below lsd, May 26, 1950. Records available: 1948-51. Mar. 26, 66.56; Sept. 6, 65.09; Dec. 21, 63.58.

10/24-5cb1. Fred Fulstone. Dug and drilled stock and domestic well, size 4 by 5 feet to 60 feet, 8 inches to 480 feet. Land-surface datum is 4,898 feet above msl. Highest water 52.66 below lsd, Sept. 28, 1950; lowest 55.44 below lsd, May 26, 1950. Records available: 1949-51. Sept. 7, 52.85; Dec. 21, 52.73.

10/24-7bd1. Rex B. Clark. Ranch headquarters. Drilled domestic well, diameter 4 inches, reported depth 128 feet. Land-surface datum is 4,910 feet above msl. Highest water level 62.13 below lsd, Dec. 21, 1951; lowest 64.53 below lsd, May 26, 1950. Records available: 1949-51. Sept. 7, 62.30; Dec. 21, 62.13.

11/23-1ab1. C. G. Smith. Dug stock water-table well, diameter 4 feet, depth 30 feet. Highest water level 20.97 below lsd, Nov. 29, 1950; lowest 22.35 below lsd, May 26, 1950. Records available: 1949-51. Mar. 26, 21.38; Sept. 7, 21.81; Dec. 21, 21.13.

11/23-3dc1. R. B. Day. Drilled irrigation well, diameter 12 inches, depth 242 feet, cased to 164, perforations 0-164. Land-surface datum is 4,830 feet above msl. Highest water level 48.40 below lsd, Aug. 22, 1949; lowest 50.55 below lsd, Mar. 26, 1951. Records available: 1948-51. Mar. 26, 50.55; Dec. 21, 48.75.

11/23-11ba1. A. Bunkowski. Drilled domestic well, diameter 3 inches, reported depth 70 feet. Highest water level 8.37 below lsd, Aug. 9, 1950; lowest 12.18 below lsd, Mar. 30, 1950. Records available: 1949-51. Mar. 26, 11.47; Sept. 7, 9.08; Dec. 21, 11.10.

11/23-24cd1. Mrs. Kate Gallaner. Drilled domestic artesian well, diameter 3 inches. Highest water level 37.2 above lsd, Sept. 28, Nov. 29, 1950; lowest 32.9 above lsd, Dec. 21, 1951. Records available: 1949-51. Mar. 26,+36.5; Sept. 7,+36.4; Dec. 21,+32.9.

11/23-27dc1. C. and M. Groso. Drilled unused well, diameter 4 inches, depth 88 feet. Highest water level 56.24 below lsd, Aug. 9, 1950; lowest 71.90 below lsd, Mar. 29, 1950. Records available: 1948-51. Mar. 26, 71.38; Sept. 7, 58.53; Dec. 21, 68.34.

11/24-18ad1. Mrs. W. E. Allen. Jetted unused artesian well, diameter 2 inches, reported depth 80 feet. Land-surface datum is 4,727.7 feet above msl. Highest water level 28.7 above lsd, Sept. 10, 1951; lowest 21.6 above lsd, Oct. 15, 1949. Records available: 1948-51.

Daily noon water level above lsd from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	26.4	25.6	26.1	27.5	23.6	24.9	24.6	25.9	25.2	25.4	27.5
2	....	26.4	25.5	26.1	27.5	24.1	24.9	26.7	26.0	25.2	25.6	27.5
3	....	26.4	25.5	26.2	27.5	24.5	25.0	....	26.0	25.3	26.0	27.5
4	....	26.5	25.7	26.2	25.2	24.6	25.1	....	26.0	25.2	26.2	27.6
5	....	26.5	25.8	26.2	25.0	24.1	25.0	24.9	28.1	25.1	26.3	27.6
6	....	26.5	25.8	26.2	24.9	24.1	24.9	24.7	28.2	25.1	26.3	27.5
7	....	26.5	25.9	26.2	24.9	24.1	24.5	24.9	28.5	25.1	26.7	27.5
8	....	26.3	26.0	26.1	24.8	24.2	24.7	26.1	28.5	25.2	26.7	27.9
9	27.0	26.4	25.8	26.5	24.9	24.1	24.4	26.3	28.6	25.2	26.7	27.5
10	27.0	26.3	25.6	24.6	24.8	24.3	24.3	25.1	28.7	25.2	26.7	27.5

11/24-18ad1--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	27.0	26.1	25.6	25.8	24.8	24.4	24.4	25.1	26.3	25.2	26.7	27.5
12	26.7	25.9	25.7	25.1	24.7	24.4	24.7	24.9	26.1	25.1	26.7	....
13	26.7	25.9	25.8	26.1	24.7	24.5	24.5	25.3	26.1	25.1	....	....
14	26.8	25.8	25.8	26.0	24.7	24.5	24.6	25.7	26.5	25.1	27.0	27.5
15	26.9	26.1	25.9	26.1	24.7	24.5	24.7	26.8	27.1	25.2	27.0	27.6
16	26.5	25.7	25.9	26.1	24.7	24.4	24.7	27.5	27.2	25.3	27.1	27.6
17	26.6	25.8	25.6	26.1	24.9	24.6	24.7	26.4	27.3	25.3	27.7	27.6
18	26.6	25.6	25.6	25.6	24.7	24.5	....	25.9	25.1	25.3	27.3	27.8
19	26.5	25.7	25.6	24.6	24.6	24.5	....	25.9	25.0	25.3	27.4	27.6
20	26.5	25.9	25.8	25.6	24.6	24.5	....	26.0	25.1	25.1	27.3	27.6
21	26.6	25.8	25.8	25.7	24.6	24.5	24.8	26.0	24.9	25.1	27.4	27.5
22	26.6	25.7	25.7	25.9	24.6	24.5	24.9	26.1	24.7	25.2	27.4	27.6
23	26.5	25.7	25.6	25.9	24.7	24.6	25.0	26.1	24.7	25.3	27.3	27.6
24	26.5	25.4	25.7	28.3	24.7	24.5	24.9	26.0	24.9	25.3	27.3	27.6
25	26.3	25.3	25.7	28.3	24.7	24.6	24.8	26.0	25.1	25.3	27.3	27.1
26	26.3	25.3	25.7	28.4	24.6	24.8	24.9	26.1	25.1	25.6	27.4	27.1
27	26.4	25.4	25.7	28.2	24.1	24.9	24.6	26.0	25.2	25.6	27.3	27.8
28	26.4	25.3	25.6	27.7	23.1	24.9	24.8	26.0	25.2	25.6	27.4	27.0
29	26.1		25.5	27.5	23.0	24.8	24.9	25.8	25.2	....	27.5	27.0
30	26.7		25.6	27.5	24.1	24.7	24.4	26.0	25.2	25.7	27.5	27.0
31	26.3		25.6		24.1		23.8	26.0		25.7		26.9

11/24-18da1. Mrs. Mary Harrison. Drilled domestic and irrigation artesian well, diameter 3 inches, reported depth 81 feet. Land-surface datum is 4,740.26 feet above msl. Highest water level 28.00 above lsd, Nov. 29, 1950; lowest 24.90 above lsd, May 11, 1949. Records available: 1948-51. Mar. 26,+27.9; Sept. 7,+25.9; Dec. 21,+25.1.

11/24-22dc1. Fred Fulstone. Dug unused water-table well, size 18 by 30 inches, reported depth 130 feet, reported cased to 130, cribbed with concrete. Land-surface datum is 4,888.46 feet above msl. Highest water level 55.65 below lsd, Mar. 4, 1951; lowest 62.19 below lsd, Nov. 15, 1949. Records available: 1948-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	57.95	.....	55.72	56.92	57.78	58.20	57.36	57.59	57.63	57.95	58.44	58.41
2	57.78	.....	55.89	56.96	57.76	58.19	57.40	57.61	57.66	57.97	58.42	58.66
3	57.72	.....	.....	56.93	57.69	58.17	57.33	57.64	57.64	58.00	58.41	58.48
4	57.65	.....	55.65	56.98	57.81	58.16	57.34	57.67	57.63	58.04	58.39	58.45
5	57.60	.....	55.78	57.05	57.80	58.23	57.37	57.68	57.62	58.10	58.45	58.62
6	57.49	57.04	55.83	57.10	57.85	58.25	57.39	57.68	.....	58.09	58.43	.....
7	57.32	57.04	55.93	57.12	57.83	58.26	57.41	57.68	57.68	58.06	58.38	.....
8	57.21	57.19	55.84	57.20	57.87	58.31	57.39	57.66	57.72	58.08	58.43	.....
9	57.18	57.15	55.85	57.20	57.88	58.35	57.34	57.65	57.72	58.08	58.42	58.77
10	57.15	57.13	56.07	57.25	57.81	58.34	57.33	57.66	57.63	58.08	58.35	58.71
11	57.04	57.16	56.13	.....	57.85	58.26	57.39	57.68	57.74	58.07	58.42	.....
12	57.30	57.30	56.14	.....	57.88	58.28	57.38	57.70	57.74	58.14	58.42	.....
13	57.33	57.25	56.14	.....	57.87	58.36	57.40	.....	57.77	58.16	58.42	.....
14	57.30	57.08	56.17	.....	57.96	58.38	57.41	.....	57.78	58.14	58.44	.....
15	57.22	56.88	56.19	57.34	57.98	58.34	57.42	.....	57.78	58.13	58.50	.....
16	57.33	56.77	56.24	.....	57.98	58.28	57.46	.....	57.78	58.14	58.51	58.69
17	57.36	56.60	56.36	.....	57.95	58.25	57.48	.....	57.79	58.21	58.46	58.73
18	57.35	56.56	56.41	.....	57.95	58.19	.....	.....	57.79	58.19	58.41	58.53
19	57.55	56.47	56.41	.....	57.95	58.08	.....	57.72	57.81	58.18	58.36	58.41
20	57.58	56.23	56.43	.....	57.95	58.02	.....	57.67	57.82	58.11	58.40	.....
21	57.60	56.15	56.49	.....	58.01	57.92	.....	47.67	57.85	58.21	58.47	58.80
22	.....	56.02	56.59	57.50	58.02	57.84	57.48	57.67	57.80	58.26	58.51	58.83
23	.....	55.97	56.63	.....	58.06	57.75	57.46	57.67	57.83	58.18	58.49	58.70
24	.....	55.86	56.62	.....	58.07	57.68	57.46	57.72	57.88	58.06	58.55	58.80
25	.....	55.78	56.61	57.57	58.07	57.67	57.48	57.67	57.87	58.32	58.60	58.81
26	.....	55.72	56.69	57.68	58.04	57.60	57.52	57.67	57.88	58.39	58.57	58.84
27	.....	55.81	56.75	57.63	58.04	57.56	57.52	57.62	57.86	58.37	58.55	58.82
28	.....	55.78	56.76	57.57	58.12	57.51	57.51	57.64	57.90	58.30	58.58	58.82
29	.....		56.75	57.65	58.08	57.49	57.57	57.70	57.94	58.27	58.55	58.94
30	.....		56.82	57.75	58.12	57.41	57.55	57.69	57.95	58.31	58.57	58.92
31	.....		56.88		58.17		57.58	57.64		58.39		58.92

11/24-27cc1. A. A. Chisholm. Drilled domestic well, diameter 4 inches, reported depth 123 feet. Land-surface datum is 4,879.7 feet above msl. Highest water level 40.96 below lsd, Sept. 7, 1951; lowest 47.80 below lsd, May 11, 1949. Records available: 1948-51. Feb. 20, 42.92; Mar. 26, 44.27; Sept. 7, 40.96.

11/24-32ab1. Nellie Albright. Drilled domestic well, diameter 3 inches, reported depth 130 feet. Land-surface datum is 4,824 feet above msl. Highest water level 0.94 below lsd, Mar. 29, 1948; lowest 7.45 below lsd, May 26, 1950. Records available: 1948-51. Mar. 26, 5.02; Sept. 7, 3.75; Dec. 21, 2.80.

11/24-32dc1. A. Nuti. Drilled irrigation well, diameter 16 inches, reported depth 390 feet. Land-surface datum is 4,865 feet above msl. Highest water level 23.62 below lsd, Mar. 3, 1948; lowest 31.00 below lsd, June 30, 1948. Records available: 1948-51. Sept. 7, 28.58; Dec. 21, 27.68.

12/23-22ac3. S. H. Hunnewill. Drilled stock artesian well, diameter 6 inches, reported depth 50 feet. Land-surface datum is 4,680 feet above msl. Highest water level 10.2 above lsd, Nov. 29, 1950, Mar. 26, 1951; lowest 8.9 above lsd, Sept. 6, 1951. Records available: 1948-51. Mar. 26, +10.2; Sept. 6, +8.9; Dec. 21, +9.5.

12/24-30cd1. Owner unknown. Drilled unused well, diameter 8 inches, depth 70 feet. Land-surface datum is 4,797.66 feet above msl. Highest water level 46.45 below lsd, May 28, 1948; lowest 48.58 below lsd, June 26, 1950. Records available: 1948-51. Mar. 26, 47.72; Sept. 7, 48.24; Dec. 21, 47.60.

Mineral County

Gabbs Valley

10/35-11a1. U. S. Bureau of Land Management. Drilled stock well, diameter 6 inches, depth 265 feet. Highest water level 185.46 below lsd, Sept. 10, 1951; lowest 186.38 below lsd, Mar. 20, 1950. Records available: 1948-51. Mar. 12, 185.70; Sept. 10, 185.46.

Soda Spring Valley

8/34-28c1. Basic Magnesium Plant. Drilled unused well, diameter 8 inches. Highest water level 136.83 below lsd, Sept. 10, 1951; lowest 137.72 below lsd, Mar. 20, 1950. Records available: 1949-51. Mar. 12, 136.86; Sept. 10. 136.83.

Whiskey Flat

6/31-33b2. W. F. Merchant. Drilled unused well, diameter 8 inches, depth 69 feet. Highest water level 42.23 below lsd, Sept. 19, 1950; lowest 42.37 below lsd, Mar. 12, 1951. Records available: 1949-51. Mar. 12, 42.37.

Nye County

Pahrump Valley
(See also Clark County)

S19/53-9bbc1. Van Horn & Stringfellow. Drilled irrigation well, diameter 14 inches. Highest water level 83.50 below lsd, July 2, 1947; lowest 87.78 below lsd, Nov. 5, 1951. Records available: 1947-51. Feb. 23, 86.37; Nov. 5, 87.78.

S19/53-10cbb1. Dickey & Harris. Drilled unused well, diameter 18 inches, depth 250 feet. Highest water level 90.32 below lsd, Apr. 1, 1947; lowest 93.50 below lsd, Sept. 19, 1951. Records available: 1946-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 13	92.50	May 7	92.84	Aug. 7	93.36	Nov. 19	93.14
Mar. 5	92.47	June 20	93.02	Sept. 19	93.50	Dec. 19	93.24
Apr. 18	92.70	July 10	93.14	Oct. 19	93.05		

S19/53-16daa1. Stavers. Drilled irrigation well, diameter 8 inches, reported depth 700 feet. Highest water level 38.93 below lsd, Mar. 17, 1945; lowest 45.80 below lsd, Aug. 26, 1948. Records available: 1945, 1947-51. Feb. 13, 45.10; May 22, 44.77; Nov. 19, 47.14.

S19/53-22acd1. Stavers (State Engineer No. 31). Drilled domestic and irrigation well, diameter 16 inches, reported depth 540 feet, cased to 280, perforations 112-124, cemented at 280 feet. Highest water level 41.27 below lsd, Apr. 1, 1947; lowest 49.60 below lsd, Aug. 7, 1951. Records available: 1947-51. Feb. 13, 46.33; Mar. 5, 46.10; May 22, 48.07; Aug. 7, 49.60; Nov. 5, 48.06.

S19/53-33daa1. Hughes & Harmer (State Engineer No. 56). Drilled unused artesian well, diameter 12 inches. Highest water level 56.65 above lsd, June 17, 1948; lowest 50.35 above lsd, Nov. 19, 1951. Records available:1948-51. Feb. 13,+53.65; May 22,+52.35; Aug. 7, +51.15; Nov. 19,+50.35.

S20/53-24caa1. Ray Thomas (State Engineer No. 40). Drilled unused artesian well, diameter 10 inches, depth 570 feet. Highest water level 25.10 below lsd, Mar. 17, 1945; lowest 37.00 below lsd, Apr. 1, 2, 4, 1951. Records available: 1945, 1948-51.

Daily noon water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30.58	30.56	.....	37.00	.....	34.43	34.98	.....	.....	.....	32.07	31.77
2	30.60	30.56	.....	37.00	.....	34.10	.....	34.70	.....	.....	32.10	31.82
3	30.59	30.53	.....	36.90	.....	34.15	35.76	34.50	.....	.....	32.05	31.78
4	30.58	30.50	.....	37.00	.....	34.60	.....	34.38	.....	.....	32.02	31.79
5	30.60	30.47	33.05	36.81	.....	34.84	.....	34.26	.....	.....	32.00	31.78
6	30.64	30.60	32.84	36.73	.....	33.54	.....	34.05	.....	.....	31.99	31.83
7	30.60	.....	32.88	36.95	33.98	33.38	.....	33.82	.....	.....	31.96	31.84
8	30.55	.....	32.64	.....	33.77	34.65	.....	33.70	.....	.....	31.95	31.86
9	30.58	.....	.....	.....	33.92	34.14	.....	33.63	.....	.....	31.95	31.86
10	30.53	.....	.....	.....	33.05	33.69	36.29	.....	.....	.....	31.92	31.85
11	30.53	.....	.....	.....	33.78	33.56	.....	34.22	.....	.....	31.93	31.82
12	30.59	.....	.....	.....	33.90	33.48	.....	.....	.....	.....	31.90	31.78
13	30.65	.....	.....	.....	34.25	33.47	36.31	.....	.....	.....	31.93	31.77
14	30.65	.....	.....	.....	34.31	33.43	.....	.....	.....	.....	31.88	31.83
15	30.58	.....	.....	.....	34.33	33.39	.....	.....	.....	.....	31.90	31.79
16	30.55	.....	.....	.....	34.37	34.40	36.21	.....	.....	.....	31.92	31.73
17	30.55	.....	.....	.....	34.41	34.62	34.73	34.17	.....	.....	31.91	31.76
18	30.50	.....	.....	34.41	34.43	34.25	34.40	34.12	.....	.....	31.88	31.67
19	30.51	.....	35.00	34.09	34.10	34.86	.....	.....	33.30	32.13	31.81	31.64
20	30.56	.....	35.20	.....	33.90	35.84	.....	.....	33.30	32.10	31.80	31.76
21	30.55	.....	34.70	.....	34.32	36.01	.....	.....	33.30	32.15	31.81	31.77
22	30.50	.....	35.46	.....	34.32	36.16	.....	.....	33.28	32.16	31.81	31.73
23	30.52	.....	35.61	.....	34.43	34.97	.....	.....	33.26	32.11	31.81	31.67
24	30.52	.....	35.76	.....	34.55	.....	.....	.....	33.26	32.08	31.84	31.68
25	30.50	.....	35.95	.....	34.69	.....	.....	.....	33.13	32.10	31.88	31.69
26	30.46	.....	36.43	.....	34.59	.....	.....	.....	33.04	32.14	31.82	31.72
27	30.46	.....	36.50	.....	34.55	.....	.....	.....	.....	32.13	31.79	31.68
28	30.47	.....	36.70	.....	33.50	.....	.....	.....	.....	32.08	31.79	31.63
29	30.47		.....	.....	33.22	.....	.....	.....	.....	32.03	31.79	31.63
30	30.47		36.52	.....	33.03	.....	.....	.....	.....	32.07	31.78	31.59
31	30.52		36.93		32.87		.....	.....		32.08		31.69

S21/53-1adc1. U. S. Bureau of Land Management (State Engineer No. 41). Drilled unused water-table well, diameter 10 inches, depth 74 feet. Highest water level 25.71 below lsd, May 19, 1948; lowest 27.00 below lsd, Nov. 18, 1948. Records available: 1945, 1947-51. Feb. 13, 26.17; May 22, 25.86; Aug. 7, 26.34; Nov. 19, 26.63.

S21/53-24aa1. Townsend(State Engineer No. 42). Drilled unused well, diameter 10 inches, depth 120 feet. Highest water level 21.86 below lsd, May 24, 1949; lowest 22.72 below lsd, Nov. 29, 1949. Records available: 1947-51. Feb. 13, 21.93; May 22, 21.87; Aug. 7, 22.13; Nov. 19, 22.09.

S21/54-15aca1. Rooker (State Engineer No. 23). Drilled unused artesian well, diameter 20 to 14 inches, depth 506 feet, 14-inch casing to 130 feet. Highest water level 27.42 below lsd, Apr. 1, 1947; lowest 34.59 below lsd, Aug. 7, 1951. Records available: 1946-51. Feb. 13, 30.60; May 22, 30.55; Aug. 7, 34.59; Nov. 19, 32.89.

S21/54-28bd1. Bowman (State Engineer No. 50). Drilled unused well, diameter 10 inches, depth 140 feet. Highest water level 18.65 below lsd, Nov. 18, 1948; lowest 20.00 below lsd, Aug. 7, 1951. Records available: 1946-51. Feb. 13, 19.63; May 22, 19.70; Aug. 7, 20.00; Nov. 19, 19.64.

Ralston Valley

5/44-32bb1. Owner unknown. Dug unused water-table well, depth 18 feet, cribbed with wood. Highest water level 12.17 below lsd, May 12, 1948; lowest 12.85 below lsd, Sept.11, 1951. Records available: 1948-51. Mar. 12, 12.34; Sept. 11, 12.85.

White River Valley
(See also White Pine County)

9/61-7b1. Lloyd Sorenson. Dug stock water-table well, diameter 4 feet, depth 43 feet. Highest water level 30.52 below lsd, Mar. 15, 1950, Mar. 13, 1951; lowest 31.1 below lsd, Sept. 15, 1945. Records available: 1945, 1947-51. Mar. 13, 30.52; Sept. 11, 30.64.

10/60-36b1. U. S. Bureau of Land Management. Drilled stock well, diameter 8 inches, reported depth 80 feet. Highest water level 41.46 below lsd, Sept. 11, 1951; lowest 42.54 below lsd, Mar. 15, 1950. Records available: 1947-51. Mar. 13, 41.56; Sept. 11, 41.46.

Ormsby County

Eagle Valley

15/20-8b10. M. W. Johnstone. Dug unused water-table well, diameter 5 feet, depth 18 feet, cribbed with brick. Highest water level 4.46 below lsd, Mar. 30, 1950; lowest 7.05 below lsd, Nov. 30, 1948. Records available: 1946, 1948-51. Oct. 17, 6.98.

15/20-8c1. J. Harrison. Dug domestic water-table well, diameter 36 inches, depth 10 feet, cased to 10. Highest water level 3.25 below lsd, Mar. 30, 1950; lowest 7.14 below lsd, Nov. 30, 1948. Records available: 1946, 1948-51. Oct. 17, 6.61.

15/20-8d1. Catholic Cemetery. Dug unused water-table well, diameter 8 feet, depth 17 feet, cribbed with stone. Highest water level 11.03 below lsd, Apr. 29, 1946; lowest 12.05 below lsd, Sept. 26, 1950. Records available: 1946, 1948-51. Oct. 17, 11.54.

15/20-9a7. Jesse James. Drilled unused well, diameter 6 inches, depth 63 feet. Highest water level 13.25 below lsd, Mar. 30, 1950; lowest 13.74 below lsd, Sept. 26, 1950. Records available: 1948-51. Oct. 17, 13.72.

15/20-17a1. Simone Lompa & Rinaldo Cremetti. Drilled unused well, diameter 10 inches, reported depth 590 feet, reported cased to 590. Highest water level 4.53 below lsd, May 2, 1946; lowest 12.04 below lsd, Sept. 26, 1950. Records available: 1946, 1948-51. Oct. 17, 10.43.

15/20-17c1. State Children's Home. Drilled irrigation well, diameter 18 to 12 to 10 inches, depth 595 feet, cased to 595. Highest water level 2.56 below lsd, Apr. 30, 1946; lowest 12.01 below lsd, May 18, 1948. Records available: 1946, 1948-51. Oct. 17, 7.56.

Pershing County

Grass Valley
(See also Humboldt County)

32/38-18b1. U. S. Bureau of Land Management. Drilled stock well, diameter 6 inches, depth 125 feet, reported cased to 130. Land-surface datum is 4,529 feet above msl. Highest water level 76.36 below lsd, Mar. 30, 1951; lowest 76.44 below lsd, Sept. 15, 1949. Records available: 1946-51. Mar. 30, 76.36.

32/38-36b1. Fred Kerlee. Drilled unused well, diameter 12 inches, reported depth 110 feet, cased to 100, perforations 65-100. Land-surface datum is 4,604 feet above msl. Highest water level 78.10 below lsd, Oct. 25, 1947; lowest 79.98 below lsd, Mar. 30, 1951. Records available: 1947-51. Mar. 30, 79.98.

33/37-24a1. Lloyd Sweeney. Dug and drilled unused well, size 6 by $7\frac{1}{2}$ feet to 11 feet, 10 inches to 63 feet. Land-surface datum is approximately 4,400 feet above msl. Highest water level 1.80 below lsd, Apr. 24, 1946; lowest 13.56 below lsd, Oct. 19, 1950. Records available: 1945-51. Mar. 30, 5.62.

33/37-24d1. Lloyd Sweeney. Drilled irrigation well, diameter 14 inches, depth 73 feet. Land-surface datum is 4,414 feet above msl. Highest water level 9.99 below lsd, Apr. 24, 1946; lowest 16.57 below lsd, Oct. 19, 1950. Records available: 1945-51. Mar. 30, 14.28.

33/38-32b1. U. S. Bureau of Land Management. Drilled stock well, diameter 6 inches, depth 54 feet. Land-surface datum is 4,431 feet above msl. Highest water level 28.17 below lsd, Aug. 18, 1945; lowest 30.65 below lsd, Oct. 19, 1950. Records available: 1945-51. Mar. 30, 30.63.

34/37-22a1. J. Ballard. Drilled unused well, diameter 6 inches, depth 50 feet. Land-surface datum is 4,329 feet above msl. Highest water level 9.85 below lsd, Mar. 19, 1947; lowest 12.77 below lsd, Oct. 19, 1950. Records available: 1946-51. Oct. 30, 10.83.

Humboldt River Valley
(See also Elko, Humboldt, and Lander Counties)

29/33-33c1. Southern Pacific Co. Drilled industrial and municipal well, diameter 12 inches, reported depth 432 feet. Land-surface datum is 4,264 feet above msl. Highest water level 65.16 below lsd, May 19, 1947; lowest 70.10 below lsd, Mar. 15, 1949. Records available: 1945-51. Mar. 29, 68.33

32/33-28d1. Cliff and Cecil Campbell. Humboldt. Drilled irrigation well. Highest water level 34.37 below lsd, Apr. 26, 1950; lowest 35.62 below lsd, Sept. 17, 1951. Records available: 1950-51. Sept. 17, 35.62.

Buena Vista Valley

30/35-4c1. Gallio. Dug stock water-table well, size 4 by 4 feet, depth 46 feet, cribbed with wood. Highest water level 30.24 below lsd, June 18, 1948; lowest 39.55 below lsd, Mar. 14, 1949. Records available: 1947-51. Mar. 29, 32.00; Aug. 29, 35.40.

30/35-27b1. Neill Talcott. Drilled well, diameter 8 inches, reported depth 100 feet, cased to 100, perforations 25-100. Highest water level 21.91 below lsd, Jan. 7, 1948; lowest 27.38 below lsd, Mar. 19, 1950. Records available: 1948-50. No measurement made in 1951.

Washoe County
Spanish Springs Valley

21/20-26b1. Owner unknown. Drilled unused well, diameter 6 inches, depth 96 feet. Highest water level 66.14 below lsd, Jan. 9, 1951; lowest 71.61 below lsd, Jan. 26, 1949. Records available: 1948-49, 1951. Jan. 9, 66.14.

Steamboat Valley

17/20-5d1. Feretto Estate. Dug domestic water-table well in weathered andesite, depth 17 feet. Highest water level 13.40 below lsd, Mar. 20, 1943; lowest 16.98 below lsd, Dec. 23, 1946. Records available: 1942-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	14.55	Apr. 24	14.00	Aug. 27	14.69	Nov. 28	15.53
Feb. 27	15.07	May 28	13.92	Sept. 25	15.37	Dec. 24	15.48
Mar. 27	15.16	July 3	14.80	Oct. 26	15.62		

Sun Valley

20/20-17ba1. H. L. Gepford. Drilled unused well, diameter 6 inches, depth 187 feet. Highest water level 88.12 below lsd, Feb. 2, 1948; lowest 93.22 below lsd, Apr. 25, 1950. Records available: 1948-51. Jan. 30, 91.25; Feb. 27, 91.21; Apr. 24, 91.29; July 27, 91.00, Aug. 27, 90.98.

20/20-18aa1. H. L. Gepford. Drilled unused well, diameter 6 inches, reported depth 164 feet. Highest water level 29.09 below lsd, Sept. 18, 1948; lowest 30.29 below lsd, Aug. 27, 1951. Records available: 1948-51. Jan. 30, 29.97; Feb. 27, 29.92; Apr. 24, 30.06; July 24, 30.20; Aug. 27, 30.29.

20/20-30ab2. Frank Nelson. Drilled domestic well, diameter 6 inches, depth 50 feet. Highest water level 17.56 below lsd, Apr. 24, 1951; lowest 20.20 below lsd, Oct. 23, 1950. Records available: 1948-51. Jan. 30, 17.86; Feb. 27, 17.72; Apr. 24, 17.56; July 24, 18.30; Aug. 27, 18.82.

Truckee Meadows

18/19-1cd1. L. H. Pickens. Drilled domestic well, diameter 6 inches, reported depth 110 feet. Land-surface datum is 4,585.73 feet above msl. Highest water level 11.84 below lsd, Oct. 18, 1949; lowest 20.64 below lsd, May 27, 1949. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	15.82	Feb. 27	17.62	Apr. 24	18.93	Aug. 27	14.10
30	16.84	Mar. 27	18.90	July 24	14.57	Sept. 25	13.81

18/19-12ad1. F. P. Quinn. Drilled unused well, diameter 6 inches, depth 26 feet. Land-surface datum is 4,580.1 feet above msl. Highest water level 14.18 below lsd, May 25, 1949; lowest dry every spring. Records available: 1949-50. No measurement made in 1951.

18/19-12ad2. F. P. Quinn. Drilled domestic and irrigation well, diameter 6 inches, reported depth 135 feet. Land-surface datum is 4,580.1 feet above msl. Highest water level 15.35 below lsd, May 12, 1949; lowest 34.35 below lsd, Mar. 20, 1950. Records available: 1949-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	27.35	Feb. 27	30.50	Apr. 24	32.90	Aug. 27	27.30
30	29.10	Mar. 27	32.80	July 24	28.91	Sept. 25	24.61

18/19-12ba2. L. H. Pickens. Drilled domestic well, diameter 6 inches, reported depth 87 feet. Land-surface datum is 4,586.8 feet above msl. Highest water level 15.23 below lsd, Sept. 19, 1949; lowest 25.79 below lsd, Apr. 18, 1950. Records available: 1948-51. Jan. 2, 21.90.

18/19-12bd1. Mrs. B. Menzi. Drilled domestic and stock well, diameter 6 inches, depth 152 feet. Land-surface datum is 4,594.7 feet above msl. Highest water level 33.09 below lsd, Sept. 19, 1949; lowest 40.30 below lsd, May 16, 1950. Records available: 1949-51. Jan. 2, 36.45.

18/19-12bd2. Mrs. B. Menzi. Drilled domestic well, diameter 6 inches, depth 86 feet. Land-surface datum is 4,600 feet above msl. Highest water level 26.28 below lsd, Oct. 18, 1949; lowest 32.93 below lsd, Apr. 24, 1951. Records available: 1949-51.

Jan. 2	29.86	Mar. 6	31.70	Apr. 24	32.93	Aug. 27	30.41
30	30.68	27	32.29	July 24	31.21	Sept. 25	29.68

18/19-12cb1. Godschalk. Drilled domestic well, diameter 6 inches, reported depth 239 feet. Land-surface datum is 4,721 feet above msl. Highest water level 127.67 below lsd, Nov. 15, 1949; lowest 132.05 below lsd, Sept. 25, 1951. Records available: 1949-51.

Jan. 2	129.03	Mar. 6	129.83	Apr. 24	130.75	Aug. 29	131.72
30	129.52	27	130.60	July 24	131.76	Sept. 25	132.05

18/19-12cb5. Vuksan. Drilled domestic well, diameter 6 inches, reported depth 160 feet, cased to 160. Land-surface datum is 4,741.7 feet above msl. Highest water level 111.70 below lsd, May 19, 1949; lowest 131.43, below lsd, Oct. 26, 1951. Records available: 1949-51.

Jan. 30	121.62	Mar. 27	122.25	July 24	126.56	Sept. 18	130.32
Mar. 6	121.95	Apr. 24	122.73	Sept. 4	129.70	Oct. 26	131.43

18/19-12da1. W. W. Caffrey. Drilled domestic and stock well, diameter 8 inches, reported depth 100 feet. Land-surface datum is 4,604.5 feet above msl. Highest water level 13.10 below lsd, Sept. 12, 1950; lowest 28.35 below lsd, Mar 14, 1950. Records available: 1949-50. No measurement made in 1951.

18/19-13aa1. W. W. Caffrey. Dug domestic water-table well, diameter 4 feet, depth 39 feet. Land-surface datum is 4,651.2 feet above msl. Highest water level 3.94 below lsd, Sept. 12, 1949; lowest 31.05 below lsd, Apr. 18, 1950. Records available: 1949-51. Jan. 2, 19.25.

18/19-13ab1. Kendrick Johnson. Dug irrigation water-table well, depth 11 feet. Highest water level 1.90 below lsd, Jan. 18, 1950; lowest 4.62 below lsd, Apr. 18, 1950. Records available: 1949-51. Jan. 2, 4.14.

18/20-7bc1. Paul Faulstick. Drilled domestic well, diameter 6 inches, reported depth 118 feet. Land-surface datum is 4,558.41 feet above msl. Highest water level 6.09 below lsd, Sept. 25, 1951; lowest 14.20 below lsd, Apr. 18, 1950. Records available: 1949-51.

Jan. 2	9.86	Mar. 27	13.06	Aug. 16	7.79	Sept. 25	6.09
30	10.75	Apr. 24	12.73	27	7.60	Dec. 24	11.42
Feb. 27	11.95	July 24	7.78				

18/20-7bc2. Joe Maffi. Drilled domestic well, diameter 6 inches. Land-surface datum is 4,566.34 feet above msl. Highest water level 9.82 below lsd, May 28, 1949; lowest 19.92 below lsd, Apr. 18, 1950. Records available: 1949-51. Jan. 2, 14.95.

18/20-7cb1. Emery Kery. Drilled domestic well, diameter 6 inches, reported depth 109 feet. Land-surface datum is 4,589.95 feet above msl. Highest water level 19.69 below lsd, Dec. 7, 1948; lowest 30.75 below lsd, Mar. 14, 1950. Records available: 1948-51.

18/20-7cb1--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	25.17	Mar. 27	29.47	Aug. 16	21.49	Sept. 25	21.33
30	26.34	Apr. 24	28.03	27	21.30	Dec. 24	27.59
Feb. 27	27.80	July 24	23.60				

18/20-7dc1. Mrs. Martin Estate. Sierra Manor subdivision. Drilled unused well, diameter 12 inches, reported depth 203 feet. Land-surface datum is 4,568 feet above msl. Highest water level 8.12 below lsd, Sept. 25, 1951; lowest 15.88 below lsd, Apr. 18, 1950. Records available: 1949-51.

Jan. 2	12.78	Mar. 27	14.72	Aug. 27	10.26	Nov. 28	11.16
30	13.40	Apr. 24	14.72	Sept. 25	8.12	Dec. 24	11.88
Feb. 27	14.01	July 3	11.87	Oct. 26	9.70		

18/20-20a1. Louis Damonte. Dug unused water-table well, diameter 36 inches, depth 23 feet. Highest water level 2.68 below lsd, Apr. 24, 1951; lowest 11.90 below lsd, Mar. 29, 1949. Records available: 1942-51.

Jan. 30	7.98	Apr. 24	2.68	July 24	5.20	Oct. 26	e4.00
Feb. 27	7.85	May 28	4.19	Aug. 27	4.88	Nov. 28	5.53
Mar. 27	7.93	July 3	4.58	Sept. 25	4.02	Dec. 26	7.56

e Estimated.

19/19-11b1. Reno High School. W. Fifth and West Streets. Drilled unused water-table well, diameter 4 inches, depth 49 feet. Highest water level 28.48 below lsd, Aug. 3, 1949; lowest 33.10 below lsd, Feb. 28, 1950. Records available: 1949-51.

Jan. 30	30.59	Apr. 24	31.83	Aug. 27	29.14	Nov. 28	31.09
Feb. 27	31.25	May 28	30.48	Sept. 25	29.53	Dec. 24	31.62
Mar. 27	31.99	July 3	29.25	Oct. 26	30.22		

19/19-16c1. Chrissie Caughlin. Dug unused well, diameter 4 feet, depth 45 feet. Highest water level 36.00 below lsd, Aug. 23, 1943; lowest 42.30 below lsd, Jan. 23, 1947. Records available: 1942-51.

Jan. 30	40.84	Apr. 24	38.40	July 24	37.55	Oct. 26	40.12
Feb. 27	41.33	May 28	38.14	Aug. 27	37.14	Nov. 28	41.20
Mar. 27	41.21	July 3	37.98	Sept. 25	39.30	Dec. 24	41.98

White Pine County

Lake Valley

(See also Lincoln County)

10/65-36d2. McCulloch. Drilled unused well, diameter 10 inches, depth 58 feet. Highest water level 22.53 below lsd, Mar. 21, 1949; lowest 28.74 below lsd, Sept. 19, 1949. Records available: 1947-51. Mar. 14, 26.28; Sept. 13, 26.75.

Newark Valley

18/55-31d1. Owner unknown. Dug stock water-table well, diameter 36 inches, depth 43 feet. Highest water level 33.42 below lsd, Sept. 11, 1951; lowest 34.65 below lsd, Dec. 21, 1946. Records available: 1946-51. Mar. 15, 33.54; Sept. 11, 33.42.

19/56-30d2. Don Eldridge. Dug stock water-table well, diameter 42 inches, depth 37 feet, cribbed with concrete. Highest water level 31.73 below lsd, Sept. 19, 1950, Mar. 15, 1951; lowest 33.38 below lsd, June 19, 1950. Records available: 1948-51. Mar. 15, 31.73; Sept. 11, 31.79.

20/55-10d1. U. S. Bureau of Land Management. Dug stock water-table well, diameter 36 inches, depth 22 feet. Highest water level 8.08 below lsd, Mar. 24, 1949; lowest 8.73 below lsd, June 19, 1950. Records available: 1948-51. Mar. 15, 8.52; Sept. 11, 8.45.

21/55-9b1. R. W. Hooper. Dug domestic water-table well, diameter 5 feet, depth 34 feet. Highest water level 18.75 below lsd, Mar. 24, 1949; lowest 26.15 below lsd, Sept. 19, 1950. Records available: 1948-51. Mar. 15, 21.10; Sept. 11, 25.60.

Spring Valley

13/67-8d1. A. Schaurman. Dug stock water-table well, diameter 36 inches, reported depth 45 feet. Highest water level 12.00 below lsd, Sept. 12, 1951; lowest 15.10 below lsd, June 21, 1950. Records available: 1947-51. Mar. 14, 12.40; Sept. 12, 12.00.

15/66-13d1. J. P. Johanson. Drilled domestic well, diameter 6 inches, depth 82 feet. Highest water level 15.08 below lsd, Aug. 14, 1947; lowest 22.15 below lsd, Sept. 12, 1951. Records available: 1947-51. Mar. 14, 19.15; Sept. 12, 22.15.

17/68-6d1. U. S. Bureau of Land Management. Dug stock water-table well, diameter 4 feet, depth 28 feet. Highest water level 21.69 below lsd, Mar. 18, 1950; lowest 23.57 below lsd, Sept. 14, 1950. Records available: 1948-51. Mar. 14, 21.87; Sept. 12, 23.04.

18/68-31a1. Delbert Eldridge. Drilled irrigation well, diameter 10 to 6 inches, reported depth 220 feet. Highest water level 41.46 below lsd, Aug. 6, 1948; lowest 43.97 below lsd, Mar. 14, 1951. Records available: 1948-51. Mar. 14, 43.97.

Steptoe Valley

15/64-7a1. Lloyd Sorenson. Drilled irrigation well, diameter 16 inches, reported depth 200 feet. Highest water level 35.75 below lsd, Apr. 1, 1948; lowest 39.06 below lsd, Mar. 14, 1951. Records available: 1948-51. Mar. 14, 39.06; Sept. 12, 37.29.

16/63-1b1. Owner unknown. Drilled unused well, diameter 6 inches. Highest water level 65.02 below lsd, Apr. 10, 1950; lowest 68.58 below lsd, Sept. 12, 1951. Records available: 1949-51. Mar. 14, 67.73; Sept. 12, 68.58.

16/63-14a1. Bill Goodman. Drilled unused well, diameter 10 inches, reported depth 130 feet. Highest water level 22.42 below lsd, Mar. 14, 1951; lowest 28.54 below lsd, Oct. 3, 1949. Records available: 1947, 1949-51. Mar. 14, 22.42; Sept. 12, 24.17.

19/63-12a1. U. S. Geol. Survey. Drilled test well, diameter 12 to 8 inches, reported depth 915 feet, reported cased to 540 feet. Highest water level 14.30 below lsd, Mar. 14, 1951; lowest 21.20 below lsd, July 5, 1949. Records available: 1949-51. Mar. 14, 14.30; Sept. 12, 14.35.

20/64-32c2. U. S. Geol. Survey. Drilled test well, diameter 10 inches, depth 110 feet, reported cased to bottom. Highest water level 13.56 below lsd, June 20, 1950; lowest 14.44 below lsd, Sept. 12, 1951. Records available: 1918, 1949-51. Mar. 14, 13.66; Sept. 12, 14.44.

White River Valley
(See also Nye County)

11/61-35a1. Public domain. Drilled stock well, diameter 6 inches. Highest water level 10.53 below lsd, Mar. 25, 1949; lowest 13.08 below lsd, Sept. 11, 1951. Records available: 1947-51. Mar. 13, 11.13; Sept 11, 13.08.

12/61-34a1. U. S. Bureau of Land Management. Drilled stock well, diameter 7 inches, depth 72 feet. Highest water level 57.65 below lsd, Dec. 15, 1949; lowest 60.30 below lsd, Sept. 11, 1951. Records available: 1947-51. Mar. 13, 59.73; Sept. 11, 60.30.

12/62-18d1. U. S. Geol. Survey. Drilled test and observation well, diameter 6 inches, depth 108 feet, cased to 105. Highest water level 43.80 below lsd, May 6, 1948; lowest 50.73 below lsd, Dec. 18, 1947. Records available: 1947-51. Mar. 13, 46.16; Sept. 11, 47.10.

12/62-29a1. Jim Oxborrow. Drilled stock well, diameter 6 inches. Land-surface datum is 5,546.29 feet above msl. Highest water level 20.16 below lsd, July 17, 1947; lowest 24.80 below lsd, Sept. 11, 1951. Records available: 1947-51. Mar. 13, 22.06; Sept. 11, 24.80.

12/62-31d2. Carter Bros. Dug stock water-table well, size 4 by 4 feet, depth 16 feet. Land-surface datum is 5,516.25 feet above msl. Highest water level 11.78 below lsd, Dec. 2, 1947; lowest 16.30 below lsd, Sept. 11, 1951. Records available: 1947-51. Mar. 13, 13.28; Sept. 11, 16.30.

12/62-33a5. Wayne Gardner. Lund. Dug domestic water-table well, size 4 by 4 feet, depth 31 feet. Land-surface datum is 5,578.45 feet above msl. Highest water level 19.39 below lsd, Nov. 6, 1947; lowest 25.44 below lsd, Mar. 15, 1950. Records available: 1947-51. Mar. 13, 23.81; Sept. 11, 22.48.

NEW MEXICO

By C. S. Conover, E. H. Herrick, and W. E. Hale

Scope of Water-Level Program

Investigation of ground-water resources, including the records of water levels in observation wells, was continued in 1951 mainly in areas where ground water is used for irrigation in cooperation with the State Engineer of New Mexico. Studies have been in progress in certain irrigated areas since about 1925. Studies which began in 1947 of the occurrence of ground water on a county-wide basis were continued in cooperation with the New Mexico Bureau of Mines and Mineral Resources and the State Engineer of New Mexico.

Measurements of water levels given in this report, with few exceptions, were made in observation wells in areas where large amounts of ground water are pumped for irrigation. Because of the importance of the ground-water supplies, the development of ground water in most of the irrigated areas has been placed under regulation by the New Mexico State Engineer to avoid ruinous overdevelopment. The measurement of water levels constitutes an important part of the ground-water program in the irrigated areas. Water levels are measured in many observation wells each January or February, when the major part of the recovery from pumping effects of the previous pumping season has taken place and comparison with water levels in previous years can best be made. These winter measurements indicate the amount of ground water in storage, and comparison of water-level measurements between years shows the net changes of ground water in storage that occurred during the intervening period. The net changes in storage are the result of changes in recharge which is influenced by distribution and amount of precipitation and runoff, and in discharge, which is mainly pumpage for irrigation. In addition to measurements of water levels made in January or February, measurements also are made in selected wells generally at 2-month intervals in order to note seasonal fluctuations in water levels caused by precipitation and changes in pumping schedules. The seasonal measurements aid in interpreting the net yearly changes in water levels. Estimates of the amount of ground water pumped during the year in each area are made to determine the part played by artificial withdrawal on the seasonal and yearly changes in water levels.

About 3,020 measurements of water levels were made in 1951 in 1,313 observation wells, exclusive of the Virden Valley in Hidalgo County where measurements were made by the Arizona office of the Geological Survey. Recording gages were maintained on 34 of these observation wells. Water-level measurements were made in January or February in 1,313 wells; and seasonally, generally at 2-month intervals, in about 400 wells for which records are given in this report.

Precipitation and Pumpage

Precipitation in areas in New Mexico where ground water is used for irrigation was, in general, considerably below normal in 1951. Precipitation during the growing season from April to September averaged only about 65 percent of normal at stations in the 10 areas discussed in this report. In areas where both surface water and ground water are used for irrigation, the amount of surface water available in 1951 was generally below normal.

Pumpage of ground water for irrigation in New Mexico, with the main exceptions of the Gila, Rio Grande, and Tularosa Valleys, and the Carlsbad area, for which there is little information, is estimated at about 807,000 acre-feet in 1951, an increase of about 200,000 acre-feet from 1950. In the same areas it is estimated that about 327,000 acres of land were irrigated in 1951, as compared with 319,000 acres in 1950.

Summary of Changes of Water Level

The net annual declines of ground-water levels in 1951, in most areas in New Mexico where ground water is used for irrigation, were the greatest on record as a result mainly of the deficient precipitation which necessitated an increased amount of pumping for irrigation during the year. In some areas increased irrigated acreage was partly responsible for increased pumpage. Water levels in most of the observation wells reached their lowest winter-time levels on record by the end of 1951.

In the Roswell basin, the large pumpage and reduced recharge from deficient precipitation in 1951 resulted in record low mean annual artesian heads in 5 of the 6 artesian wells equipped with recording gages. The average change in mean annual head in 6 artesian wells was a decline of 4.9 feet in 1951, which represents an average departure from average of -13.9 feet.

Declines of water levels in shallow wells in the Roswell basin ranged from less than 1 to more than 4 feet in the Salt Creek-Macho Draw area, north of Roswell. Net annual declines in water levels occurred throughout the area from about Roswell south to the Eddy County line and amounted to more than 2 feet under about 157 square miles and more than 4 feet under 18 square miles. In Eddy County, net annual declines in shallow-water levels of more than 2 feet occurred under about 68 square miles and more than 4 feet under about 33 square miles. Declines of more than 10 feet occurred under about 2 square miles at Lakewood.

The net annual declines of water levels in the Carlsbad area west of the Southern Canal were greater in 1951 than in any year since January 1947 when records were begun. Declines of more than 20 feet occurred under about 4 square miles and more than 16 feet under about 7 square miles. In the area east of the Southern Canal, water levels declined from 2 to more than 8 feet, locally, and were 6 or more feet lower under about 7 square miles.

In Hidalgo County, net declines of water levels occurred throughout the Animas Valley in 1951 and amounted to more than 1 foot under an area of about 110 square miles and more than 4 feet under about 9 square miles. In the Playas Valley, representative declines of water levels ranged from less than 1 foot at a distance from heavy pumping to about $2\frac{1}{2}$ feet in heavily pumped areas.

In Lea County, the net declines of water levels in 1951 were, in general, the largest yearly declines on record. From January 1951 to January 1952 water levels declined more than 1 foot under about 256 square miles and more than 3 feet under about 17 square miles, as compared with like declines in 1950 under 126 and 10 square miles. In areas distant from heavy pumping, water levels in general showed small net declines, whereas small net rises were observed in 1950 in conjunction with above-normal precipitation.

In the Mimbres Valley, in Luna County, water levels declined more than 1 foot in 1951 under about 174 square miles. Declines in the area south of Deming ranged from less than 1 to more than 3 feet. West of Red Mountain, where 1951 was the first season of extensive use of ground water for irrigation, water levels declined more than 1 foot under about 9 square miles and more than 3 feet under about 2 square miles. The greatest net decline noted in that area was more than 4 feet in a well about 9 miles west of Deming.

In the House area, in Quay County, net declines in 1951 were generally the greatest on record, and record low levels were observed in practically all wells. Net declines of more than 2 feet occurred under about 8 square miles with a maximum decline of nearly 7 feet recorded in a well about $4\frac{1}{2}$ miles north of House.

Ground-water levels in Portales Valley, in Roosevelt County, declined more than 1 foot under a total area of about 215 square miles extending from about 4 miles northwest of Floyd to about 3 miles east of Arch, and from about 5 miles south to about 5 miles north of Portales. Maximum net declines of from 5 to 6 feet occurred in wells west and northwest of Portales. The declines in 1951 were for the most part the greatest on record. Water levels in a small area northwest of Portales were more than 20 feet lower than in 1932 when records began.

In Estancia Valley, in Santa Fe and Torrance Counties, where it is estimated that twice as much ground water was pumped in 1951 as in 1950, water levels declined more than 1 foot under a total area of about 197 square miles as compared with a like decline under about 100 square miles in 1950. The greatest net declines in 1951, as in previous years, occurred in the heavily pumped areas about 7 miles northwest and 7 miles southwest of Estancia where maximum declines in 1951 were about 6 and $4\frac{1}{2}$ feet, respectively.

Ground-water levels in the Truth or Consequences hot water wells, in Sierra County, declined to record lows by the end of 1951. The measured net changes from January 1951 to January 1952 ranged from about 0.3 to about 0.8 foot.

In 1951, as in 1950, no surface water from Bluewater Reservoir was available for irrigation in the Bluewater-Toltec Irrigation District, in Valencia County. The average net decline of water levels in 14 wells in the area in 1951 was about 4.3 feet, as compared with an average net decline of 5.6 feet during the preceding year and a total average net decline of about 18 feet since records began in 1946. The smaller declines in 1951 in part were the result of the greater-than-normal precipitation during the winter 1951-1952. The largest net decline in 1951 occurred in a well near the mouth of Bluewater Canyon where a decline of 12.5 feet was recorded.

Well-Numbering System

The system of numbering wells in New Mexico, used in all counties except in the Virden Valley of the Gila River, in Hidalgo County, and the thermal wells in the Hot Springs area, in Sierra County, is based on the common subdivisions in sectionized land, and by means of it, the well number, in addition to designating the well, locates its position to the nearest 10-acre tract in the land net. The number is divided into four segments by periods. The first segment denotes the township north or south of the New Mexico base line; the second denotes the range east or west of the New Mexico principal meridian; and the third denotes the section. In a county such as Roosevelt, where wells are situated both north and south of the base line, an N is added to the first segment of the well number if the well is north of the base line, but no letter is added if the well is south of the base line. Similarly, in a county where wells are both east and west of the meridian, an E is added to the second segment of the well number of those wells east of the meridian. In counties where all the wells are within a single quadrant, the direction north or south of the base line or east or west of the meridian is not given.

The fourth segment of the number, which consists of three digits, denotes the particular 10-acre tract in which the well is situated. For this purpose, the section is divided into four quarters, numbered 1, 2, 3, and 4, in the normal reading order, for the northwest, northeast, southwest, and southeast quarters, respectively. The first digit of the fourth segment gives the quarter section, which is a tract of 160 acres. Similarly, the quarter section is divided into four 40-acre tracts numbered in the same manner, and the second digit denotes the 40-acre tract. Finally, the 40-acre tract is divided into four 10-acre tracts, and the third digit denotes the 10-acre tract. Thus, well 12. 36. 24. 123 in Lea County is in the $SW\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$ sec. 24, T. 12 S., R. 36 E. If a well cannot be located accurately to a 10-acre tract, a zero is used as the third digit, and if it cannot be located accurately within a 40-acre tract, zeros are used for both the second and third digits. If the well cannot be located more closely than the section, the fourth segment of the well number is omitted. When it becomes possible to locate accurately a well in whose number zeros have been used, the proper digit or digits are substituted for the zeros. In Water-Supply Paper 911 and earlier reports the digits corresponding to unknown 10-acre and 40-acre tracts were simply omitted, but this practice caused some confusion in cataloging the wells. In Water-Supply Paper 941, and subsequent reports, wells the last segment of whose numbers end in one or two zeros correspond to wells whose numbers in earlier reports are the same except for the omission of the last one or two zeros. Letters a, b, c, ... are added to the last segment to designate the second, third, fourth, and succeeding wells inventoried in the same 10-acre tract.

The following diagram shows the method of numbering the tracts within a section.

111 112 (110) 113 114	121 122 (120) 123 124	211 212 (210) 213 214	221 222 (220) 223 224
[100]		[200]	
131 132 (130) 133 134	141 142 (140) 143 144	231 232 (230) 233 234	241 242 (240) 243 244
311 312 (310) 313 314	321 322 (320) 323 324	411 412 (410) 413 414	421 422 (420) 423 424
[300]		[400]	
331 332 (330) 333 334	341 342 (340) 343 344	431 432 (430) 433 434	441 442 (440) 443 444

Well Descriptions and Water-Level Measurements

Water levels in January or February for observation wells measured only once during the year are not included in this report, but have been used in preparing the maps which show the areal changes in water level from January 1951 to January 1952. In preceding water-supply papers of this series, the winter measurements were given for all observation wells.

All measurements, except the mean monthly and mean annual artesian heads in wells in the Roswell basin, are given in feet below land-surface datum which approximates closely the land surface at the well. The mean artesian heads are given in feet above mean sea level.

Chaves County

Roswell basin.--The Roswell basin extends along the west side of the Pecos River from Roswell in Chaves County to Lakewood in Eddy County. Water for irrigation is obtained from both shallow water-table and deep artesian wells. From about Roswell south to the Eddy County line, net annual declines in water levels occurred throughout the area amounting to more than 2 feet under about 157 square miles and more than 4 feet under 18 square miles. The areas in which net declines of water levels in 1951 exceeded 4 feet coincide with the areas of greatest pumping, northwest of Dexter and north, west, and southwest of Hagerman. Net declines in the vicinity of Roswell exceeded 2 feet. By the end of 1951, the water levels were from 30 to nearly 40 feet below the 1940 levels in a small area northwest of Dexter and southwest of Hagerman.

Precipitation was about 50 percent of normal in 1951 at stations in the Roswell basin. Precipitation during 1951 was 6.9 inches at Roswell, 8.1 inches below normal; 8.7 inches at Hagerman, 4.5 inches below normal; and 7.4 inches at Artesia, 5.2 inches below normal. Precipitation during the growing season was also about 50 percent of normal, though, as usual, about 75 percent of the annual precipitation was recorded from April to September. July 1951 precipitation was 5.0 inches above normal at Artesia, and 2.4 inches above normal at Hagerman. The year 1951 was unusually dry, there being only 6 years since 1878 in which less rainfall was recorded at Roswell.

Records of power and fuel used in 1951 to pump 1,000 wells, for which there were comparable records for 1950, indicate that 20 percent more water was pumped for irrigation in 1951 than in 1950. It is probable that about 145,000 acre-feet of shallow water and about 253,000 acre-feet of artesian water were pumped in 1951 to irrigate an estimated 115,000 acres of land in the main portion of the Roswell basin. About 28,000 acre-feet of ground water was used to irrigate 8,000 acres in the Salt Creek-Macho Draw area of the northern extension of the Roswell basin.

Record low mean annual artesian heads occurred in 1951 in 5 of the 6 artesian wells equipped with recording gages. The mean annual artesian head for 1951 in the Berrendo well was 2.5 feet lower than the previous low annual level in 1940 and nearly 2 feet lower than 1950. The new annual low levels in 1951 in the Berrendo-Smith, Orchard Park, Greenfield, and Artesia wells were from 3.2 to 8.6 feet lower than the previous low mean annual level in 1950. New record low mean annual artesian heads have been recorded every year since 1946 in the Artesia well, and every year since 1947 in the Berrendo-Smith artesian well. The mean annual artesian head in the Mountain View well was only 1.06 feet higher than the record low mean annual artesian head in 1950. The average change in annual head in the 6 artesian wells was a decline of 4.9 feet in 1951 as compared with a decline of 5.3 feet in 1950, a rise of 1.7 feet in 1949, and declines of 1.4 and 4.0 feet in 1948 and 1947, respectively. The mean annual artesian heads for 1951 were below the average for the period of record from 7.2 feet in the Berrendo well to 33.0 feet in the Artesia well. The average departure of the mean annual heads in 1951 of the artesian wells with long-term records was a decline of 13.9 feet as compared with 11.6 feet in 1950, 6.8 in 1949, 9.3 in 1948, and 8.5 in 1947. The difference between the highest mean annual artesian head, which was in 1941 for the Greenfield well and in 1942 for all others, and the artesian head in 1951, which was the lowest on record for all but the Mountain View well, ranges from 11.34 feet for the Berrendo well to 47.84 feet for the Artesia well. New low mean monthly artesian heads were reached in August of 1951 in 5 of the 6 wells with long-term records. The artesian head in the Mountain View well did not decline below the record low in June 1950. The above-normal rainfall in July in Hagerman and Artesia was not reflected in a rise of artesian heads, as pumpage was apparently decreased only a small amount. The August 1951 artesian heads ranged from 3.8 feet to 21.2 feet lower than the previous low monthly artesian heads generally reached in August 1948.

The following table gives the mean monthly and mean annual artesian heads for 7 artesian wells. The mean monthly artesian head is the average of the daily maximum and minimum throughout the month. The mean annual head is the average of the mean monthly heads. Values for missing days were estimated by inspection of the recorder graph when feasible; otherwise, records were obtained by simple interpolation.

Mean monthly and mean annual artesian heads in artesian wells in Roswell basin in 1951 and highest and lowest mean annual and mean monthly artesian heads in feet above msl

Name of well	Berrendo		Berrendo-Smith		Mountain View		Orchard Park		Greenfield		Cottonwood		Artesia	
Number	10. 24. 9. 330		10. 24. 21. 212		11. 24. 29. 242		12. 25. 23. 110		13. 25. 27. 211		16. 25. 11. 113		18. 26. 5. 330	
1951	Days of record	Head	Days of record	Head	Days of record	Head	Days of record	Head	Days of record	Head	Days of record	Head	Days of record	Head
January	31	3565. 25	31	3564. 27	31	3561. 81	31	e3527. 35	31	3518. 32			31	3358. 41
February	28	3565. 18	28	3564. 14	28	3561. 90	27	e3527. 12	27	e3514. 48			28	e3359. 38
March	31	3563. 56	31	3561. 80	31	3558. 49	31	3498. 29	31	3479. 95			12	e3352. 40
April	30	3560. 74	30	3558. 06	30	3554. 07	30	3488. 53	30	e3470. 59	18	e3404. 63	0	e3345. 50
May	31	3560. 26	31	3558. 82	31	3554. 60	31	3501. 32	31	e3485. 12	21	e3406. 64	22	e3349. 84
June	30	3559. 05	30	3556. 82	30	3552. 64	30	3488. 16	24	e3465. 25	30	3404. 51	19	e3338. 10
July	31	3556. 91	31	3554. 23	31	3549. 12	31	3480. 24	31	e3458. 35	20	e3398. 32	31	3326. 96
August	31	3556. 01	31	3553. 39	31	3547. 12	31	e3469. 13	18	e3446. 45	25	e3394. 17	31	3315. 58
September	30	3556. 43	30	3553. 83	30	3547. 84	30	e3479. 60	28	e3458. 76	30	3392. 15	30	3319. 74
October	31	3558. 41	31	3556. 82	31	3551. 73	26	e3502. 97	25	e3489. 79	29	e3397. 71	28	e3342. 76
November	30	3561. 27	30	3560. 70	30	3557. 18	30	3526. 19	29	e3518. 50	30	3404. 92	30	3357. 47
December	31	3562. 53	31	3562. 18	31	3559. 30	31	3532. 38	31	3524. 61	22	e3410. 58	31	3362. 56
Mean annual	365	3560. 46	365	3558. 75	365	3554. 65	359	e3501. 77	336	e3485. 85			293	e3344. 06
Mean annual	Year	Head	Year	Head	Year	Head	Year	Head	Year	Head	Year	Head	Year	Head
Highest	1942	3571. 8	1942	3571. 0	1942	3569. 6	1942	3528. 1	1941	e3517. 5			1942	3391. 9
Lowest	1951	3560. 46	1951	3558. 75	1950	3553. 59	1951	e3501. 77	1951	e3485. 85			1951	e3344. 06
First year of record	1927	3571. 2	1941	3566. 2	1941	3564. 2	1926	3525. 7	1941	e3517. 5			1932	3384. 6
Mean monthly	Month	Head	Month	Head	Month	Head	Month	Head	Month	Head	Month	Head	Month	Head
Highest	Dec. '26	3574. 2	Jan. '43	3574. 4	Jan. '43	3573. 7	Jan. '42	3544. 0	Jan. '42	3535. 4	May '51	e3506. 64	Jan. '43	3402. 1
Lowest	Aug. '51	3556. 01	Aug. '51	3553. 39	June '50	3544. 71	Aug. '51	e3469. 13	Aug. '51	e3446. 45	Sept. '51	3392. 15	Aug. '51	3315. 58
First month of record	June '26	3571. 7	June '40	3559. 7	July '40	3556. 2	Aug. '25	3525. 9	June '40	3496. 0	April '51	3404. 63	April '31	3377. 2

e Estimated.

The water levels in 1951 in the intake area of the artesian basin, based upon bimonthly measurements in 4 observation wells, generally were highest in January and lowest in November. The decline in water levels covered a somewhat greater-than-normal time period during 1951 due to the greater amount of pumping from the artesian wells to the east in 1951 as compared with the years 1946 through 1950 and the apparently small amount of recharge from the below-normal precipitation. Declines of water levels from January 1951 to January 1952 in the intake-area observation wells averaged about 3.4 feet. Water levels at the end of the year were generally 3 feet below the low levels reached in 1940 and 1941 prior to the large rises following the above-normal precipitation in 1941.

The increased pumpage in 1951 resulted in near-record net annual declines in water levels in shallow wells in 1951, and new record low water levels by the end of the year in most of the observation wells. In the Salt Creek-Macho Draw area, north of Roswell, water levels in observation wells showed net declines in 1951 ranging from more than 4 feet in 3 wells along the west side of the area to less than 1 foot in 4 wells along the Pecos River. Figure 36 shows the change in shallow ground-water level from January 1951 to January 1952 in the northern part of Roswell basin.

Departure in 1951 from average and change from 1950 to 1951 of mean monthly and mean annual heads in artesian wells in Roswell basin.

Name of well	Berrendo		Berrendo-Smith		Mountain View		Orchard Park		Greenfield		Artesia	
Location number	10.24. 9.330		10.24. 21.212		11.24. 29.242		12.25. 23.110		13.25. 27.211		18.26. 5.330	
	Dept. from Avg.	1950 to 1951	Dept. from Avg.	1950 to 1951	Dept. from Avg.	1950 to 1951	Dept. from Avg.	1950 to 1951	Dept. from Avg.	1950 to 1951	Dept. from Avg.	1950 to 1951
Jan.	-4.8	-1.91	-6.0	-2.88	-5.8	+6.49	-6.4	-9.42	-10.3	-10.13	-29.2	-12.73
Feb.	-4.7	-1.26	-5.8	-1.61	-6.4	+8.26	-2.4	+6.10	-5.7	+10.67	-25.2	-4.69
Mar.	-5.2	-0.66	-6.1	-1.00	-6.2	+8.49	-21.3	-5.34	-19.8	-7.31	-25.1	.....
Apr.	-6.1	-1.32	-6.1	-1.62	-6.0	+8.19	-22.0	-1.11	-14.3	+0.89	-25.1	.....
May	-6.6	-1.02	-6.6	-0.81	-6.5	+8.32	-12.9	+5.24	-8.7	+9.95	-24.0	+3.91
June	-7.5	-2.03	-7.0	-1.81	-7.6	+7.93	-24.8	+0.22	-26.3	-2.67	-34.0	-1.60
July	-8.6	-5.20	-8.5	-5.80	-10.5	-6.26	-30.2	-17.94	-29.8	-21.82	-41.7	-19.58
Aug.	-8.7	-3.80	-7.8	-3.94	-10.2	-6.02	-38.3	-16.23	-35.2	-21.16	-48.1	-15.75
Sept.	-9.6	-4.46	-9.8	-5.96	-11.5	-6.85	-35.6	-21.62	-36.2	-29.14	-50.6	-24.78
Oct.	-9.7	-5.53	-10.2	-6.58	-12.2	-8.58	-25.1	-22.85	-27.2	-29.18	-38.6	-17.92
Nov.	-7.7	-3.12	-7.9	-3.45	-9.1	-4.22	-7.0	-3.95	-6.8	-5.08	-28.7	-6.49
Dec.	-7.3	-2.82	-7.2	-2.70	-8.2	-3.07	-2.1	+2.32	-2.8	+1.65	-25.4	-4.37
Annual	-7.2	-2.76	-7.4	-3.19	-8.2	+1.06	-19.0	-7.04	-8.6	-8.61	-33.0	-8.61
Record began	June 1926		June 1940		July 1940		August 1925		June 1940		April 1931	

7.23.23.242. Jess Corn. Drilled irrigation artesian well in San Andres limestone, diameter 14 inches, depth 426 feet. Land-surface datum is 3,814 feet above msl. Highest water level 239.83 below lsd, May 26, 1951; lowest 242.02 below lsd, Nov. 8, 1951. Records available: 1951. May 26, 239.83; July 9, 240.44; Nov. 8, 242.02.

8.24.5.233. Jess Corn. Drilled irrigation artesian well in Chalk Bluff formation and San Andres limestone, diameter 12 inches, depth 446 feet. Land-surface datum is 3,645 feet above msl. Highest water level 65.34 below lsd, Jan. 25, 1950; lowest 71.02 below lsd, Sept.5, 1951. Records available: 1949-51. Jan. 15, 65.88; Mar. 6, 65.98; May 24, 68.79; July 9, 70.66; Sept. 5, 71.02; Nov. 8, 70.84.

8.24.15.111. Jess Corn. Drilled unused artesian well in Chalk Bluff formation and San Andres limestone, diameter 16 inches, depth 215 feet. Land-surface datum is 3,593 feet above msl. Highest water level 20.18 below lsd, Sept. 11, 1950; lowest 27.05 below lsd, Nov. 8, 1951. Records available: 1949-51. Jan. 8, 23.85; Mar. 6, 24.49; May 22, 23.30; July 9, 24.12; Sept. 5, 23.72; Nov. 8, 27.05.

8.24.18.144. Jess Corn. Drilled irrigation artesian well in Chalk Bluff formation and San Andres limestone, diameter 12 to 8 inches, depth 444 feet, cased to 417. Land-surface datum is 3,698 feet above msl. Highest water level 121.71 below lsd, Mar. 11, 1949; lowest 128.16 below lsd, Nov. 8, 1951. Records available: 1949-51. Mar. 11, 1949, 121.71; Sept. 8, 1950, 126.43; Nov. 1, 1950, 124.34; Jan. 15, 1951, 123.21; July 9, 1951, 127.97; Nov. 8, 1951, 128.16

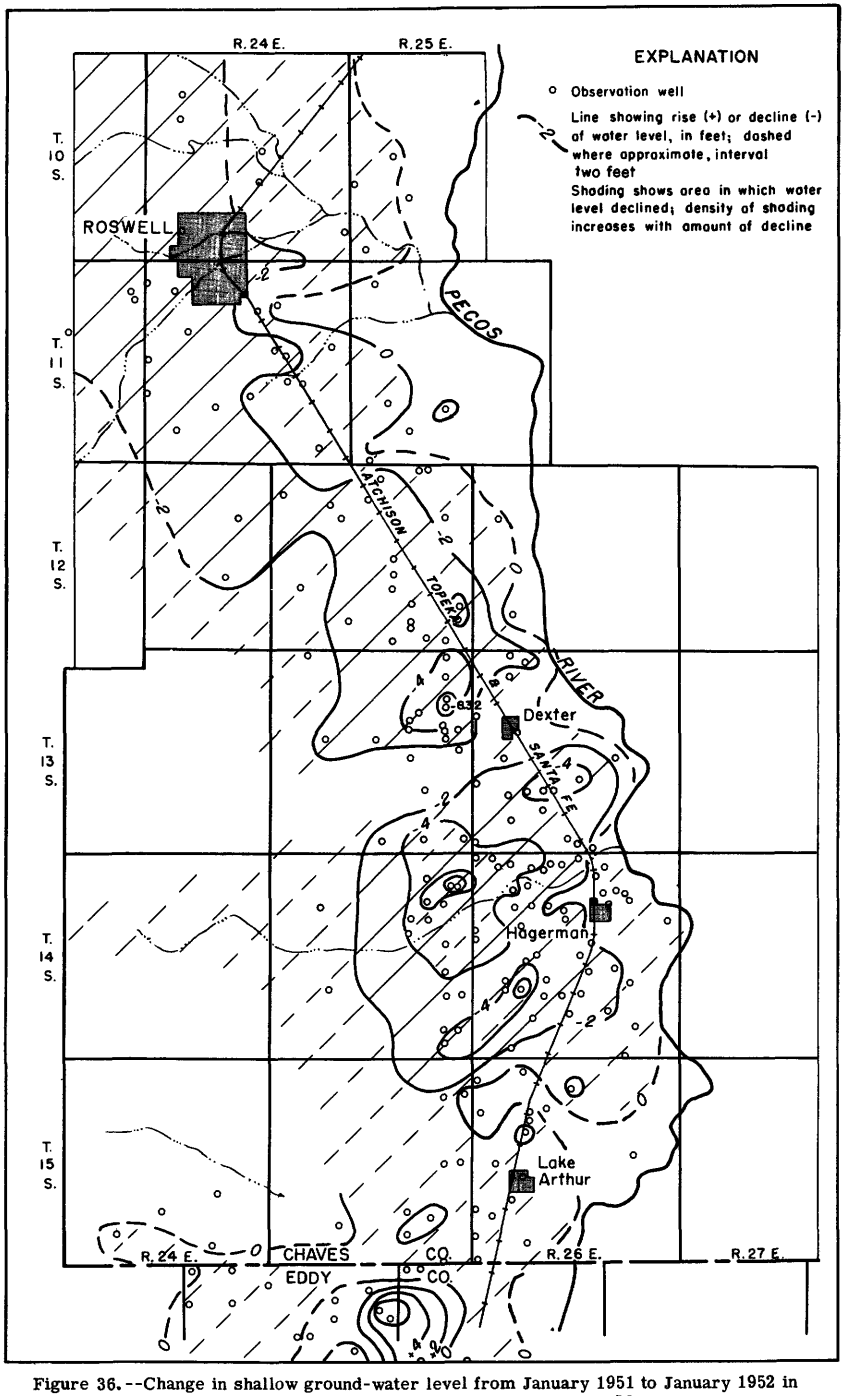

Figure 36.--Change in shallow ground-water level from January 1951 to January 1952 in northern part of Roswell basin, Chaves County, N. Mex.

8.24.35.432. W. G. Wiggins. Drilled unused water-table well in San Andres(?) formation, diameter 6 inches, depth 75 feet. Land-surface datum is 3,616 feet above msl. Highest water level 50.66 below lsd, Mar. 7, 1950; lowest 56.79 below lsd, Sept. 5, 1951. Records available: 1949-51. Jan. 16, 51.95; Mar. 6, 51.64; May 22, 54.35; July 10, 56.17; Sept. 5, 56.79; Nov. 8, 55.70.

9.24.5.130. Lacy Shortridge. Drilled irrigation artesian well in San Andres(?) formation, diameter 10 to 8 inches, depth 364 feet. Land-surface datum is 3,661 feet above msl. Highest water level 87.25 below lsd, Sept. 12, 1950; lowest 97.02 below lsd, Sept. 6, 1951. Records available: 1948-51. Jan. 17, 90.51; Mar. 6, 90.65; May 22, 94.00; July 10, 95.69; Sept. 6, 97.02; Nov. 8, 95.77.

9.24.17.331. Oscar White. Drilled unused artesian well in San Andres(?) formation, diameter 6 inches. Land-surface datum is 3,699 feet above msl. Highest water level 118.81 below lsd, Jan. 1, 1951; lowest 126.55 below lsd, Oct. 30-Nov. 7, 1951. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 12, 1948	119.43	Feb. 9, 1949	121.07	Nov. 2, 1949	119.03	July 17, 1950	104.49
May 13	119.51	Mar. 10	120.77	Jan. 29, 1950	120.39	Aug. 17	94.79
July 14	119.99	May 9	122.36	Mar. 7	120.53	Sept. 7	101.72
Sept. 14	122.19	July 14	121.04	May 8	122.65	Nov. 8	115.47
Nov. 3	122.20	Sept. 8	116.08	July 11	109.13		

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	118.81	119.69	120.15	121.05	122.91	119.41	121.65	122.15	123.88	125.93	126.55	126.18
2	118.84	119.71	120.17	121.11	122.97	119.40	121.75	122.23	123.95	125.97	126.55	126.16
3	118.88	119.73	120.19	121.16	123.02	119.40	121.85	.....	124.03	126.01	126.55	126.14
4	118.92	119.75	120.21	121.22	123.07	119.41	121.94	.....	124.11	126.05	216.55	126.11
5	118.97	119.77	120.22	121.27	123.11	119.43	122.05	.....	124.19	126.09	126.55	126.09
6	119.00	119.78	120.23	121.33	123.15	119.45	122.15	122.57	124.26	126.14	126.55	126.07
7	119.05	119.80	120.25	121.41	123.21	119.49	122.25	122.67	124.33	126.19	126.55	126.06
8	119.09	119.82	120.27	121.49	123.25	119.53	122.33	122.77	124.40	126.23	126.54	126.04
9	119.12	119.84	120.29	121.56	123.29	119.57	122.41	122.87	124.47	126.27	126.53	126.03
10	119.14	119.85	120.31	121.63	123.33	119.65	122.50	122.97	124.55	126.30	126.53	126.01
11	119.17	119.87	120.33	121.69	123.38	119.74	122.57	123.09	124.63	126.33	126.51	125.99
12	119.19	119.89	120.35	121.77	123.41	119.81	122.67	123.19	124.71	126.36	126.49	125.96
13	119.22	119.91	120.37	121.84	123.46	119.90	122.76	123.28	124.79	126.38	126.48	125.93
14	119.25	119.93	120.38	121.91	123.50	119.99	122.79	123.38	124.87	126.40	126.47	125.92
15	119.27	119.95	120.40	121.98	123.54	120.07	122.85	123.47	124.96	126.43	126.45	125.90
16	119.30	119.96	120.41	122.05	123.58	120.17	122.93	123.57	125.03	126.45	126.44	125.88
17	119.33	119.97	120.43	122.11	123.61	120.26	123.00	123.67	125.11	126.47	126.43	125.87
18	119.35	119.99	120.47	122.19	123.65	120.35	123.07	123.77	125.17	126.50	126.43	125.85
19	119.38	120.0	120.49	122.25	123.69	120.43	123.16	123.87	125.24	126.53	126.41	125.82
20	119.40	120.01	.....	122.31	123.73	120.53	123.24	123.97	125.30	126.53	126.39	125.80
21	119.43	120.03	120.57	122.38	123.76	120.63	123.32	124.08	125.37	126.51	126.37	125.78
22	119.47	120.05	120.60	122.44	123.79	120.73	123.41	123.83	125.42	126.51	126.35	125.77
23	119.48	120.07	120.63	122.52	123.64	.....	123.17	123.55	125.48	126.51	126.34	125.75
24	119.51	120.08	120.67	122.57	121.96	.....	122.36	123.47	125.54	126.51	126.32	125.73
25	119.53	120.09	120.71	122.62	121.01	.....	122.05	123.47	125.60	126.51	126.29	125.71
26	119.55	120.11	120.75	122.67	120.43	.....	121.93	123.50	125.65	126.51	126.28	125.69
27	119.57	120.13	120.79	122.73	120.01	121.23	121.90	123.55	125.71	126.52	126.26	125.68
28	119.59	120.14	120.83	122.78	119.78	121.33	121.90	123.62	125.77	126.53	126.25	125.65
29	119.61		120.89	122.83	119.60	121.43	121.93	123.67	125.82	126.53	126.23	125.62
30	119.64		120.95	122.87	119.49	121.54	122.00	123.73	125.87	126.55	126.20	125.59
31	119.66		121.00		119.43		122.07	123.81		126.55		125.58

10.24.8.333. Ira Lee. Drilled irrigation water-table well in valley fill, diameter 13 to 10 inches, depth 181 feet. Highest water level 40.67 below lsd, Feb. 5, 1947; lowest 54.79 below lsd, Sept. 6, 1951. Records available: 1946-51. Jan. 30, 46.90; May 8, 51.26; July 10, 53.86; Sept. 6, 54.79; Nov. 8, 51.83.

10.24.9.330. Berrendo. Drilled observation artesian well in limestone of San Andres formation, diameter 10 inches, depth 258 feet, depth to artesian aquifers 170 and 241. Land-surface datum is 3,586.16 feet above msl. Highest water level 11.2 below lsd, Dec. 19, 20, 1926; lowest 30.88 below lsd, Aug. 20, 1951. Records available: 1926-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20.25	20.46	20.75	23.93	25.65	24.53	27.09	27.74	28.33	28.44	25.73	24.05
2	20.28	20.37	20.71	23.83	25.81	24.65	26.93	27.79	28.11	28.37	25.50	24.03
3	20.35	20.34	20.74	24.04	25.63	24.71	27.01	28.35	28.00	28.32	25.43	23.94
4	20.31	20.33	20.68	24.23	25.33	24.55	27.20	28.31	28.13	28.35	25.31	23.85
5	20.34	20.27	20.62	24.53	25.40	24.64	27.78	28.23	28.39	28.31	25.28	23.77
6	20.39	20.40	20.74	24.78	25.34	24.80	28.15	28.12	28.46	28.17	25.20	23.75
7	20.34	20.51	20.87	24.48	25.05	24.93	28.36	28.49	28.52	27.97	25.07	23.74
8	20.28	20.55	20.94	24.45	25.09	25.05	27.64	28.72	28.66	27.87	25.02	23.69
9	20.25	20.63	20.96	24.43	25.15	25.36	27.45	28.78	28.78	27.75	24.98	23.62
10	20.37	20.65	20.94	24.70	25.28	26.28	28.67	28.81	28.60	27.59	24.87	23.54
11	20.36	20.69	20.96	24.78	26.22	26.25	29.02	28.78	28.70	27.69	24.77	23.50
12	20.44	20.61	20.90	24.93	25.63	26.52	29.08	28.89	28.79	27.59	24.72	23.45
13	20.47	20.78	20.91	24.92	25.46	26.63	29.03	28.93	28.89	27.49	24.67	23.42
14	21.12	20.67	21.00	25.08	26.02	26.58	29.02	29.27	28.74	27.29	24.63	23.45
15	21.08	20.60	21.11	25.15	26.23	26.83	28.97	29.52	28.84	27.16	24.58	23.48
16	21.08	20.63	21.20	24.95	26.34	26.97	28.79	29.48	28.78	27.23	24.61	23.37
17	20.60	20.74	21.32	25.08	26.30	26.24	29.09	30.72	29.56	27.23	24.53	23.33
18	20.50	20.59	21.42	24.95	26.32	26.05	29.14	30.82	29.84	27.17	24.43	23.33
19	20.54	20.52	21.39	24.93	26.32	26.26	29.24	30.78	29.90	26.85	24.39	23.28
20	20.65	20.63	21.72	24.97	25.18	26.28	29.54	30.88	29.95	26.75	24.35	23.27
21	20.65	20.87	22.18	24.69	24.84	26.51	29.49	30.44	29.93	26.68	24.29	23.37
22	20.55	20.74	22.38	24.62	24.74	26.65	29.37	29.79	29.66	26.62	24.26	23.27
23	20.62	20.75	22.70	24.47	24.44	27.24	28.12	29.23	29.55	26.59	24.21	23.22
24	20.67	20.73	22.99	24.44	24.28	27.35	27.87	30.08	28.98	26.57	24.15	23.17
25	20.70	20.64	22.99	24.40	24.20	26.73	28.03	29.08	28.75	26.49	24.11	23.14
26	20.74	20.60	22.91	24.38	24.18	26.91	27.69	28.94	28.88	26.38	24.07	23.15
27	20.74	20.63	23.25	24.46	24.13	26.92	28.11	28.63	28.89	26.27	24.02	23.15
28	20.73	20.71	23.43	25.44	24.07	26.91	27.80	28.45	30.13	26.10	24.04	23.07
29	20.67		23.33	25.48	24.09	27.55	27.88	29.21	30.00	26.02	24.16	23.05
30	20.62		23.55	25.39	24.19	27.36	27.62	28.32	28.66	25.92	24.17	23.00
31	20.58		23.89		24.42		27.67	28.07		25.84		22.97

10.24.21.212. Berrendo-Smith. Drilled observation artesian well in San Andres limestone, diameter 10 inches, depth 324 feet, depth to artesian aquifers 269 and 310. Land-surface datum is 3,580.65 feet above msl. Highest water level 6.06 below lsd, Jan. 19, 1943; lowest 27.66 below lsd, Aug. 15, 1951. Records available: 1940-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.40	15.67	16.31	20.59	21.03	20.61	23.97	24.67	24.73	24.71	20.96	18.90
2	15.51	15.60	16.25	20.39	21.34	20.73	23.67	24.79	24.78	25.00	20.68	18.84
3	15.43	15.55	16.26	20.87	21.32	20.57	23.87	25.43	24.58	24.85	20.59	18.79
4	15.58	15.57	16.13	21.19	21.63	20.37	24.23	25.41	24.76	25.11	20.43	18.74
5	15.70	15.42	16.05	22.01	21.72	20.72	23.86	25.09	25.14	25.14	20.40	18.65
6	15.73	15.75	16.23	22.50	21.24	21.30	24.79	24.88	25.26	24.84	20.36	18.65
7	15.59	15.93	16.51	21.27	21.00	21.49	24.84	25.56	25.50	24.33	20.19	18.67
8	15.43	16.04	16.65	21.09	21.05	21.70	24.50	26.13	25.62	24.28	20.13	18.59
9	15.52	16.12	16.70	21.21	21.33	22.09	24.63	26.49	25.48	24.07	20.08	18.48
10	15.70	16.18	16.65	21.85	21.37	22.01	25.43	26.35	25.19	23.82	19.97	18.42
11	15.63	16.25	16.67	21.93	21.40	21.89	25.88	26.14	25.47	24.19	19.87	18.36
12	15.73	16.00	16.55	22.13	21.44	22.41	25.20	26.36	25.75	24.04	19.75	18.30
13	15.79	16.14	16.79	21.83	20.93	22.55	25.45	26.44	25.93	23.80	19.72	18.30
14	15.75	15.99	16.97	21.58	20.80	22.44	25.27	27.11	25.78	23.37	19.72	18.43
15	15.68	15.88	17.09	21.41	21.19	22.79	25.18	27.66	25.87	23.12	19.64	18.35
16	15.74	15.95	17.33	21.47	21.40	22.67	24.84	27.35	25.41	23.19	19.70	18.18
17	15.77	16.01	17.47	21.75	21.38	22.38	25.69	27.25	25.03	23.17	19.62	18.12
18	15.84	15.78	17.43	21.26	21.45	22.17	26.00	27.44	25.77	23.00	19.51	18.28
19	16.05	15.67	17.33	21.16	21.38	22.61	25.81	27.14	25.92	22.79	19.44	18.25
20	16.22	15.94	17.92	21.34	20.68	22.75	26.03	27.59	26.07	22.65	19.47	18.27
21	16.05	16.15	18.90	21.04	20.52	23.12	26.14	27.42	26.12	22.52	19.38	18.40
22	15.88	16.09	18.74	20.88	20.38	23.20	25.67	26.01	26.12	22.42	19.35	18.23
23	16.04	16.20	19.51	20.49	20.15	23.54	25.27	25.77	25.74	22.46	19.29	18.17
24	16.14	16.20	19.87	20.54	19.97	23.51	24.90	25.84	25.59	22.30	19.23	18.12
25	16.14	16.02	19.39	20.55	19.92	23.30	24.73	25.64	26.23	22.19	19.14	18.09

10.24.21.212 --Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	16.16	15.94	19.08	20.62	20.01	23.87	24.47	24.72	26.37	22.02	19.10	18.07
27	16.20	16.09	19.77	20.78	19.93	23.89	24.65	24.59	26.01	21.93	19.05	18.09
28	16.07	16.27	19.99	21.05	19.85	23.94	24.69	24.78	25.88	21.79	19.03	17.97
29	15.95		19.84	20.75	20.00	24.25	24.53	24.68	25.53	21.53	19.00	17.99
30	15.92		20.24	20.49	20.36	24.16	24.32	24.73	24.99	21.30	18.97	17.88
31	15.85		21.00		20.54		24.55	24.69		21.10		17.84

10.24.32.111. F. W. Lewis. Dug unused water-table well in valley fill, diameter 40 inches, depth 52 feet. Highest water level 27.48 below lsd, Jan. 28, 1946; lowest 35.67 below lsd, Nov. 9, 1951. Records available: 1946-51. Jan. 30, 32.33; Mar. 6, 32.28; May 8, 33.78; July 10, 34.88; Sept. 6, 35.29; Nov. 9, 35.67.

10.25.19.331. E. H. Pugh. Drilled stock water-table well in valley fill, diameter 4 inches. Highest water level 30.76 below lsd, Feb. 12, 1942; lowest 36.05 below lsd, Nov. 9, 1951. Records available: 1942-51. Jan. 29, 34.98; Mar. 6, 35.64, pumping; May 8, 37.20, pumping; July 10, 35.85; Sept. 6, 38.35, pumping; Nov. 9, 36.05.

11.23.1.433. S. M. Wiggins. Drilled irrigation water-table well in valley fill, diameter 14 inches. Highest water level 56.07 below lsd, Feb. 4, 1947; lowest 73.84 below lsd, Sept. 8, 1951. Records available: 1947-51. Jan. 29, 62.82; Mar. 6, 63.35; May 8, 68.72; Sept. 8, 73.84; Nov. 9, 68.70.

11.23.15.222. C. E. Smith. Drilled irrigation artesian well in Chalk Bluff formation and San Andres limestone, diameter 16 inches, depth 649 feet. Highest water level 101.29 below lsd, Jan. 28, 1950; lowest 109.52 below lsd, Sept. 9, 1950. Records available: 1950-51. Jan. 30, 103.72; Mar. 6, 114.32, pumping; May 10, 122.60, pumping; July 11, 125.18, pumping; Sept. 8, 125.89, pumping; Nov. 9, 123.67, pumping.

11.23.22.343. Byrum Brown. Drilled irrigation artesian well in Chalk Bluff formation and San Andres limestone. Highest water level 157.90 below lsd, Mar. 6, 1951; lowest 167.85 below lsd, Sept. 8, 1951. Records available: 1951. Mar. 6, 157.90; May 10, 162.97; Sept. 8, 167.85; Nov. 9, 164.77.

11.24.10.224. C. E. Smith. Drilled stock water-table well in valley fill, diameter 8 inches, depth 129 feet. Land-surface datum is 3,563 feet above msl. Pressure pump operates intermittently. Highest water level 11.14 below lsd, Dec. 10, 1941; lowest 30.75 below lsd, July 12, 1949. Records available: 1937-51. Jan. 29, 18.86; Mar. 6, 20.53, pumped recently; May 8, 31.87; July 10, 38.39, pumping; Sept. 6, 34.80, pumping; Nov. 9, 18.80.

11.24.14.331. H. M. Flourney. Drilled irrigation water-table well in valley fill, diameter 8 inches. Highest water level 27.58 below lsd, Feb. 3, 1948; lowest 57.25 below lsd, Sept. 6, 1951. Records available: 1947-51. Jan. 29, 34.07; Mar. 7, 37.61; May 8, 46.12; July 10, 55.12; Sept. 6, 57.25; Nov. 9, 36.09.

11.24.28.113. S. W. Skinner. Formerly Rocky Arroyo school. Drilled domestic water-table well in valley fill, diameter 6 inches, deepened to 143 feet Nov. 9, 1951. Highest water level 50.78 below lsd, Nov. 14, 1941; lowest 76.65 below lsd, Nov. 9, 1951. Records available: 1938-51. Jan. 29, 68.21; Nov. 9, 76.65.

11.24.29.242. Mountain View well. Drilled observation artesian well in limestone of San Andres formation, diameter 10 inches, depth 553 feet, depth to artesian aquifers 290, 410, 460, 505, and 545. Land-surface datum is 3,627.18 feet above msl. Highest water level 53.18 below lsd, Jan. 18, 1943; lowest 81.27 below lsd, Aug. 21, 1951. Records available: 1940-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	64.49	64.81	65.77	72.22	72.35	71.67	76.58	78.30	78.84	77.29	71.78	68.67
2	64.64	64.62	65.74	71.80	72.68	71.74	75.94	78.55	78.23	77.47	71.40	68.55
3	64.65	64.49	65.83	72.71	72.78	71.53	75.95	78.82	77.90	77.53	71.21	68.49
4	64.75	64.41	65.64	73.06	72.84	71.38	76.36	79.08	78.76	77.65	70.95	68.47
5	64.88	64.26	65.47	73.24	72.95	72.04	76.13	78.74	79.34	77.71	70.94	68.28
6	65.16	64.72	65.97	73.49	72.13	72.40	76.63	78.32	79.53	77.73	70.79	68.29
7	64.84	64.95	66.28	73.05	71.84	72.70	76.90	78.95	80.00	76.85	70.56	68.35
8	64.60	65.00	66.40	72.83	72.30	73.00	76.27	79.27	80.12	76.63	70.39	68.20
9	64.61	65.20	66.48	72.40	72.53	73.37	75.94	79.67	79.12	76.61	70.38	68.03
10	64.99	65.24	66.43	72.90	72.90	73.03	76.54	79.77	78.87	76.43	70.27	67.83

11.24.29.242--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	64.82	65.06	66.50	72.95	73.23	72.85	77.15	80.04	79.27	76.29	70.03	67.77
12	65.01	64.87	66.32	73.02	73.13	73.61	77.30	79.78	79.56	76.16	69.98	67.65
13	65.17	65.07	66.64	73.04	72.25	74.15	77.38	79.48	80.19	75.97	69.91	67.67
14	65.04	64.90	67.14	73.09	72.08	73.93	77.57	80.28	80.04	75.46	69.90	67.90
15	64.89	64.77	67.49	72.69	72.55	74.17	77.51	80.75	80.08	75.20	70.00	67.80
16	64.99	64.85	67.80	72.42	72.40	74.14	77.20	80.78	78.71	75.28	69.99	67.44
17	65.08	65.02	67.93	72.56	72.30	73.42	78.10	80.97	78.23	75.27	69.80	67.35
18	65.27	64.92	67.79	72.71	72.34	73.18	78.43	81.02	78.53	75.15	69.54	67.67
19	65.54	64.73	67.59	72.68	72.65	73.95	78.80	80.95	78.45	74.80	69.52	67.60
20	65.60	65.27	68.50	72.74	71.90	74.50	79.20	80.46	78.43	74.55	69.44	67.64
21	65.18	65.34	69.00	72.50	71.73	75.00	79.54	81.27	78.55	74.07	69.37	67.92
22	65.00	65.44	69.62	71.83	71.89	75.29	79.27	79.64	78.45	73.96	69.35	67.69
23	65.26	65.51	70.26	71.55	71.62	75.63	78.58	79.32	77.67	74.02	69.32	67.50
24	65.38	65.59	70.77	71.92	71.36	75.54	78.08	70.17	77.50	73.74	69.18	67.39
25	65.53	65.25	70.30	72.01	71.38	75.25	77.87	79.67	78.25	73.56	69.02	67.34
26	65.56	65.12	69.91	72.34	71.48	75.82	77.92	78.20	78.72	73.24	68.90	67.35
27	65.64	65.51	70.89	72.48	71.07	76.28	78.05	77.96	78.75	73.15	68.85	67.38
28	65.30	65.75	71.59	72.66	71.03	76.60	78.07	78.25	78.67	72.83	68.79	67.18
29	65.17		71.13	72.15	71.29	76.75	77.70	78.30	78.43	72.68	68.77	67.20
30	65.23		72.05	71.90	71.53	77.05	77.44	78.65	77.61	72.40	68.72	67.07
31	65.11		72.38		71.58		78.03	78.68		72.03		67.00

11.25.6.421a. Leo Williamson. Drilled unused water-table well in valley fill, diameter 8 inches, depth 85 feet. Highest water level 4.36 below lsd, Sept. 8, 1950; lowest 11.14 below lsd, Sept. 15, 16, 1948. Records available: 1941-51. Jan. 29, 9.06; Mar. 6, 8.02; May 8, 7.50; July 10, 8.14; Sept. 6, 6.75; Nov. 9, 8.91.

11.25.29.444. Glenn Wheeler. Drilled unused water-table well in valley fill, diameter 6 inches, depth 30 feet. Highest water level 3.14 below lsd, Mar. 15, 1942; lowest 15.49 below lsd, Nov. 3, 1948. Records available: 1937-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.93	.....	12.11	9.71	.....	12.87	13.21	12.42	10.42	10.50	12.35	9.08
2	11.81	.....	12.37	9.35	.....	12.89	12.98	12.07	10.78	11.19	12.61	9.39
3	11.65	.....	.....	8.99	.....	12.28	13.04	11.15	11.08	11.63	12.80	9.53
4	11.53	.....	.....	9.10	.....	11.93	12.80	10.64	11.35	11.90	12.41	9.52
5	11.45	.....	.....	9.40	.....	11.82	12.68	10.42	11.59	12.23	12.37	9.70
6	11.43	.....	.....	9.63	.....	12.05	13.19	10.17	11.77	12.23	12.88	9.84
7	11.38	.....	h12.93	9.85	.....	12.57	13.54	10.13	11.90	12.01	13.23	10.11
8	11.26	.....	h13.15	.....	h11.14	12.87	13.69	10.59	11.84	11.75	13.17	10.21
9	11.23	.....	13.07	.....	11.21	13.25	13.60	11.12	11.62	11.84	13.05	10.36
10	11.20	.....	13.14	.....	11.49	13.42	13.36	11.64	11.42	11.75	13.00	10.39
11	11.12	9.22	12.85	.....	11.61	13.28	13.58	11.73	10.91	11.52	13.15	10.14
12	10.99	9.15	.....	.....	11.62	13.46	13.73	11.93	10.76	11.66	13.05	10.07
13	10.77	8.97	10.88	.....	12.00	13.67	13.84	12.07	10.86	12.03	13.40	10.07
14	10.53	8.58	10.41	.....	12.10	13.78	13.89	12.17	11.03	12.43	13.15	10.17
15	10.50	8.33	10.19	.....	12.07	13.88	13.92	12.06	11.12	12.71	12.62	10.04
16	10.45	8.34	9.89	.....	12.10	14.00	14.18	12.18	11.01	12.97	11.84	9.91
17	10.02	8.37	10.03	.....	11.98	14.08	14.21	12.06	10.89	13.21	11.29	9.91
18	8.83	8.86	10.75	.....	12.27	14.20	14.12	11.94	11.28	13.41	10.98	9.98
19	7.93	9.46	11.17	.....	12.91	14.33	14.23	11.60	11.82	13.65	10.97	9.99
20	7.92	9.83	11.51	.....	12.99	13.94	14.08	10.88	12.15	13.75	10.98	10.05
21	8.19	10.05	11.59	.....	12.85	13.38	13.55	10.44	12.41	13.75	10.99	10.19
22	8.28	10.25	10.89	.....	12.65	13.35	13.47	10.15	12.07	13.69	11.03	10.21
23	7.92	10.61	10.33	.....	12.57	13.50	12.66	10.12	12.03	13.65	11.05	10.25
24	7.86	10.90	9.89	.....	12.55	13.60	12.39	10.27	11.81	13.31	10.98	10.25
25	7.99	11.25	9.43	.....	12.53	13.45	12.43	10.74	11.15	13.12	10.92	10.28
26	8.08	11.49	8.85	.....	11.99	12.65	12.61	10.96	10.83	12.96	10.87	10.39
27	8.09	11.69	8.43	.....	12.00	12.46	13.00	11.19	10.50	12.78	10.85	10.40
28	7.77	11.85	8.71	.....	12.23	12.64	13.11	10.90	10.54	12.50	10.73	10.41
29	e7.48		9.22	.....	12.49	12.87	12.49	10.43	10.69	12.33	10.60	10.46
30	.....		9.09	.....	12.35	13.07	12.38	10.57	10.56	12.14	9.16	10.50
31	.....		9.29		12.61		12.51	10.49		12.08		10.52

e Estimated.
h Tape measurement.

12.24.13.111. W. T. Weldy. Drilled stock water-table well in valley fill, diameter 8 inches. Highest water level 62.36 below lsd, Jan. 7, 1943; lowest 81.10 below lsd, July 13, 1951. Records available: 1942-51. Jan. 26, 72.53; Mar. 7, 72.83; May 9, 78.73, pumping; July 13, 81.10; Sept. 7, 84.53, pumping; Nov. 10, 80.32.

12.25.9.422. Cumberland townsite. Drilled unused water-table well in valley fill, diameter 10 inches, reported depth 90 feet. Highest water level 38.64 below lsd, Oct. 16, 1941; lowest 63.04 below lsd, Sept. 7, 1951. Records available: 1937-51. Jan. 26, 54.86; Mar. 13, 54.33; May 9, 59.79; July 11, 60.64; Sept. 7, 63.04; Nov. 9, 60.24.

12.25.22.411. W. T. Clardy. Drilled unused water-table well in valley fill, diameter 18 inches, depth 147 feet. Highest water level 86.86 below lsd, Mar. 11, 1948; lowest 101.09 below lsd, May 9, 1950. Records available: 1947-51. Jan. 25, 91.40; Mar. 14, 91.28; May 9, 98.60; July 11, 100.15; Sept. 7, 113.17, nearby well being pumped; Nov. 10, 97.94.

12.25.23.110. Orchard Park well. Drilled unused artesian well in limestone of San Andres formation, diameter 8 inches, depth 810 feet, depth to artesian aquifers 600 to 790. Land-surface datum is 3,546.19 feet above msl. Highest water level 1.74 below lsd, Jan. 15, 1942; lowest 80.62 below lsd, Aug. 19, 1951. Records available: 1925-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	16.94	.....	25.68	65.25	50.05	35.16	69.55	68.67	76.58	54.19	26.18	17.42
2	18.14	12.95	27.05	63.10	49.73	40.37	53.68	72.39	74.69	57.48	24.00	16.78
3	18.22	13.20	27.22	64.45	51.18	37.48	52.07	74.25	71.85	55.25	22.99	16.43
4	18.70	12.67	27.81	64.86	49.58	37.68	56.68	75.18	73.36	54.00	22.43	18.30
5	18.76	12.24	27.94	65.26	49.88	41.83	57.88	72.45	74.44	54.62	22.45	17.50
6	18.94	15.09	29.72	62.20	46.55	46.10	62.13	71.35	76.08	53.60	22.28	17.09
7	18.11	16.84	31.77	57.61	45.11	47.00	63.45	74.79	75.48	51.39	20.94	16.48
8	17.65	17.79	32.83	56.54	49.07	49.79	61.80	76.19	74.92	49.73	19.78	14.42
9	18.18	18.66	33.96	54.92	51.74	53.88	60.02	78.03	70.60	49.65	19.40	13.48
10	19.19	18.86	33.19	59.93	53.24	50.86	63.05	75.17	69.38	48.72	18.63	13.30
11	20.47	19.45	35.25	59.80	52.23	50.38	66.15	77.45	70.28	47.83	18.22	12.68
12	20.43	19.02	35.72	62.55	52.31	55.90	65.97	77.99	70.25	46.78	19.51	12.67
13	20.18	17.90	39.60	60.38	50.00	59.87	67.78	77.40	69.76	45.47	19.43	12.88
14	18.90	15.85	40.67	60.23	47.90	59.63	69.11	78.60	69.15	.....	18.94	12.95
15	18.28	15.67	44.88	56.77	48.07	58.59	67.18	78.67	69.03	.....	18.87	12.65
16	18.12	16.19	48.25	54.59	47.37	60.90	66.02	78.34	63.25	.....	19.22	12.00
17	17.20	16.37	51.00	54.48	47.97	57.88	68.03	78.38	61.99	.....	19.40	11.94
18	17.60	15.87	50.05	56.44	46.67	57.42	70.98	79.18	e62.90	.....	18.42	12.33
19	18.08	15.43	52.06	56.28	42.37	59.69	73.76	80.62	61.87	39.98	17.88	12.22
20	19.07	17.15	57.37	52.67	38.33	62.88	75.64	e80.25	60.18	38.48	17.57	12.14
21	17.65	21.68	59.55	50.50	36.30	64.72	76.22	e80.15	60.13	36.77	17.38	12.33
22	16.98	23.14	62.68	48.25	36.05	66.74	69.25	77.66	58.44	35.90	17.59	12.19
23	18.93	25.15	63.88	45.18	36.92	66.97	61.42	76.95	57.20	36.08	17.41	12.19
24	19.33	24.90	64.59	48.89	36.12	65.82	56.99	77.45	55.43	35.52	17.92	11.86
25	19.30	23.44	61.88	49.94	36.16	64.37	58.02	78.18	55.22	e33.50	17.65	11.50
26	19.20	22.60	61.07	52.81	35.25	65.79	59.10	73.43	57.58	32.35	16.70	11.53
27	19.05	23.54	62.67	52.70	33.92	68.12	61.12	72.06	58.78	31.15	18.35	11.92
28	17.54	24.84	59.92	52.28	33.15	71.07	63.30	72.58	58.70	30.41	19.12	12.01
29	16.55		56.98	47.65	33.53	71.87	64.73	74.91	58.11	29.73	18.34	11.94
30	17.19		63.52	44.98	33.42	72.35	63.80	74.81	55.84	28.95	18.21	11.55
31	e15.40		67.20		34.54		66.59	76.68		27.77		11.38

e Estimated.

12.25.35.411a. A. C. Stone. Drilled irrigation water-table well in valley fill, diameter 16 inches. Highest water level 40.23 below lsd, Jan. 20, 1945; lowest 81.01 below lsd, Sept. 10, 1951. Records available: 1945-51. Jan. 25, 63.75; Mar. 14, 75.55; May 9, 78.38; July 11, 82.53; Sept. 10, 81.01; Nov. 12, 68.61.

12.26.18.221a. Cecil Johnson. Drilled irrigation water-table well in valley fill, diameter 6 inches, depth 68 feet. Highest water level 14.22 below lsd, Mar. 23, 1945; lowest 16.34 below lsd, Nov. 4, 1949. Records available: 1944-51. Jan. 25, 15.07; Mar. 13, 14.53, May 9, 14.62; July 11, 14.90; Sept. 27, 15.69; Nov. 10, 15.58.

12.26.29.333. T. S. Lawing. Drilled unused water-table well in valley fill, diameter 13 inches, reported depth 250 feet. Highest water level 14.20 below lsd, Jan. 25, 1940; lowest 18.57 below lsd, Sept. 7, 1951. Records available: 1939-51. Jan. 25, 17.91; Mar. 13, 17.32; May 9, 17.78; July 11, 18.30; Sept. 7, 18.57; Nov. 10, 18.27.

13.25.14.231. F. W. Pfeiffer. Drilled domestic water-table well in valley fill, diameter 12 inches, depth 152 feet. Highest water level 40.12 below lsd, Jan. 28, 1942; lowest 80.10 below lsd, Sept. 8, 1950. Records available: 1940-51. Jan. 24, 77.30, nearby well being pumped; Mar. 14, 78.51, nearby well being pumped; May 9, 86.50, nearby well being pumped; July 11, 89.25, nearby well being pumped; Sept. 7, 93.43, nearby well being pumped; Nov. 12, 78.56.

13.25.17.411. R. Thaman. Drilled stock water-table well in valley fill, diameter 6 inches, depth 148 feet. Highest water level 55.08 below lsd, Feb. 3, 1942; lowest 100.02 below lsd, Sept. 10, 1951. Records available: 1939, 1941-51. Jan. 25, 70.87; Mar. 14, 75.10; May 9, 85.82; July 11, 90.63; Sept. 10, 100.02; Nov. 12, 101.75, pumping.

13.25.27.211. Greenfield well. Drilled observation artesian well in limestone of San Andres formation, diameter 10 inches, depth 880 feet, depth to artesian aquifers 740 and 795. Land-surface datum is 3,523.76 feet above msl. Highest water level 12.94 above lsd, Jan. 13, 1942; lowest 78.72 below lsd, Aug. 24.1951. Records available: 1940-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	+0.22	+3.12	-18.14	-60.11	-46.30	e28.70	-57.90	-71.82	.....	-44.03	.....	-1.53
2	-2.38	3.52	19.79	60.86	44.36	e31.00	50.16	72.80	.....	48.52	-9.42	.70
3	1.49	3.61	17.58	63.87	46.17	31.08	49.37	74.45	-72.58	48.82	8.73	.44
4	3.70	2.52	18.88	68.07	47.03	30.62	55.48	76.07	76.24	48.89	8.35	1.31
5	2.93	+1.06	17.20	63.68	45.65	39.51	53.04	70.88	e76.90	49.20	8.86	1.28
6	-1.12	-2.89	21.57	61.52	38.29	42.60	59.78	69.14	78.00	46.30	8.07	1.47
7	+.06	7.22	24.17	59.57	36.88	e42.20	59.10	74.33	76.39	42.83	7.22	-.93
8	-1.83	7.10	26.14	51.58	45.78	46.01	52.80	74.93	72.30	40.18	5.69	+.12
9	2.46	9.75	29.34	49.16	44.93	49.29	e51.00	76.30	67.87	42.25	4.77	.53
10	4.93	10.71	25.40	57.33	49.27	48.25	58.41	72.14	66.17	40.42	4.00	1.06
11	4.48	.....	25.52	54.43	50.52	48.67	61.33	74.83	71.55	39.00	3.39	1.53
12	3.55	e10.20	25.61	60.06	46.35	55.95	59.28	74.73	70.39	36.55	4.25	2.15
13	2.85	4.32	31.86	49.72	35.38	57.65	66.11	74.20	69.74	34.48	3.78	1.68
14	1.40	1.63	35.52	51.28	34.04	59.78	69.86	.....	70.14	30.37	3.15	1.39
15	2.67	.87	40.55	49.49	38.12	61.09	65.74	.....	65.70	29.59	3.33	2.37
16	6.22	4.49	42.84	47.89	36.34	65.25	66.62	.....	57.40	31.77	3.57	2.90
17	6.00	5.43	44.08	51.11	35.64	.....	71.68	.....	55.02	30.65	3.21	2.24
18	2.87	3.42	43.70	51.78	33.68	.....	73.51	.....	59.03	29.40	2.23	1.72
19	4.99	3.18	43.81	52.81	30.57	.....	74.28	.....	56.20	28.00	1.85	1.97
20	4.22	6.41	53.82	50.34	27.14	65.00	76.53	.....	53.68	26.86	2.45	2.30
21	2.12	13.11	56.11	45.67	26.30	64.64	75.35	.....	54.31	24.03	2.30	1.93
22	2.34	13.59	57.52	e37.60	27.45	66.68	66.50	77.30	52.73	23.45	2.17	2.10
23	7.25	17.44	62.53	e36.40	25.62	e66.25	60.02	e76.55	51.70	23.93	1.91	2.70
24	6.31	16.99	61.65	42.37	24.63	e65.80	55.68	78.72	50.80	23.13	2.93	3.43
25	6.92	13.56	56.11	43.95	26.74	.....	59.67	77.53	53.54	22.34	3.22	3.67
26	6.76	12.97	55.57	44.93	24.65	e66.40	61.37	e75.90	54.02	.....	2.47	2.96
27	7.42	16.28	60.24	47.17	22.87	67.42	62.52	.....	53.62	.....	3.30	2.28
28	3.75	18.57	56.84	44.95	21.36	70.68	64.38	77.07	51.50	.....	3.33	2.52
29	2.06		53.73	38.02	23.92	e69.95	65.00	76.23	49.90	.....	2.75	3.23
30	-4.57		63.35	36.42	25.17	e70.85	61.10	74.40	45.65	.....	2.94	3.62
31	+.17		62.88		e29.40		69.83	.....		.....		+2.92

e Estimated.

13.25.34.323. L. D. and W. F. Kerr. Drilled unused water-table well in valley fill, diameter 12 inches, depth 141 feet. Highest water level 86.31 below lsd, Mar. 12, 1948; lowest 90.58 below lsd, Nov. 12, 1951. Records available: 1948-51. Jan. 23, 88.95; Mar. 14, 88.70; May 9, 89.01; July 11, 89.50; Sept. 10, 90.13; Nov. 12, 90.58.

13.26.7.333. Howard Amason. Drilled unused water-table well in valley fill, diameter 6 inches, depth 118 feet. Highest water level 4.45 below lsd, Oct. 1, 1941; lowest 22.07 below lsd, Aug. 27, 28, 1951. Records available: 1939-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	20.86	e21.12	20.90
2	.....	18.43	.....	.....	18.80	.....	.....	.....	.....	20.86	.....	20.91
3	.....	18.42	.....	.....	18.80	.....	.....	.....	.....	20.86	.....	20.94
4	h17.98	18.41	.....	.....	18.83	.....	.....	.....	21.88	.....	.....	20.96
5	17.99	18.41	.....	20.02	18.82	.....	.....	.....	21.85	.....	.....	21.00
6	18.06	18.40	18.40	20.02	18.81	.....	h19.70	h20.48	21.85	.....	.....	21.03
7	18.13	18.40	18.41	20.01	18.79	h18.90	19.70	20.48	21.86	.....	.....	h21.04
8	18.20	18.40	18.47	19.96	18.77	18.91	19.71	20.52	21.89	.....	.....	.....
9	18.26	18.40	18.57	19.87	18.73	18.96	19.73	20.58	21.91	.....	.....	.....
10	18.33	18.39	18.67	19.77	18.73	19.01	19.74	20.67	21.88	h21.26	h20.96	.....

13.26.7.333--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	18.38	18.38	18.77	19.69	18.75	19.04	19.78	20.76	21.83	21.26	20.96	.....
12	.....	18.37	18.86	19.61	18.80	19.06	19.79	20.83	21.78	21.26	20.97	.....
13	.....	18.37	18.94	.....	18.82	19.09	19.83	e20.90	21.73	21.26	20.96	.....
14	.....	18.37	19.00	.....	18.79	.....	19.86	.....	21.68	21.28	20.95	.....
15	.....	18.37	19.13	.....	18.75	.....	19.90	.....	21.60	21.33	20.94	.....
16	.....	18.36	19.24	.....	18.74	.....	19.92	.....	21.50	21.37	20.93	.....
17	.....	.....	19.34	19.15	.....	.....	19.94	.....	21.38	.....	20.93	20.95
18	h18.72	.....	19.45	19.07	.....	.....	19.95	.....	21.26	.....	20.92	20.93
19	18.70	.....	19.51	19.02	.....	.....	19.96	.....	21.14	h21.35	20.90	20.91
20	18.67	.....	19.56	18.97	.....	.....	h20.07	.....	21.04	21.34	20.89	20.88
21	18.64	18.36	19.61	18.94	.....	.....	20.09	h21.83	20.99	21.32	20.88	20.87
22	18.60	18.36	19.67	18.91	.....	h19.05	20.16	21.87	.....	e21.31	20.87	20.85
23	18.57	18.36	.....	18.87	.....	19.07	20.22	21.93	.....	e21.30	h20.91	20.83
24	18.54	18.35	.....	e18.84	.....	19.11	20.27	21.98	.....	e21.28	20.90	20.81
25	18.51	18.34	.....	.....	.....	19.19	20.27	22.03	.....	21.26	20.89	20.78
26	18.48	18.33	.....	.....	.....	19.28	20.27	22.06	h20.87	21.24	20.88	20.76
27	18.46	18.33	.....	.....	.....	19.38	20.27	22.07	20.86	21.22	20.87	e20.73
28	18.44	18.34	.....	.....	.....	19.46	.....	22.07	20.86	21.20	20.87	20.68
29	18.44		.....	.....	.....	19.52	.....	.....	20.86	e21.18	20.86	20.65
30	18.45		.....	.....	.....	.....	.....	.....	20.86	e21.16	h20.90	20.62
31	18.45		.....		.....		.....	.....		e21.14		20.59

e Estimated.
h Tape measurement.

13.26.17.321. Leo Nowak. Drilled domestic water-table well in valley fill, diameter 6 inches, depth 122 feet. Highest water level 6.00 below lsd, Apr. 15, 1942; lowest 22.37 below lsd, May 16, 1944. Records available: 1937-51. Jan. 23, 13.76, pumped recently; Mar. 14, 19.82, pumping; May 9, 21.46 pumped recently; July 11, 25.44 pumping; Sept. 10, 15.95; Nov. 10, 13.53.

13.26.23.111. Horton Burke. Drilled irrigation water-table well in valley fill, diameter 16 inches, depth 287 feet. Highest water level 3.55 below lsd, Feb. 2, 1942; lowest 11.16 below lsd, Sept. 10, 1951. Records available: 1938-51. Jan. 24, 6.38; Mar. 14, 31.27, pumping; May 9, 6.31; July 11, 7.56; Sept. 10, 11.16; Nov. 12, 7.29.

13.26.28.121. G. L. Grassie. Drilled stock water-table well in valley fill, diameter 6 inches. Highest water level 13.99 below lsd, Apr. 5, 1941; lowest 27.11 below lsd, July 15, 1948. Records available: 1938-51. Jan. 23, 18.40; Mar. 14, 26.82 pumped recently; May 9, 21.83; July 11, 23.32; Sept. 10, 26.22; Nov. 12, 20.38.

14.23.8.340. M. D. Kincaid. Drilled stock water-table well in San Andres formation, diameter 8 inches, depth 460 feet. Land-surface datum is 3,845 feet above msl. In intake area of artesian aquifer. Highest water level 257.55 below lsd, Feb. 9, 1943; lowest 273.93 below lsd, Sept. 10, 1951. Records available: 1940-51. Jan. 18, 269.19; Mar. 15, 269.50; May 10, 271.24; July 13, 272.50; Sept. 10, 273.93; Nov. 13, 274.06, pumping.

14.23.24.444. M. D. Kincaid. Drilled stock water-table well in valley fill, diameter 6 inches, depth 178 feet. Highest water level 152.15 below lsd, July 13, 1951; lowest 153.51 below lsd, Nov. 13, 1951. Records available: 1951. July 13, 152.15; Sept. 10, 153.58, pumping; Nov. 13, 153.51.

14.25.1.344a. V. F. Flores Estate. Drilled domestic water-table well in valley fill, diameter 6 inches, depth 135 feet. Highest water level 71.19 below lsd, Jan. 23, 1950; lowest 87.17 below lsd, Sept. 10, 1951. Records available: 1949-51. Jan. 22, 75.78; Mar. 14, 79.30; May 9, 83.66; July 13, 85.50, pumped recently; Sept. 10, 87.17; Nov. 12, 84.64.

14.25.2.233a. L. F. Massengale. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 200 feet. Highest water level 52.13 below lsd, Jan. 27, 1942; lowest 93.77 below lsd, Sept. 10. 1951. Records available: 1940-51. Jan. 23, 101.25, pumping; Mar. 14, 105.50, pumping; May 9, 106.89, pumping; Sept. 10, 93.77; Nov. 12, 92.86.

14.25.20.443. Breeb Hurst. Drilled unused water-table well in valley fill, diameter 10 inches, depth 86 feet. Highest water level 71.46 below lsd, Jan. 22, 1942; lowest 76.42 below lsd, May 11, 12, 1949. Records available: 1938-51. Jan. 18, 74.99; Mar. 15, 75.32; May 10, 75.57; July 13, 75.85; Sept 10, 76.06; Nov. 13, 76.35.

14.25.25.221. J. M. Norris. Drilled unused water-table well in valley fill, diameter 6 to 4 inches. Highest water level 24.50 below lsd, Jan. 16, 1926; lowest 78.82 below lsd, Dec. 5, 1951. Records available: 1926, 1937-47, 1949, 1951.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	e74.64	.....	.....	.....	.....	.....	.....	.....	78.14	78.66	78.75
2	.....	74.63	.....	.....	h75.68	.....	.....	.....	.....	78.17	78.74	78.78
3	.....	74.63	.....	.....	e75.66	.....	.....	.....	.....	78.17	.....	78.78
4	.....	74.62	.....	h75.21	e75.65	.....	.....	.....	h77.67	78.21	.....	78.78
5	h74.90	74.62	74.63	e75.23	75.66	.....	.....	.....	h77.70	.....	.....	78.82
6	74.91	74.66	74.61	75.23	75.66	.....	h76.67	h77.11	h77.72	.....	.....	78.80
7	.....	74.63	74.61	75.25	75.69	h76.08	76.67	e77.12	77.73	.....	.....	78.79
8	.....	74.62	74.62	75.26	75.71	e76.10	76.67	77.12	77.74	.....	.....	78.77
9	.....	74.62	74.61	75.28	75.76	76.14	76.67	77.16	77.80	.....	.....	78.78
10	.....	.....	74.65	75.29	h75.69	76.15	76.69	77.18	77.78	h78.44	.....	78.75
11	.....	.....	.....	75.22	75.71	76.15	76.71	77.24	h77.83	78.46	.....	78.71
12	.....	.....	.....	.....	75.73	76.18	76.79	77.25	77.84	78.48	h78.71	78.61
13	.....	.....	.....	.....	75.75	76.18	h76.57	77.25	77.88	78.53	78.77	78.73
14	.....	.....	h74.71	.....	75.76	76.21	e76.62	.....	77.88	78.55	78.77	78.72
15	.....	.....	74.68	.....	75.78	.....	.....	.....	77.90	78.55	78.78	.....
16	.....	.....	74.68	.....	75.77	.....	.....	.....	77.91	78.59	78.76	.....
17	.....	.....	74.74	h75.42	e75.80	.....	.....	.....	77.91	78.65	78.74	h78.63
18	.....	.....	74.76	e75.44	.....	.....	.....	.....	77.93	.....	78.76	78.55
19	74.70	.....	74.74	75.45	.....	.....	.....	.....	.....	h78.49	78.77	78.57
20	74.75	.....	74.78	75.44	.....	.....	.....	.....	.....	78.54	78.73	78.61
21	74.69	h74.97	74.77	75.48	.....	.....	.....	h77.44	.....	78.60	78.77	78.59
22	74.67	.....	.....	75.48	.....	76.33	.....	e77.44	.....	78.62	78.75	78.60
23	74.69	.....	.....	75.47	.....	76.33	.....	e77.45	.....	h78.64	78.73	78.62
24	74.70	.....	.....	75.50	.....	76.34	.....	77.46	.....	78.64	78.73	78.60
25	74.65	.....	.....	.....	.....	76.35	.....	77.48	.....	78.67	78.76	78.62
26	74.64	.....	.....	.....	.....	76.37	.....	77.51	.....	78.62	78.74	78.59
27	.....	.....	.....	.....	.....	76.39	.....	77.53	78.13	78.65	78.76	78.51
28	74.66	.....	.....	.....	.....	76.40	.....	77.56	78.10	78.65	78.74	h78.49
29	74.64		.....	.....	.....	76.39	.....	.....	78.11	78.64	78.74	78.54
30	74.62		.....	.....	.....	.....	.....	.....	78.16	78.66	78.69	78.52
31	74.66		.....		.....		.....	.....		78.67		78.53

e Estimated.
h Tape measurement.

14.26.7.443. O. T. Kunkel. Drilled domestic water-table well in valley fill, diameter 6 inches, depth 120 feet. Highest water level 23.69 below lsd, Mar. 8, 1927; lowest 56.20 below lsd, May 19, 1945. Records available: 1927, 1932, 1935-51. Jan. 19, 45.56; Mar. 14, 47.80; May 9, 38.85; July 13, 32.47; Sept. 10, 37.56, pumped recently; Nov. 12, 37.07.

14.26.12.433b. Commins. Drilled irrigation water-table well in valley fill. Highest water level 12.50 below lsd, Jan. 22, 1942; lowest 20.10, below lsd, Sept. 10, 1951. Records available: 1940-51. Jan. 22, 15.99; Mar. 15, 34.92, pumping; May 10, 35.36, pumping; July 13, 18.00; Sept. 10, 20.10; Nov. 12, 16.53.

14.26.15.322. F. H. Evans. Drilled unused water-table well in valley fill, diameter 6 inches, depth 34 feet. Highest water level 2.68 below lsd, Oct. 16, 1941; lowest 15.35 below lsd, Sept. 9, 11, 12, 1947. Records available: 1941-51. Jan. 19, 10.56; Mar. 15, 3.74; May 10, 7.67; July 13, 1.07; Sept. 10, 9.39; Nov. 12, 11.63.

14.26.15.333. Dub Andrus. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 178 feet. Highest water level 13.61 below lsd, Oct. 16, 1941; lowest 46.62 below lsd, Sept. 10, 1951. Records available: 1938-51. Jan. 19, 37.13; Mar. 15, 38.75; Sept. 10, 46.62; Nov. 12, 40.79.

14.26.19.444a. E. E. Lane. Drilled domestic water-table well in valley fill, diameter 16 inches, depth 109 feet. Highest water level 86.74 below lsd, Mar. 14, 1949; lowest 96.80 below lsd, Sept. 11, 1951. Records available: 1949-51. Jan. 18, 91.80; Mar. 14, 91.98; May 10, 94.52; July 13, 95.56; Sept. 11, 96.80; Nov. 12, 96.79.

14.26.32.331. F. B. Chambers. Formerly B. E. Spencer. Drilled unused water-table well in valley fill, diameter 6 inches, depth 104 feet. Highest water level 32.14 below lsd, Nov. 12, 1941; lowest 70.34 below lsd, July 13, 1951. Records available: 1927, 1937-51. Jan. 18, 68.18; Mar. 15, 69.10; May 10, 69.73; July 13, 70.34; Sept. 11, 70.15; Nov. 12, 70.27.

14.26.35.344. J. Q. Mitchell. Drilled unused water-table well in valley fill, depth 150 feet. Highest water level 65.68 below lsd, Jan. 22, 1943; lowest 81.53 below lsd, July 13, 14, 1950. Records available: 1939-51. Jan. 17, 71.44; Mar. 15, 71.23; May 10, 71.30; July 13, 71.62; Sept. 11, 71.91; Nov. 12, 72.22.

15.24.32.211. Carl Mangum. Drilled stock water-table well in valley fill, diameter 10 inches, depth 200 feet. Highest water level 37.63 below lsd, Jan. 9, 1945; lowest 57.99 below lsd, Sept. 11, 1951. Records available: 1940-51. Jan. 15, 51.26; Mar. 15, 52.51; May 11, 53.25; July 14, 56.54; Sept. 11, 57.99; Nov. 13, 54.05.

15.25.35.111. Mrs. Moss Spence. Drilled domestic water-table well in valley fill, diameter 6 inches. Highest water level 12.48 below lsd, Oct. 15, 1941; lowest 34.10 below lsd, Sept. 17. 1948. Records available: 1938-51. Jan. 16, 30.37; Mar. 15, 29.48, pumped recently; May 11, 28.11; July 13, 31.05,pumped recently; Sept. 11, 33.03; Nov. 13, 32.89.

15.26.4.444. Mrs. H. B. Cowan. Drilled unused water-table well in valley fill, diameter 6 inches, depth 106 feet. Highest water level 32.71 below lsd, Nov. 12, 1941; lowest 56.04 below lsd, Sept. 11, 1951. Records available: 1939-51. Jan. 17, 44.84; Mar. 15, 52.17; May 10, 47.39; July 13, 49.28; Sept. 11, 56.04; Nov. 12, 46.79.

15.26.19.212. Jim Revado. Drilled domestic and stock water-table well in valley fill, diameter 6 inches, depth 104 feet. Highest water level 39.53 below lsd, Jan. 17, 1951; lowest 40.60 below lsd, Nov. 13, 1951. Records available: 1951. Jan. 17, 39.53; Mar. 15, 39.74; May 11, 40.24; July 13, 40.07; Sept. 11, 40.39; Nov. 13, 40.60.

Eddy County

Roswell basin.—Net annual declines in shallow-water levels of more than 2 feet occurred under about 68 square miles and more than 4 feet under about 33 square miles. The declines of more than 4 feet were under two main areas, one extending from a few miles northwest of Artesia to Dayton, and the other under the pumped area west and southwest of Lake McMillan, in the vicinity of Lakewood. Declines in water levels of more than 10 feet occurred under about 2 square miles in 1951 at Lakewood. Net rises of water levels occurred in 1951 in two small areas. In the pumped area from 3 to 6 miles northwest of Artesia, rises of more than 4 feet occurred under about 3 square miles, which offset to some extent the 6-foot declines of the preceding year. About 2 miles east of Artesia water levels rose in 1951 more than 2 feet under about 2 square miles, where declines of more than 8 feet occurred in 1950. By the end of 1951, water levels were as much as 30 feet below the 1940 levels under a small area immediately west of Artesia and more than 15 feet below the 1940 levels at Dayton. (See fig. 37.)

Carlsbad area. --The irrigated lands in La Huerta and vicinity north of Carlsbad, the irrigated lands west of the Pecos River southward from Carlsbad to Black River and vicinity, and much unfarmed land principally west of the Southern Canal comprise the Carlsbad area in southeastern New Mexico. Most of the farm land is in the Carlsbad Irrigation District, where water is diverted from Lake Avalon on the Pecos River through the East Canal, which borders La Huerta on the north, and the Southern Canal, which extends roughly in a southward direction from Carlsbad to Black River. West of the Southern Canal and north of the East Canal, the farmed areas are irrigated entirely by water supplied from wells. In recent years numerous privately owned wells have been drilled in the Carlsbad Irrigation District to supplement the surface-water supply. The amount of ground water pumped from wells in the Carlsbad Irrigation District therefore depends upon the amount of surface water available, and that pumped over the entire area depends upon the amount and frequency of the precipitation during the growing season, and, to some extent, on other climatic conditions. (See fig. 38.)

Return of water applied to the irrigated lands, precipitation, and flood runoff through Dark Canyon and other draws provide recharge or increases in ground-water storage. The net yearly change in ground-water storage was observed by measuring water levels in January 1951 in about 75 wells in the Carlsbad area. These measurements are not included in this report but were used in preparing the map showing the change in water levels from January 1951 to January 1952. Bimonthly measurements of water levels were made in about 19 wells including well 22.26.24.224, equipped with a recording gage.

Precipitation in the vicinity of Carlsbad in 1951 was about 6.3 inches, considerably below the normal of 13.28 inches. Reported diversion of surface water in 1951 for the Carlsbad Irrigation District was less than 1950 and nearly equal to 1949, though deficient. This combination of unfavorable conditions resulted in large withdrawals of ground water for irrigation use.

Pumpage from the wells supplying water to the Thayer Apartments, the site of the former air base southwest of Carlsbad, was reportedly about 86 million gallons in 1951, a substantial increase from the 66 million gallons reported to have been pumped the previous year.

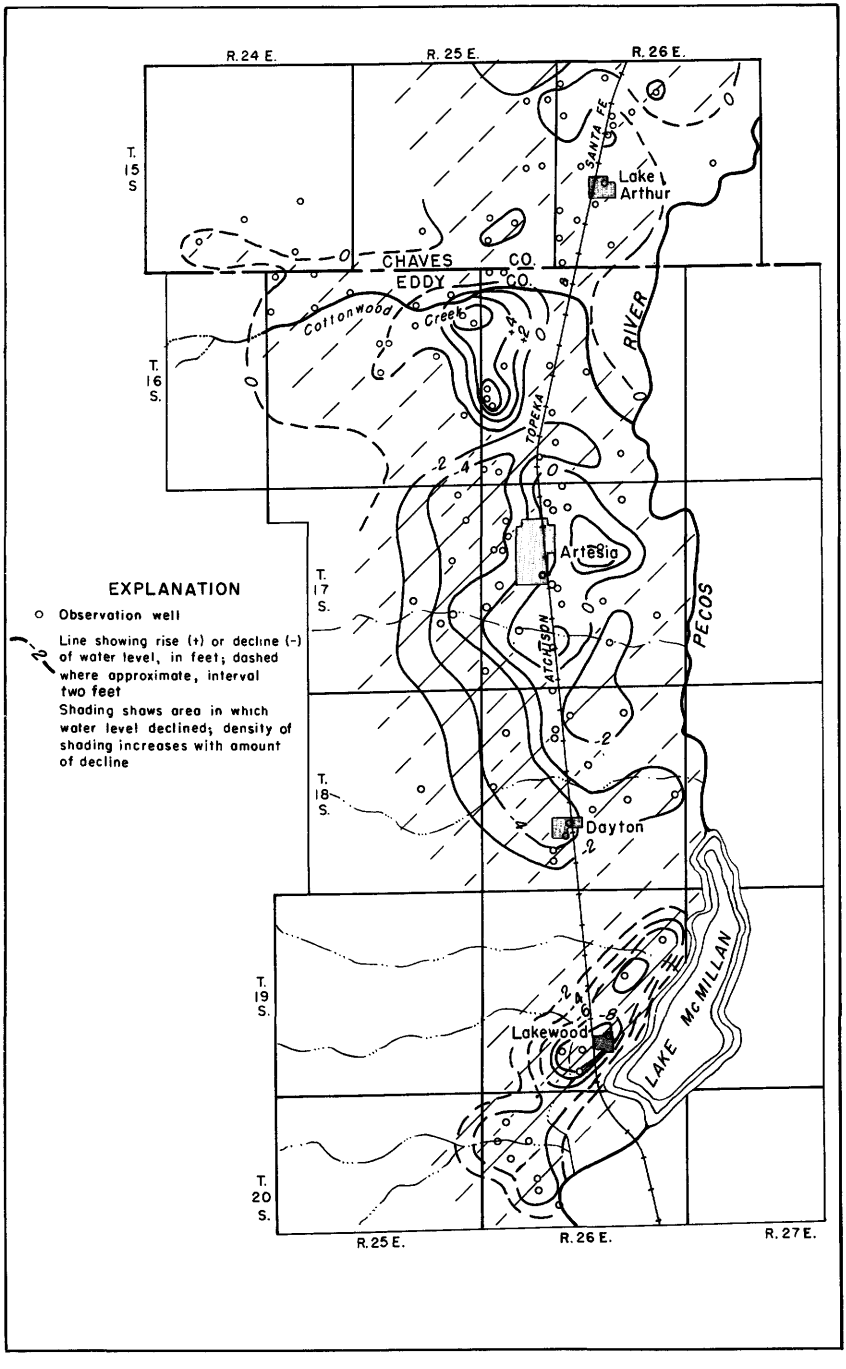

Figure 37.--Change in shallow ground-water level from January 1951 to January 1952 in southern part of Roswell basin, Eddy County, N. Mex.

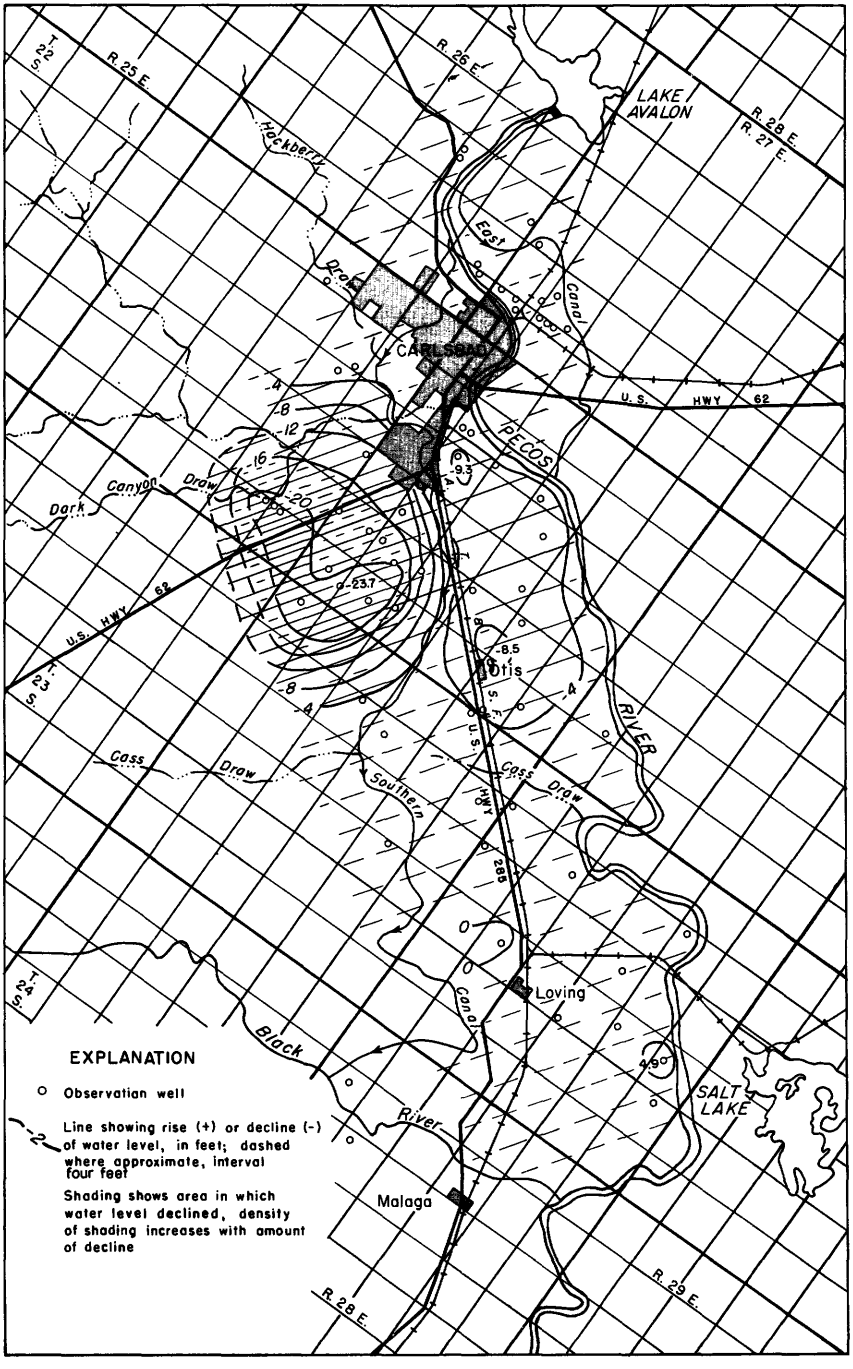

Figure 38. --Change in ground-water level from January 1951 to January 1952 in Carlsbad area, Eddy County, N. Mex.

Recharge from direct precipitation probably was small, and no large amount of recharge resulted from flood waters in arroyos. Recharge to the ground-water reservoir from irrigation return may have been about equal to that of previous years.

Because of heavy pumping and unfavorable recharge conditions during 1951, water levels declined appreciably over most of the area from January 1951 to January 1952, reaching the lowest levels on record in parts of the area. The net annual declines in water levels in the area west of the Southern Canal were greater in 1951 than in any year since records were begun in January 1947. The net declines in the area east of the Southern Canal in 1951 were nearly equal to the declines that occurred in 1947. The greatest declines occurred under the irrigated lands west of the Southern Canal, and in the vicinity of the former air base wells. The maximum decline observed was 23.7 feet in one well, while declines in excess of 20 feet occurred under about 4 square miles and more than 16 feet under about 7 square miles. Immediately west of the Southern Canal the water level was about 4 feet lower in January 1952 than in January 1951. In the area east of the Southern Canal and between 1 and 7 miles south of Carlsbad, water levels declined from 2 to more than 8 feet, locally, and were 6 or more feet lower under about 7 square miles. Farther south in that area, where ground water is used to supplement surface-water supplies, the general decline was less than 2 feet, although locally the water levels were more than 4 feet lower in January 1952 than January 1951. In Carlsbad and La Huerta, the decline in water levels was rather uniform, amounting to somewhat more than 2 feet in wells obtaining water from the Carlsbad limestone aquifer. The decline in water levels in the area east of the Southern Canal, while appreciable, is not considered critical at present. During years when sufficient surface water is available, pumping may be expected to be reduced materially, and recharge from irrigation return should replenish the ground-water reservoir in that area. West of the Southern Canal, the decline in water levels is critical inasmuch as pumping will necessarily be continued. Recharge to the ground-water body in this area is normally, in part, from flood waters in Dark Canyon and leakage of water from the Southern Canal. Both these sources were deficient in 1951. With a continuing decline of water levels in the area west of the Southern Canal, opportunity is increased for the more highly mineralized water to the east to move westward and cause a deterioration in the quality of water.

Roswell Basin

16.23.15.323. D. W. Runyan. Drilled stock water-table well in San Andres formation, diameter 10 inches, depth 1,485 feet. In intake area of artesian aquifer. Highest water level 211.87 below lsd, Mar. 25, 1945; lowest 228.31 below lsd, Nov. 14, 1951. Records available: 1940-51. Jan. 12, 225.16; Mar. 16, 225.65, pumped recently; May 15, 226.56; July 16, 227.12; Sept. 12, 229.38, pumped recently; Nov. 14, 228.31.

16.25.1.344. Buck Bros. Drilled domestic and stock water-table well in valley fill, diameter 6 inches, reported depth 120 feet. Highest water level 9.50 below lsd, Jan. 16, 1942; lowest 45.32 below lsd, Sept. 11, 1951. Records available: 1938-51. Jan. 15, 25.18, pumped recently; Mar. 15, 36.40, pumped recently; May 11, 31.00, pumped recently; July 14, 46.07, pumped recently; Sept. 11, 45.32; Nov. 13, 25.17.

16.25.6.Lot 4. F. M. Nelson. Drilled unused water-table well in valley fill, diameter 6 inches, depth 100 feet. Highest water level 9.84 below lsd, Apr. 14, 1942; lowest 15.97 below lsd, Dec. 6, 1943. Records available: 1937-51. Jan. 15, 13.33; Mar. 15, 12.20; May 11, 12.64; July 14, 14.03; Sept. 11, 12.77; Nov. 13, 9.90.

16.25.6.313. Frank Childress. Drilled unused water-table well in valley fill, diameter 20 inches. Highest water level 27.06 below lsd, Apr. 23, 1942; lowest 29.37 below lsd, Sept. 16, 1951. Records available: 1937-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	h28.40	July 14	28.86	Oct. 28	29.19	Dec. 1	28.83
8	28.27	15	28.84	29	29.13	2	28.78
9	28.08	16	28.84	30	29.13	3	28.78
10	28.08	17	28.83	31	29.14	4	28.76
11	28.17	18	28.87	Nov. 1	29.14	5	28.61
12	28.08	19	28.85	2	29.21	6	28.61
13	28.08	20	28.80	13	h28.89	7	28.82
14	28.13	21	28.80	14	28.92	8	28.94
15	28.29	Sept. 11	29.13	15	28.92	9	29.05
16	28.16	12	29.13	16	29.04	10	28.98
17	28.14	13	29.22	17	29.27	11	28.88
18	28.15	14	29.30	18	29.06	12	28.75
19	28.09	15	29.33	19	29.00	13	28.66
20	28.11	16	29.37	20	28.91	14	28.66
Mar. 15	h28.00	17	29.28	21	28.88	17	h28.70
16	27.84	Oct. 19	29.26	22	28.88	18	28.69
May 11	28.03	20	29.04	23	h28.92	19	28.51
12	27.94	21	29.02	24	28.90	20	28.50
13	27.94	22	29.07	25	28.92	21	h28.84

16.25.6.313--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 14	27.96	Oct. 23	29.20	Nov. 26	29.03	Dec. 28	h28.63
15	27.96	24	29.22	27	28.96	29	28.60
16	28.06	25	29.16	28	28.96	30	28.53
17	28.04	26	h29.19	29	28.93	31	28.52
18	28.06	27	29.18	30	h28.90		

h Tape measurement.

16.25.11.113. Cottonwood. Drilled observation artesian well in San Andres limestone, diameter 7 to 4 inches, depth 800 feet, depth to artesian aquifers 226-230, 526-550, 770-790. Land-surface datum is 3,454.39 feet above msl. Recording gage installed Mar. 13, 1951. Highest water level 41.55 below lsd, Dec. 31, 1951; lowest 63.45 below lsd, Sept. 14, 15, 1951. Records available: 1951.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	49.38	.....	46.88	53.40	.....	62.60	59.78	52.62	46.22
2	.....	.....	.....	49.82	.....	46.90	53.50	.....	62.75	59.73	52.35	45.95
3	.....	.....	.....	50.13	.....	47.00	53.57	.....	62.81	59.57	52.10	45.75
4	.....	.....	.....	50.35	.....	47.03	53.75	.....	62.91	59.45	51.70	45.63
5	.....	.....	.....	50.60	.....	47.14	53.90	.....	62.98	59.30	51.65	45.47
6	.....	.....	.....	50.80	.....	47.28	54.13	.....	63.03	59.20	51.43	45.46
7	.....	.....	.....	51.07	.....	47.38	54.27	58.45	63.13	59.00	51.20	45.28
8	.....	.....	.....	51.19	.....	47.47	54.41	58.58	63.32	58.88	51.05	45.22
9	.....	.....	.....	51.25	.....	47.67	54.64	58.73	63.23	58.60	51.00	.....
10	.....	.....	.....	50.88	.....	47.87	54.78	58.97	63.26	58.33	50.75	.....
11	.....	.....	.....	50.32	48.53	48.09	55.30	59.18	63.29	58.00	50.40	.....
12	.....	.....	.....	50.00	48.28	48.23	55.90	59.40	63.31	57.65	50.05	.....
13	.....	.....	e44.06	49.78	48.18	48.57	56.15	59.54	63.44	57.38	49.83	.....
14	.....	.....	44.23	49.54	48.05	48.93	56.41	59.72	63.45	57.05	49.55	.....
15	.....	.....	e44.75	49.48	47.97	49.37	56.55	59.88	63.45	56.80	49.42	.....
16	.....	.....	45.10	49.32	47.69	49.75	.....	60.18	63.00	56.61	49.36	.....
17	.....	.....	45.51	49.13	47.53	50.20	.....	60.38	62.60	56.36	49.06	.....
18	.....	.....	46.13	49.00	47.37	50.43	.....	60.60	62.35	56.17	48.65	43.20
19	.....	.....	46.52	.....	47.24	50.69	.....	60.80	62.15	h55.84	48.40	42.97
20	.....	.....	46.80	.....	46.98	51.07	56.97	61.07	61.95	55.30	48.14	42.93
21	.....	.....	47.10	.....	46.88	51.37	57.16	61.22	61.85	55.10	47.99	42.87
22	.....	.....	47.29	.....	46.92	51.61	57.38	61.40	61.40	.....	47.85	42.68
23	.....	.....	47.55	.....	46.83	51.97	57.45	61.58	60.93	.....	47.72	42.57
24	.....	.....	47.64	.....	46.75	52.32	57.44	61.71	60.65	54.50	47.53	42.40
25	.....	.....	47.72	.....	46.78	52.58	57.26	61.87	60.40	54.35	47.30	42.34
26	.....	.....	47.84	.....	46.75	52.94	e57.13	61.97	60.30	54.05	47.12	42.28
27	.....	.....	47.90	.....	46.69	52.98	e57.00	61.97	60.18	53.80	46.90	42.07
28	.....	.....	48.07	.....	46.59	53.04	56.86	62.03	60.05	53.48	46.72	41.88
29	.....		48.30	.....	46.55	53.10	.....	62.22	59.93	53.20	46.51	41.76
30	.....		48.53	.....	46.62	53.22	.....	62.37	59.90	53.00	46.45	41.59
31	.....		48.96		46.83		.....	62.48		52.80		41.55

e Estimated.
h Tape measurement.

16.26.19.133a. E. Jeffries. Drilled unused water-table well in valley fill, diameter 13 inches, depth 71 feet. Highest water level 30.18 below lsd, Nov. 13, 1951; lowest 31.69 below lsd, Jan. 15, 1951. Records available: 1951. Jan. 15, 31.69; Nov. 13, 30.18.

16.26.19.411. E. Jeffries. Drilled unused water-table well in valley fill, diameter 6 inches. Highest water level 21.63 below lsd, Sept. 14, 17, 1949; lowest 49.11 below lsd, Sept. 15-19, 1945. Records available: 1938-51. Jan. 13, 33.36, nearby well being pumped; Mar. 15, 30.18, nearby well being pumped; May 11, 28.54. Measurement discontinued.

16.26.28.333. H. L. Williams. Drilled unused water-table well in valley fill, diameter 6 inches, reported depth 87 feet. Highest water level 8.17 below lsd, Mar. 13, 1942; lowest dry, Sept. 11, 1951. Records available: 1938-51. Jan. 11, 33.63; Mar. 15, 35.70; May 11, 37.32; July 14, 39.87; Sept. 11, dry, at 40.40; Nov. 13, 39.90.

17.25.35.411. Ed Kissinger Estate. Drilled unused water-table well in valley fill, diameter 8 inches. Highest water level 107.95 below lsd, Jan. 28, 1943; lowest 140.16 below lsd, May 14, 1951. Records available: 1938-51. Jan. 9, 135.49; Mar. 19, 138.48; May 14, 140.16.

17.26.7.344. W. F. Culbertson. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 129 feet. Highest water level 31.53 below lsd, Jan. 14, 1942; lowest 77.92 below lsd, Sept. 11, 1951. Records available: 1940-51. Jan. 10, 66.58; May 14, 71.45; July 14, 74.80; Sept. 11, 77.92; Nov. 14, 73.83.

17.26.10.333. Roy Ingram. Formerly V. L. Gates. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 247 feet. Highest water level 4.60 below lsd, Jan. 14, 1942; lowest 53.80 below lsd, Sept. 13, 1951. Records available: 1939-51. Mar. 19, 46.41; May 14, 21.46; July 14, 36.56; Sept. 13, 53.80; Nov. 15, 19.08.

17.26.16.333. Artesia Cemetery. Drilled municipal water-table well in valley fill, diameter 6 inches. Highest water level 6.14 below lsd, Jan. 13, 1942; lowest 57.10 below lsd, Sept. 13, 1951. Records available: 1937-51. Jan. 10, 34.40; Mar. 19, 47.46; May 14, 37.54; July 14, 52.58; Sept. 13, 57.10; Nov. 15, 34.60.

17.26.24.333. Mary E. Yates. Dug unused water-table well in valley fill, diameter 2 inches, depth 6 feet. Highest water level 2.13 below lsd, Jan. 13, 1942; lowest 5.85 below lsd, Sept. 18, 20, 1948. Records available: 1941-51. Jan. 10, 2.90; Mar. 19, 2.43; May 14, 2.86, July 14, 3.48; Measurement discontinued.

18.23.5.333. Joe Clements. Drilled stock water-table well in San Andres formation, diameter 6 inches, depth 420 feet. In intake area of artesian aquifer. Highest water level 385.50 below lsd, July 21, 1945; lowest 422.54 below lsd, Nov. 14, 1951. Records available: 1945-51. Jan. 12, 418.28; Mar. 16, 418.42; May 15, 419.10; July 16, 419.67; Sept. 12, 421.14, pumped recently; Nov. 14, 422.54.

18.25.23.111. Mrs. G. M. Phelps. Drilled unused artesian (?) well in San Andres formation, diameter 8 inches, depth 300 feet. Highest water level 90.67 below lsd, Jan. 12, 1942; lowest 146.36 below lsd, Sept. 13, 1951. Records available: 1942-51. Jan. 9, 127.47; Mar. 19, 142.70; May 14, 138.40; July 16, 143.47; Sept. 13, 146.36; Nov. 15, 138.41.

18.26.4.111b. T. A. Southard. Drilled domestic water-table well in valley fill, diameter 6 inches, reported depth 200 feet. Highest water level 18.19 below lsd, Jan. 28, 1943; lowest 40.75 below lsd, Mar. 19, 1951. Records available: 1937-51. Jan. 10, 37.06; Mar. 19, 40.75; May 14, 38.65, pumped recently; July 14, 45.26, pumped recently; Sept. 13, 51.59, pumped recently; Nov. 15, 51.02, pumped recently.

18.26.5.330. Artesia. Drilled unused artesian well in San Andres limestone, diameter 8 inches, depth 1,056 feet, depth to artesian aquifers 750, 820, and 905. Land-surface datum is 3,394.50 feet above msl. Highest water level 8.30 above lsd, Jan. 12, 1942; lowest 83.55 below lsd, Aug. 24, 1951. Records available: 1931-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.36	30.86	38.19	.....	e47.00	45.59	72.65	59.34	82.18	61.39	40.50	34.34
2	28.70	29.87	39.25	.....	h48.19	45.93	72.18	60.70	80.97	60.92	40.22	33.76
3	29.15	29.50	40.30	.....	e46.45	44.74	72.95	64.14	80.37	61.03	39.72	33.53
4	29.90	30.52	40.17	.....	46.72	44.04	73.01	67.21	81.98	60.39	39.10	33.56
5	30.26	30.43	39.69	.....	e47.00	44.95	73.56	68.69	82.55	61.12	38.99	33.32
6	31.25	31.59	41.21	.....	45.40	44.80	74.21	70.23	83.08	59.64	38.83	33.19
7	30.98	33.63	42.58	.....	44.64	45.45	75.35	74.01	83.09	57.24	38.38	33.34
8	30.50	34.70	43.22	.....	44.72	46.18	75.05	76.57	82.50	56.32	38.08	32.92
9	31.16	36.11	44.01	.....	44.32	47.28	74.38	77.55	81.47	55.25	37.78	32.47
10	32.47	37.14	43.38	.....	44.35	46.52	75.53	79.64	80.99	55.15	37.48	32.18
11	33.71	37.43	43.47	.....	43.12	46.12	74.75	79.65	80.25	53.68	36.87	32.06
12	35.15	37.14	43.00	.....	42.20	.....	69.13	79.40	79.78	52.95	36.64	31.62
13	36.43	36.00	.....	.....	41.00	.....	68.23	79.84	79.39	52.71	36.42	31.37
14	36.00	32.88	.....	.....	40.30	.....	67.36	81.25	77.68	.....	36.55	31.43
15	35.32	32.25	.....	.....	40.99	.....	65.45	81.64	75.82	.....	36.34	31.91
16	37.05	32.71	.....	.....	42.71	.....	64.92	82.50	72.97	.....	36.83	31.42
17	37.40	33.63	.....	h47.63	42.95	.....	65.02	81.99	71.92	50.55	36.96	31.21
18	37.80	33.72	.....	.....	43.09	.....	65.66	82.68	71.45	50.30	36.18	31.43
19	37.86	33.10	h59.27	.....	43.15	.....	66.39	82.55	70.88	48.39	35.92	31.08
20	38.51	33.67	58.23	.....	43.36	.....	67.38	82.22	70.09	47.17	36.19	30.98
21	38.23	33.92	.....	.....	43.08	.....	68.68	82.60	69.35	46.02	36.14	31.18
22	37.21	34.57	.....	.....	43.88	.....	66.68	83.01	68.07	45.82	35.93	31.12
23	37.80	35.13	.....	.....	44.55	63.40	62.56	83.42	65.60	45.64	35.87	30.96
24	38.37	35.75	.....	.....	42.36	64.70	58.08	83.55	64.77	45.50	35.86	30.68
25	38.80	34.39	.....	.....	41.56	66.23	55.92	82.67	64.34	45.45	35.36	30.49

18.26.5.330--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
26	38.64	33.92	.....	.....	40.93	67.94	55.00	80.35	64.33	44.52	35.05	30.56
27	38.63	35.67	.....	.....	40.58	69.88	54.54	79.70	64.22	43.57	34.91	30.52
28	37.57	37.26	.....	.....	40.02	71.04	55.37	81.47	63.67	42.73	34.64	30.33
29	36.32		.....	.....	41.83	71.95	56.05	82.37	63.25	42.08	34.76	30.34
30	35.94		.....	.....	43.98	72.84	55.39	82.86	62.37	41.78	34.43	30.45
31	32.93		.....		45.19		57.63	82.19		41.16		30.16

e Estimated.
h Tape measurement.

18.26.7.234a. C. H. Hutsonpiller. Drilled unused water-table well in valley fill, diameter 8 inches, depth 159 feet. Highest water level 43.50 below lsd, Feb. 9, 1943; lowest 75.13 below lsd, Oct. 1, 2, 3, 1951. Records available: 1937-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	75.13	71.64	68.94
2	.....	h63.00	.....	.....	h69.69	.....	.....	.....	.....	75.13	71.52	68.88
3	.....	63.00	.....	.....	69.72	.....	.....	.....	.....	75.13	.....	68.85
4	h62.14	63.00	.....	.....	69.75	.....	.....	.....	h74.34	75.11	.....	68.79
5	62.12	63.01	h64.00	67.60	69.79	.....	.....	.....	74.36	.....	.....	68.68
6	62.14	63.03	.....	67.69	69.79	.....	h71.15	e72.58	74.40	.....	.....	68.69
7	62.19	63.05	.....	67.87	69.74	68.16	71.20	72.65	74.44	.....	.....	68.67
8	62.11	63.08	.....	68.00	69.69	68.16	71.34	72.74	74.49	.....	.....	.....
9	62.08	63.19	.....	68.15	69.67	68.17	71.47	72.84	74.52	.....	.....	.....
10	62.14	.....	.....	68.27	.....	68.18	71.60	72.94	74.56	h74.98	.....	.....
11	62.08	.....	.....	68.44	h69.36	68.22	71.74	73.04	74.60	74.85	.....	.....
12	62.10	.....	.....	68.55	69.27	68.30	71.82	.....	.....	74.72	.....	.....
13	62.13	.....	.....	68.63	69.18	68.39	71.45	.....	h74.67	74.60	.....	.....
14	62.22	.....	.....	.....	69.07	68.47	72.02	.....	74.68	74.46	.....	.....
15	62.25	.....	.....	.....	68.96	.....	.....	.....	74.72	74.33	70.09	.....
16	62.23	.....	.....	.....	68.85	.....	h72.13	.....	74.77	74.20	70.07	.....
17	.....	.....	.....	h69.05	68.75	.....	72.15	.....	74.78	74.09	69.97	h67.68
18	h62.32	.....	.....	69.10	68.65	.....	72.20	.....	74.82	.....	69.85	67.55
19	62.34	.....	h64.84	69.19	.....	.....	72.25	.....	74.85	h73.28	69.77	67.42
20	62.39	.....	64.89	69.27	.....	.....	72.31	.....	74.88	73.15	69.66	67.40
21	62.52	h63.65	65.04	69.36	.....	.....	72.37	h73.66	74.90	73.03	69.58	h67.36
22	62.48	63.65	65.19	69.44	.....	h68.85	72.45	e73.69	.....	72.92	69.40	67.27
23	62.50	63.67	65.35	69.46	.....	68.92	72.51	e73.77	.....	72.79	69.39	67.21
24	62.60	63.72	65.57	69.42	.....	69.06	.....	e73.86	.....	72.64	69.34	67.12
25	62.67	63.73	65.73	.....	.....	69.22	.....	e73.96	.....	72.51	69.32	67.08
26	.....	63.80	65.80	.....	.....	69.37	.....	e74.05	.....	h72.38	69.25	67.05
27	.....	63.81	65.96	.....	.....	69.53	.....	e74.15	h75.08	72.26	69.16	66.93
28	.....	63.83	.....	.....	.....	e69.70	.....	e74.24	75.09	72.13	69.08	66.79
29	.....		.....	.....	.....	.....	.....	.....	75.10	72.00	69.00	66.72
30	.....		.....	.....	.....	.....	.....	.....	75.12	71.86	68.92	66.62
31	.....		.....		.....		.....	.....		71.75		66.58

e Estimated.
h Tape measurement.

18.26.24.223a. R. G. Goodwin. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 63 feet. Highest water level 4.29 below lsd, Mar. 19, 1951; lowest 11.20 below lsd, Sept. 12, 1947. Records available: 1947-51. Jan. 9, 5.03; Mar. 19, 4.29; May 14, 5.14; July 17, 6.66; Sept. 12, 7.80; Nov. 14, 8.28.

18.26.28.121. Formerly 18.26.21.344. Town of Dayton. Drilled unused water-table well in valley fill, diameter 6 inches, depth 61 feet. Measurement discontinued. Replaced by well 18.26.28.121a. Highest water level 32.91 below lsd, Feb. 9, 1943; lowest dry, July 17, 1951. Records available: 1939-51. Measurement discontinued.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July
1	56.04	55.73	55.71	56.71	57.96	58.08	58.57
2	56.04	.....	55.73	56.78	57.96	58.08	58.63
3	56.08	55.69	55.75	56.83	57.97	58.09	58.65
4	56.08	55.71	55.74	56.87	57.97	58.08	58.71
5	56.07	55.64	55.74	56.96	57.98	58.07	58.75

18.26.28.121--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July
6	56.08	55.72	55.74	57.02	58.00	58.08	58.80
7	55.94	55.73	55.74	57.10	57.98	58.09	58.83
8	h55.85	55.73	55.74	57.15	57.97	58.11	58.84
9	55.81	55.74	55.75	57.22	57.99	58.12	.....
10	55.87	55.73	55.75	57.25	57.98	58.10	.....
11	55.79	55.73	55.77	57.34	57.95	58.12	.....
12	55.78	55.68	55.78	57.40	57.95	58.13	.....
13	55.79	55.72	55.76	57.43	57.95	58.15	.....
14	55.79	55.70	55.77	57.47	57.95	58.14	.....
15	55.78	55.68	55.77	57.54	57.96	58.16	.....
16	55.74	55.68	55.82	57.60	57.95	58.17	.....
17	55.74	55.68	55.87	57.60	57.97	58.17	(f)
18	55.72	55.67	56.00	57.64	57.99	58.17	.....
19	55.71	55.68	h55.98	57.67	57.99	58.17	.....
20	55.73	55.73	56.03	57.69	57.97	58.21	.....
21	55.73	55.73	56.07	57.73	58.01	58.25	.....
22	55.72	55.73	56.12	57.77	58.05	58.25	.....
23	55.72	55.74	56.19	57.63	58.08	58.29	.....
24	55.73	55.74	56.25	57.75	58.07	58.31	.....
25	55.72	55.73	56.31	57.81	58.08	58.33	.....
26	55.72	55.74	56.34	57.83	58.09	58.38	.....
27	55.72	55.73	56.38	57.87	58.09	58.40	.....
28	55.73	55.75	56.46	57.87	58.09	58.45	.....
29	55.70		56.54	57.85	58.09	58.48	.....
30	55.71		56.57	57.93	58.08	58.51	.....
31	55.72		56.62		58.07		.....

h Tape measurement.
f Dry at 61.15
* No record for August, September, October, November, and December.

18.26.28.121a. Town of Dayton. Drilled observation water-table well in valley fill, about 25 feet east of 18.26.28.121, completed Aug. 13, 1951, diameter 8 inches, depth 250 feet, cased to 182, casing slotted from 92-182. Recording gage installed Aug. 16, 1951. Highest water level 60.21 below lsd, Aug. 16, 1951; lowest 62.50 below lsd, Oct. 23, 1951. Records available: 1951.

Daily highest water level from recorder graph

Day	Aug.	Sept.	Oct.	Nov.	Dec.	Day	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	60.94	62.14	62.39	61.58	17	60.25	61.65	62.47	62.04	61.11
2	.....	60.95	62.17	62.36	61.54	18	60.30	61.70	62.49	61.98	61.05
3	.....	61.02	62.21	62.33	61.52	19	60.33	61.74	62.46	61.97	61.01
4	.....	61.07	62.26	62.30	61.46	20	60.37	61.78	62.43	61.92	61.02
5	.....	61.12	62.28	62.33	61.40	21	60.43	61.85	62.48	61.90	61.01
6	.....	61.16	62.35	62.31	61.45	22	60.46	61.86	62.48	61.87	60.95
7	.....	61.18	62.34	62.27	61.42	23	60.51	61.90	62.50	61.85	60.94
8	.....	61.23	62.37	62.20	61.40	24	60.56	61.94	62.47	61.81	60.87
9	.....	61.27	62.36	62.22	61.37	25	60.61	61.96	62.47	61.81	60.89
10	.....	61.32	62.39	62.18	61.30	26	60.66	61.96	62.46	61.77	60.87
11	.....	61.37	62.40	62.13	61.29	27	60.70	62.04	62.47	61.71	60.78
12	.....	61.43	62.41	62.08	61.25	28	60.77	62.06	62.45	61.69	60.74
13	.....	61.48	62.44	62.09	61.21	29	60.82	62.09	62.43	61.66	60.73
14	.....	61.53	62.45	62.05	61.22	30	60.85	62.13	62.43	61.62	60.68
15	.....	61.57	62.43	62.10	61.19	31	60.89		62.40		60.67
16	h60.21	61.61	62.46	62.11	61.13						

h Tape measurement.

19.23.27.111. C. R. Coffin. Drilled stock water-table well in San Andres limestone, diameter 6 inches, depth 416 feet. Land-surface datum is 3,940 feet above msl. In intake area of artesian aquifer. Highest water level 368.75 below lsd, Oct. 19, 1943; lowest 380.40 below lsd, July 13, 1949. Records available: 1940-51. Jan. 12, 379.38, pumped recently; May 15, 379.72 pumped recently; July 16, 376.54; Sept. 12, 375.93.

19.26.12.323c. Forrest Lee. Drilled unused water-table well in valley fill, diameter 6 inches, depth 36 feet. Highest water level 24.04 below lsd, Jan. 7, 1950; lowest 32.66 below lsd, May 16, 1949. Records available: 1949-51. Jan. 8, 24.54; Mar. 19, 27.50; May 14, 25.97; July 17, 29.20; Sept. 12, 31.75; Nov. 14, 32.11.

19.26.14.431a. Albert Lee. Drilled unused water-table well in valley fill, diameter 6 inches, depth 100 feet. Highest water level 11.75 below lsd, Jan. 4, 1945; lowest 31.27 below lsd, Nov. 14, 1951. Records available: 1945-46, 1948-51. Jan. 8, 18.77; Mar. 19, 35.62, nearby well being pumped; May 14, 26.37; July 17, 42.57, nearby well being pumped; Sept. 12, 45.29, nearby well being pumped; Nov. 14, 31.27.

19.26.27.233. Lakewood School. Drilled domestic water-table well in valley fill, diameter 8 inches, depth 127 feet. Highest water level 37.63 below lsd, May 11, 1942; lowest 74.70 below lsd, May 14, 1951. Records available: 1937-39, 1941-51. Jan. 8, 51.24, pumped recently, Mar. 19, 66.12, pumping; May 14, 74.70; July 17, 67.26, pumping; Sept. 13, 68.35, pumped recently; Nov. 15, 65.10, pumped recently.

20.26.7.122. J. B. Moutry. Formerly P. S. Campbell. Drilled domestic water-table well in valley fill, diameter 6 inches, depth 120 feet, cased to 120. Highest water level 35.48 below lsd, Nov. 12, 1941; lowest 72.61 below lsd, Sept. 13, 1951. Records available: 1937-51. Jan. 8, 54.08; Mar. 19, 57.91; May 14, 59.28, pumped recently; July 17, 65.81, pumped recently; Sept. 13, 72.61; Nov. 15, 63.54.

Carlsbad area

21.27.19.334. F. R. Dickson. Drilled irrigation artesian (?) well in Carlsbad limestone, diameter 12 inches, depth 320 feet, cased to 94. Land-surface datum is 3,136 feet above msl. Highest water level 26.10 below lsd, Jan. 17, 1950; lowest 31.20 below lsd, Nov. 19, 1951. Records available: 1946-51. Jan. 15, 28.15; Mar. 22, 26.93; July 17, 30.24; Sept. 17, 31.16; Nov. 19, 31.20.

21.27.30.442. T. Ives. Drilled domestic and irrigation artesian (?) well in Carlsbad limestone, diameter 7 inches, reported depth 256 feet. Highest water level 7.80 below lsd, Sept. 21, 1949; lowest 13.96 below lsd, May 18, 1951. Records available: 1947-51. Jan. 15, 10.06; Mar. 22, 11.47; May 18, 13.96; July 17, 17.84, pumped recently; Sept. 17, 16.15, pumped recently; Nov. 19, 13.56.

21.27.32.112. L. E. Loman. Drilled domestic and irrigation artesian well in Carlsbad limestone, diameter 6 inches, reported depth 305 feet. Land-surface datum is 3,112 feet above msl. Highest water level 4.64 below lsd, Jan. 17, 1950; lowest 8.84 below lsd, Nov. 19, 1951. Records available: 1947-51. Jan. 15, 6.10; Mar. 22, 5.07; May 18, 7.05; July 17, 8.05; Sept. 17, 8.78; Nov. 19.8.84.

21.27.32.112a. S. Tracy. Drilled irrigation water-table well in alluvium, diameter 15 inches, reported depth 105 feet. Land-surface datum is 3,112 feet above msl. Highest water level 11.09 below lsd, Sept. 15, 1950; lowest 14.95 below lsd, Jan. 24, 1950. Records available 1950-51. Jan. 15, 12.69; Mar. 22, 12.98; May 18, 12.48; July 17, 12.23; Sept. 17, 13.16; Nov. 19, 13.71.

22.26.3.344. O. G. Willis. Drilled irrigation artesian (?) well in Carlsbad limestone, diameter 14 inches, reported depth 360 feet. Land-surface datum is 3,180 feet above msl. Highest water level 72.43 below lsd, Jan. 17, 1950; lowest 77.91 below lsd, Jan. 7, 1948. Records available: 1948-51. Jan. 15, 76.97.

22.26.14.213. H. E. Stevenson. Drilled irrigation artesian(?) well in Carlsbad(?) limestone and Rustler(?) limestone, reported depth 200 feet. Land-surface datum is 3,180 feet above msl. Highest water level 63.87 below lsd, Jan. 17, 1950; lowest 69.73 below lsd, Nov. 15, 1951. Records available: 1947-51. Jan. 16, 66.19; Mar. 22, 65.22; July 18, 68.55; Sept. 17, 69.53; Nov. 15, 69.73.

22.26.24.224. D. N. Vest. Drilled unused water-table well in alluvium, diameter 11 inches, depth 200 feet. Highest water level 72.42 below lsd, Oct. 21, 1950; lowest 92.19 below lsd, Dec. 26, 1951. Records available: 1948-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	77.56	79.68	78.37	79.38	.....	81.13	82.10	83.40	86.84	90.22	91.88	e91.82
2	77.57	.....	78.34	79.77	.....	81.08	82.18	.....	87.02	90.23	91.92	e91.81
3	77.68	79.25	78.60	79.81	h81.44	81.21	82.27	83.65	87.16	90.32	91.81	91.96
4	77.81	79.21	78.66	79.86	.....	81.04	82.33	83.82	87.27	90.41	e91.73	91.80
5	77.79	78.98	78.63	80.04	.....	80.86	82.61	83.99	87.36	90.56	e91.73	91.71
6	77.89	79.18	78.77	80.16	.....	80.76	82.84	84.06	87.49	90.66	e91.75	91.78
7	78.01	79.42	79.02	80.24	.....	80.70	82.84	84.14	87.69	90.82	91.87	92.00
8	77.87	79.31	79.18	80.12	.....	80.76	82.81	84.23	87.86	90.89	91.75	92.07
9	77.85	79.54	79.40	80.17	.....	80.80	82.69	84.37	87.96	90.95	91.81	92.12
10	78.23	79.45	79.48	80.10	81.50	80.60	82.68	84.64	88.14	91.00	91.85	91.95

22.26.24.224--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	78.23	79.20	79.64	80.39	.....	80.54	82.77	84.88	88.21	91.06	91.76	91.92
12	78.39	78.95	79.63	80.50	.....	80.58	82.86	84.94	88.33	91.15	91.70	91.84
13	78.61	79.07	79.38	80.39	.....	80.56	83.00	84.90	88.47	91.29	91.74	91.83
14	78.85	79.05	79.47	80.34	.....	80.44	83.08	84.90	88.48	91.45	91.78	91.92
15	78.88	78.79	79.46	80.42	.....	80.34	83.05	84.98	88.52	91.51	91.80	92.06
16	78.80	78.59	79.27	80.78	81.49	80.40	83.08	85.07	88.64	91.58	92.03	91.94
17	78.94	78.46	79.33	80.68	81.62	80.49	h83.19	85.08	88.65	91.74	92.02	91.90
18	79.18	78.37	.....	80.79	81.79	80.57	83.26	85.31	88.71	91.83	91.83	91.92
19	79.17	78.26	79.33	80.87	81.87	80.65	83.30	85.44	88.78	91.83	91.85	91.79
20	79.27	78.54	79.20	80.88	81.82	80.70	83.30	85.48	88.89	91.75	91.79	91.83
21	79.37	78.33	79.14	.....	81.86	81.01	83.39	85.60	89.05	91.81	91.81	92.06
22	79.17	78.27	79.03	.....	81.97	81.13	83.51	85.80	89.31	91.96	91.82	91.96
23	79.19	78.33	79.13	.....	81.84	81.21	83.62	85.94	89.39	92.02	91.86	92.07
24	79.46	78.29	79.13	.....	81.71	81.27	83.55	86.04	89.51	91.93	91.84	91.97
25	79.46	78.22	79.05	.....	81.70	81.32	83.48	86.14	89.59	91.89	91.95	92.04
26	79.31	78.42	78.77	h81.37	81.69	81.36	83.38	86.20	89.65	91.91	91.97	92.19
27	79.39	78.24	78.76	.....	81.55	81.47	.....	86.23	89.79	91.96	91.88	92.00
28	79.58	78.38	78.92	.....	81.48	81.62	.....	86.33	90.02	91.92	91.91	91.90
29	79.76		79.31	.....	81.41	81.75	.....	86.41	90.06	91.87	91.88	91.93
30	79.57		79.16	.....	81.34	81.82	.....	86.50	90.17	91.92	91.86	91.90
31	79.59		79.21		81.19		83.33	86.64		91.89		91.89

e Estimated.
h Tape measurement.

22.26.35.222. Carlsbad Airfield No. 3. Drilled municipal water-table well in alluvium, diameter 12 inches, depth 256 feet. Highest water level 132.53 below lsd, Oct. 14, 1942; lowest 185.11 below lsd, Sept. 14, 1951. Records available: 1942-51. Jan. 8, 148.97; Mar. 22, 150.91; May 18, 167.07.

22.26.36.111. Carlsbad Airfield No. 1. Drilled municipal water-table well in alluvium, diameter 12 inches, depth 194 feet. Highest water level 131.81 below lsd, Oct. 14, 1942; lowest 183.91 below lsd, Sept. 14, 1951. Records available: 1942-51. Jan. 18, 147.95; Mar. 22, 149.95; May 18, 166.10; July 20, 176.33; Sept. 14, 183.91; Nov. 19, 175.78.

22.26.36.111a. Carlsbad Airfield No. 2. Drilled unused water-table well in alluvium, diameter 12 inches, depth 260 feet. Highest water level 131.50 below lsd, Oct. 14, 1942; lowest 183.83 below lsd, Sept. 14, 1951. Records available: 1942-51. Mar. 22, 149.80; May 18, 165.95; July 20, 176.30, nearby well being pumped; Sept. 14, 183.83; Nov. 19, 175.69.

22.27.10.333. Mrs. M. Enifer. Drilled irrigation water-table well in alluvium, diameter 18 inches. Land-surface datum is 3,080 feet above msl. Highest water level 3.80 below lsd, Sept. 15, 1950; lowest 14.25 below lsd, Mar. 18, 1949 Records available: 1947-51. Jan. 16, 6.30; Mar. 22, 6.81; May 16, 6.10; July 17, 5.02; Sept. 14, 9.53; Nov. 19, 11.11.

22.27.22.421. Enea Grandi. Drilled irrigation water-table well in alluvium, diameter 16 inches, reported depth 150 feet. Land-surface datum is 3,100 feet above msl. Highest water level 21.43 below lsd, Sept. 14, 15, 18, 1950; lowest 36.07 below lsd, Sept. 14, 1951. Records available: 1947-51. Jan. 16, 26.00; Mar. 22, 26.14; May 16, 25.59; July 17, 28.96; Sept. 14, 36.07; Nov. 19, 31.71.

22.27.28.133. I. L. Skeen. Drilled irrigation water table well in alluvium, diameter 16 inches, depth 205 feet. Land-surface datum is 3,137 feet above msl. Highest water level 57.05 below lsd, Jan. 18, 1950; lowest 88.47 below lsd, Sept. 14, 1951. Records available: 1947-51. Jan. 16, 73.46, pumping; Mar. 21, 59.80; May 17, 75.48; July 19, 83.93; Sept. 14, 88.47; Nov. 17, 82.96.

22.27.30.133. W. H. Merchant. Drilled unused water-table well in limestone conglomerate and alluvium, diameter 8 inches, depth 207 feet. Land-surface datum is 3,190 feet above msl. Highest water level 96.80 below lsd, Nov. 24, 1944; lowest 141.20 below lsd, Sept. 14, 1951. Records available: 1944-51. Jan. 16, 108.27; Mar. 22, 111.03; May 18, 124.85; July 17, 137.47; Sept. 14, 141.20; Nov. 17. 133.57.

22.27.31.422. Lewis Allen. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 202 feet. Highest water level 112.30 below lsd, Jan. 16, 1951; lowest 147.76 below lsd, Nov. 17, 1951. Records available: 1949-51.

22.27.31.422--Continued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 17, 1949	125.04	Mar. 24, 1950	129.45	Nov. 14, 1950	120.73	July 19,1951	a179.53
July 23	138.43	May 16	c154.02	Jan. 16, 1951	112.30	Sept. 14	c164.39
Sept. 20	133.65	July 18	140.66	Mar. 21	116.0	Nov. 17	147.76
Nov. 9	119.90	Sept. 15	135.36	May 17	c154.96		

a Pumping.
b Pumped recently.

22.27.35.433. Munoz Methola. Drilled irrigation water-table well in alluvium, diameter 16 inches, reported depth 245 feet. Land-surface datum is 3,085 feet above msl. Highest water level 20.10 below lsd, Sept. 14, 1950; lowest 39.59 below lsd, July 20, 22, 23, 1948. Records available: 1947-51. Jan. 16, 26.68, nearby well being pumped; Mar. 20, 24.83; May 16, 23.02; July 18, 21.29; Sept. 17, 35.90; Nov. 16, 30.31.

23.27.9.211. M. E. Sibley. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 200 feet. Highest water level 41.70 below lsd, Sept. 15, 1950; lowest 48.57 below lsd, Mar. 21, 1951. Records available: 1949-51.

July 23, 1949	42.29	Nov. 9, 1949	43.37	Sept. 15, 1950	b41.70	Jan. 16,1951	c49.25
Sept. 20	41.83	Mar. 21, 1950	b46.96	Nov. 15,	b44.91	Mar. 21	48.57

b Pumped recently.
c Nearby well being pumped.

23.27.23.211. W. H. Sweavingen. Drilled unused water-table well in alluvium, diameter 12 inches. Land-surface datum is 3,120 feet above msl. Highest water level 19.17 below lsd, Jan. 17, 1951; lowest 23.89 below lsd, May 19, 1948. Records available: 1947-51. Jan. 17, 19.17; Mar. 21, 19.40; May 17, 19.64; July 18, 20.20; Sept. 14, 20.66; Nov. 19, 21.00.

23.28.23.133. A. R. Donaldson. Drilled irrigation water-table well in alluvium, diameter 16 inches, depth 148 feet. Land-surface datum is 3,020 feet above msl. Highest water level 38.25 below lsd, Sept. 14, 1950; lowest 51.56 below lsd, Sept. 22, 1947. Records available: 1947-51. Jan. 17, 43.13; Mar. 20, 43.43; May 16, 42.38; July 18, 42.04; Sept. 17, 44.27; Nov. 16, 45.74.

Hidalgo County

Animas and Playas Valleys.--The Animas Valley in the southern part of Hidalgo County, is separated from the Playas Valley to the southeast by a low divide between Animas and Pyramid Mountains. Ground water has been used extensively for irrigation in those areas since 1948. Water levels were measured in January 1951 in 76 wells in the Animas Valley and in 9 wells in the Playas Valley. Measurements were made at bimonthly intervals during the year in about 55 wells in the Animas Valley and in about 9 wells in the Playas Valley. A recording gage has been maintained since November 1948 on a well near the center of the heavily pumped area in the Animas Valley. Records of water levels in wells in which only January measurements were made are not included herewith but were used in preparing the map. (See fig. 39)

Ground water in both the Animas and Playas Valleys is obtained from the permeable beds of the valley fill. Recharge to the ground water is derived mainly from precipitation which falls on the mountains and stream-built slopes that border the valleys. In 1951 the total precipitation at Animas, near the southern end of the irrigated area of Animas Valley, was 8.65 inches, 2.22 inches below normal. At Hachita, which is about 30 miles northeast of the irrigated area of Playas Valley, the total precipitation was 8.88 inches, 1.77 inches below normal. During the growing season from April to September the precipitation at Animas was 5.50 inches, 1.53 inches below normal, and at Hachita 4.78 inches, 2.02 inches below normal. It is estimated that about 16,500 acre-feet of ground water was pumped in 1951 to irrigate 9,000 acres of land in the Animas Valley. In the Playas Valley an estimated 2,400 acre-feet of ground water was pumped in 1951 to irrigate about 1,300 acres of land. Net declines in water levels occurred throughout the Animas Valley in 1951 and for the most part the declines were the greatest observed to date. The areas in the Animas Valley under which ground-water levels declined from January 1951 to January 1952 are shown in fig 39. Water levels declined more than 1 foot under an area of about 110 square miles, extending from about 2 miles southwest to about 16 miles northwest of Animas and having a maximum width of about 10 miles. During 1950 water levels declined more than 1 foot under about 75 square miles. The area of greatest net declines was in the northern part of T. 26 S., R. 20 W., and the southern part of T. 25 S., R. 20 W., where the maximum net decline recorded was 5.6 feet. Water levels declined more than 2 feet under about 52 square miles, more than 3 feet under 30 square miles, and more than 4 feet under about 9 square miles. From April 1948 to January 1952, water levels in several wells in the northeastern part of T. 26 S., R. 20 W., and the southeastern part of T. 25 S., R. 20 W., declined more than 15 feet. The water level in a well in the southeastern part of sec. 35, T. 25 S., R. 20 W., declined more than

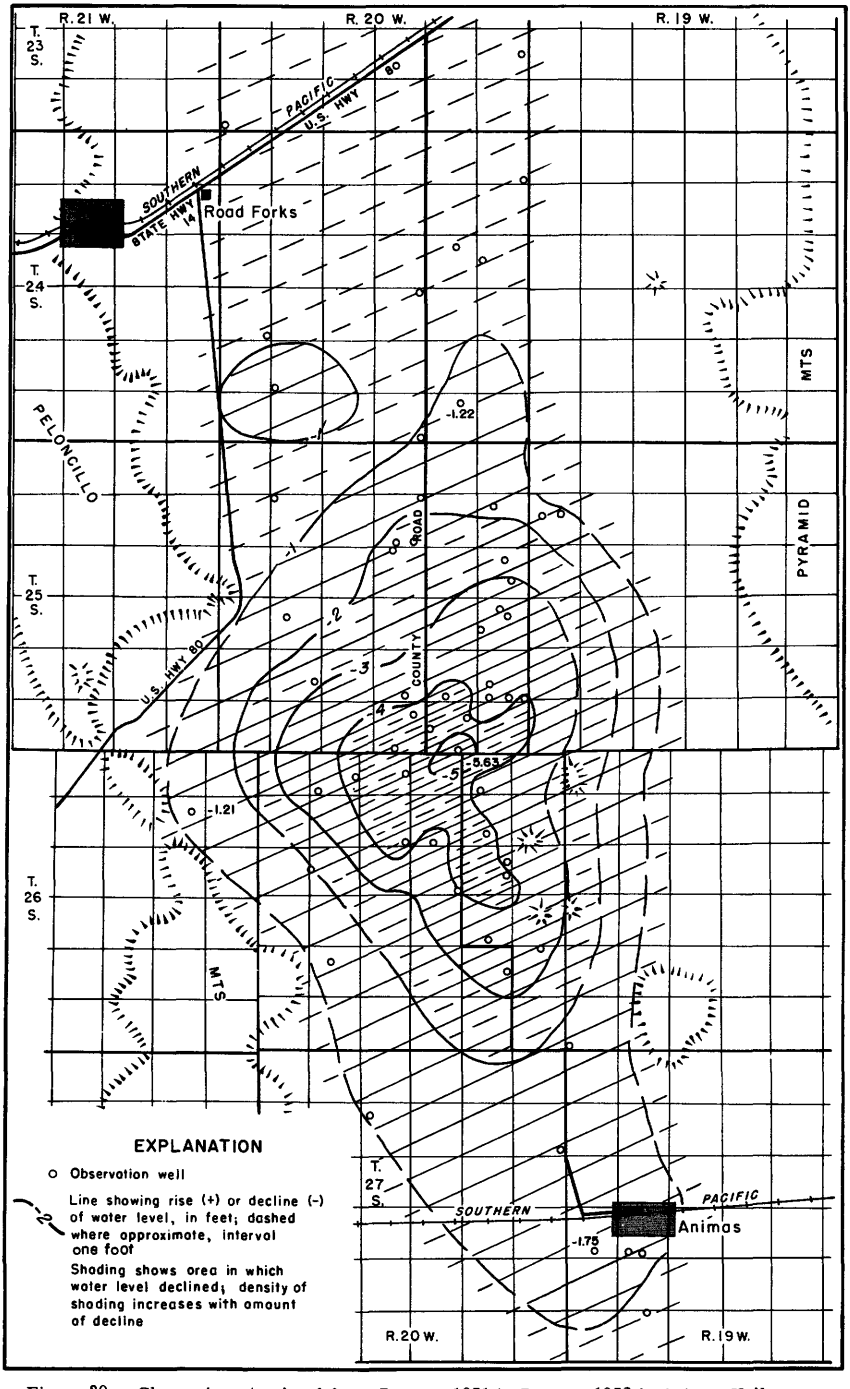

Figure 39. --Change in water level from January 1951 to January 1952 in Animas Valley, Hidalgo County, N. Mex.

19 feet during that period. In the Playas Valley the maximum declines of water levels recorded from January 1951 to January 1952 were 19.2 feet and 9.3 feet in two wells in the northeastern part of sec. 14, T. 30 S., R. 16 W. Those wells probably had been pumped a short time before measurement so that the declines were only temporary. Other more representative declines noted during that period ranged from less than 1 foot away from heavy pumping in the area to $2\frac{1}{2}$ feet in heavily pumped areas.

23.20.25.422. Kerr Cattle Co. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 150 feet. Highest water level 31.36 below lsd, May 21, 1948; lowest 32.17 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 11, 31.80; Mar. 16, 31.82; May 12, 31.85; July 31, 31.93; Sept. 26, 32.02; Nov. 27, 32.17.

24.20.1.444. Fred Kerr. Drilled irrigation water-table well in bolson deposits, diameter 30 to 18 inches, depth 92 feet. Highest water level 29.75 below lsd, Apr. 4, 1948; lowest 32.5 below lsd, July 25, 1950. Records available: 1948-51. Jan. 11, 31.42; Mar. 16, 31.10; May 12, 30.68; Nov. 27, 31.85.

24.20.13.133. P. Kerr. Drilled stock water-table well in bolson deposits, diameter 6 inches, depth 26 feet. Highest water level 14.02 below lsd, May 21, 1948; lowest 16.03 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 16, 15.24; Mar. 16, 16.96, pumping; May 12, 15.19; July 31, 15.80; Sept. 25, 15.95; Nov. 27, 16.03.

24.20.14.214. Kerr Cattle Co. Dug unused water-table well in bolson deposits, diameter 10 feet, depth 32 feet. Highest water level 14.74 below lsd, May 21, 1948; lowest 16.43 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 15.66; Mar. 16, 15.64; May 12, 31.96, pumping; July 31, 16.08; Sept. 25, 16.43; Nov. 27, 16.29.

24.20.19.444. R. E. Macow. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 100 feet. Highest water level 33.16 below lsd, Apr. 4, 1948; lowest 39.24 below lsd, July 27, 1951. Records available: 1948-51. Jan. 16, 36.2; Mar. 17, 36.40; May 14, 37.79; July 27, 39.24; Nov. 26, 37.92.

24.20.22.222. Mr. Roark. Drilled unused water-table well in bolson deposits, diameter 6 inches, depth 28 feet. Highest water level 17.35 below lsd, May 21, 1948; lowest 19.21 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 11, 18.50; Mar. 16, 18.40; May 12, 18.34; July 31, 18.89; Sept. 25, 19.17; Nov. 27, 19.21.

24.20.29.333. Mrs. May Smith. Drilled irrigation water-table well in bolson deposits, diameter 14 inches, depth 142 feet. Highest water level 37.39 below lsd, Apr. 6, 1948; lowest 43.34 below lsd, Sept. 24, 1951. Records available: 1948-51. Jan. 16, 39.43; Mar. 17, 39.22; May 14, 42.80; July 31, 42.16; Sept. 24, 43.34; Nov. 26, 41.38.

24.20.34.444. Elmer Kerr. Drilled stock water-table well in bolson deposits, diameter 6 inches, depth 33 feet. Highest water level 25.77 below lsd, Mar. 16, 1951, lowest 26.87 below lsd, Nov. 27, 1951. Records available: 1951. Jan. 11, 25.87; Mar. 16, 25.77; May 12, 25.90; July 31, 26.30; Nov. 27, 26.87.

24.20.35.214. Elmer L. Kerr. Drilled irrigation water-table well in bolson deposits, diameter 12 inches, depth 79 feet. Highest water level 17.40 below lsd, Apr. 4, 1948; lowest 20.78 below lsd, July 27, 1949. Records available: 1948-51. Jan. 11, 19.29; Mar. 16, 19.13; May 12, 19.60; July 28, 36.80, pumping; Nov. 27, 19.89.

25.19.7.134. H. E. Baker. Drilled irrigation water-table well in bolson deposits, diameter 32 inches, depth 66 feet. Land-surface datum is 4,188.33 feet above msl. Highest water level 24.66 below lsd, Apr. 1, 1948; lowest 27.99 below lsd, July 25, 1950. Records available: 1948-51. Jan. 11, 26.83; Mar. 16, 26.79; May 12, 27.07; July 30, 27.60; Sept. 25, 27.88; Nov. 27, 27.94.

25 19.7.234. R. I. Richins and G. A. McDonald. Drilled water-table well in bolson deposits, diameter 18 inches, depth 95 feet. Highest water level 31.31 below lsd, May 21, 1949; lowest 33.61 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 32.46; Mar. 16, 32.48; May 12, 32.81; July 30, 31.72; Sept. 25, 33.61; Nov. 27, 33.46.

25.20.8.111. T. H. McCants. Dug domestic and stock water-table well in bolson deposits, diameter 36 inches, depth 80 feet. Land-surface datum is 4,220.39 feet above msl. Highest water level 57.46 below lsd, May 28, 1948; lowest 59.30 below lsd, Sept. 27, 1950. Records available: 1948-51. Jan. 11, 59.13; Mar. 16, 59.18; May 14, 60.34, pumping; July 28, 59.83, pumping; Sept. 26, 60.25, pumping; Nov. 26, 60.61, pumping.

25.20.10.222. Valley View Church. Drilled domestic water-table well in bolson deposits, diameter 4 inches, depth 32 feet. Land-surface datum is 4,189.88 feet above msl. Highest water level 27.44 below lsd, Apr. 6, 1948; lowest 33.11 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 30.88; Mar. 16, 30.70; May 12. 31.48; July 31, 32.41; Sept. 25, 33.11; Nov. 27, 32.98.

25.20.10.344. J. O. and W. A. Bishop. Drilled irrigation water-table well in bolson deposits, diameter 36 inches, depth 96 feet. Land-surface datum is 4,200.09 feet above msl. Highest water level 33.14 below lsd, Apr. 1, 1948; lowest 40.49 below lsd, Sept. 26, 1951. Records available: 1948-51. Jan. 11, 37.26; Mar. 16, 37.07; May 12, 38.08; July 31, 39.43; Sept. 26, 40.49; Nov. 27, 39.91.

25.20.13.213. Geo. Wright. Drilled irrigation water-table well in bolson deposits, diameter 18 inches, depth 123 feet. Land-surface datum is 4,195.64 feet above msl. Highest water level 28.05 below lsd, Mar. 21, 1948; lowest 34.58 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 11, 31.54; Mar. 16, 35.50, nearby well being pumped; Sept. 25, 37.05, nearby well being pumped; Nov. 27, 34.58.

25.20.13.432. Jundt & Rudiger. Dug and drilled irrigation water-table well in bolson deposits, diameter 45 to 16 inches, depth 58 feet. Land-surface datum is 4,204.72 feet above msl. Highest water level 30.68 below lsd, Apr. 1, 1948; lowest 40.10 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 36.23; Mar. 16, 36.22; May 12, 37.48; Sept. 25, 40.10; Nov. 27, 39.78.

25.20.15.122. Mrs. H. K. Wood. Drilled water-table well in bolson deposits, diameter 6 inches, depth 50 feet. Land-surface datum is 4,202.62 feet above msl. Highest water level 34.41 below lsd, Apr. 1, 1948; lowest 41.56 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 16, 38.85; Mar. 16, 38.66; May 12, 39.38; July 31, 40.34; Sept. 26, 41.94, nearby well being pumped; Nov. 27, 41.56.

25.20.15.122a. Mrs. H. K. Wood. Drilled irrigation water-table well in bolson deposits, diameter 14 inches, depth 49 feet. Highest water level 37.53 below lsd, Jan. 17, 1950; lowest 41.54 below lsd, Nov. 27, 1951. Records available: 1950-51. Jan. 16, 38.92; Mar. 16, 38.69; May 12, 39.45; July 31, 41.48; Sept. 26, 42.10, pumping; Nov. 27, 41.54.

25.20.20.142. Standsberry. Dug stock water-table well in bolson deposits, depth 68 feet. Highest water level 60.09 below lsd, Apr. 6, 1948; lowest 63.97 below lsd, Nov. 26, 1951. Records available: 1948-51. Jan. 16, 62.70; Mar. 17, 62.74; May 14, 62.77; July 28, 63.79; Sept. 24, 63.85; Nov. 26, 63.97.

25.20.24.124. Elmer L. Kerr. Drilled irrigation water-table well in bolson deposits, diameter 36 inches, depth 107 feet. Land-surface datum is 4,210.61 feet above msl. Highest water 34.60 below lsd, Apr. 1, 1948; lowest 45.22 below lsd, Nov. 27, 1951. Records available: 1948-51. Jan. 11, 40.99; Mar. 16, 40.78; May 12, 42.90; Nov. 27, 45.22.

25.20.24.313. Rudiger & Jundt. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 97 feet. Land-surface datum is 4,221.43 feet above msl. Highest water level 42.43 below lsd, Apr. 1, 1948; lowest 56.81 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 49.48; Mar. 16, 49.16; May 12, 53.48; July 28, 55.54; Sept. 25, 56.81; Nov. 27, 54.28.

25.20.25.334. Richins Bros. Drilled irrigation water-table well in bolson deposits, diameter 18 inches, depth 115 feet. Land-surface datum is 4,239.18 feet above msl. Highest water level 54.94 below lsd, Apr. 1, 1948; lowest 70.96 below lsd, Sept. 4, 1949. Records available: 1948-51. Jan. 11, 63.47; Mar. 16, 64.87; May 12, 89.45, pumping; July 28, 70.47; Sept. 25, 70.78; Nov. 28, 65.38.

25.20.25.444. Richins Bros. Drilled water-table well in bolson deposits, diameter 16 inches, depth 204 feet. Land-surface datum is 4,261.29 feet above msl. Highest water level 69.00 below lsd, Apr. 1, 1948; lowest 84.22 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 11, 74.62; Mar. 16, 101.28, pumping; May 12, 102.04, pumping; Sept. 25, 84.22.

25.20.27.434. Geo. S. Tippetts. Drilled irrigation water-table well in bolson deposits, diameter 33 inches, depth 102 feet. Land-surface datum is 4,231.80 feet above msl. Highest water level 52.65 below lsd, Mar. 21, 1949; lowest 64.95 below lsd, July 26, 1951. Records available: 1948-51. Jan. 16, 57.43; Mar. 16, 57.44; May 12, 67.36, pumping; July 26, 64.95; Nov. 28, 63.61.

25.20.29.424. Standsberry. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 125 feet. Highest water level 53.80 below lsd, Jan. 18, Mar. 21, 1950; lowest 58.25 below lsd, Nov. 26, 1951. Records available: 1950-51. Jan. 16, 55.43; Mar. 17, 55.41; May 14, 55.89; Sept. 24, 57.82; Nov. 26, 58.25.

25.20.34.241. H. H. Hatch. Drilled unused well in valley fill, diameter 36 inches, reported depth 120 feet, caved 90. Land-surface datum is 4,235.37 feet above msl. Highest water level 51.44 below lsd, Apr. 2, 1948; lowest 68.54 below lsd, Sept. 22, 1951. Records available: 1948-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	58.41	58.13	58.38	59.08	62.10	64.51	66.09	.....	.....	67.24	65.35	64.30
2	58.43	58.12	58.37	59.11	62.16	64.55	66.00	.....	.....	67.14	65.31	64.28
3	58.42	58.10	58.36	59.30	62.14	64.35	66.41	.....	.....	67.07	65.26	64.25
4	58.40	58.08	58.34	59.43	62.21	64.28	66.59	.....	.....	67.01	65.19	64.21
5	58.39	58.06	58.33	59.46	62.22	64.14	66.96	.....	.....	67.00	65.18	64.14
6	58.45	58.10	58.32	59.60	62.23	64.10	67.02	.....	.....	66.92	65.15	64.17
7	58.51	58.12	58.30	59.80	62.23	64.15	66.85	.....	.....	66.82	65.08	64.17
8	58.44	58.16	58.28	60.00	62.26	64.19	67.15	.....	.....	66.74	65.05	64.16
9	58.42	58.18	58.30	60.06	62.38	64.33	67.05	.....	.....	66.64	65.01	64.14
10	58.39	58.16	58.29	60.19	62.47	64.50	.....	.....	.....	66.55	64.96	64.10
11	58.37	58.10	.....	60.49	62.60	64.47	.....	.....	.....	66.46	64.92	64.06
12	58.35	58.08	.....	60.67	62.64	64.73	67.19	.....	.....	66.41	64.85	64.01
13	58.35	58.08	58.28	60.84	62.67	65.06	66.95	.....	.....	66.36	64.84	63.98
14	58.35	58.14	58.30	60.94	62.68	65.13	66.21	.....	.....	66.29	64.80	63.99
15	58.33	58.10	58.32	61.11	62.69	65.11	66.42	.....	.....	66.22	64.77	63.98
16	58.29	58.07	58.33	61.24	62.82	65.12	66.31	.....	.....	66.18	64.77	63.92
17	58.29	58.06	58.34	61.39	62.95	64.94	66.07	.....	.....	66.12	64.73	63.91
18	58.28	58.08	58.46	61.57	63.05	64.96	66.72	.....	.....	66.06	64.68	63.86
19	58.27	58.12	58.54	61.74	63.13	65.42	66.59	.....	.....	65.98	64.63	63.81
20	58.26	58.13	58.64	61.74	63.20	65.80	66.75	.....	.....	65.91	64.59	63.80
21	58.25	58.15	58.71	61.78	63.25	65.59	66.66	.....	.....	65.89	64.56	63.83
22	58.23	58.14	58.75	61.85	63.30	65.55	66.57	.....	h68.54	65.87	64.53	63.80
23	58.22	58.23	58.78	61.83	63.39	65.48	66.72	.....	68.32	65.79	64.49	63.76
24	58.21	58.33	58.78	61.88	63.43	65.46	66.19	.....	68.25	65.71	64.49	63.74
25	58.19	58.40	58.75	61.98	63.58	65.49	66.04	.....	68.20	65.67	64.48	63.73
26	58.17	58.44	58.73	62.05	63.70	65.89	66.27	.....	68.15	65.65	64.44	63.72
27	58.16	58.43	58.71	62.13	63.82	66.16	66.50	.....	67.97	65.58	h64.43	63.68
28	58.15	58.42	58.69	62.16	63.87	65.93	66.56	.....	67.71	65.55	64.40	63.65
29	58.13		58.74	62.16	63.98	66.27	66.72	.....	67.50	65.49	64.37	63.61
30	58.10		58.89	62.12	64.25	66.31	66.92	.....	67.35	65.43	64.34	63.57
31	58.11		58.99		64.33		.....	.....		65.41		63.57

h Tape measurement.

25.20.34.344. W. A. Tyler. Drilled irrigation water-table well in bolson deposits, diameter 36 inches, depth 110 feet. Land-surface datum is 4,237.50 feet above msl. Highest water level 54.35 below lsd, May 23, 1948; lowest 67.13 below lsd, Nov. 28, 1951. Records available: 1948-51. Jan. 16, 60.51; Mar. 16, 60.86; May 14, 78.25, pumping; Nov. 28, 67.13.

25.20.35.241. W. Veck. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 120 feet. Land-surface datum is 4,238.81 feet above msl. Highest water level 53.25 below lsd, Apr. 2, 1948; lowest 74.22 below lsd, July 28, 1951. Records available: 1948-51. Jan. 11, 62.37; Mar. 16, 75.89, pumping; May 12, 80.99, pumping; July 28, 74.22; Sept. 25, 74.94; Nov. 28, 67.98.

25.20.35.434. W. Veck. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 120 feet. Land-surface datum is 4,245.96 feet above msl. Highest water level 50.27 below lsd, Apr. 2, 1948; lowest 70.34 below lsd, Nov. 28, 1951. Records available: 1948-51. Jan. 16, 63.68; Mar. 16, 63.75; Nov. 28, 70.34.

26.19.31.333. Luther Edwards. Drilled irrigation water-table well in bolson deposits, diameter 15 inches, depth 200 feet. Land-surface datum is 4,340.62 feet above msl. Highest water level 84.13 below lsd, Mar. 22, 1949; lowest 91.36 below lsd, Sept. 4, 1949. Records available: 1948-51. Jan. 17, 88.02; Mar. 17, 87.69; May 14, 100.96, pumping; July 26, 89.30; Sept. 25, 89.53; Nov. 26, 89.80.

26.20.2.344. R. H. Wamel. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 157 feet. Highest water level 66.33 below lsd, Mar. 22, 1949; lowest 78.47 below lsd, Nov. 28, 1951. Records available: 1948-51. Jan. 16, 74.46; Mar. 16, 99.82, pumping; Nov. 28, 78.47.

26.20.4.444. W. W. Roark. Drilled irrigation water-table well in bolson deposits, diameter 24 to 14 inches, depth 103 feet. Land-surface datum is 4,248.07 feet above msl. Highest water level 60.99 below lsd, Apr. 2, 1948; lowest 76.04 below lsd, May 12, 1951. Records available: 1948-51. Jan. 16, 69.18; Mar. 16, 72.97, pumping; May 12, 76.04.

26.20.5.334. D. A. Lee. Drilled irrigation water-table well in bolson deposits, diameter 40 to 12 inches, depth 100 feet. Land-surface datum is 4,240.81 feet above msl. Highest water level 54.05 below lsd, Apr. 3, 1948; lowest 65.65 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 16, 60.40; Mar. 16, 60.20; May 14, 75.10, pumping; July 27, 64.03; Sept. 25, 65.65; Nov. 28, 64.64.

26.20.5.422. D. A. Lee. Dug and drilled irrigation water-table well in bolson deposits, diameter 30 to 16 inches, depth 106 feet. Land-surface datum is 4,237.93 feet above msl. Highest water level 54.72 below lsd, July 26, 1948; lowest 67.67 below lsd, Sept. 26, 1951. Records available: 1948-51. Jan. 16, 59.71; Mar. 16, 59.59; May 14, 62.82; July 27, 65.27; Sept. 26, 67.67; Nov. 28, 64.65.

26.20.8.434. J. E. Weatherby. Drilled irrigation water-table well in bolson deposits, diameter 18 inches, depth 125 feet. Land-surface datum is 4,250.28 feet above msl. Highest water level 60.54 below lsd, Apr. 5, 1948; lowest 72.28 below lsd, Sept. 26, 1951. Records available: 1948-51. Jan. 16, 66.46; Mar. 16, 76.32, pumping; May 14, 77.38, pumping; July 27, 80.0, pumping; Sept. 26, 72.28.

26.20.9.444a. Mrs. H. K. Wood. Drilled irrigation water-table well in bolson deposits, diameter 18 inches, depth 140 feet. Land-surface datum is 4,259.56 feet above msl. Highest water level 72.52 below lsd, May 23, 1948; lowest 89.96 below lsd, July 28, 1951. Records available: 1948-51. Jan. 16, 77.96; Mar. 17, 93.89, pumping; May 12, 96.93, pumping; July 28, 89.96; Nov. 26, 84.62.

26.20.10.344. S. O. Wright. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 144 feet. Land-surface datum is 4,266.12 feet above msl. Highest water level 63.08 below lsd, Mar. 22, 1949; lowest 73.96 below lsd, Nov. 28, 1951. Records available: 1948-51. Jan. 16, 69.20; Mar. 16, 67.57; May 12, 96.0, pumping; Nov. 28, 73.96.

26.20.14.242. R. H. Wamel. Drilled water-table well in bolson deposits, diameter 16 inches, depth 150 feet. Land-surface datum is 4,293.30 feet above msl. Highest water level 79.44 below lsd, Apr. 3, 1948; lowest 90.78 below lsd, Nov. 28, 1951. Records available: 1946-51. Jan. 16, 86.86; Mar. 17, 85.22; May 12, 86.38; July 31, 88.19; Sept. 25, 85.54; Nov. 28, 90.78.

26.20.15.444. Crabtree. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 148 feet. Land-surface datum is 4,284.18 feet above msl. Highest water level 62.91 below lsd, Mar. 22, 1949; lowest 78.73 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 16, 68.22; Mar. 17, 71.57, pumped recently; May 12, 74.36; July 28, 105.8, pumping; Sept. 25, 78.73; Nov. 28, 74.60.

26.20.17.133. J. E. Weatherby. Dug stock water-table well in bolson deposits, diameter 36 to 6 inches, depth 63 feet. Highest water level 53.20 below lsd, May 23, 1948; lowest 59.35 below lsd, Nov. 26, 1951. Records available: 1948-51. Jan. 16, 61.27, pumping; Mar. 16, 57.33; May 14, 61.37, pumping; July 27, 82.61, pumping; Nov. 26, 59.35.

26.20.25.211. Wamel. Dug unused water-table well in bolson deposits, diameter 36 inches, depth 112 feet. Highest water level 93.42 below lsd, Sept. 27, 1948; lowest 104.09 below lsd, Nov. 26, 1951. Records available: 1946-51. Jan. 17, 100.20; Mar. 17, 99.19; May 12, 99.79; July 26, 101.78; Sept. 25, 103.20; Nov. 26, 104.09.

26.20.26.422. Kate Washburn. Drilled water-table well in bolson deposits, diameter 16 inches, depth 151 feet. Land-surface datum is 4,311.09 feet above msl. Highest water level 75.65 below lsd, Apr. 5, 1948; lowest 89.01 below lsd, Sept. 25, 1951. Records available: 1948-51. Jan. 17, 81.34; Mar. 17, 80.82; May 14, 85.95, pumped recently; Sept. 25, 89.01; Nov. 26, 87.15.

26.20.29.142. Kate Washburn. Drilled irrigation water-table well in bolson deposits, diameter 14 inches, depth 132 feet. Highest water level 48.86 below lsd, May 23, 1948; lowest 56.83 below lsd, Sept. 24, 1951. Records available: 1948-51. Jan. 17, 51.73; Mar. 17, 51.78; Sept. 24, 56.83; Nov. 26, 52.96.

26.21.11.200. Baker. Drilled stock water-table well in bolson deposits, diameter 6 inches, depth 89 feet. Highest water level 77.71 below lsd, July 23, 1948; lowest 80.46 below lsd, Nov. 26, 1951. Records available: 1948-51. Jan. 17, 79.47; Mar. 16, 80.33, pumping; May 14, 79.69, pumped recently; July 27, 80.04, pumping; Sept. 24, 80.21; Nov. 26, 80.46.

27.19.19.433. Anderson & Wiley. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 210 feet. Land-surface datum is 4,415.13 feet above msl. Highest water level 133.31 below lsd, Mar. 22, 1949; lowest 140.48 below lsd, Sept. 24, 1951. Records available: 1948-51. Jan. 17, 135.70; Mar. 17, 135.98; May 14, 139.86; July 30, 138.80, pumping; Sept. 24, 140.48; Nov. 25, 138.11, pumped recently.

27.19.20.343. Felix Gauthier. Drilled water-table well in bolson deposits, diameter 16 inches. Highest water level 131.90 below lsd, July 29, 1949; lowest 136.77 below lsd, Sept. 24, 1951. Records available: 1949-51. Jan. 17, 133.17; Mar. 17, 133.02; July 25, 135.96; Sept. 24, 136.77; Nov. 25, 134.77.

27.19.21.111. U. S. Government. Drilled unused water-table well in bolson deposits, diameter 6 inches, depth 139 feet. Highest water level 123.93 below lsd, July 29, 1949; lowest 126.31 below lsd, Nov. 26, 1951. Records available: 1949-51. Jan. 17, 125.41; Mar. 17, 125.44; May 14, 125.60; July 25, 125.32; Sept. 24, 126.06; Nov. 26, 126.31.

27.19.32.211. Strange. Drilled unused water-table well in bolson deposits, diameter 6 inches, depth 155 feet. Highest water level 144.84 below lsd, May 25, 1949; lowest 146.84 below lsd, Sept. 24, 1951. Records available: 1949-51. Jan. 17, 145.81; Mar. 17, 145.61; May 14, 145.97; July 25, 146,40; Sept. 24, 146.84.

27.20.9.100. Kate Washburn. Dug stock water-table well in bolson deposits, diameter 36 to 6 inches, depth 86 feet. Highest water level 71.20 below lsd, Aug. 1, Sept. 3, 1949; lowest 72.59 below lsd, Jan. 17, 1951. Records available: 1949-51. Jan. 17, 72.59; Mar. 17, 72.49; May 14, 74.54, pumping; July 27, 73.20, pumping; Sept. 24, 73.27, pumping.

27.20.12.444. Edna Curry. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 200 feet. Highest water level 105.15 below lsd, Mar. 22, 1949; lowest 112.47 below lsd, May 14, 1951. Records available: 1949-51. Jan. 17, 108.43; May 14, 112.47; Nov. 26, 110.94.

28.19.15.433. Joe G. Good. Dug unused water-table well in bolson deposits, diameter 36 inches, depth 35 feet. Highest water level 28.56 below lsd, Jan. 17, 1951; lowest 33.55 below lsd, May 25, 1949. Records available: 1949-51. Jan. 17, 28.56; Mar. 17, 28.62; May 14, 28.71; July 30, 29.03; Sept. 23, 29.28, nearby well being pumped; Nov. 25, 29.60.

28.19.15.433a. Joe G. Good. Drilled stock water-table well in bolson deposits, diameter 6 inches, depth 306 feet. Highest water level 206.31 below lsd, Nov. 23, 1949; lowest 215.73 below lsd, Sept. 3, 1949. Records available: 1949-51. Jan. 17, 215.08; Mar. 17, 214.42; May 14, 214.30; July 30, 215.35; Sept. 23, 214.90, pumped recently; Nov. 25, 215.29.

28.19.20.244. U. S. Government. Drilled stock water-table well in bolson deposits, diameter 6 inches, depth 270 feet. Highest water level 255.54 below lsd, May 24, 1949; lowest 260.44 below lsd, Nov. 25, 1951. Records available: 1948-51. Jan. 17, 256.37, pumped recently; Mar. 17, 257.41, pumping; May 14, 257.61, pumping; July 25, 256.05, pumped recently; Sept. 23, 256.12, pumped recently; Nov. 25, 260.44.

29.19.3.100. T. B. Strickland. Dug stock water-table well in bolson deposits, diameter 36 inches, depth 31 feet. Highest water level 22.65 below lsd, Dec. 4, 1950; lowest 25.98 below lsd, Nov. 25, 1951. Records available: 1949-51. Jan. 17, 22.85, pumping; Mar. 17, 23.35, pumping; May 14, 24.07, pumping; July 25, 24.91, pumping; Sept. 20, 25.56; Nov. 25, 25.98.

29.19.3.300. T. B. Strickland. Dug water-table well in bolson deposits, diameter 6¾ feet, depth 20 feet. Highest water level 12.96 below lsd, Sept. 26, 1950; lowest 18.32, below lsd, Nov. 25, 1951. Records available: 1949-51. Jan. 17, 13.83; Mar. 17, 14.48; May 14, 15.34; July 25, 16.37; Sept. 20, 17.15; Nov. 25, 18.32.

30.16.11.331. Jim Smith. Drilled irrigation water-table well in bolson deposits, diameter 12 inches. Highest water level 40.88 below lsd, Mar. 15, 1951; lowest 44.46 below lsd, Sept.21, 1951. Records available: 1951. Jan. 15, 40.94; Mar. 15, 40.88; May 10, 41.13; Sept. 21, 44.46; Nov. 23, 42.89.

30.16.14.211. M. T. Everhart, Jr. Drilled irrigation water-table well in bolson deposits, diameter 12 inches, depth 180 feet. Highest water level 31.69 below lsd, May 20, 1949; lowest 45.97 below lsd, Dec. 1, 1950. Records available: 1948-51. Jan. 15, 38.98; Mar. 15, 65.25, pumping; May 10, 64.98, pumping; July 29, 69.20, pumping; Sept. 21, 69.7, pumping; Nov. 23, 42.83.

30.16.16.244. Morrison and McCoy. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 80 feet. Highest water level 37.48 below lsd, July 29, 1951; lowest 40.24 below lsd, May 19, 1950. Records available: 1950-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 19, 1950	40.24	Dec. 1, 1950	37.98	Mar. 15, 1951	37.78	July 29, 1951	37.48
July 20	40.20	Jan. 15, 1951	37.92	May 10	37.79	Nov. 23	38.03
Sept. 25	39.19						

Virden Valley.--The Virden Valley lies along the upper Gila River in the area commonly known as the Duncan-Virden Valley. In this area ground water is pumped mainly as a supplement to a generally deficient surface-water supply. (See Arizona section under Greenlee County.) An investigation of the ground-water resources of the Duncan-Virden Valley was begun in October 1939 and continued to the present date. There were about 30 irrigation wells in use in the Valley during 1951. A total of 22 measurements were made in wells during the year. Precipitation at Duncan was 9.21 inches in 1951. Owing to increased pumping and a deficient surface-water supply, ground-water levels in the area showed an average net decline of about 2 feet in 1951.

19.21.12.420. Nancy O. Pace. Dug domestic well, diameter 4 feet, depth 30 feet. Land-surface datum is 3,792 feet above msl. Highest water level 10.92 below lsd, Mar. 13, 1944; lowest dry, Nov. 5, 1951. Records available: 1939-51. Mar. 7, 22.61; May 24, 22.50; Aug. 27, 29.80; Nov. 5, dry.

19.21.2.330a. Byron Echols. Drilled irrigation well, diameter 20 inches, depth 80 feet. Land-surface datum is about 3,755 feet above msl. Highest water level 14.58 below lsd, Mar. 1, 1949; lowest 23.19 below lsd, Nov. 5, 1951. Records available: 1948-51. Mar. 7, 16.86; Aug. 27, 22.14; Nov. 5, 23.19.

19.21.2.410. J. E. Payne. Drilled unused irrigation well, diameter 18 inches, depth 106 feet. Land-surface datum is about 3,788.6 feet above msl. Highest water level 44.66 below lsd, Oct. 22, 1941; lowest 53.13 below lsd, Nov. 5, 1951. Records available: 1939-51. Mar. 7, 45.69; May 24, 46.91; Aug. 27, 52.00; Nov. 5, 53.13.

19.20.18.120. Floyd Johns. Drilled domestic well, diameter 8 inches, depth 60 feet. Land-surface datum is about 3,804 feet above msl. Highest water level 20.05 below lsd, Feb. 1, 1945; lowest 55.00 below lsd, July 23, 1947. Records available: 1939-51. Mar. 7, 27.68; May 24, 32.20; Aug. 27, 41.63; Nov. 5, 35.64.

18.21.32.130. P. Lunt. Drilled stock well, diameter 8 inches, depth 114 feet. Land-surface datum is about 3,757 feet above msl. Highest water level 35.30 below lsd, June 3, 1940; lowest 55.35 below lsd, Mar. 10, 1942. Records available: 1939-51. Mar. 7, 45.67; Aug. 27, 44.47; Nov. 5, 48.37.

18.21.32.440. J. Pierce. Near Virden. Dug unused domestic well, diameter 36 inches, depth 40 feet. Land-surface datum is about 3,736 feet above msl. Highest water level 29.12 below lsd, Jan. 7, 1941; lowest dry, Aug. 27, Nov. 5, 1951. Records available: 1939-51. Mar. 7, 33.22; May 24, 34.20; Aug. 27, dry; Nov. 5, dry.

30.16.27.340. Victoria Land and Cattle Co. Drilled stock water-table well in bolson deposits, diameter 6 inches. Highest water level 44.24 below lsd, Feb. 4, 1949; lowest 53.36 below lsd, July 20, 1950. Records available: 1949-51. Jan. 15, 52.84, pumped recently. Measurement discontinued.

30.16.29.422. Myers Bros. Drilled irrigation water-table well in bolson deposits, diameter 16 inches, depth 160 feet. Highest water level 43.85 below lsd, Feb. 4, 1949; lowest 55.15 below lsd, Nov. 23, 1951. Records available: 1948-51. Jan. 15, 51.54; Mar. 15, 50.75; May 10, 51.89; July 29, 53.67; Sept. 21, 54.68; Nov. 23, 55.15.

32.17.13.240. Victoria Land and Cattle Co. Drilled unused water-table well in bolson deposits, diameter 6 inches, depth 61 feet. Highest water level 57.92 below lsd, May 20, 1949; lowest 58.58 below lsd, Nov. 23, 1951. Records available: 1949-51. Jan. 15, 58.43; Mar. 15, 58.40; May 10, 58.43; July 29, 58.51; Sept. 21, 58.55; Nov. 23, 58.58.

32.17.23.434. Mr. Timberlake. Drilled irrigation water-table well in bolson deposits, diameter 12 inches, depth 162 feet. Highest water level 96.09 below lsd, Mar. 23, 1949; lowest 99.35 below lsd, Nov. 23, 1948. Records available: 1948-51. Jan. 15, 97.30; May 10, 97.29; July 29, 97.24; Sept. 21, 97.38; Nov. 23, 97.46.

Lea County

Tatum-Lovington-Hobbs Area.--The Tatum-Lovington-Hobbs area, in the southeastern corner of New Mexico, is a part of the High Plains. Ground water in sufficient quantities for irrigation and industrial use is obtained from the Ogallala formation, which underlies the surface. As a part of the investigation, which began in 1929, of ground-water conditions in the area, measurements of water levels were made in 192 wells in January 1951 and at bimonthly intervals in about 33 of them. Recording gages were maintained on two wells, about a mile west of Tatum and about half a mile northwest of Lovington. The yearly measurements, not reported herein, are valuable in showing the net areal changes in water levels as shown in figure 40. Records of measurements of water levels in observation wells in Lea County have been published since 1940 in this series of water-supply papers.

Recharge to the ground-water body is directly from precipitation upon the plains, some of which collects in depressions during periods of runoff. As significant recharge occurs primarily during periods of excess precipitation, recharge in 1951 probably was small due to the deficient rainfall. The precipitation in 1951 amounted to 8.70 inches at Tatum - 7.41 inches below normal, 11.14 inches, at Lovington - 3.79 inches below normal, and 8.14 inches at Hobbs - 7.58 inches below normal. Precipitation during the growing season, April to September, was also deficient, although about 80 percent of the year's total occurred then. Above-normal precipitation occurred during May at most stations and approximately normal precipitation occurred in July. Precipitation in the last 6 years has averaged near normal, deficiencies in 1947, 1948, and 1951 being nearly offset by excesses in 1946, 1949, and 1950.

The acreage of land in Lea County irrigated from pumps apparently was slightly greater in 1951 than in 1950. It is estimated on limited data that approximately 102,000 acres was irrigated in 1951 as compared with 100,000 acres in 1950, 80,000 acres in 1949, and 25,000 acres in 1948. Approximately 50 percent of the irrigated acreage in 1951 was planted to cotton, a crop of comparatively low-water requirement. The acreage of irrigated pasture and alfalfa reportedly increased from about 20,000 acres in 1950 to about 25,000 acres in 1951. Because of the deficient precipitation, the amount of ground water required for the irrigation of crops in 1951 was in general considerably greater than in 1950. On the basis of metered electric power consumed in 1951 to pump 71 irrigation wells for which there were records in 1950, it is estimated that nearly 60 percent more water was pumped per acre in 1951 than in 1950. It is estimated that about 170,000 acre-feet of water was pumped for irrigation in 1951, an increase of about 63,000 acre-feet over that pumped in 1950. Pumpage for municipal use at Lovington reportedly increased from about 260 acre-feet in 1950 to 427 acre-feet in 1951 while the pumpage for Hobbs in 1951 was 1,900 acre-feet, about the same as in 1950. Total pumpage in the High Plains in Lea County in 1951 for all uses probably exceeded 180,000 acre-feet. Because of the record high pumpage and deficient precipitation in 1951 the net declines in water levels in 1951 were for the most part the largest yearly declines on record. The accompanying map shows the areal changes in water levels from January 1951 to January 1952. During that period the water levels declined more than 1 foot under about 256 square miles, more than 2 feet under 106 square miles, and more than 3 feet under 17 square miles as compared with like declines in 1950 under 126, 40, and 10 square miles respectively. With minor exceptions, water levels showed net declines in 1951 throughout the area in which observations were made. The largest net declines in ground-water levels in 1951 occurred in the areas where pumping was greatest. In the heavily pumped McDonald and Prairieview areas, water levels declined in 1951 more than 2 feet under the whole area and more than 3 feet under about 12 square miles. In 1950 water levels declined more than 2 feet under 12 square miles in that area. Net declines in excess of 4 feet were recorded in 5 wells in that area in 1951 with the result that under two localized areas to the east of McDonald

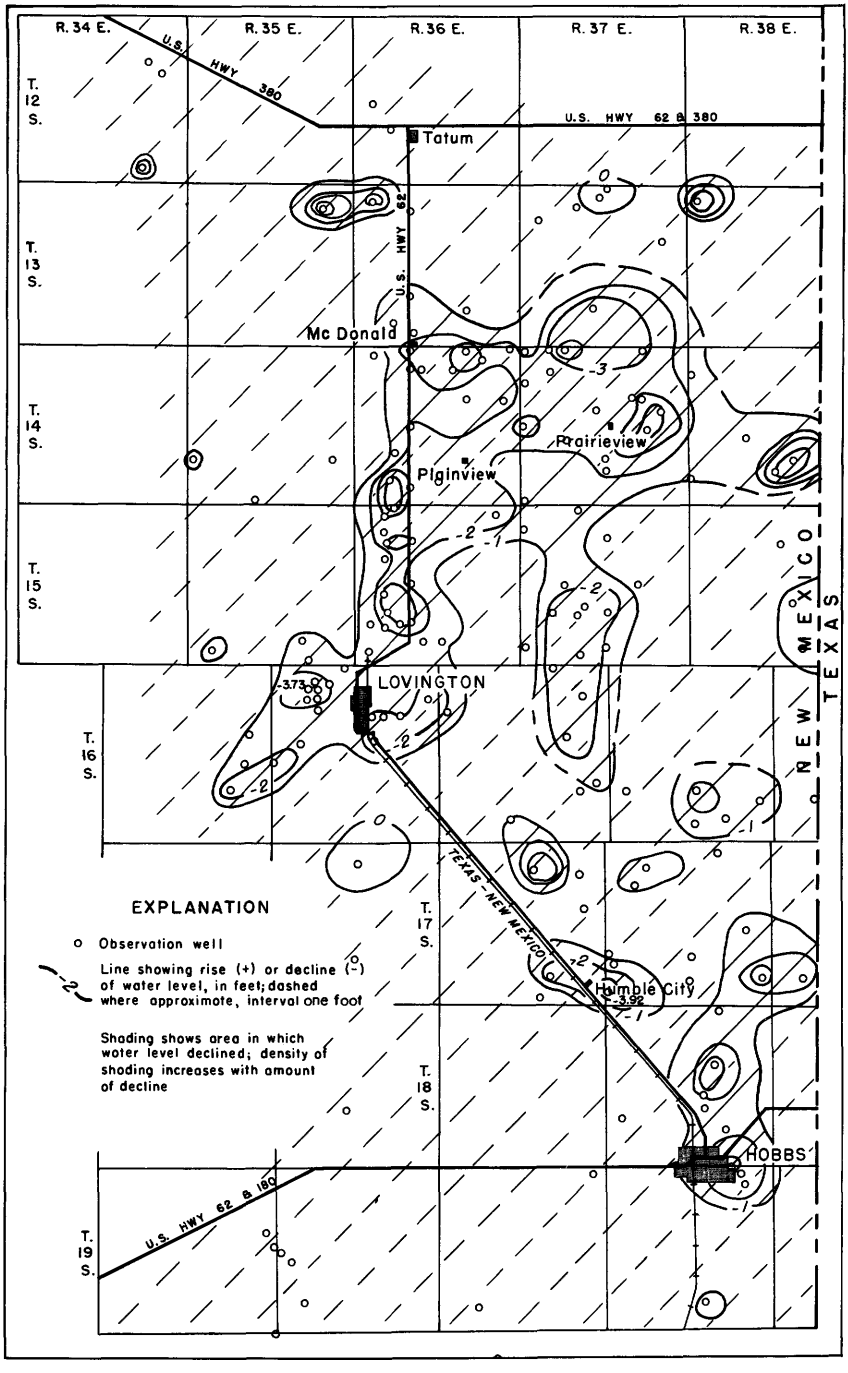

Figure 40.--Change in ground-water level from January 1951 to January 1952 in Tatum-Lovington-Hobbs area of High Plains, Lea County, N. Mex.

and Prairieview water levels in January 1952 were slightly more than 10 feet below the levels of 1947 when the large increase in irrigation development began. In the small irrigated area near the Texas line east of Prairieview, water levels declined from 2 to 4 feet in 1951. Immediately west, southwest, and southeast of Lovington, water levels declined more than 2 feet under the heavily irrigated areas with a maximum recorded decline west of Lovington of 3.7 feet as compared with 2.6 feet in 1950. Declines from 1947 to 1952 were slightly in excess of 8 feet in localized areas west, southeast, and northeast of Lovington. Declines of water levels in the heavily irrigated area about 7 miles east of Lovington exceeded 2 feet in 1951 under about 13 square miles which is somewhat less than in 1950 when net declines in excess of 3 feet occurred under about 4 square miles. In the vicinity of Humble City water levels declined in 1951 more than 2 feet under about 4 square miles as compared with declines of about 1 foot in the preceding year. Water levels declined from 1 to more than 3 feet under Hobbs and the irrigated area extending from Hobbs northward for about 8 miles, whereas in the preceding year declines in that area were generally less than 1 foot. By the end of 1951 water levels in a limited area under Hobbs were on the order of 10 feet lower than in 1947. In areas where the effects of pumping are small and effects of varying amounts of recharge from precipitation are more apparent, the water levels in general showed small net declines in 1951. These small declines were the result mainly of the smaller recharge in 1951 as compared with 1950, when small yearly rises were observed in conjunction with above-normal precipitation.

12.34.11.413. A. D. Jones Estate. Drilled unused water-table well in Ogallala formation, diameter 15 inches, depth 87 feet. Highest water level 29.57 below lsd, May 24, 1949; lowest 30.51 below lsd, Nov. 26, 1951. Records available: 1949-51. Jan. 18, 30.16; Mar. 26, 30.23; May 21, 30.31; July 26, 30.40; Sept. 20, 30.45; Nov. 26, 30.51.

12.36.24.434a. J. C. Clay. Drilled domestic water-table well in Ogallala formation, diameter 6 inches. Highest water level 22.85 below lsd, Jan. 15, 1948; lowest 24.03 below lsd, Nov. 26, 1951. Records available: 1947-51. Jan. 18, 24.02, pumping; Mar. 26, 23.79, pumping; May 23, 23.97, pumping; July 26, 24.08, pumping; Sept. 20, 24.67, pumping; Nov. 26, 24.03.

12.36.29.122.* E. D. Holt. Drilled unused water-table well in Ogallala formation, diameter 12 inches, depth 75 feet. Highest water level 27.43 below lsd, Sept. 24, 1945; lowest 30.43 below lsd, Oct. 15, 1951. Records available: 1945-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	29.79	Apr. 5	29.72	June 25	30.02	Oct. 15	30.43
10	29.77	10	29.75	30	30.08	20	30.39
15	29.77	15	29.76	July 5	30.08	25	30.41
20	29.77	20	29.75	10	30.11	30	30.40
25	29.77	25	29.75	15	30.15	Nov. 5	30.39
30	29.75	30	29.77	20	30.17	10	30.40
Feb. 5	29.74	May 5	29.82	25	30.18	15	30.39
10	29.75	10	29.85	30	30.18	20	30.39
15	29.74	15	29.88	Aug. 5	30.24	25	30.39
20	29.74	20	29.87	10	30.22	30	30.38
25	29.72	25	29.87	15	30.23	Dec. 5	30.38
Mar. 5	29.72	30	29.87	Sept. 20	30.40	10	30.40
10	29.71	June 5	29.91	25	30.38	15	30.40
15	29.71	10	29.99	30	30.38	20	30.37
20	29.73	15	29.97	Oct. 5	30.42	25	30.39
25	29.74	20	29.98	10	30.41	30	30.39
30	29.74						

* From recorder graph

13.37.7.234. W. D. Patton. Drilled unused water-table well in Ogallala formation, diameter 6 inches. Highest water level 29.56 below lsd, Mar. 27, Nov. 15, 1947. lowest 30.88 below lsd, Nov. 26, 1951. Records available: 1945-51. Jan. 18, 30.51; Mar. 26, 30.59; May 23, 30.63; July 26, 30.74; Sept. 20, 30.81; Nov. 26, 30.88.

13.37.13.132. A. M. Brownfield. Drilled unused water-table well in Ogallala formation, diameter 8 inches, depth 41 feet. Highest water level 25.46 below lsd, Aug. 12, 1941; lowest 30.12 below lsd, Dec. 21, 1940. Records available: 1930-51. Jan. 18, 29.01; Mar. 26, 29.07; May 23, 29.13; July 26, 29.20; Sept. 20, 29.29; Nov. 26, 29.44.

14.35.33.433. W. A. Anderson. Drilled unused water-table well in Ogallala formation, diameter 6 inches, depth 62 feet. Land-surface datum is 4,013.59 feet above msl. Highest water level 39.65 below lsd, May 21, July 25, 1951; lowest 42.39 below lsd, Nov. 15, 1929. Records available: 1929-51. Jan. 17, 39.66; Mar. 23, 39.68; May 21, 39.65; July 25, 39.65; Sept. 20, 39.66; Nov. 21, 39.68.

14.36.4.111. Lewis Beaman. Drilled domestic water-table well in Ogallala formation, diameter 6 inches. Highest water level 42.73 below lsd, Mar. 23, 1949; lowest 50.23 below lsd, Sept. 20, 1951. Records available: 1949-51. Jan. 17, 44.11; Mar. 23, 44.02; May 21, 46.39; July 25, 46.09, nearby well being pumped; Sept. 20, 50.23; Nov. 21, 47.53.

14.36.13.211. Mattie Chambers. Drilled unused water-table well in Ogallala formation, diameter 12 inches, depth 87 feet. Land-surface datum is 3,904.59 feet above msl. Highest water level 35.74 below lsd, Jan. 30, May 24, 1946; lowest 39.15 below lsd, Nov. 26, 1951. Records available: 1929-51. Jan. 17, 38.20; Mar. 23, 38.25; May 21, 38.35; July 25, 38.58; Sept. 20, 38.83; Nov. 26, 39.15.

14.37.14.112. M. E. Powell. Drilled unused water-table well in Ogallala formation, diameter 11 inches, depth 88 feet. Highest water level 34.51 below lsd, Mar. 31, Apr. 1, 1945; lowest 50.90 below lsd, Sept. 20, 1951. Records available: 1939-51. Jan. 19, 43.57; Mar. 26, 43.31; May 21, 46.20; July 25, 47.32, nearby well being pumped; Sept. 20, 50.90; Nov. 26, 49.53, nearby well being pumped.

14.37.27.131. J. R. Fort. Drilled unused water-table well in Ogallala formation, diameter 7 inches, depth 58 feet. Highest water level 36.10 below lsd, May 22, 1947; lowest 42.44 below lsd, Nov. 26, 1951. Records available: 1929-51. Jan. 19, 39.28; Mar. 23, 39.12; May 21, 40.45; July 25, 41.11; Sept. 20, 42.38; Nov. 26, 42.44.

14.37.31.333. T. N. and E. N. Miller. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, reported depth 130 feet. Highest water level 43.59 below lsd, Mar. 21, 1949; lowest 55.89 below lsd, May 19, 1950. Records available: 1949-51. Jan. 19, 48.77; Mar. 23, 50.11; May 21, 52.59; July 25, 53.33; Sept. 20, 85.70, pumping; Nov. 26, 51.91.

14.38.21.311. Claude Cox. Drilled irrigation water-table well in Ogallala formation. Highest water level 32.48 below lsd, Jan. 21, 1949; lowest 46.27 below lsd, July 25, 1951. Records available: 1949-51. Jan. 19, 36.60; Mar. 26, 37.41; May 21, 40.42; July 25, 46.27; Sept. 20, 40.77; Nov. 26, 38.57.

15.36.8.111a. Gordon Gann. Drilled domestic water-table well in Ogallala formation, diameter 6 inches. Highest water level 41.33 below lsd, Mar. 23, 1949; lowest 52.47 below lsd, Sept. 20, 1950. Records available: 1949-51. Mar. 23, 51.20; July 25, 76.89, nearby well being pumped; Sept. 20, 76.98, nearby well being pumped; Nov. 21, 50.45.

15.37.21.334. R. W. Dean. Drilled stock water-table well in Ogallala formation, diameter 8 inches, reported depth 80 feet. Highest water level 29.10 below lsd, July 27, 1943; lowest 41.03 below lsd, Sept. 20, 1951. Records available: 1930-51. Jan. 19, 39.13, pumping; Mar. 23, 35.76; May 23, 37.09; July 26, 42.34, pumping; Sept. 20, 41.03; Nov. 26, 38.26.

16.35.13.112. W. T. Zuber. Drilled irrigation water-table well in Ogallala formation, diameter 12 inches, reported depth 100 feet. Highest water level 42.36 below lsd, Mar. 26, 1948; lowest 48.68 below lsd, May 18, 1950. Records available: 1948-51. Jan. 16, 44.17; Mar. 24, 43.96; May 23, 59.04, pumping; July 25, 46.50; Sept. 21, 47.64; Nov. 21, 45.91.

16.36.4.Lot 12.* E. H. Byers. Drilled unused water-table well in Ogallala formation, diameter 8 inches, depth 65 feet. Highest water level 43.35 below lsd, Mar. 14, 1943; lowest 53.43 below lsd, Sept. 10, 1951. Records available: 1934-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	49.47	Apr. 25	51.01	July 10	52.39	Sept. 25	53.31
20	49.31	30	51.21	15	52.14	30	53.12
25	49.26	May 5	51.41	20	52.07	Oct. 5	53.11
30	49.23	10	51.31	25	52.12	10	52.87
Feb. 10	49.17	15	51.12	30	52.22	15	52.48
15	49.15	20	51.09	Aug. 5	52.64	Nov. 5	51.80
20	49.13	25	51.39	10	52.79	10	51.89
25	49.10	30	51.24	15	52.85	15	52.44
Mar. 5	49.07	June 5	51.63	20	52.83	20	52.10
10	49.07	10	51.78	25	52.61	25	52.01
15	49.07	15	51.94	30	52.97	30	e51.80
20	49.37	20	52.09	Sept. 5	53.21	Dec. 15	52.08
25	49.80	25	52.25	10	53.43	20	e51.80
30	49.93	30	52.47	15	53.35	25	e51.66
Apr. 5	49.30	July 5	52.55	20	53.32	30	51.44
10	49.06						

e Estimated.

* From recorder graph.

16.37.11.111. A. J. Birkshire. Formerly Mitsu Harada. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, reported depth 118 feet. Highest water level 31.93 below lsd, Jan. 23, 1949; lowest 47.36 below lsd, Sept. 21, 1951. Records available: 1949-51. Mar. 23, 38.16; May 22, 40.74; July 24, 46.16; Sept. 21, 47.36; Nov. 20, 42.00.

16.38.34.131. Ralph Moe. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, reported depth 140 feet. Highest water level 35.06 below lsd, May 22, 1947; lowest 50.68 below lsd, July 24, 1951. Records available: 1947-51. Jan. 20, 40.41; Mar. 23, 63.98, pumping; May 22, 47.25; July 24, 50.68; Sept. 21, 45.35; Nov. 20, 42.61.

17.33.13.433. Potash Company of America. Drilled industrial water-table well in Ogallala formation, diameter 16 inches. Highest water level 144.18 below lsd, Nov. 17, 1948; lowest 162.89 below lsd, July 25, 1951. Records available: 1948-51. Jan. 21, 155.16; Mar. 24, 156.12; May 22, 186.83, pumping; July 25, 162.89; Sept. 21, 188.64, pumping; Nov. 21, 155.54.

17.33.26.422. Phillips Petroleum Co. Drilled unused water-table well in Ogallala formation, diameter 8 inches, depth 200 feet. Highest water level 160.56 below lsd, Jan. 21, 1951; lowest 160.87 below lsd, Sept. 21, 1951. Records available: 1950-51. Jan. 21, 160.56; Mar. 24, 160.77; May 22, 160.86; July 25, 160.59; Sept. 21, 160.87; Nov. 21, 160.75.

17.34.35.130. Phillips Petroleum Co. Drilled unused water-table well in Ogallala formation, diameter 8 inches, depth 132 feet. Highest water level 89.91 below lsd, May 18, 1950; lowest 91.98 below lsd, Jan. 26, 1941. Records available: 1940-51. Jan. 21, 89.93; Mar. 24, 89.98; May 22, 90.02; July 25, 89.97; Sept. 21, 89.96; Nov. 21, 89.97.

17.35.35.213. Phillips Petroleum Co. Drilled unused water-table well in Ogallala formation, diameter 9 inches, depth 129 feet. Highest water level 38.60 below lsd, Jan. 16, 1948; lowest 41.45 below lsd, Jan. 26, 1941. Records available: 1940-51. Jan. 21, 39.13; Mar. 24, 39.15; May 22, 39.18; July 25, 39.20; Sept. 21, 39.23; Nov. 21, 39.27.

17.36.3.333. State of New Mexico. Drilled unused water-table well in Ogallala formation, diameter 2 inches, depth 85 feet. Highest water level 42.00 Mar. 24, May 15, 1944; lowest 45.01 below lsd, June 18, 1939. Records available: 1939-51. Jan. 21, 42.33; Mar. 24, 42.32; May 22, 42.45; July 25, 42.59; Sept. 19, 42.50; Nov. 21, 42.49.

17.36.27.131. Wallace Mitchell. Drilled irrigation water-table well in Ogallala formation. Highest water level 33.00 below lsd, Sept. 23, 1949; lowest 36.52 below lsd, May 17, 18, 1950. Records available: 1947-51. Jan. 21, 33.51; Mar. 24, 33.50; May 22, 34.87; July 25, 34.50; Sept. 19, 33.88; Nov. 21, 33.76.

17.38.7.111. Jim Cunningham. Formerly C. M. and W. R. Willess. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 135 feet. Highest water level 32.52 below lsd, Mar. 25, 1950, lowest 38.43 below lsd, May 22, 1951. Records available: 1950-51. Jan. 20, 34.17; Mar. 23, 67.57, pumping; May 22, 38.43. Measurement discontinued.

17.38.7.111a. Jim Cunningham. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, reported depth 135 feet. Highest water level 36.55 below lsd, Nov. 20, 1951; lowest 41.52 below lsd, July 24, 1951. Records available: 1951. July 24, 41.52; Nov. 20, 36.55.

17.38.30.312. Mrs. W. L. Goedeke. Drilled and dug unused water-table well in Ogallala formation, diameter 7 inches, depth 56 feet. Highest water level 26.47 below lsd, Feb. 4, 1942; lowest 33.60 below lsd, Nov. 20, 1951. Records available: 1929-51. Jan. 22, 32.82; Mar. 23, 33.12, nearby well being pumped; May 22, 33.18; July 24, 33.05; Sept. 21, 32.95; Nov. 20, 33.60.

17.38.34.113. W. E. Busby. Drilled irrigation water-table well in Ogallala formation, diameter 12 inches, depth 120 feet. Highest water level 24.78 below lsd, Jan. 15, 1944; lowest 29.58 below lsd, July 24, 1951. Records available: 1943-51. Jan. 22, 27.32; July 24, 29.58; Sept. 21, 29.37; Nov. 20, 28.01.

18.36.27.111. State of New Mexico. Drilled unused water-table well in Ogallala formation, diameter 6 inches. Highest water level 38.09 below lsd, Oct. 23, 1942; lowest 41.75 below lsd, Mar. 15, 1941. Records available: 1939-51. Jan. 21, 40.43; Mar. 22, 40.45; May 22, 40.52; July 24, 40.48; Sept. 19, 40.47; Nov. 20, 40.50.

18.38.4.232. J. R. Isaacs Estate. Dug and drilled unused water-table well in Ogallala formation, size 36 by 60 inches, depth 82 feet. Highest water level 22.04 below lsd, Oct. 24, 1942; lowest 25.59 below lsd, Jan. 16, 1940. Records available: 1929-51. Jan. 22, 24.28; Mar. 23, 24.92. Measurement discontinued.

18.38.15.241. Glenn Staley. Drilled unused water-table well in Ogallala formation, diameter 6 inches, depth 107 feet. Highest water level 26.65 below lsd, Nov. 4-7, 1942; lowest 36.13 below lsd, Nov. 20, 1951. Records available: 1940-51. Jan. 20, 29.57; Mar. 23, 29.61; May 22, 33.07; July 24, 35.52; Sept. 21, 44.36; pumped recently; Nov. 20, 36.13.

18.38.30.213. Mrs. Sadie Davis. Drilled unused water-table well in Ogallala formation, diameter 6 inches, depth 50 feet. Highest water level 23.01 below lsd, Nov. 17, 1947; lowest 29.82 below lsd, Nov. 1932. Records available: 1931-51. Jan. 20, 23.79; Mar. 23, 23.74; May 22, 23.54; July 24, 23.29; Sept. 21, 23.72; Nov. 20, 24.14.

19.37.32.241. Mrs. E. A. Anderson. Dug unused water-table well in Ogallala formation, diameter 8 feet, depth 28 feet. Highest water level 10.12 below lsd, Nov. 28, 1941; lowest 13.89 below lsd, June 17, 1934. Records available: 1929-51. Jan. 21, 12.25; Mar. 23, 12.34; May 22, 11.97; July 24, 12.32; Sept. 19, 12.27; Nov. 20, 12.32.

20.35.1.222. J. L. Wood. Dug unused water-table well in Ogallala formation, size 4 by 4 feet, depth 28 feet. Highest water level 19.38 below lsd, July 28, 1943; lowest 25.68 below lsd, Sept. 18, 1936. Records available: 1929-51. Jan. 21, 22.54; Mar. 22, 22.69; May 22, 22.82; July 24, 22.89; Sept. 19, 22.96; Nov. 20, 23.08.

20.37.9.110. W. H. Laughlin. Dug and drilled water-table well in Ogallala formation, size 4 by 6 feet, depth 53 feet. Highest water level 26.89 below lsd, Mar. 30, 1943; lowest 47.54 below lsd, Aug. 12, 1935. Records available: 1929-51. Jan. 21, 31.23; Mar. 23, 31.13; May 22, 31.20; July 24, 31.52; Sept. 19, 31.99; Nov. 20, 32.14.

Luna County

Mimbres Valley.--The Mimbres Valley, a broad alluvium-floored plain in southwestern New Mexico, is an area extensively irrigated by ground water. The Mimbres River in the area where ground water is pumped for irrigation, flows only when heavy rainfall causes flood runoff. Precipitation in 1951 at Deming, in the central part of the valley, was 8.29 inches, 1.42 inches below normal. At Columbus, in the southern part of the valley, the precipitation in 1951 was 6.54 inches, 3.15 inches, below normal. Precipitation during the growing season from April to September at Deming was about normal, 4.96 inches. It is estimated that about 27,000 acres of land in Mimbres Valley was irrigated in 1951, an increase of about 1,200 acres from 1950. Most of the increased acreage was west of Red Mountain and about 5 miles east of the Little Florida Mountains. On the basis of power records for 259 wells for which there were comparable records in 1950, it is estimated that about 69,000 acre-feet of water was pumped for irrigation in 1951, an increase of 13,000 acre-feet from 1950. An additional 2,300 acre-feet of water was pumped for domestic and industrial purposes in 1951 as compared with 1,900 acre-feet in 1950. In general, the net declines of water levels in 1951 were less than in 1950. Because of the net declines that generally occur from year to year, new record low water levels were reached by the end of 1951. The area in which water levels declined from January 1951 to January 1952 are shown on the map in figure 41. Declines of more than 1 foot occurred under three areas totaling about 174 square miles. The largest area comprising about 160 square miles, extends from about 2 miles north to 15 miles south of Deming and is about 10 miles in width. Within that area water levels declined more than 2 feet under about 44 square miles and more than 3 feet under about 3.1 square miles. The greatest decline recorded in that area was 3.1 feet in a well about 10 miles southwest of Deming, and in a well about 6 miles south of Deming. Northeast of the Little Florida Mountains, water levels declined more than 1 foot under an area of about 7 square miles with a maximum net decline of 2.3 feet being measured in a well about 14 miles east of Deming. Water levels rose in several wells on or near a natural ground-water barrier, which extends northward from the northern end of the Little Florida Mountains. The water level in one well rose 3.8 feet, while in another well less than half a mile south the water level declined about 7.3 feet. West of Red Mountain, where 1951 was the first season of extensive use of ground water for irrigation, water levels declined more than 1 foot under an area of about 9 square miles, more than 2 feet under about 5 square miles, and more than 3 feet under about 2 square miles. The greatest decline noted in that area was 4.2 feet in a well about 9 miles west of Deming. By the end of 1951, water levels were as much as 25 feet below the 1930 levels in the main areas of concentrated pumping, 4 to 5 miles west of Deming, 6 to 10 miles south of Deming, and northeast of the Little Florida Mountains.

21.10.6.112. Tom Tigner. Dug unused water-table well in alluvium of Quaternary age, diameter 12 feet, depth 23 feet. Highest water level 6.57 below lsd, Feb. 25, 1933; lowest 10.60 below lsd, Sept. 13, 1951. Records available: 1928-51. Jan. 4, 9.49; Mar. 13, 9.48; May 8, 9.58; July 19, 10.44; Sept. 13, 10.60; Nov. 16, 10.56.

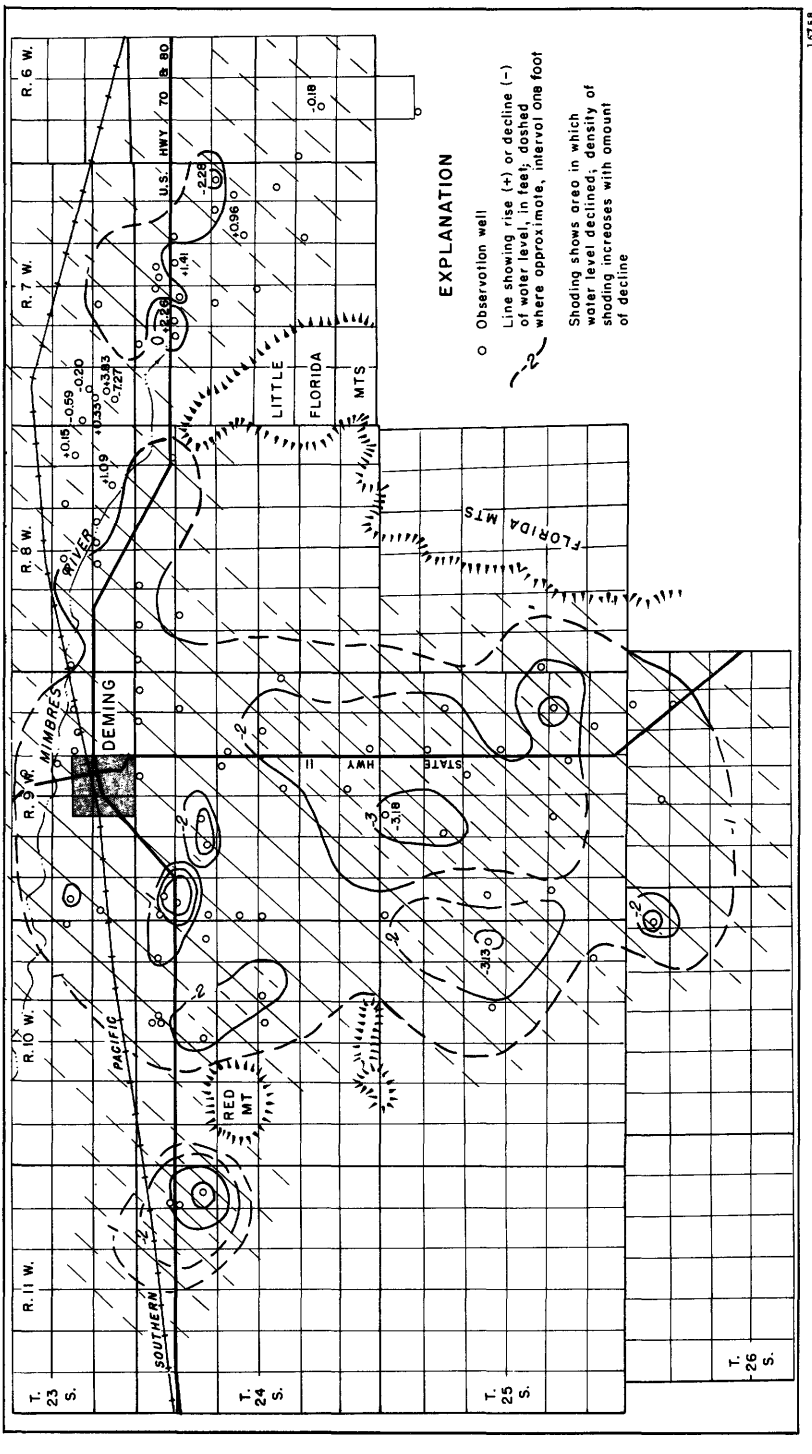

Figure 41.--Change in ground-water level from January 1951 to January 1952 in Mimbres Valley, Luna County, N. Mex.

21.11.13.411c. Patterson and Perin Farms. Formerly Claude Irwin. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 151 feet. Highest water level 29.94 below lsd, Mar. 22, 1945; lowest 52.56 below lsd, Nov. 16, 1951. Records available: 1944-51. Jan. 4, 80.29, pumping; Mar. 13, 84.45, pumping; May 8, 85.67, pumping; July 19, 88.1, pumping; Sept. 13, 88.9, pumping; Nov. 16, 52.56.

21.11.35.310. State of New Mexico. Drilled unused water-table well in valley fill, diameter 28 inches, depth 179 feet. Highest water level 13.50 below lsd, Mar. 15, 1949; lowest 36.03 below lsd, Nov. 16, 1948. Records available: 1929-51. Jan. 4, 30.19; Mar. 13, 31.65; May 8, 32.57; July 18, 33.62; Sept. 13, 33.46; Nov. 16, 34.37.

22.10.18.121. State of New Mexico. Drilled unused water-table well in valley fill, diameter 30 inches, depth 223 feet. Highest water level 68.00 below lsd, Sept. 30, 1929; lowest 78.07 below lsd, Jan.10, 30, 1949. Records available: 1928-51. Jan. 4, 75.84; Mar. 13, 76.12; May 8, 76.48; July 18, 77.00; Sept. 13, 77.23; Nov. 18, 77.52.

22.11.2.210. State of New Mexico. Drilled unused water-table well in valley fill, diameter 28 inches, depth 200 feet. Highest water level 20.38 below lsd, Nov. 11, 1941; lowest 36.28 below lsd, Nov. 16, 1948. Records available: 1929-51. Jan. 4, 31.69; Mar. 13, 32.67; May 8, 33.31; July 18, 34.27; Sept. 13, 34.44; Nov. 16, 35.02.

22.11.13.122. State of New Mexico. Drilled unused water-table well in valley fill, diameter 28 inches, depth 190 feet. Highest water level 58.00 below lsd, July 31, 1928; lowest 69.72 below lsd, Nov. 16, 1948. Records available: 1928-51. Jan. 4, 67.23; Mar. 13, 68.56; May 8, 67.93; July 18, 68.45; Sept. 13, 68.63; Nov. 18, 68.99.

22.11.13.221. State of New Mexico. Drilled unused water-table well in valley fill, diameter 28 inches, depth 225 feet. Highest water level 65.14 below lsd, July 31, 1928; lowest 76.30 below lsd, Nov. 16, 1948. Records available: 1928-51. Jan. 4, 74.18; Mar. 13, 74.47; May 8, 74.80; July 18, 75.33; Sept. 13, 75.49; Nov. 18, 75.80.

22.11.23.222. State of New Mexico. Drilled unused water-table well in valley fill, diameter 24 inches, depth 152 feet. Highest water level 46.97 below lsd, Nov. 11, 1941; lowest 60.30 below lsd, Feb. 21, 1937. Records available: 1928-51. Jan. 4, 53.75; Mar. 13, 54.08; May 8, 54.52; Sept. 13, 55.25; Nov. 16, 55.62.

23.7.30. Lot 16. H. T. Foster. Dug and drilled unused water-table well in valley fill, diameter 36 inches, depth 157 feet. Highest water level 22.45 below lsd, May 22, 1933; lowest 30.97 below lsd, Sept. 1, 1949. Records available: 1931-51. Jan. 8, 29.53; Mar. 14, 30.17; May 9, 30.43; Sept. 18, 30.19; Nov. 22, 30.04.

23.7.31.133. William Haas. Drilled unused water-table well in valley fill, diameter 14 inches, reported depth 450 feet. Highest water level 37.99 below lsd, Jan. 8, 1951; lowest 52.75 below lsd, Sept. 20, 1948. Records available: 1947-51. Jan. 8, 37.99; Mar. 14, 41.06; May 9, 40.74; July 23, 42.60; Sept. 18, 43.77; Nov. 22, 44.75.

23.8.26.131a. "Bud"Lewis. Formerly W. L. Bankston. Drilled irrigation water-table well in valley fill, diameter 12 inches. Highest water level 43.41 below lsd, Jan. 20, 1949; lowest 54.05 below lsd, May 9, 1951. Records available: 1948-51. Jan. 8, 50.20; Mar. 14, 49.23; May 9, 54.05. Measurement discontinued.

23.8.26.131b. "Bud" Lewis. Drilled irrigation water-table well in valley fill, diameter 16 inches, depth 144 feet. Highest water level 50.20 below lsd, Jan. 8, 1951; lowest 50.67 below lsd, Nov. 22, 1951. Records available: 1951. Jan. 8, 50.20; Sept. 18, 67.83, pumped recently; Nov. 22, 50.67.

23.8.34.111. Geo. Dowdle. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 101 feet. Highest water level 33.52 below lsd, Jan. 5, 1940; lowest 70.53 below lsd, Sept. 18, 1951. Records available: 1940-51. Jan. 8, 47.47; Mar. 14, 54.77. nearby well being pumped; Sept. 18, 70.53; Nov. 22, 49.82.

23.8.34.211. E. B. Law. Drilled irrigation water-table well in valley fill, diameter 16 inches, depth 168 feet. Highest water level 27.22 below lsd, Sept. 2, 1929; lowest 54.56 below lsd, May 9, 1951. Records available: 1928-51. Jan. 8, 46.22; Mar. 14, 83.20, pumping; May 9, 54.56; Nov. 22, 48.56.

23.9.22.213. Roy Perkins. Dug and drilled unused water-table well in valley fill, diameter 36 inches, depth 150 feet. Highest water level 58.12 below lsd, Sept. 9, 1930; lowest 69.00 below lsd, Sept. 1, 1949. Records available: 1928-51. Jan. 4, 66.40; Mar. 13, 66.21; May 8, 67.66; Nov. 18, 67.79.

23.9.25.311. Albert Ernst. Drilled irrigation water-table well in valley fill, diameter 36 inches, depth 150 feet. Highest water level 50.34 below lsd, June 16, 1928; lowest 65.30 below lsd, Sept. 14, 1951. Records available: 1927-51. Jan. 10, 61.30; Mar. 12, 61.14; May 11, 94.84, pumping; July 24, 64.85; Sept. 14, 65.30; Nov. 24, 63.56.

23.9.27.221. J. D. McDaniels. Drilled domestic water-table well in valley fill, diameter 7 inches, depth 70 feet. Highest water level 48.20 below lsd, Aug. 28, 1929; lowest 62.79 below lsd, Sept. 21, 1950. Records available: 1928-51. Jan. 4, 61.76; Mar. 13, 61.90; May 8, 62.90, pumping; July 19, 62.43; Sept, 28, 64.26, pumping; Nov. 24, 65.15, pumping.

24.7.3.311a. G. D. Hatfield. Drilled unused water-table well in valley fill, diameter 42 inches, depth 128 feet. Highest water level 85.57 below lsd, Mar. 17, 1950; lowest 92.63 below lsd, Sept. 22, 1950. Records available: 1949-51. Jan. 9, 86.75; Mar. 14, 85.66; May 9, 101.82, nearby well being pumped; Sept. 15, 103.45, nearby well being pumped; Nov. 21, 90.73.

24.7.4.424. G. D. Hatfield. Drilled stock and domestic water-table well in valley fill, diameter 10 inches, depth 107 feet. Highest water level 64.58 below lsd, Apr. 16, 1929; lowest 97.27 below lsd, Sept. 20, 1948. Records available: 1928-51. Jan. 9, 89.40; Mar. 14, 87.96; May 9, 91.82; Sept. 15, 96.73; Nov. 21, 93.50.

24.7.5.211. R. M. Williamson. Dug and drilled stock and domestic water-table well in valley fill, diameter 12 inches, depth 123 feet. Highest water level 64.15 below lsd, Oct. 28, 1928; lowest 93.72 below lsd, Nov. 22, 1951. Records available: 1928-51. Jan. 8, 91.10, pumped recently; Mar. 14, 91.16, pumping; May 9, 91.52; July 23, 93.2, pumping; Sept. 18, 93.5, pumping; Nov. 22, 93.72.

24.7.9.111. Smyer Bros. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 125 feet. Highest water level 76.91 below lsd, May 9, 1939; lowest 90.51 below lsd, Sept. 22, 1950. Records available: 1939-51. Jan. 18, 87.27; Mar. 14, 83.63; May 9, 97.61, nearby well being pumped; Sept. 15, 95.30, nearby well being pumped; Nov. 21, 86.54.

24.7.9.111a. Smyer Bros. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 285 feet. Highest water level 36.41 below lsd, Mar. 27, 1946; lowest 94.66 below lsd, July 21, 1951. Records available: 1946-51. Jan. 18, 87.12; Mar. 14, 83.52; July 21, 94.66; Nov. 21, 86.51.

24.7.9.241. G. D. Hatfield. Drilled unused water-table well in valley fill, diameter 40 inches, depth 132 feet. Highest water level 84.60 below lsd, Jan. 5, 1940; lowest 94.17 below lsd, Nov. 21, 1951. Records available: 1940-51. Jan. 9, 91.94; Mar. 14, 90.42; May 9, 91.11; July 21, 82.0, nearby well being pumped; Sept. 18, 91.6, nearby well being pumped; Nov. 21, 94.17.

24.7.10.211. Fred Hassman. Drilled unused water-table well in valley fill, diameter 36 inches, depth 109 feet. Highest water level 82.47 below lsd, Jan. 6, 1940; lowest 106.60 below lsd, Sept. 1, 1949. Records available: 1940-51. Jan. 9, 93.76; Mar. 14, 91.72; May 9, 99.98, nearby well being pumped; Nov. 21, 95.55.

24.7.14.221* J. H. Winslow. Drilled unused water-table well in valley fill, diameter 28 inches, depth 118 feet. Highest water level 71.15 below lsd, Apr. 19-20, 1939; lowest 88.23 below lsd, Oct. 19, 1951. Records available: 1939-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	85.46	Apr. 10	85.13	July 10	86.92	Oct. 10	88.15
10	85.38	15	85.28	15	87.00	15	88.21
15	85.31	20	85.41	20	87.09	20	88.22
20	85.24	25	85.55	25	87.17	25	88.16
25	85.16	30	85.66	30	87.26	30	88.08
30	85.08	May 5	85.78	Aug. 5	87.18	Nov. 5	88.00
Feb. 5	85.01	10	85.92	10	87.39	10	87.89
10	84.96	15	86.01	15	87.47	15	87.82
15	84.91	20	86.02	20	87.52	20	87.73
20	84.84	25	86.06	25	87.59	25	87.68
25	84.77	30	86.14	30	87.65	30	87.61
Mar. 5	84.64	June 5	86.26	Sept. 5	87.72	Dec. 5	87.51
10	84.58	10	86.33	10	87.79	10	87.49
15	84.51	15	86.41	15	87.84	15	87.43
20	84.56	20	86.51	20	87.90	20	87.33
25	84.65	25	86.61	25	87.96	25	87.29
30	84.79	30	86.71	30	88.03	30	87.19
Apr. 5	84.99	July 5	86.81	Oct. 5	88.09		

* From recorder graph.

24.7.17.211b. Geo. Snyder. Drilled irrigation water-table well in valley fill, diameter 12 inches, reported depth 150 feet. Highest water level 79.83 below lsd, May 6, 1941; lowest 96.14 below lsd, July 21, 1951. Records available: 1941-51. Jan. 9, 91.85; Mar. 14, 92.07; May 9, 95.46, pumped recently; July 21, 96.14; Sept. 15, 92.25; Nov. 21, 92.40.

24.7.24.312. Bill Birchfield. Drilled unused water-table well in valley fill, diameter 30 inches, depth 89 feet. Highest water level 65.83 below lsd, Mar. 14, 1940; lowest 76.70 below lsd, Nov. 21, 1951. Records available: 1940-51. Jan. 9, 76.20; Mar. 14, 76.31; May 9, 76.37; July 21, 76.47; Sept. 15, 76.55; Nov. 21, 76.70.

24.8.1.333b. F. K. Kretek. Drilled irrigation water-table well in valley fill, diameter 11 inches, depth 78 feet. Highest water level 15.65 below lsd, Nov. 24, 1944; lowest 28.74 below lsd, Sept. 18, 1951. Records available: 1940-51. Jan. 9, 24.00; Mar. 14, 23.56; May 9, 25.46; July 23, 27.75; Sept. 18, 28.74; Nov. 21, 26.98.

24.8.4.111.* Foy Riley. Drilled unused water-table well in valley fill, diameter 24 inches, reported depth 100 feet. Highest water level 35.06 below lsd, May 6, 1941; lowest 49.21 below lsd, Sept. 28, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	46.48	Mar. 25	46.21	June 5	47.58	Aug. 10	48.56
15	46.45	30	46.31	10	47.69	15	48.66
20	46.39	Apr. 5	46.46	15	47.78	20	48.77
25	46.36	10	46.60	20	47.82	25	48.86
30	46.30	15	46.77	25	47.89	Sept. 5	48.91
Feb. 5	46.25	20	46.94	30	47.93	10	49.00
10	46.23	25	47.04	July 5	48.02	15	49.08
15	46.21	30	47.17	10	48.06	20	49.12
20	46.17	May 5	47.21	15	48.11	25	49.18
25	46.13	10	47.28	20	h48.20	Dec. 10	48.76
Mar. 5	46.09	15	47.33	25	48.31	15	48.69
10	46.08	20	47.39	30	48.37	20	48.63
15	46.08	25	47.42	Aug. 5	48.46	25	48.59
20	46.15	30	47.48				

h Tape measurement
* From recorder graph

24.8.6.112. Deming Air Base Well 3. Drilled public-supply water-table well in valley fill, diameter 12 inches, depth 235 feet, casing perforated 150-235. Land-surface datum is 4,240.6 feet above msl. Highest water level 48.75 below lsd, Oct. 14, 1942; lowest 61.83 below lsd, Sept. 18, 1951. Records available: 1942-51. Jan. 9, 60.03; Mar. 12, 60.20; May 11, 60.39; July 19, 60.87; Sept. 18, 61.83; Nov. 30, 61.74.

24.8.11.221. F. K. Kretek. Drilled unused water-table well in valley fill, diameter 6 inches, depth 42 feet. Highest water level 12.45 below lsd, June 1, 1933; lowest 24.44 below lsd, Sept. 23, 1950. Records available: 1928-51. Jan. 9, 23.19; Mar. 14, 23.75; May 9, 24.05. Measurement discontinued.

24.9.1.211. Deming Air Base. Drilled public-supply water-table well in valley fill, diameter 12 inches, depth 235 feet, casing perforated 170-235. Land-surface datum is 4,245.3 feet above msl. Highest water level 54.89 below lsd, Oct. 14, 1942; lowest 68.19 below lsd, Sept. 18, 1951. Records available: 1942-51. Jan. 9, 65.81; Mar. 12, 66.02; May 11, 66.33; July 19, 66.68; Sept. 18, 68.19; Nov. 30, 67.59.

24.9.2.421. Roscendo Trujillo. Dug domestic water-table well in valley fill, depth 74 feet. Highest water level 48.02 below lsd, Dec. 19, 1931; lowest 69.51 below lsd, Sept. 23, 1950. Records available: 1931-51. Jan. 9, 63.75; Mar. 12, 63.55; May 11, 72.97, nearby well being pumped; Nov. 24, 67.11.

24.9.6.431. State of New Mexico. Drilled irrigation water-table well in valley fill, diameter 12 to 6 inches, depth 1,000 feet, cased to 650 feet, perforated 300 (?) - 440. Highest water level 57.28 below lsd, Feb. 15, 1942; lowest 95.21 below lsd, Sept. 21, 1950. Records available: 1941-51. Jan. 4, 85.98; Mar. 13, 84.20; May 8, 93.51; Sept. 28, 104.54, pumping Nov. 24, 86.63.

24.9.9.411. Joe Clary. Drilled unused water-table well in valley fill. Highest water level 65.16 below lsd, Jan. 18, 1939; lowest 87.65 below lsd, Sept. 1, 1949. Records available: 1939-51. Jan. 6, 76.11; Mar. 14, 77.42; May 11, 83.08.

24.9.14.113. R. O. Fewell. Drilled irrigation water-table well in valley fill, diameter 16 inches, depth 405 feet. Highest water level 67.11 below lsd, Jan. 4-6, 10, 1950; lowest 88.40 below lsd, Sept. 22, 1950. Records available: 1949-51. Jan. 9, 70.40; Mar. 14, 74.50; May 11, 81.20; Nov. 24, 74.83.

24.9.19.111. Francis Ligocky. Dug and drilled unused water-table well in valley fill, diameter 10 inches, depth 178 feet. Highest water level 72.53 below lsd, Mar. 15, 1940; lowest 91.33 below lsd, Nov. 24, 1951. Records available: 1940-51. Jan. 5, 88.65; Mar. 13, 87.82; May 11, 90.47; July 20, 92.66, nearby well being pumped; Nov. 24, 91.33.

24.10.1.311. R. V. Griggs. Drilled well in valley fill, diameter 10 inches, depth 198 feet. Highest water level 78.45 below lsd, Jan. 9, 1942; lowest 103.91 below lsd, July 23, 1951. Records available: 1941-51. Jan. 10, 88.59; Mar. 13, 89.94; May 8, 103.72, nearby well being pumped; July 23, 103.91; Sept. 28, 118.47, nearby well being pumped; Nov. 24, 91.78.

24.10.3.411. A. M. and B. L. Speir. Dug domestic well in valley fill. Highest water level 77.22 below lsd, Oct. 23, 1928; lowest 96.80 below lsd, July 23, 1951. Records available: 1928-51. Jan. 5, 95.31; Mar. 13, 95.28; May 8, 96.93, nearby well being pumped; July 23, 96.80. Measurement discontinued.

24.10.3.411b. A. M. and B. L. Speir. Drilled irrigation well in valley fill, diameter 16 inches, depth 198 feet. Highest water level 75.33 below lsd, Mar. 10, 1942; lowest 92.69 below lsd, Sept. 26, 1951. Records available: 1940-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 6, 1940	79.71	Jan. 5, 1951	87.92	May 8	a112.45	Sept. 26	92.69
Nov.13	a98.66	Mar.13	88.64	July 23	b93.50	Nov. 24	89.97

a Pumping.
b Pumped recently.

24.10.10.311. Jim Hurt. Drilled stock and domestic well in valley fill, diameter 8 inches, depth 131 feet. Highest water level 74.82 below lsd, Oct. 23, 1928; lowest 92.26 below lsd, Sept. 21, 1950. Records available: 1927-51. Jan. 5, 91.31; Mar. 13, 91.23; May 8, 96.43, pumping; July 20, 96.88, nearby well being pumped; Sept. 26, 97.31, nearby well being pumped.

24.10.12.431. Steve Hrna. Dug and drilled unused water-table well in valley fill, diameter 36 to 12 inches, reported depth 132 feet. Highest water level 77.61 below lsd, May 6-13, 1940; lowest 97.56 below lsd, Sept. 23, 1951. Records available: 1927-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	90.29	89.45	88.91	89.76	91.50	92.00	92.96	93.91	94.67	96.34	.....	.....
2	90.27	89.43	88.92	89.82	91.52	92.03	93.00	93.95	94.65	96.14	.....	.....
3	90.25	89.40	88.91	89.88	91.55	92.07	93.03	93.98	94.69	95.98	.....	.....
4	90.22	89.36	88.90	89.92	91.56	92.11	93.07	94.02	94.81	95.96	.....	.....
5	90.19	89.33	88.88	90.00	91.57	92.15	93.12	94.05	94.91	95.97	.....	.....
6	90.17	89.33	88.88	90.06	91.59	92.19	93.16	94.07	94.99	96.25	.....	h93.38
7	90.14	.....	88.87	90.12	91.60	92.23	93.19	94.09	95.03	96.17	.....	93.35
8	90.09	89.27	88.88	90.19	91.60	92.27	93.23	94.12	95.07	95.75	.....	93.32
9	.....	89.26	88.87	90.25	91.61	92.31	93.26	94.14	95.18	95.50	.....	93.29
10	.....	89.24	88.89	90.32	91.63	92.34	93.29	94.18	95.31	95.40	.....	93.25
11	90.00	89.21	88.93	90.40	91.64	92.36	93.32	94.20	95.50	95.34	.....	93.21
12	89.97	89.17	88.95	90.47	91.64	92.40	93.36	94.23	95.77	.....	.....	93.18
13	89.96	89.18	88.92	90.54	91.64	.....	93.40	94.25	96.10	.....	.....	93.14
14	89.94	89.17	88.94	90.60	91.64	.....	93.43	94.28	96.33	.....	.....	93.13
15	89.90	89.15	89.00	90.66	91.66	92.50	93.46	94.31	96.27	.....	.....	93.09
16	89.86	89.12	89.00	90.73	91.67	92.52	93.49	94.35	96.14	.....	.....	93.04
17	89.84	89.10	89.04	90.80	.....	92.55	93.51	94.39	96.16	.....	.....	93.00
18	89.80	89.08	89.11	90.86	.....	92.57	93.55	94.43	96.51	.....	.....	92.95
19	89.78	89.07	89.15	90.92	91.69	92.59	93.58	94.47	97.01	.....	.....	92.89
20	89.76	e89.06	89.19	90.97	91.70	92.60	93.60	94.50	97.10	.....	.....	.....
21	89.74	e89.05	89.23	91.06	91.71	92.62	93.63	94.55	97.20	.....	.....	92.87
22	89.69	89.04	89.26	91.10	91.73	92.65	93.65	94.61	97.46	.....	.....	92.82
23	89.68	89.02	89.31	91.15	91.75	92.67	93.67	94.66	97.56	.....	.....	92.81
24	89.65	89.00	89.35	91.20	91.78	92.71	93.71	94.69	97.47	.....	.....	92.77
25	89.61	88.99	89.38	91.25	91.81	92.75	93.74	94.73	97.43	.....	.....	92.74
26	89.58	88.97	89.43	91.30	91.83	92.77	93.77	94.69	97.35	.....	.....	92.72
27	89.56	88.95	89.48	91.34	91.85	92.81	93.78	94.65	97.42	.....	.....	92.68
28	89.54	88.95	89.52	91.39	91.88	.....	93.81	94.63	97.53	.....	.....	.....
29	89.51		89.61	91.41	91.89	92.88	93.83	94.65	97.10	.....	.....	.....
30	89.46		89.65	91.45	91.93	92.91	93.86	94.65	96.81	.....	.....	.....
31	89.46		89.70		91.98		93.88	94.64		.....		.....

e Estimated.
h Tape measurement.

24.10.22.211. E. F. Hurt. Dug and drilled irrigation well, diameter 36 inches, reported depth 206 feet. Highest water level 69.27 below lsd, May 21, 1942; lowest 82.52 below lsd, Nov. 24, 1951. Records available: 1941-51. Jan. 5, 79.94; Mar. 13, 79.29; May 11, 82.08; Nov. 24, 82.52.

24.10.23.111. E. F. Hurt. Dug and drilled irrigation well, diameter 36 inches, depth 168 feet. Highest water level 76.27 below lsd, Mar. 16, 1949; lowest 82.69 below lsd, Nov. 24, 1951. Records available: 1948-51. Jan. 5, 80.08; Mar. 13, 79.29; May 11, 82.39; Nov. 24, 82.69.

24.11.2.322. H. A. McKinney. Drilled irrigation well, diameter 16 inches, depth 191 feet. Land-surface datum is 4,433 feet above msl. Highest water level 109.66 below lsd, Mar. 15, 1951; lowest 113.69 below lsd, July 22, 1951. Records available: 1951. Mar. 15, 109.66; May 8, 109.78; July 22, 113.69.

24.11.11.211. Raymond Demingas. Drilled irrigation well, diameter 16 inches, reported depth 200 feet. Land-surface datum is 4,426 feet above msl. Highest water level 105.48 Mar. 15, 1951. Records available: 1951. Mar. 15, 105.48; May 8, 113.49, pumped recently; July 22, 148.6, pumping; Nov. 29, 109.0, pumped recently.

24.11.12.111. C. L. Taylor. Drilled irrigation well, diameter 16 inches, reported depth 200 feet. Land-surface datum is 4,418 feet above msl. Highest water level 101.55 below lsd, Jan. 11, 1951; lowest 102.25 below lsd, May 8, 1951. Records available: 1951. Jan. 11, 101.55; May 8, 102.25; July 22, 121.33, pumping; Sept. 12, 111.54, pumped recently.

24.11.12.324. Lee Palayo. Drilled irrigation well, diameter 16 inches, depth 200 feet. Land-surface datum is 4,408 feet above msl. Highest water level 98.53 below lsd, Jan. 11, 1951; lowest 103.04 below lsd, Nov. 19, 1951. Records available: 1951. Jan. 11, 98.53; May 8, 117.03, pumping; July 22, 98.10, pumping; Sept. 12, 125.5, pumping; Nov. 19, 103.04.

24.11.13.411. C. L. Lopez. Drilled irrigation well, diameter 12 inches, reported depth 200 feet. Land-surface datum is 4,393 feet above msl. Highest water level 86.77 below lsd, May 8, 1951. Records available: 1951. May 8, 86.77; July 22, 97.80, pumping; Sept. 12, 96.6, pumping.

24.11.14.122. Waldrop. Drilled irrigation well, diameter 12 inches, reported depth 210 feet. Land-surface datum is 4,405 feet above msl. Highest water level 111.16 below lsd, July 22, 1951. Records available: 1951. July 22, 111.16.

24.11.24.311. Madrid. Drilled irrigation well in valley fill, diameter 16 inches, reported depth 200 feet. Highest water level 87.92 below lsd, Nov. 19, 1951; lowest 89.97 below lsd, Sept. 12, 1951. Records available: 1951. May 11, 100.05, pumping; July 22, 89.17, pumped recently; Sept. 12, 89.97; Nov. 19, 87.92.

25.6.8.111. Franklin. Drilled unused water-table well in valley fill, diameter 16 inches, reported depth 340 feet. Highest water level 64.08 below lsd, May 9, 1951; lowest 64.53 below lsd, Nov. 30, 1950. Records available: 1950-51. Nov. 30, 1950, 64.53; Jan. 8, 1951, 64.18; Mar. 14, 64.10; May 9, 64.08; Sept. 15, 64.11; Nov. 21, 64.30.

25.8.19.331. Tom Crawford. Drilled stock well in valley fill, diameter 8 inches, depth 88 feet. Highest water level 59.01 below lsd, Jan. 12, 1942; lowest 71.07 below lsd, July 20, 1951. Records available: 1942-43, 1945-51. Jan. 10, 69.08, pumping; Mar. 13, 68.56; May 9, 73.00, pumping; July 20, 71.07; Sept. 14, 76.35, pumping; Nov. 20, 70.39.

25.9.4.211.* Val Miller. Dug and drilled unused water-table well in bolson deposits, diameter 24 inches, depth 88 feet. Highest water level 63.70 below lsd, Jan. 9, 1941; lowest dry, Sept. 19, 1951. Records available: 1940-51. Measurement discontinued.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	85.06	Mar. 5	85.12	Apr. 25	85.57	June 15	86.23
10	85.07	10	85.13	30	85.63	20	86.30
15	85.08	15	85.15	May 5	85.68	25	86.38
20	85.08	20	85.17	10	85.73	30	86.45
25	85.08	25	85.19	15	85.80	July 5	e86.52
30	85.08	30	85.23	20	85.85	10	86.62
Feb. 5	85.11	Apr. 5	85.30	25	85.91	15	e86.72
10	85.11	10	85.35	30	85.99	20	e86.82
15	85.12	15	85.42	June 5	86.08	25	86.42
20	85.12	20	85.49	10	86.15	Sept. 19	(f)
25	85.12						

e Estimated.
f Dry.
* From recorder graph

25.9.6.421. Bernabe Alba. Dug and drilled irrigation well, depth 375 feet. Highest water level 66.16 below lsd, Mar. 17, 1939; lowest 95.25 below lsd, May 9, 1951. Records available: 1939-51. Jan. 5, 88.16; Mar. 13, 110.57, pumping; May 9, 95.25. Measurement discontinued.

25.9.11.111. R. J. Bishop. Dug and drilled irrigation well in valley fill, diameter 4 feet, depth 220 feet. Highest water level 59.69 below lsd, Mar. 17, 1939; lowest 84.36 below lsd, Nov. 20, 1951. Records available: 1939-51. Jan. 6, 80.38; Mar. 14, 79.85; May 9, 83.46; Nov. 20, 84.36.

25.9.28.121. Leonard Zumwalt. Dug and drilled water-table well in valley fill, diameter 42 to 22 inches, depth 101 feet. Highest water level 65.82 below lsd, Mar. 13, 1942; lowest 86.79 below lsd, Sept. 23, 1950. Records available: 1941-51. Jan. 6, 81.88; Mar. 13, 80.53; Nov. 20, 86.60.

25.9.35.211a. L. V. Koenig. Drilled irrigation well in valley fill, diameter 16 inches, reported depth 150 feet. Highest water level 58.65 below lsd, Jan. 6, 1951; lowest 60.96 below lsd, Nov. 20, 1951. Records available: 1939-51. Jan. 6, 58.65; Mar. 13, 59.37; May 9, 60.10; July 20, 76.3, pumping; Sept. 14, 63.25, pumping; Nov. 20, 60.96.

26.9.2.221. Tom Taylor. Dug and drilled irrigation well in valley fill, diameter 14 inches, depth 74 feet. Highest water level 39.46 below lsd, Sept. 6, 1940; lowest 50.06 below lsd, May 9, 1951. Records available: 1940-51. Sept. 6, 1940, 39.46; Nov. 15, 1940, 39.69; Jan. 6, 1951, 47.70; Mar. 13, 47.67; May 9, 50.06; Nov. 20, 49.05.

26.9.11.211. State of New Mexico. Dug and drilled unused well in valley fill, diameter 12 inches, depth 80 feet. Highest water level 36.92 below lsd, Apr. 15, 1939; lowest 45.13 below lsd, Nov. 20, 1951. Records available: 1939-51. Jan. 6, 44.15; Mar. 13, 44.27; May 9, 44.38; July 20, 44.65; Sept. 14, 44.80; Nov. 20, 45.13.

27.8.5.320. Inman. Dug stock well, diameter 40 inches, reported depth 60 feet. Highest water level 25.61 below lsd, Mar. 13, 1951; lowest 25.85 below lsd, Nov. 20, 1951. Records available: 1951. Jan. 6, 25.77; Mar. 13, 25.61; May 9, 28.90, pumping; July 20, 25.70; Sept. 14, 29.70, pumping; Nov. 20, 25.85.

27.9.12.111. Waterloo School. Unused well, diameter 3 inches, depth 32 feet. Highest water level 26.95 below lsd, Mar. 22, 1945; lowest 30.17 below lsd, Sept. 14, 1951. Records available: 1944-51. Jan. 6, 28.79; Mar. 13, 28.59; May 9, 28.79; July 20, 29.87; Sept. 14, 30.17; Nov. 20, 29.64.

Quay County

House Area. --House, on the High Plains, in southwestern Quay County, about 40 miles south of Tucumcari, utilizes ground water from the Ogallala formation for irrigation. Most of the recharge to the ground-water body in the House area is derived from local precipitation. In 1951 the total precipitation at House was 7.94 inches, only about 50 percent of normal. About 60 percent of the precipitation, 4.81 inches, occurred during the growing season from April to September compared with 9.3 inches during the growing season in 1950. The amount of pumping required for the irrigation of crops is dependent upon the amount of precipitation during the growing season, and the 1951 precipitation records indicate that the amount of ground water required for irrigation was more than average. The recharge to the ground-water body from precipitation during the year was considerably less than average. It is estimated that about 8,000 acre-feet of water was pumped in 1951 to irrigate about 4,000 acres of land as compared to an estimated 6,600 acre-feet to irrigate 4,400 acres in 1950. Net declines of ground-water levels in 1951 were generally the greatest on record, and new record low levels were established in practically all wells. The areas in which ground-water levels declined from January 1950 to January 1951 are shown on the map in figure 42. Ground-water levels declined more than 1 foot under an area extending from about half a mile south to about 5 miles north of House, totaling about 13 square miles. A net decline of more than 2 feet occurred under about 7.7 square miles with the greatest net declines recorded at wells about $2\frac{1}{2}$ miles and $4\frac{1}{2}$ miles north of House. Water levels in those wells declined 5.9 feet and 6.7 feet, respectively. A decline of 3.0 feet occurred in a well about half a mile north of House, and small declines of as much as 1.3 feet were recorded in the lightly irrigated area about 5 miles east of House. The water level in well 5.29.17.133, equipped with a recording gage, was 39.69 feet on March 2, the highest level during the year. The water level declined steadily to 43.33 on October 31, the lowest of the year. With the exception of a sharp upward deflection of about 0.3 foot on November 10, the rise was gradual to 42.91 on December 31 as compared to 40.10 feet on the same date in 1950. The highest water level in well 5.29.5.342 during the year was 40.47 feet on March 24. The water level declined to 46.18 on October 10, the lowest of the year and about 3.4 feet below the lowest level in 1950. The water level rose steadily to 45.46 feet on December 31, about 3.7 feet lower than on that date in 1950. By the end of 1951, water levels in a small area of concentrated pumping, about 3 miles

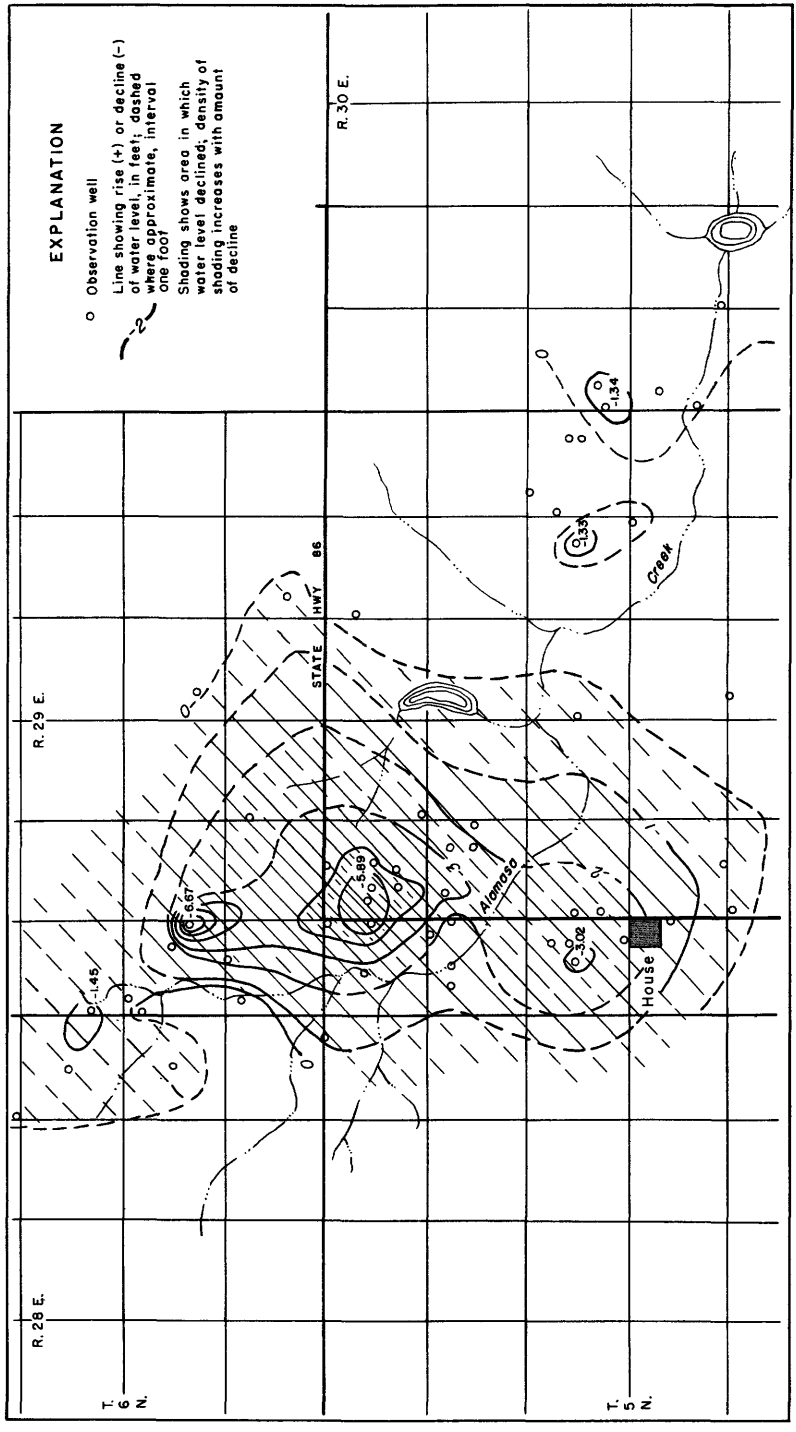

Figure 42.--Change in ground-water level from January 1951 to January 1952 in House area, Quay County, N. Mex.

north of House, were as much as 15 feet below the levels in April 1941, when records began. Water levels declined about 7 feet in the lightly pumped area about half a mile north of House and a maximum of about 2 feet in the lightly pumped area 5 miles east of House.

5.28.1.221. D. C. Wyatt. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 133 feet, cased to 134. Highest water level 46.63 below lsd, Mar. 29, 1946; lowest 50.57 below lsd, Sept. 28, 1951. Records available: 1946-51. Jan. 8, 49.41; Mar. 30, 49.49; May 28, 49.65; July 31, 50.04; Sept. 28, 50.57; Nov. 29, 50.40.

5.29.5.342.* William Martin. Drilled unused water-table well in Ogallala formation, depth 80 feet. Land-surface datum is 4,656 feet above msl. Highest water level 30.15 below lsd, Feb. 2, 1943; lowest 46.18 below lsd, Oct. 10, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	41.59	May 20	42.92	Aug. 5	44.63	Oct. 20	46.14
15	41.53	25	42.92	10	44.78	25	46.13
20	41.53	30	42.79	15	44.95	30	46.10
Feb. 10	h41.75	June 5	42.83	20	45.16	Nov. 5	46.07
Mar. 10	h41.54	10	42.86	25	45.33	10	46.04
30	41.38	15	42.95	30	45.44	15	45.99
Apr. 5	41.35	20	43.15	Sept. 5	45.61	20	45.94
10	41.57	25	43.36	10	45.76	25	45.89
15	41.85	30	43.52	15	45.92	30	45.83
20	41.98	July 5	43.72	20	46.05	Dec. 5	45.76
25	42.04	10	43.88	25	46.11	15	45.67
30	42.17	15	44.07	30	46.14	20	45.60
May 5	42.47	20	44.18	Oct. 5	46.16	25	45.54
10	42.64	25	44.38	10	46.18	30	45.47
15	42.80	30	44.50	15	46.16		

h Tape measurement.
* From recorder graph

5.29.6.222. L. L. Poe. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 125 feet. Highest water level 51.51 below lsd, Mar. 28, 1946; lowest 67.70 below lsd, Sept. 28, 1951. Records available: 1945-51. Jan. 8, 60.01; Mar. 30, 60.97; May 28, 75.00, pumping; Sept. 28, 67.70; Nov. 30, 65.57.

5.29.7.141. D. L. Birch. Drilled unused water-table well in Ogallala formation. Highest water level 28.95 below lsd, Sept. 22, 1942; lowest 39.54 below lsd, Nov. 29, 1951. Records available: 1942-51. Jan. 8, 38.23; Mar. 30, 38.40; May 28, 38.57; July 31, 39.06; Sept. 28, 39.42; Nov. 29, 39.54.

5.29.8.232. G. W. Turner. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 139 feet, cased to 98. Highest water level 34.19 below lsd, Feb. 2, Mar. 25, 1943; lowest 46.67 below lsd, May 26, 1950. Records available: 1941-51. Jan. 8, 43.40; Mar. 30, 43.93; May 28, 64.55, pumping; July 31, 70.70, pumping; Sept. 27, 48.90, pumped recently; Nov. 30, 46.42.

5.29.9.400. W. Y. Head. Drilled stock water-table well in Ogallala formation, diameter 6 inches. Highest water level 21.33 below lsd, Jan. 21, 1942; lowest 27.53 below lsd, Oct. 1, 1948. Records available: 1941-51. Mar. 30, 25.74; May 28, 26.35; July 31, 46.67, pumping; Sept. 27, 33.48, pumping; Nov. 30, 31.28, pumping.

5.29.13.121. J. C. Barron. Drilled stock water-table well in Ogallala formation, diameter 14 inches, depth 105 feet. Land-surface datum is 4,702 feet above msl. Highest water level 76.64 below lsd, Mar. 28, 1946; lowest 79.99 below lsd, Sept. 27, 1950. Records available: 1941-51. Jan. 9, 79.11, pumping; Mar. 29, 78.67, pumping; May 28, 78.48; July 30, 78.31, pumping; Sept. 27, 78.19; Nov. 29, 77.92.

5.29.15.311b. R. A. Tullis. Drilled unused water-table well in Ogallala formation, diameter 20 inches, reported depth 90 feet. Highest water level 17.52 below lsd, Sept. 23, 1942; lowest 22.02 below lsd, Nov. 29, 1951. Records available: 1942-51. Jan. 9, 21.71; Mar. 29, 21.79; May 28, 21.83; July 30, 21.90; Sept. 27, 21.95; Nov. 29, 22.02.

5.29.17.133. W. W. Kuykendall. Drilled unused water-table well in Ogallala formation, diameter 12 inches, depth 57 feet. Land-surface datum is 4,748 feet above msl. Highest water level 29.82 below lsd, Jan. 21, 1942; lowest 43.33 below lsd, Oct. 31, Nov. 1, 1951. Records available: 1941-51.

5.29.17.133--Continued. From recorder graph

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	40.08	Apr. 15	40.45	July 10	41.99	Oct. 5	43.24
10	40.03	20	40.53	15	42.12	10	43.26
15	39.99	25	40.68	20	42.20	15	43.28
20	39.96	30	40.81	25	42.27	20	43.30
25	39.92	May 5	40.93	30	42.32	25	43.32
30	39.87	10	41.03	Aug. 5	42.41	30	43.33
Feb. 5	39.84	15	41.13	10	42.46	Nov. 5	43.32
10	39.80	20	41.25	15	42.52	10	43.30
15	39.76	25	41.32	20	42.58	15	43.28
20	39.73	30	41.33	25	42.67	20	43.17
25	39.71	June 5	41.39	30	42.73	25	43.15
Mar. 5	39.70	10	41.44	Sept. 5	42.83	30	43.13
10	39.70	15	41.51	10	42.92	Dec. 5	43.09
15	39.72	20	41.59	15	43.00	15	43.01
20	39.74	25	41.68	20	43.09	20	42.97
30	39.97	30	41.78	25	43.15	25	42.96
Apr. 5	40.14	July 5	41.87	30	43.19	30	42.91
10	40.30						

5.29.18.434. A. O. Norris. Formerly Chas. Willis. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 87 feet, cased to 87. Highest water level 49.82 below lsd, Mar. 28, 1946; lowest 64.85 below lsd, Sept. 27, 1951. Records available: 1946-51. Jan. 9, 56.97; Mar. 30, 56.94; May 28, 59.20; July 31, 62.98, pumping; Sept. 27, 64.85; Nov. 30, 61.32.

5.29.23.222a. E. C. Harris. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches. Highest water level 30.00 below lsd, Mar. 30, 31, 1950; lowest 31.55 below lsd, May 28, 1951. Records available: 1949-51. Jan. 9, 30.58; Mar. 29, 30.62; May 28, 31.55; July 30, 31.01; Sept. 27, 30.96; Nov. 29, 30.92.

5.29.27.112 E. D. Gallehon. Drilled unused water-table well in Ogallala formation, diameter 16 inches, depth 152 feet, cased to 152. Highest water level 70.50 below lsd, May 28, 1951; lowest 72.14 below lsd, May 30, 1948. Records available: 1947-51. Jan. 9, 70.59; Mar. 30, 70.52; May 28, 70.50; July 31, 70.61; Sept. 27, 70.60; Nov. 29, 70.54.

5.29.29.111. C. A. Morrow. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, reported depth 91 feet. Highest water level 65.91 below lsd, Feb. 2, 1943; lowest 72.72 below lsd, Sept. 18, 1947. Records available: 1941-51. Jan. 9, 68.19; Mar. 30, 68.36; May 28, 68.41; July 31, 68.57; Sept. 27, 68.63; Nov. 29, 68.65.

5.30.18.331. Jerry Thompson. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 75 feet, cased to 60. Highest water level 34.76 below lsd, Mar. 28, 29, 1946; lowest 41.00 below lsd, May 30, 1948, July 30, 1951. Records available: 1944-51. Jan. 9, 35.47; Mar. 29, 36.87; May 28, 37.86; July 30, 41.00; Sept. 27, 37.96; Nov. 29, 37.00.

5.30.20.333. J. C. Barron. Drilled stock water-table well in Ogallala formation, diameter 6 (?) inches, depth 30 feet. Highest water level 16.74 below lsd, Mar. 26, 1942; lowest 25.76 below lsd, Nov. 29, 1951. Records available: 1941-51. Jan. 9, 24.93; Mar. 29, 25.22, nearby well being pumped; May 28, 25.19, nearby well being pumped; July 30, 25.45, nearby well being pumped; Sept. 27, 25.72, nearby well being pumped; Nov. 29, 25.76, nearby well being pumped.

5.30.31.442. R. V. Brownd. Formerly T. W. Coleman. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 129 feet, cased to 129. Highest water level 98.79 below lsd, Jan. 9, 1951; lowest 100.12 below lsd, Oct. 1, 1948, Mar. 30, 1950, Records available: 1943-51. Jan. 9, 98.79; Mar. 29, 98.89; May 28, 99.61; July 30, 99.83; Sept. 27, 99.13; Nov. 29, 99.13.

6.28.1.232. C. M. Brown. Drilled stock and domestic water-table well in Ogallala formation, reported depth 98 feet. Highest water level 66.32 below lsd, Nov. 29, 30, 1950; lowest 72.93 below lsd, Apr. 1, 1948. Records available: 1947-51. Jan. 8, 66.64; Mar. 30, 66.56; May 28, 66.53; July 31, 66.75; Sept. 28, 66.75, nearby well being pumped; Nov. 30, 66.85; nearby well being pumped.

6.28.24.233. Byers Irwin. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 131 feet, cased from 79 to 131. Highest water level 77.97 below lsd, Mar. 27, 1944; lowest 84.08 below lsd, July 31, 1951. Records available: 1944-51. Jan. 8, 82.15; Mar. 30, 81.56; May 28, 83.62; July 31, 84.08; Sept. 28, 103.94, pumping; Nov. 30, 84.02.

6.28.25.411. R. A. Davenport. Drilled irrigation water-table well in Ogallala formation, diameter 16 inches, depth 116 feet, cased to 116 feet, perforated 76 to 116. Highest water level 51.87 below lsd, Mar. 27, 1944; lowest 58.62 below lsd, July 31, 1946. Records available: 1943-51. Jan. 8, 54.51; Mar.30, 54.40; May 28, 54.42; July 31. 55.08; Sept. 28, 56.89; Nov. 29, 55.35.

6.29.27.332. J. D. Green. Drilled unused water-table well in Ogallala formation, diameter 16 inches, depth 181 feet, cased to 100. Highest water level 43.43 below lsd, Nov 30, 1950; lowest 44.33 below lsd, Mar. 29, 1944. Records available: 1944-51. Jan. 8, 43.47; Mar. 30, 43.44; May 28, 43.44; July 31, 43.48; Sept. 28, 43.48; Nov. 30, 43.44.

6.29.30.112. L. M. McDaniels. Drilled unused water-table well in Ogallala formation. Highest water level 47.98 below lsd, Nov. 20, 1942; lowest 52.74 below lsd, Sept. 28, 1951. Records available: 1941-51. Jan. 8, 52.17; Mar. 30, 52.12; May 28, 52.25; July 31, 52.05; Sept. 28, 52.74; Nov. 30, 52.48.

6.29.30.412. R. W. Dean. Drilled irrigation water-table well in Ogallala formation, diameter 18 inches, depth 122 feet, cased to 122. Highest water level 73.63 below lsd, Apr. 1, 1947; lowest 79.47 below lsd, May 28, 1951. Records available: 1946-51. Jan. 8, 77.26; Mar. 30, 77.27; May 28, 79.47; July 31, 78.60; Sept. 28, 79.34; Nov. 30, 78.90.

6.29.33.131. Frank Morrow. Drilled irrigation water-table well in Ogallala formation, diameter 20 inches, depth 139 feet, cased to 139. Highest water level 54.18 below lsd, Apr. 8, 1945; lowest 65.17 below lsd, Sept. 28, 1951. Records available: 1942-51. Jan. 8, 56.42; Mar. 30, 56.32; May 28, 63.06; July 31, 68.07, pumping; Sept. 28, 65.17; Nov. 30, 60.03.

6.29.35.314. P. R. Gates. Drilled irrigation water-table well in Ogallala formation, diameter 14 inches, depth 76 feet, cased from 28 to 76. Highest water level 38.24 below lsd, Apr. 1, 1947; lowest 47.20 below lsd, July 30, 1948. Records available: 1945-51. Jan. 8, 39.21; Mar. 30, 38.84; May 28, 40.90; July 31, 45.35; Sept. 28, 42.73; Nov. 30, 39.87.

Roosevelt County

Portales Valley.--Portales Valley is a broad shallow depression in the High Plains extending east-southeast from the western edge of the High Plains through Portales to the Texas line. In 1951, water levels were measured in 186 wells in January and in 57 of them at bimonthly intervals. Recording gages were maintained on 4 wells. The January 1951 measurements of water level, not reported herein, were used in preparing the map in figure 43 showing the change in water level in 1951. Precipitation in 1951 at three stations in the area was considerably below normal. The precipitation in 1951 at Portales was 9.19 inches, 8.73 inches below normal; at a station 7 miles northwest of Portales 9.46 inches, 9.36 inches below normal; and at Arch 12.46 inches, 4.59 inches below normal. The precipitation during the growing season from April to September at Portales was only about 38 percent of normal, 5.10 inches, at the station 7 miles northwest of Portales 39 percent of normal, 5.56 inches, and at Arch 75 percent of normal, 9.30 inches. Electric power records for 427 pumps in 1951 for which records were also available in1950 indicate that about 50 percent more water was applied to crops in 1951 than in 1950. It is estimated that about 63,000 acre-feet of water was pumped in 1951 to irrigate 35,000 acres of land as compared with 40,000 acre-feet of water in 1950 to irrigate 33,000 acres. The areas in which water levels declined from January 1951 to January 1952 are shown on the map in figure 43. The declines are the result mainly of pumping for irrigation though in small part are the result of deficient precipitation. Ground-water levels declined more than 1 foot under a total area of 215 square miles extending from about 4 miles northwest of Floyd to about 3 miles east of Arch, and from about 5 miles south to about 5 miles north of Portales. Water levels declined more than 2 feet under three areas totaling about 93 square miles. The largest area, comprising about 90 square miles, extends from northeast of Floyd to about 5 miles southeast of Portales. Water levels declined more than 3 feet under about 51 square miles, more than 4 feet under about 25 square miles, and more than 5 feet under four areas totaling about 4 square miles. The greatest net declines were noted in wells about 6 miles northwest of Portales, 5.6 feet, about 6 miles west of Portales, 5.2 feet, and in the area immediately west of Portales 5.3 feet. Water levels declined more than 2 feet under an area of about $2\frac{1}{2}$ square miles about 8 miles southeast of Portales and about 4 miles northwest of Arch. About 1 mile southeast of Arch, water levels declined more than 2 feet under about 1 square mile with a maximum decline of 3 feet recorded. The declines in water levels in 1951 were for the most part the greatest on record and resulted in water levels at the end of the year, in a small area northwest of Portales, being more than 20 feet lower than in 1932 when records began. Well 1N.33.36.400a, about 7 miles northwest

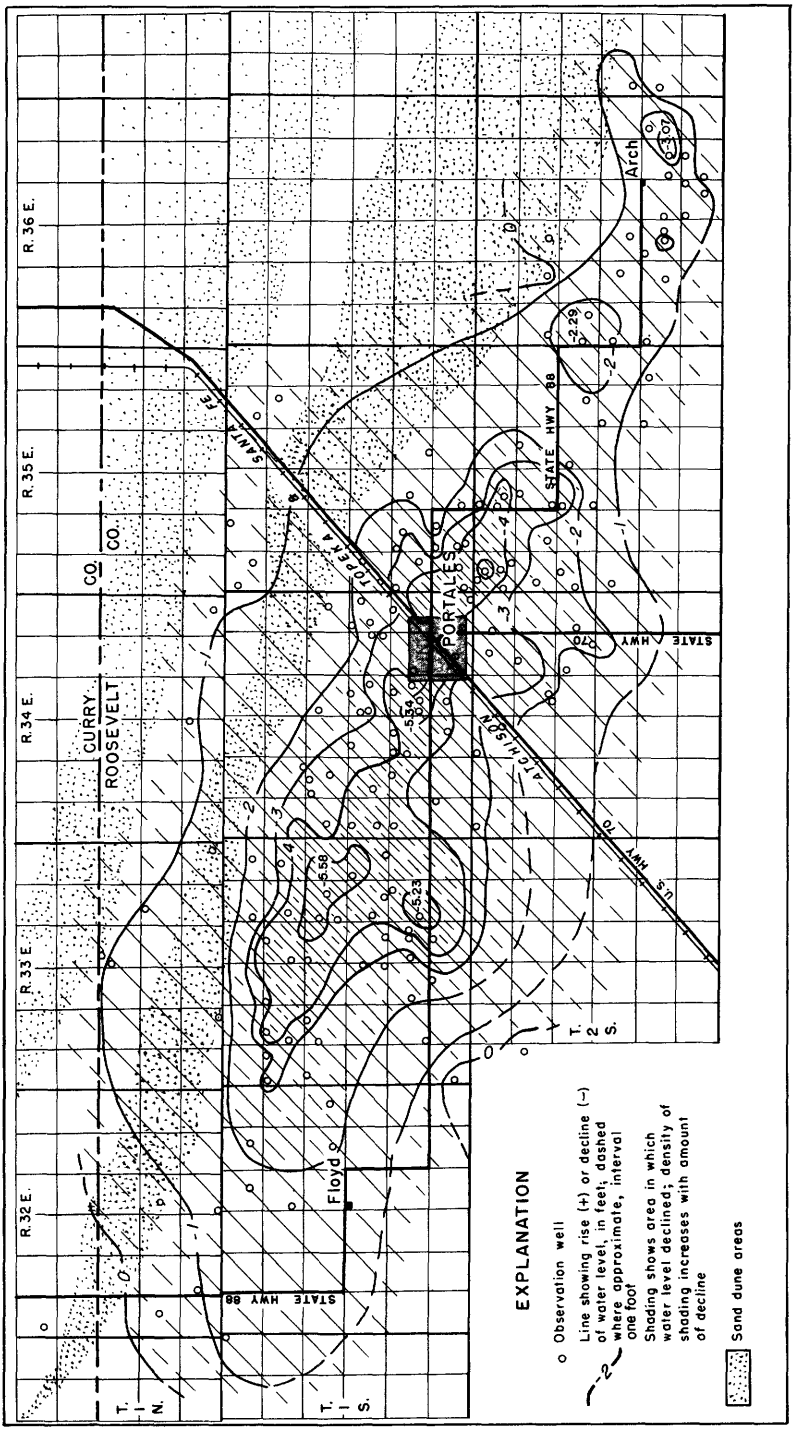

Figure 43.--Change in ground-water level from January 1951 to January 1952 in Portales Valley, Roosevelt County, N. Mex.

of Portales in an area of recharge distant from heavy pumping, is equipped with a recording gage. Between May 15 and May 24 the water level in the well rose about 0.6 foot to 4.89 feet below land surface. Unusually heavy precipitation, 2.44 inches, from May 15 to 18 is probably mainly responsible for the rise. From May 24 to September 26 the water level in the well declined to 6.77 feet, the lowest level during the year. By December 31 the water level had risen to 6.45 feet, about 1.2 feet below the level at the beginning of the year. Wells 1.34.25.211 and 2.34.2.233, also equipped with recording gages, are near Portales in areas of heavy pumping. The highest water level recorded in 1951 in well 1.34.25.211 was 44.26 feet on February 24. The lowest level of the year, 51.38 feet and about $2\frac{1}{2}$ feet below the lowest level of 1950, was recorded on September 29. On December 31 the water level in the well was 48.10 feet, more than 3 feet below the water level on that date in 1950. The fluctuations of the water level in well 2.34.2.233 had a similar general pattern.

The water level in well 2.36.28.114b declined from 13.84 feet on March 27 to 15.12 feet on May 15, then rose to about 14 feet in June and most of July. On October 5 the water level in the well reached its lowest level of the year, 16.56 feet. In 1950 the lowest level recorded in the well was 19.08 feet on June 18; and in 1950, by December 31 the water level had recovered to only 14.23 feet, about 1.1 feet above the level recorded on December 31, 1951. Unusually heavy precipitation at Arch in July and September 1950, of 10.01 and 4.91 inches, respectively, greatly reduced the amount of pumping for irrigation during the latter part of the growing season in that year. It is evident from a study of water-level fluctuations, precipitation records, pumping data, and geological and hydrological considerations that much of the pumpage in Portales Valley is from ground-water storage.

1N.32.7.300. W. J. Crenshaw. Drilled stock water-table well in valley fill, diameter 14 inches, depth 50 feet. Highest water level 14.68 below lsd, May 11, 1944; lowest 18.89 below lsd, July 11, 1940. Records available: 1931-51. Well pumping at time of measurement. Jan. 9, 17.56; Mar. 29, 16.61; May 25, 16.19; July 30, 17.23; Sept. 27, 17.82; Nov. 29, 16.76.

1N.32.27.321. Carl Essary. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 105 feet. Highest water level 44.66 below lsd, Mar. 30, 1950; lowest 49.64 below lsd, May 25, 1951. Records available: 1947-51. Jan. 9, 45.35; Mar. 29, 44.97; May 25, 49.64; July 30, 49.58; Sept. 27, 48.84; Nov. 28, 46.43.

1N.33.36.400a.* A. C. Woodburn. Dug observation water-table well in valley fill, diameter 14 inches, depth 10 feet. Highest water level 1.61 above lsd, Apr. 23, 1942; lowest 8.62 below lsd, Oct. 10, 1940. Records available: 1931-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	5.23	Apr. 15	5.35	July 15	5.89	Oct. 15	6.75
15	5.23	20	5.36	20	6.01	20	6.72
20	5.21	25	5.38	30	6.18	25	6.67
25	5.23	30	5.41	Aug. 5	6.27	30	6.63
30	5.26	May 5	5.46	10	6.33	Nov. 5	6.59
Feb. 5	5.26	10	5.50	15	6.36	10	6.55
10	5.23	15	5.53	20	6.39	15	6.54
15	5.24	20	4.92	25	6.40	20	6.53
20	5.23	25	4.89	30	6.45	25	6.52
25	5.24	30	4.96	Sept. 5	6.46	30	6.48
Mar. 10	5.24	June 5	5.09	10	6.47	Dec. 5	6.46
15	5.24	10	5.19	15	6.47	10	6.46
20	5.26	20	5.32	20	6.47	15	6.45
25	5.27	25	5.39	30	6.75	20	6.45
30	5.29	30	5.50	Oct. 5	6.75	25	6.45
Apr. 5	5.31	July 5	5.63	10	6.74	30	6.45
10	5.33	10	5.75				

* From recorder graph

1N.33.36.400b. Woodburn Bros. Formerly A. C. Woodburn. Drilled stock water-table well in valley fill, diameter 4 inches, depth 28 feet. Highest water level 1.81 below lsd, Nov. 24, 1941; lowest 13.97 below lsd, Jan. 13, 1941. Records available: 1931-36, 1938-51. Jan. 11, 8.90, pumped recently; Mar. 28, 9.59, pumping; May 25, 12.78, pumping; July 30, 11.96, pumping; Sept. 26, 13.06, pumping; Nov. 28, 10.03.

1.31.1.222. Bennett & Griffith. Drilled irrigation water-table well in valley fill, diameter 12 inches, reported depth 156 feet, cased to 135. Highest water level 74.81 below lsd, May 29, 1947; lowest 78.69 below lsd, Sept. 27, 1951. Records available: 1944-51. Jan. 9, 76.15; Mar. 29, 75.89; May 25, 76.98; July 30, 77.21; Sept. 27, 78.69; Nov. 29, 77.19.

1.32.3.431. M. Nall. Drilled irrigation water-table well in valley fill. Highest water level 35.98 below lsd, Mar. 25, 1949; lowest 44.60 below lsd, Sept. 27, 1951. Records available: 1948-51. Jan. 10, 37.80; Mar. 29, 40.67; May 25, 38.59; July 30, 40.64; Sept. 27, 44.60; Nov. 28, 40.35.

1.32.10.331. J. R. Meadows. Drilled irrigation water-table well in valley fill, diameter 14 to 12 inches, reported depth 122 feet, cased to 122. Highest water level 45.23 below lsd, Jan. 15, May 29, 1947; lowest 49.80 below lsd, Sept. 27, 1951. Records available: 1946-51. Jan. 9, 47.15; Mar. 29, 47.13; May 25, 48.22; July 30, 48.47; Sept. 27, 49.80; Nov. 28, 48.67.

1.32.14.431. Robt. Morrison. Drilled unused water-table well in valley fill, diameter 12 inches, depth 104 feet. Highest water level 43.55 below lsd, Apr. 4-6 1945; lowest 55.70 below lsd, Sept. 27, 1951. Records available: 1944-51. Jan. 11, 50.30; Mar. 29, 51.29; May 25, 52.80; July 30, 55.71, nearby well being pumped, Sept. 27, 55.70; Nov. 29, 53.14.

1.33.7.111. E. L. Sisk. Drilled irrigation water-table well in valley fill, reported depth 90 feet. Highest water level 12.15 below lsd, Nov. 24, 1942; lowest 26.67 below lsd, Sept. 25, 1950. Records available: 1940-51. Jan. 10, 21.77; Mar. 28, 26.02; Sept. 27, 35.86, pumping; Nov. 28, 26.64.

1.33.10.313a. Jim Allen. Drilled irrigation water-table well in valley fill. Highest water level 22.49 below lsd, Jan. 15, 1947; lowest 35.02 below lsd, Nov. 28, 1951. Records available: 1946-51. Jan. 10, 28.76; Mar. 28, 33.52; May 25, 34.61, pumped recently; Nov. 28, 35.02.

1.33.12.144. A. C. Woodburn. Drilled irrigation water-table well in valley fill, diameter 12 inches, reported depth 108 feet. Highest water level 28.61 below lsd, Jan. 6, 1932; lowest 42.38 below lsd, July 27, 1950. Records available: 1931-51. Jan. 11, 39.73. Measurement discontinued.

1.33.14.331c. J. E. Stacey. Drilled irrigation water-table well in valley fill. Highest water level 19.37, below lsd, Jan. 16, 1945; lowest 39.63 below lsd, Sept. 27, 1951. Records available: 1944-51. Jan. 10, 30.93; Mar. 28, 50.26, pumping; May 25, 34.21; July 30, 57.53, pumping; Sept. 27, 39.63; Nov. 28, 36.46.

1.33.15.111. Anderson Carter. Drilled irrigation water-table well in valley fill. Highest water level 31.22 below lsd, July 27, 1950; lowest 34.45 below lsd, Nov. 28, 1951. Records available: 1950-51. July 27, 1950, 31.22; Sept. 25, 1950, 32.67; Nov. 29, 1950, 32.95; Jan. 10, 1951, 33.69; Mar. 28, 33.01; May 25, 35.56, pumped recently; Nov. 28, 34.45.

1.33.17.211. Bertha Campbell. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 102 feet, cased to 92. Highest water level 17.29 below lsd, Aug. 1, 1945; lowest 33.37 below lsd, July 30, 1951. Records available: 1945-51. Jan. 10, 25.13; Mar. 28, 28.98; May 25, 30.19, pumped recently; July 30, 33.37; Sept. 27, 32.71; Nov. 28, 29.69.

1.33.28.311. J. C. Rolan. Formerly C. C. Ramey. Drilled irrigation water-table well in valley fill, diameter 15 inches, reported depth 116 feet, cased to 115. Highest water level 39.21 below lsd, Mar. 26, 1943; lowest 51.33 below lsd, Sept. 27, 1951. Records available: 1938-51. Jan. 11, 47.96; Mar. 29, 47.71; May 25, 49.00; July 30, 69.87, pumping; Sept. 27, 51.33; Nov. 29, 50.42.

1.33.29.333. M. H. Rea. Drilled stock water-table well in valley fill, diameter 7 inches, depth 51 feet. Highest water level 29.48 below lsd, Nov. 24, 1942; lowest 37.09 below lsd, Nov. 20, 1940. Records available: 1940-51. Jan. 9, 33.16; Mar. 29, 33.12; May 25, 33.52; July 30, 34.07; Sept. 27, 34.79; Nov. 29, 34.69.

1.33.34.211. R. T. Bilberry. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 100 feet. Highest water level 19.54 below lsd, Mar. 26, 1943; lowest 40.28 below lsd, Sept. 27, 1951. Records available: 1939-51. Jan. 11, 31.95; Mar. 29, 32.71; May 25, 35.09; July 30, 58.21, pumping; Sept. 27, 40.28; Nov. 29, 37.15.

1.34.13.412. Ben Donathan. Drilled unused water-table well in valley fill, diameter 15 inches, depth 157 feet. Highest water level 51.43 below lsd, Aug. 6, 1944; lowest 56.77 below lsd, May 20, 1941. Records available: 1938-51. Jan. 14, 54.33; Mar. 27, 54.22; May 24, 54.30; July 28, 54.46; Sept. 24, 54.54; Nov. 27, 54.69.

1.34.15.131. P. M. Marcus. Formerly A. M. Bradley. Drilled irrigation water-table well in valley fill. Highest water level 49.19 below lsd, Mar. 26, 1946; lowest 58.56 below lsd, Sept. 26, 1951. Records available: 1945-51. Jan. 10, 53.70; Mar. 28, 53.12; May 25, 55.09; July 30, 56.54; Sept. 26, 58.56; Nov. 28, 56.52.

1.34.17.411a. O. L. Spencer. Drilled unused water-table well in valley fill, diameter 12 inches, reported depth 70 feet. Highest water level 31.74 below lsd, Mar. 29, 1947; lowest 45.96 below lsd, Sept. 26, 1951. Records available: 1947-51. Jan. 10, 38.20; Mar. 28, 37.74; May 25, 42.20; July 30, 43.90; Sept. 26, 45.96; Nov. 28, 43.34.

1.34.22.222. Mrs. A. J. Goodwin. Drilled unused water-table well in valley fill, diameter 12 inches, reported depth 98 feet. Highest water level 38.09 below lsd, Mar. 27, 1943; lowest 44.48 below lsd, July 30, 1951. Records available: 1931-51. Jan. 10, 43.95; Mar. 28, 44.22; May 25, 44.33; July 30, 44.48. Measurement discontinued.

1.34.22.421a. R. C. Grunig. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 114 feet. Highest water level 42.27 below lsd, July 29, 30, 1949; lowest 49.18 below lsd, Sept. 26, 1951. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 29, 1948	42.43	Sept. 30, 1948	44.77	Mar. 28, 1951	43.34	Sept. 26, 1951	49.18
May 28	44.39	Nov. 22	43.54	May 25	45.06	Nov. 28	47.89
July 29	44.61	Jan. 10, 1951	43.90	July 30	47.61		

1.34.25.211. J. B. H. Young. Drilled unused water-table well in valley fill, diameter 12 inches, reported depth 101 feet. Highest water level 31.98 below lsd, May 16, 1933; lowest 51.38 below lsd, Sept. 29, 1951. Records available: 1931-51.

Daily water level from recorder graph

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	44.96	Apr. 10	44.54	July 10	48.02	Oct. 10	50.91
10	44.88	15	45.35	15	48.98	15	50.82
15	44.83	20	45.55	20	49.39	20	50.60
20	44.81	25	45.71	25	49.30	25	50.36
25	44.79	30	45.76	30	49.44	30	50.12
30	44.71	May 5	46.11	Aug. 5	49.67	Nov. 5	49.85
Feb. 5	44.59	10	46.35	10	50.01	10	49.59
10	44.59	15	46.43	15	50.21	15	49.38
15	44.51	20	46.15	20	50.37	20	49.13
20	44.53	25	45.95	25	50.52	25	48.97
25	44.41	30	45.83	30	50.65	30	48.83
Mar. 5	44.41	June 5	45.94	Sept. 5	50.81	Dec. 5	48.61
10	44.38	10	46.88	10	50.94	10	48.59
15	44.29	15	47.47	15	51.11	15	48.49
20	44.32	20	47.43	20	51.25	20	48.30
25	44.36	25	46.98	25	51.33	25	48.26
30	44.35	30	47.23	30	51.33	30	48.11
Apr. 5	44.35	July 5	47.25	Oct. 5	51.13		

1.34.33.223a. Portales Municipal Airport. Drilled irrigation water-table well in valley fill, diameter 12 inches. Highest water level 28.84 below lsd, Jan. 26, 1946; lowest 44.72 below lsd, Sept. 24, 1951. Records available: 1946-51. Jan. 10, 39.19; Sept. 24, 44.72; Nov. 27, 43.81.

1.34.33.431. W. A. Moore. Drilled unused water-table well in valley fill, diameter 10 inches, depth 106 feet. Highest water level 6.91 below lsd, Nov. 24, 1941; lowest 27.59 below lsd, May 24, 1951. Records available: 1932-51. Jan. 11, 26.42; Mar. 27, 26.59; May 24, 27.59. Measurement discontinued.

1.35.2.300. Eastern New Mexico State College Park. Drilled irrigation water-table well in valley fill, depth 140 feet. Highest water level 42.88 below lsd, May 12, 1944; lowest 48.37 below lsd, July 11, 1940. Records available: 1935-51. Jan. 14, 44.30; Mar. 29, 44.37; May 26, 44.57; July 28, 44.71; Sept. 25, 44.61; Nov. 27, 44.58.

1.35.6.131a. F. K. Montague. Dug irrigation water-table well in valley fill. Highest water level 7.27 below lsd, May 26, 1951; lowest 8.21 below lsd, Nov. 27, 1951. Records available: 1950-51. Nov. 29, 1950, 7.47; Jan. 14, 1951, 7.45; Mar. 29, 7.31; May 26, 7.27; July 28, 7.62; Sept. 25, 8.15; Nov. 27, 8.21.

1.35.6.400. J. C. Brown. Drilled unused water-table well in valley fill, diameter 6 inches, depth 23 feet. Highest water level 5.13 below lsd, Nov. 25, 1941; lowest 15.46 below lsd, Jan. 16, 1941. Records available: 1931-51. Jan. 14, 12.39; Mar. 29, 12.43; May 26, 12.40; July 28, 12.38; Sept. 25, 12.63; Nov. 27, 12.78.

1.35.11.241. Eunice McPherson. Drilled unused water-table well in valley fill, diameter 6 inches, depth 51 feet. Highest water level 13.98 below lsd, Mar. 27, 1943; lowest 20.09 below lsd, Sept. 22, 1940. Records available: 1940-51. Jan. 14, 16.09; Mar. 29, 16.19; May 26, 16.29; July 28, 16.52; Sept. 25, 16.60; Nov. 27, 16.55.

1.35.27.344a. H. J. McCroary. Drilled unused water-table well in valley fill, diameter 6 inches. Highest water level 29.02 below lsd, Jan. 13, 1951; lowest 31.44 below lsd, July 28, 1948. Records available: 1945-51. Jan. 13, 29.02; Mar. 27, 29.19; May 24, 29.50; July 27, 29.84; Sept. 25, 30.14; Nov. 27, 30.30.

1.35.28.143. C. A. Kerby. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 151 feet. Highest water level 44.08 below lsd, Mar. 27, 1943; lowest 52.68 below lsd, Sept. 21, 1940. Records available: 1935-51. Jan. 13, 46.22; Mar. 27, 46.34; May 24, 46.72; July 27, 47.35; Sept. 25, 47.90; Nov. 27, 47.95.

1.36.5.300. W. H. McDaniel. Drilled stock water-table well in valley fill, diameter 6 inches. Highest water level 32.84 below lsd, Jan. 28, 1943; lowest 36.01 below lsd, Jan. 16, 1941. Records available: 1939-51. Jan. 14, 34.25, pumping; Mar. 29, 33.86; May 26, 34.90, pumping; July 28, 33.95, Sept. 25, 34.28, pumping; Nov. 27, 34.44, pumping.

1.36.16.100. State of New Mexico. Drilled stock water-table well in valley fill, diameter 8 inches. Highest water level 14.14 below lsd, Nov. 25, 1941; lowest 24.17 below lsd, Sept. 22, 1940. Records available: 1939-51. Jan. 14, 19.67, pumped recently; Mar. 29, 20.92, pumped recently; May 26, 32.63, pumping; July 28, 20.78; Sept. 25, 26.52, pumping; Nov. 27, 23.22, pumping.

2.34.2.233. Louisa Trout. Drilled unused water-table well in valley fill, diameter 12 inches, depth 89 feet. Highest water level 32.71 below lsd, Mar. 6, 15, 1942; lowest 60.62 below lsd, Sept. 29, 1951. Records available: 1931-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	53.26	52.50	52.32	52.90	54.22	54.63	57.14	59.10	60.39	60.38	58.79	57.50
2	53.20	52.42	52.31	52.90	54.20	54.69	56.95	59.08	60.28	60.46	58.70	57.45
3	53.15	52.39	52.29	52.95	54.89	55.00	56.88	59.06	60.22	60.33	58.68	57.40
4	53.16	52.38	52.28	52.88	54.84	54.90	56.85	59.40	60.53	60.27	58.60	57.35
5	53.13	52.32	52.24	52.89	55.19	55.18	56.89	59.38	60.60	60.20	58.59	57.29
6	53.17	52.41	52.29	52.97	55.00	55.10	56.88	59.30	60.53	60.17	58.52	57.30
7	53.10	52.42	52.31	53.00	54.95	55.28	57.00	59.56	60.53	60.08	58.45	57.28
8	53.00	52.38	52.29	53.09	54.90	55.29	57.10	59.49	60.39	60.00	58.39	57.25
9	52.98	52.42	52.31	53.09	55.52	55.64	57.08	59.41	60.27	59.94	58.35	57.16
10	52.98	52.39	52.33	53.34	55.87	55.42	.....	59.47	60.21	59.90	58.30	57.10
11	.....	52.41	52.46	53.28	.....	55.39	.....	59.46	60.18	59.82	58.24	57.05
12	.....	52.38	52.39	53.67	.....	55.78	.....	59.32	60.10	59.74	58.15	57.03
13	.....	52.67	52.37	53.50	.....	56.20	.....	59.29	60.07	59.82	58.13	56.98
14	h52.88	52.49	52.39	53.49	.....	56.37	.....	60.52	60.04	59.92	58.22	57.00
15	52.87	52.38	52.38	53.58	.....	56.80	.....	60.10	60.00	59.82	58.20	56.92
16	52.80	52.43	.....	53.53	.....	56.99	.....	60.35	59.94	59.88	58.16	56.90
17	52.80	52.42	.....	53.47	.....	56.78	.....	60.20	59.87	59.90	58.07	56.88
18	52.77	52.83	.....	53.49	.....	56.74	.....	60.30	59.79	59.75	58.00	56.80
19	52.73	52.74	.....	53.50	.....	56.43	.....	60.22	59.76	59.61	57.93	56.79
20	52.79	52.70	.....	53.53	.....	56.21	e58.5	60.13	59.77	59.55	57.90	56.80
21	52.72	52.73	.....	53.62	.....	56.13	.....	60.41	59.78	59.50	57.87	56.82
22	52.67	52.68	.....	53.69	.....	56.09	.....	60.30	59.97	59.47	57.85	56.78
23	52.70	52.75	.....	53.68	54.80	56.60	.....	60.27	59.99	59.35	57.80	56.77
24	52.68	52.69	.....	53.85	54.79	56.58	.....	60.22	59.97	59.28	57.75	56.69
25	52.61	52.74	.....	54.09	54.78	56.50	.....	60.18	60.16	59.23	57.75	56.70
26	52.58	52.59	h52.57	54.17	54.74	56.89	e59.22	60.08	60.48	59.15	57.66	56.70
27	52.59	52.48	52.54	54.12	54.72	57.09	59.38	60.09	60.53	59.10	57.62	56.60
28	52.59	52.45	52.67	54.08	54.69	57.28	59.21	60.08	60.49	59.02	57.60	56.59
29	52.58		52.59	54.07	54.68	57.54	59.01	60.07	60.62	58.99	57.58	56.57
30	52.49		52.59	54.07	54.73	57.42	58.99	60.05	60.42	58.90	57.55	56.54
31	52.51		52.70		54.67		59.01	60.06		58.85		56.53

e Estimated.
h Tape measurement.

2.34.4.441. Maud Wallace. Dug observation water-table well in valley fill, diameter 2 inches, depth 14 feet. Highest water level 4.17 above lsd, Jan. 27, 1942; lowest 13.68 below lsd, Sept. 24, 1951. Records available: 1939-51. Jan. 12, 10.85; Mar. 27, 11.17; May 26, 10.99; Sept. 24, 13.68; Nov. 27, 12.95.

2.34.10.431. L. W. Allen. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 100 feet, cased to 95. Highest water level 24.05 below lsd, July 31, 1945; lowest 34.83 below lsd, Sept. 24, 1951. Records available: 1945, 1950-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 31, 1945	24.05	Nov. 27, 1950	31.04	Mar 27, 1951	31.15	Sept. 24, 1951	34.83
July 25, 1950	32.40	Jan. 12, 1951	30.92	May 26	32.54	Nov. 27	33.79
Sept. 22	32.98						

2.34.13.133. L. J. Sanders. Dug and drilled irrigation water-table well in valley fill, diameter 14 inches, depth 112 feet, cased to 80. Highest water level 17.92 below lsd, May 12, 1944; lowest 32.12 below lsd, May 23, 1950. Records available: 1944-51. Jan. 12, 23.65; Mar. 27, 28.07, nearby well being pumped; May 26, 25.88; July 26, 28.52; Sept. 24, 30.20; Nov. 27, 26.95.

2.35.4.111. E. S. Weber. Drilled irrigation water-table well in valley fill. Highest water level 12.94 below lsd, Jan. 29, 1942; lowest 33.96 below lsd, May 24, 1950. Records available: 1935, 1938-51. Jan. 13, 24.96; Mar. 27, 25.90; May 24, 26.12; July 28, 36.97, pumped recently; Nov. 27, 28.48.

2.35.6.121. Dallas Clark. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 102 feet. Highest water level 16.73 below lsd, Jan. 28, 1942; lowest 45.11 below lsd, Sept. 24, 1951. Records available: 1931-51. Jan. 13, 36.20; Mar. 27, 35.28; May 24, 38.66; July 27, 41.38; Sept. 24, 45.11; Nov. 27, 42.51.

2.35.6.443a. J. A. Vandevender. Formerly Ora Johnson. Drilled irrigation water-table well in valley fill, diameter 14 inches. Highest water level 27.86 below lsd, Mar.28, 1947; lowest 39.72 below lsd, May 24, 1950. Records available: 1947-51. Jan. 12, 29.26; Mar.27, 28.46; May 24, 31.36; July 27, 34.95; Sept. 24, 59.09, pumping; Nov. 27, 34.60.

2.35.9.122.L. D. Griffith. Drilled irrigation water-table well in valley fill. Highest water level 20.28 below lsd, Jan. 13, 1951; lowest 25.05 below lsd, Sept. 24, 1951. Records available: 1946-51. Jan. 13, 20.28; Mar. 27, 20.86; May 24, 21.88; July 27, 23.16; Sept. 24, 25.05; Nov. 27, 23.85.

2.35.14.414. Portales First National Bank. Dug observation water-table well in valley fill, diameter 2 inches, depth 9 feet. Highest water level 0.07 above lsd, Jan. 30, 1943; lowest 4.37 below lsd, Sept. 16, 1947. Records available: 1939-51. Jan. 12, 0.33; Mar. 27, 0.89; May 24, 1.03; July 27. 3.63; Sept. 25, 3.71; Nov. 27, 2.88.

2.35.15.131. Portales First National Bank. Dug observation water-table well in valley fill, diameter 2 inches, depth 8 feet. Highest water level 0.02 above lsd, Jan. 29, 1942; lowest 5.68 below lsd, Sept. 25, 1951. Records available: 1939-51. Jan. 12, 2.71; Mar. 27, 2.71; May 24, 2.67; July 27, 4.22; Sept. 25, 5.68; Nov. 27, 4.69.

2.35.16.333. A. J. Cline. Dug observation water-table well in valley fill, diameter 2 inches, depth 14 feet. Highest water level 3.77 below lsd, Nov. 26, 1941; lowest 13.83 below lsd, May 27, 1948. Records available: 1939-51. Jan. 12, 7.59; Mar. 27, 7.62; May 24, 7.44; July 27, 8.56; Sept. 24, 9.87; Nov. 27, 9.14.

2.35.18.211. State of New Mexico. Dug observation water-table well in valley fill, diameter 2 inches, depth 11 feet. Highest water level 1.99 below lsd, July 20, 1942; lowest 9.38 below lsd, Sept. 24, 1951. Records available: 1939-51. Jan. 12, 6.09; Mar. 27, 6.28; May 24, 4.83; July 27, 7.42; Sept. 24, 9.38; Nov. 27, 8.41.

2.35.19.134. Roy Faircloth. Drilled irrigation water-table well in valley fill, diameter 10 inches, depth 20 feet. Highest water level 25.87 below lsd, Nov. 27, 1950, Jan. 12, 1951; lowest 30.74 below lsd, May 27, 1948. Records available: 1946-51. Jan. 12, 25.87; Mar.27, 26.05; May 24, 26.35; July 27, 26.28; Sept. 24, 28.79; Nov. 27, 27.55.

2.35.23.111. P. O. Dozier. Formerly Jack McCarty. Drilled irrigation water-table well in valley fill. Highest water level 21.32 below lsd, Mar. 27, 1951; lowest 25.33 below lsd, May 24, 1950. Records available: 1949-51. Jan. 12, 21.45; Mar. 27, 21.32; May 24, 21.42; July 27, 21.63; Sept. 25, 23.16; Nov. 27, 22.91.

2.37.30.134. C. S. Chunn. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 115 feet, cased to 80. Highest water level 18.06 below lsd, Nov. 27, 28, 1950; lowest 21.01 below lsd, Mar. 29, 1950. Records available: 1949-51. Jan. 12, 18.33; Mar. 27, 18.29; May 24, 19.73; July 27, 19.27; Sept. 25, 24.32, pumped recently; Nov. 28, 19.66.

Santa Fe and Torrance Counties

Estancia Valley.--Estancia Valley extends from the southern part of Santa Fe County to south-central Torrance County. About 80 percent of the irrigated area of the valley is in Torrance County. Recharge to the ground-water body in Estancia Valley is derived principally from precipitation within the valley and on the surrounding higher land. However, as the amount of pumping required for irrigation of crops is dependent upon the amount of precipitation during the growing season, the distribution of rainfall during the year is fully as important to an interpretation of ground-water levels as the total annual precipitation. Precipitation in 1951 averaged only 54 percent of normal at all stations in the area for which there are complete records. The precipitation at Estancia was 5.99 inches, 7.23 inches below normal; at McIntosh 6.98 inches, 7.05 inches below normal; at Mountainair 8.43 inches, 7.89 inches below normal; at Otto 8.57 inches, 3.91 inches below normal; and at Tajique 11.09 inches, 9.19 inches below normal. Precipitation during the growing season from April to September also averaged only 54 percent of normal. The total recharge to the ground-water body in 1951 was considerably less than average, and the amount of ground water required for the irrigation of crops was above average. Declines of ground-water levels in the irrigated area were greater in 1951 than in the preceding year when precipitation during the growing season was about normal. It is estimated that about 20,000 acres of land in Estancia Valley was irrigated from wells and that about 40,000 acre-feet of water was pumped in 1951. In 1950, annual precipitation was below normal, but precipitation during the growing season was about normal, and it was estimated that about 19,000 acre-feet of ground water was pumped in that year to irrigate 19,000 acres of land. The areas in Estancia Valley in which ground-water levels declined from February 1951 to February 1952 are shown on figure 44. Ground-water levels declined more than 1 foot under a total area of about 197 square miles in the valley in 1951 as compared with a like decline under a total area of about 100 square miles in 1950. The greatest net decline in 1951 as in the previous year, occurred in the area of heavy pumping about 7 miles northwest of Estancia where the ground-water levels declined more than 2 feet under an area of about 40 square miles, more than 3 feet under about 7 square miles, and more than 4 feet under an area of 2 square miles. The maximum decline recorded in that area was 6.2 feet. In the area of heavy pumping about 7 miles southwest of Estancia ground-water levels declined more than 2 feet under an area of about 24 square miles, more than 3 feet under about 14 square miles, and more than 4 feet under an area of $5\frac{1}{2}$ square miles. The maximum decline recorded there was 4.4 feet as compared with a maximum recorded decline of 2.5 feet during the preceding year. Marked declines of ground-water levels were noted also in the southeast corner of T. 7 N., R. 8 E. where a maximum decline of 3.7 feet was recorded. In the northern part of the valley in southern Santa Fe County, ground-water levels declined more than 1 foot in 1951 under an area of about 18 square miles with a maximum decline of 1.4 feet recorded. Essentially the same decline was noted in that area in the preceding year. The highest level in well 7.8.27.221, was 21.11 feet on April 8. The water level declined to a level of 23.91 feet on June 14. From June 14 to June 26 the water level rose 0.42 foot. From June 26 it declined steadily until it was 25.71 feet on September 26, the lowest level of the year and 2.54 feet below the lowest level during the preceding year. From that date to February 28, 1952 the water level rose to 22.89 feet, about $1\frac{1}{2}$ feet below the water level in February 1951. Some small rises of water levels were noted in a few wells. These wells were not pumped or were pumped very little during the year. In 1950 most of the wells in the vicinity of Willard showed small rises, but in 1951 the water levels in these wells declined an average of more than half a foot.

Santa Fe County

10.7.23.212. G. F. Mosley. Drilled irrigation water-table (?) well in Magdalena(?) group, diameter 12 inches, reported depth 200 feet. Highest water level 137.18 below lsd, Feb. 17, 1949; lowest 139.79 below lsd, Nov. 1, 1950. Records available: 1948-51. May 3, 139.61, nearby well pumped recently.

10.7.23.234. Ray Bassett. Drilled irrigation water-table (?) well in Magdalena(?) group, diameter 16 inches, reported depth 206 feet, cased to 206. Highest water level 143.00 below lsd, Feb. 17, 1949; lowest 146.88 below lsd, Nov. 20, 1951. Records available: 1948-51. Feb. 21, 144.93; Nov. 20, 146.88.

10.8.13.133. W. R. Irby. Drilled irrigation water-table well in valley fill, reported depth 518 feet. Highest water level 86.75 below lsd, Feb. 22, 1950; lowest 93.85 below lsd, Aug. 23, 1951. Records available: 1950-51. Feb. 21, 88.14; May 3, 93.79, pumped recently; Aug. 23, 93.85; Nov. 20, 90.85.

10.8.17.424. Kenneth Martin. Unused water-table well in valley fill, diameter 6 inches, reported depth 150 feet. Highest water level 135.44 below lsd, May 3, 1949; lowest 140.13 below lsd, Nov. 20, 1951. Records available: 1949-51. Feb. 21, 136.48; May 3, 136.64; Aug. 23, 136.69; Nov. 20, 140.13.

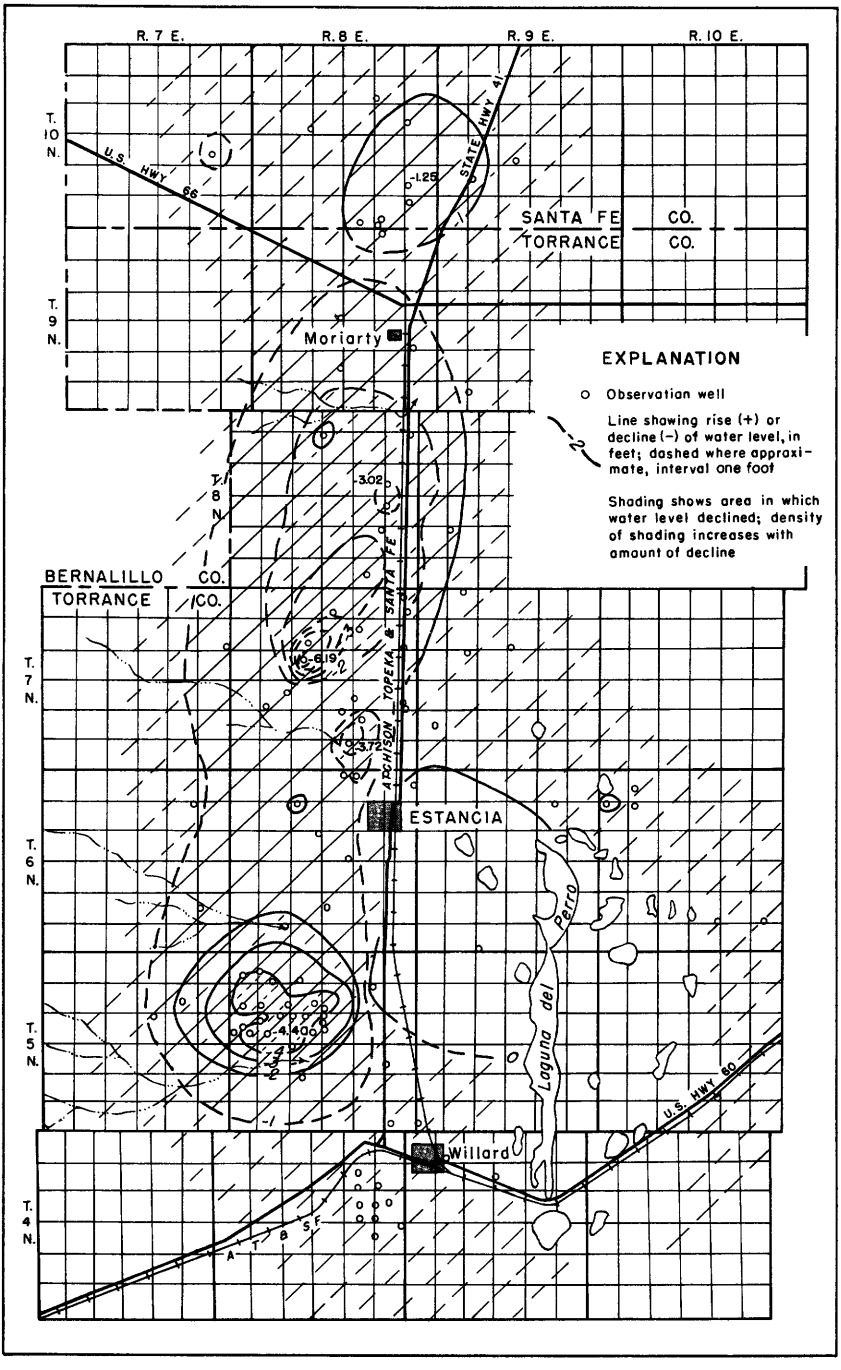

Figure 44. --Change in ground-water level from February 1951 to February 1952 in Estancia Valley, Torrance County, N. Mex.

2.35.25.114a. Joe Caraway. Drilled irrigation water-table well in valley fill, diameter 12 inches, depth 96 feet. Highest water level 22.07 below lsd, Jan. 12, 1951; lowest 29.38 below lsd, Sept. 29, 1948. Records available: 1948-51. Jan. 12, 22.07; Mar. 27, 22.09; May 24, 22.45; July 27, 42.27, pumping; Sept. 25, 23.39; Nov. 28, 22.90

2.36.7.332. Loren Johnson. Drilled irrigation water-table well in valley fill, diameter 14 inches, depth 133 feet. Highest water level 15.02 below lsd, Sept. 26, 1950; lowest 21.26 below lsd, May 29, 1948. Records available: 1944-51. Jan. 12, 15.87; Mar. 27, 16.32; May 24, 16.03; July 28, 15.98; Sept. 26, 16.85; Nov. 28, 17.48.

2.36.8.432a. S. W. Davis. Drilled irrigation water-table well in valley fill. Highest water level 15.66 below lsd, Nov. 28, 1950; lowest 22.19 below lsd, May 29, 1948. Records available: 1948-51. Jan. 12, 18.22, pumped recently; Mar. 27, 41.65, pumping; May 24, 17.19; July 28, 38.88, pumping; Sept. 26, 19.80; Nov. 28, 17.59.

2.36.18.341. E. R. McPherson. Drilled unused water-table well in valley fill. Highest water level 9.07 below lsd, Nov. 26, 1941; lowest 19.61 below lsd, Mar. 30, 1932. Records available: 1931-51. Jan. 12, 11.72; Mar. 27, 12.14; May 24, 11.54; July 27, 11.72; Sept. 25, 12.96; Nov. 28, 13.68.

2.36.20.321. W. O. Davis. Dug and drilled irrigation water-table well in valley fill, diameter 11 inches, depth 123 feet. Highest water level 8.12 below lsd, Jan. 30, 1942; lowest 21.97 below lsd, June 29, 1932. Records available: 1931-51. Jan. 12, 12.14; May 24, 12.35; July 27, 12.35; Sept. 25, 13.78; Nov. 28, 13.69.

2.36.27.311a. J. M. Riley. Drilled irrigation water-table well in valley fill, reported depth 105 feet. Highest water level 12.75 below lsd, Nov. 28, 1950; lowest 19.97 below lsd, Sept. 29, 1948. Records available: 1947-51. Jan. 12, 12.79; Mar. 27, 12.87; May 24, 13.56; July 27, 33.98, pumping; Sept. 25, 17.18; Nov. 28, 14.61.

2.36.28.114b. Morgan Trammel. Drilled unused water-table well in valley fill, diameter 12 inches, depth 44 feet. Highest water level 7.30 below lsd, Dec. 4, 1941; lowest 19.38 below lsd, Oct. 3 1948. Records available: 1932-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	14.26	Apr. 10	14.07	July 5	14.00	Oct. 5	16.56
10	14.19	15	14.16	10	14.01	10	16.41
15	14.13	20	14.23	15	13.94	15	16.30
20	14.10	25	14.39	20	13.95	20	16.16
25	14.05	30	14.56	25	14.08	25	16.09
30	14.01	May 5	14.76	30	14.22	30	15.99
Feb. 5	13.94	10	14.90	Aug. 5	14.65	Nov. 5	15.89
10	13.98	15	15.12	10	14.92	15	15.71
15	13.95	20	14.85	15	15.19	20	15.65
20	13.95	25	14.50	20	15.59	25	15.60
25	13.92	30	14.26	25	15.75	30	15.55
Mar. 5	13.93	June 5	14.06	30	15.76	Dec. 5	15.41
10	13.90	10	13.97	Sept. 5	15.94	10	15.45
15	13.87	15	14.01	10	16.15	15	15.43
20	13.90	20	14.07	20	16.48	20	15.38
25	13.89	25	14.15	25	16.52	25	15.35
30	13.89	30	14.13	30	16.52	30	15.31
Apr. 5	14.00						

2.36.30.111. L. B. Thornton. Dug observation water-table well in valley fill, diameter 2 inches, depth 10 feet. Highest water level 0.45 below lsd, Nov. 26, 1941; lowest 7.16 below lsd, Sept. 29, 1948. Records available: 1941-51. Jan. 12, 2.54; Mar. 27, 2.49; May 24, 1.62; July 27, 3.90; Sept. 25, 5.10; Nov. 28, 4.41.

2.36.34.312. L. W. Walker. Drilled irrigation water-table well in valley fill, diameter 12 inches, reported depth 65 feet, cased to 51. Highest water level 14.10 below lsd, Nov. 28, 1950; lowest 19.06 below lsd, Nov. 20, 1948. Records available: 1947-51. Jan. 12, 14.36; Mar. 27, 14.40; May 24, 14.36; July 27, 15.30; Sept. 25, 16.96; Nov. 28, 16.09.

2.36.35.212a. Mrs. Eunice Harrison. Drilled irrigation water-table well in valley fill. Highest water level 8.24 below lsd, Jan. 12, 1951; lowest 13.32 below lsd, Sept. 29, 1948. Records available: 1947-51. Jan. 12, 8.24; May 24, 8.71; July 27, 8.48; Sept. 25, 10.57; Nov. 28, 10.08.

10.8.25.311. Floyd Irvin. Drilled irrigation water-table well in valley fill (?), diameter 16 inches, reported depth 238 feet, cased to 40. Highest water level 72.85 below lsd, Feb. 17, 1949; lowest 83.36 below lsd, Aug. 23, 1951. Records available: 1948-51. Feb. 16, 75.36; May 3, 82.99, pumping; Aug. 23, 83.36; Nov. 21, 79.66.

10.8.35.312. Valley Irrigation Co. Drilled irrigation water-table well in valley fill. Highest water level 65.19 below lsd, May 20, 1948; lowest 72.31 below lsd, Aug. 1, 1950. Records available: 1948-51. Feb. 16, 67.14; May 3, 90.10, pumping.

10.8.35.331. Valley Irrigation Co. Drilled irrigation water-table well in valley fill. Highest water level 65.12 below lsd, Feb. 7, 1950; lowest 72.92 below lsd, Nov. 1, 1950. Records available: 1948-51. Feb. 16, 66.38; May 3, 89.64, pumping; Aug. 23, 74.61, nearby well being pumped; Nov. 21, 70.78.

10.8.35.411. Valley Irrigation Co. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 270 feet. Highest water level 62.00 below lsd, Feb. 17, 1949; lowest 69.69 below lsd, Aug. 1, 1950. Records available: 1948-51. Feb. 16, 64.49; May 3, 69.92, nearby well being pumped. Measurement discontinued.

10.8.36.111. Valley Irrigation Co. Drilled irrigation water-table well in Glorieta sandstone member of San Andres formation, diameter 13 inches, reported depth 309 feet, cased to 231. Highest water level 34.91 below lsd, Sept. 15, 1947, Mar. 25, 1948; lowest 46.76 below lsd, Aug. 23, 1951. Records available: 1947-51. Feb. 16, 38.73; Aug. 23, 46.76.

10.9.21.431. Everett Shockey. Drilled stock and domestic water-table well in valley fill, diameter 7 inches, reported depth 101 feet, cased to 100. Land-surface datum is 6,210 feet above msl. Highest water level 24.63 below lsd, Feb. 20, 1947; lowest 27.75 below lsd, Aug. 1, 1950. Records available: 1946-51. Feb. 16, 27.48; Nov. 21, 27.68.

10.9.29.130. Glen Terry. Drilled irrigation water-table well in Glorieta sandstone member of San Andres formation, diameter 14 inches, reported depth 200 feet, cased to 140. Highest water level 55.13 below lsd, Feb. 18, 1949; lowest 62.43 below lsd, Aug. 23, 1951. Records available: 1949-51. Feb. 16, 57.96; May 3, 59.43; Aug. 23, 62.43; Nov. 21, 60.63.

Torrance County

4.8.11.233. R. B. Slease. Drilled unused water-table well in valley fill, diameter 14 inches. Highest water level 81.31 below lsd, Feb. 15, May 2, 1951; lowest 81.87 below lsd, Aug. 21, 1951. Records available: 1950-51 May 19, 1950, 81.52; Aug. 2, 1950, 81.75; Nov. 2, 1950, 81.50; Feb. 15, 1951, 81.31; May 2, 81.31; Aug. 21, 81.87; Nov. 14, 81.77.

4.8.11.433. R. B. Slease. Drilled unused water-table well in valley fill, diameter 16 inches, reported depth 180 feet, cased to 160. Highest water level 82.93 below lsd, May 2, 1951; lowest 83.78 below lsd, Aug. 21, 1951. Records available: 1950-51. Feb. 15, 82.94; May 2, 82.93; Aug. 21, 83.78; Nov. 14, 83.46.

4.8.12.333. R. B. Slease. Drilled unused water-table well in valley fill, diameter 16 inches, reported depth 272 feet, cased to 212. Highest water level 70.53 below lsd, Aug. 2, 1950; lowest 71.69 below lsd, Aug. 21, 1951. Records available: 1950-51. Feb. 15, 70.85; May 2, 70.84; Aug. 21, 71.69.

4.8.13.133. R. B. Slease. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 225 feet, cased to 197. Land-surface datum is 6,140 feet above msl. Highest water level 79.37 below lsd, Feb. 15, 1951; lowest 80.84 below lsd, Nov. 2, 1949. Records available: 1949-51. Feb. 15, 79.37; May 2, 79.38; Aug. 21, 97.58, pumping; Nov. 14, 80.25.

4.8.13.233. R. B. Slease. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 216 feet, cased to 216. Land-surface datum is 6,130 feet above msl. Highest water level 70.82 below lsd, Feb. 15, 1951; lowest 71.96 below lsd, Aug. 2, 1950, Nov. 14, 1951. Records available: 1950-51. Feb. 15, 70.82; May 2, 70.84; Aug. 21, 94.33, pumping; Nov. 14, 71.96.

4.8.13.333. R. B. Slease. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 230 feet, cased to 230. Highest water level 79.62 below lsd, May 2, 1951; lowest 80.61 below lsd, Nov. 14, 1951. Records available: 1950-51. Feb. 15, 79.67; May 2, 79.62; Aug. 21, 102.55, pumping; Nov. 14, 80.61.

4.8.14.233. R. B. Slease. Drilled unused water-table well in valley fill, diameter 16 inches. Highest water level 91.96 below lsd, Feb. 15, 1951; lowest 93.05 below lsd, Aug. 21, 1951. Records available: 1950-51. May 19, 1950, 92.00; Aug. 2, 1950, 92.54; Nov. 2, 1950, 92.34; Feb. 15, 1951, 91.96; May 2, 92.01; Aug. 21, 93.05.

4.8.14.433. R. B. Slease. Drilled unused water-table well in valley fill, diameter 16 inches, depth 211 feet, cased to 211. Highest water level 93.81 below lsd, May 19, 1950; lowest 94.93 below lsd, Aug. 21, 1951. Records available: 1950-51. Feb. 15, 93.89; May 2, 93.87; Aug. 21, 94.93; Nov. 14, 94.55.

4.8.24.133. R. B. Slease. Drilled irrigation water-table well in valley fill, diameter 20 to 16 inches, reported depth 230 feet, cased to 100. Highest water level 84.46 below lsd, May 4, 1949; lowest 85.67 below lsd, Nov. 14, 1951. Records available: 1949-51. Feb. 15, 84.79; May 2, 84.70; Aug. 21, 107.53, pumping; Nov. 14, 85.67.

4.9.10.133. Homer Arnn. Drilled stock water-table well in valley fill, diameter 6 inches. Land-surface datum is 6,080 feet above msl. Highest water level 17.05 below lsd, May 2, 1951; lowest 18.46 below lsd, Oct. 25, 1948. Records available: 1941-51 Feb. 15, 32.30, pumping; May 2, 17.05; Aug. 21, 17.64; Nov. 14, 17.65.

5.7.11.411. O. H. Brown. Drilled unused water-table well in valley fill, diameter 16 inches, reported depth 275 feet, cased to 120. Highest water level 86.35 below lsd, Sept. 14, 1947; lowest 90.99 below lsd, Nov. 15, 1951. Records available: 1947-51. Feb. 12, 89.54; May 2, 89.85; Aug. 22, 90.30; Nov. 15, 90.99. Measurement discontinued.

5.8.5.344. O. R. Ethridge. Drilled irrigation water-table well in valley fill, diameter 18 inches, reported depth 200 feet, cased to 118. Highest water level 51.14 below lsd, Feb. 18, 1947; lowest 61.37 below lsd, May 2, 1951. Records available: 1947-51. Feb. 12, 58.38; May 2, 61.37; Aug. 22, 100.66, pumping.

5.8.8.424. Arlington Austin. Drilled irrigation water-table well in valley fill, diameter 20 inches, reported depth 204 feet, cased to 98. Highest water level 62.03 below lsd, Mar. 23, 1948; lowest 83.45 below lsd, Aug. 22, 1951. Records available: 1948-51. Feb. 14, 68.10; May 2, 74.97, pumped recently; Aug. 22, 83.45; Nov. 15, 76.93.

5.8.10.331a. Frank Craven. Drilled irrigation water-table well in valley fill, diameter 18 inches, reported depth 158 feet, cased to 91. Highest water level 19.79 below lsd, Mar. 22 1948; lowest 33.82 below lsd, Nov. 15, 1951. Records available: 1947-51. Feb. 14, 24.98; May 2, 34.50, nearby well being pumped; Aug. 22, 46.52, nearby well being pumped; Nov. 15,33.82.

5.8.15.131. Joe Begley. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 125 feet, cased to 59. Highest water level 13.68 below lsd, May 8, 1945; lowest 29.31 below lsd, Nov. 15, 1951. Records available: 1945-51. Feb. 14, 20.71; May 2, 22.71; Aug. 22, 39.31, nearby well being pumped; Nov. 15, 29.31. Measurement discontinued.

5.8.15.131a. Joe Begley. Drilled domestic water-table well in valley fill, diameter 8 inches, reported depth 70 feet, cased to 42. Highest water level 16.29 below lsd, Feb. 18, 1947; lowest 29.62 below lsd, Aug. 2, 1950. Records available: 1946-51. Feb. 14, 23.05; May 2, 24.99; Aug. 22, 41.47, nearby well being pumped. Measurement discontinued.

5.8.17.113. Madison Davis. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 148 feet, cased to 59. Highest water level 43.29 below lsd, May 8, 1945; lowest 59.65 below lsd, Nov. 15, 1951. Records available: 1945-51. Feb. 12, 52.33; Aug. 22, 70.60, pumped recently; Nov. 15, 59.65.

5.8.17.311a. Ray Brown. Drilled irrigation water-table well in valley fill. Highest water level 29.50 below lsd, Mar. 23, 1948; lowest 67.49 below lsd, Aug. 22, 1951. Records available: 1947-51. Feb. 14, 34.87; May 2, 37.46; Aug. 22, 67.49; Nov. 15, 42.28.

5.8.18.233. S. W. Hodgson. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 153 feet, cased to 80. Highest water level 38.69 below lsd, Feb. 18, 1947; lowest 55.62 below lsd, Aug. 22, 1951. Records available: 1946-51. Feb. 12, 45.35; Aug. 22, 55.62.

5.8.21.111. R. B. Ford. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 169 feet, cased to 60. Highest water level 27.23 below lsd, Feb. 18, 1947; lowest 39.81 below lsd, Nov. 15, 1951. Records available: 1946-51. Feb. 14, 34.13; May 2, 34.33; Aug. 22, 39.54; Nov. 15, 39.81.

5.8.24.311. E. B. Wallace. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 200 feet, cased to 150. Land-surface datum is 6,115 feet above msl. Highest water level 21.93 below lsd, Feb. 20, 1946; lowest 26.06 below lsd, Aug. 12, 1948. Records available: 1946-51. Feb. 14, 22.68; May 2, 23.95, pumped recently; Aug. 21, 56.75, pumping; Nov. 15, 23.35.

5.8.25.212. Homer Arnn. Drilled unused water-table well in valley fill, depth 26 feet. Land-surface datum is 6,120 feet above msl. Highest water level 22.45 below lsd, Jan. 20, Apr. 7, 1942; lowest 26.00 below lsd, Nov. 2, 1949. Records available: 1941-51. Feb. 15, 25.20; May 2, 25.16; Aug. 21, 25.59; Nov. 15, dry. Measurement discontinued.

5.9.31.331. Homer Arnn. Drilled unused water-table well in valley fill, diameter 24 inches, reported depth 210 feet, cased to 50. Land-surface datum is 6,108 feet above msl. Highest water level 32.12 below lsd, Nov. 2, 1950; lowest 34.10 below lsd, Feb. 13, 1941. Records available: 1941-51. Feb. 15, 32.32; May 2, 32.37; Aug. 21, 32.59; Nov. 14, 32.72.

6.8.1.111. Pat Homan. Drilled unused water-table well in valley fill and Magdalena group, diameter 18 inches, reported depth 450 feet. Highest water level 21.95 below lsd, Feb. 9, 1950; lowest 27.68 below lsd, Aug. 10, 1948. Records available: 1948-51. Feb. 13, 24.05; May 3, 23.66; Aug. 23, 24.30; Nov. 16, 24.36.

6.8.3.221. Ellison Timmins. Drilled unused water-table well in valley fill, diameter 18 to 10 inches, reported depth 195 feet, cased to 195. Land-surface datum is 6,160 feet above msl. Highest water level 26.09 below lsd, Apr. 8, Aug. 13, 1942; lowest 36.14 below lsd, Aug. 23, 1951. Records available: 1941-51. Feb. 13, 31.19; Aug. 23, 36.14; Nov. 16, 33.28.

6.8.15.444. Estancia Cemetery. Drilled irrigation water-table well in valley fill. Land-surface datum is 6,155 feet above msl. Highest water level 29.90 below lsd, June 18, 1943; lowest 31.95 below lsd, Nov. 15, 1951. Records available: 1941-51. Feb. 12, 30.85; May 2, 30.84; Aug. 22, 31.50; Nov. 15, 31.95.

6.8.27.134. R. M. Spruill. Drilled stock water-table well in valley fill, diameter 6 inches, reported depth 100 feet, cased to 100. Land-surface datum is 6,164 feet above msl. Highest water level 19.47 below lsd, Apr. 8, 1942; lowest 23.82 below lsd, Nov. 15, 1951. Records available: 1941-51. Feb. 12, 22.32; May 2, 24.88, pumping; Aug. 22, 23.58; Nov. 15, 23.82.

6.8.32.212. O. R. Ethridge. Drilled irrigation water-table well in valley fill, diameter 18 inches, reported depth 209 feet, cased to 84. Highest water level 23.22 below lsd, Feb. 18, 1947; lowest 32.66 below lsd, Aug. 22, 1951. Records available: 1947-51. Feb. 12, 27.16; May 2, 39.94, pumping; Aug. 22, 32.66; Nov. 15, 29.81.

6.9.11.211. H. E. Means. Drilled irrigation water-table well in valley fill, diameter 18 inches, reported depth 148 feet. Highest water level 5.07 below lsd, May 4, 1949; lowest 8.13 below lsd, May 3, 1951. Records available: 1949-51. Feb. 14, 7.15; May 3, 8.13; Aug. 22, 25.23, pumping; Nov. 15, 8.62, pumping.

6.10.5.312. Berkshire Bros. Drilled unused water-table well in valley fill (?), diameter 16 inches, reported depth 186 feet. Highest water level 6.18 below lsd, Aug. 22, 1951; lowest 11.07 below lsd, Feb. 16, 1949. Records available: 1949-51. Feb. 14, 10.50, estimated; May 3, 10.89; Aug. 22, 6.18; Nov. 15, 9.06.

6.10.5.312a. Berkshire Bros. Drilled irrigation water-table well in valley fill (?), diameter 20 inches. Highest water level 11.54 below lsd, Feb. 8, 1950; lowest 14.59 below lsd, Nov. 15, 1951. Records available: 1950-51. Feb. 14, 12.98; May 3, 13.92; Aug. 22, 18.67, pumped recently; Nov. 15, 14.59.

6.10.7.112. Owner unknown. Stock water-table well in valley fill, diameter 6 inches. Land-surface datum is 6,080 feet above msl. Highest water level 5.74 below lsd, Feb. 16, 1949; lowest 8.85 below lsd, Nov. 19, 1951. Records available: 1949-51. Feb. 14, 7.81; May 3, 8.59; Aug. 22, 14.32, pumped recently; Nov. 19, 8.85.

6.10.8.112. J. M. Milburn and Son. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 169 feet, cased to 73. Highest water level 7.90 below lsd, Sept. 2, 1948; lowest 15.83 below lsd, Aug. 22, 1951. Records available: 1948-51. Feb. 14, 10.60; May 3, 11.38; Aug. 22, 15.83; Nov. 15, 13.09.

7.7.12.444. C. B. Roland. Drilled carbon dioxide test water-table (?) well in Magdalena group, diameter 7 inches, reported depth 1,359 feet, cased to 60. Land-surface datum is 6,349 feet above msl. Highest water level 41.37 below lsd, Feb. 19, 1947; lowest 46.47 below lsd, July 11, Sept. 10, 1941. Records available: 1941-51. Feb. 13, 44.47; May 3, 45.06; Aug. 23, 45.67; Nov. 20, 45.93.

7.8.1.231. Myrtle Homan Estate. Drilled stock water-table well in valley fill, diameter 8 inches, reported depth 56 feet, cased to 20. Land-surface datum is 6,142 feet above msl. Highest water level 25.10 below lsd, Feb. 20, 1947; lowest 28.99 below lsd, Nov. 19, 1951. Records available: 1941-51. Feb. 16, 26.41; May 3, 26.98; Aug. 23, 28.66; Nov. 19, 28.99.

7.8.12.433a. Arthur Schmidt. Drilled unused water-table well in valley fill, diameter 12 inches, reported depth 103 feet. Highest water level 21.09 below lsd, Feb. 15, 1951; lowest 30.37 below lsd, Aug. 23, 1951. Records available: 1947-51. Feb. 15, 21.09; May 3, 24.98; Aug. 23, 30.37; Nov. 19, 24.33.

7.9.19.422. Bruce Grimes. Drilled unused water-table well in Magdalena(?) group, diameter 12 inches, reported depth 400 feet. Highest water level 129.03 below lsd, Feb. 13, 1951; lowest 133.54 below lsd, Aug. 1, 1950. Records available: 1949-51. Feb. 13, 129.03. Measurement discontinued.

7.8.20.240. C. A. Burns. Drilled unused water-table well in valley fill. Highest water level 86.70 below lsd, Mar. 24, 1948; lowest 90.52 below lsd, Nov. 16, 1951. Records available: 1948-51. Feb. 13, 89.49; May 3, 89.59; Aug. 23, 90.44; Nov. 16, 90.52.

7.8.23.324. O. L. Austin. Drilled unused water-table well in valley fill, diameter 12 inches, reported depth 161 feet, caved to 6. Land-surface datum is 6,166 feet above msl. Highest water level 1.74 below lsd, Mar. 24, 1948; lowest dry, Aug. 23, 1951. Records available 1941-51. Feb. 13, 2.51; May 3, 4.27; Aug. 23, dry.

7.8.24.431. R. T. Floyd. Drilled irrigation water-table well in valley fill, diameter 12 inches, reported depth 275 feet. Highest water level 21.77 below lsd, May 28, 1947; lowest 31.05 below lsd, Aug. 23, 1951. Records available: 1947-51. Feb. 15, 22.43; May 3, 23.66; Aug. 23, 31.05.

7.8.27.221.* F. C. Pace. Drilled unused water-table well in valley fill, diameter 6 inches. Land-surface datum is 6,185 feet above msl. Highest water level 19.06 below lsd, May 7-10, 1947; lowest 25.71 below lsd, Sept. 26, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	21.57	Mar. 15	21.16	May 30	23.18	Aug. 25	25.18
10	21.53	20	21.23	June 15	23.87	30	25.23
15	21.51	25	21.18	20	23.67	Sept. 15	25.49
20	21.49	30	21.14	25	23.49	20	25.57
25	21.43	Apr. 5	21.12	30	23.91	25	25.68
30	21.39	15	21.60	July 5	24.09	Oct. 5	25.32
Feb. 5	21.35	20	21.74	10	24.10	10	25.07
10	21.35	May 5	21.59	15	24.04	15	24.86
15	21.31	10	22.01	20	24.26	Nov. 5	24.23
20	21.31	15	22.28	Aug. 5	24.72	10	24.11
25	21.25	20	22.49	10	24.83	20	23.92
Mar. 10	21.17	25	22.75	15	24.97	25	23.87

* From recorder graph.

7.8.34.222. Lilburn Homan. Drilled irrigation water-table well in valley fill, diameter 18 inches, reported depth 129 feet, cased to 109. Highest water level 18.51 below lsd, May 29, 1947; lowest 35.46 below lsd, Aug. 23, 1951. Records available: 1947-51. Feb. 13, 21.64; May 3, 31.70, pumping; Aug. 23, 35.46; Nov. 16, 27.60.

8.8.12.212. Lawrence Groff. Drilled irrigation water-table well in valley fill, diameter 20 inches, reported depth 180 feet. Highest water level 29.74 below lsd, May 20, 1948; lowest 37.11 below lsd, Nov. 16, 1951. Records available: 1948-51. Feb. 15, 32.94; May 3, 35.34, pumped recently; Nov. 16, 37.11.

8.8.15.343. Ed. W. Davis. Dug stock and domestic water-table well in valley fill, reported depth 102 feet. Highest water level 97.00 below lsd, Feb. 23, 1950; lowest 99.29 below lsd, Nov. 19, 1951. Records available: 1950-51. May 3, 98.68; Aug. 23, 98.93; Nov. 19, 99.29.

8.8.26.222. Owner unknown. Drilled stock water-table well in valley fill, depth 20 feet. Land-surface datum is 6,188 feet above msl. Highest water level 6.50 below lsd, Sept. 6, 1946; lowest 10.88 below lsd, May 3, 1951. Records available: 1941-51. Feb. 13, 10.62; May 3, 10.88; Aug. 23, 12.39, pumped recently; Nov. 19, 12.87, pumped recently.

8.8.28.311. Cecil Thomas. Drilled irrigation water-table well in valley fill, diameter 16 inches, reported depth 160 feet, cased to 154. Highest water level 140.05 below lsd, May 3, 1951; lowest 149.83 below lsd, Aug. 23, 1951. Records available: 1951. May 3, 140.05, pumping; Aug. 23, 149.83; Nov. 16, 141.66.

8.8.35.322. A. C. Hibner. Drilled irrigation water-table well in valley fill (?), diameter 16 inches, reported depth 228 feet, cased to 110. Land-surface datum is 6,240 feet above msl. Highest water level 50.12 below lsd, May 28, 1947; lowest 63.29 below lsd, Nov. 19, 1951. Records available: 1947-51. Feb. 13, 58.00; May 3, 59.89; Aug. 23, 67.59, pumped recently; Nov. 19, 63.29.

9.8.11.233. Manuel Lujan. Drilled irrigation water-table well in valley fill (?), reported depth 320 feet. Highest water level 56.80 below lsd, May 20, 1948; lowest 60.54 below lsd, Nov. 1, 1950. Records available: 1948-51. May 3, 59.34; Aug. 23, 94.14, pumped recently; Nov. 21, 61.48, pumped recently.

9.8.26.433. Everett Shockey. Drilled irrigation water-table well in valley fill (?), diameter 16 inches, reported depth 198 feet, cased to 140. Highest water level 45.10 below lsd, Feb. 17, 1949; lowest 46.24 below lsd, Nov. 3, 1949. Records available: 1948-50. Measurement discontinued.

9.9.32.131. G. L. Dean. Drilled unused water-table well in valley fill (?), diameter 12 inches, reported depth 74 feet, caved to 6.4 feet. Land-surface datum is 6,176 feet above msl. Highest water level 5.13 below lsd, Sept. 19, 1944; lowest 6.88 below lsd, Feb. 20, 1941. Records available: 1941-51. Feb. 15, 6.39; May 3, 6.41; Aug. 23, dry; Nov. 19, dry. Measurement discontinued.

9.9.32.131a. G. L. Dean. Drilled unused water-table well in valley fill (?), diameter 10 inches, reported depth 72 feet. Highest water level 5.70 below lsd, Feb. 19, 20, 1947; lowest 7.65 below lsd, Nov. 19, 1951. Records available: 1943-51. Feb. 15, 6.61; May 3, 6.53; Aug. 23, 7.68; Nov. 19, 7.65.

Sierra County

Hot Springs Area. --Several wells in the Magdalena limestone yield hot water under artesian pressure. Nonthermal artesian wells in Mud Springs Draw, about a mile southwest of Truth or Consequences furnish the municipal water supply. Water levels in wells at Truth or Consequences yielding hot water have been measured at periodic intervals since 1939, and water levels in wells in the nonthermal area have been measured since 1945. As a part of these investigations, in January 1951 water levels were measured in 11 thermal wells and 2 nonthermal wells. Bimonthly measurements of water levels were not made in 1951 in the thermal wells. Recording gages were maintained in 1951, as in preceding years, on 3 thermal wells. One of the gage-equipped wells is a deep artesian well; another is a shallow well dug in alluvium; and the third is a well dug into limestone near the upper edge of the spring area. Artesian pressures in thermal wells in which water levels were measured declined from January 1951 to January 1952. The net declines for 1951 ranged from 0.29 foot to 0.76 foot, the greatest measured net decline occurring in the well near the southeast corner of Sims and Daniels Streets. Variations in river level cause variations in the artesian levels as the river is the area of natural discharge from the aquifer. As there were large deficiencies in the river flow in 1951, some of the decline in artesian pressures presumably was the result of low river levels. There possibly was some increase in use of hot water in 1951. The records indicate that in 1951, as in preceding years, highest water levels during the year were in March and April, and lowest levels were in October and November. The water level in well 6, a deep artesian well, was about 0.2 foot higher in April 1951 than in April 1950, but declined to a new low in November 1951, about 0.6 foot lower than the lowest level in 1950. In the nonthermal area, the water level in well 14.4.6.110a rose 0.55 foot from January 1951 to January 1952. The water level in that well also rose during the preceding year. However, from January 1947, when the water level in the well was first measured, to January 1952 the net change was a decline of 1.10 feet.

6. Harry Dakos. Lot 4, block 8 in Truth or Consequences. Drilled unused artesian well, diameter 7 inches, depth 105 feet. Land-surface datum is 4,243.75 feet above msl. Highest water level 1.66 above lsd, Dec. 24, 1941; lowest 0.58 below lsd, Nov. 6, 17, 1951. Records available: 1940-51.

Daily highest water level above and below lsd from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	+0.09	+0.35	+0.53	+0.62	+0.42	+0.33	+0.33	+0.17	+0.05	-0.39	-0.51	-0.55
2	.11	.37	.53	.62	.41	.30	.28	.15	.07	.42	.56	.54
3	.15	.40	.49	.65	.41	.32	.30	.13	.07	.41	.54	.53
4	.18	.40	.49	.67	.42	.31	.31	.11	.07	.44	.49	.52
5	.20	.41	.50	.65	.42	.31	.29	.09	.06	.45	.52	.50

6--Continued.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	+0.21	+0.39	+0.49	+0.63	+0.41	+0.31	+0.29	.....	+0.07	-0.48	-0.58	-0.53
7	.21	.39	.49	.65	.40	.32	.29	.....	.07	.47	.57	.55
8	.25	.40	.51	.65	.40	.32	.31	.....	.07	.47	.55	.55
9	.27	.40	.53	.67	.37	.31	.31	.....	.07	.49	.57	.57
10	.28	.40	.51	.67	.35	.36	.29	.....	.09	.49	.57	.56
11	.31	.43	.49	.66	.35	.36	.28	.....	+0.08	.48	.54	.57
12	.30	.43	.48	.66	.35	.35	.28	.....	-0.06	.48	.54	.54
13	.29	.43	.53	.67	.32	.32	.25	.....	.13	.49	.53	.51
14	.27	.42	.53	.69	.27	.32	.27	.....	.17	.49	.55	.54
15	.31	.43	.53	.69	.26	.31	.27	.....	.20	.49	.56	.57
16	.32	.45	.57	.66	.26	.32	.27	.....	.23	.49	.56	.51
17	.32	.47	.51	.67	.27	.34	.25	.....	.23	.53	.58	.51
18	.31	.49	.50	.62	.26	.34	.25	.....	.26	.54	.55	.49
19	.33	.49	.53	.59	.27	.31	.25	.....	.27	.53	.55	.48
20	.31	.45	.55	e.56	.29	.33	.25	.....	.29	.50	.54	.47
21	.31	.47	.53	.53	.28	.33	.25	.....	.31	.52	.53	.53
22	.33	.49	.55	.51	.27	.30	.19	.....	.33	.53	.53	.53
23	.33	.47	.52	.53	.27	.31	.19	.....	.33	.55	.53	.51
24	.33	.50	.53	.54	.27	.31	.18	.....	.34	.54	.52	.49
25	.34	.51	.54	.50	.27	.31	.....	.....	.35	.53	.56	.50
26	.36	.50	.57	.50	.31	.32	.....	.....	.35	.53	.55	.51
27	.36	.51	.58	.47	.31	.32	.....	+0.09	.37	.55	.53	.51
28	.37	.50	.58	.49	.31	.32	.....	.09	.37	.55	.55	.49
29	.39		.60	.49	.32	.32	.....	.06	.37	.54	.55	.48
30	.40		.63	.45	.33	.33	.....	.05	.41	.50	.55	.45
31	.40		.63		.34		.17	.06		.49		.48

e Estimated.

6a.* Harry Dakos. Lot 4, block 8 in Truth or Consequences. Dug unused water-table well in alluvium, diameter 24 inches, depth 6 feet. Land-surface datum is 4,240.71 feet above msl. Highest water level 0.34 below lsd, Aug. 26, 1951; lowest 2.70 below lsd, Oct. 24-29, 1951. Records available: 1941-51.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	2.15	Apr. 10	1.65	July 10	2.04	Oct. 10	2.65
10	2.07	15	1.66	15	2.06	15	2.67
15	1.99	20	1.70	20	2.07	20	2.69
20	1.95	25	1.77	25	2.11	25	2.70
25	1.93	30	1.85	30	2.14	30	2.42
30	1.90	May 5	1.92	Aug. 5	1.90	Nov. 5	2.30
Feb. 5	1.89	10	1.96	10	2.21	10	2.61
10	1.87	15	2.03	15	2.29	15	2.63
15	1.87	20	2.09	25	.60	20	2.68
20	1.83	25	2.10	30	1.68	25	2.67
Mar. 5	1.80	June 5	2.06	Sept. 5	2.15	30	2.68
10	1.78	10	2.05	10	2.20	Dec. 5	2.66
15	1.78	15	2.04	15	2.32	10	2.66
20	1.78	20	2.04	20	2.45	15	2.65
25	1.78	25	2.05	25	2.51	20	2.63
30	1.28	30	2.04	30	2.56	25	2.62
Apr. 5	1.61	July 5	2.04	Oct. 5	2.60	30	2.60

* From recorder graph.

25.* Jim Knox. Lot 4, block 93 in Truth or Consequences. Dug unused artesian well in Magdalena limestone, size 5 by 5 feet, depth 20 feet. Land-surface datum is 4,242.20 feet above msl. Highest water level 6.60 below lsd, May 13, 1942; lowest 8.89 below lsd, Nov. 15, 1951. Records available: 1939-51.

Jan. 5	8.18	Mar. 20	7.85	May 25	8.13	Aug. 5	8.29
10	8.12	25	7.86	June 5	8.07	10	8.44
15	8.09	30	7.78	10	8.03	15	8.38
20	8.06	Apr. 5	7.75	15	8.05	20	8.39
25	8.04	10	7.71	20	8.06	25	8.36
30	7.48	15	7.70	25	8.09	30	8.38
Feb. 5	7.96	20	7.80	30	8.06	Sept. 5	8.36
10	7.98	25	7.88	July 5	8.10	10	8.35
15	7.95	30	7.93	10	8.09	15	8.57
20	7.95	May 5	7.95	15	8.12	20	8.67
25	7.89	10	8.04	20	8.04	25	8.74
Mar. 5	7.89	15	8.11	25	8.20	30	8.80
10	7.88	20	8.09	30	8.25	Nov. 15	8.89
15	7.84						

* From recorder graph.

Valencia County

Grants-Bluewater Area.--Most of the area of irrigated lands is in the Bluewater-Toltec Irrigation District in which surface water for irrigation is distributed from Bluewater Reservoir. Individually owned wells supply supplemental water when surface water is not available. The principal aquifer in the Grants-Bluewater area is the San Andres formation of Permian age. Recharge to the ground water is derived primarily from leakage of surface water from Bluewater Reservoir and the lower end of Bluewater Canyon and from the canals. Some recharge results from the penetration of precipitation into the aquifer in its outcrop area in the Zuni Mountains and through the alluvium and lava in the valley to the underlying limestone. A small amount of recharge is derived from the return of irrigation water applied on the land. Precipitation in 1951 at Bluewater was only about half of normal and considerably less than normal during the growing season from April to September. Very little surface water was stored in Bluewater Reservoir. Consequently, recharge to the ground water in the Grants-Bluewater area was considerably less than normal in 1951. As in 1950, no surface water was available for irrigation; 23 wells supplied all the water used for that purpose. On the basis of electric power records for 13 wells and estimates for the other 10 wells, about 11,900 acre-feet of ground water was pumped in 1951 to irrigate about 6,000 acres of land. This represents an increase of only 100 acre-feet from the amount of ground water pumped for irrigation of approximately the same acreage in the preceding year. Ground-water levels in the area declined during 1951 to record winter lows. The average net decline in water levels from February 1951 to February 1952 in the 14 wells measured yearly since 1946 was about 4.3 feet, as compared with an average net decline of 5.6 feet during the preceding year and a total average decline of 18 feet since records began in 1946. Precipitation was only about half of normal during both 1950 and 1951, the withdrawal from the aquifer was about equal in both years, and no surface water was used for irrigation in either year. The smaller decline in 1951 probably was owing in part to the greater than normal precipitation during the winter of 1951-1952 and in part to the normally decreasing rate of decline with time that occurs when ground water is pumped from storage. Near Bluewater, the measured changes in water levels from February 1951 to February 1952 ranged from a decline of about 6 feet to nearly 12.5 feet. Between Bluewater station and Grants the changes ranged from a rise of less than 0.1 foot to a decline of about 4 feet; the water levels in nearly all wells in that area declined more than 2.5 feet. The largest net decline for 1951 occurred in well 12.11.5.413 near the mouth of Bluewater Canyon where a decline of 12.5 feet was recorded. Other wells in that area also showed large net declines. The large declines in the area near Bluewater Canyon probably are largely the result of deficient recharge, as water levels in that area rise in years when surface water is released from Bluewater Reservoir. The water level in well 12.11.9.222 was about 137.5 feet during January, February, March, and part of April 1951. From April 20 to July 7 the water level in the well declined rather steadily to 157.11 feet. The lowest levels were recorded during the latter part of August. On August 25 the water level was 158.37 feet, about 30 feet below the lowest level in 1950. On December 31, 1951 the water level in the well had risen to 150.88 feet, about 13 feet below the level on that date in the preceding year and 42.67 feet below the February 1946 level which is the highest recorded level.

10.9.26.224. Robert Gottlieb. Drilled stock water-table well in basalt, diameter 6 inches, depth 100 feet. Land-surface datum is 6,274.97 feet above msl. Highest water level 8.14 below lsd, Sept. 2, 1947; lowest 8.96 below lsd, Feb. 10, 1949. Records available: 1946-51. Feb. 12, 8.72, pumped recently; Apr. 20, 8.74, pumping; June 19, 8.75; Aug. 16, 8.81; Oct. 31, 8.92, pumping.

10.10.10.200. Joe Padilla. Dug domestic water-table well in alluvium of Quaternary age, size 4 by 6 feet, depth 20 feet. Highest water level 9.83 below lsd, Feb. 3, 1947; lowest 14.70 below lsd, Oct. 30, 1951. Records available: 1946-51. Feb. 12, 12.05; Apr. 20, 11.11, pumped recently; June 22, 12.98; Aug. 16, 14.65; Oct. 30, 14.70; Dec. 24, 13.35.

11.10.4.111. Buford Yarbo. Formerly M. C. Read. Drilled unused water-table well in alluvium of Quaternary age, diameter 12 inches, depth 87 feet. Highest water level 67.68 below lsd, May 10, 1946; lowest 86.63 below lsd, Aug. 16, 1951. Records available: 1946-51. Feb. 12, 76.61; Apr. 19, 77.63, pumped recently; June 22, 84.12; Aug. 16, 86.63; Oct. 31, 83.30; Dec. 24, 80.86.

11.10.4.211. J. Church Co. Formerly J. C. Church. Drilled irrigation artesian well in San Andres formation, diameter 16 inches, depth 150 feet. Highest water level 57.97 below lsd, Feb. 26, 1946; lowest 82.23 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 12, 71.54; Apr. 18, 82.61, pumped recently; June 22, 86.12, pumping; Aug. 16, 86.18, pumping; Oct. 31, 82.23; Dec. 24, 76.87.

11.10.4.222. J. Church Co. Formerly E. E. Harden. Drilled domestic water-table well in alluvium of Quaternary age, diameter 6 inches, depth 94 feet. Highest water level 58.70 below lsd, May 10, 1946; lowest 70.03 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 12, 67.89; Apr. 18, 68.14; June 22, 68.98; Aug. 16, 69.29; Oct. 31, 70.03.

11.10.5.214. V. M. Vidal. Drilled domestic artesian well in San Andres(?) formation, diameter 4 inches, depth 141 feet. Highest water level 68.78 below lsd, Mar. 11, 1947; lowest 89.19 below lsd, June 27, 1950. Records available: 1946-51. Feb. 12, 76.60; Apr. 19, 79.88, pumped recently; June 22, 93.88, pumped recently; Aug. 15, 93.50, pumping; Oct. 31, 85.45.

11.10.8.222. Salvador Milan. Drilled irrigation artesian well in San Andres formation, diameter 16 inches, depth 165 feet. Highest water level 57.85 below lsd, Feb. 27, 1946; lowest 78.27 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 13, 70.43; Apr. 19, 75.09, pumping; June 22, 86.73, pumping; Aug. 15, 84.16, pumped recently; Oct. 31, 78.27.

11.10.9.222. A. R. Card. Drilled irrigation artesian well in San Andres formation, diameter 20 inches, depth 480 feet. Highest water level 54.49 below lsd, Feb. 26, 1946; lowest 74.05 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 12, 66.04; Apr. 18, 93.24, pumping; June 22, 99.65, pumping; Aug. 16, 100.05, pumping; Oct. 31, 74.05; Dec. 24, 70.70.

11.10.9.242. A. R. Card. Drilled domestic well in San Andres formation, diameter 7 inches, depth 125 feet. Highest water level 52.24 below lsd, Feb. 26, 1946; lowest 71.93 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 12, 64.42; Apr. 18, 67.25, nearby well being pumped; June 22, 78.02, nearby well being pumped; Aug. 16, 78.98, nearby well being pumped; Oct. 31, 71.93; Dec. 24, 69.00.

11.10.16.121. Frank Wilson. Drilled irrigation artesian well in San Andres formation, diameter 16 inches, depth 155 feet. Highest water level 46.47 below lsd, Feb. 27, 1946; lowest 65.60 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 13, 58.47; Apr. 19, 77.85, pumping; June 22, 85.32, pumping; Aug. 16, 87.77, pumping; Oct. 31, 65.60.

11.10.26.411. City of Grants. Drilled public-supply well in alluvium of Quaternary age, diameter 16 inches, depth 110 feet. Highest water level 7.40 below lsd, Mar. 11, 1947; lowest 13.85 below lsd, June 20, 1951. Records available: 1946-51. Feb. 12, 9.70; Apr. 19, 11.20, nearby well being pumped; June 20, 13.85; Aug. 16, 20.26, nearby well being pumped.

11.10.27.410. Cecil Moore. Drilled unused water-table well in alluvium and basalt of Quaternary age, diameter 9 inches, depth 50 feet. Highest water level 35.54 below lsd, Mar. 11, 1947; lowest 43.01 below lsd, Aug. 16, 1951. Records available: 1946-51. Feb. 12, 38.45; Apr. 19, 38.81; June 22, 41.54; Aug. 16, 43.01, Oct. 30, 41.82; Dec. 24, 40.76.

11.10.34.420. Formerly 11.10.34.400. Manuel Ortiz. Dug unused water-table well in alluvium of Quaternary age, size 36 by 36 inches, depth 16 feet. Highest water level 14.36 below lsd, Sept. 2, 1947; lowest 16.70 below lsd, Aug. 4, 1948. Records available: 1947-51. Feb. 12, 15.55; Apr. 19, 15.91. Measurement discontinued.

12.10.23.233. T. A. Morris and Son. Formerly Green and Wilcox. Drilled irrigation artesian well in San Andres formation, diameter 18 inches, depth 865 feet. Highest water level 115.59 below lsd, Feb. 26, 1946; lowest 144.27 below lsd, Aug. 16, 1951. Records available: 1946-51. Feb. 12, 126.83; Apr. 18, 129.83, pumped recently; June 22, 169.18, pumping; Aug. 16, 144.27. Measurement discontinued.

12.10.20.434. A. R. Card. Drilled unused artesian well in San Andres formation, diameter 18 inches, depth 205 feet. Highest water level 65.46 below lsd, Oct. 14, 1944; lowest 87.69 below lsd, Dec. 24, 1951. Records available: 1944, 1946-51. Feb. 15, 82.75; Apr. 18, 84.69; June 21, 98.25, nearby well being pumped; Aug. 15, 98.33, nearby well being pumped; Oct. 31, 98.30, nearby well being pumped; Dec. 24, 87.69.

12.10.30.242. E. E. Harden. Drilled domestic water-table well in alluvium of Quaternary age, diameter 4 inches. Highest water level 88.45 below lsd, May 10, 1946; lowest 106.42 below lsd, Aug. 15, 1951. Records available: 1946-51. Feb. 15, 98.16; Apr. 18, 99.24; June 20, 105.12; Aug. 15, 106.42.

12.10.30.412. Fred Freas. Drilled irrigation artesian well in San Andres formation, diameter 16 inches, depth 225 feet. Highest water level 90.04 below lsd, Feb. 26, 1946; lowest 108.41 below lsd, Dec. 24, 1951. Records available: 1946-51. Feb. 15, 103.34; Apr. 18, 108.07, pumping; June 20, 106.97, pumping; Aug. 15, 108.62, pumping; Oct. 31, 107.64; Dec. 24, 108.41.

12.10.30.421. Milton Harding. Drilled irrigation artesian well in San Andres formation, diameter 16 inches, depth 245 feet. Highest water level 88.38 below lsd, Feb. 26, 1946; lowest 110.70 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 15, 101.63; Apr. 18, 109.98, pumping; June 20, 118.08, pumping; Oct. 31, 110.70; Dec. 24, 106.95.

12.10.32.111. J. Church Co. Formerly J. C. Church. Drilled irrigation artesian well in San Andres formation, diameter 20 inches, depth 253 feet. Highest water level 82.09 below lsd, Feb. 26, 1946; lowest 111.41 below lsd, Aug. 15, 1951. Records available: 1946-51. Apr. 20, 101.11, pumping; June 21, 112.10, pumping; Aug. 15, 111.41; Oct. 31, 104.35.

12.11.5.413. J. Church Co. Drilled unused artesian well in San Andres(?) formation, diameter 8 inches, depth 357 feet. Highest water level 183.46 below lsd, Oct. 12, 1949; lowest 220.80 below lsd, Aug. 14, 1951. Records available: 1948-51. Feb. 15, 201.02; Apr. 17, 200.98; June 20, 215.39; Aug. 14, 220.80; Oct. 30, 218.60; Dec. 18, 215.91.

12.11.9.114a. J. Church Co. Drilled unused artesian well in San Andres(?) formation, diameter 16 inches, depth 523 feet. Highest water level 123.30 below lsd, Aug. 19, 1949; lowest 175.35 below lsd, Aug. 14, 1951. Records available: 1948-51. Feb. 15, 146.36; Apr. 17, 147.29; June 20, 157.32; Aug. 14, 175.35; Oct. 30, 161.88; Dec. 18, 158.96.

12.11.9.222. J. Church Co. Formerly J. C. Church. Drilled unused water-table well in San Andres(?) formation, diameter 18 inches, depth 500 feet. Highest water level 115.70 below lsd, Feb. 27, 1946; lowest 158.37 below lsd, Aug. 25, 1951. Records available: 1946-51.

Daily highest water level from recorder graph

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	137.39	137.46	137.35	137.60	140.48	.....	.....	.....	157.07	155.23	155.00	152.45
2	137.41	137.55	137.33	137.64	141.00	.....	.....	.....	156.72	155.32	155.06	152.36
3	137.43	137.51	137.41	137.62	141.37	.....	.....	.....	156.44	155.40	154.81	152.29
4	137.47	137.44	137.48	137.56	141.67	.....	h156.41	.....	156.30	155.40	154.55	152.24
5	137.45	137.36	137.40	137.58	141.99	.....	156.60	.....	155.93	155.32	154.48	152.15
6	137.49	137.42	137.48	137.60	141.83	.....	157.08	.....	155.72	155.17	154.33	152.20
7	137.70	137.49	137.51	137.62	141.83	.....	157.11	.....	155.05	155.19	154.17	152.18
8	137.53	137.45	137.52	137.61	142.13	.....	157.09	.....	154.65	155.56	154.06	152.14
9	137.49	137.48	137.44	137.62	142.49	.....	157.02	.....	154.71	155.65	153.99	152.15
10	137.52	137.42	137.47	137.62	142.72	.....	.....	.....	155.17	155.80	153.88	152.07
11	137.47	137.33	137.52	137.69	143.67	.....	.....	.....	155.20	155.81	153.79	151.95
12	137.47	137.28	137.60	137.70	144.33	.....	.....	.....	154.54	155.77	153.73	151.80
13	137.49	137.30	137.57	137.69	144.63	.....	.....	.....	154.36	155.69	153.68	151.66
14	137.56	137.42	137.58	137.66	144.75	.....	.....	157.17	154.43	155.80	153.54	151.69
15	137.62	137.42	137.54	137.67	145.69	.....	.....	157.13	154.40	155.71	153.53	151.72
16	137.52	137.42	137.44	137.69	145.97	.....	.....	157.05	154.43	155.67	153.52	151.58
17	137.52	137.40	137.44	137.68	146.13	.....	.....	157.00	154.91	155.53	153.43	151.55
18	137.52	137.38	137.58	137.69	146.97	.....	.....	157.05	155.04	155.41	153.31	151.44
19	137.45	137.34	137.61	137.78	147.35	h152.97	.....	157.39	155.37	155.23	153.21	151.30
20	137.51	137.50	137.62	137.74	147.90	152.82	.....	.....	155.64	155.02	153.09	151.29
21	137.56	137.41	137.61	138.22	148.13	152.78	.....	.....	155.62	154.95	153.00	151.44
22	137.49	137.38	137.57	138.85	148.12	.....	.....	h158.20	155.45	154.87	152.95	151.36
23	137.51	137.40	137.62	139.18	.....	.....	.....	.....	155.48	154.76	152.91	151.31
24	137.54	137.43	137.62	139.44	.....	152.77	.....	.....	155.74	154.65	152.89	151.24
25	137.53	137.40	137.60	139.72	.....	152.80	.....	h158.37	155.95	154.57	152.88	151.24
26	137.43	137.41	137.52	140.03	.....	153.45	.....	157.84	156.00	154.48	152.81	151.27
27	137.40	137.38	137.46	140.44	.....	154.08	.....	157.81	155.31	154.39	152.71	151.18
28	137.40	137.41	137.50	140.68	.....	154.60	.....	158.19	154.88	154.28	152.66	151.09
29	137.40		137.60	140.23	.....	155.05	.....	157.85	154.78	154.23	152.61	151.03
30	137.34		137.55	140.22	.....	155.48	.....	157.57	154.78	154.52	152.54	150.92
31	137.34		137.55		.....		.....	157.41		154.83		150.88

h Tape measurement.

12.11.9.424. George Rowley. Drilled unused artesian well in San Andres formation, diameter 16 inches, depth 505 feet. Highest water level 93.75 below lsd, May 10, 1946; lowest 114.36 below lsd, Oct. 30, 1951. Records available: 1946-51. Feb. 15, 106.39; Apr. 17, 106.69; June 20, 110.65; Aug. 14, 113.51; Oct. 30, 114.36; Dec. 24, 114.19.

12.11.14.213. Dyan Berryhill. Drilled unused water-table well in alluvium of Quaternary age and Bluewater basalt, diameter 4 inches, depth 115 feet. Highest water level 98.26 below lsd, Feb. 8, 1950; lowest 100.69 below lsd, Oct. 25, 1951. Records available: 1949-51. Feb. 15, 99.82; Apr. 18, 100.02; June 19, 100.26; Aug. 14, 100.51; Oct. 25, 100.69.

12.11.15.341. Edward Freas. Drilled irrigation artesian well in San Andres formation, diameter 14 inches, depth 300 feet. Highest water level 99.78 below lsd, Oct. 12, 1949; lowest 133.14 below lsd, Oct. 31, 1951. Records available: 1946-51. Feb. 15, 115.49; Apr. 17, 115.74; June 20, 133.72, pumped recently; Aug. 15, 136.15, pumped recently; Oct. 31, 133.14; Dec. 24, 128.68.