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DEPARTMENT OF THE INTERIOR
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Ground Water Branch.

DATA ON WATER WELLS IN COYOTE, CRONISE, SODA, AND SILVER LAKE VALLEYS, SAN BERNARDINO COUNTY, CALIFORNIA

By

W. L. Burnham

Prepared in cooperation with the
California Division of Water Resources

Open-file report. Not reviewed
for conformance with stratigraphic
nomenclature and editorial standards
of the Geological Survey.

Long Beach, California
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DATA ON WATER WELLS IN COYOTE, CRONISE, SODA, AND SILVER LAKE VALLEYS, SAN BERNARDINO COUNTY, CALIFORNIA

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PURPOSE AND SCOPE OF THE WORK AND REPORT

The data presented in this tabulation were gathered by the United States Geological Survey in connection with an investigation of water wells and general hydrologic conditions throughout much of the desert region of southern California, which was begun in July 1953. The study has been financed in part by Federal funds for Arid Regions Studies, and in part by cooperation with the California Division of Water Resources.

The desert regions of California are characteristically regions of barren mountain ranges and isolated hills surrounding broad valleys or basins which are floored with alluvial debris derived from the surrounding highlands. These basins of unconsolidated alluvial materials generally contain ground water which has a wide range in chemical quality and which can be and has been developed for beneficial use.

The general objective of the investigation is to gather together and to tabulate by areas available hydrologic data for the desert basins in order to provide public agencies and the general public with a basis for planning water utilization and development, and to furnish critical data for any subsequent ground-water investigation that might be undertaken.

Accordingly, the scope of the work carried on by the Geological Survey in each area has included: (1) Very brief reconnaissance mapping of major geologic features to define the extent and general characteristics of the deposits that contain the ground-water bodies; (2) visiting and examining virtually all the water wells in the area, determining and recording their location in relation to geographic and cultural features and, wherever possible, to the public land net, and recording well depths and sizes, types and capacities of installed equipment, uses of the water, and other pertinent information available at the well site; (3) measuring the depth to the water surface below an established and described measuring point at or near the land surface; (4) selecting representative wells to be measured periodically in order to detect and record changes of water levels; (5) collecting and assembling available well records, including well logs, water-level measurements, and chemical analyses; and (6) presenting the collected data without evaluation or revision in tables 1A to 3A which identify the source from which the data were obtained.

Field work for the Coyote, Cronise, Soda, and Silver Lake Valleys was carried on intermittently from February to November 1954.

The work has been carried on by the Geological Survey, United States Department of the Interior, under the direction of A. N. Sayre, chief of the Ground Water Branch; under the general supervision of J. F. Poland, district geologist in charge of ground-water investigations in California; and under the immediate supervision of G. F. Worts, Jr., geologist in charge of the Long Beach area office.

LOCATION AND GENERAL FEATURES OF THE AREAS

The Coyote, Cronise, Soda, and Silver Lake Valleys occupy approximately 600 square miles adjacent to or within the lower part of the Mojave River drainage system in the central part of San Bernardino County, Calif. (pl. 1). A paved road from Barstow to Camp Irwin provides access to the western part of Coyote Valley, and U. S. Highways 91 and 466 traverse the southern edge of East Cronise Valley and pass through the town of Baker between Silver and Soda Lake Valleys. Access to West Cronise Valley is by a poor sandy desert road leading westward from East Cronise Valley. Silver Lake may be reached by State Highway 127 leading northward from U. S. Highways 91 and 466 at Baker. The Union Pacific railroad crosses the southern end of Soda Lake Valley.

The entire area is divided topographically into five distinct closed depressions or basins, namely: Coyote, East Cronise, West Cronise, Soda Lake, and Silver Lake Valleys. Reconnaissance geologic mapping and the altitudes of water levels in wells suggest that Coyote Valley, East and West Cronise Valleys, and Soda and Silver Lake Valleys make up three distinct structural and hydrologic units.

Plate 1 shows the principal ground-water basins, the streams, the reconnaissance geology, and the locations of wells. The inset sketch map on plate 1 shows the position of the several areas relative to each other and to the Mojave River.

Coyote Valley

Coyote Valley covers about 150 square miles. Coyote Lake is a hard, dry playa about 9 square miles in extent and is about 10 miles north of Yermo, Calif., in a broad dishlike closed depression. It is surrounded by a broad apron built by coalescing alluvial fans which were derived from continental deposits of Tertiary and Quaternary age, granitic intrusive rocks, metamorphosed marine sediments, and a wide variety of volcanic rocks which form the mountains around the valley.

The area is undeveloped except for a few homestead cabins, a large hog ranch along the western margin of the playa, and one homestead near the southeast edge of the valley.

Fine- to medium-textured alluvial sands and gravels underlie the fans west of the playa and support a moderately thick vegetation, whereas coarse, angular volcanic and granitic debris underlies the fans east of the playa and supports a very sparse growth. Extensive sand dunes compose the slopes north of the playa and form isolated ridges and hills along the western edge.

A total of 25 wells were canvassed in the area and are described in table 1A, part 1. Seven of the wells, 12/2-27J1, 28P1, 33D1, and 33D2, and 11/2-8K1, 8K2, and 8K3, near the western margin of the playa were flowing in February 1954. Water levels in the other wells ranged from 1.5 to 52.4 feet below the land surface, the deeper levels being in wells higher up the alluvial slopes. The water-level gradient appears to be toward the playa from the north and west. There are insufficient data to determine the gradient south and east of the playa.

Chemical analyses of waters from six wells in Coyote Valley are given in table 2A, part 1. This table indicates that the water is moderately to highly mineralized, the highest concentrations of dissolved salts being in wells near the south end of the playa. The best-quality water is from the southeastern part of the area. The waters of highest concentration are principally of the sodium chloride or sodium sulfate type. Boron and fluoride are present in sufficient concentration to require consideration in the use of the water. It should be noted that some of the analyses are for samples taken from the casings of nonpumped or nonflowing wells and therefore may not be representative of the true ground-water quality.

Logs of three wells are given in table 3A, part 1.

East and West Cronise Valleys

U. S. Highways 91 and 466 leave the valley of the lower Mojave River 40 miles northeast of Barstow, pass northeastward over a divide, and descend for 6 miles down a narrow alluviated valley between the Cave and Cronise Mountains onto the floor of East Cronise Valley. A poor sandy desert road leads westward through a narrow alluviated pass around the northeast end of the Cronise Mountains into the much larger and desolate West Cronise Valley.

The two valleys contain approximately 40 square miles, of which West Cronise Valley comprises about 30 square miles. Each valley contains a dry lake or playa approximately 2 square miles in extent and both lakes are of the soft, puffy, dry-surface type. Mesquite-covered sand dunes encircle all but the eastern margin of the playa in West Cronise Valley and extend outward a quarter to half a mile from the playa edge. The sand is derived from a broad apron of coalescing alluvial fans which floor the north and west parts of the valley. Prevailing northwest winds sweep the fine material from the fans across the playa and against the Cronise Mountains on the southeast, causing the dunes to encroach upon the playa from the northwest and to recede from it on the south and east. Coarse alluvial debris from the Soda Mountains floors the pass between East and West Cronise Valleys, and steep coalescing fans of the same material form the northern margin of East Cronise Valley. Very coarse debris is also brought into the southwest part of East Cronise Valley by intermittent runoff from Cave Mountain.

A major part of the detrital materials of the East Cronise Valley, however, are brought through a very narrow gap in the east end of Cave Mountain by flood flows of the Mojave River. This alluvium, composed mainly of sand and fine gravel, makes up the very sandy southern and eastern margin of the playa and supplies the material for extensive sand dunes which are prevalent in this part of the valley.

During infrequent periods of flood flow in the Mojave River, a part of the runoff flows northward through the narrow gap in the east end of Cave Mountain into the East Cronise Valley, and if such flow is of sufficient quantity, East Cronise Lake fills and overflows into West Cronise Lake. The lakes thus produced are ephemeral, usually drying up during the hot summer months of the year. Numerous shells of fresh-water gastropods and pelecypods around the present-day playas attest to the existence of these lakes for longer periods of time in the past.

Ground water moving down the lower Mojave River valley normally rises near the upstream end of Afton Canyon and maintains a small surface flow to and beyond the downstream end of the canyon. During the months of January through March, part of this flow may reach East Cronise Valley, but by May the stream bed is usually dry beyond the canyon mouth. However, ground-water underflow probably continues to move into Cronise Valley from the river alluvium.

A total of 13 wells were canvassed in East Cronise Valley and 1 in West Cronise Valley and are described in table 1A, part 2. Of these, 1 well was used for irrigation in 1954, 1 was used for domestic supply, 9 (including the 1 in West Cronise Valley) were unused, and 3 were dry or destroyed. In addition to the wells canvassed, 5 wells reported by D. G. Thompson in U. S. Geological Survey Water-Supply Paper 578 could not be located but are plotted on plate 1 at the approximate location given in that publication.

Analyses of waters from seven wells in the Cronise Valleys are given in table 2A, part 2, and indicate that all the water tapped by wells is moderately to highly mineralized, the highest concentrations being in the West Cronise area. Sodium and chloride are the predominant constituents; boron and fluoride also are present in sufficient concentration to require consideration in the use of the water. Only two of the samples were obtained from pumped wells, however, so the analyses may not be completely representative of true ground-water quality in the area.

Logs of two wells are given in table 3A, part 2.

Soda and Silver Lake Valleys

The Soda and Silver Lake Valleys are the easternmost of the areas here considered and together contain nearly 400 square miles. A low topographic divide about at the town of Baker on U. S. Highways 91 and 466 separates the two basins. Soda Lake playa covers about 41 square miles and Silver Lake playa about 4 square miles.

Most of the runoff to the area is supplied by the Mojave River. That part of the Mojave River floodwater that does not flow northward into the Cronise Valleys flows eastward to discharge at the southwest end of Soda Lake. If the flood flow is prolonged, Soda Lake overflows northward past the town of Baker into Silver Lake. The fine-grained materials suspended in the floodwater are carried onto the playas and are left upon evaporation of the water. Water-level altitudes in wells indicate that a continuous hydraulic gradient exists between Soda and Silver Lakes and that the two areas are one hydrologic unit.

The entire southern part of Soda Lake Valley, from Afton Canyon past Crucero to Sands, and northward through the sandhills known as the Devils Playground, is floored with sand. The Mojave River waters probably have brought most of the sand into the area, and after the flood flows have stopped, winds distribute it over the southeastern and eastern parts of the area. The surface of the playa is dry and hard except along the extreme southwestern margin where flowing springs and wells near Soda maintain a small wet area.

Northeast of Soda Lake a large alluvial fan underlain by sandy detritus derived from granitic highlands to the east forms a gentle slope westward to Baker and northward to Silver Lake playa. This material is generally coarser than that around Soda Lake. The Silver Lake playa surface is everywhere hard and dry.

A total of 47 wells were canvassed in the Soda Lake and Silver Lake Valleys and are described in table 1A, part 3. Of these, in October 1954 only 1, well 13/9-20J1, was used for irrigation, 1 supplied water for industrial use, 2 supplied water for railroad use, 4 furnished water for stock, 3 were public-supply wells, 11 supplied domestic water, 15 were unused, and 10 were dry or destroyed. In addition to showing the locations of the canvassed wells, plate 1 shows the approximate locations of 19 wells which were reported by D. G. Thompson in U. S. Geological Survey Water-Supply Paper 578 but which could not be found in 1954.

Chemical analyses of 24 water samples from wells and 1 from the Mojave River, taken during low flow at Baxter near the mouth of Afton Canyon, are given in table 2A, part 3. Only a few of the samples analyzed were taken from wells being pumped, and therefore the analyses may not be completely representative of ground-water quality in the area. The analyses do indicate, however, that the chemical quality of ground water does vary considerably throughout the area and that flowing springs or wells near Soda yield the most highly mineralized water. The water of best quality appears to be near Sands on the Union Pacific railroad, and in the area east of Baker.

Logs of 14 wells are given in table 3A, part 3.

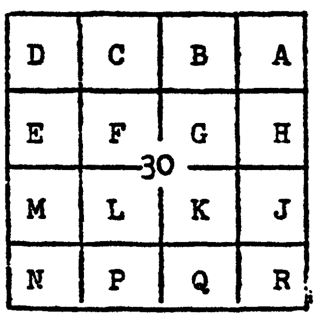
ACKNOWLEDGMENTS

During the investigation, the California Division of Water Resources supplied all information on the areas available in its files, thus aiding materially in the completeness of the data presented in the tabulation. Many of the chemical analyses of water samples tabulated herein were obtained from unpublished records of the U. S. Salinity Laboratory, Department of Agriculture, Riverside, Calif., and from the San Bernardino County Flood Control District, San Bernardino, Calif. Ephraim Harris, well-drilling contractor, and Mr. Howard of the Howard Pump Co., both of Barstow, Calif., kindly furnished logs of wells.

WELL-NUMBERING SYSTEM

The well-numbering system used in the Coyote, Cronise, Soda, and Silver Lake areas conforms to that used in essentially all ground-water investigations made by the Geological Survey in California. It has been adopted as official by the California Division of Water Resources and by the California Pollution Control Board for use throughout the State.

Wells are assigned numbers according to their location in the rectangular system for the subdivision of public land. For example, in the number 14/9-30F1, which was assigned to the public-supply well of C. F. Brown at Baker, the part of the number preceding the bar indicates the township (T. 14 N.), the part between the bar and the hyphen is the range (R. 9 E.), the number between the hyphen and the letter indicates the section (sec. 30), and the letter indicates the 40-acre subdivision of the section as shown in the accompanying diagram.



Within the 40-acre tract the wells are numbered serially as indicated by the final digit. Thus, well 14/9-30F1 is the first well to be listed in the SE$\frac{1}{4}$NW$\frac{1}{4}$ sec. 30. Because the entire area is in the northeast quadrant of the San Bernardino base and meridian lines, the foregoing abbreviation of the township and range numbers is sufficient.

For some wells the letter following the section number is designated X in place of one of the 16 letters designating the 40-acre tract. This symbol indicates that the well has been field located and is accurately plotted with respect to its position on the map, but that the control for the public land net is too poor to warrant assigning a more accurate location number.

For well numbers where a dash has been substituted for the letter designating the 40-acre tract, the dash indicates that the well is plotted from unverified location descriptions or from general locations to the nearest quarter section reported in U. S. Geological Survey Water-Supply Paper 578; the indicated sites of such wells were visited but no evidence of a well could be found.

Table 1A.- Data on water wells in Coyote, Cronise, Soda, and Silver Lake valleys, San Bernardino County, California

U.S.G.S. numbers: These numbers were assigned to wells located in the field since 1941 by the U. S. Geological Survey.

Other numbers: Many of the wells listed were visited by representatives of other agencies who assigned numbers and/or collected data concerning the wells. Numbers prefixed with the symbols 578- refer to wells reported in U. S. Geological Survey Water-Supply Paper 578; DA-, numbers refer to wells reported by the Salinity Laboratory, U. S. Department of Agriculture, Riverside, Calif., and are unpublished records of analyses of waters from wells; R-, numbers refer to wells reported in Bulletin 47 and/or unpublished analyses of well waters by the California Division of Water Resources, Sacramento, California; and F-, numbers refer to wells reported in unpublished records of analyses of well waters by the San Bernardino County Flood Control District, San Bernardino, Calif. Where the number or letter prefix is followed by two dashes it indicates that the well was reported by the indicated agency but no number was assigned.

Altitude: Altitude given is the land-surface datum, the plane of reference at the well, interpolated to the nearest 5 feet from USGS topographic maps with a 40-foot contour interval in the Coyote and Cronise Valleys and to the nearest 10 feet from maps with a 100-foot contour interval in the Soda Lake and Silver Lake valleys.

Depth of well: Depths given in whole feet are reported or taken from drillers' logs; those given in feet and tenths were measured below land-surface datum by the Geological Survey.

Type of well: C cable tool, D dug, Dr driven, G gravel packed, R rotary. Well diameter is given in inches. For dug wells the largest surface dimension, in inches, is given.

Type of pump and power: The first symbol indicates the type of pump as follows: B bucket, C centrifugal, J jet, L lift or cylinder, N none, T turbine. The second symbol indicates the type of power as follows: D diesel engine, G gasoline, H hand operated, N none, W windmill; for electric motors only the rated horsepower is given.

Use of well: Dm domestic, Ds destroyed, Id industrial, Ir irrigation, Ps public supply, RR railroad, S stock, Un unused.

Measuring point: Bpb bottom of pump base, D lower edge of discharge pipe, Hpb hole in pump base, Ls land surface, Tah top of access hole, Tbc top of board cover, Tc top of casing, Tcb top of concrete base, Twc top of wood curbing. The suffix letters N, S, E, or W indicate the side, north, south, east, or west, where measured. The distance of the measuring point in feet and tenths above or below (-) land-surface datum is given.

Water level: The water level is given in feet below land-surface datum. For flowing wells, the distance of measuring point above land-surface datum indicates the point of flow and thus is the minimum head. Measured depth to water is given in feet, tenths and usually hundredths, and reported or approximate depth to water is given in whole feet.

Yield: Yields given are in gallons per minute and are either reported or estimated.

Other data: C chemical analysis, L log. These data are included in tables 2A and 3A.

Part 1.- Coyote Valley

Well numbers: U.S.G.S.	Well numbers: Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)		Type pump and power		Use	Measuring point	(feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/2- 1E1		10-25-54			1715	0.0	D				Ds						
	578--	9- ?-17				73					Un			dry			
11/2- 7A1		2-15-54	Johnson	1933	1790	62.4	C	8	N	N	Un	Tc	1.2	52.45			
		6-16-43												52.3			L
		7-20-41				64.8								50.3	75		
11/2- 8F1		2-15-54			1740	2.2	C	10			Ds			dry			
11/2- 8K1		2-15-54	Johnson		1720	45.1	C	10	N	N	Un	D	0.2	flow	72	5	
	578--	2- ?-18	E. E. Barr	1918										3.5			
11/2- 8K2		2-15-54	Johnson		1725	21.0	C	6	N	N	Dm	D	0.8	flow	72	1	
	R--	1-30-53	Dale E. Flora											flow	72		C
11/2- 8K3		2-15-54	Johnson		1730	23.0	C	6	N	N	Un	D	0.3	flow	73	2.5	

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump	Power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/2- 8-1	578--	2-26-18			1730	17.5	D							7.8			
11/2-22N1		10-25-54			1730	19.0	D	30	N	N	Un	TcW	0.8	12.0			
		2-16-54												11.08			
	R--	1-30-53												11.2			C
	DA-M60	7-14-32						36						14			C
	578--	2-26-18				18		32	B	H	Ps			12.6			C
	578--	9- 6-17												14.9	71		
11/2-22Q1		10-25-54			1730	1.4	C	6			Ds						
	578--	2- ?-18		1918		18					Un			17.8?			
11/2-26R1		10-25-54			1780	117	C	12	N	N	Un	Tc	1.2	40.82			
		2-16-54												40.78			
11/2-27D1		10-25-54			1730	13	C	6	N	N	Un	TcN	-2.0	2.2			
	DA-M61	7-14-32															C
	578--	2- ?-18				50								flow		1±	
11/2-35G1		2-16-54			1780	93.5	DC	12	N	N	Un	TwcN	0.0	42.35			
11/3- 8N1		10-25-54	Robt. A. Edwards		1725	19.0	D	48	N	N	Un	Twc	-1.5	3.41			
		2-16-54												3.7	62		
		7-21-41				16.5							0.0	3.8	68		
11/3-11R1		2-17-54	Alvord Mine		2055		C	8	L	G	Dm	TcN	0.3	190+			
	R--	2- 3-53									Id						C

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)	Type pump and power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/3-20R1		2-16-54	C. E. Curtis		1780	87.5	C 10	L W	S	TcN	1.0	44.88			
	R--	2-17-53										47.8			C
11/3-30J1		2-16-54	C. E. Curtis		1775		C 10	N N	Un	TcS	0.5	45.20			
		7-21-41				54.1					1.9	45.82			
	R-L60	5-11-32			1780			L W				45.3			
	R-L60	5-28-30										45.3			
11/3-30J2		10-25-54	C. E. Curtis	1952	1775	130	RG 12	T G	Dm	HpbW	0.7	45.45			L
		2-16-54										45.40		120	
11/3-35F1		10-25-54	L. A. Bureau Power and Light		1778	88.2	C 10	N N	Un	Tc	2.6	65.23			
12/2-27J1		2-16-54			1720	3.5	D 72	N N	Un	Twc	0.0	flow	66	10±	
12/2-28D1		11-19-54			1775	49.2	C 12	N N	Un	Tc	0.5	36.40			
12/2-28P1		10-25-54			1720	42.5	C 6	N N	Un	Tc	0.8	flow	70	3±	
	578--	2- ?-18										flow		1±	
12/2-32C1		10-25-54	Louis C. Flint		1745		C 8	L H	Dm	Twc	1.9	12.19			
		2-16-54	do									12.87			
		2-11-51	do							Tc	0.2	11.8			
		7-19-41	do									11.65	72		
	578--	2- ?-18	J. T. Burns				C					8			

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	and diameter (in.)	Type pump	and power	Use		Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
12/2-32G1		2-16-54	Dolan	1918	1735	33	R	6	L	H	Un	Tcb	0.3	1.0			
		6-15-43	W. B. Davis						L	H				flow	75	3-5	
12/2-32K1		2-16-54	Riblet and Alexander	1923	1730		C	5	N	N	Dm	Tc	1.5	flow		1-2	
		2-11-51	Max Hering											flow		2.5	
		6-16-43	do											flow	73	2.5	
		7-19-41	do											flow	75	1-2	L
12/2-33D1		2-16-54	Wm. Marquis		1720		C	6	N	N	S	Tc	3.0	flow	69		
		7-19-41	L. S. Jones			37.2								flow	70	10-15	
	578--	2- ?-18	do			90							2.5	flow		5-10	
12/2-33D2		2-16-54	Wm. Marquis		1720		C	9	N	N	Dm	D	1.0	flow	68	5-10	
	R--	2-11-53	Rudnick and Marquis			50?		10						flow		6±	C

Part 2.- Cronise Valleys

Well numbers: U.S.G.S.	Well numbers: Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump	Power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
12/6- 4G1		10-26-54			1085	58.0	C	8	L	H	Un	BpbW	0.0	26.25			
		2-17-54												26.1			
	R--	3- 4-53												25.7			C
12/6-25A1		2-17-54			1080	143.0	C	12	B	H	S	TcW	1.8	18.9			
	F-900	2-15-53															C
12/7- 8N1		10-26-54	S. Smith	1910	1080	99.0	C	12	N	N	Un	TwcE	0.0	16.39			
		5-26-54												16.07			
12/7-17P1		2-19-54	I. A. Himes		1080	102.0	C	12	T	N	Un	Tc	0.0	22.03			
	578-35	?- ?-18	J. Walton			150			T					12		540	
12/7-18R1		10-26-54			1075	137.5	C	12	N	N	Un	Tc	3.6	15.51			
		2-19-54												15.36			
12/7-18R2		10-26-54			1075	51.5	C	12	N	N	Un	Tc	1.8	12.88			
		2-19-54												12.99			
12/7-19H1		2-17-54	I. A. Himes	1952	1080	190	C	14	T	G	Ir	D	1.5	26.33		600	L
	F-911	5-19-53												20			C
	F-911	3-20-53				280								25			C
12/7-19-1	578-36	12- 4-19	R. Hendry			22		12	L	H				13.9			
12/7-28-1	578-45	12- 5-19	J. M. Baber			134		12	C					31.1			

Table 1A

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump	Power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
12/7-29A1		5-25-54	Calif. Hwy. Dept.		1100	95.5	C	12	N	N	Un	Tc	0.0	31.19			
12/7-29B1		2-17-54	S. Smith		1090	76	C	12	N	N	Un	Twc	0.0	32.2			
	578-38	12- 5-19	H. D. Bradley			85.5								21.3		225	
12/7-29B2		10-26-54			1090	20.3	C	9½			Ds	Tc	1.5	dry			
	578-37	12- 4-19	H. D. Bradley			80			L	H				18.9			C
12/7-29Q1		10-26-54			1120	0.0	D				Ds						
	578-42	12- 3-19	H. Markt			33								31.5			
12/7-29-1	578-39	12- 5-19	G. T. Roberts			133.7	C	12						22.0		315	L
12/7-30J1		10-26-54	J. A. Proctor	1931	1100	81.5	C	12	J	G	Dm	Tah	1.5	45.0			
	R--	5-26-54												61.5			C
		2-17-54												44.42		44	
	DA-M34	6- 8-32	Elmo Proctor			85								32			C
12/7-30-1	578-40	?- ?-19	L. Holibaugh			25	C	5						14			
12/7-32C1		5-25-54			1120	61	C	12			Ds	Tc	3.5	dry			
	578-43	12- 3-19	H. Markt					8						34.6			
12/7-32C2		10-26-54			1120	2.0	DC	12			Ds			dry			
	578-41		H. Markt			44	C		L	W				35			C
12/7-33-1	578-44	12- 3-19	C. B. Baber			69	C	6	L	H				36			C

Part 3.- Soda and Silver Lake valleys

Well numbers: U.S.G.S.	Well numbers: Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)	Type pump and power	Use	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/7-11X1		5-25-54			1060	7	C 10		Ds	Tc 1.8	dry			
	578-14	12-15-19	E. I. Cook			97					30.6			
11/7-11X2		10-27-54			1070	38	C		Ds	Tc 2.0	dry			
	578-13	12-27-19	A. Skelton			141.2	8				39.9			C
11/7-14X1		10-27-54			1060	0.0	D 88		Ds		dry			
	578-17	12-27-19	B. F. Caldwell				DC 88				29.6			
11/7-14-1	578-15	12-15-19	J. J. Berray				C 8				30.4			
11/7-14-2	578-16		Massen				D							
11/7-24-1	578-18		W. T. Tener			12	Dr							
11/8- 6X1		5-25-54			1030		C 8	L G	S	Tc 2.1	25.43			
	578-19					81					11			
11/8- 7X1		5-25-54			1030	73.5	C 8	N N	Un	Tc 2.0	21.89			
	578-22	12- 7-19	Ora Weishaupt			80					9.0			
11/8- 7X2		5-26-54	L. McCormack	1952	1030	55	RG 16	N N	Un	Tc 0.8	19.80			L
11/8- 7X3		10-27-54	L. McCormack	1953	1030	178	RG 14	N N	Un	Tc 1.0	20.04			L
		5-26-54									20.60			C
11/8- 7X4		5-26-54			1030	66.5	C 7	N N	Un	Tc 0.8	25.47			
	578-20	12- 7-19	Elmo Proctor			74					11			

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump	Power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/8- 7X5		5-26-54			1030	0.0					Ds			dry			
	578-21	12-19-22	Elmo Proctor			23	C	5						7		20	C
	578-21	8- ?-21												10			
	578-21	12- 7-19												8.9			
11/8- 7X6		5-26-54			1030	0.0					Ds			dry			
	578-23		L. B. Joralmon			150	C	5	C	G				5.3		225	
11/8- 7X7		10-27-54	L. McCormack	1953	1030	18	R	30			Ds	Tc	0.0	dry			L
11/8- 8X1		5-26-54	Union Pacific R.R.		1020		C	9	L	G	RR	TcW	0.3	17.51			C
11/8- 8-1	578-25	12- 6-19	D. L. Young			13	D	48						11.0			
11/8- 8-2	578-26	12- 6-19	P. B. Sterratt			86	C	7						4.2			
11/8- 9X1		5-26-54			1010	70.7	C	8	N	N	Un	Tc	2.3	19.66			
	578-24	12- 6-19	Ida M. Gue			72								10.6			
11/8- 9X2		5-26-54			1010	94.5	C	8	N	N	Un	Tc	2.0	19.79	79		C
	578-27	12- 6-19	Craig			104								11.9			
11/8-10-1	578-28		C. Klingerman			276	C	7	C					6		160	L
11/8-17X1		10-27-54			1030	0					Ds						
	578-30	12- 7-19	L. Joralmon			154	C	8	C	G				3.0		180	L

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump	Power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
11/8-17X2		10-27-54			1030	0					Ds						
	578-31		A. J. Ingalls			91	C	8	C	G				13		100	L
11/8-17-1	578-29	12- 6-19	Mohave United Mining and Milling Co.				D	48						10.5			
11/8-18X1		5-25-54	L. McCormack	1952	1030	283	RG	16	N	N	Un	Tc	0.0	25.97			C,L
11/8-18X2		5-26-54	S. Smith		1020		C	8	L	G	S	Tc	0.6	20.20			
	578-30A		L. B. Brooks			80	C	7	C	G						150	
11/8-19-1	578-32	12- 2-19	L. Weichert			86	C	8						12.0			
11/8-29-1	578-33	12- 6-19	Mohave United Mining and Milling Co.			12.6	D	48						10.1			
11/9-17-1	578-34	12- ?-19	L. A. and Salt Lake Railroad			212	C	13½						55			C,L
11/10-29X1		5-25-54	Union Pacific RR		1220		C		T	G	RR						C
12/8-11X1		10-27-54	C. Springer		990	4	C	6	N	N	Un	Tc	-1.0	flow			
	578-10	12- 7-19				103								flow	78½	150	C
12/8-11X2		10-27-54	C. Springer		990	12	D		N	N	Dm			flow		15	
	DA-M57	7-14-32	Tonopah and Tidewater RR											flow		1±	C

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)	Type pump and power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
12/8-11-1	578-11	12- 7-19				39	7					flow	73½	1±	
12/8-22X1		10-27-54			1000	4.5	D 48	N N	S	Twc	-1.5	4.0			
12/8-27X1	R--	5-26-54	S. Smith			20	D					15	72		C
		2-17-54	Milton Culver		990		D	C G	Dm	Twc	-3.0	18.4			
	R--	5-13-53		1910								20			C
	F-749	5- ?-52	Razor Cattle Co.												C
	DA-M33	6- 8-32	Razor Station			11									C
	578-12	12- 7-19	Tonopah and Tidewater R. R.			17.8						12.6		100	C
12/8-27X2		10-27-54	S. Smith	1953	990	27	R 10	L W	Un	Tc	1.0	19.07			
		5-26-54										18.64			
		2-17-54	Milton Culver									18.40			
12/8-35X1		5-26-54	S. Smith		970	11	D 240	L G	S	Tbc	1.0	6.80	71		C
12/8-35X2		5-26-54	S. Smith		970	9.5	D 63	N N	Un	Tbc	1.4	7.28	71		C
13/8- 1H1		10-27-54			930	138	C 12	N N	Un	Tc	2.0	24.43			
		2-18-54										24.23			
	578-7		D. Heitshusen			385									
13/8- 1-1	578-9		O. Pochmeyer			400						21			
13/9- 7E1		2-18-54	F. Twisselman		930	130.0	C 12	L W	Un	TcN	0.4	22.95			

Well numbers: U.S.G.S.	Well numbers: Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)	Type pump and power	Use	Measuring point	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
13/9-20J1		10-27-54	F. Twisselman		980	400	RG 16	T D	Ir	TcN	0.8	65.89			
		2-18-54										65.82			
	R--	4-15-53					12								C
14/8-13-1	578-3	12-23-17	E. O'Rourke			32.8	D 48	B H			0.0	31.4			
14/8-14-1	578-4		A. D. Long			289	C 12					32			
14/8-25R1		2-18-54	C. F. Brown	1934	960		C 14	T N	Un	BpbN	0.0	32.98			
14/8-25R2		10-27-54	Calif. Hwy. Dept.		960		C 12	J G	Dm	TcW	0.0	34.45			
14/8-25-1	DA-M58	7-14-32	Fairbanks Service Station			308	C 12								C
14/8-36B1		2-18-54	El Rancho Motel		960		C 6	T 2	Dm	TcW	3.4	27.63			
14/8-36B2		2-18-54	Death Valley Inn	1951	970	180	C 12	J 1	Dm						
14/8-36-1	578-6	9- 9-17	R. Y. Williams			36.5	D 48	L G			0.0	34.7		7	C
14/9-29D1		2-18-54			1000		10		Ds						
14/9-30E1		2-18-54	Yermo School Dist.	1950	990	150	C 12	J 5	Dm	Tc	0.9	49.83			L
	R--	4-15-53										55			C

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well and diameter (in.)	Type pump and power	Use	Measuring point	(feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
14/9-30F1	R--	5- 6-54	C. F. Brown				C 12								C,L
		2-17-54		1947	990	140	C 14	J G	Ps	Tc	1.0	64		110	
	R--	9-11-53										62.2		30±	C
	F-591	3-15-51	C. F. Brown												C
14/9-30K1		10-27-54	E. Kolstad		990	106.0	C 6	L W	Un	Tah	1.7	25.54			
		2-17-54										25.61			
	R--	4-15-53		1950			5					75			C
14/9-30K2		2-18-54		1953	990		C	L G	Un						
14/9-30L1		2-18-54	Hadlock Motel	1952	990	127	C 8	T 2	Dm						L
14/9-30L2		2-18-54	Schaff Bros. Garage		990		C 8	T 2	Dm	TcW	0.8	45.27			
14/9-30P1		2-18-54	Failing	1942	980	235	C 10	T 5	Ps	TcW	0.7	50.42			L
	R--	4-15-53				250							74		C
	F-748	5- 7-52				240									C
14/9-30P2		2-18-54	Failing	1947	980	250	C 12	T 7½	Ps	TcE	0.7	53.55			L
14/9-30-1	578-5	10-23-17				42	D	L W				38.1			
14/9-30-2		10-27-54	Failing	1942	970	502	C		Ds						L
15/8-22R1		10-27-54	Death Valley Panamint Mining Co.	1950	930	120	C 12	J 3	Id	TcE	0.7	55.98			
		2-18-54										55.92			

Well numbers U.S.G.S.	Well numbers Other	Date canvassed or visited	Owner or user	Year completed	Altitude of lsd (ft.)	Depth (feet)	Type well	Diameter (in.)	Type pump and power	Use	Measuring point (feet)	Depth to water below lsd (ft.)	Temp °F	Yield (gpm)	Other data available
15/8-22X1		2-19-54	L. A. Dept. of Power and Light		1000	242	C	12	T 10	Dm		138			
15/8-22X2		2-19-54	do	1943	1000	208	C	9	T 10	Dm		136			
15/8-22X3		10-27-54			940	0.0									
	DA-M36	6- 8-32	Silver Lake Station			115	D					70			C
	578-2		Tonopah and Tidewater R.R.				D							15-20	
15/8-22-1	578-1	1-21-18	G. Brauer			64	D	48	L W			59.6			C
	578-1	9- 9-17										61			
15/8-36X1		2-18-54	Silver Lake Airport		910	99	C	6	T 1½	Dm	Bpb -4.0	36.44			L
	F-901	2-15-53										25			C

Table 2A.- Chemical analyses of well waters and one analysis of Mojave River water

Constituents: The sum of determined constituents, in parts per million (ppm) is the sum of tabulated constituents minus approximately one-half (50.8 percent) the bicarbonate. A value for sodium preceded by the letter a is a calculated value indicating sodium and potassium expressed as sodium. Constituents in parentheses are calculated.

Footnotes: Letters preceding the date of collection refer to the point or method of collection, according to the following: a from discharge of pumped or flowing well, b from storage facility at an active well which was not necessarily being pumped at the time sample collected, c bailed from well, and d from discharge of hand pump. Where no letter precedes date of collection, method of collection is unknown.

Analyzing laboratory: DWR State of California, Department of Public Works, Division of Water Resources; UC University of California Agricultural Extension Service, Riverside, California; DA U. S. Salinity Laboratory of the U. S. Department of Agriculture, Riverside, California; GS U. S. Geological Survey, SB San Bernardino County Laboratory, U analyzing laboratory unknown.

Part 1.- Coyote Valley

(Analyses in parts per million)

	11/2-8K2 [1]	11/2-22N1	11/2-22N1	11/2-22N1
Silica (SiO_2)	-	64	-	-
Iron (Fe)	-	0.24	-	-
Calcium (Ca)	52	13	113	14
Magnesium (Mg)	14	7.2	21	3.3
Sodium (Na)	272	(a826)	a741	650
Potassium (K)	2.6			6.4
Carbonate (CO_3)	0	18	-	0
Bicarbonate (HCO_3)	156	462	915	395
Sulfate (SO_4)	267	890	856	698
Chloride (Cl)	272	367	257	249
Nitrate (NO_3)	17	4.0	3.7	3.1
Fluoride (F)	--	-	-	7.8
Boron (B)	.8	-	34	5.4
Sum of determined constituents (Sum)	976	(2,420)	2,480	1,840
Hardness as $CaCO_3$ (Hardness)	189	62	367	49
Percent sodium (%Na)	76	97	81	96
Specific conductance (Sp C) Micromhos at 25° C	1,675	-	3,490	2,875
pH	7.5	-	8.3	8.0
Temperature (°F)	72	71	-	68
Date collected (Date)	a1-30-53	c9-6-17	c7-14-32	c1-30-53
Depth, in feet (Depth)	21	18	19	19
Analyzing laboratory (Lab.)	DWR	GS	DA	DWR
Laboratory number (Lab. no.)	P-492	-	6464	P-491

1. Not certain whether sample from 8K1, K2, or K3. Well 8K2 nearest house.

Table 2A

	11/2-27D1	11/3-11R1	11/3-20R1	12/2-33D2[1]
SiO_2	-	-	-	-
Fe	-	-	-	-
Ca	8.4	5	13	23
Mg	.1	1	4	9
Na	a656	500	105	210
K		13	2.1	2.5
CO_3	-	106	0	0
HCO_3	326	517	173	100
SO_4	662	149	51	291
Cl	351	267	44	116
NO_3	Trace	0	3.5	0
F	-	10	2.5	10
B	7.3	2.34	.74	1.96
Sum	1,850	1,310	312	713
Hardness	21	17	49	94
% Na	98	97	82	82
Sp C	2,960	2,109	454	1,013
pH	8.6	8.9	7.8	7.8
°F	-	-	-	-
Date	c7-14-32	b2-13-53	b2-17-53	a2-11-53
Depth	-	-	87.5	-
Lab.	DA	DWR	DWR	DWR
Lab. no.	6465	2870	3080	2868

1. Not certain whether sample from 33D1 or D2. Well 33D2 nearest house and actively used.

Part 2.- Cronise Valleys

(Analyses in parts per million)

	12/6-4G1[1]	12/6-25A1	12/7-19H1	12/7-19H1
Silica (SiO_2)	-	-	-	-
Iron (Fe)	-	-	-	-
Calcium (Ca)	3	8.3	24	27
Magnesium (Mg)	2	3.7	1.8	6.7
Sodium (Na)	1,200	220	800	880
Potassium (K)	31	8.1	21	26
Carbonate (CO_3)	360	0	0	0
Bicarbonate (HCO_3)	1,430	466	220	217
Sulfate (SO_4)	9	3.6	260	207
Chloride (Cl)	805	81	970	1,170
Nitrate (NO_3)	10	4.5	1.0	3.0
Fluoride (F)	3.8	2.4	4.3	3.5
Boron (B)	4.18	1.28	2.53	2.67
Sum of determined constituents (Sum)	3,220	566	2,200 ✓	2,430 ✓
Hardness as $CaCO_3$ (Hardness)	16	35	67	95
Percent sodium (% Na)	90	92	95	94
Specific conductance (Sp C) Micromhos at 25°C	4,545	968	3,550	4,350
pH	9.2	8.1	8.1	8.0
Temperature (°F)	-	-	-	-
Date collected (Date)	d3-4-53	c2-15-53	a3-20-53	a5-19-53
Depth, in feet (Depth)	58	143	280	280
Analyzing laboratory (Lab.)	DWR	SB	SB	SB
Laboratory number (Lab. no.)	3082	2520	2616	2664

1. NH_3 = 80 ppm.

Table 2A

	12/7-29B2	12/7-30J1	12/7-30J1	12/7-32C2	12/7-33-1
SiO_2	39	-	-	46	12
Fe	.11	-	.06	.23	.26
Ca	5.0	29	30	29	16
Mg	1.0	6.9	4	4.8	7.2
Na	(a241)	a136	145	(a158)	(a1,145)
K			5.7		
CO_3	36	-	-	0	0
HCO_3	307	317	323	367	1,070
SO_4	94	67	68	64	740
Cl	92	55	63	48	643
NO_3	.2	1.9	6.6	.4	Trace
F	-	-	1.7	-	-
B	-	.49	0.7	-	-
Sum	(662)	454	487	(534)	(3,100)
Hardness	17	100	91	92	70
% Na	97	75	76	79	97
Sp C	-	744	778	-	-
pH	-	8.4	7.8	-	-
°F	-	-	73	-	-
Date	12-4-19	a6-8-32	a5-26-54	12-3-19	12-3-19
Depth	82	85	35	44	70
Lab.	GS	DA	UC	GS	GS
Lab. no.	-	6385	R-148	-	-

Part 3.- Soda and Silver Lake valleys

(Analyses in parts per million)

	11/7-11X2	11/8-7X3[1]	11/8-7X5	11/8-8X1
Silica (SiO_2)	12	-	58	-
Iron (Fe)	.36	0.13	0.16	0
Calcium (Ca)	2.9	21	29	33
Magnesium (Mg)	1.9	5	5.1	5
Sodium (Na)	(a142)	300	(a135)	130
Potassium (K)		21		4.3
Carbonate (CO_3)	33	62	0	0
Bicarbonate (HCO_3)	249	115	270	273
Sulfate (SO_4)	7.2	367	74	69
Chloride (Cl)	40	166	63	74
Nitrate (NO_3)	.28	0	Trace	0
Fluoride (F)	-	2.8	-	1.7
Boron (B)	-	.66	-	.46
Sum of determined constituents (Sum)	(364)	1,000	(499)	453
Hardness as $CaCO_3$ (Hardness)	15	73	93	103
Percent sodium (% Na)	95	80	76	72
Specific conductance (Sp C) Micromhos at 25°C	-	1,631	-	787
pH	-	9.2	-	8.0
Temperature (°F)	-	76	-	-
Date collected (Date)	12-7-19	c5-26-54	12-7-19	b5-26-54
Depth, in feet (Depth)	143	178	23	-
Analyzing laboratory (Lab.)	GS	DWR	GS	DWR
Laboratory number (Lab. no.)	-	4321	-	4324

1. NH_3 = 23 ppm.

Table 2A

	11/8-9X2	11/8-18X1	11/9-17-1[1]	11/10-29X1	12/8-11X1	12/8-11X2
SiO_2	-	-	-	-	70	-
Fe	.92	0	-	0	.13	-
Ca	10	17	99	26	18	32
Mg	0	0	19	7	6.3	5.2
Na	520	390	(a181)	65	(a658)	a797
K	18	35		3.1		
CO_3	34	0	0	0	7.2	-
HCO_3	229	203	62	112	229	360
SO_4	204	187	43	55	316	366
Cl	535	380	443	49	688	824
NO_3	0	0	-	16	1.0	Trace
F	6	12	-	4	-	-
B	2.34	2.3	-	.18	-	3.37
Sum	1,440	1,130	(816)	281	(1,880)	2,210
Hardness	25	42	325	94	71	101
% Na	96	91	55	59	95	94
Sp C	2,532	1,957	-	493	-	3,830
pH	9.0	8.1	-	7.8	-	7.8
°F	79	83	-	-	-	-
Date	c5-26-54	c5-25-54	3- -08	b5-25-54	a12-7-19	a7-14-32
Depth	90.7	283	212	-	103	-
Lab.	DWR	DWR	U	DWR	GS	DA
Lab. no.	4323	4322	-	4325	-	6461

1. SiO_2, Fe_2O_3, and Al_2O_3 combined = 16 ppm.

	12/8-27X1	12/8-27X1	12/8-27X1	12/8-27X1	12/8-27X1	12/8-35X1
SiO_2	71	-	50	-	-	-
Fe	.05	-	-	-	.06	0
Ca	21	15	24	24	24	7
Mg	4.4	6.0	4.0	3.7	5	1
Na	(a227)	a188	a150	160	154	290
K				40	3.1	4
CO_3	1.2	-	0	0	-	0
HCO_3	365	336	285	284	299	488
SO_4	108	75	55	69	68	109
Cl	105	69	81	82	78	106
NO_3	.72	2.5	3.0	5.0	3.4	0
F	-	-	1.5	1.4	2.2	4.0
B	-	.59	.36	.4	.58	1.02
Sum	(720)	524	510	527	488	766
Hardness	70	63	75	75	80	22
% Na	88	87	81	81	80	96
Sp C	-	877	740	830	820	1,271
pH	-	8.2	8.1	7.7	8.0	8.0
°F	-	-	-	-	72	71
Date	c12-7-19	c6-8-32	c5- -52	c5-13-53	c5-26-54	c5-26-54
Depth	15	11	11	11	11	11
Lab.	GS	DA	SB	DWR	DWR	DWR
Lab. no.	-	6384	2045	P-652	R-150	4326

	12/8-35X2	13/9-20J1	14/8-25-1	14/8-36-1	14/9-30E1	14/9-30F1
SiO_2	-	-	-	52	-	19
Fe	3.8	-	-	.32	-	.15
Ca	8	13	27	108	13	35
Mg	1	7	23	88	14	41
Na	290	280	a1,160	a623	350	a317
K	5.5	5.4			8.2	
CO_3	10	0	-	5.8	0	0
HCO_3	564	198	271	221	334	320
SO_4	41	108	239	153	167	223
Cl	110	270	1,560	1,100	275	317
NO_3	0	18	20	10	9.4	8.9
F	4.0	4.0	-	-	3.8	.5
B	1.08	.42	1.95	-	.96	1.35
Sum	756	805	3,160	2,250	1,010	1,120
Hardness	24	61	163	631	90	254
% Na	95	90	94	68	88	73
Sp C	1,256	1,361	5,720	-	1,639	1,930
pH	8.3	8.0	8.3	-	8.2	7.8
°F	71	-	-	-	-	-
Date	c5-26-54	a4-15-53	7-14-32	9-9-17	b4-15-53	3-15-51
Depth	9.5	400	308	180	150	140
Lab.	DWR	DWR	DA	GS	DWR	SB
Lab. no.	4327	3140	6462	-	3136	1580

Table 2A

	14/9-30F1	14/9-30[illegible]1	14/9-30K1	14/9-30P1	14/9-30P1
SiO_2	-	-	-	34	-
Fe	-	-	-	-	-
Ca	30	34	39	39	39
Mg	35	33	46	43	37
Na	280	297	330	240	280
K	13	13	14	12	12
CO_3	7	Trace	0	0	0
HCO_3	300	307	307	293	302
SO_4	200	214	224	188	187
Cl	282	284	365	298	294
NO_3	13	17	8.4	11	14
F	1.4	1.7	2.0	1.4	1.2
B	1.2	1.0	.94	.83	1.0
Sum	1,010 ✓	1,050 ✓	1,180	1,010	1,020
Hardness	219	220	287	275	250
% Na	72	74	70	64	69
Sp C	1,792	1,800	1,961	1,560	1,810
pH	8.2	8.2	8.0	8.1	7.6
°F	-	-	76	-	74
Date	b9-11-53	b5-6-54	a4-15-53	5- -52	b4-15-53
Depth	140	140	140	240	240
Lab.	DWR	DWR	DWR	Sb	DWR
Lab. no.	3497	P-569	3132	2044	P-654

Table 2A

	15/8-22X3	15/8-22-1	15/8-36X1	Mojave River at Baxter[1]
SiO_2	-	61	-	-
Fe	-	.15	-	-
Ca	10	6.8	13	16
Mg	7.9	6.6	9.9	7.9
Na	a480	(a458)	380	460
K			9.2	13
CO_3	-	35	0	34
HCO_3	634	567	517	342
SO_4	213	186	188	242
Cl	266	223	182	345
NO_3	11	8.6	19	.5
F	-	-	4.0	4.3
B	1.81	-	1.1	2.57
Sum	1,310	(1,270)	1,060	1,300
Hardness	58	44	71	71
% Na	95	96	91	92
Sp C	2,180	-	1,780	2,060
pH	8.5	-	7.9	8.6
°F	-	-	-	-
Date	6-8-32	9-9-17	2-15-53	3-20-53
Depth	115	64	-	0
Lab.	DA	GS	SB	SB
Lab. no.	6387	-	2551	2619

1. Sample of streamflow. May represent rising ground water in Afton Canyon.

Table 3A.- Drillers' logs of water wells

Part 1.- Coyote Valley

11/2-7A1. Johnson. Altitude about 1,790 feet. Drilled by Max Hering. 8-inch casing; perforated 45-60 feet.

Material	Thickness (feet)	Depth (feet)
Rock and sand from top to bottom. No water gravel ----	86	86

11/3-30J2. C. E. Curtis. Altitude about 1,775 feet. Drilled by Howard Pump Co. 12-inch casing; perforated 47-141 feet. Reported yield 55 gpm.

Clay and sand --	50	50
Streaks of blue clay -------------------------------	10	60
Gravel --	3	63
Streaks of clay ------------------------------------	4	67
Clay and sand --	26	93
Gravel --	14	107
Clay and streaks of sand --------------------------	23	130
Blue clay ---	11	141

12/2-32K1. Riblet and Alexander. Altitude about 1,730 feet. Drilled by Max Hering. 5-inch casing.

Sand ---	7	7
Clay, yellow ---	10	17
Clay, blue ---	11	28
Gravel, fine (1st water) ---------------------------	.3	28.3
Clay, blue, tough, hard ----------------------------	17.7	46
Gravel, fine ---	5	51
Clay, brown --	23	74
Gravel, up to 2 inches -----------------------------	?	?

Part 2.- Cronise Valleys.

12/7-19H1. I. A. Himes. Altitude about 1,080 feet. Drilled by Howard Pump Co. 14-inch casing; perforated 159-252 feet. Reported yield 600 gpm; drawdown 95 feet.

Material	Thickness (feet)	Depth (feet)
Silt	38	38
Streaks of clay and sand	14	52
Bentonite	9	61
Fine sand, clay and streaks of boulders	30	91
Dark blue clay	67	158
Pea gravel and streaks of clay	15	173
Loose rocks	2	175
Rocks (loose)	6	181
Earth and clay	1	182
Loose rocks	10	192
Earth and clay	3	195
Loose rock	2	197
Earth and clay	54	251
Clay	1	252

12/7-29-1. G. T. Roberts. 12-inch casing; perforated 75-80, 84-116, 118-126, and 128-142 feet. Reported yield 300 gpm.

Silt and sand	12	12
Silt	6	18
Soft clay	7	25
Sand	4	29
Clay	16	45
Hard sand	5	50
Sand and gravel	2	52
Clay	4	56
Sand	1	57
Clay	2	59
Sand	1	60
Clay and sand	6	66
Sand and gravel	9	75
Gravel	5	80
Fine sand	4	84
Gravel	32	116
Quicksand	2	118
Sand and gravel	8	126
Sandrock	2	128
Sand and gravel	14	142

Part 3.- Soda and Silver Lake valleys

11/8-7X2. Loring McCormack. Altitude about 1,030 feet. Drilled by Scroggins Drilling Co. 16-inch casing; perforated 75-442 feet.

Material	Thickness (feet)	Depth (feet)
Fine sand	25	25
Fine sand and gravel	417	442

11/8-7X3. Loring McCormack. Altitude about 1,030 feet. Drilled by Howard Pump Co. 14-inch casing to 87 feet; 12-inch to 230 feet.

Material	Thickness (feet)	Depth (feet)
Silt and sand	12	12
Coarse sand and lava sand	12	24
Sand and silt mixture	38	62
Bluish clay	30	92
Coarse sand	18	110
Clay	30	140
Sand	11	151
Clay, bluish	134	285
Cavity (?)	-	285+

11/8-7X7. Loring McCormack. Altitude about 1,030 feet. Drilled by Howard Pump Co. Uncased hole.

Material	Thickness (feet)	Depth (feet)
Silt and sand	12	12
Coarse sand and lava sand	12	24
Sand and silt mixture	38	62
Bluish clay	30	92
Coarse sand	18	110
Clay	30	140
Sand	11	151
Clay	102	253
Cavity (?)	33	286

11/8-10-1. C. C. Klingerman. 7-inch casing.

Material	Thickness (feet)	Depth (feet)
Unreported (Water-bearing bed at 119 feet)	119	119
Unreported	27	146
Clay	130	276

11/8-17X1. L. B. Joralmon. Altitude about 1,030 feet. 8-inch casing; perforated 33-34, 77-80, 110-114, 116-118, and 119-125 feet.

Material	Thickness (feet)	Depth (feet)
Soil (surface water at 6 feet)	9	9
Clay	7	16
Sand	9	25
Clay	2	27
Sand	1	28
Clay	4	32
Coarse sand	3	35
Quicksand	23	58
Blue clay	5	63
Blue sand	2	65
Blue clay	5	70
Blue sand	1	71
Hard blue clay	6	77
Coarse sand	3	80
Blue clay	3	83
Sand	4	87
Blue clay	8	95
Sand	13	108
Gravel	2	110
Coarse sand	1	111
Blue clay	3	114
Sand	2	116
Coarse sand	2	118
Blue clay	1	119
Coarse sand	6	125
Blue clay	2	127
Sand	7	134
Clay	3	137
Sand	5	142
Clay	2	144
Sand	4	148
Clay	6	154

11/8-17X2. A. J. Ingalls. Altitude about 1,030 feet. 8-inch casing.

Unreported	26	26
Sand, gravel, and clay	19	45
Unreported	1	46
Clay, blue	33	79
Unreported	1	80
Gravel	10	90

11/8-18X1. Loring McCormack. Altitude about 1,030 feet. Drilled by Scroggins Drilling Co. 16-inch casing; perforated 75-360 feet. Reported yield 400 gpm.

Material	Thickness (feet)	Depth (feet)
Blow sand	25	25
Sedimentary fill-gravel, boulders and fine sand	450	475

11/9-17-1. Union Pacific Railroad. Drilled by L. A. and Salt Lake Railroad. 13.5-inch casing.

Sand and clay	55	55
Gravel	33	88
Sand and gravel	72	160
Sand and clay	15	175
Sand	30	205
Boulders	7	212

14/9-30E1. Yermo School District; Baker School. Altitude about 995 feet. Drilled by Ephraim Harris. 12-inch casing; perforated 99-106 and 117-120 feet.

Surface, gray	75	75
Good sand and gravel to 3 inches	11	86
Dirty soft sand and clay, buff colored	7	93
Good sand and gravel to 3 inches	13	106
Dirty soft sand and clay, buff colored	11	117
Coarse sand and gravel, gray sand	3	120
Hard packed sand and clay	5	125

14/9-30F1. Charles Brown. Altitude about 995 feet. Drilled by Ephraim Harris. 12-inch casing; perforated 85-102 and 111-123 feet. Reported yield 110 gpm.

Soil and gravel	40	40
Clay and hard sand	23	63
Sand and gravel	3	66
Sand and mud	19	85
Hard packed sand and gravel, water	17	102
Fine sand and mud	9	111
Good sand and small gravel	12	123
Clay and sand	2	125

14/9-30L1. Jay Hadlock. Altitude about 990 feet. Drilled by Howard Pump Co. 8-inch casing.

Material	Thickness (feet)	Depth (feet)
Clay, sand and boulders set in clay	127	127

14/9-30P1. Failing. Altitude about 980 feet. Drilled by Ephraim Harris. 10-inch casing; perforated 200-206, 216-220, and 224-232 feet.

Sand	11	11
Sandy silt	59	70
Sand and gravel	3	73
Sand and silt	19	92
Sand, silt and some gravel	58	150
Gravel and sand	2	152
Hard packed sand	48	200
Sand and gravel	6	206
Hard packed sand	10	216
Sand and gravel	4	220
Clay	3	223
Cement	1	224
Sand and small gravel	8	232
Soft clay	3	235

14/9-30P2. Failing. Altitude about 980 feet. Drilled by Ephraim Harris. 12-inch casing; perforated 198-220 and 236-250 feet.

Sand	12	12
Sand, gravel and dirt	48	60
Sand and gravel, some hard packed and some loose (1st water @ 59 feet)	32	92
Hard packed sand and silt	8	100
Sand, silt and gray gravel, very little water (sampled water)	77	177
Good sand and gravel	3	180
Fine silt, hard packed	10	190
Good sand and gravel (sample)	4	194
Fine silt, hard packed	4	198
Sand and gravel, good (sampled)	22	220
Cement, sand and silt	16	236
Sand, gravel, and layers of cement (sampled)	14	250

14/9-30-2. Failing. Altitude about 970 feet. Drilled by Ephraim Harris. Uncased hole.

Material	Thickness (feet)	Depth (feet)
Well salty all the way; worse with depth, so filled in. Clean sand, beach bar	18	18
Sandy silt, gravel and dirt, apparently from E. side of valley. w/1 36 feet.	132	150
Clay (lake bed)	150	300
Clay with little sand, increasing in amount and coarseness in depth	25	325
Gravel, sand, and clay, cemented (Drift from W. side of valley.) Water test poor at 362 feet and bad at 415 feet	37	362
Gravel, sand and clay, cemented	53	415
Hard, tight, cemented, gravel, sand, and clay	25	440
Rocks and hard sand	10	450
Hard packed fine sand	6	456
Clay, rocks, and cement	28	484
Rocks and clay	7	491
Sand and rocks, all hard packed. Open hole 407-502	11	502

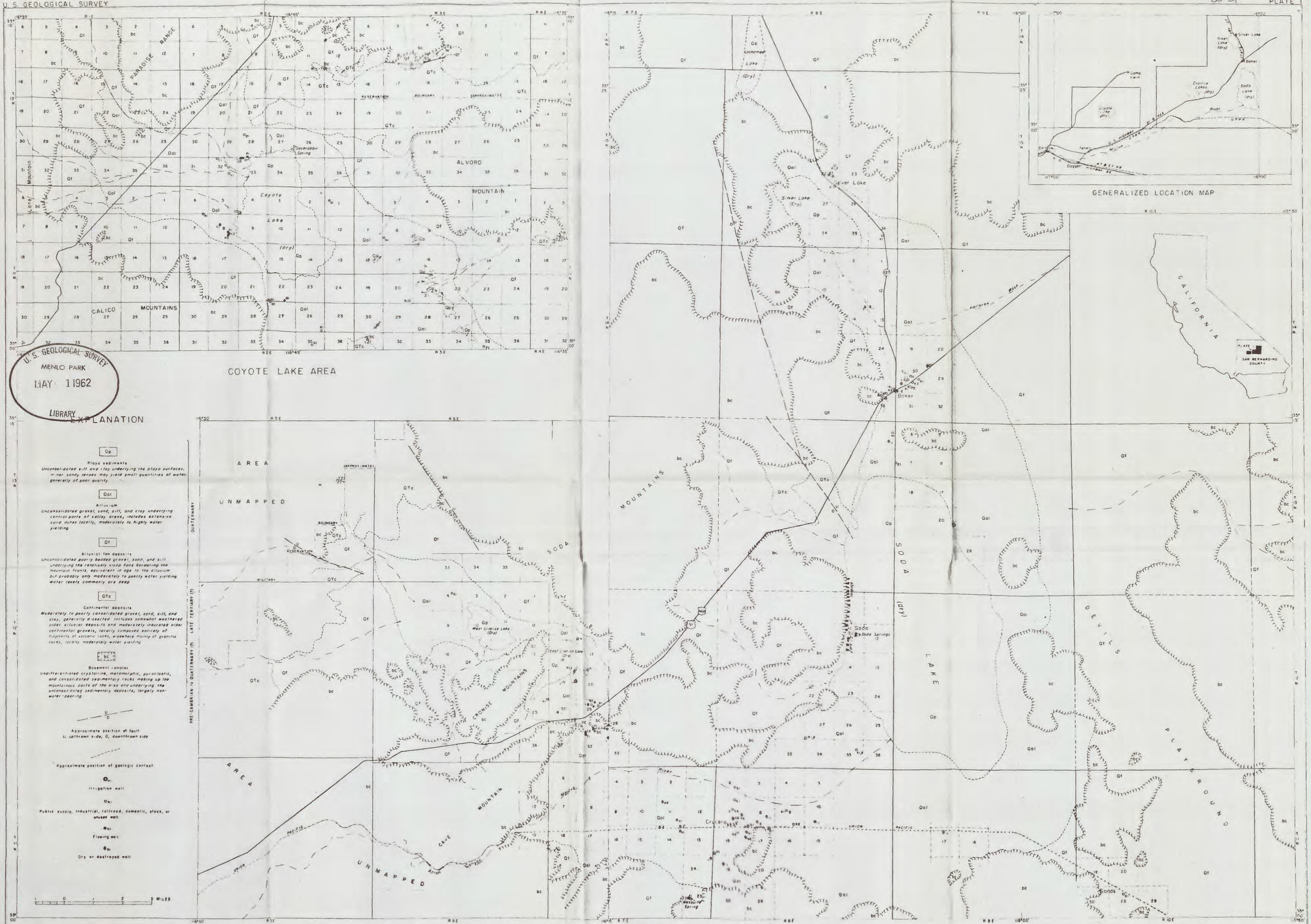
15/8-36X1. Silver Lake Airport. Altitude about 910 feet. Drilled by Ephraim Harris. 6-inch casing; perforated 70-90 feet.

Mainly sand, very little clay	90	90

(200)
G5ca3

55-21

PLATE 1



Base from U S G S topographic maps. Position of most land lines is approximate. Section lines east of 116°15' constructed from poorly controlled township and range lines and subject to major adjustments

MAP OF COYOTE, CRONISE, SODA, AND SILVER LAKE VALLEYS, CALIFORNIA
SHOWING RECONNAISSANCE GEOLOGY AND LOCATIONS OF WELLS, 1954

Geology and field location of wells by W. L. Burnham, 1954