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UNITED STATES DEPARTMENT OF THE INTERIOR

WATER LEVELS AND ARTESIAN PRESSURE  
IN OBSERVATION WELLS IN THE  
UNITED STATES IN 1943

PART 6. SOUTHWESTERN STATES AND  
TERRITORY OF HAWAII

Prepared in cooperation with the States of  
ARIZONA, CALIFORNIA, and NEW MEXICO, the Territory of HAWAII  
and other agencies

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 991

PLANNING FILES  
HYDROLOGY

**UNITED STATES DEPARTMENT OF THE INTERIOR**  
**Harold L. Ickes, Secretary**  
**GEOLOGICAL SURVEY**  
**W. E. Wrather, Director**

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**Water-Supply Paper 991**

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**WATER LEVELS AND ARTESIAN PRESSURE  
IN OBSERVATION WELLS IN THE  
UNITED STATES IN 1943**

**PART 6. SOUTHWESTERN STATES AND  
TERRITORY OF HAWAII**

**BY**

**O. E. MEINZER, L. K. WENZEL  
and others**

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**Prepared in cooperation with the States of  
ARIZONA, CALIFORNIA, and NEW MEXICO  
the TERRITORY OF HAWAII  
and other agencies**



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WATER LEVELS AND ARTESIAN PRESSURE IN OBSERVATION WELLS  
IN THE UNITED STATES IN 1943

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Part 6. SOUTHWESTERN STATES

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INTRODUCTION

By O. E. Meinzer and L. K. Wenzel

Significance of records of water level and artesian pressure

The rock formations of the earth are great natural underground reservoirs in which a part of the water derived from rain and snow is stored to supply wells and springs and to maintain the flow of streams during periods of fair weather. Water levels in wells register the stages of these natural reservoirs; they show the extent to which water supplies are depleted by drought or by heavy pumping, whether for public waterworks, irrigation, or industrial uses, and the extent to which they are replenished in seasons of abundant rainfall or melting snow. The changes in pressure recorded on flowing wells indicate depletion or replenishment of the artesian reservoirs.

Annual publication of records by Geological Survey

The regular publication of records of water level and artesian pressure in the United States was begun by the Geological Survey in 1935 and has continued yearly since. The records for the entire country were published in a single volume each year through 1939. Beginning with 1940 the 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. (See fig. 1.) The following table gives the numbers of these reports. This series of water-supply papers is in a sense an inventory, year by year, of the ground-water supplies of such parts of the country as have been covered.

## Water-supply papers on water levels and artesian pressure in observation wells in the United States

Year	North-eastern States	South-eastern States	North-central States	South-central States	North-western States	South-western States and Hawaii
1935	777	777	777	777	777	777
1936	817	817	817	817	817	817
1937	840	840	840	840	840	840
1938	845	845	845	845	845	845
1939	886	886	886	886	886	886
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

## Scope of present volume

The present volume covers the southwestern States and gives records of water level and artesian pressure in about 1,793 observation wells of the Geological Survey and cooperating agencies in Arizona, California, Hawaii, and New Mexico. Of these wells, 72 are equipped with automatic water-stage recorders. For some wells not previously reported complete records of water level are given in this volume, including those for the years before 1943. For wells whose previous records have been published this volume gives only the current records. If a complete description of a well has been published in a previous report, only the well number or the well number and a brief identifying description are given in this report. The numbers in parentheses immediately following a well number are those of the water-supply papers in which earlier records of that well are given and the pages on which they appear. An asterisk indicates that a description of the well is given in the paper whose number is so marked. This report includes about 12,280 individual determinations of water level and artesian pressure.

## Land-surface datum

Hitherto, in Geological Survey reports, the water levels and artesian heads for some wells have been given in feet above or below the measuring points and for other wells in feet above or below sea level or above or below various assumed datum planes. It was considered inadvisable to adopt a standard procedure in expressing water levels and artesian heads until after a period of trial with datum planes of different kinds. The time has now come, however, for the adoption of a uniform practice as to datum in making the records to be published in the annual water-level reports. It

has become evident that the water levels in each well should be expressed with reference to a permanent datum plane established for that well in order to preserve the continuity of the record if the measuring point is changed. The chief objection to the use of datum planes other than the land surface has been that the significance of the water level with respect to the land

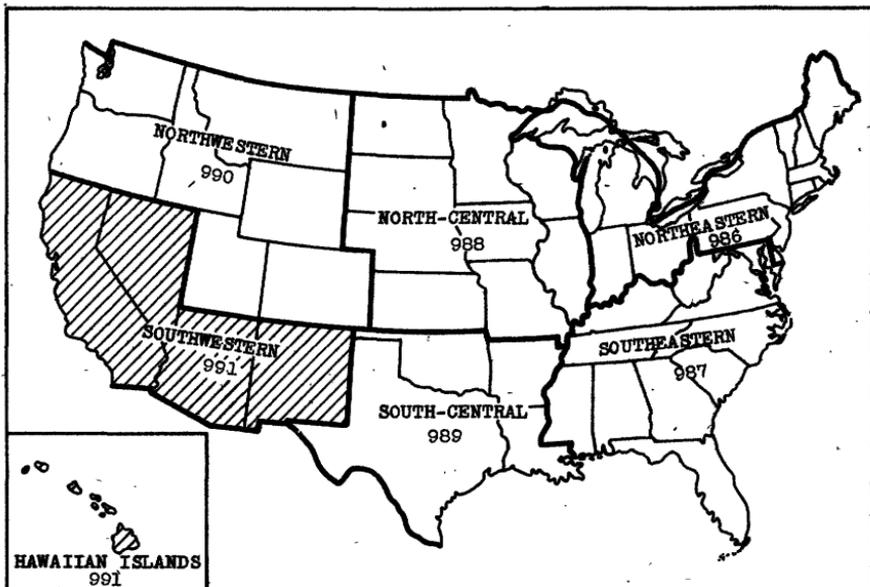


Figure 1.--Outline map of the United States, showing sections of the country covered by the six water-supply papers on water levels and artesian pressure in observation wells in 1943. The shaded section represents the part of the country covered by this volume.

surface is thereby concealed. It appears, however, that this objection can be overcome by using a precise datum plane that approximates the land surface.

The adoption of land-surface datum planes as the standard to be used in expressing water levels and artesian heads will not prevent the use of other datum planes for the summary tables and for maps and graphs in the annual water-level reports or in other reports. The use of the sea-level datum and the 10-foot datum planes are to be encouraged for purposes of study and interpretation, but the land-surface datum planes will be used exclusively for publishing original records. Bench marks must be established, as heretofore, near each observation well to prevent the loss of the precise record if the

measuring point or the well itself is destroyed. New data as to the position of the measuring point and of the bench marks, in feet above or below land-surface datum plane, will be published in the appropriate annual reports.

In accordance with the above, the water levels and artesian heads for all wells listed in this report are given in reference to land-surface datum planes. If the water levels or artesian heads are referred to land-surface datum for the first time, a conversion factor is given in the descriptive matter preceding them in order to facilitate comparison of the older and newer records. Wherever the conversion factor is given in the report for 1942, it is not repeated in this report.

#### Network of key observation wells

During 1942 the Geological Survey established a network of key observation wells in order to make available current information on general ground-water conditions over the country. These wells were selected because the fluctuations of water level in them are believed to be typical, and they represent the general fluctuations that occur in the parts of the country in which the wells are situated. At the end of 1942 the network included about 130 wells in 40 States. About 40 of the wells were established expressly for the network in 1942; the other 90 were selected from wells measured regularly in connection with cooperative ground-water investigations. The coverage of the country is still far from adequate, and it is expected that some wells not now included will be added to the network from time to time.

#### General summary of changes in ground-water level in 1943 in the southwestern part of the United States

In 1943 the precipitation in Arizona, California, and New Mexico was above normal, but in Hawaii it was below normal. The fluctuations of both water level and artesian pressure in wells depend, however, on many factors besides the amount of precipitation. In certain of the observation wells there are fluctuations caused by differences in the rate of pumping or artesian flow from other wells in the area, but most of the observation wells are not noticeably affected by pumping or artesian flow. The general trends of the water levels and artesian pressure in Arizona, California, and New Mexico in 1943 are discussed under these States, and the trends in Hawaii are discussed in the text on that Territory.

## Acknowledgments

Acknowledgments for effective services in the preparation of this water-supply paper are due Miss Dorothy M. Ireland, Mrs. Susan H. Washburn, and Mrs. Bertha K. Dale. Miss Ireland had general charge of the assembling of the several reports and did all of the offset typing; Mrs. Washburn edited all of the reports; and Mrs. Dale prepared the illustrations.

## ARIZONA

### PROGRAM OF WORK

By S. F. Turner

The investigation of ground-water resources in Arizona, which was begun in 1939 and of which a program of water-level measurements in observation wells forms an essential part, was continued in 1943 by the Geological Survey, United States Department of the Interior, in cooperation with the State Land Commissioner of Arizona. In Safford Valley, until July 1, the Office of Indian Affairs, United States Department of the Interior, also cooperated. In this investigation the Geological Survey has concentrated its efforts on making an inventory of the greatly increased pumpage in the State due to war activities and on determining the effect of this pumpage on the ground-water levels in the following areas: The Santa Cruz River Basin in Pinal, Pima, and Santa Cruz Counties; the Gila River Valley in Pinal, Graham, and Greenlee Counties; and the Queen Creek area in Maricopa and Pinal Counties. Making the pumping inventory involves two preliminary steps: First, the discharge of each well is measured as often as possible, and second, the relation of the discharge to the power input is determined. With these two factors, the total pumpage from the well can be computed. If the power is generated from electricity or natural gas, it will be metered and the input thereby ascertained. If no record of the power input is available, however, the operator of the pump is asked to keep a record of the length of time, in hours, that the pump is in operation, and this record is used to estimate the power input. For the few wells for which no record either of power input or pump operation can be obtained, the pumpage is estimated on the basis of the acreage irrigated and the amounts of water used to irrigate similar crops on neighboring farms.

The amount of water pumped for irrigation, municipal supplies, and other uses was greater in 1943 than in 1942. The percentage of increase in each of the areas studied is as follows:

	<u>Percent</u>
Graham County (Safford Valley) . . . . .	80
Greenlee County (Duncan Valley). . . . .	450
Maricopa County (Queen Creek area) . . . . .	11
Pima County (Santa Cruz Basin) . . . . .	16
Pinal County (Santa Cruz Basin). . . . .	3
Santa Cruz County . . . . .	7

Contributing factors to the increased pumpage were below-normal precipitation during 1942 and 1943, increased crop production to meet wartime demands, and a decrease in the cost of power in certain areas, which encouraged the planting of winter vegetables.

Attention should be called to the fact that most of the areas that are depending solely on ground-water supplies for their irrigation needs are rapidly depleting these supplies by overpumping. On the other hand, areas using both surface and ground water for irrigation are not depleting their ground-water supplies, because part of the surface water applied to the land is recharged to the ground-water reservoirs, thus partially counteracting the effect of pumping.

The Geological Survey continued in 1943, as in 1942, to cooperate with the United States Engineer Office, War Department, on the problem of water supplies for army camps and airfields. In addition, several special investigations were made by the Survey during the year that resulted in increased water supplies for mines and industries serving the war effort.

In March the Geological Survey, at the request of the Defense Plant Corporation, United States Department of Commerce, and its agent, the Phelps-Dodge Corporation, began a project designed to determine the amount of water consumed by river-bottom plants in the Gila River Valley in Graham County. As a part of this project, the water levels in many of the observation wells already established in Safford Valley were measured more frequently than in earlier years. All measurements made during the year in these previously established wells appear in this report.

A preliminary report on an investigation, begun in 1939 in cooperation with the State Water Commissioner of Arizona and the United States Engineer Office, War Department, of ground-water conditions in the Santa Cruz Basin was issued in May 1943.<sup>1/</sup> This report covers the results of the investigation in parts of Pima, Pinal, and Santa Cruz Counties.

<sup>1/</sup> Turner, S. F., and others, Ground-water resources of the Santa Cruz Basin, Ariz.: U. S. Geol. Survey, 84 pp., 1943. (Mimeographed.)

For information used in preparing this report the Geological Survey is indebted to the owners of many of the wells in the Santa Cruz Basin and to the following agencies: Office of Indian Affairs of the United States Department of the Interior, Salt River Valley Water Users Association, Roosevelt Water Conservation District, Arizona Edison Electric Co., Tucson Gas & Electric Co., and Citizens Utilities Co. of Nogales.

Measurements of water level in Arizona in 1943 reached a total of 3,286, distributed among 335 observation wells.

#### GRAHAM COUNTY (SAFFORD VALLEY)

By R. L. Cushman

Ground-water investigations in Safford Valley during 1943 by the Federal Geological Survey were carried on under two distinct programs, namely, the State cooperative program and a program undertaken at the request of the Defense Plant Corporation of the United States Department of Commerce. Both these programs are discussed briefly under "Program of work," on pages 6-8 of this report.

##### State cooperative program

The State cooperative program, which is continued from year to year, consisted in 1943 of the making of water-level measurements, the collection of information to be used in making an inventory of the pumpage in the valley, and the operation of the experiment station located just north of Safford. Under this program 2,877 water-level measurements were made during the year in 184 wells, 3 of which are equipped with water-stage recorders.

##### Defense Plant Corporation program

The program undertaken for the Defense Plant Corporation was begun in March 1943 for the purpose of determining the amount of water that might be saved by the elimination of the phreatophytes that grow in profusion on the flood plain of the Gila River. In order to study the consumptive use of water by phreatophytes, a process technically known as evapotranspiration, a specially equipped experiment station was established near Glenbar. Here a standard "class A" weather station and 29 sunken tanks filled with soil were installed. In 12 of the tanks the soil was left unplanted, so

that the rate and effect of evaporation from bare soil surfaces could be studied; in the remaining 17 tanks the soil was planted with the phreato-phytes common to the Safford Valley--salt cedar or tamarisk, baccharis, and cottonwood--in order to determine the variations and amounts of water involved in evapotranspiration when water levels are maintained at depths of 2, 4, 6, and 8 feet below the ground level.

Also, under this program, studies were made of water levels in the Gila Valley lowland between Thatcher and the eastern boundary of the San Carlos Indian Reservation. In this area 1,331 observation wells were put down especially for this project and 27,336 periodic water-level measurements, ranging from weekly to monthly, were made. As these new wells do not come under the continuing State cooperative program, the measurements made in them are not included in this report. Included, however, are the many additional measurements made for the Defense Plant project in the wells already established under the continuing program.

#### Fluctuations of water level

An average of the 2,877 water-level measurements made under the State cooperative program shows a 0.9 foot decline in ground-water level in the Safford Valley during 1943. Several factors contributed to this decline: River flow decreased 26 percent during the year; ground-water pumpage increased almost 50 percent (35,000 acre-feet as compared with 18,900 acre-feet in 1942); and there was too little rainfall--less than 9 inches--to produce recharge; neither was there delayed recharge from the winter of 1942, when, as in 1943, the precipitation was decidedly below normal.

Figure 2 consists of graphs showing the fluctuations of water level in several typical observation wells in the Safford Valley during the period 1939-43, the total pumpage by months, and the monthly precipitation at Safford. These graphs show an early seasonal decline in the average ground-water level, which is attributed to seepage of water from the ground-water reservoir into the river because of low flow and to heavy withdrawals beginning in the latter part of March, when many irrigation wells were put in operation.

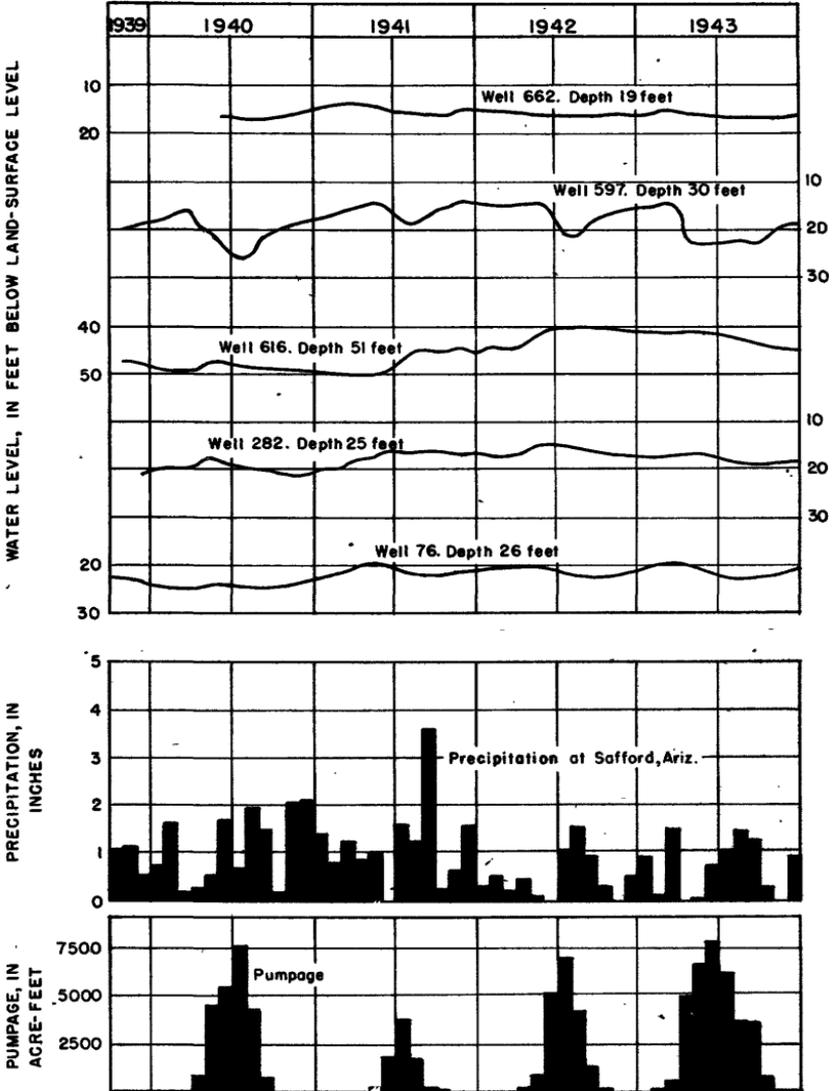


Figure 2.--Graphs showing fluctuations of water level in observation wells in the Safford Valley, Graham County, Ariz.

The water level in well 662, situated in the upper or eastern section of the valley and not affected by nearby pumping, fluctuated very little. A slight downward trend occurred between the first of May and the first of August as a result of transpiration by nearby mesquite and seepage of ground water to the river.

The graph of well 597, which is 2 miles west of Solomonville, illustrates the fluctuations in a heavily pumped area near a canal. The effect of a long period of pumping during the summer months may be plainly seen.

Well 616, south of Safford and near a canal, is away from the immediate effects of pumping. The graph of this well is interesting because it clearly shows the effect of the delayed recharge from the heavy rains that fell in the winter of 1940-41 and in September 1941. The water level started to rise in June 1941, which was 6 months after the very wet months of November and December 1940. It rose steadily for 2 months and then leveled off. But 6 months after the heavy rains of September 1941 it began to rise again, peaked in August 1942, and then declined steadily. This delayed recharge to the ground-water reservoir in the Gila River gravels was caused by flow from the nearby mountain streams recharging the alluvium at the base of the mountains and thence being slowly transmitted to the river gravels.

The graph of well 282, situated near a canal west of Pima, shows fluctuations in a well affected by canal and irrigation recharge without the immediate counter effect of nearby pumping.

The graph of well 76, at the western end of the cultivated part of the valley, also shows fluctuations in an area at a distance from pumped wells. Transpiration by a heavy growth of mesquite nearby caused these fluctuations, which were indicated by the chart of the water-stage recorder with which the well is equipped.

#### Water-level measurements

1 (\*911, p. 11; 941, p. 9; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

2 (\*911, p. 11; 941, p. 9; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

3 (\*911, p. 11; 941, p. 9; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

4 (\*911, p. 11; 941, p. 9; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

a Well now covered by waters of San Carlos Reservoir.

5 (\*911, p. 12; 941, p. 9; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 13, 1940. Measurements discontinued. a/

6 (\*911, p. 12; 941, p. 11; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

7 (\*911, p. 12; 941, p. 11; 949, p. 11). U. S. Indian Service. No measurements made since Dec. 20, 1940. Measurements discontinued. a/

8 (\*911, p. 13; \*941, p. 11; 949, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 840 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 1.1 feet above land-surface datum and 2,529.90 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	7.05	May 18	7.80	July 27	8.72	Oct. 21	8.16
Apr. 6	7.00	June 2	8.04	Aug. 31	8.23	Nov. 23	7.90
May 3	7.50	July 6	8.42	Sept. 20	8.47	Dec. 22	7.69

9 (\*911, p. 13; \*941, p. 11; 949, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 400 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 1.1 feet above land-surface datum and 2,529.10 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.92	May 18	6.77	July 26	7.70	Nov. 23	6.78
Apr. 6	6.03	June 2	7.03	Sept. 20	7.36	Dec. 22	6.57
May 3	6.52	July 6	7.38	Oct. 21	7.11		

10 (\*911, p. 13; 941, p. 11; 949, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 250 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 1.6 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.52	May 3	5.77	June 2	6.34
Apr. 6	5.20	18	6.06	July 6	6.70

11 (\*911, p. 14; \*941, p. 11; 949, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 160 feet south of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 1.2 feet below land-surface datum and 2,528.34 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.47	May 18	5.39	July 27	6.30	Nov. 23	5.34
Apr. 6	4.76	June 2	5.62	Sept. 20	5.94	Dec. 22	5.13
May 3	5.15	July 6	5.88	Oct. 21	5.68		

12 (\*911, p. 14; \*941, p. 11; 949, p. 11). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 155 feet north of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 0.7 foot above land-surface datum and 2,527.99 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.74	May 18	5.60	July 27	6.25	Nov. 23	5.65
Apr. 6	5.20	June 2	5.81	Sept. 20	6.11	Dec. 22	5.44
May 3	5.40	July 6	6.04	Oct. 21	6.03		

a Well now covered by waters of San Carlos Reservoir.

13 (#911, p. 14; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 665 feet north of Gila River, 0.4 mile east from mouth of Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 2.5 feet above land-surface datum and 2,534.27 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.31	May 18	10.24	July 27	10.99	Nov. 23	10.14
Apr. 6	9.46	June 2	10.48	Sept. 20	10.75	Dec. 22	9.82
May 3	9.90	July 6	10.71	Oct. 21	10.62		

14 (#911, p. 14; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Calva, 1,065 feet north of Gila River, 0.4 mile east from Wild Horse Canyon, 0.6 mile east from railroad bridge. Measuring point is 1.4 feet above land-surface datum and 2,533.92 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.71	May 18	10.67	July 27	11.54	Nov. 23	10.71
Apr. 6	9.81	June 2	10.84	Sept. 20	11.38	Dec. 22	10.48
May 3	10.39	July 6	11.16	Oct. 21	11.29		

16 (#911, p. 15; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 640 feet north of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 2.0 feet above land-surface datum and 2,603.36 feet above mean sea level. Measurements discontinued July 29, 1942.

17 (#911, p. 15; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 220 feet north of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 1.8 feet above land-surface datum and 2,597.47 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.80	May 18	6.97	July 27	7.18	Nov. 23	6.64
Apr. 6	6.40	June 2	7.27	Sept. 20	7.20	Dec. 22	6.46
May 3	6.78	July 6	7.42	Oct. 21	7.16		

18 (#911, p. 15; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 210 feet south of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 1.2 feet above land-surface datum and 2,598.27 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	6.98	May 18	7.99	July 27	8.13	Nov. 23	7.73
Apr. 6	7.50	June 2	8.13	Sept. 20	8.25	Dec. 22	7.50
May 3	7.84	July 6	8.29	Oct. 21	8.00		

19 (#911, p. 15; #941, p. 12; 949, p. 12). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 485 feet south of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 0.8 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	(a)	May 3	7.59	June 2	7.77
Apr. 6	7.10	18	7.49	July 6	7.97

20 (#911, p. 16; #941, p. 13; 949, p. 13). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 690 feet south of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 1.4 feet above land-surface datum and 2,599.00 feet above mean sea level.

a Well was deepened after going dry at 7.5 feet.

## 20. U. S. Indian Service--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	7.45	May 18	8.46	July 27	8.86	Nov. 23	8.22
Apr. 6	7.86	June 2	8.60	Sept. 20	8.75	Dec. 22	8.05
May 3	8.27	July 6	8.82	Oct. 21	8.51		

21 (#911, p. 16; #941, p. 13; 949, p. 13). U. S. Indian Service. On San Carlos Indian Reservation, at Bylas, 1,150 feet south of Gila River, 300 feet east of Indian rodeo grounds. Measuring point is 1.8 feet above land-surface datum and 2,601.86 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.82	May 18	10.82	July 27	11.20	Nov. 23	10.65
Apr. 6	10.16	June 2	10.95	Sept. 20	11.12	Dec. 22	10.46
May 3	10.59	July 6	11.14	Oct. 21	10.90		

51 (#911, p. 16; 941, p. 13; 949, p. 13). Bert Hinton. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 4 S., R. 22 E. (Published erroneously in previous water-supply papers as SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 13.) Measuring point is 0.5 foot above land-surface datum, which is 2,640.95 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	18.07	May 20	18.80	Aug. 10	19.30	Nov. 9	18.89
Feb. 11	17.78	June 2	18.96	31	19.25	23	18.58
Mar. 8	17.76	16	19.30	Sept. 17	19.55	Dec. 6	18.46
Apr. 6	17.97	July 6	19.47	Oct. 5	19.20	22	18.39
May 3	18.50	27	(a)	21	19.15		

52 (#911, p. 17; 941, p. 13; 949, p. 13). Bert Hinton. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 4 S., R. 22 E. (Published erroneously in Water-Supply Paper 949 as SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 13.) Measuring point is 1.2 feet above land-surface datum, which is 2,639.92 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	16.67	May 20	(a)	Aug. 10	20.43	Nov. 9	17.60
Feb. 11	(a)	June 2	18.89	31	18.55	23	17.32
Mar. 8	16.45	16	19.22	Sept. 17	18.18	Dec. 6	17.12
Apr. 6	16.41	July 6	19.30	Oct. 5	17.94	22	16.96
May 3	16.80	27	b 20.50	21	17.88		

54 (#911, p. 17; 941, p. 13; 949, p. 13). Mrs. R. S. Knowles. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 4 S., R. 22 E. (published erroneously in Water-Supply Paper 949 as SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 13). Measuring point is 2.0 feet above land-surface datum, which is 2,715.45 feet above mean sea level. Measurements discontinued after July 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	38.75	Apr. 6	37.66	June 2	38.25	July 6	39.18
Feb. 11	38.35	May 3	37.41	16	38.67	27	40.40
Mar. 8	37.94	20	38.09				

56 (#911, p. 17; 941, p. 13; 949, p. 13). Eliza Allen. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 24, T. 4 S., R. 22 E. (published erroneously in Water-Supply Paper 949 as NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 24). Measuring point at land-surface datum and 2,735.75 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	41.98	May 20	39.79	Aug. 10	37.50	Nov. 9	39.73
Feb. 11	41.49	June 2	40.00	31	c 32.42	23	40.23
Mar. 8	40.95	16	37.78	Sept. 17	36.78	Dec. 6	40.70
Apr. 6	40.60	July 6	38.70	Oct. 5	37.71	22	41.15
May 3	40.28	27	36.92	31	38.70		

a Pumping.

b Well 51 pumping.

c Surface water ran into well from a rain 12 hours previous.

60 (#941, p. 13; 949, p. 13). Pat Hinton. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T. 4 S., R. 22 E. Measuring point is 2.0 feet above land-surface datum, which is 2,859.54 feet above mean sea level. Water levels, in feet below land-surface datum, 1943; Jan. 13, 17.65; Feb. 11, 17.08; July 6, 20.00.

71 (#911, p. 18; #941, p. 14; 949, p. 13). Ed McEuen. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 7, T. 4 S., R. 23 E. Measuring point is 1.5 feet above land-surface datum, which is 2,644.29 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	17.08	June 2	17.98	Aug. 31	17.55	Nov. 9	18.27
Jan. 26	17.17	16	18.06	Sept. 20	18.54	23	18.07
May 3	17.59	July 6	18.04	Oct. 21	18.48	Dec. 22	17.89
18	17.80	26	17.99				

72 (#911, p. 18; #941, p. 14; 949, p. 13). Ed McEuen. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 7, T. 4 S., R. 23 E. Measuring point is 1.1 feet above land-surface datum, which is 2,633.14 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	3.47	June 16	4.69	July 28	4.93	Nov. 2	4.70
Apr. 6	3.95	19	4.67	Aug. 10	4.48	9	4.28
May 3	4.30	26	4.72	20	4.20	23	4.42
18	4.44	July 3	4.27	31	4.30	24	4.43
24	4.50	6	4.68	Sept. 2	4.52	Dec. 11	4.16
June 2	4.58	12	4.82	20	5.02	22	3.98
3	4.59	19	4.86	Oct. 5	4.35	27	4.09
12	4.60	26	4.50	21	4.86		

73 (#911, p. 18; #941, p. 14; 949, p. 13). Graham County. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 7, T. 4 S., R. 23 E. Measuring point is 1.0 foot above land-surface datum, which is 2,640.02 feet above mean sea level. Well destroyed; measurements discontinued after July 29, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.51	May 19	10.58	June 16	10.97	July 12	11.20
Feb. 24	9.80	24	10.75	19	11.03	19	11.16
Apr. 6	9.85	June 2	10.85	28	11.08	26	11.23
May 3	10.37	3	10.90	July 3	11.74	29	11.20
18	10.61	14	10.93	6	11.01		

74 (#911, p. 19; 941, p. 14; 949, p. 14). Graham County. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 7, T. 4 S., R. 23 E. Measuring point is 1.8 feet above land-surface datum, which is 2,635.41 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.80	Apr. 6	5.07	May 18	5.90	June 16	6.44
Feb. 24	5.03	May 3	5.85	June 2	6.30	July 6	6.40

75 (#911, p. 19; 941, p. 14; 949, p. 14). Graham County. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 4 S., R. 23 E. Measuring point is 1.8 feet above land-surface datum, which is 2,633.13 feet above mean sea level. Well destroyed; measurements discontinued after July 26, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	2.25	May 18	3.68	June 3	4.00	June 28	4.28
Feb. 24	2.51	19	3.64	12	4.07	July 3	3.96
Apr. 6	2.55	24	3.83	16	4.12	6	4.18
May 3	3.44	June 2	3.64	19	4.16	26	4.42

76 (#911, p. 19; 941, p. 15; #949, p. 14). E. W. Black. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 4 S., R. 23 E. (published erroneously in previous water-supply papers as NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18). Measuring point is 3.1 feet above land-surface datum, which is 2,660.05 feet above mean sea level. Water-level recorder installed Oct. 13.

76.--Continued.

Daily noon water level, in feet below land-surface datum, 1943  
(From recorder charts beginning Oct. 13)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	a 20.16	Oct. 22	22.56	Nov. 14	21.95	Dec. 10	19.80
Feb. 24	a 19.95	23	22.55	15	21.94	11	19.64
Mar. 27	a 19.68	24	22.54	16	21.91	12	19.60
Apr. 26	a 20.21	25	22.54	17	21.84	13	19.70
May 18	a 21.14	26	22.53	18	21.75	14	19.80
26	a 21.51	27	22.52	19	21.66	15	19.88
June 2	a 21.81	28	22.51	20	21.58	16	19.97
16	a 22.10	29	22.51	21	21.51	17	20.05
28	a 22.50	30	22.50	22	21.37	18	20.11
July 26	a 23.06	31	22.48	23	21.21	19	20.16
Aug. 28	a 22.96	Nov. 1	22.46	24	21.17	20	20.24
Sept. 20	a 23.25	2	22.43	25	21.10	21	20.30
27	a 22.84	3	22.40	26	20.99	22	20.37
Oct. 6	a 22.67	4	22.36	27	20.94	23	20.43
13	22.62	5	22.34	28	20.88	24	20.48
14	22.62	6	22.31	29	20.85	25	20.51
15	22.61	7	22.27	30	20.81	26	20.54
16	22.62	8	22.22	Dec. 1	20.80	27	20.61
17	22.62	9	22.16	2	20.82	28	20.63
18	22.02	10	22.10	3	20.88	29	20.65
19	22.61	11	22.04	4	20.89	30	20.69
20	22.59	12	21.00	5	20.92	31	20.69
21	22.57	13	21.97	9	20.23		

77 (\*911, p. 20; 941, p. 15; 949, p. 14). E. M. Claridge. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 4 S., R. 23 E. Measuring point is 0.9 foot above land-surface datum and 2,695.50 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,696.03 feet above mean sea level).

Water level, in feet below land-surface datum, 1943							
Jan. 13	33.63	May 20	(b)	Aug. 31	35.10	Nov. 9	35.70
Feb. 11	33.00	June 2	32.89	Sept. 20	35.51	23	35.33
Mar. 8	32.55	16	33.22	Oct. 6	(b)	Dec. 6	34.98
May 3	32.02	July 6	34.30	22	35.94	22	34.56

79 (\*911, p. 20; 941, p. 15; 949, p. 14). Fay Rabb. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 18, T. 4 S., R. 23 E. Measuring point is 0.2 foot above land-surface datum. Measurements discontinued after Dec. 31, 1942.

80 (\*911, p. 20; 941, p. 15; 949, p. 14). Fay Rabb. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 17, T. 4 S., R. 23 E. Measuring point is 0.5 foot above land-surface datum, which is 2,656.39 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Jan. 13	15.22	May 20	16.40	Aug. 10	16.51	Nov. 9	15.73
Feb. 11	15.04	June 2	16.56	31	15.98	23	15.40
Mar. 8	14.62	16	17.78	Sept. 17	16.54	Dec. 6	15.22
Apr. 6	15.25	July 6	17.91	Oct. 6	16.06	22	15.25
May 3	(b)	27	(b)	21	16.27		

81 (\*911, p. 20; 941, p. 15; 949, p. 14). Mrs. J. B. Blessing. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 4 S., R. 23 E. Measuring point is 0.3 foot above land-surface datum, which is 2,691.85 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Jan. 13	26.98	May 20	27.51	Aug. 10	28.50	Sept. 23	28.21
Feb. 11	26.46	June 2	27.56	31	28.79	30	c 30.09
Mar. 8	26.20	16	28.16	Sept. 9	28.55	Oct. 6	(b)
Apr. 6	26.34	July 6	28.00	16	28.79	7	28.81
May 3	26.90	27	(b)	17	28.50	14	28.63

a Tape measurements at odd hours.

b Pumping.

c Well 78, nearby, pumping.

## 81. Mrs. J. B. Blessing--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 20	28.56	Nov. 9	28.10	Nov. 24	27.47	Dec. 21	26.96
21	28.58	11	27.97	Dec. 6	27.21	22	26.95
27	28.43	17	27.75	8	27.13	29	26.87
Nov. 5	28.23	23	27.56	16	27.00		

88 (#911, p. 20; 941, p. 15; 949, p. 14). W. F. Bolinger. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 4 S., R. 23 E. Measuring point is 1.2 feet above land-surface datum. Measurements discontinued after Oct. 27, 1942.

90 (#911, p. 21; 941, p. 15; 949, p. 14). Church of Latter Day Saints NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 4 S., R. 23 E. Measuring point, top of casing, 0.4 foot above land-surface datum, which is 2,677.95 feet above mean sea level. Measurements discontinued after June 2, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	22.83	Mar. 8	22.74	May 3	23.21	June 2	23.74
Feb. 11	22.88	Apr. 6	22.78	20	23.72		

91 (#911, p. 21; 941, p. 15; 949, p. 14). Ben Montierth. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 4 S., R. 23 E. (published erroneously in Water-Supply Paper 949 as NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 29). Measuring point is 0.1 foot below land-surface datum, which is 2,705.66 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	48.94	May 20	49.60	Aug. 31	50.31	Nov. 9	49.62
Feb. 11	47.56	June 2	49.46	Sept. 17	50.28	23	49.50
Mar. 8	48.48	16	(a)	Oct. 6	49.93	Dec. 6	49.44
Apr. 6	48.93	July 6	(a)	21	49.78	22	49.37
May 3	(a)	27	(a)				

92 (#911, p. 21; 941, p. 15; 949, p. 14). Wendell Montierth. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 28, T. 4 S., R. 23 E. (published erroneously in previous water-supply papers as SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 33, T. 5 S., R. 23 E.). Measuring point is 0.1 foot above land-surface datum, which is 2,718.44 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	58.32	May 18	(a)	Aug. 31	60.68	Nov. 9	59.10
Feb. 11	58.15	June 2	59.03	Sept. 17	59.44	23	58.92
Mar. 8	58.03	16	59.17	Oct. 6	59.43	Dec. 6	58.83
Apr. 6	(a)	July 6	(a)	21	59.25	21	58.65
May 3	(a)	27	(a)				

93 (#911, p. 21; 941, p. 16; 949, p. 14). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 4 S., R. 23 E. Measuring point is 1.0 foot above land-surface datum, which is 2,678.90 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	12.82	June 12	13.80	July 28	14.38	Oct. 6	13.93
Apr. 6	11.98	16	13.85	Aug. 5	14.27	21	13.88
26	12.25	18	13.85	16	14.19	27	13.81
May 18	12.91	25	14.16	25	14.23	Nov. 8	13.71
19	12.95	July 3	13.97	31	14.07	23	13.58
21	b 13.10	6	13.90	Sept. 9	14.09	24	13.60
29	13.34	9	14.08	20	14.20	Dec. 14	13.41
June 2	13.45	17	14.20	25	14.27	22	13.31
5	13.47	26	14.26				

94 (#911, p. 21; 941, p. 16; 949, p. 15). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 4 S., R. 23 E. Measuring point is 0.2 foot above land-surface datum, which is 2,675.61 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	8.98	Apr. 26	8.57	May 19	9.14	May 29	9.58
Apr. 6	c 8.24	May 18	8.96	21	9.28	June 2	9.68

a Pumping.

b Well 87, 800 feet northwest, pumping.

c Irrigation water standing nearby.

## 94. Graham County--Continued.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 5	9.72	July 9	10.19	Aug. 25	10.27	Oct. 21	10.00
11	9.90	17	10.50	31	10.20	27	9.93
16	9.99	26	10.40	Sept. 9	10.26	Nov. 8	9.86
18	10.00	28	10.44	20	10.36	23	9.71
25	10.20	Aug. 5	10.34	25	10.40	Dec. 14	9.56
July 3	10.02	16	10.24	Oct. 6	10.02	22	9.46
6	10.06						

95 (#911, p. 22; 941, p. 16; 949, p. 15). Graham County.  $SE\frac{1}{4}SE\frac{1}{4}$  sec. 27, T. 4 S., R. 23 E. Measuring point is 0.5 foot above land-surface datum, which is 2,677.98 feet above mean sea level.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.90	June 11	10.71	July 26	11.10	Sept. 25	11.30
Apr. 6	9.95	16	10.77	28	11.41	Oct. 6	10.81
26	10.15	18	10.80	Aug. 5	11.05	21	10.79
May 18	10.45	25	10.89	16	10.91	27	10.75
19	10.45	July 2	10.52	25	10.94	Nov. 8	10.57
21	10.47	6	10.96	31	10.93	23	10.48
29	10.59	9	11.11	Sept. 9	11.13	Dec. 14	10.28
June 2	10.66	17	11.22	20	11.24	22	10.23
5	10.68						

96 (#911, p. 22; 941, p. 16; 949, p. 15). Graham County.  $SW\frac{1}{4}SW\frac{1}{4}$  sec. 26, T. 4 S., R. 23 E. Measuring point is 0.6 foot above land-surface datum. Measurements discontinued after Sept. 24, 1941.

98 (#911, p. 23; 941, p. 16; 949, p. 15). Graham County.  $NW\frac{1}{4}NW\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E. Measuring point is 0.5 foot above land-surface datum, which is 2,673.29 feet above mean sea level.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	3.97	June 10	5.22	July 26	5.69	Oct. 6	5.07
Apr. 6	4.04	16	5.27	Aug. 6	5.40	18	4.95
26	4.50	17	5.50	11	5.38	21	4.93
May 18	4.89	24	5.59	17	5.27	Nov. 8	4.68
19	4.84	July 2	5.08	30	5.20	13	4.55
21	4.90	6	5.41	31	5.16	23	4.45
28	4.98	9	5.57	Sept. 16	5.48	Dec. 8	4.25
June 2	5.12	16	5.57	20	5.47	22	4.03

99 (#911, p. 23; 941, p. 17; 949, p. 15). Graham County.  $NW\frac{1}{4}NW\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E. Measuring point is at land-surface datum. Measurements discontinued after Dec. 31, 1942.

100 (#911, p. 23; 941, p. 17; 949, p. 15). C. N. Higgins.  $SE\frac{1}{4}NE\frac{1}{4}$  sec. 34, T. 4 S., R. 23 E. (published erroneously in previous water-supply papers as  $NE\frac{1}{4}NE\frac{1}{4}$  sec. 34). Measuring point is 1.2 feet above land-surface datum, which is 2,681.11 feet above mean sea level.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	(a)	May 18	11.52	July 26	11.93	Oct. 6	11.56
Feb. 11	10.16	June 2	11.28	Aug. 11	11.84	21	11.30
Apr. 6	10.03	16	11.54	31	11.65	Nov. 23	10.70
26	10.29	July 6	11.61	Sept. 20	11.87	Dec. 22	10.21
May 3	10.38						

101 (#911, p. 24; 941, p. 17; 949, p. 15). D. G. Kempton.  $NE\frac{1}{4}NW\frac{1}{4}$  sec. 34, T. 4 S., R. 23 E. Measuring point is 3.4 feet above land-surface datum. Measurements discontinued after Oct. 15, 1941.

105 (#911, p. 24; 941, p. 17; 949, p. 15). Edward McGuen.  $SW\frac{1}{4}SW\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E. Measuring point beginning Jan. 7, 1942, top of casing, 0.8 foot below former measuring point, 0.7 foot above land-surface datum and 2,722.36 feet above mean sea level. (Through an error, the description of this measuring point was omitted in Water-Supply Paper 949.)

a Pumping.

## 105. Edward McEuen--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	44.30	Apr. 6	42.61	Sept. 17	44.30	Nov. 23	43.47
Feb. 11	43.62	May 3	42.90	Oct. 22	44.03	Dec. 6	43.07
Mar. 8	42.70	Aug. 10	44.37				

106 (#911, p. 24; 941, p. 17; 949, p. 15). E. L. Morrison. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E. Measuring point is 1.1 feet above land-surface datum and 2,720.55 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,721.90 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 13	41.77	Mar. 8	39.36	May 3	39.47
Feb. 11	41.24	Apr. 6	39.18	Aug. 10	41.65
				Oct. 21	41.21

107 (#911, p. 24; 941, p. 17; 949, p. 15). Port McEuen. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E. Measuring point is 5.4 feet above land-surface datum and 2,722.61 feet above mean sea level (published erroneously in Water-Supply Paper 949 as SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35 and in Water-Supply Paper 911 as 2,723.98 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	39.75	June 2	39.30	Aug. 11	40.22
Apr. 6	38.10	16	39.64	31	40.19
26	38.79	July 6	40.02	Sept. 20	40.32
May 18	38.92	26	40.37	Oct. 6	39.87
				Dec. 22	37.41

108 (#911, p. 25; 941, p. 17; 949, p. 15). W. O. Tyler. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 2, T. 5 S., R. 23 E. (published erroneously in previous water-supply papers as SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T. 4 S., R. 23 E.). Measuring point is 2.5 feet above land-surface datum, which is 2,700.63 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 13	15.68	Mar. 8	15.32	May 20	16.00
Feb. 11	15.44	May 3	15.49	June 16	16.44
				July 6	16.70
				Sept. 17	16.26

124-A. Mr. Willis. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 27, T. 4 S., R. 23 E., south side of house, 0.25 mile north from U. S. Highway 70, 1.2 miles northwest of Fort Thomas. Used drilled domestic well, diameter 4 inches, depth 56 feet. Measuring point, top of casing, 0.9 foot above land-surface datum and 2,698.61 feet above mean sea level. Equipped with windmill.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
May 21	34.55	July 27	35.68	Sept. 20	35.29
June 2	34.70	Aug. 10	35.52	Oct. 16	35.07
16	35.18	31	34.94	21	35.03
July 6	35.31	Sept. 17	(a)	Nov. 9	34.57
				21	33.94

126 (#911, p. 25; 941, p. 17; 949, p. 15). YL Ranch. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 24, T. 5 S., R. 21 E. Measuring point is 1.9 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 13, 58.30; Feb. 11, 50.98; July 6, 30.70.

129 (#911, p. 25; 941, p. 18; 949, p. 16). Hinton Ranch. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 5 S., R. 21 E. Measuring point is 2.0 feet above land-surface datum. Measurements discontinued after Dec. 18, 1940.

132 (#911, p. 25; 941, p. 18; 949, p. 16). Mr. Hinton. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35, T. 5 S., R. 21 E. (published erroneously in Water-Supply Papers 941 and 949 as T. 4 S., R. 21 E.). Measuring point is 1.9 feet above land-surface datum. Measurements discontinued after June 1, 1941.

143 (#911, p. 25; 941, p. 18; 949, p. 16). R. S. Snedigar. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 25, T. 5 S., R. 22 E. Measuring point is 1.3 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 13, 41.31; Feb. 11, 44.29; July 6, 32.65; Sept. 17, 35.23.

a Pumping.

156 (\*911, p. 25; 941, p. 18; 949, p. 16). Roy Layton. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 1, T. 5 S., R. 23 E. Measuring point is 0.2 foot above land-surface datum and 2,703.33 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,705.78 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	11.50	May 20	12.35	Aug. 10	12.99	Nov. 8	12.44
Feb. 11	10.05	June 2. a	13.63		31	23	11.13
Mar. 8	11.11	16	12.92	Sept. 17	13.40	Dec. 5	11.43
Apr. 7	11.52	July 6	12.80	Oct. 6	12.92	21	11.32
May 3	11.95	27	13.45		22		13.03

157. M. J. Ferguson. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 2, T. 5 S., R. 23 E., 25 feet north of county road, 0.1 mile east of U. S. Highway 70, 1.2 miles southeast of Fort Thomas. Unused drilled irrigation well, diameter 20 inches, depth 57 feet. Measuring point, top of casing, north side, 2.2 feet above land-surface datum and 2,710.05 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 26	14.58	Sept. 16	15.11	Oct. 16	15.07	Nov. 23	14.39
June 17	15.24	17	15.15	21	15.02	26	14.43
July 6	15.39	23	15.30	28	14.94	Dec. 6	14.23
27	15.60	30	15.15	Nov. 5	14.89	8	14.16
Aug. 10	15.35	Oct. 6	15.08	8	14.82	16	14.18
31	14.95	7	15.07	11	14.77	21	14.12
Sept. 2	14.89	14	15.02	18	14.56	28	14.08
9	14.98						

158 (\*911, p. 26; 941, p. 18; 949, p. 16). W. C. Rhodes. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 5 S., R. 23 E. Measuring point is 1.5 feet below land-surface datum, which is 2,735.00 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	39.23	May 18	36.53	Aug. 10	38.70	Nov. 9	36.80
Feb. 8	38.46	June 2	37.89	31	37.86	23	36.49
Mar. 8	37.60	16 b	40.58	Sept. 17	38.40	Dec. 6	36.28
Apr. 3	37.00	July 6	39.01	Oct. 6	37.55	21	36.00
May 3	36.52	27	39.14	22	37.14		

160 (\*911, p. 26; \*941, p. 18; 949, p. 16). W. O. Tyler. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 2, T. 5 S., R. 23 E., at rear of house, 450 feet east from U. S. Highway 70, 0.25 mile southeast from highway bridge over Black Rock Wash near Fort Thomas. Used drilled irrigation well, diameter 16 inches, depth 54 feet. Measuring point, top of casing at south side, 1.0 foot above land-surface datum, which is 2,711.83 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	25.92	June 2	26.86	Aug. 31	26.88	Nov. 9	26.25
Mar. 8	25.20	16	26.74	Sept. 17	26.85	23	26.00
Apr. 7	24.80	July 6	27.21	Oct. 6	26.85	Dec. 6	25.65
May 3	25.35	27	27.46	22	26.35	21	24.94
20	26.14	Aug. 10	27.37				

164 (\*911, p. 26; \*941, p. 18; 949, p. 16). Don Steele. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 11, T. 5 S., R. 23 E. Measuring point is 0.3 foot above land-surface datum which is 2,782.42 feet above mean sea level. No measurements made in 1943.

166 (\*911, p. 26; \*941, p. 18; \*949, p. 16). Mrs. Albert Todd. (Formerly owned by O. D. Hall.) SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 12, T. 5 S., R. 23 E. Measuring point is 0.6 foot above land-surface datum, which is 2,720.10 feet above mean sea level. (Present measuring point is 2.6 feet above measuring point in use before 1942.)

a Pumping stopped 14 hours previous to measurement after 60 hours operation.

b Irrigation well, nearby, pumping.

## 166. Mrs. Albert Todd--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 13	17.91	Mar. 8	17.72	May 3	20.2
Feb. 11	17.74	Apr. 7	17.51		

194 (#911, p. 7; #941, p. 18; 949, p. 16). Virgil McEuen. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 5 S., R. 24 E. Measuring point is 4.0 feet above land-surface datum, which is 2,776.08 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	17.88	Aug. 11	18.95	Oct. 11	18.91	Nov. 23	18.86
Feb. 10	17.56	30	18.89	19	18.97	Dec. 1	18.90
Mar. 8	17.52	Sept. 6	18.70	21	19.02	6	18.86
Apr. 13	17.54	13	18.97	26	19.03	7	18.91
May 5	17.78	17	19.03	Nov. 3	19.03	14	18.76
19	18.05	20	19.03	8	18.97	21	18.73
June 3	18.30	27	19.11	9	18.96	22	18.93
29	18.65	Oct. 4	18.99	16	18.92	30	18.80
July 28	19.00	6	18.96	22	18.93		

195 (#911, p. 7; #941, p. 18; 949, p. 16). Fay Rabb. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 5 S., R. 23 E. (Published erroneously in Water-Supply Papers #41 and #49 as SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19). Measuring point is 1.7 feet above land-surface datum and 2,734.80 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	15.47	June 8	16.50	Aug. 3	17.02	Oct. 22	16.75
Feb. 11	15.30	15	16.59	10	16.90	Nov. 8	16.66
Mar. 8	15.30	16	16.64	14	16.96	10	16.75
Apr. 7	15.38	22	16.70	26	16.82	23	16.51
May 3	15.88	29	16.82	31	16.76	Dec. 3	17.20
20	16.17	July 14	16.89	Sept. 14	17.04	6	16.30
26	16.26	22	17.08	17	16.94	21	15.95
June 2	16.41	27	17.00				

198-A. C. J. Harrington. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 19, T. 5 S., R. 24 E. 400 feet west of Fort Thomas Canal, 300 feet east of U. S. Highway 70, 1.1 miles northwest of intersection of the Cork-Eden Road with U. S. Highway 70. Unused drilled domestic well, diameter 5 inches, depth 72 feet. Measuring point, top of casing, 1.4 feet above land-surface datum and 2,743.29 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 20	21.88	June 21	22.58	July 22	22.71	Sept. 14	22.82
25	21.96	29	22.51	Aug. 4	22.81	Oct. 25	22.66
June 7	22.18	July 7	22.45	12	22.72	Nov. 11	22.57
14	22.28	13	22.62	25	22.72	Dec. 4	22.24

199. Joe Morgan. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 20, T. 5 S., R. 24 E. Near east bank of Curtis Canal, 60 feet south of county road, 2.6 miles northwest of Eden. Used drilled irrigation well, diameter 16 inches, depth 72 feet. Measuring point, 1-inch hole in pump base, on north side, 1.0 foot above land-surface datum and 2,760.15 feet above mean sea level. Equipped with turbine pump and gasoline motor.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 3	39.74	June 29	41.05	Sept. 17	41.28	Nov. 22	40.88
20	40.20	July 28	41.06	Oct. 6	41.19	Dec. 6	41.08
June 3	40.44	Aug. 11	40.94	21	41.08	21	40.65
17	(b)	30	41.04	Nov. 8	41.00		

a Dry, filled with trash.

b Pumping.

200 (#911, p. 27; 941, p. 18; 949, p. 16). J. R. Thatcher. SE $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 20, T. 5 S., R. 24 E. Measuring point is at land-surface datum which is 2,743.60 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	18.74	July 28	19.21	Oct. 6	18.18	Nov. 22	18.14
Feb. 10	18.30	Aug. 11	19.15	11	18.65	23	18.46
Mar. 8	18.26	30	19.17	19	19.11	Dec. 1	18.35
Apr. 13	18.70	Sept. 6	19.97	21	18.75	6	18.46
May 5	18.78	13	19.78	26	19.15	7	18.55
19	18.80	17	18.99	Nov. 3	18.88	14	18.71
June 3	18.87	20	18.90	8	17.44	21	18.82
17	19.26	27	18.51	9	17.44	23	18.74
29	19.42	Oct. 4	18.35	16	17.85	31	18.97

202 (#911, p. 27; #941, p. 19; 949, p. 16). A. D. Nelson. SW $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 21, T. 5 S., R. 24 E. Measuring point is at land-surface datum which is 2,765.01 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	35.35	May 19	35.52	Aug. 11	36.87	Nov. 8	37.39
Feb. 10	35.50	June 3	35.99	30	36.85	22	37.05
Mar. 8	35.33	17	36.18	Sept. 17	37.35	Dec. 6	37.03
Apr. 13	35.19	29	36.54	Oct. 6	37.65	21	36.94
May 5	(a)	July 28	36.81	21	37.50		

205 (#911, p. 27; 941, p. 19; 949, p. 16). W. B. Marshall. NW $\frac{1}{2}$ NW $\frac{1}{4}$  sec. 28, T. 5 S., R. 24 E. Measuring point is 0.8 foot above land-surface datum, which is 2,753.71 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	24.77	May 19	24.82	Aug. 11	26.01	Nov. 8	26.42
Feb. 10	24.88	June 3	25.10	30	26.20	22	26.35
Mar. 8	24.52	17	25.32	Sept. 17	26.35	Dec. 6	26.47
Apr. 13	24.61	29	25.68	Oct. 6	26.90	21	26.29
May 5	24.54	July 28	26.08	21	26.60		

206 (#911, p. 28; 941, p. 19; 949, p. 16). J. D. Colvin. SE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 29, T. 5 S., R. 24 E. Measuring point is 2.0 feet above land-surface datum, which is 2,750.20 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	18.88	May 19	19.01	Aug. 11	20.26	Nov. 8	20.31
Feb. 10	19.10	June 3	19.58	30	(a)	22	20.18
Mar. 8	18.95	17	19.54	Sept. 17	20.56	Dec. 6	20.36
Apr. 13	(a)	29	19.74	Oct. 6	20.52	21	20.40
May 5	18.82	July 28	(a)	21	20.56		

207 (#911, p. 28; #941, p. 19; 949, p. 16). Lamar Kempton. SE $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 29, T. 5 S., R. 24 E. Measuring point beginning Jan. 14, 1943, top of wood curb on north side, at land-surface datum, 4.8 feet above former measuring point, and 2,738.18 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	4.85	May 5	5.57	June 17	6.81	Aug. 11	5.91
Feb. 10	5.08	19	6.00	29	7.05	30	5.70
Mar. 8	4.97	June 3	6.46	July 28	7.01	Sept. 17	7.17

208 (#911, p. 28; 941, p. 19; 949, p. 16). L. W. Farrington. SW $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 30, T. 5 S., R. 24 E. Measuring point is 0.6 foot above land-surface datum, which is 2,749.76 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	23.23	May 20	25.08	Aug. 10	24.53	Nov. 8	24.42
Feb. 11	23.14	June 2	24.00	31	24.42	23	24.20
Mar. 8	22.99	16	24.58	Sept. 17	24.75	Dec. 6	24.28
Apr. 7	23.23	29	25.15	Oct. 6	24.45	21	23.98
May 3	23.69	July 27	25.71	22	24.61		

a Pumping.

210 (\*911, p. 28; \*941, p. 19; 949, p. 16). Boyd Hawkins. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 5 S., R. 24 E. Measuring point, top of casing, 1.4 feet above measuring point as reported in Water-Supply Paper 911, 1.2 feet above land-surface datum and 2,764.51 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	32.37	May 19	34.24	Aug. 10	34.17	Oct. 22	34.34
Feb. 11	32.24	June 2	34.61	31	34.23	Nov. 8	34.00
Mar. 8	31.80	16	34.80	Sept. 17	34.65	23	33.73
Apr. 7	32.34	29	34.68	Oct. 7	34.20	Dec. 5	33.70
May 3	33.69						

211 (\*911, p. 28; \*941, p. 19; 949, p. 16). Producers Ginning Co. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 5 S., R. 24 E. Measuring point is 1.5 feet above land-surface datum and 2,752.81 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,752.25 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	22.91	June 2	23.94	Aug. 11	23.98	Nov. 8	b 24.94
Apr. 6	23.18	16	24.32	31	23.94	22	23.86
26	23.34	29	24.52	Sept. 20	(a)	Dec. 22	23.67
May 18	23.77	July 26	24.47	Oct. 22	24.27		

212 (\*911, p. 28; 941, p. 20; 949, p. 17). Graham County. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 5 S., R. 24 E. Measuring point is 0.7 foot above land-surface datum, which is 2,749.22 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	20.50	May 25	21.62	July 26	22.06	Oct. 22	21.90
Apr. 6	20.64	June 2	21.75	Aug. 11	21.81	Nov. 8	21.66
26	21.06	7	21.82	31	21.66	22	21.48
May 18	21.56	16	21.90	Sept. 20	c 22.15	Dec. 22	21.30
20	21.57	29	22.11	Oct. 6	21.70		

213 (\*911, p. 29; 941, p. 20; 949, p. 17). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 5 S., R. 24 E. Measuring point, top of pipe, 2.2 feet above land-surface datum and 2,749.07 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,748.57 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	18.50	May 18	19.50	June 2	19.71	June 16	19.85
Apr. 6	18.67	20	19.53	7	19.75	21	19.91
26	19.10	25	19.58	14	19.83	29	19.97

214 (\*911, p. 29; 941, p. 20; 949, p. 17). Graham County. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 5 S., R. 24 E. Measuring point is 0.2 foot above land-surface datum and 2,742.24 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,741.92 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	13.44	June 2	14.70	Aug. 11	14.03	Oct. 22	14.54
Apr. 6	13.81	16	14.81	31	14.26	Nov. 8	14.29
26	14.16	29	14.90	Sept. 20	14.85	22	14.23
May 18	14.52	July 26	14.75	Oct. 6	14.37	Dec. 22	14.06

216 (\*911, p. 30; 941, p. 20; 949, p. 17). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 5 S., R. 24 E. Measuring point is 1.0 foot above land-surface datum and 2,737.05 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,736.53 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	6.53	May 28	7.95	June 25	8.33	July 26	8.13
Apr. 6	7.08	June 2	8.11	29	8.30	31	8.26
26	7.68	4	8.06	July 3	7.86	Aug. 11	7.36
May 18	7.90	11	8.11	6	8.07	19	7.58
20	7.86	16	8.19	13	8.21	30	7.52
21	7.88	18	8.22	22	8.15	Sept. 14	8.10

a Pumping.

b Pumped recently.

c Well 211, 300 feet south, pumping.

## 216. Graham County--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 20	8.14	Oct. 22	7.74	Nov. 8	7.35	Nov. 26	7.45
29	7.23	29	7.63	22	7.43	Dec. 22	7.27
Oct. 6	7.64						

217 (#911, p. 30; 941, p. 20; 949, p. 17). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 5 S., R. 24 E. Measuring point is 1.1 feet above land-surface datum and 2,734.84 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,734.29 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Jan. 26	3.54	June 11	5.25	July 22	5.23	Sept. 29	4.65
Apr. 6	3.91	16	5.30	26	5.36	Oct. 6	4.75
26	4.37	18	5.35	31	5.38	22	4.85
May 18	4.88	25	5.45	Aug. 11	4.68	30	4.61
20	4.86	29	5.43	19	4.59	Nov. 8	4.33
21	4.88	July 3	5.05	30	4.63	22	4.44
28	4.97	6	5.16	Sept. 14	5.22	26	4.48
June 2	5.14	13	5.31	20	5.27	Dec. 22	4.32
4	5.13						

218 (#911, p. 30; #941, p. 21; 949, p. 17). Graham County. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 5 S., R. 24 E. Measuring point is 0.2 foot above land-surface datum and 2,735.76 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,736.35 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Jan. 26	4.54	June 4	6.18	July 13	6.42	Sept. 20	6.40
Apr. 6	4.85	11	6.35	22	6.32	29	6.12
26	5.12	16	6.42	26	6.50	Oct. 6	6.00
May 18	5.85	18	6.46	31	6.53	22	6.05
20	5.82	25	6.58	Aug. 11	5.92	30	5.77
21	5.87	29	6.60	17	5.60	Nov. 22	5.77
28	6.02	July 3	6.29	30	5.71	26	5.72
June 2	6.16	6	6.29	Sept. 14	6.35	Dec. 22	5.39

219 (#911, p. 30; 941, p. 21; 949, p. 17). H. C. Kempton. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 32, T. 5 S., R. 24 E. Measuring point is 2.0 feet above land-surface datum. Measurements discontinued after Oct. 27, 1942.

220 (#911, p. 30; 941, p. 21; 949, p. 17). Lionel Hancock. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 33, T. 5 S., R. 24 E. (published erroneously in previous water-supply papers as SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 33). Measuring point is 0.4 foot above land-surface datum and 2,752.85 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,752.32 feet above mean sea level). Equipped with small electric pump.

Water level, in feet below land-surface datum, 1943

Jan. 14	15.68	May 19	15.81	Aug. 11	16.06	Nov. 8	14.05
Feb. 10	14.70	June 3	16.24	30	15.37	22	15.01
Mar. 8	15.25	17	17.00	Sept. 17	15.99	Dec. 6	15.52
Apr. 13	15.30	29	16.67	Oct. 6	15.07	21	14.29
May 5	15.41	July 28	16.95	21	14.62		

222 (#911, p. 31; 941, p. 21; 949, p. 17). Dave Hawkins. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 33, T. 5 S., R. 24 E. Measuring point beginning Jan. 14, 1943, top of wood cover at pump base, 2.6 feet below former measuring point, 0.5 foot above land-surface datum, and 2,758.33 feet above mean sea level. Equipped with small electric pump.

Water level, in feet below land-surface datum, 1943

Jan. 14	22.43	May 19	23.21	July 28	24.12	Oct. 21	24.55
Feb. 10	21.70	June 3	23.39	Aug. 11	24.09	Nov. 8	24.65
Mar. 8	22.90	17	23.66	30	24.62	Dec. 6	24.57
Apr. 13	22.85	29	23.76	Oct. 6	24.53	21	24.78
May 5	22.90						

223 (\*911, p. 31; 941, p. 21; 949, p. 17). E. E. Hancock. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 33, T. 5 S., R. 24 E. Measuring point is 2.3 feet above land-surface datum, which is 2,785.15 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 14, 25.70; Feb. 10, 25.85; Mar. 8, 25.93; Apr. 13, 25.87.

262 (\*911, p. 31; 941, p. 21; 949, p. 17). J. Hancock. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 6 S., R. 24 E. (published erroneously in previous water-supply papers as NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2). Measuring point is 2.8 feet above land-surface datum and 2,785.23 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	16.08	June 29	17.55	Aug. 16	16.93	Oct. 21	17.13
Feb. 10	16.25	July 5	17.30	21	16.95	Nov. 8	16.88
Mar. 8	15.90	10	17.10	30	16.94	16	16.78
Apr. 13	16.42	20	17.40	Sept. 1	16.96	22	16.60
May 5	16.75	28	17.41	16	17.34	29	16.65
19	16.90	30	17.36	17	17.40	Dec. 6	16.56
June 3	17.14	Aug. 6	17.11	Oct. 6	16.97	15	16.51
17	17.36	14	16.99	15	17.02	21	16.50
26	17.52						

264 (\*911, p. 31; 941, p. 21; \*949, p. 18). J. Hancock. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 6 S., R. 24 E. Measuring point beginning Jan. 14, 1943, top of concrete curb, 1.0 foot east of southwest corner at land-surface datum, 6.0 feet above measuring point in use in 1940, 2.6 feet below that in use in 1939, and 2,775.21 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	14.13	May 19	13.88	Aug. 11	14.00	Nov. 8	13.86
Feb. 10	13.24	June 3	14.01	30	13.78	22	13.82
Mar. 8	12.72	17	14.18	Sept. 17	14.19	Dec. 6	13.42
Apr. 13	13.25	29	14.34	Oct. 6	13.85	21	13.43
May 5	13.68	July 28	14.25	21	14.03		

267 (\*911, p. 32; 941, p. 21; 949, p. 18). Wm. Carpenter. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 4, T. 6 S., R. 24 E. Measuring point is 2.2 feet above land-surface datum and 2,771.41 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	22.65	Aug. 5	25.12	Sept. 28	25.47	Nov. 9	24.06
Feb. 10	22.62	11	24.70	30	25.36	16	23.90
Mar. 8	22.57	13	24.59	Oct. 6	24.87	22	23.90
Apr. 13	23.70	20	24.18	7	24.75	23	23.77
May 4	a 23.76	30	23.87	13	24.71	Dec. 1	23.64
19	a 25.78	31	23.85	19	24.65	6	23.58
June 3	25.88	Sept. 7	24.10	21	24.65	7	23.53
17	25.90	14	24.84	26	24.56	14	23.48
22	25.90	17	24.88	Nov. 4	24.19	21	23.45
29	26.82	21	25.20	8	24.10	23	23.45
July 28	25.52						

269 (\*911, p. 32; 941, p. 21; 949, p. 18). Frank Matthews. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 4, T. 6 S., R. 24 E. Measuring point is at land-surface datum, which is 2,777.34 feet above mean sea level. Well destroyed; measurements discontinued after Apr. 7, 1943. See well 269-A for later measurements. Water levels, in feet below land-surface datum, 1943: Jan. 13, 27.18; Feb. 11, 27.07; Mar. 8, 26.67; Apr. 7, 27.11.

269-A. Silas Jarvis. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 10, T. 6 S., R. 24 E. 75-foot west from house, 100 feet north from U. S. Highway 70, 1,500 feet east of Matthewsville Wash, 2.0 miles northwest of Glenbar. Used drilled domestic well, diameter 6 inches, depth 32 feet. Measuring point, top of casing, 1.0 foot above land-surface datum and 2,787.74 feet above mean sea level. Equipped with windmill.

a Nearby well pumping.

## 269-A. Silas Jarvis--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 20	23.84	July 27	25.34	Oct. 7	25.38	Nov. 23	25.33
June 3	23.94	Aug. 10	25.42	14	25.60	Dec. 5	25.01
16	24.43	31	25.45	22	25.50	21	24.92
29	24.80	Sept. 17	25.53	Nov. 8	25.50		

270-A. M. J. Ferguson. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 6 S., R. 24 E. 25 feet south of Dodge Nevada canal, 0.5 mile south of U. S. Highway 70, 0.7 mile west of Mathewsville Wash, 2.7 miles west of Glenbar. Unused drilled irrigation well, diameter 16 inches, depth 69 feet. Measuring point, top of casing at seam, 1.5 feet above land-surface datum and 2,793.98 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 3	50.56	Aug. 10	51.80	Oct. 7	52.09	Nov. 23	51.90
15	50.88	31	51.92	22	52.11	Dec. 5	51.81
29	51.19	Sept. 17	51.95	Nov. 8	52.03	21	51.87

273 (#911, p. 32; #941, p. 22; 949, p. 18). Eldon Palmer. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 5, T. 6 S., R. 24 E. Measuring point is 1.5 feet above land-surface datum and 2,781.10 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 13	40.95	May 19	(a)	Aug. 11	43.61	Nov. 8	42.83
Feb. 11	40.70	June 3	(a)	31	43.14	23	42.45
Mar. 8	40.41	June 15	45.29	Sept. 17	43.14	Dec. 5	42.33
Apr. 7	41.05	29	44.94	Oct. 7	43.43	21	42.23
May 3	(a)	July 27	44.94	22	43.14		

274 (#911, p. 32; #941, p. 22; #949, p. 18). Mr. Dean. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 10, T. 6 S., R. 24 E. Measuring point is 1.9 feet above land-surface datum. Measurements discontinued after Oct. 26, 1942.

275 (#911, p. 33; 941, p. 22; 949, p. 18). Lamar Bellman. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 10, T. 6 S., R. 24 E. Measuring point is 1.0 foot above land-surface datum and 2,792.79 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,792.13 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	22.78	May 19	22.65	Aug. 11	(a)	Nov. 8	23.89
Feb. 11	22.34	June 3	23.23	Sept. 17	(a)	23	23.33
Mar. 8	21.52	16	(a)	Oct. 5	24.33	Dec. 5	23.28
Apr. 6	21.59	29	24.04	22	24.14	21	23.01
May 3	(a)	July 27	24.46				

276-A. M. J. Ferguson. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 6 S., R. 24 E. 75 feet west of store at Glenbar. Used drilled irrigation well, diameter 14 inches, depth 50 feet. Measuring point, top of west side of casing, 2.8 feet above land-surface datum and 2,815.44 feet above mean sea level. Equipped with electric turbine pump.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	32.29	June 29	(a)	Oct. 5	36.95	Nov. 23	35.57
May 21	35.03	July 27	(a)	22	36.71	Dec. 5	35.02
June 3	(a)	Aug. 11	36.74	Nov. 8	36.29	21	35.06
16	(a)	Sept. 17	37.21				

279 (#911, p. 33; 941, p. 22; 949, p. 18). Howard McBride. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 12, T. 6 S., R. 24 E. Measuring point is 1.3 feet above land-surface datum and 2,786.29 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	b 3.60	Apr. 29	6.65	June 4	6.52	July 17	6.78
Feb. 12	4.74	May 19	6.11	17	6.45	27	6.88
Apr. 7	5.45	June 1	6.35	29	7.00	Aug. 7	6.53

a Pumping.

b Nearby field recently irrigated.

## 279. Howard McBride--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 10	6.68	Sept. 6	7.05	Oct. 22	6.95	Dec. 5	6.01
17	6.68	16	7.11	Nov. 5	6.36	15	5.85
23	6.87	Oct. 5	6.77	8	6.35	21	5.51
30	7.01	8	6.86	27	6.00		

280 (#911, p. 33; #941, p. 22; 949, p. 18). Graham County. ~~NE $\frac{1}{4}$ NE $\frac{1}{4}$~~  sec. 12, T. 6 S., R. 24 E. Measuring point is 1.1 feet above land-surface datum and 2,797.25 feet above mean sea level. Measurements discontinued after Dec. 16, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	12.21	June 3	12.60	July 31	13.63	Sept. 17	13.95
Feb. 10	12.17	17	12.88	Aug. 9	13.69	Oct. 6	14.17
Mar. 8	12.14	29	13.08	16	13.75	21	14.15
Apr. 13	12.08	July 10	13.27	17	13.79	22	14.15
May 5	12.14	20	13.45	24	13.84	Nov. 17	13.97
19	12.32	28	13.58	30	13.75	Dec. 16	13.12

282 (#911, p. 33; 941, p. 22; 949, p. 18). Guy Anderson. ~~SW $\frac{1}{4}$ NE $\frac{1}{4}$~~  sec. 13, T. 6 S., R. 24 E. Measuring point is 2.8 feet above land-surface datum, which is 2,811.79 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	16.56	June 18	17.30	Sept. 27	18.87	Nov. 11	18.87
Feb. 24	16.39	28	17.76	Oct. 1	18.92	18	18.61
Mar. 27	16.46	July 26	18.25	7	19.02	27	18.54
Apr. 26	16.28	Aug. 11	18.14	14	18.91	Dec. 5	18.45
May 18	16.56	28	18.42	22	19.00	21	18.17
26	16.64	Sept. 13	18.92	29	18.70	28	18.09
June 2	16.69	16	18.91				

285 (#911, p. 33; 941, p. 22; 949, p. 18). Guy Anderson: ~~SE $\frac{1}{4}$ SE $\frac{1}{4}$~~  sec. 13, T. 6 S., R. 24 E. Measuring point is at land-surface datum and 2,838.36 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	27.12	May 19	(a)	Aug. 10	30.42	Oct. 22	31.45
Feb. 12	26.72	June 3	(a)	30	30.04	Nov. 22	31.48
Mar. 8	26.60	16	(a)	Sept. 16	(a)	Dec. 5	30.19
Apr. 7	28.67	29	(a)	Oct. 5	32.74	21	29.63
29	(a)	July 27	(a)				

289 (#949, p. 18). W. J. Preston. ~~NW $\frac{1}{4}$ SW $\frac{1}{4}$~~  sec. 13, T. 6 S., R. 24 E. Measuring point, red arrow at top of casing, 1.2 feet above land-surface datum and 2,829.95 feet above mean sea level (published erroneously in Water-Supply Paper 949 as 2,828.47 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	34.94	May 18	33.39	Aug. 10	36.03	Nov. 8	36.20
Feb. 12	34.88	June 3	33.96	30	35.98	23	35.98
Mar. 8	34.15	16	34.55	Sept. 16	35.53	Dec. 5	35.65
Apr. 7	33.83	29	34.83	Oct. 5	35.38	21	35.60
May 1	33.64	July 27	35.70	22	35.73		

298 (#911, p. 34; 941, p. 23; 949, p. 18). Joe Rogers. ~~NE $\frac{1}{4}$ NW $\frac{1}{4}$~~  sec. 25, T. 6 S., R. 24 E. Measuring point is 0.8 foot above land-surface datum and 2,885.61 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,887.00 feet above mean sea level).

a Pumping.

## 298. Joe Rogers--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	a 16.47	June 3	(a)	Aug. 30	15.91	Nov. 8	15.88
Feb. 12	12.26	16	16.13	Sept. 16	(a)	22	17.11
Apr. 17	12.44	29	15.61	Oct. 5	(a)	Dec. 5	16.30
29	12.68	July 27	15.84	22	15.05	21	12.32
May 19	13.80	Aug. 10	16.02				

302-A. Mattice Bros. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 23, T. 6 S., R. 24 E. On northwest bank of Union Canal, 200 feet northwest of Tripp Canyon Road, 1.8 miles west of Pima. Used dug and drilled stock well, diameter 30 inches to depth of 50 feet with 16-inch casing beginning at 50 feet and extending to bottom of well. Depth 64 feet. Measuring point, top of inner edge of concrete curb, at southwest corner, at land-surface datum and 2,890.75 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 21	47.40	July 27	47.33	Oct. 5	48.12	Nov. 22	43.98
June 3	47.31	Aug. 10	47.35	22	45.50	Dec. 5	44.47
16	47.25	30	47.30	Nov. 8	46.18	21	45.35
29	47.10	Sept. 16	47.81				

313 (#911, p. 34; 941, p. 23; 949, p. 19). Jack Bryce. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 6 S., R. 25 E. Measuring point is 0.5 foot above land-surface datum and 2,848.62 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	57.08	May 19	58.65	Aug. 16	60.12	Nov. 8	60.38
Feb. 10	56.86	June 3	59.30	Sept. 17	63.23	22	59.99
Mar. 8	56.41	17	(b)	Oct. 6	65.09	Dec. 6	59.61
Apr. 13	58.12	29	(b)	21	60.60	21	58.78
May 4	58.37	July 28	60.10				

315 (#911, p. 34; 941, p. 23; 949, p. 19). Dick Bryce Estate. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 6 S., R. 25 E. Measuring point is 0.8 foot above land-surface datum, which is 2,818.65 feet above mean sea level. Measurements discontinued after Mar. 8, 1943, as surface water enters well. Water levels, in feet below land-surface datum, 1943: Jan. 12, 26.53; Feb. 10, 26.94; Mar. 8, 25.12.

317 (#911, p. 34; #941, p. 23; 949, p. 19). Wm. Wanslee. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 16, T. 6 S., R. 25 E. Measuring point is 0.5 foot above land-surface datum. Measurements discontinued after Oct. 23, 1942.

318 (#941, p. 23; 949, p. 19). Vance Marshall. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 17, T. 6 S., R. 25 E. Measuring point beginning Jan. 12, 1943, bottom of slot in west side of casing, 0.8 foot below former measuring point, 0.3 foot above land-surface datum, and 2,825.66 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	18.80	May 21	23.47	Aug. 16	22.04	Nov. 8	21.55
Feb. 10	c 16.05	June 4	(b)	Sept. 17	d 22.83	22	21.11
Mar. 8	17.90	17	(b)	Oct. 7	23.53	Dec. 4	20.80
Apr. 7	19.08	July 28	23.57	21	22.35	21	19.77
May 1	d 21.84						

320 (#911, p. 35; 941, p. 23; 949, p. 19). Vance Marshall. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 17, T. 6 S., R. 25 E. Measuring point is 0.7 foot above land-surface datum, which is 2,821.59 feet above mean sea level.

- a Windmill pumping.
- b Pumping.
- c Nearby field recently irrigated.
- d Well 319, nearby, pumping.

## 320. Vance Marshall--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	13.82	May 21	13.78	Aug. 16	15.09	Nov. 8	14.99
Feb. 10	13.38	June 4	a 17.03	Sept. 17	a 17.95	22	14.86
Mar. 8	13.96	17	a 18.24	Oct. 6	15.28	Dec. 4	14.75
Apr. 7	14.40	July 28	16.03	21	15.27	21	14.51
May 1	a 16.55						

321 (#911, p. 35; 941, p. 23; 949, p. 19). Graham County. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 6 S., R. 25 E. Measuring point is 0.9 foot above land-surface datum, which is 2,799.92 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Apr. 6	7.33	June 21	9.27	Aug. 11	9.03	Oct. 21	9.16
26	8.00	28	9.36	18	8.75	22	9.15
May 18	8.70	29	9.37	25	8.96	Nov. 8	8.79
20	8.71	July 6	9.05	30	8.99	17	8.62
24	8.80	13	9.30	Sept. 3	8.96	22	8.63
June 1	8.89	21	9.32	18	9.45	30	8.49
2	9.00	26	9.40	20	9.49	Dec. 17	8.14
8	9.06	Aug. 2	9.40	Oct. 5	8.75	22	8.02
15	9.18	9	9.21				

322 (#911, p. 35; #941, p. 24; 949, p. 19). Bryce Bros. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.4 feet above land-surface datum, which is 2,799.02 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 26	6.98	June 28	8.61	Aug. 11	7.57	Oct. 21	7.95
Apr. 6	7.44	29	8.60	18	7.61	22	7.92
26	7.77	July 6	8.32	25	7.65	Nov. 8	7.65
May 18	8.19	13	8.54	30	7.84	17	7.50
June 1	8.30	21	8.44	Sept. 3	7.98	22	7.54
2	8.38	26	8.25	18	8.37	30	7.37
8	8.39	Aug. 2	8.00	20	8.49	Dec. 17	7.23
15	8.50	9	7.98	Oct. 5	7.75	22	7.20
21	8.58						

323 (#911, p. 35; 941, p. 24; 949, p. 19). Graham County. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.8 feet above land-surface datum, which is 2,800.00 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 26	6.98	June 15	8.42	Aug. 9	7.83	Oct. 21	7.67
Apr. 6	7.57	21	8.43	11	7.67	22	7.61
26	7.83	28	8.55	18	7.45	Nov. 8	7.41
May 18	8.19	29	8.48	25	7.31	17	7.35
20	8.06	July 6	8.26	30	7.54	22	7.31
24	8.23	13	8.45	Sept. 3	7.79	30	7.72
June 1	8.26	21	8.31	18	8.17	Dec. 17	7.06
2	8.33	26	7.96	20	8.21	22	7.03
8	8.32	Aug. 2	7.51	Oct. 5	7.50		

324 (#911, p. 36; 941, p. 24; 949, p. 19). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.3 feet above land-surface datum, which is 2,800.00 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 26	b 2.51	May 18	5.68	June 8	5.89	July 6	b 5.61
Apr. 6	4.81	25	5.82	15	5.99	13	5.77
26	5.23	June 1	5.86	22	6.10	19	5.67
May 11	4.85	2	5.75	29	6.10	26	5.71

a Well 337, nearby, pumping.

b Nearby field recently irrigated.

## 324. Graham County--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 29	5.81	Aug. 30	5.00	Oct. 9	4.65	Nov. 22	4.28
Aug. 9	5.36	Sept. 6	5.39	22	4.53	30	2.90
11	5.36 <sup>a</sup>	20	5.70	Nov. 6	4.25	Dec. 16	a 2.50
18	5.18	Oct. 5	a 4.63	8	4.27	22	3.60
24	4.68						

325 (\*911, p. 36; 941, p. 24; 949, p. 19). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.5 feet above land-surface datum, which is 2,800.66 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	a 2.82	June 16	6.28	Aug. 9	5.70	Oct. 9	4.85
Apr. 6	5.02	22	6.46	11	5.43	22	4.93
26	5.44	29	6.42	18	5.88	Nov. 6	4.66
May 11	5.45	July 6	a 5.89	24	5.64	8	4.60
18	5.88	13	6.10	30	5.39	22	4.65
25	6.08	19	6.13	Sept. 6	5.78	30	3.51
June 2	5.93	26	6.24	20	6.16	Dec. 16	a 2.21
9	6.15	29	6.18	Oct. 5	a 4.97	22	3.79
15	6.31						

326 (\*911, p. 36; 941, p. 24; 949, p. 19). Graham County. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.2 feet above land-surface datum, which is 2,803.61 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	a 2.27	June 16	6.53	Aug. 9	5.94	Oct. 9	4.25
Apr. 6	4.88	22	6.76	11	5.85	22	5.20
26	5.52	29	a 5.12	18	6.28	Nov. 6	4.51
May 11	5.39	July 6	6.11	24	6.01	8	4.60
18	5.89	13	6.37	30	5.61	22	4.65
25	6.15	19	6.58	Sept. 6	6.01	30	3.15
June 2	a 5.06	26	6.75	20	6.41	Dec. 16	a 1.74
9	6.28	29	6.62	Oct. 5	a 5.10	22	3.51
15	6.49						

328 (\*911, p. 36; 941, p. 25; 949, p. 20). Dodge-Nevada Canal Co. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 0.5 foot above land-surface datum, which is 2,808.30 feet above mean sea level. Measurements discontinued after Dec. 22, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	3.37	June 2	(b)	Aug. 30	4.69	Oct. 22	(b)
Apr. 6	(b)	July 26	8.00	Sept. 20	(b)	Nov. 22	5.26
26	(b)	Aug. 11	6.53	Oct. 5	7.01	Dec. 22	4.00
May 18	(b)						

329 (\*911, p. 37; 941, p. 25; 949, p. 20). Art Lines. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 6 S., R. 25 E. Measuring point is 1.1 feet above land-surface datum, which is 2,826.60 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	15.30	Mar. 8	15.46	May 19	17.18	June 16	19.20
Feb. 12	15.18	Apr. 7	16.48	June 3	18.00	29	19.70

330 (\*911, p. 37; 941, p. 25; 949, p. 20). W. W. Crockett. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 6 S., R. 25 E. Measuring point is 1.5 feet above land-surface datum, which is 2,828.32 feet above mean sea level. Measurements discontinued after Feb. 10, 1943; well destroyed. Water levels, in feet below land-surface datum, 1943; Jan. 12, 14.30; Feb. 10, 15.00.

a Nearby field recently irrigated.

b Pumping.

335 (\*911, p. 37; 941, p. 25; 949, p. 20). E. B. McBride. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 20, T. 6 S., R. 25 E. Measuring point is 2.4 feet above land-surface datum, which is 2,828.84 feet above mean sea level.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	11.67	May 19	10.11	Aug. 10	12.19	Nov. 8	12.05
Feb. 10	11.82	June 3	11.00	30	12.00	22	11.87
Mar. 8	10.76	15	11.27	Sept. 16	12.13	Dec. 4	11.66
Apr. 7	10.02	29	12.20	Oct. 5	12.74	21	11.56
29	9.20	July 27	12.20	22	11.93		

342 (\*911, p. 37; 941, p. 25; 949, p. 20). Ed Howard. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 23, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 23). Measuring point is 1.0 foot above land-surface datum, which is 2,869.49 feet above mean sea level.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	24.45	June 4	25.28	Oct. 6	26.02	Nov. 22	25.20
May 1	24.20	Aug. 16	26.16	21	26.00	Dec. 4	25.37
21	24.63	Sept. 17	26.42	Nov. 8	25.90	21	24.79

344 (\*911, p. 37; 941, p. 25; 949, p. 20). J. M. Talley. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 36, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 26). Measuring point is 1.0 foot above land-surface datum, which is 2,880.40 feet above mean sea level. Obstructed with trash; measurements discontinued after Jan. 12, 1943. Water level, in feet below land-surface datum, 1943: Jan. 12, 22.40.

346 (\*911, p. 37; 941, p. 25; 949, p. 20). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 1.0 foot above land-surface datum and 2,844.07 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,841.91 feet above mean sea level).

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.67	June 11	6.96	July 26	7.03	Oct. 5	7.11
Apr. 6	5.55	15	6.70	Aug. 3	7.34	22	7.32
26	6.02	18	6.98	11	6.49	23	7.31
May 8	6.29	25	7.30	12	6.07	Nov. 8	7.26
14	6.19	29	7.42	20	6.85	19	7.10
18	6.46	July 3	6.98	27	6.56	22	7.11
21	6.50	9	7.24	30	6.96	Dec. 6	6.95
28	6.64	16	7.44	Sept. 6	7.03	20	6.60
June 2	6.84	22	7.34	20	7.50	22	6.49
5	6.83						

347 (\*911, p. 38; 941, p. 26; 949, p. 20). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 2.0 feet above land-surface datum and 2,845.83 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,843.69 feet above mean sea level).

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	6.18	June 11	7.49	July 26	7.63	Oct. 5	7.63
Apr. 6	6.50	15	7.42	Aug. 2	7.68	22	7.84
26	6.90	18	7.51	11	7.43	23	7.85
May 8	7.09	25	7.69	12	7.10	Nov. 8	7.79
14	7.00	29	7.70	20	7.51	19	7.71
18	7.20	July 3	7.26	28	7.29	22	7.70
21	7.22	9	7.69	30	7.54	Dec. 6	7.81
28	7.30	16	7.80	Sept. 6	7.68	20	7.30
June 2	7.44	22	7.84	20	8.04	22	7.21
4	7.42						

349 (\*911, p. 38; 941, p. 26; 949, p. 20). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 1.1 feet above land-surface datum. Measurements discontinued after Sept. 23, 1941.

a Nearby field recently irrigated.

350 (#911, p. 38; 941, p. 26; 949, p. 20). Graham County. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 1.2 feet above land-surface datum and 2,846.63 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,844.50 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.37	June 3	6.88	July 26	6.78	Oct. 5	6.76
Apr. 6	4.90	10	6.84	Aug. 2	6.73	14	6.82
26	6.20	17	6.79	11	6.45	22	6.78
May 6	6.34	24	6.88	12	6.62	Nov. 8	6.55
13	6.45	29	6.88	21	6.79	10	6.51
18	6.63	July 2	6.20	28	6.56	22	6.32
20	6.56	8	6.82	30	6.60	Dec. 8	6.00
27	6.68	15	6.84	Sept. 9	7.06	21	5.79
June 2	6.79	21	6.87	20	7.25	22	5.74

352 (#911, p. 39; 941, p. 27; 949, p. 20). Graham County. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 0.6 foot above land-surface datum and 2,847.80 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,845.54 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	6.41	June 10	7.84	July 26	7.95	Oct. 5	7.94
Apr. 6	6.91	15	7.89	Aug. 2	7.92	14	7.99
26	7.27	17	7.82	11	7.73	22	7.92
May 6	7.38	24	7.93	12	7.84	Nov. 8	7.61
13	7.44	29	7.97	21	7.94	11	7.60
18	7.60	July 2	7.38	28	8.35	22	7.31
20	7.61	8	7.86	30	8.30	Dec. 8	6.96
27	7.70	15	7.95	Sept. 9	8.26	22	6.63
June 2	7.80	21	8.07	20	8.47	28	6.66
3	7.77						

354 (#911, p. 40; #941, p. 27; 949, p. 20). Ned Daley. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 1.8 feet above land-surface datum and 2,851.53 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	6.92	May 19	12.90	Aug. 10	(a)	Nov. 8	9.65
Feb. 10	7.03	June 2	12.57	30	(a)	22	8.77
Mar. 9	6.24	15	(a)	Sept. 16	12.80	Dec. 4	8.24
Apr. 7	9.05	29	12.91	Oct. 5	11.16	21	7.47
29	10.90	July 27	11.40	22	11.32		

356 (#911, p. 40; 941, p. 27; 949, p. 21). W. T. Watson. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 27, T. 6 S., R. 25 E. Measuring point is 1.2 feet above land-surface datum and 2,844.72 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,843.78 feet above mean sea level). Well partially filled in; measurements discontinued after July 27, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	10.00	Apr. 6	9.70	June 3	10.87	June 29	11.60
Feb. 10	9.80	29	9.29	15	10.16	July 27	10.86
Mar. 9	9.03	May 19	10.36				

366 (#911, p. 40; 941, p. 27; 949, p. 21). Charles M. Beals. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 30, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 30). Measuring point is 0.5 foot above land-surface datum, which is 2,883.84 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	16.40	Apr. 7	15.25	June 3	18.37	July 27	19.45
Feb. 10	17.77	29	17.14	15	18.74	Aug. 10	19.37
Mar. 8	15.24	May 19	17.96	29	19.14	30	19.80

a Pumping.

## 366. Charles M. Beals--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 16	18.76	Oct. 22	17.67	Nov. 22	18.46	Dec. 21	19.78
Oct. 5	19.00	Nov. 8	18.45	Dec. 4	19.13		

368 (#911, p. 40; 941, p. 27; 949, p. 21). G. Chavez. NW $\frac{1}{2}$ NW $\frac{1}{2}$  sec. 30, T. 6 S., R. 25 E. Measuring point is 2.7 feet above land-surface datum, which is 2,901.39 feet above mean sea level. Measurements discontinued after Apr. 7, 1943. See well 408 for later measurements in this vicinity. Water levels, in feet below land-surface datum, 1943: Jan. 12, 39.35; Mar. 28, 38.97; Apr. 7, a/ 39.9.

372 (#911, p. 41; 941, p. 28; 949, p. 21). George Layton. NW $\frac{1}{2}$ SW $\frac{1}{2}$  sec. 33, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as NE $\frac{1}{2}$ SE $\frac{1}{2}$  sec. 32). Measuring point is 3.2 feet above land-surface datum and 2,884.57 feet above mean sea level (published erroneously in Water-Supply Paper 911 as 2,890.02 feet above mean sea level).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	31.85	May 19	32.05	Aug. 10	35.94	Nov. 8	35.32
Feb. 10	31.72	June 3	33.58	30	36.12	23	34.79
Mar. 8	30.43	15	34.06	Sept. 16	35.90	Dec. 4	34.56
Apr. 7	30.65	29 b	34.5	Oct. 5	36.00	21	34.37
29	31.09	July 27	(c)	22	36.71		

379 (#911, p. 41; #941, p. 28; 949, p. 21). Smithville Canal Co. SE $\frac{1}{2}$ NE $\frac{1}{2}$  sec. 34, T. 6 S., R. 25 E. Measuring point is 1.3 feet above land-surface datum. Measurements discontinued after Jan. 9, 1942.

380 (#911, p. 41; 941, p. 28; 949, p. 21). Smithville Canal Co. SE $\frac{1}{2}$ NE $\frac{1}{2}$  sec. 34, T. 6 S., R. 25 E. Measuring point is at land-surface datum which is 2,851.37 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Jan. 26, 5.68.

408. Roy Saline. SW $\frac{1}{2}$ NW $\frac{1}{2}$  sec. 30, T. 6 S., R. 25 E. 500 feet north of cemetery, 25 feet east of county road, 0.45 mile west and 0.75 mile south of Pima grammar school. Used drilled irrigation well, diameter 16 inches, depth 98 feet. Measuring point, hole in south side of pump base, at land-surface datum and 2,910.42 feet above mean sea level. Equipped with turbine pump.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 26	46.09	June 16	47.61	Aug. 30	49.65	Nov. 8	50.32
Apr. 7	46.60	29	48.08	Sept. 16	49.94	22	50.39
29	46.74	July 27	48.90	Oct. 5	50.29	Dec. 4	50.35
May 19	46.90	Aug. 10	49.15	22	50.39	21	50.38
June 3	47.16						

409. Joe Alder. NE $\frac{1}{2}$ SW $\frac{1}{2}$  sec. 29, T. 6 S., R. 25 E. 25 feet north of county road, 0.55 mile east and 0.6 mile south from Southern Pacific Railroad depot in Pima. Unused drilled irrigation well, diameter 16 inches, depth 27 feet. Measuring point, bottom of slot in top of casing, on east side, 0.5 foot above land-surface datum and 2,872.37 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 25	3.07	June 29	4.84	Sept. 16	6.24	Nov. 8	5.62
May 22	3.27	July 27	5.25	Oct. 5	6.18	22	5.62
June 3	3.48	Aug. 10	5.47	14	5.90	Dec. 4	5.62
15	3.82	30	5.41	22	5.88	21	4.40

410. Smithville Canal Co. SE $\frac{1}{2}$ SE $\frac{1}{2}$  sec. 28, T. 6 S., R. 25 E. 15 feet south from Smithville Canal, 15 feet north of county road, 0.75 mile north-east of store in Central. Used drilled irrigation well, diameter 16 inches, depth 65 feet. Measuring point, bottom of slot in south side of casing, 1.1 feet above land-surface datum and 2,851.21 feet above mean sea level. Equipped with turbine pump and natural-gas motor.

a Less than 0.1 foot of water in well. c Well being deepened.

b Dry.

## 410. Smithville Canal Co.--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
May 21	15.10	Aug. 10	16.43	Oct. 5	15.64	Nov. 22	11.60
June 3	15.31	30	15.59	22	15.70	Dec. 4	11.09
15	(a)	Sept. 16	(a)	Nov. 8	12.98	21	10.40
July 27	16.27						

429 (#911, p. 41; 941, p. 28; 949, p. 21). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 6 S., R. 27 E. Measuring point beginning Oct. 25, 1943, top of broken pipe, 1.8 feet below former measuring point, 0.2 foot below land-surface datum, and 3,043.66 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	7.81	Apr. 26	7.63	July 26	9.13	Oct. 25	8.89
Feb. 24	7.88	May 3	9.00	Aug. 30	8.59	Nov. 22	8.59
Apr. 7	7.19	June 28	9.69	Sept. 20	9.25	Dec. 22	8.35

430 (#911, p. 42; 941, p. 28; 949, p. 21). Graham County. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 6 S., R. 27 E. Measuring point is 0.7 foot above land-surface datum, which is 3,040.05 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Aug. 25, 9.17; Nov. 22, 9.57; Dec. 22, 9.30.

431 (#911, p. 42; #941, p. 28; 949, p. 21). Jesse Tyler. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T. 6 S., R. 27 E. Measuring point is 1.0 foot above land-surface datum, which is 3,039.47 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	4.55	Apr. 26	4.73	July 26	5.03	Oct. 25	5.14
Feb. 24	4.63	June 3	5.23	Aug. 30	4.87	Nov. 22	5.34
Apr. 7	4.60	28	5.38	Sept. 20	5.47	Dec. 22	5.10

433 (#911, p. 43; 941, p. 29; #949, p. 21). W. H. Baker. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 36, T. 6 S., R. 27 E. Measuring point is 2.3 feet above land-surface datum. Measurements discontinued after July 1, 1942. See well 662 for later measurements in this vicinity.

434 (#911, p. 43; 941, p. 29; 949, p. 22). Abel Sanchez. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 36, T. 6 S., R. 27 E. Measuring point beginning Jan. 11, 1943, top of concrete curb, at northwest corner, 2.5 feet below former measuring point, and 0.2 foot above land-surface datum, which is 3,060.84 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 19.96; Apr. 22, 19.83; Sept. 15, 21.34; Dec. 20, 20.54.

452 (#911, p. 43; #941, p. 29; 949, p. 22). S. A. Clontz. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 31, T. 6 S., R. 28 E. Measuring point is 1.4 feet above land-surface datum, which is 3,075.46 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 21.60; Apr. 22, 20.40; Sept. 15, 22.47; Dec. 20, 22.45.

454 (#911, p. 43; 941, p. 29; 949, p. 22). Brown Canal Co. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 6 S., R. 28 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 21.57; Apr. 22, 20.77; Sept. 15, 22.25; Dec. 20, 22.26.

491 (#911, p. 44; 941, p. 29; 949, p. 22). Jim Smith. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 17, T. 7 S., R. 24 E. Measuring point is 2.5 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 10.80; Feb. 12, 8.57.

506. Roy Layton. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 2, T. 7 S., R. 25 E. 100 feet north-east of intersection of roads that bound Thatcher on the north and west, 0.35 mile west and 0.25 mile north of Thatcher post office. Unused drilled irrigation well, diameter 16 inches, depth 37 feet. Measuring point, bottom of slot at top of casing, on west side, 1.2 feet above land-surface datum and 2,898.16 feet above mean sea level.

a Pumping.

## 506. Roy Layton--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 25	23.90	June 29	24.80	Sept. 15	26.88	Nov. 8	26.67
May 21	23.35	July 27	26.13	Oct. 5	27.06	22	26.62
June 3	23.46	Aug. 10	26.38	14	27.06	Dec. 4	26.49
15	24.10	30	26.71	22	27.01	21	26.38

508 (\*911, p. 44; 941, p. 29; 949, p. 22). Graham County.  $SE\frac{1}{4}SE\frac{1}{4}$  sec. 34, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as  $NE\frac{1}{4}NE\frac{1}{4}$  sec. 3, T. 7 S., R. 25 E.). Measuring point is 1.8 feet above land-surface datum and 2,874.33 feet above mean sea level.

Water level, in feet below land-surface datum, 1943.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	10.86	May 19	12.05	Aug. 10	15.25	Nov. 8	14.01
Feb. 10	11.03	June 2	13.22	30	15.49	22	13.15
Mar. 9	10.23	15	13.84	Sept. 16	15.31	Dec. 4	12.37
Apr. 7	9.88	29	14.90	Oct. 5	15.18	22	12.43
29	10.95	July 27	15.11	22	14.75		

509 (\*911, p. 44; 941, p. 30; 949, p. 22). Ellis Welker and Eldon Palmer.  $SE\frac{1}{4}SW\frac{1}{4}$  sec. 3, T. 7 S., R. 25 E. Measuring point is 0.3 foot above land-surface datum and 2,904.44 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	31.45	May 19	30.51	Aug. 10	34.95	Oct. 22	34.01
Feb. 10	31.78	June 3	31.45	30	35.13	Nov. 8	34.14
Mar. 9	31.08	15	32.01	Sept. 16	34.97	23	34.17
Apr. 7	30.22	29	33.38	Oct. 5	34.87	Dec. 21	34.15
29	30.00	July 27	34.35				

510 (\*911, p. 44; \*941, p. 30; 949, p. 22). Ted Ferguson.  $SW\frac{1}{4}SW\frac{1}{4}$  sec. 34, T. 6 S., R. 25 E. (published erroneously in previous water-supply papers as  $NW\frac{1}{4}NW\frac{1}{4}$  sec. 3, T. 7 S., R. 25 E.). Measuring point is 3.0 feet above land-surface datum, which is 2,876.77 feet above mean sea level. Measurements discontinued after Nov. 8, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	17.62	Apr. 7	12.50	June 29	a 18.6	Aug. 10	(a)
Feb. 10	16.50	May 21	16.92	July 27	(a)	Nov. 8	(a)
Mar. 9	15.77	June 3	17.21				

554 (\*911, p. 45; 941, p. 30; 949, p. 22). Graham Canal Co.  $SW\frac{1}{4}SE\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is at land-surface datum and 2,901.08 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 11.26; May 1, b; Sept. 16, b; Dec. 20, 15.40.

557 (\*911, p. 45; 941, p. 30; 949, p. 22). R. A. Smith.  $NE\frac{1}{4}NE\frac{1}{4}$  sec. 6, T. 7 S., R. 26 E. Measuring point is 0.5 foot above land-surface datum, which is 2,904.87 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 26.57; May 1, 28.67; Sept. 16, 32.61; Dec. 20, 30.08.

564-A (\*941, p. 31; 949, p. 22). Rose E. Golding.  $NW\frac{1}{4}SW\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 0.3 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	9.54	June 2	8.99	Aug. 30	11.67	Nov. 22	10.80
Apr. 7	c 6.60	29	9.07	Sept. 20	12.00	Dec. 22	10.60
30	8.08	July 26	11.48	Oct. 25	11.23		

565-A (\*941, p. 31; 949, p. 22). Z. C. Prina.  $SW\frac{1}{4}NW\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 1.8 feet above land-surface datum, which is 2,900.04 feet above mean sea level.

a Dry.

b Pumping.

c Nearby field recently irrigated.

## 565-A. Z. C. Prina--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	7.24	June 2	6.87	Aug. 30	9.15	Nov. 22	8.49
Apr. 7 a	4.46	29	6.99	Sept. 20	9.58	Dec. 22	8.41
30	6.02	July 26	9.20	Oct. 25	8.90		

566-A (#941, p. 31; 949, p. 22). Z. C. Prina. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 2.5 feet above land-surface datum, which is 2,898.06 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.67	June 2	5.43	Aug. 30	7.63	Nov. 22	6.95
Apr. 7 a	2.90	29	5.58	Sept. 20	7.98	Dec. 22	6.86
30	4.60	July 26	7.68	Oct. 25	7.42		

567-A (#941, p. 32; 949, p. 22). Z. C. Prina. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 1.7 feet above land-surface datum, which is 2,895.81 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.20	June 2	4.05	Aug. 30	5.90	Nov. 22	5.50
Apr. 7 a	1.67	29	4.18	Sept. 20	6.40	Dec. 22	5.34
30	3.15	July 26	5.98	Oct. 25	5.95		

568-A (#941, p. 32; 949, p. 23). Z. C. Prina. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 1.6 feet above land-surface datum, which is 2,894.96 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.41	June 2	4.49	Aug. 30	6.18	Nov. 22	5.77
Apr. 7 a	2.27	29	4.59	Sept. 20	6.63	Dec. 22	5.54
30	3.61	July 26	6.24	Oct. 25	6.24		

569-A (#941, p. 33; 949, p. 23). Graham County. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 1.7 feet above land-surface datum, which is 2,893.86 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.09	June 2	4.26	Aug. 30	5.69	Nov. 22	5.51
Apr. 7 a	2.20	29	4.38	Sept. 20	6.27	Dec. 22	5.11
30	3.44	July 26	5.78	Oct. 25	5.90		

570 (#911, p. 48; #941, p. 33; 949, p. 23). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is 1.5 feet above land-surface datum, which is 2,888.80 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	2.49	June 2	2.62	Aug. 30	2.36	Nov. 22 b	1.04
Apr. 7 b	1.80	29	2.34	Sept. 20	4.07	Dec. 22	2.88
30	2.47	July 26	2.49	Oct. 25	4.32		

573 (#911, p. 48; #941, p. 33; 949, p. 23). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is 1.0 foot above land-surface datum, which is 2,889.91 feet above mean sea level. Measurements discontinued after Nov. 22, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.23	June 29	4.34	Aug. 30	4.34	Oct. 25	6.11
Apr. 7	3.73	July 26	4.39	Sept. 20	6.34	Nov. 22	5.84
30	4.36						

574 (#911, p. 48; #941, p. 33; 949, p. 23). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is 1.0 foot above land-surface datum, which is 2,890.15 feet above mean sea level.

- a Nearby field recently irrigated.  
b Irrigation water in nearby slough.

## 574. Z. C. Prina--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	4.66	June 29	4.47	Aug. 30	4.44	Oct. 25	6.51
Apr. 7	4.10	July 26	4.49	Sept. 20	5.88	Dec. 22	5.51
30	4.48						

575 (#911, p. 49; #941, p. 34; 949, p. 23). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is 0.7 foot above land-surface datum, which is 2,890.88 feet above mean sea level.

Daily noon water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.84	5.55	5.81	5.32	5.94	6.53	6.68	7.19	7.00	....	....	....
2	5.81	5.53	5.77	5.26	6.04	6.07	6.45	6.89	7.05	....	....	....
3	5.78	5.59	5.79	5.21	6.12	6.70	6.63	6.75	7.13	....	....	....
4	5.75	5.61	5.73	5.16	6.14	6.78	6.74	6.84	7.21	....	7.49	....
5	5.71	5.61	5.46	5.23	6.07	6.85	6.86	6.98	7.26	....	7.49	....
6	5.69	5.64	4.79	5.29	6.09	6.91	6.93	6.89	7.32	....	7.50	....
7	5.68	5.64	4.41	5.35	6.10	6.97	7.04	6.99	7.37	....	7.52	....
8	5.65	5.64	4.47	5.40	6.14	7.03	7.13	7.10	7.43	....	7.53	....
9	5.63	5.66	4.54	5.45	6.19	7.06	7.24	7.12	7.48	....	7.54	....
10	5.63	5.71	4.60	5.49	6.21	7.11	7.34	7.04	7.71	....	7.54	....
11	5.62	5.74	4.65	5.53	6.18	7.12	7.42	6.68	7.73	....	7.49	....
12	5.61	5.78	4.68	5.58	6.14	7.14	7.51	6.80	7.77	....	7.48	....
13	5.60	5.81	4.70	5.60	6.03	7.12	7.56	6.92	7.61	....	7.46	....
14	5.58	5.82	4.75	5.64	6.02	7.17	7.63	6.97	7.64	....	7.45	....
15	5.57	5.83	4.85	5.68	6.09	7.23	7.48	6.93	7.68	7.57	7.43	....
16	5.56	5.89	4.94	5.74	6.12	7.27	7.16	6.73	7.92	7.62	7.37	....
17	5.55	5.91	5.02	5.76	6.18	7.31	7.19	6.78	....	7.65	7.28	....
18	5.55	5.92	5.09	5.75	6.15	7.45	7.21	6.95	....	7.66	7.21	....
19	5.55	5.94	5.18	5.78	6.18	7.40	7.16	7.02	....	7.67	....	....
20	5.55	5.94	5.27	5.74	6.23	7.44	7.16	7.09	....	7.67	....	....
21	5.56	5.93	5.29	5.72	6.28	7.48	7.32	7.11	....	7.53	....	....
22	5.57	5.92	5.31	5.78	6.28	7.52	7.07	7.10	....	7.50	....	b6.53
23	5.60	5.98	5.45	5.47	6.25	7.52	7.29	7.14	....	7.55	....	....
24	5.63	5.90	5.49	5.56	6.24	7.57	7.37	6.88	....	7.57	....	....
25	5.63	5.90	5.40	5.66	6.24	7.62	7.35	6.76	....	7.59	....	....
26	5.61	5.91	5.45	5.70	6.29	7.66	7.14 (a)	....	....	7.59	....	....
27	5.59	5.91	5.43	5.75	6.38	7.69	7.12	6.83	....	7.58	....	....
28	5.58	5.91	5.57	5.79	6.40	7.73	7.13	6.92	....	7.56	....	....
29	5.55	....	5.63	5.83	6.40	7.55	7.14	6.83	....	7.55	....	....
30	5.53	....	5.61	5.88	6.43	7.10	7.18	6.85	....	....	....	....
31	5.55	....	5.53	....	6.46	....	7.16	6.89	....	....	....	....

576 (#911, p. 50; #941, p. 35; 949, p. 24). Z. C. Prina. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 S., R. 26 E. Measuring point is 0.8 foot above land-surface datum, which is 2,890.08 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	5.23	June 29	5.19	Aug. 30	5.04	Oct. 25	7.25
Apr. 7	5.11	July 26	5.12	Sept. 20	7.03	Dec. 22	6.28
30	5.17						

580 (#911, p. 51; #941, p. 35; 949, p. 24). City of Safford. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 8, T. 7 S., R. 26 E. Measuring point is 1.8 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 9.54; Apr. 24, 11.82; Sept. 16, 12.35; Dec. 20, 11.11.

585 (#911, p. 51; #941, p. 36; 949, p. 24). Graham Canal Co. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 7 S., R. 26 E. Measuring point is 1.1 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 14.54; May 1, 16.10; Sept. 16, c/ 16.3; Dec. 16, 16.67.

a No record on chart.

c Tape would not pass obstruction at

b Tape measurement at odd hour. 16.3 feet.

586 (#911, p. 51; 941, p. 36; 949, p. 24). Ted Tidwell. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 12, T. 7 S., R. 26 E. Measuring point is 2.6 feet above land-surface datum, which is 2,964.19 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 17.75; Apr. 23, 17.75; Sept. 15, 18.80; Dec. 20, a/ 20.15.

587 (#911, p. 51; 941, p. 36; 949, p. 24). Graham County. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 12, T. 7 S., R. 26 E. Measuring point is 0.7 foot above land-surface datum, which is 2,955.02 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	7.50	Apr. 26	7.33	July 26	9.01	Oct. 25	9.17
Feb. 24	8.18	June 2	8.57	Aug. 30	8.58	Nov. 22	9.22
Apr. 7	7.76	28	9.04	Sept. 20	9.22	Dec. 22	9.02

588 (#911, p. 52; 941, p. 36; 949, p. 24). Graham County. NE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 13, T. 7 S., R. 26 E. Measuring point is 1.0 foot above land-surface datum, which is 2,955.29 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	7.50	Apr. 26	8.07	July 26	8.17	Oct. 25	8.63
Feb. 24	7.72	June 2	8.16	Aug. 30	7.95	Nov. 22	8.69
Apr. 7	7.64	28	8.49	Sept. 20	8.67	Dec. 22	8.49

592 (#911, p. 52; 941, p. 37; 949, p. 24). E. M. Claridge. SW $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 13, T. 7 S., R. 26 E. Measuring point is 2.6 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 15.05; Apr. 23, b/; Sept. 15, b/; Dec. 20, 17.34.

593 (#911, p. 53; 941, p. 37; 949, p. 24). E. M. Claridge. SE $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 13, T. 7 S., R. 26 E. Measuring point is 2.5 feet above land-surface datum, which is 2,961.38 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 16.28; Apr. 23, b/; Sept. 15, b/; Dec. 20, 18.72.

594 (#911, p. 53; 941, p. 37; 949, p. 25). E. M. Claridge. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 14, T. 7 S., R. 26 E. Measuring point is 1.2 feet above land-surface datum, which is 2,948.45 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 9.80; Apr. 23, 9.89; Sept. 15, b/; Dec. 20, 11.27.

597 (#911, p. 53; 941, p. 37; 949, p. 25). C. M. Pursley. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 15, T. 7 S., R. 26 E. Measuring point is 3.6 feet below land-surface datum, which is 2,942.34 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	15.40	May 26	c 23.77	Aug. 28	22.68	Oct. 27	21.25
Feb. 24	15.18	June 28	23.50	Sept. 20	c 26.25	Nov. 27	19.41
Mar. 27	14.82	July 26	22.88	27	23.55	Dec. 28	18.40
Apr. 26	c 23.22						

598 (#911, p. 53; 941, p. 37; 949, p. 25). Union Canal Co. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 15, T. 7 S., R. 26 E. Measuring point is 0.9 foot above land-surface datum, which is 2,940.41 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 13.64; Apr. 23, b/; Sept. 15, b/; Dec. 20, 16.64.

603 (#911, p. 53; 941, p. 37; 949, p. 25). L. A. Nelson. SE $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 16, T. 7 S., R. 26 E. Measuring point is 1.8 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 29.04; Apr. 24, 30.34; Sept. 16, 34.90; Dec. 20, 33.27.

- a Windmill pumping.
- b Pumping.
- c Nearby irrigation wells pumping.

606 (#911, p. 54; 941, p. 37; 949, p. 25). Pedro Solas. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 16, T. 7 S., R. 26 E. Measuring point is 2.6 feet above land-surface datum, which is 2,916.42 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 2.95; Apr. 24, 7.80; Sept. 15, 10.40; Dec. 20, 5.90.

609 (#911, p. 54; #941, p. 37; 949, p. 25). Mrs. Annie Collins. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 17, T. 7 S., R. 26 E. Measuring point, is 1.0 foot below land-surface datum, which is 2,927.90 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 21.85; Apr. 24, 21.65; Sept. 16, 25.25; Dec. 20, 25.06.

610 (#911, p. 54; 941, p. 38; 949, p. 25). Bert Hatch. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 17, T. 7 S., R. 26 E. Measuring point is 3.0 feet above land-surface datum, which is 2,960.59 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 44.50; Apr. 24, 43.84; Sept. 16, 45.90; Dec. 20, 47.22.

612 (#911, p. 55; 941, p. 38; 949, p. 25). Montezuma Canal Co. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 7 S., R. 26 E. Measuring point is 0.9 foot above land-surface datum, which is 2,959.40 feet above mean sea level. No measurements made since June 4, 1940. Measurements discontinued.

613 (#911, p. 55; 941, p. 38; 949, p. 25). Montezuma Canal Co. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 7 S., R. 26 E. Measuring point is 0.5 foot above land-surface datum, which is 2,960.65 feet above mean sea level. Casing obstructed; measurements discontinued Jan. 11, 1943.

614 (#911, p. 55; #941, p. 38; 949, p. 25). Mrs. Bertha Gietz. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 7 S., R. 26 E. Measuring point is 1.0 foot above land-surface datum, which is 2,974.82 feet above mean sea level. Casing obstructed at 60 feet; measurements discontinued on Dec. 20, 1943. Water levels, in feet below land-surface datum, 1943: Jan. 11, 57.10; Apr. 24, 58.36; Sept. 15, 59.84.

615 (#911, p. 55; #941, p. 38; 949, p. 25). Mrs. Bertha Gietz. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 7 S., R. 26 E. Measuring point is 1.0 foot above land-surface datum, which is 2,975.37 feet above mean sea level. Well destroyed; measurements discontinued on Dec. 20, 1943. Water levels, in feet below land-surface datum, 1943: Jan. 11, 56.91; Apr. 24, 57.34; Sept. 15, 58.90.

616 (#911, p. 55; #941, p. 38; 949, p. 25). Kimball & Greenhalgh. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 20, T. 7 S., R. 26 E. Measuring point is 0.5 foot above land-surface datum, which is 2,964.12 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	41.34	May 26	41.70	Aug. 28	43.19	Oct. 27	44.78
Feb. 24	41.69	June 28	42.01	Sept. 20	43.78	Nov. 27	45.39
Mar. 27	41.87	July 26	42.42	27	44.02	Dec. 28	45.00
Apr. 26	41.74						

618 (#941, p. 38; 949, p. 25). Willard Welker. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 21, T. 7 S., R. 26 E. Measuring point is 0.4 foot above land-surface datum, which is 2,958.06 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 30.25; Apr. 24, 30.92; Sept. 15, 35.06; Dec. 20, 35.51.

621 (#941, p. 39; 949, p. 25). Lee Johns. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 22, T. 7 S., R. 26 E. Measuring point is 1.5 feet above land-surface datum, which is 2,956.46 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 29.23; Apr. 23, b/; Sept. 15, 36.63; Dec. 20, 34.14.

623 (#911, p. 56; 941, p. 39; 949, p. 25). Lee Johns. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 22, T. 7 S., R. 26 E. Measuring point is 0.9 foot above land-surface datum, which is 2,950.27 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 23.19; Apr. 23, 26.49; Sept. 15, 32.11; Dec. 30, 27.67.

a Dry.

b Pumping.

625 (#911, p. 56; 941, p. 39; 949, p. 26). Willard Welker. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 22, T. 7 S., R. 26 E. Measuring point is 0.5 foot above land-surface datum, which is 2,961.96 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 27.82; Apr. 23, 28.55; Sept. 15, 33.70; Dec. 20, 33.10.

627 (#911, p. 56; 941, p. 39; 949, p. 26). Mrs. Nannie Wilson. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 24, T. 7 S., R. 26 E. Measuring point is 1.8 feet above land-surface datum, which is 2,965.03 feet above mean sea level. Well destroyed; measurements discontinued on Jan. 12, 1943.

628 (#911, p. 56; 941, p. 39; 949, p. 26). Kempton & Larson. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 24, T. 7 S., R. 26 E. Measuring point is 0.9 foot above land-surface datum, which is 2,965.42 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 19.28; Apr. 23, a; Sept. 15, 26.88; Dec. 20, 21.77.

630 (#911, p. 57; 941, p. 39; 949, p. 26). E. L. Claridge. NE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 24, T. 7 S., R. 26 E. Measuring point beginning June 3, 1943, bottom of pump base, 0.9 foot above former measuring point and 1.3 feet above land-surface datum, which is 2,967.01 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	17.07	Apr. 26	21.13	July 26	22.02	Oct. 25	20.12
Feb. 24	17.05	June 3	20.92	Aug. 30	20.87	Nov. 22	19.55
Apr. 7	17.70	28	21.46	Sept. 20	22.70	Dec. 22	18.97

639 (#911, p. 57; 941, p. 39; 949, p. 26). Amos Cook. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 31, T. 7 S., R. 26 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 25.77; Apr. 24, 26.59; Sept. 15, 25.84; Dec. 20, 25.93.

661 (#911, p. 57; 941, p. 39; 949, p. 26). Louis Michelena. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 1, T. 7 S., R. 27 E. Measuring point is 2.8 feet above land-surface datum, which is 3,075.18 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 30.14; Apr. 22, 30.18; Sept. 15, 30.51; Dec. 20, 30.46.

662 (#911, p. 57; 941, p. 40; 949, p. 26). Mrs. Jose Somora. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 2, T. 7 S., R. 27 E. Measuring point is 1.5 feet above land-surface datum, which is 3,052.43 feet above mean sea level. Water-level recorder installed Oct. 11.

Daily noon water level, in feet below land-surface datum, 1943  
(From recorder charts beginning Oct. 11)

Jan. 25	b 15.78	Oct. 24	16.62	Nov. 16	16.52	Nov. 9	16.34
Feb. 23	b 15.77	25	16.60	17	16.52	10	16.34
Mar. 27	b 15.57	26	16.60	18	16.52	11	16.33
Apr. 26	b 15.88	27	16.60	19	16.51	12	16.32
May 26	b 16.50	28	16.60	20	16.51	13	16.30
June 2	b 16.58	29	16.60	21	16.50	14	16.29
	28	30	16.60	22	16.50	15	16.28
July 26	b 16.98	31	16.60	23	16.49	16	16.28
Aug. 28	b 16.58			24	16.49	17	16.28
Sept. 20	b 16.99	Nov. 1	16.59	25	16.48	18	16.27
	27	2	16.59	26	16.48	19	16.26
Oct. 11	16.63	3	16.58	27	16.47	20	16.25
12	16.63	4	16.58	28	16.46	21	16.23
13	16.63	5	16.57	29	16.45	22	16.22
14	16.63	6	16.57	30	16.44	23	16.21
15	16.63	7	16.56			24	16.19
16	16.63	8	16.56	Dec. 1	16.43	25	16.18
17	16.64	9	16.55	2	16.40	26	16.16
18	16.64	10	16.55	3	16.40	27	16.16
19	16.65	11	16.54	4	16.38	28	16.16
20	16.64	12	16.54	5	16.37	29	16.15
21	16.63	13	16.53	6	16.36	30	16.14
22	16.63	14	16.53	7	16.35	31	16.13
23	16.62	15	16.52	8	16.34		

a Pumping.

b Tape measurements at odd hours.

664 (\*911, p. 58; 941, p. 40; 949, p. 26). San Jose Canal Co. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 2, T. 7 S., R. 27 E. Measuring point is 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	15.60	Apr. 26	15.75	July 26	18.68	Oct. 25	18.46
Feb. 24	15.69	June 2	16.08	Aug. 30	18.23	Dec. 22	17.39
Apr. 7	15.61	28	18.56	Sept. 20	18.50		

667 (\*941, p. 40; 949, p. 26). Jose B. Garcia. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 7 S., R. 27 E. Measuring point is 2.6 feet above land-surface datum, which is 3,031.82 feet above mean sea level. Well destroyed; measurements discontinued on Sept. 15, 1943. Water levels, in feet below land-surface datum, 1943: Jan. 11, 15.98; Apr. 22, 15.60.

669 (\*911, p. 58; \*941, p. 40; 949, p. 26). S. Molino. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 7 S., R. 27 E. Measuring point is 0.3 foot above land-surface datum, which is 3,035.68 feet above mean sea level. Measurements made after Oct. 22, 1942, inaccurate owing to leakage of artesian water into well. Measurements discontinued.

674 (\*911, p. 58; 941, p. 40; 949, p. 26). Louis Michelena. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 4, T. 7 S., R. 27 E. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 13.02; Apr. 22, 11.76; Sept. 15, 15.34; Dec. 20, 14.90.

675 (\*941, p. 40; 949, p. 26). Louis Michelena. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 4, T. 7 S., R. 27 E. Measuring point is 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 10.75; Apr. 22, 9.45; Sept. 15, 13.16; Dec. 20, 12.55.

676 (\*911, p. 58; 941, p. 41; 949, p. 26). Louis Michelena. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 4, T. 7 S., R. 27 E. Measuring point is 2.2 feet above land-surface datum, which is 3,005.46 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 13.75; Apr. 22, 11.66; Sept. 15, 15.14; Dec. 20, 14.70.

683 (\*911, p. 58; 941, p. 41; 949, p. 26). Tom Gardner. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 10, T. 7 S., R. 27 E. Measuring point is 2.7 feet above land-surface datum, which is 3,022.68 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 21.82; Apr. 22, 20.79; Sept. 15, a/ 25.5; Dec. 20, 23.24.

685 (\*911, p. 58; 941, p. 41; 949, p. 27). Brijido Carrasco. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 11, T. 7 S., R. 27 E. Measuring point is 2.2 feet above land-surface datum, which is 3,040.42 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 26.03; Apr. 22, 25.10; Sept. 15, 25.65; Dec. 30, 27.54.

689 (\*911, p. 58; 941, p. 41; 949, p. 27). San Jose Canal Co. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 16, T. 7 S., R. 27 E. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 42.04; Apr. 22, b/; Sept. 15, b/; Dec. 20, 43.75.

696 (\*911, p. 58; \*941, p. 41; 949, p. 27). Louis Carrasco. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 18, T. 7 S., R. 27 E. Measuring point is 2.7 feet above land-surface datum, which is 2,976.47 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 14.75; Apr. 22, c/ 17.30; Sept. 15, 19.85; Dec. 20, 16.16.

699-A (\*949, p. 27). E. M. Claridge. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 7 S., R. 27 E. Measuring point is at land-surface datum, which is 2,955.92 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 25	7.00	Apr. 26	6.66	July 26	(a)	Oct. 25	(a)
Feb. 23	d 5.30	June 2	7.53	Aug. 30	(a)	Dec. 22	(a)
Apr. 7	6.60	28	a 7.8	Sept. 20	(a)		

a Dry.

b Pumping.

c Irrigation well, 100 feet east, pumping.

d Nearby field recently irrigated.

700-A (\*949, p. 27). Graham County. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 7 S., R. 27 E. Measuring point is at land-surface datum, which is 2,956.72 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	7.12	Apr. 26 a	6.39	July 26	(b)	Oct. 25	(b)
Feb. 23 a	5.24	June 2	7.58	Aug. 30	(b)	Dec. 22	(b)
Apr. 7	6.24	28 b	7.8	Sept. 20	(b)		

701 (\*911, p. 60; 941, p. 42; 949, p. 27). Graham County. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 7 S., R. 27 E. Measuring point is 0.5 foot above land-surface datum, which is 2,957.46 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	7.10	Apr. 26	7.05	July 26	10.20	Oct. 25	9.77
Feb. 24 a	6.50	June 2	8.62	Aug. 30	10.05	Nov. 22	9.42
Apr. 7 a	6.38	28	8.96	Sept. 20	10.57	Dec. 22	8.92

702 (\*911, p. 61; 941, p. 42; 949, p. 27). William Waldrom. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 7 S., R. 27 E. Measuring point is 0.2 foot above land-surface datum, which is 2,962.89 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 25	13.53	Apr. 7	14.24	Aug. 30	17.33	Dec. 20	15.67
Feb. 24	13.26	23	16.85	Sept. 15	18.52		

703 (\*911, p. 61; 941, p. 42; 949, p. 27). William Waldrom. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 7 S., R. 27 E. Measuring point is 0.1 foot above land-surface datum, which is 2,964.11 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 13.85; Apr. 23, c; Sept. 15, 17.80; Dec. 20, 15.46.

705 (\*911, p. 61; 941, p. 42; 949, p. 27). J. M. Hatfield. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 7 S., R. 27 E. Measuring point is 0.5 foot above land-surface datum, which is 2,982.57 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 21.38; Apr. 22, 19.78; Sept. 15, 20.69; Dec. 20, 21.11.

708 (\*911, p. 61; \*941, p. 42; 949, p. 28). Pete Bertaldo. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 20, T. 7 S., R. 27 E. Measuring point is 0.7 foot above land-surface datum, which is 3,012.46 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 11, 37.80; Apr. 22, 38.35; Sept. 15, 38.70; Dec. 20, 38.10.

709 (\*911, p. 61; 941, p. 42; 949, p. 28). E. E. Taylor. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 30, T. 7 S., R. 27 E. Measuring point is 3.7 feet below land-surface datum, which is 2,982.94 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 12, 20.97; Apr. 23, 19.83; Sept. 15, 20.87; Dec. 20, 21.95.

758 (\*911, p. 61; 941, p. 42; 949, p. 28). Mrs. E. Harris. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 8 S., R. 26 E. Measuring point is 0.1 foot below land-surface datum. Measurements discontinued after Jan. 11, 1943. Water level, in feet below land-surface datum, 1943: Jan. 11, 19.31.

766 (\*911, p. 62; \*941, p. 42; 949, p. 28). Cluff & Montierth. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 8 S., R. 26 E. Measuring point is 2.3 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 11, 46.47; Apr. 24, 46.33; Sept. 16, 48.20; Dec. 20, 50.18.

791 (\*911, p. 62; 941, p. 43; 949, p. 28). Howard Olsen. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 16, T. 8 S., R. 27 E. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 31.55; Apr. 23, 34.19.

792 (\*911, p. 62; \*941, p. 43; 949, p. 28). Howard Olsen. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 15, T. 8 S., R. 27 E. Measuring point is 1.4 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 33.62; Apr. 23, 32.90.

a Nearby field recently irrigated.

b Dry.

c Pumping.

793 (#911, p. 62; #941, p. 43; 949, p. 28). Howard Olsen. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 16, T. 8 S., R. 27 E. (published erroneously in Water-Supply Papers 941 and 949 as T. 8 S., R. 26 E.). Measuring point is 0.8 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 12, 46.00; Apr. 23, 45.77.

## GREENLEE COUNTY (DUNCAN VALLEY)

By R. L. Cushman

The Duncan-Virden Valley, which lies along the upper Gila River, includes the Duncan Valley, in Greenlee County, Ariz., and the Virden Valley, in Hidalgo County, N. Mex. The records of water levels in Virden Valley are therefore given in the New Mexico section of this volume, although conditions affecting ground water in the area as a whole are here discussed. In Duncan Valley 53 measurements were made in 22 wells in 1943, during the seasons when the approximate highest and lowest stages in water level could be expected.

Fluctuations of water level

The pumpage from irrigation wells in the Duncan-Virden Valley during the period 1940-43 is shown below. The great increase in pumpage in 1943 was caused by low rainfall and the resultant low flow in the Gila River and by the increased crop production during the war.

<u>Year</u>	<u>Acre-feet</u>	<u>Year</u>	<u>Acre-feet</u>
1940	2,436	1942	1,600
1941	1,348	1943	7,000

Figure 3 shows, for the period 1940-43, the fluctuations of water level in each of seven wells in the Duncan-Virden Valley, the precipitation at Duncan, Ariz., and the pumpage for the entire valley. The graphs of wells 61, 133, and 201 show the fluctuations in and near the heavily pumped areas, and those of wells 5, 104, and 232 show the fluctuations in areas unaffected by pumping. The graph of well 171 shows a gradual rise in water level, probably owing to recharge during the wet seasons of 1940 and 1941, which was delayed in reaching the well because of its slow transmission through the underlying lake beds.

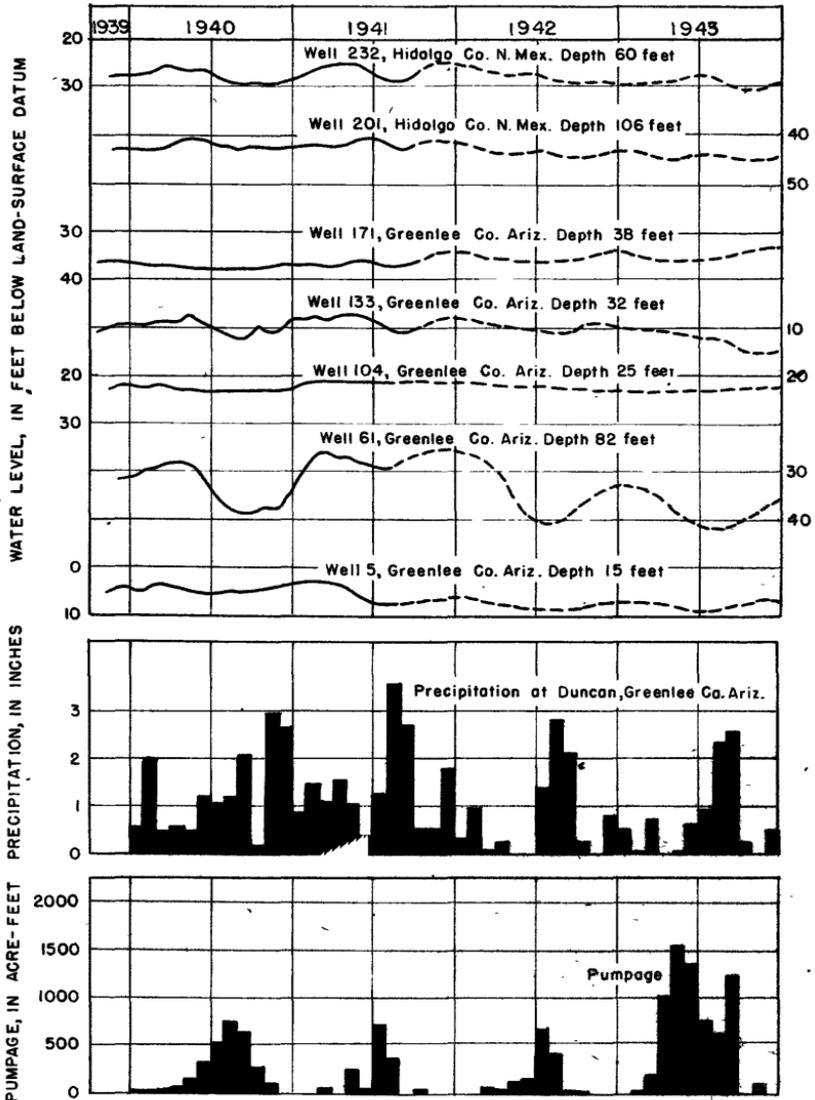


Figure 3.--Graphs showing fluctuations of water level in observation wells in the Duncan-Virden Valley, Greenlee County, Ariz., and Hidalgo County, N. Mex.

Water-level measurements

5 (\*941, p. 45; 949, p. 30). Warner Foote. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 7, T. 6 S., R. 31 E. Measuring point is 1.0 foot above land-surface datum, which is 3,452.16 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 7.08; Sept. 29, 7.58; Dec. 27, 7.19.

12 (\*911, p. 65; 941, p. 45; 949, p. 30). Mr. Wilton. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 20, T. 6 S., R. 31 E. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Sept. 29, 24.81; Dec. 27, 24.06.

14 (\*911, p. 65; \*941, p. 45; 949, p. 30). Victor Rowden. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 19, T. 6 S., R. 31 E. Measuring point is 0.3 foot above land-surface datum, which is 3,508.51 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 35.56; Dec. 27, 35.00.

31 (\*911, p. 65; 941, p. 45; 949, p. 30). J. C. Merritt. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 4, T. 7 S., R. 31 E. Measuring point is 0.6 foot above land-surface datum, which is 3,544.39 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 29.05; Dec. 27, 28.30.

36 (\*911, p. 66; 941, p. 45; 949, p. 30). M. M. Gosper. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 16, T. 7 S., R. 31 E. Measuring point is 1.6 foot above land-surface datum, which is 3,548.76 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 16.79; Dec. 27, 16.88.

43 (\*911, p. 66; 941, p. 45; 949, p. 30). Ernest Campbell. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 21, T. 7 S., R. 31 E. Measuring point is 2.1 feet above land-surface datum, which is 3,570.46 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Dec. 27, 25.06.

49 (\*911, p. 66; 941, p. 45; 949, p. 30). W. M. Zumwalt. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 34, T. 7 S., R. 31 E. Measuring point is 0.6 foot above land-surface datum, which is 3,593.08 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 49.64; Dec. 27, 50.40.

61 (\*911, p. 66; 941, p. 46; 949, p. 30). M. W. McKelvey. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 8 S., R. 31 E. Measuring point is 0.8 foot above land-surface datum, which is 3,598.35 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 40.20; Dec. 27, 39.25.

63 (\*911, p. 67; 941, p. 46; 949, p. 30). M. W. McKelvey. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 3, T. 8 S., R. 31 E. Measuring point is 5.0 feet above land-surface datum, which is 3,603.51 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 40.83; Sept. 29, 56.50; Dec. 27, 58.74.

66 (\*911, p. 67; 941, p. 46; 949, p. 30). Franklin Irrigation District well 4. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 11, T. 8 S., R. 31 E. Measuring point is 4.0 feet above land-surface datum, which is 3,618.07 feet above mean sea level. No measurements made since Oct. 23, 1941. Measurements discontinued.

68 (\*911, p. 67; 941, p. 46; 949, p. 30). Franklin Irrigation District test well 10. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 11, T. 8 S., R. 31 E. Measuring point is 8.1 feet above land-surface datum, which is 3,619.48 feet above mean sea level. Measurements discontinued after Mar. 11, 1942.

69 (\*911, p. 67; 941, p. 46; 949, p. 30). Franklin Irrigation District well 3. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 11, T. 8 S., R. 31 E. Measuring point is 4.0 feet above land-surface datum, which is 3,620.30 feet above mean sea level. No measurements made since Oct. 23, 1941. Measurements discontinued.

72 (\*911, p. 67; 941, p. 46; 949, p. 30). J. C. Campbell. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 12, T. 8 S., R. 31 E. Measuring point beginning Sept. 29, 1943, top of wooden pipe clamp, 1.8 feet below former measuring point and 0.9 foot above land-surface datum, which is 3,660.3 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 48.50; Dec. 27, 49.82.

84 (\*941, p. 46; 949, p. 30). Lee Beavers. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 8 S., R. 32 E. Measuring point is 2.2 feet above land-surface datum. Casing obstructed with rocks; no measurements made since Oct. 23, 1941. Measurements discontinued.

92 (#911, p. 68; 941, p. 46; 949, p. 30). Raymond Davis. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 17, T. 8 S., R. 32 E. Measuring point is 0.6 foot above land-surface datum, which is 3,704.13 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 29, 68.25; Dec. 27, 66.99.

96 (#911, p. 68; 941, p. 46; 949, p. 30). L. Deane. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 8 S., R. 32 E. Measuring point is 0.3 foot above land-surface datum, which is 3,653.68 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 30.21; Dec. 27, 27.93.

100 (#911, p. 68; 941, p. 46; 949, p. 30). W. M. Zumwalt. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 19, T. 8 S., R. 32 E. Measuring point is 0.5 foot above land-surface datum, which is 3,653.68 feet above mean sea level. No measurements made in 1943.

104 (#911, p. 68; 941, p. 47; #949, p. 31). Bill Gosper. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 8 S., R. 32 E. Measuring point is 2.9 feet below measuring point in use May 5 and June 3, 1941, 8.3 feet below that in use before May 5, 1941, 11 feet below land-surface datum, and 3,645.61 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 3, 23.53; Sept. 29, 23.20; Dec. 27, 23.87.

111 (#911, p. 68; 941, p. 47; 949, p. 31). Franklin Irrigation District well 8. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 28, T. 8 S., R. 32 E. Measuring point is 3.6 feet above land-surface datum, which is 3,668.07 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 7.60; Dec. 27, 6.53.

120 (#911, p. 69; 941, p. 47; 949, p. 31). D. E. Wilkins. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 8 S., R. 32 E. Measuring point after Nov. 10, 1942, top of concrete curb, on north side, 0.4 foot below former measuring point and 0.8 foot above land-surface datum, which is 3,690.52 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 11.30; Dec. 27, 10.10.

122 (#911, p. 69; 941, p. 47; 949, p. 31). Delbert Moyers. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 32, T. 8 S., R. 32 E. Measuring point is 0.5 foot above land-surface datum, which is 3,716.5 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 25.23; Dec. 27, 23.33.

125 (#911, p. 69; 941, p. 47; 949, p. 31). V. L. Crotts. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 33, T. 8 S., R. 32 E. Measuring point beginning Sept. 28, 1943, top of wooden cover, 1.69 feet above former measuring point and 2.5 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Sept. 28, 21.55; Dec. 27, 20.83.

131 (#911, p. 69; #941, p. 47; 949, p. 31). Franklin Irrigation District well 2. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 34, T. 8 S., R. 32 E. Measuring point is at land-surface datum, which is 3,698.01 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 24.43; Dec. 27, 20.15.

133 (#911, p. 71; 941, p. 47; #949, p. 31). Floyd McDaniels. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 34, T. 8 S., R. 32 E. Measuring point is 2.7 feet above land-surface datum, which is 3,686.91 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 3, 8.96; Sept. 28, a/ 11.6; Dec. 27, b/.

136 (#911, p. 71; 941, p. 47; 949, p. 31). Franklin Irrigation District well 1. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 34, T. 8 S., R. 32 E. Measuring point is 0.5 foot above land-surface datum, which is 3,726.14 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Sept. 28, 46.99.

160 (#911, p. 71; 941, p. 47; 949, p. 31). Franklin Irrigation District well 7. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 9 S., R. 32 E. Measuring point is 4.0 feet above land-surface datum, which is 3,689.96 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 13.76; Dec. 27, 6.48.

- a Well being repaired.  
b Well caved in.

161 (#911, p. 71; 941, p. 48; 949, p. 31). Franklin Irrigation District well 6. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 9 S., R. 32 E. Measuring point is 4.5 feet above land-surface datum, which is 3,689.47 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 13.65; Dec. 27, 5.65.

162 (#911, p. 72; 941, p. 48; 949, p. 31). Franklin Irrigation District well 5. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 9 S., R. 32 E. Measuring point is 0.7 foot above land-surface datum, which is 3,702.90 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 26.16; Dec. 27, 18.49.

171 (#911, p. 72; 941, p. 48; 949, p. 31). John Chapman. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 9 S., R. 32 E. Measuring point is 1.6 feet lower than that in use before May 6, 1941, 0.3 foot above land-surface datum and 3,743.2 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 3, 36.46; Sept. 28, 35.54; Dec. 27, 35.80.

#### MARICOPA COUNTY (QUEEN CREEK AREA)

By E. M. Cushing and J. F. Hostetter

The Queen Creek area is in both Maricopa and Pinal Counties, but as the larger part is in Maricopa County, the progress made in 1943 in the continuing cooperative investigation of its ground-water resources is discussed under Maricopa County. The water-level measurements for the nine observation wells in Pinal County, however, are included with those for other wells listed under that county. For the entire area 65 measurements were made in 39 wells during 1943; in Maricopa County 49 measurements were made in 30 wells.

#### Fluctuations of water level

A comparison of the water-level measurements made in 26 of the observation wells in the Queen Creek area in 1943 with those made in the same wells on corresponding days in 1942 shows a gradual downward trend of the water table, which averaged more than 3 feet during the year. This decline was caused by heavy withdrawals from the ground-water reservoir and indicates that they greatly exceeded the recharge. A brief discussion of the fluctuations of water level in four typical wells, as illustrated by graphs in figure 4, follows:

The graph of well 23, a shallow dug well situated in the Queen Creek Canyon near the base of the Pinal Mountains and isolated from irrigation pumping, records the rise and fall of the underflow in the sand and gravel of the flood channel of Queen Creek. Well 35 is a deep well on the desert plain about half a mile from Queen Creek and a few miles downstream from the mouth of the canyon. The water level in this well rose slowly during 1943. This rise was a continuation of the rise that began in the spring of

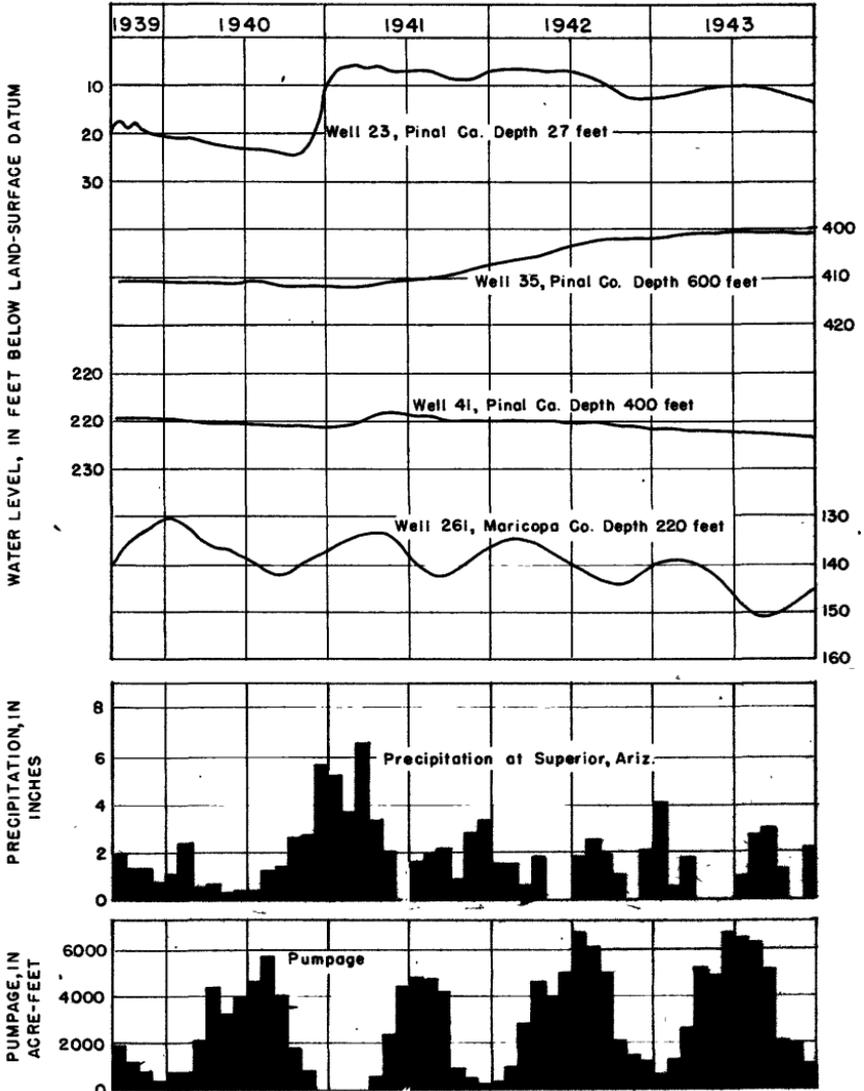


Figure 4.--Graphs showing fluctuations of water level in observation wells in the Queen Creek area, Maricopa and Pinal Counties, Ariz.

1941 and shows that recharge is continuing in this part of the Queen Creek area. In well 41, at the eastern edge of a heavily pumped section, the water level declined slowly during the year as a result of the pumping. The graph indicates that there was no recharge in this part of the Queen Creek area. The graph of well 261, which is in a section of heavy pumping, shows the same fluctuations in water level as occurred in this well in previous years, with a continuation of the downward trend.

The continued downward trend of the water levels in wells 41 and 261, as shown by their graphs, and of the water levels in other wells, as shown by the measurements made in them and given in this report, indicate that the annual pumpage in the Queen Creek area greatly exceeds the safe yield of underground water and that dangerously large amounts are being withdrawn from storage.

The total pumpage in the Queen Creek area in 1943 was about 173,200 acre-feet, an increase of 11 percent over 1942 and 110 percent over 1941.

For the purpose of this investigation the Queen Creek area has been divided into five irrigation districts, as follows: (1) The Roosevelt Water Conservation district, which lies between the Salt River Valley Water Users' Eastern canal, on the west, and the Roosevelt Water Conservation District canal, on the east. (2) The Bulldog-Superstition area, which adjoins the above-described district on the east and is separated from it by the Roosevelt Water Conservation District canal; it is bounded on the north by the Salt River, on the east by the Superstition Mountains, and on the south by an east-west line through the center of T. 1 S. (3) The Queen Creek Irrigation district, which adjoins the Bulldog-Superstition area on the south; it is bounded on the west by the Roosevelt Water Conservation District canal, on the south by Santan Mountain and the Chandler Heights Citrus Irrigation district, and on the southeast by the Magma area. (4) The Chandler Heights Citrus Irrigation district, which forms the eastern part of the area lying between Sonoqui Wash and Santan Mountain. (5) The Magma area, which lies southeast of the Queen Creek Irrigation district, the south line of T. 2 S. forming the boundary between the two; it is near the railroad junction of Magma.

The table that follows affords a comparison, by years, of the pumpage in the five districts during the period 1941-43:

Pumpage, in acre-feet, in the Queen Creek area, Ariz., 1941-43

	<u>1941</u>	<u>1942</u>	<u>1943</u>
Roosevelt Water Conservation district . . . . .	45,602	94,900	105,000
Bulldog-Superstition area. . . . .	5,847	7,500	7,700
Queen Creek Irrigation district. . . . .	22,920	39,500	44,000
Chandler Heights Citrus Irrigation district. . . . .	2,478	4,659	5,000
Magma area . . . . .	5,603	9,439	11,500
Total . . . . .	82,450	155,998	173,200

About 125 wells were considered in the pumpage inventory. Of this number, 105 were equipped with electric motors, 10 with oil or liquefied-petroleum-gas engines, and 10 with natural-gas engines.

Water-level measurements

1 (\*941, p. 51; 949, p. 34). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 4, T. 1 N., R. 6 E. Measuring point is 0.15 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 24, 172.12; Apr. 21, 175.61; Aug. 26, 179.60; Nov. 22, 179.89.

10 (\*911, p. 74; 941, p. 51; 949, p. 34). Win Wylie. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 15, T. 1 N., R. 6 E. Measuring point is at land-surface datum and 1,358.11 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 21, a/; Nov. 22, a/.

18 (\*911, p. 74; 941, p. 51; 949, p. 34). J. Assyd. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 21, T. 1 N., R. 6 E. Measuring point is 0.8-foot above land-surface datum, which is 1,301.78 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 138.34; Nov. 22, 143.44.

19 (\*911, p. 74; 941, p. 51; 949, p. 34). E. D. Edwards. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 28, T. 1 N., R. 6 E. Measuring point is at land-surface datum and 1,294.48 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 131.96; Nov. 22, 138.83.

68 (\*911, p. 75; 941, p. 51; 949, p. 34). Mr. Schmitt. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 23, T. 1 N., R. 7 E. Measuring point is 1.5 feet above land-surface datum, which is 1,583.44 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 21, 302.71; Nov. 22, 303.07.

84 (\*911, p. 75; 941, p. 51; 949, p. 34). W. A. Anderson. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 11, T. 1 S., R. 7 E. Measuring point is 0.5 foot above land-surface datum, which is 1,447.09 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 176.40; Nov. 24, a/.

87 (\*911, p. 75; 941, p. 52; 949, p. 34). Mrs. Gardner. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 1 S., R. 7 E. Measuring point is at land-surface datum and 1,326.67 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 116.70; Nov. 23, 117.99.

89 (\*911, p. 75; 941, p. 52; 949, p. 34). D. Cole. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 18, T. 1 S., R. 7 E. Measuring point is 0.3 foot above land-surface datum, which is 1,347.93 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 115.45; Nov. 24, 116.49.

94 (\*911, p. 75; 941, p. 52; 949, p. 34). "Old Clifford Place". NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 21, T. 1 S., R. 7 E. Measuring point is 5.7 feet below land-surface datum, which is 1,393.08 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 133.89; Nov. 24, 134.59.

101 (\*911, p. 76; 941, p. 52; 949, p. 34). Mr. Gardiner. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 25, T. 1 S., R. 7 E. Measuring point is 0.3 foot above land-surface datum, which is 1,459.87 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 163.83; Nov. 24, 164.53.

a Pumping.

102 (#911, p. 76; 941, p. 52; 949, p. 34). Florence McEntire. ~~NE~~~~NE~~ sec. 33, T. 1 S., R. 7 E. Measuring point is 1.5 feet above land-surface datum, which is 1,383.28 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 117.62; Nov. 24, 119.06.

125 (#911, p. 77; 941, p. 52; 949, p. 35). G. H. Dunn. (Formerly owned by J. C. Jenkins.) ~~NW~~~~NW~~ sec. 12, T. 1 S., R. 6 E. Measuring point is at land-surface datum and 1,307.27 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 150.47; Nov. 22, 156.20.

128 (#911, p. 77; 941, p. 52; 949, p. 35). Roosevelt Water Conservation District. ~~SE~~~~SW~~ sec. 14, T. 1 S., R. 6 E. Measuring point is at land-surface datum and 1,293.42 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 115.28; Nov. 23, 118.56;

130 (#911, p. 77; 941, p. 52; 949, p. 35). C. F. Lockhart. ~~SE~~~~SW~~ sec. 23, T. 1 S., R. 6 E. Measuring point is 1.0 foot above land-surface datum, which is 1,298.85 feet above mean sea level. Measurements discontinued after Dec. 17, 1942.

136 (#911, p. 77; 941, p. 53; 949, p. 35). Roosevelt Water Conservation District. ~~NE~~~~NE~~ sec. 25, T. 1 S., R. 6 E. Present measuring point is 0.2 foot above land-surface datum, which is 1,324.13 feet above mean sea level; measuring point in use before Feb. 27, 1941, was 2 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Apr. 24, 98.47.

151 (#911, p. 77; 941, p. 53; 949, p. 35). Roosevelt Water Conservation District. ~~SW~~~~SE~~ sec. 13, T. 2 S., R. 5 E. Measuring point is at land-surface datum and 1,248.55 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, a/; Nov. 23, 56.81.

155 (#911, p. 78; 941, p. 53; 949, p. 35). F. C. Harris. ~~SW~~~~NE~~ sec. 25, T. 2 S., R. 5 E. Measuring point is 1 foot above land-surface datum and 1,250.28 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 30.06; Nov. 23, b/.

164 (#911, p. 78; 941, p. 53; 949, p. 35). Roosevelt Water Conservation District. ~~SE~~~~NW~~ sec. 5, T. 2 S., R. 6 E. Measuring point is at land-surface datum and 1,273.05 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Apr. 24, 78.21.

170 (#911, p. 78; 941, p. 53; 949, p. 35). A. Sanford. ~~SE~~~~SW~~ sec. 3, T. 2 S., R. 6 E. Measuring point is at land-surface datum and 1,302.46 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 100.97; Nov. 23, 101.35.

177 (#911, p. 78; 941, p. 53; 949, p. 35). J. O. Power. - ~~SE~~~~NW~~ sec. 12, T. 2 S., R. 6 E. Measuring point is at land-surface datum. No measurements made in 1943.

185 (#911, p. 78; 941, p. 53; 949, p. 35). J. S. Gephart. ~~SE~~~~SE~~ sec. 8, T. 2 S., R. 6 E. Measuring point is at land-surface datum and 1,283.39 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 24, 102.54; Nov. 23, 104.98.

205 (#911, p. 79; 941, p. 53; 949, p. 35). J. E. Watson. (Formerly owned by A. J. Schlesinger). ~~SE~~~~SW~~ sec. 24, T. 2 S., R. 6 E. Measuring point is 0.5 foot above land-surface datum, which is 1,351.19 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, a/; Nov. 23, 119.18.

208 (#911, p. 79; 941, p. 53; 949, p. 35). H. O. Backer. ~~SE~~~~NE~~ sec. 20, T. 2 S., R. 6 E. Measuring point is at land-surface datum and 1,288.23 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 84.71; Nov. 23, 85.39.

217 (#911, p. 79; 941, p. 54; 949, p. 35). Chandler Heights Citrus Irrigation District. ~~SW~~~~SE~~ sec. 36, T. 2 S., R. 6 E. Measuring point is 0.5 foot above land-surface datum, which is 1,448.20 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, a/; Nov. 23, 195.69.

a Pumping.  
b Dry.

218 (#911, p. 79; 941, p. 54; 949, p. 35). Clyde Fitzgerald. SE $\frac{1}{2}$ NW $\frac{1}{4}$  sec. 34, T. 2 S., R. 6 E. Measuring point is 0.4 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 23, 101.22; Nov. 23, 99.41.

221 (#911, p. 79; 941, p. 54; 949, p. 35). Roosevelt Water Conservation District. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 2 S., R. 6 E. Measuring point is 1.0 foot above land-surface datum, which is 1,267.54 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 51.59; Nov. 23, a.

252 (#911, p. 80; 941, p. 54; 949, p. 35). Jack Barnes. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 9, T. 2 S., R. 7 E. Measuring point is 0.5 foot above land-surface datum, which is 1,401.56 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 22, a; Nov. 24, 148.44.

254 (#911, p. 80; 941, p. 54; 949, p. 35). W. J. Germann. SE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 7, T. 2 S., R. 7 E. Measuring point is at land-surface datum and 1,361.20 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Nov. 24, 134.25.

260 (#911, p. 80; 941, p. 54; 949, p. 35). Lawrence Ellsworth. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 16, T. 2 S., R. 7 E. Measuring point is 0.3 foot above land-surface datum, which is 1,406.21 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 22, a; Nov. 24, a.

261 (#911, p. 80; 941, p. 54; 949, p. 35). Higley Ward School. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 15, T. 2 S., R. 7 E. Measuring point is 0.4 foot above land-surface datum, which is 1,400.57 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 24, 138.98; Apr. 22, 141.12; Aug. 26, 150.91.

266 (#941, p. 54; 949, p. 35). B. P. Hurt. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 22, T. 2 S., R. 7 E. Measuring point is at land-surface datum and 1,421.38 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Apr. 22, 148.82. Measurements discontinued after Apr. 22, 1943.

271 (#911, p. 80; 941, p. 54; 949, p. 36). Sossaman Bros. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 2 S., R. 7 E. Present measuring point is 0.4 foot above that used before Nov. 6, 1941, 1.4 feet above land-surface datum and 1,374.16 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, a; Nov. 23, 138.27.

273 (#911, p. 81; 941, p. 55; 949, p. 36). Leo Ellsworth. SE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 28, T. 2 S., R. 7 E. Measuring point is at land-surface datum and 1,409.05 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 23, 147.19; Nov. 24, a.

279 (#911, p. 81; 941, p. 55; 949, p. 36). Southern Pacific Railroad. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 25, T. 2 S., R. 7 E. Measuring point is 3.3 feet below land-surface datum, which is 1,456.68 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Apr. 22, 155.60.

## PIMA COUNTY

By E. M. Cushing and M. J. Scott

Investigations of ground-water resources in the Santa Cruz River Valley in Pima County were continued in 1943 as part of the general cooperative program in the State, discussed on pages 6-8, in which special attention was given to determining the effect of heavy pumping on the underground reservoir. Measurements of water level were made during the year in 28 observation wells--monthly in 6 wells considered as typical and twice or oftener in the remaining 22 wells. In all, 135 measurements were made.

a Pumping.

Fluctuations of water level

The average decline in water level in 1943 for all the wells measured in Pima County was 1.5 feet and was the result of the deficiency in rainfall during the last 2 years and the increase in pumpage due to the war effort.

The total pumpage during the year for all uses--irrigation, municipal, and industrial--was about 100,000 acre-feet, representing an increase of 16 percent over the pumpage in 1942. The increase was not uniform, however, in the different parts of the county. Northwest of Tucson, in an area of heavy pumping for irrigation, the pumpage increased 28 percent; south of Tucson, in an area where winter vegetables constitute a major crop, the pumpage increased 9 percent; and municipal pumpage increased about 10 percent. About 310 wells were considered in the pumpage inventory, of which 290 were equipped with electric motors and 20 with oil or liquefied-petroleum-gas engines.

A brief discussion of the fluctuations of water level in five of the wells that were measured monthly, as illustrated by graphs in figure 5, follows:

Well 1337 is an unused well in an area of heavy pumping about 16 miles northwest of Tucson. The water level in this well declined during January and February, rose slightly during March, but resumed its downward trend in April and continued to decline until the end of July, when a rise began that continued through November. The fact that the water level showed a greater decline in January and February of 1943 than in January and February of 1942 can be attributed to the 10 percent increase in pumpage during these 2 months in 1943. The rise in water level during the period August to November was caused by recharge from floods on the Santa Cruz River and also by a decrease in the requirements for pumped water. At the end of 1943, however, the water level was 4.08 feet lower than at the beginning of that year and 14.61 feet lower than in December 1939.

Well 2823 is an unused dug well northeast of Tucson and 500 feet north of Rillito Creek. The graph shows that the water level in this well, which had been declining since April 1942, continued its downward trend throughout 1943 except for slight rises in March and August, caused by recharge from floods in Rillito Creek. The water level was 3.94 feet lower at the end of the year than at the beginning.

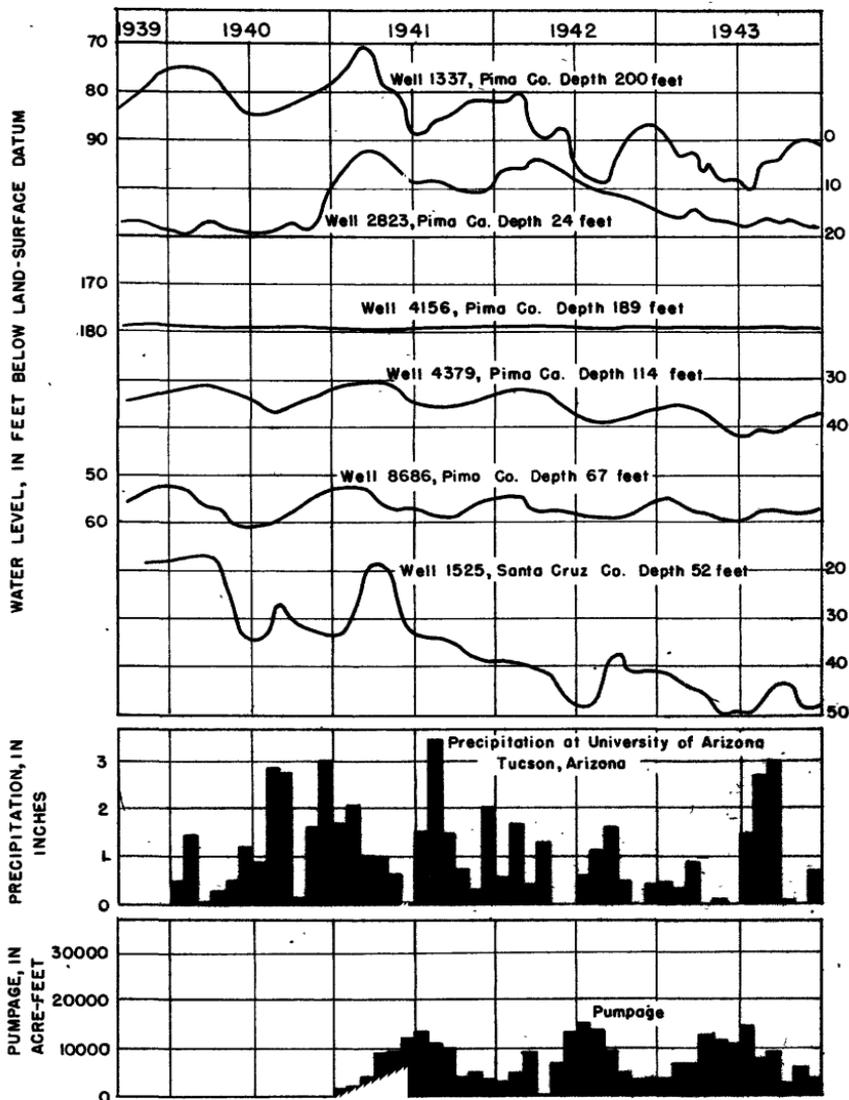


Figure 5.--Graphs showing fluctuations of water level in observation wells in the Santa Cruz Valley, Pima and Santa Cruz Counties, Ariz.

Well 4156 is an unused well east of Tucson and isolated from heavy pumping. The water level in this well fluctuated very little during 1943, but at the end of the year it was 0.50 foot lower than at the beginning of the year and 1.35 feet lower than in December 1939. This moderate decline in water level shows the effect of withdrawals over a long period from the deeper water-bearing strata, with insufficient recharge.

Well 4379 is 4 miles south of Tucson and about 300 feet east of the Santa Cruz River. In 1943 the water level in this well declined during the first half of the year, rose in July and August, declined again in September, and rose during the last quarter, but at the end of the year it was 1.72 feet lower than at the beginning. The water level in this well fluctuates in response to the variations in pumpage for the city of Tucson.

Well 8686 is about a quarter of a mile south of Sahuarita, in a heavily pumped area. The decline of its water level during the winter may be attributed to the pumpage required for the irrigation of winter vegetables, and the rise in July and August to recharge from summer floods in the Santa Cruz River. The water level was 1.58 feet lower at the end of the year than at the beginning.

#### Water-level measurements

454 (#949, p. 39). Cortaro Farms. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 11, T. 11 S., R. 11 E. Measuring point is 2.3 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Apr. 14, 152.66.

457 (#941, p. 57; #949, p. 39). T. J. Smith. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 22, T. 11 S., R. 10 E. Measuring point is 0.9 foot below land-surface datum. No measurements made in 1943.

460 (#941, p. 57; #949, p. 39). W. E. Anway. NW $\frac{1}{4}$  sec. 27, T. 11 S., R. 10 E. Measuring point is 1.2 feet above land-surface datum. No measurements made in 1943.

461 (#941, p. 57; #949, p. 39). T. V. Valenzuela. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 32, T. 11 S., R. 10 E. Measuring point is 1.4 feet above land-surface datum. No measurements made in 1943.

463 (#941, p. 57; #949, p. 39). Bud Parker. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 36, T. 11 S., R. 10 E. Measuring point is 1.4 feet above land-surface datum. No measurements made in 1943.

535 (#911, p. 85; 941, p. 58; #949, p. 39). Cortaro Farms. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T. 11 S., R. 11 E. Measuring point is 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 173.31; Nov. 4, 174.09.

1254 (#911, p. 85; #941, p. 58; #949, p. 39). Cortaro Farms. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 31, T. 12 S., R. 13 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 96.34; Nov. 3, 96.42.

1337 (#911, p. 85; 941, p. 58; #949, p. 39). Cortaro Farms. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 16, T. 12 S., R. 12 E. Measuring point is at land-surface datum.

## 1337. Cortaro Farms--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	90.20	Apr. 14	96.99	July 29	101.83	Nov. 3	91.91
30	90.31	28	95.40	Aug. 31	95.63	29	90.57
Feb. 27	94.43	May 31	99.46	Sept. 28	95.13	Dec. 29	91.19
Mar. 29	93.80	June 29	98.80	Oct. 27	91.98		

1367 (#911, p. 86; 941, p. 58; \*949, p. 39). Arizona Building Co. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 33, T. 12 S., R. 12 E. Measuring point is 0.3 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 128.18; Nov. 8, 129.47.

1425 (#911, p. 86; 941, p. 58; \*949, p. 40). Cortaro Farms. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 1, T. 12 S., R. 11 E. Measuring point is 0.4 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 169.47; Nov. 3, a/.

1430 (#941, p. 58; \*949, p. 40). J. E. Glover. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 18, T. 12 S., R. 11 E. Measuring point is 1.1 feet above land-surface datum. No measurements made in 1943.

1432 (#941, p. 59; \*949, p. 40). P. Johansen. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 12 S., R. 11 E. Measuring point is 1.1 feet above land-surface datum. No measurements made in 1943.

1435 (#941, p. 59; \*949, p. 40). S. B. Miles. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 34, T. 12 S., R. 11 E. Measuring point is 1.7 feet above land-surface datum. No measurements made in 1943.

1503 (#941, p. 59; \*949, p. 40). V. Valenzuela. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 12 S., R. 10 E. Measuring point is 0.5 foot above land-surface datum. No measurements made in 1943.

1506 (#941, p. 59; \*949, p. 40). Harry Alexander. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 26, T. 12 S., R. 10 E. Measuring point is 1.6 feet above land-surface datum. No measurements made in 1943.

2708 (#911, p. 87; 941, p. 59; \*949, p. 40). Cortaro Farms. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 13 S., R. 13 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 34.90; Nov. 3, 35.56.

2731 (#911, p. 88; 941, p. 60; \*949, p. 40). Ralph Wetmore. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 24, T. 13 S., R. 13 E. Measuring point is 1 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 24.58; Nov. 8, 28.37.

2738 (#911, p. 88; 941, p. 60; \*949, p. 40). Bruce Knapp. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 28, T. 13 S., R. 13 E. Measuring point is 0.8 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 32.63; Nov. 3, 33.87.

2808 (#911, p. 88; 941, p. 60; \*949, p. 40). Courtright Stables. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 25, T. 13 S., R. 14 E. Measuring point is 1.25 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 8.53; Nov. 8, 12.41.

2823 (#911, p. 89; 941, p. 61; \*949, p. 41). Southern Arizona Polo Association. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 28, T. 13 S., R. 14 E. Measuring point is 3.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Jan. 29	16.13	Apr. 28	17.41	Aug. 31	16.57	Nov. 8	18.13
Feb. 27	17.05	May 28	18.03	Sept. 29	17.94	27	18.45
Mar. 29	15.69	June 28	18.12	Oct. 27	17.98	Dec. 28	18.84
Apr. 14	16.85	July 29	18.40				

2903 (#911, p. 89; \*941, p. 61; \*949, p. 41). E. L. Urquides. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 30, T. 13 S., R. 15 E. Measuring point is 1.08 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 11.35; Nov. 8, 13.79.

2910 (#911, p. 90; 941, p. 61; #949, p. 41). V. C. Crouch. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 36, T. 13 S., R. 15 E. Present measuring point is 0.2 foot lower than that in use before June 3, 1941, and 1.4 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 23.44; Nov. 8, 28.58.

4153 (#911, p. 90; 941, p. 61; #949, p. 41). Emily Greenblatt. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 3, T. 14 S., R. 15 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 14, 57.23; Nov. 8, a/.

4156 (#911, p. 90; 941, p. 62; #949, p. 41). Charles Reynard. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 14 S., R. 15 E. Measuring point is at land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	179.50	Apr. 28	179.59	Aug. 31	179.86	Nov. 8	179.86
Feb. 27	179.52	May 28	179.66	Sept. 29	179.91	27	179.99
Mar. 29	179.46	June 28	179.70	Oct. 27	179.89	Dec. 27	179.97
Apr. 14	179.56	July 29	179.79				

4375 (#911, p. 91; 941, p. 62; #949, p. 41). Hal Manning. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 34, T. 14 S., R. 13 E. Measuring point is 0.04 foot higher than that in use Feb. 24 to Dec. 31, 1941, 1.1 feet lower than that in use before Feb. 24, 1941, and 1.1 feet below land-surface datum. Water level, in feet below land-surface datum, 1943: Apr. 15, b/.

4379 (#911, p. 91; 941, p. 62; #949, p. 41). Hal Manning. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 35, T. 14 S., R. 13 E. Measuring point is 2 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	35.31	Apr. 28	38.41	Sept. 29	41.22	Nov. 27	38.98
Feb. 27	35.44	May 28	40.20	Oct. 27	40.08	Dec. 16	38.33
Mar. 29	36.01	June 28	42.40	Nov. 12	39.63	27	37.86
Apr. 15	37.13	Aug. 31	40.62				

4450 (#941, p. 62; #949, p. 41). Pima County. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 6, T. 14 S., R. 12 E. Measuring point is 0.4 foot above land-surface datum. No measurements made in 1943.

4452 (#941, p. 62; #949, p. 41). Pima County. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 17, T. 14 S., R. 12 E. Measuring point is 0.2 foot above land-surface datum. No measurements made in 1943.

4453 (#941, p. 62; #949, p. 41). Pima County. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 21, T. 14 S., R. 12 E. Measuring point is 1.4 feet above land-surface datum. No measurements made in 1943.

4601 (#941, p. 63; #949, p. 42). J. Burrell. Sec. 10, T. 14 S., R. 10 E. Measuring point is 0.6 foot above land-surface datum. No measurements made in 1943.

4602 (#941, p. 63; #949, p. 42). J. Burrell. Sec. 10, T. 14 S., R. 10 E. Measuring point is at land-surface datum. No measurements made in 1943.

4604 (#941, p. 63; #949, p. 42). Frank R. Rendon. SW $\frac{1}{4}$  sec. 24, T. 14 S., R. 10 E. Measuring point is 0.7 foot above land-surface datum. No measurements made in 1943.

6404 (#941, p. 63; #949, p. 42). Everett Inscho. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 15 S., R. 10 E. Measuring point is 1.7 feet above land-surface datum. No measurements made in 1943.

6405 (#941, p. 63; #949, p. 42). C. W. Van Camp. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 33, T. 15 S., R. 10 E. Measuring point is 0.4 foot above land-surface datum. No measurements made in 1943.

6410 (#941, p. 63; #949, p. 42). C. W. Van Camp. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 15 S., R. 10 E. Measuring point is 1.5 feet above land-surface datum. No measurements made in 1943.

a Well filled in.

b Pumping.

6575 (#911, p. 91; 941, p. 63; #949, p. 42). H. C. Barker. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 1, T. 15 S., R. 13 E. Measuring point is 0.55 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 15, 52.16; Nov. 10, 52.48; Dec. 16, 52.43.

6582 (#911, p. 91; 941, p. 64; #949, p. 42). San Xavier School NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 15, T. 15 S., R. 13 E. Measuring point is 2.0 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 15, 38.09; Nov. 10, 39.06; Dec. 16, 38.93.

6593 (#911, p. 92; 941, p. 64; #949, p. 42). U. S. Indian Service. San Xavier Reservation. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 22, T. 15 S., R. 13 E. Measuring point is 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 15, 31.75; Dec. 16, 29.53.

6612 (#949, p. 42). City of Tucson. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 15 S., R. 13 E. Measuring point is 1.0 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	31.77	Apr. 28	32.18	Aug. 31	31.87	Nov. 27	32.49
Feb. 27	31.81	May 28	32.47	Sept. 29	32.24	Dec. 16	32.48
Mar. 29	31.89	June 28	32.93	Oct. 27	32.54	27	52.48
Apr. 15	32.03	July 29	33.10	Nov. 10	32.48		

7152 (#911, p. 93; 941, p. 64; #949, p. 42). State of Arizona. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 16 S., R. 14 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 19, 43.62; Dec. 16, 43.70.

7166 (#911, p. 93; 941, p. 65; #949, p. 42). Lane Farms. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 31, T. 16 S., R. 14 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 19, 61.18; Nov. 12, 50.56; Dec. 16, 50.11.

8578 (#911, p. 93; 941, p. 65; #949, p. 43). Lane Farms. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 13, T. 17 S., R. 13 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 19, 63.87; Nov. 12, 69.50; Dec. 16, 66.32.

8686 (#911, p. 94; 941, p. 65; #949, p. 43). Arizona State Highway Department. NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 18, T. 17 S., R. 14 E. Measuring point is 1.3 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	55.60	Apr. 28	58.92	Aug. 31	57.63	Nov. 27	58.00
Feb. 27	57.40	May 28	60.44	Sept. 29	58.20	Dec. 16	58.23
Mar. 30	58.22	June 28	60.21	Oct. 28	58.52	27	57.38
Apr. 19	59.13	July 29	59.60	Nov. 12	58.54		

9230 (#911, p. 95; 941, p. 65; #949, p. 43). J. B. Bull. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 1, T. 18 S., R. 13 E. Measuring point is 1.25 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 19, 50.01; Nov. 12, 48.74; Dec. 16, 48.48.

9238 (#911, p. 95; 941, p. 66; #949, p. 43). Owner's No. E2. Inter-continental Ranch Co. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 26, T. 18 S., R. 13 E. Measuring point is 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 19, 46.24; Nov. 15, 43.95; Dec. 23, 43.77.

10477 (#911, p. 95; 941, p. 66; #949, p. 43). Owner's No. W1. Inter-continental Ranch Co. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 3, T. 19 S., R. 13 E. Measuring point is 0.83 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Nov. 15, 52.15; Dec. 23, 52.28.

10483 (#911, p. 96; 941, p. 66; #949, p. 43). Gustavo Amado. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 29, T. 19 S., R. 13 E. Measuring point is 2.5 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 32.04; Nov. 15, 31.04; Dec. 23, 31.43.

## PINAL COUNTY

By E. M. Cushing and J. F. Hostetter

In Pinal County in 1943 the continuing cooperative investigation of ground-water conditions, which covers several counties and is discussed in the general introduction to the Arizona section of this volume, consisted mainly, as in the other counties concerned, in the making of water-level measurements and inventories of pumpage in three areas, two of which extend into other counties. These areas are the Santa Cruz River Basin, which extends southward through Pima and Santa Cruz Counties; the Queen Creek area, which extends westward into Maricopa County; and the part of the Gila River Basin that lies between the mouth of the Santa Cruz River and the Ashurst-Hayden Dam. The program in the Queen Creek area is discussed under Maricopa County, but the nine wells in the Pinal County part of that area are listed under Pinal County, together with the other wells in this county whose water levels were measured during the year. The program in the part of the Santa Cruz Basin that lies in Pima and Santa Cruz Counties is discussed under those counties, under which, also, are given the water-level measurements made in wells in that part of the basin.

The well-measurement program in Pinal County in 1943 included 77 wells, all of which were measured at least once during the year, some twice or oftener, and 9 at monthly intervals. In all, 180 measurements were made.

Fluctuations of water level

The discussion that follows takes into account all wells observed in Pinal County except those in the Queen Creek area, which have already been considered in the discussion of the fluctuations of water level in that area, included under Maricopa County, on page 47 of this volume. Measurements made in the other observation wells in Pinal County during the 12-month period November 1942 to October 1943 show that there was an average decline in water level of 3.5 feet for this period. The decline was caused principally by heavy pumpage in parts of the county, but partly, also, by a deficiency in rainfall. The precipitation at the Casa Grande Ruins National Monument during 1943 was only 5.84 inches, which was 1.2 inches less than in 1942 and 4.77 inches below normal. The pumpage in 1943 amounted to 515,000 acre-feet, which represents an increase of 3

percent over 1942 and 47 percent over 1941. The increase was entirely from privately owned wells, as the pumpage from wells owned by the San Carlos Irrigation District was approximately 8 percent less in 1943 than in 1942. About 540 wells were considered in the pumpage inventory, of which 400 were equipped with electric motors, 90 with oil or liquefied-petroleum-gas engines, and 50 with natural-gas engines.

Graphs showing the fluctuations of water level in typical wells in the Casa Grande-Eloy area of the Santa Cruz Basin during the period of investigation are given in figure 6, as are also graphs showing the pumpage, by months; from the ground-water reservoir, and the precipitation, by months, at the Casa Grande Ruins National Monument.

Well 890 is an unused well situated a few miles northwest of Casa Grande. The rise in its water level during the summer months may be attributed to recharge from surface water that had been applied to the land for irrigation. The water level was only 0.33 foot lower at the end of the year than at the beginning.

Well 975 is an active irrigation well situated about a mile northeast of Casa Grande. The graph shows a decline in water level in this well during the irrigation season and recovery after pumping had ceased. At the end of 1943 the water level was 0.73 foot lower than at the beginning of the year.

Well 1532 is an unused well about 7 miles southwest of Casa Grande, in an area of heavy pumping. The water level in this well declined continuously during the first 8 months of 1943 but partially recovered during the last 4 months. The measurements show that the water level was 4.57 feet lower at the end of the year than at the beginning, indicating the very heavy withdrawal from ground-water storage during 1943.

Well 1795 is an active irrigation well south of Eloy, in the center of an area of heavy pumping. The graph of this well shows a steep downward trend of the water level during the irrigation season, with only partial recovery at the end of that season, so that its stage was 7.66 feet lower at the end of 1943 than at the end of 1942. From April 1940, when measurements in this well were begun, to the close of 1943 the water level had declined 18½ feet.

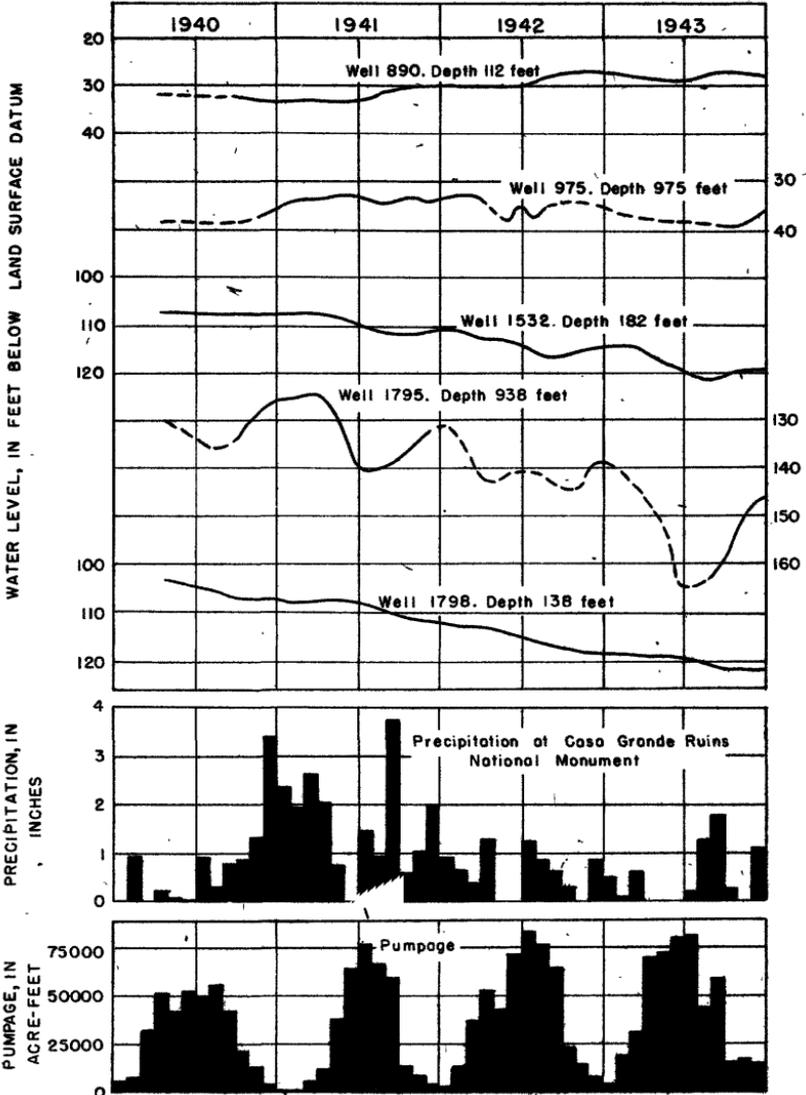


Figure 6.--Graphs showing fluctuations of water level in observation wells in the Casa Grande-Eloy area, Pinal County, Ariz.

Well 1798 is an unused well about 6.5 miles southwest of Eloy, near the western edge of the heavily pumped Eloy area. The water level in this well declined throughout the year, continuing its constant decline since measurements began in April 1940. The total decline since the well was first observed has been about 18½ feet, which indicates that most of the water pumped in the Eloy area is taken from storage. The water level was 3.23 feet lower at the end of 1943 than at the beginning.

In brief, the water level in wells in Pinal County in and near the areas having a surface-water supply showed little or no decline during the year, but the water level in wells in the area depending solely on ground water declined markedly as a result of excessive pumping. The marked decline in the last-named areas indicates large withdrawals from ground-water storage.

#### Water-level measurements

1 (\*911, p. 81; 941, p. 69; \*949, p. 46). Mrs. T. Rose. SW¼SW¼ sec. 31, T. 1 N., R. 8 E. Measuring point is at land-surface datum. Measurements discontinued after Dec. 14, 1942.

12 (\*941, p. 69; 949, p. 46). Mr. Dobson. SW¼SW¼ sec. 15, T. 1 S., R. 8 E. Measuring point is 1.0 foot above land-surface datum and 1,582.90 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 21, 259.27.

22 (\*911, p. 81; 941, p. 69; 949, p. 46). Hart Mullins. NW¼SE¼ sec. 35, T. 1 S., R. 10 E. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 21, 11.67; Nov. 22, 13.63.

23 (\*911, p. 81; 941, p. 69; 949, p. 47). Hart Mullins. NW¼SE¼ sec. 35, T. 1 S., R. 10 E. Measuring point is 2.0 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 21, 10.66; Nov. 22, 12.65.

24 (\*911, p. 82; 941, p. 69; 949, p. 47). Jack Gray. NW¼SW¼ sec. 35, T. 1 S., R. 10 E. Measuring point is 2.0 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 21, 33.39; Nov. 22, 35.83.

32 (\*911, p. 82; 941, p. 69; 949, p. 47). L. G. Baldwin. SE¼SW¼ sec. 34, T. 1 S., R. 10 E. Measuring point is 2.0 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 21, 16.04; Nov. 22, 17.68.

35 (\*911, p. 82; 941, p. 70; 949, p. 47). E. M. Little. SW¼SW¼ sec. 8, T. 2 S., R. 10 E. Measuring point is 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 21, 401.26; Nov. 22, 401.03.

36 (\*911, p. 82; 941, p. 70; 949, p. 47). L. G. Baldwin. SE¼SW¼ sec. 34, T. 1 S., R. 10 E. Measurements discontinued after Oct. 13, 1942.

41 (\*911, p. 82; 941, p. 70; 949, p. 47). W. A. Barkley. NW¼SE¼ sec. 27, T. 2 S., R. 8 E. Measuring point is at land-surface datum and 1,558.19 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Apr. 22, 222.00.

71 (\*911, p. 82; 941, p. 70; 949, p. 47). Magma Arizona Railroad. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 3 S., R. 8 E. Measuring point is 0.8 foot above land-surface datum, which is 1,510.33 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 22, 153.43; Nov. 23, 155.74.

93 (\*949, p. 47). Owner's No. 64. U. S. Indian Service. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 33, T. 3 S., R. 6 E. Measuring point is 1.8 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 50.21.

122 (\*949, p. 47). Owner's No. 52. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35, T. 3 S., R. 4 E. (published erroneously in Water-Supply Paper 949 as SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 25, T. 3 S., R. 4 E.). Measuring point is 0.9 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 6, 26.42.

123 (\*949, p. 47). Owner's No. 61. U. S. Indian Service. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 36, T. 3 S., R. 4 E. Measuring point is at land-surface datum. Water level, in feet below land-surface datum, 1943: May 6, 23.46.

174 (\*949, p. 47). G. W. Yancey. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 18, T. 4 S., R. 3 E. Measuring point is 1.6 feet above land-surface datum, which is 1,145.87 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 24.64.

176 (\*949, p. 47). Mr. Sherman. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 23, T. 4 S., R. 3 E. Measuring point is 0.5 foot above land-surface datum, which is 1,177.11 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 41.26.

249 (\*949, p. 48). Owner's No. 11-X. U. S. Indian Service. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 4, T. 4 S., R. 6 E. Measuring point is 0.2 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 30	33.23	Apr. 29	33.24	June 29	34.24	Aug. 27	33.31
Feb. 25	33.56	May 5	33.25	July 30	34.34	Dec. 29	33.87
Mar. 31	32.91	31	33.10				

257 (\*949, p. 48). Owner's No. 44. U. S. Indian Service. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 19, T. 4 S., R. 7 E. Measuring point is 0.9 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 19.55.

258 (\*949, p. 48). Owner's No. 42. U. S. Indian Service. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 20, T. 4 S., R. 7 E. Measuring point is 0.8 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 30	17.27	Apr. 29	16.73	May 31	17.17	July 30	18.02
Feb. 25	17.02	May 5	16.83	June 29	17.60	Aug. 27	18.21
Mar. 31	16.65						

259 (\*949, p. 48). Owner's No. 43. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T. 4 S., R. 7 E. Measuring point is 0.3 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 17.40.

278 (\*941, p. 70; 949, p. 48). Arizona Ranches, Inc. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 4 S., R. 8 E. Measuring point is 1.3 feet below land-surface datum, which is 1,533.08 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 22, 162.20; Nov. 24, 164.30.

299 (\*949, p. 48). E. C. High. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 32, T. 4 S., R. 9 E. Measuring point is 0.4 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, a/.

324 (\*949, p. 48). Owner's No. 1. U. S. Indian Service. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 21, T. 4 S., R. 10 E. Measuring point is at land-surface datum.

a Pumping.

## 324. U. S. Indian Service--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	81.27	May 5	79.85	July 30	77.25	Oct. 29	77.49
Feb. 25	81.24	31	79.07	Aug. 26	77.03	Nov. 30	78.28
Mar. 31	80.95	June 29	78.00	Sept. 28	77.12	Dec. 29	79.30
Apr. 29	80.06						

327 (\*949, p. 48). Owner's No. 4. U. S. Indian Service. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 31, T. 4 S., R. 10 E. Measuring point is at land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 94.34.

341 (\*949, p. 48). Owner's No. 7. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 7, T. 4 S., R. 11 E. Measuring point is 0.8 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1-	17.56	May 5	18.36	July 30	18.14	Oct. 29	22.85
Feb. 25	18.29	31	17.71	Aug. 26	19.59	Nov. 30	23.57
Mar. 31	18.51	June 29	15.30	Sept. 28	22.06	Dec. 29	24.17
Apr. 29	18.41						

437 (\*949, p. 49). Owner's No. 76. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 5 S., R. 9 E. Measuring point is 1.5 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 114.59.

458 (\*949, p. 49). Owner's No. 16. U. S. Indian Service. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 14, T. 5 S., R. 8 E. Measuring point is 0.9 foot above land-surface datum. Measurements discontinued after Dec. 31, 1942.

493 (\*949, p. 49). S. H. Wynn. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 5 S., R. 8 E. Measuring point is 0.8 foot above land-surface datum, which is 1,413.01 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 5, 73.42.

503 (\*949, p. 49). L. D. Ulmer. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 1, T. 5 S., R. 8 E. Measuring point is 0.5 foot below land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 36.41.

554 (\*949, p. 49). S. B. Rial. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 13, T. 5 S., R. 7 E. Measuring point is 0.8 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, a/ 50.12.

616 (\*949, p. 49). H. D. Murphy. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 4, T. 5 S., R. 4 E. Measuring point is at land-surface datum and 1,228.87 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 72.97.

618 (\*949, p. 49). J. R. Ross. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 30, T. 5 S., R. 4 E. Measuring point is 1.5 feet above land-surface datum, which is 1,242.72 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 83.43.

653 (\*949, p. 49). Bernice White. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 3, T. 5 S., R. 3 E. Measuring point is 2.2 feet above land-surface datum, which is 1,199.11 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 55.87.

723 (\*949, p. 49). Mrs. Davis. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 36, T. 6 S., R. 2 E. Measuring point is 0.9 foot above land-surface datum, which is 1,535.24 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 228.82. Measurements discontinued after May 6, 1943; obstruction in well at 154 feet.

738 (\*949, p. 50). A. A. Wallace. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 9, T. 6 S., R. 3 E. Measuring point is at land-surface datum and 1,291.99 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, b/.

801 (\*941, p. 70; 949, p. 50). Jake Stegmeier. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 1, T. 6 S., R. 4 E. Measuring point is at land-surface datum and 1,306.57 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 77.62.

a Well, 200 feet east, pumping. b Pumping.

818 (#949, p. 50). Earl Lane. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 30, T. 6 S., R. 4 E. Measuring point is 0.8 foot above land-surface datum, which is 1,310.98 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 110.09.

887 (#941, p. 71; 949, p. 50). Paul Knobloch. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 9, T. 6 S., R. 5 E. Measuring point is 1.0 foot above land-surface datum, which is 1,331.46 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 6, 42.17.

890 (#941, p. 71; 949, p. 50). Mrs. Gus Dratzka. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 15, T. 6 S., R. 5 E. Measuring point is 0.8 foot above land-surface datum, which is 1,348.92 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	28.07	Apr. 29	29.16	June 29	28.86	Sept. 28	27.61
Feb. 25	28.37	May 6	29.20	July 30	28.45	Nov. 30	27.94
Mar. 31	28.76	31	29.24	Aug. 28	27.95	Dec. 29	28.10

893 (#941, p. 71; 949, p. 50). P. H. Ethington. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 18, T. 6 S., R. 5 E. Measuring point is 0.8 foot above land-surface datum, which is 1,346.20 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 47.84.

906 (#949, p. 51). Owner's No. 100. U. S. Indian Service. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 23, T. 6 S., R. 5 E. Measuring point is 0.7 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 7, 32.46.

907 (#941, p. 72; 949, p. 51). Burris Bros. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 23, T. 6 S., R. 5 E. Measuring point is at land-surface datum and 1,374.56 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 37.07.

961 (#941, p. 72; 949, p. 51). Floyd Smith. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 6 S., R. 6 E. Measuring point is 1.6 feet above land-surface datum, which is 1,389.03 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 5, 29.37.

967 (#941, p. 73; 949, p. 51). E. E. Rosenberry. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 10, T. 6 S., R. 6 E. Measuring point is at land-surface datum and 1,403.40 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 1, 33.75; May 6, 34.04.

968 (#941, p. 73; 949, p. 51). C. E. Sherrill. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 13, T. 6 S., R. 6 E. Measuring point is 0.67 foot above land-surface datum, which is 1,420.54 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 1, 41.60; May 6, a/.

975 (#941, p. 73; 949, p. 51). Gilbert Bros. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 17, T. 6 S., R. 6 E. Measuring point is 0.2 foot above land-surface datum, which is 1,396.51 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 30	(a)	May 6	(a)	July 30	(a)	Oct. 28	39.45
Feb. 25	(a)	31	(a)	Aug. 28	(a)	Nov. 30	(a)
Mar. 31	(a)	June 29	(a)	Sept. 28	39.29	Dec. 29	36.69
Apr. 29	(a)						

981 (#941, p. 74; 949, p. 51). Gilbert Bros. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 20, T. 6 S., R. 6 E. Measuring point is 0.2 foot above land-surface datum, which is 1,407.47 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: June 29, 44.16; July 30, 43.28; Aug. 28, 43.03; Sept. 28, 42.31.

991 (#941, p. 74; 949, p. 51). Mrs. Emma Pennington. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 25, T. 6 S., R. 6 E. Measuring point is 2.4 feet above land-surface datum, which is 1,438.32 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 1, 39.63; May 6, 41.21.

a Pumping.

1002 (#949, p. 52). Owner's No. 103. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 33, T. 6 S., R. 6 E. Measuring point is 1.3 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 7, 32.56.

1066 (#941, p. 74; 949, p. 52). Diwan Singh. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 22, T. 6 S., R. 7 E. Measuring point is 0.6 foot above land-surface datum, which is 1,446.09 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 1, 53.71; May 6, a/

1072 (#949, p. 52). Owner's No. 85. U. S. Indian Service. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 6 S., R. 7 E. Measuring point is 1.1 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 1, 56.95; May 5, 59.54.

1079 (#949, p. 52). Owner's No. 84. U. S. Indian Service. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 6 S., R. 7 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 1, 72.26; May 5, 86.10.

1118 (#941, p. 75; 949, p. 52). Dick Shiflet. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 4, T. 6 S., R. 8 E. Measuring point is 2.1 feet above land-surface datum, which is 1,429.49 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 25	54.15	May 5	67.13	Sept. 28	68.09
Apr. 29	64.37	Aug. 27	74.59		

1153 (#949, p. 52). Owner's No. 82. U. S. Indian Service. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 30, T. 6 S., R. 8 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 1, 71.57; May 5, 78.64.

1157 (#949, p. 52). Owner's No. 78. U. S. Indian Service. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 35, T. 6 S., R. 8 E. Measuring point is 2.2 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 30.91.

1162 (#949, p. 52). Mr. McFarland (formerly published as owned by Amos Hess Estate). SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 27, T. 6 S., R. 8 E. Measuring point is at land-surface datum. Water level, in feet below land-surface datum, 1943: May 5, 66.94.

1331 (#949, p. 52). D. C. Roberts. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 20, T. 7 S., R. 8 E. Measuring point is 0.7 foot above land-surface datum, which is 1,539.82 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 5, a/.

1341 (#949, p. 52). A. B. Houser. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 35, T. 7 S., R. 8 E. Measuring point is 0.4 foot above land-surface datum, which is 1,577.33 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 5, a/.

1405 (#949, p. 53). S. C. McFarland. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 7 S., R. 7 E. Measuring point is 0.2 foot above land-surface datum, which is 1,498.19 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Jan. 1, 87.25; May 5, a/.

1421 (#941, p. 75; 949, p. 53). F. W. Shedd. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 27; T. 7 S., R. 7 E. Measuring point is at land-surface datum and 1,516.79 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, a/.

1422 (#941, p. 75; 949, p. 53). D. S. Gramer. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 29, T. 7 S., R. 7 E. Measuring point is at land-surface datum and 1,513.44 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 87.52.

1476 (#941, p. 75; 949, p. 53). D. A. Trekill. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 7 S., R. 6 E. Measuring point is 2.9 feet above land-surface datum, which is 1,420.68 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 38.44.

a Pumping.

1479 (#941, p. 76; 949, p. 53). Paul Brophy. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 12, T. 7 S., R. 6 E. Measuring point is 0.2 foot above land-surface datum, which is 1,467.40 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, a/.

1485 (#941, p. 76; 949, p. 53). F. W. Shedd. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 7 S., R. 6 E. Measuring point is 0.4 foot below land-surface datum, which is 1,480.78 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 63.00.

1489 (#949, p. 53). Albert Steinfeld. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T. 7 S., R. 6 E. Measuring point is at land-surface datum and 1,443.57 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 54.01.

1532 (#941, p. 76; 949, p. 53). Phoenix Church of Brethren. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 7 S., R. 5 E. Measuring point is 2.0 feet below land-surface datum, which is 1,368.06 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	114.66	May 7	118.52	July 30	120.70	Oct. 28	119.95
Feb. 25	114.70	June 31	119.52	Aug. 28	121.49	Nov. 30	119.54
Mar. 31	114.75	June 29	119.60	Sept. 28	120.96	Dec. 29	119.39
Apr. 29	117.15						

1539 (#949, p. 54). W. S. Stephenson Estate. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 22, T. 7 S., R. 5 E. Measuring point is at land-surface datum and 1,416.10 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, b/.

1540 (#949, p. 54). L. R. Meyers. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 3, T. 7 S., R. 5 E. Measuring point is 1.0 foot above land-surface datum, which is 1,387.13 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 89.93.

1583 (#949, p. 54). State of Arizona. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 36, T. 7 S., R. 4 E. Measuring point is 1.1 feet above land-surface datum, which is 1,371.46 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, c/.

1716 (#941, p. 77; 949, p. 54). Smith-Thornburg Co. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 8 S., R. 6 E. Measuring point is 0.8 foot above land-surface datum, which is 1,501.20 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 67.36.

1725 (#949, p. 54). State of Arizona. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 21, T. 8 S., R. 6 E. Measuring point is at land-surface datum and 1,503.74 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 70.56.

1776 (#941, p. 77; 949, p. 54). S. C. Milligan. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 9, T. 8 S., R. 7 E. Measuring point is 1.0 foot above land-surface datum, which is 1,543.77 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 127.84.

1787 (#941, p. 77; 949, p. 54). Sam Phillips. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 15, T. 8 S., R. 7 E. Measuring point is 2.0 feet above land-surface datum, which is 1,567.41 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 132.40.

1791 (#941, p. 77; 949, p. 54). S. G. Wilson. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 22, T. 8 S., R. 7 E. Measuring point is 1.1 feet above land-surface datum, which is 1,573.78 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 142.84.

1795 (#941, p. 78; 949, p. 54). Jack Pretzer, Jr. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 25, T. 8 S., R. 7 E. Measuring point is 0.4 foot above land-surface datum, which is 1,614.81 feet above mean sea level

Water level, in feet below land-surface datum, 1943

Jan. 30	(a)	Apr. 29	(a)	June 29	164.70	Oct. 29	153.10
Feb. 25	(a)	May 4	(a)	Aug. 28	(a)	Nov. 30	148.18
Mar. 31	(a)	31	154.50	Sept. 28	160.76	Dec. 29	(a)

a Bees swarming around measuring point prevented measurement.

b Water pouring into casing prevented measurement.

c Pumping.

1798 (\*941, p. 78; 949, p. 55). F. W. Shedd. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 33, T. 8 S., R. 7 E. Measuring point is 0.8 foot above land-surface datum, which is 1,591.98 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 30	118.54	Apr. 29	118.99	June 29	119.79	Nov. 30	121.65
Feb. 25	118.58	May 4	119.06	Aug. 28	120.84	Dec. 29	121.75
Mar. 31	118.72	31	119.34				

1855 (\*949, p. 55). D. A. Trekell. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 7, T. 8 S., R. 8 E. Measuring point is 0.5 foot above land-surface datum, which is 1,583.68 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 3, a/.

1880 (\*941, p. 78; 949, p. 55). Arizona Farm Products Co., locally known as Jack Pretzer well 11. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 8 S., R. 8 E. Measuring point is 0.3 foot above land-surface datum, which is 1,628.41 feet above sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	152.89	May 4	(a)	Dec. 29	163.69
Feb. 25	155.77	Sept. 28	175.92		

1884 (\*941, p. 78; 949, p. 55). Arizona Farm Products Co., locally known as Jack Pretzer well 6. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 33, T. 8 S., R. 8 E. Measuring point is 0.2 foot above land-surface datum, which is 1,640.46 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 3, a/.

1886 (\*949, p. 55). Clark and Johnson. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 15, T. 8 S., R. 8 E. Measuring point is 0.3 foot below land-surface datum, which is 1,609.66 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 3, 138.55.

2104 (\*941, p. 79; 949, p. 55). P. G. Wolfe. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 20, T. 9 S., R. 8 E. Measuring point is 0.6 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 4, a/.

2108 (\*949, p. 55). J. F. Nutt. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 26, T. 9 S., R. 8 E. Measuring point is 0.2 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 3, 161.74.

2173 (\*949, p. 55). Owner's No. 2. R. W. Dickey. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 15, T. 9 S., R. 7 E. Measuring point is at land-surface datum and 1,621.71 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 147.32.

2233 (\*949, p. 55). J. Sevak. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 24, T. 9 S., R. 6 E. Measuring point is 0.3 foot below land-surface datum, which is 1,579.04 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 90.64.

2236 (\*949, p. 56). B. F. Nelssen. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 3, T. 9 S., R. 6 E. Measuring point is 0.6 foot above land-surface datum, which is 1,533.63 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 7, 90.51.

2311 (\*941, p. 79; 949, p. 56). J. C. Kinney. NW $\frac{1}{4}$  sec. 3, T. 10 S., R. 7 E. Measuring point is 1.5 feet above land-surface datum, which is 1,614.64 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 102.56.

2314 (\*941, p. 79; 949, p. 56). Roland Curry. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 10 S., R. 7 E. Measuring point is 1.8 feet above land-surface datum, which is 1,587.99 feet above mean sea level. Water level, in feet below land-surface datum, 1943: May 4, 94.46.

a Pumping.

2332 (\*941, p. 79; 949, p. 56). J. C. Kinney. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 5, T. 10 S., R. 8 E. Measuring point is at land-surface datum. Water level, in feet below land-surface datum, 1943: May 4, 158.62.

2351 (\*949, p. 56). J. C. Kinney. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 5, T. 10 S., R. 9 E. Measuring point is 1.1 feet above land-surface datum. No measurements made in 1943.

2354 (\*941, p. 79; 949, p. 56). H. H. Calk. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 10, T. 10 S., R. 9 E. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 16, a/ 148.78; Nov. 4, 149.04.

2361 (\*941, p. 80; 949, p. 56). King Bros. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 22, T. 10 S., R. 9 E. Measuring point is 0.6 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Apr. 16, 142.29.

2363 (\*941, p. 80; \*949, p. 56). H. B. Aguirre. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 36, T. 10 S., R. 9 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 16, b/; Nov. 4, 139.86.

2383. Tom Soleng. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 34, T. 10 S., R. 10 E. 2.5 miles west of State Highway 84, 5 miles southeast of Red Rock. Used drilled stock well, diameter 6 inches. Measuring point, east side top of casing, 1.4 feet above land-surface datum. Equipped with centrifugal pump and gasoline engine. Water levels, in feet below land-surface datum, 1943: Apr. 14, 151.32; Nov. 4, 151.26.

#### SANTA CRUZ COUNTY

By E. M. Cushing and M. J. Scott

The measurement of water levels in observation wells in Santa Cruz County in 1943 and the making of a pumpage inventory formed part of the program covering the entire Santa Cruz River Valley, which, in turn, is part of the continuing cooperative investigation of ground-water resources in Arizona discussed on pages 6-8. The larger part of the Santa Cruz Valley lies in Pima and Pinal Counties, and under those counties, therefore, will be found the records on wells situated in that part of the valley.

During the year 41 measurements of water level, distributed among nine observation wells, were made in Santa Cruz County. Measurements were made monthly in two of the wells, and twice during the year in the remaining seven.

#### Fluctuations of water level

The water levels in the wells measured in Santa Cruz County showed an average decline of 0.95 foot during the calendar year 1943. Their downward trend throughout the year is attributed to the fact that precipitation was below normal in both 1942 and 1943.

- 
- a Well 300 feet distant pumping.  
b Pumping.

The total pumpage in 1943 in the Santa Cruz Valley in Santa Cruz County was about 15,000 acre-feet, representing an increase of 7 percent over 1942. Considered in the pumpage inventory were about 50 wells, 23 of which were equipped with electric motors and 27 with oil or liquefied-petroleum-gas engines.

Figure 5, which appears on page 54, in the Pima County section of this report, includes a graph of well 1525, Santa Cruz County. This is a domestic well equipped with a windmill. It is about 0.2 mile downstream from the Nogales municipal pumping station, and the graph shows the effect of the pumping at this station on the water levels in the surrounding area. The water level in well 1525 declined more than 7 feet during the period January to June, but by the end of September, owing to recharge from floods on the Santa Cruz River, it had recovered about 5 feet. At the end of the year it was 5.67 feet lower than at the beginning of the year and 29.05 feet lower than in November 1939, when the first measurement was made.

#### Water-level measurements

5 (\*911, p. 96; 941, p. 81; \*949, p. 57). R. W. Littlejohn. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 20 S., R. 12 E. Present measuring point is 2.6 feet higher than that in use before July 15, 1941, which was at land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 61.43; Dec. 31, 60.41.

79 (\*911, p. 97; 941, p. 81; \*949, p. 57). Mrs. Schenkel. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 20 S., R. 13 E. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 29.16; Dec. 31, 28.76.

616 (\*911, p. 97; 941, p. 81; \*949, p. 57). Mrs. Mary Ellen Cotter. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 21 S., R. 13 E. Measuring point is 0.30 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 29.47; Dec. 31, 29.78.

901 (\*911, p. 98; 941, p. 82; \*949, p. 58). T. T. Pendleton. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 5, T. 22 S., R. 13 E. Present measuring point is 0.3 foot lower than that in use before Sept. 23, 1941, and 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, a/; Dec. 31, a/.

908 (\*911, p. 98; 941, p. 82; \*949, p. 58). T. T. Pendleton. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 16, T. 22 S., R. 13 E. Measuring point is 0.9 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 26.57; Dec. 31, 27.90.

915 (\*911, p. 99; 941, p. 82; \*949, p. 58). T. T. Pendleton. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T. 22 S., R. 13 E. Present measuring point is 0.24 foot lower than that in use before Sept. 23, 1941, and 0.26 foot above land-surface datum.

#### Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	39.03	May 28	42.49	Aug. 31	35.04	Nov. 27	35.03
Mar. 30	41.61	June 28	44.28	Sept. 29	34.92	Dec. 27	36.17
Apr. 17	41.30	July 29	42.01	Oct. 28	34.88	Dec. 31	36.22
28	41.16						

a Dry.

1504 (\*911, p. 100; 941, p. 83; \*949, p. 58). J. F. Dalton. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 23 S., R. 14 E. Present measuring point is 2.5 feet higher than that in use before July 15, 1941, and 0.1 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 15.01; Dec. 31, 16.15.

1513 (\*911, p. 100; 941, p. 83; \*949, p. 58). Dines Nelson. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 27, T. 23 S., R. 14 E. Measuring point is 0.3 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 18.19; Dec. 31, 17.48.

1525 (\*911, p. 100; 941, p. 83; \*949, p. 58). Camberos Bros. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 36, T. 23 S., R. 14 E. Measuring point is at land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	42.55	Apr. 28	46.75	Aug. 31	46.65	Nov. 27	48.65
Feb. 27	44.62	May 28	50.02	Sept. 29	43.70	Dec. 27	48.23
Mar. 30	45.82	June 28	49.20	Oct. 28	44.40	31	47.57
Apr. 17	46.02	July 29	49.52				

1912 (\*911, p. 101; 941, p. 84; \*949, p. 59). Simon Mastick. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 8, T. 24 S., R. 14 E. Measuring point is 1.8 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 17, 27.74; Dec. 31, 27.35.

# CALIFORNIA

By J. F. Poland, J. W. Robinson, H. M. Stafford,  
J. E. Upson, and others

## SCOPE OF THE WATER-LEVEL PROGRAM

This report shows the progress made in 1943 in the measurement of water levels in California by the Geological Survey, United States Department of the Interior, in cooperation with several other Federal, State, and local agencies. It also reviews, in general, the other principal water-level programs in the State, in which the Geological Survey did not participate but concerning which general information is available.

The following table shows, by ground-water areas, under counties, the distribution in the State in 1943 of (1) observation wells, (2) water-stage recorders and float gages, and (3) records of tape measurements or automatic recorders as given in this report. As may be seen from the table, the report lists 6,367 water-level measurements made during 1943, distributed among 447 observation wells in 8 of the 58 counties in the State. Seven of the eight counties are in the southern part of the State, six of them south of the Tehachapi Mountains, as is also the part of the seventh covered by this report. The remaining one of the eight counties, San Joaquin, is in the central part of the State. For two counties, San Diego and Santa Barbara, water levels in wells in all the principal ground-water areas are given; for the other six counties, water levels in only scattered basins or areas are included.

Distribution of observation wells in California in 1943

County	Number of observation wells			Number of records of water levels in this report	Number of wells with water-stage recorders (R) or float gages (F)		
	Established during 1943	Discontinued in 1943	At year end		Through-out 1943	Part of 1943	At year end
Kern County:							
Antelope Valley, part	0	0	3	a 4	0	0	0
Los Angeles County:							
Antelope Valley, part	0	0	25	a 36	0	0	0

a This is the number for 1943 only; scattered records for some earlier years are also given.

Distribution of observation wells in California in 1943--Continued

County	Number of observation wells			Number of records of water levels in this report	Number of wells with water-stage recorders (R) or float gages (F)		
	Estab-lished during 1943	Discon-tinued in 1943	At year end		Through-out 1943	Part of 1943	At year end
Los Angeles County:							
San Gabriel River Basin	0	0	1	365	1R	0	1R
Coastal plain	0	3	12	a 418	0	4R	1R
Orange County:							
Coastal plain	3	5	24	917	0	12R	3R
Riverside County:							
San Jacinto Valley	0	0	1	4	0	0	0
San Bernardino County:							
Mojave River Basin	0	7	b 66	123	0	0	0
Santa Ana River Basin	0	0	1	51	0	0	0
San Diego County:							
San Luis Rey River Basin	0	0	18	205	0	0	0
San Dieguito River Basin	0	1	5	29	0	0	0
San Diego River Basin	0	0	21	227	0	0	0
Sweetwater River Basin	0	0	2	10	0	0	0
Otay River Basin	0	0	2	12	0	0	0
Tia Juana River Basin	0	0	5	30	0	0	0
San Joaquin County:							
Mokelumne River Basin	0	0	24	293	0	0	0
Santa Barbara County:							
Carpinteria Basin	1	c 2	22	327	0	3R	0
Goleta Basin	9	c 6	36	583	0	4R, 1F	1R
Middle Santa Ynez Valley	4	c 10	20	371	0	2R	1R
Lower Santa Ynez Valley	43	c 17	67	1,813	2R, 3F	4R	4R, 3F
Santa Maria Valley	3	c 1	30	452	2F	0	2F
Cuyama Valley	0	3	7	97	0	0	0
	63	55	392	6,367	3R, 5F	29R, 1F	11R, 5F

a This is the number for 1943 only; scattered records for some earlier years are also given.

b 11 wells in which no measurements were made in 1943 not included.

c Measurements were discontinued as of 1943 in other wells not included here, as no measurements were made in them during that year. They are distributed as follows: Carpinteria Basin, 9; Goleta Basin, 5; Middle Santa Ynez Valley, 8; Lower Santa Ynez Valley, 9; Santa Maria Valley, 3.

In addition to this program in which the Geological Survey participated, systematic measurements of water level were made by other agencies in several areas in southern California. Measurements were continued in ground-water areas in Ventura County by the Ventura County Water Survey, and a summary of fluctuations in ground-water levels for the period 1928-41 was published.<sup>1/</sup> The San Bernardino Valley Water Conservation District continued measurements in more than 300 wells in the San Bernardino Valley, and summarized the indicated changes in ground-water levels in a statement issued in mimeographed form. In continuation of observations begun in 1937, the Division of Irrigation of the Soil Conservation Service, United States Department of Agriculture, in cooperation with the Bureau of Plant Industry, Soils, and Agricultural Engineering, of the same Department, the Bureau of Reclamation and the Division of Irrigation of the Office of Indian Affairs, both of the United States Department of the Interior, and the Imperial Irrigation District made monthly measurements in about 150 observation wells in the Yuma-Bard area between the Colorado River and the All-American Canal. The Division of Water Resources of the Department of Public Works, State of California, continued to assemble records, collected by various agencies, of wells in the south-coastal basins. The records assembled for 1941 have been published in the Division's Bulletin 39-J, which is one of and continues the series beginning with Bulletin 39, published in 1932, and includes also records for wells in San Jacinto and Antelope Valleys from the time they were first measured through 1941.

As has already been brought out, no water-level records for the northern part of California appear in this report, and the central part is represented by records for only a part of one county--the Mokelumne River area of San Joaquin County. Many State, county, and local agencies, however, carried on systematic programs of water-level measurements in 1943 in the central part of California, which includes the large San Joaquin and Sacramento Valleys and many smaller basins. Thus, in several hundred wells distributed rather widely over the San Joaquin Valley, water levels were measured periodically by irrigation districts and local water-conservation agencies, largely in collaboration with the Division of Water Resources of the California Department of Public Works. In the Sacramento and Santa Clara Valleys and elsewhere several substantial water-level

<sup>1/</sup> Jamison, R. H., Am. Geophys. Union Trans. 1942, p. 129.

programs were maintained. Unfortunately, the facilities available to the Geological Survey have not been adequate to include the records of these programs in this report.

#### RAINFALL AND SNOWFALL

The following general summary of climatologic features for California for the calendar year 1943 is quoted from the annual report on such data issued by the Weather Bureau:<sup>2/</sup>

"The annual precipitation for the State for 1943 was somewhat less than the 47-year average period beginning with 1897. It was well above normal in the San Joaquin, South Coast, and Southeastern Desert Drainage Basins, approximated the normal in the Northeastern Interior Drainage Basins, and was far below normal elsewhere. Monthly averages for the State exceeded the normal in January, March, April, and June, with plus departures most pronounced in January and March. Totals for the southern portion of the State were much above the normal in December, but minus departures elsewhere brought the State average markedly below the December normal. Heavy rains in March, and excessive runoff from snow cover in the southern Sierra Nevada during subsequent months, caused the flooding of 112,000 acres of land adjacent to Lake Tulare by June 10th, causing estimated damage in the neighborhood of \$5,500,000.

"The total annual snowfall for the State was only 60 percent of the normal. June and July were the only months with excesses. The total for the 1942-43 season was but 66 percent of the normal. The snow cover at the end of the year was 6 percent of the normal. The ground was then generally bare below the 3,000-foot level in northern California, below the 4,000-foot level in the middle Sierra Nevada, and below the 5,000-foot level in the southern Sierra Nevada and mountains of southern California."

Because ground water is derived essentially from rain or snow, the volume in storage and the water levels in wells generally fluctuate in response to fluctuations in precipitation. Where there is a marked seasonal variation in precipitation, as is true of the entire Pacific Coast region, ground-water storage generally is greatest and natural ground-water levels are highest at or soon after the height of the wet season, but during the ensuing dry season the unconfined ground-water storage is depleted by natural discharge and the water levels in wells commonly recede. This depletion goes on 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 commonly 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 early autumn. For this treatment of climatic conditions and for the following summary treatment of runoff the water year is taken as ending September 30, the most practicable average date for near-maximum depletion of unconfined ground-water storage and near-minimum runoff.

<sup>2/</sup> U. S. Department of Commerce, Weather Bureau, Climatological data, vol. 47, No. 13, 1943.

The first of the two following tables shows the average monthly and seasonal distribution of precipitation in California for the 47-year period 1897-1943. The second table shows, for the water year ending September 30, 1943, the distribution of the precipitation by provinces and the wetness in each in relation to the average precipitation for the 50-year period ending September 30, 1940, as based on the records at 15 representative stations in the State. It will be seen from this table that the precipitation during the water year 1942-43, in percentage of the average for the 50-year period, varied considerably from one part of the State to another and was substantially greater than the average in most areas for which water levels are given in this report.

Average monthly and yearly precipitation in California, in inches, based on the 47-year period 1897-1943  
(From U. S. Weather Bureau, Climatological data, vol. 47, No. 13, 1943)

October	1.23	April	1.73
November	2.36	May	.95
December	3.91	June	.32
January	4.91	July	.07
February	4.56	August	.10
March	3.72	September	.45
	20.69		3.62
The year			24.31

Precipitation and relative wetness for the year ending Sept. 30, 1943, at 15 representative climatologic stations in California

Province	Station and county	Precipitation, 1942-43	
		Inches	Percentage of 50-year average <sup>a</sup>
Northern Coast Ranges Coast Ranges of central and southern California	Eureka, Humboldt County	39.96	102
	San Francisco, San Francisco County	21.71	108
	San Luis Obispo, San Luis Obispo County	26.05	119
	Santa Barbara, Santa Barbara County	24.34	136
	Los Angeles, Los Angeles County	17.94	124
Great Valley (California Trough)	San Bernardino, San Bernardino County	27.34	168
	San Diego, San Diego County	11.14	114
	Cuyamaca, San Diego County	37.77	98
Sierra Nevada	Red Bluff, Tehama County	25.95	112
	Stockton, San Joaquin County	17.96	129
Great Basin (Southwestern Bolson province)	Fresno, Fresno County	8.72	92
	Nevada City, Nevada County	58.26	119
	West Point, Calaveros County	49.51	125
	Indio, Riverside County	4.69	143
	Needles, San Bernardino County	4.55	101

<sup>a</sup> Average for water years ending September 30 during period 1891-1940.

## RUNOFF

The runoff in California streams during the water year ending September 30, 1943, ranged from less than the average to more than three times the average. Representative of the runoff in streams in the northern and central parts of the State are the year's total for Trinity River at Lewiston, in the north-coastal drainage, which was 110 percent of normal, and that for Kings River at Piedra, in the southern Sierra drainage, which was 130 percent of normal. In southern California the greatest runoff occurred in the frontal mountain areas whose drainage is tributary to the San Gabriel and Los Angeles Rivers and in the areas draining to the headwaters of the Santa Clara River. The water year 1942-43, with more than three times the average runoff in these areas, is one of the three wettest years on record. Southern San Diego County is the area that had the least runoff; there the total for the water year was substantially less than average. In most other areas of southern California, however, the runoff was in the intermediate part of its range of 100 to 300 percent of the average.

## SUMMARIES OF PROGRAMS, HYDROLOGIC CONDITIONS, AND WATER-LEVEL FLUCTUATIONS

Coastal plain in Los Angeles and Orange Counties

## Program of work

Since 1940 the Geological Survey, in cooperation with the Orange County Flood Control District, the Orange County Water District, the Los Angeles County Flood Control District, and the Board of Water Commissioners of the city of Long Beach, has been engaged in an intensive investigation of the ground-water bodies that underlie the so-called Long Beach-Santa Ana area--that is, most of the coastal plain in Los Angeles and Orange Counties. The investigation is concerned particularly with the contamination of the ground-water bodies by salt water and with the watertightness of the Newport-Inglewood structural zone. Reports pertaining to this investigation, released by the Geological Survey in 1943, are as follows:

Garrett, A. A., and others, Partial chemical analyses of waters from wells, streams, ponds, and sumps in the coastal zone of the Long Beach-Santa Ana area, Calif.: U. S. Geol. Survey processed report, 89 pp., maps, July 1943.

Piper, A. M., Poland, J. F., and others, Progress report on the cooperative ground-water investigation in the Long Beach-Santa Ana area, Calif.: U. S. Geol. Survey processed report, 46 pp., maps, sections, and graphs, August 1943.

An earlier release <sup>3/</sup> explains the three well-numbering systems widely used in this area and presents a cross-index correlating the three systems. The numbering system used by the Geological Survey has also been described in Water-Supply Paper 949, on pages 87 and 189.

The intensive program of water-level measurements which was carried on in 1941 and 1942 by the Geological Survey, and for which records have been published in an earlier report, <sup>4/</sup> had been largely, but not entirely, discontinued by the end of 1942. Automatic water-stage recorders were maintained or established during 1943 on 16 wells, records for which are given in this report. The following table lists these wells by location symbols and gives the period during which continuous records of water level were made. For all but three of these wells the depth and the position of the water-yielding zone tapped have been given in a previous report. <sup>5/</sup> For the three additional wells--Nos. 5/11-18J2, 5/11-26M3, and 5/11-26N3--available data are presented in the descriptions accompanying the respective water-level records.

Wells in the Long Beach-Santa Ana area on which automatic water-stage recorders were maintained in 1943 by the Geological Survey

Well	Period of operation a/
3/13-35C2	Nov. 1, 1943-
4/13-2J4	July 25, 1942-June 22, 1943
4/13-23M2	Apr. 29, 1941-June 22, 1943
5/11-18J2	Oct. 8, 1943-
5/11-18N1	Sept. 9, 1943-
5/11-18P1	Sept. 9, 1943-
5/11-26M3	Sept. 24, 1943-Nov. 1, 1943
5/11-26N3	Sept. 24, 1943-Nov. 1, 1943
5/11-29E1	July 6, 1943-Nov. 1, 1943
5/11-29E2	July 6, 1943-Nov. 1, 1943
5/12-11H1	July 2, 1942-Aug. 9, 1943
5/12-11L1	June 16, 1942-Aug. 9, 1943
5/12-12P3	June 16, 1942-Aug. 9, 1943
5/12-13D1	Feb. 20, 1942-Oct. 4, 1943
5/12-13D2	Feb. 18, 1942-Oct. 4, 1943
6/10-6P1	Nov. 29, 1940-Jan. 11, 1943

For 29 representative wells, selected to show typical fluctuations of water level in the Long Beach-Santa Ana area and designated "continuing"

<sup>3/</sup> Piper, A. M., Poland, J. F., and others, Index to factual data from water wells on a part of the coastal plain in Los Angeles and Orange Counties, Calif.: U. S. Geol. Survey processed report, 298 pp., June 1942.

<sup>4/</sup> Meinzer, O. E., Wenzel, L. K., and others, Water levels and artesian pressure in observation wells in the United States in 1942, Part 6, Southwestern States and Territory of Hawaii: U. S. Geol. Survey Water-Supply Paper 949, pp. 77-169, 1944.

<sup>5/</sup> Idem, pp. 80-81.

a If no terminal date is indicated, water-stage recorder continued to operate after Dec. 31, 1943.

observation wells in a previous report (see Water-Supply Paper 949, pp. 81-82), records have been continued in this report. Of these wells, 25 are measured currently by other agencies at monthly or more frequent intervals, and 3 are measured currently by the Geological Survey only. For all these wells, records by one or more agencies covering the full period of measurement through 1942 have already been published. (See Water-Supply Paper 941, pp. 105-135, and Water-Supply Paper 949, pp. 89-169.) The agencies collaborating with the Geological Survey in obtaining the records on these "continuing wells" are the city of Long Beach, the Los Angeles County Flood Control District, the Orange County Flood Control District, the San Gabriel Valley Protective Association, and R. A. Shafer for the Bixby-Bryant interests.

In Water-Supply Paper 949 water levels were published for 243 wells, in 202 of which measurements were discontinued by the Geological Survey during 1942. These wells are listed in the following table.

Wells in which water levels were measured by the Geological Survey in 1940-42 but not in 1943.

Los Angeles County					
3/13-32C1	4/13-2P1	4/13-11L3	4/13-22G1	4/13-28N2	5/12-2B3
4/12-4J2	6K1	11P1	23D2	29M1	2C4
4J3	7E1	13N1	23E2	29P1	2H2
8N1	8L1	14F3	23F2	30D1	2H3
16J1	10F1	14K5	23G1	31L1	2K1
17G3	10R1	14K6	23P2	32D1	2P4
24M1	11E1	14P1	26C1	33E1	10A1
25M1	11E2	14Q3	26L1	33E6	10H1
30B1	11B3	15E1	26P2	33E7	10H2
33A1	11G1	16D1	26P6	35M1	10K1
4/13-2A1	11D2	16H1	27K1	5/12-2A1	10P1
2J3	11F1	16D1	28N1	2B2	11D1
2K1	11K5				
Orange County					
4/11-19J1	5/11-17A1	5/11-23A2	5/11-34G2	6/10-6H1	6/10-19F2
30K2	17J1	23B1	34H1	6N1	19L1
5/10-19A1	17P2	24A1	34H2	6P2	6/11-1Q1
21F2	18B1	24A3	35A4	7B1	2A3
28D1	18G1	25A1	35C2	7C1	2G1
30B3	18G2	25M1	35D2	7L1	2G2
31A1	18P2	25N1	35L1	7L4	2G3
32P1	18P3		5/12-1D1	7P1	2H2
33A1	18P4	26N2	24H1	8A1	11J1
33H1	18P5	27A2	6/10-2B2	8B1	11Q1
34E1	18P6	27B2	2G5	10D3	12A1
5/11-6A1	19D2	27D1	2H1	18B4	12C1
6D2	20C1	27L1	3E1	18C5	12E1
7G1	20E1	27P1	3E2	18F2	12J2
8D1	20H2	28H2	3E3	18J4	13C2
11Q2	20L2	28H4	3N1	18L1	13F2
13A1	21H2	28J2	3Q2	18P2	13F3
13A3	21M3	33A1	5B1	19B1	13G1
13M2	21P4	33G1	6A1	19B3	13G4
14B2	21R1	33L1	6B1	19C1	13M1
14J1	22L3	33M1	6D1	19C2	13M3
16D1	22N2	33N1			

In 1943, an investigation was started by the Geological Survey in the Torrance-Santa Monica area in cooperation with the Los Angeles County Flood Control District and certain municipalities. This investigation is concerned fundamentally with the perennial yield and chemical character of the ground-water supplies in the so-called West Basin, which lies between the Palos Verdes Hills on the south, the Santa Monica Mountains on the north, the Pacific Ocean on the west, and the Newport-Inglewood structural zone on the east. In effect, it extends the area in which salt-water contamination and the permeability of the Newport-Inglewood structural zone have been under study northwestward from the Long Beach-Santa Ana area to the Santa Monica Mountains. By this extension the complete investigation spans all the Newport-Inglewood zone and the full coastal fringe of the Los Angeles Basin.

A field canvass of the wells in the Torrance-Santa Monica area was started in October 1943, but no periodic measurements of the depth to water had been made by the end of 1943, and hence no water-level measurements for wells in that area are included in the present report.

#### Hydrologic conditions and fluctuations of water level

Rainfall for the calendar year 1943 in the Long Beach-Santa Ana area was about 50 percent greater than the long-term average, according to records published by the United States Weather Bureau, but for the water year ending September 30, 1943, it was only about 20 percent greater than average. In January it was about double the average, and in both February and March it was greater than average. Hence withdrawal of ground water for irrigation was light until May. The rainfall was deficient in the autumn of 1943 until December, however, and therefore ground-water withdrawals continued throughout the autumn, especially in those parts of Orange County producing citrus fruit, which have a large acreage.

The coastal plain of Los Angeles and Orange Counties is divided into two distinct ground-water basins by the Newport-Inglewood structural zone. (See Water-Supply Paper 949, p. 78, fig. 7.) For the main coastal-plain basin northeast of the structural zone the average yearly withdrawal of ground water since 1930 has been about 320,000 acre-feet. For the ground-water basin southwest of the structural zone, which has been designated the West Basin by Eckis,<sup>6/</sup> the withdrawal has been somewhat less than a

<sup>6/</sup> Eckis, Rollin, South Coastal Basin investigation, geology and ground-water storage capacity of valley fill: California Dept. of Public Works, Water Resources Div., Bull. 45, p. 198, 1934.

quarter as great, or about 50,000 to 70,000 acre-feet a year. During the war period beginning in 1941, the withdrawal from the West Basin has increased substantially--in 1943 it was at least 25 percent greater than in 1940. Some increase in withdrawals also has occurred in certain parts of the main coastal-plain basin, especially in the industrial and residential areas west of the Rio Hondo. On the other hand, withdrawals to the east of the Rio Hondo are made largely for use in agriculture and so are low during years of greater-than-average rainfall, and they are not influenced appreciably by war activities. Therefore it is believed that the withdrawal from the main basin as a whole has not increased greatly since 1940.

The graph for well 4/13-23G2, which is the "Silverado" well of the city of Long Beach (see fig. 7), illustrates conditions in the southern part of the West Basin, where withdrawals for industrial use have increased about 30 percent since 1940. In this well the water level declined more than 10 feet during the period 1940-43. To show the trend in the main coastal-plain basin, the graph for well 4/11-19K1 (U. S. 47), at Los Alamitos, is also plotted on figure 7. This well is about on the boundary between Los Angeles and Orange Counties and furnishes a good index of water levels in the central area of confined water. In this well the piezometric surface has risen slowly but fairly steadily since the historic low-water period of 1936.

The following table summarizes the observed range of water levels in the 28 wells selected to show typical fluctuations in wells in the Long Beach-Santa Ana area and designated in Water-Supply Paper 949 as "continuing" observation wells. (For the location of the wells, see Water-Supply Paper 949, p. 78, fig. 7.) Because the historic low-water period for the coastal plain occurred in the autumn of 1936, the year-end water levels for 1942 and 1943 are compared with the year-end levels for 1936. Of the 28 wells, 24 are in the main coastal-plain basin and 4 are in the West Basin. One of those in the West Basin, well 4/13-14L1, taps the shallow water-bearing zone of Recent age in Dominguez Gap; the other three tap the main aquifer of Pleistocene age from which the heavy withdrawals are made. Because water levels in the wells tapping this aquifer have declined several feet since 1936, the average level is given, at the end of the table, for the wells in each of the two ground-water basins.

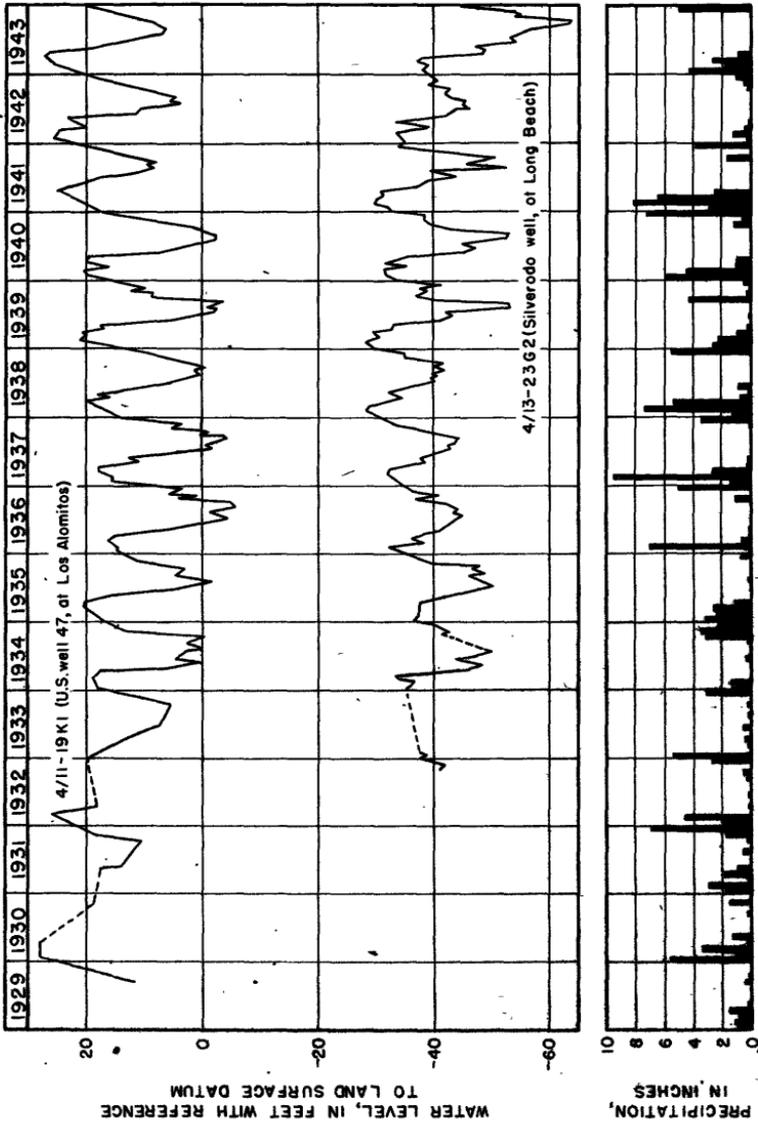


Figure 7.--Graphs showing fluctuations of water level in each of the two ground-water basins on the coastal plain in Los Angeles and Orange Counties, Calif., and monthly and seasonal precipitation at Long Beach, 1929-43.

Summary of water-level fluctuations in 28 selected observation wells of the Long Beach-Santa Ana area, Calif., 1936-43

Well	Water level at end of December, in feet above (+) or below (-) sea level <sup>a/</sup>			Net rise (+) or decline (-) in water level, in feet	
	1936	1942	1943	1936-43	1942-43
2/12-13A1	+133.5	+157.7	+160.2	+26.7	+2.5
3/11-36Q2	+18.2	+31.8	+36.0	+17.8	+4.2
3/12-8L3	+62.6	+70.8	+72.1	+9.5	+1.3
3/13-32F2 b/	-24.3	-27.5	-33.2	-8.9	-5.7
3/13-35B2	+28.0	+36.5	+36.8	+8.8	+3
4/9-7B1	+11.2	+45.7	+52.5	+41.3	+6.8
4/10-22L2	+10.2	+27.1	+30.8	+20.6	+3.7
4/11-5D1	+14.5	+21.9	+21.9	+7.4	.0
4/11-19K1	+10.9	+19.5	+21.4	+10.5	+1.9
4/12-8P1	-14.2	-23.2	-23.0	-8.8	+2
4/12-27K2	+3.5	+11.7	+13.1	+9.6	+1.4
4/13-14L1 b/	+3	c +5.0	+5.3	+5.0	+3
4/13-23G2 b/	-34.3	-40.1	-45.0	-10.7	-4.9
4/13-33D1 b/	-30.5	-33.5	-37.2	-6.7	-3.7
5/10-9D1	+10.0	+21.5	+24.3	+14.3	+2.8
5/10-28B1	+7.8	.....	+18.0	+10.2	....
5/11-2E1	+4.4	+18.7	+22.1	+17.7	+3.4
5/11-16D2	+2.0	+10.5	+12.0	+10.0	+1.5
5/11-25P1	+3.5	+11.4	+12.4	+8.9	+1.0
5/11-28A1	-.6	+9.4	+15.5	+16.1	+6.1
5/11-29C4	.....	.....	+7.9	.....	....
5/12-2E1	+3.0	+9.6	+10.4	+7.4	+8
5/12-12P1	+9	+6.6	+6.6	+5.7	.0
6/10-1E1	+2	+10.4	+13.0	+12.8	+2.6
6/10-1L2	+17.1	+21.6	+21.5	+4.4	-.1
6/10-5G1	+3.5	+11.7	+12.7	+9.2	+1.0
6/11-13G2	+8	+1.9	+1	-.7	-1.8
I-9F1	-1.8	+15.4	+20.7	+22.5	+5.3
<b>Averages:</b>					
24 wells in main coastal-plain	+14.3	+24.9	+25.8	+12.3	+2.0
4 wells in West Basin	-22.2	-24.0	-27.5	-5.3	-3.5

Mojave Desert region, Kern, Los Angeles, and San Bernardino Counties

Antelope Valley, Kern and Los Angeles Counties

Observations of water level in Antelope Valley were continued in 1943 in 29 wells, which were measured in both spring and autumn. The measurements indicate a continuation of the downward trend in levels shown by the observations of the past several years. The average stage for the entire basin in December 1943 was 2.8 feet lower than the average stage in December 1942. As in previous years, the greatest decline occurred in the southern part of the valley, where it averaged about 4 feet. Water levels in the Redman area, where the land surface is lower, declined 2.3 feet on the average.

a Chiefly interpolated.

b Well in West Basin, southwest of Newport-Inglewood structural zone.

c From recorder chart.

## Mojave River Basin, San Bernardino County

Observations of water level in the Mojave River Basin were continued in 1943 in 106 wells, most of which were measured in both spring and autumn. The discharge of the Mojave River near Victorville during the water year ending September 30, 1943, was 178 percent of the 18-year average, and there was continuous flow at Barstow from January 23 to the middle of May.

Measurements of water level in wells in the area near the Forks indicate net rises ranging from 8.6 feet to more than 15 feet. Near Hesperia Crossing the rise averaged 2.5 feet. No definite trend in water level in wells on the mesa east of the river was noted.

Wells in the valley between Victorville and Hodge showed very little change in water level from the preceding year; the average net change was a rise of 0.2 foot. Downstream from Hodge, between the river and the Barstow-Mojave highway, there was a net rise ranging from 4.0 feet in well 9/3W-14D1 (formerly M56a), near the river, to 0.6 foot at Hinkley. In wells in the area north of the above-mentioned highway, no definite trend in water level during the year was noted.

Net rises in water level in the Lenwood-Barstow area ranged from 0.3 foot in well 9/2W-19B1 (formerly M43), near Lenwood, to an average of 1.2 feet in wells at Barstow. The rise increased toward Daggett, where, in well 9/1E-18E1 (formerly L1), it was 5.2 feet.

East of Daggett, near the Daggett airfield, the water levels showed an average net rise during the year of 4.9 feet. North of the river and east of Yermo the average net rise was 3.8 feet.

The wells that were measured in the sand-dune area between Newberry and Troy Lake showed no definite trend in water level during the year.

Mokelumne River Basin, San Joaquin County

During 1943 the East Bay Municipal Utility District continued measurements of water level in typical observation wells of the Mokelumne area, in the central part of the Great Valley. Records for 24 of the wells were first published by the Geological Survey in its annual report on water levels for 1935 (Water-Supply Paper 777), when they were selected as the basis for an index to changes in ground-water storage in the area. In 1943 water levels in these wells were measured about monthly, 293 measurements having been made during the year. No water-stage recorders or float gages were operated.

The first of the two following tables correlates the average yearly water-level changes since 1933 in the 24 selected wells with the fluctuations in yearly rainfall. The upward trend of the water levels beginning in 1940, caused by greater than average rainfall, was halted in 1943 by a diminution in rainfall. The second table shows the changes in water level in 1943 during each of the two significant periods of the year in relation to irrigation--that of increasing withdrawal and that of diminishing withdrawal.

Average yearly rise or decline of water level in 24 observation wells and yearly rainfall in the Mokelumne area, 1934-43

Year	Water level		Rainfall <sup>a/</sup>	
	Yearly rise (+) or decline (-) (feet)	Accumulated rise (+) or decline (-) (feet)	Excess (+) or deficiency(-) (inches)	Accumulated excess (+) or deficiency(-) (inches)
1934	-0.72	-0.72	-12.78	-12.78
1935	+0.07	-.65	-3.20	-15.98
1936	+1.53	+0.88	+11.86	-4.12
1937	+1.17	+2.05	+5.11	+0.99
1938	+1.24	+3.29	+14.31	+15.30
1939	-3.58	-.29	-12.70	+2.60
1940	+1.31	+1.02	+15.18	+17.78
1941	+1.34	+2.36	+5.68	+23.46
1942	+.72	+3.08	+8.52	+31.98
1943	-.19	+2.89	-2.17	+29.81

Seasonal changes in water level, in feet, in 24 observation wells in the Mokelumne area, 1943

Period	Greatest rise	Greatest recession	Average change in water level
Jan. 1 to May 31 (increasing withdrawal for irrigation)	+5.73	-5.65	+0.83
June 1 to Dec. 31 (diminishing withdrawal)	+6.58	-6.09	-1.02
The year	+0.93	-1.98	-.19

The second table indicates that replenishment was greatest in the first half of the year, as in each of the years 1940-42. Rainfall during 1943 was heavy in January and again in March and April; the remainder of the year was unusually dry. The water level in most wells was lowest in August and September; in a few the lowest stage was reached at the end of the year, and in one or two it was reached in June. The year ended with a slight average decline in stage from the year-end stage of 1942.

<sup>a</sup> Average of rainfall at Electra, West Point, and Twin Lakes. Average yearly rainfall, 1906-40, at the three stations was 37.98 inches.

San Gabriel River Basin, Los Angeles County

A continuous water-stage recorder was in operation all year on well 1S/10-18 (formerly 42a) at Baldwin Park,<sup>7/</sup> which is regarded as typical of wells in the upper San Gabriel Valley. The water level in this well declined steadily from a mean daily stage of 295.17 feet above sea level, on January 1, to a stage of 294.59 feet, the lowest of the year, on January 20. The following day it began to rise, and it rose steadily until May 26, when it reached its highest stage of the year, 324.97 feet. On December 31 its mean daily stage was 307.31 feet--17.66 feet below the highest stage of the year, 12.72 feet above the lowest stage of the year, and 12.14 feet above the stage of December 31, 1942.

Basins in San Diego County

In contrast to the general decline in water level in the wells of San Diego County observed in 1942, the measurements in 50 wells in this county in 1943 indicate a small net rise during the year. Except for the Sweetwater River Basin, in which the only well measured showed a net rise of 10.22 feet, the average net rise in the several basins, as shown in the following table, ranged from 0.06 foot in the Tia Juana River Basin to 1.69 feet in the San Luis Rey River Basin. The greatest net rise in any one well was 10.30 feet in well 11/4W-18 (formerly F32), in Mission Basin of the San Luis Rey River, and the greatest net decline was 1.53 feet in well 18/2W-33 (formerly O120) in the Tia Juana Basin.

Net changes in water level, in feet, in observation wells  
in San Diego County, 1943

Basin	Number of wells	Number of measurements	Greatest net rise	Greatest net decline	Average net change
Tia Juana River near San Ysidro	5	6	0.97	1.53	+0.06
Otay River at Otay	2	6	1.58	....	+98
Sweetwater River at Sunnyside	1	6	....	....	+10.22
San Diego River, Cape Horn to coast	21	11	3.56	1.14	+33
San Dieguito River, San Pasqual Valley	5	6	1.43	.87	+46
San Luis Rey River, Monserate Narrows to coast	16	12	10.30	.10	+1.69

<sup>7/</sup> Ebert, F. C., Am. Geophys. Union Trans. 1936, p. 372.

a Well 17/1W-19 (formerly O18c) not included because of incomplete record.

b Wells 10/3W-20a (formerly C7c) and 11/4W-5 (formerly F22) not included because of incomplete records.

Santa Ana River Basin, Riverside and San Bernardino Counties

## San Bernardino area

The water level in well 1S/3W-17C1, known as the Williams well, near Redlands, rose from 21.67 feet below land-surface datum, reached on January 2, to 2.67 feet, the highest stage of the year, reached on March 6. It then declined until October 2, when it stood at 20.25 feet. On December 25 its stage was 17.75 feet below land-surface datum, which indicates a net rise of 3.92 feet for the year.

Measurements of water level made during 1943 in 10 wells<sup>B/</sup> distributed over the San Bernardino area indicate an average rise for the year of 3.22 feet and a range in rise of about 1 foot to 5.50 feet. The greatest rise occurred in well 122, which is west of Redlands; the minimum, in well "T", north of the Santa Ana River and west of East Highlands.

The publications of the United States Weather Bureau indicate that 1943 was the ninth consecutive year in which precipitation at San Bernardino was very near or greater than the long-term average. During this 9-year period, the water levels in the 10 wells mentioned above have, on the average, risen 30.25 feet.

## San Jacinto Valley

The water level in well 4/3W-32E1 (formerly 72c) rose from 69.84 feet below land-surface datum, reached on November 3, 1942, to 69.06 feet, reached on December 16, 1943.

Measurements of water level made during 1943 in nine wells<sup>B/</sup> distributed over the valley indicate a mean rise of 2.18 feet. The greatest rise was 8.20 feet. Only one well showed a net decline, and that was only 0.62 foot.

Basins in Santa Barbara County

The inventory of ground-water resources of Santa Barbara County, which began in January 1941, was continued in 1943 by the Geological Survey in cooperation with the county. In connection with this inventory periodic water-level measurements were made in 177 wells in 1941 (see Water-Supply Paper 941, p. 141), in 195 wells in 1942 (see Water-Supply Paper 949, p. 176), and in 221 wells in 1943. During 1943 measurements were discontinued in 39 wells and begun in 60 additional wells; also, water-stage recorders or "high-low" float gages were maintained on 21 wells. Measurements

B/ No records for these wells appear in this report.

of water level were made by the Geological Survey in six areas of the county; in two areas measurements were made by four local agencies, as follows: (1) In the Santa Maria Valley, by the Santa Maria Valley Water Conservation District, the city of Santa Maria, and the San Joaquin Power Division of Pacific Gas & Electric Co.; (2) in the Carpinteria Basin, by the Carpinteria County Water District. These measurements by local agencies have been made available to the Geological Survey. The distribution of water-level measurements in 1943 in the several areas has already been indicated. (See table on p. 72.)

#### General hydrologic conditions

Rainfall throughout the county was comparatively heavy during the period 1941-43. As computed from data published by the United States Weather Bureau, precipitation during the calendar year 1943 was more than double that in 1942 and about 130 percent of the long-term averages for the 10 stations for which there are 20 or more years of record. Throughout the county, from 30 to 50 percent of the precipitation of 1943 fell during the heavy storm of January 21-23. During these 2 days the storm rainfall at Santa Barbara was the greatest for the 76 years of record, or 11.96 inches; at Juncal Dam, near the head of the Santa Ynez River, the storm rainfall was 23.02 inches, the heaviest fall recorded in the county. Nearly all this rainfall quickly ran off and was not effective in replenishing the ground-water reservoirs. This was true especially in the Carpinteria and Goleta Basins, which are not large and which are floored with fine-grained deposits. In the Santa Maria and Cuyama Valleys, on the other hand, the storm runoff traversed long reaches of relatively coarse-grained deposits, and there probably replenished the ground-water bodies much more effectively.

The remainder of the year's precipitation fell chiefly in February, March, and December. Owing to the heavy rains during the winter and early spring, withdrawal of ground water for irrigation in 1943 was delayed throughout most of the county until late May, but the relatively dry autumn made it necessary, in places, to continue withdrawals into December.

The generally excessive rainfall and stream flow in 1940 and 1941 and again in 1943 have caused the level of unconfined ground-water bodies to rise generally and rather steadily throughout the county but have had a

less pronounced effect on the level of confined water bodies. The rise was greatest in the northern part of the county, where by December 1943 the water levels, in certain wells had reached their highest stages of record. In the Santa Maria Valley water levels in key observation wells rose as much as 23 feet during the calendar years 1941-43, which indicates a substantial increase in ground-water storage in this area.

In the southern part of the county, where the principal water bodies are largely confined, the water level rose only locally during the calendar year 1943 and declined in parts of each ground-water basin. These declines were probably due to the residual draw-down from late withdrawals and to lack of rainfall in October and November 1943.

#### Carpinteria Basin

Figure 8 shows the net change in water level in wells of the Carpinteria Basin during the calendar year 1943, also the monthly precipitation and the fluctuations of water level in a typical well in 1942 and 1943. In this basin the principal ground-water body is largely confined. On the average, throughout the basin the water level rose about 0.2 foot in 1943. The net rise was greatest in the eastern part of the basin, where, in places, it was more than 8 feet, but in the western end of the basin it was slight. This rise probably was the result of replenishment from the greater-than-average rainfall during the first three months of the year, replenishment which, although delayed, was sufficient to offset the greater-than-average withdrawal during the prolonged irrigation season. In the central and southern parts of the basin, the water level declined during 1943, probably owing to the combination of lag in replenishment and late withdrawals.

The graph of well 4/25-27Q2 (fig. 8) shows that the fluctuation of water levels in 1943 was essentially the same as in 1942. The highest stage of 1943 was somewhat above that of 1942, a condition that was evidently the result of the increased rainfall in 1943.

#### Goleta Basin

In wells of the Goleta Basin, in which the principal ground-water body also is largely confined, water levels averaged about 0.2 foot lower at the close of 1943 than at the close of 1942. As shown in figure 9 they declined in the central and southern parts of the basin, in which withdrawals

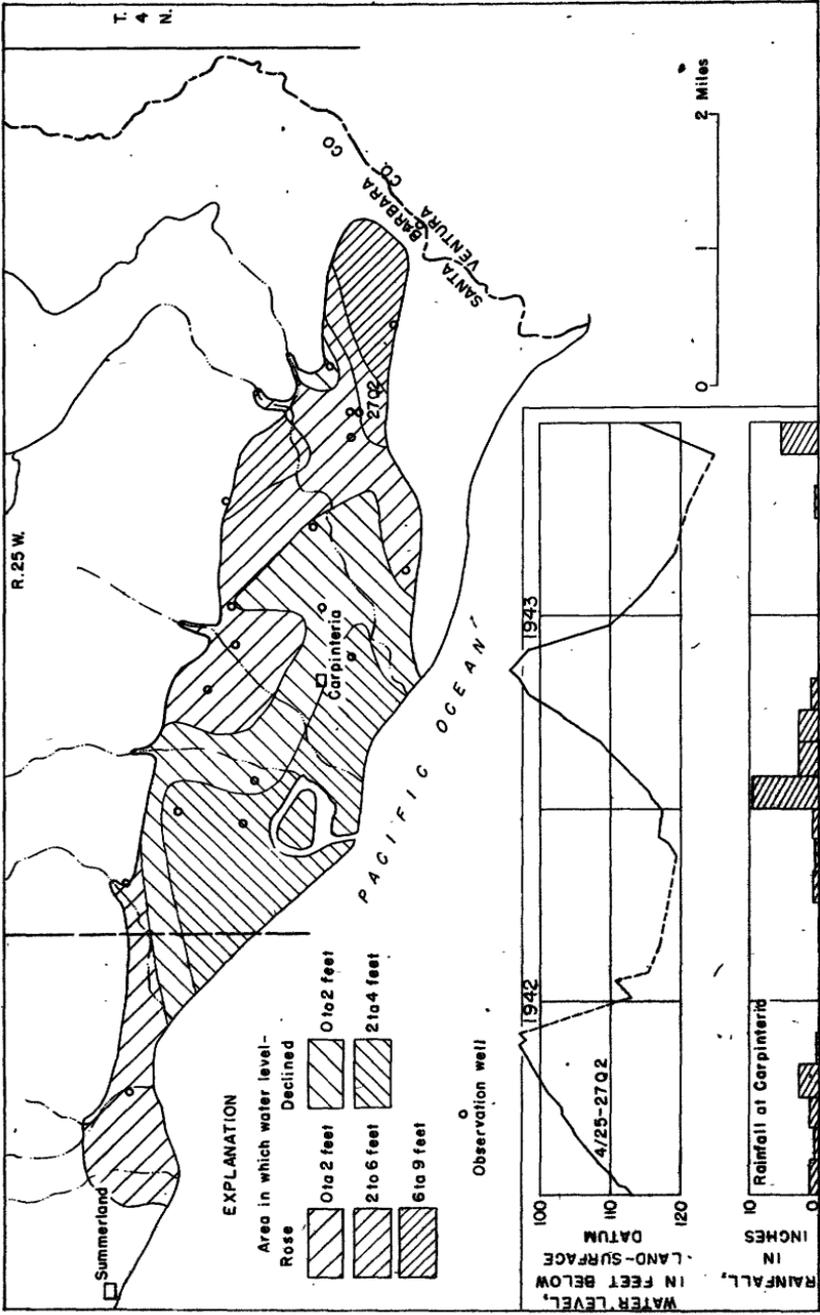


Figure 8.--Map of the Carpinteria Basin, Calif., showing net change of ground-water level in the calendar year 1943 and graphs showing fluctuations of water level in a typical well and monthly precipitation in 1942 and 1943.

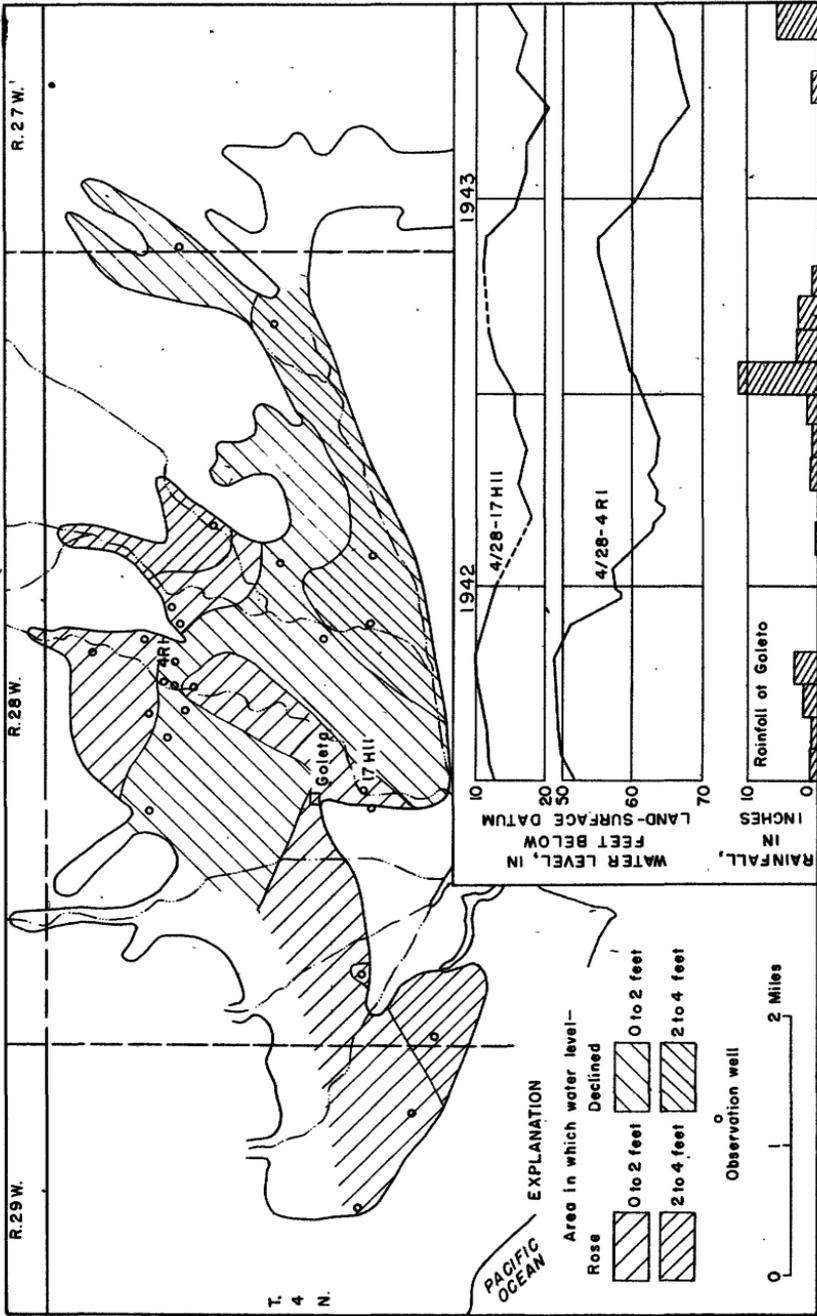


Figure 9.—Map of the Goleta Basin, Calif., showing net change of ground-water level in the calendar year 1943 and graphs showing fluctuations of water level in two typical wells and monthly precipitation in 1942 and 1943.

for irrigation are heaviest, but rose in the northern and western parts. Withdrawals of ground water were greater than average owing to the lack of appreciable rainfall before late December.

Throughout most of 1943 water levels were generally lower than in 1942 at corresponding times, but they rose sharply in December as withdrawals ceased and as the lagging replenishment from the greater-than-average rains brought their stages back nearly to those of December 1942.

#### Middle Santa Ynez Valley

In wells of the Middle Santa Ynez Valley the water levels of December 1943 were 1.9 feet higher, on the average, than those of December 1942. The greatest net rise, about 4 feet, occurred in the eastern and southeastern parts of the valley (fig. 10). Water levels declined in the area along the Santa Ynez River west of Buellton and in the central part of the broad eastern segment of the valley, but the decline was less than 2 feet except in two wells.

The general net rise of water level during 1943 probably resulted from replenishment derived directly from the excessive rainfall during the winter of 1942-43. The net decline along the Santa Ynez River west of Buellton doubtless was caused jointly by late summer withdrawals and by low stream flow, and thus, indirectly, by deficient rainfall in the autumn of 1943.

#### Lower Santa Ynez Valley

In the Lower Santa Ynez Valley, in which the principal ground-water body is largely confined, the water levels of December 1943 averaged about 0.4 foot below those of December 1942. Except in the northwest quarter of the valley (see fig. 11), water levels declined from 1 to 3 feet during the year, probably owing to the low stream flow and to the relatively prolonged withdrawals, both caused by relatively low rainfall during October and November 1943.

In the northwest quarter of the valley, water levels rose generally about 1 foot during the year; in one small area near the Santa Ynez River the net rise was more than 3 feet. This rise probably was due largely to cessation of withdrawals in the extreme western end of the Lompoc Plain.

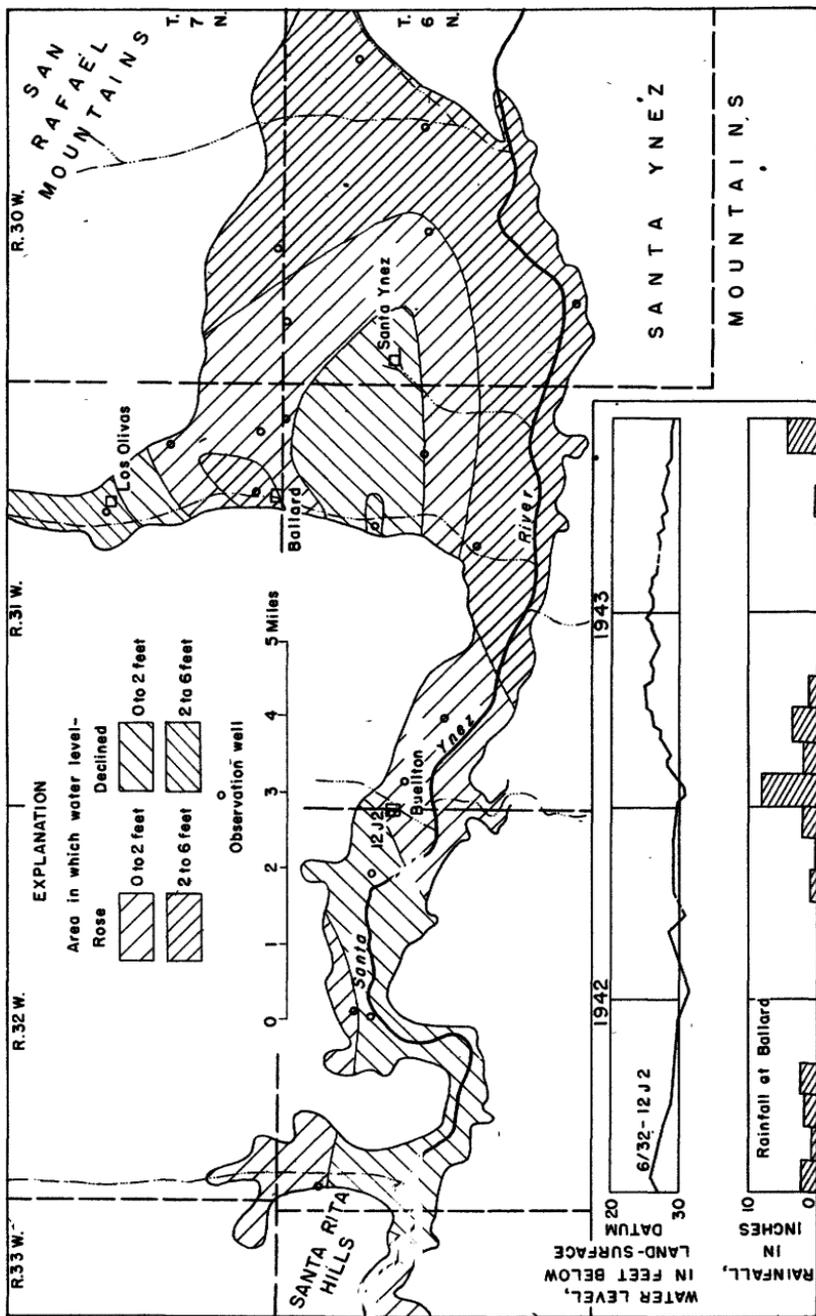


Figure 10.—Map of the Middle Santa Ynez Valley, Calif., showing net change of ground-water level in the calendar year 1942 and 1943 and graphs showing fluctuations of water level in a typical well and monthly precipitation in 1942 and 1943.

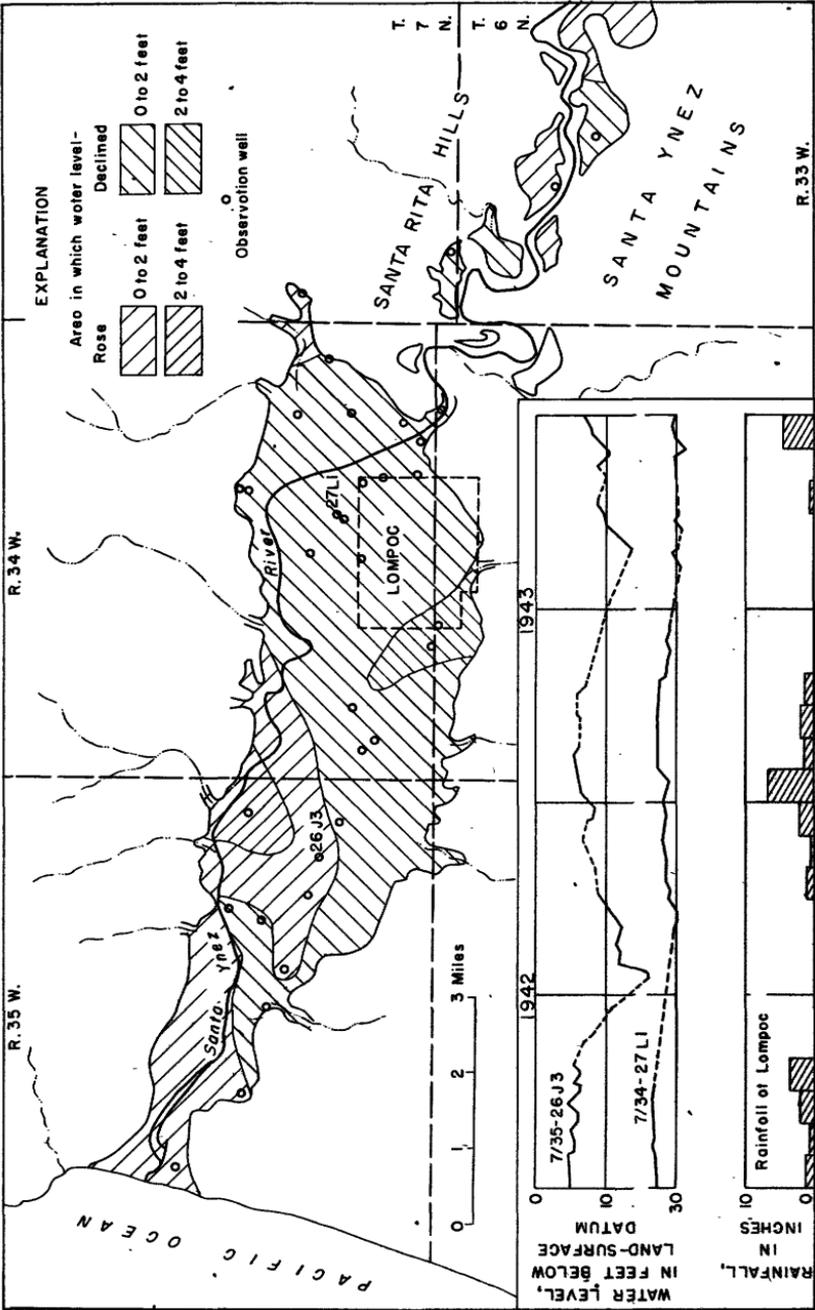


Figure 11.—Map of the Lower Santa Ynez Valley, Calif., showing net change of ground-water level in the calendar year 1943 and graphs showing fluctuations of water level in two typical wells and monthly precipitation in 1942 and 1943.

### Santa Maria Valley

In wells of the Santa Maria Valley, in which the principal ground-water body is unconfined over an extensive area, the water levels of December 1943 averaged about 3.8 feet above those of December 1942, and nowhere in the valley was the water level lower than in December 1942. The rise was greatest in wells along the Santa Maria River, and in areas north and northwest of Santa Maria and east of Sisquoc, it was more than 10 feet. (See fig. 12.) West of Santa Maria water levels rose to higher stages, and by December the small area of artesian flow at the extreme western end of the valley extended farther to the east than at any time in the past 15 years. Thus, ground-water storage in this valley has increased substantially in recent years.

### Cuyama Valley

In wells of the Cuyama Valley the water levels at the end of 1943 averaged about 1 foot higher than at the end of 1942, and nowhere in the valley had the water level declined. (See fig. 13.) The rise was greatest in the eastern part of the valley and least in the western part, where withdrawals are greatest. The net rise doubtless was due to the ground-water replenishment that was provided by the greater-than-normal rainfall in 1943 and that more than offset the increased withdrawals for irrigation.

In the Cuyama Valley some 25 wells have been drilled to supply water to more than 3,000 acres of land placed under irrigation since 1940. Despite this considerable increase in the use of ground water, the water table has risen slightly since water-level measurements were begun, in 1941. Thus it is evident that during the period 1941-43 the ground-water recharge was at least equal to the withdrawals.

### SYMBOLS ASSIGNED TO OBSERVATION WELLS

For uniformity in this report all observation wells have been assigned symbols according to the method used heretofore for wells in the coastal-plain area of Los Angeles and Orange Counties and in Santa Barbara County. Thus, new symbols are herein assigned to observation wells of the Mojave River Basin in San Bernardino County, the Mokelumne River Basin in San Joaquin County, the San Gabriel River Basin in Los Angeles County, the Santa Ana River Basin in San Bernardino and Riverside Counties, and the several basins of San Diego County. These symbols indicate the locations of the

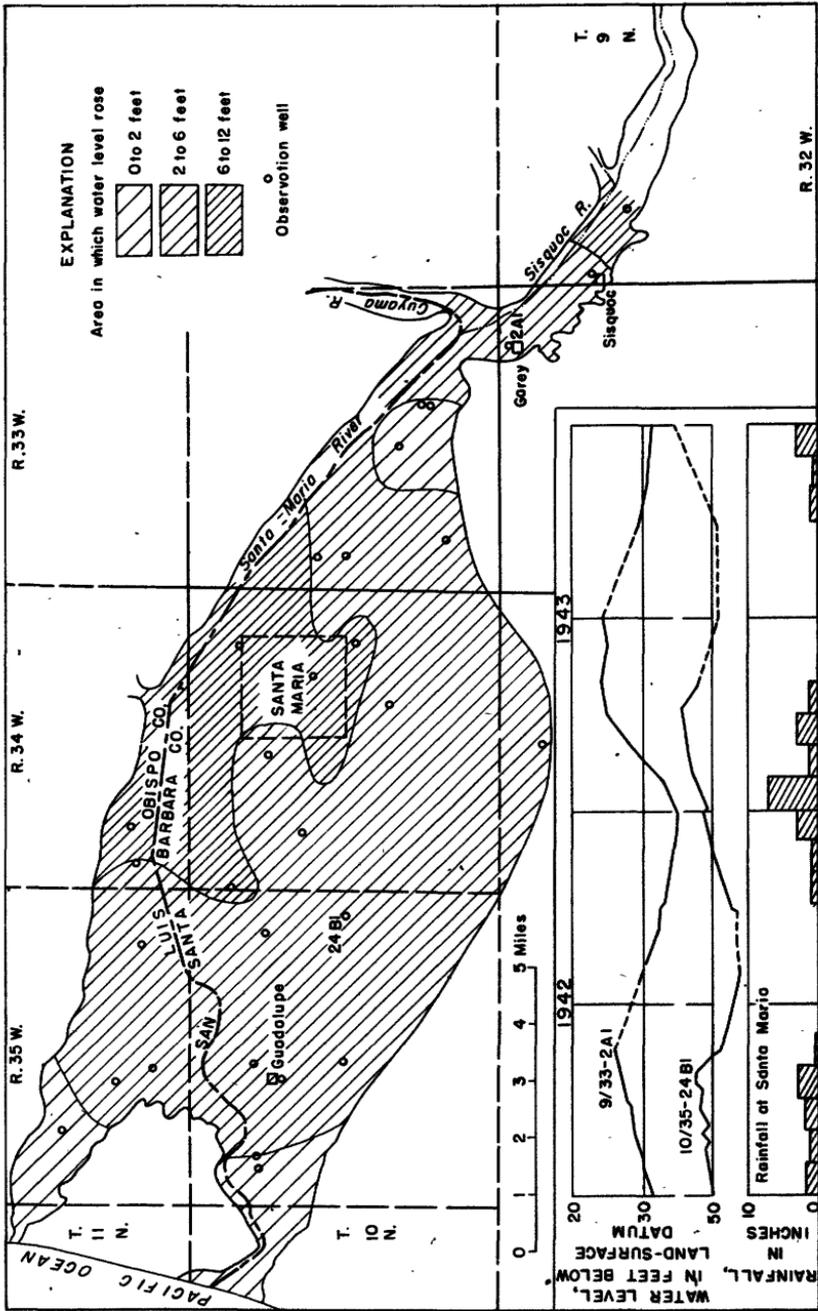


Figure 12.—Map of the Santa Maria Valley, Calif., showing net change of ground-water level in the calendar year 1943 and graphs showing fluctuations of water level in two typical wells and monthly precipitation in 1942 and 1943.

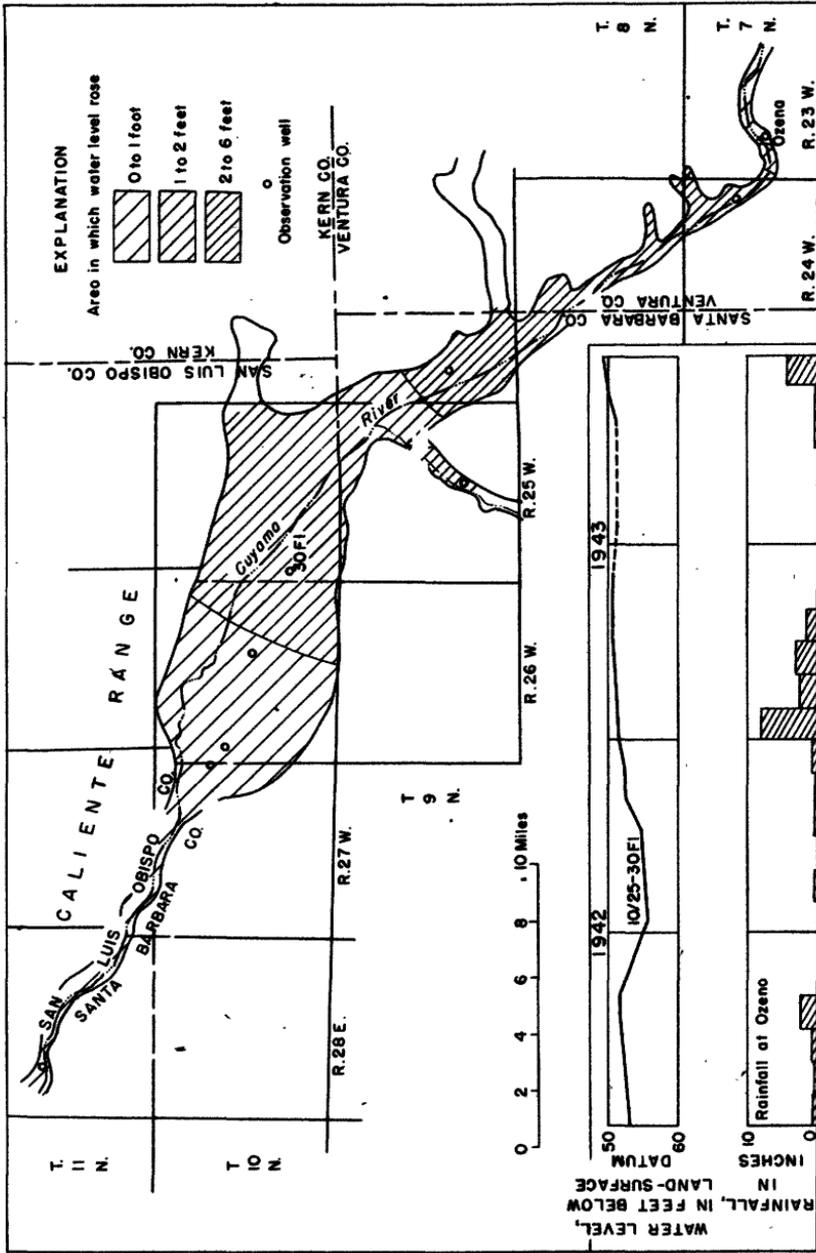


Figure 13.—Map of the Cuyama Valley, Calif., showing net change of ground-water level in the calendar year 1942 and 1943 and graphs showing fluctuations of water level in a typical well and monthly precipitation in 1942 and 1943.

wells according to the rectangular system of public-land surveys, as described in the next two paragraphs. The table on page 99 correlates the numbers of certain wells as used in previous reports with the symbols assigned to them in this report.

For example, for well 2/12-13A1, on the coastal plain of Los Angeles County, the part of the symbol that precedes the hyphen indicates the township and range (T. 2 S., R. 12 W.). The one or two digits following the hyphen indicate the section (sec. 13), and the letter indicates the 40-acre subdivision of the section as shown by the accompanying diagram. Within each 40-acre tract the wells are numbered serially as indicated by the final digit of the symbol. Thus, well 13A1 was the first well listed in the  $NE\frac{1}{4}NE\frac{1}{4}$  sec. 13.

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

In connection with this method of assigning location symbols several conventions are applied, as follows: (1) Numerous districts in California have never been public land; for these the rectangular system of subdivision has been projected, commonly after projections by local officials for purposes of land assessment. (2) If the ground-water basin or area under consideration is wholly in one quadrant of the particular base line and meridian (Humboldt, Mt. Diablo, or San Bernardino meridians, in California), the cardinal directions for township and range are not indicated. However, if the basin or area spans parts of two quadrants, the cardinal directions are abbreviated as necessary for clarity--for example, wells 15/1E-17 and 15/1W-13 in the San Diego River Basin and well 15/10-17 in the San Gabriel River Basin. (3) For a well whose location is known only approximately the symbol is shortened to the designations of township, range, and section only; also, if there are two or more such wells seemingly in a common section, their symbols are differentiated by lower-case letters affixed to the section number--for example, wells 10/3W-20 and 10/3W-20a of the San Luis Rey River Basin in San Diego County.

Numbers used in previous reports and location symbols used in this report to designate observation wells in certain areas in California

Previous reports	This report	Previous reports	This report	Previous reports	This report
<u>Mojave River Basin, San Bernardino County</u>					
U1	3/4W-13B1	M22	8/4W-20N1	L21	8/3E-4B1
U4	3/4W-12J1	M26	8/4W-2Q1	L22	8/3E-4B2
U6	3/3W-6E1	M30	8/4W-12Q1	L23	8/3E-3E1
U9	4/3W-30E1	M38	8/3W-4M1	L24	8/3E-3F1
U13	4/3W-19R1	M41a	9/3W-34R1	L28	8/4E-7N1
U14	4/3W-20H1	M43	9/2W-19B1	L31	9/4E-31K1
U15	4/3W-20L1	M51	9/3W-28A1	L32	8/4E-4N1
U16	4/3W-20K1	M52	9/3W-10P1	L37	8/4E-12L1
U17	4/3W-21A1	M52b	10/3W-32C1	L42	9/1E-15L1
U19	4/3W-1M1	M53	9/3W-10A1	L43	9/1E-13E1
U21	4/2W-5N1	M56	9/3W-10R1	L43a	9/1E-13E2
U23	4/3W-19G1	M56a	9/3W-14D1	L47	9/1E-12D1
U26	4/3W-17M1	M64	11/3W-28J1	L49	10/2E-32P1
U28	4/3W-18E1	M66	11/3W-34F1	L50	9/2E-4D1
U31	4/3W-5P1	M71	10/3W-23N1	L51	9/2E-3A1
U43	4/3W-6D1	M74	10/2W-30R1	L51a	9/2E-3A2
U44	4/3W-6B1	M75	10/2W-19P1	L54	10/2E-34L1
U55	5/3W-9K1	M82	9/1W-6B1	L63	9/2E-18F1
U57	5/3W-18F1	M84	10/1W-31C1	L64	9/2E-8J1
U59	5/4W-11P1	M88	10/1W-33D1	L67	9/2E-12N1
U59a	5/4W-11P2	M91	9/1W-10D1	L68	9/2E-14N1
U61	5/4W-10	M92	9/1W-10A1	L68a	9/2E-14N2
U68	5/4W-35A1	M97	9/1W-10M1	L68c	9/2E-14N3
U72	5/4W-36H1	M100	9/1W-13B1	L76	9/3E-10D1
M3	6/4W-19G1	L1	9/1E-18E1	L77	9/3E-3D1
M7	7/4W-30C1	L8	9/1E-24D1	L78	10/3E-34E1
M15	8/4W-31R1	L10a	9/2E-20M1	L93	9/3E-12E1
M19	8/4W-31D1	L19	9/3E-34D1	L97	10/3E-21A1
<u>Mokelumne River Basin, San Joaquin County</u>					
363L3	3N/6-3K3	3715P2	3N/7-15P2	4718N3	4N/7-18N3
3617A1	3N/6-17D1	3719A2	3N/7-19D2	4722Q4	4N/7-22Q4
3636R2	3N/6-36R2	3727F3	3N/7-27F3	4722Q5	4N/7-22Q5
373B1	3N/7-3C1	3730E2	3N/7-30E2	4727P1	4N/7-27P1
376J8	3N/7-6M8	4612R1	4N/6-12R1	4730J2	4N/7-30M2
377J1	3N/7-7M1	4634R1	4N/6-34R1	4731J3	4N/7-31M3
3710K3	3N/7-10L3	4636A1	4N/6-36D1	4731N5	4N/7-31N5
3710K4	3N/7-10L4	4715C3	4N/7-15B3	4734G1	4N/7-34G1
<u>San Gabriel River Basin, Los Angeles County</u>					
42a	1S/10-18				
<u>San Luis Rey River Basin</u>					
C9a	10/3W-1	C7b	10/3W-20	F30	11/4W-8
C9b	10/3W-1a	C7c	10/3W-20a	F32	11/4W-18
C9c	10/3W-1b	C4	10/3W-30	F13b	11/5W-13a
C8	10/3W-1c	F37	11/4W-9F1	F13c	11/5W-13b
C3a	10/3W-15	F36	11/4W-5	F13d	11/5W-13c
C5	10/3W-16	F22	11/4W-5a	F13e	11/5W-15
<u>San Dieguito River Basin</u>					
G17a	12/1W-31	G22a	12/1W-32	H17a	12/1W-33a
G17b	12/1W-31a	H31b	12/1W-33	H34b	12/1W-35

Numbers used in previous reports and location symbols used in this report to designate observation wells in certain areas in California--Continued

Previous reports	This report	Previous reports	This report	Previous reports	This report
<u>San Diego River Basin</u>					
L28	15/1E-2	L35	15/1E-19	L85	15/1W-28
L29	15/1E-16	L37	15/1W-13	K51a	16/2W-16
L30	15/1E-16a	L39	15/1W-24	K51b	16/2W-16a
L31	15/1E-17	L2	15/1W-24D7	K60	16/3W-24
L32	15/1E-17a	L44a	15/1W-13N2	K62	16/3W-23
L33	15/1E-17b	L83c	15/1W-23H1	K63	16/3W-22
L5a	15/1E-7	L46	15/1W-27	K33a	16/3W-21
<u>Santa Ana River Basin, Riverside and San Bernardino Counties</u>					
72c	4/3W-32				
Williams	18/3W-17				
<u>Sweetwater River Basin</u>					
018c	17/1W-19				
018d	17/1W-19a				
<u>Otay River Basin</u>					
039a	18/2W-22a				
089a	18/2W-22				
<u>Tia Juana River Basin</u>					
0118b	18/2W-34	0125	18/2W-34a	0140b	19/2W-1
0120	18/2W-33	0130b	19/2W-4		

## WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

Kern CountyAntelope Valley

9/12-21. (Believed to be well 69 in Water-Supply Paper 278, p. 72; see also Water-Supply Paper 578, pp. 330, 348, 364, well 21.) W. S. Webb. NW $\frac{1}{4}$  sec. 21, T. 9 N., R. 12 W., at rear of Rosamond Hotel in village of Rosamond. Used domestic well, diameter 6 inches, depth 89 feet. Measuring point, top of casing, 0.7 foot above land-surface datum.

Water level, in feet below land-surface datum, 1920-22, 1924-30, 1932

Date	Water level	Date	Water level	Date	Water level
Jan. 12, 1920	24.3	Jan. 9, 1926	29.3	Oct. 27, 1927	32.2
May 30, 1921	25.5	May 13	28.8	Apr. 26, 1928	31.3
Oct. 3	27.9	Aug. 25	31.3	28, 1929	31.3
Feb. 7, 1922	25.5	Oct. 15	31.3	Dec. 28	a 32.3
Oct. 23, 1924	28.7	Jan. 19, 1927	29.3	Apr. 17, 1930	31.9
May 5, 1925	27.7	May 9	30.3	8, 1932	(b)
Oct. 6	29.2				

9/12-21D1. Southern Pacific Lands Agency. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 21, T. 9 N., R. 12 W., 150 feet north of Center Street, 75 feet west of U. S. Highway 6, in village of Rosamond. Domestic well, equipped with windmill; 6-foot square concrete slab set level with top of casing. Measuring point, top of 3- by 6-inch wooden clamp on top of casing, 0.8 foot above land-surface datum.

a Pumping:

b Measurements discontinued; see record for well 9/12-21a.

## 9/12-21D1. Southern Pacific Lands Agency--Continued.

Water level, in feet below land-surface datum, 1932-43

Date	Water level	Date	Water level	Date	Water level
Apr. 8, 1932	32.52	Apr. 16, 1936	37.0	Mar. 13, 1940	35.8
Dec. 29	33.9	Jan. 8, 1937	36.4	Dec. 6	a 38.4
Apr. 13, 1933	33.7	Apr. 22	35.9	Apr. 25, 1941	35.8
Dec. 20	35.6	Nov. 10	39.6	Dec. 3	37.4
Apr. 19, 1934	35.9	May 23, 1938	37.9	Apr. 21, 1942	37.5
Jan. 8, 1935	36.3	Mar. 8, 1939	36.1	20, 1943	38.0
May 1	36.3	Nov. 17	38.5	Dec. 7	a 39.85
Dec. 13	37.0				

9/13-20H1 (See Water-Supply Paper 578, p. 367, well 157.) Harry White. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 20, T. 9 N., R. 13 W., 0.2 mile west of 80th Street W., and 2,000 feet south of Rosamond-Willow Springs road, in brush 300 feet north of corrugated-iron pump house. Abandoned irrigation well, diameter 12 inches, depth 350 feet. Measuring point, top of casing, at land-surface datum.

Water level, in feet below land-surface datum, 1921-43

Date	Water level	Date	Water level	Date	Water level
May 30, 1921	37.2	Aug. 20, 1926	42.8	Apr. 16, 1936	53.1
Oct. 3	37.85	Oct. 15	42.3	Jan. 8, 1937	53.0
Jan. 21, 1922	36.6	Jan. 19, 1927	41.0	Apr. 22	54.1
Apr. 29	36.0	May 9	43.1	Nov. 10	55.1
May 24	36.6	Oct. 27	43.0	May 23, 1938	b 58.8
Oct. 17	38.5	Apr. 26, 1928	43.8	Mar. 8, 1939	- 55.7
Apr. 30, 1923	40.2	Nov. 18	43.6	Nov. 17	57.4
July 10	40.2	Apr. 25, 1929	44.7	Mar. 13, 1940	57.4
Aug. 8	40.4	Dec. 28	44.5	Dec. 6	ab 61.8
Apr. 13, 1924	40.1	Apr. 17, 1930	45.8	28	58.7
July 4	40.4	Dec. 16, 1931	48.2	Apr. 9, 1941	a 58.8
Oct. 23	38.7	Apr. 7, 1932	b 52.2	25	58.5
Dec. 31	37.4	Dec. 29	49.5	May 30	a 59.3
Feb. 10, 1925	37.4	Apr. 13, 1933	b 52.6	July 18	a 60.2
May 5	40.4	Dec. 20	50.4	Aug. 29	a 60.4
8	40.9	Apr. 19, 1934	b 53.8	Sept. 27	a 60.6
July 21	41.8	Jan. 8, 1935	51.3	Oct. 31	(c)
Jan. 9, 1926	38.5	May 1	52.80	Jan. 31, 1942	a 61.8
May 13	40.55	Dec. 13	52.6	Apr. 20, 1943	65.0

9/13-20H2. Harry White. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 20, T. 9 N., R. 13 W., 2,300 feet south of Rosamond-Willow Springs road and 0.2 mile west of 80th Street W., in corrugated-iron pump house, 1,000 feet west of ranch buildings. Used irrigation well, diameter 12 inches, depth 350 feet. Measuring point, hole in north side of pump base, at land-surface datum. Water levels, in feet below land-surface datum: Dec. 3, 1941, 59.4; Apr. 21, 1942, 61.9; Dec. 15, 1943, a/63.02.

## Los Angeles County

## Antelope Valley

5/11-14F1. (See Water-Supply Paper 578, p. 366, well 139.) Littleton. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 14, T. 5 N., R. 11 W., 300 feet west of Little Rock Creek bridge and 100 feet north of State Highway 138. Abandoned irrigation well, diameter 16 inches, depth 43.0 feet on Oct. 24, 1924. Altitude of land surface about 2,880 feet. Measuring point, top of casing, 1.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1915-16, 1920-43

Date	Water level	Date	Water level	Date	Water level
Nov. 6, 1915	31.8	July 1, 1916	21.5	Oct. 21, 1922	33.8
Dec. 2	41.8	Aug. 1	28.5	July 14, 1923	32.6
Jan. 4, 1916	33.5	Sept. 8	22.3	July 16, 1924	42.9
Feb. 1	20.3	Nov. 6	35.5	Oct. 24	(d)
Mar. 17	19.2	Jan. 9, 1920	38.3	May 5, 1925	(e)
Apr. 3	17.8	Apr. 29, 1921	33.7	Oct. 7	(e)
May 2	16.5	Oct. 9	34.9	May 12, 1926	31.15
June 6	21.5	Jan. 5, 1922	36.85	Oct. 16	34.9

a Measurement by Los Angeles County Flood Control District.

b Pumping nearby.

c Obstruction at 61.0 feet.

d Well dry at 43.0 feet.

e Well dry.

5/11-14Fl. Littleton--Continued.

Water level, in feet below land-surface datum, 1915-16, 1920-43

Date	Water level	Date	Water level	Date	Water level
May 10, 1927	22.2	Apr. 13, 1933	35.5	Feb. 11, 1939	a 27.3
Oct. 19	a 30.5	Dec. 20	(e)	Mar. 8	25.5
26	30.9	Apr. 19, 1934	(d)	May 20	a 28.2
Dec. 6	a 31.5	Jan. 8, 1935	(f)	Nov. 24	(ad)
Jan. 21, 1928	a 34.8	May 2	22.7	Mar. 29, 1940	(ad)
Apr. 25	36.4	Dec. 12	(g)	June 29	(ad)
July 29	a 38.5	Apr. 16, 1936	(d)	Nov. 26	(ad)
Nov. 17	41.5	Jan. 8, 1937	(g)	Jan. 31, 1941	(ad)
Dec. 5	(ab)	Apr. 22	22.7	Apr. 9	a 21.9
Apr. 25, 1929	(c)	May 29	a 30.1	10	21.74
June 22	(ab)	June 26	a 31.8	May 30	a 21.1
Dec. 28	(d)	Nov. 10	(d)	July 18	a 23.7
Feb. 4, 1930	(ab)	Feb. 26, 1938	(ad)	Aug. 29	a 24.5
Apr. 17	(d)	May 1	a 21.2	Sept. 27	a 27.2
Nov. 29	(b)	23	20.1	Nov. 26	a 31.6
Dec. 15, 1931	(d)	June 16	a 21.3	Dec. 2	(h)
Apr. 7, 1932	a 25.7	Aug. 13	a 24.0	Jan. 31, 1942	(ad)
Aug. 6	a 31.3	Sept. 24	a 27.4	Apr. 20, 1943	18.03
Dec. 29	34.9	Nov. 19	a 31.3	Dec. 16	(ad)

6/8-10N1. W. G. Baguet. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 10, T. 6 N., R. 8 W., 175 feet north and 250 feet east of SW. corner of section, 40 feet north of ranch house. Dug domestic well, equipped with windmill. Altitude of land surface about 2,803 feet. Measuring point, top of concrete curb at three chisel marks on north side, at land-surface datum.

Water level, in feet below land-surface datum, 1932-43

Apr. 7, 1932	27.53	Jan. 9, 1937	27.8	Mar. 14, 1940	i 30.2
14, 1933	27.5	Apr. 22	27.8	Nov. 27	a 30.4
20, 1934	28.8	Nov. 10	28.8	Dec. 18, 1941	28.3
May 2, 1935	27.4	May 24, 1938	27.8	Apr. 22, 1942	28.6
Dec. 12	27.6	Mar. 10, 1939	28.7	Dec. 15, 1943	a 30.1
Apr. 15, 1936	27.6	Nov. 18	29.2		

6/8-18D1. (Believed to be well 121, Water-Supply Paper 578, p. 358.) Huff. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 6 N., R. 8 W., 900 feet south of Avenue O and 1,300 feet east of west line of section, 200 feet southwest of ranch house. Used domestic and stock well equipped with windmill, diameter 9 inches, depth 210 feet. Altitude of land surface about 2,723 feet. Measuring point, top of casing, 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1939-43

Nov. 18, 1939	157.0	Nov. 27, 1940	157.6	Dec. 3, 1941	j 155
Mar. 14, 1940	157.1	Apr. 25, 1941	157.7	18	j 157.6

6/9-4H1. Wilsona School. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 4, T. 6 N., R. 9 W., 2,450 feet south of Avenue M and 120 feet west of 170th Street E., in pump house 200 feet southeast of schoolhouse. Used domestic well equipped with power pump, diameter 12 inches. Prior to Mar. 11, 1939, equipped with windmill. Altitude of land surface about 2,596 feet. Measuring point, top of casing, 0.4 foot above land-surface datum.

- a Measurement by Los Angeles County Flood Control District.
- b Well dry at 41.0 feet.
- c Well dry at 42.0 feet.
- d Well dry.
- e Well dry at 38.5 feet.
- f Well dry at 38 feet.
- g Well dry at 35 feet.
- h Boulders in bottom of casing; wet at 31.5 feet.
- i Pumping.
- j Poor measurement; wet casing.

## 6/9-4H1. Wilsona School--Continued.

## Water level, in feet below land-surface datum, 1932-43

Date	Water level	Date	Water level	Date	Water level
Apr. 7, 1932	100.0	Jan. 9, 1937	103.1	Apr. 25, 1941	b 106.6
14, 1933	100.5	Apr. 22	103.2	22, 1942	107.4
20, 1934	101.2	Nov. 10	103.6	Dec. 3	b 108.6
May 2, 1935	a 101.9	May 24, 1938	104.1	Apr. 21, 1943	108.3
Dec. 12	102.3	Mar. 11, 1939	105.6	Dec. 15	b 108.8
Apr. 15, 1936	102.5	14, 1940	b 105.7		

6/9-29G1. Rankin. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 6 N., R. 9 W., 0.15 mile east of center of section, in corrugated iron pump house. Used irrigation well, diameter 14 inches, depth 180 feet. Altitude of land surface about 2,781 feet. Measuring point, top of casing, at land-surface datum.

## Water level, in feet below land-surface datum, 1939-43

Nov. 18, 1939	34.0	Nov. 26, 1941	b 29.8	Apr. 21, 1943	39.2
Mar. 14, 1940	36.8	Jan. 3, 1942	b 30.6	Dec. 15	b 29.95
Nov. 25	b 33.7	Apr. 22	35.1		

6/11-5A1. Lycns Bros. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 5, T. 6 N., R. 11 W., 650 feet south of Avenue M and 100 feet west of 40th Street E., under weeping willow tree. Used irrigation well, equipped with 60 horsepower motor and turbine pump. Altitude of land surface about 2,477 feet. Measuring point, pump base, at land-surface datum.

## Water level, in feet below land-surface datum, 1939-43

Nov. 18, 1939	134.8	Nov. 27, 1940	138.8	Dec. 5, 1942	b 146.95
Mar. 28, 1940	b 133.6	Dec. 3, 1941	140.1	13, 1943	b 149.85

6/11-28E1. Pierce. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 28, T. 6 N., R. 11 W., 1,100 feet east of 40th Street E., and 40 feet north of Avenue Q8. Abandoned irrigation well, 12-inch casing, depth 223 feet on Mar. 8, 1939. Altitude of land surface about 2,606 feet. Measuring point, top of casing, 1.7 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1927-43

Oct. 18, 1927	189.1	Dec. 15, 1931	192.6	Nov. 9, 1937	219.7
28	185.5	Apr. 7, 1932	b 198.8	Jan. 22, 1938	(bc)
Dec. 6	b 184.8	Dec. 29	202.6	Feb. 26	(bc)
Jan. 21, 1928	b 184.3	Apr. 13, 1933	202.8	May 1	b 220.8
Apr. 26	185.8	Dec. 20	205.2	23	221.2
July 29	b 187.3	Apr. 17, 1934	b 206.5	July 16	b 222.6
Nov. 17	187.5	19	206.5	Aug. 13	(bc)
Dec. 15	b 185.3	Jan. 8, 1935	209.2	Nov. 19	b 230.8
Apr. 25, 1929	188.1	May 2	210.4	Feb. 11, 1939	(bc)
June 22	b 189.3	Dec. 12	212.8	Mar. 8	(d)
Dec. 28	190.7	Apr. 16, 1936	214.1	July 27, 1940	(bc)
Feb. 4, 1930	b 190.9	Jan. 8, 1937	216.8	Apr. 22, 1941	(bc)
Apr. 17	191.0	Apr. 22	216.9	Dec. 2	(e)
26	b 191.3	May 29	b 225.6	Apr. 21, 1942	(c)
July 17	b 192.3	June 25	b 219.3	Nov. 30, 1943	(bc)
Nov. 29	b 193.7				

7/10-5M1. Ella E. Cunningham. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 N., R. 10 W., 1,440 feet north of Avenue H and 1,320 feet east of 90th Street E., in corrugated-iron pump house. Used irrigation well equipped with 25 horsepower gas engine and turbine pump, diameter 14 inches, depth 387 feet. Altitude of land surface about 2,396 feet. Measuring point, top of concrete pump base, 1.0 foot above land-surface datum.

- a Pumping.
- b Measurement by Los Angeles County Flood Control District.
- c Well dry.
- d Well dry at 221 feet.
- e Well dry at 217 feet.

7/10-5M1. Ella E. Cunningham--Continued.

Water level, in feet below land-surface datum, 1939-43

Date	Water level	Date	Water level	Date	Water level
Nov. 18, 1939	69.8	Apr. 25, 1941	78.7	Apr. 20, 1943	107.0
Mar. 13, 1940	73.4	Dec. 3	67.5	Dec. 15	a 70.1
Nov. 29	a 71.5	Nov. 25, 1942	a 79.08		

7/10-5N1. (See Water-Supply Paper 578, p. 366, well 155a.) Christ Laras. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 N., R. 10 W., 100 feet north of Avenue H and 1,100 feet east of 90th Street E. Abandoned irrigation well. Altitude of land surface about 2,401 feet. Measuring point, top of casing, at land-surface datum.

Water level, in feet below land-surface datum, 1921-39

May 29, 1921	28.9	Feb. 10, 1925	25.3	Apr. 17, 1930	b 55.5
Aug. 21	33.45	May 6	b 46.7	Dec. 16, 1931	c 37.1
Oct. 1	35.6	Aug. 12	b 49.9	Apr. 8, 1932	(bd)
Feb. 8, 1922	21	Oct. 6	b 46.4	Dec. 29	39.3
May 23	b 34.4	Jan. 4, 1926	24.4	Apr. 14, 1933	b 55.0
Sept. 8	b 40.1	Mar. 17	27.5	Dec. 20	42.7
Oct. 30	23.8	May 13	b 46.3	Apr. 20, 1934	b 62.1
Feb. 26, 1923	23.1	Aug. 16	b 54.4	Jan. 8, 1935	45.7
May 13	b 36.9	Oct. 16	34.4	Dec. 12	49.9
July 12	b 43.4	Jan. 18, 1927	26.8	Apr. 15, 1936	b 64.5
Oct. 10	31.1	May 9	b 52.2	Jan. 9, 1937	51.6
Dec. 12	23.5	Oct. 27	35.8	Apr. 22	(be)
Apr. 12, 1924	63.7	Apr. 26, 1928	b 57.3	Nov. 10	57.6
July 8	45.1	Nov. 18	32.4	May 25, 1938	(bf)
Oct. 23	28.5	Apr. 25, 1929	b 54.5	Mar. 10, 1939	58.9
Nov. 13	25.3	Dec. 28	31.1	Nov. 18	(g)

7/10-5N2. (See Water-Supply Paper 578, p. 362, well 155.) Ella E. Cunningham. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 7 N., R. 10 W., 45 feet south of well 7/10-5N1. Abandoned irrigation well, diameter 16 inches, depth 404 feet. Altitude of land surface about 2,401 feet. Measuring point, hole in base of pump, 1.6 feet above land-surface datum.

Water level, in feet below land-surface datum, 1939-43

Nov. 18, 1939	71.1	Apr. 9, 1941	a 73.6	Apr. 22, 1942	(i)
Mar. 13, 1940	71.5	25	80.9	20, 1943	(j)
Nov. 29	71.4	May 30	(ah)	Dec. 15	(aj)
Jan. 31, 1941	a 65.3	Dec. 3	71.1		

7/10-7B1. Boege. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 7 N., R. 10 W., 1,400 feet west of 90th Street E., and 150 feet south of Avenue H. Domestic well, equipped with windmill, diameter 6 inches. Altitude of land surface about 2,397 feet. Measuring point, top of casing, 0.5 foot above land-surface datum.

Water level, in feet below land-surface datum, 1932-43

Apr. 8, 1932	41.08	Apr. 22, 1937	b 57.5	Apr. 25, 1941	60.0
14, 1935	44.85	Nov. 10	52.4	Dec. 3	60.5
20, 1934	50.1	May 23, 1938	59.9	Apr. 22, 1942	66.8
May 2, 1935	53.6	Mar. 10, 1939	53.1	Nov. 25	a 65.62
Dec. 12	k 46.8	Nov. 18	57.2	Apr. 20, 1943	69.1
Apr. 15, 1936	b 56.0	Mar. 14, 1940	56.7	Dec. 15	a 67.9
Jan. 9, 1937	48.0	Nov. 29	a 59.75		

a Measurement by Los Angeles County Flood Control District.

b Pumping nearby.

c Probably rainwater; well seemed plugged just below 37.1 feet.

d Plugged and dry at 51 feet.

e Bottom caved; dry at 59 feet.

f Dry at 63 feet.

g Plugged and dry at 60.1 feet.

h Water surface below obstruction at 100 feet. Heavy pumping nearby.

i Well apparently dry at about 80 or 82 feet. Tape showed wet rust.

j Well dry.

k Windmill pumping.

7/10-31B1. (See Water-Supply Paper 578, p. 370, well 170.) NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 31, T. 7 N., R. 10 W., 60 feet south of Avenue L and 1,000 feet west of 90th Street E., about 300 feet southeast of ranch buildings. Abandoned irrigation well, diameter 14 inches, depth approximately 300 feet. Altitude of land surface about 2,500 feet. Measuring point, top of casing, 2.5 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1921-43

Date	Water level	Date	Water level	Date	Water level
May 29, 1921	78.7	Oct. 6, 1925	86.9	Dec. 20, 1933	119.6
Aug. 2	80.0	30	86.5	Apr. 20, 1934 a	124.5
Oct. 2	79.5	Jan. 4, 1926	84.5	Jan. 8, 1935	123.9
Jan. 23, 1922	78.7	Mar. 16	84.8	May 2	127.2
May 1	80.5	May 13	87.4	Dec. 12	128.8
Aug. 30	a 82.6	Aug. 16	92.3	Apr. 15, 1936	132.3
Oct. 21	a 82.9	Oct. 15	91.4	Jan. 9, 1937	133.6
May 8, 1923	a 81.6	Jan. 17, 1927	87.7	Apr. 22	a 137.6
July 12	a 83.4	May 9	92.3	Nov. 10	141.1
14	82.9	Oct. 27	93.6	May 23, 1938	144.6
Oct. 8	82.7	Apr. 26, 1928	95.7	Mar. 10, 1939	141.7
Dec. 12	82.1	Nov. 18	97.8	Nov. 18	148.6
Apr. 12, 1924	81.2	Apr. 25, 1929	99.3	Mar. 14, 1940	146.3
July 10	84.8	Dec. 28	a 103.6	Nov. 29	153.7
Oct. 23	84.2	Apr. 17, 1930	108.8	Apr. 11, 1941	149.7
Nov. 14	83.0	Dec. 16	113.3	Dec. 3	156.1
Feb. 10, 1925	82.3	29, 1931	115.6	Apr. 22, 1942	160.0
May 6	84.8	Apr. 8, 1932	115.0	Dec. 4	b 161.93
June 9	a 85.4	Dec. 29	115.6	Apr. 21, 1943	165.8
July 17	a 86.7	Apr. 14, 1933 a	119.7	Dec. 15	b 166.2

7/11-8P1. Mae Avery. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 8, T. 7 N., R. 11 W., 850 feet north of Avenue I and 1,700 feet east of 30th Street E., in field northwest of ranch buildings. Abandoned irrigation well, diameter 10 inches, depth more than 300 feet. Altitude of land surface about 2,382 feet. Measuring point, top of casing, 0.4 foot above land-surface datum, and 0.4 foot below top of 2.5-foot square concrete curb.

## Water level, in feet below land-surface datum, 1933-43

Apr. 14, 1933	44.6	Apr. 22, 1937 a	56.2	Dec. 5, 1940 b	53.7
20, 1934 c	50.6	Nov. 10	a 53.5	Apr. 10, 1941	54.4
May 2, 1935 a	53.1	May 23, 1938 a	59.0	Dec. 3	55.8
Dec. 12	44.9	Mar. 10, 1939	51.3	Apr. 22, 1942	58.7
Apr. 16, 1936 a	53.9	Nov. 18	53.2	Dec. 20, 1943	60.2
Jan. 9, 1937	46.4	Mar. 14, 1940 a	53.4	Dec. 15	b 60.05

7/11-24C1. Stevenson. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 24, T. 7 N., R. 11 W., 150 feet south of Avenue J and 2,500 feet east of 70th Street E., 50 feet south of ranch house. Used domestic well, equipped with three-legged windmill, diameter 6 inches, depth 210 feet. Altitude of land surface about 2,432 feet. Measuring point, top of casing, 0.8 foot above land-surface datum.

## Water level, in feet below land-surface datum, 1932-43

Apr. 8, 1932	72.6	Apr. 22, 1937 a	94.7	Apr. 11, 1941 b	97.62
14, 1933	74.4	Nov. 10	93.8	May 30	110.8
20, 1934	83.0	May 24, 1938 a	100.3	Dec. 3	d 104.9
May 2, 1935 a	86.9	Mar. 10, 1939	91.7	Apr. 22, 1942	111.2
Dec. 12	80.2	Nov. 18	99.2	Dec. 4	b 102.75
Apr. 15, 1936 a	90.9	Mar. 14, 1940	96.8	14, 1943 b	108.9
Jan. 9, 1937	84.6	Nov. 29	b 103.35		

a Pumping nearby.

b Measurement by Los Angeles County Flood Control District.

c Heavy pumping nearby for more than a month.

d Pumping.

7/11-28L1. NE $\frac{1}{2}$ SW $\frac{1}{4}$  sec. 28, T. 7 N., R. 11 W., about 100 feet west and 1,000 feet south of center of section. Abandoned irrigation well, diameter 12 inches, depth more than 200 feet. Altitude of land surface about 2,448 feet. Measuring point, top of casing, 0.7 foot above land-surface datum and 0.1 foot below top of 8-foot square adobe slab.

Water level, in feet below land-surface datum, 1937-43

Date	Water level	Date	Water level	Date	Water level
Nov. 10, 1937	95.6	Mar. 13, 1940	97.82	Dec. 3, 1941	103.1
May 24, 1938	97.6	Nov. 27	a 101.0	Apr. 22, 1942	104.8
Mar. 10, 1939	94.3	Apr. 10, 1941	99.9	Apr. 21, 1943	107.8
Nov. 18	98.5	24	a 100.2	Dec. 14	a 111.0

7/12-32J1. (See Water-Supply Paper 578, p. 369, well 166.) Lord. NE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 32, T. 7 N., R. 12 W., 200 feet west and 200 feet south of the east quarter corner. Abandoned irrigation well, equipped with windmill. depth 152 feet on Nov. 17, 1939. Altitude of land surface about 2,488 feet. Measuring point, top of casing, 1.0 foot above land-surface datum.

Water level, in feet below land-surface datum, 1921-43

Oct. 4, 1921	115.1	Aug. 25, 1926	120.3	May 1, 1935	138.1
Feb. 8, 1922	114.3	Oct. 15	120.6	Dec. 13	140.0
May 21	114.3	Jan. 20, 1927	119.8	Apr. 16, 1936	140.1
Oct. 26	115.6	May 9	120.5	Jan. 8, 1937	142.2
May 13, 1923	115.4	Oct. 26	123.0	Apr. 22	142.2
July 11	115.8	Apr. 26, 1928	123.6	Nov. 9	145.0
May 28, 1924	115.5	Nov. 17	125.4	May 23, 1938	145.1
July 16	b 116.8	Apr. 25, 1929	124.9	Mar. 8, 1939	146.5
Oct. 22	117.5	Dec. 28	127.8	Nov. 17	149.4
Nov. 15	117.4	Apr. 17, 1930	127.7	Mar. 13, 1940	148.7
Feb. 19, 1925	117.0	Dec. 15, 1931	129.5	Nov. 26	(c)
May 5	117.1	Apr. 7, 1932	a 132.61	Apr. 10, 1941	d 151.3
June 8	117.6	Dec. 29	134.7	Dec. 2	(c)
Aug. 12	117.4	Apr. 13, 1933	134.3	Apr. 21, 1942	(c)
Oct. 6	118.5	Dec. 20	136.1	Nov. 17	(ac)
Dec. 29	118.2	Apr. 19, 1934	137.1	Apr. 20, 1943	(c)
May 13, 1926	118.5	Jan. 8, 1935	138.0	Dec. 1	(ac)

7/12-32R1. SE $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 32, T. 7 N., R. 12 W., 40 feet north and 150 feet west of SE. corner of section, on north side of concrete pump base. Abandoned irrigation well, diameter 10 inches, depth about 202 feet on Nov. 17, 1939. Altitude of land surface about 2,522 feet. Measuring point, top of casing, 0.5 foot above land-surface datum.

Water level, in feet below land-surface datum, 1937-43

Nov. 9, 1937	172.3	Mar. 13, 1940	177.1	Apr. 21, 1942	182.5
May 23, 1938	172.9	Nov. 29	a 180.05	Nov. 17	a 185.7
Mar. 8, 1939	174.9	Apr. 10, 1941	180.1	Apr. 20, 1943	190.2
Nov. 17	177.1	Dec. 2	182.4	Dec. 1	(ae)
Feb. 16, 1940	a 178.7				

7/12-34H1. (See Water-Supply Paper 578, p. 369, well 167.) SE $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 34, T. 7 N., R. 12 W., 800 feet west of U. S. Highway 6 and 0.5 mile north of Avenue M. Abandoned irrigation well, depth 173 feet. Altitude of land surface about 2,501 feet. Measuring point, outside edge of  $\frac{1}{2}$ -inch pipe elbow, 1.5 feet above land-surface datum; prior to Nov. 17, 1939, top of casing, 0.8 foot above land-surface datum.

Water level, in feet below land-surface datum, 1921-43

Oct. 4, 1921	122.8	Oct. 22, 1922	124.3	July 16, 1924	124.6
Feb. 8, 1922	120.9	May 13, 1923	122.7	Oct. 22	126.2
May 21	121.7	July 11	123.7	Nov. 14	125.3

a Measurement by Los Angeles County Flood Control District.

b Windmill running.

c Well dry.

d About 0.5 foot water in well; water may have come in from top of casing.

e Well dry at 200 feet.

7/12-34H1. Morrison--Continued.

Water level, in feet below land-surface datum, 1921-43

Date	Water level	Date	Water level	Date	Water level
Feb. 19, 1925	125.8	Jan. 8, 1935	149.5	Apr. 9, 1941	b 165.0
May 5	124.7	May 1	149.1	10	164.8
June 8	125.1	Dec. 13	151.9	23	b 165.0
Aug. 12	125.9	Apr. 15, 1936	151.8	May 30	b 165.4
Oct. 6	126.4	Jan. 8, 1937	154.6	July 18	b 166.2
Dec. 29	126.1	Apr. 22	154.6	Aug. 29	b 166.9
May 12, 1926	125.9	Nov. 9	157.5	Sept. 26	b 167.3
Aug. 25	132.6	May 23, 1938	157.6	Oct. 31	b 167.6
Oct. 15	127.7	Mar. 8, 1939	159.9	Nov. 24	b 167.5
Jan. 20, 1927	129.2	Nov. 17	162.7	Dec. 2	167.4
May 9	127.7	Dec. 9	b 162.6	Apr. 21, 1942	b 166.77
Oct. 26	129.9	Feb. 16, 1940	b 162.4	24	b 168.27
Apr. 26, 1928	130.0	Mar. 16	162.10	May 29	b 168.25
Nov. 17	133.3	Apr. 21	b 162.7	June 27	b 168.10
Apr. 25, 1929	132.6	May 31	b 163.1	July 31	b 169.11
Dec. 28	139.0	June 29	b 163.5	Sept. 25	b 170.35
Apr. 17, 1930	136.2	July 27	b 164.1	Oct. 23	b 170.9
Dec. 16, 1931 (a)	145.1	Aug. 24	b 164.5	Nov. 17	b 171.3
29, 1932	145.1	Nov. 29	b 165.5	Dec. 26	b 171.6
Apr. 15, 1933	144.7	Dec. 28	b 165.4	Apr. 20, 1943	171.7
Dec. 20	147.1	Jan. 31, 1941	b 165.3	Nov. 30	b 174.3
Apr. 19, 1934	147.0				

7/13-6A1. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 6, T. 7 N., R. 13 W., 600 feet west of 90th Street W., and 650 feet south of Avenue G, 50 feet southwest of ranch house. Used domestic well, equipped with windmill, diameter 8 inches. Altitude of land surface about 2,433 feet. Measuring point, top of casing, at land-surface datum.

Water level, in feet below land-surface datum, 1936-43

Apr. 16, 1936	92.8	Mar. 8, 1939	99.1	Dec. 3, 1941	105.2
Jan. 8, 1937	90.8	Nov. 17	102.0	Apr. 21, 1942	107.5
Apr. 22	94.9	Mar. 13, 1940	d 95.3	Nov. 24	b 113.1
Nov. 9	98.7	Dec. 6	103.8	Apr. 20, 1943	109.5
May 23, 1938	c 98.3	Apr. 25, 1941	98.4	Dec. 6	b 115.5

7/13-11M1. John Payne. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 7 N., R. 13 W., 20 feet east of 60th Street W., and 2,400 feet north of Avenue I, in corrugated-iron pump house. Used domestic well, equipped with automatic electric pump. Altitude of land surface about 2,354 feet. Measuring point, top of 1-inch cover on casing, at land-surface datum.

Water level, in feet below land-surface datum, 1939-43

Nov. 17, 1939	14.0	Apr. 9, 1941	b 13.0	Mar. 28, 1942	b 14.35
Feb. 16, 1940	b 11.4	May 30	b 20.9	Apr. 21	16.4
Mar. 13	11.6	July 18	b 20.8	May 29	b 14.48
May 31	b 18.0	Aug. 29	b 20.8	July 31	b 15.35
June 29	b 17.9	Sept. 27	b 20.0	Aug. 21	b 15.85
Aug. 24	b 21.6	Oct. 31	b 15.4	Nov. 24	b 13.15
Nov. 26	b 15.8	Dec. 2	e 18.4	Dec. 26	b 12.9
Dec. 28	b 14.1	5	b 18.8	Apr. 20, 1943	10.8
Jan. 31, 1941	b 14.2	Jan. 31, 1942	b 15.50	Dec. 1	b 12.95

7/13-15. (See Water-Supply Paper 578, p. 364, well 59.) SE $\frac{1}{4}$  sec. 15, T. 7 N., R. 13 W., opposite Bonnefeux ranch. Altitude of land surface about 2,350 to 2,355 feet. Measuring point, through July 11, 1923, top of sewer pipe, about 5.0 feet above top of casing and land-surface datum; thereafter, top of casing, at land-surface datum.

- a Well dry at 140 feet; tape stuck.
- b Measurement by Los Angeles County Flood Control District.
- c Windmill pumping.
- d Well deepened 20 feet during preceding year.
- e Pumping just stopped.

7/13-15 --Continued.

Water level, in feet below land-surface datum, 1920-27

Date	Water level	Date	Water level	Date	Water level
Jan. 10, 1920	(a)	Oct. 26, 1922	1.1	Jan. 22, 1925	(a)
Apr. 30, 1921	12.5	Nov. 20	(a)	May 5	(c)
May 30	5.4	Feb. 25, 1923	(b)	July 7	(c)
Oct. 2	8.7	May 14	11.9	Oct. 6	(c)
Jan. 21, 1922	(a)	July 11	17.1	Jan. 9, 1926	(a)
Apr. 30	10.1	Oct. 20, 1924	3.4	Aug. 30	(c)
May 24	(a)	22	2.5	Jan. 20, 1927	(a)

7/13-17D1. G. Zaro. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 17, T. 7 N., R. 13 W., 20 feet south of Avenue I and 200 feet east of 90th Street W., in pump house northeast of ranch house, west of large reservoir. Used irrigation well, diameter 12 inches, depth 450 feet. Altitude of land surface about 2,424 feet. Measuring point, top of concrete pump base, 1.0 foot above land-surface datum.

Water level, in feet below land-surface datum, 1937, 1939-43

Nov. 9, 1937	91.5	Dec. 5, 1940 d	95.9	Nov. 24, 1942 d	101.25
Mar. 8, 1939	84.4	Apr. 25, 1941	99.5	Apr. 20, 1943	127.4
Nov. 17	98.7	Dec. 2	95.8	Dec. 1	d 104.1
Mar. 13, 1940	91.5				

7/13-23H1. (See Water-Supply Papers 278, p. 82, well 247; 578, p. 365, well 61.) Sibley. NE $\frac{1}{4}$  sec. 23, T. 7 N., R. 13 W. Altitude of land surface about 2,365 feet. Measuring point, top of casing, at land-surface datum.

Water level, in feet below land-surface datum, 1920-21, 1923-27

Jan. 10, 1920	0.6	Sept. 29, 1924	20.5	Jan. 9, 1926	4.4
Apr. 30, 1921	19.2	Oct. 22	9.6	May 13	24.2
May 30	13.0	Nov. 15	8.8	Aug. 30	(e)
Oct. 2	12.5	Jan. 22, 1925	4.0	Oct. 15	20.3
Feb. 25, 1923	2.5	May 6	18.5	Jan. 20, 1927	5.7
May 14	15.6	July 17	(e)	May 9	(e)
July 11	22.2	Oct. 6	19.9	Oct. 26	17.0

7/13-34H1. E. P. Wieman. SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 34, T. 7 N., R. 13 W., 2,400 feet south of Avenue L and 200 feet west of 60th Street W. Used domestic well, equipped with windmill, diameter 8 inches, depth about 168 feet on Nov. 17, 1939. Altitude of land surface about 2,458 feet. Measuring point, top of casing, 0.4 foot above land-surface datum.

Water level, in feet below land-surface datum, 1934-37, 1939-43

Apr. 19, 1934	142.0	Nov. 22, 1937	149.3	Dec. 2, 1941	164.8
May 1, 1935	140.9	17, 1939 dg	160.9	Apr. 21, 1942	167.4
Dec. 13	142.9	Mar. 13, 1940	151.8	Nov. 24	d 172.3
Apr. 16, 1936 f	145.0	Nov. 26	d 164.85	Apr. 20, 1943	168.7
22, 1937	149.3	Apr. 10, 1941	155.1	Dec. 1	d 177.4
Nov. 9	156.1				

7/13-35E1. George Lane. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 35, T. 7 N., R. 13 W., 230 feet east of 60th Street W., and 1,500 feet south of Avenue L, in corrugated-iron pump house, 0.25 mile northeast of well 7/13-34H1. Used irrigation well, diameter 12 inches. Altitude of land surface about 2,443 feet. Measuring point, top of concrete at edge of pump base, 0.4 foot horizontal offset from top of casing, 0.6 foot above land-surface datum.

- a Flowing.
- b Flowing about 40 gallons a minute.
- c Water below debris which plugged well at about 7 feet.
- d Measurement by Los Angeles County Flood Control District.
- e Water below debris which plugged well at 21.5 feet.
- f Windmill pumping.
- g Well 700 feet northeast pumping.

7/13-35E1. George Lane--Continued.

Water level, in feet below land-surface datum, 1937-43

Date	Water level	Date	Water level	Date	Water level
Nov. 9, 1937	137.8	Mar. 13, 1940	132.5	Dec. 2, 1941	145.8
May 23, 1938	136.2	Nov. 26	a 145.15	Nov. 24, 1942	a 153.5
Mar. 8, 1939	129.2	Apr. 10, 1941	b 135.5	Dec. 1, 1943	a 158.4

7/14-14F1. (See Water-Supply Papers 278, p. 70, well 35; 578, p. 364, well 48.) George Marigold. Near SE. corner of NW $\frac{1}{4}$  sec. 14, T. 7 N., R. 14 W. Diameter 5 inches, depth 152 feet. Altitude of land surface about 2,530 feet. Measuring point, top of casing, taken to have been 0.2 foot above land-surface datum.

Water level, in feet below land-surface datum, 1919, 1921-28

Dec. 18, 1919	146.8	Mar. 28, 1924	145.85	Jan. 9, 1926	145.6
Apr. 30, 1921	146.3	July 4	146.1	May 16	145.3
Oct. 14	146.9	Oct. 22	146.8	Aug. 30	146.4
Jan. 1, 1922	146.3	Nov. 15	146.0	Oct. 15	146.6
Apr. 30	147.2	Feb. 17, 1925	145.5	Jan. 20, 1927	145.8
May 24	146.3	May 6	146.6	May 9	146.1
Oct. 26	146.8	June 8	145.7	Oct. 26	147.8
Feb. 24, 1923	146.1	July 21	146.1	Apr. 26, 1928	148.2
July 11	146.4	Oct. 6	146.5	Nov. 18	(c)
Jan. 9, 1924	146.1				

8/10-9M1. (See Water-Supply Paper 578, p. 368, well 162.) J. M. Hamilton. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 9, T. 8 N., R. 10 W., 1,400 feet north of Avenue C and 600 feet east of 100th Street E., about 0.25 mile north of ranch buildings. Abandoned irrigation well, diameter 8 inches, depth about 25 feet. Altitude of land surface about 2,317 feet. Measuring point, top of casing, 1.8 feet above land-surface datum.

Water level, in feet below land-surface datum, 1921-43

May 29, 1921	9.45	Aug. 10, 1925	10.8	Apr. 20, 1934	15.5
Aug. 21	11.1	Oct. 6	11.0	Jan. 8, 1935	15.9
Oct. 1	9.6	Jan. 4, 1928	10.8	May 2	15.7
Feb. 7, 1922	9.5	Mar. 17	10.7	Dec. 12	16.5
Apr. 29	8.8	May 13	10.65	Apr. 15, 1936	16.5
July 20	9.5	Aug. 16	11.6	Jan. 9, 1937	17.1
Oct. 30	10.0	Oct. 16	11.6	Apr. 22	16.8
Feb. 26, 1923	9.8	Jan. 18, 1927	11.4	Nov. 10	17.8
May 13	9.8	May 9	11.0	May 23, 1938	17.8
July 12	10.1	Apr. 26, 1928	11.8	Mar. 10, 1939	18.0
Oct. 10	10.2	Nov. 18	12.67	Nov. 18	18.7
Dec. 12	9.9	Apr. 25, 1929	12.0	Mar. 13, 1940	18.5
Jan. 10, 1924	9.5	Dec. 28	13.0	Nov. 29	19.15
Mar. 7	9.8	Apr. 17, 1930	12.8	Apr. 25, 1941	18.7
July 8	10.2	Dec. 16, 1931	14.0	22, 1942	19.4
Oct. 23	10.7	Apr. 8, 1932	13.54	Nov. 25	a 19.96
Nov. 13	10.6	Dec. 29	14.7	Apr. 20, 1943	20.2
Feb. 10, 1925	10.4	Apr. 14, 1933	14.6	Dec. 15	a 22.4
May 6	10.1	Dec. 20	15.4		

8/10-19Q1. Union Trust & Savings Bank. SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 19, T. 8 N., R. 10 W., 50 feet north of Avenue E and 2,400 feet west of 90th Street E., in wooden pump house. Used irrigation well, equipped with electric pump, diameter 12 inches, depth about 750 feet. Altitude of land surface about 2,342 feet. Measuring point, top of casing, 0.4 foot above land-surface datum.

Water level, in feet below land-surface datum, 1939-42

Nov. 18, 1939	44.8	Apr. 9, 1941	a 29.7	Jan. 3, 1942	a 35.1
Mar. 13, 1940	36.6	25	35.3	Apr. 22	61.8
Nov. 29	a 41.8	Dec. 3	42.3	Nov. 25	a 50.43
Jan. 31, 1941	a 30.9				

a Measurement by Los Angeles County Flood Control District.

b Poor measurement.

c Plugged at 111 feet.

8/11-22N1. Lewis Prothro. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 22, T. 8 N., R. 11 W., 45 feet north of Avenue E and 1,200 feet east of 50th Street E. Abandoned irrigation well, diameter 8 inches, depth 210 feet. Altitude of land surface about 2,321 feet. Measuring point, top of casing, at land-surface datum.

Water level, in feet below land-surface datum, 1932-37

Date	Water level	Date	Water level	Date	Water level
Apr. 8, 1932	34.67	May 2, 1935	a 52.7	Apr. 15, 1936	a 47.8
14, 1933	a 45.0	Dec. 12	26.4	Jan. 9, 1937	(b)
20, 1934	a 48.8				

8/11-22N2. Lewis Prothro. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 22, T. 8 N., R. 11 W., 50 feet west of well 8/11-22N1. Abandoned irrigation well, diameter 8 inches. Altitude of land surface about 2,321 feet. Measuring point, top of casing, at land-surface datum. Water levels, in feet below land-surface datum, 1937: Jan. 9, 27.0; Apr. 22, a/ 45.2; Nov. 10, c/.

8/11-22N3. Lewis Prothro. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 22, T. 8 N., R. 11 W., 0.25 mile north of Avenue E and 0.25 mile east of 50th Street E., in pump house 0.25 mile north of ranch buildings. Used irrigation well, diameter 12 inches, depth 175 feet. Altitude of land surface about 2,317 feet. Measuring point, top of 1-inch pipe at surface of concrete pump base, 0.3 foot above land-surface datum.

Water level, in feet below land-surface datum, 1937, 1939-43

Nov. 10, 1937	34.5	Nov. 29, 1940	d 37.25	Apr. 22, 1942	46.9
Mar. 10, 1939	28.3	Apr. 25, 1941	32.7	Nov. 25	d 41.22
Nov. 17	34.4	Dec. 3	36.9	Dec. 8, 1943	d 42.95

8/13-8D1. Rogers School. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 8, T. 8 N., R. 13 W., 50 feet east of 90th Street W., and 150 feet south of Avenue B, in adobe pump house. Used domestic well, equipped with automatic electric pump, diameter 6 inches. Altitude of land surface about 2,442 feet. Measuring point, top of casing, 0.2 foot above land-surface datum.

Water level, in feet below land-surface datum, 1937, 1939-43

Nov. 10, 1937	85.8	Apr. 25, 1941	88.0	Nov. 24, 1942	d 96.2
Mar. 8, 1939	d 85.0	Dec. 3	92.3	Apr. 20, 1943	97.8
Nov. 17	d 89.0	Apr. 21, 1942	91.1	Dec. 6	d 98.7
Mar. 13, 1940	86.65				

8/13-30A1. (See Water-Supply Paper 578, p. 368, well 164.) Near NE. corner of NE $\frac{1}{4}$  sec. 30, T. 8 N., R. 13 W. Altitude of land surface about 2,436 feet. Measuring point, top of casing, 0.5 foot above land-surface datum.

Water level, in feet below land-surface datum, 1921-35

Oct. 3, 1921	64.7	Feb. 11, 1925	56.4	Nov. 18, 1928	66.0
Jan. 6, 1922	54.9	May 5	61.0	Apr. 26, 1929	66.0
Apr. 30	59.3	June 8	61.4	Dec. 28	67.0
May 24	59.2	July 21	63.8	Apr. 17, 1930	70.2
Aug. 23	61.1	Oct. 6	61.9	Dec. 16, 1931	71.3
Oct. 17	58.8	Jan. 9, 1926	58.0	Apr. 7, 1932	74.1
Mar. 20, 1923	56.5	May 13	61.8	Dec. 29	72.3
July 10	58.5	Aug. 25	66.2	Apr. 13, 1933	(e)
26	61.9	Oct. 15	64.9	Dec. 20	(f)
Aug. 9	62.1	Jan. 19, 1927	60.4	Apr. 19, 1934	(f)
July 4, 1924	62.1	May 9	64.5	Jan. 8, 1935	(f)
Oct. 20	58.8	Oct. 27	65.7	May 1	(f)
22	59.4	Apr. 26, 1928	66.4	Dec. 13	(f)

a Pumping nearby.

b Pump installed, preventing further measurements; see record for well 8/11-22N2.

c Could not measure.

d Measurement by Los Angeles County Flood Control District.

e Dry and plugged at 68 feet.

f Dry.

8/14-24A2. (See Water-Supply Paper 578, p. 368, well 163). NE $\frac{1}{4}$  sec. 24, T. 8 N., R. 14 W. Well equipped with windmill at corral of cattle camp. Altitude of land surface about 2,462 feet. Measuring point, top of casing, 0.2 foot above land-surface datum.

Water level, in feet below land-surface datum, 1921-35

Date	Water level	Date	Water level	Date	Water level
May 30, 1921	78.8	July 21, 1925	79.0	Dec. 28, 1929	83.6
Oct. 3	78.6	Oct. 6	79.3	Apr. 17, 1930	84.3
Jan. 5, 1922	a 80.0	Jan. 9, 1926	78.8	Dec. 16, 1931	88.9
May 24	79.2	May 13	78.9	Apr. 7, 1932	88.74
Oct. 17	78.9	Aug. 25	79.7	Dec. 29	90.7
July 10, 1923	78.65	Oct. 15	80.8	Apr. 13, 1933	90.6
27, 1924	78.7	Jan. 19, 1927	79.5	Dec. 20	(b)
Oct. 20	78.75	May 9	79.3	Apr. 19, 1934	(c)
22	78.9	Oct. 27	80.1	Jan. 8, 1935	(c)
Feb. 11, 1925	78.3	Nov. 18, 1928	82.3	May 1	(c)
May 5	78.6	Apr. 26, 1929	81.3	Dec. 13	(c)
June 8	78.65				

San Gabriel River Basin

1S/10-18. Formerly well 42a (\*817, pp. 9-11; 840, pp. 28-29; 845, pp. 17-18; 886, pp. 23-24; 911, p. 119; 941, pp. 90-91; 949, pp. 64-65). Key well U. S. 75. At Baldwin Park. Measuring point is 0.7 foot above land-surface datum and 387.70 feet above mean sea level.

Water level, in feet, 1943

Day	January		February		March		April	
	Below land-surface datum	Above sea level						
1	91.83	295.17	89.17	297.83	81.18	305.82	65.76	321.24
2	91.85	295.15	88.69	298.31	80.82	306.18	65.38	321.62
3	91.87	295.13	88.22	298.78	80.41	306.59	65.02	321.98
4	91.88	295.12	87.77	299.23	80.04	306.96	64.74	322.26
5	91.88	295.12	87.33	299.67	79.64	307.36	64.46	322.54
6	91.91	295.09	86.92	300.08	79.08	307.92	64.26	322.74
7	91.92	295.08	86.48	300.52	78.52	308.48	64.15	322.85
8	91.95	295.05	86.07	300.93	77.96	309.04	64.02	322.98
9	91.97	295.03	85.75	301.25	77.41	309.59	63.92	323.08
10	91.99	295.01	85.43	301.57	76.85	310.15	63.92	323.08
11	92.02	294.98	85.07	301.93	76.29	310.71	63.92	323.08
12	92.06	294.94	84.77	302.23	75.73	311.27	63.91	323.09
13	92.07	294.93	84.51	302.49	75.17	311.83	63.87	323.13
14	92.06	294.94	84.24	302.76	74.61	312.39	63.92	323.08
15	92.12	294.88	84.04	302.96	74.01	312.99	63.98	323.02
16	92.18	294.82	83.88	303.12	73.42	313.58	64.04	322.96
17	92.21	294.79	83.77	303.23	72.84	314.16	64.11	322.89
18	92.35	294.65	83.69	303.31	72.27	314.73	64.14	322.86
19	92.33	294.67	83.48	303.52	71.73	315.27	64.16	322.84
20	92.35	294.65	83.32	303.68	71.21	315.79	64.26	322.74
21	92.32	294.68	83.18	303.82	70.65	316.35	64.37	322.63
22	92.25	294.75	82.97	304.03	70.11	316.89	64.46	322.54
23	92.26	294.74	82.87	304.13	69.64	317.36	64.50	322.50
24	92.28	294.72	82.67	304.33	69.16	317.84	64.55	322.45
25	92.07	294.93	82.45	304.55	68.67	318.33	64.60	322.40
26	91.80	295.20	82.17	304.83	68.23	318.77	64.55	322.45
27	91.47	295.53	81.87	305.13	67.78	319.22	64.52	322.48
28	91.10	295.90	81.53	305.47	67.35	319.65	64.52	322.48
29	90.64	296.36			66.96	320.04	64.42	322.58
30	90.21	296.79			66.57	320.43	64.35	322.65
31	89.66	297.34			66.16	320.84		

a Pumping.

b Dry at 91.3 feet.

c Dry.

1s/10-18--Continued.

Water level, in feet, 1943								
Day	May		June		July		August	
	Below land-surface datum	Above sea level						
1	64.29	322.71	62.55	324.45	64.50	322.50	68.20	318.80
2	64.14	322.86	62.58	324.42	64.62	322.38	68.40	318.60
3	63.97	323.03	62.66	324.34	64.70	322.30	68.55	318.45
4	63.79	323.21	62.84	324.16	64.75	322.25	68.65	318.35
5	63.60	323.40	62.88	324.12	64.87	322.13	68.74	318.26
6	63.36	323.64	62.94	324.06	65.03	321.97	68.89	318.11
7	63.23	323.77	63.02	323.98	65.16	321.84	69.00	318.00
8	63.13	323.87	63.08	323.92	65.33	321.67	69.07	317.93
9	63.03	323.97	63.07	323.93	65.45	321.55	69.17	317.83
10	62.89	324.11	63.08	323.92	65.60	321.40	69.30	317.70
11	62.82	324.18	63.09	323.91	65.64	321.36	69.44	317.56
12	62.71	324.29	63.14	323.86	65.83	321.17	69.57	317.43
13	62.62	324.38	63.23	323.77	66.05	320.95	69.65	317.35
14	62.54	324.46	63.35	323.65	66.15	320.85	69.76	317.24
15	62.43	324.57	63.39	323.61	66.26	320.74	69.84	317.16
16	62.29	324.71	63.44	323.56	66.39	320.61	69.92	317.08
17	62.21	324.79	63.48	323.52	66.52	320.48	70.04	316.96
18	62.17	324.83	63.56	323.44	66.57	320.43	70.14	316.86
19	62.13	324.87	63.58	323.42	66.61	320.39	70.32	316.68
20	62.11	324.89	63.67	323.33	66.72	320.28	70.42	316.58
21	62.13	324.87	63.72	323.28	66.82	320.18	70.55	316.45
22	62.14	324.86	63.80	323.20	66.95	320.05	70.65	316.35
23	62.15	324.85	63.83	323.17	67.08	319.92	70.81	316.19
24	62.10	324.90	63.85	323.15	67.17	319.83	70.95	316.05
25	62.07	324.93	63.86	323.14	67.28	319.72	71.06	315.94
26	62.10	324.90	64.01	322.99	67.41	319.59	71.15	315.85
27	62.16	324.84	64.05	322.95	67.59	319.41	71.23	315.77
28	62.17	324.83	64.13	322.87	67.75	319.25	71.34	315.66
29	62.35	324.65	64.23	322.77	67.87	319.13	71.41	315.59
30	62.43	324.57	64.37	322.63	67.96	319.04	71.57	315.43
31	62.44	324.56			68.12	318.88	71.71	315.29

Water level, in feet, 1943								
Day	September		October		November		December	
	Below land-surface datum	Above sea level						
1	71.79	315.21	74.69	312.31	76.97	310.03	78.79	308.21
2	71.83	315.17	74.82	312.18	77.08	309.92	78.87	308.13
3	71.93	315.07	74.85	312.15	77.14	309.86	78.94	308.06
4	72.04	314.96	74.92	312.08	77.17	309.83	78.98	308.02
5	72.16	314.84	74.98	312.02	77.20	309.80	79.00	308.00
6	72.23	314.77	75.10	311.90	77.28	309.72	79.04	307.96
7	72.32	314.68	75.20	311.80	77.37	309.63	79.08	307.92
8	72.41	314.59	75.27	311.73	77.40	309.60	79.10	307.90
9	72.56	314.44	75.31	311.69	77.45	309.55	79.12	307.88
10	72.74	314.26	75.40	311.60	77.53	309.47	79.25	307.75
11	72.81	314.19	75.48	311.52	77.63	309.37	79.24	307.76
12	72.83	314.17	75.62	311.38	77.70	309.30	79.28	307.72
13	72.95	314.05	75.71	311.29	77.77	309.23	79.31	307.69
14	73.08	313.92	75.75	311.25	77.84	309.16	79.31	307.69
15	73.20	313.80	75.86	311.14	77.89	309.11	79.31	307.69
16	73.26	313.74	75.92	311.08	77.95	309.05	79.36	307.64
17	73.33	313.67	75.98	311.02	78.01	308.99	79.40	307.60
18	73.39	313.61	75.99	311.01	78.08	308.92	79.38	307.62
19	73.46	313.54	76.11	310.89	78.12	308.88	79.42	307.58

1S/10-18--Continued.

## Water level, in feet, 1943

Day	September		October		November		December	
	Below land-surface datum	Above sea level						
20	73.57	313.43	76.15	310.85	78.14	308.86	79.44	307.56
21	73.65	313.35	76.20	310.80	78.17	308.83	79.46	307.54
22	73.79	313.21	76.26	310.74	78.27	308.73	79.50	307.50
23	73.96	313.04	76.38	310.62	78.32	308.68	79.51	307.49
24	74.07	312.93	76.42	310.58	78.37	308.63	79.54	307.46
25	74.15	312.85	76.46	310.54	78.40	308.60	79.53	307.47
26	74.22	312.78	76.56	310.44	78.48	308.52	79.57	307.43
27	74.36	312.64	76.63	310.37	78.56	308.44	79.64	307.36
28	74.51	312.49	76.72	310.28	78.56	308.44	79.63	307.37
29	74.55	312.45	76.76	310.24	78.62	308.38	79.67	307.33
30	74.61	312.39	76.82	310.18	78.70	308.30	79.68	307.32
31			76.84	310.16			79.69	307.31

## Coastal plain

2/12-13A1 (#941, p. 105; 949, p. 89). Lycan Bros. About 1 mile east of Montebello. Records furnished by San Gabriel Valley Protective Association.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	23.10	Apr. 7	19.01	July 7	19.84	Oct. 6	22.30
13	23.03	14	18.93	14	19.97	13	22.34
20	22.96	21	19.01	21	20.15	20	22.28
27	21.97	28	19.10	28	20.39	27	22.16
Feb. 3	21.33	May 5	19.17	Aug. 4	20.75	Nov. 3	22.02
10	20.97	12	19.53	11	21.05	10	21.93
17	20.72	19	19.32	18	21.35	17	21.80
24	20.51	26	19.49	25	21.58	24	21.74
Mar. 3	20.28	June 2	19.45	Sept. 1	21.75	Dec. 1	21.65
10	19.91	9	19.50	8	21.88	8	21.53
17	19.52	16	19.53	15	22.01	15	21.36
24	19.24	23	19.63	22	22.11	22	21.11
31	19.10	30	19.72	29	22.24	29	20.87

3/12-8L3 (#941, p. 107; 949, p. 89). Los Angeles County Farm. About 2 miles southwest of Downey. Records furnished by San Gabriel Valley Protective Association.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	20.94	Apr. 5	19.15	July 5	29.75	Oct. 4	29.72
11	21.85	12	17.71	12	32.31	11	28.47
18	21.79	19	18.68	19	30.72	18	27.12
25	19.83	26	20.46	26	32.54	25	26.87
Feb. 1	18.90	May 3	23.42	Aug. 2	33.00	Nov. 1	25.50
8	18.37	10	24.92	9	32.34	8	26.35
15	19.35	17	25.42	16	32.99	15	25.13
22	18.32	24	28.14	23	32.32	22	24.04
Mar. 1	17.53	31	28.02	30	31.67	29	24.25
8	16.99	June 7	27.81	Sept. 6	31.40	Dec. 6	23.84
15	16.68	14	28.50	13	31.72	13	21.61
22	16.33	21	29.50	20	30.17	20	20.68
29	16.79	28	31.74	27	31.13	27	20.28

3/13-32F2 (#949, p. 90). John Larronde. About 1.5 miles southeast of Gardena. Water levels, in feet below land-surface datum, 1943: Feb. 18, a/ 73.79; Dec. 31, a/ 81.56.

a Water surface below sea level.

3/13-35B2 (\*949, p. 90). H. Y. Sasaki. About 1.5 miles south of Compton. Water levels, in feet below land-surface datum, 1943: Feb. 18, 16.75; Dec. 31, 18.47.

3/13-35C2 (\*949, p. 91). Carsbn Estate Co. About 1.5 miles south of Compton. Automatic water-stage recorder installed Nov. 1, 1943, by Geological Survey. Water level affected by pumping of well 3/13-35C1, 320 feet northeast, which is reported to be about 150 feet deep.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 18	18.13	Nov. 8	22.82	Nov. 20	22.20
Nov. 1	22.60	15	22.85	Dec. 31	19.97

4/11-5D1 (\*949, p. 91). V. Capovilla. About 3.5 miles south of Norwalk. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 14	17.94	Apr. 13	a 15.91	July 16	31.21	Oct. 18	24.79
Feb. 11	13.26	May 11	25.26	Aug. 17	33.84	Nov. 16	24.76
Mar. 8	13.13	June 14	24.25	Sept. 20	31.95	Dec. 16	a 28.06

4/12-8P1 (138, p. 74, well 934; \*941, p. 110; 949, p. 93). Montana Land Co. About 2 miles north of Signal Hill. Records for period 1923-42 previously published; those for period 1914-19, obtained since preparation of Water-Supply Paper 949, are included in the following table. Records furnished by city of Long Beach.

Water level, in feet below land-surface datum, 1914-19, 1943

Date	Water level	Date	Water level	Date	Water level
Sept. 29, 1914	23	May 31, 1915	1	Aug. 6, 1917	b 48.5
29	b 48	31	b 37	12	b 50
Oct. 7	22	June 12	b 36.5	Oct. 12	b 46.5
7	b 47	24	16	28	49
14	22	24	b 38	Jan. 10, 1918	b 42.5
14	b 47	July 28	15	May 13	b 47
21	18.5	28	b 41	21	b 49
21	b 47.5	Aug. 25	19	July 11	25
28	18	25	b 43	20	25.8
28	b 47.5	Sept. 25	15.5	20	b 47
Nov. 4	18	25	b 41.5	31	24
11	17	Oct. 28	16	31	b 46
11	b 45	28	b 38.5	Aug. 7	29.3
18	16	Nov. 20	16	7	b 46
18	b 44.5	20	b 39.5	15	26.5
25	16	Dec. ..	2	15	b 47
25	b 42	..	b 38	22	26
Dec. 2	12	Jan. 15, 1916	1	22	b 45
2	b 40	15	b 34	29	25.3
9	10	Feb. 25	(c)	29	b 44
9	b 36.5	25	b 32	Sept. 4	28
30	3	Mar. 15	b 31	4	b 47
30	b 36	Apr. 28	2	11	26
Jan. 20, 1915	1	28	b 35	11	b 45.5
20	b 35	May 26	11.5	18	27
Feb. 20	1	26	b 39.5	18	b 45.5
20	b 37	June 24	12.5	26	27
Mar. 19	1	24	b 40	26	b 45
19	b 34.5	July 26	11	Oct. 3	28
Apr. 15	1	26	b 42	3	b 45.5
15	b 35	Aug. 26	13	20	30
May 14	(c)	26	b 43	20	b 45.5
14	b 36	Sept. 26	21	30	27
28	1	26	b 44	30	b 45
28	b 38.5	July 8, 1917	b 49	Nov. 2	28

a Just after pumping had stopped.

b Pumping.

c Flowing.

4/12-8P1--Continued.

Water level, in feet below land-surface datum, 1914-19, 1943

Date	Water level	Date	Water level	Date	Water level
Nov. 2, 1918	a 46	May 26, 1919	28	June 21, 1943	b 91.07
13	27	30	27	28	b 91.89
13	a 40	June 16	37.5	July 5	b 92.03
Jan. 1, 1919	20	Jan. 4, 1943	b 90.45	12	b 93.51
1	a 39	11	b 89.86	19	b 95.97
13	a 34	18	b 89.80	26	b 98.44
13	a 38	25	b 88.83	*Aug. 2	b100.50
22	24	Feb. 1	b 87.78	9	b 97.88
22	a 40	8	b 86.79	16	b101.26
30	23	15	b 86.15	23	b102.24
30	a 40	22	b 86.17	30	b101.31
Feb. 2	20.5	Mar. 1	b 85.86	Sept. 6	b 98.52
Mar. 8	19	8	b 85.20	13	b101.46
8	a 38	15	b 84.55	20	b102.36
22	18	22	b 84.01	27	b102.65
22	a 39	29	b 83.99	Oct. 4	b101.67
29	19	Apr. 3	bc84.29	11	b 99.73
29	a 39	5	b 84.43	18	b 99.40
Apr. 1	21	12	b 83.72	25	b100.66
9	a 40	19	b 83.37	Nov. 1	b100.48
9	a 43	26	b 84.55	8	b100.26
18	21	May 3	b 84.75	15	b101.82
18	a 43.5	10	b 86.17	22	b100.54
25	22	17	b 87.96	29	b 98.08
25	a 47	24	b 90.06	Dec. 6	b100.00
May 1	22	31	b 89.88	13	b 95.33
1	a 48	June 7	b 90.40	20	b 93.49
		14	b 90.56	27	b 92.23

4/12-27K2 (\*949, p. 94). Bryant Ranch. About 2 miles east of Signal Hill. Depth 498.3 feet, measured July 17, 1944. Records furnished by R. A. Shafer.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	5.29	Apr. 1	0.17	July 6	9.72	Oct. 1	13.86
18	4.70	19	2.42	19	10.95	15	12.75
Feb. 2	3.23	May 4	3.15	Aug. 3	12.63	Nov. 4	9.87
16	2.60	17	4.58	16	13.51	16	9.02
Mar. 2	1.47	June 4	6.23	Sept. 4	13.89	Dec. 1	7.91
17	1.37	18	7.79	20	13.21	17	6.31

4/13-2J4 (\*949, p. 97). Del Amo Estate Co. About 3 miles south of Compton. Automatic water-stage recorder maintained on well to June 22, 1943, by Geological Survey, after which measurements were discontinued.

Water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	d 16.19	Feb. 20	d 14.91	Apr. 5	e 14.22	May 20	g 17.17
10	d 16.17	25	d 14.50	10	(f)	25	g 17.62
15	d 16.20	28	d 14.47	15	d 14.04	31	g 17.30
20	d 16.22	Mar. 5	d 13.96	20	d 14.12	June 5	g 18.18
25	d 15.27	10	d 13.91	25	d 14.51	10	g 18.40
31	d 14.97	15	d 13.86	30	g 14.64	15	g 18.05
Feb. 5	d 14.92	20	d 13.80	May 5	g 15.45	20	g 18.34
10	d 14.90	25	d 13.81	10	e 15.80	22	g 18.52
15	d 14.86	31	d 13.91	15	g 15.55		

a Pumping.

d At noon.

b Water surface below sea level. e Tape measurement.

c Measured by Geological Survey. f Recorder not operating.

g Highest for the day.

4/13-14L1 (\*949, p. 101). Southern California Edison Co., Ltd. In Long Beach, 0.4 mile west of Los Angeles River. Automatic water-stage recorder maintained on well until June 22, 1943, by Geological Survey. Records after June 22 furnished by city of Long Beach. Highest daily water level, in part, in feet below land-surface datum, 1943 (From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	23.76	Feb. 28	22.17	Apr. 20	22.02	June 10	24.75
10	23.83	Mar. 3	22.00	25	22.40	15	24.72
15	23.82	8	21.89	30	23.69	20	25.35
20	23.60	10	21.79	May 5	23.26	22	b 26.47
25	a 22.92	15	b 21.82	10	23.54	July 13	26.74
31	22.74	20	21.77	15	23.52	Aug. 6	26.65
Feb. 3	22.64	25	21.73	20	24.22	Sept. 8	25.52
10	22.57	29	b 22.00	25	23.54	Oct. 21	24.47
15	b 22.54	Apr. 5	b 22.36	31	23.57	Nov. 10	24.62
20	22.62	10	21.68	June 5	24.32	Dec. 15	23.54
25	22.29	15	22.00				

4/13-23G2 (\*941, p. 115; 949, p. 105). City of Long Beach. Records furnished by city of Long Beach. All water levels are below sea level.

Water level, in feet below land-surface datum, 1943							
Jan. 9	64.3	Apr. 24	67.0	July 24	78.5	Oct. 16	79.9
16	64.4	30	72.7	Aug. 1	79.1	23	84.7
29	62.5	May 8	69.1	7	79.7	29	82.1
Feb. 13	62.4	15	72.3	14	80.4	Nov. 6	84.2
20	63.6	22	73.9	21	80.1	13	78.4
Mar. 1	63.9	June 1	72.7	Sept. 1	81.5	20	80.1
6	61.7	12	74.7	11	85.9	Dec. 1	74.0
13	62.3	19	76.5	18	85.7	11	73.5
20	62.5	30	78.1	25	87.7	18	73.8
31	62.7	July 10	76.8	Oct. 1	87.9	31	c 69.65
Apr. 17	65.2	17	77.5	8	88.5	31	69.5

4/13-23M2 (\*949, p. 105). Irwin Stewart. In Long Beach. Automatic water-stage recorder maintained on well to June 22, 1943, by Geological Survey, after which measurements were discontinued.

Water level at noon, in feet below land-surface datum, 1943 (From recorder charts)							
Jan. 5	d 21.49	Feb. 20	20.15	Apr. 5	19.53	May 20	d 20.90
10	d 21.60	25	19.99	10	19.43	25	d 21.04
15	d 21.61	28	19.91	15	19.54	31	d 20.95
20	d 21.42	Mar. 5	19.71	20	19.65	June 5	d 21.06
25	d 20.91	10	19.53	25	19.72	10	d 21.60
31	20.41	15	19.44	30	19.16	15	d 21.63
Feb. 5	20.21	20	19.38	May 5	20.22	20	d 21.71
10	20.09	25	19.32	10	20.32	22	d 21.69
15	20.03	31	19.40	15	20.52		

4/13-33D1 (\*949, p. 109). City of Los Angeles. In Wilmington. Water levels, in feet below land-surface datum, 1943: Feb. 20, d/65.41; Dec. 31, d/69.92.

- a After 5.7 inches of rainfall.  
 b Tape measurement.  
 c Measured by Geological Survey.  
 d Water surface below sea level.  
 e Rainfall 5.7 inches Jan. 21-23.

5/12-2Bb (#949, p. 111). Bryant Ranch. About 2 miles north of Seal Beach. Records furnished by R. A. Shafer.

Water level, in feet, with reference to land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	0.0	Apr. 1	(a)	July 19	-2.7	Oct. 15	-5.4
18	+3	19	(a)	Aug. 3	-4.0	Nov. 4	-3.3
Feb. 2	(a)	May 4	(a)	16	-4.9	16	-2.5
16	(a)	June 4	+1	Sept. 4	-5.4	Dec. 1	-1.8
Mar. 2	(a)	18	-6	Oct. 1	-5.3	17	-6
17	(a)	July 6	-2.2				

5/12-11Hl (#949, p. 116). Bryant Ranch. About 1 mile north of Seal Beach. Automatic water-stage recorder maintained on well to Aug. 9, 1943, by Geological Survey, after which measurements were discontinued.

Water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	b 3.17	Feb. 28	d 2.20	Apr. 25	c 2.52	June 20	c 4.12
10	c 2.95	Mar. 5	d 1.80	30	c 2.21	25	c 3.88
15	c 2.66	10	d 2.10	May 5	c 2.42	30	c 3.95
20	c 2.89	15	d 2.22	10	b 2.71	July 5	b 3.94
25	b 2.46	20	d 2.17	15	c 2.74	10	c 3.86
31	d 2.75	25	c 2.24	20	c 2.65	15	c 3.79
Feb. 5	d 2.26	31	d 2.24	25	c 2.81	20	c 4.07
10	d 2.50	Apr. 5	d 2.25	30	c 2.97	25	c 4.53
15	d 2.53	10	d 2.15	June 5	d 2.96	Aug. 2	b 4.84
20	d 2.62	15	d 2.14	10	d 3.28	5	d 4.91
25	d 2.19	20	b 2.02	15	c 4.34	9	b 5.20

Orange County

Coastal plain

3/11-36Q2 (#941, p. 117; 949, p. 116). M. Del Giorgio. About 1 mile southeast of Buena Park. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Jan. 6	58.78	Apr. 7	50.10	July 7	69.28	Oct. 6	70.49
13	58.94	14	49.57	14	71.19	13	70.86
20	60.91	21	49.72	21	71.09	20	68.96
27	58.89	28	51.02	28	72.84	27	68.97
Feb. 3	55.62	May 5	52.28	Aug. 4	73.60	Nov. 3	66.70
10	54.73	12	54.94	11	73.82	10	68.43
17	54.24	19	60.44	18	72.35	17	67.92
24	53.38	26	63.97	25	73.62	24	64.97
Mar. 3	52.85	June 2	65.23	Sept. 1	75.08	Dec. 1	64.19
10	52.29	9	64.99	8	73.14	8	63.09
17	51.45	16	64.68	15	72.30	15	59.19
24	50.79	23	65.84	22	71.33	22	57.15
31	50.30	30	69.46	29	71.38	29	55.81

4/9-7B1 (#941, p. 120; 949, p. 117). Dowling & Prentice. About 3 miles east of Anaheim. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Jan. 6	168.32	Feb. 10	149.29	Mar. 24	121.34	Apr. 28	124.20
13	168.25	17	148.83	31	123.24	May 5	126.97
20	168.57	24	150.24	Apr. 7	127.10	12	129.95
27	168.24	Mar. 10	134.86	14	124.88	19	133.61
Feb. 3	168.90	17	123.88	21	122.99	26	137.24

- a Flowing.
- b Tape measurement.
- c Highest for the day.
- d At noon.

4/9-7Bl. Dowling &amp; Prentice--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 2	139.36	July 28	149.90	Sept. 22	162.17	Nov. 17	163.00
9	142.00	Aug. 4	153.22	29	164.96	24	164.98
16	143.45	11	153.45	Oct. 6	165.68	Dec. 1	163.30
23	142.95	18	154.16	13	170.38	8	163.05
30	144.92	25	155.65	20	166.40	15	162.96
July 7	146.05	Sept. 1	156.80	27	170.24	22	162.99
14	147.25	8	158.58	Nov. 3	171.65	29	161.15
21	148.63	15	159.03	10	162.35		

4/10-22L2 (Formerly well 41b) (\*840, p. 28; 845, p. 18; 886, p. 24; \*941, p. 123; 949, p. 117). Halderman & Callens. About 2 miles south of Anaheim. Records furnished by San Gabriel Valley Protective Association and Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11 a	107.88	Apr. 8 b	101.07	July 22 b	107.08	Oct. 14 b	110.90
Feb. 4 b	106.48	12 a	100.90	Aug. 10 a	108.72	Nov. 4 b	110.32
9 a	105.95	May 10 a	100.68	12 b	109.42	8 a	120.56
25 b	105.09	June 8 a	104.40	Sept. 10 a	110.10	26 b	108.33
Mar. 5 a	104.50	10 b	105.03	23 b	110.34	Dec. 9 a	107.48
18 b	102.83	July 12 a	106.65	Oct. 8 a	110.02	16 b	106.58

4/11-19K1 (138, p. 83, well 1183; \*941, p. 123; 949, p. 117). Key well U. S. 47. Los Alamitos Sugar Co. About 0.5 mile north of Los Alamitos. Records furnished by city of Long Beach.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4	8.49	Apr. 12	2.20	July 19	19.38	Oct. 11	20.48
11	8.03	19	2.12	26	20.16	18	19.38
18	7.57	26	2.34	31 d	22.01	25	18.64
25	6.44	May 1 d	3.09	Aug. 2	20.46	30 d	18.06
Feb. 1 d	5.48	3	3.49	9	23.59	Nov. 1	16.85
1	5.53	10	4.49	16	23.32	8	16.32
8	4.83	17	6.02	23	22.69	15	14.86
15	4.33	24	9.17	30	21.89	22	13.39
22	3.96	31 d	10.55	31 d	22.79	29	12.39
Mar. 1 d	3.44	June 7	11.83	Sept. 6	21.58	30 d	12.36
8	2.74	14	13.24	13	22.09	Dec. 6	11.53
15	2.66	21	14.05	20	21.30	13	10.28
22	2.28	28	16.18	27	21.13	20	8.90
29	2.17	30 d	16.50	30 d	21.82	27	7.66
31 d	2.40	July 5	17.57	Oct. 4	20.88	30 d	7.20
Apr. 5	3.17	12	18.71				

5/10-9D1 (\*941, p. 126; 949, p. 118). Julio Martinez. About 1 mile south of Garden Grove. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	51.64	Apr. 12	47.16	July 12	(e)	Oct. 8	(e)
Feb. 9	48.98	May 10	48.97	Aug. 10	60.49	Nov. 8	57.95
Mar. 5	48.12	June 8	(e)	Sept. 10	61.52	Dec. 9	52.24

5/10-28B1 (\*949, p. 119). John Sturtevant. About 3.5 miles southwest of Santa Ana. Records furnished by Orange County Flood Control District, which agency reported an obstruction in the well until sometime in October. Water levels, in feet below land-surface datum, 1943: June 18, d/33.48; Nov. 2, 35.12; Dec. 6, 30.95.

- a By Orange County Flood Control District.
- b By San Gabriel Valley Protective Association.
- c Probably pumping.
- d Measured by Geological Survey.
- e Pumping.

5/11-2E1 (\*949, p. 121). Western Trust & Savings Bank. About 1 mile north of Westminster. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	28.85	May 3	27.25	Aug. 2	43.65	Nov. 1	35.32
Feb. 2	26.83	24 a	34.92	Sept. 2	(b)	Dec. 3	32.68
Mar. 1	25.84	June 1	34.47	Oct. 5	40.00	30 a	26.00
Apr. 2	24.68	July 1	41.69				

5/11-16D2 (\*941, p. 127; 949, p. 124). Anaheim Sugar Co. About 4 miles east of Seal Beach. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	4.94	Apr. 7	3.05	July 7	10.35	Oct. 6	c 17.33
13	4.94	14	2.07	14	13.23	13	c 16.65
20	5.26	21	2.16	21	14.90	20	13.66
27	4.24	28	2.05	28	13.52	27	13.49
Feb. 3	3.67	May 5	2.96	Aug. 4	13.60	Nov. 3	11.93
10	3.53	12	4.84	11	14.35	10	13.06
17	5.50	19	6.14	18	15.48	17	10.99
24	4.09	26	7.95	25	c 16.68	24	9.11
Mar. 3	5.63	June 2	-6.65	Sept. 1	c 16.38	Dec. 1	9.92
10	3.92	9	6.98	8	15.87	8	9.20
17	3.98	16	7.52	15	c 17.37	15	7.31
24	2.93	23	7.63	22	c 18.05	22	5.11
31	3.44	30	10.37	29	c 18.53	29	4.18

5/11-18J2. Center Gun Club. California Division of Water Resources serial No. C-910z and location No. 536A. About 2.5 miles east of Seal Beach, 3,000 feet south of Bolsa Avenue, and 5,600 feet west of Bolsa Chica Avenue, 750 feet southwest of frame building, in field. Unused well, diameter 6 inches, depth 215.7 feet. Measuring point, top of 8-inch casing extension, 4.10 feet above measuring point previously used by Orange County Flood Control District, 5.40 feet above land-surface datum, and 10.7 feet above sea-level datum of 1941. Automatic water-stage recorder installed Oct. 8, 1943, by Geological Survey. Reference bench mark, top northeast side of concrete base around 8-inch casing extension, 4.55 feet below measuring point. Additional measurements made about monthly since 1933 by Orange County Flood Control District.

Highest daily water level, in feet with reference to land-surface datum, 1943  
(From recorder charts)

Oct. 8	dc-8.41	Oct. 25	c-5.54	Nov. 20	+0.36	Dec. 10	+0.83
10	c-8.24	Nov. 1	d -.91	22	d +.73	15	+1.93
13	c-7.76	5	-2.58	29	d -.79	20	+3.06
18	d-3.53	9	-2.46	30	-.63	27	d +4.16
20	-2.99	15	-.83	Dec. 5	-1.60	31	+4.37

5/11-18N1 (\*949, p. 125). Alamitos Land Co. About 2 miles southeast of Seal Beach. Automatic water-stage recorder installed Sept. 9, 1943, by Geological Survey.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Sept. 9	2.84	Oct. 5	3.15	Nov. 5	3.50	Dec. 5	3.18
10	2.62	10	2.58	10	2.55	10	1.62
15	2.57	15	2.66	15	2.98	15	2.86
20	3.33	20	3.75	22	d 4.52	20	3.50
25	3.02	25	3.55	25	2.90	25	2.25
30	3.35	31	2.53	30	2.30	31	3.15

- a Measured by Geological Survey
- b Pumping.
- c Water surface below sea level.
- d Tape measurement.

5/11-18P1 (#949, p. 126). Alamitos Land Co. About 2 miles southeast of Seal Beach. Automatic water-stage recorder installed Sept. 9, 1943, by Geological Survey.

Highest daily water level, in feet with reference to land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 9	a -0.64	Oct. 5	-0.34	Nov. 5	-0.73	Dec. 5	-0.35
11	a -2.88	10	+23	10	+30	10	+1.28
15	-.15	15	+22	15	-.15	15	.00
20	-.56	20	-.92	20	-.95	20	-.62
25	a -1.64	25	-.70	25	+07	25	+62
30	-.53	31	+34	30	+58	31	-.33

5/11-25P1 (#949, p. 131). E. J. Lecrivain. About 3.5 miles north of Huntington Beach. Records furnished by Orange County Flood Control District.  
Water level, in feet below land-surface datum, 1943

Jan. 7	36.30	May 4	34.83	Aug. 3	41.68	Nov. 2	38.70
Feb. 4	35.52	June 4	38.51	Sept. 7	41.53	Dec. 6	38.13
Mar. 2	36.53	July 6	40.94	Oct. 7	40.40	31	b 35.61
Apr. 5	35.47						

5/11-26M3. Constructed by Geological Survey on property of Orange County. About 3 miles north of Huntington Beach, 1,260 feet north of Talbert Avenue, 24 feet east of Golden West Avenue, and 400 feet north of well 5/11-26N2, at edge of pasture. Bored water-table well, diameter 8 inches, depth 9.4 feet. Measuring point, top north side of casing, at land-surface datum and 2.5 feet above sea-level datum of 1941. Automatic water-stage recorder maintained on well Sept. 24 to Nov. 1, 1943, by Geological Survey, after which measurements were discontinued.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

July 7	a 2.01	Sept.30	2.02	Oct. 15	1.91	Oct. 30	1.74
24	a 2.12	Oct. 5	2.02	20	1.85	Nov. 1	a 1.72
Sept.25	2.15	10	1.94	25	1.82		

5/11-26N3. Constructed by Geological Survey on property of Orange County. About 3 miles north of Huntington Beach, 860 feet north of Talbert Avenue, 23 feet east of Golden West Avenue, and 100 feet north of shallow well 5/11-26N2, at edge of pasture. Bored water-table well, diameter 8 inches, depth 9.7 feet. Measuring point, top north side of casing, at land-surface datum and 3.8 feet above sea-level datum of 1941. Automatic water-stage recorder maintained on well from Sept. 24 to Nov. 1, 1943, by Geological Survey, after which measurements were discontinued.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

July 7	a 2.15	Sept.30	2.72	Oct. 15	2.57	Oct. 25	2.39
24	a 2.20	Oct. 5	2.68	20	2.46	Nov. 1	a 2.30
Sept.25	2.76	10	2.64				

5/11-28A1 (#949, p. 133). A. Ruoff. About 4 miles northwest of Huntington Beach. Records furnished by Orange County Flood Control District.  
Water level, in feet, with reference to land-surface datum, 1943

Jan. 7	+2.26	May 4	(c)	Aug. 3	+6.6	Nov. 2	+2.48
Feb. 4	+1.75	June 4	(c)	Sept. 7	+5.8	Dec. 6	+5.83
Mar. 2	+6.88	16	(bc)	Oct. 7	-1.72	31	b +9+
Apr. 5	(c)	July 6	(c)				

a Tape measurement.

b Measured by Geological Survey.

c Flowing.

5/11-2904 (#949, p. 135). Sunset Land & Water Co. About 1 mile southeast of Sunset Beach. Records furnished by Orange County Flood Control District.

Water level, in feet, with reference to land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	+0.83	July 6	-2.89	Oct. 7	a -11.40	Dec. 6	-5.43
May 4	+1.72	Aug. 3	-5.03	Nov. 2	-5.52	31	b +0.03
June 4	-.55	Sept. 7	-7.26				

5/11-29E1 (#949, p. 136). U. S. Government. Formerly owned by Bolsa Land Co. About 1 mile southeast of Sunset Beach. Automatic water-stage recorder maintained on well from June 22 to Nov. 1, 1943, by Geological Survey.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

June 22	5.35	July 31	4.76	Sept. 5	5.58	Oct. 10	4.91
28	4.94	Aug. 5	5.53	10	4.96	15	5.00
30	4.95	10	5.23	13	c 6.75	20	5.83
July 5	5.10	15	4.38	20	c 5.81	25	5.70
10	5.73	20	5.48	25	5.26	31	4.90
15	4.58	25	5.33	27	c 5.67	Nov. 1	c 5.67
20	5.33	31	5.18	Oct. 4	c 5.35	Dec. 31	c 4.89
25	5.30						

5/11-29E2 (#949, p. 136). U. S. Government. Formerly owned by Bolsa Land Co. About 1 mile southeast of Sunset Beach. Automatic water-stage recorder maintained on well from July 6 to Nov. 1, 1943, by Geological Survey.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

July 6	c 5.37	Aug. 10	4.77	Sept. 10	4.64	Oct. 10	4.55
10	5.12	15	4.21	15	4.59	15	4.83
15	4.45	20	4.89	20	4.89	20	5.13
20	4.48	25	4.84	25	4.77	25	5.14
25	4.86	31	4.75	30	4.95	31	4.60
31	4.40	Sept. 5	5.02	Oct. 5	4.86	Dec. 31	c 4.91
Aug. 5	4.87						

5/12-11L1 (#949, p. 139). City of Los Angeles. About 1 mile north of Seal Beach. Automatic water-stage recorder maintained on well to Aug. 9, 1943, by Geological Survey, after which measurements were discontinued. All water levels are below sea level.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	15.96	Feb. 28	16.04	Apr. 25	15.88	June 20	16.01
10	16.03	Mar. 5	15.77	30	15.92	25	15.88
15	15.97	10	16.05	May 5	15.95	30	15.86
20	15.95	15	16.01	10	16.08	July 5	16.09
25	15.90	20	16.23	15	16.16	10	16.20
31	15.89	25	16.48	20	15.83	15	16.17
Feb. 5	15.89	31	16.07	25	16.15	20	16.25
8	c 16.00	Apr. 5	15.93	31	15.93	25	15.91
15	16.19	10	16.10	June 5	16.03	31	15.26
20	16.06	15	16.18	10	16.21	Aug. 5	15.58
22	c 16.04	20	15.91	15	16.12	9	16.55

- a Water surface below sea level.  
b Measured by Geological Survey.  
c Tape measurement.

5/12-12P1 (#949, p. 140). I. W. Hellman Ranch. About 1 mile east of Seal Beach. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	9.29	Apr. 10	6.76	July 10	10.76	Oct. 9	15.87
9	9.20	17	6.63	17	12.40	16	14.78
16	9.11	24	6.63	24	13.11	23	14.38
30	8.13	May 1	6.54	31	13.07	30	13.87
Feb. 6	7.65	8	6.78	Aug. 7	12.70	Nov. 6	12.98
13	7.64	15	7.43	14	13.53	13	13.12
20	7.62	22	8.43	21	13.84	20	12.30
Mar. 6	7.14	29	9.17	28	14.27	27	11.87
13	7.09	June 5	9.12	Sept. 4	14.25	Dec. 4	12.57
20	7.10	12	9.51	11	14.72	18	10.63
27	7.00	19	9.17	18	14.80	24	9.43
Apr. 3	6.82	26	9.52	25	15.59	30	a 9.11
7	a 6.96	July 3	10.23	Oct. 2	15.91	31	9.40

5/12-12P3 (#949, p. 143). City of Seal Beach. Automatic water-stage recorder maintained on well to Aug. 9, 1943, by Geological Survey, after which measurements were discontinued.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	13.14	Feb. 28	11.08	Apr. 25	10.48	June 20	13.93
10	13.40	Mar. 5	10.68	30	10.29	25	14.29
15	12.90	10	11.33	May 5	10.56	30	14.43
20	13.07	15	10.61	10	10.74	July 5	14.91
25	12.52	20	10.74	15	11.18	10	15.03
31	12.12	25	10.51	20	12.15	15	15.92
Feb. 5	11.54	31	10.45	25	12.50	20	17.08
10	11.51	Apr. 5	10.56	31	12.58	25	17.68
15	11.25	10	10.10	June 5	12.85	31	18.23
20	11.37	15	10.18	10	13.50	Aug. 5	18.24
25	11.07	20	10.17	15	13.62	9	18.50

5/12-13D1 (#949, p. 143). I. W. Hellman Ranch. In Seal Beach. Automatic water-stage recorder maintained on well to Oct. 4, 1943, by Geological Survey.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	22.65	Mar. 15	d 24.33	May 25	24.31	Aug. 5	24.30
10	bc 24.57	20	24.34	31	24.18	10	24.28
15	c 24.58	25	24.38	June 5	24.20	15	24.16
20	24.48	31	24.33	10	24.33	20	24.34
25	24.36	Apr. 5	24.33	15	24.22	25	24.32
31	24.28	10	24.29	20	24.14	31	24.30
Feb. 5	24.13	15	24.36	25	24.29	Sept. 5	24.38
10	24.37	20	24.32	30	24.22	10	24.30
15	24.32	25	24.37	July 5	24.24	15	24.31
20	24.22	30	24.43	10	24.36	20	24.36
25	24.26	May 5	24.36	15	24.19	25	24.31
28	24.26	10	24.42	20	24.25	30	24.37
Mar. 5	24.11	15	24.44	25	24.33	Oct. 4	d 24.41
10	24.28	20	24.23	31	24.18	Dec. 31	d 24.18

5/12-13D2 (#949, p. 144). I. W. Hellman Ranch. In Seal Beach. Automatic water-stage recorder maintained on well to Oct. 4, 1943, by Geological Survey.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Jan. 5	24.50	Jan. 15	24.55	Jan. 25	e 24.22	Feb. 5	24.06
10	24.55	20	24.50	31	e 24.14	10	24.18

a Measured by Geological Survey.

b Water level depressed and adjusted balance obtained by pumping out brackish water above salt-water column.

c Water surface below sea level.

d Tape measurement.

e Rise due to surface runoff entering through casing.

5/12-13D2. I. W. Hellman Ranch--Continued.  
Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 15	24.18	Apr. 15	24.24	June 14	b 24.28	Aug. 15	24.13
20	24.11	20	24.24	21	24.31	20	24.25
25	24.13	25	24.27	25	24.20	25	24.24
28	24.13	30	24.34	30	24.18	31	24.23
Mar. 5	24.02	May 5	24.28	July 5	24.19	Sept. 5	24.28
10	24.13	10	24.31	10	24.26	10	24.25
15	24.18	15	24.33	15	24.18	15	24.30
20	(a)	20	24.19	20	24.22	20	24.31
25	24.25	25	24.21	25	24.28	25	24.28
31	24.23	31	24.12	31	24.15	30	24.33
Apr. 5	24.17	June 5	24.12	Aug. 5	24.20	Oct. 4	b 24.34
10	24.19	10	24.22	10	24.21	Dec. 30	bc 22.52

6/10-1E1 (#949, p. 144). Frank Ey. About 3.5 miles northeast of Costa Mesa. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Jan. 2	23.51	Apr. 17	20.41	July 10	31.93	Oct. 9	29.60
9	23.86	19	20.08	13	31.21	11	29.45
12	23.51	24	19.62	17	e 34.71	16	29.61
16	24.15	May 1	19.73	24	e 38.34	23	28.35
30	22.76	8	19.78	31	e 39.48	30	27.42
Feb. 6	23.98	15	20.76	Aug. 7	e 37.85	Nov. 6	26.91
13	25.81	18	21.58	12	e 37.73	9	26.90
15	26.23	22	22.56	14	e 35.02	13	27.10
20	27.51	29	23.16	21	33.45	20	26.18
27	28.41	June 5	22.93	28	32.38	27	25.33
Mar. 6	27.38	10	23.97	Sept. 4	31.78	Dec. 4	25.58
13	26.67	12	23.75	11	30.61	13	24.83
16	26.23	18	d 24.65	13	30.28	18	23.07
20	25.78	19	24.93	18	29.33	24	22.08
27	25.85	26	26.43	25	30.47	31	21.17
Apr. 3	27.11	July 3	28.69	Oct. 2	30.08	31	d 21.19
10	22.83						

6/10-1L2 (137, p. 137, Santa Ana quadrangle well 1356; #949, p. 147). I. A. W. Henry. About 3.5 miles northeast of Costa Mesa. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Jan. 12	18.01	Apr. 19	16.37	July 13	16.36	Oct. 11	19.25
Feb. 15	16.96	May 18	16.15	Aug. 12	19.80	Nov. 9	19.05
Mar. 16	16.40	June 10	16.08	Sept. 13	19.02	Dec. 13	18.88

6/10-5C1 (#941, p. 130; #949, p. 150). Robert Gisler. About 3 miles northeast of Huntington Beach. Records furnished by Orange County Flood Control District.

Water level, in feet below land-surface datum, 1943

Jan. 2	7.18	Apr. 10	8.71	July 10	(f)	Oct. 9	12.09
9	7.47	17	5.82	17	15.32	16	11.31
16	7.60	24	5.65	24	15.44	23	10.85
30	6.31	May 1	5.47	31	15.13	30	10.56
Feb. 6	5.88	8	6.25	Aug. 7	14.90	Nov. 6	10.33
13	5.98	15	7.42	14	(f)	13	11.32
20	7.26	22	(f)	21	15.63	20	10.10
27	6.80	29	(f)	28	15.16	27	9.90
Mar. 6	6.34	June 5	10.56	Sept. 4	14.22	Dec. 4	10.15
13	6.88	12	10.14	11	14.44	18	7.80
20	(f)	19	10.70	18	13.69	24	7.08
27	(f)	26	12.27	25	13.45	31	6.37
Apr. 3	(f)	July 3	(f)	Oct. 2	12.69	31	d 6.46

a Recorder not operating.

b Tape measurement.

c Rise due to surface runoff entering through casing.

d Measured by Geological Survey.

e Water surface below sea level.

f Pumping.

6/10-6P1 (\*949, p. 151). H. J. Lamb. About 2.5 miles northeast of Huntington Beach. Automatic water-stage recorder maintained on well to Jan. 11, 1943, by Geological Survey, after which measurements were discontinued. Highest daily water levels, in feet below land-surface datum, 1943 (from recorder charts): Jan. 5, 2.17; Jan. 10, 2.75.

6/11-13G2 (\*949, p. 163). Surf Land & Water Co. About 1.5 miles east of Huntington Beach. Records furnished by Orange County Flood Control District.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	1.16	Apr. 7	1.59	July 7	a 6.55	Oct. 6	a 4.30
13	2.46	14	1.62	14	a 6.33	13	a 4.29
20	a 3.04	21	1.52	21	a 7.21	20	a 3.37
27	.82	28	1.65	28	a 6.25	27	a 5.78
Feb. 3	.72	May 5	1.97	Aug. 4	a 7.27	Nov. 3	a 5.40
10	b .20	12	2.42	11	a 7.90	10	a 5.61
17	b .23	19	a 3.26	18	a 7.32	17	a 5.40
24	1.27	26	a 4.80	25	a 6.78	24	a 4.20
Mar. 3	1.80	June 2	a 4.02	Sept. 1	a 5.92	Dec. 1	a 6.94
10	1.93	9	a 4.66	8	a 6.97	8	a 4.80
17	2.80	16	a 4.07	15	a 6.75	15	a 3.40
24	a 4.93	23	a 5.27	22	a 5.35	22	1.12
31	a 4.07	30	a 6.77	29	a 4.99	29	2.75

I-9F1 (\*941, p. 133; 949, p. 169). The Irvine Co. About 3 miles south of Santa Ana. Records furnished by Orange County Flood Control District.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	34.75	Apr. 21	26.41	July 14	ac157.30	Oct. 6	39.38
13	ac158.56	28	28.39	21	ac159.05	13	38.73
20	ac158.99	May 5	27.44	28	ac152.32	20	39.12
Feb. 3	32.59	12	27.15	Aug. 4	50.81	27	37.85
10	31.56	19	29.02	11	a 51.78	Nov. 3	36.68
17	31.66	26	29.89	18	41.21	10	36.36
Mar. 10	30.82	June 2	30.41	25	39.27	17	36.10
17	30.44	9	31.06	Sept. 1	38.93	24	34.29
24	29.66	16	31.88	8	39.56	Dec. 1	34.91
31	29.04	23	32.48	15	39.75	8	35.31
Apr. 7	28.90	30	34.43	22	37.97	15	32.94
14	27.53	July 7	38.33	29	38.79	22	32.23

Riverside County

## Santa Ana River Basin, San Jacinto Valley

4/3W-32. Formerly well 72c (\*817, p. 12; 840, p. 30; 845, p. 18; 886, p. 24; 911, p. 120; 941, p. 92; 949, p. 66). Key well. At Perris, Riverside County. Measuring point, top of casing, 1.8 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Mar. 26, 69.72; June 15, 70.04; Aug. 11, 69.47; Dec. 16, 69.05.

San Bernardino County

## Mojave River Basin

3/3W-6E1. Formerly well U6 (\*886, p. 30; 911, p. 125; 941, p. 96; 949, p. 66). Mike Spranger. Near center of east line of SW $\frac{1}{4}$  sec. 6, T. 3 N., R. 3 W. Measuring point is 2.1 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 4.42; Dec. 20, 7.18.

- a Water surface below sea level.
- b Above land-surface datum.
- c Pumping.

3/4W-12J1. Formerly well U4 (\*886, p. 30; 911, p. 125; 941, p. 96; 949, p. 66). Near center of SE $\frac{1}{4}$  sec. 12, T. 3 N., R. 4 W. Measuring point, is 1.4 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 5.35; Dec. 20, 5.22.

3/4W-13E1. Formerly well U1 (\*886, p. 30; 911, p. 125; 941, p. 96; 949, p. 66). Mr. Olive. SE. corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 3 N., R. 4 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 67.95; Dec. 20, 66.57.

4/2W-5N1. Formerly well U21 (\*886, p. 33; 911, p. 126; 941, p. 96; 949, p. 66). A. B. Sheridan. SW. corner of sec. 5, T. 4 N., R. 2 W. Measuring point is 2.5 feet above land-surface datum. No measurements made in 1943. a/

4/3W-1M1. Formerly well U19 (\*886, p. 33; 911, p. 126; 941, p. 96; 949, p. 66). E. D. S. Pope. Near SW. corner of NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 1, T. 4 N., R. 3 W. Measuring point is 1.2 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 12, b/

4/3W-5P1. Formerly well U31 (\*886, p. 34; 911, p. 126; 941, p. 96; 949, p. 67). Center of east line of SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 4 N., R. 3 W. Measuring point is 3.2 feet below land-surface datum. Water level, in feet below land-surface datum, 1943: May 12, 169.00.

4/3W-6B1. Formerly well U44 (\*886, p. 35; 911, p. 126; 941, p. 96; 949, p. 67). A. J. Lintner. Near NE. corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 6, T. 4 N., R. 3 W. Measuring point is 0.2 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 12, b/.

4/3W-6D1. Formerly well U43 (\*886, p. 35; 911, p. 126; 941, p. 96; 949, p. 67). A. W. Phillips. Near NE. corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 6, T. 4 N., R. 3 W. Measuring point is 1.0 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 12, 51.70.

4/3W-17M1. Formerly well U26 (\*886, p. 34; 911, p. 126; 941, p. 96; 949, p. 67). Arrowhead Reservoir & Power Co. Near NW. corner of SW $\frac{1}{4}$  sec. 17, T. 4 N., R. 3 W. Measuring point is 0.4 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 12.05; Dec. 20, 17.83.

4/3W-18E1. Formerly well U28 (\*886, p. 34; 911, p. 126; 941, p. 96; 949, p. 67). C. O. Evans. Near SE. corner of SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 4 N., R. 3 W. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 14.48; Dec. 20, 22.80.

4/3W-19G1. Formerly well U23 (\*886, p. 33; 911, p. 126; 941, p. 96; 949, p. 67). G. W. McLister. Near center of south line of NE $\frac{1}{4}$  sec. 19, T. 4 N., R. 3 W. Measuring point is 1.3 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 12.75; Dec. 20, 28.51.

4/3W-19R1. Formerly well U13 (\*886, p. 31; 911, p. 126; 941, p. 96; 949, p. 66). Arrowhead Reservoir & Power Co. Near west line of SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 19, T. 4 N., R. 3 W. Measuring point is 0.6 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 10.86; Dec. 20, 28.83.

4/3W-20K1. Formerly well U16 (\*886, p. 32; 911, p. 126; 941, p. 96; 949, p. 66). N. F. Marsh. Near center of south line of NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 20, T. 4 N., R. 3 W. Measuring point is 1.10 feet above land-surface datum. No measurements made in 1943.

4/3W-20L1. Formerly well U15 (\*886, p. 32; 911, p. 126; 941, p. 96; 949, p. 66). J. M. Allison. Near center of south line of NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 20, T. 4 N., R. 3 W. Measuring point is 0.9 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: May 12, 19.78.

4/3W-20N1. Formerly well U14 (\*886, p. 31; 911, p. 126; 941, p. 96; 949, p. 66). O. A. Minister. Near SW. corner of sec. 20, T. 4 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 12, 15.30; Dec. 20, well caved, measurements discontinued.

- a Well is in Army bombing range.  
b Pumping; no measurements made.

- 4/3W-21A1. Formerly well U17 (\*886, p. 32; 911, p. 126; 941, p. 96; 949, p. 66). W. O. Wade. SW. corner of NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 21, T. 4 N., R. 3 W. Measuring point is at land-surface datum. No measurements made in 1943.
- 4/3W-30E1. Formerly well U9 (\*886, p. 30; 911, p. 126; 941, p. 96; 949, p. 66). A. W. Cole. Near NE. corner of SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 30, T. 4 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 12, 23.50; Dec. 20, 38.00.
- 5/3W-9E1. Formerly well U55 (\*886, p. 35; 911, p. 126; 941, p. 96; 949, p. 67). F. A. Fletcher. Near center of west line of SE $\frac{1}{4}$  sec. 9, T. 5 N., R. 3 W. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 12, 88.91; Dec. 21, 88.95.
- 5/3W-18F1. Formerly well U57 (\*886, p. 35; 911, p. 126; 941, p. 96; 949, p. 67). J. D. Humiston. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 5 N., R. 3 W. Measuring point is 0.3 foot below land-surface datum. Water levels, in feet below land-surface datum, 1943; May 12, 104.30; Dec. 21, 104.38.
- 5/4W-10. Formerly well U61 (\*886, p. 36; 911, p. 126; 941, p. 96; 949, p. 67). SW $\frac{1}{4}$  sec. 10, T. 5 N., R. 4 W., in Victorville. Measuring point is 2.15 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 43.77; Dec. 21, 43.57.
- 5/4W-11F1. Formerly well U59 (\*886, p. 36; 911, p. 126; 941, p. 96; 949, p. 67). Lee Saul. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 5 N., R. 4 W. Measuring point is 2.6 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 54.24; Dec. 21, 55.25.
- 5/4W-11F2. Formerly well U59a (\*886, p. 36; 911, p. 126; 941, p. 96; 949, p. 67). Lee Saul. SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 5 N., R. 4 W. Engine driven pump replaced by windmill on May 13, 1943. New measuring point, top of casing, 0.08 foot below former measuring point, and 0.4 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 34.60; Dec. 21, 46.25.
- 5/4W-35A1. Formerly well U68 (\*886, p. 36; 911, p. 126; 941, p. 97; 949, p. 67). A. Sorenson. On Verde Ranch, near NW. corner of NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 5 N., R. 4 W. Measuring point is 2.0 feet above land-surface datum. No measurements made in 1943.
- 5/4W-36N1. Formerly well U72 (\*886, p. 36; 911, p. 127; 941, p. 97; 949, p. 67). On Verde Ranch, near SW. corner of sec. 36, T. 5 N., R. 4 W. Measuring point is 0.2 foot above land-surface datum. Water level, in feet below land-surface datum, 1943; May 12, 2.49.
- 6/4W-19G1. Formerly well M3 (\*886, p. 37; 911, p. 127; 941, p. 97; 949, p. 67). John Bennetts. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 6 N., R. 4 W. Measuring point is 2.5 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 20.72; Dec. 22, 19.84.
- 7/4W-30C1. Formerly well M7 (\*886, p. 37; 911, p. 127; 941, p. 97; 949, p. 67). NE. corner of NW $\frac{1}{4}$  sec. 30, T. 7 N., R. 4 W. Measuring point is 0.6 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 56.77; Dec. 22, 56.94.
- 8/3E-3E1. Formerly well L23 (\*886, p. 43; 911, p. 128; 941, p. 98; 949, p. 69). C. W. Beaverstock. SW. corner of NW $\frac{1}{4}$  sec. 3, T. 8 N., R. 3 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 5.84; Dec. 30, 6.59.
- 8/3E-3F1. Formerly well L24 (\*886, p. 44; 911, p. 128; 941, p. 98; 949, p. 69). SE. corner of NW $\frac{1}{4}$  sec. 3, T. 8 N., R. 3 E. Measuring point is 2.3 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 21.85; Dec. 30, 21.89.
- 8/3E-4B1. Formerly well L21 (\*886, p. 43; 911, p. 128; 941, p. 98; 949, p. 69). Lyle Graham. NW. corner of NE $\frac{1}{4}$  sec. 4, T. 8 N., R. 3 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 3.86; Dec. 30, 3.85.
- 8/3E-4B2. Formerly well L22 (\*886, p. 43; 911, p. 128; 941, p. 98; 949, p. 69). Lyle Graham. NW. corner of NE $\frac{1}{4}$  sec. 4, T. 8 N., R. 3 E., in pump house near ranch house. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 4.14; Dec. 30, 4.15.

8/5W-4M1. Formerly well M38 (\*886, p. 38; 911, p. 127; 941, p. 97; 949, p. 68). Everett Swing. SE. corner of NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 4, T. 8 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 13.10; Dec. 22, 14.76.

8/4E-4M1. Formerly well L32 (\*886, p. 44; 911, p. 128; 941, p. 98; 949, p. 68). Near SW. corner of SW $\frac{1}{4}$  sec. 4, T. 8 N., R. 4 E. Well caved in 1943; measurements discontinued.

8/4E-7M1. Formerly well L28 (\*886, p. 44; 911, p. 129; 941, p. 98; 949, p. 69). G. E. Burckhardt. Near SW. corner of SW $\frac{1}{4}$  sec. 7, T. 8 N., R. 4 E. Measuring point is 1.4 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 37.37; Dec. 30, well caved; measurements discontinued.

8/4E-12L1. Formerly well L37 (\*886, p. 44; 911, p. 128; 941, p. 98; 949, p. 69). Mojave Camp service station. Near center of SW $\frac{1}{4}$  sec. 12, T. 8 N., R. 4 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 33.29; Dec. 30, a/.

8/4W-2Q1. Formerly well M26 (\*886, p. 38; 911, p. 127; 941, p. 97; 949, p. 67). Near SW. corner of SE $\frac{1}{4}$  sec. 2, T. 8 N., R. 4 W. Measuring point is 0.5 foot above land-surface datum. Water level, in feet below land-surface datum, 1943; May 14, 23.63.

8/4W-12Q1. Formerly well M30 (\*886, p. 38; 911, p. 127; 941, p. 97; 949, p. 68). Holcomb Bros. SW. corner of SE $\frac{1}{4}$  sec. 12, T. 8 N., R. 4 W. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, a/; Dec. 31, 8.79.

8/4W-20M1. Formerly well M22 (\*886, p. 37; 911, p. 127; 941, p. 97; 949, p. 67). Mr. Lord. Near center of south line of SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 20, T. 8 N., R. 4 W. Measuring point is 9.0 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943; May 14, 12.62; Dec. 31, 13.84.

8/4W-31R1. Formerly well M15 (\*886, p. 37; 911, p. 127; 941, p. 97; 949, p. 67). SE. corner of sec. 31, T. 8 N., R. 4 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943; May 13, 14.81; Dec. 22, 15.18.

8/4W-31D1. Formerly well M19 (\*886, p. 37; 911, p. 127; 941, p. 97; 949, p. 67). F. H. Merrell. Near center of west line of NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 31, T. 8 N., R. 4 W. Measuring point is 1.0 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 14, 43.38; Dec. 31, 44.07.

9/1E-12D1. Formerly well L47 (\*886, p. 45; 911, p. 129; 941, p. 98; 949, p. 69). Near NW. corner of NW $\frac{1}{4}$  sec. 12, T. 9 N., R. 1 E. Measuring point, top of casing, at land-surface datum. (Previously published measurements are referred to original measuring point, which was 0.6 foot above land-surface datum.) Water levels, in feet below land-surface datum, 1943; May 18, 35.35; Dec. 29, 38.73.

9/1E-13E1. Formerly well L43 (\*886, p. 45; 911, p. 128; 941, p. 98; 949, p. 69). Near SW. corner of NW $\frac{1}{4}$  sec. 13, T. 9 N., R. 1 E. Measuring point is 1.2 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 49.93; Dec. 30, 58.54.

9/1E-13E2. Formerly well L43a (\*886, p. 45; 911, p. 128; 941, p. 98; 949, p. 69). Near SW. corner of NW $\frac{1}{4}$  sec. 13, T. 9 N., R. 1 E., about 300 feet south of well 13E1 (formerly L43). Measuring point is 0.7 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943; May 19, 55.46; Dec. 30, 59.48.

a Pumping; no measurements made.

9/1E-15L1. Formerly well L42 (\*886, p. 45; 911, p. 128; 941, p. 98; 949, p. 69). G. Linguenfelder. Near center of SW $\frac{1}{4}$  sec. 15, T. 9 N., R. 1 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 48.80; Dec. 30, 61.23.

9/1E-18E1. Formerly well L1 (\*886, p. 47; 911, p. 128; 941, p. 98; 949, p. 69). B. A. Funk. SW. corner of NW $\frac{1}{4}$  sec. 18, T. 9 N., R. 1 E. Measuring point is 3.7 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 19, 7.38; Dec. 28, 10.36.

9/1E-24D1. Formerly well L8 (\*886, p. 47; 911, p. 128; 941, p. 98; 949, p. 69). Center of west line of NW $\frac{1}{4}$  sec. 24, T. 9 N., R. 1 E. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 62.61; Dec. 30, 63.69.

9/1W-6B1. Formerly well M82 (\*886, p. 41; 911, p. 128; 941, p. 97; 949, p. 68). Water company. In Barstow, near center of west line of NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 6, T. 9 N., R. 1 W. Well destroyed in 1943.

9/1W-10A1. Formerly well M92 (\*886, p. 42; 911, p. 128; 941, p. 98; 949, p. 68). Mr. Gibbs. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 10, T. 9 N., R. 1 W. Measuring point is 5.9 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 7.53; Dec. 28, 9.28.

9/1W-10D1. Formerly well M91 (\*886, p. 42; 911, p. 128; 941, p. 98; 949, p. 68). R. Harlan. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 10, T. 9 N., R. 1 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 4.10; Dec. 28, 7.35.

9/1W-10M1. Formerly well M97 (\*886, p. 43; 911, p. 128; 941, p. 98; 949, p. 69). Greystone Auto Camp. NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 10, T. 9 N., R. 1 W. Measuring point is 0.8 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 20, 48.45; Dec. 28, 51.56.

9/1W-13B1. Formerly well M100 (\*886, p. 43; 911, p. 128; 941, p. 98; 949, p. 69). F. Ryerse. NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 9 N., R. 1 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 19, 6.87; Dec. 28, 9.92.

9/2E-3A1. Formerly well L51 (\*886, p. 46; 911, p. 129; 941, p. 99; 949, p. 70). Bruce McCormick. Near center of NE $\frac{1}{4}$  sec. 3, T. 9 N., R. 2 E., near corral. Measuring point is 0.9 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 10.19; Dec. 29, 12.18.

9/2E-3A2. Formerly well L51a (\*886, p. 46; 911, p. 129; 941, p. 99; 949, p. 70). Bruce McCormick. Near center of NE $\frac{1}{4}$  sec. 3, T. 9 N., R. 2 E., at east end of ranch house. Measuring point is 0.8 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 14.89; Dec. 29, 15.88.

9/2E-4D1. Formerly well L50 (\*886, p. 46; 911, p. 129; 941, p. 99; 949, p. 70). Near NW. corner of NW $\frac{1}{4}$  sec. 4, T. 9 N., R. 2 E. Measuring point is 0.1 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 16.27; Dec. 29, 16.77.

9/2E-8J1. Formerly well L64 (\*886, p. 47; 911, p. 129; 941, p. 99; 949, p. 70). Annie Escholtz. Near center of SE $\frac{1}{4}$  sec. 8, T. 9 N., R. 2 E. Measuring point is 0.2 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 35.88; Dec. 30, 36.85.

9/2E-12N1. Formerly well L67 (\*886, p. 49; 911, p. 129; 941, p. 99; 949, p. 70). Hunter. Near SW. corner of SW $\frac{1}{4}$  sec. 12, T. 9 N., R. 2 E. Measuring point is at land-surface datum. Water level, in feet below land-surface datum, 1943: Dec. 30, 3.25.

9/2E-14N1. Formerly well L68 (\*886, p. 49; 911, p. 129; 941, p. 99; 949, p. 70). Scobel & Haimut. Near SW. corner of SW $\frac{1}{4}$  sec. 14, T. 9 N., R. 2 E., north of ranch house. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 23.31; Dec. 30, 23.08.

9/2E-14N2. Formerly well L68a (\*886, p. 49; 911, p. 129; 941, p. 99; 949, p. 70). Scobel & Halmut. Near SW corner of SW $\frac{1}{4}$  sec. 14, T. 9 N., R. 2 E., about 200 feet northeast of well 14N1 (formerly L68). Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 19.10; Dec. 30, 16.53.

9/2E-14N3. Formerly well L68c (\*886, p. 50; 911, p. 129; 941, p. 99; 949, p. 70). Scobel & Halmut. Near SW corner of SW $\frac{1}{4}$  sec. 14, T. 9 N., R. 2 E., southeast of well 14N1 (formerly L68). Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 17.88; Dec. 30, 17.38.

9/2E-18F1. Formerly well L63 (\*886, p. 47; 911, p. 129; 941, p. 99; 949, p. 70). Near center of sec. 18, T. 9 N., R. 2 E. Measuring point is 1.0 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Dec. 30, a/.

9/2E-20M1. Formerly well L10a (\*886, p. 48; 911, p. 128; 941, p. 98; 949, p. 69). E. D. Barry. Near NW corner of SW $\frac{1}{4}$  sec. 20, T. 9 N., R. 2 E. Well filled with earth and rocks; measurements discontinued May 18, 1943.

9/2W-19B1. Formerly well M43 (\*886, p. 39; 911, p. 127; 941, p. 97; 949, p. 68). Mr. Shobel. Near NE corner of NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 19, T. 9 N., R. 2 W. Measuring point is 1.2 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 13, 63.93.

9/3E-3D1. Formerly well L77 (\*886, p. 50; 911, p. 130; 941, p. 99; 949, p. 70). NW corner of sec. 3, T. 9 N., R. 3 E. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 42.37; Dec. 29, 42.75.

9/3E-10D1. Formerly well L76 (\*886, p. 50; 911, p. 129; 941, p. 99; 949, p. 70). Mr. Bozarth. Near center of west line of NW $\frac{1}{4}$  sec. 10, T. 9 N., R. 3 E. Measuring point is 2.0 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 36.04; Dec. 29, 35.94.

9/3E-12E1. Formerly well L93 (\*886, p. 51; 911, p. 130; 941, p. 99; 949, p. 70). B. Nicholas. SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 12, T. 9 N., R. 3 E. Measuring point is 2.6 feet below land-surface datum. Water level, in feet below land-surface datum, 1943: May 18, a/.

9/3E-34D1. Formerly well L19 (\*886, p. 48; 911, p. 128; 941, p. 98; 949, p. 69). Mr. Clinkenbeard. NW corner of NW $\frac{1}{4}$  sec. 34, T. 9 N., R. 3 E. Measuring point is 0.3 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, a/; Dec. 29, 29.85.

9/3W-10A1. Formerly well M53 (\*886, p. 39; 911, p. 127; 941, p. 97; 949, p. 68). NE corner sec. 10, T. 9 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 75.23; Dec. 22, well caved; measurements discontinued.

9/3W-10P1. Formerly well M52 (\*886, p. 39; 911, p. 127; 941, p. 97; 949, p. 68). SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 10, T. 9 N., R. 3 W. Measuring point is 1.3 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 89.58; Dec. 22, 89.00.

9/3W-10R1. Formerly well M56 (\*886, p. 40; 911, p. 127; 941, p. 97; 949, p. 68). Mr. Osborn. SE corner of sec. 10, T. 9 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 8.73; Dec. 22, 12.00.

9/3W-14D1. Formerly well M56a (\*886, p. 40; 911, p. 127; 941, p. 97; 949, p. 68). Mr. Bullock. SW corner of NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 14, T. 9 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 8.07; Dec. 22, 13.10.

9/3W-28A1. Formerly well M51 (\*886, p. 39; 911, p. 127; 941, p. 97; 949, p. 68). J. Slagill. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 28, T. 9 N., R. 3 W. Measuring point is 0.8 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Dec. 22, 12.04.

a Pumping; no measurements made.

9/3W-34R1. Formerly well M41a (\*886, p. 38; 911, p. 127; 941, p. 97; 949, p. 68). Nellie Storey. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 34, T. 9 N., R. 3 W. Measuring point is at land-surface datum. No measurements made in 1943.

9/4E-31K1. Formerly well L31 (\*886, p. 44; 911, p. 128; 941, p. 98; 949, p. 69). A. M. Monroe. Near NW corner of SE $\frac{1}{4}$  sec. 31, T. 9 N., R. 4 E. Measuring point is 3.2 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 19, 13.08; Dec. 30, 13.14.

10/1W-31G1. Formerly well M84 (\*886, p. 42; 911, p. 128; 941, p. 98; 949, p. 68). Mr. Nelson. SE. corner of NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 31, T. 10 N., R. 1 W. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 46.33; Dec. 28, 47.97.

10/1W-33D1. Formerly well M88 (\*886, p. 42; 911, p. 128; 941, p. 98; 949, p. 68). Mr. Sandoz. NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 33, T. 10 N., R. 1 W. Measuring point is 1.6 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 23.97; Dec. 28, 25.54.

10/2E-34L1. Formerly well L54 (\*886, p. 46; 911, p. 129; 941, p. 99; 949, p. 70). Near center of SW $\frac{1}{4}$  sec. 34, T. 10 N., R. 2 E. Measuring point is 1.2 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 55.08; Dec. 29, 55.60.

10/2E-32P1. Formerly well L49 (\*886, p. 45; 911, p. 128; 941, p. 98; 949, p. 69). Yermo Mutual Water Co. SE. corner of SW $\frac{1}{4}$  sec. 32, T. 10 N., R. 2 E. Measuring point is 0.65 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 23.94; Dec. 29, 24.64.

10/2W-19P1. Formerly well M75 (\*886, p. 41; 911, p. 128; 941, p. 97; 949, p. 68). Mr. Loftus. NE. corner of SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 19, T. 10 N., R. 2 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 66.75; Dec. 28, 66.85.

10/2W-30R1. Formerly well M74 (\*886, p. 41; 911, p. 128; 941, p. 97; 949, p. 68). J. D. Rich. SE. corner of sec. 30, T. 10 N., R. 2 W. Measuring point, top of casing, 4.4 feet below land-surface datum. (Previously published measurements are referred to original measuring point, which was 2.0 feet above land-surface datum.) Water levels, in feet below land-surface datum, 1943: May 13, a; Dec. 28, 19.29.

10/3E-21A1. Formerly well L97 (\*886, p. 51; 911, p. 130; 941, p. 99; 949, p. 70). G. F. Getty. Near NE. corner of sec. 21, T. 10 N., R. 3 E. Measuring point is 0.3 foot above land-surface datum. No measurements made in 1943.

10/3E-34E1. Formerly well L78 (\*886, p. 50; 911, p. 130; 941, p. 99; 949, p. 70). Mr. Henderson. South of center of NW $\frac{1}{4}$  sec. 34, T. 10 N., R. 3 E. Measuring point is 0.5 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: May 18, 7.85; Dec. 29, 8.06.

10/3W-23N1. Formerly well M71 (\*886, p. 41; 911, p. 128; 941, p. 97; 949, p. 68). A. H. Harris. Near SW. corner of sec. 23, T. 10 N., R. 3 W. Well destroyed in 1943.

10/3W-32O1. Formerly well M52b (\*886, p. 39; 911, p. 127; 941, p. 97; 949, p. 68). Near center of north line of NW $\frac{1}{4}$  sec. 32, T. 10 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 13, 57.68; Dec. 22, 57.85.

11/3W-28J1. Formerly well M64 (\*886, p. 40; 911, p. 127; 941, p. 97; 949, p. 68). NE. corner of SE $\frac{1}{4}$  sec. 28, T. 11 N., R. 3 W. Measuring point is 1.2 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: May 14, dry at 45 feet.

11/3W-34F1. Formerly well M66 (\*886, p. 41; 911, p. 128; 941, p. 97; 949, p. 68). Near center of south line of SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 34, T. 11 N., R. 3 W. Measuring point is at land-surface datum. Water levels, in feet below land-surface datum, 1943: May 14, 32.11; Dec. 22, 32.33.

a Pumping; no measurements made.

## Santa Ana River Basin, San Bernardino area

1S/3W-17C1. Formerly listed only as Williams well (#817, pp. 12-16; 840, p. 30; 845, pp. 18-19; 886, p. 24; 911, pp. 119-120; 941, pp. 91-92; 949, pp. 65-66). Records furnished by Gage Canal Co. Measuring point, top of casing, at land-surface datum. All previously published records have been referred to the original measuring point, which was top of casing, 3.8 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2	20.87	Apr. 3	2.78	July 3	11.36	Oct. 9	18.86
9	20.78	10	2.36	10	12.03	16	18.95
16	20.53	17	2.03	17	12.87	23	18.86
23	20.36	24	2.12	24	13.70	29	18.95
29	12.87	May 1	2.53	31	14.45	Nov. 6	18.88
Feb. 6	10.78	8	3.20	Aug. 7	15.12	14	18.53
13	10.70	15	4.53	14	15.36	20	18.45
20	10.87	22	5.78	21	15.87	27	18.28
27	7.03	29	6.87	28	16.36	Dec. 4	18.20
Mar. 6	1.87	June 5	7.70	Sept. 4	17.03	11	18.12
13	2.95	12	8.36	11	17.28	18	17.28
20	2.78	19	9.03	25	18.70	25	16.95
27	2.78	26	9.95	Oct. 2	19.45		

## San Diego County

## San Luis Rey River Basin

10/3W-1. Formerly well C9a (#840, p. 35; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 94; 949, p. 73). On San Luis Rey Ranch. Measuring point is 5.5 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Jan. 18	6.00	Apr. 12	5.51	July 14	7.36	Oct. 12	6.08
Feb. 15	6.00	May 14	6.30	Aug. 17	6.53	Nov. 16	6.04
Mar. 15	5.51	June 15	6.24	Sept. 14	6.22	Dec. 14	5.82

10/3W-1a. Formerly well C9b (#840, p. 36; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 94; 949, p. 73). On San Luis Rey Ranch, NE $\frac{1}{4}$  sec. 1, T. 10 S., R. 3 W., 6 miles east of Bonsall post office. Measuring point is 1.4 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Jan. 18	7.72	Apr. 12	6.64	July 14	7.08	Oct. 12	7.13
Feb. 15	7.19	May 14	6.99	Aug. 17	7.13	Nov. 16	7.12
Mar. 15	6.58	June 15	7.04	Sept. 14	7.13	Dec. 14	7.01

10/3W-1b. Formerly well C9c (#840, p. 36; 845, p. 43; 886, p. 28; 911, p. 124; 941, p. 94; 949, p. 73). On San Luis Rey Ranch, NE $\frac{1}{4}$  sec. 1, T. 10 S., R. 3 W., 6 miles east of Bonsall post office. Measuring point is at land-surface datum.

## Water level, in feet below land-surface datum, 1943

Jan. 18	6.05	Apr. 12	5.04	July 14	5.56	Oct. 12	5.61
Feb. 15	5.62	May 14	5.43	Aug. 17	5.62	Nov. 16	5.56
Mar. 15	5.03	June 15	5.52	Sept. 14	5.61	Dec. 14	5.48

10/3W-1c. Formerly well C8 (#886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). Fallbrook Public Utility District observation well. On San Luis Rey Ranch. Measuring point is 3.2 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Jan. 18	6.20	Apr. 12	5.84	July 14	6.62	Oct. 12	6.58
Feb. 15	5.82	May 14	6.32	Aug. 17	6.70	Nov. 16	6.42
Mar. 15	5.53	June 15	6.49	Sept. 14	6.67	Dec. 14	6.01

10/3W-15. Formerly well C3a (\*840, p. 35; 845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). On Gird Ranch, NW $\frac{1}{4}$  sec. 15, T. 10 S., R. 3 W., 2.5 miles east of Bonsall post office. Measuring point is 4.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	3.85	Apr. 12	3.46	July 14	4.80	Oct. 12	6.38
Feb. 15	3.38	May 14	4.23	Aug. 17	5.46	Nov. 16	5.32
Mar. 15	3.00	June 15	4.44	Sept. 14	6.04	Dec. 14	3.53

10/3W-16. Formerly well C5 (\*845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). Hart, Inc. 2 miles east of Bonsall. Measuring point is 2.8 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	a 3.89	Apr. 12	3.18	July 14	3.68	Oct. 12	5.07
Feb. 15	3.20	May 14	3.55	Aug. 17	4.84	Nov. 16	4.44
Mar. 15	3.55	June 15	3.46	Sept. 14	5.12	Dec. 14	3.56

10/3W-20. Formerly well C7b (\*840, p. 35; 845, p. 42; 886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). Bonsall School well. In SW $\frac{1}{4}$  sec. 20, T. 10 S., R. 3 W., at Bonsall. Measuring point is 1.9 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	8.19	Apr. 12	6.85	July 14	8.16	Oct. 12	9.45
Feb. 15	6.94	May 14	b 7.73	Aug. 17	(c)	Nov. 16	8.87
Mar. 15	6.34	June 15	7.94	Sept. 14	9.18	Dec. 14	8.32

10/3W-20a. Formerly well C7c. Sickler Ranch. In SW $\frac{1}{4}$  sec. 20, T. 10 S., R. 3 W., at Bonsall. Diameter 3.3 feet, depth 33 feet. Measuring point, top of curb on east side, 0.5 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 15	14.80	Aug. 17	15.46	Oct. 12	16.32	Dec. 14	15.24
July 14	b 16.63	Sept. 14	16.09	Nov. 16	15.86		

10/3W-30. Formerly well C4 (\*886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). Fallbrook Public Utility District observation well. On property of San Diego County Water Co. Measuring point is 3.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	10.13	Apr. 12	9.64	July 14	10.82	Oct. 12	11.23
Feb. 15	9.84	May 14	10.33	Aug. 17	11.06	Nov. 16	11.09
Mar. 15	9.32	June 15	10.53	Sept. 14	11.20	Dec. 14	10.27

11/4W-5. Formerly well F36 (\*886, p. 28; 911, p. 124; 941, p. 94; 949, p. 74). City of Oceanside observation well. On Stokes property, on north bank of San Luis Rey River, east of San Luis Rey. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 3.6 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	7.57	Apr. 12	5.62	July 13	7.42	Oct. 18	10.86
Feb. 15	5.96	May 14	6.08	Aug. 17	8.74	Nov. 16	11.58
Mar. 15	5.20	June 15	6.42	Sept. 14	9.90	Dec. 14	11.16

11/4W-5a. Formerly well F22 (\*845, p. 43; 886, p. 28; 911, p. 124; 941, p. 95; 949, p. 74). Santa Fe well. In pump house on right bank of San Luis Rey River, 0.1 mile west of Ashley School. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 1.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	9.00	Apr. 12	8.50	July 13	(b)	Oct. 18	12.79
Feb. 15	8.70	May 14	(b)	Aug. 17	(b)	Nov. 16	(b)
Mar. 15	8.33	June 15	10.08	Sept. 14	(b)	Dec. 14	12.64

a Nearby well pumping.

b Pumping.

c Pump house locked.

11/4W-8. Formerly well F30 (\*886, p. 29; 911, p. 124; 941, p. 95; 949, pp. 74-75). Carlsbad Mutual Water Co. observation well. Near north abutment of county-road bridge at San Luis Rey. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 2.1 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	7.00	Apr. 12	4.91	July 13	7.07	Oct. 18	9.47
Feb. 15	5.90	May 14	6.15	Aug. 17	8.11	Nov. 16	9.91
Mar. 15	5.50	June 15	6.51	Sept. 14	8.76	Dec. 14	9.41

11/4W-9F1. Formerly well F37 (\*911, p. 125; 941, p. 95; 949, p. 74). City of Oceanside observation well. On Williams Ranch, in SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 9, T. 11 S., R. 4 W. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 4.4 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	5.38	Apr. 12	3.54	July 13	8.21	Oct. 18	9.33
Feb. 15	4.11	May 14	3.96	Aug. 17	7.71	Nov. 16	10.23
Mar. 14	3.47	June 15	5.10	Sept. 14	10.18	Dec. 14	8.63

11/4W-18. Formerly well F32 (\*886, p. 29; 911, p. 125; 941, p. 95; 949, p. 75). Carlsbad Mutual Water Co. observation well. 0.25 mile east of Carlsbad Mutual Water Co.'s pumping plant near San Luis Rey. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 1.1 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	18.68	Apr. 12	8.12	July 13	18.86	Oct. 18	21.31
Feb. 15	12.30	May 14	21.41	Aug. 17	25.72	Nov. 16	16.52
Mar. 15	8.35	June 15	21.51	Sept. 14	25.92	Dec. 14	10.21

11/5W-13a. Formerly well F13b (\*886, p. 29; 911, p. 125; 941, p. 95; 949, p. 75). City of Oceanside. Near Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 3.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	9.14	Apr. 12	4.47	July 13	10.66	Oct. 18	13.07
Feb. 15	5.78	May 14	10.95	Aug. 17	13.95	Nov. 16	12.33
Mar. 15	4.11	June 15	10.47	Sept. 14	14.45	Dec. 14	6.97

11/5W-13b. Formerly well F13c (\*886, p. 29; 911, p. 125; 941, p. 95; 949, p. 75). City of Oceanside. Near Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	11.12	Apr. 12	5.36	July 13	9.98	Oct. 18	12.80
Feb. 15	7.79	May 14	6.61	Aug. 17	11.45	Nov. 16	12.84
Mar. 15	5.98	June 15	8.79	Sept. 14	12.58	Dec. 14	11.62

11/5W-13c. Formerly well F13d (\*886, p. 29; 911, p. 125; 941, p. 95; 949, p. 75). City of Oceanside. Near Oceanside. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 2.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	10.80	Apr. 12	5.89	July 13	9.97	Oct. 18	11.71
Feb. 15	6.63	May 14	8.50	Aug. 17	11.61	Nov. 16	11.11
Mar. 15	6.00	June 15	9.17	Sept. 14	12.09	Dec. 14	8.16

11/5W-15. Formerly well F13e (\*886, p. 29; 911, p. 125; 941, p. 95; 949, p. 75). City of Oceanside. 0.1 mile northwest of old brick pumping plant. Measurements made by Soil Conservation Service and Carlsbad Mutual Water Co. Measuring point is 4.5 feet above land-surface datum.

11/5W-15. City of Oceanside--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18	5.80	Apr. 12	1.68	July 13	5.06	Oct. 18	6.66
Feb. 15	2.11	May 14	3.68	Aug. 17	6.35	Nov. 16	6.21
Mar. 15	1.61	June 15	4.33	Sept. 14	6.81	Dec. 14	3.61

## San Dieguito River Basin.

12/1W-31. Formerly well G17a (\*840, p. 38; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 73). City of San Diego. Formerly owned by Pratt Ranch. NE $\frac{1}{4}$  sec. 31, T. 12 S., R. 1 W., near San Pasqual. Well filled in; measurements discontinued.

12/1W-31a. Formerly well G17b (\*817, pp. 38-39; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 73). City of San Diego. Formerly owned by Pratt Ranch. NE $\frac{1}{4}$  sec. 31, T. 12 S., R. 1 W., near San Pasqual. Measuring point is 2.0 feet below land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 1	8.75	May 24	7.76	Sept. 13	10.04
Mar. 16	6.50	July 23	a 8.98	Dec. 28	8.06

12/1W-32. Formerly well G22a. County-road station. NW $\frac{1}{4}$  sec. 32, T. 12 S., R. 1 W. Diameter 3 feet, depth 38 feet. Equipped with windmill pump. Measuring point, top of plank cover, 0.7 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 11	18.15	May 24	b 18.97	Sept. 13	b 21.23
Mar. 16	15.48	July 23	b 21.22	Dec. 28	18.41

12/1W-33. Formerly well H31b (\*840, p. 39; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 73). H. G. Fenton. Formerly owned by Ward Estate. SW $\frac{1}{4}$  sec. 33, T. 12 S., R. 1 W., just west of San Pasqual. Measuring point is 0.4 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 1	9.86	May 24	10.55	Sept. 13	10.72
Mar. 16	9.14	July 23	10.20	Dec. 28	10.73

12/1W-33a. Formerly well H17a. W. H. Dyer. NW $\frac{1}{4}$  sec. 34, T. 12 S., R. 1 W. Diameter 10 inches, depth 17.5 feet. Measuring point, top of casing, 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 11	1.77	May 24	0.44	Sept. 13	4.11
Mar. 16	.53	July 23	2.60	Dec. 28	.45

12/1W-35. Formerly well H34b (\*840, p. 42; 845, p. 42; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 73). C. E. Christopher. Formerly owned by Peet Ranch. NW $\frac{1}{4}$  sec. 35, T. 12 S., R. 1 W., at San Pasqual. Measuring point is 1.0 foot below land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 6.65	May 24	(a)	Sept. 13	5.86
Mar. 16	5.63	June 4	5.31	Dec. 28	5.22

a Pumping.

b Windmill pumping intermittently.

## San Diego River Basin

15/1E-2. Formerly well L28 (\*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92; 949, p. 71). San Diego County. At El Monte Park. Measuring point is 0.7 foot above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	24.97	Apr. 28	12.42	Aug. 9	22.10	Nov. 30	26.25
Feb. 11	20.58	May 24	14.83	Sept. 20	23.95	Dec. 27	26.06
Mar. 26	16.39	July 6	19.45	Oct. 22	a 25.88		

15/1E-7. Formerly well L5a (\*845, p. 28; 886, p. 25; 911, p. 122; 941, p. 93; 949, p. 71). J. F. Rickerts. SE $\frac{1}{4}$  sec. 7, T. 15 S., R. 1 E., El Cajon land grant. At Lakeside. Measuring point is 3.5 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	9.15	Apr. 28	7.19	Aug. 9	9.01	Nov. 30	10.19
Feb. 11	8.27	May 24	7.62	Sept. 20	9.63	Dec. 27	10.29
Mar. 26	7.46	July 6	8.36	Oct. 22	9.88		

15/1E-16. Formerly well L29 (\*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92; 949, p. 71). Pratt test well. On north bank of San Diego River, about 0.3 mile east of El Monte pumping plant. Measuring point is 1.7 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	7.99	Apr. 28	6.00	Aug. 9	8.19	Nov. 30	9.34
Feb. 11	5.87	May 24	6.28	Sept. 20	8.91	Dec. 27	8.66
Mar. 26	5.93	July 6	7.32	Oct. 22	9.22		

15/1E-16a. Formerly well L30 (\*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 92; 949, p. 71). Irrigation District well 6. 0.2 mile north of El Monte pumping plant. Measuring point is 1.0 foot above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	6.33	Apr. 28	3.18	Aug. 9	5.78	Nov. 30	7.13
Feb. 11	3.67	May 24	3.92	Sept. 20	6.58	Dec. 27	6.84
Mar. 26	3.19	July 6	4.95	Oct. 22	6.97		

15/1E-17. Formerly well L31 (\*845, p. 26; 886, p. 25; 911, p. 121; 941, p. 93; 949, p. 71). On Truttman Ranch, about 0.5 mile northwest of El Monte pumping plant. Measuring point is 0.8 foot below land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	7.34	Apr. 28	4.89	Aug. 9	6.84	Nov. 30	8.06
Feb. 11	5.85	May 24	5.40	Sept. 20	7.47	Dec. 27	7.69
Mar. 26	4.81	July 6	6.14	Oct. 22	7.86		

15/1E-17a. Formerly well L32 (\*845, p. 27; 886, p. 25; 911, p. 121; 941, p. 93; 949, p. 71). On Dr. Ireys Ranch, on north bank of San Diego River, east of Lakeside. Measuring point is 1.5 feet above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	9.35	Apr. 28	7.23	Aug. 9	9.38	Nov. 30	10.03
Feb. 11	8.17	May 24	7.71	Sept. 20	9.70	Dec. 27	9.67
Mar. 26	7.30	July 6	8.50	Oct. 22	9.98		

15/1E-17b. Formerly well L33 (\*845, p. 27; 886, p. 25; 911, p. 121; 941, p. 93; 949, p. 71). In county yard, NW $\frac{1}{4}$  sec. 17, T. 15 S., R. 1 E., east of Lakeside. Measuring point is 0.7 foot above land-surface datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	9.20	Apr. 28	6.92	Aug. 9	9.06	Nov. 30	9.95
Feb. 11	8.13	May 24	7.50	Sept. 20	9.67	Dec. 27	9.65
Mar. 26	7.07	July 6	8.34	Oct. 22	9.85		

a Pumping.

15/1E-19. Formerly well L35 (#845, p. 32; 886, p. 26; 911, p. 122; 941, p. 35; 949, p. 71). Mr. Langdon. Near Benedict Avenue, in Lakeside. Measuring point is at land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	10.66	Apr. 28	7.80	Aug. 9	10.16	Nov. 30	11.32
Feb. 11	9.61	May 24	8.11	Sept. 20	11.11	Dec. 27	10.70
Mar. 26	8.21	July 6	9.11	Oct. 22	11.51		

15/1W-13. Formerly well L37 (#845, pp. 32-33; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 71). Mr. Levi. SE $\frac{1}{4}$  sec. 13, T. 15 S., R. 1 W., Lakeside. Measuring point is 1.3 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	11.45	Apr. 28	8.13	Aug. 9	11.51	Nov. 30	11.28
Feb. 11	8.95	May 24	8.89	Sept. 20	12.46	Dec. 27	10.63
Mar. 26	8.00	July 6	10.32	Oct. 22	12.24		

15/1W-13N2. Formerly well L44a (#845, p. 34; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). Riverview well 3. North of main river channel, at Riverview. Measuring point is 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	4.12	Apr. 28	2.09	Aug. 9	3.99	Nov. 30	5.11
Feb. 11	2.66	May 24	2.51	Sept. 20	4.70	Dec. 27	4.47
Mar. 26	2.13	July 6	3.47	Oct. 22	5.08		

15/1W-23E2. Formerly well L83c (#845, p. 35; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). Riverview well 1. NE $\frac{1}{4}$  sec. 23, T. 15 S., R. 1 W., at Riverview. Measuring point is at land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	1.76	Apr. 28	0.83	Aug. 9	2.16	Nov. 30	2.00
Feb. 11	.59	May 24	1.04	Sept. 20	2.59	Dec. 27	2.00
Mar. 26	.76	July 6	1.62	Oct. 22	2.85		

15/1W-24. Formerly well L39 (#845, p. 33; 886, p. 26; 911, p. 122; 941, p. 93; 949, pp. 71-72). Mr. Burch. NE $\frac{1}{4}$  sec. 24, T. 15 S., R. 1 W., at Riverview. Measuring point is 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	(a)	Apr. 28	6.33	Aug. 9	6.65	Nov. 30	7.62
Feb. 11	7.22	May 24	6.52	Sept. 20	7.05	Dec. 27	7.40
Mar. 26	6.09	July 6	6.39	Oct. 22	7.42		

15/1W-24D7. Formerly well L2 (#845, p. 33; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). Riverview well 2. At Riverview. Measuring point is 1.2 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	3.10	Apr. 28	1.67	Aug. 9	4.87	Nov. 30	5.70
Feb. 11	1.54	May 24	2.95	Sept. 20	6.08	Dec. 27	3.59
Mar. 26	1.36	July 6	3.92	Oct. 22	5.70		

15/1W-27. Formerly well L46 (#845, p. 36; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). On County Farm, NW $\frac{1}{4}$  sec. 27, T. 15 S., R. 1 W., at Santee. Measuring point is 2.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	6.88	Apr. 28	4.95	Aug. 9	6.44	Nov. 30	7.40
Feb. 11	5.38	May 24	5.38	Sept. 20	7.05	Dec. 27	6.67
Mar. 26	4.80	July 6	5.88	Oct. 22	7.22		

a Well filled with lubricating oil.

15/1W-28. Formerly well L85 (#845, p. 36; 886, p. 26; 911, p. 122; 941, p. 39; 949, p. 72). Dr. Good. On El Cajon land grant, at Santee. Measuring point is 0.6 foot below land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	12.61	Apr. 28	9.84	Aug. 9	13.32	Nov. 30	13.56
Feb. 11	10.64	May 24	a 12.71	Sept. 20	14.19	Dec. 27	12.36
Mar. 26	9.81	July 6	11.81	Oct. 22	15.45		

16/2W-16. Formerly well K51a (#845, p. 37; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). Mr. Jaussaud. 0.25 mile east of Old Mission San Diego, near Grantville. Measuring point is 2.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	14.70	Apr. 29	11.72	Aug. 9	14.94	Nov. 30	14.94
Feb. 18	12.20	May 25	b 17.39	Sept. 17	b 21.04	Dec. 27	12.84
Mar. 1	11.67	July 6	b 18.76	Oct. 22	14.92		

16/2W-16a. Formerly well K51b (#845, p. 36; 886, p. 26; 911, p. 122; 941, p. 93; 949, p. 72). Mr. Jaussaud. 0.25 mile east of Old Mission San Diego, near Grantville. Measuring point is 1.2 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	14.71	Apr. 29	11.78	Aug. 9	15.01	Nov. 30	15.06
Feb. 18	12.21	May 25	a 17.30	Sept. 17	21.50	Dec. 27	12.95
Mar. 1	11.71	July 6	a 18.74	Oct. 22	15.02		

16/3W-21. Formerly well K33a (#845, p. 40; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 73). Mr. Chapman. On Pueblo lands of San Diego, Old Town. Measuring point is at land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	6.21	Apr. 29	4.87	Aug. 9	6.40	Nov. 30	(c)
Feb. 18	4.69	May 25	5.38	Sept. 17	(c)	Dec. 27	4.46
Mar. 1	4.53	July 6	5.27	Oct. 27	(c)		

16/3W-22. Formerly well K63 (#845, p. 39; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 72). Mr. Confar. On Pueblo lot 1119, on south side of Mission Valley. Measuring point is 0.5 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	13.90	Apr. 29	11.19	Aug. 9	13.63	Nov. 30	15.27
Feb. 18	10.24	May 25	11.89	Sept. 17	14.01	Dec. 27	10.34
Mar. 1	10.74	July 6	12.79	Oct. 27	14.14		

16/3W-23. Formerly well K62 (#845, p. 39; 886, p. 27; 911, p. 123; 941, p. 93; 949, p. 72). S. H. McIntosh. On Pueblo lot 1106, near Murray Canyon road in Mission Valley. Measuring point is 3.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	8.08	Apr. 29	6.52	Aug. 9	8.41	Nov. 30	9.25
Feb. 18	6.09	May 25	7.20	Sept. 17	8.75	Dec. 27	6.88
Mar. 1	6.12	July 6	7.93	Oct. 27	9.19		

16/3W-24. Formerly well K60 (#845, p. 38; 886, p. 26; 911, p. 123; 941, p. 93; 949, p. 72). R. I. Officer. Formerly owned by Mr. Bridges. On Pueblo lot 1110, 0.3 mile west of city of San Diego pumping plant, on south side of Mission Valley. Measuring point is 5.5 feet below land-surface datum.

- a Pumping.
- b Nearby well pumping.
- c Well dry.

16/3W-24. R. I. Officer--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	8.91	Apr. 29	8.65	Aug. 9	10.45	Nov. 30	9.98
Feb. 18	8.05	May 25	9.12	Sept. 17	10.02	Dec. 27	8.82
Mar. 1	8.30	July 6	12.44	Oct. 27	10.27		

## Sweetwater River Basin

17/1W-19. Formerly well 018c (#845, p. 25; 886, p. 25; 911, p. 121; 941, p. 92; 949, p. 75). L. C. Kincaid. On La Nacion land grant, at Sunnyside. Measuring point is 2.2 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	(b)	May 17	7.83	Oct. 25	12.04
Mar. 24	(b)	July 21	11.48	Dec. 23	9.88

17/1W-19a. Formerly well 018d. L. C. Kincaid. In river bed, 200 yards south of well 018c. Pump removed. Diameter of casing 12 inches, depth 42 feet. Measuring point, top of casing, 3.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	15.23	May 17	5.15	Oct. 25	7.62
Mar. 24	17.80	July 21	6.97	Dec. 23	5.01

## Otay River Basin

18/2W-22. Formerly well 089a (#845, p. 23; 886, p. 25; 911, p. 121; 941, p. 92; 949, pp. 70-71). G. W. St. Clair. NW $\frac{1}{4}$  sec. 22, T. 18 S., R. 2 W., at Otay. Measuring point is 1.3 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	23.77	May 17	21.89	Oct. 25	24.26
Mar. 24	20.98	July 21	23.41	Dec. 23	22.19

18/2W-22a. Formerly well 039a (#845, p. 23; 886, p. 25; 911, p. 121; 941, p. 92; 949, p. 70). N. Bard. At NW corner of Sixth and Main Streets, in Otay. Measuring point is 3.4 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	31.11	May 17	29.60	Oct. 25	32.9
Mar. 24	29.64	July 21	30.34	Dec. 23	30.72

## Tia Juana River Basin

18/2W-33. Formerly well 0120 (#845, p. 20; 886, p. 24; 911, p. 120; 941, p. 92; 949, p. 76). On Hewitt Bros. Hog Ranch, SW $\frac{1}{4}$  sec. 33, T. 18 S., R. 2 W. Measuring point is 1.8 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	7.57	May 17	7.07	Oct. 25	10.56
Mar. 24	5.96	July 21	8.28	Dec. 23	9.10

18/2W-34. Formerly well 0118b (#845, p. 20; 886, p. 24; 911, p. 120; 941, p. 92; 949, p. 76). On Owens Ranch, SW $\frac{1}{4}$  sec. 34, T. 18 S., R. 2 W. Measuring point is 1.8 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	9.11	May 17	9.29	Oct. 25	11.98
Mar. 24	7.93	July 21	11.06	Dec. 23	9.65

a Pumping.  
b Well dry.

18/2W-34a. Formerly well 0125 (\*845, p. 21; 886, p. 25; 911, p. 120; 941, p. 92; 949, p. 76). On Evans Ranch, SE $\frac{1}{4}$  sec. 34, T. 18 S., R. 2 W., near San Ysidro. Measuring point is 3.0 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	7.42	May 17	7.50	Oct. 25	8.70
Mar. 24	6.39	July 21	8.62	Dec. 23	6.45

19/2W-1. Formerly well 0140b (\*845, p. 22; 886, p. 25; 911, p. 120; 941, p. 92; 949, p. 76). Mrs. A. W. Jackson. Near center of sec. 1, T. 19 S., R. 2 W., at San Ysidro. Measuring point is 3.5 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	3.84	May 17	4.01	Oct. 25	4.11
Mar. 24	3.37	July 21	4.32	Dec. 23	2.88

19/2W-4. Formerly well 0130b (\*845, p. 21; 886, p. 25; 911, p. 120; 941, p. 92; 949, p. 76). At Nestor Bridge, NE $\frac{1}{4}$  sec. 4, T. 19 S., R. 2 W. Measuring point is 3.8 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	6.32	May 17	6.62	Oct. 25	7.39
Mar. 24	5.67	July 21	7.70	Dec. 23	5.90

### San Joaquin County

#### Mokelumne River Basin

3N/6-3K3. Formerly well 363L3 (\*840, p. 45; 845, p. 44; 886, p. 53; 911, p. 132; 941, p. 137; \*949, p. 171). F. B. Mills. Land-surface datum is 41.24 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	14.15	Mar. 31	11.32	July 2	13.75	Oct. 1	13.77
Feb. 2	13.95	Apr. 30	11.40	Aug. 2	15.27	Nov. 1	13.80
Mar. 2	13.37	June 1	10.35	Sept. 1	16.94	Dec. 1	13.46

3N/6-17D1. Formerly well 3617A1 (\*840, p. 45; 845, p. 44; 886, p. 53; 911, p. 132; 941, p. 137; \*949, p. 172). Otto Helmie. Land-surface datum is 24.29 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	12.13	Mar. 31	5.93	July 2	11.88	Oct. 4	14.71
Feb. 2	10.94	Apr. 30	6.52	Aug. 2	14.15	Nov. 1	13.83
Mar. 2	9.50	June 1	8.23	Sept. 1	15.16	Dec. 1	13.05

3N/6-36R2. Formerly well 3636R2 (\*619, p. 311; \*777, p. 28; \*817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138; \*949, p. 172). Leland W. Bunch. Land-surface datum is 37.97 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	16.24	Mar. 31	10.56	July 2	b 16.65	Oct. 7	16.70
Feb. 2	12.02	Apr. 30	a 12.59	Aug. 2	b 17.19	Nov. 1	15.21
Mar. 2	12.18	June 1	13.65	Sept. 1	16.54	Dec. 1	16.63

3N/7-3C1. Formerly well 373B1 (\*777, p. 28; \*817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138; \*949, p. 172). Jacob Knoll. Land-surface datum is 80.45 feet above sea-level datum of earlier reports.

a Pumping.

b Water level depressed by recent pumping.

## 3N/7-3C1. Jacob Knoll--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	33.22	Mar. 31	30.02	Aug. 2	28.10	Nov. 1	32.87
Jan. 15	33.19	Apr. 30	27.99	Sept. 1	30.68	Nov. 2	32.88
Feb. 2	32.33	June 1	27.49	Oct. 8	32.27	Dec. 1	33.27
Mar. 2	32.30	July 2	25.31				

3N/7-6M8. Formerly well 376J8 (\*777, p. 28; \*817, p. 18; 840, p. 46; 845, p. 44; 886, p. 53; 911, p. 133; 941, p. 138; \*949, p. 172). R. E. and Ruth F. Coker. Land-surface datum is 53.35 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	20.03	Mar. 31	18.75	July 2	18.07	Oct. 6	20.19
Feb. 2	19.47	Apr. 30	17.82	Aug. 2	18.96	Nov. 1	20.20
Mar. 2	19.17	June 1	18.11	Sept. 1	19.71	Dec. 1	20.54

3N/7-7M1. Formerly well 377J1 (\*777, p. 29; \*817, p. 19; 840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; \*941, p. 138; \*949, p. 172). J. and Rachel Goetken. Land-surface datum is 52.63 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	25.39	Mar. 31	25.16	July 2	27.30	Oct. 6	26.58
Feb. 2	24.69	Apr. 30	27.45	Aug. 2	27.66	Nov. 1	25.99
Mar. 2	25.08	June 1	26.98	Sept. 1	27.23	Dec. 1	26.23

3N/7-10L3. Formerly well 3710K3 (\*777, p. 29; \*817, p. 19; 840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138; \*949, p. 172). Edward Preszler. Land-surface datum is 72.59 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	36.06	Mar. 31	36.51	July 2 a	41.64	Oct. 8	38.03
Feb. 2	36.53	Apr. 30 a	47.12	Aug. 2	40.40	Nov. 1	37.34
Mar. 2	37.78	June 1	41.08	Sept. 1	39.18	Dec. 1	36.76

3N/7-10L4. Formerly well 3710K4 (\*777, p. 29; \*817, p. 19; \*840, p. 46; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138; \*949, p. 172). Edward Preszler. Land-surface datum is 72.37 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	35.51	Mar. 31	36.04	July 2 b	40.70	Oct. 8	37.37
Feb. 2	36.06	Apr. 30 a	45.30	Aug. 2	41.02	Nov. 1	36.67
Mar. 2	37.28	June 1	40.46	Sept. 1	39.75	Dec. 1	35.99

3N/7-15P2. Formerly well 3715P2 (\*777, p. 29; \*817, p. 19; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138; \*949, p. 172). Eugene R. Hieb. Land-surface datum is 66.84 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	36.68	Apr. 30	35.85	Aug. 2	41.18	Nov. 1	38.65
Feb. 2	36.33	June 1	38.53	Sept. 1	40.70	Dec. 1	37.77
Mar. 2	36.02	July 2	42.00	Oct. 8	39.50		

3N/7-19D2. Formerly well 3719A2 (\*777, p. 30; \*817, p. 19; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 138; \*949, p. 173). G. M. Ferdun. Land-surface datum is 48.32 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	25.74	Mar. 31	24.82	July 2	28.68	Oct. 6	28.33
Feb. 2	25.34	Apr. 30	25.37	Aug. 2	29.86	Nov. 1	27.39
Mar. 2	24.96	June 1	27.88	Sept. 1	29.55	Dec. 1	26.54

a Nearby well pumping.

b Water level depressed by recent pumping.

3N/7-27F3. Formerly well 3727F3 (\*777, p. 30; \*817, p. 20; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 139; \*949, p. 173). John F. Heltzmann. Land-surface datum is 59.42 feet above sea-level datum of earlier reports.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8	33.39	Mar. 31	26.12	July 2	36.93	Oct. 8	35.79
Feb. 2	33.01	Apr. 30	30.85	Aug. 2	a 36.69	Nov. 1	34.98
Mar. 2	32.30	June 1	a 31.84	Sept. 3	37.12	Dec. 1	34.33

3N/7-30E2. Formerly well 3730E2 (\*619, p. 322; \*777, p. 30; \*817, p. 20; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 133; 941, p. 139; \*949, p. 173). W. L. Flanigan. Land-surface datum is level with concrete floor of pump house, and 41.86 feet above sea-level datum of earlier reports.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	20.39	Apr. 30	15.84	Aug. 2	26.64	Nov. 1	22.15
Mar. 2	17.52	June 1	18.42	Sept. 1	26.34	Dec. 1	21.27
31	15.70	July 2	24.28	Oct. 7	23.51		

4N/6-12R1. Formerly well 4612R1 (\*619, p. 337; \*777, p. 31; \*817, p. 20; 840, p. 47; 845, p. 45; 886, p. 54; 911, p. 134; 941, p. 139; \*949, p. 173). G. A. Jahant. Land-surface datum is 57.34 feet above sea-level datum of earlier reports. Measuring point (4) beginning Jan. 7, 1943, top of galvanized-iron casing, 0.70 foot above land-surface datum and 58.04 feet above sea-level datum.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	27.88	Mar. 31	25.27	July 2	29.28	Oct. 6	29.68
Feb. 2	27.49	Apr. 30	24.08	Aug. 2	30.92	Nov. 1	29.30
Mar. 2	26.44	June 1	24.97	Sept. 1	30.95	Dec. 1	28.12

4N/6-34R1. Formerly well 4634R1 (\*619, p. 344; \*777, p. 31; \*817, p. 20; \*840, p. 47; 845, p. 46; 886, p. 55; 911, p. 134; \*941, p. 139; \*949, p. 173). E. M. Smith. Land-surface datum is 43.28 feet above sea-level datum of earlier reports.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	12.43	Mar. 31	11.51	July 2	11.70	Oct. 4	a 13.32
15	12.62	Apr. 30	11.52	Aug. 2	a 12.45	Nov. 1	a 12.95
Feb. 2	12.50	June 1	a 11.46	Sept. 1	a 13.13	Dec. 1	11.65
Mar. 2	12.77						

4N/6-36D1. Formerly well 4636A1 (\*619, p. 345; \*777, p. 31; \*817, p. 20; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139; \*949, p. 173). D. D. Smith and S. H. and I. Zimmermen. Land-surface datum is 49.90 feet above sea-level datum of earlier reports.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	18.93	Mar. 31	15.02	July 2	a 24.70	Oct. 6	17.20
15	18.73	Apr. 30	17.24	Aug. 2	18.25	Nov. 1	17.17
Feb. 2	17.71	June 1	16.77	Sept. 1	17.43	Dec. 1	17.61
Mar. 2	17.49						

4N/7-15B3. Formerly well 4715C3 (\*777, p. 32; \*817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139; \*949, p. 174). Robert L. Carter. Land-surface datum is 92.05 feet above sea-level datum of earlier reports.

## Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 12	47.44	Mar. 31	45.87	July 2	47.79	Oct. 11	49.03
Feb. 2	47.01	Apr. 30	45.43	Aug. 2	49.03	Nov. 1	48.53
Mar. 2	46.25	June 1	45.82	Sept. 1	49.65	Dec. 1	47.89

a Nearby well pumping.

4N/7-18N3. Formerly well 4718N3 (\*777, p. 32; \*817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139; \*949, p. 174). Martha Eddlemon. Land-surface datum is 59.04 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	30.26	Apr. 1	28.04	July 2	35.91	Oct. 6	31.64
Feb. 2	29.71	30	27.19	Aug. 2	34.44	Nov. 1	30.84
Mar. 2	28.87	June 1	28.60	Sept. 1	34.31	Dec. 1	30.09

4N/7-22Q4. Formerly well 4722Q4 (\*777, p. 32; \*817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139; \*949, p. 174). Adolphus Eddlemon. Land-surface datum is 83.61 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	37.96	Mar. 31	36.54	July 2 a	37.78	Oct. 11	38.63
Feb. 2	37.60	Apr. 30	35.95	Aug. 2 a	38.58	Nov. 1	38.31
Mar. 2	37.18	June 1	36.00	Sept. 1 a	39.28	Dec. 1	37.90

4N/7-22Q5. Formerly well 4722Q5 (\*777, p. 32; \*817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 139; \*949, p. 174). Adolphus Eddlemon. Land-surface datum is 83.83 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 12	38.02	Mar. 31	36.34	July 2	46.59	Oct. 11	39.63
Feb. 2	37.39	Apr. 30	36.47	Aug. 2 a	43.83	Nov. 1	38.89
Mar. 2	37.29	June 1	39.43	Sept. 1	45.30	Dec. 1	38.35

4N/7-27P1. Formerly well 4727P1 (\*777, p. 33; \*817, p. 21; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 140; \*949, p. 174). Frank H. and Leonard W. Buck. Land-surface datum is 81.20 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 14	31.41	Mar. 31	27.53	July 2	28.57	Oct. 11	32.54
Feb. 2	29.66	Apr. 30	26.92	Aug. 2	30.85	Nov. 1	32.54
Mar. 2	29.86	June 1	27.27	Sept. 1	30.47	Dec. 1	32.50

4N/7-30M2. Formerly well 4730J2 (\*777, p. 33; \*817, p. 22; 840, p. 48; 845, p. 46; 886, p. 55; 911, p. 134; 941, p. 140; \*949, p. 174). Clara A. Barton. Land-surface datum is 58.27 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	26.96	Mar. 31	24.28	July 2	30.14	Oct. 6	27.11
Feb. 2	26.47	Apr. 30	26.13	Aug. 2 a	28.77	Nov. 1	26.61
Mar. 2	25.78	June 1	27.49	Sept. 1	28.90	Dec. 1	26.25

4N/7-31M3. Formerly well 4731J3 (\*777, p. 33; \*817, p. 22; \*840, p. 49; \*845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140; \*949, p. 174). Charles H. Woest. Land-surface datum is 57.78 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7 b	22.10	Mar. 31	18.08	July 2	19.82	Oct. 6	21.58
15 b	22.25	Apr. 30	21.39	Aug. 2	20.85	Nov. 1	21.68
Feb. 2	19.58	June 1	21.53	Sept. 1	21.13	Dec. 1	22.55
Mar. 2	20.45						

4N/7-31N5. Formerly well 4731N5 (\*777, p. 33; \*817, p. 22; 840, p. 49; 845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140; \*949, p. 175). Jacob Goehring. Land-surface datum is 44.12 feet above sea-level datum of earlier reports.

a Nearby well pumping.

b Creek or river flowing nearby.

4N/7-31N5. Jacob Goehring--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 7	a 7.66	Mar. 31	4.27	July 2	4.94	Oct. 6	6.46
15	a 7.95	Apr. 30	1.73	Aug. 2	5.53	Nov. 1	6.83
Feb. 2	5.34	June 1	3.48	Sept. 1	6.12	Dec. 1	7.86
Mar. 2	6.70						

4N/7-34G1. Formerly well 4734G1 (\*777, p. 34; 817, p. 22; 840, p. 49; 845, p. 47; 886, p. 55; 911, p. 135; 941, p. 140; \*949, p. 175). John J. Schmiedt. Land-surface datum is 57.50 feet above sea-level datum of earlier reports.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	6.11	Mar. 31	b 2.43	July 2	5.79	Oct. 8	8.10
15	6.83	Apr. 30	b 1.77	Aug. 2	7.00	Nov. 1	8.42
Feb. 2	b 3.05	June 1	3.19	Sept. 2	7.27	Dec. 1	8.23
Mar. 2	4.97						

Santa Barbara County

## Carpinteria Basin

4/25-19P4 (\*949, p. 189). M. F. Lewis. Land-surface datum is about 106 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	95.48	May 27	77.10	Aug. 30	88.77	Dec. 1	95.29
Feb. 25	87.89	June 24	78.54	Sept. 28	91.65	4	95.41
Apr. 1	80.77	July 29	83.89	Nov. 2	94.04	30	94.90
29	78.93						

4/25-19J5 (\*949, p. 190). Lyman & Young. Land-surface datum is about 56 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	55.91	Apr. 29	42.95	July 29	c 74.47	Nov. 2	60.37
Feb. 25	51.84	May 27	41.68	Aug. 30	c 79.67	Dec. 30	61.22
Apr. 1	46.98	June 24	cd 72.87	Sept. 28	61.42		

4/25-20K1 (\*949, p. 190). C. B. Franklin. No measurements made in 1943; measurements discontinued.

4/25-20Q2 (\*949, p. 190). J. B. Romero. Measuring point, beginning Apr. 1, 1943, top of steel cover through hole, 0.30 foot above land-surface datum and about 41 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	34.59	Apr. 29	22.19	July 29	35.74	Nov. 2	d 42.42
Feb. 18	e 32.07	May 13	e 21.43	Aug. 30	d 41.08	Dec. 1	42.56
25	30.90	27	20.82	Sept. 28	42.15	30	36.86
Apr. 1	26.61	June 24	d 34.41				

4/25-21N2 (\*941, p. 162; \*949, p. 190). E. S. Pillsbury. Land-surface datum is about 51 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	40.55	Apr. 29	29.82	Sept. 28	55.20	Dec. 1	59.88
Feb. 25	37.12	May 27	31.23	Nov. 2	65.60	30	42.78
Apr. 1	33.31	July 29	60.94				

- a Creek or river flowing nearby.
- b Adjacent land flooded.
- c Pumping.
- d Nearby well pumping.
- e Measured by Carpinteria County Water District.

4/25-21R1 (\*949, p. 190). B. Moore. Land-surface datum is about 127 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	76.88	Apr. 29	70.10	July 29	70.18	Nov. 2	73.62
Feb. 18 a	75.97	May 13 a	67.66	Aug. 30	70.97	Dec. 1	75.37
25	75.44	27	66.55	Sept. 28	71.92	30	74.90
Apr. 1	72.31	June 24	67.97				

4/25-21R2 (\*949, p. 191). B. Moore. No measurements made in 1943; measurements discontinued.

4/25-22R1 (\*941, p. 162; \*949, p. 191). A. H. Young. Land-surface datum is about 211 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 28	19.26	Apr. 1	12.96	May 27 b	92.36	Dec. 1	29.60
Feb. 25	14.59	29	12.64	June 24 b	85.50	30	19.95

4/25-27J1 (\*941, p. 163; \*949, p. 191). J. Rock. Land-surface datum is about 142 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 28	128.40	May 27	106.24	Aug. 30	123.30	Dec. 1	130.76
Feb. 18 a	126.24	June 24	114.34	Sept. 28	125.80	30	129.70
25	125.45	July 29	118.93	Nov. 2	128.22		

4/25-27P3 (\*949, p. 191). C. B. Franklin. Land-surface datum is about 129 feet above mean sea level. Automatic water-stage recorder installed Apr. 29 and removed Aug. 23.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Apr. 29	94.32	June 3 c	103.98	July 8	call0.74	Aug. 19	call1.91
30	94.23	10	cal06.20	15	call0.22	23 c	112.67
May 5	93.57	17	cal06.90	26	call1.78	Sept. 28 c	118.36
10	92.86	25 c	106.56	29 c	114.35	Nov. 2 c	123.74
15	92.35	30 c	105.66	Aug. 5	call3.55	Dec. 1	116.15
20	c 92.56	July 2 c	106.75	12	call4.25	30	112.03
27 c	97.40						

4/25-27Q1 (\*949, p. 192). F. G. McCloskey. Land-surface datum is about 135 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Apr. 29	100.79	June 24	109.20	Sept. 28 d	121.06	Dec. 30	119.18
May 27	100.30	Aug. 30	117.66	Nov. 2 c	122.28		

4/25-27Q2 (\*941, p. 162; \*949, p. 192). A. F. Heimlich. Measuring point beginning Apr. 20, 1943, top east side of 10-inch casing, 0.62 foot above land-surface datum and about 128 feet above mean sea level. Equipped with automatic water-stage recorder until Apr. 20.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts until Apr. 20)

Jan. 5 c	118.94	Feb. 15	111.53	Mar. 31	102.98	June 24	110.03
10 c	116.20	20	110.71	Apr. 5	101.68	July 29	115.10
15 c	117.69	25	110.09	10	100.62	Aug. 30	119.69
20	115.53	28	109.48	15	99.86	Sept. 28	120.94
25	114.83	Mar. 5	108.62	20	98.97	Nov. 2 c	122.68
31	113.98	10 a	107.33	May 13 a	96.37	Dec. 1 c	125.00
Feb. 5	113.15	25	104.19	27	97.52	30	115.25
10	112.50						

a Measured by Carpinteria County Water District.

b Pumping.

c Nearby well pumping.

d Pumping recently.

4/25-27Q3 (#949, p. 192). S. E. Kramer. No measurements made in 1943; measurements discontinued.

4/25-27Q5 (#949, p. 192). S. E. Kramer. No measurements made in 1943; measurements discontinued.

4/25-27R2 (#949, p. 193). W. H. Yule. Land-surface datum is about 132 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	117.72	Apr. 22 a	104.00	May 27	101.02	Sept. 28	119.61
Feb. 25	113.30	29	103.12	June 24	108.23	Dec. 1	118.51
Apr. 1	107.40	May 13 a	101.21	Aug. 30	116.61	30	114.67

4/25-28F1 (#949, p. 193). P. Hanson. No measurements made in 1943; measurements discontinued.

4/25-28J1 (#949, p. 193). W. C. and C. A. Catlin. Land-surface datum is about 89 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	69.62	Apr. 22 a	56.96	June 24 b	102.02	Sept. 28 b	103.92
Feb. 18	a 66.91	29	56.02	July 29	70.97	Nov. 2	76.45
25	66.05	May 20 a	53.79	Aug. 30 c	78.51	Dec. 30	71.91
Apr. 1	59.75	27 b	87.46				

4/25-28M1 (#941, p. 163; #949, p. 193). Mrs. A. Baylor. Land-surface datum is about 57 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	34.07	Apr. 22 a	22.42	June 24 c	51.51	Nov. 2	45.78
Feb. 18	a 31.70	29	21.69	July 29	39.96	Dec. 1	54.55
25	30.78	May 20 a	53.79	Aug. 30 c	50.41	30	36.52
Apr. 1	25.24	27	29.54	Sept. 28	47.46		

4/25-29A1 (#949, p. 193). M. Young. No measurements made in 1943; measurements discontinued.

4/25-29A3 (#949, p. 194). M. Young. Land-surface datum is about 32 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	20.14	Apr. 29	8.65	July 29 c	59.43	Nov. 2 c	37.13
Feb. 18	a 17.30	May 13 a	7.82	Aug. 30 c	45.24	Dec. 1	34.73
25	16.23	27	8.42	Sept. 28	37.47	30	21.80
Apr. 1	12.31	June 24 c	40.56				

4/25-29D1 (#949, p. 194). H. Sturmer. Land-surface datum is about 17 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	18.87	Apr. 29	6.65	July 29	20.86	Nov. 2	24.68
Feb. 18	a 16.00	May 20 a	6.32	Aug. 30	27.44	Dec. 1	26.90
25	14.90	27	5.57	Sept. 28	26.05	30	21.50
Apr. 1	10.05	June 24	15.57				

4/25-29H1 (#949, p. 194). C. R. Sawyer. No measurements made in 1943; measurements discontinued.

4/25-29R1 (#949, p. 194). Carpinteria Union High School. Measuring point beginning Apr. 1, 1943, top of base panel of instrument shelter at 1-inch bored hole, 1.22 feet above land-surface datum, 0.23 foot above top of casing, and about 33 feet above mean sea level. Automatic water-stage recorder installed Apr. 20 and removed Dec. 30.

- a Measured by Carpinteria County Water District.
- b Pumping.
- c Nearby well pumping.

## 4/25-29R1. Carpinteria Union High School--Continued.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts beginning Apr. 20)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	15.76	June 3 ab	17.93	Aug. 19 ab	37.97	Nov. 10	27.00
Feb. 25	15.03	10 ab	27.07	26 ab	36.32	15	27.65
Apr. 1	12.35	17 ab	26.55	Sept. 2 ab	41.02	19	27.47
20	10.42	24 a	22.61	10 ab	30.17	25	26.84
25	10.24	July 1 ab	32.78	16 ab	26.57	30	26.43
30	10.10	8 ab	26.46	23 ab	26.05	Dec. 5 ab	40.75
May 5	10.07	15 ab	30.58	24 b	25.20	10	29.33
10	9.66	26 ab	24.91	Oct. 5 b	28.10	15	24.08
15	10.41	29 ab	30.76	9	27.09	20	21.76
20 a	9.49	Aug. 5 ab	25.80	14 ab	31.94	25	20.05
25	10.08	12 ab	25.69	21 ab	36.87	30	19.93
27	ab18.29						

\*4/25-30B1 (#949, p. 195). A. Fogliadini. Land-surface datum is about 14 feet above mean sea level. Measurements discontinued Dec. 30.

Water level, in feet below land-surface datum, 1943

Jan. 28	2.28	Apr. 29	4.11	July 29	7.05	Nov. 2	6.83
Feb. 25	2.01	May 27	7.86	Aug. 30	5.11	Dec. 1	6.44
Apr. 1	3.83	June 24	7.45	Sept. 28	6.56	30	4.71

4/25-30B3 (#949, p. 195). A. Fogliadini. Land-surface datum is about 14 feet above mean sea level. Measurements discontinued Dec. 30.

Water level, in feet below land-surface datum, 1943

Jan. 28	2.26	Apr. 29	4.10	July 29	7.05	Nov. 2	6.83
Feb. 25	1.95	May 27	7.88	Aug. 30	5.08	Dec. 1	6.45
Apr. 1	3.82	June 24	7.44	Sept. 28	6.54	30	4.71

4/25-33C1 (#949, p. 195). B. F. Franklin. Land-surface datum is about 70 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 28	25.07	Apr. 29	24.73	July 29	24.42	Nov. 2	24.97
Feb. 25	25.36	May 27	24.82	Aug. 30	24.65	Dec. 1	25.20
Apr. 1	24.89	June 24	24.86	Sept. 28	24.70	30	25.30

4/25-35A1 (#949, p. 195). E. S. Atkinson. No measurements made in 1943; measurements discontinued.

4/25-35B1 (#949, p. 195). R. Nichols. Land-surface datum is about 139 feet above mean sea level.

\* Water level, in feet below land-surface datum, 1943

Apr. 1	26.39	June 24	34.40	Sept. 28 b	46.81	Dec. 1	66.70
29	24.07	July 29 b	36.02	Nov. 2 b	62.33	30	48.45
May 27	23.78	Aug. 30 b	50.66				

4/25-35D1 (#941, p. 164; #949, p. 196). W. B. Knowlton. Land-surface datum is about 145 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 28	136.17	Apr. 29	128.99	July 29	127.79	Nov. 2	130.35
Feb. 25	134.20	May 27	126.74	Aug. 30	129.24	Dec. 1	130.51
Apr. 1	131.43	June 24	128.00	Sept. 28	129.26	30	128.83

4/25-35M1. Quinton, Code, and Hill-Leeds and Barnard well 219. E. L. Sheldon. About 2.8 miles nearly east-southeast of Carpinteria, 175 yards south of Rincon Creek road, 125 yards east of old U. S. Highway 101, 200 feet northeast of frame house painted white, in corrugated-steel pump house. Measuring point, top of notch in north side of casing, 1.3 feet above land-surface datum and about 86 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 17.19; Dec. 30, 15.50.

a Measured by Carpinteria County Water District.

b Nearby well pumping.

4/26-23H1 (#949, p. 196). A. P. Kramer. No measurements made in 1943; measurements discontinued.

4/26-23H4 (#949, p. 196). Earl Busby. Land-surface datum is about 40 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26	32.28	May 27	26.38	Sept. 28	31.01	Dec. 1	32.15
Feb. 25	29.91	July 29	29.07	Nov. 2	31.45	30	31.89
Apr. 1	27.52	Aug. 30	30.52				

4/26-24F2 (#949, p. 196). A. F. Thurmond. Land-surface datum is about 12 feet above mean sea level. Water level, in feet below land-surface datum, 1943: Dec. 30, 7.60.

Goleta Basin

4/27-6N1 (#949, p. 197). John McCaughey. Land-surface datum is about 232 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	84.85	Apr. 28	85.50	July 28	97.05	Nov. 1	87.67
Feb. 24	85.79	May 26	85.36	Aug. 21	86.62	Dec. 2	87.35
Mar. 31	85.60	June 23	86.16	Sept. 27	87.74	29	87.18

4/27-7L3 (#949, p. 197). Nora J. Spear. Land-surface datum is about 190 feet above mean sea level. Measurements discontinued Sept. 27.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	49.99	Apr. 28	47.29	June 23	56.04	Aug. 21	66.82
Feb. 24	48.68	May 26	51.19	July 28	58.15	Sept. 27	59.22
Mar. 31	46.92						

4/28-2N2. County of Santa Barbara. In Tucker's Grove, about 2.6 miles nearly east-northeast of Goleta, 0.4 mile east of old San Marcos Pass road, 200 feet north of Cathedral Oaks road, 50 feet northwest of San Antonio Creek, 10 feet east of paved road at east edge of Tucker's Grove. Measuring point, bottom of cut-out in east side of casing, 0.70 foot above land-surface datum and about 190 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	26.12	Apr. 28	16.12	July 28	18.66	Nov. 1	25.25
Feb. 24	16.82	May 26	15.86	Aug. 21	20.58	Dec. 2	26.96
Mar. 31	15.97	June 23	16.13	Sept. 27	23.10	29	27.94

4/28-2F2 (#949, p. 197). A. L. Pennell. Land-surface datum is about 195 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 27, 34.61; Feb. 24, 29.03; Mar. 31, 24.70. Measurements discontinued.

4/28-3E2 (#949, p. 197). Peter Cavalletto. Land-surface datum is about 138 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	10.05	Apr. 28	10.54	July 28	c 33.89	Dec. 2	11.88
Feb. 24	10.40	May 26	b 12.03	Sept. 27	b 14.38	29	11.08
Mar. 31	b 11.17	June 23	bc 46.24	Nov. 1	b 13.19		

4/28-3M2 (#949, p. 197). L. W. Fowler. Land-surface datum is about 125 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	92.89	Apr. 28	87.90	July 28	b 98.46	Nov. 1	b 101.02
Feb. 24	90.59	May 26	b 93.96	Aug. 21	b 98.42	Dec. 2	b 99.14
Mar. 31	b 90.64	June 23	b 98.54	Sept. 27	b 100.34	29	94.12
Apr. 23	88.07						

a Pump shut down prior to measurement.

b Nearby well pumping.

c Pumping.

4/28-3P1 (\*949, p. 197). Lynn Sexton. Land-surface datum is about 159 feet above mean sea level. Automatic water-stage recorder installed Apr. 22 and removed May 13.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts Apr. 22 to May 13)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	132.81	Apr. 25	130.71	May 13	130.39	Sept. 27	132.77
Feb. 24	132.25	30	130.57	June 23	131.15	Nov. 1	133.68
Mar. 31	131.55	May 5	130.45	July 28	131.57	Dec. 1	133.95
Apr. 22	130.75	10	130.38	Aug. 21	132.08	29	133.32

4/28-3P2 (\*949, p. 198). G. L. Bean. Land-surface datum is about 129 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 27, 57.80; Feb. 24, 55.53; Mar. 31, 53.82; Dec. 29, 57.31.

4/28-3Q2. A. J. Haverland. About 2.1 miles nearly east-northeast of Goleta, 270 yards west of old San Marcos Pass road, 330 yards east of Maria Ygnacio Creek, 30 feet south of Cathedral Oaks road, 15 feet south of two concrete standpipes. Measuring point, top of south side of casing, 0.60 foot above land-surface datum and about 151 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

May 26	88.67	July 28	90.38	Sept. 27	94.06	Dec. 2	92.61
June 23	94.10	Aug. 21	91.95	Nov. 1	91.36	29	90.54

4/28-4K4 (\*949, p. 198). R. S. Rowe. Land-surface datum is about 90 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 29	16.97	Apr. 28	12.83	July 28	15.73	Nov. 1	18.50
Feb. 24	14.90	May 26	13.40	Aug. 21	31.79	Dec. 2	18.03
Mar. 31	13.14	June 23	27.69	Sept. 27	17.36	29	17.63

4/28-4P1 (\*949, p. 198). J. Reeber. Land-surface datum is about 94 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 29	82.20	Apr. 28	79.46	Aug. 21	86.91	Dec. 2	87.78
Feb. 24	81.23	May 26	86.01	Nov. 1	87.40	29	84.83
Mar. 31	80.29	June 23	81.64				

4/28-4Q2 (\*949, p. 198). R. S. Rowe. Land-surface datum is about 86 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 29	70.55	Apr. 28	64.05	July 28	76.99	Nov. 1	77.64
Feb. 24	68.52	May 26	63.46	Aug. 21	90.55	Dec. 2	77.67
Mar. 31	65.89	June 23	70.27	Sept. 27	80.62	29	74.74

4/28-4R1 (\*941, p. 164; \*949, p. 198). L. M. Cavaletto. Land-surface datum is about 97 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 6	61.18	Mar. 31	56.75	July 28	62.93	Nov. 1	66.79
15	60.62	Apr. 28	55.59	Aug. 21	63.95	Dec. 2	65.64
27	59.83	May 26	55.20	Sept. 27	67.98	29	63.43
Feb. 24	58.40	June 23	61.07				

4/28-4R2 (\*941, p. 165; \*949, p. 199). G. M. Gallagher. Land-surface datum is about 103 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 27	56.37	Apr. 28	49.55	July 28	55.76	Nov. 1	58.40
Feb. 24	51.84	May 26	49.59	Aug. 21	57.99	Dec. 1	56.91
Mar. 31	50.48	June 23	55.88	Sept. 27	63.37	29	55.03

a Nearby well pumping.

4/28-4R3 (\*941, p. 165; \*949, p. 199). Cavaletto & Gallagher. Land-surface datum is about 96 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	70.74	Apr. 28	64.31	July 28	a 88.00	Nov. 1	79.95
Feb. 24	68.82	May 26	63.57	Aug. 21	77.38	Dec. 2	78.33
Mar. 31	66.15	June 23	a 83.34	Sept. 27	a 93.81	29	75.25

4/28-5C1 (\*949, p. 199). Mario Mostachetti. Land-surface datum is about 182 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	5.58	Apr. 28	a 23.44	July 28	a 15.39	Nov. 1	5.94
Feb. 24	4.76	May 26	3.44	Aug. 21	4.81	Dec. 2	6.65
Mar. 31	3.67	June 23	a 9.86	Sept. 27	5.56	29	6.20

4/28-5D1 (\*949, p. 200). Mario Mostachetti. Land-surface datum is about 212 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	24.14	Apr. 28	22.45	July 29	a 25.20	Dec. 2	26.23
Feb. 24	23.96	May 26	22.51	Aug. 21	24.77	29	25.15
Mar. 31	23.13	June 23	a 33.54	Sept. 27	a 35.29		

4/28-5J1 (\*949, p. 200). Harry Sexton. Land-surface datum is about 96 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	12.41	Apr. 28	11.14	Aug. 21	13.58	Nov. 1	14.79
Feb. 24	11.51	May 26	11.61	Sept. 27	13.84	Dec. 29	15.07
Mar. 31	10.59	July 28	14.64				

4/28-5J2 (\*949, p. 200). Harry Sexton. Land-surface datum is about 94 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	10.58	Apr. 28	9.37	Aug. 21	11.77	Dec. 2	20.08
Feb. 24	9.68	May 26	9.84	Sept. 27	12.12	29	13.51
Mar. 31	8.77	July 28	11.63	Nov. 1	12.95		

4/28-5R4. Quinton, Code, and Hill-Leeds and Barnard well 167. F. J. Ewing. About 1.0 mile nearly north of Goleta, 275 yards east of Fairview road, 400 feet north of Stow Canyon road (extended), 50 feet south of property line, beside corrugated-steel motor shelter. Measuring point, bottom south edge of pump base through hole near air line, 0.40 foot above land-surface datum and about 62 feet above mean sea level. Water levels, in feet below land-surface datum, 1943; Aug. 21, 48.62; Nov. 1, 47.62; Dec. 2, 47.65; Dec. 29, 46.20.

4/28-5R5 (\*949, p. 200). F. J. Ewing. Land-surface datum is about 61 feet above mean sea level. Measurements discontinued Sept. 27.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 31	43.67	May 26	43.86	July 28	46.04	Sept. 27	47.69
Apr. 28	42.71	June 23	b 44.69	Aug. 21	47.17		

4/28-8K5. Quinton, Code, and Hill-Leeds and Barnard well 51. H. Sexton. About 0.45 mile nearly north-northwest of Goleta, 440 yards north of Southern Pacific Railroad, 230 yards west of Fairview road, 20 feet north of power line. Measuring point, top north side of 8-inch casing, 0.80 foot above land-surface datum and about 26 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 23	20.14	Aug. 21	23.26	Nov. 1	26.10	Dec. 29	26.70
July 28	21.27	Sept. 27	25.51	Dec. 2	26.72		

a Pumping.

b Nearby well pumping.

4/28-9A3 (\*941, p. 166; \*949, p. 200). L. M. Cavaletto. Measuring point beginning Jan. 20, 1943, top east side of 12-inch casing, 1.50 feet above land-surface datum and about 88 feet above mean sea level. Automatic water-stage recorder removed Jan. 20; "high-low" float gage installed Jan. 20 and removed Sept. 20.

Water level at noon, in feet below land-surface datum, 1943<sup>a/</sup>  
(From recorder charts to Jan. 20; from float gage Jan. 20 to Sept. 20)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	45.74		41.58		47.48		49.20
10	46.04	Mar. 17	40.10	19	43.30	21	44.60
15	45.23		38.60		40.65		43.78
20	45.24		44.07		46.19		47.27
20	45.21	24	40.24	26	43.56	28	44.60
	42.76		39.91		40.88		44.60
	45.21		43.08		48.33		45.49
27	42.76	31	40.53	June 2	43.29	Aug. 4	45.49
	41.96		40.04		42.52		44.59
	42.76		44.60		46.75		45.49
Feb. 3	42.03	Apr. 7	40.48	9	42.84	11	45.33
	41.82		39.90		42.84		45.33
	45.49		42.20		48.68		47.05
10	42.18	14	39.90	16	43.80	21	47.05
	42.18		39.45		43.80	Sept. 6	48.47
	45.72		41.89		49.31		48.47
17	44.84	21	40.12	23	44.98		53.22
	41.51		39.73		44.61	13	47.58
	45.30		43.88		50.38		47.41
24	41.52	28	40.00	30	44.61		49.72
	40.89		39.63		44.47	20	49.72
	43.16		44.39		48.77	27	b 48.69
Mar. 3	41.61	May 5	41.39	July 7	44.98	Oct. 4	48.24
	40.61		39.68		43.90	11	b 47.70
	41.61		44.55		48.23	Nov. 1	46.77
10	40.64	12	41.28	14	43.90	Dec. 2	47.06
	40.10		41.28		43.45	29	45.18

4/28-9E1. A. T. Spaulding. About 0.6 mile nearly north-northeast of Goleta, 0.3 mile east of Fairview road, 160 feet north of Encina road, in pump house painted white. Measuring point, top north-side of 12-inch casing, level with concrete floor, and 0.20 foot above land-surface datum, and about 49 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Aug. 21, 38.20; Nov. 1, 36.56; Dec. 2, 37.20; Dec. 29, 35.62.

4/28-10A1 (\*949, p. 201). C. C. Lee. Land-surface datum is about 131 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 27	100.94	Apr. 28	94.47	July 28	96.53	Nov. 1	96.95
Feb. 24	99.17	May 26	94.23	Aug. 21	b 96.93	Dec. 2	96.00
Mar. 31	95.53	June 23	94.83	Sept. 27	98.14	29	97.23

4/28-10F1 (\*949, p. 201). John S. Edwards. Land-surface datum is about 77 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 28	60.70	Apr. 28	56.44	Aug. 21	c 83.78	Dec. 2	63.91
Feb. 24	60.02	May 26	57.05	Sept. 1	64.13	29	62.53
Mar. 31	58.81	July 28	62.90	Nov. 1	65.12		

a Undated entries are highest and lowest levels between dates of observation.

b Nearby well pumping.

c Pumping.

4/28-10F2. John S. Edwards. About 1.5 miles nearly east-northeast of Goleta, 250 yards north of Southern Pacific Railroad, 250 yards east of Patterson Avenue, 100 feet west of Maria Ygnacio Creek, and 15 feet south of paved property-line road. Measuring point, top north side of casing, level with land-surface datum and about 86 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Aug. 21	a 79.66	Nov. 1	70.99	Dec. 29	70.62
Sept. 27	70.36	Dec. 2	71.69		

4/28-10K2 (#949, p. 201). Norman Troup. Land-surface datum is about 80 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	86.56	Apr. 28	83.80	July 28	91.80	Nov. 1	b 144.82
Feb. 24	84.50	May 26	95.97	Aug. 21	91.42	Dec. 2	90.41
Mar. 31	85.03	June 23	b 130.55	Sept. 27	92.46	29	88.88

4/28-10N6 (#949, p. 201). Dr. E. O. Campbell. Land-surface datum is about 61 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	22.55	Apr. 28	21.62	July 28	21.91	Nov. 1	22.34
Feb. 25	22.15	May 26	21.63	Aug. 21	22.01	Dec. 2	22.50
Mar. 31	21.75	June 23	21.79	Sept. 27	22.18	29	22.53

4/28-11F1 (#949, p. 202). J. Scavarda. Land-surface datum is about 143 feet above mean sea level. Measurements discontinued July 28.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 27	117.09	Mar. 31	116.62	May 26	116.03
Feb. 24	116.95	Apr. 28	116.32	June 23	b 143.04
				July 28	117.65

4/28-11K1. Quinton, Code, and Hill-Leeds and Bernard well 33. Giovanni Cavalli. About 2.7 miles nearly east of Goleta, 150 yards west of San Antonio road, 100 feet north of Southern Pacific Railroad, open casing in walnut orchard. Measuring point, top north side of casing, level with concrete foundation, at land-surface datum and about 72 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Aug. 21	a 84.56	Nov. 1	78.17	Dec. 29	78.19
Sept. 27	a 82.90	Dec. 2	79.83		

4/28-12L4 (#941, p. 167; #949, p. 202). L. More. Measuring point, top of base panel of instrument shelter, 0.33 foot above land-surface datum and about 141 feet above mean sea level. Automatic water-stage recorder installed Jan. 20.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 20	43.19	Mar. 5	39.16	Apr. 20	37.94	June 5	a 58.49
25	a 41.27	10	38.82	25	39.35	15	a 73.88
31	40.50	15	39.76	30	38.60	25	a 94.04
Feb. 5	40.85	20	39.09	May 5	38.61	30	a 75.03
10	41.25	25	39.39	10	38.49	July 5	a 80.00
15	40.33	31	38.35	15	a 68.58	10	a 89.18
20	a 40.95	Apr. 5	38.51	20	a 48.71	15	a 74.44
25	39.82	10	37.90	25	a 49.50	20	a 71.34
28	39.83	15	37.70	31	a 54.35	25	66.01

a Nearby well pumping.

b Pumping.

4/28-12L4. L. More--Continued.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 31	70.35	Sept. 10	a 86.72	Oct. 20	62.18	Nov. 30	51.89
Aug. 5	a 87.68	15	a 77.64	25	64.85	Dec. 5	a 57.30
10	a 88.05	20	67.20	31	62.81	10	52.82
15	68.83	25	68.62	Nov. 5	63.32	15	49.70
20	a 78.68	30	66.44	10	78.08	20	48.60
25	a 95.74	Oct. 5	65.59	15	a 69.13	25	47.67
31	a 75.10	10	a 87.37	20	54.02	31	46.20
Sept. 5	a 73.33	15	68.82	25	52.77		

4/28-15E1 (\*949, p. 202). A. J. Holloway. Land-surface datum is about 36 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	40.67	Apr. 28	38.28	July 28	50.23	Nov. 1	47.88
Feb. 25	40.05	May 26	38.33	Aug. 21	48.44	Dec. 2	46.39
Mar. 31	38.79	June 23	44.41	Sept. 27	48.74	29	45.68

4/28-15G2 (\*949, p. 202). J. J. Wheeler. Measuring point beginning May 26, 1943, lower south edge of pump base, 0.90 foot above land-surface datum and about 45 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 27	51.43	Mar. 31	48.98	May 26	49.21
Feb. 24	50.39	Apr. 28	48.90	Dec. 29	55.02

4/28-16F2. John Begg. About 0.6 mile nearly southeast of Goleta, 0.3 mile south of U. S. Highway 101, 180 feet west of Goleta Beach road, beside tank house. Drilled 6-inch well inside dug well 16F3. Measuring point, top of plank cover vertically above casing, 0.20 foot above land-surface datum and about 22 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Aug. 11	26.31	Sept. 27	34.59	Dec. 2	33.14
21	36.09	Nov. 1	31.49	29	30.56

4/28-16F3. John Begg. About 0.6 mile nearly southeast of Goleta. Dug well surrounding drilled well 4/28-16F2. Measuring point is identical with that for well 16F2.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Aug. 11	11.42	Sept. 27	11.35	Dec. 2	13.00
21	11.57	Nov. 1	12.66	29	12.41

4/28-17C1 (\*949, pp. 201-202). Navy Department, Marine Corps Air station. No measurements made in 1943; measurements discontinued.

4/28-17C2 (\*949, p. 202). Navy Department, Marine Corps Air Station. No measurements made in 1943; measurements discontinued.

4/28-17G1 (\*949, p. 203). Navy Department, Marine Corps Air Station. No measurements made in 1943; measurements discontinued.

4/28-17H3 (\*941, p. 167; \*949, p. 203). J. J. Mathews. Land-surface datum is about 11 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	2.53	Apr. 28	3.10	July 28	5.05	Nov. 1	6.38
Feb. 25	1.72	May 26	3.57	Aug. 21	5.56	Dec. 2	6.45
Mar. 31	2.62	June 23	4.28	Sept. 27	6.17	29	5.09

a Nearby well pumping.

4/28-17H11 (\*941, p. 168; \*949, p. 203). Mrs. Leslie Oakley and Mrs. Mary Bonetti. Land-surface datum is about 11 feet above mean sea level.

Water level, in feet below land-surface datum, 1943.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	13.35	Apr. 28	10.67	July 28	17.15	Nov. 1	15.99
Feb. 25	11.90	May 26	11.50	Aug. 21	17.19	Dec. 2	17.27
Mar. 31 a	26.82	June 23	16.28	Sept. 27	20.32	29	14.88

4/28-18G2 (\*949, p. 203). T. B. Bishop Co. Land-surface datum is about 7 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 28	23.59	July 28	27.42	Sept. 27	30.74	Dec. 2	26.12
May 26	22.44	Aug. 11	25.82	Nov. 1	32.03	29	24.43
June 23	27.79	21	40.60				

4/28-18N3 (\*949, p. 204). C. A. Storke. Land-surface datum is about 7 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	13.75	Apr. 28	9.14	July 28	12.32	Nov. 1	13.84
Feb. 25	11.43	May 26	11.37	Aug. 21	14.04	Dec. 2	13.51
Mar. 31	10.42	June 23	11.54	Sept. 27	16.75	29	12.78

4/28-18Q1 (\*949, p. 204). Navy Department, Marine Corps Air Station. No measurements made in 1943; measurements discontinued.

4/28-18Q2 (\*949, p. 204). Navy Department, Marine Corps Air Station. No measurements made in 1943; measurements discontinued.

4/29-13K2 (\*949, p. 204). T. B. Bishop Co. Land-surface datum is about 24 feet above mean sea level. Automatic water-stage recorder removed Apr. 22.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts until Apr. 22)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 10	44.25	Feb. 20	43.21	Mar. 31	42.55	May 26	42.18
15	44.06	25	43.27	Apr. 5	42.39	June 23	42.97
20	44.03	28	43.11	10	42.31	July 28	43.87
25	43.78	Mar. 5	43.07	15	42.28	Aug. 21	44.40
31	43.67	10	42.91	20	42.13	Sept. 27	44.36
Feb. 5	43.54	15	42.88	22	42.13	Nov. 1	45.52
10	43.64	20	42.79	28	42.03	Dec. 29	44.47
15	43.32	25	42.63				

4/29-14A3 (\*949, p. 205). Frank Baker. Land-surface datum is about 51 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	73.03	Apr. 28	72.41	July 28	b 73.61	Nov. 1	73.86
Feb. 25	72.82	May 26	72.11	Aug. 21	b 73.52	Dec. 2	73.42
Mar. 31	b 72.50	June 23	72.88	Sept. 27	72.99	29	72.50

#### Santa Ynez, Santa Maria, and Cuyama Valleys

6/30-2N1. L. B. and K. W. Manning. In Middle Santa Ynez Valley, about 3.6 miles nearly east of Santa Ynez, 220 yards east of Santa Agueda Creek, 200 feet north of Happy Canyon road, 30 feet north of dwelling, in frame pump house. Drilled irrigation well. Diameter 16 inches, reported depth 1,400 feet. Measuring point, top north side of casing, 1.40 feet above land-surface datum and about 680 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Apr. 30, 24.04; June 4, 23.30; measurements discontinued.

a Pumping.

b Nearby well pumping.

6/30-2P1 (#949, p. 205). L. B. and K. W. Manning. In Middle Santa Ynez Valley. Land-surface datum is about 687 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	36.21	Apr. 30	32.84	July 29 a	37.25	Nov. 5	31.80
Feb. 23	35.76	June 4 a	34.09	Sept. 3	31.87	Dec. 31	31.96
Apr. 8	33.58	July 3	31.96				

6/30-6A1 (#949, p. 205). Sam Torrence. In Middle Santa Ynez Valley. Land-surface datum is about 669 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	46.06	Apr. 30	42.19	July 29	49.45	Nov. 5	51.44
Feb. 23	44.64	June 4 b	46.52	Sept. 3 a	67.60	Dec. 31	45.89
Apr. 8	42.02	July 3	45.94	Oct. 1	51.22		

6/30-7K1 (#949, p. 205). Mrs. Anderson. In Middle Santa Ynez Valley. Measuring point, since Jan. 28, 1943, top west side of board cover through hole, 1.20 feet above land-surface datum and about 616 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28 c	39.81	Apr. 30 a	39.92	July 29 a	40.31	Nov. 5	39.11
Feb. 23 a	39.10	June 4 a	39.22	Sept. 3 a	40.13	Dec. 31	38.93
Apr. 8 a	38.98	July 3 a	40.27	Oct. 1	39.14		

6/30-9N1 (#949, p. 205). San Lucas Ranch. In Middle Santa Ynez Valley. Land-surface datum is about 653 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	31.87	Apr. 30	31.24	July 29	30.96	Nov. 5	31.03
Feb. 23	31.53	June 4	31.13	Sept. 3	31.03	Dec. 30	31.01
Apr. 8 d	31.97	July 3	31.15	Oct. 1	31.06		

6/30-10R1 (#949, p. 206). L. B. and K. W. Manning. In Middle Santa Ynez Valley. Land-surface datum is about 644 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	19.10	Apr. 30 a	22.16	July 29 a	24.17	Nov. 5	20.93
Feb. 23	19.92	June 4 a	21.03	Sept. 3 a	21.98	Dec. 31	19.24
Apr. 8 a	26.93	July 3 a	23.51	Oct. 1	21.21		

6/30-20H2 (#949, p. 206). Rancho Juan y Lolita. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/30-29E1 (#949, p. 206). Rancho Juan y Lolita. In Middle Santa Ynez Valley. Land-surface datum is about 462 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 4	12.76	July 29	13.63	Oct. 1 a	15.25	Dec. 31	13.85
July 3	13.07	Sept. 3	14.45	Nov. 5	15.89		

6/31-1B2 (#949, p. 206). H. Imbach. In Middle Santa Ynez Valley. Land-surface datum is about 675 feet above mean sea level. Measurements discontinued Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	32.64	Apr. 30 b	50.41	July 29	35.10	Nov. 4	44.70
Feb. 23 b	39.49	June 4 b	52.49	Sept. 2	415.63	Dec. 30 b	53.64
Apr. 7 b	39.55	July 3 b	47.05	30	48.55		

a Pumping.

b Pumping recently.

c Nearby well pumping.

d Pump shut down prior to measurement.

6/31-7P1 (#949, p. 206). H. Anderson. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/31-7P2. City of Santa Barbara, Water Works Dept. well 555. W. M. Hunt. In Middle Santa Ynez Valley, about 0.44 mile east-southeast of Buellton, 200 feet south of State Highway 150, 35 feet east of private lane, 5 feet west of tank and tower painted white. Measuring point, top of 8-inch casing, 1.10 feet above land-surface datum and about 359 feet above mean sea level. Measurements discontinued Dec. 31.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	27.02	Apr. 30	27.32	July 30	27.71	Nov. 5	28.27
Feb. 23	a 30.65	June 4	27.30	Sept. 3	27.72	Dec. 31	27.67
Apr. 7	25.30	July 2	b 27.43	Oct. 1	27.64		

6/31-11E1 (#949, p. 207). T. Petersen. In Middle Santa Ynez Valley. Land-surface datum is about 559 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 28	35.82	Apr. 30	33.47	July 30	c 95.43	Nov. 4	c 99.71
Feb. 23	34.80	June 4	c 96.82	Sept. 2	c 98.83	Dec. 30	39.34
Apr. 7	33.90	July 3	c 96.39	30	c 97.37		

6/31-13D1 (#949, p. 207). Mrs. Parker. In Middle Santa Ynez Valley. Land-surface datum is about 608 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	103.58	Apr. 30	c 102.78	July 29	d 105.92	Nov. 5	103.31
Feb. 23	103.24	June 4	c 102.97	Sept. 3	103.20	Dec. 31	103.36
Apr. 8	102.64	July 3	c 104.69	Oct. 1	103.30		

6/31-13L1 (#949, p. 207). A. Hunt. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/31-15K1 (#949, p. 207). Rasmussen Bros. In Middle Santa Ynez Valley. Land-surface datum is about 446 feet above mean sea level. Measurements discontinued Dec. 31.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 28	3.62	Apr. 30	3.27	July 30	4.09	Nov. 5	3.41
Feb. 23	3.59	June 4	5.98	Sept. 3	8.83	Dec. 31	2.83
Apr. 8	c 3.16	July 3	4.35	Oct. 1	3.36		

6/31-16N2 (#949, p. 208). H. G. Petersen. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/31-17F1 (#949, p. 208). John R. Orton. In Middle Santa Ynez Valley. Measuring point, beginning Sept. 3, 1943, top of wood cover through hole, 1.00 foot above land-surface datum and about 358 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	16.33	Apr. 30	16.42	July 30	19.20	Nov. 5	16.95
Feb. 23	16.24	June 4	16.66	Sept. 3	17.32	Dec. 31	16.55
Apr. 7	16.27	July 3	17.00	Oct. 1	17.23		

6/31-21H1 (#949, p. 208). Alisal Corporation. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/31-21H2. City of Santa Barbara, Water Works Dept. well 568. Alisal Corporation. In Middle Santa Ynez Valley, about 0.6 mile nearly southwest of Solvang, 265 yards north of Santa Ynez River, 110 yards east of Alisal Road, and 30 feet east of well 6/31-21H1. Measuring point, top east side of 8-inch casing, 1.80 feet above land-surface datum and about 409 feet above mean sea level.

- a Pumping recently.
- b Nearby well pumping.
- c Pumping.
- d Pump shut down prior to measurement.

## 6/31-21H2. Alisal Corporation--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	6.20	Apr. 30	7.47	July 30	7.92	Nov. 5	7.92
Feb. 23	7.09	June 4	7.62	Sept. 3	8.06	Dec. 31	7.53
Apr. 8	7.29	July 3	7.28	Oct. 1	8.09		

6/31-24F1 (#949, p. 208). Rancho Juan y Lolita. In Middle Santa Ynez Valley. Land-surface datum is about 429 feet above mean sea level. Water level, in feet below land-surface datum, 1943; Apr. 30, 7.70; measurements discontinued.

6/32-6K1 (#949, p. 209). M. Barker. In Middle Santa Ynez Valley. Land-surface datum is about 390 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	a 26.60	Apr. 29	17.92	July 30	18.06	Nov. 4	17.71
Feb. 24	17.08	June 3	b 25.90	Sept. 3	a 29.30	Dec. 30	17.66
Apr. 7	16.85	July 2	b 23.03	Oct. 1	17.65		

6/32-7Q1 (#949, p. 209). A. Silva. In Middle Santa Ynez Valley. Land-surface datum is about 298 feet above mean sea level. Measurements discontinued Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	44.06	Apr. 29	a 45.41	July 30	a 57.56	Nov. 4	46.24
Feb. 24	44.00	June 3	47.77	Sept. 3	48.64	Dec. 30	45.86
Apr. 7	44.39	July 2	48.70	Oct. 1	47.45		

6/32-9A1 (#949, p. 209). Owen Hollister. In Middle Santa Ynez Valley. Land-surface datum is about 310 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	29.24	Apr. 29	a 33.56	July 30	32.57	Nov. 4	32.21
Feb. 24	29.33	June 3	a 34.19	Sept. 3	c 33.98	Dec. 30	31.02
Apr. 7	29.19	July 2	a 36.49	Oct. 1	32.17		

6/32-9G1 (#949, p. 209). G. D. Owen. In Middle Santa Ynez Valley. Land-surface datum is about 301 feet above mean sea level. Measurements discontinued Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	27.76	Apr. 29	d 28.70	July 30	30.97	Nov. 4	30.73
Feb. 24	27.78	June 3	29.36	Sept. 3	a 45.23	Dec. 30	29.77
Apr. 7	28.04	July 2	a 43.85	Oct. 1	30.79		

6/32-11H1 (#949, p. 209). W. M. Hunt. In Middle Santa Ynez Valley. Measuring point beginning June 3, 1943, top south side of casing, 0.60 foot above land-surface datum and about 300 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 3	0.08	July 2	a 5.49	Sept. 3	a 8.30	Nov. 4	0.97
3	a 8.90	30	a 7.59	Oct. 1	a 6.32		

6/32-12J2 (#941, p. 153; #949, p. 210). A. Bodine. In Middle Santa Ynez Valley. Land-surface datum is about 361 feet above mean sea level. Water-stage recorder removed Apr. 21.

Water level at noon, in feet below land-surface datum, 1943

(From recorder charts until Apr. 21)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	29.13	Jan. 27	29.34	Feb. 15	27.60	Mar. 5	26.75
10	29.97	31	28.88	20	28.18	10	26.85
15	30.36	Feb. 5	28.15	25	27.26	15	26.06
20	30.12	10	27.76	28	29.46	20	25.65

a Pumping.

b Pump shut down prior to measurement.

c Nearby well pumping.

d Pumping recently.

6/32-12J2. A. Bodine--Continued.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts until Apr. 21)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 25	25.22	May 19	25.47	Aug. 4	25.29	Oct. 6	28.00
31	24.85	26	26.21	11	26.11	15	27.60
Apr. 3	24.78	June 2	26.17	19	28.84	20	28.99
10	24.62	9	25.33	26	26.45	Nov. 4	27.36
15	24.65	16	25.10	Sept. 3	26.39	11	27.58
20	24.46	23	24.73	8	26.12	17	27.47
21	24.60	July 2	25.13	15	26.20	24	27.76
28	25.21	7	25.24	22	27.12	Dec. 21	28.21
May 5	25.53	21	24.97	Oct. 1	26.98	30	28.61
12	25.09	50	25.14				

6/32-13C1 (#949, p. 210). Murdo Campbell. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/32-14C1. City of Santa Barbara, Water Works Dept. well 576. Murdo Campbell. In Middle Santa Ynez Valley, about 1.5 miles west-southwest of Buellton, 0.6 mile west of ranch headquarters, 60 feet south of Santa Rosa road, 10 feet west of wood tank and tower. Measuring point, top of 12-inch casing, level with land-surface datum and about 348 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Jan. 27	44.92	Apr. 28	38.30	July 28	43.25	Nov. 3	45.64
Feb. 24	a 42.13	June 3	40.62	Sept. 1	44.51	Dec. 29	45.45
Apr. 7	37.19	July 1	42.11	29	45.22		

6/32-16P3 (#949, p. 210). Lind Ranch. In Middle Santa Ynez Valley. Land-surface datum is about 293 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Jan. 27	42.21	Apr. 28	44.03	July 28	45.13	Nov. 3	44.99
Feb. 24	41.82	June 2	44.34	Sept. 1	45.22	Dec. 29	44.67
Apr. 7	43.54	July 1	44.88	29	45.16		

6/33-5E1 (#949, p. 210). James Guerra. In Lower Santa Ynez Valley. Land-surface datum is about 191 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Feb. 27	a 33.83	July 1	a 52.67	Sept. 1	a 47.18	Nov. 3	a 41.02
May 5	31.58	28	a 41.89	29	32.22	Dec. 29	a 32.56
June 2	33.64						

6/33-8G1 (#949, p. 210). S. N. Pettit. In Lower Santa Ynez Valley. Land-surface datum is about 198 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Feb. 27	45.27	June 2	47.20	Sept. 1	47.00	Nov. 3	46.84
May 5	46.73	July 28	46.83	29	46.91	Dec. 29	46.49

6/33-9P1 (#941, p. 154; #949, p. 211). Hollister Estate. In Lower Santa Ynez Valley. Land-surface datum is about 200 feet above mean sea level.

Water level, in feet below land-surface datum, 1943<sup>b/</sup>  
(From float gage)

	35.87		33.98	July 1	35.31		36.36
	36.35		34.16		35.31	Sept. 29	36.34
Jan. 27	35.87	Apr. 28	34.13		35.66		36.34
	34.82		34.09	28	35.63		36.47
	35.87		34.79		35.63	Nov. 3	36.47
Feb. 24	34.82	June 2	34.79		36.10		36.46
	33.84		34.78	Sept. 1	36.09		36.60
	34.82		35.32		36.09	Dec. 29	36.56
Apr. 7	34.00						

a Pumping.

b Undated entries are highest and lowest levels between dates of observation.

6/33-12L1 (#949, p. 211). J. Corbillini. In Middle Santa Ynez Valley. Land-surface datum is about 227 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 8	14.30	June 2	15.59	July 28 a	23.10	Sept. 29	17.10
8 a	21.06	July 1 a	23.36	Sept. 1 a	22.19	Nov. 3	16.65

6/33-16A1 (#949, p. 211). W. H. Cooper. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/34-2A1 (#941, p. 154; #949, p. 212). C. Madsen. In Lower Santa Ynez Valley. Land-surface datum is 127.86 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	36.17	July 30 a	43.68	Oct. 6	38.55	Nov. 17	38.48
Feb. 27	36.27	Aug. 4	38.53	13	38.56	24	38.50
Apr. 7	37.04	Sept. 1	38.57	20	38.55	Dec. 1	38.45
28	37.61	8 a	44.96	27	38.54	10	38.40
June 2 b	38.07	15	38.52	Nov. 3	38.52	22	38.29
July 1	38.34	22	38.58	11	38.52	29	38.09
7	38.37	29	38.56				

6/34-4D1 (#949, p. 212). Peter Tognatti. In Lower Santa Ynez Valley. Land-surface datum is 84.04 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	22.95	July 1	25.35	Sept. 1	27.86	Dec. 29	25.40
Feb. 24 c	22.18	28 c	27.37	29	26.24		

6/34-6C1 (#949, p. 212). A. R. Leege. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

6/34-6C2. City of Santa Barbara, Water Works Dept. well 100-D. Bank of America. In Lower Santa Ynez Valley, about 2.5 miles west of Lompoc, 0.3 mile south of State Highway 150 (Ocean Avenue), 15 feet west of Legge Avenue. Measuring point, top of 12-inch casing, 1.00 foot above land-surface datum and 100.80 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27 a	50.62	Apr. 28	49.34	July 1	53.12	Sept. 1	56.31
Feb. 24	47.88	June 2	51.95	28 c	55.21	29	54.70
Apr. 7 a	50.04						

7/23-20C1 (#949, p. 237). Eric Smith. In Cuyama Valley. Land-surface datum is about 3,595 feet above mean sea level. Measurements discontinued Dec. 28.

Water level, in feet above land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	2.59	June 30	2.24	Aug. 31	1.88	Nov. 2	1.85
27	2.64	July 27	2.12	Sept. 28	1.82	Dec. 28	2.09
June 1	2.32						

7/24-13C1 (#949, p. 237). Apache School District. In Cuyama Valley. Land-surface datum is about 3,418 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	5.65	June 30	6.99	Sept. 28	8.91	Nov. 30	9.03
27	5.95	July 27	7.78	Nov. 2	8.80	Dec. 28	8.27
June 1	6.71	Aug. 31	8.46				

7/29-28D1 (#949, p. 212). H. P. Golfelt. In Middle Santa Ynez Valley. Land-surface datum is about 1,122 feet above mean sea level. Measurements discontinued Dec. 31.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Feb. 12	31.13	Apr. 15	13.41	July 3	27.50	Oct. 1	54.16
15	30.08	30	13.25	29	37.60	Nov. 5	55.77
23	27.58	June 4	19.42	Sept. 3	50.52	Dec. 31	52.13
Apr. 8	13.86						

a Pumping.

b Pumping recently.

c Pump shut down prior to measurement.

7/30-27Q1 (#949, p. 212). Margaret Hourihan. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/30-31L2 (#949, p. 213). H. B. Sanderson. In Middle Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/30-32R1 (#949, p. 213). Ray McGee. In Middle Santa Ynez Valley. Land-surface datum is about 704 feet above mean sea level. Measurements discontinued Dec. 31.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	85.51	Apr. 30	84.50	July 29 a	85.14	Nov. 5	83.49
Feb. 23	84.98	June 4	83.87	Sept. 3	83.76	Dec. 31	83.10
Apr. 8	84.15	July 3	83.86	Oct. 1	83.74		

7/31-23P1 (#949, p. 213). F. L. Mattel. In Middle Santa Ynez Valley. Land-surface datum is about 826 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	8.33	Apr. 30	9.71	July 29 a	16.02	Nov. 4	11.27
Feb. 23	8.72	June 4 a	13.56	Sept. 2	16.76	Dec. 30	10.66
Apr. 7	8.19	July 3 a	15.49	30	11.68		

7/31-25L1 (#949, p. 213). Russell Smith. In Middle Santa Ynez Valley. Land-surface datum is about 806 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28	61.03	Apr. 30	56.18	July 29 a	59.65	Nov. 4 a	62.80
Feb. 23 a	62.65	June 4	56.32	Sept. 2	60.53	Dec. 30	61.30
Apr. 7	56.77	July 3	57.16	30 a	61.92		

7/31-35K1 (#949, p. 213). B. H. and A. R. Hill. In Middle Santa Ynez Valley. Land-surface datum is about 683 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 27	35.16	Apr. 30	28.88	July 29	29.59	Nov. 4	31.69
Feb. 23	32.42	June 4	29.31	Sept. 2	30.78	Dec. 30	33.03
Apr. 7	29.28	July 3	29.21	30	30.99		

7/31-36L2 (#949, p. 213). Dr. W. B. Swackhamer. In Middle Santa Ynez Valley. Land-surface datum is about 715 feet above mean sea level. Automatic water-stage recorder installed Aug. 4.

Water level at noon, in feet below land-surface datum, 1943

(From recorder charts)

Jan. 27	18.12	Aug. 15	17.60	Oct. 5	17.81	Nov. 20	b 18.17
Feb. 23	17.53	20	17.58	10	17.81	25	17.93
Apr. 7	16.54	25 b	17.85	15	17.88	30	b 18.09
30	16.62	31 b	17.81	20	17.83	Dec. 5	17.82
June 4	16.96	Sept. 5	17.74	25	17.82	10	17.72
July 3	17.29	10	17.82	31	17.82	15	17.82
29	17.43	15	17.72	Nov. 5	17.82	20	17.83
Aug. 4	17.52	20	17.74	10	17.89	25	17.91
5	17.53	25 b	18.00	15	17.83	31	17.72
10	17.54	30	17.83				

7/33-30C1 (#949, p. 214). John Valla. In Lower Santa Ynez Valley. Land-surface datum is about 233 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	151.89	Apr. 28 b	151.79	July 28	151.48	Sept. 29 b	151.51
Feb. 24 b	151.95	June 2 b	151.62	Sept. 1 b	151.51	Dec. 29	151.29
Mar. 31 b	151.99	July 1 b	151.60				

a Pumping.

b Nearby well pumping.

7/33-31R1 (\*949, p. 214). Lewis Bros. In Lower Santa Ynez Valley. Land-surface datum is about 169 feet above mean sea level. Measurements discontinued Dec. 29.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	41.95	July 1	42.93	Sept. 1	43.51	Nov. 3	43.69
May 5	42.13	28	43.23	29	43.62	Dec. 29	43.57
June 3	42.54						

7/34-21J1 (\*949, p. 214). War Department, Camp Cooke Military Reservation. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/34-22H1 (\*949, p. 215). H. E. Harris. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/34-22H2 (\*949, p. 215). H. E. Harris. In Lower Santa Ynez Valley. Land-surface datum is 96.94 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	21.68	July 1	22.22	Sept. 22	22.26	Oct. 20	22.28
Feb. 24	21.61	28	22.54	29	22.35	27	22.30
Apr. 7	21.49	Sept. 1	22.29	Oct. 6	22.36	Nov. 11	22.44
28	21.64	8	22.25	13	22.39	Dec. 10	22.17
June 2	22.60	15	22.28				

7/34-22J3 (\*949, p. 215). H. E. Harris. In Lower Santa Ynez Valley. Land-surface datum is 96.98 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 8	22.93	Sept. 29	23.09	Oct. 20	22.91	Nov. 10	23.00
15	23.12	Oct. 6	23.22	22	23.80	Dec. 10	22.67
22	22.83	13	23.07				

7/34-22J5. H. E. Harris. In Lower Santa Ynez Valley, about 2.5 miles nearly north-northeast of Lompoc, 130 yards south and 130 yards west of well 22J3, 400 yards northeast of Santa Ynez River, near north edge of thickly wooded flood plain, by trail. Bored observation well, diameter 2 inches, measured depth 8.0 feet. Unconfined water in alluvial sand and silt. Measuring point, top of north side of casing, 3.20 feet above land-surface datum and 80.65 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 15	6.78	Oct. 6	6.92	Oct. 20	6.97	Nov. 11	6.95
22	6.84	13	6.96	27	7.00	Dec. 10	6.89
29	6.89						

7/34-22Q1. A. Scolari. In Lower Santa Ynez Valley, about 2.2 miles nearly north-northeast of Lompoc, 0.3 mile north of Rucker Crossing Road, 85 feet southeast of dwelling, 12 feet west of North A Street, extended. Bored observation well, diameter 2 inches, measured depth 15.4 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 3.60 feet above land-surface datum and 84.80 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 1	12.83	Sept. 22	12.93	Oct. 13	12.92	Nov. 11	12.86
8	12.89	29	12.94	20	12.88	Dec. 10	12.75
15	12.77	Oct. 6	12.90	27	12.88		

7/34-22Q3. H. E. Harris. In Lower Santa Ynez Valley, about 2.3 miles nearly north-northeast of Lompoc, 300 yards northeast of well 22Q1, 160 yards northeast of Santa Ynez River, on thickly wooded flood plain, in trail. Bored observation well, diameter 2 inches, measured depth 9.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of south side of casing, 2.00 feet above land-surface datum and 79.92 feet above sea-level datum of 1929.

a Nearby well pumping.

## 7/34-22Q3. H. E. Harris--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 15	8.30	Oct. 6	8.36	Oct. 20	8.31	Nov. 11	8.32
22	8.35	13	8.39	27	8.30	Dec. 10	8.12
29	8.36						

7/34-25K1 (\*949, p. 215). William Dutra. In Lower Santa Ynez Valley. Land-surface datum is 135.34 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	55.70	June 2 a	59.20	July 28 b	57.12	Sept. 29 b	57.13
Apr. 7	55.58	July 1 b	57.30	Sept. 1 b	56.81	Dec. 29 b	56.66
28	55.66						

7/34-26A2 (\*941, p. 155; \*949, p. 216). K. McConnell. In Lower Santa Ynez Valley. Land-surface datum is 113.32 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 8	35.40	Oct. 6	35.49	Oct. 27	35.52	Dec. 8	35.48
15	35.45	8	35.45	Nov. 10	35.51	10	35.53
22	35.42	13	35.50	17	35.50	22	35.52
29	35.46	20	35.52	24	35.54	29	35.52

7/34-26D2. Union Sugar Co. In Lower Santa Ynez Valley, about 2.2 miles nearly north-northeast of Lompoc, 300 yards east of Santa Ynez River, 30 feet south of junction of Rucker Crossing Road and paved T-road north, 10 feet south of power-line guy pole. Bored observation well, diameter 2 inches, measured depth 12.5 feet. Unconfined water in alluvial sand and silt. Measuring point, top of north side of casing, 3.50 feet above land-surface datum and 86.97 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 1	9.82	Sept. 22	9.93	Oct. 8	9.93	Oct. 27	9.97
8	9.86	29	9.95	13	9.95	Nov. 11	9.94
15	9.99	Oct. 6	9.95	20	9.95	Dec. 10	9.90

7/34-26E1. Union Sugar Co. In Lower Santa Ynez Valley, about 1.8 miles nearly northeast of Lompoc, 100 yards east of Santa Ynez River, on thickly wooded flood plain, 50 feet north of Cebada Creek drainage ditch. Bored observation well, diameter 2 inches, measured depth 12.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of south side of casing, 1.80 feet above land-surface datum and 87.30 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 28	9.86	Sept. 22	10.00	Oct. 13	9.93	Dec. 10	9.68
Sept. 1	9.92	29	9.92	20	9.84	22	9.60
8	9.91	Oct. 6	9.88	27	9.81	29	9.40
15	9.88	8	9.90	Nov. 11	9.84		

7/34-26F1 (\*941, p. 156). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is 109.19 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 9	32.20	Sept. 1	32.56	Oct. 8	32.48	Nov. 11	32.50
23	31.99	8	32.49	13	32.58	17	32.48
July 1	32.14	15	32.48	20	32.49	Dec. 10	32.49
14	32.15	22	32.44	27	32.50	22	32.46
Aug. 11	32.45	29	32.50	Nov. 3	32.50	29	32.40
18	32.38	Oct. 6	31.79				

a Pumping.

b Pump shut down prior to measurement.

7/34-26F4. Union Sugar Co. In Lower Santa Ynez Valley, about 2.2 miles nearly northeast of Lompoc, 200 feet west of irrigation well 26F1, 40 feet west of abandoned frame dwelling, at base of terrace. Bored observation well, diameter 6 inches, measured depth 19.5 feet. Unconfined water in alluvial sand and silt. Measuring point, top of base panel of instrument shelter, 0.21 foot above concrete-tile casing, 0.71 foot above land-surface datum and 94.49 feet above sea-level datum of 1929. Automatic water-stage recorder installed Sept. 1.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 26	a 16.63	Sept. 30	16.37	Nov. 5	16.45	Dec. 5	16.48
Sept. 1	16.33	Oct. 5	16.38	10	16.47	10	16.52
5	16.32	10	16.39	15	16.49	15	16.48
10	16.34	15	16.41	20	16.50	20	16.49
15	16.34	20	16.43	25	16.50	25	16.53
20	16.30	25	16.42	30	16.51	31	16.53
25	16.32	31	16.44				

7/34-26F5. Union Sugar Co. In Lower Santa Ynez Valley, about 2.0 miles nearly northeast of Lompoc, 400 yards southwest of irrigation well 26F1, 40 feet north of Cebada Creek drainage ditch, 20 feet east of abandoned irrigation well 26F2. Bored observation well, diameter 2 inches, measured depth 17.3 feet. Unconfined water in alluvial gravel and sand. Measuring point, top west side of casing, 2.30 feet above land-surface datum and 94.52 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 28	15.33	Sept. 22	15.40	Oct. 13	15.48	Dec. 10	15.49
Sept. 1	15.35	29	15.47	20	15.49	22	15.47
8	15.38	Oct. 6	15.43	27	15.50	29	15.44
15	14.95	8	15.45	Nov. 11	15.50		

7/34-26M1. Valla Bros. In Lower Santa Ynez Valley, about 1.9 miles nearly northeast of Lompoc, 200 yards east of Santa Ynez River, 150 feet south of Cebada Creek drainage ditch, at west edge of small field. Bored observation well, diameter 2 inches, measured depth 12.8 feet. Unconfined water in alluvial gravel and sand. Measuring point, top north side of casing, 2.80 feet above land-surface datum and 89.44 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 28	10.51	Sept. 22	10.62	Oct. 13	10.62	Dec. 10	10.43
Sept. 1	10.53	29	10.61	20	10.56	22	10.37
8	10.56	Oct. 6	10.59	27	10.54	29	10.30
15	10.47	8	10.58	Nov. 11	10.58		

7/34-26P1. Roy Bland. In Lower Santa Ynez Valley, about 1.7 miles nearly northeast of Lompoc, 350 yards north of North Avenue extended, 250 yards east of Santa Ynez River, 100 yards south of abandoned shed, 100 feet west of property-line fence, in brush-covered field. Unused drilled stock well, diameter 12 inches, measured depth 16.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top north side of casing, 0.30 foot above land-surface datum and 91.79 feet above sea-level datum of 1929. Automatic water-stage recorder installed July 14.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 14	12.78	Aug. 25	13.06	Oct. 10	13.09	Nov. 25	13.16
15	12.75	31	13.09	15	13.09	30	13.14
20	12.74	Sept. 5	13.12	20	13.09	Dec. 5	13.14
25	12.80	10	13.13	25	13.11	10	13.08
31	12.86	15	13.12	31	13.11	15	13.06
Aug. 5	12.92	20	13.13	Nov. 5	13.12	20	13.05
10	12.97	25	13.15	10	13.14	25	13.04
15	13.02	30	13.14	15	13.13	31	12.99
20	13.05	Oct. 5	13.11	20	13.14		

a Nearby well pumping.

7/34-26Q1. A. G. Hibbits. In Lower Santa Ynez Valley, about 1.9 miles nearly northeast of Lompoc, 0.3 mile west of State Highway 150, 275 feet south of road leading to farm, 175 feet west of frame dwelling, at end of eucalyptus row, at base of terrace, in frame pump house. Measuring point, top of west side of casing, 0.50 foot below land-surface datum and 91.17 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Oct. 13	12.53	Oct. 27	12.76	Dec. 10	12.70	Dec. 29	12.66
20	12.59	Nov. 10	12.66	22	12.93		

7/34-26Q2. A. G. Hibbits. In Lower Santa Ynez Valley, about 2.0 miles nearly northeast of Lompoc, 0.3 mile west of State Highway 150, 250 feet northwest of frame dwelling, 25 feet north of road leading to farm, near edge of terrace, in corrugated-steel pump house. Measuring point, bottom of south edge of pump base, 0.25 foot above land-surface datum and 112.37 feet above sea-level datum of 1929. (In measuring, add 0.25 foot to elevation of measuring point to offset inclination of tape.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	33.09	Oct. 27	33.42	Dec. 10	33.32	Dec. 29	33.28
13	33.18	Nov. 10	33.30	22	33.29		

7/34-26R2 (#949, p. 216). W. T. McHenry. In Lower Santa Ynez Valley. Land-surface datum is 114.03 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	33.38	July 1	a 36.61	Sept. 15	34.03	Nov. 11	34.12
Feb. 24	32.89	28	a 36.94	29	a 37.93	17	34.12
Apr. 7	32.91	Sept. 1	a 36.41	Oct. 6	34.56	Dec. 10	34.19
28	33.30	8	a 35.81	27	34.13	22	34.19
June 2	33.09						

7/34-27A3. L. H. Schuyler. In Lower Santa Ynez Valley, about 2.1 miles north-northeast of Lompoc, 0.27 mile east of North A Street extended, 170 yards west of Santa Ynez River, 20 feet south of Rucker Crossing road, 18 feet east of property-line fence. Bored observation well, diameter 2 inches, measured depth 12.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of north side of casing, 2.28 feet above land-surface datum and 81.56 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 1	8.57	Sept. 22	8.67	Oct. 8	8.65	Oct. 27	8.62
8	8.61	29	8.67	13	8.66	Nov. 11	8.59
15	8.64	Oct. 6	8.65	20	8.63	Dec. 10	8.46

7/34-27F1 (#949, p. 216). M. G. and W. G. Moore. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/34-27E2. L. H. Schuyler. In Lower Santa Ynez Valley, about 1.8 miles nearly north-northeast of Lompoc, 0.45 mile east of North A Street, 125 feet west of Santa Ynez River, 50 feet north of Central Avenue extended, 8 feet west of fence, in field. Bored observation well, diameter 6 inches, measured depth 13.6 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of concrete-tile casing, 0.70 foot above land-surface datum and 88.07 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 25	13.06	Sept. 29	13.12	Oct. 20	13.05	Dec. 10	12.88
Sept. 1	13.08	Oct. 6	13.08	27	13.01	22	12.76
8	13.13	8	13.09	Nov. 11	12.95	29	12.67
22	13.14	13	13.10	Dec. 1	12.96		

a Pumping.

7/34-27J2. L. H. Schuyler. In Lower Santa Ynez Valley, about 1.7 miles nearly north-northeast of Lompoc, 0.33 mile west of North A Street, 175 feet south of Central Avenue extended, 80 feet south and 30 feet east of fence corner, on the Santa Ynez River flood plain. Bored observation well, diameter 2 inches, measured depth 13.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 1.50 feet above land-surface datum and 86.43 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 13	12.85	Sept. 15	12.84	Oct. 8	12.80	Nov. 11	12.65
16	12.75	22	12.82	13	12.82	Dec. 10	12.72
25	12.70	29	12.80	20	12.79	22	12.59
Sept. 1	12.74	Oct. 6	12.81	27	12.74	29	12.51
8	12.80						

7/34-27J3. L. H. Schuyler. In Lower Santa Ynez Valley, about 1.6 miles nearly north-northeast of Lompoc, 110 yards west-southwest of observation well 27J2, 80 feet east of base of terrace, on the Santa Ynez River flood plain. Bored observation well, diameter 2 inches, measured depth 15.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of east side of casing, 1.80 feet above land-surface datum and 87.98 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 25	14.55	Sept. 22	14.53	Oct. 13	14.64	Dec. 10	14.48
Sept. 1	14.62	29	14.58	20	14.57	22	14.20
8	14.65	Oct. 6	14.55	27	14.48	29	14.26
15	14.59	8	14.57	Nov. 11	14.41		

7/34-27J4. L. H. Schuyler. In Lower Santa Ynez Valley, about 1.6 miles nearly northeast of Lompoc, 300 yards south of observation well 27J2, at foot of terrace at west edge of Santa Ynez River flood plain. Abandoned drilled irrigation well, diameter 10 inches, measured depth 130.0 feet. Probably confined water. Measuring point, top of east side of casing, 1.00 foot below land-surface datum and 87.74 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sept. 1	16.12	Sept. 29	16.35	Oct. 20	16.42	Dec. 10	16.67
8	16.20	Oct. 6	16.40	27	16.52	22	16.26
15	16.25	8	16.40	Nov. 11	16.55	29	16.62
22	16.32	13	16.43				

7/34-27L1 (#949, p. 217). Mrs. Susan Van Clief. In Lower Santa Ynez Valley. Land-surface datum is 98.54 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	28.37	Apr. 7	27.33	July 7	b 30.59	Oct. 6	29.95
13	28.52	14	27.33	14	a 30.48	13	a 30.72
20	28.84	21	27.47	21	a 32.03	20	29.95
27	27.68	28	28.44	28	c 36.39	27	29.77
Feb. 3	27.39	May 5	28.29	Aug. 4	a 31.99	Nov. 3	29.75
10	27.34	12	28.62	11	30.52	11	29.73
17	27.33	19	28.99	18	29.93	17	29.73
24	27.32	26	28.75	25	a 31.29	24	30.04
Mar. 3	27.20	June 2	28.68	Sept. 1	30.24	Dec. 1	30.93
10	27.16	9	29.00	8	a 30.65	10	29.76
17	27.04	16	28.95	15	30.55	22	29.59
24	27.17	23	a 30.27	22	29.87	29	30.00
31	27.36	July 1	a 31.90	29	29.99		

a Nearby well pumping.

b Pump shut down prior to measurement.

c Pumping.

7/34-27P1 (#949, p. 217). Mary Skaarup. In Lower Santa Ynez Valley. Land-surface datum is 95.00 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	31.73	Apr. 28	31.66	July 28 b	31.16	Sept. 29	28.54
Feb. 24	25.97	June 2 a	36.50	Sept. 1	28.70	Dec. 29 a	35.26
Apr. 7	24.50	July 1	34.00				

7/34-28H1 (#949, p. 217). T. M. Parks. In Lower Santa Ynez Valley. Land-surface datum is about 85 feet above mean sea level. Measurements discontinued Sept. 1.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	24.12	Mar. 10	22.60	May 12	25.59	July 14 c	38.04
13 a	24.51	17	22.70	19	25.98	21 c	36.03
20 a	26.91	24	23.28	26	27.18	28	27.23
27	23.07	31	23.74	June 2	25.00	Aug. 4	27.47
Feb. 3	22.99	Apr. 7	23.35	9	25.80	11	28.04
10	22.96	14	23.27	16	26.04	18	27.41
17	22.99	21	23.70	23 c	37.17	25 c	36.58
24	22.99	28	25.82	July 1 c	36.97	Sept. 1 c	37.42
Mar. 3	22.85	May 5	24.80	7	26.35		

7/34-28H2 (#949, p. 217). T. M. Parks. In Lower Santa Ynez Valley. Land-surface datum is 89.55 feet above sea-level datum of 1929.

## Water level at noon, in feet below land-surface datum, 1943

(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	23.26	Apr. 15	22.41	July 15 b	28.56	Oct. 10	25.90
10	23.89	20	22.76	20 b	26.93	15 b	27.00
15	23.86	25 b	24.21	25 b	28.50	20	25.33
20 b	25.23	30 b	25.25	31 b	28.70	25	25.07
25	22.19	May 5 b	23.95	Aug. 5 b	25.85	31	25.20
31	22.22	10 b	25.08	10 b	27.10	Nov. 5	25.21
Feb. 5	22.11	15 b	25.08	15	26.20	10	25.30
10	22.12	20 b	24.89	20	26.60	15 b	25.78
15	22.20	25	24.70	25 b	26.90	20	25.54
20 b	23.16	31	24.02	28 b	28.25	25	25.03
24	22.14	June 5	25.40	Sept. 5	26.30	30	25.33
Mar. 5	21.83	10	24.60	10 b	26.60	Dec. 5	25.17
10	21.74	15 b	25.73	15 b	26.50	10	24.93
20	21.97	20 b	27.30	20	26.00	15	25.01
25	22.66	25 b	27.85	25 b	27.90	20	25.06
31	22.85	30 b	28.08	30	25.87	25	25.58
Apr. 5	22.89	July 5	24.95	Oct. 5	25.72	31	25.31
10	22.41	10 b	25.95				

7/34-28R1. City of Santa Barbara, Water Works Dept. well 47. A. C. Zvolánek. In Lower Santa Ynez Valley, about 1.1 miles north of Lompoc, in slough, 600 feet north of North Avenue, 300 feet west of H Street. Measuring point, top of horizontal flange of suction pipe, 0.80 foot above land-surface datum and 70.48 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	8.26	Oct. 27	7.10	Nov. 24	7.29	Dec. 22	6.42
13	8.82	Nov. 11	6.83	Dec. 10	6.67	29	6.02
20	7.03	17	7.30				

- a Pumping recently.  
 b Nearby well pumping.  
 c Pumping.

7/34-28R2. A. C. Zvolanek. In Lower Santa Ynez Valley, about 1.1 miles north of Lompoc, 15 feet west of irrigation well 28R1, in slough. Bored observation well, diameter 2 inches, measured depth 16.0 feet. Unconfined water in alluvial sand and silt. Measuring point, top of west side of casing, 4.00 feet above land-surface datum and 73.50 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	5.17	Oct. 27	5.03	Nov. 24	5.04	Dec. 22	4.90
13	5.23	Nov. 11	5.00	Dec. 10	5.05	29	4.71
20	5.18	17	5.02				

7/34-29A1. City of Santa Barbara, Water Works Dept. well 61-H. J. Cantley. In Lower Santa Ynez Valley, about 2 miles northwest of Lompoc, 0.35 mile north of Central Avenue, 25 feet west of Thirteenth Road, in northeast corner of field on south bank of Santa Ynez River channel, in open casing beneath barrel. Measuring point, top of east side of casing, at edge of square notch, 0.20 foot above land-surface datum and about 80 feet above mean sea level. Measurements discontinued Dec. 29.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 21	23.90	June 2 a	26.71	July 14 a	28.53	Aug. 18 b	30.79
28 a	27.81	9 a	27.09	21	26.79	25	25.85
May 5	24.95	16	25.20	28 a	30.16	Sept. 1	27.70
12 a	28.02	23	25.97	Aug. 4	27.39	29	27.16
19 a	27.91	July 1	26.43	11	30.43	Dec. 29	24.03
26	25.95	7	26.35				

7/34-30A1. City of Santa Barbara, Water Works Dept. well 98-C. G. F. Sanor. In Lower Santa Ynez Valley, about 2.8 miles northwest of Lompoc, 0.34 mile north of Central Avenue, 35 feet west of Floradale Avenue, in corrugated-steel pump house in field. Measuring point, top of north side of pump base, through hole, 1.00 foot above land-surface datum and about 66 feet above mean sea level.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 21	17.55	June 16	20.95	Sept. 15	23.94	Nov. 10	22.76
28 a	18.92	23	20.57	22	22.64	17	21.52
May 5	21.37	July 1 a	20.88	29	21.41	24	20.89
12	23.37	14	21.78	Oct. 6 a	24.03	Dec. 1	20.86
19	22.03	28 a	26.27	13 a	24.83	8	20.85
26	21.25	Aug. 4	23.40	20	22.49	22	18.38
June 2	20.27	Sept. 1	22.56	27	22.19	29	16.75
9	20.41	8	23.86	Nov. 3	22.75		

7/34-30R1 (#949, p. 218). Mrs. E. Manfrina. In Lower Santa Ynez Valley. Land-surface datum is 66.81 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	14.77	Apr. 28 a	17.27	July 28	15.81	Sept. 29	16.93
Feb. 27	13.97	June 2	15.28	Sept. 1	16.66	Dec. 29	16.81
Apr. 6	14.15	July 1 a	18.60				

7/34-31B2 (#949, p. 218). Tanoye. In Lower Santa Ynez Valley. Land-surface datum is 63.21 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27 b	13.39	Apr. 28 b	17.48	July 28 a	37.14	Sept. 29 a	24.93
Feb. 24 b	12.66	June 2	19.71	Sept. 1 a	29.26	Dec. 29	14.90
Apr. 7 b	14.33	July 1 a	26.94				

a Nearby well pumping.

b Pumping.

7/34-31C1 (#941, p. 157; #949, p. 218). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is 59.73 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	13.38	Apr. 28 a	17.49	July 28 bc	27.07	Sept. 29 c	21.79
Feb. 24 a	12.84	June 2 b	20.31	Sept. 1 bc	25.28	Dec. 29	15.39
Apr. 7 a	13.52	July 1 b	20.81				

7/34-32R2 (#941, p. 157; #949, p. 218). Lewis Bros. In Lower Santa Ynez Valley. Land-surface datum is 79.70 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	21.84	Apr. 14	19.25	July 14 c	25.22	Oct. 6	23.09
13	19.81	21	19.39	21 c	25.94	13 c	26.29
20	22.69	28 c	23.16	28 c	25.23	20	23.47
27	19.22	May 5	20.45	Aug. 4	22.77	27	23.31
Feb. 3	18.96	12	20.91	11 c	25.81	Nov. 3	23.20
10	18.88	19 c	26.09	18	23.21	10	22.86
17	18.84	26 c	25.88	25 c	25.20	17	23.68
24	18.81	June 2	24.01	Sept. 1 c	26.59	24 c	25.32
Mar. 3	18.71	9	21.77	8 c	26.14	Dec. 1 c	27.51
10	18.62	16	21.36	15 c	26.00	8	23.19
17	18.66	23 c	24.11	22	23.67	22	22.42
31	19.27	July 1	22.93	29	23.54	29	22.12
Apr. 7	19.13	7 c	25.42				

7/34-33A1 (#949, p. 219). Mrs. S. E. C. Jordan. In Lower Santa Ynez Valley. Land-surface datum is about 68 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	11.51	Apr. 28	13.01	July 28	13.18	Sept. 29	13.51
Feb. 24	12.47	June 2	11.97	Sept. 1	13.37	Dec. 29	13.08
Apr. 7	12.85	July 1	12.87				

7/34-34A1 (#949, p. 219). Mary Skaarup. In Lower Santa Ynez Valley. Land-surface datum is 103.62 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 1	32.66	Oct. 13	32.38	Nov. 11	30.13	Dec. 1	31.36
28	31.74	20	30.88	17	30.30	10	30.33
Sept. 1	30.48	27 a	37.47	24	30.81	22	31.10
29	32.17	Nov. 3	30.16				

7/34-34H1 (#949, p. 220). Mrs. M. Balaam. In Lower Santa Ynez Valley. Land-surface datum is 112.10 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
July 1	36.86	Sept. 29	36.85	Oct. 16	36.99	Nov. 11	36.77
28	37.17	Oct. 6	37.03	20	36.85	Dec. 1	36.99
Sept. 8	37.19	8	36.85	27	36.82	22	36.73
15	37.09	13	36.89	Nov. 3	36.77	29	36.65
22	36.90						

7/34-34H2. Mrs. M. Skaarup. In Lower Santa Ynez Valley, near east boundary of Lompoc, 10 feet north of irrigation well 34H1, on Lompoc Plain. Bored observation well, diameter 2 inches, measured depth 37.5 feet. Unconfined water in alluvial sand and silt. Measuring point, top of east side of casing, 2.00 feet above land-surface datum and 113.95 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8	36.24	Oct. 27	36.19	Nov. 17 c	36.44	Dec. 10	35.52
13	36.22	Nov. 3	36.14	24	36.79	22	36.15
16	36.25	11	36.10	Dec. 1	36.42	29	36.09
20	36.22						

a Pumping.

b Pump shut down prior to measurement.

c Nearby well-pumping.

7/34-34K4. Fred Houk. In Lower Santa Ynez Valley, in east Lompoc, 180 yards north of Southern Pacific Railroad, 130 feet east of Third Street, 90 feet southeast of frame dwelling, 5 feet west of concrete-tile standpipe, in field. Bored observation well, diameter 2 inches, measured depth 41.5 feet. Unconfined water in alluvial sand. Measuring point, top of west side of casing, 4.00 feet above land-surface datum and 116.98 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 8	40.77	Oct. 27	40.60	Nov. 17	40.66	Dec. 10	40.76
13	40.51	Nov. 3	40.63	24	40.74	22	40.81
16	40.51	11	40.63	Dec. 1	40.75	29	40.81
20	40.56						

7/34-35B1. City of Santa Barbara, Water Works Dept. well 2-B. Antone Mattias. In Lower Santa Ynez Valley, about 1.9 miles northeast of Lompoc, 0.55 mile north of Robinson Bridge over Santa Ynez River, 0.13 mile west of State Highway 150, 50 feet northeast of storage tank, beneath windmill tower. Measuring point, top of 6-inch casing, 3.40 feet above land-surface datum and 99.66 feet above sea-level datum of 1929. Water levels, in feet below land-surface datum, 1943: Oct. 16, a/ 35.30; Oct. 20, 17.04; Oct. 27, 16.05; Dec. 10, 16.00.

7/34-35B2. A. G. Hibbits. In Lower Santa Ynez Valley, about 2.0 miles nearly east-northeast of Lompoc, 180 yards west of State Highway 150, 6 feet north of diagonal road leading to farm, by property-line fence. Bored observation well, diameter 2 inches, measured depth 18.5 feet. Unconfined water in alluvial sand and silt. Measuring point, top of south side of casing, 1.50 feet above land-surface datum and 94.63 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Aug. 18	12.95	Sept. 22	12.98	Oct. 16	12.89	Nov. 24	13.08
19	12.80	29	12.95	20	12.94	Dec. 1	12.92
25	12.68	Oct. 6	12.90	27	12.95	10	12.88
Sept. 1	12.79	8	12.87	Nov. 10	12.93	22	12.85
8	12.87	15	12.82	17	12.94	29	12.73
15	12.92						

7/34-35C2. Valla Bros. In Lower Santa Ynez Valley, about 1.7 miles east-northeast of Lompoc, 0.26 mile west of State Highway 150, 100 yards east of frame dwelling, 35 feet north of gate, at angle in diagonal road leading to farm, by property-line fence. Bored observation well, diameter 2 inches, measured depth 14.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 3.00 feet above land-surface datum and 97.26 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Aug. 18	13.42	Sept. 22	13.45	Oct. 20	13.42	Nov. 24	13.59
19	13.32	29	13.36	27	13.47	Dec. 1	13.60
25	13.35	Oct. 6	13.30	Nov. 3	13.51	10	13.30
Sept. 1	13.37	8	13.33	10	13.53	22	13.32
8	13.40	13	13.35	17	13.55	29	13.48
15	13.51	16	13.38				

7/34-35C3. Mary Skaarup. In Lower Santa Ynez Valley, about 1.6 miles east-northeast of Lompoc, 0.4 mile west of State Highway 150, 170 feet south of extension of road leading to farm, 100 yards east of Santa Ynez River, 175 feet west of property-line fence, at west edge of field. Bored observation well, diameter 2 inches, measured depth 16.0 feet. Unconfined water in alluvial sand. Measuring point, top of north side of casing, 2.00 feet above land-surface datum and 98.11 feet above sea-level datum of 1929.

a Pump shut down prior to measurement.

7/34-35C3. Mary Skaarup--Continued.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 19	15.22	Sept. 22	15.33	Oct. 16	15.25	Nov. 24	15.33
25	15.29	29	15.27	20	15.29	Dec. 1	15.27
Sept. 1	15.24	Oct. 6	15.29	27	15.32	10	15.23
8	15.28	8	15.27	Nov. 11	15.31	22	15.18
15	15.25	13	15.31	17	15.29	29	15.03

7/34-35D3. Mary Skaarup. In Lower Santa Ynez Valley, about 1.4 miles northeast of Lompoc, 0.7 mile east of North A Street, 75 feet north of Pine Avenue extended, 250 feet west of Santa Ynez River, near edge of thickly wooded flood plain, by trail. Bored observation well, diameter 2 inches, measured depth 9.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 1.80 feet above land-surface datum and 89.18 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 19	7.62	Sept. 29	7.60	Oct. 20	7.54	Nov. 24	7.64
25	7.57	Oct. 6 b	7.60	27	7.51	Dec. 1	7.51
Sept. 1	a 7.70	8	7.57	Nov. 3	7.44	10	7.44
8	7.78	13	7.38	11	7.46	22	7.32
15	7.69	16	7.59	17	7.54	29	7.07
22	7.69						

7/34-35D5. Mary Skaarup. In Lower Santa Ynez Valley, about 1.3 miles nearly northeast of Lompoc, 120 yards east of North First Street extended and 5 feet north of Pine Avenue, on Lompoc Plain, on 6-inch concrete-tile curbing level with land surface. Bored observation well, diameter 2 inches, measured depth 37.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of north side of casing, 0.50 foot below land-surface datum and 112.09 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 27	35.96	Nov. 11	35.86	Nov. 24 a	36.37	Dec. 10	36.03
Nov. 5	35.89	17	36.19	Dec. 1	36.17	22	35.88

7/34-35F1 (#949, p. 220). Antone Mattias. In Lower Santa Ynez Valley. Land-surface datum is 100.02 feet above sea-level datum of 1929. Water levels, in feet below land-surface datum, 1943: Jan. 6, 19.50; Feb. 3, 18.85; Feb. 27, 18.61; Apr. 7, 18.49; measurements discontinued.

7/34-35F2. City of Santa Barbara, Water Works Dept. well 12. Valla Bros. In Lower Santa Ynez Valley, about 1.5 miles east-northeast of Lompoc, 300 yards northwest of east abutment of Robinson Bridge, 100 yards east of Santa Ynez River, 15 feet east of motor shed, 15 feet west of property-line fence, by road leading to farm. Drilled irrigation well, diameter 15 inches, reported depth 140 feet. Unconfined water in gravel at 30 to 54 and 96 to 136 feet below land surface. Measuring point, top of east side of pump base through hole, 0.10 foot below land-surface datum and 100.23 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27	15.18	Oct. 16 c	40.69	Nov. 17	17.37	Dec. 10	17.28
Apr. 7	15.86	20	20.40	24	17.40	22	17.25
28	16.54	27	17.42	Dec. 1	17.40	29	17.04
Oct. 6	17.52	Nov. 10	17.50				

7/34-35F5. City of Santa Barbara, Water Works Dept. well 11-B. M. Schuyler. In Lower Santa Ynez Valley, about 1.4 miles east-northeast of Lompoc, 0.27 mile east of North First Street, 150 feet south of College Avenue extended, in unpainted frame pump house, 25 feet west of edge of Lompoc Plain. Drilled irrigation well, diameter 16 inches, reported depth 164 feet. Unconfined water in sand and gravel 110 to 164 feet below land surface. Measuring point, south side of concrete foundation through opening, 0.33 foot above land-surface datum and 120.30 feet above sea-level datum of 1929. (In measuring, add 1.04 feet to elevation of measuring point to offset inclination of tape.)

a Nearby well pumping.                      b Nearby well recently pumping.  
c Pumping.

7/34-35F5. M. Schuyler--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	39.53	Oct. 27	39.31	Nov. 17	39.52	Dec. 10	39.25
13	39.48	Nov. 3	39.25	24	40.18	22	39.16
16	39.63	11	39.26	Dec. 1	39.31	29	39.00
20	39.45						

7/34-35F6. M. Schuyler. In Lower Santa Ynez Valley, about 1.4 miles east-northeast of Lompoc, 10 feet northeast of irrigation well 35F5, 15 feet west of edge of Lompoc Plain. Bored observation well, diameter 2 inches, measured depth 40.4 feet. Unconfined water in alluvial sand. Measuring point, top of south side of casing, 1.00 foot above land-surface datum and 120.46 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 7	38.25	Oct. 20	38.33	Nov. 17	38.18	Dec. 10	38.14
8	38.20	27	38.21	24	38.61	22	38.03
13	38.30	Nov. 3	38.14	Dec. 1	38.22	29	37.94
16	38.72	11	38.13				

7/34-35F8. Valla Bros. In Lower Santa Ynez Valley, about 1.6 miles east-northeast of Lompoc, 200 yards nearly north of irrigation well 35F2, 5 feet east of road leading to farm, by property-line fence. Bored observation well, diameter 2 inches, depth 18.3 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 2.00 feet above land-surface datum and 100.94 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	16.70	Oct. 20	16.84	Nov. 17	16.80	Dec. 10	16.80
8	16.74	27	16.78	24	16.85	22	16.78
13 a	16.84	Nov. 3	16.74	Dec. 1	16.82	29	16.73
16	16.96	10	16.76				

7/34-35F10. M. Schuyler. In Lower Santa Ynez Valley, about 1.4 miles nearly northeast of Lompoc, about 200 yards south of Pine Avenue extended, about 250 yards north of irrigation well 35F5, 200 feet west of Santa Ynez River, at west edge of thickly wooded flood plain, by trail. Bored observation well, diameter 2 inches, measured depth 9.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of west side of casing, 0.90 foot above land-surface datum and 89.61 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 16	7.24	Nov. 3	7.12	Nov. 24	7.29	Dec. 22	6.95
20	7.19	11	7.14	Dec. 1	7.14	29	6.80
27	7.13	17	7.14	10	7.08		

7/34-35F12. M. Schuyler. In Lower Santa Ynez Valley, about 1.4 miles east-northeast of Lompoc, 130 yards northeast of irrigation well 35F5, 200 feet west of Santa Ynez River, in trail along west edge of thickly wooded flood plain. Bored observation well, diameter 2 inches, measured depth 7.0 feet. Unconfined water in alluvial sand. Measuring point, top of west side of casing, 2.40 feet above land-surface datum and 90.02 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6	5.57	Oct. 20	5.57	Nov. 17	5.47	Dec. 10	5.39
8	5.56	27	5.49	24	5.69	22	5.28
13	5.65	Nov. 3	5.46	Dec. 1	5.47	29	5.11
16	5.63	11	5.48				

7/34-35K1 (\*949, p. 220). Mrs. M. McDonald. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

a Nearby well pumping.

7/34-35K2 (#949, p. 221). Mrs. M. McDonald. In Lower Santa Ynez Valley. Land-surface datum is 96.01 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	8.99	Apr. 14	8.27	July 14	a 13.27	Oct. 8	a 13.62
13	9.02	21	8.39	21	10.59	13	a 13.83
20	9.01	28	8.51	28	a 10.49	16	11.64
27	8.39	May 5	8.61	Aug. 4	a 10.37	20	11.06
Feb. 3	8.28	12	9.18	11	a 10.64	27	10.62
10	8.39	19	a 10.50	18	a 13.14	Nov. 3	10.41
17	8.52	26	a 12.76	25	a 12.48	11	10.52
24	8.44	June 2	a 12.13	Sept. 1	a 10.98	17	10.64
Mar. 3	8.18	9	a 12.58	8	a 10.95	24	10.33
10	7.95	16	10.32	15	11.79	Dec. 1	11.50
17	7.83	23	9.97	22	a 13.09	10	10.42
24	7.92	July 1	a 10.55	29	a 12.95	22	10.18
31	8.04	7	13.03	Oct. 6	12.85	29	10.12
Apr. 7	8.18						

7/34-35K3 (#949, p. 221). A. Dettamanti. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/34-35K6. A. Dettamanti. In Lower Santa Ynez Valley, about 1.6 miles east-northeast of Lompoc, 150 feet south of east abutment of Robinson Bridge, 150 feet east of Santa Ynez River, 10 feet west of fence, at east edge of flood plain. Bored observation well, diameter 2 inches, measured depth 11.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of east side of casing, 5.83 feet above land-surface datum and 99.13 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Oct. 6	8.61	Oct. 27	8.65	Nov. 17	8.45	Dec. 10	8.41
13	8.42	Nov. 3	8.60	24	8.53	22	8.33
16	8.70	11	8.53	Dec. 1	8.44	29	8.12
20	8.62						

7/34-35K7. W. P. and N. L. Robinson. In Lower Santa Ynez Valley, about 1.4 miles nearly east of Lompoc, 400 feet south of west abutment of Robinson Bridge, 55 feet west of Santa Ynez River, 25 feet east of fence along west edge of flood plain. Bored observation well, diameter 2 inches, measured depth 7.5 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of north side of casing, 3.26 feet above land-surface datum and 93.82 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Oct. 6	5.68	Oct. 27	5.62	Nov. 17	5.59	Dec. 10	5.47
13	5.70	Nov. 3	5.60	24	5.71	22	5.39
16	5.68	11	5.62	Dec. 1	5.59	29	5.17
20	5.67						

7/34-35L1. City of Santa Barbara, Water Works Dept. well 11-A. E. Schuyler. In Lower Santa Ynez Valley, about 1.4 miles nearly east-northeast of Lompoc, 0.34 mile east of North First Street, 20 feet north of Laurel Avenue extended, in corrugated-steel pump house at edge of Lompoc Plain. Drilled irrigation well, diameter 16 inches; reported depth 140 feet. Unconfined water in sand and gravel. Measuring point, top of east side of pump base through hole at oil line, 0.20 foot above land-surface datum and 121.05 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Oct. 21	37.82	Nov. 11	37.55	Dec. 1	37.56	Dec. 22	37.35
27	37.58	17	37.62	10	37.54	29	37.17
Nov. 3	37.53						

a Nearby well pumping.

7/34-35L2. M. Schuyler. In Lower Santa Ynez Valley, about 1.5 miles east-northeast of Lompoc, about 180 yards northwest of west abutment of Robinson Bridge, 100 feet west of Santa Ynez River, in trail along west edge of wooded flood plain. Bored observation well, diameter 2 inches, measured depth 8.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of north side of casing, 1.30 feet above land-surface datum and 91.91 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 16	6.87	Nov. 3	6.80	Nov. 24	a 6.91	Dec. 22	6.55
20	6.87	11	6.81	Dec. 1	6.75	29	6.23
27	6.82	17	6.64	10	6.66		

7/34-35L3. M. Schuyler. In Lower Santa Ynez Valley, about 1.5 miles east-northeast of Lompoc, 120 yards northwest of well 35L2, in trail along west edge of flood plain. Bored observation well, diameter 2 inches, measured depth 8.0 feet. Unconfined water in alluvial gravel and sand. Measuring point, top of south side of casing, 0.65 foot above land-surface datum and 89.66 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 27	6.35	Nov. 17	6.26	Dec. 1	6.29	Dec. 22	5.89
Nov. 3	6.25	24	a 6.83	10	6.19	29	5.70
11	6.26						

7/34-35M1. E. Schuyler. In Lower Santa Ynez Valley, about 1.2 miles east-northeast of Lompoc, 250 yards east of North First Street, 240 feet north of Laurel Avenue, 15 feet north of frame barn, on Lompoc Plain. Bored observation well, diameter 2 inches, measured depth 38.0 feet. Unconfined water in alluvial sand. Measuring point, top of north side of casing, 3.75 feet above land-surface datum and 121.25 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 3	37.41	Nov. 17	37.41	Dec. 1	37.57	Dec. 22	37.42
11	37.39	24	a 37.67	10	37.49	29	37.38

7/34-35N1 (#949, p. 221). E. Schuyler. In Lower Santa Ynez Valley. Land-surface datum is 115.81 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	35.96	July 28	36.52	Oct. 27	36.79	Dec. 1	b 38.47
Feb. 24	35.63	Sept. 1	36.62	Nov. 3	36.78	10	37.11
Apr. 7	35.10	29	36.58	11	b 36.94	22	c 39.16
28	35.26	Oct. 16	36.69	17	36.84	29	37.50
July 1	36.15	20	36.77	24	a 36.95		

7/34-35P1 (#949, p. 221). W. P. and N. L. Robinson. In Lower Santa Ynez Valley. Land-surface datum is 121.95 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943  
(From float gage)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	36.34		35.91		34.37	Apr. 14	36.02
	36.33	Feb. 10	35.91		34.86		36.02
	36.84		35.91	Mar. 17	34.86		36.15
13	36.60		36.30		34.86	21	36.15
	36.49	17	36.30		35.25		36.15
	36.60		35.18	24	35.25		36.38
20	36.49		36.38		35.25	28	36.35
34	34.39	24	35.18		35.55		36.35
	36.85		34.95	31	35.54		36.60
27	34.58		35.39		35.53	May 5	36.60
	34.57	Mar. 3	35.39		35.94		36.57
	35.31		34.37	Apr. 7	35.83		36.63
Feb. 3	35.27		35.39		35.81	12	36.62
	35.27	10	34.37		36.03		36.62

a Nearby well pumping.

b Pumping recently.

c Pumping

d Undated entries are highest and lowest levels between dates of observation.

7/34-35P1. W. P. and N. L. Robinson--Continued.

Water level, in feet below land-surface datum, 1943<sup>a/</sup>  
(From float gage)

Date	Water level	Date	Water level	Date	Water level	Date	Water level		
May 19	36.97	July 14	37.96	Sept. 15	37.75	Nov. 3	37.51		
	36.97		37.65		38.49		37.58		
	36.88		37.96		37.75		37.52		
	37.43		21		37.65		37.69	37.49	
	26		37.42		37.65		37.75	37.55	
June 2	37.15	28 b	38.50	22	37.69	11	37.49		
	37.53		38.50		37.61		37.48		
	37.15		38.09		37.74		37.51		
	37.12		38.64		29		37.62	17	37.48
	37.64		Aug. 4		38.22		37.52	37.48	
	9		38.03		37.72		38.32		
	37.55		38.66		Oct. 6		37.59	24	38.12
	37.88		38.43		37.57		37.52		
	16		37.78		37.94		37.60	38.13	
	37.56		11		38.43		37.57	Dec. 1	37.53
37.99	18	37.94	37.57	37.41					
23	37.94	37.67	37.86	37.73					
July 1	37.91	25	37.94	13	37.69	10	37.41		
	38.37		37.68		37.54		37.14		
	38.33		37.66		37.91		38.13		
	37.53		38.46		16		37.74	22	37.29
	7		38.33		20		37.82	37.19	
	37.53		Sept. 1		38.46		37.58	37.50	
	37.51		38.27		37.86		37.86	29	37.19
	38.02		8		38.50		37.58		

7/35-18J1 (\*941, p. 158; \*949, p. 222). War Department, Camp Cooke Military Reservation. In Lower Santa Ynez Valley. Land-surface datum is 5.20 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Jan. 6	1.23	Mar. 31	2.31	July 1	2.73	Sept. 29	1.13
27	1.07	Apr. 28	2.69	28	2.77	Dec. 29	1.04
Feb. 24	1.69	June 2	2.60	Sept. 1	2.52		

7/35-20J1 (\*949, p. 223). War Department, Camp Cooke Military Reservation. In Lower Santa Ynez Valley. Land-surface datum is 19.07 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Jan. 27	5.46	Apr. 28	6.36	July 28	7.86	Sept. 29	7.86
Feb. 24	5.80	June 2	7.07	Sept. 1	7.93	Dec. 29	7.28
Apr. 6	5.93	July 1	7.49				

7/35-21G1 (\*949, p. 223). War Department, Camp Cooke Military Reservation. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/35-21R1 (\*949, p. 223). War Department, Camp Cooke Military Reservation. In Lower Santa Ynez Valley. Land-surface datum is 26.43 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Jan. 27	5.77	Apr. 28	6.48	July 28	9.36	Sept. 29	10.06
Feb. 24	5.90	June 2	7.66	Sept. 1	9.91	Dec. 29	8.86
Apr. 6	6.00	July 1	8.63				

a Undated entries are highest and lowest levels between dates of observation.

b Nearby well pumping.

7/35-23E1 (#949, p. 223). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is about 37 feet above mean sea level. Measurements discontinued Dec. 22.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	15.22	Apr. 7	12.88	July 7	b 5.05	Sept. 29	abl3.49
13	a 15.25	14	13.03	14	b 6.10	Oct. 6	b 14.19
20	a 15.28	21	13.26	21	b 6.98	13	a 14.76
27	12.52	28	a 13.54	28	ab 7.82	20	15.18
Feb. 3	12.50	May 5	13.78	Aug. 4	ab 8.38	27	15.39
10	12.57	12	a 14.04	11	ab 9.24	Nov. 3	15.55
17	12.69	19	a 14.29	18	ab 9.90	10	15.69
24	12.63	26	a 14.46	25	abl0.55	17	15.85
Mar. 3	12.75	June 2	14.64	Sept. 1	abl1.06	24	16.00
10	12.46	9	14.75	8	abl1.56	Dec. 1	16.18
17	12.52	16	14.90	15	abl2.00	8	16.24
24	a 12.66	23	a 15.12	22	abl2.85	22	16.39
31	a 12.88	July 1	b 4.03				

7/35-23E2 (#949, p. 224). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is 36.59 feet above sea-level datum of 1929. Measurements discontinued Dec. 22.

## Water level, in feet below land-surface datum, 1943

Jan. 6	15.97	Mar. 17	c 18.56	June 16	c 19.25	Oct. 27	16.42
27	16.30	24	d 62.38	July 1	17.14	Nov. 3	16.35
Feb. 3	14.82	Apr. 7	14.73	14	17.03	10	14.18
10	15.21	14	14.72	21	17.24	17	17.90
17	15.36	21	15.41	Aug. 11	d 67.46	24	c 22.48
24	14.92	May 5	c 21.41	18	d 67.18	Dec. 8	c 23.21
Mar. 3	14.79	June 2	17.63	Oct. 6	c 22.73	22	16.57
10	14.04	9	16.13	20	16.55		

7/35-23N1 (#949, p. 224). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is 32.06 feet above sea-level datum of 1929.

## Water level, in feet below land-surface datum, 1943

Jan. 6	11.56	Mar. 24	a 11.74	June 2	a 21.45	Aug. 4	14.34
13	11.89	31	a 11.52	9	12.80	11	15.55
20	d 15.99	Apr. 7	d 12.31	16	d 23.33	18	16.12
27	d 18.57	14	10.24	23	a 18.05	25	a 19.31
Feb. 10	d 13.47	28	a 12.41	July 1	a 18.27	Sept. 1	13.53
17	10.70	May 5	12.49	7	a 17.35	29	12.61
27	10.23	12	a 14.03	14	d 22.50	Nov. 3	11.99
Mar. 3	d 14.30	19	a 13.68	21	d 25.43	Dec. 1	d 18.49
10	d 15.90	26	a 18.29	28	ad 21.65	29	11.63
17	10.13						

7/35-24J1 (#941, p. 159; #949, p. 224). T. M. Parks. In Lower Santa Ynez Valley. Land-surface datum is 59.40 feet above sea-level datum of 1929. Automatic water-stage recorder removed Mar. 24. Measurements discontinued May 26.

## Water level at noon, in feet below land-surface datum, 1943

(From recorder charts)

Jan. 5	22.58	Feb. 5	23.35	Mar. 5	22.94	Apr. 7	21.83
10	23.14	10	21.92	10	22.46	May 5	a 31.12
15	23.64	15	21.91	15	21.60	12	d 40.90
20	26.60	20	22.68	20	21.51	19	25.83
25	22.04	25	21.66	24	24.45	26	d 51.78
31	22.00	28	22.49	31	a 27.79		

a Nearby well pumping.

b Water level affected by irrigation water running into well on July 1.

c Pumping recently.

d Pumping.

7/35-24K1 (#949, p. 225). A. B. Henning. In Lower Santa Ynez Valley. Land-surface datum is 51.43 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	18.30	Mar. 10	19.67	May 12	a 26.88	July 21	a 24.04
13	18.61	17	17.14	19	a 25.36	28	a 27.23
20	21.93	24	20.68	26	a 27.40	Aug. 4	a 31.07
27	17.36	31	18.68	June 2	a 21.17	11	a 28.08
Feb. 3	20.29	Apr. 7	17.48	9	20.26	18	25.54
10	17.89	14	19.89	16	a 24.88	25	a 28.99
17	20.49	21	a 20.27	23	a 29.32	Sept. 1	a 28.26
24	17.63	28	a 22.66	July 1	a 26.71	29	23.84
Mar. 3	20.44	May 5	a 30.71	14	a 28.14	Dec. 29	18.70

7/35-24K2 (#949, p. 225). A. B. Henning. In Lower Santa Ynez Valley. Measuring point beginning Jan. 6, 1943, top east side of pump base through hole, 1.79 feet above land-surface datum and about 52 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	17.51	Feb. 17	20.41	Mar. 31	18.39	June 9	19.69
13	18.10	24	17.05	Apr. 7	16.96	July 1	a 26.25
20	22.78	Mar. 3	20.44	14	19.92	21	a 24.21
27	16.94	10	19.62	21	a 21.13	Aug. 18	25.41
Feb. 3	20.24	17	16.59	28	a 22.90	Sept. 29	23.61
10	17.25	24	20.54	June 2	a 20.86	Dec. 29	18.12

7/35-25P2 (#949, p. 225). Sudden Estate. In Lower Santa Ynez Valley. Land-surface datum is about 47 feet above mean sea level. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	6.47	Apr. 28	9.84	July 28	b 17.00	Sept. 29	b 13.63
Feb. 24	5.64	June 2	14.07	Sept. 1	b 15.60	Dec. 29	7.91
Apr. 7	b 7.77	July 1	a 16.44				

7/35-26P2 (#949, p. 226). Union Sugar Co. In Lower Santa Ynez Valley. Land-surface datum is 37.58 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	6.01	Apr. 28	a 17.58	July 28	a 22.59	Sept. 29	9.66
Feb. 24	5.84	June 2	b 11.12	Sept. 1	12.32	Dec. 29	7.07
Apr. 7	6.05	July 1	12.83				

7/35-26J3 (#949, p. 226). County of Santa Barbara, Artesia School District. In Lower Santa Ynez Valley. Land-surface datum is 40.86 feet above sea-level datum of 1929.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5	6.72	Apr. 10	5.85	July 10	a 16.21	Oct. 10	10.86
10	7.16	15	6.45	15	a 13.60	15	10.52
15	a 8.90	20	a 9.00	20	a 14.98	20	9.42
18	a 9.80	25	a 11.06	25	a 13.72	25	9.54
31	5.92	30	a 10.42	31	a 13.64	31	9.95
Feb. 5	6.16	May 5	a 11.78	Aug. 5	a 16.60	Nov. 5	9.64
10	5.76	10	a 9.86	10	a 13.84	10	10.35
15	5.73	15	a 11.37	15	a 16.36	15	9.83
20	6.23	20	a 10.41	20	a 13.71	20	9.76
25	6.12	25	a 10.95	25	a 14.95	25	11.15
28	6.10	31	a 11.24	31	13.21	30	10.31
Mar. 5	6.82	June 5	a 11.84	Sept. 5	13.16	Dec. 5	9.28
10	6.09	10	9.20	10	11.90	10	8.91
15	6.00	15	9.00	15	10.60	15	7.77
20	5.72	20	a 12.90	20	11.70	20	7.60
25	8.19	25	a 11.55	25	12.25	25	7.44
31	7.60	30	a 12.84	30	10.67	31	7.00
Apr. 5	7.34	July 5	a 11.93	Oct. 5	12.56		

a Nearby well pumping.

b Pumping.

7/35-27C2 (#941, p. 160; #949, p. 226). Southern Pacific Railroad. In Lower Santa Ynez Valley. Land-surface datum is 32.42 feet above sea-level datum of 1929.

Water level, in feet below land-surface datum, 1943<sup>a/</sup>  
(From float gage)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6	10.38		8.48		11.10	Sept. 22	11.04
	10.36		8.76	July 1	10.89		10.95
	10.48	Apr. 6	8.48		10.77		11.18
13	10.47		8.21		11.46	29	11.00
	10.36		8.48	7	11.21		10.87
	10.63	14	8.38		11.07		11.06
20	10.59		8.37		11.44	Oct. 6	11.06
	8.49		8.84	14	11.07		10.81
	10.77	21	8.84		11.05		11.62
27	8.51		8.82		11.15	13	11.35
	8.50		9.48	21	11.11		10.67
	9.62	28	9.43		11.02		12.07
Feb. 3	8.50		9.38		13.20	27	10.71
	8.45		9.60	28	13.20		10.59
	8.73	May 5	9.41		12.61		10.80
10	8.73		9.41		13.31	Nov. 3	10.66
	8.68		9.80	Aug. 4	12.61		10.53
	8.90	12	9.79		11.40		10.79
17	8.89		9.79		13.15	10	10.55
	8.58		10.06	11	11.44		10.49
	9.04	19	10.06		11.40		10.84
24	8.59		9.88		11.96	17	10.82
	8.37		11.37	18	11.96		10.79
	8.59	26	11.31		11.37		11.77
Mar. 3	8.44		11.31		13.06	24	10.88
	8.01		12.21	25	12.41		10.75
	8.44	June 2	12.10		11.50		13.31
10	8.01		10.39		12.83	Dec. 1	10.83
	7.96		12.42	Sept. 1	11.50		10.53
	8.04	9	10.39		11.10		10.89
17	8.01		10.21		11.50	8	10.54
	7.98		11.57	8	11.10		10.35
	8.33	16	10.45		11.08		10.68
24	8.33		10.34		12.11	22	10.36
	8.33		10.82	15	11.99		10.15
	8.74	23	10.70		11.03		10.36
31	8.67		10.55		12.00	29	10.15

7/35-36B1 (#949, p. 227). Union Sugar Co. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/35-36E3. City of Santa Barbara, Water Works Dept. well 128-A. Southern Pacific Milling Co. In Lower Santa Ynez Valley, about 3.9 miles nearly west of Lompoc, 0.14 mile east of Artesia Avenue, 50 feet south of Southern Pacific Railroad, 60 feet west of frame warehouse painted red. Measuring point beginning Apr. 6, 1943, top edge of copper washer, level with top of casing, 0.40 foot above land-surface datum and about 54 feet above mean sea level. Automatic water-stage recorder installed Apr. 6 and removed July 14.

Water level at noon, in feet below land-surface datum, 1943  
(From recorder charts)

Apr. 6	11.27	May 31	b 15.53	July 28	15.98	Oct. 13	16.03
10	11.48	June 4	b 18.26	Aug. 4	17.47	20	15.78
15	11.53	10	14.16	11	18.05	27	15.45
20	11.63	15	13.78	18	17.41	Nov. 3	15.35
25	12.05	20	14.18	25	18.04	10	15.55
30	b 15.12	25	b 16.26	Sept. 1	17.67	17	15.40
May 5	12.59	30	b 16.30	8	16.55	24	15.44
10	12.75	July 5	b 15.95	15	17.14	Dec. 1	15.34
15	13.10	10	b 16.12	22	18.50	8	15.01
20	b 15.72	14	b 16.53	29	16.46	22	14.77
25	b 15.77	21	17.81	Oct. 6	16.48	29	14.50

a Undated entries are highest and lowest levels between dates of observation.

b Nearby well pumping.

7/35-36P3 (#949, p. 227). Mrs. B. Carr. In Lower Santa Ynez Valley. No measurements made in 1943; measurements discontinued.

7/35-36Q2 (#949, p. 228). Turri Bros. In Lower Santa Ynez Valley. Land-surface datum is 68.18 feet above sea-level datum of 1929. Measurements discontinued Dec. 29.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
July 1	a 31.34	Sept. 1	b 52.03	Dec. 29	29.32
28	a 30.45	29	b 48.45		

9/24-19Q1 (#941, p. 146; #949, p. 237). U. S. Forest Service. In Cuyama Valley. Land-surface datum is about 2,783 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 25	32.03	June 1	27.07	Aug. 31	28.35	Nov. 30	29.73
Apr. 5	26.99	30	27.48	Sept. 28	28.78	Dec. 28	30.11
27	26.85	July 27	27.85	Nov. 2	29.33		

9/25-14K1 (#941, p. 146; #949, p. 237). Snedden Land & Cattle Co. In Cuyama Valley. Land-surface datum is about 2,646 feet above mean sea level. Measurements discontinued Dec. 28.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	54.74	June 30	55.20	Aug. 31	57.94	Nov. 2	60.35
27	c 54.50	July 27	56.43	Sept. 28	c 59.28	Dec. 28	61.46
June 1	54.03						

9/25-27G1 (#941, p. 146; #949, p. 238). Snedden Land & Cattle Co. In Cuyama Valley. Land-surface datum is about 2,809 feet above mean sea level. Measurements discontinued Dec. 28.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 5	c 64.15	June 30	62.40	Aug. 31	63.90	Nov. 2	66.75
27	c 62.05	July 27	c 62.93	Sept. 28	64.92	Dec. 28	67.84
June 1	c 62.11						

9/32-7N1 (#941, p. 147; #949, p. 228). Valerio Tognazzini. In Santa Maria Valley. Land-surface datum is about 422 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1 ad	50.83	Apr. 5	54.96	July 2	c 57.18	Oct. 1 ad	42.33
29	47.16	29	c 54.27	29	c 58.80	Nov. 4	41.28
Feb. 26	41.07	June 3	c 55.54	Sept. 2	c 60.75	Dec. 30	45.24
Apr. 1 d	35.83	July 1 ad	38.17	30	c 60.41		

9/32-7Q1 (#949, p. 228). A. R. Carranza. In Santa Maria Valley. No measurements made in 1943; measurements discontinued.

9/32-17G1 (#949, p. 228). E. C. Lyman. In Santa Maria Valley. Land-surface datum is about 447 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	25.51	Apr. 29	11.23	July 29	a 21.44	Nov. 4	22.60
Feb. 26	15.25	June 3	11.75	Sept. 2 ab	24.20	Dec. 30	24.10
Apr. 5	11.22	July 2	b 19.67	30	25.30		

9/32-18A1 (#949, p. 229). Maria Dutra. In Santa Maria Valley. No measurements made in 1943; measurements discontinued.

- a Pump shut down prior to measurement.
- b Nearly well pumping.
- c Pumping.
- d Measured by Santa Maria Valley Water Conservation District.

9/33-2A1 (\*941, p. 147; \*949, p. 229). Santa Maria Realty Co. In Santa Maria Valley. Land-surface datum is about 380 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 34.92	Apr. 5	24.51	July 2	c 33.42	Oct. 1	a 29.50
Jan. 29	32.51	Apr. 29	23.99	July 29	c 34.77	Nov. 4	30.45
Feb. 26	28.17	June 3	24.78	Sept. 2	c 36.60	Dec. 30	31.09
Apr. 1	a 24.75	July 1	ab 24.10				

9/34-3N3 (\*941, p. 148; \*949, p. 229). Owner's No. 3. City of Santa Maria. In Santa Maria Valley. Land-surface datum is about 279 feet above mean sea level. Measured by city of Santa Maria.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 31	153.1	Apr. 30	152.0	July 31	152.8	Oct. 31	152.4
Feb. 27	152.4	May 31	152.6	Aug. 31	152.8	Nov. 30	152.4
Mar. 31	152.0	June 30	152.8	Sept. 30	152.8	Dec. 31	150.8

10/25-30F1 (\*949, p. 238). H. S. Russell. In Cuyama Valley. Land-surface datum is about 2,311 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	51.43	Apr. 27	50.51	July 27	51.72	Nov. 30	50.40
Feb. 25	51.21	June 1	50.89	Nov. 2	51.31	Dec. 28	49.95
Apr. 5	50.67						

10/26-18F1 (\*941, p. 146; \*949, p. 238). H. S. Russell. In Cuyama Valley. Land-surface datum is about 2,081 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	54.19	Apr. 5	68.45	Nov. 30	55.30		
Feb. 25	53.62	Nov. 2	57.13	Dec. 28	54.71		

10/26-22A1 (\*941, p. 146; \*949, p. 238). H. S. Russell. In Cuyama Valley. Land-surface datum is about 2,200 feet above mean sea level.

Water level, in feet with reference to land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	+0.19	Apr. 27	d -0.53	July 27	d -15.88	Nov. 2	-3.80
Feb. 25	+31	June 1	d -10.50	Aug. 31	d -9.12	Nov. 30	-.96
Apr. 5	-.06	June 30	d -12.15	Sept. 28	d -14.98	Dec. 28	-.07

10/27-12R1 (\*941, p. 147; \*949, p. 238). H. S. Russell. In Cuyama Valley. Land-surface datum is about 2,036 feet above mean sea level.

Water level, in feet below land-surface datum, 1943							
Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	40.69	Apr. 27	d 38.78	July 27	e 45.19	Nov. 2	45.05
Feb. 25	39.96	June 1	d 38.81	Aug. 31	c 63.25	Nov. 30	42.69
Apr. 5	39.09	June 30	c 55.40	Sept. 28	c 64.30	Dec. 28	41.26

10/33-18G1 (\*949, p. 229). Owner's No. 8. La Brea Securities Co. In Santa Maria Valley. Land-surface datum is about 273 feet above mean sea level. Measured by Santa Maria Valley Water Conservation District. Water levels, in feet below land-surface datum, 1943: Jan. 1, 84.10; Apr. 1, 79.50; July 1, b/66.75; Oct. 1, 70.67.

- a Measured by Santa Maria Valley Water Conservation District.
- b Pump shut down prior to measurement.
- c Pumping.
- d Nearby well pumping.
- e Pumping recently.

10/33-19B1 (#941, p. 148; #949, p. 229). Owen T. Rice. In Santa Maria Valley. Land-surface datum is about 275 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 79.60	Apr. 5	78.49	July 2	b 89.86	Sept. 30	73.71
29	80.49	29	76.00	29	b 89.49	Oct. 1	a 73.75
Feb. 26	80.64	June 3	b 90.50	Aug.	cd 74.8	Nov. 4	74.37
Apr. 1	a 79.30	July 1	ac 72.90	Sept. 2	73.31	Dec. 30	75.96

10/33-27G1 (#949, p. 230). W. C. Adam. In Santa Maria Valley. Land-surface datum is about 338 feet above mean sea level. Measurements discontinued by Geological Survey Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 42.95	Apr. 5	29.43	July 2	b 84.49	Oct. 1	ac40.70
29	42.65	29	28.24	29	b 92.02	Nov. 4	39.98
Feb. 26	35.23	June 3	e 28.55	Sept. 2	b 77.46	Dec. 30	42.85
Apr. 1	a 30.18	July 1	ac 33.20	30	b 77.58		

10/33-27K1 (#941, p. 149; #949, p. 230). Newhall Land & Farming Co. In Santa Maria Valley. Land-surface datum is about 345 feet above mean sea level.

Water level, in feet below land-surface datum, 1943<sup>f/</sup>  
(From float gage)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	39.40	Apr. 29	27.34	July 29	29.38	Sept. 30	38.38
	32.64		26.75		32.37		38.38
Feb. 26	39.40		26.75		32.37	Nov. 4	40.25
	32.64	June 3	27.69		32.37		40.25
	27.34		27.67	Sept. 2	35.99		42.55
	32.65		27.67		35.98	Dec. 30	42.55
Apr. 5	27.34	July 2	29.38		38.38		
	26.73						

10/33-28A1 (#949, p. 230). Joe Soares. In Santa Maria Valley. Land-surface datum is about 325 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 47.22	Apr. 5	34.87	July 2	b 69.08	Sept. 30	b 71.30
29	48.20	29	33.37	29	b 99.03	Oct. 1	a 42.80
Feb. 26	41.96	June 3	b 69.97	Aug.	d 41.4	Nov. 4	43.85
Apr. 1	a 35.97	July 1	ac 35.40	Sept. 2	b 70.42	Dec. 30	46.46

10/33-28H1 (#941, p. 150; #949, p. 231). J. Soares. In Santa Maria Valley. No measurements made in 1943; measurements discontinued.

10/33-31A1. M. Fleisher & Co. In Santa Maria Valley, about 4.2 miles southeast of Santa Maria, 2.0 miles south of Stowell Road, 500 feet west of Telephone Road, 100 feet south of dwelling, beneath metal windmill tower. Measuring point, top of south side of 6-inch casing, 0.30 foot above land-surface datum and about 326 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29	133.74	July 2	c 150.82	Sept. 2	136.43	Nov. 4	c 140.08
Feb. 26	133.76	29	c 144.89	30	134.83	Dec. 30	130.27
Apr. 29	133.07						

10/34-2R1 (#949, p. 231). Gracio Apalatequi. In Santa Maria Valley. Land-surface datum is about 230 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 91.27	Apr. 5	74.95	July 1	a 69.80	Oct. 1	a 85.30
29	91.71	28	69.65	27	72.28	Nov. 2	78.38
Feb. 25	86.44	June 1	69.16	Aug. 31	b106.06	Dec. 29	80.60
Apr. 1	a 77.40	30	70.10	Sept. 28	76.94		

a Measured by Santa Maria Valley Water Conservation District.

b Pumping.

c Pump shut down prior to measurement.

d Measured by San Joaquin Power Division, Pacific Gas & Electric Co., about Aug. 1.

e Nearby well pumping.

f Undated entries are highest and lowest levels between dates of observation.

10/34-6N1 (#949, p. 231). Grisingher & Signorelli. In Santa Maria Valley. Land-surface datum is about 152 feet above mean sea level. Measured by Santa Maria Valley Water Conservation District. Water levels, in feet below land-surface datum, 1943: Jan. 1, 54.97; Apr. 1, 48.40; July 1, a 52.38; Oct. 1, 52.71.

10/34-8Q1. J. B. Lippincott's well 127-K. Sawdey & Hunt. In Santa Maria Valley, about 2.5 miles west of Santa Maria, 1.5 miles west of Blosser Road, 65 feet south of State Highway 166, 80 feet north of dwelling, beneath frame windmill tower. Drilled domestic well, diameter 6 inches, reported depth 128 feet. Water in alluvial gravel and sand. Measuring point, top of south side of casing, 1.10 feet above land-surface datum and about 175 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 29	67.74	Apr. 29	65.10	July 29	66.53	Nov. 4	a 66.70
Feb. 26	66.88	June 3	a 65.20	Sept. 2	66.30	Dec. 30	62.85
Apr. 6	a 65.22	July 2	66.27	30	65.92		

10/34-9F1. Santa Maria Valley Water Conservation District well 22. Mrs. A. E. Preisker. In Santa Maria Valley, about 1.7 miles nearly west-northwest of Santa Maria, 0.7 mile north of State Highway 166, 0.6 mile west of North Blosser Road, 20 feet west of property-line fence, in corrugated-steel pump house, in field. Measuring point, lower west edge of pump base through hole in concrete foundation, 0.30 foot above land-surface datum and about 189 feet above mean sea level. Measured by Santa Maria Valley Water Conservation District.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
July 1, 1942	77.20	Jan. 1, 1943	a 78.37	July 1, 1943	a 73.83
Oct. 1	a 80.20	Apr. 1	74.95	Oct. 1	a 73.78

10/34-14B3 (#941, p. 151; #949, p. 231). City of Santa Maria. In Santa Maria Valley. Land-surface datum is about 225 feet above mean sea level. Measured by city of Santa Maria, except as indicated.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3	103.75	Apr. 5	b 101.48	July 2	b 98.94	Sept. 12	98.50
10	103.50	11	101.25	4	98.90	19	98.33
17	103.25	18	101.25	11	98.66	30	b 98.32
24	103.08	29	100.62	18	98.83	Nov. 4	97.44
29	b 102.97	May 2	100.00	25	98.83	7	97.40
Feb. 7	102.96	9	100.06	28	b 98.75	14	97.27
14	102.87	16	99.90	Aug. 1	c 98.5	21	97.21
21	102.70	23	99.87	8	98.88	28	97.10
27	b 102.49	30	99.68	1	98.96	30	96.95
Mar. 7	102.23	June 2	b 99.62	15	98.85	Dec. 5	96.92
14	102.23	6	99.68	22	98.81	12	96.79
21	101.98	13	99.33	29	98.75	19	96.67
28	101.85	20	99.12	Sept. 2	b 98.73	26	96.46
Apr. 4	101.20	27	98.98	5	98.62	30	b 96.36

10/34-22R1 (#949, p. 232). George J. Wheat. In Santa Maria Valley. Land-surface datum is about 217 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	d 100.10	Apr. 7	98.65	July 1	99.05	Oct. 1	d 98.43
29	99.85	28	98.68	28	99.35	Nov. 3	97.03
Feb. 25	99.34	June 2	98.88	Sept. 1	99.05	Dec. 29	95.21
Apr. 1	d 98.67	July 1	d 98.93	29	98.33		

a Pump shut down prior to measurement.

b Measured by Geological Survey.

c Measured by San Joaquin Power Division, Pacific Gas & Electric Co., about Aug. 1.

d Measured by Santa Maria Valley Water Conservation District.

10/34-23H1 (#949, p. 232). Marion B. Rice. In Santa Maria Valley. Land-surface datum is about 242 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level						
Jan. 1 a	112.35	Apr. 1 a	110.65	June 2	109.77	Oct. 1 a	108.25
29	111.80	5	110.38	July 1 a	109.80	Nov. 4	107.11
Feb. 25	111.20	28	110.20	Sept. 30	108.33	Dec. 30	105.69

10/35-7F1 (#941, p. 152; #949, p. 232). M. J. Ellis. In Santa Maria Valley. Land-surface datum is about 48 feet above mean sea level.

Water level, in feet with reference to land-surface datum, 1943

Date	Water level						
Jan. 1 a	+0.87	Apr. 1 a	+1.10	June 3 c	-9.59	Sept. 30	-4.33
27	+1.15	6	+2.00	July 1 a	-10.13	Oct. 1 a	-4.30
Feb. 26	+2.05	29	-2.58	Sept. 2	-5.59	Dec. 30	+2.18

10/35-7G3 (#949, p. 233). J. Jenkins. In Santa Maria Valley. Land-surface datum is about 53 feet above mean sea level.

Water level, in feet below land-surface datum, 1943<sup>d/</sup>  
(From float gage)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	5.86	Apr. 29	13.58	July 29	10.34	Sept. 30	13.20
	4.31		10.90		20.31		7.79
	5.86		9.45		16.44		16.48
Feb. 26	5.35	June 3	16.55		11.78	Nov. 4	11.19
	4.95		15.98		19.72		4.99
	10.98		11.03	Sept. 2	14.26		13.32
Apr. 6	6.17		19.44		9.76	Dec. 30	4.99
	4.78	July 2	16.54		17.80		

10/35-9F1 (#941, p. 152; #949, p. 233). Waller-Franklin Seed Co. In Santa Maria Valley. Land-surface datum is about 88 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1 a	17.40	Apr. 6	15.54	July 2	25.67	Oct. 1 a	23.08
27	16.58	29	21.60	29	25.65	Nov. 4	19.17
Feb. 26	15.33	June 3	23.69	Sept. 2	24.25	Dec. 30	14.78
Apr. 1 a	16.00	July 1 a	25.00	30	23.71		

10/35-9N1 (#949, p. 234). Agnes King. In Santa Maria Valley. Land-surface datum is about 87 feet above mean sea level. Measurements discontinued by Geological Survey Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1 a	16.80	Apr. 5	15.10	July 2 e	51.76	Oct. 1 ab	30.97
27	15.33	29 e	48.18	29	26.59	Nov. 4 e	46.00
Feb. 26	14.83	June 3 e	49.88	Sept. 2 e	51.37	Dec. 30	14.12
Apr. 1 ab	23.70	July 1 a	27.72	30 e	51.32		

10/35-12M1 (#949, p. 234). E. and G. LeRoy. In Santa Maria Valley. Land-surface datum is about 138 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1 a	43.35	Apr. 6	38.56	July 2 e	59.62	Oct. 1 a	45.05
29	41.88	29 e	57.25	29 e	59.43	Nov. 4	41.83
Feb. 26	41.19	June 3 e	59.15	Sept. 2	45.40	Dec. 30	38.40
Apr. 1 a	40.60	July 1 ab	47.35	30 e	58.86		

a Measured by Santa Maria Valley Water Conservation District.

b Pump shut down prior to measurement.

c Nearby well pumping.

d Undated entries are highest and lowest levels between dates of observation.

e Pumping.

10/35-21B1 (\*949, p. 234). C. P. Mathison. In Santa Maria Valley. Land-surface datum is about 94 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 12.05	Apr. 6	10.28	July 2	b 50.55	Oct. 1	a 18.05
27	10.38	29	10.39	29	b 47.79	Nov. 4	12.91
Feb. 26	9.79	June 3	b 45.32	Sept. 2	b 49.00	Dec. 30	9.18
Apr. 1	a 10.80	July 1	ac 27.80	30	b 46.65		

10/35-24B1 (\*941, p. 152; \*949, p. 234). Union Sugar Co. In Santa Maria Valley. Land-surface datum is about 144 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 49.00	Apr. 6	45.53	July 2	50.31	Oct. 1	a 50.10
27	47.36	29	47.86	29	b 59.45	Nov. 4	d 49.24
Feb. 26	46.43	June 3	d 51.33	Sept. 2	d 52.72	Dec. 30	44.23
Apr. 1	a 48.25	July 1	a 50.40	30	d 52.41		

11/28-17L1 (\*949, p. 238). Seers Ranch. In Guyama Valley. Land-surface datum is about 1,600 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30	19.75	June 1	19.86	Aug. 31	20.10	Nov. 2	20.04
Feb. 25	19.98	30	19.98	Sept. 28	20.13	Dec. 28	19.76
Apr. 27	19.76	July 27	20.01				

11/34-29F1 (\*949, p. 235). A. Guerra. In Santa Maria Valley. Land-surface datum is about 159 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 27	48.55	Apr. 29	20.22	July 29	36.72	Sept. 30	38.85
Feb. 26	42.26	June 3	d 36.89	Sept. 2	d 45.18	Nov. 4	40.91
Apr. 6	19.33	July 2	29.78				

11/34-30Q1 (\*949, p. 235). Mary Bolton. In Santa Maria Valley. Land-surface datum is about 148 feet above mean sea level. Measurements discontinued by Geological Survey Nov. 4.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 51.00	Apr. 29	b 51.34	July 2	b 61.40	Sept. 30	b 66.29
Feb. 26	47.05	June 3	38.70	29	b 65.32	Oct. 1	ac 48.33
Apr. 1	a 42.92	July 1	ac 41.00	Sept. 2	b 65.19	Nov. 4	b 65.12
6	36.72						

11/35-20E1 (\*941, p. 153; \*949, p. 235). Union Sugar Co. In Santa Maria Valley. Land-surface datum is about 49 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 2.40	Apr. 6	b 93.40	July 2	8.33	Oct. 1	a 5.08
27	.27	29	b 87.85	29	b 92.72	Nov. 4	b 89.64
Feb. 26	.03	June 3	b 91.60	Sept. 2	b 93.10	Dec. 30	.01
Apr. 1	a .75	July 1	ac 35.50	30	b 93.64		

11/35-28M1 (\*949, p. 236). Union Sugar Co. In Santa Maria Valley. Land-surface datum is about 77 feet above mean sea level. Measurements discontinued by Geological Survey Dec. 30.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 15.75	Apr. 6	12.54	July 2	d 23.48	Oct. 1	a 21.75
27	12.62	29	d 19.54	29	bd 52.15	Nov. 4	16.50
Feb. 26	11.70	June 3	d 23.01	Sept. 2	, 21.45	Dec. 30	11.09
Apr. 1	a 14.25	July 1	a 20.50	30	19.44		

- a Measured by Santa Maria Valley Water Conservation District.
- b Pumping.
- c Pump shut down prior to measurement.
- d Nearby well pumping.

11/35-33F1 (\*949, p. 236). Union Sugar Co. In Santa Maria Valley. Land-surface datum is about 84 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Jan. 27, 17.60; Feb. 26, 16.72; Apr. 6, measurements discontinued.

11/35-33G1 (\*949, p. 236). H. E. Pezzoni. In Santa Maria Valley. Land-surface datum is about 91 feet above mean sea level.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1	a 20.85	June 3	c 25.69	July 29	b 34.47	Oct. 1	ad 27.01
Apr. 1	a 17.30	July 1	a 27.10	Sept. 2	26.87	Nov. 4	21.98
6	18.07	2	b 33.55	30	25.33	Dec. 30	17.63
29	b 31.09						

11/35-35A1 (\*949, p. 236). Bello Estate. In Santa Maria Valley. Land-surface datum is about 123 feet above mean sea level. Measured by Santa Maria Valley Water Conservation District. Water levels, in feet below land-surface datum, 1943: Jan. 1, 38.25; Apr. 1, 32.50; July 1, d/36.25; Oct. 1, d/37.75.

- a Measured by Santa Maria Valley Water Conservation District.
- b Pumping.
- c Nearby well pumping.
- d Pump shut down prior to measurement.

# HAWAII

By H. T. Stearns

## INTRODUCTION

The systematic investigation of the geology and ground-water resources of the Territory of Hawaii was continued in 1943 by the Geological Survey, United States Department of the Interior, in cooperation with the Division of Hydrography of the Territory, progress being made especially on the island of Hawaii. In addition, many special investigations were made for the armed forces, not only in the Territory of Hawaii but also in areas embraced in the war theaters of the central and south Pacific and south Atlantic waters. Confidential reports on ground water and rock supplies in these areas were submitted to the War Department as a result of these investigations.

The total draft of ground water in the Territory during 1943 was 202,075 million gallons (about 620,369 acre-feet, or an average of 554 million gallons a day). This was 17,612 million gallons more than in 1942, an increase accounted for by heavy pumpage on Maui and Oahu to alleviate conditions caused by drought. On Molokai there was a slight increase. On the islands other than these three the pumpage was less than in 1942.

Water levels in most wells on the islands showed a net decline in 1943. The average rainfall for the Territory was 72.37 inches, which is 19.69 inches below the average for 1942 and 13.62 inches below normal.

### RECORDS OF ARTESIAN HEAD, WATER LEVEL, AND PUMPAGE

The tables in this report set forth data on ground-water conditions in the Territory in 1943, such as artesian head, water level, and the chloride content of the waters. In the section on Oahu is a table listing, by name and number, the artesian areas on that island and giving the time of high and low artesian heads in each; in the records that follow, these areas are referred to by the numbers shown in this table. At the end of the report is a table showing, by pumping plants, the ground-water draft in the Territory during the year.

In the tables of well records, the measurements of artesian head or water level are given, in feet, with reference both to mean sea level and to land-surface datum. They are listed in two columns, designated A and B--those in A being referred to mean sea level and those in B to land-surface datum. The symbol + in column B indicates that the artesian head or water level is above land-surface datum; no symbol indicates below land-surface datum. In some of the wells the measurement given is the water level; in others it is the height to which the water would rise in a casing or tube as indicated by the shut-in pressure.

#### ISLAND OF OAHU

During 1943 the Geological Survey made 283 monthly measurements of artesian head and 347 determinations of chloride on 134 wells on the island of Oahu. The Board of Water Supply, City and County of Honolulu, made 118 measurements of artesian head on 102 wells, 16 of which were measured more than once. Automatic water-stage recorders were maintained by the Geological Survey throughout the year on 2 wells and by the Board of Water Supply on 11 wells.

The prolonged drought that began in 1940 was broken in 1942 by heavy rains but began anew in 1943. The total pumpage for the island was 130,847 million gallons, or 9,736 million gallons more than in 1942. All 12 artesian areas (see table on p. 186) showed losses in underground storage. The average rainfall on Oahu for the year was 65.62 inches, which is 15.46 inches less than in 1942 and 10.98 inches below normal.

The water level in area 4 declined 1.33 feet below the previous all time low of 1926 as a result of the drought and increased pumpage.

Red Hill and Barbers Point shafts, which are owned by the United States Navy, were completed and put into use during the year. The Halawa shaft, which is owned by the Honolulu Board of Water Supply, is still under construction.

The location of all wells is shown on the geologic map of Oahu in Hawaii Division of Hydrography Bulletin 2.

Time of high and low heads in artesian areas and net loss in static head, in feet, as shown by typical wells on Oahu, 1943

(\*777, p. 47; 817, p. 35; 840, p. 58; 845, p. 55; 886, p. 81; 911, p. 138; 941, p. 170; 949, p. 241).

Area	Name	Well	High	Low	Net loss
1	St. Louis Heights	2	January	November and December	4.59
2	Makiki-Pacific Heights	83	February and March	December	2.98
3	Kapalama	132	February and March	November and December	2.71
4	Moanalua	144	January, February, and March	December	2.66
5	Wilhelmina Rise	1A	January and February	June and July	.08
6	Pearl Harbor	201	January	November and December	3.62
		244	January	November	4.59
		266	January	November	6.53
7	Waialua	326	January and March	August and October	.62
8	Kahuku	356	January	August and September	1.36
		396	January	November	2.26
9	Kahana	405	February and March	November and December	2.09
10	Kaaawa	406	March	November and December	1.36
11	Gilbert	a T5	January	October	.73
12	Mokuleia	286	January	June	.50
		308	January and September	February and April	.64

Schofield Barracks shaft 4 (\*840, p. 59; \*845, p. 56; 886, p. 82; 911, p. 138; 941, p. 171; 949, p. 241). Measuring point is 291.29 feet above mean sea level or 558.71 feet below land-surface datum.

Water level, in feet, 1943  
(From recorder charts)

Date	Water level		Date	Water level		Date	Water level	
	A	B		A	B		A	B
Jan. 2	275.12	574.88	May 1	277.00	573.00	Sept. 4	(b)	(b)
9	(b)	(b)	8	277.22	572.78	11	278.81	571.19
16	(b)	(b)	15	277.35	572.65	18	278.82	571.18
23	275.22	574.78	22	277.49	572.51	25	(b)	(b)
30	275.32	574.68	29	(b)	(b)	Oct. 2	(b)	(b)
Feb. 6	275.25	574.75	June 5	(b)	(b)	9	(b)	(b)
13	275.50	574.50	12	277.98	572.02	16	(b)	(b)
20	275.62	574.38	19	277.88	572.12	23	(b)	(b)
27	275.81	574.19	26	(b)	(b)	30	(b)	(b)
Mar. 6	275.88	574.12	July 3	(b)	(b)	Nov. 6	(b)	(b)
13	276.07	573.93	10	278.17	571.83	13	278.15	571.85
20	276.16	573.84	17	(b)	(b)	20	278.16	571.84
27	276.31	573.69	24	278.47	571.53	27	278.09	571.91
Apr. 3	276.43	573.57	31	(b)	(b)	Dec. 4	(b)	(b)
10	276.70	573.30	Aug. 7	(b)	(b)	11	(b)	(b)
17	276.70	573.30	14	(b)	(b)	18	277.83	572.17
24	276.83	573.17	21	(b)	(b)	25	(b)	(b)
			28	278.80	571.20			

a Nonartesian, but indicative of adjacent artesian conditions.  
b Pumps running.

Artesian head, in feet, in 5 wells in the Honolulu district, 1943

(\*817, p. 36; 840, p. 61; 845, p. 56; 886, p. 82; 911, p. 139; 941, p. 171; 949, p. 242).

(Mean daily measurements furnished by Board of Water Supply, City and County of Honolulu, from recorder charts)

Area	1		2		3		4		5	
Well	2		83		132		144		1A	
Altitude(ft.)	87		27		43		26		18	
	A	B	A	B	A	B	A	B	A	B
Jan.	6 28.21	8.79	29.45	+2.45	28.72	14.28	25.68	0.32	....	....
	13 28.40	8.60	29.78	+2.78	29.02	13.98	26.19	+1.19	....	....
	20 28.17	8.83	29.97	+2.97	29.22	13.78	26.52	+5.52	8.97	9.03
	27 28.01	8.99	30.31	+3.31	29.57	13.43	26.83	+4.83	....	....
Feb.	3 27.88	9.12	30.42	+3.42	29.73	13.27	26.86	+4.86	8.90	9.10
	10 28.05	8.95	30.56	+3.56	29.87	13.13	26.82	+4.82	....	....
	17 27.90	9.10	30.48	+3.48	29.81	13.19	26.73	+4.73	....	....
	24 27.81	9.19	30.51	+3.51	29.83	13.17	26.64	+4.64	....	....
Mar.	3 27.76	9.24	30.49	+3.49	29.89	13.11	26.69	+4.69	8.81	9.19
	10 27.79	9.21	30.58	+3.58	29.87	13.13	26.70	+4.70	....	....
	17 27.69	9.31	30.54	+3.54	29.89	13.11	26.81	+4.81	8.89	9.11
	24 27.77	9.23	30.54	+3.54	29.87	13.13	26.68	+4.68	....	....
	31 27.66	9.34	30.50	+3.50	29.74	13.26	26.57	+4.57	8.87	9.13
Apr.	7 27.62	9.48	30.34	+3.34	29.61	13.39	26.54	+4.54	8.85	9.15
	14 27.35	9.65	....	....	29.53	13.47	....	....	8.82	9.18
	21 26.97	10.03	30.11	+3.11	29.41	13.59	26.21	+2.21	8.78	9.22
	28 26.74	10.26	29.96	+2.96	29.26	13.74	26.04	+2.04	8.71	9.29
May	5 26.55	10.45	29.74	+2.74	29.04	13.96	25.70	....	8.71	9.29
	12 .....	....	29.59	+2.59	28.92	14.08	25.64	....	8.74	9.26
	19 .....	....	29.53	+2.53	28.94	14.06	25.91	....	....	....
	26 26.97	10.03	29.48	+2.48	28.97	14.03	25.92	....	8.76	9.24
June	2 27.01	9.99	29.46	+2.46	28.92	14.08	25.85	....	....	....
	9 26.62	10.38	29.32	+2.32	28.71	14.29	25.66	....	....	....
	16 26.28	10.72	29.19	+2.19	28.57	14.43	25.52	....	8.68	9.32
	23 26.02	10.98	28.95	+1.95	28.31	14.69	25.42	....	....	....
	30 25.72	11.28	28.74	+1.74	28.05	14.95	....	....	8.56	9.44
July	7 25.76	11.24	28.60	+1.60	27.93	15.07	25.09	....	8.61	9.39
	14 25.42	11.58	28.37	+1.37	27.68	15.32	24.99	....	....	....
	21 25.15	11.85	....	....	27.42	15.58	....	....	....	....
	28 24.93	12.07	27.85	+4.85	27.12	15.88	24.71	....	8.63	9.37
Aug.	4 24.92	12.08	27.66	+4.66	26.85	16.04	24.58	....	8.66	9.34
	11 24.74	12.26	27.48	+4.48	26.65	16.15	....	....	....	....
	18 24.56	12.44	27.34	+4.34	26.65	16.35	....	....	8.81	9.19
	25 24.60	12.40	27.18	+4.18	26.57	16.43	....	....	....	....
Sept.	1 24.72	12.28	....	....	26.56	16.44	24.05	....	1.95	8.83
	8 24.50	12.50	27.00	....	26.41	16.59	23.99	....	2.01	8.83
	15 24.26	12.74	....	....	26.35	16.65	23.90	....	2.10	8.86
	22 24.26	12.74	....	....	26.42	16.58	23.83	....	2.17	....
	29 24.16	12.84	26.80	....	26.37	16.63	23.78	....	2.22	8.81
Oct.	6 24.20	12.80	26.76	....	....	....	23.67	....	2.33	8.83
	13 24.10	12.90	26.74	....	26.25	16.75	23.55	....	2.45	8.82
	20 23.91	13.09	26.68	....	....	....	23.48	....	2.52	....
	27 23.76	13.24	26.61	....	....	....	23.41	....	2.59	8.76
Nov.	3 23.68	13.32	26.56	....	....	....	....	....	....	....
	10 23.58	13.42	26.50	....	26.01	16.99	....	....	8.73	9.27
	17 23.44	13.56	26.43	....	25.94	17.06	....	....	....	....
	24 23.27	13.73	26.35	....	25.90	17.10	23.05	....	2.95	8.71
Dec.	1 23.25	13.75	26.29	....	25.87	17.13	22.98	....	3.02	8.72
	8 23.45	13.55	26.25	....	25.85	17.15	22.95	....	3.05	8.82
	15 23.83	13.17	26.16	....	25.74	17.26	22.89	....	3.11	8.80
	22 23.86	13.14	....	....	25.68	17.32	22.80	....	3.20	8.79
	29 23.95	13.05	26.10	....	25.72	17.28	22.93	....	3.07	8.79
	31 23.87	13.13	26.12	....	....	....	22.93	....	3.07	8.78

Artesian head, in feet, and chloride, in parts per million, in typical wells on Oahu, 1943

Well 1B (area 5) (\*777, p. 50; \*817, p. 37; 840, p. 56, 61; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172; 949, p. 243). Bishop Estate. On north side of Waialae Golf Links, Kaimuki. Measuring point is 8.22 feet above mean sea level, or 10 feet below land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 27	8.94	9.28	147	July 27	8.57	9.65	204
Feb. 24	8.85	9.37	159	Aug. 24	8.78	9.44	228
Mar. 27	8.90	9.32	187	Sept. 25	8.84	9.38	240
Apr. 24	8.73	9.49	196	Oct. 26	8.72	9.50	233
May 27	8.66	9.56	166	Nov. 28	8.77	9.45	220
June 27	8.62	9.60	171	Dec. 21	8.74	9.48	173

Well 9 (area 1) (\*777, p. 49; 817, p. 37; 840, p. 56, 62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172; 949, p. 243). J. J. Gouveia. Kapahulu Road, Honolulu. Measuring point is 18.08 feet above mean sea level or 2 feet above land-surface datum.

Jan. 27	27.62	+11.54	49	July 27	24.56	+8.48	55
Feb. 22	27.58	+11.50	51	Aug. 24	24.14	+8.06	57
Mar. 26	27.70	+11.62	50	Sept. 24	23.70	+7.62	57
Apr. 24	26.85	+10.77	54	Oct. 29	23.42	+7.34	56
May 27	26.33	+10.25	52	Nov. 23	23.21	+7.13	56
June 25	25.56	+9.48	54	Dec. 21	26.61	+7.53	57

Well 81 (area 2) (\*777, p. 49; 817, p. 37; 840, p. 56, 62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172; 949, p. 243). A. Young. On Young Street, Honolulu. Measuring point is 18.04 feet above mean sea level or level with land-surface datum.

Jan. 27	30.07	+12.03	36	July 27	27.81	+9.77	40
Feb. 22	30.57	+12.53	39	Aug. 24	27.04	+9.00	41
Mar. 26	29.25	+11.21	38	Sept. 24	26.65	+8.61	40
Apr. 24	29.85	+11.81	39	Oct. 26	26.56	+8.52	40
May 27	29.23	+11.19	38	Nov. 24	26.26	+8.22	41
June 25	28.70	+10.66	40	Dec. 21	25.96	+7.92	42

Well 119 (area 3) (\*777, p. 49; \*817, p. 37; 840, p. 56, 62; 845, p. 57; 886, p. 83; 911, p. 139; 941, p. 172; 949, p. 243). Honolulu Gas Co. In Honolulu. Measuring point is 4.22 feet above mean sea level or level with land-surface datum.

Jan. 25	26.66	+22.44	332	Aug. 6	24.95	+20.73	409
Mar. 1	29.45	+25.23	334	24	24.20	+19.98	700
Apr. 2	28.05	+23.83	348	Sept. 24	.....	.....	397
24	28.74	+24.52	516	28	24.97	+20.75	880
May 14	28.38	+24.16	...	Oct. 26	24.46	+20.24	396
27	.....	.....	514	Nov. 23	24.06	+19.84	405
June 30	27.98	+23.76	420	Dec. 21	23.96	+19.74	405

Well 153 (area 4) (\*777, p. 50; 817, p. 37; 840, p. 56, 62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173; 949, p. 243). S. Damon Estate. Moanalua Gardens, Honolulu. Measuring point is 22.38 feet above mean sea level or 2 feet above land-surface datum.

Jan. 25	26.69	+6.31	51	Aug. 2	24.40	+4.02	58
Feb. 22	26.67	+6.29	56	24	23.98	+3.60	62
Mar. 23	26.07	+5.69	53	Sept. 24	23.57	+3.19	60
Apr. 24	25.89	+5.51	54	Oct. 26	23.23	+2.85	62
May 24	25.74	+5.36	56	Nov. 24	22.91	+2.53	60
June 29	25.08	+4.70	56	Dec. 21	22.73	+2.35	..

Artesian head, in feet, and chloride, in parts per million, in typical wells on Oahu, 1943

Well 187B (area 6) (\*817, p. 37; 840, p. 56, 62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173; 949, p. 245). United States Navy. Near Aiea railroad station. Measuring point is 12.93 feet above mean sea level or 3 feet above land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 25	.....	.....	110	Aug. 20	19.66	+9.73	...
Feb. 24	.....	.....	123	24	.....	.....	98
Mar. 23	.....	.....	129	Sept. 17	19.36	+9.43	...
31	21.46	+11.53	...	24	.....	.....	121
Apr. 21	.....	.....	127	Oct. 26	18.76	+8.83	138
May 24	22.41	+12.48	91	Nov. 19	18.26	+8.33	...
June 24	20.76	+10.83	99	25	.....	.....	120
July 23	29.36	+10.43	...	Dec. 21	.....	.....	144
26	.....	.....	103				

Well 190 (area 6) (\*777, p. 51; \*817, p. 37; 840, p. 57, 62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173; 949, p. 243). C. B. Cooper. Half a mile west of Aiea. Measuring point is 19.73 feet above mean sea level or 3 feet below land-surface datum.

Jan. 25	23.31	+0.58	50	July 30	20.41	2.32	56
Feb. 23	22.56	.17	57	Aug. 24	20.08	2.65	59
Mar. 23	22.23	.50	55	Sept. 24	19.39	3.34	60
Apr. 21	21.23	1.50	59	Oct. 26	19.13	3.60	66
May 24	22.34	.39	54	Nov. 23	18.52	4.21	62
June 24	20.83	1.90	53	Dec. 21	18.16	4.57	62

Well 193 (area 6) (\*777, p. 51; 817, p. 38; 840, p. 57, 62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173; 949, p. 244). L. L. McCandless Estate. In Waimalu Valley, 1 mile northwest of Aiea. Measuring point is 18.05 feet above mean sea level or 5 feet above land-surface datum.

Jan. 25	22.65	+9.60	137	July 30	19.61	+6.56	178
Feb. 23	22.31	+9.26	140	Aug. 24	19.14	+6.09	189
Mar. 23	21.75	+8.70	154	Sept. 24	18.54	+5.49	185
Apr. 21	20.86	+7.81	157	Oct. 26	18.07	+5.02	167
May 24	21.89	+8.84	154	Nov. 23	17.74	+4.69	172
June 24	20.51	+7.46	166	Dec. 21	17.45	+4.40	180

Well 201 (area 6) (\*777, p. 52; 817, p. 38; 840, p. 57, 62; 845, p. 58; 886, p. 83; 911, p. 140; 941, p. 173; 949, p. 244). Bishop Estate, Pearl City. Measuring point is 13.17 feet above mean sea level or 4 feet above land-surface datum.

Jan. 25	21.36	+12.19	648	July 30	17.97	+8.80	625
Feb. 24	20.67	+11.50	659	Aug. 24	18.12	+8.95	618
Mar. 23	20.52	+11.35	682	Sept. 24	17.60	+8.43	475
Apr. 21	19.79	+10.62	617	Oct. 26	17.19	+8.02	505
May 24	20.19	+11.02	633	Nov. 24	16.82	+7.65	505
June 25	19.25	+10.08	668	Dec. 21	16.77	+7.60	480

Well 244 (area 6) (\*777, p. 52; 817, p. 38; 840, p. 57, 62; 845, p. 58; 886, p. 84; 911, p. 140; 941, p. 173; 949, p. 244). Bishop Estate, Waipahu. Measuring point is 12.47 feet above mean sea level or 2 feet above land-surface datum.

Jan. 25	24.11	+13.64	120	July 30	19.78	+9.31	132
Feb. 24	22.68	+12.21	118	Aug. 24	19.09	+8.62	127
Mar. 23	22.57	+12.10	130	Sept. 24	18.49	+8.02	137
Apr. 21	21.19	+10.72	122	Oct. 26	18.60	+8.13	135
May 24	22.04	+11.57	121	Nov. 23	18.00	+7.53	131
June 25	20.55	+10.08	123	Dec. 21	18.40	+7.93	139

Artesian head, in feet, and chloride, in parts per million, in typical wells on Oahu, 1943

Well 266 (area 6) (\*777, p. 52; 817, p. 38; 840, p. 57, 62; 845, p. 59; 886, p. 84; 911, p. 140; 941, p. 173; 949, p. 244). Honouliuli Ranch. 1.75 miles northeast of Ewa. Measuring point is 15.16 feet above mean sea level or 2.5 feet above land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 25	24.29	+11.63	186	July 30	17.82	+5.16	208
Feb. 24	21.23	+8.57	191	Aug. 24	16.78	+4.12	220
Mar. 23	20.96	+8.30	197	Sept. 24	16.35	+3.69	220
Apr. 21	20.56	+7.90	200	Oct. 26	16.40	+3.74	216
May 24	20.35	+7.69	196	Nov. 23	16.18	+3.52	220
June 26	18.37	+5.71	205	Dec. 21	16.38	+3.72	233

Well 286 (area 12) (\*777, p. 54; 817, p. 38; 840, p. 57, 63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174; 949, p. 244). Waiialua Agricultural Co., Mokuiaia. Measuring point is 12.04 feet above mean sea level or 0.5 foot above land-surface datum.

Jan. 26	18.14	+6.60	128	July 29	17.72	+6.18	114
Feb. 23	17.89	+6.35	132	Aug. 25	17.44	+5.90	126
Mar. 24	17.99	+6.45	140	Sept. 23	17.54	+6.00	133
Apr. 22	17.54	+6.00	143	Oct. 25	17.55	+6.01	135
May 25	17.72	+6.18	122	Nov. 27	17.60	+6.06	133
June 28	17.37	+5.83	123	Dec. 22	17.64	+6.10	147

Well 308 (area 12) (\*777, p. 54; 817, p. 38; 840, p. 57, 63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174; 949, p. 244). J. F. Mendonca. 1.5 miles west of Waiialua Mill. Measuring point is 8.46 feet above mean sea level or level with land-surface datum.

Jan. 26	19.20	+10.74	93	July 29	19.07	+10.61	112
Feb. 23	18.60	+10.14	101	Aug. 25	18.73	+10.27	127
Mar. 24	18.98	+10.62	100	Sept. 23	19.13	+10.67	126
Apr. 22	18.58	+10.12	103	Oct. 25	18.84	+10.38	118
May 25	18.76	+10.30	100	Nov. 27	18.99	+10.53	115
June 28	18.64	+10.18	104	Dec. 22	18.94	+10.48	118

Well 326 (area 7) (\*777, p. 52; 817, p. 39; 840, p. 58, 63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174; 949, p. 244). Waiialua Agricultural Co. About half a mile south of Waiialua. Measuring point is 4.69 feet above mean sea level or 1.5 feet below land-surface datum.

Jan. 26	11.50	+5.51	66	July 29	11.17	+4.98	74
Feb. 23	11.31	+5.12	67	Aug. 25	10.99	+4.80	77
Mar. 24	11.54	+5.35	66	Sept. 23	11.04	+4.85	76
Apr. 22	11.19	+5.00	69	Oct. 25	10.99	+4.80	77
May 25	11.26	+5.07	69	Nov. 27	11.19	+5.00	78
June 28	11.07	+4.88	71	Dec. 22	11.04	+4.85	78

Well 337 (area 8) (\*777, p. 53; 817, p. 39; 840, p. 58, 63; 845, p. 59; 886, p. 84; 911, p. 141; 941, p. 174; 949, p. 245). Waiiale Training School for Boys. Measuring point is 20.45 feet above mean sea level or 1 foot below land-surface datum.

Jan. 26	13.98	7.47	128	July 29	14.20	7.25	132
Feb. 23	13.94	7.51	138	Aug. 25	14.37	7.08	147
Mar. 24	14.20	7.25	139	Sept. 23	14.22	7.23	147
Apr. 22	13.82	7.63	130	Oct. 25	14.29	7.16	140
May 25	13.99	7.46	137	Nov. 27	14.44	7.01	135
June 28	14.45	7.00	132	Dec. 22	14.24	7.21	153

Artesian head, in feet, and chloride, in parts per million, in typical wells on Oahu, 1943

Well 356 (area 8) (\*777, p. 53; 817, p. 39; 840, p. 58, 63; 845, p. 59; 886, p. 85; 911, p. 141; 941, p. 174; 949, p. 245). Kahuku Plantation Co. At sugar mill in Kahuku. Measuring point is 9.83 feet above mean sea level or 1 foot above land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 26	15.14	+6.31	131	July 29	12.84	+4.01	143
Feb. 23	14.36	+5.53	136	Aug. 25	11.15	+2.32	206
Mar. 24	14.46	+5.63	144	Sept. 23	11.03	+2.20	211
Apr. 22	12.89	+4.06	143	Oct. 25	11.87	+3.04	167
May 25	13.83	+5.00	141	Nov. 27	11.53	+2.70	175
June 28	12.15	+3.32	135	Dec. 22	13.83	+5.00	168

Well 396 (area 8) (\*777, p. 53; \*817, p. 39; 840, p. 58, 63; 845, p. 59; 886, p. 85; 911, p. 141; 941, p. 174; 949, p. 245). Kahuku Plantation Co. In Haunua. Measuring point is 16.36 feet above mean sea level or 6 feet above land-surface datum.

Jan. 26	21.94	+11.58	46	July 29	19.26	+8.80	51
Feb. 23	21.82	+11.16	45	Aug. 25	19.81	+9.45	56
Mar. 24	21.59	+11.23	47	Sept. 23	19.57	+9.01	58
Apr. 22	21.26	+10.89	55	Oct. 25	19.52	+9.16	61
May 25	20.86	+10.50	49	Nov. 27	19.08	+8.72	58
June 28	20.18	+9.82	47	Dec. 22	19.72	+9.36	60

Well 405 (area 9) (817, p. 39; 840, p. 58, 63; 845, p. 59; 886, p. 85; 911, p. 141; \*941, p. 174; 949, p. 245). M. E. Foster Estate. In Kahana. Measuring point is 5.76 feet above mean sea level or level with land-surface datum.

Jan. 26	19.40	+13.64	39	July 29	18.84	+13.08	40
Feb. 23	19.79	+14.03	42	Aug. 25	18.87	+13.11	47
Mar. 24	19.78	+14.02	41	Sept. 23	18.28	+12.52	47
Apr. 22	19.43	+13.67	44	Oct. 25	17.80	+12.04	47
May 25	19.41	+13.65	44	Nov. 27	17.44	+11.68	46
June 28	19.04	+13.28	47	Dec. 22	17.49	+11.73	46

Well 406 (area 10) (\*777, p. 53; 817, p. 39; 840, p. 58, 63; 845, p. 59; \*886, p. 85; 911, p. 141; 941, p. 175; 949, p. 245). F. M. Swansy. In Kaaawa Valley. Measuring point is 10.27 feet above mean sea level or level with land-surface datum.

Jan. 26	17.27	+7.00	206	July 29	17.02	+6.75	198
Feb. 23	17.45	+7.18	191	Aug. 25	16.81	+6.54	198
Mar. 24	17.61	+7.34	179	Sept. 23	16.47	+6.20	203
Apr. 22	17.45	+7.18	176	Oct. 25	16.15	+5.88	198
May 25	17.45	+7.18	177	Nov. 27	15.67	+5.40	200
June 28	17.19	+6.92	176	Dec. 22	15.53	+5.26	213

Water levels, in feet, and chloride, in parts per million, in test borings in Oahu, 1943

Test boring Oahu T1 (tributary to area 12) (\*845, p. 60; 886, p. 85; 911, p. 141; 941, p. 175; 949, p. 245). Waialua Agricultural Co. In Kaukonahua Gulch, 4 miles south of Waialua. Measuring point January to September (top of pipe) was 274.86 feet above mean sea level or 1.25 feet above land-surface datum; in October, in order to remove plug put in by mistake, 0.25 foot was cut from top of pipe; measuring point beginning Nov. 1 is 274.61 feet above mean sea level or 1.00 foot above land-surface datum.

Water levels, in feet, and chloride, in parts per million, in test borings in Oahu, 1943

Date	Water level		Chloride	Date	Water level		Chloride
	A	B			A	B	
Jan. 4	17.16	256.45	52	July 1	17.75	255.86	42
Feb. 1	17.00	256.61	42	Aug. 2	17.00	256.61	52
28	16.62	256.99	52	Sept. 1	17.62	255.99	42
Apr. 1	16.83	256.78	42	Nov. 1	17.10	256.51	42
May 1	18.41	255.20	52	Dec. 1	16.74	256.87	31
June 1	16.96	256.65	73				

Test boring Oahu T2 (tributary to area 7) (\*845, p. 60; 886, p. 85; 911, p. 142; 941, p. 175; 949, p. 245). Waiialua Agricultural Co. Near Anahulu Canyon, 3.5 miles east of Haleiwa. Measuring point is 342.88 feet above mean sea level or 1 foot above land-surface datum.

Jan. 2	6.14	335.74	156	July 1	5.86	336.02	208
Feb. 1	6.67	335.21	145	Aug. 2	6.66	335.22	177
28	6.81	335.07	104	Sept. 1	6.31	335.57	187
Apr. 1	14.08	327.80	94	Oct. 2	6.91	334.97	187
May 1	7.91	333.97	187	Nov. 1	6.91	334.97	135
June 1	5.91	335.97	156	Dec. 1	5.49	336.39	135

Test boring Oahu T5 (tributary to area 11) (\*886, p. 84; 911, p. 142; 941, p. 175; 949, p. 246). Suburban Water Works, Honolulu. 5 miles west of Ewa on main highway. Measuring point is 80.13 feet above mean sea level or 1 foot above land-surface datum.

Jan. 28	5.20	73.93	242	Aug. 2	4.93	74.20	479
Feb. 25	5.15	73.98	382	26	4.64	74.49	549
Mar. 25	5.10	74.03	418	Sept. 25	4.58	74.55	523
Apr. 26	4.59	74.54	420	Oct. 27	4.40	74.73	530
May 26	4.73	74.40	306	Nov. 26	4.55	74.58	565
June 25	4.77	74.36	404	Dec. 23	4.53	74.60	540

Test boring Oahu T15 (\*911, p. 142; 941, p. 175; 949, p. 246). Suburban Water Works, Honolulu. 1.8 miles above mouth of Nanakuli Gulch. Measuring point is 479.64 feet above mean sea level or 1 foot above land-surface datum.

Jan. 28	2.72	475.92	95	Aug. 2	2.37	476.27	102
Feb. 25	3.14	475.50	96	26	2.34	476.30	107
Mar. 25	2.92	475.72	94	Sept. 25	2.46	476.18	104
Apr. 26	2.79	475.85	99	Oct. 27	2.35	476.29	102
May 26	2.67	475.97	96	Nov. 26	2.28	476.36	100
June 25	2.59	476.05	100	Dec. 23	2.26	476.38	105

Test boring Oahu T20 (tributary to area 6) (\*949, p. 246). United States Navy. 2 miles northwest of Ewa on main highway to Waianae. Measuring point is 139.5 feet above mean sea level or level with land-surface datum.

Jan. 28	19.28	120.22	242	Aug. 2	18.00	121.50	260
Feb. 25	19.16	120.34	244	26	17.48	122.02	267
Mar. 25	18.96	120.54	254	Sept. 25	17.30	122.20	280
Apr. 26	18.46	121.04	270	Oct. 27	17.33	122.17	258
May 26	18.61	120.89	262	Nov. 26	17.32	122.18	258
June 25	18.05	121.45	250	Dec. 23	17.57	121.93	285

a A second measurement verified this unusually high head.

## ISLAND OF MAUI

The water levels in the wells owned by the Hawaiian Commercial & Sugar Co. and the Maui Agricultural Co. on the windward side of the island continued to decline in 1943. Except for those in pump 4 of the Hawaiian Commercial & Sugar Co. and pump 12 of the Maui Agricultural Co., which rose slightly, they showed a net decline for the year of 0.06 to 0.43 foot. Pumps 1, 5, and 6 of the Maui Agricultural Co. showed no change. Water levels in the six wells of the Pioneer Mill Co. on the leeward side of West Maui showed a net decline for the year of 0.20 to 1.88 feet. The chloride content in all wells on Maui in 1943 was slightly higher than in 1942.

The East Maui Irrigation Co. ditch deliveries to the Isthmus amounted to 65,287.60 million gallons in 1943, an increase of 2,762.64 million gallons over their deliveries in 1942. The Hawaiian Commercial & Sugar Co. started three of its pumps in January and the others in February. The Maui Agricultural Co.'s pumping season began in January. All the Pioneer Mill Co.'s pumps except one were started in January; one was started in February. The pumping season for the three plantations closed in December.

The data in the following table were furnished by R. E. Hughes, of the Hawaiian Commercial & Sugar Co.; R. Bradley, of the Maui Agricultural Co., and C. K. Brown, of the Pioneer Mill Co.

Chloride, in parts per million, and water levels and net gain in static level, in feet above sea level, on Maui, 1943

(911, p. 143; 941, p. 176; 949, p. 247)

Location	Geol. Survey well No.	Chloride	Water level	
			Dec. 31	Gain or loss
Hawaiian Commercial & Sugar Co.				
1 (Kihei)	14	...	4.11	-0.39
2	25	411	4.92	-.43
3	22	345	3.86	-.39
4	24	465	3.06	+1.17
5	19	429	4.21	-.14
6	18	384	4.83	-.33
7	16	285	5.17	-.33
8	17	441	4.94	-.14
3 (Kihei)	15	405	6.40	-.27
Maui Agricultural Co.				
Lower Paia (pumps 1, 5, and 6)	30	499	4.25	.00
Kaheka (pumps 3 and 4)	27	239	5.17	-.25
Paia School (pump 7)	28	343	4.08	-.06
Mill (pumps 8 and 13)	29	364	4.50	-.40
Kuuu (pump 12)	31	249	4.33	+1.10
Pioneer Mill Co.				
Kaanapali	3	645	2.07	-.23
Kahoma	5	351	2.52	-.38
Lahaina	9	871	2.50	-.20
Mill	7	939	3.19	-.30
Olowalu	10	484	3.20	-.40
Ukumehame	12	484	4.27	-1.88

Water levels, in feet, and chloride, in parts per million,  
in test borings in Maui, 1943

(Measurements furnished by Wailuku Sugar Co.)

Test boring Maui T102 (Iao Valley) (\*911, p. 144; 941, p. 176; 949, p. 247). Geological Survey, U. S. Dept. of Interior. In Iao Valley, 1 mile west of Wailuku. Measuring point is 453.90 feet above mean sea level or level with land-surface datum.

Date	Water level		Chloride	Date	Water level		Chloride
	A	B			A	B	
Jan. 19	35.13	418.77	18	July 16	33.57	420.33	22
Feb. 17	31.93	421.97	19	Aug. 17	33.80	420.10	19
Mar. 16	33.75	420.15	18	Sept. 15	34.23	419.67	20
Apr. 16	34.08	419.82	17	Oct. 15	34.06	419.84	20
May 12	34.45	419.45	21	Nov. 24	34.11	419.79	22
June 15	34.24	419.66	18	Dec. 16	34.18	419.72	19

Test boring Maui T110 (Puu Hele) (\*911, p. 143; 941, p. 177; 949, p. 247). Wailuku Sugar Co. 2 miles north of Maalaea. Measuring point is 312.70 feet above mean sea level or level with land-surface datum.

Jan. 19	5.86	306.84	121	July 16	8.92	303.78	191
Feb. 17	8.61	304.09	128	Aug. 17	8.94	303.76	241
Mar. 16	8.86	303.84	137	Sept. 15	9.04	303.66	235
Apr. 16	9.02	303.68	148	Oct. 15	9.03	303.67	249
May 12	8.90	303.80	158	Nov. 24	9.04	303.66	274
June 15	8.78	303.92	175	Dec. 16	9.23	303.47	278

#### ISLAND OF MOLOKAI

The water level in test boring T1 showed a slight net rise in 1943 above its stages during the period June to December 1942. The monthly stages are the highest yet recorded for this hole. The maximum of 6.36 feet occurred in March and again in October. The chloride content was higher during the last 4 months of the year than at any previous time.

The water level in the Connant well showed a net decline from its stages in 1942. The highest measurement during the year was 1.08 feet on May 15. In the Kamalo well the water level varied only slightly from its stages of 1942, ranging from 1.75 to 1.92 feet. Ualapue well showed little change during 11 months of the year, but its December water level of 3.67 feet is the lowest yet recorded for this well.

The United States Army in 1943 installed a pumping plant on a dug well at Kamakana, 4 miles east of Kaunakakai. It was pumped during the last 3 months of the year.

Test boring Molokai T1 (\*845, p. 62; 886, p. 87; 911, p. 144; 941, p. 177; 949, p. 248). Geological Survey, U. S. Dept. of Interior. Three-quarters of a mile east of airport. Measuring point is 397.94 feet above mean sea level or 0.5 foot above land-surface datum.

Water level, in feet, and chloride, in parts per million, 1943  
(Measurements made by Solomon Hanakaewa, Hawaiian Homes Commission)

Date	Water level		Chloride	Date	Water level		Chloride
	A	B			A	B	
Jan. 15	6.11	391.33	532	July 15	6.27	391.17	577
Feb. 15	6.27	391.17	553	Aug. 15	6.23	391.21	625
Mar. 15	6.36	391.08	564	Sept. 15	6.27	391.17	625
Apr. 15	6.19	391.25	569	Oct. 26	6.36	391.08	630
May 15	6.27	391.17	572	Nov. 15	6.27	391.17	680
June 15	6.32	391.12	566	Dec.	6.27	391.17	650

Connant well (\*845, p. 63; 886, p. 87; 911, p. 144; 941, p. 177; 949, p. 248). Half a mile inland from Kaunakakai. Measuring point is 28.00 feet above mean sea level or level with land-surface datum.

Water level, in feet, 1943  
(Measurements made by Herbert Wilson)

Date	Water level		Date	Water level		Date	Water level	
	A	B		A	B		A	B
Jan. 15	0.75	27.25	May 15	1.08	26.92	Sept. 15	1.00	27.00
Feb. 15	.92	27.08	June 15	1.00	27.00	Oct. 15	.92	27.08
Mar. 15	.75	27.25	July 15	.83	27.17	Nov. 15	.92	27.08
Apr. 15	.83	27.17	Aug. 15	.83	27.17	Dec. 15	.83	27.17

Kamalo well (\*845, p. 63; 886, p. 87; 941, p. 177; 949, p. 248). Half a mile northeast of Kamalo wharf. Measuring point is 40.00 feet above mean sea level or level with land-surface datum.

Water level, in feet, 1943  
(Measurements made by Herbert Wilson)

Jan. 15	1.83	38.17	May 15	1.83	38.17	Sept. 15	1.83	38.17
Feb. 15	1.83	38.17	June 15	1.83	38.17	Oct. 15	1.75	38.25
Mar. 15	1.83	38.17	July 15	1.83	38.17	Nov. 15	1.75	38.25
Apr. 15	1.92	38.08	Aug. 15	1.92	38.08	Dec. 15	1.83	38.17

Ualapue well (\*845, p. 63; 886, p. 87; 941, p. 177; 949, p. 248). 2.75 miles east of Kamalo well. Measuring point is 43.00 feet above mean sea level or level with land-surface datum.

Water level, in feet, 1943  
(Measurements made by Herbert Wilson)

Jan. 15	4.33	38.67	May 15	4.50	38.50	Sept. 15	4.25	38.75
Feb. 15	4.50	38.50	June 15	4.42	38.58	Oct. 15	4.17	38.83
Mar. 15	4.33	38.67	July 15	4.50	38.50	Nov. 15	4.08	38.92
Apr. 15	4.25	38.75	Aug. 15	4.25	38.75	Dec. 15	3.67	39.33

## ISLAND OF LANAI

The water level in Maunalei shaft 1 reached its highest stage of any month on record in October 1943. It exceeded by 0.05 foot the 1940 high of 2.78 feet. The average rainfall on Lanai was 10 inches more in 1943 than in 1942.

Maunalei shaft 1 (817, p. 41; 840, p. 65; 845, p. 63; 886, p. 87; 911, p. 144; 941, p. 178; 949, p. 249). 4 miles north-northeast of Lanai City. Measuring point is 2.40 feet above mean sea level or 291.60 feet below land-surface datum.

## Maunalei shaft 1--Continued.

Water level, in feet, 1943  
(Records furnished by Hawaiian Pineapple Co.)

Date	Water level		Date	Water level		Date	Water level	
	A	B		A	B		A	B
Jan. 2	2.68	291.32	May 1	2.53	291.47	Sept.	2.75	291.25
Feb. 1	2.70	291.30	June 1	2.46	291.54	Oct.	2.83	291.17
Mar. 1	2.69	291.31	July 1	2.58	291.42	Nov.	2.55	291.45
Apr. 1	2.73	291.27	Aug.	2.55	291.45	Dec.	2.59	291.41

## ISLAND OF HAWAII

The water level in the Olaa shaft declined during 1943. It ranged from a high of 15.26 feet on August 7 to a low of 13.17 feet on December 31.

In the Kaiwiki shaft measurements of water level were made in 1943 during the period February to May, but irregularly, owing to excavation work to enlarge the shaft. No measurements were made during the corresponding period in 1942, but a comparison with measurements made in 1941 shows that there was little variation in water level. No chloride determinations were made in 1943.

Olaa shaft (\*817, p. 42; 840, p. 66; 845, p. 64; 886, p. 88; 911, p. 145; 941, p. 178; 949, p. 249). Measuring point is 220 feet above mean sea level or level with land-surface datum.

Water level, in feet, 1943  
(Records furnished by George Duncan, Olaa Sugar Co., Ltd.)

Jan. 2	14.11	205.89	May 1	13.83	206.17	Sept. 4	15.07	204.93
9	14.58	205.42	8	14.08	205.92	11	14.94	205.06
16	14.90	205.10	15	13.92	206.08	18	14.84	205.16
23	14.42	205.58	22	13.82	206.18	25	14.77	205.23
30	14.21	205.79	29	13.78	206.22	Oct. 2	14.61	205.39
Feb. 6	14.16	205.84	June 5	13.75	206.25	9	14.36	205.64
13	14.40	205.60	12	13.53	206.47	16	14.19	205.81
20	14.11	205.89	19	13.53	206.47	23	13.98	206.02
27	14.25	205.75	26	13.58	206.42	30	13.85	206.15
Mar. 6	14.26	205.74	July 3	13.82	206.18	Nov. 6	13.75	206.25
13	14.42	205.58	10	14.17	205.83	13	13.67	206.33
20	14.30	205.70	17	14.65	205.35	20	13.65	206.35
27	14.16	205.84	24	15.01	204.99	27	13.60	206.40
Apr. 3	14.11	205.89	31	15.25	204.75	Dec. 4	13.50	206.50
10	14.06	205.94	Aug. 7	15.26	204.74	11	13.69	206.31
17	13.92	206.08	14	15.21	204.79	18	13.33	206.67
24	13.83	206.17	21	15.16	204.84	25	13.25	206.75
			28	15.07	204.93	31	13.17	206.83

Kaiwiki shaft (\*840, p. 66; 845, p. 64; 886, p. 88; 911, p. 145; 941, p. 178; 949, p. 250). Measuring point is 300 feet above mean sea level and level with land-surface datum.

Water level, in feet, 1943  
(Records furnished by A. Walker, Kaiwiki Sugar Co. Unless otherwise indicated, measurements were made while two pumps were operating)

Feb. 15	5.33	294.67	Mar. 15	5.79	294.21	May 7	a 5.58	a294.42
22	5.71	294.29	Apr. 15	5.46	294.54	14	5.25	294.75
Mar. 1	5.62	294.38	22	5.25	294.75	22	a 5.50	a294.50
6	5.92	294.08	29	a 5.33	a294.67	26	a 5.29	a294.71

a One pump operating.

## ISLAND OF KAUAI

Wells in Kauai showed only slight variations in artesian head in 1945 from the preceding year. The chloride content of the water in wells 2F, 7, and 8 increased during the last half of the year; that in well 35 rose sharply in April and remained high through November.

Artesian head, in feet, and chloride content, in parts per million, in typical artesian wells in Kauai, 1945

Well 2F (#840, p. 67; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 250). In Kealia. Measuring point is 10.05 feet above mean sea level or 2 feet above land-surface datum. Records furnished by East Kauai Water Co.

Date	Head		.Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 20	9.80	+1.75	40	July 21	9.73	+1.68	45
Feb. 23	9.81	+1.76	40	Aug. 18	10.06	+2.01	42
Mar. 20	9.68	+1.63	40	Sept. 24	10.05	+2.00	46
Apr. 20	9.93	+1.88	40	Oct. 20	10.41	+2.36	46
May 20	9.78	+1.73	40	Nov. 24	10.32	+2.27	46
June 22	9.79	+1.74	41	Dec. 21	10.17	+2.12	45

Well 7 (#840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 250). In Waialua. Records furnished by Lihue Plantation Co.

Jan. 15	.....	.....	128	July 16	.....	.....	124
Feb. 16	.....	.....	124	Aug. 16	.....	.....	139
Mar. 15	.....	.....	134	Sept. 16	.....	.....	150
Apr. 16	.....	.....	123	Oct. 15	.....	.....	146
May 15	.....	.....	124	Nov. 16	.....	.....	145
June 15	.....	.....	129	Dec. 16	.....	.....	148

Well 8 (#840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 250). In Waialua. Measuring point is 13.95 feet above mean sea level or 2 feet above land-surface datum. Records furnished by Lihue Plantation Co.

Jan. 15	12.33	+0.38	95	July 16	12.59	+0.64	111
Feb. 16	12.19	+.24	102	Aug. 16	12.79	+.84	125
Mar. 15	12.17	+.22	99	Sept. 16	12.88	+.93	128
Apr. 16	12.02	+.07	97	Oct. 15	12.78	+.83	107
May 15	12.52	+.57	100	Nov. 16	12.72	+.77	106
June 15	12.50	+.55	99	Dec. 16	12.89	+.94	117

Well 14N (#840, p. 68; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 250). In Koloa. Measuring point is 86.52 feet above mean sea level or 0.5 foot above land-surface datum. Records furnished by Koloa Sugar Co.

Jan. 26	31.27	54.75	39	July 27	a 12.19	a 73.83	43
Feb. 25	30.94	55.08	41	Aug. 28	30.77	55.25	41
Mar. 25	31.02	55.00	..	Sept. 28	a 14.10	a 71.92	41
Apr. 26	a 19.10	a 66.92	42	Oct. 28	a 13.52	a 72.50	42
May 28	28.69	57.33	42	Nov. 29	30.85	55.17	41
June 26	a 13.52	a 72.50	41	Dec. 28	30.85	55.17	..

a Pumps operating.

Artesian head, in feet, and chloride, in parts per million, in Kekaha Sugar Co.'s wells in Kauai, 1943  
(Records furnished by Kekaha Sugar Co.)

Well 35 (\*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 251). Near Kekaha. Measuring point is 6.82 feet above mean sea level or 1 foot below land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 15	10.78	+2.96	170	July 15	9.47	+1.65	449
Feb. 15	10.39	+2.57	188	Aug. 14	9.00	+1.18	467
Mar. 15	10.42	+2.60	188	Sept. 14	9.14	+1.32	467
Apr. 16	9.57	+1.75	479	Oct. 16	9.40	+1.58	340
May 16	.....	.....	...	Nov. 15	9.19	+1.37	352
June 16	9.55	+1.73	516	Dec. 16	8.96	+1.14	249

Well 37 (\*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 179; 949, p. 251). 4 miles northwest of Kekaha. Measuring point is 7.48 feet above mean sea level or 2.5 feet below land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 15	11.07	+1.09	100	July 15	9.83	+0.15	152
Feb. 15	11.08	+1.10	97	Aug. 14	9.53	.45	291
Mar. 15	10.79	+ .81	103	Sept. 14	9.88	.10	322
Apr. 16	10.13	+ .15	176	Oct. 16	9.64	.34	115
May 16	.....	.....	...	Nov. 15	9.93	.06	115
June 16	9.99	+ .01	176	Dec. 16	10.11	+ .13	115

Well 56 (\*840, p. 68; 845, p. 65; 886, p. 89; 911, p. 146; 941, p. 180; 949, p. 251). 7.5 miles northwest of Kekaha. Measuring point is 6.42 feet above mean sea level or 5.5 feet below land-surface datum.

Date	Head		Chloride	Date	Head		Chloride
	A	B			A	B	
Jan. 15	.....	.....	...	July 15	9.37	2.55	243
Feb. 15	9.64	2.28	267	Aug. 14	9.25	2.67	243
Mar. 15	9.47	2.45	243	Sept. 14	9.39	2.53	243
Apr. 16	9.47	2.45	249	Oct. 16	9.32	2.60	237
May 16	.....	.....	...	Nov. 15	9.29	2.63	249
June 16	9.47	2.45	243	Dec. 16	9.28	2.64	243

#### PUMPAGE

The following table gives the draft from all large ground-water pumping plants in the Territory of Hawaii. The wells represented include irrigation, domestic, and industrial wells. The draft from individual wells on Oahu is not included. The numbers in parentheses in the records for Oahu and Maui are those used by the Federal Geological Survey for the wells or other recovery devices.

The total pumpage during 1943 was 202,074.72 million gallons. This was 17,612.05 million gallons more than in 1942 but 2,626.16 million gallons less than in 1941. Oahu, Maui, and Molokai were the only islands on which the draft for the year showed an increase. Renewal of the drought which began in 1940 and new development and use of water supplies by the armed forces of the United States account for the increase.

The draft from individual wells on Oahu is estimated to be about 25 million gallons a day.



Ground-water draft, in millions of gallons, from wells in  
Territory of Hawaii, 1943--Continued  
(Data furnished by owners)

Island of Oahu--Continued		Island of Oahu--Continued	
<b>Ewa Plantation Co.--Continued</b>		<b>Kahuku Plantation Co.</b>	
Pump 6 (259)	2,598.00	Pump 1 (353)	875.50
Pump 7 (263)	2,120.00	Pump 2 (341)	2,349.94
Pump 8 (270)	414.00	Pump 3 (382)	1,822.60
Pump 9A(273)	689.00	Pump 5 (352)	1,256.90
Pump 9B(273)	0.00	Pump 6 (362-1)	366.71
Pump 9C(273)	1,029.00	Pump 7 (363)	195.20
Pump 9D(273)	(h)	Pump 8 (357)	279.32
Pump 9E(273)	474.00	Pump 12(361)	149.21
Pump 10(276)	2,737.00	Pump 14(338)	a 367.78
Pump 11(276)	1,364.00	Pump 15(348)	121.00
Pump 12(276)	1,416.00	Pump 17(362)	142.69
Pump 13(276)	36.00	Pump 20(377)	468.93
Pump 15(shaft 3)	3,170.00	Pump 23(387)	81.54
Pump 16		Pump 25(373)	68.55
(dug well 16)	4,397.00	Pump 26(392)	127.47
Pump 20		Pump 27(396)	5.81
(dug well 20)	890.00	Mill pump(355)	a 691.20 9,410.35
Pump 21			
(dug well 21)	585.00		
Pump 22		<b>Oahu Sugar Co.</b>	
(dug well 22)	516.00	Pump 1 (247)	2,137.95
Pump 23		Pump 2 (249)	2,249.58
(dug well 23)	3,201.00	Pump 3 (249)	1,575.58
Pump 24		Pump 4 (248)	1,269.68
(dug well 24)	864.00	Pump 4B(tunnel)	624.91
Pump 25 (254)	408.00 39,816.00	Pumps 5 & 5B	
		(274)	2,260.12
		Pump 6 (239)	1,863.36
		Pump 6B (239)	715.54
		Pump 7 (246)	3,280.49
		Pumps 8 & 8A	
		(Waialeale Spring)	1,535.81
		Pump 9 (Waiala Spring)	495.51 18,008.13
<b>Hawaiian Electric Co.</b>			
Wells & tunnel		<b>Private wells in</b>	
(199-1 & shaft 8)	4,181.00	Honolulu	m 5,289.04
Kaluaoo pu Spring	3,285.00 7,466.00		
		<b>U. S. Army</b>	
		Schofield (shaft 4)	2,207.69
		Kahuku air base (339)	a 73.00 2,280.69
		<b>U. S. Navy</b>	
		Aiea (shaft 5)	2,421.00
		Red Hill (shaft 11)	5,004.00
		Barbers Point (shaft 14)f/	22.00
		Aiea wells (187)	794.00
		Wahiawa Radio Station (330-2)c/	45.00 8,286.00
		<b>Waialeale Training School</b>	
		Sunset Beach (337-1 & 2)	8.50
		School pump (337-1 & 2)	a 28.00 36.50
		<b>Waialua Agricultural Co.</b>	
		Pump 1 (321)	932.26
<b>Honolulu Board of Water Supply</b>			
Kalihi Station (shaft 6)	2,272.41		
Waialae Station (shaft 7)	204.88		
Halawa Station (shaft 12) f/	12,417.00		
Kaimuki Station (7)	2,760.18		
Beretania Station (88)	3,466.78		
Kalihi Station (128)	1,905.25 13,026.50		
<b>Honolulu Plantation Co.</b>			
Pump 1 (185)	1,495.10		
Pump 2 (196)	1,390.12		
Pump 3 (186)	3,727.23		
Pump 4 (197)	2,479.20		
Pump 5 (189)	2,027.99		
Pump 6 (Kaluaoo Spring)	650.59		
Pump 16 (199-1)	13,950.60 15,720.83		
<b>Honolulu Rural Water Works</b>			
Lualualei (shaft 2)k/	82.75		

See footnotes at end of table.

Ground-water draft, in millions of gallons, from wells in  
Territory of Hawaii, 1943--Continued  
(Data furnished by owners)

Island of Oahu--Continued		Island of Oahu--Continued	
Waiialua Agricultural Co.--Continued		Waianae Co.--Continued	
Pump 2 (322)	2,861.56	Makaha (dug well 2)	44.12
Pump 3 (331)	2,955.48	Lehano (dug well 3)	37.91
Pump 4 (334)	1,295.08	Kuaiwa (dug well 4)	13.72
Pump 5 (285)	958.30	Paheehee (dug well 5)	44.97
Pump 6 (298, 299, & 301)	159.13	Keekee (dug well 6)	21.05
Pump 7 (324)	605.32	Pahoa (dug well 7)	118.33
Pump 8 (329)	124.76	Kahoolanakio (dug well 10)	63.46
Pump 9 (327)	55.84	Kamaile (277)	820.36
Pump 10(323)	1,513.99	Shaft 17 (shaft 1)	196.16
Pump 11(296)	15.47	Makaha wells (277-9)	a 52.56
Pump 12(332)	23.90	Mill	a 10.92 1,659.63
Pump 13(328)	25.75		
Pump 15(317)	71.48		
Pump 16(316)	127.61		
Mill (319)	<u>1,989.47</u>	Total	130,647.12
	13,715.30		
Waianae Co.		Grand total	
Puko (dug well 1)	142.21		202,074.72
Makaha (dug well 1B)	38.86		

a Estimated.

b Draft by McBryde Sugar Co. not included. Three pumps of this company in Hanapepe Valley and one pump at Lawai Valley pump both ground and surface water, but it is not possible to separate the ground-water draft from the surface-water draft.

c Not included in previous pumpage data.

d 1,324.41 million gallons wasted.

e 184.46 million gallons wasted.

f New data.

g Number assigned since Hawaii Division of Hydrography Bulletin 7 was published. For description, see footnote a on page 217 of that publication.

h Abandoned in 1942.

i Wasted during construction.

j Includes an inseparable amount from Kaluaooopu Spring, obtained from Hawaiian Electric Co.

k This shaft was pumped by the Waianae Co. for irrigating sugarcane, under an agreement whereby the Rural Water Works receives water from the mountain tunnels in exchange.

m Includes pumpage from wells belonging to military establishments in Honolulu.

n Draft by pump 16 of Honolulu Plantation Co. not included in total for Oahu because it boosts water already listed under Hawaiian Electric Co. well.

## NEW MEXICO

### INTRODUCTION

By G. R. Murray

#### PROGRAM OF WORK

The investigation of ground-water resources in New Mexico, which has been in progress in parts of the State for many years, was continued in 1943 by the Geological Survey, United States Department of the Interior, in cooperation with the State engineer. An observation-well program, under which the artesian head or the water level is measured in selected wells, forms an integral part of the investigation. As in previous years water levels were measured in most observation wells in irrigated areas in the State in January or February, after their recovery from the effects of pumping during the irrigation season. In addition to the measurements made in the winter, measurements of water level were made in selected groups of observation wells in Chaves, Eddy, Lea, Quay, and Roosevelt Counties at 2-month intervals, in Grant, Luna, and Sierra Counties at 3-month intervals, and in Torrance County at 4-month intervals. In all 2,326 measurements were made during the year exclusive of Hidalgo County.

#### FLUCTUATIONS IN WATER LEVEL

Water levels, in general, declined throughout New Mexico in 1943. Precipitation was below normal in nearly all areas in the State, and unusually large amounts of water were required for the production of crops. Even in nonirrigated areas water levels declined in most wells, because the relatively high stages at which they stood after the abnormal precipitation of 1941 could not be maintained with the subnormal to normal precipitation since 1941. In the Roswell artesian basin, in Chaves and Eddy Counties, there was a general decline during the year in artesian head and in the water levels of shallow wells. As in previous years, declines in the shallow-water levels were greatest in several small areas of concentrated pumping situated along the stretch from Orchard Park south to Lakewood. Declines in artesian head, also, were greater in the southern part of the basin. Although water levels attained new high stages in 1943 in the

outcrop area of the San Andres limestone, their stages at the end of the year were lower than at the beginning. In the Portales Valley, in Roosevelt County, where irrigation by ground water is extensive, large declines in water level took place. Similarly, appreciable declines took place in the House area, in Quay County, where development is intensive, though confined to a small area. In the lightly pumped though extensive Lovington area, in Lea County, water levels declined in general, but significant declines were restricted to small areas of relatively heavy pumping.

Excessive withdrawal of ground water continued in the Deming area, in Luna County. Water levels declined throughout the irrigated area, exceptionally large declines taking place in the parts of the area east, west, and south of Deming, where pumping is especially heavy.

#### WELL-NUMBERING SYSTEM

The system of numbering wells in New Mexico, used in all counties except Hidalgo and Sierra, 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 an area such as Roosevelt County, 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 township is north of the base line, but no letter is added if the township is south of the base line. In areas in which no confusion can arise, 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

located 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. In Water-Supply Paper 911 and earlier reports the digits corresponding to unknown 10-acre and 40-acre tracts are 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 ends 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 in the same 10-acre tract.

The following diagram shows the method of numbering the tracts within a section:

111	112	121	122	211	212	221	222
- (1)-	-	- (2)-	-	- (1)-	-	- (2)-	-
113	114	123	124	213	214	223	224
		[1]				[2]	
131	132	141	142	231	232	241	242
- (3)-	-	- (4)-	-	- (3)-	-	- (4)-	-
133	134	143	144	233	234	243	244
311	312	321	322	411	412	421	422
---(1)-	---	---(2)-	---	---(1)-	---	---(2)-	---
313	314	323	324	413	414	423	424
		[3]				[4]	
331	332	341	342	431	432	441	442
- (3)-	-	- (4)-	-	- (3)-	-	- (4)-	-
333	334	343	344	433	434	443	444

WELL DESCRIPTIONS, RECORDS OF ARTESIAN HEAD, AND  
WATER-LEVEL MEASUREMENTS

Measurements for most of the observation wells in New Mexico are listed alphabetically by counties, and numerically within each county. Two groups

of measurements--those of artesian head in the Roswell artesian basin and those of water level in the artesian-intake area of that basin--are listed under the common heading "Chaves and Eddy Counties," and in these groups the wells are indicated by name only. The listing of water-level measurements in the shallow-water wells of the Roswell artesian basin, however, follows the general plan, each well appearing under the county in which it is situated. Records of artesian head are expressed as water level in feet above sea level.

CHAVES AND EDDY COUNTIES (ROSWELL ARTESIAN BASIN)

By P. D. Akin

The program of inventorying records of water level and artesian head in the Roswell artesian basin was continued in 1943 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Most of the Roswell artesian basin lies in Chaves County, but a considerable part lies in northern Eddy County.

The first intensive investigation by the Federal Geological Survey of the artesian-water resources of the Roswell artesian basin was begun by A. G. Fiedler and S. S. Nye in 1925, and an intensive investigation of the shallow-water resources was begun by A. M. Morgan in 1937. The findings of these investigations have been published in Geological Survey Water-Supply Paper 639 and in the 7th to 13th biennial reports of the State engineer of New Mexico. Data on artesian head have been published in Water-Supply Papers 777, 817, 840, 845, 886, 911, 941, and 949. Data on shallow-water levels have been published in Water-Supply Papers 845, 886, 911, 941, and 949. A comprehensive report of the hydrology and agricultural development of the Pecos Valley has been published by the National Resources Planning Board as part 10 of the Regional Planning series, "The Pecos River Joint Investigation in the Pecos River Basin in New Mexico and Texas", 1942.

The precipitation in 1943 at Roswell, as reported by the United States Weather Bureau, was only 8.78 inches, or about 59 percent of the normal annual precipitation of 14.94 inches. The precipitation during the period April to September was only 5.48 inches, or about 55 percent of the normal precipitation for that period. The monthly precipitation was below normal for all months except May, June, and December.

Much water was used for irrigation in 1943 because of the dry weather and the increased production of crops induced by wartime demands. It is estimated that in the Roswell artesian basin 354,600 acre-feet of water was used for this purpose, of which 191,300 acre-feet was artesian water, 109,100 acre-feet was shallow ground water, and 54,200 acre-feet was surface water. More water for irrigation, from all three sources combined, was used in 1943 than in any previous year of record. The amount used was about one and one-half times the amount used in 1942 and more than twice the amount used in 1941.

It is estimated that about 119,800 acres of land was irrigated in 1943, of which 64,600 acres was irrigated with artesian water, 36,900 with shallow ground water, and 18,300 with surface water. These figures include lands using water from two or more sources, the acreage of such lands being distributed proportionally among the several sources. The estimate of 119,800 acres for 1943 is about 5,000 acres greater than the estimate for 1941. Approximately 1,500 acres of this increase can be accounted for by new developments of land under permits for shallow wells not previously drilled. It has been estimated that approximately 1,000 acres of new land was developed under these permits in 1942 and about 500 acres in 1943. The remaining increase of 3,500 acres amounts to about 3 percent of the total irrigated acreage in 1941 and probably can be accounted for by lands which were idle or fallow in 1941 but which were farmed in 1943 under the inducement of wartime demands.

#### ARTESIAN WELLS

Six continuous water-stage recorders were operated in 1943 on artesian observation wells. The records obtained from these wells were used to compute the mean monthly and mean yearly artesian heads, as has been done in previous years. The mean monthly heads are computed from the recorder records by the following procedure: The daily maximum and daily minimum heads are obtained from the recorder charts by inspection, missing days being interpolated. Mean monthly maximum and mean monthly minimum heads are then computed by averaging the daily maximum and daily minimum heads for the month. The mean monthly head is then considered to be the average of the mean monthly maximum and mean monthly minimum heads. The mean annual head is the average of the mean monthly heads for the year. In all, 126 water-level measurements were made in artesian recorder wells during the year.

## Records of artesian head

Berrendo well (\*777, p. 112; 817, p. 196; 840, p. 254; 845, p. 281; 886, p. 377; 911, p. 153; 941, p. 187; 949, p. 260). SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 9, T. 10 S., R. 24 E. Beginning of record: June 1926. Extremes: Highest mean annual water level, 3,571.8 feet (1942). Lowest mean annual water level, 3,563.0 feet (1940). Highest mean monthly water level, 3,574.8 feet (December 1926). Lowest mean monthly water level, 3,560.0 feet (August 1940).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	16	3,574.0	June	23	3,568.8	Oct.	12	3,570.2
Feb.	21	3,573.7	July	31	3,568.5	Nov.	30	3,570.1
Mar.	12	3,572.8	Aug.	31	3,566.2	Dec.	31	3,572.1
Apr.	30	3,569.6	Sept.	30	3,567.8	Annual	288	3,570.3
May	21	3,570.0						

Berrendo-Smith well (\*911, p. 153; 941, p. 187; 949, p. 260). NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 21, T. 10 S., R. 24 E. Beginning of record: June 1940. Extremes: Highest mean annual water level, 3,571.0 feet (1942). Lowest mean annual water level, 3,566.2 feet (1941). Highest mean monthly water level, 3,574.4 feet (January 1943). Lowest mean monthly water level, 3,557.9 feet (August 1940).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	30	3,574.4	June	23	3,567.0	Oct.	29	3,569.5
Feb.	28	3,573.7	July	31	3,567.0	Nov.	30	3,570.7
Mar.	31	3,571.5	Aug.	31	3,563.8	Dec.	31	3,572.2
Apr.	30	3,567.6	Sept.	30	3,565.6	Annual	351	3,569.4
May	27	3,569.8						

Mountain-View well (\*911, p. 153; 941, p. 187; 949, p. 260). NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 29, T. 11 S., R. 24 E. Beginning of record: July 1940. Extremes: Highest mean annual water level, 3,569.6 feet (1942). Lowest mean annual water level, 3,564.2 feet (1941). Highest mean monthly water level, 3,573.6 feet (January 1942). Lowest mean monthly water level, 3,555.4 feet (August 1940).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	31	3,573.7	June	30	3,564.6	Oct.	31	3,566.2
Feb.	28	3,573.0	July	31	3,565.0	Nov.	30	3,568.6
Mar.	31	3,570.5	Aug.	31	3,560.7	Dec.	31	3,570.3
Apr.	30	3,565.7	Sept.	30	3,561.3	Annual	365	3,567.1
May	31	3,565.5						

Orchard Park well (\*777, p. 112; 817, p. 196; 840, p. 254; 845, p. 282; 886, p. 378; 911, p. 154; 941, p. 188; 949, p. 260). NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 23, T. 12 S., R. 25 E. Beginning of record: August 1925. Extremes: Highest mean annual water level, 3,528.1 feet (1942). Lowest mean annual water level, 3,516.1 feet (1940). Highest mean monthly water level, 3,544.0 feet (January 1942). Lowest mean monthly water level, 3,501.2 feet (August 1943).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	31	3,540.7	June	30	3,511.7	Oct.	31	3,524.3
Feb.	28	3,537.7	July	31	3,520.3	Nov.	30	3,530.9
Mar.	31	3,526.6	Aug.	30	3,501.2	Dec.	31	3,536.6
Apr.	30	3,510.5	Sept.	30	3,504.9	Annual	364	3,521.4
May	31	3,511.2						

Greenfield well (\*911, p. 154; 941, p. 188; \*949, p. 260). NW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 13 S., R. 25 E. Beginning of record: May 1940. Extremes: Highest mean annual water level, 3,517.5 feet (1941). Lowest mean annual water level, 3,506.9 feet (1943). Highest mean monthly water level, 3,535.4 feet (Jan. 1942). Lowest mean monthly water level, 3,485.0 feet (August 1940).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	30	3,530.9	June	30	3,491.3	Oct.	31	3,509.4
Feb.	28	3,526.4	July	31	3,505.4	Nov.	30	3,519.8
Mar.	31	3,511.2	Aug.	17	3,486.2	Dec.	31	3,526.3
Apr.	30	3,491.9	Sept.	30	3,489.2	Annual	350	3,506.9
May	31	3,495.0						

Artesia well (\*777, p. 113; 817, p. 196; 840, p. 254; \*845, p. 282; 886, p. 378; 911, p. 154; 941, p. 188; \*949, p. 261). SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 18 S., R. 26 E. Beginning of record: April 1931. Extremes: Highest mean annual water level, 3,391.9 feet (1942). Lowest mean annual water level, 3,376.0 feet (1940). Highest mean monthly water level, 3,402.1 feet (January 1943). Lowest mean monthly water level, 3,365.0 feet (August 1940).

Mean monthly and mean annual water level, in feet  
above sea level, 1943

Month	Days of record	Water level	Month	Days of record	Water level	Month	Days of record	Water level
Jan.	31	3,402.1	June	30	3,378.9	Oct.	31	3,389.6
Feb.	28	3,396.6	July	28	3,387.0	Nov.	30	3,394.1
Mar.	31	3,388.5	Aug.	31	3,375.3	Dec.	31	3,398.1
Apr.	21	3,378.6	Sept.	30	3,375.5	Annual	353	3,386.9
May	31	3,380.8						

#### Fluctuations in artesian head

In 1943 the water levels in the artesian recorder wells were high during January and the first few days in February. They began to decline early in February, owing to the beginning of irrigation, and declined steadily until about the 10th of May, when irrigation was somewhat reduced because of rainfall. There followed a few days of recovery, but, as irrigation was soon resumed, the water levels began again to decline and continued to decline until the last of June or first of July, when irrigation was again reduced because of rainfall and the water levels rose somewhat. The rains during the last part of June were heavier than the rains during May, and the recovery of the water levels during the early part of July was accordingly greater than their recovery in May. Full irrigation was resumed by the middle of July, and the water levels again declined until, during the latter part of August, they reached their lowest stages of the year. Near the end of August and during the first part of September, as irrigation began to decrease with the end of the growing season, the water levels began to rise, and they continued to rise throughout the remainder of the year.

The mean monthly water level for August was the lowest of the year in all the recorder wells. It was from 1.7 to 12.1 feet lower than the mean monthly water level for August 1942 at the same wells, the Greenfield well showing the greatest difference and the Berrendo well the least. The mean monthly water level for August 1943 at the Orchard Park well was the lowest of record for that well.

The mean monthly water levels for December 1943 were from 1.5 to 3.8 feet lower than the mean monthly water levels for December 1942, the least difference being in the Berrendo well, at the north end of the basin, and the greatest difference being in the Artesia well, in the southern part of the basin. The average mean monthly water level for December 1943 for the six recorder wells was 2.7 feet lower than the average for December 1942. The following table shows the changes just discussed:

Decline in mean monthly water level, in feet, in artesian recorder wells in Roswell artesian basin from 1942 to 1943

Well	August	December
Berrendo	1.7	1.5
Berrendo-Smith	2.4	1.7
Mountain-View	2.8	2.8
Orchard Park	10.6	2.7
Greenfield	12.1	3.6
Artesia	5.0	3.8
Average	5.8	2.7

In January 1944 E. G. Minton, Jr., artesian well supervisor, measured the artesian head and water level at 47 artesian wells for which the head and water level had been measured in January 1943. The differences in the 1943 and 1944 artesian heads in the several wells ranged from an increase of 7.5 feet to a decrease of 6.2 feet. The average change of head in the 47 wells was a decrease of 0.7 foot. The average change of head in the six artesian recorder wells for the same period was a decrease of 1.6 feet.

#### WELLS IN THE ARTESIAN INTAKE AREA

Monthly water-level measurements were made in 1943 in six wells near the eastern edge of the principal intake area for the Roswell artesian basin. The water levels in all the observation wells in the intake area, except the J. Herbst well, reached their highest stages of record in 1943. The average change in water level in all the wells from December 1942 to December 1943 was a decline of 1.22 feet. In all, 72 water-level measurements were made in the artesian-intake wells during the year.

Water-level measurements

R. H. Rosenburg well (\*941, p. 189; 949, p. 262). NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T. 10 S., R. 23 E.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	238.26	Apr. 9	238.20	July 10	240.00	Oct. 19	241.08
Feb. 9	237.60	May 11	239.21	Aug. 10	240.63	Nov. 13	240.89
Mar. 12	237.86	June 18	239.87	Sept. 10	241.53	Dec. 17	240.53

J. Herbst well (\*941, p. 189; 949, p. 262). NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 12 S., R. 23 E. Measuring point beginning Mar. 12, top of steel-plate well cover, 0.02 foot above top of casing, 0.32 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	228.74	Apr. 9	230.36	July 10	232.53	Oct. 19	233.87
Feb. 9	228.95	May 11	231.33	Aug. 10	232.92	Nov. 13	233.78
Mar. 12	229.71	June 18	232.27	Sept. 10	233.72	Dec. 17	233.55

Diamond A Cattle Co. well (\*941, p. 189; 949, p. 262). SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 8, T. 14 S., R. 23 E.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	258.09	Apr. 9	257.69	July 10	258.69	Oct. 19	259.34
Feb. 9	257.55	May 11	258.23	Aug. 10	258.84	Nov. 13	259.21
Mar. 12	257.56	June 18	258.79	Sept. 10	259.39	Dec. 7	258.97

D. W. Runyan well (\*941, p. 189; 949, p. 262). SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 15, T. 16 S., R. 23 E.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	213.52	Apr. 9	213.44	July 10	213.28	Oct. 19	213.14
Feb. 9	212.98	May 11	213.58	Aug. 10	213.60	Nov. 13	213.03
Mar. 12	213.56	June 18	213.88	Sept. 10	214.00	Dec. 17	213.02

E. S. McAuliffe well (\*949, p. 264). NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 3, T. 18 S., R. 23 E.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	338.25	Apr. 9	335.11	July 10	346.05	Oct. 19	344.17
Feb. 9	336.98	May 11	335.00	Aug. 10	345.17	Nov. 13	343.86
Mar. 12	336.94	June 18	334.98	Sept. 10	345.12	Dec. 17	343.49

C. R. Coffin well (\*941, p. 190; 949, p. 264). NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 27, T. 19 S., R. 23 E.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 11	371.03	Apr. 9	370.73	July 10	370.72	Oct. 19	368.75
Feb. 9	370.80	May 11	370.92	Aug. 10	370.25	Nov. 13	369.13
Mar. 12	370.94	June 18	370.98	Sept. 10	369.10	Dec. 17	369.60

## SHALLOW WELLS

In order to observe the yearly water-level changes in the shallow wells in the Roswell artesian basin, water levels were measured in 419 wells in January and February of 1943. Of these, 6 wells were equipped with automatic water-stage recorders and 28 others were measured at bimonthly intervals throughout the year in order to note the seasonal fluctuations. Of the 419 wells in which water levels were measured, 297 are in Chaves County and 122 in Eddy County. In all, 700 water-level measurements were made during the year. Measurements were discontinued in 29 wells.

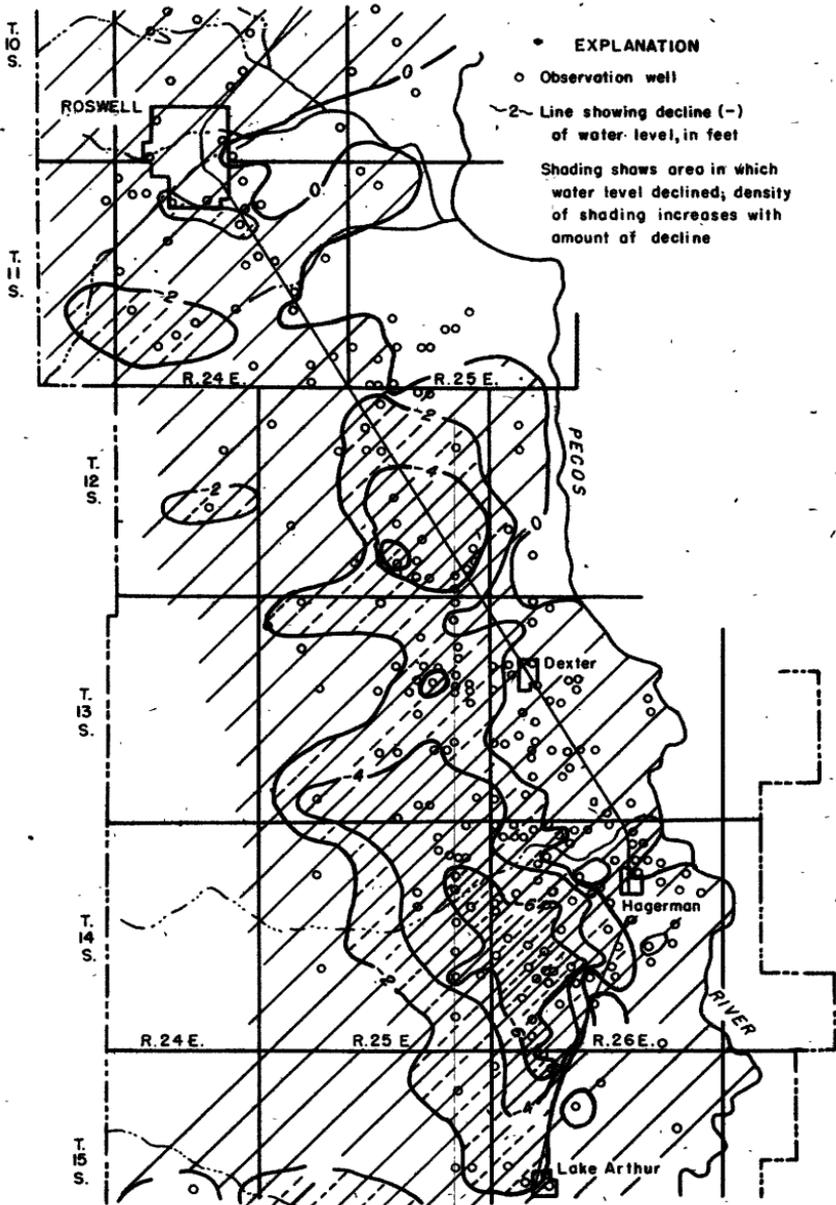


Figure 14.--Map of northern part of Roswell Basin, in Chaves County, N. Mex., showing decline of water level from January 1943 to January 1944.

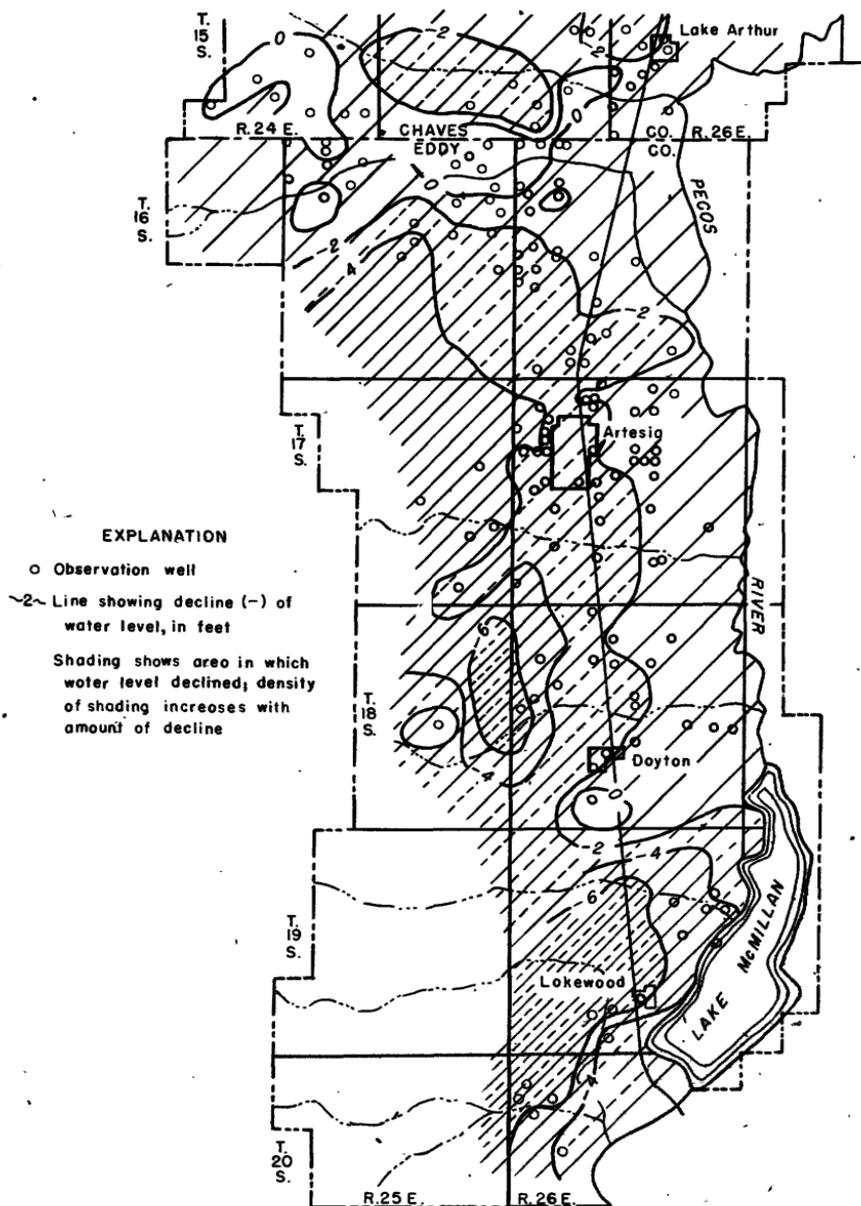


Figure 15.--Map of southern part of Roswell Basin, in Chaves and Eddy Counties, N. Mex., showing decline of water level from January 1943 to January 1944.

Fluctuations in water level

Water-level measurements made in the winter of each of the years 1943 and 1944 were used to prepare maps showing the change in water level from January 1943 to January 1944.

In the northern part of the Roswell artesian basin, in Chaves County, water levels declined over most of the area in 1943. In the heavily pumped area near Orchard Park, in T. 12 S., R. 25 E., and in a large area west of Hagerman, in Tps. 13 and 14 S., Rs. 25 and 26 E., declines of 4 to 6 feet occurred, and in the heavily pumped area southwest of Hagerman, in T. 14 S., Rs. 25 and 26 E., declines of 6 to 8 feet occurred.

The only general rise of water level in this part of the basin occurred in an area extending from east of Roswell, in T. 10 S., Rs. 24 and 25 E., to the vicinity of East Grand Plains in T. 11 S., Rs. 24 and 25 E. Local rises in small areas occurred northeast, south, and west of Hagerman and northeast of Lake Arthur. The rises were generally less than a foot, but those in a few of the wells were larger.

In the southern part of the Roswell artesian basin, which is in the extreme southern part of Chaves County and in Eddy County, water levels declined over most of the area. They declined 4 to 6 feet over a large area on the west side of the pumping district, from about midway of T. 16 S. to the southern part of T. 18 S. and mostly in R. 25 E. In a small area in T. 18 S., Rs. 25 and 26 E., they declined 4 to 8 feet.

Water levels declined 4 to 8 feet in a considerable area near Lakewood, in Tps. 19 and 20 S., R. 26 E. In one well in this area, the decline was 10.50 feet.

In the southern part of the Roswell artesian basin there were two general areas in which the water levels were higher in 1943 than in 1942. One of these areas is in the southern part of Chaves County, in T. 15 S., R. 24 E. The general rise of the water level in this area ranged from a fraction of an inch to 4.69 feet. The other area of general rise lies mostly in Eddy County, in the northeastern part of T. 16 S., R. 25 E., and in the northwestern part of T. 16 S., R. 26 E., but extends into Chaves County. The general rise of the water level in this area ranged from a fraction of an inch to 5.22 feet. Local rises of the water level occurred in T. 16 S., R. 25 E., in T. 16 S., R. 26 E., and south of Dayton in T. 18 S., R. 26 E.

The general areas of rise in 1943 agree closely with the areas in which the rise was comparatively small in 1941, after the heavy rains. These are also the areas in which the water level rose or declined but little in 1942. This suggests that some natural adjustment of the water table is still in progress, more than two years after the rains that caused the marked rise in water level in 1941. It may also be suggested that part of the water-level rise in these areas may have been caused by the downward percolation of artesian and surface irrigation water, as large parts of the areas in which the rises occurred lie in parts of the basin that are irrigated principally by artesian and surface water, and therefore only a small proportion of the water used to irrigate them is shallow ground water.

In general, the lowering of the water levels can be attributed to the removal of water from underground storage by pumpage for irrigation. It may be due in part, however, to continued adjustment of the water table after the rains of 1941, especially in those areas where the rise of the water table was relatively great in 1941.

Water-level measurements

Records of water levels in shallow wells in the Roswell artesian basin follow. For convenience, the wells are divided into two groups corresponding to the two counties in which they are situated.

Chaves County

10.24.8.111 (\*886, p. 385; 911, p. 164; 941, p. 202; 949, p. 266).  
O. S. Stockton. Water level, in feet below land-surface datum, 1943: Jan. 4, 44.10.

10.24.15.342 (\*886, p. 385; 911, p. 164; 941, p. 202; 949, p. 266).  
L. C. Tow. Water level, in feet below land-surface datum, 1943: Jan. 4, 12.17.

10.24.16.133 (\*886, p. 385; 911, p. 164; 941, p. 202; 949, p. 266).  
George D. Perrine. Water level, in feet below land-surface datum, 1943: Jan. 4, 22.85.

10.24.17.122 (\*886, p. 385; 911, p. 159; 941, p. 197; 949, p. 266).  
Mr. Howard.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 4	24.71	May 17	27.13	Sept. 16	30.99
Mar. 19	25.27	July 12	29.30	Dec. 4	26.85

10.24.18.424 (\*886, p. 385; 911, p. 164; 941, p. 202; 949, p. 266).  
L. T. Lewis. Water level, in feet below land-surface datum, 1943: Jan. 4, 34.66

10.24.20.344 (\*886, p. 385; 911, p. 164; 941, p. 202; 949, p. 266).  
Clyde Blackwell. Water level, in feet below land-surface datum, 1943: Jan. 4, 36.69.

10.24.22.322 (\*886, p. 386; 911, p. 164; 941, p. 202; 949, p. 266).  
A. B. Carpenter. (Formerly owned by H. Crile.) Water level, in feet below  
land-surface datum, 1943: Jan. 4, 11.53.

10.24.27.111 (\*886, p. 386; 911, p. 164; 941, p. 202; 949, p. 266).  
Jack Taylor. Measuring point, beginning Jan. 4, 1943, top of casing, level  
with land-surface datum. Water level, in feet below land-surface datum,  
1943: Jan. 4, 15.84.

10.24.28.122 (\*941, p. 197; 949, p. 267). Gale M. Nellis. Measure-  
ments discontinued.

10.24.29.333 (\*886, p. 386; 911, p. 164; 941, p. 202; 949, p. 267).  
Isaac Durand. Water level, in feet below land-surface datum, 1943: Jan. 4,  
32.89.

10.24.31.333 (\*886, p. 386; 911, p. 164; 941, p. 202; 949, p. 267).  
Mr. Williams. Water level, in feet below land-surface datum, 1943: Jan. 4,  
28.59.

10.24.31.423 (\*886, p. 386; 911, p. 164; 941, p. 202; 949, p. 267).  
Ernest Wilson. Water level, in feet below land-surface datum, 1943:  
Jan. 4, 17.04.

10.24.31.444 (\*845, p. 285; 886, p. 386; 911, p. 159; 941, p. 187;  
949, p. 267). J. P. Van Winkle, (Star Tourist Camp). No equipment at well.  
Measuring point after March 1943, top south edge of Geological Survey washer  
in well cover to north of box, level with land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 4	18.65	May 17	18.53	Sept. 16	20.43
Mar. 19	17.63	July 13	19.32	Dec. 4	21.13

10.24.33.244 (\*949, p. 267). J. Westover. Water level, in feet below  
land-surface datum, 1943: Feb. 19, 5.35.

10.24.34.333 (\*949, p. 267). Elmer Butler. Water level, in feet  
below land-surface datum, 1943: Feb. 19, 4.37.

10.24.36.222 (\*949, p. 267). State of New Mexico. Water level, in  
feet below land-surface datum, 1943: Feb. 19, 2.88.

10.25.7.444 (\*949, p. 267). John R. Pendergrass. Water level, in  
feet below land-surface datum, 1943: Feb. 19, 5.37.

10.25.17.344 (\*949, p. 267). P. E. Cannon. Water level, in feet  
below land-surface datum, 1943: Feb. 19, 5.31.

10.25.19.331 (\*949, p. 267). Fred C. Smith, Jr. Water level, in feet  
below land-surface datum, 1943: Feb. 19, 31.02.

10.25.29.222 (\*949, p. 267). U. S. Government. Water level, in feet  
below land-surface datum, 1943: Feb. 19, 1.66.

10.25.32.444 (\*886, p. 387; 911, p. 164; 941, p. 202; 949, p. 267).  
Henry Russell Estate. Measurements discontinued.

11.25.12.221 (\*886, p. 387; 911, p. 164; 941, p. 202; 949, p. 267).  
Mable Clifford. Water level, in feet below land-surface datum, 1943:  
Jan. 4, 51.57.

11.24.2.322 (\*886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
I. F. Cassell. Water level, in feet below land-surface datum, 1943:  
Jan. 5, 11.31.

11.24.3.312 (\*886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Dee Bristow. Water level, in feet below land-surface datum, 1943: Jan. 4,  
4.54.

11.24.3.333 (\*886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Henry Hoheland. Well is in back of garage at filling station. Windmill  
removed. No equipment. Water level, in feet below land-surface datum,  
1943: Jan. 4, 20.13.

a Windmill pumping.

11.24.6.224 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Measurements discontinued.

11.24.6.311 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
R. B. Wirtz. Water level, in feet below land-surface datum, 1943: Jan. 4,  
40.50.

11.24.6.433 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Mr. Watkins. Water level, in feet below land-surface datum, 1943: Jan. 4,  
31.24.

11.24.6.444 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Morrie Huff. Water level, in feet below land-surface datum, 1943: Jan. 4,  
31.20.

11.24.7.333 (#911, p. 164; 941, p. 202; 949, p. 268). Mrs. Pearl  
Baker. Measurements discontinued.

11.24.8.122 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
W. L. Nuly. Pump removed and casing pulled. Measuring point, top of old  
platform, 0.38 foot above land-surface datum. Water level, in feet below  
land-surface datum, 1943: Jan. 4, 22.75.

11.24.9.211 (#886, p. 387; 911, p. 164; 941, p. 202; 949, p. 268).  
Raymond McCutchen. Well is now equipped with automatic pressure pump.  
Bucket bailer has been removed. Water level, in feet below land-surface  
datum, 1943: Jan. 4, 29.51.

11.24.10.114 (#911, p. 164; 941, p. 202; 949, p. 268). Claude Hobbs.  
Water level, in feet below land-surface datum, 1943: Jan. 5, 17.98.

11.24.10.224 (#845, p. 286; 886, p. 388; 911, p. 159; 941, p. 197;  
949, p. 268). C. E. Smith. Windmill disconnected. Shed built over well  
and pressure pump installed. Measuring point after January 1943, top of  
casing, 0.60 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 5	12.61	May 17	12.06	Sept. 16	24.74
Mar. 19	11.90	July 13	11.15	Dec. 4	14.03

11.24.10.321 (#886, p. 388; 911, p. 164; 941, p. 202; 949, p. 268).  
J. H. Rodgers. Water level, in feet below land-surface datum, 1943:  
Jan. 5, 22.19.

11.24.13.144 (#886, p. 388; 911, p. 164; 941, p. 202; 949, p. 268).  
Frank Peters. Water level, in feet below land-surface datum, 1943: Jan. 6,  
16.08.

11.24.14.315b (#845, p. 287; 886, p. 388; 911, p. 160; 941, p. 197;  
949, p. 268). H. F. Fairbanks (Fairbanks Filling Station).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 6	27.92	May 17	39.66	Sept. 16	47.39
Mar. 19	34.93	July 13	40.34	Dec. 4	31.98

11.24.15.421 (#886, p. 388; 911, p. 164; 941, p. 202; 949, p. 268).  
M. L. Barnett. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 30.39.

11.24.15.431 (#886, p. 388; 911, p. 164; 941, p. 202; 949, p. 268).  
M. L. and S. Barnett. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 31.30.

11.24.17.121a (#949, p. 269). D. H. Johnson. Water level, in feet  
below land-surface datum, 1943: Jan. 5, 48.96.

11.24.18.333 (#886, p. 388; 911, p. 164; 941, p. 202; 949, p. 268).  
G. V. Coker. Measuring point beginning Jan. 5, 1943, lower edge of square  
opening in west side of pump case, 1.15 feet above land-surface datum.  
Water level, in feet below land-surface datum, 1943: Jan. 5, 79.36.

11.24.19.345 (\*886, p. 388; 911, p. 164; 941, p. 202; 949, p. 269). Walter C. Hendricks. Water level, in feet below land-surface datum, 1943: Jan. 5, 84.89.

11.24.22.333 (\*886, p. 388; 911, p. 164; 941, p. 202; 949, p. 269). John Tweedy. Water level, in feet below land-surface datum, 1943: Jan. 6, 40.68.

11.24.23.411a (\*886, p. 389; 911, p. 164; 941, p. 202; 949, p. 269). Howard E. Babcock, Jr. (Formerly owned by John Tweedy.) Water level, in feet below land-surface datum, 1943: Jan. 6, 11.78.

11.24.23.433 (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Tweedy Gin. Water level, in feet below land-surface datum, 1943: Jan. 6, 14.37.

11.24.24.144 (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Measurements discontinued.

11.24.28.113 (\*886, p. 389; 911, p. 160; 941, p. 198; 949, p. 269). Rocky Arroyo School House, State land.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 5	57.14	May 17	62.17	Sept. 16	67.74
Mar. 20	57.38	July 13	63.66	Dec. 4	62.97

11.24.29.333 (\*949, p. 269). F. W. Clow. Water level, in feet below land-surface datum, 1943: Jan. 5, 81.54.

11.24.29.411 (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Belle Hurst. (Formerly owned by Mrs. J. S. Singleton.) Water level, in feet below land-surface datum, 1943: Jan. 5, 73.60.

11.24.34.411b (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Belle Hurst. Water level, in feet below land-surface datum, 1943: Jan. 6, 40.40.

11.24.36.211 (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Russell Smith. Water level, in feet below land-surface datum, 1943: Jan. 6, 17.60.

11.24.36.133 (\*886, p. 389; 911, p. 164; 941, p. 203; 949, p. 269). Wiley Grizzle. Measuring point beginning Jan. 6, 1943, lower edge of pump base at north side of pump, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 6, 25.28.

11.24.36.333 (\*886, p. 389; 911, p. 165; 949, p. 269). Wiley Grizzle. Water level, in feet below land-surface datum, 1943: Feb. 19, 29.18.

11.25.6.123 (\*911, p. 165; 941, p. 203; 949, p. 269). J. P. White Co. (Formerly owned by Henry Russell Estate.) Measurements discontinued.

11.25.6.123a. J. P. White Co. Unused irrigation well, about 50 feet southwest of reservoir for well 11.25.6.123. No equipment. Measuring point, top of 12-inch casing, 1.40 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 5, 13.26.

11.25.6.421a (\*941, p. 203 and 207; 949, p. 269). J. P. White Co. (Formerly owned by Mrs. Annie Lee Stewart.) Water level, in feet below land-surface datum, 1943: Jan. 5, 5.07.

11.25.22.333 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 269). Mrs. T. E. Whitney. Water level, in feet below land-surface datum, 1943: Jan. 6, 7.31.

11.25.28.234 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 269). E. Whitney. Water level, in feet below land-surface datum, 1943: Jan. 6, 6.70.

11.25.28.244 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 269). R. O. Whitney. No measurements made in 1943.

11.25.29.111 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
Farmers Incorporated. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 8.74.

11.25.29.343 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
Albert Hobson. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 6.65.

11.25.29.444 (\*845, p. 288; 886, p. 390; 911, p. 160; 941, p. 198;  
949, p. 270). Glenn C. Wheeler. Equipped with water-stage recorder.  
Highest and lowest recorded water levels, in feet below land-surface datum,  
1943: Dec. 23, 5.68; Sept. 19, 12.10.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	6.55a	10.14	.....	.....	10.71	11.72	11.38a	10.82	a7.15	.....
2	a6.68	.....	6.55	9.30	.....	.....	10.77	11.76	11.52	10.46	.....	.....
3	6.69	.....	6.55	9.35	.....	.....	.....	11.81	11.56	.....	.....	a6.59
4	6.66	.....	6.58	9.70	.....	.....	.....	11.92	11.57	.....	.....	6.52
5	6.60	.....	6.57	9.97	.....	.....	.....	11.99	.....	.....	.....	6.48
6	6.60	.....	6.59	10.15	.....	.....	.....	12.07	.....	.....	.....	6.48
7	6.59	.....	6.57	10.50	.....	.....	.....	12.15	.....	.....	.....	6.45
8	6.58	a5.99	.....	10.43	.....	a9.10	.....	12.16	.....	.....	.....	6.42
9	6.58	.....	.....	10.54	.....	9.09	.....	.....	.....	.....	.....	6.40
10	6.58	.....	.....	10.65	a8.55	9.09	.....	.....	.....	.....	.....	.....
11	.....	.....	.....	10.76	8.60	9.09	.....	all.79	all.40	.....	.....	.....
12	.....	.....	.....	10.85	8.68	9.09	.....	11.54	11.50	.....	.....	.....
13	.....	.....	.....	10.93	8.88	9.09a	10.72	11.45	11.64	.....	.....	.....
14	.....	.....	.....	11.00	9.04	9.08	.....	11.37	11.78	.....	.....	.....
15	.....	.....	a7.46	11.07	9.22	9.08	.....	11.34	11.90	.....	a7.04	a5.88
16	.....	.....	7.52	11.13	9.42	9.08	.....	11.33	11.96	.....	6.94	5.83
17	.....	.....	7.58	11.21	9.67	9.08	.....	11.27	12.02	.....	6.92	5.72
18	.....	.....	7.67	11.26	9.80	.....	.....	11.11	12.06	.....	6.89	5.72
19	.....	.....	7.83	11.18	9.95	.....	.....	11.06	12.10	.....	6.89	5.72
20	.....	.....	8.11	.....	.....	.....	.....	11.06	.....	.....	6.88	5.73
21	a6.10	.....	8.50	.....	.....	.....	.....	.....	.....	a7.65	6.85	5.70
22	6.09	.....	8.77	.....	.....	.....	.....	.....	.....	.....	6.82	5.68
23	6.08	.....	.....	.....	.....	a9.94	.....	.....	.....	.....	6.75	5.68
24	6.10	.....	.....	.....	.....	9.93	.....	.....	.....	.....	6.74	.....
25	6.13	.....	.....	.....	.....	10.07	.....	.....	.....	.....	.....	.....
26	6.08	a6.62	.....	.....	.....	10.30	.....	all.06	.....	.....	.....	.....
27	6.06	6.56	.....	a8.33	.....	10.42	.....	11.16	.....	.....	.....	.....
28	.....	6.55	.....	.....	.....	10.53	.....	11.28	.....	.....	.....	.....
29	.....	.....	.....	.....	.....	10.68	.....	11.29	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	10.67	all.56	11.27	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	11.64	11.35	.....	.....	.....	.....

11.25.30.333 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
J. P. White Co. Measuring point beginning Jan. 6, 1943, lower edge of  
opening in west side of pump case, 0.72 foot above land-surface datum.  
Water level, in feet below land-surface datum, 1943: Jan. 6, 11.25.

11.25.31.223 (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
Ruby Brown. Water level, in feet below land-surface datum, 1943: Jan. 6,  
9.65.

11.25.31.433a (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
Albert Watson. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 23.43.

11.25.31.433b (\*886, p. 390; 911, p. 165; 941, p. 203; 949, p. 270).  
Albert Watson. Measuring point beginning Jan. 6, 1943, lower edge of opening  
in northeast side of pump case, 0.57 foot above concrete pump base and  
land-surface datum. Water level, in feet below land-surface datum, 1943:  
Jan. 6, 23.60.

11.25.32.333 (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 270).  
George Bogart. Water level, in feet below land-surface datum, 1943: Jan. 6,  
21.44.

a Tape measurement.

12.24.12.411 (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 270).  
Mr. Little. Measurements discontinued.

12.24.13.111 (\*949, p. 270). Leora Newman.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 7	62.36	May 17	67.64	Sept.16	70.67
Mar. 20	63.53	July 13	70.89	Dec. 4	68.09

12.24.23.441a (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
Monte Goodin. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 75.53.

12.24.23.441b (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
Monte Goodin. Measurements discontinued.

12.25.2.lot 3 (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
B. F. Heine. Water level, in feet below land-surface datum, 1943: Jan. 7,  
11.92.

12.25.2.lot 4 (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
E. R. Duvall. Water level, in feet below land-surface datum, 1943: Jan. 7,  
10.53.

12.25.3.334 (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
J. W. Young. Water level, in feet below land-surface datum, 1943: Jan. 7,  
23.47.

12.25.7.144a (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
Olivia Etz. Water level, in feet below land-surface datum, 1943: Jan. 7,  
37.08.

12.25.7.144b (\*886, p. 391; 911, p. 165; 941, p. 203; 949, p. 271).  
Olivia Etz. Measurements discontinued.

12.25.9.422 (\*845, p. 288; 886, p. 391; 911, p. 160; 941, p. 198;  
949, p. 271). Cumberland townsite (Welty).

Water level, in feet below land-surface datum, 1943

Jan. 7	41.10	May 17	42.34	Sept.16	45.72
Mar. 19	40.62	July 14	43.25	Dec. 4	44.75

12.25.13.111 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271).  
M. E. Colclazier. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 11.23.

12.25.15.112 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271).  
A. J. Merry Estate. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 41.95.

12.25.15.333 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271).  
G. M. Sterrett. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 57.46.

12.25.16.111 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271).  
Ernest Nelson. Measuring point beginning Feb. 19, 1943, lower edge of  
opening in north side of pump case, 1.30 feet above land-surface datum and  
0.85 foot above concrete pump base. Water level, in feet below land-surface  
datum, 1943: Feb. 19, 29.50.

12.25.16.222 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271).  
State of New Mexico. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 45.57.

12.25.22.231 (\*886, p. 392; 911, p. 160; 941, p. 203; 949, p. 271).  
W. T. Clardy. Water level, in feet below land-surface datum, 1943:  
Jan. 7, 61.13.

12.25.23.143 (\*941, p. 198; 949, p. 271). M. L. Kuykendall. Well  
destroyed. Measurements discontinued after Mar. 20. Water level, in feet  
below land-surface datum, 1943: Jan. 7, 50.01; Mar. 20, 49.93.

12.25.25.413 (\*886, p. 392; 911, p. 165; 949, p. 271). Ann E. Freeman. (Formerly owned by Omar Leach.) Water level, in feet below land-surface datum, 1943: Jan. 8, 21.04.

12.25.26.311 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271). J. K. Murphey. (Formerly owned by C. E. Smith.) Water level, in feet below land-surface datum, 1943: Jan. 8, 48.93.

12.25.27.211 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271). W. T. Clardy. Water level, in feet below land-surface datum, 1943: Jan. 7, 57.53.

12.25.30.222 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 271). Ivy Woodman. Water level, in feet below land-surface datum, 1943: Jan. 7, 78.24.

12.25.33.112 (\*886, p. 392; 911, p. 165; 941, p. 203; 949, p. 272). H. G. Wager. (Formerly owned by W. A. McLeod.) Water level, in feet below land-surface datum, 1943: Jan. 8, 74.80.

12.25.34.211 (\*949, p. 272). Mack Sharp. (Formerly owned by Jack Hubbard.) Water level, in feet below land-surface datum, 1943: Jan. 8, 48.35.

12.25.34.311a (\*845, p. 289; 886, p. 393; 911, p. 160; 941, p. 203; 949, p. 272). W. T. Clardy. Measurements discontinued.

12.25.34.311b (\*886, p. 393; 911, p. 165; 941, p. 203; 949, p. 272). W. T. Clardy. Measurements discontinued.

12.25.34.411 (\*886, p. 393; 911, p. 165; 941, p. 203; 949, p. 272). Jack Mask. Water level, in feet below land-surface datum, 1943: Jan. 8, 46.38.

12.25.35.111 (\*911, p. 165; 941, p. 203; 949, p. 272). C. E. Smith. Water level, in feet below land-surface datum, 1943: Jan. 8, 39.09.

12.25.35.311a (\*845, p. 290; 886, p. 393; 911, p. 160; 941, p. 198; 949, p. 272). H. G. Moberly. (Formerly owned by A. C. Stone.) Well cleaned out and pressure pump installed in March 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 8	45.98	May 17	a 60.45	Sept.16	a 73.86
Mar. 19	a 60.94	July 14	a 57.65	Dec. 4	48.78

12.25.35.311b (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). H. G. Moberly. (Formerly owned by A. C. Stone.) Water level, in feet below land-surface datum, 1943: Jan. 8, 41.11.

12.25.35.411 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). A. C. Stone. Water level, in feet below land-surface datum, 1943: Jan. 8, 35.27.

12.25.36.133 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). H. Kuykendall. Water level, in feet below land-surface datum, 1943: Jan. 8, 27.55.

12.25.36.142 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). O. B. Berry. Water level, in feet below land-surface datum, 1943: Jan. 8, 17.68.

12.25.36.313 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). M. L. Kuykendall. Water level, in feet below land-surface datum, 1943: Jan. 8, 23.44.

12.26.7.421 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272). Cecil Johnson. Measuring point beginning Jan. 7, 1943, bottom edge of pump base at southwest corner, 0.72 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 7, 2.43.

12.26.18.221 (\*949, p. 272). Cecil Johnson. Water level, in feet below land-surface datum, 1943: Jan. 7, 13.92.

a Irrigation well 200 feet east pumping.

12.26.29.333 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272).  
T. S. Lawing. Water level, in feet below land-surface datum, 1943: Jan. 8,  
17.48.

12.26.30.213 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272).  
Loman Wiley. (Formerly owned by S. O. Wilburn.) Water level, in feet  
below land-surface datum, 1943: Feb. 19, 16.23.

13.25.1.111 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272).  
M. L. Kuykendall. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 16.21.

13.25.1.331 (\*886, p. 394; 911, p. 165; 941, p. 203; 949, p. 272).  
Will Schaaphok. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 13.49.

13.25.3.111 (\*886, p. 395; 911, p. 165; 941, p. 203; 949, p. 273).  
Grace G. Stanley. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 53.64.

13.25.5.111 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
W. H. Belcher. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 64.82.

13.25.6.333 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
R. L. Lowe. Water level, in feet below land-surface datum, 1943: Jan. 12,  
80.14.

13.25.8.133 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
W. H. Jeffries. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 62.00.

13.25.10.344 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
H. W. Reinicke. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 62.55.

13.25.11.111 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
Kermit Southard. (Formerly owned by Mrs. Belle Hurst.) Water level, in  
feet below land-surface datum, 1943: Jan. 12, 38.66.

13.25.11.343 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
J. E. Brockman. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 46.65.

13.25.11.433 (\*886, p. 395; 911, p. 161; 941, p. 198; 949, p. 273).  
J. E. Brockman.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 12	37.51	May 17	56.75	Sept. 16	(a)
Mar. 19	45.76	July 14	54.02	Dec. 4	48.53

13.25.12.133 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
M. E. Colclazier. Water level, in feet below land-surface datum, 1943:  
Feb. 19, 19.08.

13.25.12.311 (\*886, p. 395; 911, p. 165; 941, p. 204; 949, p. 273).  
M. E. Colclazier. Water level, in feet below land-surface datum, 1943:  
Feb. 19, 19.50.

13.25.13.113 (\*886, p. 395; 911, p. 166; 941, p. 204; 949, p. 273).  
W. F. Kerr. Water level, in feet below land-surface datum, 1943: Feb. 19,  
36.89.

13.25.13.131 (\*886, p. 395; 911, p. 166; 941, p. 204; 949, p. 273).  
Fletcher Bros. Water level, in feet below land-surface datum, 1943:  
Jan. 12, 33.28.

13.25.13.133 (\*949, p. 273). Fletcher Bros. (Formerly owned by  
Learue Martin.) Water level, in feet below land-surface datum, 1943:  
Jan. 12, 37.50.

a Dry at 63.5 feet.

- 13.25.13.233a (\*886, p. 395; 911, p. 166; 941, p. 204; 949, p. 273).  
W. F. Kerr. Water level, in feet below land-surface datum, 1943: Jan. 12, 26.25.
- 13.25.13.233b (\*886, p. 395; 911, p. 166; 941, p. 204; 949, p. 273).  
W. F. Kerr. Water level, in feet below land-surface datum, 1943: Jan. 12, 27.08.
- 13.25.13.311 (\*911, p. 166; 941, p. 204; 949, p. 273). Fletcher Bros. (Formerly owned by Learue Martin.) Water level, in feet below land-surface datum, 1943: Jan. 12, 37.15.
- 13.25.13.433 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 273).  
Mrs. J. W. Wien. Water level, in feet below land-surface datum, 1943: Jan. 12, 29.76.
- 13.25.14.131 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 273).  
W. F. Kerr. (Formerly owned by Durand & McNeil.) Water level, in feet below land-surface datum, 1943: Jan. 12, 54.37.
- 13.25.14.231 (\*911, p. 166; 941, p. 204; 949, p. 273). William Zappe. Water level, in feet below land-surface datum, 1943: Jan. 12, 44.71.
- 13.25.15.311 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 273).  
Rex Richmond. (Formerly owned by the Roswell Insurance & Surety Co.) No measurements made in 1943.
- 13.25.15.422 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
Rex Richmond. Water level, in feet below land-surface datum, 1943: Jan. 12, 53.77.
- 13.25.17.411 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
R. Thaman. Water level, in feet below land-surface datum, 1943: Jan. 12, 60.33.
- 13.25.23.111 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
I. F. Wortman. Water level, in feet below land-surface datum, 1943: Jan. 12, 55.80.
- 13.25.24.333 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 12, 45.71.
- 13.25.26.211 (\*949, p. 274). Belle Hurst. (Formerly owned by Hal Bogle.) Water level, in feet below land-surface datum, 1943: Jan. 12, 51.65.
- 13.25.26.222 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
Belle Hurst. Water level, in feet below land-surface datum, 1943: Jan. 12, 45.82.
- 13.25.27.111 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 12, 74.67.
- 13.25.27.211b (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 12, 65.03.
- 13.25.32.411 (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
William Brashler. Water level, in feet below land-surface datum, 1943: Jan. 13, 79.03.
- 13.25.34.433a (\*886, p. 396; 911, p. 166; 941, p. 204; 949, p. 274).  
W. F. Kerr. (Formerly owned by O. B. Berry.) Water level, in feet below land-surface datum, 1943: Jan. 13, 65.57.
- 13.25.35.311 (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
W. F. Kerr. Water level, in feet below land-surface datum, 1943: Jan. 13, 62.55.
- 13.25.35.322. W. F. Kerr. Abandoned irrigation well directly beneath discharge pipe of irrigation well now in use a few feet east. No equipment. Measuring point, top of concrete well curb at north side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 13, 58.73.

13.25.36.421a (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
R. M. Ware. Water level, in feet below land-surface datum, 1943: Jan. 13,  
43.36

13.25.36.421b (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
R. M. Ware. Water level, in feet below land-surface datum, 1943: Jan. 13,  
44.71.

13.25.36.421c (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
R. M. Ware. Water level, in feet below land-surface datum, 1943: Jan. 13,  
44.21.

13.26.5.111 (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
Robert H. Aston. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 12.27.

13.26.5.231a (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
Chas. P. Sterrett. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 14.83.

13.26.5.231b (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
Chas. P. Sterrett. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 10.97.

13.26.5.331 (\*886, p. 397; 911, p. 166; 941, p. 204; 949, p. 274).  
W. W. Harris. Water level, in feet below land-surface datum, 1943: Jan. 8,  
15.25.

13.26.7.333 (\*886, p. 397; 911, p. 161; 941, p. 199; 949, p. 274).  
Howard Amason. Equipped with water-stage recorder. Highest and lowest  
recorded water levels, in feet below land-surface datum, 1943: Mar. 2,  
9.70; Sept. 12, 15.97.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	9.70	10.68	12.89	.....	.....	12.65	14.88	14.95	.....	.....
2	a10.15	.....	9.70	11.38	12.98	.....	.....	12.78	14.89	14.88	13.15	.....
3	10.12	.....	9.71	11.57	13.06	.....	.....	12.91	.....	14.78	13.16a	12.84
4	10.14	.....	9.71	11.74	13.15	.....	.....	13.04	.....	14.66	13.16	12.83
5	10.17	.....	9.71	11.90	13.23	.....	.....	13.14	.....	14.53	13.16	12.81
6	10.16	.....	.....	12.04	.....	.....	.....	13.20	.....	14.37	13.16	12.80
7	10.14	.....	.....	12.22	.....	.....	.....	.....	.....	14.16	13.16	12.79
8	10.13	a9.75	.....	.....	.....	a13.60	.....	.....	.....	14.07	13.14	12.76
9	10.11	9.71	.....	.....	.....	13.68	.....	.....	.....	.....	13.11	12.74
10	.....	9.71	.....	a12.03a	a13.10	13.75	.....	.....	.....	.....	13.08	12.73
11	.....	9.72	.....	11.99	13.09	13.85	.....	a13.79a	a15.96	.....	13.05	12.71
12	.....	9.73	.....	11.99	13.12	13.95	.....	13.86	15.97	.....	13.01	12.67
13	.....	9.74a	a10.09	12.01	13.14	14.05	.....	13.97	15.90	.....	12.98	12.63
14	.....	9.76	10.12	12.09	13.17	14.14a	a11.34	13.94	15.83	.....	12.95	12.60
15	.....	9.74	10.16	.....	13.19	14.20	11.36	13.89	15.78	.....	12.92	12.57
16	.....	.....	10.15	.....	13.14	.....	11.43	13.85	15.73	.....	12.90	12.53
17	.....	.....	10.15	.....	12.94	.....	11.40	13.83	15.68	.....	12.90	12.51
18	.....	.....	10.15	.....	12.77	.....	11.67	13.84	15.65	.....	12.90	12.47
19	.....	.....	10.16	.....	12.62	.....	11.86	.....	.....	.....	12.91	12.43
20	.....	.....	10.19	.....	12.51	.....	11.91	.....	.....	.....	12.93	12.40
21	a9.94	.....	.....	.....	12.42	.....	11.98	.....	.....	a13.17	12.95	12.36
22	9.91	.....	.....	.....	12.32	.....	.....	.....	.....	13.15	12.97	12.31
23	9.89	.....	.....	.....	12.22a	a13.60	.....	a14.55	.....	13.15	12.98	12.29
24	9.87	.....	.....	.....	12.16	13.46	.....	14.58	.....	13.16	12.98	12.25
25	9.87	.....	.....	.....	.....	13.45	.....	14.71	.....	13.15	12.98	12.23
26	9.87	a9.72	.....	.....	.....	13.44	.....	14.84	.....	13.12	12.98	12.21
27	9.89	9.71	.....	.....	.....	13.50	.....	14.88	.....	13.11	12.98	12.19
28	9.87	9.71	.....	a12.75	.....	13.58	.....	14.88	.....	13.10	12.95	12.17
29	.....	.....	.....	12.76	.....	13.70	.....	14.97	.....	.....	12.93	12.14
30	.....	.....	.....	12.81	.....	13.82a	a12.55	14.95	.....	.....	12.91	12.11
31	.....	.....	a10.62	.....	.....	.....	12.57	14.90	.....	.....	.....	12.09

a Tape measurement.

13.26.7.433 (\*886, p. 398; 911, p. 166; 941, p. 204; 949, p. 275).  
J. E. Sinn. Water level, in feet below land-surface datum, 1943: Jan. 8,  
11.14.

13.26.8.332 (\*886, p. 398; 911, p. 166; 941, p. 204; 949, p. 275).  
G. M. Sterrett. Water level, in feet below land-surface datum, 1943:  
Jan. 8, 6.30.

13.26.8.422 (\*845, p. 291; 886, p. 398; 911, p. 161; 941, p. 199; 949,  
p. 275). Jack Hubbard. (Formerly owned by Jake Mills.) Measuring point,  
top of casing, 0.29 foot above land-surface datum. Water level, in feet  
below land-surface datum, 1943: Jan. 14, 14.87.

13.26.14.331 (\*941, p. 204 and 207; 949, p. 275). Guy C. and H. E.  
Saunders. (Formerly owned by Zuber Hollow Corporation.) Water level, in  
feet below land-surface datum, 1943: Jan. 13, 0.95.

13.26.16.114a (\*886, p. 398; 911, p. 166; 941, p. 204; 949, p. 275).  
U. S. Government fish hatchery. Water level, in feet below land-surface  
datum, 1943: Jan. 13, 8.01.

13.26.16.114b (\*886, p. 398; 911, p. 166; 941, p. 204; 949, p. 275).  
U. S. Government fish hatchery. Measuring point, top of concrete block,  
0.90 foot above floor of shed, 1.10 feet above land-surface datum. Water  
level, in feet below land-surface datum, 1943: Jan. 13, 4.81.

13.26.16.114c (\*886, p. 398; 911, p. 166; 941, p. 204; 949, p. 275).  
U. S. Government fish hatchery. Water level, in feet below land-surface  
datum, 1943: Jan. 13, 5.19.

13.26.17.321 (\*845, p. 292; 886, p. 398; 911, p. 162; 941, p. 199;  
949, p. 275). Leo Nowak.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 13	9.36	May 17	a 26.39	Sept. 16	13.60
Mar. 19	9.63	July 14	b 22.12	Dec. 6	11.98

13.26.17.443 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 275).  
H. Vandebout. Water level, in feet below land-surface datum, 1943:  
Jan. 13, 11.96.

13.26.17.444 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
H. Vandebout. Water level, in feet below land-surface datum, 1943:  
Jan. 13, 13.95.

13.26.18.211 (\*911, p. 166; 941, p. 204; 949, p. 276). B. A. Armor.  
Water level, in feet below land-surface datum, 1943: Jan. 8, 10.41.

13.26.18.311 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
W. F. Kerr. Water level, in feet below land-surface datum, 1943: Jan. 12,  
13.10.

13.26.19.222 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
A. T. Stone. Water level, in feet below land-surface datum, 1943: Jan. 13,  
20.32.

13.26.19.333 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 13,  
24.17.

13.26.19.343 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 13,  
19.93.

13.26.19.432 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Tom Bogle. (Formerly owned by George Weaver.) Water level, in feet below  
land-surface datum, 1943: Jan. 13, 9.32.

13.26.20.113 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
A. T. Stone. Water level, in feet below land-surface datum, 1943: Jan. 13,  
19.33.

a Windmill pumping.

b Windmill had been pumping.

13.26.20.333 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Odessa White Lockhead. Water level, in feet below land-surface datum, 1943:  
Jan. 13, 13.20.

13.26.23.111 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Guy C. and H. E. Saunders. (Formerly owned by Zuber Hollow Corporation.)  
Water level, in feet below land-surface datum, 1943: Jan. 13, 4.56.

13.26.28.111 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Joe Nowak. Water level, in feet below land-surface datum, 1943: Jan. 14,  
a/ 21.65.

13.26.28.121 (\*886, p. 399; 911, p. 162; 941, p. 199; 949, p. 276).  
George Grassie. Measuring point, top of casing, 0.76 foot above land-surface  
datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 14	16.46	May 17	19.75	Sept. 16	19.22
Mar. 19	17.58	July 14	15.00	Dec. 4	19.19

13.26.28.221 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Feb. 19,  
9.42.

13.26.28.233 (\*886, p. 399; 911, p. 166; 941, p. 204; 949, p. 276).  
F. W. Sadler. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 10.99.

13.26.28.311 (\*886, p. 400; 911, p. 166; 941, p. 204; 949, p. 276).  
Joe Giles and Anna Heinzl. (Formerly owned by Mr. C. S. Appleby.) Water  
level, in feet below land-surface datum, 1943: Jan. 14, 15.11.

13.26.29.111 (\*911, p. 166; 941, p. 204; 949, p. 276). J. H. Reid.  
Water level, in feet below land-surface datum, 1943: Jan. 13, 11.44.

13.26.29.113 (\*886, p. 400; 911, p. 166; 941, p. 204; 949, p. 276).  
J. H. Reid. Water level, in feet below land-surface datum, 1943: Jan. 13,  
16.25.

13.26.29.211 (\*886, p. 400; 911, p. 166; 941, p. 205; 949, p. 276).  
J. H. Reid. Water level, in feet below land-surface datum, 1943: Jan. 14,  
b/ 14.55.

13.26.29.333 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 276).  
M. Y. Monical. Water level, in feet below land-surface datum, 1943:  
Jan. 13, 13.52.

13.26.29.424 (\*911, p. 167; 941, p. 205; 949, p. 276). M. Y. Monical.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 8.48.

13.26.31.241 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 276).  
Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 13,  
8.54.

13.26.31.311 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 276).  
E. O. Moore. Water level, in feet below land-surface datum, 1943: Jan. 13,  
39.53.

13.26.33.421 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 276).  
E. P. Malone. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 17.31.

13.26.34.313 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 276).  
Elton Lankford. (Formerly owned by Mrs. West.) Water level, in feet below  
land-surface datum, 1943: Jan. 14, 10.34.

13.26.34.431 (\*941, p. 205 and 207; 949, p. 277). Chas. J. Michelet.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 25.35.

- a Well pumped recently.  
b Well pumping.

14.25.1.112 (\*845, p. 292; 886, p. 400; 911, p. 162; 941, p. 200; 949, p. 277). P. R. Fuller. (Formerly owned by Mr. Gentry.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	34.28	May 17	42.07	Sept. 16	(b)
Mar. 19	a 36.24	July 15	43.31	Dec. 4	42.12

14.25.1.343 (\*886, p. 400; 911, p. 167; 941, p. 205; 949, p. 277). A. W. Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 19, 53.48.

14.25.1.344 (\*845, p. 292; 886, p. 400; 911, p. 162; 941, p. 200; 949, p. 277). A. W. Langnegger.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	46.92	May 17	54.72	Sept. 16	c 63.68
Mar. 19	53.50	July 15	54.96	Dec. 4	55.05

14.25.2.233a (\*911, p. 167; 941, p. 205; 949, p. 277). L. T. Lewis. Water level, in feet below land-surface datum, 1943: Jan. 19, 56.37.

14.25.2.431. J. V. Thomas. Drilled irrigation well. No equipment. Diameter 18 inches, depth 187 feet. Measuring point, top of casing, 0.35 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 19, 67.69.

14.25.2.444 (\*886, p. 401; 911, p. 167; 941, p. 205; \*949, p. 277). J. V. Thomas. Water level, in feet below land-surface datum, 1943: Jan. 19, 54.87.

14.25.8.411 (\*886, p. 401; 911, p. 167; 941, p. 205; 949, p. 277). Ray Mathes. Water level, in feet below land-surface datum, 1943: Feb. 19, 94.15.

14.25.11.333 (\*949, p. 277). Ray Mathes. Water level, in feet below land-surface datum, 1943: Feb. 19, 82.60.

14.25.12.133a (\*949, p. 277). Charles H. Whitman. Water level, in feet below land-surface datum, 1943: Jan. 19, 63.64.

14.25.12.133b (\*886, p. 401; 911, p. 167; 941, p. 205; 949, p. 277). Charles H. Whitman. Water level, in feet below land-surface datum, 1943: Jan. 19, 64.46.

14.25.12.313 (\*886, p. 401; 911, p. 167; 941, p. 205; 949, p. 277). L. T. Lewis. Water level, in feet below land-surface datum, 1943: Jan. 19, 67.61.

14.25.13.213 (\*949, p. 277). Calvin Graham. (Formerly owned by A. M. Middleton.) Water level, in feet below land-surface datum, 1943: Jan. 19, 62.10.

14.25.13.311 (\*886, p. 401; 911, p. 167; 941, p. 205; \*949, p. 277). E. O. Moore. Water level, in feet below land-surface datum, 1943: Jan. 19, 70.34.

14.25.14.131 (\*886, p. 401; 911, p. 167; 941, p. 205; \*949, p. 277). Ray Mathes. (Formerly owned by O. B. Berry.) Water level, in feet below land-surface datum, 1943: Jan. 19, 87.86.

14.25.20.443 (\*886, p. 401; 911, p. 167; 941, p. 205; 949, p. 278). Breeb Hurst. Water level, in feet below land-surface datum, 1943: Jan. 19, 73.19.

14.25.21.131 (\*845, p. 293; 886, p. 401; 911, p. 162; 941, p. 200; 949, p. 278). U. S. Government. Water level, in feet below land-surface datum, 1943: Jan. 19, 87.93; Mar. 20, 88.17. Well destroyed; measurements discontinued.

a Irrigation well 200 feet northeast pumping.

b Well dry at 47 feet.

c Irrigation well to west pumping.

14.25.24.133 (\*886, p. 401; 911, p. 167; 941, p. 205; 949, p. 278).  
E. O. Moore. Water level, in feet below land-surface datum, 1943: Jan. 20,  
63.43.

14.25.25.111 (\*886, p. 401; 911, p. 167; 941, p. 205; \*949, p. 278).  
John M. Norris. Water level, in feet below land-surface datum, 1943:  
Jan. 19, 62.71.

14.25.25.111a. John M. Norris. Irrigation well drilled in fall of  
1942 at east side of reservoir. Diameter 16 inches, depth 170 feet.  
Measuring point, top of pump base inside of pump case on east side, 1.35  
feet above land-surface datum. Water level, in feet below land-surface  
datum, 1943: Jan. 19, 59.92.

14.25.25.221 (\*845, p. 293, designated incorrectly as 14.25.25.112;  
886, p. 402; 911, p. 162; 941, p. 200; \*949, p. 278). John M. Norris.  
Equipped with water-stage recorder. Highest and lowest recorded water  
levels in feet below land-surface datum, 1943: Mar. 5, 45.15; Oct. 6,  
52.90.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	45.17	45.65	47.45	.....	.....	50.68	51.90a	52.84	.....	.....
2	a46.08	.....	45.28	45.64	47.50	.....	.....	50.70	51.95	52.85a	52.57	.....
3	46.10	.....	45.20	45.68	47.55	.....	.....	50.74	.....	52.85	52.54a	52.08
4	46.08	.....	45.15	45.78	47.60	.....	.....	50.79	.....	52.90	52.52	52.06
5	46.03	.....	45.15	45.85	.....	.....	.....	50.82	.....	52.90	52.50	52.03
6	46.00	.....	.....	45.87	.....	.....	.....	50.84	.....	52.90	52.51	52.04
7	45.99	.....	.....	45.94	.....	.....	.....	.....	.....	52.90	52.49	52.01
8	45.98a	45.32	.....	.....	a49.36	.....	.....	.....	.....	52.90	52.47	52.00
9	45.95	45.31	.....	.....	.....	49.41	.....	.....	.....	.....	52.45	.....
10	.....	45.36	.....	a46.16a	48.08	49.45	.....	.....	.....	.....	.....	.....
11	.....	45.30	.....	46.20	48.10	49.50	.....	a51.05a	52.27	.....	.....	.....
12	.....	45.33	.....	46.30	48.20	49.54	.....	51.07	52.30	.....	.....	.....
13	.....	45.29	.....	46.34	48.37	49.65	.....	51.13	52.35	.....	.....	.....
14	.....	45.26	.....	46.28	48.43	49.74	.....	51.20	52.40	.....	.....	.....
15	.....	45.24	.....	46.43	48.47	49.80a	50.42	51.24	52.43	.....	a52.36a	51.80
16	.....	.....	.....	46.45	48.50	.....	50.42	51.27	52.47	.....	52.34	51.79
17	.....	.....	.....	46.46	48.57	.....	50.43	51.32	52.47	.....	52.31	51.75
18	.....	.....	.....	.....	.....	.....	50.45	51.38	52.48	.....	52.32	51.74
19	.....	.....	.....	.....	.....	.....	50.46	.....	.....	.....	52.29	51.74
20	.....	.....	a45.34	.....	.....	.....	50.46	.....	.....	.....	52.27	51.68
21	a45.68	.....	45.39	.....	.....	.....	50.47	.....	.....	a52.69	52.26	51.67
22	45.66	.....	45.34	.....	.....	.....	50.48	.....	.....	52.65	52.25	51.65
23	45.64	.....	45.34	.....	.....	a50.02	.....	.....	.....	52.65	.....	.....
24	45.63	.....	45.39	.....	.....	50.08	.....	.....	.....	52.65	.....	.....
25	45.65	.....	45.36	.....	.....	50.12	.....	.....	.....	52.62	.....	.....
26	45.66a	45.25	45.39	.....	.....	50.15	.....	a51.68	.....	52.60	.....	.....
27	.....	45.13	45.52a	47.10	.....	50.20	.....	51.71	.....	52.58	.....	.....
28	.....	45.17	.....	47.23	.....	50.26	.....	51.72	.....	52.57	.....	.....
29	.....	.....	.....	47.28	.....	50.32	.....	51.76	.....	.....	.....	.....
30	.....	.....	.....	47.36	.....	50.37a	50.64	51.80	.....	.....	.....	.....
31	.....	.....	a45.63	.....	.....	.....	50.66	51.85	.....	.....	.....	.....

14.25.36.111 (\*949, p. 278). C. H. Foster. Water level, in feet  
below land-surface datum, 1943: Jan. 20, 55.69.

14.26.3.111 (\*886, p. 402; 911, p. 167; \*949, p. 278). Flora E. West.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 13.72.

14.26.3.213 (\*886, p. 402; 911, p. 167; 941, p. 205; \*949, p. 279).  
Mary Louise Brown. Water level, in feet below land-surface datum, 1943:  
Jan. 18, 7.73.

14.26.3.413 (\*886, p. 402; 911, p. 167; 941, p. 205; \*949, p. 279).  
Howard Menefee. Water level, in feet below land-surface datum, 1943:  
Jan. 18, 10.74.

14.26.3.442 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
John Langnegger. Water level, in feet below land-surface datum, 1943:  
Jan. 18, 18.60.

a Tape measurement.

14.26.4.133a (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
L. E. Harshey. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 19.82.

14.26.4.133b (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
L. E. Harshey. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 19.70.

14.26.4.141 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
Roy Lockhead. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 20.61.

14.26.4.231 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
George E. Wade. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 17.62.

14.26.5.131 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
L. M. Harter. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 24.58.

14.26.5.211 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
M. D. Menoud. (Formerly owned by Mr. McKinstry.) Water level, in feet  
below land-surface datum, 1943: Jan. 14, 23.90.

14.26.5.243 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
J. D. S. McKinstry. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 21.40.

14.26.5.433 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
D. L. Newsom. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 27.86.

14.26.6.111 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
Wiley Grizzle. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 20.80.

14.26.6.142 (\*911, p. 167; 941, p. 205; 949, p. 279). W. L. Heitman.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 23.43.

14.26.6.211 (\*886, p. 403; 911, p. 167; 941, p. 205; 949, p. 279).  
Wiley Grizzle. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 22.28.

14.26.6.232 (\*911, p. 167; 941, p. 205; 949, p. 279). Tom Andrews.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 29.53.

14.26.6.241 (\*886, p. 404; 911, p. 167; 941, p. 205; 949, p. 279).  
Tom Andrews. Water level, in feet below land-surface datum, 1943: Jan. 14,  
27.83.

14.26.7.333 (\*845, p. 293; \*949, p. 279). R. G. Campbell. (Formerly  
owned by O. C. Yarbrough.) Water level, in feet below land-surface datum,  
1943: Jan. 15, 49.22.

14.26.7.344 (\*911, p. 167; 941, p. 205; 949, p. 279). W. W. Adams.  
Measurements discontinued.

14.26.7.443 (\*845, p. 293; 886, p. 404; 911, p. 163; 941, p. 201;  
949, p. 279). W. W. Adams. Windmill disconnected and pressure pump in-  
stalled. Measuring point, top of casing, 0.88 foot above land-surface  
datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 15	39.81	May 17	45.10	Sept. 16	40.88
Mar. 19	40.28	July 15	44.53	Dec. 4	a 46.31

14.26.8.112 (\*886, p. 404; 911, p. 167; 941, p. 205; 949, p. 279).  
G. L. Truitt. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 25.08.

14.26.8.243 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280).  
P. Flores, Jr. Water level, in feet below land-surface datum, 1943:  
Jan. 15, 23.17.

a Pressure pump operating prior to measurement.

14.26.8.312 (\*949, p. 280). N. C. Newsom. (Formerly owned by Jacob Jacobsen.) Water level, in feet below land-surface datum, 1943: Jan. 14, 45.34.

14.26.8.433a (\*845, p. 294; \*886, p. 404; 911, p. 163; 941, p. 201; \*949, p. 280). Tom Ferguson. Water level, in feet below land-surface datum, 1943: Jan. 15, a/ 45.15.

14.26.9.143 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). V. R. Barnett. Water level, in feet below land-surface datum, 1943: Jan. 15, 30.11.

14.26.9.234 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). Mrs. Myrtle H. Gehman. Water level, in feet below land-surface datum, 1943: Jan. 15, 12.12.

14.26.9.434 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). Cave Bros. Water level, in feet below land-surface datum, 1943: Feb. 19, 10.70.

14.26.9.442 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). Oscar Cave. Water level, in feet below land-surface datum, 1943: Jan. 15, 15.05.

14.26.10.121 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). Mrs. Levi Barnett. Water level, in feet below land-surface datum, 1943: Jan. 18, 14.91.

14.26.10.221 (\*949, p. 280). John Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 18, 11.55.

14.26.10.244 (\*886, p. 404; 911, p. 168; 941, p. 205; 949, p. 280). John Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 18, 14.14.

14.26.10.433 (\*886, p. 405; 911, p. 168; 941, p. 205; 949, p. 280). Mark Boyce. Measurements discontinued.

14.26.11.111 (\*886, p. 405; 911, p. 168; 941, p. 205; 949, p. 280). John Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 18, 17.18.

14.26.11.121 (\*886, p. 405; 911, p. 168; 941, p. 205; 949, p. 280). H. A. Kiper. Measuring point, beginning Jan. 18, 1943, top of 6-inch casing, 2.66 feet above wooden platform and land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 18, b/ 18.54.

14.26.11.322 (\*886, p. 405; 911, p. 168; 941, p. 205; 949, p. 280). Marie Stewart. Measuring point, top of casing, now 0.30 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 18, 13.47.

14.26.11.444 (\*886, p. 405; 911, p. 168; 941, p. 205; 949, p. 280). W. E. Utterback. Water level, in feet below land-surface datum, 1943: Jan. 18, 10.44.

14.26.12.131 (\*845, p. 295; 886, p. 405; 911, p. 163; 941, p. 201; 949, p. 280). W. E. Utterback.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	21.63	May 17	28.07	Sept. 16	21.06
Mar. 20	21.90	July 15	22.18	Dec. 6	21.78

14.26.12.433b (\*911, p. 168; 941, p. 205; 949, p. 280). W. N. Olive. Water level, in feet below land-surface datum, 1943: Jan. 18, 13.88.

14.26.13.121 (\*886, p. 405; 911, p. 168; 941, p. 206; 949, p. 280). L. M. Lang. Water level, in feet below land-surface datum, 1943: Jan. 18, 15.99.

- a Well 100 feet east pumping.  
b Windmill pumping.

14.26.14.212 (\*911, p. 168; 941, p. 206; 949, p. 280). B. L. Barnett. (Formerly owned by George Harris.) Water level, in feet below land-surface datum, 1943: Jan. 18, 12.77.

14.26.14.421. Jim Michelet. Drilled irrigation well, equipped with turbine pump. Measuring point, top of pump base plate, 4.85 feet below land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 18, 10.49.

14.26.14.441 (\*886, p. 405; 911, p. 168; 941, p. 206; 949, p. 280). F. H. Evans. (Formerly owned by M. C. Brown.) Water level, in feet below land-surface datum, 1943: Jan. 18, 12.63.

14.26.15.113 (\*886, p. 405; 911, p. 168; 941, p. 206; 949, p. 281). State of New Mexico. Water level, in feet below land-surface datum, 1943: Jan. 15, 16.87.

14.26.15.322 (\*941, p. 201; 949, p. 281). F. H. Evans.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	8.06	May 17	7.80	Sept. 15	8.87
Mar. 20	6.06	July 15	6.60	Dec. 6	9.24

14.26.15.333 (\*886, p. 405; 911, p. 168; 941, p. 201; \*949, p. 281). E. D. Menoud.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 15	20.65	May 15	22.64	Sept. 15	21.99
Mar. 20	20.79	July 15	21.32	Dec. 4	21.76

14.26.16.111 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). Marie O'Dell. Measurements discontinued.

14.26.16.422 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). Measurements discontinued.

14.26.17.122 (\*949, p. 281). R. A. and T.A. Bledsoe. Water level, in feet below land-surface datum, 1943: Feb. 19, 44.65.

14.26.17.211 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). William Salomon. Water level, in feet below land-surface datum, 1943: Jan. 15, 45.54.

14.26.17.444 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). Pearson Bros. Water level, in feet below land-surface datum, 1943: Jan. 15, 42.74.

14.26.18.113 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). E. D. Watson. (Formerly owned by O. C. Yarbrough.) Water level, in feet below land-surface datum, 1943: Jan. 15, 53.60.

14.26.18.131 (\*949, p. 281). E. D. Watson. (Formerly owned by J. P. White Co.) Water level, in feet below land-surface datum, 1943: Jan. 15, 53.52.

14.26.19.211 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). Pearson Bros. (Formerly owned by Joseph Hooten.) Water level, in feet below land-surface datum, 1943: Jan. 15, 45.71.

14.26.19.242 (\*886, p. 406; 911, p. 168; 941, p. 206; \*949, p. 281). Oscar A. Pearson. Water level, in feet below land-surface datum, 1943: Jan. 15, 54.05.

14.26.19.311 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). W. C. West. Water level, in feet below land-surface datum, 1943: Jan. 15, 42.99.

14.26.19.444 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). E.E. Lane. Water level, in feet below land-surface datum, 1943: Jan. 15, 55.29.

14.26.20.143 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 281). Pearson Bros. Water level, in feet below land-surface datum, 1943: Jan. 15, 53.74.

- 14.26.20.334 (911, p. 168; 941, p. 206; \*949, p. 281). E. Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 15, 66.82.
- 14.26.20.343 (\*886, p. 406; 911, p. 168; 941, p. 206; \*949, p. 281). E. Langnegger. Water level, in feet below land-surface datum, 1943: Jan. 15, 61.71.
- 14.26.21.333 (\*886, p. 406; 911, p. 168; 941, p. 206; 949, p. 282). G. E. Wade. Water level, in feet below land-surface datum, 1943: Jan. 15, 36.95.
- 14.26.21.422 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). A. L. Nail. Water level, in feet below land-surface datum, 1943: Jan. 15, 18.36.
- 14.26.22.141 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). J. E. Lusk. Water level, in feet below land-surface datum, 1943: Jan. 18, 25.06.
- 14.26.22.213 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). J. L. King. Measurements discontinued.
- 14.26.22.411 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). A. L. Nail. Measurements discontinued.
- 14.26.23.131 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). E. A. White. Water level, in feet below land-surface datum, 1943: Jan. 18, 9.39.
- 14.26.23.214 (\*949, p. 282). F. E. Pilley. Water level, in feet below land-surface datum, 1943: Jan. 18, 12.06.
- 14.26.23.413 (\*949, p. 282). E. A. White. Water level, in feet below land-surface datum, 1943: Jan. 18, 10.86.
- 14.26.27.111 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). J. L. Ogle. Measuring point, beginning January 15, 1943, top of windmill pipe clamps, 0.30 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 15, 12.24.
- 14.26.28.111 (\*949, p. 282). Ross Sears. (Formerly owned by Helen Gilroy.) Water level, in feet below land-surface datum, 1943: Jan. 18, 36.28.
- 14.26.28.114 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). Ross Sears. (Formerly owned by Phillip Stoos.) Water level, in feet below land-surface datum, 1943: Jan. 18, 33.74.
- 14.26.28.211 (\*886, p. 407; 911, p. 168; 941, p. 206; \*949, p. 282). L. T. Lewis. Water level, in feet below land-surface datum, 1943: Jan. 18, 27.83.
- 14.26.28.423 (\*949, p. 282). L. T. Lewis. (Formerly owned by L. T. Bealer.) Water level, in feet below land-surface datum, 1943: Jan. 15, 23.89.
- 14.26.29.112 (\*886, p. 407; 911, p. 168; 941, p. 206; \*949, p. 282). Phillip E. Stoos. Water level, in feet below land-surface datum, 1943: Jan. 15, 64.95.
- 14.26.29.213 (\*886, p. 407; 911, p. 168; 941, p. 206; \*949, p. 282). Phillip E. Stoos. Water level, in feet below land-surface datum, 1943: Feb. 19, 54.52.
- 14.26.29.441a (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). J. W. Wiggins. Water level, in feet below land-surface datum, 1943: Jan. 18, 36.88.
- 14.26.29.441b (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). J. W. Wiggins. Water level, in feet below land-surface datum, 1943: Jan. 18, 36.13.
- 14.26.30.441 (\*886, p. 407; 911, p. 168; 941, p. 206; 949, p. 282). Ray Bartlett. Water level, in feet below land-surface datum, 1943: Jan. 15, 55.90.

14.26.32.131a (\*949, p. 282). B. F. Knoll. Water level, in feet below land-surface datum, 1943: Feb. 20, 53.09.

14.26.32.331 (\*845, p. 295; 886, p. 408; 911, p. 163; 941, p. 201; 949, p. 282; designated incorrectly in former reports as 14.26:32.332). B. E. Spencer.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 15	34.84	May 17	36.15	Sept. 15	34.34
Mar. 20	35.55	July 15	35.05	Dec. 4	35.74

14.26.35.344 (\*886, p. 408; 911, p. 168; 941, p. 206; 949, p. 283). J. H. King. Water level, in feet below land-surface datum, 1943: Jan. 22, 65.68.

15.24.23.344 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). Carroll Jackson. Water level, in feet below land-surface datum, 1943: Jan. 20, 66.22.

15.24.27.344 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). S. A. Lanning. Water level, in feet below land-surface datum, 1943: Jan. 20, 59.53.

15.24.28.244 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). State of New Mexico. Water level, in feet below land-surface datum, 1943: Jan. 20, a/ 95.91.

15.24.32.211 (\*911, p. 169; 941, p. 206; 949, p. 283). Carl Mangum. Water level, in feet below land-surface datum, 1943: Jan. 20, 37.84.

15.24.34.341 (\*886, p. 408; 911, p. 169; 941, p. 206; \*949, p. 283). S. A. Lanning. Water level, in feet below land-surface datum, 1943: Jan. 20, 36.39.

15.24.35.143 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). E. P. Malone. Water level, in feet below land-surface datum, 1943: Jan. 20, b/ 33.00.

15.24.36.243 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). State of New Mexico. Water level, in feet below land-surface datum, 1943: Jan. 20, 39.68.

15.25.12.111a (\*886, p. 408; 911, p. 169; 941, p. 206; \*949, p. 283). Jack Palmer. (Formerly owned by F. U. Gooding.) Water level, in feet below land-surface datum, 1943: Jan. 20, 38.50.

15.25.12.111b (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). Jack Palmer. Measurements discontinued.

15.25.24.111 (\*886, p. 408; 911, p. 169; 941, p. 206; 949, p. 283). Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 20, 13.31.

15.25.24.211 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 283). Hal Bogle. Water level, in feet below land-surface datum, 1943: Jan. 20, 9.49.

15.25.26.423 (\*949, p. 283). R. T. Spence. Water level, in feet below land-surface datum, 1943: Jan. 20, 5.42.

15.25.27.321 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 283). Pearson Bros. (Formerly owned by Charles W. Nelson.) Water level, in feet below land-surface datum, 1943: Jan. 20, 19.09.

15.25.28.331 (\*886, p. 409; 911, p. 169; \*949, p. 283). Troy C. Sexton. (Formerly owned by Carroll Jackson.) No measurements made in 1943.

15.25.33.112 (\*886, p. 409; 911, p. 169; 941, p. 206; \*949, p. 283). Carroll Jackson. Water level, in feet below land-surface datum, 1943: Jan. 20, 15.94.

a Windmill pumping prior to measurement.

b Windmill shut down for 15 minutes prior to measurement.

15.25.35.111 (\*845, p. 295; 886, p. 409; 911, p. 163; 941, p. 201; 949, p. 283). Moss M. Spence.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 20	23.31	May 17	26.12	Sept. 15	26.13
Mar. 20	24.81	July 15	23.78	Dec. 6	26.49

15.25.35.311 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 284). Paul Robinson. (Formerly owned by R. E. Coleman.) Water level, in feet below land-surface datum, 1943: Jan. 22, 34.53.

15.25.36.333 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 284). John M. Norris. No measurements made in 1943.

15.25.36.333a (\*949, p. 284). John M. Norris. Water level, in feet below land-surface datum, 1943: Jan. 22, 26.43.

15.26.4.444 (\*886, p. 417; 911, p. 163; 941, p. 201; 949, p. 284; designated incorrectly in earlier reports as 15.26.9.222). Harry Cowan.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 22	34.88	May 16	36.44	Sept. 15	36.22
Mar. 20	34.63	July 15	35.27	Dec. 4	36.50

15.26.5.121 (\*886, p. 409; 911, p. 169; 941, p. 206; \*949, p. 284). B. E. Spencer. Water level, in feet below land-surface datum, 1943: Jan. 22, 38.43.

15.26.5.142 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 284). A. Russell Estate. (Formerly owned by H. S. Russell. Water level, in feet below land-surface datum, 1943: Jan. 22, 25.55.

15.26.6.311 (\*886, p. 409; 911, p. 169; 941, p. 206; 949, p. 284). Calvin Graham. Water level, in feet below land-surface datum, 1943: Jan. 20, 33.67.

15.26.9.133 (\*911, p. 169; 941, p. 206; 949, p. 284). E. M. George. Water level, in feet below land-surface datum, 1943: Feb. 20, 19.30.

15.26.14.222 (\*949, p. 284). Breeb Hurst. Water level, in feet below land-surface datum, 1943: Feb. 20, 4.72.

15.26.19.211 (\*941, p. 202; 949, p. 284). Lake Arthur Cemetery.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 20	27.41	May 16	27.92	Sept. 15	30.63
Mar. 20	27.17	July 15	28.98	Dec. 6	31.28

15.26.19.442 (\*886, p. 418; 911, p. 169; 941, p. 207; \*949, p. 284). J. F. Frazier. Water level, in feet below land-surface datum, 1943: Jan. 22, 7.34.

15.26.20.144 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). J. W. Webb. Water level, in feet below land-surface datum, 1943: Jan. 22, 22.02.

15.26.20.431 (\*886, p. 418; 911, p. 169; 941, p. 207; \*949, p. 284). Bill Walton Estate. Water level, in feet below land-surface datum, 1943: Jan. 22, 13.20.

15.26.29.111 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). E. C. Jackson. Water level, in feet below land-surface datum, 1943: Jan. 22, 5.39.

15.26.29.222 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). Lake Arthur Drainage District. Water level, in feet below land-surface datum, 1943: Jan. 22, 13.60.

15.26.29.231 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). Mrs. Hattie C. Evans. Water level, in feet below land-surface datum, 1943: Jan. 22, 9.3.

15.26.30.131 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). Paul Robinson. Water level, in feet below land-surface datum, 1943: Jan. 20, 7.72.

15.26.30.224 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284). First National Bank of Artesia. Measuring point, beginning Jan. 22, 1943, top of casing, 1.10 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 22, 8.04.

15.26.30.411. J. B. Crook. Drilled irrigation well, equipped with turbine pump. Diameter  $12\frac{1}{2}$  inches, depth 95 feet. Measuring point, top of casing, 0.75 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 20, 13.35.

15.26.31.111 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 284.) E. J. Gromo. Water level, in feet below land-surface datum, 1943: Jan. 20, 11.65.

15.26.31.333 (\*949, p. 285). B. E. Spencer. Water level, in feet below land-surface datum, 1943: Jan. 22, 17.23.

15.26.32.231 (\*886, p. 418; 911, p. 169; 941, p. 207; 949, p. 285). Mrs. Hattie C. Evans. Water level, in feet below land-surface datum, 1943: Jan. 22, 8.88.

#### Eddy County

16.25.1.lot 3 (\*886, p. 418; 911, p. 172; 941, p. 210; 949, p. 285). Pearson Bros. Water level, in feet below land-surface datum, 1943: Jan. 23, 15.52.

16.25.1.lot 13. Charles Buck. Drilled irrigation well, equipped with turbine pump. Diameter  $12\frac{1}{2}$  inches, depth 156 feet. Measuring point, top of casing, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 23, 18.84.

16.25.1.344 (\*886, p. 418; 911, p. 172; 941, p. 210; 949, p. 285). Buck Bros. Water level, in feet below land-surface datum, 1943: Jan. 23, 10.58.

16.25.1.423 (\*886, p. 418; 911, p. 172; 941, p. 210; 949, p. 285). O'Bannon & Meyer. Measurements discontinued.

16.25.2.lot 9 (\*886, p. 419; 911, p. 172; 941, p. 210; 949, p. 285). Ralph Pearson. Measuring point, beginning Jan. 23, 1943, top of casing, 1.21 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 25, 19.29.

16.25.2.lot 15 (\*911, p. 172; 941, p. 210; 949, p. 285). Ralph Pearson. Water level, in feet below land-surface datum, 1943: Jan. 23, 19.34.

16.25.4.lot 12 (\*886, p. 419; 911, p. 172; 941, p. 210; 949, p. 285). J. E. Taylor. Water level, in feet below land-surface datum, 1943: Jan. 22, 11.63.

16.25.5.lot 4 (\*886, p. 419; 911, p. 172; 941, p. 210; 949, p. 285). E. P. Malone, Jr. Water level, in feet below land-surface datum, 1943: Jan. 22, 12.36.

16.25.5.lot 5 (\*949, p. 285). E. P. Malone, Jr. Water level, in feet below land-surface datum, 1943: Jan. 22, 12.77.

16.25.5.lot 13 (\*886, p. 419; 911, p. 172; 941, p. 210; 949, p. 285). Fred Croom. Water level, in feet below land-surface datum, 1943: Jan. 22, 5.23.

16.25.5.443 (\*886, p. 419; 911, p. 172; 941, p. 210; 949, p. 285). Winton M. Ault. Water level, in feet below land-surface datum, 1943: Jan. 22, 15.61.

16.25.6.lot 4 (\*845, p. 296; 886, p. 419; 911, p. 169; 941, p. 207; 949, p. 285). Fred M. Nelson.

16.25.6.lot 4. Fred M. Nelson--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 22	12.65	May 17	14.41	Sept.15	15.36
Mar. 20	13.47	July 15	13.91	Dec. 6	15.97

16.25.6.lot 8 (\*886, p. 419; 911, p. 173; 941, p. 210; 949, p. 285). E. P. Malone. Measurements discontinued.

16.25.6.313 (\*845, p. 296; 886, p. 419; 911, p. 169; 941, p. 207; \*949, p. 285). Frank Childress. Equipped with water-stage recorder. Measuring point, beginning Feb. 28, 1943, top of wooden cribbing in well, 0.40 foot above land-surface datum. Highest and lowest recorded water level, in feet below land-surface datum, 1943: Feb. 28, 27.43; Nov. 7, 28.61.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	27.50	27.75	27.74	.....	.....	27.97	28.32	.....	.....	.....
2	a27.56	.....	27.50	27.73	27.65	.....	.....	27.96	28.32	.....	a28.46	.....
3	27.65	.....	27.59	27.70	27.67	.....	.....	27.95	.....	.....	28.40	28.46
4	27.87	.....	27.45	27.70	27.55	.....	.....	28.00	.....	.....	28.28	28.37
5	27.60	.....	27.50	27.55	.....	.....	.....	28.10	.....	.....	28.15	28.22
6	27.58	.....	.....	27.51	.....	.....	.....	28.12	.....	.....	28.15	28.28
7	27.70	.....	.....	27.52	.....	.....	.....	.....	.....	.....	28.46	.....
8	27.73	a27.52	.....	.....	.....	a28.04	.....	.....	.....	.....	28.52	.....
9	27.64	27.43	.....	.....	.....	27.98	.....	.....	.....	.....	28.46	.....
10	.....	27.62	.....	a27.62	a27.80	27.92	.....	.....	.....	.....	.....	.....
11	.....	27.75	.....	27.65	27.71	27.86	.....	a28.09	a28.44	.....	.....	.....
12	.....	27.75	.....	27.77	27.74	27.89	.....	28.09	28.36	.....	.....	.....
13	.....	27.83	a27.72	27.75	27.78	27.92	.....	28.10	28.37	.....	.....	.....
14	.....	27.73	27.60	27.77	27.60	27.95	.....	28.13	28.33	.....	.....	.....
15	.....	27.73	27.51	27.56	27.64	27.96	a28.00	28.13	28.38	.....	a28.42	a28.40
16	.....	.....	27.51	27.57	27.70	.....	27.95	28.13	28.45	.....	28.40	28.40
17	.....	.....	27.57	27.75	27.75	.....	28.00	28.15	28.55	.....	28.33	28.50
18	.....	.....	27.49	.....	.....	.....	28.06	28.20	28.41	.....	28.32	28.38
19	.....	.....	27.49	.....	.....	.....	27.99	.....	.....	.....	28.36	28.34
20	.....	.....	27.73	.....	.....	.....	27.98	.....	.....	a28.35	28.26	28.28
21	a27.54	.....	.....	.....	.....	.....	28.00	.....	.....	28.37	28.27	28.24
22	27.54	.....	.....	.....	.....	.....	28.03	.....	.....	28.28	28.36	28.23
23	27.52	.....	.....	.....	.....	a28.07	.....	.....	.....	28.30	.....	.....
24	27.52	.....	.....	.....	.....	28.04	.....	.....	.....	28.45	.....	.....
25	27.60	.....	.....	.....	.....	28.06	.....	.....	.....	28.47	.....	.....
26	27.80	a27.98	.....	.....	.....	28.10	.....	a28.34	.....	28.58	.....	.....
27	27.65	27.43	.....	a27.76	.....	28.02	.....	28.32	.....	28.30	.....	.....
28	27.60	27.43	.....	27.73	.....	28.05	.....	28.30	.....	.....	.....	.....
29	.....	.....	.....	27.67	.....	28.15	.....	28.25	.....	.....	.....	.....
30	.....	.....	.....	27.73	.....	28.06	a28.02	28.22	.....	.....	.....	.....
31	.....	a27.73	.....	.....	.....	.....	28.03	28.25	.....	.....	.....	.....

16.25.8.111 (\*886, p. 420; 911, p. 173; 941, p. 210; 949, p. 286). Pearson Bros. Measuring point, beginning Jan. 22, 1943, top of casing, 0.80 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 22, 26.93.

16.25.10.311 (\*886, p. 420; 911, p. 173; 941, p. 210; 949, p. 286). Measurements discontinued.

16.25.10.334 (\*886, p. 420; 911, p. 173; \*949, p. 286). Orval Gray. (Formerly owned by Clayton Gray.) Water level, in feet below land-surface datum, 1943: Jan. 23, 49.43.

16.25.10.344 (\*886, p. 420; 911, p. 173; 941, p. 210; 949, p. 286). Measurements discontinued.

a Tape measurement.

- 16.25.11.233 (\*886, p. 420; 911, p. 173; 941, p. 210; 949, p. 286).  
Noah Buck. Water level, in feet below land-surface datum, 1943: Jan. 23, 29.90.
- 16.25.12.124 (\*886, p. 420; 911, p. 173; 941, p. 210; 949, p. 286).  
Buck Bros. Water level, in feet below land-surface datum, 1943: Jan. 23, 16.39.
- 16.25.12.412 (\*886, p. 420; 911, p. 173; 941, p. 211; 949, p. 286).  
T. J. Terry. (Formerly owned by Terry Reser.) Water level, in feet below land-surface datum, 1943: Jan. 23, 11.64.
- 16.25.13.211 (\*886, p. 420; 911, p. 173; 941, p. 211; \*949, p. 286).  
T. J. Terry. Water level, in feet below land-surface datum, 1943: Jan. 23, 21.22.
- 16.25.14.213 (\*886, p. 420; 911, p. 173; 941, p. 211; 949, p. 286).  
L. T. Lewis. (Formerly owned by Charles Buck.) Water level, in feet below land-surface datum, 1943: Jan. 23, 31.95.
- 16.25.15.233 (\*886, p. 420; 911, p. 173; \*949, p. 286). J. H. Everest.  
Water level, in feet below land-surface datum, 1943: Jan. 23, 67.55.
- 16.25.15.331 (\*886, p. 421; 911, p. 173; \*949, p. 286). J. H. Everest.  
No measurements made in 1943.
- 16.25.24.212 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 286).  
Monroe Howard. (Formerly owned by H. C. Powell.) Water level, in feet below land-surface datum, 1943: Jan. 25, 31.82.
- 16.26.5.lot 3 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 286).  
Ed Taylor. Water level, in feet below land-surface datum, 1943: Jan. 23, 26.92.
- 16.26.5.lot 4 (\*845, p. 287; 886, p. 421; 911, p. 170; 941, p. 211; 949, p. 286).  
H. V. Parker. Water level, in feet below land-surface datum, 1943: Jan. 23, a/ 31.64.
- 16.26.5.331 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 286).  
Nancy A. Ripper. Water level, in feet below land-surface datum, 1943: Jan. 23, 16.82.
- 16.26.6.lot 2 (\*886, p. 421; 911, p. 173; 941, p. 211; \*949, p. 286).  
H. V. Parker. No measurements made in 1943.
- 16.26.6.lot 4 (\*886, p. 421; 911, p. 173; \*949, p. 287). H. V. Parker.  
Water level, in feet below land-surface datum, 1943: Feb. 20, b/ 34.61.
- 16.26.6.333 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 287).  
Scott Meyer. (Formerly owned by O'Bannon & Meyer.) Water level, in feet below land-surface datum, 1943: Jan. 23, 12.13.
- 16.26.7.121 (\*886, p. 421; 911, p. 173; 941, p. 211; \*949, p. 287).  
L. T. Lewis. (Formerly owned by L. Keith.) Water level, in feet below land-surface datum, 1943: Jan. 23, 8.18.
- 16.26.7.321 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 287).  
Charles Buck. Water level, in feet below land-surface datum, 1943: Jan. 25, 4.29.
- 16.26.7.332 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 287).  
Measurements discontinued.
- 16.26.8.111 (\*886, p. 421; 911, p. 173; 941, p. 211; 949, p. 287).  
Ira S. Reser. (Formerly owned by Reser & Johnson.) Water level, in feet below land-surface datum, 1943: Jan. 23, 14.01.
- 16.26.15.333 (\*949, p. 287). Carl Manda. (Formerly owned by F. A. Manda.)  
Water level, in feet below land-surface datum, 1943: Jan. 25, 10.59.
- 16.26.16.313 (\*886, p. 422; 911, p. 173; 941, p. 211; 949, p. 287).  
V. L. Gates. Water level, in feet below land-surface datum, 1943: Jan. 25, 4.70.

a Pressure pump operating intermittently.  
b Pressure pump operating.

16.26.17.311 (\*886, p. 422; 911, p. 173; 941, p. 211; 949, p. 287).  
W. R. Roberts. (Formerly owned by J. L. Muncy.) Water level, in feet below  
land-surface datum, 1943: Jan. 25, 17.57.

16.26.17.331 (\*886, p. 422; 911, p. 173; 941, p. 211; 949, p. 287).  
Elzie Swift. (Formerly owned by Mr. Green.) Measuring point, beginning  
Jan. 25, 1943, lower edge of opening on south side of pump case, 0.81 foot  
above land-surface datum. Water level, in feet below land-surface datum,  
1943: Jan. 25, 6.12.

16.26.18.331 (\*886, p. 422; 911, p. 173; 941, p. 211; \*949, p. 287).  
Monroe Howard. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 16.40.

16.26.18.411 (\*886, p. 422; 911, p. 173; 941, p. 211; 949, p. 287).  
Ira S. Reser. (Formerly owned by G. G. Golder.) Water level, in feet  
below land-surface datum, 1943: Jan. 25, 15.03.

16.26.19.113 (\*886, p. 422; 911, p. 173; 941, p. 211; \*949, p. 287).  
Henry E. Hall. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 18.05.

16.26.19.133 (\*886, p. 422; 911, p. 173; 941, p. 211; 949, p. 287).  
F. M. Privett. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 17.82.

16.26.19.211 (\*886, p. 422; 911, p. 173; 941, p. 211; \*949, p. 287).  
H. V. Parker. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 11.34.

16.26.19.411 (\*886, p. 409; 911, p. 170; 941, p. 208; 949, p. 287).  
F. M. Privett. Windmill removed. Well is equipped with hand pump.  
Measuring point, beginning Jan. 25, 1943, top of casing, 0.72 foot above  
land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 25	29.92	May 16	39.00	Sept. 15	47.62
Mar. 20	31.68	July 15	34.57	Dec. 4	33.76

16.26.21.333 (\*886, p. 409; 911, p. 173; 941, p. 211; 949, p. 287).  
J. H. Everest. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 5.03.

16.26.28.333 (\*886, p. 410; 911, p. 170; 941, p. 208; 949, p. 287).  
Irvin Dixon. (Formerly owned by Ina C. Harral.) Iron collar removed.  
Measuring point, beginning Sept. 15, 1943, top of concrete base, 1.25 feet  
above land-surface datum.

Water level, in feet below land-surface datum, 1943

Jan. 25	10.49	May 16	17.02	Sept. 15	21.30
Mar. 20	10.69	July 15	13.75	Dec. 6	14.37

16.26.28.431 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 287).  
R. E. Coleman. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 10.29.

16.26.31.413 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288).  
W. W. Wilson. (Formerly owned by T. F. Wilson.) Water level, in feet  
below land-surface datum, 1943: Jan. 25, 41.56.

16.26.32.231. B. E. Green. Drilled irrigation well, equipped with  
turbine pump. Diameter 12 $\frac{1}{2}$  inches, depth 170 feet. Measuring point,  
center of  $\frac{1}{2}$ -inch tap hole in top of discharge pipe west of pump, 2.60 feet  
above land-surface datum. Water level, in feet below land-surface datum,  
1943: Jan. 25, 20.41.

16.26.32.411 (\*886, p. 410; 911, p. 173; 941, p. 211; \*949, p. 288).  
B. E. Green. (Formerly owned by O. V. Moore.) Water level, in feet below  
land-surface datum, 1943: Jan. 25, 16.84.

16.26.32.421 (\*886, p. 410; 911, p. 173; 941, p. 211; \*949, p. 288).  
W. W. Parker. Water level, in feet below land-surface datum, 1943:  
Jan. 25, 14.84.

16.26.35.113. Mary E. Strunk. Dug and drilled irrigation well, equipped with centrifugal pump. Measuring point, top of 2- by 12-inch board over pit at west side of pump shaft, 0.20 foot above 8- by 8-inch stringers, 0.88 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 25, 7.86.

17.25.13.131 (\*886, p. 410; 911, p. 173; 941, p. 211; \*949, p. 288). L. G. Monsehke. Water level, in feet below land-surface datum, 1943: Jan. 27, 87.03.

17.25.22.223 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288). State of New Mexico. Water level, in feet below land-surface datum, 1943: Jan. 27, 141.25.

17.25.24.433 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288). J. M. Jackson. Water level, in feet below land-surface datum, 1943: Jan. 28, 83.67.

17.25.26.222 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288). Mildred and Minnie L. Dass. Water level, in feet below land-surface datum, 1943: Jan. 28, 93.46.

17.25.35.411 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288). Ed Kissinger Estate. Water level, in feet below land-surface datum, 1943: Jan. 28, 107.95.

17.26.2.133 (\*886, p. 410; 911, p. 173; 941, p. 211; 949, p. 288). Fred Savoie. (Formerly owned by A. L. Jackson.) Water level, in feet below land-surface datum, 1943: Jan. 26, 7.49.

17.26.3.231 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). H. R. Rogers. Water level, in feet below land-surface datum, 1943: Jan. 26, 7.33.

17.26.3.333. A. T. Woelk. Drilled irrigation well, equipped with turbine pump. Measuring point, center of  $\frac{1}{2}$ -inch tap hole in top of discharge pipe, 1.60 feet above concrete pump base and 1.90 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 26, 9.96.

17.26.3.433 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). Mrs. R. W. Box. No measurements made in 1943.

17.26.4.121 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). State of New Mexico. Water level, in feet below land-surface datum, 1943: Jan. 26, 10.53.

17.26.4.331a (\*886, p. 411; 911, p. 173; 941, p. 211; \*949, p. 288). Howard Stroup. Water level, in feet below land-surface datum, 1943: Jan. 26, 3.77.

17.26.4.331b (\*886, p. 411; 911, p. 173; 941, p. 211; \*949, p. 288). Howard Stroup. Water level, in feet below land-surface datum, 1943: Jan. 26, 3.57.

17.26.4.413 (\*886, p. 411; 911, p. 173; \*949, p. 288). Fred Crawford. Water level, in feet below land-surface datum, 1943: Jan. 26, 13.08.

17.26.5.422 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). Doris Newberry. Water level, in feet below land-surface datum, 1943: Feb. 20, 13.50.

17.26.6.413 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). Fred and B. A. Savoie. Water level, in feet below land-surface datum, 1943: Jan. 25, 36.36.

17.26.7.131 (\*886, p. 411; 911, p. 173; 941, p. 211; 949, p. 288). J. W. Collins. Water level, in feet below land-surface datum, 1943: Jan. 25, 44.68.

17.26.7.344 (\*886, p. 411; 911, p. 170; 941, p. 208; 949, p. 288). Everest E. Scoggins. Turbine pump installed in well in September 1943. Measuring point, beginning Sept. 15, 1943, bottom edge of mouth of discharge pipe, 5.35 feet above land-surface datum. Previous measuring point was top of casing, 2.63 feet above land-surface datum.

## 17.26.7.344. Everest E. Scoggins--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 25	33.95	May 17	42.53	Sept. 15	48.61
Mar. 20	36.93	July 15	41.11	Dec. 6	39.11

17.26.7.421 (\*886, p. 412; 911, p. 173; 941, p. 211; \*949, p. 288).  
Ivan Rogers. (Formerly owned by J. W. Jackson.) Water level, in feet  
below land-surface datum, 1943: Jan. 25, 21.52.

17.26.7.423 (\*911, p. 173; 941, p. 211; \*949, p. 289). C. A. Houghton.  
Water level, in feet below land-surface datum, 1943: Jan. 25, 19.87.

17.26.7.433 (\*886, p. 411; 911, p. 173; 941, p. 211; \*949, p. 289).  
Ed Stone. (Formerly owned by Everest Scoggins.) Water level, in feet  
below land-surface datum, 1943: Jan. 25, 29.46.

17.26.7.444 (\*886, p. 412; 911, p. 173; 941, p. 211; 949, p. 289).  
Albert Blake. Centrifugal pump removed and pressure pump installed.  
Measuring point, beginning Jan. 25, 1943, top of hole in 2-inch floor  
boards about 6 inches south of pump, level with land-surface datum. Water  
level, in feet below land-surface datum, 1943: Jan. 25, 25.40.

17.26.9.333 (\*886, p. 412; 911, p. 174; 941, p. 211; \*949, p. 289).  
New Mexico Asphalt & Refining Co. Water level, in feet below land-surface  
datum, 1943: Jan. 26, 9.30.

17.26.10.333 (\*886, p. 412; 911, p. 170; 941, p. 208; 949, p. 289).  
V. L. Gates.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	6.35	May 16	8.65	Dec. 6	7.37
Mar. 20	8.53	July 15	6.29		

17.26.10.433 (\*886, p. 412; 911, p. 174; 941, p. 211; 949, p. 289).  
D. D. Sullivan. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 16.73.

17.26.15.113 (\*886, p. 412; 911, p. 174; 941, p. 211; \*949, p. 289).  
R. L. Vogel. (Formerly owned by C. L. Allison.) No measurements made in  
1943.

17.26.15.121 (\*886, p. 412; 911, p. 174; 941, p. 211; \*949, p. 289).  
R. L. Vogel. Water level, in feet below land-surface datum, 1943: Jan. 26,  
7.39.

17.26.15.211 (\*886, p. 412; 911, p. 174; 941, p. 211; 949, p. 289).  
J. M. Vogel. Water level, in feet below land-surface datum, 1943: Jan. 26,  
13.76.

17.26.15.313 (\*886, p. 412; 911, p. 174; \*949, p. 289). J. H. Holloman.  
Measurements discontinued.

17.26.15.411 (\*886, p. 412; 911, p. 174; 941, p. 211; 949, p. 289).  
M. F. Hardendorf. (Formerly owned by Mrs. A. J. Hardendorf.) Water level,  
in feet below land-surface datum, 1943: Jan. 26, 13.97.

17.26.16.333 (\*845, p. 298; 886, p. 412; \*911, p. 171; 941, p. 208;  
949, p. 289). Artesia Cemetery. Measuring point raised to 1.27 feet above  
land-surface datum on Sept. 15, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	8.48	May 16	a 25.27	Sept. 15	28.63
Mar. 20	16.14	July 15	b 16.30	Dec. 6	12.08

17.26.16.411 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 289).  
G. G. Armstrong & Son. Water level, in feet below land-surface datum,  
1943: Jan. 26, 13.31.

a Windmill had been pumping. b Pumping slowly.

17.26.17.423 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 289).  
H. A. Denton. Measuring point, beginning Jan. 26, 1943, top of boards  
over pit, 0.25 foot above concrete well curb and 5.35 feet below land-  
surface datum. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 18.07.

17.26.18.224 (\*886, p. 413; 911, p. 174; 941, p. 211; \*949, p. 289).  
Measurements discontinued.

17.26.18.433 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 289).  
Albino C. Baca. (Formerly owned by Lowery & Baca.) Water level, in feet  
below land-surface datum, 1943: Jan. 26, 40.97.

17.26.18.442 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 290).  
Mrs. Murphy. Water level, in feet below land-surface datum, 1943: Jan. 26,  
28.90.

17.26.20.133 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 290).  
W. E. Ragdale. No measurements made in 1943.

17.26.21.112 (\*886, p. 413; 911, p. 174; 941, p. 211; 949, p. 290).  
Roger Durand. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 10.74.

17.26.21.341 (\*886, p. 413; 911, p. 174; 941, p. 212; 949, p. 290).  
W. S. Hogssett. (Formerly owned by W. T. Amstutz.) Water level, in feet  
below land-surface datum, 1943: Jan. 28, 0.53.

17.26.22.233 (\*886, p. 413; 911, p. 174; 941, p. 212; 949, p. 290).  
R. L. Paris. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 19.80.

17.26.24.333 (\*949, p. 290). Mary E. Yates. Water level, in feet  
below land-surface datum, 1943: Feb. 20, 2.71.

17.26.27.413 (\*886, p. 413; 911, p. 174; 941, p. 212; \*949, p. 290).  
W. Leslie Martin. (Formerly owned by W. E. Simmons.) Water level, in feet  
below land-surface datum, 1943: Jan. 26, 12.61.

17.26.27.423 (\*886, p. 413; 911, p. 174; 941, p. 212; \*949, p. 290).  
W. Leslie Martin. Water level, in feet below land-surface datum, 1943:  
Feb. 20, 11.00.

17.26.28.331 (\*886, p. 413; 911, p. 174; 941, p. 212; 949, p. 290).  
Carl E. Martin. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 10.02.

17.26.29.131a (\*886, p. 413; 911, p. 174; 941, p. 212; 949, p. 290).  
Carl E. Martin. Water level, in feet below land-surface datum, 1943:  
Jan. 26, 27.64.

17.26.31.133 (\*886, p. 413; 911, p. 174; 941, p. 212; \*949, p. 290).  
G. R. Brainard. (Formerly owned by W. Clendenen.) Water level, in feet  
below land-surface datum, 1943: Jan. 28, 56.57.

18.25.23.111 (\*949, p. 290). Mrs. G. M. Phelps. Water level, in feet  
below land-surface datum, 1943: Jan. 28, 90.71.

18.26.2.333 (\*886, p. 414; 911, p. 174; 941, p. 212; 949, p. 290).  
S. O. Higgins. Water level, in feet below land-surface datum, 1943:  
Jan. 28, 11.64.

18.26.4.111b (\*845, p. 298; 886, p. 414; 911, p. 171; 941, p. 212;  
949, p. 290). Frank Watkins.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 28	18.19	May 16	27.70	Sept. 15	26.42
Mar. 20	19.94	July 15	26.40	Dec. 6	a 25.43

18.26.4.433 (\*886, p. 414; 911, p. 174; 941, p. 212; 949, p. 290).  
W. M. Schneider. Water level, in feet below land-surface datum, 1943:  
Jan. 28, 16.82.

a Windmill pumping.

18.26.7.234a (\*845, p. 299; 886, p. 414; 911, p. 171; 941, p. 209; 949, p. 290). C. H. Hutsonpillar. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Feb. 9, 43.50; Sept. 17, 50.45.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	43.65	43.68	44.49	46.30	.....	.....	48.12	49.75a	50.22	.....	.....
2	a45.97	43.57	43.67	44.56	46.27	.....	.....	48.17	49.77	50.22a	49.08	.....
3	44.00	43.57	43.84	44.65	46.28	.....	.....	48.22	.....	50.16	49.05a	48.18
4	44.07	43.56	43.78	44.72	46.30	.....	.....	48.28	.....	50.14	48.99	48.14
5	43.97	.....	43.70	44.80	.....	.....	.....	48.37	.....	50.11	48.91	48.07
6	43.93	.....	.....	44.84	.....	.....	.....	48.45	.....	50.07	48.91	48.06
7	43.96	.....	.....	44.88	.....	.....	.....	.....	.....	50.00	48.91	48.04
8	43.96a	43.56	.....	.....	a46.89	.....	.....	.....	.....	49.96	48.91	47.94
9	43.92	43.50	.....	.....	46.89	.....	.....	.....	.....	.....	48.87	47.85
10	.....	43.57	.....	a45.18a	46.46	46.90	.....	.....	.....	.....	.....	47.78
11	.....	43.62	.....	45.22	46.47	46.91	.....	a48.78a	50.34	.....	.....	.....
12	.....	43.63	.....	45.30	46.48	46.92	.....	48.80	50.34	.....	.....	.....
13	.....	43.67	43.89	45.35	46.54	46.96	.....	48.88	50.35	.....	.....	.....
14	.....	43.64	43.85	45.42	46.58	47.00	.....	48.78	50.37	.....	.....	.....
15	.....	43.64	43.83	45.48	46.59	47.07a	47.35	49.02	50.38	.....	a48.64a	47.85
16	.....	.....	43.83	45.50	46.64	.....	47.35	49.04	50.40	.....	48.61	47.84
17	.....	.....	43.90	45.58	46.65	.....	47.35	49.08	50.44	.....	48.57	47.83
18	.....	.....	43.85	.....	.....	.....	47.37	49.18	.....	.....	48.55	47.78
19	.....	.....	43.83	.....	.....	.....	47.39	.....	.....	.....	48.53	47.76
20	.....	.....	43.97	.....	.....	.....	47.42	.....	.....	.....	48.49	47.71
21	a43.70	.....	.....	.....	.....	47.47	.....	.....	a49.40	.....	48.46	47.67
22	43.68	.....	.....	.....	.....	.....	.....	.....	49.37	48.46	47.65	.....
23	43.64	.....	.....	.....	a47.40	.....	.....	.....	.....	49.37	.....	.....
24	43.64	.....	.....	.....	47.40	.....	.....	.....	.....	49.37	.....	.....
25	43.66	.....	.....	.....	47.41	.....	.....	.....	.....	49.35	.....	.....
26	43.72a	43.78	.....	.....	47.47	.....	a49.65	.....	49.32	.....	.....	.....
27	43.66	43.66	.....	a46.10	47.52	.....	49.65	.....	49.27	.....	.....	.....
28	43.64	43.67	.....	a46.13	47.55	.....	49.67	.....	49.25	.....	.....	.....
29	43.64	.....	.....	46.16	47.60	.....	49.69	.....	.....	.....	.....	.....
30	43.62	.....	.....	46.20	47.62a	48.03	49.70	.....	.....	.....	.....	.....
31	43.64	.....	a44.44	.....	.....	.....	48.06	49.70	.....	.....	.....	.....

18.26.7.234c (\*845, p. 300; \*886, p. 414; 911, p. 174; 941, p. 212; 949, p. 291). C. H. Hutsonpillar. Water level, in feet below land-surface datum, 1943: Jan. 28, 54.15.

18.26.9.133. Martin Yates, Jr. Drilled irrigation well, equipped with turbine pump. Measuring point, top edge of pump base inside of pump case, 0.17 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 28, 26.01.

18.26.9.311 (\*886, p. 414; 911, p. 174; 941, p. 212; \*949, p. 291). Mrs. R. J. Johnston. (Formerly owned by B. E. Spencer.) Water level, in feet below land-surface datum, 1943: Jan. 28, 26.62.

18.26.10.233 (\*886, p. 415; 911, p. 174; 941, p. 212; \*949, p. 291). Charles Rogers. (Formerly owned by Mr. Muncie.) Water level, in feet below land-surface datum, 1943: Jan. 28, 11.36.

18.26.15.133 (\*886, p. 415; 911, p. 174; 941, p. 212; \*949, p. 291). J. D. Terry Estate. Water level, in feet below land-surface datum, 1943: Jan. 28, 18.64.

18.26.15.311 (\*886, p. 415; 911, p. 174; 941, p. 212; 949, p. 291). Charles Martin. (Formerly owned by J. H. Everest.) Water level, in feet below land-surface datum, 1943: Jan. 28, 17.55.

18.26.15.444 (\*886, p. 415; 911, p. 174; 941, p. 212; 949, p. 291). J. H. Everest. Measurements discontinued.

18.26.17.112 (\*886, p. 415; 911, p. 174; 941, p. 212; 949, p. 291). W. B. McCrary. (Formerly owned by Mr. Yates.) Measuring point at land surface. Water level, in feet below land-surface datum, 1943: Jan. 28, 36.5.

a Tape measurement.

18.26.18.241 (\*886, p. 415; 911, p. 174; 941, p. 212; \*949, p. 291).  
W. B. McCrary. (Formerly owned by L. McCrory.) Water level, in feet below  
land-surface datum, 1943: Jan. 28, 37.50.

18.26.18.323 (\*886, p. 415; 911, p. 174; 941, p. 212; 949, p. 291).  
W. B. McCrary. (Formerly owned by W. D. McCrory.) Water level, in feet  
below land-surface datum, 1943: Jan. 28, 38.49.

18.26.21.344 (\*886, p. 415; 911, p. 171; 941, p. 209; \*949, p. 291).  
Town of Dayton. Equipped with water-stage recorder. Highest and lowest  
recorded water levels, in feet below land-surface datum, 1943: Feb. 9,  
32.91; Oct. 25, 37.24.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	33.03	32.98	33.76	34.52	....	....	36.04	36.90	37.05	37.07	....
2	a33.06	32.92	33.10	33.80	34.50	....	....	36.06	36.92	37.05	37.07	....
3	33.13	32.92	33.07	33.84	34.50	....	....	36.07	....	37.07	37.01	a36.88
4	33.25	32.96	32.95	33.88	34.52	....	....	36.13	....	37.07	36.98	36.84
5	33.18	....	33.00	33.87	....	....	....	36.20	....	37.07	36.92	36.79
6	33.06	....	....	33.83	....	....	....	36.25	....	37.07	36.92	36.82
7	33.06	....	....	33.88	....	....	....	....	....	37.11	36.97	36.77
8	33.12	a32.99	....	....	....	a35.30	....	....	....	37.08	37.06	36.76
9	33.15	32.91	....	....	....	35.31	....	....	....	....	37.05	36.76
10	....	32.96	....	a33.97	a34.76	35.29	....	....	....	....	....	36.77
11	....	33.16	....	34.00	....	35.34	....	a36.31	a37.09	....	....	....
12	....	33.05	....	34.03	....	35.38	....	36.38	37.09	....	....	....
13	....	33.10	a33.25	34.04	....	35.38	....	36.40	37.10	....	....	....
14	....	33.11	33.13	34.08	....	35.40	....	36.44	37.08	....	....	....
15	....	33.08	33.12	33.97	....	35.40	a35.62	36.45	34.10	....	a36.98	a36.80
16	....	....	33.25	34.03	....	....	35.63	36.50	37.13	....	36.95	36.79
17	....	....	33.16	34.17	....	....	35.66	36.57	37.13	....	36.92	36.82
18	....	....	33.16	....	....	....	35.70	....	37.11	....	36.92	36.77
19	....	....	33.17	....	....	....	35.70	....	....	....	36.94	36.77
20	....	....	33.29	....	....	....	35.75	....	....	....	36.87	36.72
21	a32.96	....	....	....	....	....	35.78	....	....	....	36.89	36.71
22	32.98	....	....	....	....	....	35.83	....	....	....	36.92	36.70
23	32.97	....	....	....	....	a35.64	....	....	....	....	....	....
24	32.97	....	....	....	....	35.65	....	....	....	....	....	....
25	33.01	....	....	....	....	35.68	....	....	....	a37.24	....	....
26	33.10	a33.20	....	....	....	35.71	....	a36.76	....	37.17	....	....
27	33.00	32.95	....	a34.47	....	35.70	....	36.70	....	37.09	....	....
28	32.99	32.98	....	34.46	....	35.70	....	36.80	....	37.09	....	....
29	33.00	....	....	34.45	....	35.77	....	36.80	....	37.05	....	....
30	33.00	....	....	34.53	....	35.72	a36.02	36.82	....	37.05	....	....
31	33.04	....	a33.72	....	....	....	36.03	36.86	....	37.06	....	....

18.26.22.314 (\*886, p. 416; 911, p. 174; 941, p. 212; \*949, p. 292).  
George Krause. Water level, in feet below land-surface datum, 1943:  
Jan. 28, 8.16.

18.26.23.213 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
A. W. Boyce. (Formerly owned by Smith & Horner.) Water level, in feet  
below land-surface datum, 1943: Jan. 28, 21.26.

18.26.24.131. Angeline Mackey. Drilled irrigation well, equipped  
with turbine pump. Diameter 12½ inches, depth 80 feet. Measuring point,  
top of casing. 0.30 foot above land-surface datum. Water level, in feet  
below land-surface datum, 1943: Jan. 28, 14.16.

18.26.24.223 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
Angeline Mackey. Water level, in feet below land-surface datum, 1943:  
Jan. 18, 3.26.

18.26.28.132 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
Dayton School. Water level, in feet below land-surface datum, 1943:  
Jan. 28, 49.83.

18.26.28.142 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
Measurements discontinued.

a Tape measurement.

18.26.33.111 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
Harvey Yates. Water level, in feet below land-surface datum, 1943:  
Jan. 29, 64.56.

19.26.12.323 (\*886, p. 416; 911, p. 174; 941, p. 212; \*949, p. 292).  
Forrest Lee. (Formerly owned by E. W. Dimock.) Water level, in feet below  
land-surface datum, 1943: Jan. 29, 17.06.

19.26.12.323a. Forrest Lee. Drilled irrigation well, equipped with  
turbine pump and located about 5 feet west of well 19.26.12.323. Measuring  
point, top of casing, 0.57 foot above land-surface datum. Water level, in  
feet below land-surface datum, 1943: Jan. 29, 17.06.

19.26.12.333 (\*949, p. 292). Ollie M. Banks.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	22.21	May 16	24.33	Sept. 15	27.31
Mar. 20	22.68	July 15	24.61	Dec. 6	26.75

19.26.13.211 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 292).  
R. L. House. Water level, in feet below land-surface datum, 1943:  
Jan. 29, 9.53.

19.26.13.344 (\*949, p. 293). R. W. Rankin. Water level, in feet  
below land-surface datum, 1943: Feb. 20, 4.07.

19.26.14.431 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 293).  
Albert Lee. No measurements made in 1943.

19.26.27.233 (\*845, p. 300; 886, p. 416; 911, p. 172; 941, p. 210;  
949, p. 293). Lakewood School. Measuring point, beginning Jan. 29, 1943,  
top of casing, 1.58 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Jan. 29	40.73	May 17	49.09	Sept. 15	49.68
Mar. 20	44.02	July 15	50.80	Dec. 6	a 52.69

19.26.28.334 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 293).  
Frank Howard. Water level, in feet below land-surface datum, 1943:  
Jan. 29, 48.81.

19.26.28.441 (\*886, p. 416; 911, p. 174; 941, p. 212; \*949, p. 293).  
D. D. Sullivan. Water level, in feet below land-surface datum, 1943:  
Jan. 29, 55.96.

19.26.33.412 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 293).  
J. H. Everest. (Formerly owned by E. G. Kimmell.) Water level, in feet  
below land-surface datum, 1943: Jan. 29, 40.63.

20.26.6.431 (\*886, p. 416; 911, p. 174; 941, p. 212; 949, p. 293).  
J. G. Moutry & Sons. Water level, in feet below land-surface datum, 1943:  
Feb. 3, 37.09.

20.26.7.122 (\*845, p. 300; 886, p. 417; 911, p. 172; 941, p. 210;  
949, p. 293). P. S. Campbell. Measuring point, beginning Jan. 29, 1943,  
top of iron pipe clamps, 1.00 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Jan. 29	38.18	May 17	45.62	Sept. 15	49.83
Mar. 20	40.31	July 15	44.15	Dec. 6	a 46.52

20.26.7.421 (\*886, p. 417; 911, p. 174; 941, p. 212; 949, p. 293).  
E. Manthei. Measuring point, beginning Jan. 29, 1943, bottom edge of mouth  
of discharge pipe, 11.30 feet above land-surface datum. Water level, in  
feet below land-surface datum, 1943: Jan. 29, 32.13.

20.26.8.112 (\*886, p. 417; 911, p. 174; 941, p. 212; 949, p. 293).  
J. G. Moutry & Sons. Water level, in feet below land-surface datum, 1943:  
Jan. 29, 25.87.

a Windmill pumping.

20.26.17.411 (\*886, p. 417; 911, p. 174; 941, p. 212; 949, p. 293).  
J. H. Angell. (Formerly owned by Cecil E. Hollman and Roy D. Angell.)  
Water level, in feet below land-surface datum, 1943: Jan. 29, 43.49.

#### GRANT COUNTY

By C. R. Murray

The observation-well program in Grant County began April 24, 1943, when the Federal Geological Survey installed an automatic water-stage recorder on a well on land belonging to Albert P. Mracek near the town of Central, just east of the Fort Bayard Military Reservation. The well was drilled by the Corps of Engineers, United States Army, on the advice of Charles V. Theis, of the Federal Geological Survey, in order to test the possibilities of the area for furnishing a water supply for a military cantonment whose establishment was contemplated. This well started in the upper part of the Syrena formation of the Magdalena group and was drilled to a depth of 288 feet. On completion it pumped approximately 570 gallons a minute, with a draw-down of about 28 feet after 24 hours pumping.

#### Fluctuations in water level

The water level in the Mracek well is reported to have been 220 feet below the surface, or at an altitude of 6,089 feet above sea level on January 8, 1943, when the well was tested. On April 9 it was 218.97 feet below land-surface datum, and it was 219.78 feet on April 24 at the time the recorder was installed. From May 1 to December 31 the water level declined 12.72 feet, or an average of 1.6 feet a month. This monthly average decline was exceptionally uniform and continuous, July alone departing much from it, with a decline of only 0.85 foot. The greatest monthly decline was 1.91 feet in September. Five tape measurements of water levels were made in 1943.

The cause of the steady decline of water level in the Mracek well seems to be the removal of water from storage. It appears that pumping in mines in the vicinity of the well is removing water from the formations supplying the well at a more rapid rate than that at which the well is being naturally recharged. It is true that if the water in the lower strata of the limestone was under a lower artesian head than the water in the upper strata, then water from the higher beds would drain into the lower beds, and this would cause a reduction of water level in the well; but, as under these conditions equilibrium should be quickly established and a new static water level obtain, the decline cannot be accounted for by climatic changes. All things considered, the removal of water from storage seems the most likely explanation of the continuing large decline.

Water-level measurements

17.12.31.121. Albert P. Mracek. Unused drilled test well, equipped with automatic water-stage recorder. Diameter 12 inches, depth 288 feet. Measuring point, top of casing, on east side of well, 0.80 foot above land-surface datum. Reference point, "X" cut in limestone ledge 27 feet west of the well, 2.42 feet above measuring point.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Apr.	May	June	July	Aug.	Sept.	Oct.	Dec.
1	.....	220.14	.....	223.48	224.33	225.78	227.69	.....
2	.....	220.18	221.95	223.36	224.37	225.85	227.76	.....
3	.....	220.24	222.00	223.34	224.44	225.92	227.81	.....
4	.....	220.29	222.05	223.34	224.51	225.98	227.88	.....
5	.....	220.34	222.11	223.36	224.56	226.01	227.95	.....
6	.....	220.39	222.16	223.40	224.64	226.10	228.00	.....
7	.....	220.45	222.23	223.45	224.71	226.16	228.06	.....
8	.....	220.51	222.29	223.51	224.77	226.22	228.12	.....
9	218.97	220.57	222.36	223.56	224.84	226.29	228.18	.....
10	.....	220.64	222.41	223.64	224.89	226.36	228.24	.....
11	.....	220.70	222.46	223.69	224.94	226.42	228.29	232.12
12	.....	220.73	222.52	223.76	225.00	226.50	228.35	232.18
13	.....	220.81	222.57	223.81	225.07	226.57	228.41	232.24
14	.....	220.86	222.63	223.89	225.15	226.64	228.48	.....
15	.....	220.93	222.69	223.94	225.22	226.72	228.53	.....
16	.....	.....	222.76	223.94	225.26	226.77	228.58	.....
17	.....	.....	222.83	223.94	225.29	226.82	228.65	.....
18	.....	.....	222.89	223.98	225.31	226.88	228.71	232.46
19	.....	.....	222.94	224.00	225.35	226.93	228.76	232.41
20	.....	.....	223.02	224.04	225.39	226.98	228.82	232.36
21	.....	.....	223.08	224.05	225.45	227.08	228.88	232.33
22	.....	.....	223.15	224.01	225.43	227.14	228.93	232.35
23	.....	.....	223.18	224.02	225.40	227.19	228.99	232.41
24	.....	.....	223.24	224.05	225.39	227.26	229.06	232.47
25	219.79	.....	223.31	224.09	225.41	227.32	229.12	232.51
26	219.84	.....	223.36	224.09	225.45	227.38	229.18	232.59
27	219.90	.....	223.43	224.10	225.51	227.45	229.23	232.64
28	219.97	.....	223.49	224.13	225.57	227.51	229.29	232.70
29	220.02	.....	223.52	224.17	225.61	227.57	229.35	232.75
30	220.08	.....	223.49	224.22	225.67	227.64	229.39	232.80
31	.....	.....	.....	224.27	225.73	.....	.....	232.86

HIDALGO COUNTY (VIRDEN VALLEY)

By R. L. Cushman

The Virden Valley, in Hidalgo County, is the eastern part of the area commonly known as Duncan-Virden Valley, which lies along the upper Gila River. The western part of the area, Duncan Valley, is in Greenlee County, Ariz.

Periodic measurements of water levels in observation wells in the Duncan-Virden Valley were begun in 1939, as part of a detailed investigation of its ground-water resources, by the Geological Survey, United States Department of the Interior, in cooperation with the United States Engineer Office, War Department, and have been continued each year since. In Virden Valley 20 measurements were made in 9 wells in 1943, during seasons when the water levels were at approximately their highest and lowest stages of the year.

The quantity of water pumped for irrigation from wells in the Duncan-Virden Valley and the fluctuations of water level in several of the wells are shown in figure 3, which is included in the Arizona section of this volume. The graph of well 61 shows the effect of pumping on a well in the heavily pumped area; that of well 5, which is at a distance from heavy pumping and therefore unaffected by it, shows the fluctuations caused by rainfall and river flow. Both these wells are in Duncan Valley, but the figure includes also graphs of two wells in Virden Valley--Nos. 201 and 232.

#### Water-level measurements

181 (#911, p. 75; 941, p. 213; 949, p. 294). P. Lunt. SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 32, T. 18 S., R. 21 W. Measuring point is 0.3 foot above land-surface datum, which is 3,756.42 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Sept. 28, 41.52; Dec. 27, 39.30.

185 (#911, p. 175; 941, p. 213; 949, p. 294). J. Pierce. SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 32, T. 18 S., R. 21 W. Measuring point beginning Feb. 4, 1943, top of pipe, 0.2 foot below former measuring point, 2.5 feet above land-surface datum and 3,735.49 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 30.70; Sept. 28, 32.02; Dec. 27, 30.35.

201 (#911, p. 175; 941, p. 213; 949, p. 294). J. E. Payne. NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 2, T. 19 S., R. 21 W. Measuring point is at land-surface datum which is 3,788.59 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 43.60; Sept. 28, 44.88; Dec. 27, 44.19.

202. Byron Echols. SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 19 S., R. 21 W., 50 feet west of side road, 0.2 mile south of Sunset canal, 1.2 miles southeast of Virden. Used dug irrigation well, diameter 96 inches, depth 20 feet. Measuring point, green arrow at top of timber across well, at land-surface datum and 3,754.77 feet above mean sea level. Equipped with centrifugal pump and gasoline engine.

#### Water level, in feet below land-surface datum, 1939, 1942-43

Date	Water level	Date	Water level	Date	Water level
Nov. 21, 1939	13.36	Dec. 16, 1942	13.95	Sept. 28, 1943	14.86
Dec. 12	13.34	Feb. 4, 1943	14.05	Dec. 27	13.90

204 (#911, p. 176; 941, p. 213; 949, p. 294). State of New Mexico. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 2, T. 19 S., R. 21 W. Measuring point is 2.5 feet above land-surface datum, which is 3,790.21 feet above mean sea level. Measurements discontinued after Dec. 16, 1942. For later measurements in this vicinity see well 202.

215 (#911, p. 176; 941, p. 213; 949, p. 294). John B. Jones. SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 12, T. 19 S., R. 21 W. Measuring point is 0.6 foot above land-surface datum, which is 3,766.20 feet above mean sea level. No measurements made in 1943.

217 (#911, p. 176; 941, p. 213; 949, p. 294). Nancy O. Pace. NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 12, T. 19 S., R. 21 W. Measuring point beginning Feb. 3, 1943, bottom of pump base, 2.7 feet below former measuring point, 0.3 foot above land-surface datum, and 3,788.84 feet above mean sea level. Well equipped with hand pump. Water levels, in feet below land-surface datum, 1943: Feb. 3, 19.70; Sept. 28, 21.18; Dec. 27, 17.27.

219 (#911, p. 177; 941, p. 213; 949, p. 294). Ruth Skaggs. NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 19 S., R. 21 W. Measuring point beginning Feb. 4, 1943, top of 1-inch pipe, 3.1 feet below former measuring point, at land-surface datum and 3,777.85 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 14.47; Sept. 28, 16.64; Dec. 27, 15.70.

232 (#911, p. 177; 941, p. 214; 949, p. 294). Floyd Johns. NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 19 S., R. 20 W. Measuring point is 0.6 foot above land-surface datum, which is 3,802.87 feet above mean sea level. Water levels, in feet below land-surface datum, 1943: Feb. 4, 29.29; Sept. 28, 30.35; Dec. 27, 29.71.

LEA COUNTY

By C. R. Murray and P. D. Akin.

Investigation of the ground-water resources of the part of the High Plains surrounding Lovington, in Lea County, was continued in 1943 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Progress reports presenting the results of the investigation have been published in the 9th to 13th biennial reports of the State engineer. Additional data on the water-level changes, precipitation, acreage of land irrigated with ground water, and the quantity of water used for irrigation have been published in Geological Survey Water-Supply Papers 817, 911, 941, and 949.

Measurements were made in 86 wells in January, in 29 wells in March, in 28 wells in May, July, and September, and in 30 wells in November, making a total of 229 measurements for the year. Continuous records of water-level fluctuations in 2 wells were obtained with automatic water-stage recorders.

Fluctuations in water level

The precipitation in Lea County was only about 80 percent of normal in 1943. The United States Weather Bureau reported 11.96 inches of precipitation at Lovington, 12.41 inches at Hobbs, and 12.45 inches at Tatum. The precipitation was 3.21 inches below normal at Lovington and 2.60 inches below normal at Hobbs. Considerable precipitation fell during May, June, July, and September, but August was dry. The precipitation during December at the three stations mentioned averaged nearly 2 inches but came too late to affect significantly the amount of water pumped or the position of the water table during the year.

It is estimated that about 6,000 acre-feet of ground water was used to irrigate 3,200 acres of cropland in Lea County in 1943. In 1942 about 3,500 acre-feet was used on 3,000 acres, and in 1941 about 1,550 acre-feet on 2,600 acres, the remainder of the water requirement in 1941 being furnished by the heavy precipitation of that year. In addition to the water pumped for irrigation, large quantities are pumped for stock, for municipal supplies, and for use in industry. The total amount of ground water used in Lea County in 1943 is estimated at 12,500 acre-feet, as compared with 9,550 acre-feet in 1942.

During 1943 water levels in general declined slightly. In 78 wells for which measurements are comparable, there was an average decline of 0.42 foot, with 22 wells showing rises and 56 showing declines during the year. The wells that showed rises in water level are mostly isolated from areas of relatively concentrated pumping, wells in the latter areas almost invariably showing declines. More wells showed rises in water level north of Lovington, both near Tatum and near McDonald, than south of Lovington, where nearly all water levels declined. The greatest rise in water level observed was 0.26 foot in well 13.37.7.12, which is 6 miles southeast of Tatum, and the largest decline recorded was 2.52 feet in well 17.37.36.141, which is 14 miles southeast of Lovington and just east of Humble City.

Although the declines in the Lovington area in 1943 were small, they were equivalent to significant percentages of the rises that occurred during 1941. Water levels were still in a favorable position at the end of the year. However, it appears that the rises which began in 1941 and continued in many wells during 1942 culminated by 1943. Under normal weather conditions, accelerated though not necessarily serious declines in water level are to be expected even with the present pumping regimen under which irrigation wells are, in general, widely scattered.

#### Water-level measurements

12.36.19.223 (\*911, p. 179; 941, p. 218; 949, p. 296). O. V. Fisher. Water level, in feet below land-surface datum, 1943: Jan. 18, 22.13.

12.36.24.434 (\*941, p. 218; \*949, p. 296). Jerry Clay. Measuring point, beginning Jan. 18, 1943, top of concrete surrounding casing, flush with land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 18, 3.56.

12.36.25.222 (\*911, p. 180; 941, p. 218; 949, p. 296). State land.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	21.06	May 27	20.98	Sept. 28	20.86
Mar. 29	21.03	July 27	20.97	Dec. 1	20.77

12.36.27.212 (\*911, p. 180; 941, p. 218; 949, p. 296). State land.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	33.67	May 27	34.24	Sept. 28	34.71
Mar. 29	34.00	July 27	34.49	Dec. 1	34.83

12.36.29.110 (\*911, p. 181; 941, p. 218; 949, p. 297). E. D. Holt. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Aug. 13, 27.63; Jan. 4, 27.91.

12.36.29.110. E. D. Holt--Continued.  
 Highest daily water level, in feet below land-surface datum, 1943  
 (From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	27.89	27.77	27.70	27.67	27.68	27.73	27.73	27.65	.....	27.73	27.69	27.69
2	27.89	27.77	27.72	27.67	27.68	27.72	27.74	27.65	.....	27.73	27.72	27.69
3	27.89	27.77	27.70	27.67	27.68	27.73	27.73	27.64	.....	27.73	27.71	27.71
4	27.91	27.76	27.69	27.67	27.68	27.74	27.73	27.64	.....	27.73	27.70	27.71
5	27.88	27.76	27.68	27.66	27.68	27.75	27.73	27.65	.....	27.72	27.68	27.70
6	27.87	27.78	27.72	27.65	27.69	27.75	27.74	27.66	.....	27.72	27.68	27.70
7	27.88	27.76	27.71	27.65	27.69	27.76	27.73	27.65	.....	27.73	27.70	27.70
8	27.88	27.74	27.70	27.64	27.71	27.76	27.73	27.64	.....	27.71	27.72	27.70
9	27.87	27.73	27.69	27.64	27.72	27.76	27.72	27.64	.....	27.71	27.72	27.69
10	27.87	27.76	27.69	27.64	27.72	27.74	27.71	27.64	.....	27.71	27.72	27.72
11	27.86	27.77	27.68	27.65	27.74	27.74	27.72	27.64	.....	27.69	27.72	27.71
12	27.86	27.77	27.68	27.66	27.74	27.74	27.72	27.64	.....	27.69	27.72	27.71
13	27.86	27.77	27.69	27.67	27.75	27.74	27.71	27.63	.....	27.71	27.71	27.71
14	27.84	27.76	27.68	27.67	27.74	27.74	27.67	27.64	.....	27.70	27.71	27.73
15	27.82	27.76	27.67	27.65	27.74	27.74	27.71	27.64	.....	27.71	27.71	27.80
16	27.82	27.75	27.69	27.64	27.75	27.74	27.70	27.64	.....	27.70	27.72	27.80
17	27.82	27.75	27.67	27.66	27.76	27.75	27.70	27.64	.....	27.70	27.71	.....
18	27.81	27.75	27.66	27.67	27.77	27.74	27.71	27.66	.....	27.69	27.71	.....
19	27.84	27.74	27.68	27.66	27.77	27.74	27.69	27.65	.....	27.68	27.71	.....
20	27.82	27.73	27.69	27.65	27.78	27.73	27.69	27.65	.....	27.69	27.70	.....
21	27.80	27.72	27.71	27.65	27.77	27.74	27.68	27.65	.....	27.70	27.70	.....
22	27.80	27.71	27.68	27.65	27.77	27.74	27.68	27.65	.....	27.69	27.71	.....
23	27.79	27.71	27.68	27.66	27.76	27.73	27.68	27.66	.....	27.69	27.71	.....
24	27.79	27.72	27.68	27.65	27.76	27.73	27.68	27.66	.....	27.71	27.71	.....
25	27.80	27.73	27.66	27.65	27.76	27.74	27.68	27.66	.....	27.72	27.70	.....
26	27.81	27.73	27.67	27.65	27.75	27.74	27.67	27.67	.....	27.71	27.70	.....
27	27.79	27.71	27.66	27.65	27.76	27.73	27.67	27.68	.....	27.70	27.71	.....
28	27.78	27.70	27.67	27.67	27.76	27.74	27.66	27.68	27.72	27.69	27.70	.....
29	27.78	.....	27.67	27.67	27.75	27.75	27.66	.....	27.72	27.68	27.71	.....
30	27.78	.....	27.66	27.67	27.74	27.74	27.66	.....	27.72	27.68	27.69	.....
31	27.78	.....	27.66	.....	27.73	.....	27.66	.....	.....	27.69	.....	.....

12.37.20.331 (\*941, p. 220; \*949, p. 297). W. O. Dunlap, Jr. Water level, in feet above land-surface datum, 1943: Jan. 18, 15.24.

12.38.4.312 (\*941, p. 220; 949, p. 297). G. C. Copeland. Water level, in feet below land-surface datum, 1943: Jan. 18, 39.15.

13.35.11.222 (\*911, p. 181; 941, p. 220; 949, p. 297). Ashley G. Green. Water level, in feet below land-surface datum, 1943: Jan. 18, 29.14.

13.35.19.211 (\*911, p. 182; 941, p. 220; 949, p. 297). Clara K. Elkins. (Formerly owned by Seth Alston.) Water level, in feet below land-surface datum, 1943: Jan. 18, 45.82.

13.36.6.221 (\*911, p. 182; 941, p. 220; 949, p. 297). R. W. Duncan. Water level, in feet below land-surface datum, 1943: Jan. 18, 34.02.

13.36.33.341 (\*911, p. 182; 941, p. 220; 949, p. 297). Lewis Beaman. Water level, in feet below land-surface datum, 1943: Jan. 18, 40.50.

13.36.35.323 (\*911, p. 182; 941, p. 220; 949, p. 297). M. J. McClish. (Formerly owned by J. C. McClish.) Water level, in feet below land-surface datum, 1943: Jan. 19, 36.58.

13.37.3.131 (\*911, p. 182; \*941, p. 220; 949, p. 297). Jim H. Simpson. Water level, in feet below land-surface datum, 1943: Jan. 18, 38.44.

13.37.3.133 (\*911, p. 182; 941, p. 220; 949, p. 297). Jim H. Simpson. Water level, in feet below land-surface datum, 1943: Jan. 18, 35.83.

13.37.7.121 (\*911, p. 182; 941, p. 220; 949, p. 297). W. O. Barrow. (Formerly owned by Tom Parsley.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	31.91	May 27	31.79	Sept. 28	31.71
Mar. 29	31.83	July 27	31.76	Dec. 1	31.67

13.37.13.132 (\*911, p. 183; 941, p. 220; 949, p. 298). A. M. Brownfield.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 18	27.37	May 27	27.63	Sept. 28	27.77
Mar. 29	27.52	July 27	27.71	Dec. 1	27.85

13.37.28.411 (\*941, p. 220; 949, p. 298). A. F. Hight and Marvin E. Powell. (Formerly owned by Marvin E. Powell.) Water level, in feet below land-surface datum, 1943: Jan. 19, 31.30.

13.38.6.341 (\*911, p. 184; 941, p. 221; 949, p. 298). Opal Fulton. Water level, in feet below land-surface datum, 1943: Jan. 18, 43.35.

14.35.30.141 (\*911, p. 184; \*941, p. 221; 949, p. 298). W. A. Anderson. Water level, in feet below land-surface datum, 1943: Jan. 19, 45.99.

14.35.33.433 (\*911, p. 184; 941, p. 221; 949, p. 298). W. A. Anderson.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	40.43	May 27	40.29	Sept. 28	40.23
Mar. 29	40.31	July 27	40.25	Nov. 29	40.20

14.36.2.410 (\*911, p. 185; 941, p. 221; 949, p. 298). Clarence M. King. Water level, in feet below land-surface datum, 1943: Jan. 19, 39.26.

14.36.6.420 (\*911, p. 185; 941, p. 221; 949, p. 298). S. A. and W. B. Richardson. Water level, in feet below land-surface datum, 1943: Jan. 19, 39.31.

14.36.9.111 (\*911, p. 185; 941, p. 221; 949, p. 298). A. C. Drake. (Formerly owned by L. C. Bivins.) Measuring point, beginning Jan. 19, 1943, top of concrete collar, on west side, 0.40 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 19, 38.58.

14.36.9.210 (\*911, p. 185; 941, p. 221; 949, p. 298). Buford Rankins. Water level, in feet below land-surface datum, 1943: Jan. 19, 40.46.

14.36.13.211 (\*911, p. 185; 941, p. 221; 949, p. 298). Mattie E. Chambers. (Formerly owned by Noble L. Hibbits.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	36.08	May 27	36.04	Sept. 28	36.00
Mar. 29	36.02	July 27	36.02	Dec. 1	35.98

14.36.14.121 (\*911, p. 186; 941, p. 221; 949, p. 298). V. M. Chamber. Water level, in feet below land-surface datum, 1943: Jan. 19, 40.95.

14.37.3.113 (\*911, p. 186; 941, p. 221; 949, p. 298). Lois C. Hobbs. Water level, in feet below land-surface datum, 1943: Jan. 19, 31.98.

14.37.14.112 (\*911, p. 186; 941, p. 221; 949, p. 298). R. W. Smith.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	34.75	May 27	34.64	Sept. 28	34.59
Mar. 29	34.64	July 27	34.62	Dec. 1	34.58

14.37.16.421 (\*911, p. 186; 941, p. 221; 949, p. 298). School land. Water level, in feet below land-surface datum, 1943: Jan. 19, 28.86.

14.37.20.410 (\*911, p. 186; 941, p. 221; 949, p. 298). Doyle Hudgens. Water level, in feet below land-surface datum, 1943: Jan. 19, 33.61.

14.37.27.130 (\*911, p. 187; 941, p. 221; 949, p. 298). J. R. Fort.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	36.31	May 27	36.26	Sept. 28	36.19
Mar. 29	36.26	July 27	36.23	Dec. 1	36.22

14.38.27.240 (\*911, p. 187; 941, p. 222; 949, p. 298). Mal Morrison Gaines. Irrigation pump removed and windmill installed. Measuring point, beginning Jan. 19, 1943, top of concrete curb, on west side, 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 19, 34.57.

14.38.28.120 (\*911, p. 187; 941, p. 222; 949, p. 298). Ila M. Cox.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	24.32	May 27	24.39	Sept. 28	25.11
Mar. 29	24.34	July 27	24.83	Dec. 1	24.95

15.35.35.112 (\*941, p. 222; 949, p. 298). Will Gorrell. Water level, in feet below land-surface datum, 1943: Jan. 20, 39.60.

15.36.8.131 (\*911, p. 188; 941, p. 222; 949, p. 299). Orren Beatty.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 19	40.17	May 27	40.12	Sept. 28	40.02
Mar. 29	40.13	July 27	40.10	Dec. 1	40.00

15.36.14.311 (\*941, p. 222; 949, p. 299). Ben Graham. Measuring point, beginning Jan. 20, 1943, mouth of 1.82-foot discharge pipe on Pomona pump, 4.30 feet above land-surface datum. Reference point, top of new concrete curb or pump base, 1.33 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 20, 42.48.

15.36.29.410 (\*911, p. 189; 941, p. 222; 949, p. 299). D. A. Hudgens. Water level, in feet below land-surface datum, 1943: Jan. 20, a/ 42.75.

15.36.29.441 (\*941, p. 222; 949, p. 299). H. R. Fleming. Measuring point, beginning Jan. 20, 1943, top edge of north  $\frac{1}{4}$ -inch hole in west side of Peerless pump base, 1.0 foot above land-surface datum. Reference point, top of concrete pump base, 0.5 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 20, a/41.74.

15.37.10.113 (\*911, p. 189; \*941, p. 222). W. Arthur Simpson. Measurements resumed in 1943. Water level, in feet below land-surface datum, 1943: Jan. 20, 34.99.

15.37.21.330 (\*911, p. 189; 941, p. 222; \*949, p. 299). Robert W. Dean.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 20	29.24	May 27	31.55	Sept. 28	b 30.47
Mar. 29	29.18	July 27	29.10	Dec. 1	b 32.73

15.37.27.110 (\*941, p. 222; 949, p. 299). Chas. L. Naul. Water level, in feet below land-surface datum, 1943: Jan. 20, 29.38.

15.38.22.200 (\*911, p. 190; 941, p. 222; 949, p. 299). Mr. Motsenbocker. (Formerly owned by Etta Arnett.) Water level, in feet below land-surface datum, 1943: Jan. 20, 29.50.

16.36.1.400 (\*911, p. 190; 941, p. 222; 949, p. 299). Lorene Easley. Water level, in feet below land-surface datum, 1943: Jan. 20, 39.92.

16.36.4.433 (\*911, p. 190; 941, p. 222; 949, p. 299). City of Lovington. Measurements discontinued.

a Nearby windmill pumping.

b Windmill pumping.

16.56.4.1ot 12 (\*911, p. 190; 941, p. 222; 949, p. 299). E. H. Byers. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Mar. 20, 45.35; Sept. 5, 45.67.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	45.49	43.38	43.62	44.31	44.74	44.92	44.47	45.55	44.94	45.20	44.43	
2	45.48	43.39	43.62	44.40	44.70	44.87	44.46	45.58	44.95	45.14	44.42	
3	45.69	43.48	43.38	43.62	44.43	44.66	44.81	44.55	45.61	44.86	45.09	44.41
4	45.68	43.47	43.37	43.69	44.50	44.59	44.76	44.62	45.63	44.84	.....	44.39
5	45.67	43.47	43.37	43.70	44.50	44.57	44.71	44.73	45.67	44.79	.....	44.38
6	45.66	43.47	43.38	43.67	44.54	44.62	44.69	44.83	45.59	.....	.....	44.38
7	45.66	43.46	43.37	43.67	44.54	44.68	44.66	44.95	45.52	.....	44.94	44.36
8	45.66	43.45	43.37	43.78	44.60	44.66	44.58	45.04	45.47	.....	44.89	44.34
9	45.64	43.44	43.37	43.87	44.67	44.60	44.53	45.03	45.37	.....	44.87	44.33
10	45.63	43.46	43.37	43.88	44.68	44.74	44.51	44.99	45.50	.....	44.83	44.33
11	45.62	43.45	43.36	43.94	44.67	44.84	44.49	45.06	45.23	.....	44.79	44.31
12	45.61	43.46	43.36	43.93	44.73	44.84	44.47	45.10	45.17	.....	44.76	44.31
13	45.61	43.44	43.36	43.92	44.78	44.78	44.45	45.16	45.12	.....	44.74	44.30
14	45.59	43.44	43.36	44.00	44.82	44.72	44.38	45.21	45.09	.....	44.71	44.30
15	45.57	43.43	.....	43.99	44.88	44.69	44.36	45.25	45.04	.....	44.70	44.29
16	45.57	43.43	.....	43.97	44.91	44.65	44.34	45.23	44.98	45.17	44.68	44.28
17	45.54	43.43	.....	43.95	44.90	44.61	44.31	45.28	44.93	45.18	44.66	44.28
18	45.54	43.42	.....	43.91	44.91	44.62	44.29	45.26	44.89	45.16	44.64	44.26
19	45.55	43.42	.....	43.88	44.88	44.57	44.28	45.32	44.87	45.12	44.62	44.25
20	45.53	43.42	43.35	43.83	44.81	44.53	44.25	45.34	44.84	45.08	44.57	44.24
21	45.53	43.40	.....	43.81	44.78	44.51	44.23	45.38	44.85	45.04	44.56	44.23
22	45.52	43.39	.....	43.79	44.84	44.48	44.20	45.40	44.85	45.02	44.54	44.23
23	45.51	43.39	.....	43.77	44.78	44.52	44.19	45.37	44.95	45.02	44.53	44.23
24	45.52	43.40	.....	43.76	44.73	44.61	44.16	45.43	45.04	44.98	44.52	44.21
25	45.52	43.39	.....	43.86	44.71	44.79	44.15	45.38	45.15	44.97	44.50	44.20
26	45.52	43.39	.....	43.89	44.84	44.96	44.14	45.41	45.18	45.04	44.50	44.20
27	45.51	43.37	.....	44.01	44.97	44.98	44.13	45.43	45.15	45.15	44.49	44.19
28	45.51	43.38	.....	44.16	44.99	44.97	44.22	45.41	45.10	45.29	44.48	44.19
29	45.50	.....	45.57	44.18	44.91	44.95	44.38	45.46	45.04	45.35	44.47	44.18
30	45.50	.....	43.56	44.22	44.86	44.96	44.43	45.43	44.98	45.31	44.46	44.18
31	45.50	.....	43.56	.....	44.80	.....	44.44	45.50	.....	45.25	.....	44.17

16.56.5.1ot 10 (\*911, p. 192; 941, p. 223; 949, p. 300). Mrs. Mary A. Coxe. Water level, in feet below land-surface datum, 1943: Jan. 20, 44.55.

16.56.5.1ot 14 (\*911, p. 192; \*941, p. 223; 949, p. 300). W. B. Phillips. (Formerly owned by Aubry Bush.) Water level, in feet below land-surface datum, 1943: Jan. 20, 45.44.

16.56.5.321 (\*911, p. 192; 941, p. 223; 949, p. 300). J. T. Gwinn. (Formerly owned by J. T. Phillips.) Water level, in feet below land-surface datum, 1943: Jan. 20, 44.94.

16.56.5.411 (\*911, p. 192; 941, p. 223; 949, p. 300). Mrs. Emma J. Robinson. Water level, in feet below land-surface datum, 1943: Jan. 20, 45.76.

16.56.8.424 (\*911, p. 192; 941, p. 223; 949, p. 300). E. B. Yarbro. (Formerly owned by Seth Alston and J. S. Eaves.) Water level, in feet below land-surface datum, 1943: Jan. 20, 50.90.

16.56.10.233 (\*911, p. 192; 941, p. 223; 949, p. 300). J. E. Simmons. Water level, in feet below land-surface datum, 1943: Jan. 20, 50.30.

16.56.15.240 (\*911, p. 192; \*941, p. 223; 949, p. 300). J. C. Griffin. Water level, in feet below land-surface datum, 1943: Jan. 20, 46.72.

16.56.27.133 (\*911, p. 192; 941, p. 223; 949, p. 300). State land. Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 20	49.57	May 26	49.49	Sept. 29	49.49
Mar. 30	49.53	July 28	49.48	Nov. 30	49.45

16.37.19.200 (\*911, p. 193; \*941, p. 224; 949, p. 300). H. Taylor Montiekh. Water level, in feet below land-surface datum, 1943: Jan. 20, 28.80.

16.37.33.110 (\*911, p. 193; 941, p. 224; 949, p. 300). Elbert Shipp. Water level, in feet below land-surface datum, 1943: Jan. 20, 27.53.

16.38.25.144 (\*941, p. 224; 949, p. 300). J. S. and Rose Eaves.. (Formerly owned by Raymond Eaves.) Water level, in feet below land-surface datum, 1943: Jan. 21, 31.98.

16.38.28.444 (\*911, p. 193; 941, p. 224; \*949, p. 300). J. L. Williams.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 21	a 31.74	May 26	32.40	Sept. 29	30.75
Mar. 30	31.95	July 28	30.78	Nov. 30	a 31.82

16.38.35.110 (\*941, p. 224; 949, p. 300). Mrs. P. S. Bennett. (Formerly owned by F. B. Spencer.) Water level, in feet below land-surface datum, 1943: Jan. 21, b/34.10.

17.34.35.130 (\*941, p. 224; 949, p. 300). Phillips Petroleum Co., Mabel lease.

Water level, in feet below land-surface datum, 1943

Jan. 22	90.70	May 26	90.66	Sept. 29	90.69
Mar. 30	90.65	July 27	90.68	Nov. 30	90.69

17.35.35.120 (\*941, p. 224; 949, p. 300). Phillips Petroleum Co. lease.

Water level, in feet below land-surface datum, 1943

Jan. 22	38.93	May 26	38.92	Sept. 29	38.87
Mar. 30	38.92	July 28	38.92	Nov. 30	38.84

17.36.3.333 (\*941, p. 224; 949, p. 300). State land.

Water level, in feet below land-surface datum, 1943

Jan. 20	42.14	May 26	42.10	Sept. 29	42.07
Mar. 30	42.10	July 28	42.06	Nov. 30	42.04

17.37.13.310 (\*911, p. 193; 941, p. 225; 949, p. 300). John Catchings. Water level, in feet below land-surface datum, 1943: Jan. 21, 25.71.

17.37.26.333 (\*911, p. 194; 941, p. 225; 949, p. 300). Mrs. Dave B. Wilhoit. Water level, in feet below land-surface datum, 1943: Jan. 21, 26.21.

17.37.34.441 (\*941, p. 225; 949, p. 300). B. J. Caudill. (Formerly owned by J. D. Merrell.) Water level, in feet below land-surface datum, 1943: Jan. 21, 24.60.

17.37.36.141 (\*911, p. 194; 949, p. 300). M. J. Waltman. State school land. Water level, in feet below land-surface datum, 1943: Jan. 21, 23.93.

17.38.30.113 (\*911, p. 194; 941, p. 225; 949, p. 300). W. H. Martin. Water level, in feet below land-surface datum, 1943: Jan. 20, b/24.14.

17.38.30.312 (\*911, p. 194; \*941, p. 225; 949, p. 301). Colan M. Hawkins.

Water level, in feet below land-surface datum, 1943

Jan. 21	26.72	May 26	26.99	Sept. 29	27.30
Mar. 30	26.84	July 28	27.16	Nov. 30	27.34

a Windmill pumping.

b Nearby windmill pumping.

17.38.34.113. W. E. Busby. Drilled irrigation well, equipped with turbine pump. Depth 120 feet. Measuring point, top of  $\frac{3}{8}$ -inch hole in south side of pump base, 0.14 foot above concrete pump base and 0.54 foot above land-surface datum. Water level, in feet below land-surface datum, 1943: Nov. 30, 24.80.

18.36.27.111 (#911, p. 195; 941, p. 225; 949, p. 301). State land.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 22	38.13	May 26	38.31	Sept. 29	38.55
Mar. 30	38.23	July 28	38.44	Nov. 30	38.60

18.38.2.131 (#911, p. 195; 941, p. 225; 949, p. 301). Sam Dalmont. Water level, in feet below land-surface datum, 1943: Jan. 21, a/27.20.

18.38.4.232 (#911, p. 195; 941, p. 225; 949, p. 301). J. R. Isaacs.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 21	22.17	May 26	22.36	Sept. 29	22.23
Mar. 30	22.28	July 28	22.20	Nov. 30	22.41

18.38.15.241 (#911, p. 196; #941, p. 225; 949, p. 301; incorrectly designated as 18.38.15.4 and 18.38.15.400 in these reports). W. L. Greebon. Equipped with water-stage recorder until May 26, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 21	26.77	May 26	26.85	Sept. 29	27.50
Mar. 30	26.79	July 28	b 39.24	Nov. 30	27.22

18.38.22.321 (#911, p. 196; #941, p. 226; 949, p. 301). Mr. Browning. (Formerly owned by Earl C. Scott.) Water level, in feet below land-surface datum, 1943: Jan. 21, 34.43.

18.38.22.412 (#911, p. 196; 941, p. 226; 949, p. 301). M. C. Younger. (Formerly owned by R. V. Holman.) Measuring point, beginning Jan. 21, 1943, top edge of south  $\frac{3}{8}$ -inch hole in east side of Peerless pump base, 0.42 foot above concrete pump base and land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 21, 37.09.

18.38.23.131. Charles Mills. Drilled irrigation well, diameter 14 inches, depth 102 feet, equipped with turbine pump. Measuring point, top of casing, level with land-surface datum. Water level, in feet below land-surface datum, 1943: Nov. 30, 40.85.

18.38.26.343 (#911, p. 196; 941, p. 226; #949, p. 301). J. F. Mattox. (Formerly owned by Mr. Morrison.) Measuring point, beginning Mar. 30, 1943, lower edge of opening in north side of pump case, 10.00 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Mar. 30, 40.30.

18.38.30.200 (#911, p. 196; 941, p. 226; 949, p. 302). Mrs. Sadie Davis.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 21	23.72	May 26	23.86	Sept. 29	23.89
Mar. 30	24.33	July 28	23.90	Nov. 30	23.85

19.35.13.211 (#911, p. 197; 941, p. 226; 949, p. 302). Clara Fowler.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 22	20.49	May 26	21.06	Sept. 29	21.44
Mar. 30	20.83	July 28	21.27	Nov. 30	21.62

19.35.24.222 (#911, p. 197; 941, p. 226; 949, p. 302). F. K. Turner. (Formerly owned by A. R. Brashears.) Water level, in feet below land-surface datum, 1943: Jan. 22, 18.70.

19.36.19.113 (#911, p. 197; 941, p. 227; 949, p. 302). Louis S. Evans. Water level, in feet below land-surface datum, 1943: Jan. 22, 16.65.

a Windmill 200 feet northwest pumping.

b Nearby irrigation well pumping.

19.36.19.411. Clarence R. Jordan. Dug and bored irrigation well, equipped with vertical centrifugal pump. Depth 70 feet. Measuring point, top north edge of 8- by 12-inch timber on south side of well, 6 inches west of vertical discharge pipe, 0.25 foot above land-surface datum. Water levels, in feet below land-surface datum: Feb. 5, 1942, 16.44; Jan. 22, 1943, 16.53.

19.36.32.111 (\*911, p. 198; 941, p. 227; 949, p. 302). S. P. Jordan. Water level, in feet below land-surface datum, 1943: Jan. 22, 16.06.

19.36.32.321. E. T. Childers. Dug irrigation well, equipped with centrifugal pump. Measuring point, top east edge of 4- by 8-inch curb on west side of well, 0.50 foot above land-surface datum. Measuring point is 0.38 foot above concrete well curb at southwest corner of well. Water level, in feet below land-surface datum: Feb. 5, 1942, 23.80; Jan. 22, 1943, 25.75.

19.36.32.323. E.T. Childers. Dug well. No equipment at present. Measuring point, west top edge of 2- by 12-inch plank on east side of well, level with land-surface datum. Water level, in feet below land-surface datum: Feb. 5, 1942, 23.17; Jan. 22, 1943, 24.83.

19.37.32.241 (\*911, p. 198; incorrectly designated 19.37.32.131; 941, p. 227; 949, p. 302, incorrectly designated 19.37.32.141). Mrs. E. A. Anderson. Measuring point, beginning Mar. 30, 1943, top south edge of Geological Survey washer in south upper surface of 2- by 6-inch board in old well cover, 0.37 foot below land-surface datum. Present measuring point is 1.5 feet west of former measuring point and 0.13 foot above it. Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Mar. 30	12.00	July 28	11.98	Nov. 30	12.09
May 26	12.06	Sept. 29	12.00		

19.38.2.122 (\*941, p. 227; 949, p. 302). A. C. Cheser. Water level, in feet below land-surface datum, 1943: Jan. 21, 44.46.

19.38.2.242 (\*941, p. 227; 949, p. 302). Mr. Dunn. Water level, in feet below land-surface datum, 1943: Jan. 21, 44.55.

19.38.2.424 (\*941, p. 227; 949, p. 302). A. C. Cheser. Water level, in feet below land-surface datum, 1943: Jan. 21, 44.00.

20.35.1.222 (\*911, p. 198; 941, p. 227; 949, p. 302). J. L. Wood.

Water level, in feet below land-surface datum, 1943

Jan. 22	19.72	May 26	19.41	Sept. 29	19.48
Mar. 30	19.56	July 28	19.38	Nov. 30	19.59

20.37.9.110 (\*911, p. 199; \*941, p. 227; 949, p. 302). W. H. Laughlin.

Water level, in feet below land-surface datum, 1943

Jan. 22	27.18	May 26	27.03	Sept. 29	28.30
Mar. 30	26.89	July 28	27.69	Nov. 30	28.33

20.37.9.110a (\*941, p. 227; 949, p. 302). W. H. Laughlin.

Water level, in feet below land-surface datum, 1943

Jan. 22	26.36	May 26	26.23	Sept. 29	27.46
Mar. 30	26.08	July 28	26.88	Nov. 30	27.50

LUNA COUNTY (MIMBRES VALLEY)

By C. R. Murray

Investigation of the ground-water resources of the Mimbres Valley was continued in 1943 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Progress reports on this investigation, which was begun in 1927, have been published in the 10th to 13th biennial reports of the State engineer and in Geological Survey Water-Supply Paper 637. Statistical data on water levels, precipitation, acreage irrigated, and quantity of water pumped have been published in Geological Survey Water-Supply Papers 817, 845, 886, 911, 941, and 949.

Measurements of water level were made in 122 wells in January, and in about 60 of these in April, July, and October, making a total of 328 measurements during the year. Automatic water-stage recorders were in operation on 4 wells during the year. The measurements made during January show the yearly change in the amount of ground water in storage in the valley, and the measurements made throughout the year show seasonal fluctuations caused largely by the withdrawal of water for irrigation.

Fluctuations in water level

The precipitation recorded by the United States Weather Bureau at Deming in 1943 was 7.80 inches. This is 1.20 inches below normal, 2.44 inches less than in 1942, which was a year of slightly above normal precipitation, and 5.09 inches less than in 1941, which was a year of exceptionally heavy precipitation. Fortunately, 7.11 inches of the year's total in 1943 fell during June, July, and August, when it was most beneficial to growing crops. Most of it fell as very localized thundershowers rather than as regional rains, and the amount received by different tracts of land varied greatly.

The amount of land irrigated with ground water increased from about 13,000 acres in 1942 to about 13,750 acres in 1943. Estimates of the acreage under irrigation in 1941 and 1940 were 12,170 and 11,750 acres, respectively. The amount of ground water pumped for use in agriculture and industry in 1943 is estimated at about 29,000 acre-feet. Corresponding estimates for 1942, 1941, and 1940 were 24,500, 21,000, and 25,500 acre-feet, respectively.

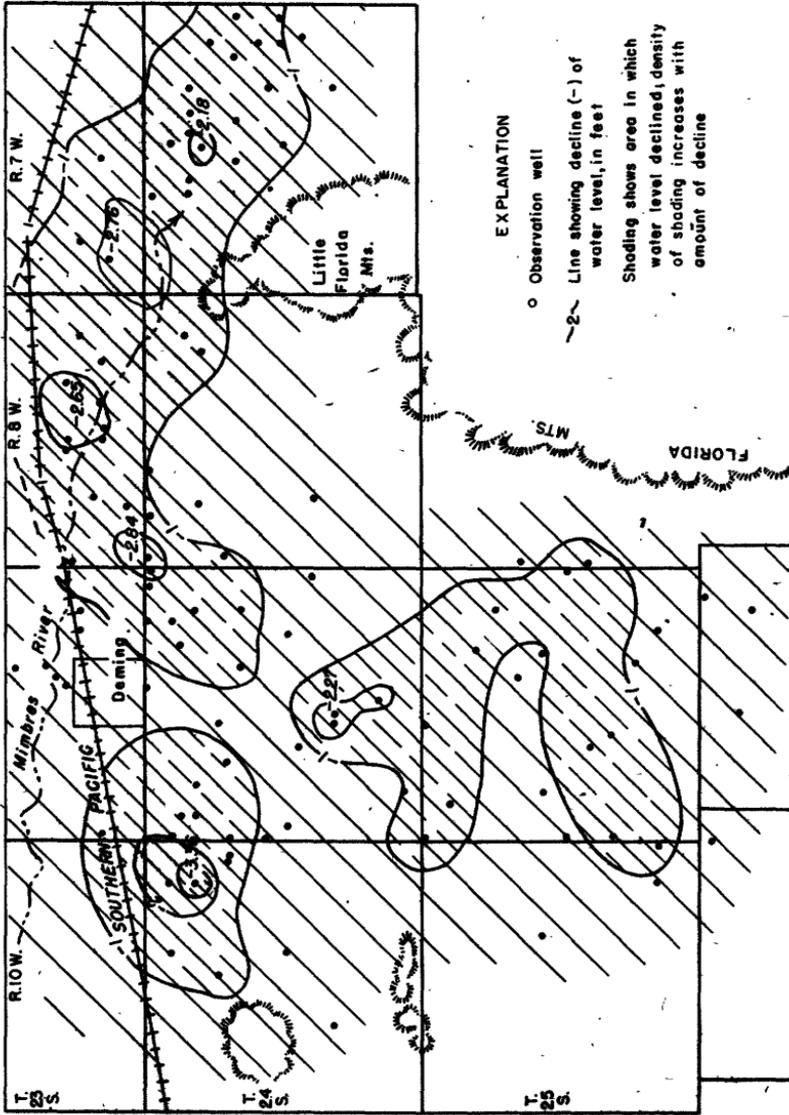


Figure 16.--Map of Mimbres Valley, Luna County, N. Mex., showing decline of water level from January 1943 to January 1944.

Figure 16 shows the changes in water level in the Mimbres Valley from January 1943 to January 1944. Water levels declined from a fraction of a foot to several feet over the irrigated lands of the valley. There were three large areas, totaling more than 100 square miles to the east, west, and south of Deming in which the decline in water level was in excess of 1 foot, the individual areas comprising about 53, 17, and 32 square miles. These large areas include smaller areas, totaling about 10 square miles, in which declines in excess of 2 feet occurred. The greatest decline in water level in any one well in the area shown in figure 16 was 3.36 feet in well 24.10.12.111, which lies southwest of Deming and northeast of Red Mountain. It was in this same general area that the only rise of an appreciable areal extent occurred in 1942. With this one exception, the patterns of the changes in water level for the 2 years were similar, though the changes extended over larger areas in 1943.

Along the Mimbres River, northwest of the area shown in figure 16, in Tps. 21 and 22 S., Rs. 10 and 11 W., water levels again declined in 1943, the decline averaging about 3 feet and ranging from 0.55 foot in well 21.10.6.112 to 6.53 feet in well 21.11.13. Water levels in this area are still slightly higher, however, than they were prior to 1941, in which year large rises occurred as a result of the abnormal flow of the Mimbres River.

During 1943 more water was removed from the irrigated area of Mimbres Valley by pumps and natural drainage than was supplied to it by rainfall and stream flow. This excessive withdrawal caused the water table to decline throughout the extensive area shown. It appears that under the present pumping regimen and climatic conditions water levels will continue to decline rather rapidly for some years to come. A period of above-normal precipitation might slacken the rate of decline or even cause a rise in water levels in the Mimbres Valley, but, under the climatic conditions that can normally be expected, increased pumping lifts are anticipated for the Deming area.

#### Water-level measurements

21.10.6 (\*886, p. 427; \*911, p. 204; 941, p. 231; 949, p. 305). Tom Tigner. Measuring point, Jan. 15, 1943, surface of concrete curb on south side of well, level with land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 15, 8.50; Apr. 24, 9.01; July 9, 9.07; Oct. 10, 9.63.

21.11.13 (\*886, p. 427; 911, p. 205; \*941, p. 231; 949, p. 305). R. A. Gunter. Water levels, in feet below land-surface datum, 1943: Jan. 15, 33.07; Apr. 24, 34.52.

- 22.11.35.310 (\*886, p. 427; 911, p. 205; 941, p. 231; 949, p. 305). State land, Tigner lease. Water levels, in feet below land-surface datum, 1943: Jan. 15, 26.50; Apr. 27, 27.96; July 9, 26.18; Oct. 10, 29.10.
- 22.10.6.233 (\*941, p. 231; 949, p. 305). State land; Tigner lease. Measurements discontinued.
- 22.10.18.121 (\*886, p. 428; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 71.34; Apr. 27, 72.16; July 9, 72.55; Oct. 10, 72.84.
- 22.10.20.210 (\*911, p. 205; 941, p. 232; 949, p. 306). State land. Water level, in feet below land-surface datum, 1943: Jan. 15, 91.00.
- 22.11.2.210 (\*886, p. 428; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 27.73; Apr. 27, 29.04; July 9, 29.17; Oct. 10, 30.10.
- 22.11.13.122 (\*886, p. 429; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 63.20; Apr. 27, 64.03; July 9, 64.48; Oct. 10, 64.82.
- 22.11.13.221 (\*886, p. 429; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 70.13; Apr. 27, 70.96; July 9, 71.37; Oct. 10, 71.70.
- 22.11.14.222 (\*886, p. 430; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 55.14; Apr. 27, 56.17; July 9, 56.65; Oct. 10, 57.08.
- 22.11.23.222 (\*886, p. 430; 911, p. 205; 941, p. 232; 949, p. 306). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 49.48; Apr. 27, 50.49; July 9, 50.97; Oct. 10, 51.34.
- 23.7.17.200 (\*941, p. 232; 949, p. 306). Water levels, in feet below land-surface datum, 1943: Jan. 14, 93.17; Apr. 26, 95.58; July 11, 94.27.
- 23.7.30.106 (\*886, p. 431; 911, p. 206; 941, p. 232; 949, p. 306). H. T. Poster. Water levels, in feet below land-surface datum, 1943: Jan. 14, 25.61; Apr. 26, 26.14; July 11, 26.67; Oct. 12, 26.31.
- 23.7.30.400 (\*911, p. 206; 941, p. 232; 949, p. 306). John Kelly. Water level, in feet below land-surface datum, 1943: Jan. 14, 61.62.
- 23.7.31.120 (\*911, p. 206; 941, p. 232; 949, p. 306). William Haas. Water level, in feet below land-surface datum, 1943: Jan. 14, 45.16.
- 23.7.31.140 (\*911, p. 206; 941, p. 232; 949, p. 306). William Haas. Water level, in feet below land-surface datum, 1943: Jan. 14, 45.86.
- 23.7.33.211 (\*911, p. 206; 941, p. 232; 949, p. 306). Lewis and R. S. Smyer. Water level, in feet below land-surface datum, 1943: Jan. 14, 62.65.
- 23.8.3.300 (\*941, p. 233; 949, p. 306). Water levels, in feet below land-surface datum, 1943: July 8, 131.51; Oct. 13, 131.52.
- 23.8.13.400 (\*886, p. 431; 911, p. 206; 941, p. 233; 949, p. 306). Mr. Peoples. (Formerly owned by Bart and John H. Childs.) Water levels, in feet below land-surface datum, 1943: Jan. 14, 37.80; Apr. 26, 38.33; July 11, 38.30; Oct. 13, 39.03.
- 23.8.25.311 (\*911, p. 206; 941, p. 233; 949, p. 306). Ed Remondini. Water level, in feet below land-surface datum, 1943: Jan. 14, 21.34.
- 23.8.26.131 (\*886, p. 431; 911, p. 206; 941, p. 233; 949, p. 306). George Snyder. Water levels, in feet below land-surface datum, 1943: Jan. 14, 34.22; Apr. 26, 39.36; July 11, 38.93; Oct. 12, 38.59.
- 23.8.28.231. C. R. Lewis, Jr. Drilled irrigation well, equipped with turbine pump. Measuring point, top edge of casing, north side, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum, Jan. 15, 1942, 43.50; Jan. 14, 1943, 45.32.

a Windmill pumping.

- 23.8.28.241 (#911, p. 206; 941, p. 233; #949, p. 306). C. R. Lewis, Jr. Water level, in feet below land-surface datum, 1943: Jan. 14, 43.71.
- 23.8.29.433 (#886, p. 432; 911, p. 206; 941, p. 233; #949, p. 306). B. N. Ruebush. Water level, in feet below land-surface datum, 1943: Jan. 14, 47.08.
- 23.8.30.133 (#886, p. 432; 911, p. 206; #941, p. 233; 949, p. 306). Lee Wilkerson. Water level, in feet below land-surface datum, 1943: Jan. 14, 47.09.
- 23.8.32.323 (#886, p. 432; 911, p. 207; 941, p. 233; 949, p. 307). Jess T. Gosnell. Water levels, in feet below land-surface datum, 1943: Jan. 13, 41.65; Apr. 26, 41.30; July 10, 42.15; Oct. 12, 42.93.
- 23.8.33.221 (#911, p. 207; 941, p. 233; 949, p. 307). A. J. Inderrieden. Water level, in feet below land-surface datum, 1943: Jan. 14, 38.14.
- 23.8.34.111 (#911, p. 207; 941, p. 233; 949, p. 307). A. J. Inderrieden. Pump removed. Measuring point, beginning Jan. 14, 1943, top of concrete pump base, at northwest corner, 1.64 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 14, 35.71.
- 23.8.34.211 (#886, p. 432; 911, p. 207; 941, p. 233; 949, p. 307). H. T. Foster. Measuring point, beginning Oct. 12, 1943, lower inside lip of rectangular hole in east side of pump shell, 0.96 foot above pump base or concrete pump support, on east side of pump, 2.46 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 14, 34.94; Apr. 26, 35.82; July 11, 38.88; Oct. 12, 39.69.
- 23.8.35.211b (#941, p. 233; 949, p. 307). Joe Remondini. Water level, in feet below land-surface datum, 1943: Jan. 14, 29.33.
- 23.9.7.240 (#911, p. 207; 941, p. 233; 949, p. 307). R. M. Wilson ranch. Water level, in feet below land-surface datum, 1943: Jan. 15, a/99.43.
- 23.9.22.200 (#886, p. 433; 911, p. 207; 941, p. 234; 949, p. 307). Roy Perkins. Water levels, in feet below land-surface datum, 1943: Jan. 15, 63.20; Apr. 25, 63.12; July 9, 63.41; Oct. 12, 63.50.
- 23.9.25.311 (#886, p. 434; 911, p. 207; 941, p. 234; #949, p. 307). Albert Ernst. Well supplies water for a gravel pit in addition to water for irrigation. Water levels, in feet below land-surface datum, 1943: Jan. 15, 56.63; Apr. 26, 57.73; July 11, 59.02; Oct. 13, 59.28.
- 23.9.25.330 (#886, p. 434; #911, p. 207; 941, p. 234; 949, p. 307). John C. Thompson. Measurements discontinued.
- 23.9.26.410 (#886, p. 434; 911, p. 207; 941, p. 234; #949, p. 307). Hubert Ruebush. Water level, in feet below land-surface datum, 1943: Jan. 15, 55.76.
- 23.9.27.142 (#886, p. 435; #911, p. 207; #941, p. 234; 949, p. 307). H. J. Thomas. (Formerly owned by Mr. Gray.) Water levels, in feet below land-surface datum, 1943: Jan. 15, a/61.09; Apr. 26, 61.07; July 9, 61.34; Oct. 12, 61.75.
- 23.9.27.221 (#886, p. 435; 911, p. 208; 941, p. 234; 949, p. 307). R. E. Hardaway. Water levels, in feet below land-surface datum, 1943: Jan. 15, 59.08; Apr. 26, 58.35; July 9, b/58.66; Oct. 12, 58.65.
- 23.9.31.110 (#911, p. 208; 941, p. 234; 949, p. 307). Schauer and Lindauer. Water levels, in feet below land-surface datum, 1943: Jan. 8, 77.96; July 12, 79.00.
- 23.10.15 (#886, p. 436; 911, p. 208; 941, p. 234; 949, p. 307). State land. Water levels, in feet below land-surface datum, 1943: Jan. 15, 92.93; Apr. 27, 93.15; July 9, 93.29; Oct. 10, 93.64.
- 24.6.29.300 (#941, p. 234; 949, p. 307). Mr. Brownfield. Water level, in feet below land-surface datum, 1943: Jan. 13, 67.17.
- 24.6.30.111 (#941, p. 234; 949, p. 307). Mr. Brownfield. Water level, in feet below land-surface datum, 1943: Jan. 13, 67.14.

a Windmill pumping.

b Windmill had been pumping.

24.7.4.424 (\*886, p. 437; 911, p. 208; 941, p. 234; 949, p. 307).  
G. D. Hatfield. Water levels, in feet below land-surface datum, 1943:  
Jan. 14, 88.70; Apr. 26, 89.84; July 10, 90.21; Oct. 13, 91.52.

24.7.5.200 (\*886, p. 437; 911, p. 208; 941, p. 235; \*949, p. 307).  
R. M. Williamson. Water levels, in feet below land-surface datum, 1943:  
Jan. 14, 81.65; Apr. 26, 81.77; July 10, 82.42; Oct. 13, 83.16.

24.7.8.221 (\*911, p. 208; 941, p. 235; 949, p. 308). J. M. McDougall.  
Water level, in feet below land-surface datum, 1943: Jan. 13, 83.82.

24.7.9.111 (\*886, p. 437; 911, p. 208; \*941, p. 235; 949, p. 308).  
Smyer Bros. Water levels, in feet below land-surface datum, 1943: Jan. 13,  
83.37; July 10, 85.68; Oct. 13, 86.08.

24.7.9.241 (\*941, p. 235; 949, p. 308). G. D. Hatfield. Water level,  
in feet below land-surface datum, 1943: Jan. 14, 89.69.

24.7.10.111 (\*911, p. 208; 941, p. 235; 949, p. 308). G. D. Hatfield.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 90.22.

24.7.10.211 (\*911, p. 208; 941, p. 235; 949, p. 308). Fred Hassman.  
Water level, in feet below land-surface datum, 1943: Jan. 14, 88.23.

24.7.11.111 (\*911, p. 208; \*941, p. 235; \*949, p. 308). Edith E.  
Pollard. Water level, in feet below land-surface datum, 1943: Jan. 14,  
84.14.

24.7.12.311 (\*886, p. 437; 911, p. 209; 941, p. 235; 949, p. 308).  
E. N. Odenbaugh. Measurements discontinued.

24.7.13.212 (\*911, p. 209; 941, p. 235; 949, p. 308). Percival &  
Dwyer. Water level, in feet below land-surface datum, 1943: Jan. 13,  
69.30.

24.7.13.311 (\*886, p. 438; 911, p. 209; 941, p. 235; 949, p. 308).  
Jennie Weeks. Water level, in feet below land-surface datum, 1943:  
Jan. 14, 75.69.

24.7.14.221 (\*886, p. 438; \*911, p. 209; \*941, p. 235; 949, p. 308).  
J. H. Winslow. Equipped with water-stage recorder. Highest and lowest  
recorded water level, in feet below land-surface datum, 1943: Mar. 18,  
79.39; Nov. 22, 82.00.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.92	79.48	79.63	80.38	80.89	81.08	81.36	81.63	81.74	81.91	81.88	
2	79.91	79.48	79.68	80.42	80.85	81.08	81.37	81.61	81.73	81.92	81.87	
3	79.89	79.47	79.73	80.84	81.07	81.38	81.61	81.73	81.91	81.84		
4	79.88	79.43	79.78	80.83	81.07	81.37	81.61	81.72	81.89	81.82		
5	79.86	79.42	79.87	80.82	81.07	81.38	81.61	81.71	81.89	81.81		
6	79.87	79.43	79.90	80.81	81.05	81.38	81.62	81.70	81.91	81.80		
7	79.83	79.43	79.96	80.81	81.04	81.37	81.64	81.70	81.93	81.78		
8	79.80	79.42	79.99	80.82	81.04	81.37	81.66	81.70	81.92	81.75		
9	79.80	79.41	80.01	80.84	81.04	81.37	81.68	81.69	81.92	81.74		
10	80.34	79.81	79.41	80.03	80.88	80.86	81.04	81.37	81.71	81.67	81.92	81.73
11	80.33	79.77	79.40	80.04	80.90	80.93	81.04	81.37	81.73	81.65	81.92	81.70
12	80.30	79.77	79.43	80.05	80.93	80.97	81.04	81.37	81.75	81.66	81.92	81.67
13	80.29	79.74	79.42	80.06	80.97	81.04	81.38	81.77	81.66	81.92	81.66	
14	80.26	79.73	79.41	80.10	81.01	81.08	81.39	81.78	81.66	81.93	81.65	
15	80.22	79.69	79.40	80.11	81.04	81.09	81.39	81.78	81.65	81.94	81.64	
16	80.21	79.68	79.42	80.12	81.04	81.09	81.39	81.78	81.64	81.95	81.63	
17	80.18	79.67	79.40	80.14	81.04	81.07	81.40	81.78	81.64	81.96	81.61	
18	80.18	79.66	79.39	80.14	81.04	81.08	81.45	81.78	81.64	81.93	81.60	
19	80.18	79.65	79.42	80.13	81.04	81.07	81.49	81.77	81.63	81.98	81.56	
20	80.17	79.64	79.43	80.13	81.03	81.06	81.51	81.77	81.72	81.98	81.54	
21	80.12	79.62	79.43	80.14	80.99	81.05	81.51	81.77	81.74	81.99	81.51	
22	80.11	79.60	79.41	80.14	80.98	81.05	80.50	81.78	81.76	82.00	81.50	
23	80.08	79.60	79.41	80.13	80.99	81.06	81.58	81.60	81.79	81.99	81.49	
24	80.07	79.60	79.42	80.15	81.03	81.10	81.59	81.60	81.81	81.98	81.48	

a Windmill pumping.

24.7.14.221. J. H. Winslow--Continued.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
25	80.06	79.59	79.40	80.12	81.06	81.10	81.12	81.61	81.77	81.82	81.97	81.46
26	80.05	79.53	79.40	80.12	81.06	81.10	81.13	81.62	81.60	81.83	81.96	81.43
27	80.03	79.49	79.40	80.14	81.04	81.10	81.16	81.63	81.77	81.84	81.96	81.43
28	80.02	79.49	79.41	80.19	81.03	81.09	81.21	81.63	81.76	81.85	81.94	81.41
29	80.00	.....	79.44	80.25	80.98	81.08	81.27	81.62	81.75	81.86	81.93	81.40
30	79.99	.....	79.49	80.30	80.95	81.08	81.31	81.64	81.75	81.88	81.90	81.38
31	79.97	.....	79.54	.....	80.93	.....	81.34	81.63	.....	81.90	.....	81.33

24.7.14.331 (\*911, p. 209; 941, p. 236; 949, p. 309). Catherine Nordhaus. Water level, in feet below land-surface datum, 1943: Jan. 13, 81.27.

24.7.15.122 (\*886, p. 438; \*911, p. 209; 941, p. 236; 949, p. 309). J. N. McDougall. Measuring point, beginning Jan. 13, 1943, top south edge of north 8- by 8-inch timber pump support at point northeast of pump, 0.75 foot above top of concrete pump base and 1.21 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 13, 87.00.

24.7.16.211 (\*886, p. 438; 911, p. 209; 941, p. 236; 949, p. 309). George Snyder. Measurements discontinued.

24.7.16.211b (\*941, p. 236; 949, p. 309). George Snyder. Water levels, in feet below land-surface datum, 1943: Jan. 13, 82.77; Apr. 26, 83.19; July 10, 83.52; Oct. 13, 84.12.

24.7.21.222 (\*911, p. 210; \*941, p. 236; 949, p. 309). Hiram Jeter. Water level, in feet below land-surface datum, 1943: Jan. 13, 74.17.

24.7.24.111 (\*886, p. 438; 911, p. 210; 941, p. 236; 949, p. 309). Jasper Wilson. Water levels, in feet below land-surface datum, 1943: Jan. 14, 73.71; Apr. 26, 73.84; July 10, 74.12; Oct. 13, 74.50.

24.7.24.211 (\*911, p. 210; 941, p. 236; 949, p. 309). J. S. Hack. Water level, in feet below land-surface datum, 1943: Jan. 13, 71.80.

24.7.24.312 (\*911, p. 210; 941, p. 236; 949, p. 309). H. E. Emory. Water levels, in feet below land-surface datum, 1943: Jan. 13, 70.50; Apr. 26, 70.70; July 10, 70.84; Oct. 13, 71.12.

24.7.26.113 (\*941, p. 237; 949, p. 309). Mr. Birchfield. (Formerly owned by Mr. Brownfield.) Water levels, in feet below land-surface datum, 1943: Jan. 13, 69.59; Apr. 26, 69.74; July 10, 69.88; Oct. 13, 70.11.

24.8.1.333 (\*886, p. 438; 911, p. 210; 941, p. 237; 949, p. 309). F. K. Kretek. Water levels, in feet below land-surface datum, 1943: Jan. 13, 16.65; Apr. 26, 16.37; July 10, a/22.93; Oct. 12, 18.52.

24.8.1.333b (\*941, p. 237; 949, p. 309). F. K. Kretek. Water levels, in feet below land-surface datum, 1943: Jan. 13, 16.38; Apr. 26, 17.02; Oct. 12, 19.20.

24.8.4.111 (\*941, p. 237; 949, p. 309). Water levels, in feet below land-surface datum, 1943: Jan. 13, 36.75; Apr. 26, 36.26; July 10, 37.24; Oct. 12, 37.92.

24.8.5.110 (\*886, p. 439; \*911, p. 210; 941, p. 237; 949, p. 309). R. A. Hackebell. Water level, in feet below land-surface datum, 1943: Jan. 13, 43.15.

24.8.6.112. Deming Army Air Base water-supply well 3. Diameter 12 inches, depth 235 feet. Equipped with turbine pump. Measuring point, bottom edge of 3- by 8-inch hole in east side of pump shell, 0.64 foot above steel flange, which is 0.15 foot above concrete pump base; concrete pump base is 0.33 foot above concrete floor of pump house, and floor is 0.40 foot above land-surface datum. Measuring point is 1.52 feet above land-surface datum.

a Well 100 feet west pumping.

## 24.8.6.112. Deming Army Air Base water-supply well 3--Continued.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1942	48.75	Apr. 26, 1943	50.42	July 10, 1943	a 60.87
Jan. 8, 1943	49.22	July 10	51.66	Oct. 11	51.64

24.8.7.300 (\*941, p. 237; 949, p. 309). Paul Hrna. No measurements made in 1943.

24.8.8.120 (\*886, p. 440; 911, p. 210; 941, p. 237; 949, p. 309). J. F. Holiday. Water level, in feet below land-surface datum, 1943; Jan. 13, 42.66.

24.8.11.200 (\*886, p. 439; 911, p. 210; 941, p. 237; 949, p. 309). F. K. Krettek. Water levels, in feet below land-surface datum, 1943; Jan. 13, 16.09; Apr. 26, 16.24; July 10, 17.57; Oct. 12, 18.19.

24.8.20.411 (\*886, p. 440; 911, p. 210; 941, p. 237; 949, p. 309). J. W. Jones. Water levels, in feet below land-surface datum, 1943; Jan. 11, 42.66; Apr. 25, 42.61; July 10, 42.55; Oct. 12, 42.96.

24.9.1.211. Deming Army Air Base water-supply well 2. Diameter 12 inches, depth 235 feet. Equipped with turbine pump. Measuring point, bottom edge of 3- by 8-inch hole in west side of pump shell, 0.64 foot above steel flange, which is 0.15 foot above concrete pump base; concrete pump base is 0.62 foot above concrete floor, and floor is 1.00 foot above land-surface datum. Measuring point is 2.41 feet above land-surface datum.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1942	54.89	Apr. 26, 1943	55.87	July 10, 1943	a 67.29
Jan. 8, 1943	55.64	July 10	57.09	Oct. 11	58.01

24.9.1.222. Deming Army Air Base water-supply well 1. Diameter 12 inches, depth 234 feet. Equipped with turbine pump. Measuring point, bottom edge of 3- by 8-inch hole in north side of pump shell, 0.64 foot above steel flange, which is 0.15 foot above concrete base; concrete base is 0.03 foot above land-surface datum. Measuring point is 0.82 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Oct. 14, 1942	51.47	Apr. 26, 1943	53.21	July 10, 1943	a 71.18
Jan. 8, 1943	a 71.68	July 10	54.18	Oct. 11	54.75

24.9.2.221 (\*886, p. 441; 911, p. 210; 941, p. 237; 949, p. 309). R. G. Folk. Measurements discontinued.

24.9.2.221a. R. G. Folk. Unused dug and drilled well, 50 feet east of well 24.9.2.221. Diameter 4 feet, depth unknown. Measuring point, top of east-west 8- by 8-inch timber at northeast corner of well, at washer, 0.24 foot above land-surface datum at original well. Reference point, surface of concrete block on south side of original well, painted orange, 1.86 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Apr. 25, 55.40; July 10, 55.77; Oct. 12, 56.27.

24.9.2.421 (\*886, p. 441; 911, p. 210; 941, p. 238; 949, p. 309). J. H. Winslow. Water levels, in feet below land-surface datum, 1943; Jan. 11, 54.39; Apr. 25, 54.59; July 10, 54.82; Oct. 12, 55.20.

24.9.3.121 (\*941, p. 238; 949, p. 309). Jim Swartz. Water level, in feet below land-surface datum, 1943: Jan. 9, 59.70.

24.9.6.311 (\*886, p. 441; 911, p. 211; 941, p. 238; 949, p. 309). J. B. Wells. Measuring point, beginning July 11, 1943, bottom edge of pump base, west side, 0.96 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 8, 76.04; Apr. 27, 76.07; July 11, 80.89; Oct. 11, 80.82.

a Pumping.

24.9.6.431 (\*941, p. 238; \*949, p. 310). State of New Mexico. Equipped with water-stage recorder. Highest and lowest recorded water level, in feet below land-surface datum, 1943: Feb. 6, 58.60; Aug. 12, 71.36.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Oct.	Nov.	Dec.
1	.....	59.25	59.05	.....	60.17	66.37	.....	68.59	.....	62.90	61.34
2	.....	59.17	59.08	.....	60.04	66.71	.....	68.97	.....	62.77	60.70
3	.....	59.05	59.06	.....	60.02	66.59	.....	69.54	.....	62.63	61.59
4	.....	58.98	58.99	.....	60.11	64.75	.....	69.84	.....	62.51	62.16
5	.....	58.98	58.94	.....	60.08	64.26	.....	69.77	.....	62.55	61.63
6	.....	58.60	58.95	.....	60.27	63.35	.....	69.47	.....	62.27	61.57
7	.....	58.90	58.95	.....	60.35	63.26	.....	69.30	.....	62.30	61.85
8	58.97	58.80	58.87	.....	60.16	63.14	64.91	70.06	.....	62.28	61.43
9	58.95	58.78	59.11	.....	60.12	63.15	64.89	70.63	.....	62.30	61.35
10	58.92	58.82	59.13	.....	60.42	65.01	64.91	70.89	.....	62.10	61.35
11	58.91	58.90	59.03	.....	61.60	64.60	64.81	71.03	62.52	62.02	61.23
12	58.91	58.93	59.03	.....	62.35	64.30	65.27	71.36	62.49	61.92	61.11
13	59.21	58.89	58.97	.....	62.85	64.28	67.04	71.26	62.42	61.83	61.03
14	59.47	58.83	58.90	.....	63.69	66.28	68.20	69.49	62.55	61.78	61.04
15	59.54	58.80	.....	.....	63.13	67.04	66.54	68.50	62.87	61.77	61.02
16	59.23	58.78	.....	.....	62.29	67.48	65.48	68.38	63.63	61.72	62.98
17	59.09	58.78	.....	.....	62.20	67.86	66.51	70.52	63.76	61.65	62.99
18	59.05	59.16	.....	.....	62.98	67.90	66.42	69.98	64.85	61.60	60.94
19	59.09	59.02	.....	.....	64.38	68.54	65.50	70.45	64.11	61.54	60.88
20	59.07	59.39	.....	.....	64.66	67.69	64.93	70.00	63.45	61.48	60.83
21	58.99	59.30	.....	.....	64.07	68.21	64.57	70.10	65.82	61.44	60.78
22	58.99	59.12	.....	.....	63.18	69.10	64.31	69.69	65.59	61.39	60.74
23	58.93	59.24	.....	.....	63.07	69.55	64.06	.....	65.53	61.37	60.73
24	58.90	59.47	.....	.....	64.17	69.10	64.01	.....	66.44	61.33	60.70
25	58.90	59.64	.....	60.14	63.25	.....	63.80	.....	65.28	61.29	60.64
26	59.30	59.44	.....	60.08	64.40	.....	64.10	.....	64.77	62.57	60.54
27	59.51	59.23	.....	60.05	65.36	.....	64.34	.....	64.36	62.66	60.58
28	59.37	59.17	.....	59.95	65.72	.....	66.15	.....	63.86	62.71	60.67
29	59.33	.....	.....	59.97	64.30	.....	67.42	.....	63.48	62.64	60.59
30	59.65	.....	.....	60.36	63.92	.....	68.07	.....	63.23	62.79	60.59
31	59.49	.....	.....	.....	65.48	.....	68.27	.....	63.03	.....	60.53

24.9.7.211 (\*886, p. 442; 911, p. 211; \*941, p. 238; \*949, p. 310). Emanuel Vocale. Water levels, in feet below land-surface datum, 1943: Jan. 8, 68.13; Apr. 25, 69.11; July 8, 74.29; Oct. 11, 72.24.

24.9.7.331 (\*886, p. 442; \*911, p. 211; 941, p. 238; 949, p. 310). Smitty R. Moir. Water levels, in feet below land-surface datum, 1943: Jan. 8, 74.47; Apr. 25, a/74.85; July 8, 76.34; Oct. 11, 77.35.

24.9.8.111 (\*886, p. 442; 911, p. 211; 941, p. 238; 949, p. 310). Ben F. Jonas. Measurements discontinued.

24.9.8.112 (\*886, p. 443; 911, p. 211; 941, p. 238; 949, p. 310). Ben F. Jonas. Water levels, in feet below land-surface datum, 1943: Jan. 8, 74.07; Apr. 27, 73.25; July 8, 74.64; Oct. 11, 76.28.

24.9.8.440 (\*911, p. 211; 941, p. 238; 949, p. 310). Frank A. Bredecko. Water level, in feet below land-surface datum, 1943: Jan. 11, 70.59.

24.9.9.411 (\*886, p. 444; \*911, p. 211; \*941, p. 238; 949, p. 310). Joe Clary. Water levels, in feet below land-surface datum, 1943: Jan. 9, 66.90; Apr. 25, 69.52; July 9, b/61.21; Oct. 11, 69.83.

24.9.12.111 (\*886, p. 444; 911, p. 211; 941, p. 238; 949, p. 311). Ed H. Hatcher. Water level, in feet below land-surface datum, 1943: Jan. 11, 54.40.

24.9.13.111 (\*886, p. 444; 911, p. 211; 941, p. 238; 949, p. 311). Mary E. Barrett. Water levels, in feet below land-surface datum, 1943: Jan. 11, 24.59; Apr. 25, 24.50; July 10, 26.33; Oct. 12, 28.08.

a Windmill had been pumping. b Well 100 feet west pumping.

24.9.15.221 (\*941, p. 239; \*949, p. 311). Joe Lutonsky. Water level, in feet below land-surface datum, 1943: Jan. 11, 62.70.

24.9.18.311 (\*911, p. 211; 941, p. 239; 949, p. 311). Charles Peter. Water level, in feet below land-surface datum, 1943: Jan. 8, 73.43.

24.9.19.121 (\*911, p. 211; 941, p. 239; 949, p. 311). Francis Ligoocky. Water levels, in feet below land-surface datum, 1943: Jan. 8, 74.81; Apr. 25, 74.84; July 9, 77.34; Oct. 11, 77.50.

24.9.21.131 (\*886, p. 445; 911, p. 212; 941, p. 239; 949, p. 311). L. L. Gaskill.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 9	71.14	July 9	a 87.30	Oct. 11	b 79.58
Apr. 25	73.70	11	79.34		

24.9.23.211 (\*886, p. 446; \*911, p. 212; 941, p. 239; 949, p. 311). J. H. Winslow. Water levels, in feet below land-surface datum, 1943: Jan. 11, 69.48; July 10, 72.32; Oct. 12, 70.61.

24.9.24.421. W. F. Roberts. Dug and drilled irrigation well, equipped with turbine pump. Measuring point, top edge of concrete well curb, on south side of well, 1.00 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 12, 1942, 59.17; Jan. 11, 1943, 59.36.

24.9.28.221 (\*941, p. 239; 949, p. 311). John Hrna. Water level, in feet below land-surface datum, 1943: Jan. 9, 66.82.

24.9.32.311 (\*911, p. 212; 941, p. 239; 949, p. 311). D. D. Roderick. (Formerly owned by H. C. Wheeler.) Water level, in feet below land-surface datum, 1943: Jan. 9, 72.25.

24.9.34.111 (\*941, p. 239; 949, p. 311). H. C. Norwood. Water level, in feet below land-surface datum, 1943: Jan. 9, 62.40.

24.10.1.311 (\*941, p. 239; 949, p. 311). R. V. Griggs. Water level, in feet below land-surface datum, 1943: Jan. 8, 79.40.

24.10.3.411 (\*886, p. 446; \*911, p. 212; 941, p. 239; 949, p. 311). Josh Bryan.

Water level, in feet below land-surface datum, 1943

Jan. 8	83.56	July 9	c 84.99	Oct. 11	85.28
Apr. 27	83.94	11	84.65		

24.10.3.411b (\*941, p. 239; \*949, p. 311). Josh Bryan. Water levels, in feet below land-surface datum, 1943: Jan. 8, 76.94; Apr. 27, 77.29; July 11, 79.98; Oct. 11, 78.62.

24.10.10.311 (\*886, p. 446; \*911, p. 213; 941, p. 239; 949, p. 311). John Tilch. (Formerly owned by G. F. Ackerman.) Water levels, in feet below land-surface datum, 1943: Jan. 8, 80.35; Apr. 27, 81.76; Aug. 10, 82.72; Oct. 11, 81.76.

24.10.12.111 (\*886, p. 447; 911, p. 213; 941, p. 240; 949, p. 311). Morgan Garrett. Water level, in feet below land-surface datum, 1943: Jan. 8, 81.65.

24.10.12.431 (\*886, p. 447; 911, p. 213; 941, p. 240; 949, p. 311). Steve Hrna. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Mar. 30, 78.20; Sept. 5, 84.16.

a Well 20 feet southwest pumping.

b Well 20 feet southwest probably pumped in the morning.

c Well 50 feet east pumping.

24.10.12.431. Steve Hrna--Continued.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	79.38	78.83	.....	78.22	78.83	79.66	81.81	82.41	84.08	82.79	81.90	81.15
2	79.36	78.82	.....	78.21	78.83	79.72	81.77	82.48	84.11	82.73	81.87	81.13
3	79.36	78.80	78.39	78.21	78.85	79.80	81.71	82.57	84.12	82.68	81.88	81.11
4	79.33	78.78	78.36	78.22	78.87	79.84	81.65	82.65	84.15	82.62	81.80	81.06
5	79.30	78.78	78.37	78.22	78.90	79.85	81.62	82.75	84.16	82.59	81.76	81.02
6	79.29	78.78	78.39	78.22	.....	79.88	81.61	82.84	84.15	82.59	81.73	81.01
7	79.28	78.73	78.43	78.23	.....	79.94	81.58	82.92	84.11	.....	81.73	80.98
8	79.27	78.70	78.46	78.25	.....	80.01	81.58	82.98	84.07	.....	81.70	80.93
9	79.24	78.70	78.46	78.26	.....	80.10	81.59	83.06	84.02	.....	81.66	80.92
10	79.21	78.75	78.44	78.29	.....	80.24	81.66	83.10	83.99	.....	81.63	80.95
11	79.20	78.71	78.41	78.32	.....	80.36	81.74	83.23	83.96	82.49	81.60	80.91
12	79.18	78.71	78.43	78.33	78.96	80.48	81.82	83.30	83.90	82.46	81.57	80.88
13	79.16	78.68	78.40	78.37	78.99	80.62	81.87	83.37	83.85	82.43	81.53	80.86
14	79.13	78.65	.....	78.39	79.01	80.74	81.95	83.42	83.80	82.43	81.50	80.85
15	79.10	78.64	78.35	78.45	79.04	80.86	82.02	83.42	82.76	82.44	81.49	80.83
16	79.08	78.62	.....	78.49	79.03	80.98	82.06	83.46	82.71	82.42	81.46	80.80
17	79.06	78.60	78.31	78.59	79.04	81.12	82.11	83.50	82.66	82.38	81.42	80.79
18	79.06	78.59	78.30	78.68	79.06	81.21	82.19	83.56	82.60	82.34	81.40	80.75
19	79.07	78.57	78.31	78.77	79.08	81.30	82.30	83.61	82.53	82.31	81.37	80.73
20	79.02	78.55	78.31	78.81	79.08	81.40	82.33	83.65	82.47	82.27	81.33	80.70
21	79.01	78.52	78.29	78.86	79.07	81.46	82.30	83.70	82.41	82.23	81.30	80.67
22	79.00	78.50	78.25	78.85	79.08	81.50	82.24	83.73	82.33	82.20	81.28	80.65
23	78.96	78.50	78.24	78.84	79.08	81.51	82.19	83.76	82.28	82.17	81.26	80.64
24	78.96	78.48	78.26	78.83	79.09	81.55	82.13	83.79	82.22	82.14	81.25	80.62
25	78.94	78.49	78.24	78.82	79.12	81.60	82.07	83.84	82.16	82.10	81.25	80.58
26	78.94	78.47	78.25	78.82	79.16	81.68	82.03	.....	82.09	82.07	81.26	80.54
27	78.91	.....	78.24	78.82	79.28	81.72	82.02	.....	82.02	82.03	81.26	80.57
28	78.91	.....	78.24	78.81	79.39	81.76	82.03	83.96	82.97	82.00	81.23	80.54
29	78.90	.....	78.21	78.82	79.49	81.81	82.10	83.99	82.90	81.96	81.21	80.52
30	78.87	.....	78.20	78.84	79.53	81.85	82.20	84.01	82.84	81.94	81.18	80.51
31	78.87	.....	78.22	.....	79.58	.....	82.32	84.04	.....	81.92	.....	80.48

24.10.12.432a (#911, p. 213; 941, p. 240; #949, p. 312). Steve Hrna.  
Water level, in feet below land-surface datum, 1943: Jan. 8, 78.00.

24.10.12.432b (#911, p. 214; 941, p. 240; 949, p. 312). Steve Hrna.  
Water level, in feet below land-surface datum, 1943: Jan. 8, 78.66.

24.10.22.211 (#941, p. 241; 949, p. 312). Mr. Hurt. Water levels, in feet below land-surface datum, 1943: Jan. 8, 69.66; Apr. 27, 69.52; July 9, 69.86; Oct. 11, 70.17.

24.10.29.222 (#911, p. 214; 941, p. 241; 949, p. 312). State land.  
Water levels, in feet below land-surface datum, 1943: Jan. 8, 64.19; Apr. 27, 64.14; July 9, 64.25; Oct. 11, 64.39.

24.11.1.333. J. D Smith. Used drilled irrigation well, equipped with turbine pump. Measuring point, top of concrete well curb, on west side of well, 0.15 foot below land-surface datum. Water level, in feet below land-surface datum, 1943: Aug. 10, 101.30.

25.8.18.111 (#911, p. 214; #941, p. 241; 949, p. 312). George McCann.  
Water levels, in feet below land-surface datum, 1943: Jan. 12, 52.53; Apr. 27, a/57.88; July 11, a/58.55; Oct. 12, a/58.32.

25.8.19.331. Used windmill stock well. Diameter 8 inches, depth 65 feet. Measuring point, top of casing, on east side of well, 0.90 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 12, 1942, 59.01; Jan. 12, 1943, 59.45.

25.9.4.211 (#911, p. 215; 941, p. 241; 949, p. 312). Val Miller.  
Recorder installed on well May 21, 1942. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Jan. 9-23, 66.14; Dec. 19, 67.53.

a Well 20 feet northeast pumping.

## 25.9.4.211. Val Miller--Continued.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	66.15	66.18	66.18	66.23	66.30	66.49	66.87	66.88	.....	67.36	67.47
2	.....	66.15	66.18	66.18	66.23	66.30	66.50	66.67	66.88	.....	67.37	67.48
3	.....	66.15	66.18	66.18	66.23	66.31	66.52	66.67	66.89	.....	67.37	67.48
4	.....	66.15	66.18	66.18	66.24	66.31	66.52	66.68	66.90	.....	67.37	67.48
5	.....	66.15	66.18	66.18	66.24	66.31	66.52	66.68	66.90	.....	67.37	67.49
6	.....	66.15	66.18	66.18	66.24	66.31	66.52	66.70	66.91	.....	67.38	67.49
7	.....	66.15	66.18	66.18	66.24	66.34	66.52	66.71	66.93	.....	67.39	67.49
8	.....	66.15	66.18	66.18	66.24	66.34	66.53	66.70	66.93	67.25	67.39	67.50
9	66.14	66.15	66.18	66.18	66.24	66.34	66.53	66.72	66.95	67.24	67.40	67.49
10	66.14	66.15	66.18	66.18	66.24	66.34	66.53	66.72	66.95	67.25	67.40	67.51
11	66.14	66.15	66.18	66.18	66.24	66.36	66.54	66.74	66.95	67.26	67.40	67.51
12	66.14	66.17	66.18	66.18	66.24	66.36	66.56	66.74	66.95	67.26	67.41	67.51
13	66.14	66.17	66.18	66.18	66.24	66.36	66.56	66.75	66.93	67.27	67.41	67.51
14	66.14	66.17	66.18	66.20	66.24	66.36	66.56	66.75	66.94	67.27	67.41	67.52
15	66.14	66.17	66.18	66.20	66.24	66.37	66.57	66.76	66.96	67.28	67.42	67.52
16	66.14	66.18	66.18	66.20	66.25	66.37	66.58	66.78	66.96	67.28	67.42	67.52
17	66.14	66.18	66.18	66.20	66.25	66.37	66.58	66.78	66.97	67.28	67.42	67.52
18	66.14	66.18	66.18	66.22	66.25	66.39	66.58	66.78	66.97	67.29	67.43	67.52
19	66.14	66.18	66.18	66.22	66.25	66.39	66.60	66.80	.....	67.29	67.43	67.53
20	66.14	66.18	66.18	66.22	66.25	66.39	66.60	66.80	.....	67.30	67.43	.....
21	66.14	66.18	66.18	66.22	66.26	66.41	66.60	66.81	.....	67.31	67.44	.....
22	66.14	66.18	66.18	66.22	66.26	66.41	66.61	66.81	.....	67.31	67.44	.....
23	66.14	66.18	66.18	66.22	66.27	66.41	66.62	66.82	.....	67.31	67.44	.....
24	66.15	66.18	66.18	66.22	66.27	66.44	66.62	66.83	.....	67.32	67.45	.....
25	66.15	66.18	66.18	66.23	66.28	66.44	66.63	66.83	.....	67.33	67.45	.....
26	66.15	66.18	66.18	66.23	66.28	66.45	66.64	66.83	.....	67.33	67.46	.....
27	66.15	66.18	66.18	66.23	66.28	66.47	66.64	66.84	.....	67.34	67.46	.....
28	66.15	66.18	66.18	66.23	66.30	66.47	66.64	66.85	.....	67.34	67.47	.....
29	66.15	.....	66.18	66.23	66.30	66.48	66.65	66.86	.....	67.34	67.47	.....
30	66.15	.....	66.18	66.23	66.30	66.49	66.65	66.86	.....	67.35	67.47	.....
31	66.15	.....	66.18	.....	66.30	.....	66.66	66.87	.....	67.36	.....	.....

25.9.6.111 (\*941, p. 241; 949, p. 312). Paul M. Yates. Water level, in feet below land-surface datum, 1943: Jan. 9; 66.29.

25.9.6.421 (\*886, p. 447; \*911, p. 215; 941, p. 241; 949, p. 312). Roderick and Wheeler. Water levels, in feet below land-surface datum, 1943: Jan. 9, 70.08; Apr. 27, 71.09; July 11, 73.34.

25.9.11.114 (\*886, p. 447; \*911, p. 215; \*941, p. 241; 949, p. 312). J. B. Anderson. Measuring point, beginning July 15, 1943, bottom edge of north east-west rail pump support, 1.05 feet below top of concrete well curb, on south side of well, which is level with land surface. Water levels, in feet below land-surface datum: Oct. 14, 1942, 64.39 (published erroneously in Water-Supply Paper 949 as 63.78); Jan. 12, 1943, 63.49; Apr. 27, 1943, 65.32; July 15, 1943, 66.94; Oct. 12, 1943, 67.28.

25.9.12.311 (\*911, p. 215; 941, p. 241; 949, p. 312). Jo Willa Cheek. Water level, in feet below land-surface datum, 1943: Jan. 12, 59.17.

25.9.14.311 (\*911, p. 215; 941, p. 241; 949, p. 312). George W. McCann. Water level, in feet below land-surface datum, 1943: Jan. 12, 59.43.

25.9.15.211 (\*886, p. 448; 911, p. 215; 941, p. 241; \*949, p. 312). C. H. Paulk. Water level, in feet below land-surface datum, 1943: Jan. 12, 63.15.

25.9.17.311 (\*911, p. 215; 941, p. 241; 949, p. 312). Tom Figner. Water level, in feet below land-surface datum, 1943: Jan. 11, 67.25.

25.9.19.111 (\*911, p. 215; 941, p. 241; 949, p. 313). Tom Marzak. Water level, in feet below land-surface datum, 1943: Jan. 11, 64.13.

25.9.21.311 (\*886, p. 448; 911, p. 215; 941, p. 242; 949, p. 313). A. W. Speir. Water levels, in feet below land-surface datum, 1943: Jan. 11, 66.05; Oct. 12, 68.59.

- 25.9.24.222 (\*886, p. 447; 911, p. 215; 941, p. 242; 949, p. 313). George P. Watkins. Water levels, in feet below land-surface datum, 1943: Jan. 12, 49.92; July 11, 51.97.
- 25.9.25.111 (\*911, p. 215; \*941, p. 242; \*949, p. 313). Alan Crotchett. Water level, in feet below land-surface datum, 1943: Jan. 12, 48.33.
- 25.9.27.422 (\*911, p. 216; \*941, p. 242; 949, p. 313). H. A. Gray. Water level, in feet below land-surface datum, 1943: Jan. 12, 55.35.
- 25.9.28.121 (\*941, p. 242; 949, p. 313). Owner unknown. Water levels, in feet below land-surface datum, 1943: Jan. 11, 66.60; Apr. 27, 67.96; July 11, 71.26; Oct. 12, 70.03.
- 25.9.30.111 (\*911, p. 216; \*941, p. 242; 949, p. 313). Frank Chvojka. Water level, in feet below land-surface datum, 1943: Jan. 11, 58.14.
- 25.9.35.210 (\*886, p. 448; \*911, p. 216; 941, p. 242; 949, p. 313). Sigman Lindauer Estate. Water levels, in feet below land-surface datum, 1943: Jan. 12, 49.81; Apr. 27, 50.74; July 11, 50.73; Oct. 12, 51.24.
- 25.10.15.422 (\*941, p. 242; 949, p. 313). C. H. Graves. Water level, in feet below land-surface datum, 1943: Jan. 11, 58.22.
- 25.10.36.111 (\*911, p. 216; 941, p. 242; 949, p. 313). State land. Water level, in feet below land-surface datum, 1943: Jan. 11, 61.43.
- 25.10.36.222 (\*886, p. 448; \*911, p. 216; 941, p. 242; 949, p. 313). State land. Water levels, in feet below land-surface datum, 1943: Jan. 11, 61.05; July 11, 63.20; Oct. 12, 63.27.
- 26.9.2.221 (\*941, p. 242; 949, p. 313). Tom R. Taylor. Water levels, in feet below land-surface datum, 1943: Jan. 12, 40.59; Apr. 27, 40.49; July 11, 40.75; Oct. 12, 41.04.
- 26.9.4.331 (\*941, p. 242; 949, p. 313). Water level, in feet below land-surface datum, 1943: Jan. 12, 52.98.
- 26.9.11.211 (\*886, p. 448; 911, p. 216; 941, p. 243; 949, p. 313). State land. Water levels, in feet below land-surface datum, 1943: Jan. 12, 38.45; Apr. 27, 38.51; July 11, 38.64; Oct. 12, 38.78.
- 26.10.1.100 (\*886, p. 448; \*911, p. 216; 941, p. 243; \*949, p. 313). Theo. Eisen. (Formerly owned by W. F. Kerr.) Water level, in feet below land-surface datum, 1943: Jan. 11, 59.81.
- 27.8.8.411 (\*911, p. 216; 941, p. 243; 949, p. 313). Pearl Verdick. Water levels, in feet below land-surface datum, 1943: Jan. 12, 23.53; Apr. 27, 23.47; July 11, 23.57; Oct. 12, 23.64.
- 27.9.2.211 (\*911, p. 217; 941, p. 243; 949, p. 313). State land. Water levels, in feet below land-surface datum, 1943: Jan. 12, 11.18; Apr. 27, 14.35; July 11, a/9.80; Oct. 12, 12.06.
- 29.7.4.111 (\*911, p. 217; 941, p. 243; 949, p. 313). Francis S. Connatt. Measurements discontinued.
- 29.7.18.211 (\*911, p. 217; 941, p. 243; 949, p. 313). R. M. Marshall. No measurements made in 1943.
- 29.8.12.244 (\*911, p. 217; 941, p. 243; 949, p. 313). A. G. Anderson. Water level, in feet below land-surface datum, 1943: Jan. 12, 7.28.
- 29.8.13.111 (\*911, p. 217; 941, p. 243; 949, p. 313). L. L. Burkhead. Water level, in feet below land-surface datum, 1943: Jan. 12, 6.62.

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a Recent heavy local rains.

QUAY COUNTY (HOUSE AREA)

By C. R. Murray and P. D. Akin

Further study of the ground-water resources of the House area, in Quay County, was made in 1943 by the Federal Geological Survey in cooperation with the State engineer. Earlier data obtained during the investigation, which began in 1940 and has been conducted under the supervision of Charles V. Theis, on changes in water levels, precipitation records, the acreage of land irrigated, and the quantity of water pumped have been published in Geological Survey Water-Supply Papers 941 and 949.

Measurements of water level were made in 34 wells in the House area in February, March, May, July, September, and November, making a total of 204 measurements in 1943. Automatic water-stage recorders were in operation on 2 wells during the year, giving a continuous record of water-level fluctuations.

Fluctuations in water level

Precipitation in the House area returned to about normal in 1943 after two wet years. The United States Weather Bureau reported 13.82 inches of precipitation at Hassell, 7 miles west and 4 miles north from House. This is 0.53 inch above normal but considerably less than the 21.56 inches that fell in 1942 and the 42.52 inches in 1941. Of the year's precipitation, 11.51 inches fell during the period May to September, when it could be used by crops to supply, in part, their water needs.

It is estimated that about 1,300 acres in the House area was irrigated with ground water in 1943. The estimates for 1942 and 1941 were 1,250 and 720 acres, respectively. Approximately 3,300 acre-feet of water was pumped for irrigation in 1943, as compared with about 2,500 acre-feet in 1942 and 580 acre-feet in 1941.

Declines in water level took place in nearly all observation wells in the House area in 1943, as shown in figure 17. A general decline of a fraction of a foot took place along Alamosa Creek for a distance of at least 12 miles, and declines in excess of 1 foot took place in two areas--one a pear-shaped area, about 5½ miles long and 3 miles wide at its widest part and containing about 9 square miles, northeast of House, and the other an elliptical area of about 0.4 square mile, about 6 miles east of House. The two areas in which water levels rose in 1942--one in secs. 5 and 8,

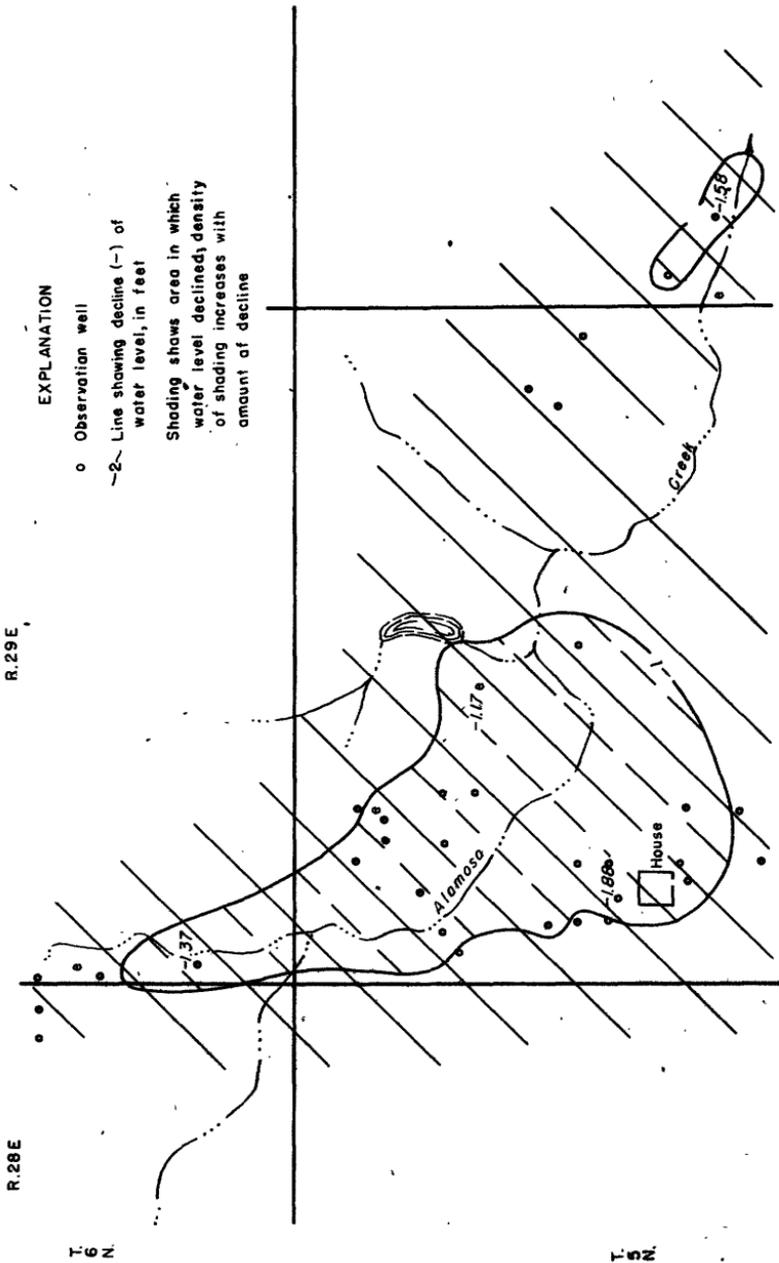


Figure 17.--Map of House area, Quay County, N. Mex., showing decline of water level from January 1943 to January 1944.

T. 5 N., R. 29 E., and the other in sec. 13 in the same township--are included in the areas in which declines occurred in 1943. The water level in well 5N.29.18.444, just north of House, declined 1.88 feet during 1943, and that in well 5N.30.20.333, 6 miles east of House, declined 1.58 feet, despite the fact that at the time the 1942 measurement was made the static level was lower than normal because the windmill on the well was pumping. Again in 1943 the areas of greatest decline were those in which the greatest rise occurred in 1941, and they also correspond to the areas of heaviest pumping, but only a part of the 1941 gains have been lost up to the present time.

Water-level measurements

5N.29.5.341 (\*941, p. 245; 949, p. 315). William Martin. (Formerly owned by J. D. Hardcastle.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	29.73	May 21	36.66	Sept. 25	33.72
Mar. 25	32.02	July 25	34.02	Nov. 23	31.81

5N.29.5.342 (\*941, p. 245; \*949, p. 315). William Martin. (Formerly owned by J. D. Hardcastle.) Water levels, in feet below land-surface datum, 1942: Oct. 20, 31.03; Nov. 20, 30.64 (erroneously published in Water-Supply Paper 949 as 30.77 and 30.38, respectively).

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	30.15	May 21	31.46	Sept. 24	32.69
Mar. 25	30.26	July 25	32.51	Nov. 23	31.88

5N.29.5.411 (\*941, p. 245; 949, p. 315). A. R. Wallace. Water levels, in feet below land-surface datum, 1943: Feb. 2, 37.95; July 25, 40.57; Sept. 24, 39.65; Nov. 23, 39.09.

5N.29.5.413 (\*941, p. 245; \*949, p. 315). A. R. Wallace. Equipped with water-stage recorder until Nov. 23, 1943. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Mar. 18, 30.74; Sept. 15-16, 33.10.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	31.12	30.97	30.84	31.10	31.44	32.16	.....	.....	33.07	33.00	32.66
2	31.10	30.92	30.92	.....	31.45	32.17	.....	.....	33.08	32.98	32.67
3	31.14	30.94	30.84	31.09	31.49	32.21	32.60	.....	33.08	32.98	32.63
4	31.16	30.92	30.79	31.11	31.49	32.23	32.61	.....	33.08	32.96	32.61
5	31.08	30.90	30.77	31.09	31.52	32.26	32.63	.....	33.08	32.96	32.57
6	31.08	30.99	30.88	31.06	31.55	32.28	32.63	.....	33.08	32.96	32.58
7	31.11	30.95	30.86	31.04	31.57	32.28	.....	32.74	33.09	32.93	32.63
8	31.10	30.89	30.84	31.05	31.63	32.31	32.64	32.76	33.09	32.91	32.61
9	31.09	30.88	30.80	31.03	31.67	32.31	32.66	32.77	33.09	32.89	32.59
10	31.08	30.96	30.81	31.06	31.70	32.29	32.64	32.78	33.09	32.88	32.58
11	31.08	30.96	30.80	31.08	31.78	32.31	.....	32.80	33.08	32.84	32.57
12	31.07	30.98	30.82	31.10	31.81	32.32	.....	32.81	33.08	32.84	32.56
13	31.06	30.97	30.83	31.09	31.85	32.32	.....	32.83	33.08	32.84	32.53
14	31.04	30.96	30.77	31.10	31.84	32.33	.....	32.87	33.08	32.83	32.53
15	30.97	30.95	30.77	31.03	31.87	32.34	.....	32.87	33.10	32.83	32.54
16	31.00	30.90	30.82	31.04	31.90	32.37	.....	32.89	33.10	32.81	32.52
17	31.01	30.92	30.77	31.12	31.94	32.36	.....	32.93	33.07	32.79	32.50
18	31.01	30.92	30.74	31.14	31.97	32.36	32.75	32.95	33.04	32.76	32.50

5N.29.5.413. A. R. Wallace--Continued.  
Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
19	31.11	30.91	30.84	31.09	31.99	32.36	.....	32.93	33.04	32.74	32.50
20	31.00	30.91	30.88	31.12	32.00	32.37	.....	32.94	33.03	32.76	32.48
21	31.00	30.88	30.92	31.15	31.96	32.39	.....	32.97	33.03	32.76	32.47
22	30.99	30.85	30.89	31.19	.....	32.39	.....	32.99	33.03	32.73	32.47
23	30.97	30.86	30.90	31.24	.....	32.40	.....	33.00	33.03	32.74	32.47
24	30.97	30.91	30.95	31.24	.....	32.42	.....	33.01	33.04	32.76	.....
25	31.03	30.90	30.94	.....	.....	32.44	32.80	33.02	33.04	32.74	.....
26	31.03	30.92	30.98	31.29	.....	32.47	32.81	33.03	33.02	32.72	.....
27	30.97	30.82	30.98	31.32	.....	32.47	32.81	33.06	33.00	32.69	.....
28	30.97	30.84	31.04	31.37	.....	32.52	32.81	33.06	33.01	32.68	.....
29	30.99	.....	31.04	31.39	32.09	32.54	32.82	33.06	33.01	32.64	.....
30	30.96	.....	31.04	31.43	32.11	.....	32.83	33.06	32.98	32.65	.....
31	31.00	.....	31.07	.....	32.14	.....	32.83	33.07	.....	32.66	.....

5N.29.7.141. Elmer Phillips. Unused drilled well. Measuring point, top edge of small hole in north side of bottom of inverted tub covering the well, 0.70 foot above land-surface datum. Reference point, top of 2- by 2-inch stake in ground under east-west fence line about 10 feet east of corner fence post, which is about 70 yards north-northeast of well. Reference point is 0.20 foot below land-surface datum at well.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Sept. 22, 1942	28.95	Feb. 2, 1943	29.26	July 24, 1943	29.51
Oct. 19	29.01	Mar. 25	29.40	Sept. 24	30.54
Nov. 19	29.14	May 21	29.64	Nov. 22	30.80

5N.29.7.142 (\*941, p. 246; 949, p. 316). Elmer Phillips.

Water level, in feet below land-surface datum, 1943

Feb. 2	15.22	May 21	15.67	Sept. 24	16.77
Mar. 25	15.28	July 24	15.59	Nov. 22	16.87

5N.29.7.143 (\*941, p. 246; 949, p. 316). Elmer Phillips. Measuring point, beginning Sept. 24, 1943, top south edge of 1- by 4-inch board over north side of well, level with land-surface datum. Reference point established Sept. 24, 1943, top of 2- by 2-inch stake in ground under east-west fence line, about 12 feet east of post which ties north-south fence to east-west fence. Reference point is 1.42 feet above land-surface datum at well.

Water level, in feet below land-surface datum, 1943

Mar. 25	22.63	July 24	23.02	Nov. 22	22.86
May 21	22.59	Sept. 24	22.88		

5N.29.7.221 (\*941, p. 246; 949, p. 316). C. P. McBride.

Water level, in feet below land-surface datum, 1943

Feb. 2	26.26	May 21	28.15	Sept. 24	28.12
Mar. 25	26.26	July 24	28.51	Nov. 21	27.97

5N.29.8.114 (\*941, p. 246; 949, p. 316). J. C. Davenport.

Water level, in feet below land-surface datum, 1943

Feb. 2	23.30	May 21	25.01	Sept. 24	25.36
Mar. 25	23.27	July 24	25.40	Nov. 21	25.09

5N.29.8.232 (\*941, p. 247; 949, p. 316). Joe Douglas. (Formerly owned by J. D. Hardcastle.)

Water level, in feet below land-surface datum, 1943

Feb. 2	34.19	July 25	36.61	Nov. 23	35.90
Mar. 25	34.19	Sept. 25	37.09		

5N.29.8.412 (\*941, p. 247; 949, p. 316). W. W. Kuykendall. (Formerly owned by Byron W. Jones.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	27.94	July 25	31.87	Nov. 23	29.88
Mar. 25	28.04	Sept. 25	30.59		

5N.29.8.422 (\*949, p. 317). Frank W. Gray. Measurements discontinued after Sept. 25.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	28.62	May 21	29.67	Sept. 25	30.38
Mar. 25	28.48	July 25	30.62		

5N.29.9.400 (\*941, p. 247; 949, p. 317). W. Y. Head.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	21.50	May 21	a 30.86	Sept. 25	22.45
Mar. 25	21.48	July 25	a 28.66	Nov. 23	a 35.61

5N.29.13.113 (\*941, p. 247; 949, p. 317). Emil Kirschenmann. Pump removed in March 1943; measuring point and reference point destroyed. Measuring point, beginning Mar. 26, 1943, top of casing at east side of well, 1.40 feet below land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	78.10	May 21	78.19	Sept. 25	79.36
Mar. 26	78.08	July 25	79.06	Nov. 24	78.82

5N.29.13.131 (\*941, p. 247; \*949, p. 317). Emil Kirschenmann. Turbine pumped installed in March 1943. Measuring point beginning Mar. 26, 1943, lower edge of opening in west side of pump case, 0.99 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	58.10	July 25	68.61	Nov. 24	59.27
Mar. 26	57.83	Sept. 25	61.44		

5N.29.13.412 (\*941, p. 247; \*949, p. 317). Emil Kirschenmann.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Mar. 26	46.56	July 25	55.16	Nov. 24	48.42
May 21	48.52	Sept. 25	50.86		

5N.29.15.311b. R. A. Tullis. Abandoned drilled irrigation well, diameter 20 inches, depth 90 feet. Measuring point, top west edge of 1- by 4-inch board over east side of well, under wooden well cover, level with land-surface datum.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Sept. 23, 1942	17.52	Feb. 2, 1943	17.91	July 25, 1943	18.48
Oct. 20	17.63	Mar. 26	18.10	Sept. 25	18.76
Nov. 20	17.73	May 21	18.21	Nov. 23	18.93

5N.29.15.331. R. A. Tullis. Drilled well, diameter 10 inches, depth 120 feet. Windmill installed in March 1943. Measuring point, top of concrete well curb at south side of well, 0.70 foot above land-surface datum. Reference point, top of 1- by 1-inch stake 35 feet south of well in line with green switch pole at Tullis domestic well near house, 0.92 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Sept. 23, 1942	34.86	Feb. 2, 1943	34.52	Sept. 25, 1943	34.77
Oct. 20	34.77	Mar. 26	a 52.55	Nov. 23	b 39.16
Nov. 20	34.66	July 25	34.63		

a Windmill pumping.

b Windmill had been pumping.

5N.29.17.133 (\*941, p. 248; 949, p. 317). W. W. Kuykendall. (Formerly owned by Byron W. Jones.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 1	30.64	May 21	32.04	Sept. 23	33.70
Mar. 24	30.54	July 24	33.04	Nov. 21	32.80

5N.29.17.331 (\*941, p. 248; 949, p. 317). L. V. Vaughan. Water levels, in feet below land-surface datum, 1943: Feb. 1, 33.56; Mar. 24, 33.47.

5N.29.18.213 (\*941, p. 248; 949, p. 317). A. R. Wallace. Measuring point, beginning Sept. 24, 1943, lower edge of oval hole in north side of pump, 1.18 feet above land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 1, 35.07; May 21, 39.07; July 24, 41.33; Sept. 24, 39.71.

5N.29.18.233 (\*941, p. 248; 949, p. 317). M. R. Wallace. Water levels, in feet below land-surface datum, 1943: Feb. 1, 46.96; Sept. 24, 50.29; Nov. 21, 47.56.

5N.29.18.444 (\*941, p. 249; 949, p. 317). L. M. Head.

Water level, in feet below land-surface datum, 1943

Feb. 1	37.52	May 21	41.07	Sept. 23	42.77
Mar. 24	37.45	July 24	42.56	Nov. 21	40.24

5N.29.19.244 (\*941, p. 249; 949, p. 317). Lester McCasland. (Formerly owned by William Martin.)

Water level, in feet below land-surface datum, 1943

Feb. 1	47.15	May 21	49.67	Sept. 24	52.94
Mar. 25	49.97	Sept. 23	54.69	Nov. 21	49.38

5N.29.20.131a. Jerry M. Thompson. Used drilled domestic windmill well, diameter 6 inches, depth 64 feet. Measuring point, top edge of 4- by 4-inch wooden pipe clamps at north side of windmill pump column, 0.34 feet above well curb and land-surface datum.

Water level, in feet below land-surface datum, 1942-43

July 15, 1942	a 54.36	Nov. 19, 1942	b 50.68	May 21, 1943	51.11
16	51.43	Feb. 1, 1943	48.49	July 24	54.50
Sept. 22	48.92	Mar. 24	a 51.88	Sept. 24	54.59
Oct. 19	48.69	25	50.70	Nov. 21	50.72

5N.29.20.131b. Jerry M. Thompson. Used drilled irrigation well, diameter 14 inches, depth 90 feet. Measuring point, top west edge of rectangular slot in west side of Layne & Bowler pump case, inside of shell, 0.63 feet above concrete well curb and land-surface datum.

Water level, in feet below land-surface datum, 1942-43

July 15, 1942	a 52.45	Nov. 19, 1942	49.70	May 21, 1943	51.31
16	51.62	Feb. 1, 1943	48.79	July 24	54.67
Sept. 22	49.23	Mar. 24	a 52.36	Sept. 24	54.96
Oct. 19	49.01	25	50.97	Nov. 21	51.05

5N.29.20.133. Welton Henry. Used drilled irrigation well, diameter 16 inches, depth 94 feet. Measuring point, top south edge of north 6- by 8-inch timber pump support at a point just west of pump, 0.45 feet above land-surface datum. Reference point, top of 2- by 2-inch stake level with land surface, 17.5 feet west and 4.5 feet north of well and 1.3 feet south of small tree, 1.05 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Mar. 24	a 57.57	July 24	54.45	Sept. 24	52.35
25	49.51	Sept. 23	54.13	Nov. 21	48.81
May 21	49.27				

- a Nearby well pumping.  
b Windmill pumping.

5N.29.20.433b (\*941, p. 249; \*949, p. 317). Spence E. Morris.  
Recorder removed Feb. 1, 1943.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	47.01	May 21	48.33	Sept. 23	48.11
Mar. 24	47.07	July 24	a 51.69	Nov. 21	48.15

5N.29.29.111 (\*941, p. 250; 949, p. 318). C. A. Morrow.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	65.91	May 21	67.17	Sept. 23	66.71
Mar. 24	65.97	July 24	68.95	Nov. 21	66.74

5N.30.19.132 (\*941, p. 250; 949, p. 318). Ralph Hendricks. Measuring point, beginning Feb. 2, 1943, top west edge of 1- by 8-inch plank at center of east side of well, level with land-surface datum. Well being filled; for continuation of record, see measurements at well 5N.30.19.132a. Water levels, in feet below land-surface datum, 1943: Feb. 2, 24.98; Mar. 26, 25.19; May 21, 25.29.

5N.30.19.132a. Ralph Hendricks. New well drilled 10 feet south of well 5N.30.19.132. Measuring point, top of base plate of turbine pump at rectangular hole on west side of pump, inside pump case, 0.13 foot above concrete pump foundation, 0.59 foot above land-surface datum at abandoned well. Water levels, in feet below land-surface datum, 1943: July 25, 25.80; Sept. 25, 26.20; Nov. 24, 26.12.

5N.30.19.313 (\*941, p. 250; 949, p. 318). Ralph Hendricks. New turbine pump installed in March 1943; measuring point destroyed. Measuring point, beginning Mar. 26, 1943, top edge of north 3/4-inch hole inside pump case on west side, 2.22 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	16.33	May 21	19.22	Sept. 25	16.86
Mar. 26	19.67	July 25	19.98	Nov. 24	16.78

5N.30.20.333 (\*941, p. 250; 949, p. 318). Emil Kirschenmann.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	b 17.70	May 21	17.58	Sept. 25	18.76
Mar. 26	17.35	July 25	18.06	Nov. 24	b 19.55

6N.28.24.423. Raymond J. Ferry. Abandoned drilled irrigation well. Diameter 12 inches, depth 140 feet. Measuring point, top edge of casing at highest point on west side, 0.29 foot above concrete well curb and 0.50 foot above land-surface datum.

Water level, in feet below land-surface datum, 1942-43

Date	Water level	Date	Water level	Date	Water level
Jan. 22, 1942	63.60	Oct. 19, 1942	63.31	May 21, 1943	63.04
Mar. 26	63.46	Nov. 20	63.19	July 24	63.31
July 14	63.47	Feb. 2, 1943	62.95	Sept. 24	63.25
Sept. 22	63.43	Mar. 25	62.82	Nov. 22	63.10

6N.29.30.112 (\*941, p. 250; 949, p. 318). R. W. Dean.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	48.08	May 21	48.51	Sept. 24	48.43
Mar. 25	48.15	July 24	48.39	Nov. 22	48.59

6N.29.30.113 (\*941, p. 250; 949, p. 318). R. W. Dean.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	51.29	May 21	51.67	Sept. 24	51.63
Mar. 25	51.31	July 24	51.52	Nov. 22	52.04

a Nearby well pumping.

b Windmill pumping.

6N.29.31.114 (\*941, p. 250; 949, p. 318). L. M. McDaniels.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Feb. 2	37.28	May 21	41.57	Sept. 24	40.91
Mar. 25	a 59.24	July 24	40.49	Nov. 22	39.16

6N.29.33.131. Frank Morrow. Used drilled irrigation well, diameter 20 inches to depth of 119 feet and 8 inches to bottom, at depth of 139 feet. Measuring point, top of concrete well curb and pump base at east side of well, level with land-surface datum.\*

Water level, in feet below land-surface datum, 1942-43

Oct. 20, 1942	54.57	May 21, 1943	57.02	Sept. 24, 1943	55.09
Nov. 20	54.52	July 25	57.87	Nov. 22	54.56
Feb. 2, 1943	54.57				

ROOSEVELT COUNTY (PORTALES VALLEY)

By C. R. Murray and P. D. Akin

Investigation of the ground-water resources of Portales Valley was continued in 1943 by the Federal Geological Survey in cooperation with the State engineer of New Mexico. Since its inception in 1931 the investigation has been conducted under the supervision of Charles V. Theis. Several progress reports setting forth the results of the investigation have been published in the 10th to 13th biennial reports of the State engineer. Data, most of which are of a purely statistical nature, such as water-level measurements, precipitation records, acreage irrigated and quantity of water pumped, have been published in Geological Survey Water-Supply Papers 845, 886, 911, 941, and 949.

Water-level measurements were made in 163 wells in the valley in January, when water levels had largely recovered from the heavy pumping of the irrigation season, and in 53 wells in March, May, July, September, and November, making 434 measurements for the year. The measurements made in January show the over-all yearly changes in water level, and the bimonthly measurements show the more immediate effects of changes in the pumping regimen, which depend primarily on weather conditions. During the year automatic water-stage recorders were in operation on 4 wells, giving a continuous record of water-level fluctuations in these wells.

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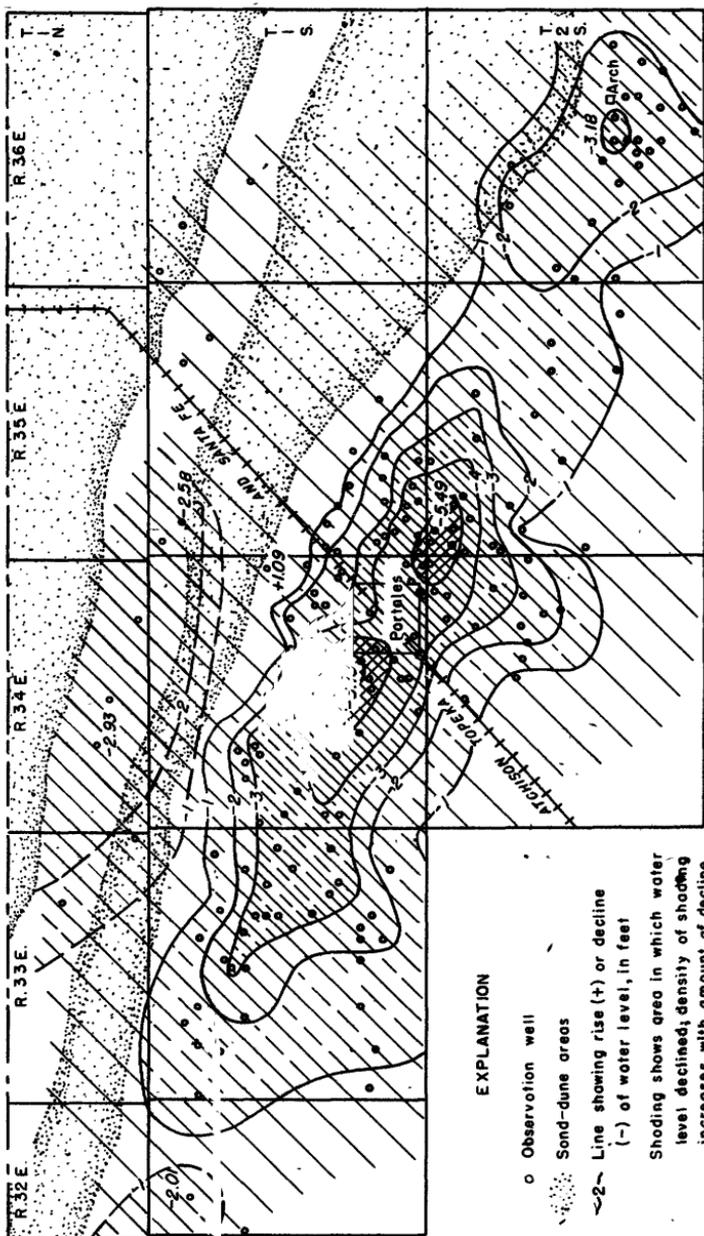
a Pumping.

Fluctuations in water level

The precipitation recorded by the United States Weather Bureau at Portales for 1943 was 8.45 inches, or 9.62 inches below the normal of 18.07 inches. This is much less than the precipitation in 1942 and 1941, when 17.35 and 44.10 inches, respectively, were recorded. Little of the year's precipitation occurred during the summer months, June, with 2.26 inches, being an exception, so that there was an exceptionally heavy draft on the ground-water supply to produce the crops grown in the valley. It is estimated that about 17,000 acres of land was irrigated in Portales Valley in 1943 and that about 45,000 acre-feet of water was pumped for irrigation. The estimates of the acreages irrigated in 1942 and 1941 were 15,700 and 15,000 acres, respectively, and the estimates of ground water pumped were 23,500 and 9,750 acre-feet, respectively.

The increased use of water for irrigation in 1943 caused marked declines in water level throughout Portales Valley. Changes in water level from January 1943 to January 1944 in part of the valley are shown in figures 18. Water levels declined over an elliptical area of about 300 square miles in this part of the valley--more than a foot over about 120 square miles extending along its axis. This elliptical area of decline is about 30 miles long from northwest to southeast and near its southeast end extends through the Arch area.

Included in the area of 120 square miles mentioned as showing declines of more than a foot are two smaller areas in which water levels declined more than 2 feet--one of about 48 square miles surrounding Portales and one of about 13 square miles surrounding Arch--and in parts of these two smaller areas declines exceeded 3 feet. The part surrounding Portales enclosed by the 3-foot contour of decline contains about 30 square miles and the part surrounding Arch about half a square mile, as indicated by two wells. In a still smaller area surrounding Portales--containing about 14 square miles--declines in excess of 4 feet occurred, and two areas included in this 14 square miles showed declines in excess of 5 feet. Of the two last-mentioned areas, one, of about 3 square miles, is just northwest of Portales, and the other, of 1.5 square miles, is just southeast of Portales. Well 1.34.27.211, which is northwest of Portales, showed a decline of 6.15 feet.



EXPLANATION

- Observation well
- Sand-dune areas
- Line showing rise (+) or decline (-) of water level, in feet
- Shading shows area in which water level declined; density of shading increases with amount of decline

Figure 1B.—Map of Portales Valley, Roosevelt County, N. Mex., showing change of water level from January 1943 to January 1944.

Water levels also declined significantly in Blackwater Draw, which lies between the sand-hill areas north of Portales. The extent of the areas over which declines of 1 and 2 feet occurred is somewhat uncertain, as water levels are measured in only a few observation wells in the sand-hill area between Portales Valley and Blackwater Draw. The number of observation wells in Blackwater Draw is also small and the wells are rather widely spaced; however, as declines in excess of 2 feet were measured in several of the wells, an appreciable lowering of the water table took place in this area.

The declines in water level in Portales Valley in 1943 were greater and more extensive than the declines in 1942. The cone of depression that has resulted from the concentrated pumping around Portales spread out both parallel to and across the valley, taking in the area about 9 miles northwest of Portales where there had been a rise in water level in 1942 and also the area northeast of Portales where many wells showed rises in water level in 1942. Well 1.34.13.412 in this area, however, showed a rise of 1.09 feet during 1943. The distribution on each side of Portales of the two areas where declines in excess of 5 feet occurred and the pinching together of the other contour lines in the vicinity of Portales show clearly that within the corporate limits of Portales less water is pumped than in the immediately adjacent areas. In Blackwater Draw the area of decline in water level in 1943 appears similar in shape and extent to the area of decline in 1942, but declines were considerably larger in 1943.

Water levels began to decline in many wells in Portales Valley shortly after the beginning of the year and continued to decline rather steadily until the end of September, when they became about stationary, and they either remained so or else rose slightly until the end of the year. The large declines along the Portales Valley and Blackwater Draw appear to be caused by a combination of the effects of transpiration and evaporation and of pumping water from irrigation wells, pumping being a much larger factor in Portales Valley than in the lightly pumped Blackwater Draw area. Despite the large declines in water levels in 1942 and 1943, water levels in nearly all wells in the Portales Valley are still higher than they were just previous to the period of abnormal precipitation in 1941; however, if declines as large as those of 1942 and 1943 occur in 1944, the water levels in many wells will be as low as they were just prior to the period of abnormal precipitation in 1941.

## Water-level measurements

1N.32.7.300 (\*845, p. 249; 886, p. 453; 911, p. 222; 941, p. 255; 949, p. 322). W. J. Greshaw.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	14.93	May 23	a 15.79	Sept. 25	15.79
Mar. 26	14.94	July 25	a 16.02	Nov. 24	15.48

1N.33.16.100a (\*941, p. 255; \*949, p. 322). Mr. Hardwick. Measuring point, beginning Jan. 27, 1943, top of 3 $\frac{1}{2}$ -foot circular concrete pump base around well, 1.50 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 27, 19.54.

1N.33.16.100b (\*941, p. 255; 949, p. 322). Mr. Hardwick. Measurements discontinued.

1N.33.16.100c. Mr. Hardwick. Drilled irrigation well, equipped with turbine pump. Diameter 16 inches. Measuring point, lower edge of rectangular hole in south side of pump shell, 0.80 foot above base of pump and top of casing and 1.20 feet above land-surface datum. Water levels, in feet below land-surface datum: Jan. 26, 1942, 20.00; Jan. 27, 1943, 20.35.

1N.33.26.120 (\*886, p. 453; 911, p. 222; 941, p. 255; 949, p. 322). Mary E. Miller. No measurements made in 1943.

1N.33.36.400a (\*845, p. 250; \*886, p. 453; \*911, p. 222; 941, p. 255; 949, p. 322). A. C. Woodburn. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet with reference to land-surface datum, 1943: Jan. 5, +1.24; Sept. 26-27, -2.58.

Highest daily water level, in feet with reference to land-surface datum, 1943  
(From recorder charts).

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	+1.11	+0.85	+0.49	-0.14	-0.83	-1.26	-1.78	-2.27	-2.53	-2.52	-1.56
2	.....	+1.15	+0.79	+0.49	-0.17	-0.88	-1.30	-1.79	-2.29	-2.52	-2.31	-1.59
3	+1.15	+1.07	+0.90	+0.45	-0.24	-0.96	-1.24	-1.81	-2.30	-2.52	-2.30	-1.61
4	+1.17	+1.06	+0.93	+0.40	-0.26	-1.01	-1.36	-1.82	-2.32	-2.50	-2.28	-1.58
5	+1.24	+1.03	+0.90	+0.42	-0.31	-1.00	-1.48	-1.84	-2.33	-2.50	-2.27	-1.52
6	+1.21	+1.00	+0.81	+0.46	-0.37	-1.02	-1.55	-1.85	-2.35	-2.49	-2.26	-1.57
7	+1.20	+1.03	+0.84	+0.46	-0.38	-1.00	-1.60	-1.86	-2.37	-2.48	-2.25	-1.52
8	+1.19	+1.01	+0.84	+0.46	-0.40	-0.88	-1.65	-1.87	-2.58	-2.48	-2.25	-1.52
9	+1.21	+0.87	+0.83	+0.36	-0.32	-0.99	-1.52	-1.88	-2.40	-2.47	-2.24	-1.10
10	+1.20	+0.98	+0.79	+0.32	-0.24	-1.06	-1.03	-1.90	-2.41	-2.47	-2.23	-0.95
11	+1.22	+0.94	+0.72	+0.28	-0.33	-0.82	-1.01	-1.91	-2.42	-2.46	-2.22	-0.80
12	+1.22	+0.97	+0.78	+0.27	-0.48	-0.88	-1.09	-1.93	-2.43	-2.43	-2.21	-0.80
13	+1.22	+0.95	+0.78	+0.27	-0.42	-1.08	-1.18	-1.95	-2.45	-2.42	-2.19	-0.78
14	+1.21	+0.92	+0.78	+0.25	-0.35	-1.13	-1.29	-1.97	-2.46	-2.42	-2.18	-0.84
15	+1.23	+0.96	+0.75	+0.30	-0.35	-1.19	-1.28	-1.99	-2.47	-2.42	-2.18	-0.90
16	+1.16	+0.91	+0.65	+0.28	-0.53	-1.27	-1.12	-2.01	-2.49	-2.41	-2.16	-0.90
17	+1.17	+1.10	+0.72	+0.18	-0.59	-1.29	-0.99	-2.02	-2.50	-2.41	-2.14	-0.93
18	+1.13	+1.10	+0.71	+0.21	-0.54	-1.30	-1.04	-2.04	-2.51	-2.39	-2.12	-0.91
19	+1.06	+0.96	+0.63	+0.25	-0.50	-1.33	-1.08	-2.06	-2.52	-2.38	-2.10	-0.91
20	+1.11	+0.96	+0.62	+0.23	-0.55	-1.19	-1.19	-2.08	-2.53	-2.38	-2.09	-0.91
21	+1.17	+0.95	+0.61	+0.21	-0.18	-1.28	-1.30	-2.09	-2.54	-2.37	-2.07	-0.93
22	+1.15	+0.91	+0.63	+0.14	-0.02	-1.39	-1.37	-2.11	-2.55	-2.37	-2.05	-0.94
23	+1.14	+0.84	+0.64	+0.00	-0.18	-1.43	-1.41	-2.12	-2.57	-2.36	-2.04	-0.97
24	+1.11	+0.87	+0.77	+0.16	-0.37	-1.48	-1.47	-2.14	-2.57	-2.36	-1.98	-0.95
25	+1.07	.....	+0.70	+0.03	-0.45	-1.52	-1.55	-2.15	-2.57	-2.36	-1.88	-0.94
26	+1.10	.....	+0.61	+0.06	-0.52	-1.56	-1.56	-2.17	-2.58	-2.35	-1.64	-0.96
27	+1.13	+0.85	+0.61	-0.06	-0.63	-1.58	-1.59	-2.19	-2.58	-2.36	-1.57	-1.00
28	+1.15	.....	+0.57	-0.06	-0.64	-1.59	-1.64	-2.21	-2.57	-2.35	-1.57	-0.90
29	+1.10	.....	+0.57	-0.07	-0.55	-1.35	-1.89	-2.22	-2.56	-2.34	-1.58	-0.80
30	+1.11	.....	+0.55	-0.18	-0.65	-1.23	-1.73	-2.24	-2.54	-2.33	-1.56	-0.80
31	+1.06	.....	+0.46	.....	-0.77	.....	-1.76	-2.26	.....	-2.33	.....	-0.83

a Windmill pumping.

1N.33.36.400b (\*845, p. 250; 886, p. 453; \*911, p. 222; 941, p. 256; 949, p. 323). A. C. Woodburn.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level
Jan. 28	2.40	May 22	3.53	Sept. 26	5.74
Mar. 27	2.85	July 25	4.97	Nov. 27	4.96

1N.34.29.444 (\*886, p. 453; 911, p. 222; 941, p. 256; 949, p. 323). J. N. Tefertiller. Water level, in feet below land-surface datum, 1943: Jan. 28, 11.27.

1N.34.33.224 (\*886, p. 453; 911, p. 222; 941, p. 256; 949, p. 323). Mrs. Lee Garrett. Water level, in feet below land-surface datum, 1943: Jan. 28, 12.20.

1N.34.35.432 (\*886, p. 453; 911, p. 222; 941, p. 256; 949, p. 323). Earl McCollum. Water level, in feet below land-surface datum, 1943: Jan. 28, 26.93.

1.32.3.440 (\*845, p. 251; 886, p. 453; 911, p. 223; 941, p. 256; 949, p. 323). M. Hall.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level
Jan. 26	28.08	May 23	28.84	Sept. 25	29.59
Mar. 26	28.36	July 25	29.40	Nov. 24	29.87

1.32.16.111 (\*911, p. 223; 941, p. 256; 949, p. 323). Mrs. J. P. Nash.

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level
Jan. 26	42.00	May 23	41.90	Sept. 25	41.83
Mar. 26	41.91	July 25	41.92	Nov. 24	41.91

1.33.5.432 (\*845, p. 252; \*886, p. 454; 911, p. 223; 941, p. 256; 949, p. 323). Clay Jones. Water level, in feet below land-surface datum, 1945: Jan. 26, 13.10.

1.33.7.111 (\*911, p. 223; 941, p. 256; 949, p. 323). E. L. Sisk. (Formerly owned by I. G. Hall.)

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level
Jan. 26	12.42	May 23	14.25	Sept. 25	14.42
Mar. 26	12.60	July 25	14.90	Nov. 24	14.15

1.33.8.112 (\*845, p. 252; \*886, p. 454; 911, p. 223; \*941, p. 256; \*949, p. 323). A. Q. Smith. Water level, in feet below land-surface datum, 1943: Jan. 26, 11.69.

1.33.8.311 (\*886, p. 454; 911, p. 223; 941, p. 256; \*949, p. 324). E. E. Marcus. Water level, in feet below land-surface datum, 1943: Jan. 26, 12.28.

1.33.9.111 (\*886, p. 454; \*911, p. 223; 941, p. 256; 949, p. 324). Earl Plank. (Formerly owned by G. C. Kennedy.) Water level, in feet below land-surface datum, 1943: Jan. 26, 13.36.

1.33.9.442 (\*845, p. 253; 886, p. 454; 911, p. 223; 941, p. 256; 949, p. 324). John Adams. (Formerly owned by B. J. Perkins.) Water level, in feet below land-surface datum, 1943: Jan. 26, 12.58.

1.33.10.211 (\*886, p. 454; 911, p. 223; 941, p. 256; 949, p. 324). O. B. Sherman. Water level, in feet below land-surface datum, 1943: Jan. 26, 18.63.

1.33.10.313 (\*845, p. 253; \*886, p. 454; 911, p. 223; 941, p. 256; 949, p. 324). Jim Allen. (Formerly owned by C. E. Deahl.)

Water level, in feet below land-surface datum, 1945

Date	Water level	Date	Water level	Date	Water level
Jan. 26	14.73	May 22	15.22	Sept. 25	19.38
Mar. 26	14.66	July 25	16.24	Nov. 24	17.33

a Windmill pumping.

1.33.11.312 (\*845, p. 253; \*886, p. 454; 911, p. 223; \*941, p. 256; \*949, p. 324). C. F. Williams. Water level, in feet below land-surface datum, 1943: Jan. 26, 20.32.

1.33.12.144 (\*845, p. 253; 886, p. 454; \*911, p. 223; 941, p. 257; 949, p. 324). A. C. Woodburn.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 28	28.70	July 25	31.29	Nov. 27	30.48
Mar. 27	29.63	Sept. 26	32.44		

1.33.13.111 (\*845, p. 254; 886, p. 455; 911, p. 254; \*941, p. 257; 949, p. 324). E. Elkins. Measuring point, beginning Jan. 28, 1943, top of hole in base of pump, on east side, 0.05 foot above asphalt strip on which pump rests, 0.12 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Jan. 28, 17.83; May 22, 22.63.

1.33.13.431 (\*845, p. 254; 886, p. 455; 911, p. 224; \*941, p. 257; 949, p. 324). Buddie Black. (Formerly owned by Mr. Spires.) No measurements made in 1943.

1.33.14.131 (\*845, p. 254; \*886, p. 455; 911, p. 224; 941, p. 257; 949, p. 324). J. V. Miller. Water level, in feet below land-surface datum, 1943: Jan. 26, 14.79.

1.33.14.311 (\*845, p. 254; 886, p. 455; 911, p. 224; 941, p. 257; \*949, p. 324). Claude Elder. (Formerly owned by J. T. Elder.) Water level, in feet below land-surface datum, 1943: Jan. 26, 13.42.

1.33.14.331 (\*845, p. 254; 886, p. 455; 911, p. 224; 941, p. 257; 949, p. 324). Claude Elder. (Formerly owned by J. T. Elder.) Measuring point, beginning Nov. 24, 1943, top edge of Geological Survey washer in south side of north upright immediately below notch for lower cross brace, 0.25 foot below former measuring point, 3.08 feet above land-surface datum.

Water level, in feet below land-surface datum, 1943

Jan. 26	14.11	May 22	14.33	Sept. 25	a 17.45
Mar. 26	14.84	July 25	15.54	Nov. 24	17.53

1.33.14.331b (\*941, p. 257; 949, p. 324). Claude Elder. (Formerly owned by J. T. Elder.) Measurements discontinued after July 1943. Water levels, in feet below land-surface datum, 1943: Jan. 26, 14.09; Mar. 26, 14.12; May 22, 14.71; July 25, b/16.12.

1.33.14.421 (\*845, p. 255; 886, p. 455; 911, p. 224; 941, p. 257; 949, p. 324). Leon Jones. Water level, in feet below land-surface datum, 1943: Jan. 27, 16.53.

1.33.15.212 (\*845, p. 255; \*886, p. 455; 911, p. 224; 941, p. 257; \*949, p. 324). O. D. Minick. Water level, in feet below land-surface datum, 1943: Jan. 26, 13.58.

1.33.16.222 (\*941, p. 257; 949, p. 325). Bethel Church.

Water level, in feet below land-surface datum, 1943

Jan. 26	11.13	May 22	11.71	Sept. 25	13.48
Mar. 26	11.27	July 25	12.21	Nov. 24	13.77

1.33.17.221 (\*845, p. 255; 886, p. 455; \*911, p. 224; \*941, p. 257; 949, p. 325). R. F. Campbell.

Water level, in feet below land-surface datum, 1943

Jan. 26	11.06	May 22	11.34	Sept. 25	12.74
Mar. 26	11.20	July 25	11.71	Nov. 24	12.87

a Pumped recently.

b Measurement uncertain as well had caved.

1.33.23.311 (\*845, p. 255; \*886, p. 455; 911, p. 224; 941, p. 257; \*949, p. 325). Dan. H. Smith. Water level, in feet below land-surface datum, 1943: Jan. 26, 17.72.

1.33.23.433 (\*845, p. 255; 886, p. 455; 911, p. 224; 941, p. 257; 949, p. 325). Dr. H. A. Miller. Water level, in feet below land-surface datum, 1943: Jan. 26, 16.95.

1.33.24.111 (\*845, p. 255; \*886, p. 455; 911, p. 224; \*941, p. 257; \*949, p. 325). J. E. Dictson. Water level, in feet below land-surface datum, 1943: Jan. 27, 19.94.

1.33.24.433 (\*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258; 949, p. 325). J. E. Jones. Water level, in feet below land-surface datum, 1943: Jan. 27, 16.86.

1.33.26.221 (\*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258; 949, p. 325). D. E. Thomas. Water level, in feet below land-surface datum, 1943: Jan. 26, 16.57.

1.33.26.331 (\*845, p. 256; 886, p. 455; 911, p. 224; 941, p. 258; 949, p. 325). C. G. Norton. (Formerly owned by Luther Thomas.) Water level, in feet below land-surface datum, 1943: Jan. 26, 22.56.

1.33.27.311 (\*941, p. 258; 949, p. 325). Joseph A. Henley. Water level, in feet below land-surface datum, 1943: Jan. 26, 36.55.

1.33.27.411. W. W. McClary. Used irrigation well. Measuring point, top edge of east  $\frac{3}{4}$ -inch hole in north side of metal pump base, 0.14 foot above concrete base and land-surface datum. Water levels, in feet below land-surface datum: Jan. 13, 1941, 36.44; Jan. 26, 1942, 27.79; Jan. 26, 1943, 27.20.

1.33.27.421. Luther Cooper. Used drilled irrigation well. Measuring point, top edge of northeast  $\frac{3}{4}$ -inch hole in southeast side of Peerless pump base, 0.14 foot above concrete base and 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 26, 1942, 23.75; Jan. 26, 1943, 23.31.

1.33.28.311 (\*886, p. 456; 911, p. 224; 941, p. 258; 949, p. 325). Gloria Fay Richardson. (Formerly owned by R. L. Jolly.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	39.39	July 27	40.45	Nov. 27	41.02
Mar. 26	39.21	Sept. 25	43.40		

1.33.29.333 (\*911, p. 225; 941, p. 258; 949, p. 325). M. H. Rea.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	29.73	May 23	29.90	Sept. 25	30.80
Mar. 26	29.68	July 27	30.38	Nov. 27	31.04

1.33.30 (\*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258; 949, p. 325). Joe S. Lewis. Water above land surface. No measurements made in 1943.

1.33.34.211 (\*886, p. 456; 911, p. 225; 941, p. 250; 949, p. 325). John E. Plummer.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 26	19.72	May 22	21.01	Sept. 25	a 25.14
Mar. 26	19.54	July 27	22.52	Nov. 27	22.38

1.33.36.113 (\*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258; \*949, p. 325). Edwin Johnson. Water level, in feet below land-surface datum, 1943: Jan. 26, 31.89.

1.34.8.434 (\*845, p. 257; 886, p. 456; 911, p. 225; 941, p. 258; 949, p. 325). Bob Ledbetter. (Formerly owned by W. H. Marsh.) Water level, in feet below land-surface datum, 1943: Jan. 27, 28.33.

a Pumped recently.

1.34.13.412 (\*886, p. 456; 911, p. 225; 941, p. 258; 949, p. 326). Ben Donathan.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	52.59	May 23	51.84	Sept. 26	51.62
Mar. 27	52.08	July 26	51.74	Nov. 25	51.54

1.34.16.422 (\*911, p. 225; 941, p. 258; 949, p. 326). R. E. White.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 27	42.33	May 22	42.44	Sept. 25	44.03
Mar. 27	42.04	July 25	43.08	Nov. 26	44.22

1.34.17.111 (\*845, p. 258; \*886, p. 456; 911, p. 225; 941, p. 258; 949, p. 326). Mrs. Ruth Culpitt. (Formerly owned by L. E. Eyer.) Water level, in feet below land-surface datum, 1943: Jan. 27, 28.16.

1.34.17.122 (\*845, p. 258; \*886, p. 456; 911, p. 225; 941, p. 259; 949, p. 326). Bob Ledbetter. (Formerly owned by George C. Donnell.) Water level, in feet below land-surface datum, 1943: Jan. 27, 27.59.

1.34.17.233 (\*845, p. 258; 886, p. 457; 911, p. 225; 941, p. 259; 949, p. 326). L. E. Allison. (Formerly owned by D. L. Ray.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 27	25.10	May 22	28.72	Sept. 26	a 36.06
Mar. 27	25.00	July 25	27.54	Nov. 27	29.58

1.34.17.241 (\*845, p. 258; \*886, p. 457; 911, p. 225; \*941, p. 259; 949, p. 326). B. F. Ray. Water level, in feet below land-surface datum, 1943: Jan. 27, 22.52.

1.34.18.133. J. E. Tucker. Used drilled irrigation well. Measuring point, top outside edge of north  $\frac{1}{4}$ -inch hole in west side of Peerless pump base, 0.10 foot above concrete base and 0.50 foot above land-surface datum. Water level, in feet below land-surface datum, 1942: Jan. 24, 25.64. No measurements made in 1943.

1.34.18.343 (\*845, p. 258; \*886, p. 457; 911, p. 225; 941, p. 259; 949, p. 326). J. W. Terry. Water level, in feet below land-surface datum, 1943: Jan. 27, 21.62.

1.34.19.223 (\*845, p. 258; \*886, p. 457; 911, p. 225; 941, p. 259; 949, p. 326). A. H. Keswater. (Formerly owned by Lewis P. Kirby.) Water level, in feet below land-surface datum, 1943: Jan. 27, 19.53.

1.34.19.341 (\*941, p. 259; 949, p. 326). Floyd Horne. (Formerly owned by Tusco Walker.) Measuring point, beginning Jan. 27, 1944, lower edge of oval hole in Peerless pump base, 0.78 foot above concrete base and 1.33 feet above land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 27, 17.85.

1.34.21.121 (\*845, p. 259; \*886, p. 457; 911, p. 226; 941, p. 259; 949, p. 326). L. H. Lee. No measurements made in 1943.

1.34.21.141 (\*845, p. 259; \*886, p. 457; 911, p. 226; \*941, p. 259; 949, p. 326). Douglas Owen. No measurements made in 1943.

1.34.21.222 (\*845, p. 259; \*886, p. 457; 911, p. 226; 941, p. 259; 949, p. 326). Elizabeth Tipton. No measurements made in 1943.

1.34.22.131 (\*845, p. 259; 886, p. 457; 911, p. 226; 941, p. 259; 949, p. 326). Mrs. W. E. Jergins. Water level, in feet below land-surface datum, 1943: Jan. 27, 27.85.

a Pumped recently.

1.34.22.222 (\*845, p. 260; 886, p. 457; 911, p. 226; 941, p. 259; 949, p. 326). Mrs. A. J. Goodwin.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 25	38.17	May 22	38.12	Sept. 25	39.03
Mar. 27	38.09	July 25	38.64	Nov. 26	38.86

1.34.22.421 (\*886, p. 458; 911, p. 226; 941, p. 259; 949, p. 326). R. C. Grunig. Water level, in feet below land-surface datum, 1943; Jan. 25, 29.07.

1.34.22.443 (\*845, p. 260; \*886, p. 458; 911, p. 226; 941, p. 259; 949, p. 326). Mable Jernigan. (Formerly owned by R. M. Cox.) Water level, in feet below land-surface datum, 1943: Jan. 25, 25.47.

1.34.23.211 (\*845, p. 260; 886, p. 458; 911, p. 226; 941, p. 259; 949, p. 326). Pope Long. (Formerly owned by Hazel Hall. Water level, in feet below land-surface datum, 1943: Jan. 25, 40.07.

1.34.23.311 (\*845, p. 260; \*886, p. 458; 911, p. 226; 941, p. 259; 949, p. 326). J. R. Mahaffey. Water level, in feet below land-surface datum, 1943: Jan. 25, 28.85.

1.34.23.313a (\*845, p. 261; 886, p. 458; 911, p. 226; 941, p. 259; 949, p. 327). R. E. McDonald. (Formerly owned by F. A. Buchanan.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 25	27.47	May 22	28.49	Sept. 25	33.35
Mar. 27	27.16	July 25	30.42	Nov. 25	32.53

1.34.23.422 (\*845, p. 261; \*886, p. 458; 911, p. 226; 941, p. 259; 949, p. 327). E. L. Yandell. Water level, in feet below land-surface datum, 1943: Jan. 25, 27.73.

1.34.23.442a (\*941, p. 260; 949, p. 327). Sam B. Fletcher. (Formerly owned by J. C. Hicks.) Water level, in feet below land-surface datum, 1943: Jan. 25, 28.54.

1.34.24.243 (\*845, p. 261; \*886, p. 458; 911, p. 226; 941, p. 260; 949, p. 327). J. T. Gorrell. Water level, in feet below land-surface datum, 1943: Jan. 28, 42.45.

1.34.24.312 (\*845, p. 261; 886, p. 458; 911, p. 226; \*941, p. 260; 949, p. 327). W. A. Cummings. Measurements discontinued.

1.34.24.312a. W. A. Cummings. New used drilled irrigation well, about 200 feet east of well 1.34.24.312. Measuring point, top edge of east 3/4-inch hole in south side of Layne-Bowler pump base, 0.13 foot above top of casing and concrete curb around well and 0.35 foot above land-surface datum. Water levels, in feet below land-surface datum; Jan. 23, 1942, 30.51; Jan. 29, 1943, 29.40.

1.34.24.200 (\*845, p. 262; 886, p. 458; 911, p. 227; 941, p. 261; 949, p. 327). J. B. H. Young and Smith Feed Pens. Water level, in feet below land-surface datum, 1943: Jan. 25, a/29.53.

1.34.25.211 (\*845, p. 261; \*886, p. 458; \*911, p. 227; 941, p. 260; 949, p. 327). J. B. H. Young. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Apr. 6-7, 32.36; Nov. 18, 35.64.

Highest daily water levels, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	32.95	32.69	32.56	32.40	32.62	.....	33.58	33.84	34.52	35.32	35.58	35.54
2	32.95	.....	32.59	32.40	32.62	.....	33.61	.....	34.55	35.34	35.58	35.55
3	32.96	.....	.....	32.40	32.65	33.02	33.60	.....	34.57	35.36	35.57	35.55
4	32.97	.....	.....	32.40	32.64	33.07	33.61	35.84	.....	35.37	35.56	35.54
5	32.93	.....	.....	32.38	32.65	33.14	33.62	33.86	.....	35.39	35.56	35.53

a Pumping intermittently.

## 1.34.25.211. J. B. H. Young--Continued.

Highest daily water levels, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	32.93	.....	.....	32.36	32.68	33.15	33.64	33.89	.....	35.40	35.67	35.53
7	32.93	.....	32.56	32.36	32.71	33.21	33.65	33.92	.....	35.41	35.60	35.53
8	32.92	.....	32.55	32.37	32.75	.....	33.65	33.95	.....	35.43	35.59	.....
9	32.90	.....	.....	32.37	32.77	.....	.....	33.97	.....	35.43	35.60	.....
10	32.90	.....	.....	32.38	32.78	.....	.....	34.00	.....	35.45	35.60	.....
11	32.89	.....	.....	32.40	.....	.....	.....	34.02	.....	35.45	35.60	.....
12	32.88	.....	32.52	.....	.....	33.26	33.65	34.05	.....	35.46	35.61	.....
13	32.86	.....	32.52	.....	.....	33.29	33.67	34.09	.....	35.46	35.61	.....
14	32.85	.....	32.50	.....	.....	33.36	33.68	34.12	.....	35.48	35.61	.....
15	32.82	.....	.....	.....	.....	33.37	33.66	34.15	.....	35.48	35.62	.....
16	32.83	.....	.....	.....	.....	33.41	33.68	34.16	.....	35.50	35.61	.....
17	32.82	.....	.....	.....	.....	33.42	33.70	34.19	.....	35.50	35.61	.....
18	32.83	.....	.....	32.48	.....	33.45	33.69	34.20	.....	35.51	35.62	.....
19	32.84	.....	.....	32.45	.....	.....	33.69	34.22	.....	35.51	35.62	.....
20	32.80	.....	.....	32.45	.....	33.46	33.70	34.24	.....	35.53	35.61	35.47
21	32.80	32.59	.....	32.47	.....	33.47	33.72	34.26	.....	35.53	35.61	35.46
22	32.79	32.58	.....	32.49	.....	33.48	.....	34.28	.....	35.53	35.63	35.46
23	32.77	32.58	.....	32.51	32.87	33.48	.....	34.31	.....	35.55	35.63	35.46
24	32.76	32.60	.....	32.49	32.90	33.51	.....	34.32	.....	35.57	35.62	35.43
25	.....	32.58	.....	32.51	32.84	33.53	.....	34.35	.....	35.57	35.61	35.43
26	.....	32.57	.....	32.53	32.89	33.54	33.75	34.38	35.22	35.56	35.62	35.43
27	.....	32.54	32.41	32.55	32.96	33.55	33.77	34.42	35.23	35.55	35.60	35.47
28	.....	32.57	32.41	32.57	32.97	33.54	33.78	34.44	35.25	35.57	35.59	35.45
29	.....	.....	32.39	32.58	.....	33.58	33.80	.....	35.27	35.56	35.58	35.43
30	.....	.....	32.39	32.63	.....	33.59	33.82	.....	35.31	35.57	35.55	35.43
31	32.77	.....	32.41	.....	32.99	.....	33.84	34.48	.....	35.58	.....	35.43

1.34.26.400 (\*911, p. 227; 941, p. 261; 949, p. 327). Water level, in feet below land-surface datum, 1943: Jan. 25, 24.33.

1.34.27.211 (\*845, p. 263; 886, p. 459; 911, p. 227; 941, p. 261; 949, p. 328). J. F. Bowman. Water level, in feet below land-surface datum, 1943: Jan. 25, 22.89.

1.34.27.331 (\*886, p. 459; 911, p. 227; 941, p. 261; 949, p. 328). Lewis Kirby. Water level, in feet below land-surface datum, 1943: Jan. 25, 20.63.

1.34.27.341 (\*845, p. 263; \*886, p. 459; 911, p. 227; 941, p. 261; 949, p. 328). L. O. Dunn. (Formerly owned by B. F. Smith.) Water level, in feet below land-surface datum, 1943: Jan. 25, 20.71.

1.34.27.412 (\*845, p. 264; \*886, p. 459; 911, p. 227; \*941, p. 261; 949, p. 328). J. E. Plummer. (Formerly owned by J. D. Cyphers.) Water level, in feet below land-surface datum, 1943: Jan. 25, 21.86.

1.34.27.444. Mr. Huffman. Used dug irrigation well, equipped with vertical centrifugal pump. Measuring point, lower south edge of horizontal part of steel frame making bearing for pulley-wheel shaft, 2.05 feet above land-surface datum. Water levels, in feet below land-surface datum: Jan. 14, 1941, 31.44; Jan. 27, 1942, 17.95; Jan. 25, 1943, 20.83.

1.34.28.111. G. C. Morris. Used drilled irrigation well. Measuring point, top edge of north  $\frac{1}{4}$ -inch hole in east side of Peerless pump base, 0.14 foot above concrete pump base and 0.65 foot above land-surface datum. Water levels, in feet below land-surface datum: Jan. 27, 1942, 18.84; Jan. 25, 1943, 19.70.

1.34.28.211 (\*911, p. 228; 941, p. 261; 949, p. 328). H. M. Livingston. Water level, in feet below land-surface datum, 1943: Jan. 25, 21.32.

1.34.28.133a (\*941, p. 261; 949, p. 328; designated incorrectly as 1.34.28.311a). Lee Daniels. (Formerly owned by Mrs. Nora Teague.) Water level, in feet below land-surface datum, 1943: Jan. 25, 22.00.

1.34.29.211 (#845, p. 264; #886, p. 459; 911, p. 228; 941, p. 261; 949, p. 328). J. W. King. (Formerly owned by George & King.) Water level, in feet below land-surface datum, 1943: Jan. 25, 19.04.

1.34.30.121 (#845, p. 264; #886, p. 459; 911, p. 228; 941, p. 261; 949, p. 328). M. A. Pember. Water level, in feet below land-surface datum, 1943: Jan. 27, 17.91.

1.34.33.431 (#845, p. 264; 886, p. 460; 911, p. 228; 941, p. 261; 949, p. 328). W. A. Moore. (Formerly owned by F. E. DeGuire.) Well equipped on July 26 with 3-inch horizontal centrifugal pump.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	9.50	May 24	9.89	Sept. 27	12.17
Mar. 28	9.32	July 26	10.81	Nov. 28	12.61

1.34.54.143 (#845, p. 265; 886, p. 460; 911, p. 228; 941, p. 261; 949, p. 328). J. A. Sanders. Water level, in feet below land-surface datum, 1943: Jan. 29, 24.00.

1.34.54.232 (#845, p. 265; #886, p. 460; 911, p. 228; 941, p. 261; 949, p. 328). J. W. Owens. Water level, in feet below land-surface datum, 1943: Jan. 29, 21.10.

1.34.54.322 (#845, p. 265; #886, p. 460; 911, p. 228; #941, p. 262; #949, p. 328). T. E. Mears. (Formerly owned by W. L. Patton.) Water level, in feet below land-surface datum, 1943: Jan. 29, 22.12.

1.34.55.300 (#845, p. 265; #886, p. 460; 911, p. 228; 941, p. 262; 949, p. 328). Eastern New Mexico College. Water level, in feet below land-surface datum, 1943: Jan. 31, 20.76.

1.34.56.324 (#845, p. 266; #886, p. 460; 911, p. 228; 941, p. 262; #949, p. 328). Mr. Disney. No measurements made in 1943.

1.34.56.332 (#845, p. 266; 836, p. 460; 911, p. 228; 941, p. 262; 949, p. 328). T. R. Chambers. No measurements made in 1943.

1.34.56.333 (#941, p. 262; 949, p. 328). Jim Landiss. Water level, in feet below land-surface datum, 1943: Jan. 31, 19.68.

1.34.56.421 (#845, p. 266; #886, p. 460; 911, p. 228; 941, p. 262; 949, p. 328). Earl McCollum. No measurements made in 1943.

1.34.56.443 (#845, p. 266; #886, p. 460; 911, p. 228; 941, p. 262; 949, p. 328). Foy Williams. Water level, in feet below land-surface datum, 1943: Jan. 31, 20.75.

1.35.2.300 (#845, p. 266; 886, p. 460; #911, p. 229; 941, p. 262; 949, p. 329). Eastern New Mexico State Park.

Water level, in feet below land-surface datum, 1943

Jan. 28	43.62	May 23	43.46	Sept. 26	43.73
Mar. 27	43.55	July 26	43.56	Nov. 25	43.49

1.35.6.141 (#886, p. 461; 911, p. 229; 941, p. 262; 949, p. 329). Aubrey Ellis.

Water level, in feet below land-surface datum, 1943

Jan. 28	1.60	May 23	2.75	Sept. 26	5.08
Mar. 27	2.01	July 26	3.78	Nov. 25	4.54

1.35.6.400 (#845, p. 266; 886, p. 460; 911, p. 229; 941, p. 262; 949, p. 329). John C. Brown. (Formerly owned by Dr. W. M. Brown.)

Water level, in feet below land-surface datum, 1943

Jan. 28	5.82	May 23	6.48	Sept. 26	8.07
Mar. 27	6.02	July 26	7.31	Nov. 25	8.60

1.35.11.241 (\*941, p. 262; 949, p. 329). Eunice McPherson.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 28	14.03	May 23	14.00	Sept. 26	14.48
Mar. 27	13.98	July 26	14.33	Nov. 25	14.42

1.35.19.332 (\*845, p. 267; 886, p. 461; 911, p. 229; 941, p. 262; 949, p. 329). S. D. Foreman. Water level, in feet below land-surface datum, 1943: Jan. 31, 37.80.

1.35.19.432 (\*845, p. 267; 911, p. 229; \*941, p. 262; 949, p. 329). D. A. Carroll. Water level, in feet below land-surface datum, 1943: Jan. 31, 41.12.

1.35.27.344 (\*941, p. 263; 949, p. 329). H. J. McCroary.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Mar. 27	28.84	July 26	28.86	Nov. 29	29.63
May 24	28.83	Sept. 27	29.09		

1.35.28.143 (\*845, p. 267; 886, p. 461; 911, p. 229; \*941, p. 263; 949, p. 329). J. C. Dick. Measuring point, beginning July 26, 1943. top of 4- by 4-inch wooden pipe clamps at east side of pump column, 0.47 foot above land-surface datum.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 31	44.24	May 24	44.16	Sept. 27	44.31
Mar. 27	44.08	July 26	44.13	Nov. 29	44.47

1.35.29.111 (\*911, p. 229; \*941, p. 263; 949, p. 329). Clara Mullmeyer. Water level, in feet below land-surface datum, 1943: Jan. 31, 35.26.

1.35.29.231 (\*845, p. 267; \*886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). R. E. Lee. Water level, in feet below land-surface datum, 1943: Jan. 31, 33.15.

1.35.30.111 (\*845, p. 267; 886, p. 461; 911, p. 229; \*941, p. 263; 949, p. 329). E. F. Foreman. Water level, in feet below land-surface datum, 1943: Jan. 31, 33.65.

1.35.30.343 (\*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). T. E. Livingston. (Formerly owned by B. E. Pickling.) Water level, in feet below land-surface datum, 1943: Jan. 31, 22.87.

1.35.31.122 (\*845, p. 268; 886, p. 461; 911, p. 229; \*941, p. 263; 949, p. 329). Mary M. Kenyon. Water level, in feet below land-surface datum, 1943: Jan. 31, 22.00.

1.35.31.231 (\*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). Walter R. McCollum. (Formerly owned by W. L. Rogers.) Water level, in feet below land-surface datum, 1943: Jan. 31, 19.23.

1.35.31.331 (\*845, p. 268; \*886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). R. A. Young. Water level, in feet below land-surface datum, 1943: Jan. 31, 19.42.

1.35.31.341. W. M. Drinkard. Unused dug irrigation well, equipped with centrifugal pump. Measuring point, top west edge of east stringer, east of discharge pipe, level with land-surface datum. Water level, in feet below land-surface datum: Jan. 29, 1942, 19.72; Jan. 31, 1943, 19.63.

1.35.31.342 (\*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). E. F. Moore. Water level, in feet below land-surface datum, 1943: Jan. 31, 19.37.

1.35.31.421 (\*845, p. 268; 886, p. 461; 911, p. 229; 941, p. 263; 949, p. 329). Henry Beebe. Water level, in feet below land-surface datum, 1943: Jan. 31, 19.15.

1.35.32.112 (\*845, p. 268; \*886, p. 461; 911, p. 230; \*941, p. 263; 949, p. 330). Alvin George. (Formerly owned by George & King.) Water level, in feet below land-surface datum, 1943: Jan. 31, 19.65.

1.35.32.212 (\*911, p. 230; \*941, p. 263; 949, p.330). R. H. Green. (Formerly owned by H. M. Livingston.) Water level, in feet below land-surface datum, 1943: Jan. 31, 18.45.

1.35.32.311 (\*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 263; \*949, p. 330). Orville W. Doak. (Formerly owned by Lee and Nelle Carter.) Water level, in feet below land-surface datum, 1943: Jan. 31, 18.52.

1.35.32.332 (\*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). G. E. Lane. (Formerly owned by Lee and Nelle Carter.) Water level, in feet below land-surface datum, 1943: Jan. 31, 17.32.

\*1.35.32.413 (\*845, p. 268; 886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330; designated incorrectly as 1.35.32.411). Quincy L. Hanies. Water level, in feet below land-surface datum, 1943: Jan. 31, 15.05.

1.35.33.112 (\*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). Roy Newberry. Water level, in feet below land-surface datum, 1943: Jan. 31, 22.34.

1.35.33.331 (\*845, p. 269; \*886, p. 462; 911, p. 230; 941, p. 264; \*949, p. 330). Lowell G. Green. Water level, in feet below land-surface datum, 1943: Jan. 30, 14.13.

1.36.5.300 (\*886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). W. H. McDaniel. (Formerly owned by H. Pieper.) Water levels, in feet below land-surface datum, 1943: Jan. 28, 32.84; July 26, 33.01; Nov. 25, 33.02.

1.36.6.100 (\*886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). O. W. Bivins. (Formerly owned by Julian L. Bivins.) Water level, in feet below land-surface datum, 1943: Jan. 28, 37.60.

1.36.16.100 (\*886, p. 462; 911, p. 230; 941, p. 264; \*949, p. 330). State land.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 28	a 23.38	May 23	29.73	Sept.26	a 28.12
Mar. 27	a 20.59	July 26	22.23	Nov. 25	18.39

2.34.1.114 (\*845, p. 269; \*886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). E. C. Murrill. Water level, in feet below land-surface datum, 1943: Jan. 31, 20.19.

2.34.1.133 (\*845, p. 269; \*886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). Hugh R. Knox. Water level, in feet below land-surface datum, 1943: Jan. 31, 20.23.

2.34.1.221 (\*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). Foy Williams. Water level, in feet below land-surface datum, 1943: Jan. 31, 20.48.

2.34.2.233 (\*845, p. 269; 886, p. 462; 911, p. 230; 941, p. 264; 949, p. 330). Louisa Troutt. (Formerly owned by A. G. Troutt.) Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Jan. 16, 34.71; Nov. 12, 39.46.

Highest daily water levels, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	34.94	34.95	35.19	35.65	36.30	36.79	37.28	38.28	39.25	39.33	39.33
2	.....	34.81	35.07	.....	35.65	36.38	36.79	.....	38.29	39.24	39.35	39.34
3	.....	34.87	34.98	.....	35.72	36.38	36.79	.....	38.36	39.24	39.30	39.36
4	34.93	34.85	34.91	.....	35.72	36.41	36.79	.....	38.39	39.25	39.32	39.33
5	34.80	34.84	34.90	35.19	35.74	36.44	36.81	.....	.....	39.27	39.34	39.28

a Windmill pumping.

2.34.2.233. Louisa Troutt--Continued.

Highest daily water levels, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	34.80	34.99	35.06	35.17	35.75	36.44	36.84	.....	38.49	39.27	39.37	39.33
7	34.87	34.94	35.03	35.18	35.79	36.44	36.86	.....	38.54	39.24	39.45	39.28
8	34.88	34.87	35.02	35.21	.....	.....	36.88	.....	38.57	39.23	39.44	39.28
9	34.83	34.84	34.98	35.23	35.82	.....	36.91	37.58	38.63	39.21	39.43	39.28
10	34.84	34.96	35.03	35.27	35.84	.....	.....	37.60	38.65	39.22	39.44	39.34
11	34.83	34.98	34.99	35.31	35.85	.....	36.91	37.69	38.70	39.20	39.43	39.29
12	34.83	35.01	35.00	35.35	35.88	.....	36.93	37.71	38.70	39.20	39.46	39.28
13	34.83	35.01	35.08	35.37	35.91	.....	.....	37.79	38.72	39.22	39.42	39.25
14	34.79	35.00	35.00	35.39	35.88	36.60	.....	37.81	38.77	39.21	39.43	39.26
15	34.72	35.00	34.98	35.32	.....	36.61	.....	37.82	38.81	39.25	39.43	39.28
16	34.71	34.96	35.08	35.33	.....	36.66	.....	37.84	38.84	39.25	39.42	39.28
17	34.77	34.97	35.02	35.45	35.99	36.70	.....	37.87	38.95	39.24	39.40	39.30
18	34.78	35.02	34.98	35.45	36.01	36.69	.....	37.91	38.97	39.23	39.39	39.26
19	34.90	35.00	35.10	35.39	36.02	36.71	36.97	37.94	38.98	39.22	39.40	39.26
20	34.80	34.99	35.12	35.40	36.05	36.72	36.98	37.96	38.97	39.25	39.39	39.24
21	34.79	34.96	35.15	35.44	36.08	36.72	37.02	37.99	39.00	39.25	39.40	39.24
22	34.79	34.90	35.12	35.48	36.05	36.72	37.09	38.00	39.03	39.22	39.42	39.23
23	34.78	34.92	35.10	35.50	36.08	36.72	37.11	38.02	39.06	39.24	39.42	39.25
24	34.78	35.01	35.16	35.49	36.10	36.76	37.11	38.01	39.07	39.27	39.41	39.22
25	34.83	35.04	35.11	.....	36.15	36.78	37.16	38.05	39.08	39.29	39.37	39.20
26	34.90	35.04	35.17	.....	36.17	36.79	37.16	38.13	39.14	39.29	39.40	39.20
27	34.84	34.91	35.16	35.62	36.20	36.77	37.18	38.13	39.14	39.28	39.37	39.20
28	34.83	34.96	35.18	35.62	36.25	36.79	37.19	38.15	39.19	39.28	39.36	.....
29	34.85	.....	35.16	35.62	36.25	36.81	37.21	38.16	39.22	39.28	39.36	.....
30	34.87	.....	35.13	35.68	36.27	36.79	37.26	38.17	39.22	39.29	39.33	.....
31	34.92	.....	35.17	.....	36.30	.....	37.27	38.22	.....	39.31	.....	.....

2.34.4.441 (\*886, p. 462; 911, p. 231; 941, p. 265; 949, p. 331).  
Maud Wallace.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	0.18	May 24	1.15	Sept. 27	2.98
Mar. 28	.28	July 26	2.27	Nov. 28	1.93

2.34.10.343 (\*845, p. 270; 886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). J. E. Bollen. Water level, in feet below land-surface datum, 1943: Jan. 29, 32.25.

2.34.11.122 (\*941, p. 265; 949, p. 331). D. W. Bedinger. Water level, in feet below land-surface datum, 1943: Jan. 31, 21.71.

2.34.12.143 (\*886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). Heck Harrison. (Formerly owned by E. J. Pendergraft.) Measurements discontinued.

2.34.13.111 (\*886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). Lon J. Partin. Measurements discontinued.

2.34.13.224 (\*941, p. 265; 949, p. 331). Mrs. A. L. Lamm. Water level, in feet below land-surface datum, 1943: Jan. 29, 4.06.

2.34.14.113 (\*845, p. 271; \*886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). J. P. Tarlton. (Formerly owned by E. E. McNew.) Water level, in feet below land-surface datum, 1943: Jan. 29, 22.35.

2.34.14.122 (\*941, p. 265; 949, p. 331). Mrs. Mary J. Bingham. Measurements discontinued.

2.34.14.412 (\*845, p. 271; 886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). N. R. Blackard. Measuring point, beginning May 24, 1943, bottom edge of 2 $\frac{1}{2}$ -inch hole in west side of well casing just below seam between top joint of casing and next lower joint, 0.98 foot above land-surface datum.

## 2.34.14.412. N. R. Blackard--Continued.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	19.66	May 24	20.09	Sept. 27	22.00
Mar. 28	19.78	July 26	21.00	Nov. 28	21.76

2.34.14.443 (\*845, p. 271; \*886, p. 463; 911, p. 231; 941, p. 265; 949, p. 331). J. M. Shim. Water level, in feet below land-surface datum, 1943: Jan. 29, 30.14.

2.34.15.212 (\*845, p. 271; \*886, p. 463; 911, p. 232; 941, p. 265; \*949, p. 332). L. W. Allen. (Formerly owned by R. B. Rogers.)

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	24.48	May 24	25.08	Sept. 27	25.53
Mar. 28	24.81	July 26	25.29	Nov. 28	25.83

2.35.4.111 (\*845, p. 272; \*886, p. 464; 911, p. 232; 941, p. 266; \*949, p. 332). W. E. Munsey. (Formerly owned by W. W. Hampton.)

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	14.33	May 24	15.27	Sept. 27	18.93
Mar. 27	14.39	July 26	17.19	Nov. 29	18.38

2.35.5.311 (\*845, p. 272; 886, p. 464; 911, p. 232; 941, p. 266; 949, p. 332). H. G. Black. Water level, in feet below land-surface datum, 1943: Jan. 31, 14.40.

2.35.5.341 (\*845, p. 272; \*886, p. 464; 911, p. 232; 941, p. 266; 949, p. 332). H. R. Sadler. Water level, in feet below land-surface datum, 1943: Jan. 31, 15.32.

2.35.6.121 (\*845, p. 273; \*886, p. 464; 911, p. 232; \*941, p. 266; 949, p. 332). Mr. Clarke. (Formerly owned by Wayne Culppepper.)

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 31	17.90	May 24	19.03	Nov. 29	24.11
Mar. 28	17.73	Sept. 27	25.76		

2.35.6.213 (\*845, p. 273; \*886, p. 464; 911, p. 232; \*941, p. 266; 949, p. 332). Mrs. Beulah Ownby. Water level, in feet below land-surface datum, 1943: Jan. 31, 17.71.

2.35.6.312 (\*845, p. 273; 886, p. 464; 911, p. 232; 941, p. 266; 949, p. 332). Mrs. Minnie Lee Master. (Formerly owned by Ray Snelson.) Water level, in feet below land-surface datum, 1943: Jan. 31, 16.30.

2.35.6.331 (\*845, p. 273; \*886, p. 464; 911, p. 232; 941, p. 266; 949, p. 332). J. A. Akens. Water level, in feet below land-surface datum, 1943: Jan. 31, 15.14.

2.35.6.411 (\*886, p. 464; 911, p. 232; 941, p. 266; 949, p. 332). F. A. Jewell. Water level, in feet below land-surface datum, 1943: Jan. 31, 15.83.

2.35.6.443 (\*845, p. 273; \*886, p. 464; \*911, p. 232; 941, p. 266; 949, p. 332). Ora Johnson. (Formerly owned by B. H. Howard.) Equipped with water-stage recorder until July 26, 1943.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 24	14.92	May 24	18.61	Sept. 27	23.63
Mar. 27	15.04	July 26	20.87	Nov. 29	20.29

2.35.7.134 (\*845, p. 273; \*886, p. 464; 911, p. 233; 941, p. 267; 949, p. 333). A. L. Kelly. Water level, in feet below land-surface datum, 1943: Jan. 31, 26.24.

2.35.7.311 (\*845, p. 273; 886, p. 464; 911, p. 233; 941, p. 267; 949, p. 333). W. E. Elliott. (Formerly owned by W. H. Seefield.)

2.35.7.311. W. E. Elliott--Continued.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 31	9.45	May 24	10.48	Sept. 27	a 13.73
Mar. 27	9.44	July 26	11.99	Nov. 29	a 13.19

2.35.8.331 (#845, p. 274; 886, p. 464; 911, p. 233; 941, p. 267; 949, p. 333). D. L. Ray. (Formerly owned by G. C. Cooper.) Water level, in feet below land-surface datum, 1943: Jan. 29, 20.70.

2.35.9.211 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 333). Joe Maxwell. (Formerly owned by Fred Smith.) Measurements resumed in 1943. Water level, in feet below land-surface datum, 1943: Jan. 30, 12.43.

2.35.10.211 (#911, p. 233; 941, p. 267; 949, p. 333). S. H. Hare. Pump removed. Measuring point, beginning Jan. 30, 1943, top edge of casing, level with top of concrete collar and land-surface datum. Water level, in feet below land-surface datum, 1943: Jan. 30, 12.08.

2.35.14.313 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 333). First National Bank of Portales.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	7.66	May 24	8.28	Sept. 27	10.19
Mar. 28	7.70	July 26	9.18	Nov. 29	10.04

2.35.14.414 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 333). First National Bank of Portales.

Water level, in feet with reference to land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	+0.07	May 24	-1.19	Sept. 27	-3.50
Mar. 28	-.19	July 26	-2.81	Nov. 29	-2.29

2.35.15.131 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 333). First National Bank of Portales. Reference point, top edge of pipe driven in ground 1 foot west of well, is now 0.10 foot above land-surface datum instead of 0.39 foot below land-surface datum as described in Water-Supply Paper 886.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	-0.00	May 24	0.96	Sept. 27	2.17
Mar. 28	.27	July 27	1.83	Nov. 29	1.35

2.35.16.333 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 334). A. J. Cline.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	5.79	May 24	6.75	Sept. 27	8.33
Mar. 28	5.82	July 27	7.89	Nov. 29	7.76

2.35.18.211 (#886, p. 465; 911, p. 233; 941, p. 267; 949, p. 334). State of New Mexico.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	2.80	May 24	3.82	Sept. 27	5.44
Mar. 28	3.14	July 27	4.77	Nov. 29	4.46

2.35.19.134 (#845, p. 274; 886, p. 465; 911, p. 234; #941, p. 267; 949, p. 334). J. A. Roberson. (Formerly owned by J. S. Martin.)

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	25.07	May 24	25.30	Sept. 27	25.59
Mar. 28	25.23	July 26	25.49	Nov. 28	25.63

2.35.25.123 (#845, p. 274; #886, p. 466; 911, p. 234; #941, p. 268; 949, p. 334). Dr. L. C. Buchanan.

a Windmill pumping.

2.35.25.123. Dr. L. C. Buchanan--Continued.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	16.59	May 24	17.17	Sept.27	18.94
Mar. 28	16.84	July 26	17.43	Nov. 28	18.39

2.35.26.111 (\*941, p. 268; \*949, p. 334). T. M. McCrary. Former measuring point destroyed; measuring point, beginning Jan. 29, 1943, top edge of Geological Survey washer placed on west face of the middle one of three 2- by 6-inch timbers nailed together on east side of well, level with land-surface datum. Water level, in feet below land-surface datum, 1943; Jan. 30, 28.47.

2.36.8.432 (\*886, p. 466; 911, p. 234; \*941, p. 268; 949, p. 334). S. W. Davis.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 29	13.60	May 24	15.72	Sept.27	16.73
Mar. 28	13.06	July 26	14.18	Nov. 28	16.14

2.36.9.431 (\*886, p. 466; 911, p. 234; 941, p. 268; 949, p. 334). Thomas E. Polley. Water level, in feet below land-surface datum, 1943; Jan. 29, 15.67.

2.36.18.341 (\*845, p. 275; 886, p. 466; 911, p. 234; 941, p. 268; 949, p. 334). Bob Stokes.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	10.13	May 24	9.43	Sept.27	11.64
Mar. 28	10.12	July 26	10.99	Nov. 28	12.39

2.36.19.113 (\*941, p. 268; \*949, p. 334). E. O. Hobbs. (Formerly owned by J. S. Hobbs.) Water level, in feet below land-surface datum, 1943; Jan. 30, 17.56.

2.36.20.321 (\*845, p. 275; 886, p. 466; 911, p. 234; 941, p. 268; 949, p. 334). W. O. Davis.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	9.43	May 24	11.36	Nov. 28	11.96
Mar. 28	9.24	July 26	10.51		

2.36.21.432 (\*886, p. 466; 911, p. 234; 941, p. 268; 949, p. 334). Sam H. McCarson. Measuring point, beginning Jan. 30, 1944, top south edge of casing at seam, 0.85 foot above top of concrete well curb and land-surface datum. Water level, in feet below land-surface datum, 1943; Jan. 30, 10.39.

2.36.25.112 (\*886, p. 466; 911, p. 234; 941, p. 268; 949, p. 334). W. D. Pate. Water level, in feet below land-surface datum, 1943; Jan. 30, 10.86.

2.36.26.131 (\*845, p. 276; 886, p. 466; 911, p. 234; \*941, p. 268; 949, p. 334). L. L. Bugg.

## Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	8.24	May 24	12.53	Sept.27	10.63
Mar. 28	8.24	July 26	9.28	Nov. 28	11.39

2.36.26.311 (\*845, p. 276; 886, p. 466; 911, p. 234; 941, p. 268; 949, p. 335). J. S. Riley. Water level, in feet below land-surface datum, 1943; Jan. 30, 8.17.

2.36.28.423 (\*911, p. 234; 941, p. 269; 949, p. 335). W. B. Cox. Water level, in feet below land-surface datum, 1943; Jan. 30, 11.57.

2.36.27.111 (\*886, p. 467; 911, p. 234; 941, p. 269; 949, p. 335). B. L. Kennedy. Water level, in feet below land-surface datum, 1943; Jan. 30, 8.77.

2.36.27.131 (\*845, p. 276; \*886, p. 467; 911, p. 234; 941, p. 269; 949, p. 335). B. L. Kennedy. Water level, in feet below land-surface datum, 1943: Jan. 30, 9.09.

2.36.27.211 (\*845, p. 276; 886, p. 467; 911, p. 234; 941, p. 269; 949, p. 335). M. O. Pate. Water level, in feet below land-surface datum, 1943: Jan. 30, 8.22.

2.36.27.311 (\*845, p. 277; 886, p. 467; 911, p. 234; 941, p. 269; 949, p. 335). J. M. Riley.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	9.59	May 24	9.97	Sept. 27	12.74
Mar. 28	9.58	July 26	a 11.92	Nov. 28	12.84

2.36.28.114b (\*845, p. 277; \*886, p. 467; 911, p. 235; 941, p. 269; 949, p. 335). Morgan Trammell. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Apr. 9, 9.64; Dec. 16-18, 12.81.

Highest daily water levels, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.90	9.83	9.73	....	9.83	10.24	10.80	11.21	12.03	12.51	12.72	12.77
2	9.98	9.76	9.79	....	9.82	10.25	10.81	11.23	12.06	12.52	12.72	12.76
3	9.98	9.78	9.72	....	9.85	10.28	10.82	11.26	12.07	12.54	12.72	12.79
4	9.96	9.75	9.69	9.71	9.84	10.31	10.82	11.29	12.09	12.55	12.72	12.79
5	9.90	9.75	9.68	9.68	9.85	10.35	10.83	11.33	12.12	12.56	12.71	12.77
6	9.90	9.83	9.76	9.66	9.88	10.37	10.85	11.36	12.15	12.57	12.72	....
7	9.93	9.80	9.74	9.65	9.87	10.39	10.87	11.38	12.17	12.58	12.72	....
8	9.92	9.75	9.73	9.65	9.92	10.41	10.88	11.41	12.19	12.59	12.75	....
9	9.90	9.73	9.72	9.64	9.94	10.43	10.89	11.44	12.21	12.60	12.75	....
10	9.90	9.78	9.72	9.65	9.96	10.44	10.90	11.47	12.23	12.61	12.75	....
11	9.88	9.81	9.71	9.65	9.96	10.44	10.91	11.49	12.23	12.61	12.75	....
12	9.88	9.82	9.71	....	9.96	10.45	10.91	11.52	12.25	12.61	12.76	12.79
13	9.85	9.83	9.70	....	10.00	10.48	10.92	11.55	12.26	12.61	12.75	12.79
14	9.83	9.83	9.69	....	9.96	10.49	10.94	11.59	12.28	12.62	12.75	12.79
15	9.80	9.83	9.68	....	9.96	10.52	10.93	11.62	12.29	12.62	12.75	12.80
16	9.80	9.80	9.72	....	10.00	10.54	10.94	11.64	12.31	12.62	12.75	12.81
17	9.81	9.80	9.69	....	10.03	10.58	10.97	11.68	12.34	12.62	12.75	12.81
18	9.82	9.81	9.65	....	10.07	10.59	10.98	11.70	12.35	12.63	12.75	12.81
19	9.91	9.80	....	9.67	10.09	10.60	10.99	11.72	12.36	12.63	12.75	12.80
20	9.83	9.80	....	9.66	10.11	10.62	10.99	11.75	12.39	12.64	12.75	12.79
21	9.82	9.76	9.74	9.66	10.10	10.63	11.00	11.78	12.40	12.66	12.75	12.79
22	9.81	9.73	9.70	9.68	10.09	10.65	11.02	11.80	12.41	12.66	12.76	12.78
23	9.81	9.73	9.69	....	10.10	10.66	11.05	11.83	12.43	12.66	12.76	12.79
24	9.81	9.76	9.69	....	10.11	10.68	11.07	11.85	12.45	12.68	12.76	12.78
25	9.84	9.80	9.87	9.73	10.12	10.71	11.09	11.87	12.46	12.70	12.76	12.77
26	9.88	9.80	....	9.74	10.13	10.73	11.10	11.89	12.47	12.70	12.76	12.76
27	9.83	9.72	....	9.74	10.17	10.75	11.11	11.92	12.46	12.70	12.76	12.76
28	9.82	9.73	9.71	9.78	10.21	10.76	11.12	11.94	12.47	12.70	12.76	12.76
29	9.82	....	9.69	9.78	10.20	10.79	11.12	11.95	12.47	12.70	12.78	12.75
30	9.81	....	9.68	9.82	10.20	10.80	11.16	11.98	12.49	12.70	12.77	12.75
31	9.82	....	9.69	....	10.21	....	11.18	12.00	....	12.70	....	12.76

2.36.28.411 (\*845, p. 277; 886, p. 467; 911, p. 235; 941, p. 269; 949, p. 335). C. A. Tevis. Water level, in feet below land-surface datum, 1943: Jan. 30, 9.64.

2.36.28.421 (\*845, p. 277; \*886, p. 467; 911, p. 235; 941, p. 269; 949, p. 335). C. A. Tevis. Water level, in feet below land-surface datum, 1943: Jan. 30, 10.72.

2.36.28.441 (\*845, p. 277; 886, p. 467; 911, p. 235; 941, p. 269; 949, p. 335). E. C. Sanders. (Formerly owned by J. W. Robinson.) Water level, in feet below land-surface datum, 1943: Jan. 30, 11.60.

a Had been pumping.

2.36.30.111 (\*941, p. 270; \*949, p. 336). L. B. Thornton.

Water level, in feet below land-surface datum, 1943

Date	Water level	Date	Water level	Date	Water level
Jan. 30	0.77	May 24	1.97	Sept. 27	4.14
Mar. 28	1.07	July 26	2.81	Nov. 28	3.46

2.36.34.111 (\*845, p. 278; 911, p. 235; 941, p. 270; 949, p. 336). M. F. Riley. Water level, in feet below land-surface datum, 1943: Jan. 30, 10.85.

2.36.34.221 (\*845, p. 278; \*886, p. 467; 911, p. 235; 941, p. 270; 949, p. 336). W. H. Davenport. Water level, in feet below land-surface datum, 1943: Jan. 30, 6.40.

2.36.34.341 (\*845, p. 278; 886, p. 467; \*911, p. 235; 941, p. 270; 949, p. 336). W. J. Murrill.

Water level, in feet below land-surface datum, 1943

Jan. 30	14.98	July 26	15.95	Nov. 28	17.35
Mar. 28	14.82	Sept. 27	17.08		

2.36.34.421 (\*886, p. 467; 911, p. 235; \*941, p. 270; 949, p. 336). I. F. Dacus. Water level, in feet below land-surface datum, 1943: Jan. 30, 6.67.

2.36.35.212 (\*845, p. 278; \*886, p. 467; 911, p. 235; 941, p. 270; \*949, p. 336). A. E. Whitehead.

Water level, in feet below land-surface datum, 1943

Jan. 30	6.67	May 24	7.28	Sept. 27	9.86
Mar. 28	6.63	July 26	8.78	Nov. 28	9.28

2.37.19.331 (\*886, p. 467; 911, p. 235; 941, p. 270; 949, p. 336). W. H. McDougal.

Water level, in feet below land-surface datum, 1943

Jan. 30	14.36	May 24	17.02	Sept. 27	16.07
Mar. 28	14.61	July 26	15.43	Nov. 28	16.19

2.37.19.341 (\*886, p. 467; 911, p. 235; 941, p. 270; 949, p. 336). C. R. Anderson. Water level, in feet below land-surface datum, 1943: Jan. 30, 14.29.

#### SIERRA COUNTY (HOT SPRINGS AREA)

By C. R. Murray

Water-level measurements were continued in Sierra County in 1943 under the observation-well program established in 1939, at which time the investigation of the thermal waters at Hot Springs was begun by the Federal Geological Survey in cooperation with the State engineer of New Mexico. A general report on the investigation has been prepared for publication in a forthcoming biennial report of the State engineer. Records of water-level fluctuations since 1939 have been published in Geological Survey Water-Supply Papers 911, 941, and 949.

Measurements were made in 14 observation wells in April, July, and October, and these added to 12 other measurements made at irregular times make a total of 54 water-level measurements during the year. Twelve of the observation wells obtain thermal artesian water from the Magdalena limestone; the remaining well is dug only into the alluvium. This shallow well and two of the artesian wells were equipped with automatic water-stage recorders throughout 1943.

#### Fluctuations in water level and artesian head

There was little change in water level or artesian head from November 24, 1942, to April 28, 1943. Measurements made on these two days are practically identical, and the records obtained by the water-stage recorders show only slight fluctuations during this period. Water levels and artesian head began declining about the first of May and continued through September. During the period April 28 to July 8 the average fall in artesian head in the 12 observation wells was 0.22 foot, and during the period July 8 to October 10 it was 0.23 foot. Beginning in October and continuing to the end of the year there was little change in artesian head, the average change during the period October 10, 1943, to January 6, 1944, being a rise of 0.01 foot. An average that better represents the rise during this period, however, is about 0.06 foot, obtained by dropping certain erratic measurements in computing it. The decline in artesian head for the period April 28, 1943, to January 6, 1944, averaged about 0.45 foot. The fluctuations in water level were similar to the changes in artesian head, although smaller. For example, well 6A showed a decline of 0.07 foot during the period April 28 to July 8; a decline of 0.17 foot during the period July 8 to October 10, a rise of 0.09 foot during the period October 10, 1943, to January 6, 1944, and its net change in water level for the period April 28, 1943, to January 6, 1944, was a decline of 0.13 foot.

Hydrographs of artesian head made for 1941, 1942, and 1943 are quite different. In well 6, which can be considered typical of the artesian wells, the artesian head in 1941 was about 0.5 foot above the land surface until September, when it began to rise, reaching 1.6 feet by the end of the year. It remained fairly stationary in 1942 until the end of May, when it rose sharply to nearly 3.00 feet. It then began declining, reaching about 1.0 foot by the end of September and remaining at about that level for the rest of the year. In 1943 the artesian head began declining in May,

decreasing to about 0.6 foot by the end of September and remaining at about that level for the rest of the year. As in the previous years the stage of the Rio Grande at Hot Springs in 1943 was the chief factor in controlling artesian head and water levels.

Water-level measurements

The lot and block numbers in each of the following entries refer to the Hot Springs townsite.

2 (#941, p. 272; 949, p. 337). Lot 17, block 1. H. L. Lockhart. Water levels, in feet above land-surface datum, 1943: Apr. 28, 0.83; July 8, 0.56; Oct. 10, 0.24.

3 (#941, p. 272; 949, p. 337). Lot 17, block 1. H. L. Lockhart. Water levels, in feet above land-surface datum, 1943: Apr. 28, 0.88; July 8, 0.60; Oct. 10, 0.29.

4 (#911, p. 237; 941, p. 272; 949, p. 337). Lot 21, block 2. C. E. James. Water levels, in feet above land-surface datum, 1943: Apr. 28, 0.89; July 8, 0.64; Oct. 10, 0.39.

6 (#911, p. 237; 941, p. 272; 949, p. 337). Lot 12, block 9. J. E. Malone. Water levels, in feet below land-surface datum, 1943: Apr. 28, 0.21; July 8, 0.46; Oct. 10, 0.73.

6 (#911, p. 237; 941, p. 272; 949, p. 337). Lot 4, block 8. C. E. James. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet above land-surface datum, 1943: Jan. 2, 1.15; Nov. 7, 0.52.

Water level at 4:00 a.m., in feet above land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.14	1.13	1.07	1.05	0.96	....	0.79	0.64	....	0.54	0.59
2	1.15	1.07	1.07	1.07	.97	....	.78	.65	....	.54	.59
3	1.12	1.07	1.07	1.07	.95	....	.76	.64	....	.55	.56
4	1.10	1.13	1.07	1.08	....	....	.76	.62	.54	.55	.57
5	1.10	1.09	1.09	1.06	....	....	.76	.63	.56	.58	.62
6	1.12	1.10	1.11	1.06	....	....	.76	.62	.56	.59	.59
7	1.09	1.10	1.12	1.08	....	....	.76	.61	.57	.52	.60
8	1.12	1.07	1.10	1.04	....	.85	.76	.62	.58	.53	.62
9	1.12	1.09	1.13	1.04	....	.82	.71	.62	.59	.56	.68
10	....	1.09	1.12	1.03	....	.81	.72	.62	.58	.55	.60
11	1.10	1.10	1.08	1.05	....	.81	.72	.62	.57	.56	.60
12	1.09	1.11	1.08	1.04	....	.82	.71	.62	.59	.56	.61
13	....	1.06	1.08	1.04	....	.81	.70	.61	.56	.56	.60
14	....	1.10	1.11	1.02	....	.81	.68	.62	.58	.56	.59
15	....	1.12	1.11	1.02	....	.81	.69	.60	.56	.54	.58
16	....	1.07	1.12	.99	....	.81	.66	.59	.57	.55	.58
17	....	1.10	1.07	.99	....	.81	.67	.57	.56	.57	.55
18	....	1.13	1.07	.96	....	.80	.66	.58	.57	.58	.56
19	....	1.08	1.08	....	....	.82	.66	.60	.61	.58	.58
20	....	1.09	1.13	....	....	.81	.67	.56	.56	.59	.58
21	....	1.05	1.08	....	....	.81	.66	.57	.56	.59	.59
22	....	1.09	1.08	.96	....	.81	.66	.57	.58	.58	.61
23	....	1.10	1.08	....	....	.81	.70	.58	.58	.59	.60
24	....	1.09	1.08	....	....	.80	.68	.62	.56	.59	.61
25	....	1.10	1.07	....	....	.80	.68	....	.56	.60	.62
26	....	1.10	1.08	....	....	.77	.66	....	.58	.62	.62
27	....	1.11	1.07	....	....	.80	.67	.60	.59	.58	.68
28	....	1.10	1.06	....	....	.80	.66	....	.59	.59	.60
29	....	1.10	1.07	....	....	.81	.67	....	.60	.55	.63
30	....	1.12	1.07	1.01	....	.81	.66	....	.58	.59	.64
31	....	1:10	....	.99	....	.79	.62	....	....	....	.62

6a (#941, p. 273; 949, p. 338). Lot 4, block 8. C. E. James. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Feb. 23 and Mar. 1, 2, and 12, 1.45; Sept. 20-22, 1.79.

Water level at 4:00 a.m., in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.46	....	1.45	1.48	....	1.55	1.59	1.67	1.74	1.71	1.71	1.66
2	1.46	....	1.45	1.48	....	1.57	1.61	1.68	1.74	1.73	1.72	....
3	1.48	....	1.47	1.48	1.50	1.58	1.62	1.69	1.75	1.74	1.72	....
4	1.50	....	1.48	1.49	1.50	1.60	1.65	1.70	1.77	1.74	1.72	....
5	1.49	....	1.46	1.49	1.51	1.62	1.65	....	1.76	1.74	1.71	1.64
6	1.48	....	1.46	1.48	1.51	1.62	1.64	....	1.76	1.74	1.70	1.64
7	1.48	....	1.46	1.47	1.51	1.62	1.58	....	1.78	1.74	1.72	1.65
8	1.47	....	1.46	1.47	1.53	1.64	1.58	....	1.77	1.74	1.72	1.65
9	1.46	1.46	1.46	1.47	1.54	1.63	1.59	1.73	1.77	1.73	1.71	1.61
10	1.47	1.48	1.46	1.47	1.52	1.63	1.60	1.73	1.77	1.73	1.71	1.46
11	1.48	1.50	1.46	1.49	1.53	1.60	1.62	1.73	1.77	1.73	1.70	....
12	1.48	1.50	1.45	1.48	1.53	1.61	1.62	1.73	1.78	1.72	1.70	1.59
13	1.49	1.52	1.47	1.48	1.54	1.62	1.65	1.74	1.78	1.74	1.69	1.60
14	1.49	1.51	1.47	1.47	1.56	1.64	1.64	1.74	1.78	1.73	1.69	1.62
15	1.48	1.49	1.46	1.47	1.56	1.67	1.62	1.73	1.78	1.73	1.69	1.64
16	1.47	1.50	1.46	1.47	1.57	1.66	1.62	1.76	....	1.73	1.69	1.65
17	1.47	1.49	1.47	1.47	1.57	1.67	1.63	1.76	....	1.74	1.68	....
18	1.47	1.48	1.46	1.48	1.57	1.66	1.65	1.76	....	1.73	1.67	....
19	1.49	1.49	1.47	1.48	1.58	1.66	1.62	1.75	....	1.72	1.67	1.65
20	1.50	1.48	1.47	1.47	1.58	1.67	1.57	1.74	1.79	1.72	....	1.64
21	1.49	1.48	1.49	1.47	1.59	1.68	1.68	1.76	1.79	1.72	....	....
22	1.48	1.46	1.47	1.48	1.59	1.69	1.69	1.76	1.79	1.72	....	....
23	1.48	1.45	1.46	1.49	1.58	1.68	1.60	1.12	1.78	1.72	1.66	....
24	....	1.46	1.46	1.49	1.58	1.69	1.62	1.58	1.69	1.72	1.66	....
25	....	....	1.46	1.49	1.59	1.70	1.62	1.66	1.68	1.73	1.66	....
26	....	....	1.46	1.49	1.59	1.69	1.64	1.69	1.69	1.72	1.65	1.62
27	1.49	....	1.46	1.50	1.60	1.70	1.65	1.70	1.70	1.71	1.66	1.62
28	1.47	....	1.46	1.50	1.60	1.69	1.65	1.72	1.66	1.71	1.66	1.57
29	1.48	....	1.46	1.50	1.60	1.56	1.65	1.72	1.69	1.71	1.66	....
30	1.48	....	1.46	....	1.30	1.58	1.66	1.73	1.70	1.70	1.67	....
31	1.49	....	1.46	....	1.47	....	1.67	1.74	....	1.71	....	....

12 (#911, p. 238; 941, p. 273; 949, p. 339). Lot 8, block 40. Mr. Mathis. Water levels, in feet above land-surface datum, 1943: Apr. 28, 4.16; July 8, 3.93; Oct. 10, 3.27.

18 (#911, p. 238; 941, p. 273; 949, p. 339). Lot 7, block 105. Mrs. J. Schauer. Water levels, in feet below land-surface datum, 1943: Apr. 28, 1.45; July 8, 1.62; Oct. 10, 0.86.

19 (#911, p. 238; 941, p. 273; 949, p. 339). Lot 12, block 105. Bill Green. Water levels, in feet below land-surface datum, 1943: Apr. 28, 0.50; July 8, 0.72; Oct. 10, 1.00.

25 (#911, p. 238; 941, p. 273; 949, p. 339). Lot 4, block 93. Jim Knox. Equipped with water-stage recorder. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Feb. 2, 7.57; Dec. 17, 18, 20, and 24, 8.00.

Water level at 4:00 a.m., in feet below land-surface datum, 1943  
(From recorder charts)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.78	7.62	....	7.70	7.66	7.75	7.77	7.80	7.89	7.93	7.93	7.92
2	....	7.57	....	7.69	7.63	7.75	7.81	7.80	7.88	7.94	7.93	7.92
3	....	7.58	....	7.69	7.63	7.76	7.80	7.85	7.89	7.94	7.93	7.93
4	....	7.58	....	7.70	7.61	7.78	7.84	7.82	7.89	7.94	7.93	7.93
5	7.67	7.56	....	7.68	7.64	7.79	7.82	7.86	7.89	7.93	7.92	7.92
6	7.72	7.63	....	7.65	7.64	7.79	7.75	7.78	7.89	7.93	7.92	7.92
7	7.74	7.77	....	7.64	7.78	7.78	7.76	7.79	7.89	7.93	7.94	7.92
8	7.72	7.74	....	7.65	7.79	7.81	7.79	7.79	7.89	7.93	7.94	7.91
9	....	7.71	....	7.63	7.65	7.78	7.80	7.81	7.90	7.93	7.93	7.90
10	....	7.79	....	7.63	7.79	7.79	7.80	7.85	7.89	7.93	7.93	7.98

## 25. Jim Knox--Continued.

Water level at 4:00 a.m., in feet below  
(From recorder charts).

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	....	7.77	7.70	7.66	7.65	7.79	7.82	7.85	7.90	7.92	7.93	7.98
12	7.70	7.77	7.68	7.66	7.79	7.82	7.82	7.85	7.90	7.92	7.93	7.98
13	7.71	7.80	7.72	7.65	7.78	7.80	7.78	7.86	7.89	7.93	7.93	7.98
14	7.66	7.75	7.70	7.64	7.74	7.82	7.82	7.87	7.89	7.92	7.93	7.98
15	....	7.78	7.69	7.63	7.80	7.76	7.82	7.87	7.90	7.93	7.93	7.99
16	....	7.78	7.72	7.63	7.71	7.79	7.76	7.88	7.91	7.93	7.93	7.99
17	....	7.74	7.72	7.65	7.62	7.76	7.85	7.87	7.92	7.93	7.92	8.00
18	....	7.75	7.70	7.64	7.68	7.76	7.84	7.88	7.92	7.92	7.92	8.00
19	....	7.77	7.73	7.63	7.69	7.78	7.80	7.88	7.91	7.90	7.93	7.99
20	....	7.76	7.73	7.59	7.80	7.77	7.78	7.88	7.92	7.92	7.92	8.00
21	....	7.73	7.75	7.62	7.75	7.79	7.84	7.89	7.91	7.92	7.92	7.99
22	....	....	7.72	7.63	7.76	7.79	7.82	7.88	7.92	7.92	7.92	7.98
23	....	....	7.69	7.64	7.76	7.76	7.84	7.87	7.91	7.92	7.92	7.99
24	....	....	7.70	7.62	7.76	7.79	....	7.88	7.91	7.92	7.92	8.00
25	....	....	7.69	7.63	7.70	7.78	....	7.89	7.92	7.92	7.92	7.99
26	7.64	....	7.68	7.62	7.78	7.81	7.80	7.89	7.92	7.92	7.92	7.99
27	7.63	....	7.68	7.62	7.80	7.81	7.84	7.90	7.92	7.92	7.93	7.99
28	7.61	....	7.68	7.65	7.82	7.80	7.81	7.90	7.92	7.92	7.92	7.99
29	7.63	....	7.68	7.65	7.80	7.72	7.80	7.89	7.93	7.92	7.93	7.98
30	7.61	....	7.66	7.65	7.69	7.80	7.84	7.89	7.93	7.92	7.91	7.98
31	7.61	....	7.68	....	7.71	....	7.79	7.89	....	7.93	....	7.99

27 (#911, p. 239; 941, p. 274; 949, p. 339). Lot 4, block 42. Ben Graham. Water levels, in feet above land-surface datum, 1943: Apr. 28, 2.66; July 8, 2.45; Oct. 10, 2.15.

30 (#911, p. 240; 941, p. 274; 949, p. 340). Lot 1, block 102. George L. Mills. Water levels, in feet below land-surface datum, 1943: Apr. 28, 0.98; Oct. 10, 1.52.

31 (#911, p. 240; 941, p. 274; 949, p. 340). Lot 3, block 104. Mrs. M. J. Scarborough. Water levels, in feet above land-surface datum, 1943: Apr. 28, 1.56; July 8, 1.28; Oct. 10, 0.83.

32 (#911, p. 240; 941, p. 274; 949, p. 340). Lot 4, block 103. Tom Jones. No measurements made in 1943.

33 (#941, p. 274; 949, p. 340). Lot 2, block 106. C. E. James. Water levels, in feet below land-surface datum, 1943: Apr. 28, 0.05; July 8, 0.25; Oct. 10, 0.51.

TORRANCE COUNTY (ESTANCIA VALLEY)

By C. R. Murray

Water-level measurements were continued in 1943 in the observation wells established in 1941 throughout Estancia Valley by the Federal Geological Survey in cooperation with the State engineer of New Mexico. The well program forms part of an investigation of the ground-water resources of the valley. Records of measurements in these wells for 1941 and 1942 have been published in Geological Survey Water-Supply Papers 941 and 949. A comprehensive report by O. E. Meinzer, of the Federal Geological Survey, on the geology and hydrology of Estancia Valley was published in 1911 as Water-Supply Paper 275. In that report, in addition to describing the geologic

conditions which control the occurrence of ground water in the valley, Mr. Meinzer discusses the practical aspects of irrigation by ground water in the area and the interrelated factors, climate and soils.

#### Fluctuations in water level

As Estancia Valley is a closed basin, the position of the water table is dependent primarily on the amount of precipitation received within its boundaries. Other factors influencing the position of the water table are the rate of evaporation from the salt lakes, the rate of transpiration and evaporation from areas in which the depth to water is slight, and the rate at which water may drain from the valley through subsurface channels. As the rate at which natural withdrawal proceeds is probably fairly uniform, variations in precipitation no doubt form the principal factor in producing sudden changes in water level in the valley. The amount of water used for irrigation, stock, and industrial purposes is only a small percentage of that removed by natural processes. In 1943 the United States Weather Bureau reported 10.56 inches of precipitation at Estancia, which is 2.85 inches below normal, and 13.81 inches at McIntosh, about 7 miles north of Estancia, which is 0.31 inch above normal.

As in previous years most of the water used for irrigation was pumped from two wells, Nos. 5.8.17.311 and 5.8.17.323, owned by Ray Brown. About 150 acres was irrigated by these wells. The land was planted to vegetables, some of which were grown for seed, and corn and oats. It is estimated that about 150 acre-feet of water was pumped from these wells. Windmills supplied water for numerous gardens in the valley and were used on wells 9.9.32.121 and 121a by G. L. Deen for raising several acres of alfalfa and potatoes and other garden vegetables.

Measurements were made in approximately 60 wells in February, June, and September, making a total of 174 measurements in 1943. One automatic water-stage recorder was in operation in the valley in 1943. In 53 wells for which records are comparable there was an average decline of 0.09 foot during 1943, 21 wells showing rises and 32 showing declines. Water levels declined in general in the central part of the valley and rose along its eastern and western margins. The few observation wells located in R. 7 E. and those in the eastern part of R. 10 E. uniformly show rises in water levels: Of the rises that occurred along the central part of the valley,

in Rs. 8 and 9 E., practically all were in wells lying north of Estancia, wells west of Witt being especially consistent in showing rises. Water levels in wells south of Estancia declined almost without exception. The greatest decline in water level, 1.45 feet, took place in well 6.8.24.111, 2 miles south of Estancia, and the largest rise, 2.59 feet, in well 6.9.9.222, 4 miles east of Estancia. The latter well has a low specific capacity, yielding only about 0.5 gallon per foot of draw-down, and the water level is strongly affected when the windmill on the well is pumping; therefore, some of the observed rise may be due to the effects of pumping even though no pumping occurred 12 hours previous to the measurements made in February of each of the years 1943 and 1944.

As in other areas in New Mexico water levels are in general at an intermediate stage between their stages previous to the heavy rains of 1941 and the high stages they attained subsequently; however, in many wells no declines have taken place as yet, and water levels are at their highest recorded stages.

It thus appears that water may still be moving into Estancia Valley from the west at a rate greater than normal as a result of the heavy precipitation in 1941, but evaporation and transpiration in the central part of the valley are probably taking place at an accelerated rate, and water levels in this area may continue to decline. Precipitation, in the form of snow, was considerably above normal in Estancia Valley and the Manzano Mountains to the west in December 1943, which makes the outlook for the position of the water table in 1944 favorable.

#### Water-level measurements

4.8.1.144 (\*941, p. 277; 949, p. 341). J. M. Harper. Water levels, in feet below land-surface datum, 1943: Feb. 3, 53.70; June 17, 54.67; Sept. 30, 53.83.

4.8.24.222 (\*941, p. 277; 949, p. 341). M. E. Ottoson. Water levels, in feet below land-surface datum, 1943: Feb. 3, 56.27; June 17, 56.28; Sept. 29, 56.32.

4.9.6.444 (\*941, p. 277; 949, p. 341). Red Ball Camp. Water levels, in feet below land-surface datum, 1943: Feb. 3, 35.60; June 17, 35.77; Sept. 29, 35.97.

4.9.7.441 (\*941, p. 277; 949, p. 341). Water levels, in feet below land-surface datum, 1943: Feb. 3, 52.68; June 17, 52.77; Sept. 29, 53.14.

4.9.8.144 (\*941, p. 277; 949, p. 341). Measurements discontinued.

4.9.10.133 (\*941, p. 277; 949, p. 341). Homer Arm. Water levels, in feet below land-surface datum, 1943: Feb. 3, 17.45; June 17, 17.70; Sept. 29, 17.96.

a Windmill pumping.

- 5.7.15.212 (#941, p. 277; 949, p. 341). Ewing School. Measuring point, beginning June 18, 1943, top of casing, 0.10 foot above land-surface datum. Reference point established June 1943, top of cement slab over well, 0.5 foot above measuring point. South edge of cement blocks around pump is 0.6 foot from top of casing. Water levels, in feet below land-surface datum, 1943: Feb. 3, 116.15; June 18, 116.02; Sept. 30, 115.79.
- 5.8.4.343 (#941, p. 277; 949, p. 341). Water levels, in feet below land-surface datum, 1943: Feb. 3, a/32.24; June 18, 30.13; Oct. 1, 30.90.
- 5.8.11.221 (#941, p. 278; 949, p. 341). J. V. Chamberlin. Water levels, in feet below land-surface datum, 1943: Feb. 3, 9.75; June 17, 9.63; Sept. 29, 10.35.
- 5.8.12.111 (#941, p. 278; 949, p. 341). J. V. Chamberlin. Water levels, in feet below land-surface datum, 1943: Feb. 3, 12.04; June 17, 12.55; Sept. 29, 12.85.
- 5.8.17.241 (#941, p. 278; 949, p. 341). Ray Brown. Water levels, in feet below land-surface datum, 1943: Feb. 3, 40.78; June 18, 41.00; Sept. 30, 41.68.
- 5.8.17.311 (#941, p. 278; 949, p. 341). Ray Brown. Water levels, in feet below land-surface datum, 1943: Feb. 3, 27.10; June 17, 27.67; Sept. 30, 28.18.
- 5.8.17.323 (#941, p. 278; 949, p. 341). Ray Brown. Water levels, in feet below land-surface datum, 1943: Feb. 3, 26.58; June 18, 27.50.
- 5.8.17.334 (#941, p. 278; 949, p. 341). Water levels, in feet below land-surface datum, 1943: Feb. 3, 10.54; June 18, 11.19; Sept. 30, 12.19.
- 5.8.18.224 (#941, p. 278; 949, p. 341). S. W. Hodgson. Water levels, in feet below land-surface datum, 1943: Feb. 3, 43.25; June 18, 43.59; Sept. 30, 44.22.
- 5.8.25.212 (#941, p. 278; 949, p. 341). Mrs. Frances Backer. Water levels, in feet below land-surface datum, 1943: Feb. 3, 22.68; June 17, 23.04; Sept. 29, 23.36.
- 5.8.25.222b (#941, p. 278; 949, p. 341). Mrs. Frances Backer. Water levels, in feet below land-surface datum, 1943: Feb. 3, 23.87; June 17, 24.12.
- 5.8.30.121 (#941, p. 278; 949, p. 342). Water levels, in feet below land-surface datum, 1943: Feb. 3, 23.77; June 17, 24.22; Sept. 30, 25.33.
- 5.8.32.333 (#941, p. 278; 949, p. 342). Frank Meder. Water levels, in feet below land-surface datum, 1943: Feb. 3, 68.62; June 17, 69.45; Sept. 30, 69.74.
- 5.8.36.341 (#941, p. 279; 949, p. 342). Mrs. Iva Dena Moe. Water levels, in feet below land-surface datum, 1943: Feb. 3, 45.37; June 17, b/45.31; Sept. 29, 45.36.
- 5.9.31.331 (#941, p. 279; 949, p. 342). G. L. McBeth. Water levels, in feet below land-surface datum, 1943: Feb. 3, 32.69; June 17, 32.63; Sept. 29, 32.69.
- 5.10.27.444 (#941, p. 279; 949, p. 342). Water levels, in feet below land-surface datum, 1943: Feb. 3, 40.55; June 17, 40.56; Sept. 30, 40.58.
- 5.10.31.133 (#941, p. 279; 949, p. 342). Water level, in feet below land-surface datum, 1943: Feb. 3, 27.66. Measurements discontinued after February 1943.
- 6.8.1.244 (#941, p. 279; 949, p. 342). Water levels, in feet below land-surface datum, 1943: Feb. 4, 21.08; June 17, 21.05; Oct. 1, 21.23.
- 6.8.2.333 (#941, p. 279; 949, p. 342). Measurements discontinued.
- 6.8.3.221 (#941, p. 279; 949, p. 342). Elliscn Timmins. Water levels, in feet below land-surface datum, 1943: Feb. 4, 26.19; June 18, 26.20; Oct. 1, 26.42.

a Windmill pumping.

b Windmill had been pumping.

- 6.8.8.424 (\*941, p. 279; 949, p. 342). Measurements discontinued.
- 6.8.11.433 (\*941, p. 279; 949, p. 342). Pablo Lucero. Water levels, in feet below land-surface datum, 1943: Feb. 3, 5.56; June 17, 6.01; Sept. 30, 7.73.
- 6.8.12.133 (\*941, p. 279; 949, p. 342). Aurileo Brito. Water levels, in feet below land-surface datum, 1943: Feb. 3, 16.90; June 18, 17.13; Sept. 30, 18.07.
- 6.8.15.444 (\*941, p. 279; 949, p. 342). Estancia Cemetery. Water levels, in feet below land-surface datum, 1943: Feb. 3, 29.99; June 18, 29.90; Sept. 30, 30.60.
- 6.8.16.222 (\*941, p. 279; 949, p. 342). McGee Estate. Water levels, in feet below land-surface datum, 1943: Feb. 3, 58.72; June 17, 58.68.
- 6.8.24.111 (\*941, p. 279; 949, p. 342). Aurileo Brito. Well equipped with windmill. Measuring point, beginning Feb. 3, 1943, top of drum forming collar of well, 0.45 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 3, 7.42; June 17, 10.48; Sept. 29, 12.80.
- 6.8.27.134 (\*941, p. 280; 949, p. 342). R. M. Spruill. Water levels, in feet below land-surface datum, 1943: Feb. 3, 19.59; June 17, 19.63; Oct. 1, 20.41.
- 6.8.30.434 (\*941, p. 280; 949, p. 342). J. W. Langley. Water levels, in feet below land-surface datum, 1943: Feb. 3, 30.09; June 18, 31.83; Sept. 30, 32.96.
- 6.9.9.222 (\*941, p. 280; 949, p. 342). Water levels, in feet below land-surface datum, 1943: Feb. 4, 11.93; June 18, 11.13; Sept. 30, a/10.47.
- 6.10.25.344 (\*941, p. 280; 949, p. 342). C. A. Blackwell. Water levels, in feet below land-surface datum, 1943: Feb. 3, 42.07; June 17, 42.05; Sept. 30, 41.95.
- 6.10.27.444 (\*941, p. 280; 949, p. 342). Fred Lick. Water levels, in feet below land-surface datum, 1943: Feb. 3, 20.50; June 17, 20.55; Sept. 30, 20.49.
- 7.7.12.342 (\*941, p. 280; 949, p. 342). De Hart Estate. Water levels, in feet below land-surface datum, 1943: Feb. 4, 40.77; June 18, 40.45; Oct. 1, 40.39.
- 7.7.12.444 (\*941, p. 280; 949, p. 342). C. B. Roland. Water levels, in feet below land-surface datum, 1943: Feb. 4, 43.49; June 18, 43.22; Oct. 1, 43.22.
- 7.8.1.231 (\*941, p. 280; 949, p. 342). Myrtle A. Homan Estate. Water levels, in feet below land-surface datum, 1943: Feb. 4, 26.00; June 18, 26.19; Oct. 1, 26.40.
- 7.8.1.423 (\*941, p. 280; 949, p. 342). Floyd Stump. Water levels, in feet below land-surface datum, 1943: Feb. 4, 24.55; June 18, 24.87; Oct. 1, 24.77.
- 7.8.9.444 (\*941, p. 280; 949, p. 343). Water levels, in feet below land-surface datum, 1943: Feb. 4, 60.76; June 18, 59.95; Oct. 1, 59.72.
- 7.8.10.221 (\*941, p. 280; 949, p. 343). H. W. Rice. Water levels, in feet below land-surface datum, 1943: Feb. 4, 17.17; June 18, 16.98; Oct. 1, 17.10.
- 7.8.10.244 (\*941, p. 280; 949, p. 343). Ted Maxfield. Measuring point, beginning Feb. 4, 1943, top of 3- by 16-inch plank over well, 0.25 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 4, 18.35; June 18, a/18.99.
- 7.8.12.433 (\*941, p. 280; 949, p. 343). W. A. Deatherage. Water levels, in feet below land-surface datum, 1943: Feb. 4, 22.07; June 19, 22.19; Oct. 1, 22.16.

a Windmill had been pumping.

7.8.16.422 (\*941, p. 281; 949, p. 343). B. F. Strotman. Water levels, in feet below land-surface datum, 1943: Feb. 4, 45.04; June 18, a/46.40; Oct. 1, 44.70.

7.8.23.311 (\*941, p. 281; 949, p. 343). James P. Morgan. Water levels, in feet below land-surface datum, 1943: Feb. 4, 17.95; June 18, 17.85; Sept. 29, 18.23.

7.8.23.324 (\*941, p. 281; 949, p. 343). James P. Morgan. Recorder removed Feb. 4, 1943. Water levels, in feet below land-surface datum, 1943: Feb. 4, 2.30; June 18, 2.82; Sept. 29, 3.54.

7.8.23.334 (\*941, p. 281; 949, p. 343). James P. Morgan. Measurements discontinued.

7.8.24.433 (\*941, p. 281; 949, p. 343). R. T. Floyd. Water levels, in feet below land-surface datum, 1943: Feb. 4, 24.02; June 19, 24.14; Oct. 1, 24.16.

7.8.25.411 (\*941, p. 281; 949, p. 343). R. T. Floyd. Measuring point, beginning Feb. 4, 1943, top east edge of drum in well, 1.39 feet below land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 4, 21.30; June 18, 21.34; Oct. 1, 21.44.

7.8.26.121. Mrs. T. M. McCloskey. Shallow dug well, equipped with water-stage recorder Feb. 4, 1943. Highest and lowest recorded water levels, in feet below land-surface datum, 1943: Apr. 6-10, 3.67; Sept. 22, 6.56.

Highest daily water level, in feet below land-surface datum, 1943  
(From recorder charts)

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.77	3.69	3.86	....	4.91	5.50	6.32	6.08	5.15	4.72
2	....	3.77	3.69	3.91	....	4.92	5.53	6.34	6.04	5.13	4.72
3	....	3.77	3.68	3.94	....	4.94	5.56	6.35	6.00	5.11	4.72
4	....	3.76	3.68	3.95	....	4.96	5.60	6.37	5.96	5.09	4.71
5	3.95	3.75	3.68	3.98	....	4.97	5.63	....	5.92	5.06	4.69
6	3.91	3.75	3.67	4.00	....	4.99	5.66	....	5.89	5.05	4.68
7	3.89	3.76	3.67	4.02	....	5.01	5.68	6.41	5.84	5.04	4.67
8	3.87	3.75	3.67	4.04	....	5.03	5.71	6.43	5.80	5.03	4.66
9	3.86	3.75	3.67	4.06	....	5.05	5.74	6.45	5.77	5.01	4.69
10	3.85	3.74	3.67	4.08	....	5.08	5.77	6.46	5.73	5.00	4.60
11	3.86	3.74	3.68	4.09	....	5.10	5.80	6.47	5.70	4.98	4.62
12	3.85	3.74	3.68	4.11	....	5.12	5.83	6.49	5.68	4.96	4.63
13	3.85	3.74	3.69	4.12	....	5.15	5.87	6.51	5.65	4.94	4.61
14	3.84	3.73	3.69	4.14	....	5.18	5.90	6.52	5.62	4.92	4.61
15	3.84	3.72	3.69	4.15	....	5.16	5.92	6.53	5.59	4.91	4.61
16	3.83	3.72	3.69	4.17	....	5.20	5.94	6.54	5.56	4.90	4.61
17	3.82	3.72	3.70	4.19	4.60	5.22	5.97	6.54	5.53	4.89	4.60
18	3.81	3.71	3.71	4.21	4.61	5.24	6.00	6.54	5.50	4.87	4.59
19	3.81	3.71	3.71	4.22	4.63	5.26	6.03	6.54	5.48	4.86	4.58
20	3.81	3.72	3.70	4.25	4.65	5.27	6.05	6.55	5.46	4.85	4.57
21	3.81	3.72	3.70	4.23	4.67	5.28	6.07	6.55	5.42	4.83	4.55
22	3.80	3.71	3.71	4.24	4.69	5.29	6.10	6.56	5.39	4.81	4.55
23	3.79	3.71	3.72	4.23	4.71	5.31	6.12	6.55	5.37	4.81	4.54
24	3.79	3.70	3.73	4.23	4.74	5.33	6.14	6.48	5.34	4.79	4.54
25	3.79	3.70	3.75	4.24	4.77	5.34	6.16	6.40	5.32	4.78	4.53
26	3.79	3.70	3.77	....	4.79	5.36	6.18	6.31	5.29	4.77	4.50
27	3.78	3.70	3.79	....	4.82	5.38	6.21	6.22	5.26	4.76	4.50
28	3.77	3.70	3.82	....	4.85	5.40	6.23	6.17	5.23	4.75	4.60
29	....	3.69	3.84	....	4.84	5.42	6.26	6.14	5.20	4.75	4.50
30	....	3.69	3.87	....	4.89	5.44	6.28	6.12	5.18	4.73	4.60
31	....	3.68	....	....	....	5.46	6.30	....	5.16	....	4.60

7.8.27.221 (\*941, p. 282; 949, p. 343). Wagner Estate. Water levels, in feet below land-surface datum, 1943: Feb. 4, 19.35; June 18, 19.28; Sept. 29, 19.60.

7.8.33.123 (\*941, p. 282; 949, p. 344). B. A. Kincheloe. Water levels, in feet below land-surface datum, 1943: Feb. 4, 30.08; June 18, 30.20; Sept. 30, 30.69.

a Windmill had been pumping.

7.8.35.424 (#941, p. 282; 949, p. 344). E. C. Hays Estate. Water levels, in feet below land-surface datum, 1943: Feb. 4, 53.03; June 18, 52.98; Sept. 30, 52.82.

7.8.35.111 (#941, p. 282; 949, p. 344). Homer Voss. Water levels, in feet below land-surface datum, 1943: Feb. 4, 18.38; June 18, 18.52; Oct. 1, 18.67.

7.8.35.332 (#941, p. 282; 949, p. 344). Homer Voss. Water levels, in feet below land-surface datum, 1943: Feb. 4, 15.32; June 18, 15.42; Oct. 1, 15.88.

7.9.5.211 (#941, p. 282; 949, p. 344). Water levels, in feet below land-surface datum, 1943: Feb. 4, 19.15; June 18, 19.20; Oct. 1, 19.48.

7.9.10.333 (#941, p. 282; 949, p. 344). Mrs. Minnie Farnsworth. Water level, in feet below land-surface datum, 1943: June 19, 15.00.

8.8.10.244 (#941, p. 282; 949, p. 344). Dennis Willie. Water levels, in feet below land-surface datum, 1943: Feb. 4, 65.21; June 19, 65.35; Oct. 1, 65.49.

8.8.26.222 (#941, p. 282; 949, p. 344). Water levels, in feet below land-surface datum, 1943: Feb. 4, 7.11; June 18, 7.20; Oct. 1, 11.90.

8.9.8.111 (#941, p. 282; 949, p. 344). Water levels, in feet below land-surface datum, 1943: Feb. 2, 23.82; June 19, 24.23; Oct. 1, 24.57.

8.9.29.111 (#941, p. 282; 949, p. 344). Mrs. Harry Bigger. Water levels, in feet below land-surface datum, 1943: Feb. 4, 22.17; June 18, 21.28.

8.9.29.111a. Mrs. Harry Bigger. Abandoned windmill well. Measuring point, top of 2- by 2-foot concrete collar around well, 0.75 foot above land-surface datum. Water levels, in feet below land-surface datum, 1943: June 18, 21.64; Oct. 1, 21.93.

9.8.25.111 (#941, p. 282; 949, p. 344). Measurements discontinued.

9.8.26.121 (#941, p. 282; 949, p. 344). Water level, in feet below land-surface datum, 1943: Feb. 4, 19.60.

9.9.32.131 (#941, p. 282; 949, p. 344). G. L. Deen. New measuring point, established June 19, top of 10-inch casing, 0.3 foot below land-surface datum. Water levels, in feet below land-surface datum, 1943: Feb. 4, 5.90; June 19, 5.75.

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a Windmill pumping.

