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Department of the Interior

Geological Survey

Ground-water resources of Peeples Valley, Arizona

by

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Prepared in cooperation with
Arizona State Land Department
O. C. Williams, Commissioner

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CONTENTS

TABLES

ILLUSTRATIONS

INTRODUCTION

Purpose and cooperation

The ground-water resources and geology of Peeples Valley were studied during 1946 by the Geological Survey, United States Department of the Interior. This work was financed under a cooperative agreement between the Arizona State Land Commissioner and the Federal Geological Survey. The work was performed as a part of a State-wide program to obtain basic data needed by the Arizona State Legislature in connection with the drafting of adequate legislation for the control of the use of ground-water supplies in the State.

Peeples Valley is typical of many small basins in the northern part of the State, and therefore a detailed study was made of the valley to serve as a guide for investigations of other similar basins. Field work was done by S. C. Brown, geologist, and H. M. Babcock and A. M. Sourdry, engineers. The work was under the direct supervision of S. F. Turner, District Engineer (Ground Water), of the Federal Geological Survey.

Location

Peeples Valley is a high mountain valley in the Weaver Mountains, about 30 miles southwest of Prescott, Arizona. It lies entirely within Yavapai County and is largely in T. 11 N., Rs. 4 and 5 W. The valley is drained by Genung and Poplar Washes, which converge at the narrows in the eastern end of the basin and flow into Kirkland Creek. The drainage area of the basin is about 55 square miles.

Climatological data

No records of the temperature or rainfall in Peeples Valley are available. According to records of the U. S. Weather Bureau, the mean average temperature at Stanton, which is the nearest comparable area and has an elevation of 3,500 feet, is 63 degrees Fahrenheit. The precipitation at Stanton is 14.5 inches a year. As the elevation of the cultivated portion of Peeples Valley is about 4,500 feet, or 1,000 feet higher than Stanton, it is probable that the mean annual temperature is lower and the annual rainfall is higher in Peeples Valley than at Stanton.

Agricultural development

Stock raising is the principal industry in Peeples Valley, although some land is farmed. Some irrigation is practiced in the valley to carry the crops through the dry season during the late spring and early summer. A total of about 150 acres of land is under irrigation. The crops raised are wheat, corn, vegetables, and fruit. The annual use of water for irrigation probably does not exceed 1 acre-foot per acre of cultivated land.

All the water used for irrigation in the valley is supplies from wells. In 1946 ten wells were pumped for irrigation. Table 1 presents records of all the irrigation wells and of some of the domestic wells and springs in the valley. The map, plate 1, shows the locations of all these wells and springs.

GEOLOGY AND ITS RELATION TO GROUND WATER

Maps and field work

Field work was done during the latter part of June and the early part of July 1946. Geology was mapped in the field on contact prints of aerial photographs. Elevations and locations of wells were obtained with the plane table. The base map was made directly from the contact prints and the plane-table survey, because no reliable base map was available. The areal geology and the two geologic sections of Peeples Valley are shown on plate 1.

Geologic history

Little is known of the pre-Tertiary geologic history of the basin. Probably during Tertiary time, boulders and other detrital materials were deposited in alluvial fans at the base of the Weaver Mountains. The alluvial deposits are termed here "fanglomerate" or "older alluvial fill".

Subsequent erosion cut deep, narrow canyons through the older alluvial material and into the underlying granite. The erosion cycle was then interrupted by violent volcanic action, sometime during the Tertiary period, and a series of lava flows entered the basin from the south. The first of these lava flows filled parts of the deep narrow canyons, forming a dam along the east side of the basin. This caused the formation of a deep lake, which filled rapidly with sediment. Debris eroded from the surrounding mountains during flash floods was deposited in the lake as poorly-sorted alluvium and boulders. Moderate flows of water deposited sorted gravel, sand, and silt lenses. These deposits that were laid down after the volcanic flows occurred are of Tertiary and Quaternary age. They are termed "younger alluvial fill".

The present drainage pattern of the basin is essentially the same as that which existed prior to the lava flows.

Geologic structure

There are numerous faults in the granite. One fault was traced into the older alluvial fill (sec. 10, T. 11 N., R. 5 W.). No faults were traced into the younger alluvial fill or into the lava flows.

The lava flows range widely in thickness and dip gently north or northeast. There is no evidence that the lava has been tilted, because the dips are not excessive for lavas laid down on a slope. The variable thickness of the lava flows is probably due to the uneven topography that existed before the flows occurred.

Small springs occur along fracture planes, joints, and decomposed zones in the granite. These springs usually produce sufficient water for wild game or a few head of cattle.

The most important structural feature of the basin with relation to ground water is the barrier of volcanic rocks in secs. 25 and 26, T. 11 N., R. 5 W., and in secs. 18, 19, and 30, T. 11 N., R. 4 W. This barrier forces the ground water to the surface, forming Genung Spring (No. 54, pl. 1) and other smaller springs. The smaller springs have discharges of 1 to 10 gallons per minute; the measured discharge of Genung Spring was 230 gallons per minute on July 8, 1946.

Stratigraphy

The physical character and water-bearing properties of the rock formations exposed in Peeples Valley are briefly discussed in this report, beginning with the oldest formations.

Yavapai schist (pre-Cambrian)

The Yavapai schist[1], of pre-Cambrian age, is exposed on the western

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1/ Jaggar, T. A., Jr., and Palache, Charles, U. S. Geol. Survey Geol. Atlas, Bradshaw Mountains folio (No. 126), p. 1, 1905.

side of Peeples Valley. The main body of the schist trends about N. 10° E., and it is over half a mile wide on the surface. It has an approximate thickness of 2,850 feet, with vertical foliation that has a strike from N. 10° E. to N. 35° E. The northern and southern ends of the main body of the schist are in fault contact with granite. Large inclusions of schist occur in the granite near the southern fault contact. Numerous intrusive dikes of pegmatite and aplite occur in the schist near the eastern contact with the granite. These dikes have a maximum width of 5 feet but most of them are 2 feet or less in width.

No wells or springs were found in the Yavapai schist.

Generalized section of Yavapai schist from west to east
(N½ sec. 21, T. 11 N., R. 5 W.)

Thickness (feet)	
± 100	Medium-gray schist with numerous pegmatite dikes along the bedding planes. Schist somewhat sericitized. Strike N. 15° E. Dip vertical.
± 50	Silvery sericite schist. Several zones contain phenocrysts of hornblende. Strike N. 15-20 E. Dip vertical.
± 200	Grayish-brown to black thinly-banded, slaty schist; probably metamorphosed clays. Narrow band of quartzite at west end. Strike N. 20-30° E. Dip vertical.
± 2,500	Greenish-black chlorite schist (greenstone) with narrow brown lenticular bands. The western one-fourth of this zone is cut by numerous pegmatite dikes and by a few scattered aplite dikes. Strike N. 10-35° E. Dip vertical.

Granite (pre-Cambrian)

The granite exposed along the west side of Peeples Valley is probably of the same age as the pre-Cambrian Bradshaw granite[2] exposed in the Bradshaw quadrangle 15 miles to the east. The granite in Peeples Valley is a coarse plutonic rock. Fresh surfaces are medium to light bluish-gray in color and weathered surfaces range from buff to brown. The main constituents are transparent to milky quartz, light gray to white feldspar (probably orthoclase and microcline), biotite, and small amounts of epidote. Most of the grains reach a maximum of 0.3 inch in diameter, and locally feldspar crystals up to 1.5 inches in diameter are found.

Three prominent felsite dikes strike approximately N. 45° W. The largest of these dikes is more than 5 miles long. The northwestern end of the largest dike dies out in the Yavapai schist and the southeastern end disappears under the Tertiary volcanic rocks near Yarnell. The two smaller dikes lie on echelon to the north of the large dike. These smaller dikes pinch out into the schist on the northwest and into the granite on the southeast.

The granite has a well-defined joint system that is plainly evident in the aerial photographs. The major sets of joints strike N. 50° W. and N. 30° E., respectively. The granite weathers into massive, rounded

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2/ Jaggar, T. A., Jr., and Palache, Charles, op. cit., p. 2, 1905.

Lindgren, W., Ore deposits of the Jerome and Bradshaw Mountains quadrangles, Ariz.: U. S. Geol. Survey Bull. 782, p. 15, 1926.

boulders and locally is highly decomposed. Small springs usually occur along joint and fracture planes and in the decomposed zones. Most of these springs are seasonal but a few of them are perennial.

Granitic complex (pre-Cambrian)

East and southeast of the Yavapai schist is a complex of pre-Cambrian granitic rocks which are probably equivalent to the rocks of the Crooks complex[3] of the Bradshaw quadrangle. Granite is the most abundant rock; it contains many small intrusive masses of gabbro and felsite with epidotized zones. Immediately east of the largest felsite dike (see pl. 1) is a well-defined gneissoid and schistose zone of felsite, granite, and gabbro, in order of abundance. The strike of the schistosity in this zone is about N. 80° E. and the dips range from 70° N. to vertical.

The rocks of the complex are relatively unimportant in their relation to ground-water supplies. However, a few very small seep-springs occur along joints and in weathered zones.

Older alluvial fill (Tertiary)

The older alluvial fill of Peeples Valley is of probable Tertiary age. This material is about 100 feet in thickness, and it is principally a poorly-sorted, non-stratified boulder conglomerate. The boulders reach a maximum of 8 inches in diameter and consist of granite, felsite, gabbro, quartzite, milky quartz, and schist. Wells in this material produce sufficient water for stock and domestic use.

Volcanic rocks (Tertiary)

The volcanic rocks in Peeples Valley are probably of Tertiary age. Along the east side of the valley is a series of basalt and andesite flows which have a gentle dip to the northeast. The flows range in thickness from 10 feet to several hundred feet and are separated by poorly to moderately well-stratified tuffs and agglomerates. The upper parts of the flows are usually vesicular.

Reddish-brown to maroon volcanic agglomerate is exposed in a highway cut at the north end of the valley (NW cor. sec. 18, T. 11 N., R. 4 W.). Boulders of basalt and other basic fragmental material up to 30 inches in diameter were observed. These boulders are moderately cemented with tuffaceous material.

Six wells have been dug or drilled in the volcanic rocks but none of these wells produce more than enough water for stock or domestic use.

Younger alluvial fill (Tertiary and Quaternary)

The younger alluvial fill of Peeples Valley was deposited after the lava flows dammed the basin and this fill is probably of both Tertiary and Quaternary age. A comparatively thin layer of Recent material forms the uppermost part of the fill. The fill is composed of alternating beds of silt, sand, gravel, and scattered boulders, and it is several hundred feet thick. The deepest well in the valley (well 18, SE¼SE¼ sec. 23, T. 11 N., R. 5 W.) was drilled in this material. The depth of this well is reported to be 500 feet. Well 32, less than half a mile south of the deep well, is reported to have encountered granite at 100 feet. It is therefore evident that deep canyons were eroded into the old granite surface before the lava flows dammed the basin. Well 18, which did not strike bedrock, probably is

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3/ Jaggar, T. A. Jr., and Palache, Charles, op. cit., 1905.

not in the deepest portion of the basin, and it is believed that the greatest thickness of the younger alluvial fill is more than 500 feet.

The younger alluvial fill is the only formation in Peeples Valley that yields sufficient water for irrigation. Existing wells in this material produce up to 475 gallons per minute.

GROUND-WATER RESOURCES

Occurrence of ground water

The sands and gravels of the younger alluvial fill comprise the principal water-bearing formation in Peeples Valley, and the fill is the source of water for all the irrigation wells. Ground water is also found in limited quantities in the fractured and weathered zones of the granite, in the older alluvial fill, and in the volcanic rocks. Several domestic and stock wells have been constructed in these materials.

Source of ground water

Recharge of the younger alluvial fill is largely from seepage losses from flows in the many small washes and ravines. Most of this recharge occurs near the contact between the hard rocks and the alluvial fill. Some recharge also occurs as infiltration from precipitation and from water applied to the land for irrigation.

Movement of ground water

A water-table contour map was prepared for June 1946 (see pl. 1) to assist in determining the origin and direction of flow of the ground water. The water-level contours show that the general slope of the water table is from west to east. The ground water moves in a uniform manner down the slope of the water table, perpendicular to the contours, from the upper limits of the younger alluvial fill to the lower end of the valley. There the ground water is forced to the surface by the lava barrier, forming several springs and seeps.

Discharge of ground water

Ground water is discharged from the basin by pumping and by natural discharge. The following tabulation gives a conservative estimate of the amounts of water discharged annually from the basin:

	Acre-feet
Loss from irrigation use (evaporation and transpiration)	110
Surface flow from basin	90
Underflow from basin	60
Transpiration loss from natural vegetation	170
Total	430

Pumpage

In June 1946 there were 10 irrigation wells in the valley. They range in discharge from about 20 gallons per minute to 475 gallons per minute, in depth from 30 to 250 feet, and in diameter from 6 to 40 inches. The discharge of each well was measured or estimated and information on the period of operation of each well was obtained from the well owner or operator. From these data it was calculated that about 150 acre-feet of water was pumped from the valley in 1945. On the basis of experiments conducted in the Safford and Duncan-Virden Valleys[4], it was estimated that about 75 percent of the water pumped for irrigation was discharged from the valley through evaporation and transpiration. Therefore, of the 150 acre-feet of water pumped from the ground about 100 acre-feet was lost from the valley and the remaining 40 acre-feet was returned to the ground-water reservoir.

Natural discharge

Natural discharge from the basin occurs as surface flow and underflow out of the basin, and by evaporation and transpiration.

In June 1946 the measured surface flow leaving the basin was 55 gallons per minute at a point half a mile below the junction of Poplar and Genung Washes. If this rate continued for 12 months, the total flow would be about 90 acre-feet. It is believed that the discharge of surface water from the basin exceeds 90 acre-feet per year because June is a dry month and the loss of water by evaporation and transpiration is large during this season.

The underflow leaving the basin was estimated to be about 40 gallons per minute, or about 60 acre-feet per year, on the basis of a cross-sectional area of 1,500 square feet, a slope of 45 feet per mile, and an estimated coefficient of permeability of 5,000 gallons per day per square foot.

The amount of water used by evaporation and transpiration in areas of phreatophyte growth was estimated to be at least 170 acre-feet per year. This estimate was based upon an area of 34 acres of phreatophytes, measured from aerial photographs, and upon a rate of consumption of 5 acre-feet of water per acre per year[5]. The amount of water evaporated and transpired in areas surrounding the small springs and seeps along Poplar Wash was not included in this estimate.

An indication of the amount of water used by phreatophytes is given by the loss in flow of Genung Wash. In June 1946 Genung Spring (No. 54, pl. 1) had a measured discharge of 230 gallons per minute. This flow sinks into the sand and gravel fill of Genung Wash, and most of it is used by phreatophytes along the channel of the wash.

QUALITY OF WATER

Chemical character of the ground water

The quality of the ground water of Peeples Valley was determined by analyzing 19 samples of water collected from wells and springs. All the analyses are shown in table 2. The total dissolved solids in the water range from 94 to 444 parts per million, and most of the samples contained between 200 and 300 parts per million. The water is generally hard and contains mainly calcium, magnesium, and bicarbonate.

The most highly-mineralized water came from a spring (No. 53, pl. 1) in the granitic rocks along the west side of the valley. The water of lowest concentration came from a well (No. 27, pl. 1) in the volcanic rocks along the east side of the valley. Water in the younger alluvial fill is

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4/ Turner, S. F., and others, Water resources of Safford and Duncan-Virden Valleys, Ariz. and N. Mex.: U. S. Geol. Survey (mimeographed), p. 28, 1941.

5/ Turner, S. F., and others, op. cit., p. 30, 1941.

rather uniform in quality, although it contains less dissolved matter at the upper end of the valley than at the lower end.

Relation of quality of water to its use

All the waters sampled in Peeples Valley would be considered of "excellent to good" quality for irrigation, according to the standards of Wilcox and Magistad[6] Most of the waters are rather hard but they do not contain sufficient amounts of dissolved matter to be otherwise objectionable for domestic use. The fluoride content of ground waters in the valley is generally low, although water from one spring (No. 53, table 2) has 1.4 parts per million. This is within the limit for acceptable water.

Discharge of dissolved solids from the basin

Natural discharge of dissolved salts from Peeples Valley now occurs as surface flow and underflow out of the valley. Slow accumulation of salts in the soil and ground water of the valley will probably result if water is pumped to such an extent that underflow out of the valley is stopped. This accumulation of salts would be very slow because of the low dissolved-solids content of the ground water.

SUMMARY AND CONCLUSIONS

Peeples Valley occupies a basin formed in the hard rocks of the Weaver Mountains. The outlet to the valley was dammed by a lava flow that created a deep lake. Gravel, sand, and silt eroded from the mountains eventually filled the lake, and these deposits are the principal water-bearing beds in the valley.

The water in the valley is derived from seepage losses from flows in the small washes, from infiltration of precipitation, and from water used for irrigation. Ground water moves in a uniform manner from the upper limits of the alluvial fill to the lower end of the valley. At least 430 acre-feet of water is discharged from the ground-water reservoir each year through irrigation, by surface flow and underflow out of the valley, and by transpiration from natural vegetation and evaporation. The ground water is only moderately mineralized and is suitable for domestic use.

The total amount of recharge to the ground-water reservoir is equal to the total amount of water discharged plus the gain or minus the loss in ground-water storage. Assuming no change in ground-water storage, the total amount of recharge, therefore, is estimated to be at least 430 acre-feet annually. About 320 acre-feet annually is lost as surface flow and underflow leaving the valley, and as water consumed by evaporation and by transpiration from the natural vegetation. This water is now lost from the valley. It represents the approximate amount of water available for future development and use. Substantial additional pumpage of ground water, however, would lower the water table and decrease or stop the flow from the existing springs and seeps. The maximum quantity can be developed only by means of wells distributed so as to stop the natural discharge.

6/ Wilcox, L. V., and Magistad, O. C., Interpretation of analyses of irrigation waters and the relative tolerance of crop plants: U. S. Dept. Agr., Bur. Plant Industry, Soil and Agr. Research Administration; Riverside, Calif. Mimeographed, 8 pp., May 1943.

The time available for the investigation was not sufficient to determine the trend of the ground-water fluctuations. Water-level measurements should be made periodically over a number of years. If additional development of ground water takes place in the valley, accurate records should be kept of the amount of water pumped and of the fluctuations of the water table, as a check against overdevelopment.

Table 1. Records of wells and springs in Peeples Valley, Yavapai County, Arizona
(All wells are drilled unless otherwise noted in "Remarks" column.)
(Numbers 1-32 are wells, 50-54 are springs.)

Well No.	Location	Owner	Driller	Altitude above sea level (feet)	Depth of well (feet)	Diameter of well (in.)
	T. 11 N., R. 4 W.					
d/ 1	NE¼SW¼ sec. 7	Hays	-	-	-	-
d/ 2	SW¼NE¼ sec. 19	-	-	-	-	6
d/ 3	NW¼NW¼ sec. 19	Peeples Valley School	-	-	-	-
4	SW¼NW¼ sec. 19	Martin Norris	-	4453.0	40	6
5	do.	Dan Resner	-	4454.0	47	6
6	NW¼SW¼ sec. 19	E. S. Genung	-	4449.2	-	72
d/ 7	NW¼NW¼ sec. 29	Young	-	-	105	6
	T. 11 N., R. 5 W.					
8	SW¼SW¼ sec. 11	R. J. McChesney	A. H. Vaughn	4518.6	-	-
9	SW¼SW¼ sec. 13	Hays	-	4475.4	-	10
d/ 10	NE¼NE¼ sec. 13	do.	-	4436.0	-	6
d/ 11	NW¼NE¼ sec. 14	R. J. McChesney	-	4501.4	60	6
12	NE¼NW¼ sec. 14	do.	C. W. Freelove	4501.9	-	-
13	SW¼NW¼ sec. 23	W. E. Thimmes	-	4520.2	-	20
d/ 14	SW¼NW¼ sec. 25	do.	Muse	4532.1	90	6
15	NE¼SW¼ sec. 23	do.	-	4501.6	40	6
d/ 16	SE¼SW¼ sec. 25	R. C. Wilson	-	4521.8	105	-
d/ 17	SE¼SE¼ sec. 25	Hays-Zwang	-	4486.4	-	-
18	do.	Hays	-	4483.1	500	8
d/ 19	NE¼SW¼ sec. 24	do.	-	4469.2	250	10

a/ Measuring point was usually top of casing, top of pump base, top of water-pipe clamp, or top of well curb.

b/ C, cylinder; T, turbine; Cf, centrifugal; G, gasoline; H, hand; W, windmill; E, electric; number indicates horsepower.

Records obtained by S. C. Brown and A. M. Sourdry

Well No	Water level: Depth below measuring point (feet) a/	Water level: Date of measurement	Pump and power b/	Use of water c/	Temp. °F.	Remarks
1	0.0	May 24, 1946	C,G	D	-	Well flows during winter and spring.
2	33.4	May 21, 1946	C,H	N	61	-
3	-	-	C,W	D	58	-
4	-	-	T,E 3/4	D,I	-	-
5	18.5	July 3, 1946	C,W	D,S	-	-
6	16.6	May 23, 1946	T,G	I	-	Dug to 20 feet; drilled to unknown depth.
7	99.0	do.	C,W	S	60	Reported soil, 0-14 feet; conglomerate, 14-30 feet.
8	36.8	July 5, 1946	T,G	S,I	-	Owner reports well operated 100 hours in 1945.
9	12.5	July 2, 1946	C,W	S	-	-
10	7.0	May 24, 1946	C,W	S	60	Well flows during winter and spring.
11	30 e/	-	C,W	S	60	-
12	23.5	July 5, 1946	T,G	I	-	-
13	45.6	July 3, 1946	None	N	-	Uncompleted July 1946.
14	60 e/	July 1946	C,W,G	D,S	-	-
15	31.8	July 3, 1946	C,W	N	-	-
16	40 e/	July 1946	C,G	-	60	-
17	26.2	May 22, 1946	C,W	S	60	-
18	20.7	July 2, 1946	None	N	-	Formerly irrigation well.
19	6 e/	July 1946	T,G 30	S,I	60	Measured discharge, 475 gallons a minute, July 1946.

c/ D, domestic; I, irrigation; S, stock; N, not used.
d/ See table 2 for analysis of water.
e/ Water level reported.

Table I. Records of wells and springs in Peeples Valley, Yavapai County, Arizona-Continued

Well No.	Location	Owner	Driller	Altitude above sea level (feet)	Depth of well (feet)	Diameter of well (in.)
d/ 20	NE¼NE¼ sec. 25	C. Huddleston	-	4467.2	28	40
d/ 21	do.	J. W. Howlett	-	4464.1	-	40
22	do.	89er Cafe	-	4471.6	-	48
23	do.	Ed. Cravey	-	4467.2	36	36
24	SW¼NE¼ sec. 25	W. E. Entwistle	-	4474.1	30	8
25	SE¼NE¼ sec. 25	Towne	-	4473.6	-	12
26	NE¼SE¼ sec. 25	do.	-	-	166	8
d/ 27	do.	do.	-	-	55	8
28	SW¼SE¼ sec. 25	do.	-	4490.5	-	6
d/ 29	NE¼SE¼ sec. 26	Statler	-	4513.9	100	-
d/ 30	NE¼SE¼ sec. 35	Hays	-	4526.6	-	6
d/ 31	SE¼SE¼ sec. 35	Van Cleve	-	-	21	48
32	SE¼NE¼ sec. 26	Statler	-	4577.6	163	-
	T. 11 N., R. 4 W.					
50	SE¼NW¼ sec. 18	Hays	-	4412.4	-	-
51	SE¼SW¼ sec. 18	do.	-	4408.2	-	-
52	NE¼NW¼ sec. 19	do.	-	4413.2	-	-
	T. 11 N., R. 5 W.					
d/ 53	SW¼NE¼ sec. 15	R. J. McChesney	-	-	-	-
54	NE¼SW¼ sec. 24	E. S. Genung	-	4458.7	-	-
55	SE¼SE¼ sec. 17	-	-	-	-	-

a/ Measuring point was usually top of casing, top of pump base, top of water-pipe clamp, or top of well curb.

b/ C, cylinder; T, turbine; Cf, centrifugal; G, gasoline; H, hand; W, windmill; E, electric; number indicates horsepower.

Well No.	Water level: Depth below measuring point (feet) a/	Water level: Date of measurement	Pump and power b/	Use of water c/	Temp. °F.	Remarks
20	18.6	May 23, 1946	Cf,G 10	D	59	Dug well.
21	18.6	do.	Cf,G 50	I	-	Do.
22	22.9	July 5, 1946	T,E 3/4	D	-	Do.
23	23.1	July 3, 1946	Cf,G	I	-	Reported discharge, 700 gallons a minute.
24	25.2	July 2, 1946	T,E 3/4	D,I	-	Reported well produces 60,000-70,000 gallons a week.
25	26.8	July 5, 1946	T,E	I	-	Reported struck water at 30 feet.
26	28.8	do.	None	N	-	-
27	27.8	do.	-	I	55	Measured discharge, 20 gallons a minute, July 1946.
28	35 e/	July 1946	C,W	S	-	-
29	-	-	C,W	D	-	-
30	32.0	May 22, 1946	C,W	S	-	-
31	13 e/	July 1946	C,H	S	55	Dug well.
32	-	-	T,E	D	-	Reported struck granite at 100 feet.
50	-	-	-	S	-	-
51	-	-	-	S	-	Estimated flow, 1 gallon a minute.
52	-	-	-	S	-	Estimated flow, 5 gallons a minute.
53	-	-	-	S	-	Flows into stock tank.
54	-	-	-	S	-	Genung Spring. Measured discharge, 230 gallons a minute. 7/8/46.
55	-	-	-	S	-	Ground-water seepage in Genung Wash. Measured discharge, 55 gallons a minute, June 18, 1946

c/ D, domestic; I, irrigation; S, stock; N, not used.
d/ See table 2 for analysis of water.
e/ Water level reported.

Table 2. Analyses of water from wells and springs in Peeples Valley, Yavapai County, Arizona
Numbers correspond to numbers given in table 1 and locations shown on plate 1.
Analyses by Geological Survey. (Parts per million except specific conductance.)

No.	Date of collection (1946)	Depth (feet)	Specific conductance ($K \times 10^5$ at 25°C.)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$
1	May 24	-	53.5	71	17	25	288	16	30	0.4	4.4	306	247
2	May 21	-	70.0	78	17	52	340	29	48	0.2	0.2	392	264
3	May 24	-	48.4	-	-	-	209	-	12	0.2	-	-	-
7	May 23	105	42.2	-	-	-	258	-	11	-	-	-	-
10	May 24	-	37.9	-	-	-	196	-	22	-	-	-	-
11	do.	60	40.1	-	-	-	197	-	11	0.8	-	-	-
14	May 22	90	40.8	-	-	-	229	-	9	0.8	-	-	-
16	do.	105	65.6	97	12	32	372	18	21	0.6	9.3	373	292
17	do.	-	48.4	66	12	21	245	16	22	0.4	13	271	214
19	May 23	250	33.7	-	-	-	182	-	15	-	-	-	-
20	do.	28	45.3	54	14	26	234	21	19	0.4	7.5	257	192
21	June 18	32	47.7	-	-	-	252	-	19	-	-	-	-
27	do.	55	17.9	19	5.6	8.7	83	14	4	0.2	1.5	94	70
29	May 22	-	48.7	36	10	54	189	11	50	0.8	12	267	131
30	do.	-	41.8	-	-	-	210	-	13	-	-	-	-
31	May 24	21	30.4	34	8.0	19	144	21	10	1.0	3.6	168	118
53	do.	a/	79.8	58	37	61	363	65	42	1.4	1.1	444	296
54	June 18	a/	33.5	-	-	-	173	-	11	-	-	-	-
55	do.	a/	42.1	-	-	-	244	-	13	-	-	-	-

a/ Spring.