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GEOLOGICAL SURVEY
Water Resources Division

DATA FOR SPRINGS IN THE SOUTHERN COAST, TRANSVERSE, AND PENINSULAR RANGES OF CALIFORNIA

By

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Prepared in cooperation with the
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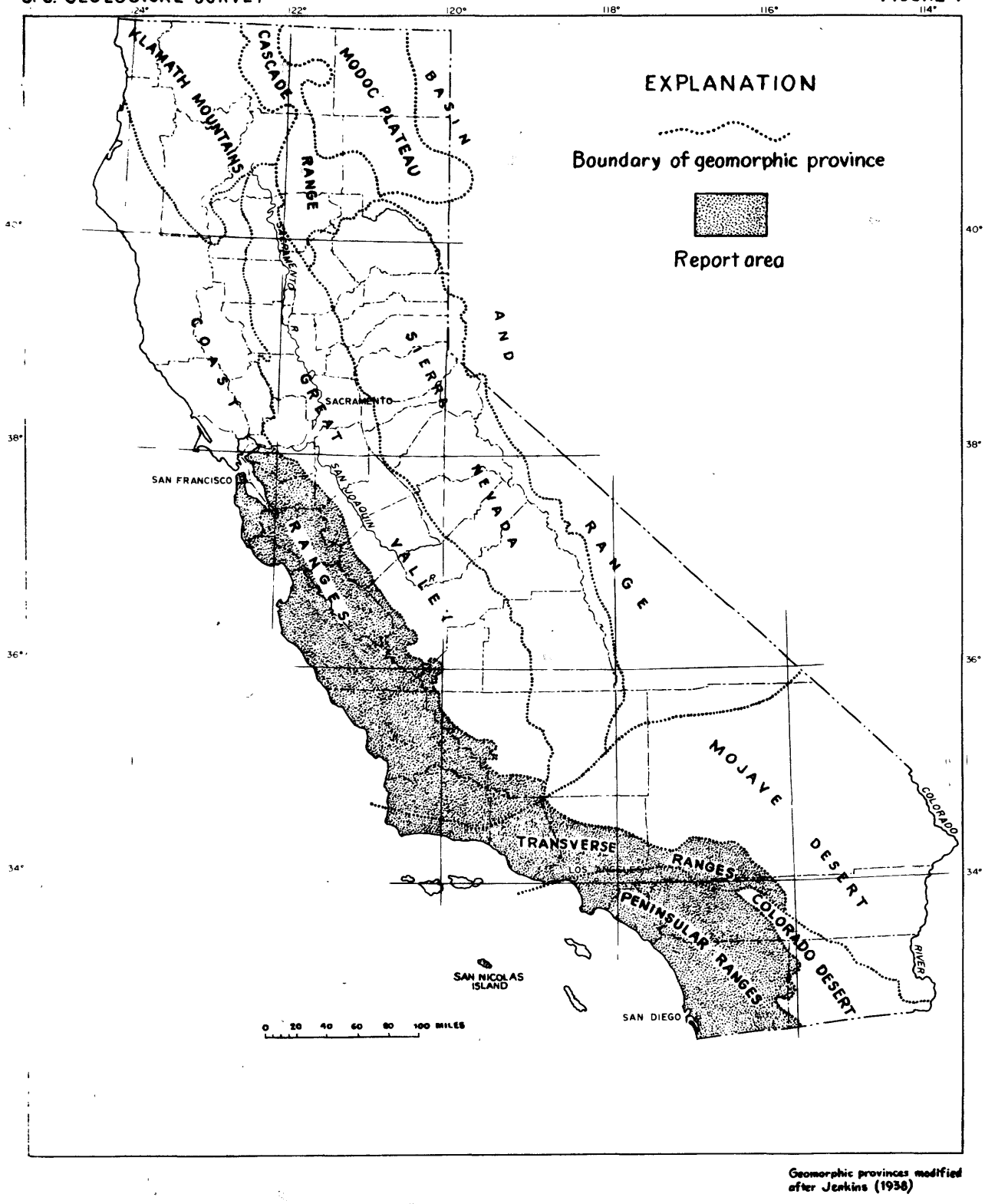
FIGURE 1



Geomorphic provinces modified after Jenkins (1938)

Figure 1.—Index map.

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INTRODUCTION

The area covered in this investigation includes the Coast Ranges south of San Francisco, the Transverse Ranges, and the Peninsular Ranges southward to the Mexican border (fig. 1). The area probably includes more than 100,000 springs and only about 200 are described here. Appendix A describes 203 springs, spring groups, and a few wells that have been designated as springs by their owners. Appendix B lists the results of chemical analyses of water from 184 springs. Because many springs occur in groups of two or more and the chemical quality of water from each of the springs in a group is often similar, one analysis has often been used to represent a group. Both appendixes list the spring data alphabetically by county and, within each county, numerically by township and range.

In a few instances wells are designated as springs. In most cases, these are flowing wells that have been developed for use by health resorts and are named as springs on maps, or are ingrained in the literature as springs. A conscious effort has been made to avoid naming new springs which are in fact wells.

Purpose and Scope

The purpose of this report is to provide basic data about selected springs in the Coast, Transverse, and Peninsular Ranges of California south of San Francisco. The scope of this report includes description of the springs and the results of up-to-date analyses of water from the springs.

Criteria used to select springs for this study included accessibility, availability of previous data, and geologic or hydrologic significance. Temperature and pH were measured at the spring site and ammonium was determined qualitatively since January 1963. Flow from springs was measured or estimated, depending on the situation at each site. The location of each site was determined on topographic or other available maps. Chemical and spectrographic analyses were made by personnel of the U.S. Geological Survey. Analyses include most of the major, minor, and trace inorganic constituents that occur in natural water.

This report represents the direct or indirect effort of many people who supplied information and aided in collection of samples. Individuals employed by the U.S. Forest Service, the California Division of Forestry, and the California State Library were of particular help.

Previous Investigations

Two statewide reports on springs have been published. Anderson (1890) described about 200 springs in California. Waring (1915) described about 590 spring areas representing nearly 1,600 springs; he included about 300 chemical analyses for 250 springs. A comprehensive tabulation of thermal springs throughout the United States, including California, was made by Stearns and others (1937) and by Waring (1965). Other reports that describe springs in California include the works of Whitney (1865), Gilbert (1875), Loew (1876), Peale (1886, 1894), Becker (1888), Crook (1899), Clarke (1924), and Fitch (1927). Mendenhall (1909a), Brown (1920, 1923), and Thompson (1929) described desert watering places, many of which are springs. Ball (1907) described the geology of some springs in eastern California and Mendenhall (1905a,b) describes some springs in the Los Angeles area.

Additional descriptions of springs and analyses of their water have been published in many areal reports that describe water resources, mineral deposits, and geology. The references at the end of this report list many such reports and includes all publications cited above or in Appendix A.

MINERAL CONSTITUENTS IN SPRING WATER

All natural water contains dissolved mineral matter. Water in contact with soil or rock, even for a few minutes, will dissolve some mineral or organic materials. This is one part of the weathering process. The type and quantity of dissolved matter depends on many variables such as the type of rocks or soils, the length of time of contact, and the temperature.

The mineral constituents and physical properties of natural water reported in the table of analyses (Appendix B) include those that have a practical bearing on the value of the water for most domestic and industrial purposes. Others, such as the trace metals, may presently be only of academic interest, but may assume importance as knowledge of the relation of water quality to health grows. Analyses include results for silica, arsenic, calcium, magnesium, strontium, sodium, potassium, lithium, nitrogen as ammonium, bicarbonate, carbonate, sulfate, chloride, fluoride, nitrate, phosphate, boron, pH, sum of the determined constituents, and specific conductance. In addition, many analyses include spectrographic determinations for the trace metals, aluminum, beryllium, bismuth, cadmium, cobalt, chromium, copper, iron, gallium, germanium, manganese, molybdenum, nickel, lead, titanium, vanadium, and zinc.

The chemistry of natural water has been described by Hem (1959) and White and others (1963), and standards of chemical quality for domestic, industrial, and irrigation use are available (U.S. Salinity Laboratory Staff, 1954; U.S. Public Health Service, 1962; McKee and Wolf, 1963).

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APPENDIX A

DESCRIPTION OF SPRINGS

Appendix A.--Description of springs in the southern Coast, Transverse, and Peninsular Ranges

Location number: Each spring is assigned a number according to its location in the rectangular system for the subdivision of public land. For example, in the number 1S/3W-30B,M, the part of the number preceding the slash indicates the township (T. 1 S.), and the number between the slash and the hyphen indicates the range (R. 3 W.); the number between the hyphen and letter indicates the 40-acre subdivision of the section, as shown in the accompanying diagram. The letter X is used where the location of the site was determined only to the section. Unverified sites are indicated by the letter Z. The letter following the comma indicates the base line and meridian: M, Mount Diablo base line and meridien; S, San Bernardino base line and meridian. The location is also listed according to latitude and longitude.

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

Name of spring and owner or user: First name given is the name of the spring. When the spring is known by two or more names, preferred or current usage is given first and other names are in parentheses. Where a group of springs has a name and individual springs in the group are also named, the individual names are indented under the group name. Spring names may be singular or plural without regard to the number of spring orifices.

Date of observation: The date given is the date the spring was visited.

Altitude: In feet above mean sea level; interpolated from Geological Survey topographic maps.

Discharge: In gallons per minute (gpm); estimated, except as noted. The letter m preceding a figure indicates measured discharge; r indicates reported.

Temperature: Water temperature, in degrees Fahrenheit, at orifice.

Physical appearance, development, and use: Information given is the condition and use of the spring on the date of observation.

Water type and related remarks: Where only one cation (aluminum, iron, calcium, magnesium, sodium) and one anion (bicarbonate, sulfate, chloride) are given, those ions each constitute more than 50 percent of the total reacting values of cations or anions. Where two cations or anions are given, they are given in order of decreasing abundance, and the sum of the percentage-reacting values of the two cations or anions is more than 50 percent of the total cations and anions.

References: For complete titles, see selected references in text.

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				ALAMEDA COUNTY				
1S/3W-30B,M 37°48'18"N,122°13'56"	Piedmont Springs City of Piedmont	5- 5-65	175	m0.5	59	Water trickles from well-defined joints in serpentine. Unused.	Sodium calcium bicarbonate. Weak odor of hydrogen sulfide noted. Small quantity of sulfur deposited by water.	Anderson (1890, p. 222-223). Waring (1915, p. 269-270). Gudde (1962, p. 232).
2S/2W-31F,M 37°43'00"N,122°07'00"	Alameda County Boys Camp	8-14-58	300			Domestic use.	Magnesium calcium bicarbonate.	
2S/2W-31F,M 37°43'00"N,122°07'00"	Bay-O-Vista Project	8-14-58	300			Probably destroyed or covered in 1958.	Magnesium bicarbonate.	
3S/2W-5Q,M 37°42'00"N,122°07'00"		8-22-58	200				Calcium magnesium sulfate.	
3S/2W-6A,M 37°42'00"N,122°07'00"	Tomnovee	8-22-58	200		68	Water collects in concrete box.	Magnesium calcium bicarbonate.	
3S/2E-14P,M 37°40'00"N,121°43'00"	Herman Wente	2- 4-60	620				Sodium calcium chloride bicarbonate.	California Department of Water Resources (1964, p. W28).
3S/2E-33F,M 37°37'55"N,121°45'43"	C. F. Crohare	10-30-59	520	2	70	Stock use.	Sodium bicarbonate chloride.	California Department of Water Resources (1964, p. F34).
3S/3E-15Q,M 37°40'07"N,121°37'43"	W. G. Wagoner	6- 6-63	1,620	m1.5	68	Spring area is completely concealed. Spring area excavated, gravel filled, and covered. Pipeline carries water 0.1 mile to stock-watering troughs.	Calcium sodium bicarbonate chloride. Sample had odor of petroleum, and oil was observed in storage tank.	Huey (1948). California Department of Water Resources (1964).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
4S/1W-15A,M 37°35'26"N,121°54'59"		7-30-51	180			Artificial spring in railroad tunnel. Unused.	Sodium magnesium sulfate bicarbonate.	
4S/1W-16Q,M 37°34'48"N,121°58'37"	Mayhew Spring Arnold Bellini	6- 6-63	110		61	Spring is surrounded by a cemented stone curbing about 4 feet in diameter and 10 feet deep. Unused.	Sodium bicarbonate. Bubbles of hydrogen sulfide were observed in spring.	Waring (1915, p. 270, 372).
4S/3E-8A,M 37°36'19"N,121°39'47"	Mud Springs Holm Bros.	6- 7-63	1,440	dry				
4S/3E-16G,M 37°35'18"N,121°38'52"	Mendenhall Springs (Agua de Vida Springs) Lower Spring	6- 7-63	1,900	.5	57	Springs issue from tunnels dug in cherty sandstone. Water seeps from tunnel walls, collects on floor, and is piped to storage tanks. Entrances are covered. Domestic and stock use.	Calcium bicarbonate.	Anderson (1890, p. 74-76). Waring (1915, p. 309-310).
4S/3E-16H,M 37°35'16"N,121°38'45"	Mineral Spring Mrs. H. S. Walker	6- 7-63	1,820	1.0	54			
4S/4E-19M,M 37°34'33"N,121°34'51"		6- 7-63	2,060	.1	69	Spring area is covered. Water is piped to tank. Stock use.	Calcium magnesium bicarbonate sulfate.	
4S/4E-31K,M 37°32'21"N,121°34'18"	Sweet Springs Camp Los Mochos, Boy Scouts of America	6- 7-63	2,450	1	68	Springs have been excavated, filled with gravel, and covered. Water is piped 0.2 mile to collection box for distribution to camp facilities. Domestic, stock, and swimming use.	Magnesium bicarbonate.	Waring (1915, p. 310-311).
5S/1E-8X,M 37°31'00"N,121°53'00"	Laurel Springs M. O. Pyzer	5-13-63	1,600			Water is piped about a mile. Domestic, stock, and irrigation use.	Calcium bicarbonate.	
5S/1E-18C,M 37°30'11"N,121°54'22"	Warm Springs (Alameda Warm Springs, Mission San Jose Hot Springs) L. E. and E. H. Pyzer	5-13-63	390	10	80	Springs issue from seepy depressions near the base of a low hill. Springs are protected by rock and mortar curbs. Water is piped to swimming pool. Recreation use.	Sodium bicarbonate.	Anderson (1890, p. 76, 195). Waring (1915, 1965).
						CONTRA COSTA COUNTY		
1N/1E-28M,M 37°54'01"N,121°52'27"	Travertine Spring Victoria Resources Corp.	5- 5-65	700	10	59	Spring issues through mine-tailings dump. Spring originally issued from travertine-covered orifice. Unused.	Aluminum iron sulfate. Strongly acidic, reduced. Water is golden-orange color. Iron oxides and sulfur deposits on rocks in discharge channel.	
1N/1E-28M,M 37°54'00"N,121°52'30"	Epsom Salt Spring (Alkali Spring) Victoria Resources Corp.	5- 5-65	800	50	67		Sodium chloride.	
1N/1E-33D,M 37°54'00"N,121°52'25"	Howard Ranch	7-11-58	800		70	Stock use.	Sodium chloride.	
1N/1W-15N,M 37°56'05"N,121°57'54"		7-11-58	620		74	Stock use.	Sodium chloride.	Pampeyan (1963).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				CONTRA COSTA COUNTY--Continued				
1N/2W-24M,M 37°54'53"N,122°02'31"	Sulphur Spring	1-20-66	190	2	76	Spring is protected by 4x4 concrete curb and cover. Water flows down channel to earthen tank. Stock use.	Sodium bicarbonate. Odor of hydrogen sulfide noted, and sulfur has precipitated on the soil.	Waring (1915, p. 270; 1965.
1N/3W-2H,M 37°54'41"N,122°09'18"	Alhambra Springs E. R. and L. W. Lasell Estate	1-20-66	600	m<.3	45	Spring is in a tunnel dug into hillside; entrance is covered. Unused.	Calcium sodium bicarbonate	Waring (1915, p. 293-94). Davis and Vernon (1951, p. 576-577). Davis and Goldman (1958, p. 535). Gudde (1962, p. 7).
2N/3W-33J,M 37°58'25"N,122°11'20"	A. V. Pacheco	5- 5-65	520	5	65	Springs issue along creek channel. Stock use.	Calcium bicarbonate.	
1S/3E-15F,M 37°50'50"N,121°37'50"	Byron Hot Springs	6-17-54	40		83		Sodium chloride.	Peale (1886, p. 204. Anderson (1890, p. 103-114. Waring (1915, p. 109-112, 293; 1965). Davis and Goldman (1958, p. 536). Gudde (1962, p. 43). Scott and Barker (1962).
1S/3E-15F,M 37°50'50"N,121°37'50"		6-17-54	40		95			
1S/3E-15G,M 37°50'50"N,121°37'50"		10- 2-54	40	r.5	96			
1S/3E-15G,M 37°50'50"N,121°37'51"	Black Sulphur Spring	5-17-63	50		75	Water collects in rock-and-mortar shelter.		
1S/3E-15K,M 37°50'38"N,121°37'50"	Surprise Spring	5-17-63	30		65	Spring is cribbed and covered with planks. Situated on edge of sandy mudflat.		
1S/3E-15K,M 37°50'44"N,121°37'44"	Byron Resorts, Inc.	5-17-63	40			Several concealed springs that are reportedly warm, are piped into pool.		
1S/1W-2M,M 37°52'23"N,121°56'53"	Mrs. Angel Kerley	5- 4-65	1,250	m>.2	57	Water is piped to concrete tub along roadside. Stock use and public supply.	Sodium bicarbonate.	
				FRESNO COUNTY				
13S/10E-32R,M 36°44'56"N,120°53'51"	Burnham and Davis	1- 8-63	1,150	0.5	52	Spring developed from collapsed mining prospect tunnel dug into sandstone. Stock and domestic use.	Magnesium sodium sulfate.	
13S/10E-32X,M 36°45'00"N,120°54'00"	Mercey Cold Spring	6-13-55	1,200				Sodium magnesium bicarbonate.	
14S/10E-15R,M 36°42'12"N,120°51'20"	Mercey Hot Springs Mr. and Mrs. H. C. Swatzel	1- 7-63	1,150	r7.5	119	Spring issues into cribbed and covered collector and is delivered to bathhouse by gravity flow. Health resort use.	Sodium chloride	Waring (1915, p. 78). Laizure (1929, p. 322). Stearns and others (1937, p. 127). Logan and others (1951, p. 512-513). White (1957b, p. 1676-1677). Gudde (1962, p. 188). White and others (1963, p. 36).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				FRESNO COUNTY--Continued				
15S/12E-8X,M 36°38'00"N,120°41'00"		7-23-56	900		75		Magnesium sodium sulfate.	
18S/14E-10J,M 36°22'31"N,120°25'35"	Sulphur Spring	1- 8-63	925	.5	58	Spring seeps from base of small bluff onto terrace. Stock use.	Sodium bicarbonate sulfate. White sulfur deposited on soil and vegetation. Gas bubbles observed in spring pool; odor of hydrogen sulfide.	
18S/14E-25K,M 36°19'53"N,120°24'04"	Domengine Spring A. N. Domengine	1- 9-63	1,925	2	58	Spring issues from alluvium and sandstone into covered concrete collection box. Water is piped to troughs. Stock use.	Sodium bicarbonate.	
18S/15E-19K,M 36°20'47"N,120°22'29"	Martinez Spring Mr. Christy	1- 9-63	900	2		Spring issues from sandstone into plank-cribbed collector. Water is piped to troughs. Stock use.	Sodium magnesium sulfate.	
18S/15E-30F,M 36°20'00"N,120°23'14"	Little Oak Spring A. N. Domengine	1- 9-63	1,525	m.5		Spring area is covered. Water collects in plank-cribbed shaft and is piped to troughs. Stock use.	Sodium chloride.	
18S/15E-31C,M 36°19'27"N,120°23'00"	A. N. Domengine	1-11-59	1,700			Water is piped about 2 miles to ranch headquarters. Domestic and stock use.	Sodium bicarbonate sulfate. Water reportedly kills roses, quince, and crabapples, and causes other plants to become yellow.	
20S/13E-34K,M 36°08'42"N,120°33'22"	Coalinga Mineral Springs (Fresno Hot Springs) Coalinga Mineral Springs, Inc.	1- 8-63	2,000		112	About 20 springs issue from wall of canyon, about 700 feet above the valley floor. About five springs were developed; these were dug out and covered with concrete shelters. Water was piped about 0.5 mile to resort area where water was reheated. Unused.	Sodium bicarbonate.	Peale (1886, p. 204). Anderson, 1890, p. 135). Waring (1915, p. 78). Laizure (1929, p. 319-320). Stearns and others (1937, p. 127).
				IMPERIAL COUNTY				
17S/9E-19Q,S 32°40'10"N,116°06'13"	Mountain View Spring Clarence Case	2- 6-61	2,430		64	Spring flows into collector and is distributed by pipeline. Public supply use along highway.	Calcium sodium chloride.	
				KERN COUNTY				
25S/18E-25C,M 35°44'13"N,119°58'57"	Salt Spring	1-10-63	500	Dry		Spring site covered with tarry (oily) residue. Unused.	Sodium chloride, odor of petroleum noted.	Arnold and Johnson (1910, p. 22). Waring (1915, p. 301). Wood and Davis (1959, p. 52-53, 122-123).
28S/19E-22X,M 35°28'00"N,119°55'00"	Mize Spring	8- 6-54			73	Domestic and stock use.	Sodium calcium sulfate.	Wood and Davis (1959, p. 52-53, 122-123).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				KERN COUNTY--Continued				
29S/20E-5C,M 35°26'19"N,119°50'46"	Carneros Spring Kenneth Twisselman	1-10-63	1,390	50		Springs consist of many seeps issuing through marshy soil at base of sandstone bluff. Marsh area is about 2 acres. Water is piped from covered, cribbed collector to houses and stock tanks. Domestic and stock use.	Calcium sodium bicarbonate sulfate in 1954, calcium sodium sulfate in 1955.	Wood and Davis (1959, p. 52-53, 122-123).
29S/20E-33N,M 35°21'05"N,119°49'57"		5-18-61	3,240	<1		Stock use.	Reportedly contains algae and has sodium bicarbonate taste.	
29S/21E-33E,M 35°21'00"N,119°43'18"		11- 8-55				Stock use.	Sodium magnesium sulfate.	Wood and Davis (1959, p. 52-53, 122-123).
				KINGS COUNTY				
23S/16-3Q,M 36°57'08"N,120°13'18"	Jerry Sagaser	1-10-63	1,600	m0.8	65	Covered collection box is built against base of sandstone bluff. Water is piped to trough. Stock use.	Sodium magnesium sulfate.	
23S/17E-6L,M 36°57'14"N,120°10'22"	Wade Baxter Spring Jerry Sagaser	1-10-63	1,120	2		Spring area developed and covered; water is piped to trough. Stock use.	Sodium calcium sulfate.	
				LOS ANGELES COUNTY				
1N/15W-19D,S 34°07'34"N,118°29'57"	El Encino Springs California Division of Beaches and Parks	2- 4-65	760	ml7	78	Springs feed small artificial lake or fishpond.	Sodium sulfate.	Whitney (1865, p. 119-120). Loew (1876, p. 415-416). Anderson (1890, p. 194). Waring (1915, p. 246-47). Guide (1962, p. 97).
1N/17W-4A,S 34°12'10"N,118°39'30"	Sulphur Spring Platt Ranch	1-16-63	900		58	Spring issues into bottom of stone-walled bath about 8x12 feet across and 6 feet deep, covered by barbed wire and planks; water is piped to trough. Stock use	Calcium magnesium bicarbonate sulfate.	Waring (1915, p. 281).
1N/17W-15D,S 34°10'29"N,118°39'21"	Mr. Staats	1-16-63	985	<.1		Spring in channel of creek; location identified by small seeps on rocks. Unused.		Waring (1915, p. 281, 380).
3N/11W-12B,S 34°22'00"N,117°59'06"	Sulphur Spring U.S. Forest Service	5-24-63	5,240	61		Developed and protected for camp supply. Public supply use.	Calcium bicarbonate.	
3N/16W-35A,S 34°18'21"N,118°31'08"	Sulphur Spring C. J. Ranch	1-16-63	1,650	.5	58	Spring is cribbed and covered with redwood planks. Water is piped to octagonal concrete water trough. Stock use.	Calcium bicarbonate sulfate.	Loew (1876, p. 415). Anderson (1890, p. 249).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
						LOS ANGELES COUNTY--Continued		
4N/11W-30P,S 34°23'45"N,118°04'25"	Aliso Spring U.S. Forest Service	1-16-63	4,720			Spring is covered; water is piped by gravity to large storage tank, then pumped into pressure system. Domestic, stock, irrigation and firefighting use.	Calcium bicarbonate.	Gudde (1962, p. 7).
4N/12W-11F,S 34°26'45"N,118°06'31"	Kentucky Springs E. H. Southwell	4-28-63	3,700			Domestic and stock use.	Calcium bicarbonate.	Waring (1915, p. 380).
4N/12W-24E,S 34°24'58"N,118°05'31"	Wagonwheel Ranch Springs Wagonwheel Ranch	3-21-64	3,900	3	42	Domestic, stock, and irrigation use.	Calcium bicarbonate.	
6N/16W-15L,S 34°36'26"N,118°33'44"	Warm Springs Los Angeles County Charity Camp	1-11-63	2,060	5	92	Spring issues from sandy area surrounded by concrete cribbing that is foundation for shelter house. Pit is about 4 feet deep. Swimming and firefighting use.	Sodium chloride.	Waring (1915, p. 66). Stearns and others (1937, p. 126).
1S/14W-14E,S 34°05'01"N,118°19'20"	Hollywood Spa (Radium Sulphur Spring) Mr. Harold Brooks	1-15-63	280		67	Water source is an oil testwell reportedly 1,500 feet deep, probably drilled in 1905. Well formerly flowed; water level declined below land surface and well now is pumped. Health-bathing use.	Sodium bicarbonate.	Waring (1915, p. 71-72). Merrill (1919a, p. 508). Fitch (1927, p. 273). Sampson (1937, p. 206).
1S/18W-5L,S 34°06'27"N,118°47'27"	Seminole Hot Springs Robert Dusek	1-15-63	850	r15	114	Water source is an oil testwell reportedly about 3,000 feet deep. Health-bathing and swimming use.	Sodium bicarbonate.	
2S/10W-24N,S 33°58'33"N,117°53'11"	Alvarado Hot Springs William Alvarado	1-14-63	610		112	Water is pumped from large-diameter oil testwell drilled to about 5,000 feet in 1910. Airlift pump raises water to elevated tank at about 25 to 50 gpm. Natural gas pumped with water heats bathhouse. Health-bathing use.	Sodium chloride.	
2S/11W-17A,S 34°00'12"N,118°02'55"	Cal-Baden Mineral Spring Hugh Gregg	3- 6-64	400	r15	68	Health-bathing use.	Magnesium calcium sulfate.	
						MERCED COUNTY		
12S/9E-9L,M 36°54'00"N,121°00'00"	Carrisalito Springs	1- 7-63	850	20		Springs consist of many marshy seeps in two separate areas, totaling about 40 acres. Stock use.		Gudde (1962, p. 52).
12S/9E-34B,M 36°50'59"N,120°58'11"	Piedra Azul Spring	1- 7-63	1,175			Stock use.		Gudde (1962, p. 17, 232).
13S/10E-29G,M 36°46'25"N,120°53'58"	Iridat Spring L. H. Tryon	1- 8-63	1,290	20	73	Spring issues from sandy zone at foot of low scarp or bluff. Small earthen dam impounds water at spring. Water is piped to house and troughs. Domestic and stock use.	Sodium bicarbonate.	

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				MERCED COUNTY--Continued				
13S/10E-29Q,M 36°46'00"N,120°53'57"	L. H. Tryon	1- 8-63	1,225	10	81	Spring issues from poorly defined orifices in alluvium at base of low scarp. Stock use.	Sodium bicarbonate.	
				MONTEREY COUNTY				
18S/5E-25R,M 36°19'52"N,121°22'07"	Paraiso Springs	5- 9-63	1,150		98	Spring discharge is piped directly into bathing tubs.	Sodium sulfate. Arsenic Spring has same amount of arsenic as other two.	Peale (1886, p. 207). Anderson (1890, p. 217). Waring (1915, p. 60-62; 1965). Guide (1962, p. 225).
18S/6E-30N,M 36°19'49"N,121°22'02"	Arsenic Spring	5- 9-63	1,120	m0.1	60	Rock and mortar spring box provides sanitary shelter.		
18S/6E-30N,M 36°19'53"N,121°21'58"	Sulphur Spring Mr. and Mrs. Otto Barrett	5- 9-63	1,100		87	Spring issues into sheltered rectangular concrete-cribbed cistern. Water is piped to faucets and swimming pool. Resort use.		
19S/3E-30X,M 36°15'00",121°41'00"	Hot Springs U.S. Forest Service		1,100			Crude bathing facility developed. Bathing and stock use.		
19S/4E-32K,M 36°14'00"N,121°33'01"	Tassajara Hot Springs Lower Main Spring	5- 8-63	1,580	r50	134	Spring issues from well-defined orifices and joints in schist exposed in lower hillside along creek. Water flows into concrete cistern. Resort use.	Sodium carbonate sulfate. Magnesia spring is misnomer; no magnesium is present. Hydrogen sulfide discharge ranges from slight to abundant in various springs.	Peale (1886, p. 208). Anderson (1890, p. 253). Waring (1915, p. 57-60; 1965). Guide (1962, p. 314-315).
19S/4E-32K,M 36°14'01"N,121°33'00"		5- 8-63	1,570	100	144	Spring issues from orifices and joints in schist into rectangular concrete box that serves as foundation for steam-bathhouse. Resort use.		
19S/4E-32L,M 36°14'01"N,121°32'57"	Magnesia Spring	5- 8-63	1,570	m1.5	119	Spring issues from fissures in schist into rock-and-mortar drinking basin. Resort use.		
19S/4E-32K,M 36°14'02"N,121°33'02"	Iron Spring Mr. and Mrs. Robert Beck	5- 8-63	1,570		59	Spring is in a developed pit covered by rock and mortar shelter. Unused.	Calcium bicarbonate.	
20S/4E-28X,M 36°10'00"N,121°32'00"	U.S. Forest Service		1,640					Reiche (1936, p. 163-164).
20S/6E9X,M 36°12'00"N,121°19'00"	Sulphur Spring on Vaqueros Creek U.S. Forest Service					Unused.		

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				MONTEREY COUNTY--Continued				
21S/3E-9K,M 36°07'24"N,121°38'07"	Big Sur Hot Springs (Slates Hot Springs)	9-20-62 1-18-63 5-10-63 11-11-63	100	25 25 25 25	122 118 116 120	Springs issue from poorly-defined fissures in poorly cemented gravel or conglomerate and are impounded in concrete collection boxes. Bathing and firefighting use.	Sodium carbonate sulfate. Abundant hydrogen sulfide; sulfur crystals deposited in springs.	Waring (1915, p. 56-57, 384).
21S/3E-9K,M 36°07'24"N,121°38'07"		9-20-62	100	r10	95			
21S/3E-9K,M 36°07'24"N,121°38'07"	Mrs. Vinnie A. Murphy	1-18-63 5-10-63 11-11-63	100	m40 40 40	116			
21S/3E-24P,M 36°05'01"N,121°35'11"	Dolans Hot Springs Big Creek Ranch	11-11-63	440	30	98	Two major springs issue from seepy areas about 10 feet apart; covered by alluvium and brush. Flows merge, forming single stream. Unused.	Sodium carbonate bicarbonate Sulfur is deposited along channel.	Waring (1915, p. 57, 384).
21S/3E-26J,M 36°04'21"N,121°35'53"	Big Creek Ranch	11-11-63	40	2		Spring issues from seeps. Collects in redwood storage tank and is distributed by pipeline. Domestic, stock, and irrigation use.	Calcium bicarbonate.	
22S/7E-5R,M 36°02'28"N,121°13'15"	Sulphur Spring U.S. Army	1-18-63	1,200	4	40	Spring issues from marshy area cribbed with planks and surrounded with a barbed wire fence. Stock use.	Sodium bicarbonate. Fairly strong odor of hydrogen sulfide; sulfur is deposited on ground.	
22S/7E-6K,M 36°02'42"N,121°14'57"	U.S. Army	9-20-62	1,170	50	62	Springs issue from alluvium in channel. Stock use.	Calcium bicarbonate.	
				ORANGE COUNTY				
3S/9W-2P,S 33°56'02"N,117°47'48"	LaVida Mineral Springs LaVida Mineral Springs Corporation	1-14-63	800	20	110	Flowing well, drilled at or near former site of natural spring. Resort use.	Sodium bicarbonate.	
4S/8W-12P,S 33°49'53"N,117°40'15"	Mineral Spring U.S. Forest Service		1,380					
5S/7W-7P,S 33°44'40"N,117°39'18"	Aqua Viva Mineral Spring W. F. Collar	1-13-63	1,080			Pumped well; water is stored in pressure tank. Health drinking and firefighting use.	Calcium sodium sulfate.	
5S/10W-18H,S 33°43'55N,117°57'16"		1-14-63	37	dry		Spring sites are shallow depressions in alluvium. Sites are being covered by suburban and commercial development.		
6S/5W-18X,S 33°39'00"N,117°26'00"	Camp McConville	1-12-63	2,600			Unused.		
6S/5W-21B,S 33°38'20"N,117°24'17"	Whitewood Ranch	1-12-63	2,300	1	–	Spring issues from joints in weathered granite. Water is impounded by earthen dam. Domestic, stock, irrigation, and firefighting use.		

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				ORANGE COUNTY--Continued				
6S/5W-12J,S 33°39'32"N,117°27'06"	Los Pinos Spring U.S. Forest Service	1-12-63	3,300	dry		Spring reportedly issues from rock during periods of seasonal flow. Stock use.		Gudde (1962, p. 234).
7S/6W-4E, S 33°35'20"N,117°31'01"	San Juan Hot Springs E. G. Starr	5-10-63	740	15	120	Unused.	Sodium chloride carbonate.	Loew (1876, p. 413). Peale (1886, p. 206). Anderson (1890, p. 179, 228). Crook (1899, p. 177). Waring (1915, p. 48-49).
				RIVERSIDE COUNTY				
2S/3E-2C,S 34°01'54"N,116°38'24"	U.S. Bureau of Indian Affairs	10-17-63	2,800	m2	66	Stock use.	Calcium sodium sulfate.	
2S/7E-27Q,S 33°57'44"N,116°14'05"	Stubby Spring U.S. National Park Service	11-24-64	4,840	m.1	57	Spring issues from weathered granitic rock. Public supply use.	Calcium magnesium bicarbonate.	Mendenhall (1909a, p. 77). Brown (1920, p. 84; 1923, p. 278). Weir and Bader (1964, p. 64).
2S/1W-25X,S 33°58'10"N,116°56'30"	Highland Springs	1-31-61	3,100			Resort use.	Calcium sodium bicarbonate.	
2S/3W-20F,S 33°59'00"N,117°12'59"	Consol Springs	1-31-61	2,070				Sodium bicarbonate.	Waring (1915, p. 352).
2S/4W-33K,S 33°58'04"N,117°17'52"	Box Spring Atchison, Topeka and Santa Fe Railroad	1-31-61	1,450	dry		Unused		Waring (1915, p. 352, 387).
3S/2W-23J,S 33°53'30"N,117°03'30"	Eden Springs (Canadian Hot Springs) Arthur Kelly	1-30-61	1,700			Three wells supplementing springs. Resort use.	Sodium chloride bicarbonate and sodium bicarbonate sulfate.	Waring (1915, p. 37; 1919, p. 24).
4S/1E-30D,S 33°48'00"N,116°55'30"	White Sulphur Spring (Soboba Hot Springs) (Ritchey Hot Springs)	1-30-61	1,900			Resort use.	Sodium carbonate.	Waring (1915, p. 39-40, 387). Gudde (1962, p. 299). Scott and Barker (1962, p. 27).
4S/6E-12L,S 33°50'13"N,116°18'36"	Thousand Palms Paul Wilhelm	11-12-64	520	500	71	Spring issues from alluvial material. Unused.	Sodium sulfate.	Gudde (1962, p. 222). Brown (1923, p. 278-79).
4S/7E-17E,S 33°49'27"N,116°16'51"	Pushawalla Palms	11-12-64	560	10	69	Spring issues from alluvium and conglomerate. Stock use.	Sodium sulfate.	
4S/1W-9K,S 33°50'00"N,116°59'00"	Gilman Hot Springs, (Relief or San Jacinto Hot Springs)	1-31-61	1,600					Waring (1915, p. 38, 387).
4S/3W-12X,S 33°50'16"N,117°08'40"	Pilares Hot Springs (Lakeview or Bernasconi Hot Springs)	2- 1-61						Waring (1915, p. 40, 387).
5S/5E-23F,S 33°43'20"N,116°26'09"	Magnesia Spring	1-31-61						Waring (1915, p. 247-248).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				RIVERSIDE COUNTY--Continued				
5S/6W-10C,S 33°45'22"N,117°29'40"	Glen Ivy Hot Springs (Temescal or Anti-Fat Hot Springs) Exel Springboard	1-12-63	1,260		131	Present water supply is from wells. Resort use.	Sodium sulfate.	Anderson (1890, p. 89, 253). Crook (1899, p. 176). Waring (1915, p. 42; 1919, p.79-80). Gudde (1962, p. 317).
5S/6W-29A,S 33°37'38"N,117°31'10"	Bear Spring U.S. Forest Service	1-12-63	4,060			Firefighting and public supply use.		
6S/5E-25M,S 33°37'08"N,116°25'27"	Dos Palmas U.S. Forest Service	1-31-61						
6S/5E-28C,S 33°37'26"N,116°28'15"	Asbestos Spring U.S. National Spring	1-31-61	4,360				Calcium magnesium bicarbonate.	
6S/4W-7X,S 33°40'10"N,117°19'50"	Bundy's Elsinore Hot Springs	1-12-63	1,240			Probably a spring originally, replaced by well at later date. Unused.		Waring (1915, p. 43; 1919, p. 75).
6S/4W-7X,S 33°40'10"N,117°19'50"	Elsinore Hot Spring	1-12-63	1,240			Unused.		Anderson (1890, p. 133). Waring (1915, p. 42; 1919, p. 75).
7S/3W-14X,S 33°33'30"N,117°09'20"	Murrieta Hot Springs Ramona Spring	2- 1-61	1,150		96	Resort use.	Sodium chloride.	Waring (1915, p. 44).
7S/3W-14X,S 33°33'30"N,117°09'20"	Bethesda Spring	2- 1-61	1,150		117	Resort use.		
				SAN BENITO COUNTY				
13S/4E-10M,M 36°48'52"N,121°31'19"	San Juan Canyon Spring City of San Juan Bautista	5-16-63	400	20	63	Spring issues from alluvium in stream channel. Discharges into weir box via a tile-drain system. Domestic, stock, and irrigation use.	Calcium bicarbonate.	
13S/4E-35G,M 36°45'44"N,121°29'55"	California Division of Beaches and Parks	5-14-63	2,440	m.2	53	Spring seeps from alluvium on granitic and metamorphic bedrock. Spring is covered by rock and mortar shelter. Water is piped to storage tank and pumped into distribution system. Public supply use.	Calcium bicarbonate.	
13S/6E-7K,M 36°48'56"N,121°21'35"	Hollister Mineral Well (San Benito Mineral Spring) A. A. Anderson	5-14-63	530	r20	72	Drilled well reportedly 300 feet deep. Water is pumped to elevated storage tank and distributed by gravity. Domestic and stock use.	Sodium chloride. Water has odor and taste of petroleum.	Waring (1915, p. 306-307). Eaton and others (1941, p. 28, 37).
16S/7E-26L,M 36°30'30"N,121°10'45"	Willow Spring U.S. National Park Service	5-15-63	1,400	20	68	Spring area concealed by dense vegetation. Water is piped to concrete collection box and then spilled on ground. Unused.	Sodium bicarbonate sulfate.	Evenson (1962).
18S/11E-36A,M 36°19'23"N,120°42'45"		5-15-63	2,700	<.1	62	Spring issues through soil, developed by inserting short piece of steel casing into ground. Stock use.	Sodium bicarbonate. Water is yellowish-green from sulfur and algae. Strong odor of hydrogen sulfide.	
19S/9E-10F,M 36°16'39"N,120°59'03"		5-15-63	775	200	74	Spring issues from base of low bluff of alluvial material onto terrace. Unused.	Sodium chloride. Terrace and channels were brightly colored by algae and precipitated sulfur.	

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SAN BERNARDINO COUNTY				
1N/4W-11F,S 34°11'18"N,117°16'13"	Waterman Hot Springs	3- 7-61	1,920				Sodium sulfate.	Anderson (1890, p. 263). Waring (1915, p. 33-35). Gudde (1962, p. 263).
1N/4W-11J,S 34°11'11"N,117°15'43"	Arrowhead Hot Springs Granite Spring	3- 7-61	1,980			Resort use.	Sodium sulfate.	Loew (1876, p. 412). Anderson (1890, p. 90). Waring (1915, p. 32-33). Gudde (1962, p. 14).
1N/4W-11J,S 34°11'11"N,117°15'43"	Palm Spring Arrowhead Hot Springs Co.	3- 7-61	1,980					
2N/1E-12M,S 34°16'18"N,116°50'17"	Mountain Ranch Springs (Pan Hot Springs) T. R. Spradlin	3- 7-61	6,725			Resort use.	Sodium sulfate.	Waring (1915, p. 35).
2N/2E-21X,S 34°14'30"N,116°46'30"		7-25-51	7,000	2		Domestic and irrigation use.	Calcium sodium sulfate.	
2N/6W-26E,S 34°13'50"N,117°29'02"	Warm Springs in Lytle Canyon	3- 7-61		dry				Waring (1915, p. 35).
1S/3E-35P,S 34°02'06"N,116°38'30"	U.S. Bureau of Indian Affairs	10- 9-63	2,800	1	70	Stock use.	Calcium sodium sulfate.	
1S/5E-27M,S 34°08'13"N,116°27'14"	Rattlesnake Spring U.S. National Park Service	2-15-65	3,400	m.03	42	Spring opening concealed by shelter; water is piped to 5-gallon storage basin. Spring is on floor of arroyo. Unused.	Calcium magnesium sulfate.	
1S/7E-33L,S 34°02'17"N,116°15'27"	Quail Spring U.S. National Park	2-16-65	3,800		55	Spring issues from partly collapsed mine tunnel. Unused.	Calcium bicarbonate.	Bader and Moyle (1960, p. 53).
2S/9W-36P,S 33°56'47"N,117°46'46"	Carbon Canyon Mineral Springs	1-14-63	800			Drilled oil-test well. Unused.		
				SAN DIEGO COUNTY				
8S/4W-32X,S 33°26'09"N,117°19'30"	DeLuz Warm Springs (Corral deLuz) San Diego County Dept. of Parks & Recreation	2- 2-61	350		85		Sodium bicarbonate.	Waring (1915, p. 47-48, 389). Gudde (1962, p. 83).
9S/1W-19N,S 33°22'30"N,117°02'00"		11-12-54	1,500	1	70	Spring is developed in pit 15 feet deep. Domestic use.	Calcium bicarbonate.	Scott and Barker (1962, p. 26-27).
9S/6W-35X,S 33°21'30"N,117°29'00"	Horno Ridge Springs U.S. Marine Corps	2- 2-61	700				Magnesium sodium bicarbonate.	
10S/3E-24N,S 33°17'03"N,116°37'49"	Warner Hot Springs (Las Aguas Calientes)	2- 3-61	3,140			Resort use.	Sodium chloride sulfate.	Peale (1886 Anderson (1890, p. 72-73, 262-263). Waring (1915, p. 45-46; 1965, p.24) Gudde (1962, p. 340).
10S/4E-31Q,S 33°15'31"N,116°36'41"	Corona Springs	2- 3-61	3,550		61		Sodium calcium bicarbonate.	

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SAN DIEGO COUNTY--Continued				
11S/2E-21K,S 33°12'07"N,116°46'33"	U.S. Bureau of Indian Affairs	11- 4-52	3,580			Spring reportedly issues from clayey bench on flank of bedrock hill; water is piped to houses. Domestic use.	Magnesium calcium bicarbonate.	
11S/2E-25N,S 33°11'03"N,116°43'57"	U.S. Bureau of Indian Affairs	11- 6-52	3,800	<1	60	Spring flow is collected in stone reservoir. Stock use.	Sodium calcium bicarbonate.	
11S2E-26A,S 33°11'41"N,116°44'17"	Quail Springs U.S. Bureau of Indian Affairs	11- 3-52	3,680	m.25	50	Water is collected by perforated pipe in soil; delivered to stone reservoir.	Sodium bicarbonate.	Olmsted (1953, p. 61-62).
11S/7E-8P,S 33°13'35"N,116°16'09"	Borrego Spring California Division of Beaches and Parks	2- -61	460	dry				Mendenhall (1909a, p. 82).
12S/2E-3B,S 39°09'58"N,116°45'38"	U.S. Bureau of Indian Affairs	11- 5-52	3,260	m2.5	50	Springs issue from jointed metamorphic and igneous rocks at head small creek. Domestic use.	Calcium bicarbonate.	
12S/2E-10G,S 33°08'47"N,116°45'38"	U.S. Bureau Indian Affairs	11- 5-52	2,900	.3		Spring reportedly issues where joints in rock are at right angles to water table. Stock use.	Calcium sodium bicarbonate.	
14S/5E-12F,S 32°58'13"N,116°25'23"	Vallecitos Spring Mitchell's Ranch	2- 3-61	2,000		78		Sodium magnesium sulfate.	Mendenhall (1909a, p. 84). Waring (1915, p. 349). Gudde, 1962, p. 333-334).
14S/7E-18P,S 32°56'53"N,116°18'13"	Aqua Caliente Springs San Diego County Dept. of Parks and Recreation	2- 3-61	1,390		99	Resort use.		Anderson (1890, p. 72). Mendenhall (1909a, p. 85). Waring (1915, p. 24).
15S/1E-18N,S 32°51'50"N,116°55'10"	Lakeside Mineral Wells	2- 3-61	400	dry				Waring (1915, p. 305).
16S/1W-19R,S 32°45'33"N,117°00'50"	La Mesa Spring (Lamesa, Indian, or Allison Springs City of La Mesa	2- 5-61	600			Decorative use.	Sodium sulfate chloride.	Waring (1915, p. 350). Gudde (1962, p. 189).
16S/5E-20X,S 32°46'15"N,116°29'30"	Buckman Springs	2- 5-61		dry				Waring (1915, p. 247, 389).
17S/6E-13M,S 32°41'40"N,116°43'39"	U.S. Bureau of Indian Affairs	10-29-52	3,950			Stock use.	Sodium calcium bicarbonate.	
17S/6E-14R,S 32°41'27"N,116°20'05"	Live Oak Springs	2- 6-61	3,920			Resort use.	Sodium calcium bicarbonate.	
17S/6E-33R,S 32°38'51"N,116°22'14"	U.S. Bureau of Indian Affairs	10-24-52	3,240	2.5	65	Domestic and irrigation use.	Calcium sodium bicarbonate.	
17S/7E-34H,S 32°38'49"N,116°14'38"	Bankhead Springs	2- 6-61	3,360		51		Sodium calcium bicarbonate.	

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SAN DIEGO COUNTY--Continued				
17S/8E-32F,S 32°39'00"N,116°11'06"	Arsenic Spring California Division of Beaches and Parks	2- -61	2,700	dry				
18S/8E-7J,S 32°36'57"N,116°11'32"	Jacumba Hot Springs	2- 6-61	2,840				Sodium chloride carbonate.	Waring (1915, p. 45, 389 Gudde (1962, p. 146).
				SAN FRANCISCO COUNTY				
				No springs were found, observed, or sampled in May 1963. Few springs reportedly were ever known in the county.				
				SAN JOAQUIN COUNTY				
4S/5E-20F,M 37°34'27"N,121°26'40"	Lone Tree Mineral Spring John A. Rustan	6- 3-63	960	m0.1	71	Spring area concealed. Water is piped to storage tank and then to troughs. Stock use.	Magnesium bicarbonate. Tasted very salty.	
4S/5E-20K,M 37°34'04"N,121°26'18"	Salt Spring John A. Rustan	6- 3-63	800	<.1		Spring seeps from sandstone along west bank of creek. Unused.	Tasted very salty.	
4S/5E-20K,M 37°34'06"N,121°26'23"	Sulphur Spring John A. Rustan	6- 3-63	820	<.1		Water seeps from poorly defined crack in sandstone. Collected in concrete tank that is trough. Stock use.	Algal growth in trough. Reportedly very salty.	
4S/5E-20N,M 37°34'06"N,121°26'46"	Sulphur Spring John A. Rustan	6- 3-63	880	10	73	Spring area in alluvium or soil is covered by shelter. Water is piped about 500 feet to trough. Stock use.	Sodium magnesium bicarbonate sulfate. Water tastes of sulfur (alkaline sulfides).	
				SAN LUIS OBISPO COUNTY				
25S/16E-31R,M 35°42'17"N,120°17'05"	Ybarra Spring	1-10-63	1,365	m>1.5	57	Spring issues from soil or alluvium on northwest side of low hill. Area is fenced. Water is piped from cribbed collector to troughs. Stock use.	Sodium magnesium sulfate.	
26S/12E-20A,M 35°39'25"N,120°41'40"		9-19-62	680	r90	110	Spring is concealed by shelter. Water is piped into womens baths. Unused.	Sodium chloride; strong odor of hydrogen sulfide. Much nonflamable gas was observed bubbling in spring.	
26S/12E-20A,M 35°39'25"N,120°41'40"	Paso Robles Mud Bath Springs H. B. Jenne	9-19-62	680	5	108	Spring issues into bottom of a Roman-type pool in mens baths. Unused.		
26S/12E-33F,M 35°37'31"N,120°41'17"	Paso Robles City Baths (El Paso del Robles) H. B. Jenne	1- 9-63	720	>150	101	Flowing well reportedly 400 feet deep. Unused.	Sodium bicarbonate chloride. Strong odor of hydrogen sulfide.	Anderson (1890, p. 123-133).
27S/12E-14X,M 35°34'31"N,120°38'49"	Neal's Spring	9-19-62	990	dry		Spring issued from soil or alluvium; destroyed by covering.		

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SAN LUIS OBISPO COUNTY--Continued				
27S/12E-14X,M 35°34'56"N,120°39'52"	Santa Ysabel Springs (Sulphur Springs) C. W. Hunt	1- 9-63	830	m>50	92	Spring issues from alluvium into bottom of large concrete crib that serves as swimming pool. Stock, irrigation, and bathing use.	Sodium bicarbonate.	Anderson (1890, p. 232-242). Waring (1915, p. 76-77).
31S/12E-32F,M 35°11'12"N,120°42'46"	Sycamore Hot Springs (San Luis Hot Springs)	1-17-63	60		100	Flowing wells called springs were drilled as oil tests. Resort use.	Sodium magnesium bicarbonate. Much flammable gas detected by flame and strong odor of hydrogen sulfide.	
31S/12E-32F,M 35°11'12"N,120°42'45"	Mr. and Mrs. Paul Byllings	1-17-63	60	<.1	90			
31S/12E-32J,M 35°10'51"N,120°42'06"	Hidden Valley Hot Springs (Ontario or Budan Hot Springs) A. F. Strickland	9-18-62	40		135	Flowing well drilled in 1908 to depth of 40 or 50 feet seeking oil. Resort use.	Sodium bicarbonate. Strong odor of hydrogen sulfide.	Waring (1915, p. 71). Logan (1919, p. 691-692). Laizure (1925, p. 526).
32S/13E-23R,M 35°07'20"N,120°32'36"	Newsome Springs (Arroyo Grande or Warm Springs) C. Genovini	9-19-62	375		99	Spring rises from alluvium in cribbed collector that was foundation of bathhouse. Unused.	Magnesium sodium bicarbonate.	Peale (1886, p. 207). Anderson (1890, p. 90, 207-208). Waring (1915, p. 68-69).
				SAN MATEO COUNTY				
6S/4W-9F,M 37°25'31"N,122°18'21"	Summit Spring	5- 6-63	1,960	>100				
6S/4W-22Q,M 37°23'34"N,122°16'59"		5- 6-63	1,900	>100	54	Unused.	Calcium sodium bicarbonate chloride.	
7S/5W-3Q,M 37°20'54"N,122°22'56"	John Machado	5- 6-63	520	2	59	Spring covered by plank box and cover. Water seeps into collector through alluvial cover. Pipeline delivers water to house and troughs. Domestic and stock use.	Sodium chloride bicarbonate.	
				SANTA BARBARA COUNTY				
4N/25W-18Q,S 34°25'22"N,119°32'17"	Parida Spring No.3 (Boron Springs) Walcott Tuckerman	9-15-62	225	25	72	Unused.	Sodium chloride.	
	Montecito Hot Springs (Santa Barbara Hot Springs)							
4N/26W-5D,S 34°27'45"N,119°38'16"	Lower Barn Springs	9-16-62	1,400	m4.0	112	Springs issue from joints in sandstone. Public-supply use.	Sodium bicarbonate	Whitney (1865, p. 128). Waring (1915, p. 67).
4N/26W-5D,S 34°27'47"N,119°38'14"	Upper Barn Springs	9-16-62	1,500	m29.9				
4N/26W-6A,S 34°27'47N,119°38'18"	Arsenic Springs	9-16-62	1,360	m23.5	111			
4N/26W-6A,S 34°27'46"N,119°38'20"	Cliff Springs Kenneth H. Hunter	9-16-62	1,450	m17.3				

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SANTA BARBARA COUNTY--Continued				
4N/26W-5M,S 34°27'23"N,119°38'16"	Crystal Springs (Spencer Cascade) Kenneth H. Hunter	9-16-62	950			Unused.		
4N/27W-19H,S 34°24'40"N,119°44'29"	Veronica Springs Kimbal Estate	9-15-62 1-17-63	50		68	Unused.	Magnesium sulfate.	Waring (1915, p. 294-296, 391).
4N/27W-22J,S 34°24'43"N,119°41'30"	Sulphur Springs on Burton Mound	9-14-62	30			Destroyed.		
4N/28W-23H,S 34°24'54"N,119°46'42"		9-14-62	30	500	63	Springs concealed in dense growth of Rhus diversiloba (poison oak). Unused.	Calcium sodium sulfate.	
5N/26W-1P,S 34°32'24"N,119°33'42"	Aqua Caliente Spring (Big Caliente Hot Springs) U.S. Forest Service	9-17-62	1,950	200	133	Springs issue from at least four orifices in sandstone on side of bluff. Water is piped 0.3 mile to concrete bathing tub, and excess flow about 2 miles to public campground. Bathing and camp supply use.	Sodium bicarbonate. Sulfur deposited on rocks near spring orifices.	
5N/26W-4X,S 34°32'25"N,119°37'10"	Little Caliente Springs Los Padres National Forest	9-17-62	1,650			Spring is thick grove of chapparal, rushes and poison oak. Unused.		
5N/29W-2R,S 34°32'14"N,119°52'52"	San Marcos Hot Springs (Mountain Glen or Cuyama Hot Springs) Robert S. Odell	11-17-63	1,050	80	110		Sodium bicarbonate.	Anderson (1890, p. 200, 228). Waring (1915, p. 67-68; 1965). Rantz (1960, p. 204; 1962, p. 24-25).
5N/28W-17X,S 34°30'30"N,119°49'40"	Tom Kinevan	11-18-53	2,230	m.35	55	Dug pit in alluvial wash below sandstone ledge.	Calcium magnesium bicarbonate.	Rantz (1960, p. 59).
5N/29W-26X,S 34°30'00"N,119°53'00"	Tecolote Tunnel U.S. Bureau of Reclamation	3-27-63	653	m2,060	92.7	In tunnel.	Sodium bicarbonate.	Rantz (1962, p. 16-19).
5N/32W-12M,S 34°31'46"N,120°11'12"	Tito Giorgi	9-14-62	725	5	58	Spring is cribbed and covered with planks. Water is piped to stock tank. Stock use.	Sodium bicarbonate chloride. Odor of hydrogen sulfide was noted.	
5N/32W-22F,S 34°30'08"N,120°13'04"	Gaviota Hot Springs (Las Cruces Hot Springs or Sulphur Springs) Hollister Estate Co.	9-14-62	650	10	99	Spring issues in a dense thicket on hillside and is piped to concrete bathing tub. Bathing use.	Sodium bicarbonate.	
5N/34W-7E,S 34°31'53"N,120°30'08"	Sudden Estate Co.	12- 2-59	520	5		Stock use.	Calcium magnesium bicarbonate.	Evenson (1961).
5N/35W-1F,S 34°32'49"N,120°30'50"		12- 2-59	1,120			Stock use.	Calcium magnesium bicarbonate.	Evenson (1961).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SANTA BARBARA COUNTY--Continued				
5N/35W-1N,S 34°32'12"N,120°31'08"	Sudden Estate Co.	12- 2-59	200	5		Stock use.	Magnesium sodium chloride bicarbonate.	Evenson (1961).
5N/35W-2D,S 34°32'55"N,120°32'20"	Sudden Estate Co.	12- 2-59	320	5		Stock use.	Sodium calcium chloride sulfate.	Evenson (1961).
6N/29W-32X,S 34°33'10"N,119°57'40"	H. Noel	11-18-53	1,550	3.8	54	Stock use.	Calcium bicarbonate.	Rantz (1960, p. 233-234; 1962).
6N/35W-21X,S 34°35'03"N,120°33'30"	U.S. Navy	5-15-58	2,000	3	63	Public supply use.	Calcium sodium bicarbonate chloride.	Evenson and Miller (1963).
6N/35W-30R,S 34°34'04"N,120°35'41"	Aqua Vina Spring Sudden Estate Co.	12- 2-59	560		65	Stock use.	Magnesium calcium chloride bicarbonate. Odor of hydrogen sulfide reported near spring but not in water.	Evenson (1961).
6N/36W-25H,S 34°34'31"N,120°36'48"	Sudden Estate Co.	12- 2-59	520	10	57	Stock use.	Calcium sodium bicarbonate chloride.	Evenson (1961).
				SANTA CLARA COUNTY				
6S/1E-24K,M 37°23'31"N,121°48'08"	Alum Rock Springs	5-17-63	460	m0.1		Decorative use.	Sodium chloride.	Waring (1915, p. 21, 108).
6S/2E-19F,M 37°23'51"N,121°47'48"	Soda Spring	5-17-63	590		63	Spring concealed by rock and mortar cover. Decorative use.	Sodium bicarbonate.	Anderson (1890, p. 78-80).
6S/2E-19F,M 37°23'51"N,121°47'46"	White Sulphur Spring	5-17-63	600	5	84	Water issues from joints in conglomerate and is delivered to decorative drinking font. Use--decorative.		
6S/2E-19F,M 37°23'55"N,121°47'47"	Sulphur Tunnel No. 3 City of San Jose	5-17-63	590	2	83	Spring issues from joints in rocks developed by tunneling into hillside. Decorative use.		
6S/5E-18G,M 37°24'50"N,121°27'40"	Westvaco Chlorine Products Corp.	4-30-44	2,720	30		Domestic and industrial use.	Magnesium bicarbonate.	
8S/2W-11F,M 37°15'04"N,121°03'00"	Congress Springs (Pacific Congress Springs) San Jose Water Works	6- 4-63	800	50	55	Spring area obscured by dense vegetation. Public supply use.	Calcium bicarbonate	Anderson (1890, p. 213-214). Waring (1915, p. 215). Gudde (1962, p. 69).
8S/4E-33N,M 37°11'18"N,121°32'46""	California Division of Beaches and Parks	6- 4-63	2,700			Spring issues from cracks in soil-covered metamorphosed sandstone, high on mountainside. Spring is cribbed and covered with planks. Water is piped by gravity for distribution. Public supply use.	Sodium chloride.	
9S/4E-10K,M 37°09'59"N,121°30'44"	Madrone Soda Springs California Division of Beaches and Parks	6- 5-63	1,480		54	Spring issues from alluvium. It is protected by concrete cribbing and plank cover, surmounted by small pavilion. Unused.	Calcium bicarbonate.	Peale (1886). Anderson (1890, p. 191). Waring (1915, p. 214, 391). Gudde (1962, p. 179).

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
				SANTA CLARA COUNTY--Continued				
9S/4E-18E,M 37°08'18"N,121°34'08"		6- 5-63	660	10	—	Springs seep from sandstone. Unused.		
9S/4E-36G,M 37°06'33"N,121°28'40"	Gilroy Hot Springs H. K. Sakata	5-16-63	1,190	r4	106	Spring issues into beehive shaped concrete shelter. Water is piped to bathhouse. Resort use.	Sodium bicarbonate.	Anderson (1890, p. 156-158). Waring (1915, p. 79-80). Gudde (1962, p. 114). White and others (1963, p. 49).
11S/4E-31A,M 36°56'25"N,121°33'49"	Sargent Estate	5-16-63	360	m.8	77	Spring concealed by rock and mortar collection box and plank cover. Water is piped to troughs. Stock use.	Sodium bicarbonate.	
				SANTA CRUZ COUNTY				
9S/3W-23R,M 37°07'47"N,122°09'15"	Peavine Spring Citizens Utilities Co.	5- 7-63	1,600	r1,000	55	Water is stored in 8.5-million-gallon tank before distribution. Public supply use.	Calcium magnesium bicarbonate.	
10S/2W-23D,M 37°03'04"N,122°03'08"	Redwood Springs Mount Herman Association	5- 7-63	460		58	Spring is cribbed and covered by plank shelter. Water is piped to large tank and is pumped into distribution system. Public supply use.	Calcium sodium bicarbonate.	
11S/2E-30X,M 36°56'40N,121°47'10"	J. W. Edwards	10-17-51	150	r100	66	Domestic, stock, and irrigation use.	Sodium chloride bicarbonate.	
12S/3E-10A,M 36°54'29"N,121°52'00"	El Pajaro Springs (Chittenden Sulphur or Shale Sulphur Springs) M. E. Taylor	5- 7-63	190	m.5	60	Springs seep out in poorly developed pits. Site is partly concealed by dense vegetation. Unused.	Calcium magnesium bicarbonate.	Anderson (1890, p. 248). Waring (1915, p. 274-276). Gudde (1962, p. 221).
				STANISLAUS COUNTY				
6S/6E-10F,M 37°25'52"N,121°18'30"	Salt Grass Springs Oak Flat Ranch	1- 7-63	1,300	1	73	Springs issue on small mound at edge of meadow. Springs are cribbed and covered with planks. Water is piped to troughs. Stock use.	Calcium sulfate.	
				VENTURA COUNTY				
4N/21W-17R,S 34°25'30"N,119°05'43"	Sulphur Mountain Springs C. P. Gist	1-17-63	1,400	r1	44	Spring reportedly issues into drift or tunnel. Water is piped to tavern and resort area. Resort, laundry, and stock use.	Calcium bicarbonate. Water sample was milky with sulfur at time of collection.	Waring (1915, p. 279-280). Jennings and Troxel (1954, p. 33).
5N/23W-16Q,S 34°30'33"N,119°17'27"	Wheeler Hot Springs Main Spring	9-13-62	1,525	25	102	Two springs developed by tunneling into north-dipping shale and sandstone. Water is impounded by earthen dam at mouth of tunnel and piped to pool and baths. Resort use.	Sodium bicarbonate. Mineral deposits precipitated on tunnel wall and floor; includes sulfide minerals and native sulfur.	Waring (1915, p. 64-66; 1965).
5N/23W-16Q,S 34°30'32"N,119°17'27"		9-13-62	1,520	10	94			
5N23W-16Q,S 34°30'31"N,119°17'27"	Bucket Spring R. C. Haslam	9-13-62	1,500	<.1				

Location number	Name of spring and owner or user	Date of observation	Altitude (feet)	Discharge (gpm)	Temperature (°F)	Physical appearance, development, and use	Water type and related remarks	References
					VENTURA COUNTY--Continued			
5N/23W-29J,S 34°29'00"N,119°18'19"	Ventura County	9-13-62 1-17-63	960		74 42	Spring reportedly is cribbed and covered on sandstone outcrop. Public supply use.	Calcium bicarbonate.	
5N/23W-29K,S 34°29'03"N,119°18'26"	Matilija Hot Springs (Ojai Hot Sulphur Springs) Ventura County	9-13-62 1-17-63	980	r75	109 100	Spring reportedly issues from steeply-dipping sandstone. Resort use.	Calcium bicarbonate.	Peale (1886, p. 206). Anderson (1890, p. 193). Waring (1915, p. 63-64). Guide (1962, p. 185). Scott and Barker (1962, p. 25,27).
5N/24W-24F,S 34°20'07"N,119°20'25"	G. A. Rice	9-13-62	1,280	7	123	Springs issue from alluvial cover on bedrock in brushy area. Collection area is cribbed and partly covered. Water is piped to several residences. Bathing use.	Sodium chloride.	
5N/24W-24K,S 34°29'58"N,119°20'26"	G. A. Rice	9-13-62	1,260	50	123	Springs issue from joints in bedrock. Water flows directly into bath in concrete house which is partly covered by road fill. Bathing use.		
6N/20W-21R,S 34°35'39"N,118°59'52"	Sespe Hot Springs Wm. Lagomarsino, James Hollingsworth, Jack and Richard Willett	9-12-62	2,850	100	194	Springs issue from at least four well-defined orifices in granitic rock. Unused.	Sodium chloride. Sulfides and sulfur deposited at orifices.	Anderson (1890, p. 223). Waring (1915, p. 66).
6N/20W-30M,S 34°34'55"N,119°02'50"	Willett Hot Springs Jack and Richard Willett, Wm. Lagomarsino, and Jim Hollingsworth	9-12-62	4,000	150	108	Springs issue from at least three areas, high on side of mountain. Flumes and pipes deliver water to tubs. Bathing use.	Sodium bicarbonate.	
6N/21W-9X,S 34°37'40"N,119°06'50"	Thorn Meadows Spring U.S. Forest Service	6-26-51	5,000			Public supply use.	Calcium sulfate.	
7N/24W-22X,S 34°42'00"N,119°23'30"	U.S. Forest Service	9-12-62	3,750		69	Stock use.	Magnesium sodium sulfate.	
33°16'05"N,119°31'20"	San Nicolas Island Springs No. 3	1-12-57	465	10		Domestic use	Sodium chloride	Burnham and others (1963).
33°15'26"N,119°32'44"	No. 4	1-12-57	500	2		Unused.	Sodium bicarbonate.	
33°17'00"N,119°31'50"	No. 7	1-12-57	25	4		Unused.	Sodium bicarbonate.	
33°13'58"N,119°31'38"	No. 9	1-13-57	50	2		Unused.	Sodium chloride. Water is similar to sea water, but diluted about 1:4.	

APPENDIX B

CHEMICAL AND SPECTROGRAPHIC ANALYSES

Appendix B.--Chemical and spectrographic analyses of water from springs

All analyses are by the U.S. Geological Survey. Exceptionally high concentrations of some metals reported with spectrographic determinations may result from passage of particulate matter of colloidal or subcolloidal size through filters, from solution of particulate matter during acid fixation, or from unidentified causes. Those values do not necessarily represent metallic ions in solution in the water sample. Symbols: ≤ equal to or less than; < less than; > greater than; + present in qualitative test; a constituent determined by means other than spectrographic analysis; u nitrogen cycle compounds were not fixed, and data may not represent concentration at time of sampling. For exact location of springs, refer to appendix A. Springs in this appendix are listed in the same order as those in appendix A.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
ALAMEDA COUNTY																							
1S/3W-30B,M	5- 5-65	24	trace	79	20	0.5	97	1.5	0.03	0.0	322	0	106	86	0.7	1.8	0.00	0.5	576	280	+	932	7.3
2S/2W-31F,M	8-14-58	36		42	37		35	.8			220	0	79	48	.1	u8.3		.2	394	258		562	7.7
2S/2W-31F,M	8-14-58	70		42	59		19	.8			306	0	36	67	.0	u8.2		.1	453	346		692	8.0
3S/2W- 5Q,M	8-22-58	42		149	87		45	1.0			369	0	365	95	.0	u25		.1	991	730		1,180	7.6
3S/2W- 6A,M	8-22-58	54		122	96		63	.5			531	0	230	112	.0	u38		.5	978	700		1,420	7.2
3S/2E-14P,M	2- 4-60	37		106	57		192	2.8			496	0	150	290	.3	u4.3		3.3	1,090	500		1,780	7.8
3S/2E-33F,M	10-30-59	37		27	29		164	8.4			309	0	74	150	.2	u16		1.6	659	185		1,020	7.9
3S/3E-15Q,M	6- 6-63	24	trace	139	36	1.2	144	1.3	.10	.0	422	0	122	238	.9	7.2	.05	4.8	926	496		1,600	7.5
4S/1W-15A,M	7-30-51	14		81	55		162	4.0			440	0	350	30	.3	u3.0		1.4	917	428		1,330	8.3
4S/1W-16Q,M	6- 6-63	21	trace	50	15	.9	250	4.1	.08	3.9	768	0	41	45	1.8	1.5	.05	1.2	813	186	+	1,290	7.9
4S/3E-16G,M	6- 7-63	17	trace	98	34	1.5	46	4.0	.08	.0	414	0	101	29	.1	1.6	.05	.0	536	388	0	855	7.4
4S/3E-16H,M	6- 7-63	21	trace	108	40	1.4	48	3.3	.03	.0	414	0	135	38	.1	1.2	.00	.0	600	436	0	931	7.8
4S/4E-19M,M	6- 7-63	17	trace	133	49	2.1	69	2.3	.05	.0	418	0	290	34	.4	7.2	.00	.2	809	538	0	1,190	8.1
4S/4E-31K,M	6- 7-63	18	trace	16	169	.3	7.6	.4	.00	.0	844	16	9.0	12	.1	3.7	.00	.0	668	736	0	1,140	8.4
5S/1E- 8X,M	5-13-63	24	trace	70	6.9	.2	16	.3	.00	.0	183	0	53	13	.2	10	.00	.1	284	203	0	451	7.7
5S/1E-18C,M	5-13-63	34	trace	11	.4	.0	116	.3	.00	.0	286	9	9.0	16	.7	.7	.10	.6	339	29	+	509	8.6
CONTRA COSTA COUNTY																							
1N/1E-28M,M[1]	5- 5-65	0.2	0.00	508	2,260	1.9	151	6.4	1.8	17	0	0	29,600	283	19	15	0.00	15	44,500	10,600		27,700	2.0
1N/1E-28M,M[2]	5- 5-65	43	trace	228	333	4.8	3,350	99	11	67	1620	0	2,560	4,090	.6	57	.00	242	11,900	1,940	0.0	16,500	7.6
1N/1E-33D,M[3]	7-11-58	16	.00	431	12		3,100	53	4.6	u57	203	0	1.6	5,770	2.5	u.0	.00	191	9,770	1,130	.4	16,200	7.7
1N/1W-15N,M[4]	7-11-58	23	.00	286	.0		1,500	7.6	.0	u13	0	64	16	2,750	.2	u2.2	.15	10	4,700	715	.5	8,370	9.1
1N/2W-24M,M	1-20-66	100	trace	33	17	.0	308	16	.09	1.9	662	0	2.0	221	1.1	1.1	.15	7.3	1,050	154	18	1,670	8.2
1N/3W- 2H,M	1-20-66	24	trace	78	24	.9	84	.8	.05	.0	316	0	185	23	.7	.4	.08	.2	577	292	0	885	7.8
2N/3W-33J,M	5- 5-65	37	trace	62	13	.4	38	.5	.03	.0	237	0	62	19	.3	1.7	.25	.0	351	208	0	542	7.8
1S/3E-15F,M	6-17-54			714	84		3,720	55			20	0		7,190				16		2,130		19,800	6.9
1S/3E-15F,M	6-17-54			768	95		3,670	52			91	0		7,290				15		2,300		20,300	7.7
1S/3E-15G,M[5]	10- 2-54	30		736	81		3,640	47			124	0	4.9	7,260	.3		.0		11,900	2,170		20,300	7.0
1S/3E-15G,M	5-17-63	25	trace	1,380	373	20	8,730	108	1.6	.0	645	0	2,750	14,800	2.5	21	.00	68	28,600	5,000	+	40,400	7.1
1S/3E-15K,M	5-17-63	15	.01	4,200	948	99	33,600	336	3.3	+	117	0	559	61,500	3.1	36	.10	59	101,000	14,500		119,000	6.9
1S/3E-15K,M	5-17-63	30	trace	768	104	18	3,820	60	.42	.6	117	0	50	7,550	1.1	9.0	.00	15	12,500	2,360		20,600	7.1
1S/1W- 2M,M	5- 4-65	26	.00	6.2	6.3	.4	97	2.6	.03	+	202	35	9.0	9.3	4.4	1.9	.00	17	317	42	0	467	8.6

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
ALAMEDA COUNTY																	
1S/3W-30B,M	8.6							34		1.6	27		1.4				
3S/3E-15Q,M	37						6.0	18			100	≤0.2	2.1				
4S/1W-16Q,M	12							a100	≤5.0	.8	a80		1.6				
4S/3E-16G,M	14							9.2			14	5.0	1.1				
4S/3E-16H,M	11							7.5			8.8	≤.2	1.2				
4S/4E-19M,M	9.8							7.5				1.3	1.2				
4S/4E-31K,M	7.0			34		31	≤1.2	3.0					2.0				
5S/1E- 8X,M	9.8				≤1.2			3.0				4.8	.8			5.0	
5S/1E-18C,M	22							13		7.2	10		.4				
CONTRA COSTA COUNTY																	
1N/1E-28M,M	60							a840		70	1,400		60				
1N/2W-24M,M	20							19		51			2.1	4.3			
1N/3W- 2H,M	11							20				2.9	1.7			0.3	40
2N/3W-33J,M	14							71			43	1.2	3.4			5.7	
1S/3E-15G,M	21				7.1			a18,000		≤.3	a290	13	23				
1S/3E-15K,M	20			≤1.4	≤1.4		57	a2,500			a380		9.1				
1S/3E-15K,M	21			47		43		a610			a430		11	1.8			
1S/1W- 2M,M	22							37		13	4.3		1.4				

See footnotes at end of table.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
FRESNO COUNTY																							
13S/10E-32R,M	1- 8-63	30	trace	74	69	3.1	124	2.8	0.12	u0.0	328	0	350	56	1.0	18	0.10	3.8	894	470	0	1,310	8.0
13S/10E-32X,M	6-13-55			21	20	.0	95	1.3			250	0	40	60				4.0	364	134			7.3
14S/10E-15R,M[2]	1- 7-63	72	trace	40	.0	.5	820	7.3	.12	+	6	30	6.0	1,310	.5	5.2	.00	14	2,310	100	+	4,110	8.7
15S/12E- 8X,M	7-23-56	91		442	2,470		4,290	35			0	0	18,500	399	9.8	u583		13	26,800	11,300		23,300	4.5
18S/14E-10J,M	1- 8-63	27	.00	107	31	1.8	1,340	16	1.4	u3.8	1,860	0	304	1,060	.8	3.0	.25	17	3,830	396	+	5,890	8.0
18S/14E-25K,M	1- 9-63	22	trace	16	19	.6	372	4.2	.30	+	738	0	.0	252	.6	9.5	.25	2.7	1,060	120	0	1,790	8.1
18S/15E-19K,M	1- 9-63	38	trace	524	401	1.7	960	33	2.0	u.0	223	0	4,500	137	7.1	2.8	.00	5.0	6,730	2,960	0	7,060	6.1
18S/15E-30F,M	1- 9-63	33	.01	337	236	6.0	1,080	8.4	.64	u.0	264	0	1,600	1,600	1.5	14	.10	17	5,060	1,820	0	7,420	7.9
18S/15E-31C,M	1-11-59	31		77	103		288	4.0			663	0	430	185	.6	u2.7		2.1	1,450	614		2,110	7.9
20S/13E-34K,M	1- 8-63	63	.01	2.0	.0	.0	140	1.8	.06	+	173	14	47	68	3.9	.5	.00	7.6	433	5	+	637	8.6
IMPERIAL COUNTY																							
17S/ 9E-19Q,M[6]	2- 6-61	35	0.00	74	40	0.6	77	6.9	0.0		220	0	63	185	0.5	u10	0.00	0.1	600	347	0.1	1,090	8.2
KERN COUNTY																							
25S/18E-25C,M[1]	4-23-54			0.0	49		4,220	40		-	2,370	683	1,130	3,560		u14		14	10,900	202		16,100	9.2
28S/19E-22C,M[1]	8- 6-54	14		301	140		484	4.8		u0.4	207	0	1,740	264	0.6	u4.9		5.5	3,060	1,330		3,830	7.7
29S/20E- 5C,M[1]	8- 3-55	21		58	17		66	3.3			156	0	197	21	.2	u9.0		.0	476	213		704	7.8
29S/20E-33N,M	5-18-61																					<1,000	
29S/21E-33E,M[1]	11- 8-55			230	181		430	10			337	0	1,560	250				3.8	2,830	1,320		3,530	7.7
KINGS COUNTY																							
23S/16E- 3Q,M	1-10-63	47	trace	129	116	1.6	288	2.6	0.20	u+	514	0	948	19	2.0	u1.9	0.00	0.5	1,810	800	+	2,350	7.4
23S/17E- 6L,M	1-10-63	45	0.01	343	141	1.4	465	14	.18	u.0	422	0	1,930	79	.6	u1.3	.20	1.4	3,230	1,440	0	3,780	7.8
LOS ANGELES COUNTY																							
1N/15W-19D,S	2- 4-65	19	trace	2.2	0.5	0.2	410	1.4	0.02		436	8	458	32	2.6	u9.4	0.00	1.6	1,160	8	+	1,750	8.4
1N/17W- 4A,S	1-16-63	34	0.00	99	59	.3	60	2.8	.02	u0.0	376	0	226	54	.6	u1.7	.15	.1	723	490	+	1,070	7.7
3N/11W-12B,S	5-24-63	24	trace	36	6.6	.4	15	1.9	.01	u.0	175	0	3.0	5.0	.2	u.6	.00	.0	179	117	0	278	6.9
3N/16W-35A,S	1-16-53	49	trace	223	67	1.6	123	3.4	.12		648	0	508	28	.7	u10	.10	1.1	1,330	835	+	1,750	7.6
4N/11W-30P,S	1-16-63	27	trace	73	14	.7	21	4.0	.02	u.0	317	0	20	7.2	.4	u1.2	.10	.0	324	238	0	519	7.8
4N/12W-11F,S	4-28-63	31	trace	54	16	.5	30	1.7	.03	u.0	226	0	46	24	.3	u4.1	.20	.0	319	200	0	495	7.5
4N/12W-24E,S	3-21-64	34		74	17		41	2.2		u.0	324	0	49	18	.4	u.6	.00	.1	396	256	0	611	8.0
6N/16W-15L,S	1-11-63	36	.01	76	.5	2.2	336	4.9	.12			18	368	355	9.2	u1.7	.00	6.2	1,210	194	+	1,960	9.0
1S/14W-14E,S[8]	1-15-63	45	.00	61	22	.6	500	16	.14	+	1,280	0	1.0	227	.9	u2.2	.00	1.3	1,510	242	+	2,360	7.7
1S/18W- 5L,S	1-15-63	21	.00	1.6	.1	.0	220	1.3	.06	+	466	0	76	12	1.9	u.1	.05	1.0	565	4	+	861	8.0
2S/10W-24N,S[9]	1-14-63	31	.17	724	3.8	11	2,140	16	.28	+		27	37	4,740	.9	u5.0	.00	5.9	7,740	1,830	+	12,900	8.8
2S/11W-17A,S[10]	3- 6-64	26	.01	303	.246	1.4	298	6.4	.26	+	502	0	1,700	168	1.4	u.2	.05	.6	3,000	1,770		3,590	7.7

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
FRESNO COUNTY																	
13S/10E-32R,M	36							a50				≦0.3	2.5			0.9	
14S/10E-15R,M[5]	65							310		10			4.0				
18S/14E-10J,M	43							a410		3.7	7.7		4.9		9.4		
18S/14E-25K,M	5.1							a100		2.3	9.4		1.0				
18S/15E-19K,M	210				4.6			a1,600			a5,700		>25		2.4	2.7	760
18S/15E-30F,M	21							a80			12		7.4				150
20S/13E-34K,M	84							a40		35		.6	3.1				
IMPERIAL COUNTY																	
17S/9E-19Q,M[6]	11							2.5				0.2				23	
KERN COUNTY																	
29S/20E-33N,M	29							11				2.1	2.7			1.5	
KINGS COUNTY																	
23S/16E- 3Q,M	12							24		4.3	89		2.3				
23S/17E- 6L,M	21							370			57	3.4	5.7			1.7	190
LOS ANGELES COUNTY																	
1N/15W-19D,S	9.1						18	1.7		7.7	3.4	4.3	0.3				
1N/17W- 4A,S	≦1.4							220			23		1.9				
3N/11W-12B,S	39				≦1.2			24			≦1.2		1.8			≦0.2	
3N/16W-35A,S	7.7						6.3	13		1.1	34	13	1.9	≦1.4	≦0.6	.8	
4N/11W-30P,S	6.3						7.1	5.7				≦.3	.5	≦1.4	≦.6	.8	
4N/12W-11F,S	5.7						6.0	3.7			2.6		1.3			13	
4N/12W-24E,S	9.4							260			13	≦.3	1.4			2.1	>2,000
6N/16W-15L,S	36							4.3		7.7		.6	2.0				
1S/14W-14E,S[8]	39							56		7.4	33		2.5				17
1S/18W- 5L,S	≦1.4							63		8.3	9.7		1.1				
2S/10W-24N,S[9]	30							a190		9.1	11		1.8		1.2		
2S/11W-17A,S[10]	3.8						31	78		1.2	30	≦.2	.9			≦.2	

See footnotes at end of table.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
MERCED COUNTY																							
13S/10E-29G,M	1- 8-63	33	trace	36	15	0.5	74	2.5	0.12	u0.0	278	0	58	20	0.6	u2.8	0.05	1.2	381	151		589	8.2
13S/10E-29Q,M	1- 8-63	36	0.01	3.6	.7	1.0	178	2.9	.18	u+	366	22	10	45	1.9	ul.7	.00	5.6	489	12	+	764	8.7
MONTEREY COUNTY																							
18S/5E-25R,M	5- 9-63	43	trace	23	0.4	0.7	260	3.4	0.16	0.0	30	0	496	52	8.4	4.4	0.00	1.7	908	59	+	1,350	8.1
18S/6E-30N,M	5- 9-63	30	trace	26	1.5	.4	275	3.5	.18	+	39	0	526	59	9.5	4.7	.05	2.0	957	71	0	1,450	7.6
18S/6E-30N,M	5- 9-63	36	trace	23	.4	.7	260	3.2	.14	+	30	0	498	52	8.7	5.3	.05	1.8	904	59	+	1,350	7.4
19S/4E-32K,M	5- 8-63	109	0.00	3.0	.1	.2	89	2.3	.05	1.0	10	58	65	18	5.0	.6	.00	.3	355	8	+	409	9.6
19S/4E-32K,M[11]	5- 8-63	113	trace	3.8	.0	.2	89	2.5	.08	1.0	8	61	67	14	4.9	.8	.00	.4	360	10	+	414	9.6
19S/4E-32K,M	5- 8-63	32	trace	25	6.0	.1	5.9	2.7	.05	.0	71	0	34	3.8	.2	.9	.00	.0	146	86	0	212	6.8
19S/4E-32L,M	5- 8-63	133	trace	5.8	.0	.2	90	2.5	.06	11	(b)	61	79	28	4.8	.8	.00	.3	418	14	+	430	9.6
21S/3E- 9K,M	5-10-63	71	trace	3.6	.0	.0	67	.6	.01	.6	37	37	41	10	3.1	.7	.00	.5	254	9	+	311	9.5
21S/3E- 9K,M	1-18-63	61	trace	2.4	.0	.0	64	.9	.00	+	27	30	43	12	2.8	.3	.00	.3	241	6	+	298	9.4
21S/3E-24P,M	11-11-63	44	.00	2.0	.0	.2	46	.6	.00	+	36	30	16	6.2	.9	.7	.00	.2	164	5	+	218	9.4
21S/3E-26J,M	12- 3-63	17	.00	63	9.0	.2	21	.5	.00	0	194	0	27	38	.4	1.9	.00	.0	274	194	0	476	7.9
22S/7E- 5R,M	1-18-63	40	trace	103	39	.8	202	4.0	.13	u8.0	810	0	165	48	.7	ul.1	.20	1.0	1,010	416	+	1,510	7.3
22S/7E- 6K,M	9-20-62	35	trace	56	17	.3	24	1.1	.10	.0	193	0	84	13	.4	1.8	.45	.1	328	210	0	489	8.2
ORANGE COUNTY																							
3S/9W- 2P,S	1-14-63	25	0.00	8.8	1.9	0.8	1,780	8.4	0.30	u+	3,090	69	3.0	935	2.3	u2.6	0.25	5.0	4,360	31	0	6,690	8.3
5S/7W- 7P,S	1-13-63	29	.01	267	136	4.1	278	2.0	.36	u+	240	0	1,440	100	.5	u5.7	.00	.3	2,380	1,230	0	2,880	7.3
7S/6W- 4E,S	5-10-63	79	trace	2.8	.1	.1	92	1.6	.05	u+	9	34	26	69	8.0	u.4	.00	.9	319	8	+	447	9.4
RIVERSIDE COUNTY																							
2S/3E- 2C,S	10-17-63	19		119	40		101	7.9			269	0	390	30	2.3	u0.0		0.2	842	460		1,190	7.8
2S/7E-27Q,S[12]	11-24-64	20	trace	82	28	0.3	42	7.1	0.00	0.0	402	6	28	33	.5	1.1	.00	.1	446	318	0	744	8.3
2S/1W-25X,S[12]	1-31-61	29	.00	21	5.5	.1	15	1.2	.0		108	0	5.8	5.1	.4	u8.0	.10	.1	144	75	.4	216	8.1
2S/3W-20F,S[12]	1-31-61	54	.00	20	6.3	.2	44	4.0	.0		110	0	11	46	.4	u5.6	.30	.0	245	76	.2	373	8.0
3S/2W-23J,S[12]	1-30-61	49	.00	1.6	1.9	.1	89	.4	.0		54	12	33	54	14	u.0	.00	1.0	282	12	20	423	9.0
3S/2W-23J,S[12]	1-30-61	49	.00	3.6	.7	.1	81	.5	.0		74	1	43	31	14	u.0	.00	1.1	261	12	.3	395	8.6
4S/1E-30D,S[12]	1-30-61	58	.00	1.0	.0	.2	67	.6	.0		(b)	59	30	13	1.2	u.6	.00	.1	202	2	2.8	331	9.9
4S/6E-12L,S	11-12-64	20	.01	55	11	1.0	380	12	.00	.0	150	6	622	160	8.0	1.5	.00	1.5	1,390	184	0	2,060	8.6
4S/7E-17E,S	11-12-64	20	trace	98	16	1.0	330	12	.02	.0	208	2	618	158	5.4	1.8	.00	1.8	1,370	310	0	2,040	8.3
5S/6W-10C,S[13]	1-12-63	54	trace	4.4	.0	.0	83	.7	.00	u.0	20	22	110	12	3.3	u.3	.00	.4	300	11	+	407	9.3
6S/5E-28C,S[12]	1-31-61	41	trace	68	28	.4	47	8.5	.0		332	9	29	50	.6	u.0	.00	.1	444	286		717	8.4
7S/3W-14X,S[12]	2- 1-61	58	.00	7.8	.0	.2	240	4.4	.0		12	15	27	338	3.6	ul.5	.00	4.1	706	20	1.3	1,280	8.9
7S/3W-14X,S[12]	2- 1-61	65	.00	9.2	.5	.2	248	4.4	.0		0	25	15	348	4.0	u.1	.00	2.0	721	25	.0	1,280	9.1

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
MERCED COUNTY																	
13S/10E-29G,M	12							6.9		51			1.1		7.1		
13S/10E-29Q,M	89							430		30			2.6		2.8		
MONTEREY COUNTY																	
18S/5E-25R,M	23							45		>50			0.6				
18S/6E-30N,M	28						25	14		>45	14		4.0				
18S/6E-30N,M	180						12	5.5		>50			.5				
19S/4E-32K,M[11]	46							7.5	≦5.0	11			.9				
19S/4E-32K,M[11]	98							10	≦5.0	17			1.2				
19S/4E-32K,M	10				≦1.2			a770			22		3.2			11	
19S/4E-32L,M	74				≦1.2		≦1.2	9.0	≦5.0	12			1.7				
21S/3E- 9K,M	18				≦1.2			6.5	≦5.0	5.0			1.3				
21S/3E- 9K,M	66							9.7		9.7			5.1				
21S/3E-24P,M	15							3.7					≦.3				
21S/3E-26J,M								1.8				3.1	1.0				
22S/7E- 5R,M	12							34		4.6	19		1.8	≦0.6			
22S/7E- 6K,M	24		0.7		13			77		3.4		.8	2.1			2.1	
ORANGE COUNTY																	
3S/9W- 2P,S	1.8							160		16			2.1		1.0		
5S/7W- 7P,S	6.3							4.6			a860		1.2		≦.6	0.5	
7S/6W- 4E,S	20			14				17		50	≦1.2	7.8	2.5				
RIVERSIDE COUNTY																	
2S/7E-27Q,S	8.6						11	11			5.7	1.4	0.5		0.7	8.0	
2S/1W-25X,S[12]	5.4						≦2.8	6.0				≦.1	.6			2.0	
2S/3W-20F,S[12]								8.6				.8				28	
3S/2W-23J,S[12]	110						≦2.8	>50	13	>50			.6				
4S/1E-30D,S[12]	31							7.7	4.9	4.3		1.1	≦.3				
4S/6E-12L,S	34							14			7.4	27	.5			6.6	
4S/7E-17E,S	18							20			5.1	39	1.1				
5S/6W-10C,S	16							43				.9	5.4				
6S/5E-28C,S[13]	21							1.8				2.2	≦.3			17	≦500
7S/3W-14X,S[12]	36							2.7	>50			≦.1					
7S/3W-14X,S[12]	32						≦2.8	11	>50			≦.1	.6				

See footnotes at end of table.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
SAN BENITO COUNTY																							
13S/4E-10M,M	5-16-63	27	trace	113	23	0.3	42	1.2	0.02	0.0	368	0	86	45	0.6	9.1	0.00	0.2	528	376	0	836	7.2
13S/4E-35G,M	5-14-63	35	trace	69	19	.2	11	1.5	.00	.0	273	0	26	16	.2	3.3	.10	.1	315	251	0	499	7.2
13S/6E- 7K,M	5-14-63	37	trace	26	54	.8	875	3.6	.09	5.8	730	20	426	790	.6	2.0	.30	6.0	2,610	288	+	4,130	8.3
16S/7E-26L,M	5-15-63	65	0.01	9.6	1.9	.0	40	1.7	.01	.0	60	0	41	20	.7	.8	.90	.1	211	32	0	250	7.0
18S/11E-36A,M	5-15-63	25	trace	47	37	1.0	845	16	.67	3.5	1,540	0	64	625	1.9	2.4	.00	23	2,450	270	+	3,910	8.1
19S/9E-10F,M	5-15-63	74	trace	221	289	1.8	5,250	61	1.5	u49	1,470	0	2,060	7,380	1.3	18	.60	24	16,200	1,740	+	23,600	8.1
SAN BERNARDINO COUNTY																							
1N/4W-11F,S[14]	3- 7-61	104	0.13	30	2.9	0.8	308	14	0.3		86	0	578	61	9.0	u0.4	0.20	3.5	1,150	87	0.3	1,570	8.2
1N/4W-11J,S[15]	3- 7-61	54	.08	19	1.2	.6	110	7.6	.2		76	0	189	29	3.0	u.3	.05	1.1	451	52	.5	660	8.2
1N/4W-11J,S[15]	3- 7-61	94	.12	29	2.1	.8	255	12	.4		83	0	454	52	8.0	u.3	.00	3.2	951	81	.6	1,400	8.0
2N/1E-12M,S[15]	3- 7-61	37	.02	4.4	.1	.2	134	1.2	.1		49	5	209	8.0	10	u.1	.00	.1	433	12	.2	652	9.4
2N/2E-21X,S	7-25-51	12		21	13		12	2.3			132	0	9.3	7.8	.4	u5.6			148	106		254	
1S/3E-35P,S	10- 9-63	22		111	46		101	6.9			213	0	462	18	3.1	u.1		.1	875	468		1,220	7.4
1S/5E-27M,S	2-15-65	14	trace	98	49	.2	40	19	.00	.0	288	0	290	19	.5	2.8	.05	.0	674	446	0	979	7.5
1S/7E-33L,S	2-16-65	26	trace	78	21	.4	40	5.6	.00	.0	334	0	48	34	.4	2.6	.00	.0	421	282	0	686	7.7
SAN DIEGO COUNTY																							
8S/4W-32X,S[16]	2- 2-61	57	0.00	1.6	0.5	0.1	75	0.7	0.0		42	34	11	43	1.6	u0.0	0.00	0.3	246	6	0.4	356	9.5
9S/1W-19N,S[17]	11-12-54	39		73	16		50	4.4			249	0	33	86	.2	u.5			425	248		712	7.7
9S/6W-35X,S[16]	2- 2-61	37	.01	47	63	.3	73	2.3	.0		350	10	13	149	.3	u1.3	.00	.0	568	375		1,020	8.4
10S/3E-24N,S[16]	2- 3-61	81	.01	2.4	.5	.1	96	1.8	.0		44	26	66	49	4.4	u.0	.00	.6	350	8	37	468	9.2
10S/4E-31Q,S[16]	2- 3-61	50	.00	32	11	.3	45	3.3	.0		204	0	6.6	31	.3	u3.7	.30	.0	283	126	.0	434	7.8
11S/2E-21K,S[18]	11- 4-52			42	33		16	.7			286	0		17		u.6		.1		240		489	7.8
11S/2E-25N,S[18]	11- 6-52			14	5.1		17	3.5			72	0		14		u1.9		.5		56		191	7.0
11S/2E-26A,S[18]	11- 3-52			11	3.1		21	2.8			61	0		17		u.4		.4		40		175	7.1
12S/2E- 3B,S[18]	11- 5-52			25	1.5		13	1.5			83	0		7.8		u3.2		.3		69		188	7.9
12S/2E-10G,S[18]	11- 5-52			20	9.4		22	4.1			118	0		10		u2.4		.0		89		268	7.5
14S/5E-12F,S[16]	2- 3-61	40	.08	84	57	.6	126	5.4	.0		267	0	380	92	.4	u.7	.10	.2	918	444		1,360	7.9
14S/7E-18P,S[16]	2- 3-61	40	.00	.8	.5	.2	104	1.2	.0		57	12	55	68	4.0	u.1	.00	.9	315	4	1.1	512	9.0
16S/1W-19R,S[16]	2- 5-61	98	.00	36	40	.2	188	2.8	.0		144	0	252	161	1.0	u44	.75	.2	894	254		1,340	7.6
17S/6E-13M,S[18]	10-29-52			29	5.3		40	1.2			138	0		34		u10		.1		94		364	8.1
17S/6E-14R,S[16]	2- 6-61	51	.00	26	6.2	.4	38	.8	.0		129	0	10	34	.3	u5.0	.65	.0	235	90	.3	348	7.0
17S/6E-33R,S[16]	10-24-52			48	10		54	2.2			232	0		49		u4.3		.1		161		550	8.0
17S/7E-34H,S[16]	2- 6-61	49	.00	37	8.6	.4	46	2.4	.0		154	0	19	60	.4	u2.4	.25	.1	301	128	.2	477	7.5
18S/8E- 7J,S[16]	2- 6-61	56	.00	2.4	.1	.1	101	1.2	.0		42	23	32	77	1.8	u.0	.00	.6	316	6	6.5	491	9.3

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
SAN BENITO COUNTY																	
13S/4E-10M,M	9.0							6.2			9.8	2.5	1.9				
13S/4E-35G,M	6.5							5.0				12	2.1			25	
13S/6E- 7K,M	39							650					1.6				
16S/7E-26L,M	800							190					2.4				
18S/11E-36A,M	68							30		40	39		2.3	1.2			
19S/9E-10F,M	2.1			≦1.4				9.1		≦.3	9.7	3.4	5.1				
SAN BERNARDINO COUNTY																	
1N/4W-11F,S[14]	16						≦2.8	2.6		>50		1.0	0.5			≦0.6	
1N/4W-11J,S[15]	40							>50		15		1.1		6.6			
1N/4W-11J,S[15]	46						≦2.8	7.1		24	≦0.6	2.0					
2N/1E-12M,S[15]	35						≦2.8	4.3		>50	.6	6	.5			≦.6	
1S/5E-27M,S	6.3						4.0	29			21	66	.7			1.3	76
1S/7E-33L,S	4.0		0.8		14		13	≦1.4				10	.9			4.0	9.4
SAN DIEGO COUNTY																	
8S/4W-32X,S[16]	15						≦2.8	4.9	5.4	12		0.9	0.4				
9S/6W-35X,S[16]	9.1						4.6	>50		>50			.8			>100	
10S/3E-24N,S[16]	23						≦2.8	8.9	7.4	>50		≦.1	.4				
10S/4E-31Q,S[16]	85							13				≦.1	2.4			16	
14S/5E-12F,S[16]								2.9				.7				13	
14S/7E-18P,S[16]	53							6.9		>50		.3					
16S/1W-19R,S[16]	7.4						3.1	8.6		≦.3	1.0	.8	.8			7.7	
17S/6E-14R,S[16]	8.3							1.8				≦.1	.4		≦0.6	3.4	
17S/7E-34H,S[16]	21							44					9.4			1.4	
18S/8E- 7J,S[16]	18						4.0	6.0	7.7	17		≦.1	.7				

See footnotes at end of table.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
SAN JOAQUIN COUNTY																							
4S/5E-20F,M	6- 3-63	43	trace	36	51	0.0	18	0.3	0.00	0.0	251	3	113	10	0.1	1.5	0.00	0.4	400	300	0	597	8.3
4S/5E-20N,M	6- 3-63	17	trace	94	67	2.8	196	6.0	.13	1.3	534	0	312	124	.6	1.0	.00	2.4	1,090	514	+	1,650	8.0
SAN LUIS OBISPO COUNTY																							
25S/16E-31R,M	1-10-63	44	0.01	92	64	1.4	141	3.7	0.18	u0.0	304	0	408	95	1.0	u8.6	0.05	0.8	1,010	494	0	1,440	8.2
26S/12E-20A,M	9-19-62	85	.00	106	.2	2.5	710	9.0	.46	+	116	0	490	820	4.8	u2.1	.00	8.2	2,300	268	+	3,720	7.9
26S/12E-20A,M	9-19-62	85	.00	116	.5	2.7	720	11	.52	u.0	56	0	558	840	4.9	u2.9	.00	9.2	2,380	294	+	3,760	7.1
26S/12E-33F,M	1- 9-63	63	.00	11	5.5	.1	520	11	.10	+	642	0	239	315	1.9	u1.9	.00	2.3	1,490	50	+	2,350	8.2
27S/12E-15G,M	1- 9-63	52	trace	4.0	1.3	.0	325	2.3	.06	+	467	14	141	133	1.7	u.8	.05	1.3	906	16	+	1,370	8.4
31S/12E-32F,M	1-17-63	61	trace	46	29	.3	84	15	.02	u6.1	444	0	35	38	.7	u.7	.70	.1	535	234	+	817	7.6
31S/12E-32F,M	1-17-63	64	trace	42	30	.3	96	15	.02	u6.9	502	0	25	30	.6	u.7	.00	.1	557	228	+	857	7.5
31S/12E-32J,M	9-18-62	77	.00	24	32	.4	212	25	.10		618	0	38	69	.9	u31	.00	1.2	815	192	+	1,200	8.1
32S/13E-23R,M	9-19-62	38	trace	54	46	.2	70	11	.06		426	0	69	43	.4	u1.8	.00	.1	543	324	+	860	7.8
SAN MATEO COUNTY																							
6S/4W-22Q,M	5- 6-63	21	trace	7.8	1.6	0.2	8.0	0.5	0.01	0.0	26	0	8.0	10	0.1	1.3	0.25	0.0	72	26	0	93	7.6
7S/5W- 3Q,M	5- 6-63	37	trace	12	7.5	.2	34	1.0	.04	0	56	0	14	46	.2	13	.25	.0	193	61	0	294	7.3
SANTA BARBARA COUNTY																							
4N/25W-18Q,S	9-15-62	24	0.00	89	6.3	8.1	720	5.5	0.68		248	0	17	1,160	5.0	u1.6	0.00	14	2,170	258	0	3,890	7.8
4N/26W- 5D,S	1-17-63	38	trace	4.6	.9	.2	131	1.5	.08	+	226	0	34	51	4.8	u.3	.00	1.4	379	15	+	586	8.0
4N/26W- 6A,S	1-17-63	38	.01	5.8	1.0	.3	133	1.3	.08	+	244	0	31	54	4.9	u.6	.00	1.5	391	19	+	600	8.2
4N/27W-19H,S[19]	1-17-63	14	.01	249	3,530	9.4	2,390	41	3.6	+	1,220	0	14,900	1,790	8.2	u1,340	.20	4.4	24,900	15,200	0	21,400	7.0
4N/28W-23H,S	9-14-62	62	.01	372	101	1.4	250	13	.18		484	0	916	372	.4	u22	1.2	.6	2,350	1,340	0	3,100	7.0
5N/26W- 1P,S[20]	9-17-62	60	trace	2.4	.0	.2	258	2.3	.20	+	570	0	17	46	12	u.6	.00	6.0	686	6	+	1,010	8.2
5N/28W-17X,S[21]	11-18-53			34	17		20	.8			151	0	39	23	.1			.0	220	157		365	7.5
5N/29W- 2R,S[21]	11-17-53			4.4	0		163	1.2			226	0	36	101	2.8			3.0	542	11	+	762	8.2
5N/29W-26X,S	3-27-63	31	trace	16	3.4	.5	106	.6	.09		210	0	74	26	1.9	u1.2	.00	.4	364	54	+	555	7.7
5N/32W-12M,S	9-14-62	19	.00	53	28	2.2	248	3.9	.56	+	410	0	186	166	2.2	u1.0	.00	6.6	918	248	+	1,480	8.1
5N/32W-22F,S[22]	9-14-62	38	trace	15	2.3	.2	196	1.4	.22		423	0	27	58	6.6	u1.1	.00	1.4	555	47	+	856	8.2
5N/34W- 7E,S[22]	12- 2-59			126	68		62	3.5			520	0		116				.1		595		1,240	8.1
5N/35W- 1F,S[22]	12- 2-59			102	54		42	2.7			450	0		85				.1		478		997	8.2
5N/35W- 1N,S[22]	12- 2-59			126	99		184	5.0			422	16		390				.2		720		2,080	8.4
5N/35W- 2D,S[22]	12- 2-59			100	52		128	4.8			222	0		248				.2		465		1,410	8.2
6N/29W-32X,S[21]	11-18-53			44	12		27	.8			221	0	14	19	.3			.0	165	162		423	7.3
6N/35W-21X,S[22]	5-15-58			42	15		44	4.1			149	0		83				.1		168		525	8.0
6N/35W-30R,S[22]	12- 2-59			140	89		158	9.2			468	0		318				.2		715		1,920	8.2
6N/36W-25H,S[22]	12- 2-59			160	79		158	7.2			476	0		274				.1		725		1,880	

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
SAN JOAQUIN COUNTY																	
4S/5E-20F,M	9.8							2.0			16	0.2	3.8			3.8	
4S/5E-20N,M	22							a170		6.0	14		2.8		0.5		
SAN LUIS OBISPO COUNTY																	
25S/16E-31R,M	2.7							14				11	4.0			4.3	13
26S/12E-20A,M	140							170		6.3			4.6				
26S/12E-33F,M	89							45		3.4			5.7				
27S/12E-15G,M	43							13		13			4.6				
31S/12E-32F,M	30							57		15	160		2.7				
31S/12E-32F,M	2.3							6.3		7.7	21		2.7				
31S/12E-32J,M	43							4.0		9.4			2.3				
32S/13E-23R,M	66							330		15			2.9				
SAN MATEO COUNTY																	
6S/4W-22Q,M	>180							a150			10			3.0	3.4	0.9	
7S/5W- 3Q,M	a4,000							210			a110		14		>250	8.5	
SANTA BARBARA COUNTY																	
4N/25W-18Q,S	16							540		14	29		1.8				
4N/26W- 5D,S	36							37		20			2.5				
4N/26W- 6A,S	43							31		21	36		3.1		1.4		
4N/27W-19H,S[19]	15						140	74			a960	11	>25		1.1		a10,000
4N/28W-23H,S	6.0						11	18			45	10	>25	1.1		>25	7.1
5N/26W- 1P,S[20]	13			23	1.7	21		130		41	6.0		27				
5N/29W-26X,S	28							3.0		14	120	≦.2	1.6				
5N/32W-12M,S	11							10		14	9.1		1.3				
5N/32W-22F,S	31							8.6		22			2.6				

See footnotes at end of table.

Location number	Date collected	Results of chemical analyses in parts per million																				Specific conductance (micromhos at 25°C)	pH
		Silica (SiO_2)	Arsenic (As)	Calcium (Ca)	Magnesium (Mg)	Strontium (Sr)	Sodium (Na)	Potassium (K)	Lithium (Li)	Ammonium (NH_4)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Boron (B)	Dissolved solids	Hardness as $CaCO_3$	Sulfide as H_2S		
SANTA CLARA COUNTY																							
6S/1E-24K,M	5-17-63	46	0.01	110	340	1.8	1,870	24	0.42	0.0	774	0	608	3,160	0.6	23	0.05	37	6,600	1,670	0	10,600	8.2
6S/2E-19F1,M	5-17-63	30	trace	149	31	2.7	1,580	43	1.6	27	3,750	0	15	762	1.3	22	.00	44	4,560	504	+	6,680	7.1
6S/2E-19F2,M	5-17-63	23	trace	85	35	1.5	700	23	.77	14	2,010	0	74	193	1.8	2.5	.05	8.3	2,150	360	+	3,270	7.2
6S/2E-19F3,M	5-17-63	28	trace	181	67	2.1	800	24	.50	4.8	1,790	0	402	488	1.8	3.3	.10	31	2,910	730	+	4,330	7.6
6S/5E-18G,M	4-30-44			3.5	130		c20				696	0	3.0	9					508	542		939	
8S/2W-11F,M	6- 4-63	21	trace	57	18	.3	18	1.5	.00	.0	252	0	24	17	.1	1.6	.05	.1	283	216	0	461	8.2
8S/4E-33N,M	6- 4-63	15	trace	2.4	1.2	.1	5.7	.0	.00	.0	8	0	1.0	8.5	.1	5.1	.00	.0	43	11	0	52	6.6
9S/4E-10K,M	6- 5-63	68	trace	252	65	.9	100	1.8	.11	.0	1,240	0	62	20	.2	2.4	.00	4.1	1,190	895	0	1,760	6.8
9S/4E-36G,M	5-16-63	101	trace	13	134	.2	274	6.0	.16	+	1,240	0	2.0	130	.4	.8	.10	17	1,290	585	+	1,990	7.0
11S/4E-31A,M	5-16-63	21	trace	38	16	1.0	272	7.5	.05	+	544	0	8.0	222	1.6	1.2	.00	2.0	857	160	+	1,480	7.7
SANTA CRUZ COUNTY																							
9S/3W-23R,M	5- 7-63	23	0.00	13	4.3	0.1	7.5	1.8	0.02	0.0	66	0	6.0	7.0	0.1	0.7	0.00	0.2	97	50	0	130	7.8
10S/2W-23D,M	5- 7-63	31	trace	7.6	.2	.0	8.5	.8	.02	.0	29	0	2.0	8.0	.1	3.2	1.4	.0	77	20	0	81	7.0
11S/2E-30X,M	10-17-51	45		8.0	6.3		26	1.3			50	0	3.4	32	.0	u15		.0	162	46		230	6.9
12S/3E-10A,M	5- 7-63	50	trace	163	70	1.0	112	4.5	.10	+	784	0	135	103	.3	1.2	.35	.6	1,030	696	+	1,580	7.5
STANISLAUS COUNTY																							
6S/6E-10F,M	1- 7-63	29	trace	540	0.0	1.8	375	2.8	0.22	u0.0	11	0	1,760	196	2.0	u11	0.00	11	2,930	1,350	0	3,440	6.6
VENTURA COUNTY																							
4N/21W-17R,S[23]	1-17-63	36	trace	190	41	2.2	44	2.6	0.06	u>4	810	0	93	9.0	0.2	u<1	0.00	0.5	822	644	+	1,230	7.2
5N/23W-16Q,S	9-13-62	31	trace	8.0	.6	.6	336	3.6	.28		429	24	29	245	7.4	u1.3	.00	7.4	905	23	+	1,560	8.7
5N/23W-16Q,S	9-13-62	30	trace	7.4	1.9	.5	352	3.5	.28		432	23	21	248	7.8	u4.9	.05	8.3	921	27	+	1,570	8.6
5N/23W-29J,S	1-17-63	22	.01	50	12	.1	16	.8	.00	u.0	157	0	77	4.0	.4	u.7	.00	.0	260	174	0	398	8.2
5N/23W-29K,S	1-17-63	47	.01	2.0	.0	.0	80	.8	.02	+	141	8	13	21	2.6	u.2	.00	.3	244	5	+	355	9.0
5N/24W-24F,S	9-13-62	56	trace	42	4.4	1.0	340	13	.84	+	111	0	71	502	6.8	u.9	.15	16	1,110	123	+	1,940	7.9
6N/20W-21R,S[11]	9-12-62	92	.05	23	.1	.6	320	16	.76	+	68	0	288	292	12	u2.1	.05	13	1,090	58	+	1,730	8.0
6N/20W-30M,S	9-12-62	45	trace	15	2.1	.2	292	3.4	.22		512	34	67	91	12	u2.8	.05	6.6	824	46	+	1,290	8.8
6N/21W- 9X,S	6-26-51	39		197	56		33	2.7			234	0	563	9.2	.8	u.8		.2	1,020	722		1,280	8.0
7N/24W-22X,S	9-12-62	13	trace	294	248	2.3	440	6.0	.14		468	0	2,110	58	1.8	u.8	.00	.9	3,410	1,760	0	3,910	7.8
San Nicolas Island																							
d3	1-12-57			59	29		500	10			452	0		598	.8			.5		268		2,740	7.9
d4	1-12-57			81	14		228	10			484	0		209	.4			.5		260		1,480	7.4
d7	1-12-57			32	16		276	9.0			308	0		284	1.0			.4		144		1,540	7.9
d9	1-13-57			463	459		2,520	50			369	0		4,850	.4			1.9		3,040		15,300	7.8

Location number	Results of spectrographic analyses in micrograms per liter (approximately parts per billion)																
	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Cobalt (Co)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Lead (Pb)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
SANTA CLARA COUNTY																	
6S/1E-24K,M	9.2							6.5			1.2		18			≦0.2	
6S/2E-19F1,M	70							a160		>50	212		3.2				
6S/2E-19F2,M	140							a640		36	a380		5.0			3.8	
6S/2E-19F3,M	110							a1,600		55	a240		6.8	1.5		4.0	
8S/2W-11F,M	11							4.8					1.4			2.2	
8S/4E-33N,M	15			72			16	49			14		1.0				
9S/4E-10K,M								110			14		.6				
9S/4E-36G,M	17			11				20		9.0	10		8.2				
11S/4E-31A,M	49							a100		28	42		1.2				
SANTA CRUZ COUNTY																	
9S/3W-23R,M	11						≦1.2	4.2					1.1			≦0.2	
10S/2W-23D,M	14						≦1.2	4.5					1.0			≦.2	
12S/3E-10A,M	12							4.5			150		5.0			≦.2	
STANISLAUS COUNTY																	
6S/6E-10F,M	44			10			11	30		18	≦1.6	≦0.3	5.8	4.5	1.3		
VENTURA COUNTY																	
4N/21W-17R,S[23]	11							4.3		4.0	66		1.3	1.9		1.0	
5N/23W-16Q,S	14			100	5.0	91	4.6	>100		13	9.7		>25	2.3			
5N/23W-16Q,S	66			27		14		18		26	11		2.9	4.3			
5N/23W-29J,S	6.3						5.1	12			4.0		.7	.6	≦0.5	.7	
5N/23W-29K,S	39							14		7.1	11		2.0		1.4		
5N/24W-24F,S	65			290	9.1	260		>100		43	26		>25				
6N/20W-21R,S[11]	190			3.7		16	23	63	≦5.7	11	10	11	7.4	2.5			
6N/20W-30M,S	94							4.9		50			3.4				
7N/24W-22X,S	6.0					5.4	1.7	3.7	≦5.7	≦.3		≦.3	1.1		≦.6	≦.3	

1. Al, 4,080 ppm; Fe, 7,460 ppm; Mn, 94 ppm; residue at 180°C, 79, 900 ppm.
2. Analysis from Pampeyan (1963, p. 30). Al, 1.3 ppm; Fe, 0.34 ppm; Mn, 0.13 ppm; Cu, 0.00 ppm; Pb, 0.00 ppm; Zn, 0.0 ppm; Barium (Ba), 23 ppm; Bromide (Br), 14 ppm; Iodide (I), 15 ppm; Nitrite (NO_2), 0.0 ppm.
3. Analysis from Pampeyan (1963, p. 30). Al, 0.10 ppm; Fe, 0.32 ppm; Mn, 0.02 ppm; Cu, 0.02 ppm; Pb, 0.00 ppm; Zn, 0.0 ppm; Hydroxide (OH), 9 ppm; Br, 8.0 ppm; I, 7.5 ppm; NO_2, 0.0 ppm.
4. Analysis from Scott and Barker (1962, p. 27). Al, 0.4 ppm; Fe, 0.2 ppm; Mn, 0.30 ppm; Uranium (U), 2.3 µg/l (micrograms per liter).
5. Analysis from White and others (1963). NH_4, 5 ppm; Br, 0.0 ppm; I, 20 ppm.
6. Selenium (Se), 0.0 ppm; Br, 0.0 ppm; I, 0.0 ppm; NO_2, 0.0 ppm.
7. Analysis from Wood and Davis (1959, p. 122-123).
8. Organic carbon, >5.0 ppm.
9. Organic carbon, 12 ppm.
10. Organic carbon, 2.5 ppm.
11. Organic carbon, 0.0 ppm.
12. Se, 0.00 ppm; Br, 0.0 ppm; I, 0.0 ppm; NO_2, u0.00 ppm.
13. Se, 0.00 ppm; Br, 0.0 ppm; I, 0.0 ppm; NO_2, u0.30 ppm.
14. Se, 0.00 ppm; Br, 0.0 ppm; I, 0.0 ppm; NO_2, 0.02 ppm.
15. Se, 0.00 ppm; Br, 0.0 ppm; I, 0.0 ppm; NO_2, u0.00 ppm.
16. Se, 0.00 ppm; Br, 0.0 ppm.
17. Analysis from Scott and Barker (1962, p. 26-27). Al, 0.1 ppm; Fe, 0.05 ppm; Mn, 0.00 ppm; residue at 180°C, 446 ppm; U, 5.6 µg/l.
18. Analysis from Olmsted (1953).
19. Organic carbon, 56 ppm.
20. Organic carbon, 0.2 ppm.
21. Analysis from Rantz (1962).
22. Analysis from Evenson (1961).
23. Organic carbon, 5.0 ppm.
- b. Hydroxide (OH), 1 ppm.
- c. Calculated; includes K.
- d. Spring numbers and analyses from Burnham and others (1963).

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