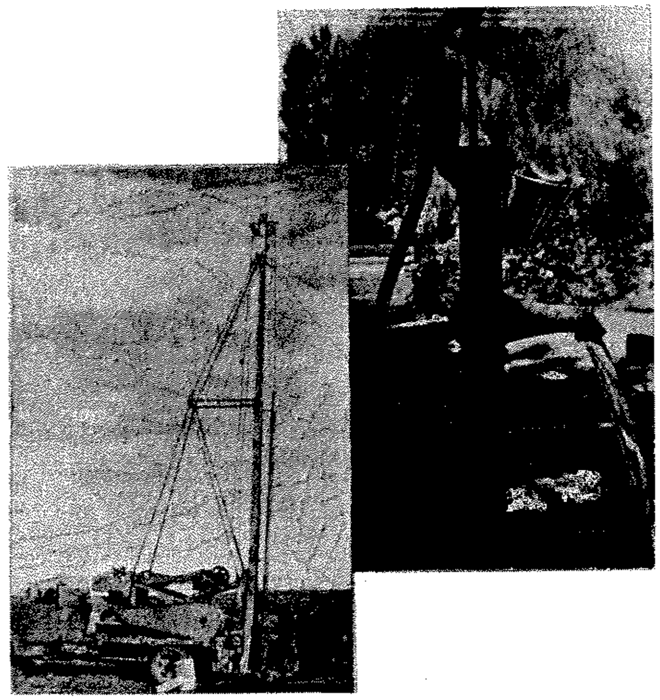
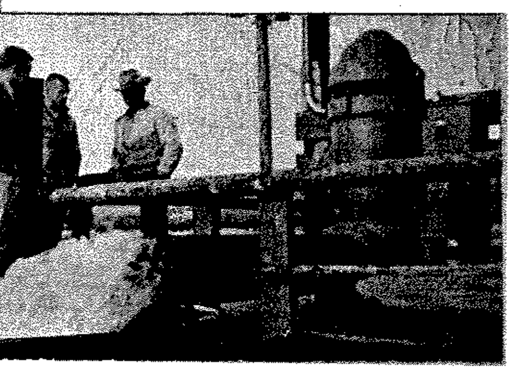
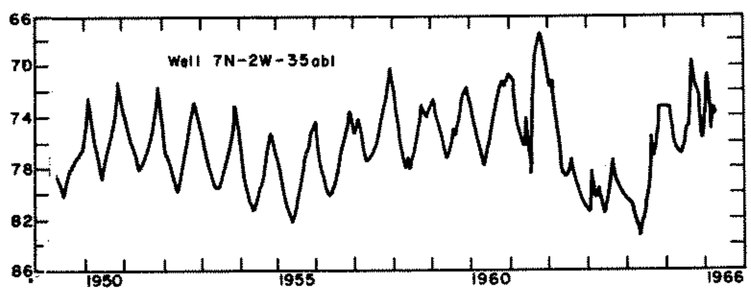
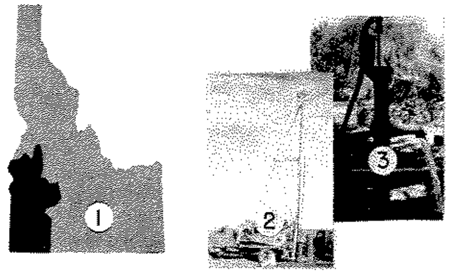


A GROUND-WATER MONITORING NETWORK FOR SOUTHWESTERN IDAHO



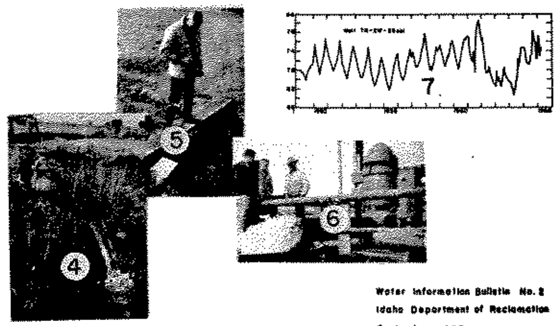


Water Information Bulletin No. 2
Idaho Department of Reclamation
September 1967



A GROUND-WATER MONITORING

NETWORK FOR SOUTHWESTERN IDAHO



Water Information Bulletin No. 2
Idaho Department of Reclamation
September 1967

THE COVER

1. Map showing coverage of Ground-Water Monitoring Network for Southwestern Idaho.

2. Well being drilled near Hammett, Idaho, with a cable-tool type drilling rig.

3. Flowing well plumbed to discharge through an old hand pump in a garden at the residence of Harold W. Davis, Middleton, Idaho.

4. Flowing irrigation well equipped with valve located east of Nampa, Idaho.

5. Department of Reclamation employees measuring water in an irrigation ditch. The water is being discharged into this ditch by a hot flowing well located 12 miles east of Mt. Home, Idaho. Robert Hamilton (top of photo) is making the measurement with a pigmy current meter and Gary Page (bottom of photo) is recording the readings.

6. Department of Reclamation employees talking with rancher, Wm. Walker, about his very productive well used for irrigation, shown in the photo. Well is located about 16 miles east of Mt. Home, Idaho.

7. Hydrograph showing water-level depth changes in feet below land surface in a well located in Sec. 35, T. 7 N, R. 2 W (near Emmett, Idaho).

WATER INFORMATION BULLETIN No. 2

A GROUND-WATER MONITORING NETWORK FOR SOUTHWESTERN IDAHO

by

N. P. Dion

&

M. L. Griffiths

United States Geological Survey

PREPARED BY THE UNITED STATES GEOLOGICAL SURVEY
IN COOPERATION WITH
THE IDAHO DEPARTMENT OF RECLAMATION

Published by
Idaho Department of Reclamation
R. Keith Higginson
State Reclamation Engineer

September 1967

CONTENTS

ILLUSTRATION

TABLE

A GROUND-WATER MONITORING NETWORK FOR SOUTHWESTERN IDAHO

By N. P. Dion and M. L. Griffiths

INTRODUCTION

The study area covers more than 15,500 square miles in southwestern Idaho and includes all or parts of Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, and Washington Counties. Surface drainage is provided by the Snake River and its tributaries, which include the Weiser, Payette, Boise, and Bruneau Rivers.

Large scale water-development projects which could affect the entire hydrologic regimen of this region are now in the planning stage. The Idaho Department of Reclamation, which is responsible for the administration of the State's water resources, and the Water Resources Division of the U.S. Geological Survey recognized the need to monitor changes in ground-water conditions resulting from the implementation of the proposed projects.

The objectives of this study were to establish a network of observation wells that would:

a. adequately monitor seasonal and long-term ground-water changes in all significant aquifers of the area;

b. provide a foundation of hydrologic data from which future comparisons could be made to show the effects of large-scale development on the ground-water system;

c. indicate areas where ground-water problems are most likely to develop;

d. permit detection of ground-water problems before they become serious; and,

e. identify areas and (or) aquifers that are not adequately represented by existing observation wells, either areally or with respect to depth.

GEOLOGIC FRAMEWORK

In general, southwestern Idaho is underlain by clastic and volcanic rocks ranging in age from Miocene to Recent. Only in the highlands of Valley, Boise, Elmore, and Owyhee Counties do older, pretertiary granites, gneisses, and folded sediments crop out.

Pyroclastic, basaltic, and rhyolitic rocks of Miocene and Pliocene age crop out in several regions, such as the Jarbidge and Owyhee Mountains, and along the Payette River. The basalt flows apparently are equivalent in age to the Miocene and Pliocene Columbia River Group which extensively covers the Weiser River basin and part of the Payette River basin. The Payette Formation, composed chiefly of coarse arkose and granite cobble conglomerate, generally occurs interbedded with basalts of the Columbia River Group.

Unconformably overlying the Miocene and Pliocene volcanic rocks are the Pliocene Idavada Volcanics, several thousand feet of welded ash flows with bedded tuffs and lava flows. The rocks are exposed in the Jarbidge and Owyhee Mountains, in the Mt. Bennett Hills, and on the Owyhee upland.

The Idaho Group of Pliocene and Pleistocene age consists of several thousand feet of partly-consolidated sand and clay with some gravel, volcanic ash, and intercalated basalt flows. The sedimentary beds, which probably accumulated in a subsiding basin, generally erode into badlands. Exposures of the Idaho Group occur along the Snake River and in the lower reaches of its tributaries. The group also mantles much of the Mountain Home Plateau.

The Snake River Group, composed of olivine basalt with some clay, silt, sand, and gravel, is of Pleistocene and Recent age. It underlies a large part of the Mountain Home Plateau.

Unconsolidated deposits of Pleistocene to Recent age consist of glacial outwash, alluvium, and terrace gravels. They occur in the axis of Long Valley and the lower reaches of the larger streams.

GENERAL GROUND-WATER CONDITIONS IN THE PRINCIPAL HYDROLOGIC UNITS

Weiser River Basin

Sedimentary deposits and basalt of the Columbia River Group supply most of the ground water in the Weiser River basin. The sediments are generally fine grained and yield only small to moderate amounts of water. Larger supplies can be obtained from the coarser deposits and from the basaltic rocks. Many of the wells finished in the basalt flow at the surface.

Payette Valley

Sand and gravel beds within the Idaho Group are the best aquifers but yields are erratic from one area to another. Permeable stream and terrace gravels overlying the Idaho Group yield moderate quantities of water to wells.

The principal sources of recharge to the valley are runoff from precipitation on the surrounding highlands and percolation of irrigation water from surface-water sources. Ground water moves toward the center of the valley and then down-gradient in the direction of stream-flow.

Depth to water is generally less than 50 feet and has decreased in the recent past owing to the application of irrigation water. Partly as a result of the rise in water level, about 25 percent of the irrigated area has a drainage problem.

Locally, the confining action of hardpan and clay beds causes low artesian pressures.

Boise Valley

Ground water occurs in stream and terrace gravels and in the sand, gravel, and lava flows of the Idaho Group which underlies most of the valley. Water occurs unconfined in the shallower aquifers and confined under low to moderate pressures in the deeper aquifers. South of Nampa, basalt of the Snake River Group yields large quantities of water, but elsewhere in the valley the basalt lies above the regional water table.

Principal sources of ground-water recharge include seepage from the Boise River, runoff from the highlands north of the valley, and seepage of irrigation water obtained from both surface- and ground-water sources. Ground-water movement is generally westward. Natural discharge is to drainage canals and to the Boise River.

Owing to widespread irrigation, water levels in the Boise valley have risen considerably through the years. This rise has caused widespread water-logging and drainage problems in low-lying areas.

Mountain Home Plateau

Little is known about the ground water in this area. Between Mountain Home and the foothills to the north, sand and gravel contain water at shallow depths. The southwestern part of the City of Mountain Home is underlain by a very shallow body of perched ground water that is of small extent. This aquifer yields small amounts of water to domestic wells. Elsewhere on the plateau, wells must be drilled several hundred feet to tap the aquifers of the Snake River and Idaho Groups whose yields in this region have proved erratic from one area to another.

Recharge to the aquifers is from intermittent stream percolation, underflow from the foothills, and seepage losses from irrigation water. Natural discharge is probably southward and southwestward to the Snake River.

Northeast Slope of Owyhee Mountains

Ground water occurs under artesian conditions in the sand, gravel, and volcanic rocks of the Idaho Group and Idavada Volcanics from Grandview to the Oregon state line, and under nonartesian conditions in alluvial deposits along the Snake River.

Recharge to the artesian aquifers is from precipitation on the highlands to the southwest; recharge to the alluvial deposits is from intermittent stream percolation and seepage losses of irrigation water.

Development of the ground water west of Grandview has increased significantly in the past few years with the construction of several deep irrigation wells that yield large quantities of hot (80-170° F) water under high artesian pressures.

Bruneau River Valley

Little is known about the ground-water hydrology of the Bruneau River basin except for the downstream part near Bruneau. There, unconfined ground water occurs in alluvium along the Bruneau River and its principal tributaries, and warm (60-125° F) artesian water occurs in the Idaho Group and in the underlying basalt and silicic volcanics.

The artesian aquifers are recharged by precipitation on the outcrop area to the south. The principal direction of ground-water movement is northward toward the Snake River.

In general, wells flow if drilled into the artesian aquifer and if ground-surface elevation at the well is less than 2,700 feet above sea level. Artesian water levels in the Bruneau area have declined slightly since the increase in ground-water development, which began about fifteen years ago.

Sailor Creek Area

Ground water occurs under low artesian pressures in sedimentary deposits of the Idaho Group and in the underlying basaltic and silicic volcanic rocks. The depth to water is generally several hundred feet below the land surface.

Recharge is from precipitation on the outcrop area to the south. The regional direction of ground-water movement is northward toward the Snake River.

Ground-water development has been slow for this relatively isolated area but it is now increasing with the drilling of several new wells for irrigation.

SELECTION OF WELLS

The observation wells for the ground-water monitoring system in southwestern Idaho were selected according to the following criteria, in order of decreasing consideration: areal coverage, aquifer penetration, availability and accessibility, water-level measurement capability, well use, nearby interference, and previous record.

Areal Coverage

Prime concern was given to the geographic locations of the candidate wells. All available well data were examined and the well locations plotted on a base map. A code was used to distinguish between domestic and irrigation wells. After determining the desired areal density of observation wells, the most likely candidates were selected from examination of records and then inspected in the field. For those areas where no recorded well satisfied the requirements or where no wells had been previously inventoried, additional wells were visited and inventoried. In general, areas most likely to be affected by future hydrologic projects and areas having the greatest degree of ground-water development were covered by the greatest density of observation wells.

Aquifer Penetration

The aquifers selected for monitoring by the observation network were those thought most likely to be affected by future hydrologic development. Well schedules and drillers' logs were examined and wells not finished, at least partly, in the aquifers of interest were disregarded and not visited. Highest consideration was given to wells that tapped only one aquifer.

Availability and Accessibility

Permission to make periodic water-level measurements and (or) to install continuous recorders was obtained from well owners. In order to minimize the amount of time and labor involved in making the water-level measurements, consideration was given to whether or not the well was accessible without hindrance during inclement weather, from stock gates, or because of seasonal crops. For the same reason, wells at ground level were given preference over those in a subsurface pit.

Water-Level Measurement Capabiltiy

Preference was given to the well offering the most accurate type of water-level measurement capability. The four most common methods are, in order of decreasing accuracy: wetted tape, continuous recorder, electric tape, and manometer (for flowing wells only).

Well Use

The majority of the wells selected for the observation network were used for either domestic or irrigation purposes or not presently in use. Irrigation wells are generally preferable because they are deeper, of larger diameter, and easier to measure. However, they usually are pumped for extended periods during the irrigation season, thus preventing a measurement of static water level. Domestic wells are usually shallower, of smaller diameter, and pumped intermittently for shorter periods. Because of location and type of pump they are often more difficult to measure.

An unused well gives the most meaningful water-level data. In selecting unused wells for observation purposes, a check was made to determine if the well was not being used because of caving, plugging, screen failure, or some other factor that might cause the measured water level to be nonrepresentative of the aquifer.

Nearby Interferences

The static water level of many wells is affected by nearby wells that are pumped either intermittently or continuously. This effect does not necessarily reflect a change in regional water levels. The records from such wells must be carefully analyzed because the relationship of their water level to the regional static water level is difficult to interpret. In many cases, several months of record must be analyzed before nearby influences can be identified and related to the regional static water level.

Previous Record

Wells with previous water-level measurements were given preference over unmeasured wells because they provided a historic record of water-level fluctuations in their respective aquifers.

THE OBSERVATION-WELL NETWORK

Figure 1 shows the location of the wells selected for the observation-well network. The symbol used to designate the well location also indicates the frequency of measurement. The wells are labeled according to their "local" well numbers which are based on the location of the wells within the official rectangular subdivisions of the public lands. Data for each well are listed in Table 1. All available geographic, physical, and geologic data, with the exception of the driller's log and location sketch, have been coded so that they may be entered on punch-cards for computerized storage and retrieval.

Those wells that promise to be the most representative of their hydrologic units will be measured more often than others until sufficient record is obtained to determine the character of water-level changes in these units. Continuous water-level recorders have been installed on 10 wells. Bimonthly water-level measurements will be made on 37 wells; the remaining 88 wells will be measured semiannually. Water levels in all network wells have been measured at least once.

CONCLUSIONS AND RECOMMENDATIONS

The newly established observation-well network will meet the intended objectives except in two small areas. Areal control is lacking in southern Ada County and in the Sailor Creek area of Owyhee County because these areas are still in a primitive state of water development and few, if any, wells have been drilled. As these areas are developed, early efforts should be made to establish observation wells, or wells might be drilled specifically for the purpose of observing water levels.

SELECTED BIBLIOGRAPHY

Burnham, W. L., and others, 1966, Summary of ground-water conditions in Idaho, 1966: Idaho Department of Reclamation Water Information Bull., no. 1, 64 p.

Crosthwaite, E. G., 1963, Ground-water reconnaissance of the Sailor Creek area, Owyhee, Elmore, and Twin Falls Counties, Idaho: U.S. Geol. Survey open-file report, 53 p.

Littleton, R. T., and Crosthwaite, E. G., 1957, Ground-water geology of the Bruneau-Grand View Area, Owyhee County, Idaho: U.S. Geol. Survey Water-Supply Paper 1460-D, 51 p.

Malde, H. E., and Powers, H. A., 1962, Upper Cenozoic stratigraphy of Western Snake River Plain: Geol. Soc. America Bull., v. 73, no. 10, p. 1197-1220.

Mundorff, M. J., Crosthwaite, E. G., and Kilburn, Chabot, 1964, Ground water for irrigation in the Snake River Basin in Idaho: U.S. Geol. Survey Water-Supply Paper 1654, p. 55-72.

Nace, R. L., West, S. W., and Mower, R. W., 1957, Feasibility of ground-water features of the alternate plan for the Mountain Home Project, Idaho: U.S. Geol. Survey Water-Supply Paper 1376, 121p.

U.S. Dept. of Interior, Bureau of Reclamation, 1966, Southwest Idaho water development project, Idaho: Regional Director's Report, Boise, Idaho.

Walker, E. H., and Sisco, H. G., 1964 Ground water in the Midvale and Council areas, Upper Weiser River basin, Idaho: U.S. Geol. Survey Water-Supply Paper 1779-Q, 26 p.

TABLE 1
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Depth: Depth of well below land surface datum, to nearest foot.
Casing depth: Depth to first perforation(s).
Well finish: F-perforated with gravel packing
G-screened with gravel packing
O-open end P-perforated S-screen
W-shored X-open hole
Type of aquifer: S-sand and (or) gravel V-volcanic rocks
Altitude: Approximate altitude of land surface in feet above mean sea level. Determined from topographic maps.

Water level: Feet above (+) or below land surface datum.
Type of pump: C-centrifugal J-jet N-none
P-piston S-submersible T-turbine
Use of water: D-dewatering H-domestic I-irrigation
P-public supply S-stock U-unused
Remarks: gpm-gallons per minute
L-driller's log available
s. c. - specific capacity
T-temperature

Well	Depth (ft)	Casing		Well Finish	Type of Aquifer	Altitude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H. P.		
ADA COUNTY												
5N- 1W-16cab1	628	8	492	X	S	2,715	187.6	4-26-67	S	1.0	H	L, s. c. 0.6
-35baa1	153	12	65	P	S	2,610	61.3	5-1-67	T	---	I	L
5N- 1E-34dbb1	175	14	---	P	-	2,680	30.0	5-1-67	T	---	I	Entire csg. perf.
4N- 1W- 5ccd1	58	4	---	-	S	2,470	3.7	4-27-67	S	0.75	H	
-13ddb1	130	3	---	-	-	2,525	+8.5	5-1-67	N	---	I	Flows 125 gpm
-31aaa1	462	6	455	O	S	2,508	+25.2	4-28-67	N	---	I	L
-35aaa1	44	24	---	-	S	2,572	11.0	4-27-67	N	---	U	Cont. recorder
4N- 1E-14aba1	100	6	---	-	S	2,620	24.2	5-1-67	J	---	H	
4N- 2E-26ccc1	741	20	210	P	S	2,875	81.1	5-2-67	T	---	I	L, yields 700 gpm
3N- 1W-14aaa1	150	3	---	-	-	2,595	12.7	5-1-67	P	---	H	
3N- 1E- 5aab2	82	6	---	-	S	2,616	13.6	5-1-67	N	---	U	
-11ddd1	139	14	---	P	S	2,684	4.3	5-1-67	C	---	I	Yields 630 gpm
-36ada1	330	4	---	-	-	2,821	121.3	5-1-67	N	---	U	
3N- 2E- 6aad1	79	36	---	-	S	2,710	32.6	5-1-67	J	---	H	
-21bcc1	58	14	---	-	S	2,758	12.5	5-1-67	T	7.5	I	Yields 550 gpm

TABLE 1 (Cont.)
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Well	Depth (ft)	Casing		Well Finish	Type of Aquifer	Altitude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H.P.		
ADA COUNTY (Cont.)												
3N- 2E-24aca2	110	12	55	X	S	2,760	36.1	5-1-67	T	---	P	L, s.c. 4.3
2N- 1W-11ada1	130	16	64	P	S	2,685	72.4	12-20-66	T	---	I	L
2N- 1E-32aaa1	208	6	---	-	-	2,750	62.9	5-19-67	N	---	U	Cont. recorder
2N- 3E- 4add1	42	4	---	-	S	2,840	33.4	5-1-67	N	---	U	
-18acb1	470	6	470	-	-	3,095	392.4	5-1-67	S	---	H	
1N- 1W- 7bcc1	408	20	14	X	V	2,820	225.3	4-27-67	T	400.0	I	L, s.c. 960
-24aaa1	366	20	---	X	-	2,880	304.7	4-28-67	T	---	I	
1N- 2E-15dca1	600	6	---	-	-	2,970	361.5	5-25-67	T	---	U	
1S- 1E- 6ccd1	595	16	---	P	-	2,965	435.4	5-22-67	N	---	U	Cont. recorder
1S- 4E-30aac1	637	12	550	X	V	3,150	487.6	5-24-67	N	---	U	Cont. recorder
2S- 1E-18dda1	40	24	---	-	S	2,320	11.5	4-28-67	T	3.0	H	
2S- 4E- 9ddd2	600	6	400	X	V	3,122	421.4	4-24-67	N	---	U	
ADAMS COUNTY												
16N- 1W- 3ddd1	79	12	7	X	S	2,985	1.8	4-24-67	N	---	U	L, s.c. 5
15N- 1W-10bac1	61	6	---	-	S	2,935	41.0	4-24-67	N	---	U	
14N- 1W-11ccc1	163	6	24	P	-	3,000	4.1	4-24-67	C	---	H	
BOISE COUNTY												
9N- 4W-22bdd1	111	6	---	-	S	3,100	54.2	4-24-67	S	---	H	L
7N- 2E-34caa1	42	60	42	O	S	2,650	39.1	4-24-67	S	---	H	Local observer
CANYON COUNTY												
6N- 5W-30bab1	169	12	135	X	S	2,225	30.0	4-26-67	T	20.0	I	L, s.c. 10
5N- 5W-18cac1	250	6	---	-	-	2,225	12.4	4-26-67	S	---	H	
-24dbb1	98	18	---	-	S	2,300	9.5	5-12-67	N	----	U	Cont. recorder
5N- 4W-13bcb1	105	4	---	-	S	2,395	19.7	4-26-67	J	---	S	
5N- 3W-11bca1	365	16	311	P	S	2,625	160.1	4-26-67	T	---	I	L

TABLE 1 (Cont.)
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Well	Depth (ft)	Casing		Well Fin-ish	Type of Aqui-fer	Alti-tude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H. P.		
CANYON COUNTY (Cont.)												
5N- 2W-22caa1	450	12	279	P	S	2,610	185.9	2-21-67	T	---	I	L
4N- 5W- 7dcc1	130	6	---	-	-	2,292	12.2	4-26-67	T	10.0	I	
-22ccc1	37	6	33	X	S	2,290	9.2	4-26-67	C	3.0	I	Yields 90 gpm
4N- 4W- 5ddb1	178	4	---	-	-	2,284	+3.3	4-26-67	N	---	S	Small flow
-11daa1	42	4	37	X	S	2,310	7.4	4-26-67	C	---	H	
-32dbb1	155	12	28	F	S	2,530	41.3	4-26-67	T	40.0	I	L, s.c. 2.2
4N- 3W-13baa1	185	6	185	O	-	2,370	+6.2	4-28-67	N	---	S	
4N- 2W-34bdc1	150	16	---	-	S	2,562	13.0	4-28-67	T	---	U	
3N- 4W-11ada1	91	6	---	-	S	2,497	11.6	5-15-67	N	---	U	Cont. recorder
3N- 3W- 3bcb2	94	6	---	-	S	2,428	14.6	4-27-67	N	---	U	
3N- 2W- 7ddd1	100	4	80	X	-	2,450	10.8	4-27-67	S	---	S	
3N- 1W- 7bcb1	51	6	---	-	S	2,495	8.6	4-28-67	N	---	U	
2N- 4W-36aad1	550	12	120	P	S	2,305	80.5	1-3-67	T	---	I	L, s.c. 3.1
2N- 3W- 2dcc1	46	36	---	-	S	2,550	19.1	4-27-67	J	---	H	
- 6dbd1	---	4	---	-	-	2,614	214.7	4-27-67	N	---	U	
2N- 3W-22ddc1	580	14	400	F	S	2,750	313.0	4-27-67	T	125.0	I	L, s.c. 7.9
2N- 2W- 6aab1	132	4	---	-	-	2,575	71.7	4-27-67	N	---	U	
-23cbb1	165	4	---	-	-	2,655	109.6	4-27-67	N	---	H	
2N- 1W- 7bbc4	103	6	---	P	S	2,550	9.9	5-29-67	N	---	U	Cont. recorder
1N- 2W- 5add1	720	12	415	P	S	2,675	134.9	4-27-67	T	75.0	I	L
-17dda1	565	16	20	P	S	2,718	201.1	12-22-66	T	100.0	I	L yields 1350 gpm
1S- 2W-14ccc2	235	6	---	-	-	2,395	46.8	4-28-67	J	0.5	H	
ELMORE COUNTY												
1N- 4E 23aab1	64	18	---	P	S	3,500	27.1	4-24-67	T	---	U	
1S- 4E 10dad1	525	10	525	S	V	3,300	341.6	4-24-67	N	---	U	
1S- 5E 35bcb1	445	16	400	P	V	3,360	161.9	4-24-67	N	---	U	
2S- 5E 36bbb1	356	6	50	X	V	3,190	285.1	5-27-66	N	---	U	Cont. recorder
2S- 6E 11dac1	1,620	12	---	-	-	3,540	107.7	4-24-67	N	---	U	

TABLE 1 (Cont.)
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Well	Depth (ft)	Casing		Well Finish	Type of Aquifer	Altitude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H.P.		
ELMORE COUNTY (Cont.)												
3S- 6E-35abb1	14	12	14	O	S	3,135	6.6	4-24-67	S	---	P	
3S- 7E- 3cdc1	411	6	---	-	-	3,460	33.9	4-24-67	S	---	H	
3S- 8E-36cda1	600	8	---	X	S	3,395	+131.6	4-24-67	N	---	I	L, T. 150°F
4S- 3E-29ddd1	100	12	---	P	-	2,485	18.9	4-26-67	T	25.0	U	
4S- 5E-19cba1	490	18	4	X	V	3,000	321.2	4-26-67	T	---	I	L, s.c. 30
-25bbc1	530	20	444	S	V	3,048	359.1	4-24-67	T	350.0	I	s.c. 11, L
4S- 7E- 9dcc1	862	12	630	X	V	3,152	367.7	4-24-67	T	300.0	I	L, s.c. 15
4S-10E-30bba1	2,265	20	---	-	-	3,455	257.6	4-24-67	N	---	U	Yields 375 gpm
5S- 4E- 5caa1	600	14	440	P	S	2,850	175.9	4-26-67	N	---	U	L, s.c. 30
5S- 6E-14baa1	408	8	30	X	-	3,030	381.6	4-24-67	S	---	H	
5S- 7E- 3adb1	1,260	8	592	F	S	3,090	422.0	4-24-67	N	---	U	Collapsed, L
5S- 8E-36ccc1	90	6	---	-	S	2,536	63.8	4-25-67	J	---	U	
5S- 9E-21abc1	905	6	---	-	-	3,065	513.4	4-24-67	S	---	H	
5S-10E-32ada1	1,006	6	85	X	-	2,510	+39.7	4-25-67	N	---	S	L, flows 225 gpm
6S-10E-30dcb1	437	6	---	P	V	2,990	251.1	4-25-67	P	---	S	L
6S-11E- 6bba1	445	6	---	P	-	2,680	109.2	4-25-67	S	---	H	
GEM COUNTY												
7N- 3W-14bbc1	170	4	160	X	S	2,400	105.8	4-26-67	S	---	S	L, s.c. 1.0
-36cdd1	82	4	---	-	S	2,260	+15.9	4-26-67	S	---	H	
7N- 2W-35ab 1	99	36	---	-	-	---	76.6	4-26-67	T	---	H	
7N- 1W-28cbc1	64	6	54	P	S	2,500	43.6	4-26-67	S	---	H	L
7N- 1E- 3acc1	6	24	6	O	S	2,560	3.1	4-24-67	C	---	H	
-26ddb1	400	10	160	P	S	2,695	40.8	4-24-67	S	---	H	L, s.c. 0.6
6N- 2W-15ddc1	20	4	---	-	S	2,350	7.3	4-26-67	C	---	H	
6N- 1W- 9ccc1	385	6	373	-	-	2,405	26.4	4-26-67	J	---	H	

TABLE 1 (Cont.)
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Well	Depth (ft)	Casing		Well Fin-ish	Type of Aqui-fer	Alti-tude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H.P.		
OWYHEE COUNTY												
3N- 5W-19dcd1	325	4	110	X	-	2,378	58.4	4-28-67	S	---	S	
3N- 4W-30aab1	200	12	63	X	S	2,305	53.0	1-3-67	T	---	I	L, s.c. 7.2
2N- 4W- 7dbb1	1,100	4	---	-	V	2,356	49.2	4-28-67	S	---	H	
1N- 3W-20bda1	155	12	90	P	-	2,475	35.7	4-28-67	T	20.0	I	
1S- 3W- 1bcb1	---	3	---	-	-	2,290	+8.1	5-5-67	N	---	I	
2S- 3W-18dcb1	910	6	189	X	V	3,787	+2.6	4-24-67	N	---	U	L
2S- 2W- 3cbb1	900	8	66	X	V	2,467	38.5	4-28-67	T	5.0	I	Yields 175 gpm
3S- 1W- 8cbc1	920	6	---	-	V	3,180	414.5	4-26-67	N	---	U	
3S- 1E-35dac1	300	6	60	X	-	2,340	14.6	4-26-67	C	---	H	
4S- 2W-11aba1	450	12	20	P	-	3,260	3.6	4-26-67	T	---	I	
4S- 1E-30bbb1	320	10	32	X	-	2,810	40.9	4-26-67	T	7.5	I	
5S- 1E-29aaa1	666	10	74	X	V	---	28.7	4-26-67	T	---	I	L
5S- 2E- 5bcd1	2,800	10	---	O	V	2,530	+51.6	5-23-67	N	---	U	T 106° F
6S- 3E-14bcb1	1,341	4	373	X	V	2,643	13.6	5-26-67	N	---	U	Cont. recorder
6S- 4E-15bda1	2,000	15	1,400	X	V	2,606	6.1	4-26-67	N	---	U	
6S- 5E-24bca1	1,095	6	76	X	V	2,525	+49.8	4-26-67	N	---	H	
-33dbb1	142	6	---	-	S	2,540	3.1	4-26-67	C	---	H	
6S- 6E-11baa1	89	4	---	-	S	2,505	63.2	4-25-67	J	---	U	
6S- 7E- 3ddc1	32	--	---	W	S	2,490	38.6	4-25-67	J	---	S	
7S- 4E-10dbc1	907	16	200	X	-	2,750	57.5	2-2-67	T	250.0	I	
7S- 5E-19ccc1	760	12	300	X	V	2,720	25.9	4-26-67	T	---	I	
7S- 6E- 9bad1	960	8	80	X	O	2,578	+26.7	4-25-67	N	---	H	
-26ada1	1,000	12	171	X	V	2,700	0.8	4-25-67	C	---	I	L, yields 700 gpm
8S-11E-33cba1	290	6	---	P	S	3,190	172.6	4-25-67	S	---	S	Yields 17 gpm
9S-12E-29dba1	530	18	---	-	-	3,640	195.9	4-25-67	N	---	U	

TABLE 1 (Cont.)
RECORDS OF OBSERVATION WELLS IN SOUTHWESTERN IDAHO

Well	Depth (ft)	Casing		Well Fin-ish	Type of Aqui-fer	Alti-tude	Water Level		Pump		Use of Water	Remarks
		Diam. (in.)	Depth (ft)				Depth (ft)	Date Measured	Type	H.P.		
PAYETTE COUNTY												
9N- 5W-13ccb1	88	6	83	S	S	2,195	56.7	4-25-67	S	---	H	L, yields 30 gpm
8N- 5W- 3bad1	26	12	---	-	S	2,156	9.4	4-25-67	C	7.5	I	
-14cdd1	42	3	---	P	S	2,212	31.1	4-25-67	J	---	H	
8N- 4W- 3acd1	183	5	129	F	S	2,335	74.7	4-25-67	S	---	H	
-14bda1	18	48	---	O	S	2,195	11.6	4-25-67	C	3.0	I	
-33aca1	29	6	---	-	S	2,211	5.5	5-17-67	N	---	U	Cont. recorder
8N- 3W-19adc1	600	12	---	-	-	2,280	30.7	4-25-67	N	---	U	
7N- 5W- 2bcc1	55	10	---	-	-	2,276	36.2	4-25-67	T	3.0	I	s.c. 7.7
-25bcb1	160	6	---	-	-	2,360	59.4	4-25-67	N	---	U	
7N- 4W-25cbc1	99	4	97	P	S	2,390	47.4	4-25-67	S	---	H	L, s.c. 3.0
7N- 3W- 7ab 1	118	4	---	-	S	2,175	+12.2	4-25-67	N	---	H	L
6N- 3W-18ddd1	300	4	---	-	-	2,610	148.0	4-25-67	S	---	H	
VALLEY COUNTY												
18N- 3E-36bc 1	160	6	140	F	S	5,120	42.7	4-24-67	J	---	H	L
16N- 3E-14aab1	100	6	80	F	S	4,865	1.9	4-24-67	S	---	H	L
13N- 4E-16bad1	84	6	67	X	S	4,770	23.3	4-24-67	S	---	H	L, s.c. 0.3
12N- 4E- 8acc1	55	6	---	-	S	4,775	53.7	4-24-67	S	---	H	
WASHINGTON COUNTY												
14N- 2W- 6dcc1	398	4	315	X	S	2,745	+14.0	4-24-67	T	3.0	I	L
13N- 4W-12cbc1	170	6	---	-	-	2,625	52.0	4-24-67	S	---	I	
13N- 3W-10cdd1	320	8	149	X	V	2,610	1.3	4-24-67	P	---	I	L
12N- 4W-31dbb1	95	6	---	-	S	2,510	39.6	4-24-67	S	---	H	
11N- 6W-14bcb1	72	12	45	F	S	2,178	33.0	4-25-67	T	15.0	I	L, s.c. 7.7
10N- 4W- 6add1	---	6	---	-	-	2,185	+36.2	4-25-67	N	---	U	

FIGURE I.--MAP OF SOUTHWESTERN IDAHO SHOWING LOCATION AND FREQUENCY OF MEASUREMENT OF OBSERVATION WELLS.