HYDROCHEMICAL DATA FOR THE TRUCKEE RIVER DRAINAGE SYSTEM, CALIFORNIA AND NEVADA

By L. V. Benson

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CONTENTS

	Page
Abstract	1
Introduction	2
Sources of data	3
Methods	4
Hydrochemical data	5
References cited	35

ILLUSTRATIONS

Figures 1-3. Maps showing:

1. Location of Truckee River drainage basin and water-quality sampling stations and sites used in 1975---- 3
2. Location of creeks that flow into Lake Tahoe and the upper reach of the Truckee River upstream from the water-quality and streamflow-gaging station at Farad, California---------- 6
3. Location of water-quality and gravity-core sampling sites in Pyramid Lake, Nevada---------- 19

TABLES

Table 1. Chemical composition of creeks that flow into Lake Tahoe and the upper reach of the Truckee River upstream from the water-quality and streamflow-gaging station at Farad, California, 1971-72---------- 7

2. Chemical composition of Truckee River at Tahoe City, California, January 2, 1968, through January 29, 1975------ 9
3. Chemical composition of Little Truckee River upstream from Stampede Reservoir, California, January 2, 1968, through April 9, 1980---------- 11
4. Chemical composition of Truckee River at Farad, California, upstream from irrigation diversions, January 2, 1968, through June 4, 1980---------- 14
5. Chemical composition of Truckee River at 11 sampling stations and sites from Tahoe City, California, to Nixon, Nevada, June 4 and September 3, 1975---------- 17
6. Selected chemical analyses of Pyramid Lake, Nevada, 1882-1973---------- 20
7. Chemical composition of water samples collected as a function of depth in Pyramid Lake, Nevada, November 6, 1975, through December 13, 1976---------- 22
8. Temperature of Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977---------- 24
9. Dissolved-oxygen concentration in Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977---------- 26

TABLES--Continued

		Page
Table 10.	Chemical composition of pore fluids in gravity cores from Pyramid Lake, Nevada	28
11.	Chemical composition of water samples collected from Truckee River at Farad, California, and from Pyramid Lake, Nevada, 1981	30
12.	Trends in chemical composition of water from Pyramid Lake, Nevada, during 21-day evaporation experiment using 75 liters of water	31
13.	Chemical composition of tufa from the Pyramid Lake basin, Nevada	32
14.	Carbonate mineralogy of greater than 2-micrometer fraction of sediment in gravity cores from Pyramid Lake, Nevada	34

METRIC CONVERSION TABLE

For those readers who prefer to use inch-pound rather than metric units, conversion factors for the terms used in this report are listed below:

Multiply SI units	By	To obtain inch-pound units
micrometer (μm)	3.937×10^{-5}	inch (in.)
millimeter (mm)	0.03937	inch (in.)
centimeter (cm)	0.3937	inch (in.)
meter (m)	3.281	foot (ft)
cubic meter per second (m^3/s)	2.832×10^{2}	cubic foot per second (ft^3/s)
kilometer (km)	6.214×10^{-1}	mile (mi)
cubic kilometer (km^3)	1.233×10^{6}	acre-foot (acre-ft)
liter (L)	2.642×10^{-1}	gallon (gal)
milligram (mg)	0.002205	pound (lb)
kilogram (kg)	2.205	pound (lb)
milliliter (mL)	0.00022	gallon (gal)
degree Celsius (°C)	F = 9/5°C + 32	degree Fahrenheit (°F)

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ABSTRACT

Surface-water samples were collected from the Truckee River drainage system during 1975, 1976, and 1981. Data resulting from chemical analyses of these samples, as well as certain other previously unpublished data, are tabulated in this report. The report contains the following hydrochemical data:

1. Chemical composition of 21 tributaries to Lake Tahoe and the Truckee River upstream from Farad, California (May and October 1971, and June 1972).
2. Chemical composition of the Truckee River at Tahoe City (January 1968-January 1975) and at Farad, California (January 1968-June 1980), and of the Little Truckee River upstream from Stampede Reservoir, California (January 1968-April 1980).
3. Chemical composition of the Truckee River at 11 sites from Tahoe City, California, to Nixon, Nevada (June 4 and September 3, 1975).
4. Historical chemical analyses of water from Pyramid Lake, Nevada (1882-1973).
5. Chemical composition (November 1975-December 1976), water temperature (January 1976-November 1977), and dissolved oxygen (January 1976-November 1977) at various depths in Pyramid Lake, Nevada.
6. Chemical composition of pore fluids from and carbonate mineralogy of sediment greater than 2 micrometers in five cores, Pyramid Lake, Nevada.
7. Chemical composition of the Truckee River at Farad, California (January-July 1981).
8. Chemical composition of tufa from the Pyramid Lake basin.

INTRODUCTION

The Truckee River drainage system, in the Basin and Range province, is located in northwestern California and west-central Nevada (fig. 1). The Truckee River originates as outflow from Lake Tahoe and terminates at Pyramid Lake, one of the largest desert lakes in North America (fig. 1).

The purpose of this report is to make available all hydrochemical data collected by the author in the Truckee River drainage since 1975 as well as previously unpublished data collected by colleagues since 1968. These data are a basis for continuing studies of the chemical evolution of closed-basin lakes.

SOURCES OF DATA

The following data were collected:

1. pH, specific conductance, total alkalinity, chloride, sulfate, sodium, potassium, calcium, magnesium, silica, and sometimes nitrate for the Truckee River and creeks that flow into the Truckee River and Lake Tahoe, California.
2. Volume, dissolved mass, calcium, magnesium, sodium, potassium, total alkalinity, sulfate, chloride, and silica for Pyramid Lake from 1882 through 1973.
3. Temperature, dissolved oxygen, pH, total alkalinity, chloride, sulfate, sodium, potassium, calcium, magnesium, silica, boron, strontium, aluminum, lithium, molybdenum, nitrate, nitrite, ammonium, orthophosphate, total dissolved phosphorus, arsenic, fluoride, and total organic nitrogen for Pyramid Lake from 1975 through 1977.
4. pH, Eh, total alkalinity, chloride, sulfate, sodium, potassium, calcium, magnesium, silica, manganese, iron, aluminum, lead, phosphate, and nitrate from Pyramid Lake pore fluids.
5. Temperature, pH, sodium, potassium, calcium, magnesium, chloride, total alkalinity, sulfate, silica, iron, aluminum, manganese, dysprosium, uranium, barium, molybdenum, lutetium, tungsten, lanthanum, cesium, chromium, nickel, rubidium, zinc, samarium, scandium, cobalt, antimony, thorium, terbium, tantalum, cerium, hafnium, and ytterbium for the Farad, California, site on the Truckee River.
6. Temperature, pH, total alkalinity, chloride, sulfate, sodium, potassium, calcium, magnesium, strontium, and silica for Pyramid Lake water for an evaporation experiment.
7. Sodium, potassium, magnesium, and strontium of tufas from Pyramid Lake basin, Nevada.
8. Carbonate mineralogy of greater than 2-μm size fraction of Pyramid Lake sediment.

The sampling program was designed to: (1) Obtain a general overview of the hydrochemistry of the Truckee River system; (2) define the effects of pollutant sources on the chemistry of the surface-water system; and (3) provide a data base for future research into the chemical evolution of

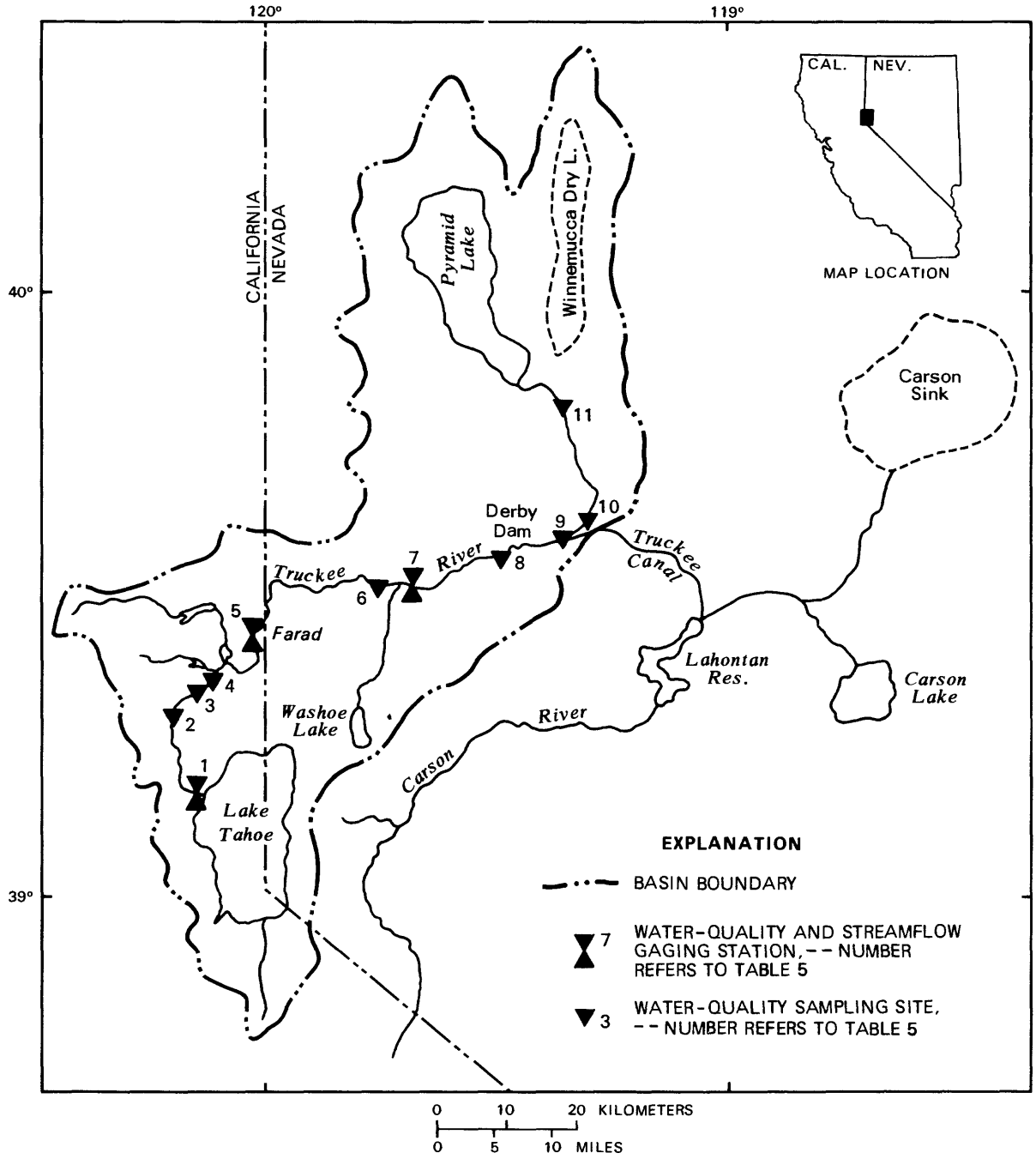

Figure 1.--Location of Truckee River drainage basin and water-quality sampling stations and sites used in 1975.

this closed-basin system. The 1981 sampling program was designed to supplement earlier data and, in particular, to provide data on the seasonal changes of river chemistry at a station located upstream from irrigation diversions.

The author wishes to express his appreciation and to acknowledge the efforts of those individuals who participated in sample-collection activities and who made previously unpublished data available to the author. Jim Hainline and Ronald Spencer, formerly associated with the Desert Research Institute (DRI), Reno, Nevada, were responsible for gravity coring and extraction of pore fluids from the sediments of Pyramid Lake. James Hideker and Patricia Harris, of the Water Quality Laboratory of DRI, supervised all chemical analyses except neutron-activation analyses. Helen Michel, of the Lawrence Berkeley Laboratory, Berkeley, California, was responsible for neutron-activation studies. C. M. Skau of the University of Nevada, Reno, made available unpublished data on the chemical composition of certain streams that flow into Lake Tahoe and the upper reach of the Truckee River. James Federicci of DRI made available monthly chemical data for several sites along the Truckee River. Edward Lider of W. F. Sigler and Associates, Inc., Logan, Utah, supervised the sampling, temperature, and dissolved-oxygen measurements of Pyramid Lake. The work on which this report is based was supported, in part, by the U.S. Department of the Interior, Office of Water Resources and Technology, as authorized under 95-467; in part by Director's Development funds from the Lawrence Berkeley Laboratory, as authorized under U.S. Department of Energy contract W-7405-Eng-48; in part by the U.S. Geological Survey; and in part by the U.S. Department of the Interior, Bureau of Indian Affairs, as authorized under contract no. H50C14209487.

METHODS

Neutron-activation and X-ray-fluorescence analyses of samples collected in 1981 were performed in the Lawrence Berkeley Laboratory (see Asaro and others, 1981, and Giaque and others, 1977, for a discussion of analytical procedures). Other analyses were done at the Water Quality Laboratory of the Desert Research Institute, Reno, Nevada. Methods of analysis were primarily those discussed in the methods of the American Public Health Association (1971); these methods are tabulated in Benson and Leach (1979).

Measurements of temperature, pH, and dissolved oxygen of lake samples were made at the sampling site using an INTEROCEAN Model 5130 probe*. Samples collected for nutrient analyses were packed in ice and frozen to prevent deterioration. Samples for major- and trace-element analyses (excluding chloride, sulfate, and alkalinity) were field-filtered (0.1 μm) and acidified with ultra-pure nitric acid to a pH of 2 or less. Water samples were collected from Pyramid Lake with a 9-L Alpha water bottle. Sediment samples from below the sediment-water interface were obtained using a Phleger gravity

*Use of the trade names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

corer. After core recovery, plastic liners were removed from the core barrel, sealed at both ends, and placed in crushed ice for transport to the laboratory. At the laboratory, the core was kept chilled at 10°C prior to processing.

Water was extracted from 10-cm sections of core using a modified version of the squeezing apparatus described by Kalil and Goldhaber (1973); this process allowed pore fluids to be removed without air contact. During the squeezing process, the core section was kept chilled by circulating ice water through copper tubing surrounding the core liner to prevent ion exchange and precipitation reactions. A study of fluid chemistry as a function of quantity extracted showed that the first few milliliters usually were subject to chemical mixing processes caused by shearing processes that occurred along the liner wall during penetration of the coring device. Therefore, the first 5 mL of extracted fluid was discarded. Measurements of pH were made on the next extracted aliquot. The remaining extracted fluid was filtered through a 0.1-μm membrane into two vials on splits. One split, subsequently analyzed for silica and anions, was left unacidified and undiluted. The other split was acidified with ultra-pure nitric acid and for very concentrated solutions was diluted with distilled deionized water prior to analysis. pH and Eh measurements were made with an Orion model 407A meter and model 91-02 combination pH, and model 96-78 platinum-redox electrodes. Beckman pH buffers and standardized Zobell solution were brought to sample temperature prior to measurement.

Mineralogic composition of the principal carbonate minerals contained in several cores was semi-quantitatively determined by X-ray diffraction techniques (see Spencer, 1977, for a summary of methods used).

HYDROCHEMICAL DATA

Locations of creeks that flow into the main tributaries of the Truckee River, and into Lake Tahoe, and locations of water-quality sampling stations on the upper reaches of the Truckee River are shown in figure 2. Data for the chemical composition of the creeks shown in figure 2 are shown in table 1; data for the chemical composition of monthly samples collected at the three water-quality stations depicted in figure 2 are shown in tables 2, 3, and 4.

The surface drainage basin of the Truckee River is illustrated in figure 1. Synoptic chemical composition of the Truckee River at 11 water-quality sampling sites (fig. 1) is listed in table 5 for two flow regimes: high flow (84 m^3/s at Farad on June 4, 1975) and low flow (24 m^3/s at Farad on September 3, 1975).

A map of the Pyramid Lake area, showing the location of one water-quality sampling site and five gravity-coring sites is shown in figure 3. Results of chemical analyses of samples collected from Pyramid Lake from 1882 until 1973 are shown in table 6. Results of analyses of water samples collected from three depths in Pyramid Lake from November 6, 1975, through December 13, 1976,

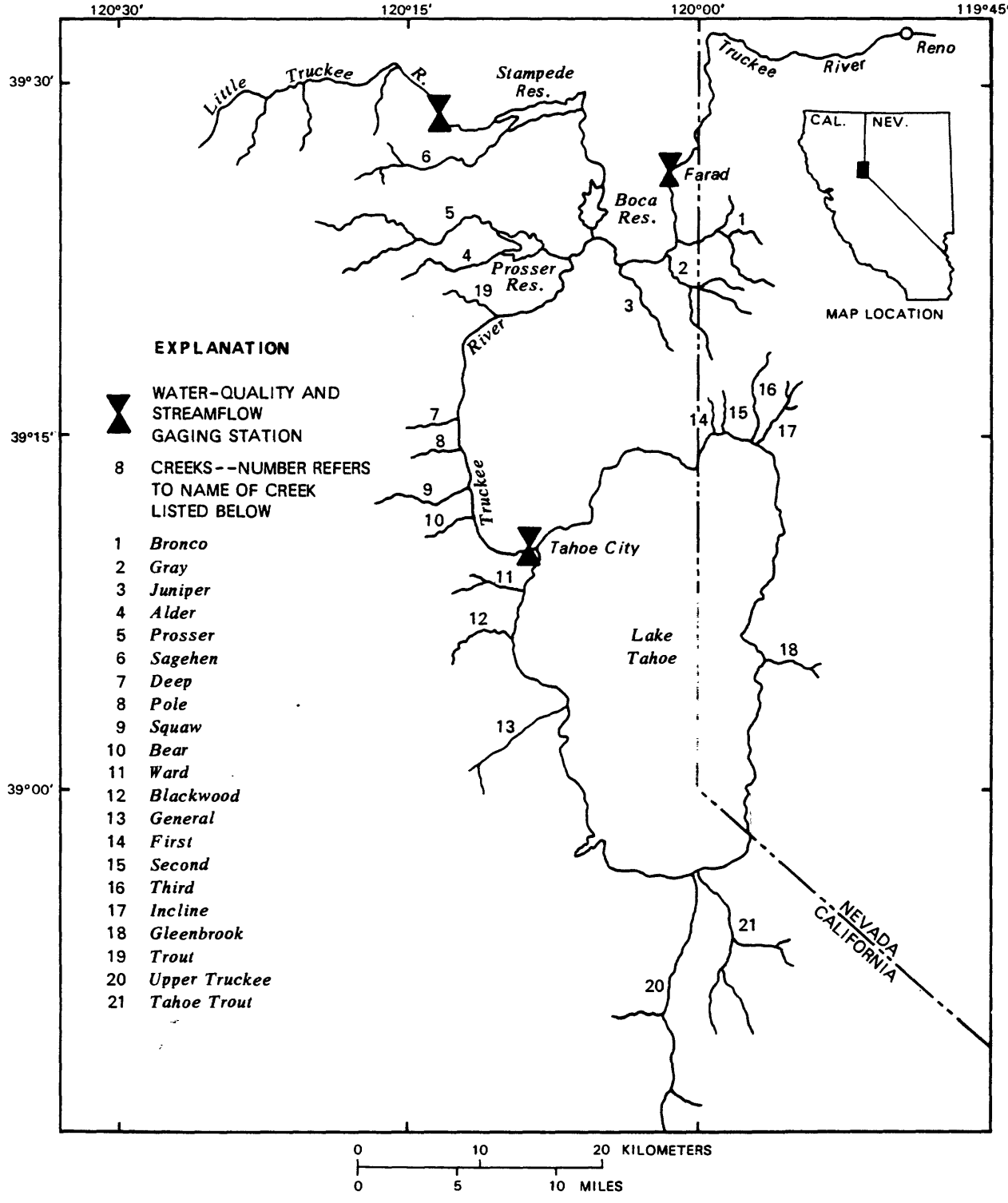

Figure 2.--Location of creeks that flow into Lake Tahoe and the upper reach of the Truckee River upstream from the water-quality and streamflow-gaging station at Farad, California.

Table 1.--*Chemical composition of creeks that flow into Lake Tahoe and the upper reach of the Truckee River upstream from the water-quality and streamflow-gaging station at Farad, California, 1971-72*

[Creek locations shown on figure 2; dissolved constituents: HCO_3, bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; SiO_2, silica, reported in milligrams per liter; SC, specific conductance, reported as micromhos per centimeter at 25° Celsius]

Creek (number in fig. 2)	Date collected	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2
Bronco (1)	Late May 1971	7.5	64	44	.69	1.4	3.6	1.1	6.4	3.2	32
Bronco (1)	Mid Oct. 1971	7.6	80	49	.59	.5	4.0	1.4	7.5	3.1	34
Bronco (1)	Early June 1972	7.8	58	39	.44	.5	3.5	1.1	5.3	2.6	34
Gray (2)	Late May 1971	7.8	144	82	.59	13	4.5	1.1	19	5.2	25
Gray (2)	Mid Oct. 1971	7.9	124	67	.46	8.8	4.2	1.2	15	3.8	25
Gray (2)	Early June 1972	8.0	102	58	.50	10	3.6	1.0	12	3.3	20
Juniper (3)	Late May 1971	7.6	82	53	.50	4.7	3.4	.83	11	3.1	21
Juniper (3)	Mid Oct. 1971	7.8	108	63	.48	5.3	4.5	1.2	12	3.6	26
Juniper (3)	Early June 1972	8.0	83	49	.25	3.3	3.1	.9	10	2.8	24
Alder (4)	Late May 1971	7.2	34	24	.50	.5	2.0	.58	4.1	1.4	18
Alder (4)	Mid Oct. 1971	7.6	93	61	.59	.5	4.7	1.7	9.5	3.4	32
Alder (4)	Early June 1972	7.8	51	33	.40	.5	2.2	.78	6.0	1.8	21
Prosser (5)	Late May 1971	7.2	40	28	.74	1.7	2.5	.71	5.2	1.4	16
Prosser (5)	Mid Oct. 1971	7.8	107	69	.59	2.0	5.9	1.7	11.4	3.4	25
Prosser (5)	Early June 1972	7.7	32	26	.22	2.2	2.0	.55	5.0	1.2	16
Sagehen (6)	Late May 1971	7.2	45	31	.61	.5	2.3	.71	5.1	2.0	20
Sagehen (6)	Mid Oct. 1971	7.8	122	79	.50	.5	6.0	1.9	12.5	4.6	33
Sagehen (6)	Early June 1972	8.0	68	43	.31	.5	3.4	.94	7.8	2.6	25
Deep (7)	Late May 1971	7.3	41	28	.45	2.0	2.3	1.3	4.6	1.6	26
Deep (7)	Mid Oct. 1971	7.6	74	47	.48	2.2	4.2	1.9	7.5	2.8	33
Deep (7)	Early June 1972	7.8	40	28	.21	.5	2.4	1.0	4.5	1.3	25
Pole (8)	Late May 1971	7.4	59	40	.45	2.1	2.4	.58	7.8	2.2	19
Pole (8)	Mid Oct. 1971	7.8	94	54	.46	5.9	4.7	.78	11.4	2.9	19
Pole (8)	Early June 1972	7.7	53	32	<.01	.5	2.4	.43	6.8	1.6	14
Squaw (9)	Late May 1971	7.2	52	24	1.0	6.1	1.9	.35	7.6	1.2	10
Squaw (9)	Mid Oct. 1971	7.7	187	56	5.1	36	7.0	.68	24	3.0	10
Squaw (9)	Early June 1972	7.6	43	22	.65	3.8	1.8	.28	6.5	.85	6.0
Bear (10)	Late May 1971	7.3	47	30	1.3	2.0	1.8	.47	7.3	1.3	13
Bear (10)	Mid Oct. 1971	7.8	81	46	1.4	1.7	3.4	.88	10	2.1	20
Bear (10)	Early June 1972	7.6	35	22	.48	2.6	1.6	.36	5.1	.95	9.5

Table 1.--*Chemical composition of creeks that flow into Lake Tahoe and the upper reach of the Truckee River upstream from the water-quality and streamflow-gaging station at Farad, California, 1971-72*--Continued

Creek (number in fig. 2)	Date collected	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2
Ward (11)	Late May 1971	7.2	39	28	.45	.5	1.8	.63	5.2	1.6	20
Ward (11)	Mid Oct. 1971	7.7	66	42	.48	2.0	3.4	1.0	7.5	2.5	26
Ward (11)	Early June 1972	7.2	35	23	.20	2.9	1.6	.55	4.2	1.2	18
Blackwood (12)	Late May 1971	7.2	41	27	.29	2.2	1.8	.58	5.8	1.4	20
Blackwood (12)	Mid Oct. 1971	7.7	69	43	.46	2.1	3.6	1.2	8.0	2.2	28
Blackwood (12)	Early June 1972	7.6	35	22	.25	2.2	2.0	.48	4.6	1.0	16
General (13)	Late May 1971	6.8	15	11	.45	.5	1.6	.40	2.2	.30	10
General (13)	Mid Oct. 1971	7.3	54	35	.55	.5	4.2	.72	6.2	1.0	20
General (13)	Early June 1972	7.4	12	9	.36	.5	1.4	.25	1.6	.20	5.5
First (14)	Late May 1971	7.4	50	35	.59	.5	3.5	1.1	6.2	1.6	24
First (14)	Mid Oct. 1971	7.5	79	52	.40	.5	5.5	1.4	8.4	2.2	25
First (14)	Early June 1972	7.7	60	39	.20	.5	3.6	1.1	6.6	1.6	24
Second (15)	Late May 1971	7.3	49	35	.55	.5	3.3	1.1	6.2	1.6	22
Second (15)	Mid Oct. 1971	7.4	66	43	.36	.5	4.4	1.4	7.1	1.6	20
Second (15)	Early June 1972	7.8	49	33	.20	.5	3.0	1.1	5.7	1.3	20
Third (16)	Late May 1971	7.2	60	37	2.0	2.2	3.1	1.4	7.2	2.2	18
Third (16)	Mid Oct. 1971	7.5	58	37	.90	.5	3.8	1.4	5.9	1.7	22
Third (16)	Early June 1972	7.6	35	21	.31	.5	1.3	1.0	3.8	1.0	15
Incline (17)	Late May 1971	7.2	57	37	1.6	.5	3.4	1.1	6.9	1.9	22
Incline (17)	Mid Oct. 1971	7.4	58	37	.82	.5	4.2	1.1	6.0	1.6	24
Incline (17)	Early June 1972	7.5	49	31	.01	.5	3.8	.82	5.0	1.2	22
Glenbrook (18)	Late May 1971	7.6	248	86	18	31	11	1.8	28	7.0	20
Glenbrook (18)	Mid Oct. 1971	7.3	317	140	8.2	45	11	2.4	42	9.8	24
Glenbrook (18)	Early June 1972	7.9	241	98	7.4	43	9.2	2.4	34	7.8	24
Trout (19)	Late May 1971	7.1	42	26	.90	1.8	3.8	.83	4.6	.9	16
Trout (19)	Mid Oct. 1971	7.2	43	28	.89	2.1	4.5	.78	5.0	.9	15
Trout (19)	Early June 1972	7.8	32	21	.46	.5	2.5	.70	3.8	.6	14
Upper Truckee (20)	Late May 1971	7.0	33	17	7.0	.5	2.8	.71	3.0	.65	11
Upper Truckee (20)	Mid Oct. 1971	7.3	71	37	4.6	2.4	6.2	1.4	6.0	2.0	17
Upper Truckee (20)	Early June 1972	7.5	31	17	1.8	.5	2.4	.59	3.2	.80	11
Trout (21)	Late May 1971	7.2	38	24	.45	.5	1.6	.43	3.5	2.0	16
Trout (21)	Mid Oct. 1971	7.6	106	70	.50	.5	3.9	.82	9.2	6.2	28
Trout (21)	Early June 1972	7.9	58	39	.40	.5	2.7	2.6	5.8	3.0	22

Table 2.--*Chemical composition of Truckee River at Tahoe City, California, January 2, 1968, through January 29, 1975*

[Dissolved constituents: HCO_3, bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; SiO_2, silica, reported in milligrams per liter; SC, specific conductance, reported as micromhos per centimeter at 25° Celsius]

Date	T°C	pH	SC	Ca	Mg	Na	K	Cl	SO_4	HCO_3	SiO_2
1-02-68	5.0	7.7	87	9.3	2.4	5.6	1.8	1.8	3.1	52	13.0
3-06-68	6.5	8.0	87	9.4	2.2	5.8	1.8	1.7	3.1	52	12.2
5-05-68	.0	7.8	87	9.6	2.1	5.8	1.7	1.8	3.1	50	13.0
7-01-68	13.5	7.7	87	8.4	2.6	6.6	1.6	1.5	3.1	54	13.0
8-05-68	18.0	7.8	88	8.4	2.2	5.9	2.4	1.6	3.1	54	13.5
8-28-68	14.0	7.9	87	8.9	2.3	6.0	1.9	1.6	3.1	54	12.1
9-29-68	12.2	7.4	89	9.2	2.5	6.5	1.8	1.8	4.0	52	13.0
11-01-68	10.0	7.7	88	9.1	2.6	6.5	1.7	1.6	3.0	53	13.5
12-02-68	5.5	7.7	88	9.3	2.2	5.8	1.7	2.2	4.1	52	14.5
12-30-68	5.2	7.9	90	8.7	2.3	6.5	1.7	1.7	3.1	50	14.0
2-02-69	4.6	7.4	88	8.2	2.5	6.5	1.7	1.6	4.1	49	11.0
2-27-69	3.8	7.7	88	8.4	2.4	6.2	1.6	1.6	5.1	51	13.8
3-30-69	5.5	7.6	86	8.3	2.4	5.9	1.8	1.8	3.1	51	11.3
5-04-69	6.5	7.8	86	8.5	2.5	5.8	1.7	1.8	3.1	48	15.3
6-02-69	13.2	7.5	85	8.8	2.5	6.1	1.8	1.6	3.1	52	13.8
6-03-69	15.7	7.1	85	8.1	2.6	6.0	1.9	1.6	2.1	50	14.5
8-04-69	18.4	7.4	86	7.8	2.4	6.7	1.9	1.6	3.1	52	13.1
9-02-69	21.0	7.6	86	8.6	2.4	7.1	1.9	1.6	3.1	53	11.3
9-30-69	13.8	7.1	98	9.1	3.0	6.8	1.7	1.5	1.5	59	16.0
10-28-69	9.8	7.2	85	8.8	2.4	7.2	1.6	1.8	3.1	53	11.3
12-02-69	6.9	7.4	85	8.4	2.4	7.1	1.6	1.8	3.1	53	11.3
12-30-69	3.9	7.6	85	9.0	2.5	7.2	1.8	2.0	3.1	54	11.2
1-28-70	4.5	7.7	84	8.4	2.4	6.0	1.7	1.7	1.5	52	11.7
3-01-70	4.1	7.5	84	9.0	2.4	5.8	1.6	1.3	3.1	50	10.7
3-31-70	4.9	7.5	86	8.5	2.6	6.0	1.6	1.7	3.1	52	12.1
5-03-70	7.5	7.2	82	8.6	2.4	6.0	1.7	1.7	3.1	51	12.0
5-29-70	8.3	7.5	87	8.7	2.5	5.4	1.8	1.9	3.1	50	13.2
6-29-70	11.2	7.3	82	9.0	2.4	6.2	1.8	1.7	3.1	51	14.8
8-03-70	17.1	7.8	81	8.4	2.6	6.5	1.8	1.9	3.1	53	12.8
9-02-70	17.9	7.7	83	8.6	2.4	5.8	1.7	2.0	1.6	51	11.2
9-30-70	13.5	7.6	83	8.8	2.6	6.2	1.8	1.6	1.6	54	14.5
11-02-70	9.7	7.7	84	8.8	2.5	6.0	2.2	1.8	2.4	54	11.8
12-03-70	2.0	7.9	80	8.8	2.4	5.5	1.8	2.1	2.1	51	12.3
12-30-70	4.2	7.1	83	9.0	2.5	5.6	1.8	1.7	3.1	50	13.5
2-02-71	5.5	7.7	84	8.8	2.3	5.6	1.9	1.9	2.4	51	11.3
3-02-71	4.4	8.0	83	8.8	2.4	5.5	1.6	2.0	2.4	51	11.5
3-31-71	5.5	7.6	84	8.8	2.4	5.9	1.8	2.0	2.4	51	10.6
5-03-71	7.2	7.8	83	9.5	2.2	5.4	1.7	2.0	2.4	50	12.2
6-01-71	6.0	7.7	86	8.9	2.4	5.6	1.9	1.8	2.6	52	13.0
6-30-71	13.7	7.3	87	9.0	2.2	5.4	1.7	1.6	1.8	50	13.5
8-02-71	22.0	7.5	85	8.1	2.2	5.9	1.7	1.7	2.0	50	13.3
9-03-71	17.1	7.6	87	8.2	2.1	5.6	1.8	1.6	2.5	48	11.8
10-01-71	11.1	7.6	85	8.0	2.3	6.2	1.7	1.8	2.1	50	15.2
11-02-71	9.2	7.5	85	8.0	2.6	5.9	1.8	1.5	2.5	51	13.0
11-30-71	5.5	7.6	85	8.0	2.4	5.9	1.5	1.4	2.1	50	12.8

Table 2.--*Chemical composition of Truckee River at Tahoe City, California, January 2, 1968, through January 29, 1975*--Continued

Date	T°C	pH	SC	Ca	Mg	Na	K	Cl	SO_4	HCO_3	SiO_2
12-29-71	4.8	7.2	90	8.8	2.2	6.0	1.8	2.4	2.2	52	14.5
2-02-72	2.7	7.6	88	8.6	2.3	6.2	1.6	2.8	2.3	51	13.0
3-01-72	3.9	7.8	89	9.0	2.6	7.0	1.8	2.4	2.3	54	13.5
3-30-72	6.0	7.6	90	8.9	2.5	6.3	1.7	2.3	2.3	52	11.0
5-02-72	8.7	7.8	85	9.5	2.6	1.8	1.8	1.8	2.2	55	11.8
5-31-72	11.8	7.6	85	8.6	2.4	6.0	1.7	1.9	2.4	52	11.0
7-06-72	15.2	7.7	88	8.8	2.6	6.0	1.6	1.9	2.5	51	11.5
7-28-72	.0	7.5	86	8.9	2.6	6.1	1.6	2.1	2.6	51	13.5
8-31-72	17.5	7.5	86	8.5	2.4	6.1	1.4	1.4	2.3	52	10.5
9-28-72	14.0	7.2	88	8.2	2.5	6.2	1.5	1.4	2.7	52	13.5
10-27-82	11.5	7.6	88	8.8	2.4	6.0	1.6	1.9	2.5	52	12.8
12-01-72	6.5	7.4	89	8.5	2.4	5.9	1.4	1.4	2.3	52	12.8
1-03-73	3.0	7.4	90	8.8	2.4	6.1	1.6	3.0	2.9	50	13.5
2-01-73	3.0	7.3	103	9.0	2.8	7.4	1.7	6.1	2.8	51	13.5
3-01-73	5.0	7.3	97	8.8	2.6	7.8	1.7	4.3	2.7	52	12.7
4-02-73	4.0	7.2	100	8.9	2.6	7.2	1.8	4.5	2.3	52	13.5
5-01-73	7.0	7.2	91	8.6	2.4	6.1	1.8	2.0	2.3	51	12.5
5-31-73	12.0	7.4	90	8.7	2.6	6.1	1.5	2.2	2.2	51	12.5
7-03-73	15.0	7.5	87	8.0	2.3	5.8	1.6	1.6	2.2	51	12.6
7-31-73	17.5	7.3	87	8.1	2.3	6.1	1.5	1.6	2.2	51	12.5
9-04-73	15.0	7.6	89	9.4	2.2	5.9	1.7	1.6	2.6	51	11.4
10-04-73	13.5	7.2	88	8.7	2.4	5.9	1.8	1.6	2.6	52	14.2
11-01-73	10.0	7.3	90	9.0	2.4	5.6	1.8	1.9	2.8	50	12.7
11-29-73	6.0	7.5	91	9.0	2.5	5.5	1.8	1.2	2.5	52	11.5
1-03-74	.0	7.1	85	8.5	2.5	5.6	1.8	1.8	2.3	51	11.2
1-31-74	3.0	7.9	85	8.8	2.4	5.4	1.8	1.8	2.5	52	11.7
2-28-74	4.0	7.0	89	8.8	2.4	5.5	1.7	1.7	1.8	52	13.3
4-03-74	3.0	7.4	90	8.5	2.4	5.5	2.1	1.8	1.9	51	13.6
5-02-74	7.0	7.2	91	9.0	2.4	5.5	1.8	1.9	2.1	52	11.8
6-05-74	12.0	7.1	89	8.8	2.3	5.4	1.7	1.6	2.0	52	11.9
7-03-74	11.0	7.6	87	8.4	2.3	5.4	1.7	1.6	2.2	50	12.1
8-01-74	18.5	7.6	87	8.5	2.3	5.4	1.7	1.3	2.1	50	11.4
8-28-74	18.0	7.3	87	8.4	2.4	5.3	1.8	1.8	2.5	50	14.3
10-02-74	15.5	7.6	88	8.5	2.5	5.6	1.5	1.5	1.6	51	13.7
11-07-74	9.0	7.3	90	8.7	2.4	5.4	1.5	1.4	1.6	52	12.7
12-05-74	6.5	7.5	86	9.0	2.4	5.7	1.5	2.3	2.3	53	11.5
1-02-75	4.5	7.5	87	8.5	2.4	5.8	1.6	1.9	2.4	51	11.5
1-29-75	.0	7.6	90	9.2	2.3	5.6	1.7	1.8	3.1	52	11.5

Table 3.--*Chemical composition of Little Truckee River upstream from Stampede Reservoir, California, January 2, 1968, through April 9, 1980*

[Dissolved constituents: HCO_3, bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; NO_3, nitrate; SiO_2, silica, reported in milligrams per liter; T°C, temperature in degrees Celsius; SC, specific conductance, reported as micromhos per centimeter at 25° Celsius]

Date	T°C	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
1-02-68	.1	7.5	65	41	.4	1.0	2.8	1.2	7.5	2.2	20.1	---
3-06-68	4.5	7.3	49	30	.7	.5	2.1	.95	5.4	1.5	17.5	---
5-05-68	5.0	7.2	37	21	.2	1.0	1.8	.65	4.5	1.1	15.5	---
7-01-68	15.5	7.7	69	45	.3	.5	4.0	1.3	6.5	2.3	22.5	---
8-28-68	16.0	7.6	60	39	.4	.5	2.5	1.3	6.2	1.9	17.2	---
11-01-68	2.5	7.4	68	41	.3	1.5	3.7	1.3	7.2	2.2	14.0	---
12-30-68	.1	7.1	61	36	.4	2.1	3.3	1.0	6.7	1.8	15.2	---
2-27-69	.1	7.5	59	34	.6	3.1	2.8	.90	6.8	2.0	19.2	---
5-04-69	2.0	7.0	43	32	.3	1.5	2.4	.70	5.3	1.5	20.0	---
6-30-69	9.4	7.0	38	24	.2	1.5	1.8	.72	3.9	1.2	14.8	---
9-02-69	19.8	7.7	89	59	.3	.5	4.0	1.7	9.6	3.1	21.5	---
10-28-69	4.3	7.2	76	50	.3	1.5	4.1	1.3	8.1	2.7	21.9	---
12-02-69	2.8	7.3	41	27	.2	.5	2.3	.97	4.6	1.4	14.6	---
12-30-69	0.1	7.3	48	31	.5	.5	2.6	1.0	5.6	1.6	15.7	---
1-28-70	0.0	7.1	39	26	.6	.5	1.9	.85	4.6	1.3	16.5	---
3-01-70	1.4	7.2	50	32	.5	1.5	2.6	.92	5.8	1.8	18.0	---
3-31-70	2.1	7.1	46	28	.4	1.5	2.1	.80	5.2	1.6	18.6	---
5-03-70	3.0	7.2	43	28	.6	.5	2.2	.82	5.0	1.5	18.0	---
5-29-70	7.5	7.2	43	23	.2	.5	1.6	.67	4.4	1.2	16.0	---
6-29-70	12.2	7.1	42	30	.2	.15	2.6	.50	5.8	1.6	20.0	---
8-03-70	13.0	7.5	53	43	.2	.5	3.5	1.3	7.1	2.4	19.0	---
9-02-70	9.8	7.6	71	48	.3	.5	3.8	1.4	8.2	2.6	19.5	---
9-30-70	7.1	7.4	79	57	.3	5	4.9	1.5	8.8	2.8	20.8	---
11-02-70	6.1	7.7	83	56	.5	1.9	4.4	1.8	9.3	3.0	22.1	---
12-03-70	.0	7.5	51	35	.6	.5	2.9	1.4	5.8	1.8	18.5	---
12-30-70	.0	7.2	58	38	.6	1.3	3.0	1.2	6.9	2.0	17.0	---
2-02-71	.1	7.4	51	35	.8	1.8	2.4	1.1	6.6	1.8	19.2	---
3-02-71	.0	7.4	58	39	1.0	.5	2.8	1.1	7.0	2.0	21.5	---
3-31-71	.5	7.2	59	38	1.9	1.9	3.2	1.0	7.2	2.2	19.3	---
5-03-71	2.3	7.3	43	28	.9	1.9	2.2	.83	5.6	1.6	15.3	---
6-01-71	2.7	7.4	42	26	.5	.5	2.0	.72	5.2	1.4	16.5	---
6-30-71	10.2	7.2	34	24	.5	.5	1.8	.70	4.4	1.2	15.5	---
7-31-73	13.5	7.1	54	35	.1	.5	2.7	1.0	5.6	1.8	16.0	.14
9-04-73	12.5	6.8	40	26	.1	.5	1.9	.92	4.7	1.3	13.9	.09
10-04-73	11.5	7.2	93	58	.8	.5	5.0	1.7	9.8	3.1	24.0	<.05
11-01-73	9.5	7.2	79	54	.3	.5	4.1	1.5	8.8	2.8	21.5	
11-29-73	3.5	6.8	49	31	.2	1.9	2.2	1.0	5.9	1.6	16.8	<.05
1-03-74	.0	6.9	49	35	.6	.5	2.4	.98	6.1	1.8	18.8	.18
1-31-74	1.0	7.3	46	31	.8	.5	2.2	.87	5.5	1.7	19.2	.10
2-28-74	.3	7.2	61	38	.8	.5	2.6	1.0	6.9	2.0	21.7	.05
4-03-74	.3	7.0	16	33	1.1	.5	2.4	1.1	6.0	1.8	19.9	<.05

Table 3.--*Chemical composition of Little Truckee River upstream from Stampede Reservoir, California, January 2, 1968, through April 9, 1980*--Continued

Date	T°C	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
5-02-74	.5	6.8	40	27	.3	.5	1.7	.74	4.8	1.3	16.6	.14
6-05-74	9.0	6.9	34	23	.4	.5	1.4	.67	4.3	1.0	15.0	.06
7-03-74	12.5	6.8	38	24	.2	.5	1.6	.73	4.6	1.2	14.6	.04
8-01-74	14.0	7.3	57	37	.3	.5	2.3	1.1	6.7	2.0	18.1	.07
8-28-74	14.0	7.2	69	43	.3	.5	3.0	1.2	7.6	2.1	20.6	.06
10-02-74	12.5	7.5	42	28	.3	.5	1.8	.99	4.8	1.4	14.5	.05
11-07-74	8.5	7.4	68	44	.4	1.3	2.9	1.1	7.6	2.4	18.3	.08
12-05-74	.0	7.4	67	43	.6	.5	3.0	1.0	7.4	2.4	16.4	.04
1-02-75	.0	7.4	69	44	.4	1.9	3.2	1.2	7.9	2.3	19.0	.04
1-29-75	.0	7.7	70	46	.3	2.1	3.3	1.3	8.4	2.5	19.3	<.04
2-26-75	.0	7.4	72	47	.4	2.1	3.5	1.1	8.3	2.5	20.2	.13
4-03-75	1.0	7.2	78	46	1.4	2.1	3.5	1.1	8.6	2.8	20.3	<.04
4-30-75	2.0	7.1	75	44	2.3	2.0	3.1	1.9	8.3	2.7	19.7	<.04
6-04-75	4.5	6.7	23	22	.1	1.9	2.5	.62	3.7	1.0	11.5	.09
7-02-75	10.0	6.7	34	24	.3	---	1.6	.74	4.2	1.1	13.5	.04
7-30-75	14.5	6.8	48	32	---	---	2.0	.70	5.8	1.6	17.5	<.04
9-03-75	17.0	6.8	57	36	.3	.5	2.4	.95	6.0	1.8	15.3	<.04
10-02-75	15.5	6.8	45	28	.2	.9	1.8	.98	4.9	1.5	14.7	<.04
11-05-75	7.0	7.2	55	35	.4	2.4	2.5	.94	6.4	1.9	16.8	<.04
12-04-75	3.0	7.0	60	36	.5	2.2	2.6	1.1	6.5	2.0	16.3	<.04
1-07-76	.0	6.9	64	40	.4	2.2	2.8	1.2	6.9	2.2	16.3	<.04
2-05-76	.0	6.7	68	42	.6	2.0	3.2	1.4	7.4	2.3	17.5	.04
3-04-76	1.0	6.6	63	37	.3	2.0	2.7	1.2	7.0	2.0	16.6	.09
4-01-76	5.5	6.5	100	40	.5	1.8	2.6	1.2	7.8	2.3	16.4	<.04
5-06-76	7.0	6.4	40	24	.4	---	1.6	.74	4.5	1.2	12.5	.09
6-02-76	10.0	7.0	57	36	.4	2.5	2.5	1.1	6.8	2.0	16.1	<.01
6-30-76	14.5	7.8	66	43	.3	---	3.2	1.3	7.4	2.2	15.5	.13
8-05-76	13.5	7.7	91	59	.5	---	4.6	1.7	9.6	3.0	20.6	.04
9-01-76	15.0	7.8	97	64	.3	1.9	5.4	1.7	10.5	3.4	15.3	<.04
10-05-76	10.0	8.0	101	65	.5	---	4.8	1.7	10.7	3.4	22.2	<.04
11-03-76	9.0	7.8	98	59	.3	2.0	4.7	1.6	10.2	3.2	20.5	.04
12-01-76	.0	7.4	101	65	.2	---	4.8	1.6	11.0	3.4	22.2	.13
1-05-77	.0	7.4	100	61	.4	2.2	4.7	1.5	10.9	3.3	21.4	.07
3-02-77	.0	7.6	99	61	.4	2.5	4.7	1.6	10.6	3.2	21.7	.09
4-04-77	5.0	7.5	93	56	.6	1.9	4.4	1.7	9.3	3.1	18.8	.13
5-23-77	7.0	7.4	56	38	.5	2.8	1.2	1.2	6.6	2.0	18.0	.10
7-06-77	14.0	7.6	92	61	.4	.5	5.0	1.9	10.0	3.2	22.5	<.04
8-04-77	20.0	7.9	109	67	.4	2.4	6.1	2.2	10.6	3.4	24.0	.10
9-07-77	13.0	7.8	62	43	.2	---	3.4	1.4	7.0	2.2	16.5	.20
10-06-77	11.0	7.9	69	44	.2	---	3.5	1.4	6.7	2.4	17.4	<.04
11-03-77	5.0	7.4	68	44	.3	1.0	3.5	1.4	7.4	2.3	16.9	.06

Table 3.--*Chemical composition of Little Truckee River upstream from Stampede Reservoir, California, January 2, 1968, through April 9, 1980*--Continued

Date	T°C	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
12-01-77	4.0	7.5	73	43	.3	1.2	3.5	1.2	7.8	2.3	17.8	.13
1-05-78	.0	7.4	69	40	.8	2.0	3.2	1.2	7.4	2.2	16.4	.08
2-03-78	1.0	7.6	70	41	1.0	1.9	3.2	1.2	8.0	2.2	18.3	.04
4-06-78	2.0	7.3	53	31	.8	1.8	2.4	.89	5.5	1.7	17.8	.13
5-04-78	2.0	7.0	43	25	.3	1.7	1.9	.80	5.0	1.3	16.2	.27
6-07-78	8.0	7.3	33	20	---	1.8	1.5	.70	3.9	.94	14.0	.13
7-05-78	10.0	7.2	40	24	---	1.0	1.7	.72	4.5	1.2	15.2	.09
8-02-78	16.5	7.6	57	35	---	---	2.5	1.0	6.0	1.7	16.0	.09
9-07-78	11.0	7.3	61	36	---	1.2	2.7	1.2	6.3	1.8	15.2	.09
10-05-78	9.0	7.1	59	35	---	1.1	2.7	1.1	6.1	1.8	15.1	.09
11-02-78	6.0	7.0	67	40	---	1.2	2.9	1.2	6.8	2.0	16.9	.04
12-07-78	1.0	7.0	75	45	.3	1.9	3.3	1.4	7.8	2.3	20.6	.04
1-04-79	.5	7.3	63	40	.1	1.0	2.8	1.2	7.0	2.0	17.0	.04
2-01-79	.0	7.1	65	40	.2	1.8	3.0	1.2	7.3	2.0	18.2	.04
3-07-79	2.0	7.3	71	43	.4	1.2	3.1	1.1	7.8	2.3	17.7	.09
4-06-79	4.0	7.0	72	42	.2	1.5	2.9	1.2	7.8	2.2	17.9	.09
5-04-79	4.0	7.1	45	27	.3	1.9	1.8	.75	5.6	1.4	16.2	.17
6-07-79	10.0	7.2	35	21	.1	---	1.4	.62	4.0	.95	13.1	.20
7-11-79	19.0	7.9	60	39	.25	---	2.7	1.2	6.5	1.8	16.8	.16
10-03-79	18.5	8.3	102	66	.4	.6	5.5	1.8	10.8	3.2	24.5	.04
1-09-80	1.0	7.2	58	35	.9	1.0	2.6	1.1	6.4	1.7	15.3	.09
4-09-80	5.0	7.3	61	35	1.2	---	2.7	.87	6.5	1.7	18.6	.09

Table 4.--*Chemical composition of Truckee River at Farad, California, upstream from irrigation diversions, January 2, 1968, through June 4, 1980*

[Dissolved constituents: HCO_3, bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; NO_3, nitrate; SiO_2, silica, reported in milligrams per liter; T°C, temperature in degrees Celsius; SC, specific conductance, reported as micromhos per centimeter at 25° Celsius]

Date	T°C	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
1-02-68	2.0	7.5	97	56	2.6	4.1	6.0	1.6	10.5	2.9	15.8	<.5
3-06-68	5.0	7.5	78	41	3.3	4.1	4.1	1.1	8.8	2.7	18.1	<.5
5-05-68	8.3	7.7	66	38	1.7	1.5	3.4	1.0	7.2	2.0	16.7	<.5
7-01-68	14.2	7.8	83	47	1.8	3.1	5.2	1.6	8.5	2.5	20.5	<.5
8-05-68	16.5	7.6	89	52	2.2	2.5	5.6	1.5	9.0	2.5	14.5	<.5
8-29-68	14.0	7.5	87	51	1.9	3.0	5.4	1.6	8.5	2.7	16.3	<.5
9-29-68	12.2	7.4	83	46	2.6	4.0	7.0	1.4	7.6	2.5	16.0	<.5
11-01-68	9.0	7.8	95	56	2.0	5.0	6.0	1.6	8.8	2.8	15.0	<.5
12-02-68	1.7	7.4	89	49	2.5	5.1	5.6	1.5	9.3	2.5	18.5	---
12-30-68	.1	7.6	102	52	2.7	4.1	6.4	1.5	9.5	2.8	19.0	<.5
2-02-69	1.2	7.3	88	42	3.8	4.1	5.5	1.3	8.0	2.8	18.0	.78
2-27-69	4.5	7.6	92	50	3.1	5.1	6.0	1.5	8.6	2.7	16.8	<.5
3-30-69	5.3	7.6	88	48	3.1	3.1	5.8	1.5	8.8	2.7	15.5	<.5
5-04-69	7.5	7.2	64	36	1.6	4.1	2.9	1.1	6.7	2.2	21.8	<.5
6-02-69	13.0	7.4	51	29	1.2	3.1	2.9	.93	5.9	1.6	18.0	<.5
6-30-69	16.8	7.4	79	46	1.6	3.1	5.1	1.6	7.8	2.4	13.0	<.5
8-04-69	13.8	7.4	88	52	1.8	3.1	5.5	1.5	8.2	2.5	18.6	<.5
9-02-69	15.3	7.9	85	50	1.7	4.1	4.8	1.6	8.1	3.8	16.9	<.5
9-30-69	11.6	7.3	66	41	1.2	3.1	5.0	1.1	7.2	2.2	13.8	<.5
10-28-69	8.4	7.5	94	55	2.8	4.1	6.2	1.8	9.6	3.0	17.3	<.5
12-02-69	3.5	7.6	97	56	2.7	3.1	6.3	1.6	9.6	3.0	14.3	<.5
12-30-69	.8	7.5	88	43	4.2	4.1	5.7	1.2	8.4	2.6	15.1	.54
1-28-70	3.3	7.4	72	41	2.3	3.1	5.5	1.3	7.4	2.2	13.1	<.5
3-01-70	3.5	7.4	84	47	2.7	4.1	5.6	1.5	8.6	2.4	14.8	<.5
3-31-70	5.9	7.4	79	42	2.9	4.1	4.8	1.2	8.6	2.6	17.4	<.5
5-29-70	10.3	7.4	58	35	1.3	1.5	3.2	1.0	6.6	2.1	17.0	<.5
6-29-70	13.6	7.2	76	48	1.7	4.1	5.6	2.0	9.0	2.4	12.8	<.5
8-03-70	17.1	7.5	84	51	2.0	3.1	6.0	1.7	8.7	2.8	15.3	<.5
9-02-70	16.5	7.6	81	49	2.6	2.0	5.9	1.6	8.6	2.6	14.5	<.5
9-30-70	13.6	7.6	89	55	2.7	1.8	7.0	1.7	8.8	2.5	16.5	<.5
11-02-70	8.1	7.6	90	51	3.7	2.6	6.2	2.1	9.0	2.6	15.0	<.5
12-03-70	.0	7.6	87	49	4.0	3.2	5.8	1.4	9.2	2.5	14.8	<.5
12-30-70	2.4	7.4	93	52	4.3	2.9	5.8	1.7	9.5	2.5	15.5	<.5
2-02-71	4.5	7.6	90	49	3.8	3.1	5.5	1.7	9.8	2.6	14.5	<.5
3-02-71	1.7	7.5	94	51	4.0	3.3	5.9	1.5	9.6	2.9	18.1	<.5
3-31-71	5.4	7.4	80	44	4.5	2.9	5.5	1.2	8.5	2.8	16.8	<.5
5-03-71	6.8	7.4	74	40	3.6	2.8	4.2	1.0	8.5	2.5	14.3	<.5
6-01-71	7.1	7.4	72	39	2.3	2.6	3.8	1.2	7.2	2.4	16.9	<.5
6-30-71	13.5	7.3	76	43	1.8	2.8	4.2	1.4	7.6	2.4	16.0	<.5
8-02-71	22.5	7.6	80	46	2.0	1.9	5.0	1.5	7.5	2.5	15.2	<.5
9-03-71	12.8	7.5	97	54	2.8	2.7	6.5	1.7	9.1	2.6	14.8	<.5
10-01-71	10.9	7.2	68	41	2.4	1.6	4.2	1.1	7.2	2.2	15.3	<.5
11-02-71	6.4	7.4	92	53	3.0	3.0	6.3	1.6	9.0	2.9	14.8	<.5
11-30-71	3.6	7.5	91	51	3.2	3.0	6.2	1.4	9.2	2.9	16.5	<.5
12-29-71	.8	7.4	94	53	2.2	3.2	6.4	1.4	9.1	2.6	19.8	<.5
2-02-71	.2	7.4	105	54	4.4	3.2	6.8	1.6	10.0	2.9	17.0	<.5
3-01-72	2.7	7.4	114	52	11.2	4.2	9.0	1.7	10.8	3.4	20.0	.51

Table 4.--*Chemical composition of Truckee River at Farad, California, upstream from irrigation diversions, January 2, 1968, through June 4, 1980*--Continued

Date	T°C	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
3-20-72	6.7	7.6	87	42	6.2	3.3	5.5	1.2	8.8	2.8	15.0	.14
5-02-72	10.6	7.5	66	41	1.7	2.2	3.8	1.1	7.8	2.4	15.8	<.5
5-31-72	11.9	7.3	55	33	1.4	2.4	3.4	1.0	6.2	2.0	18.8	<.5
7-06-72	17.0	7.4	84	50	2.6	2.8	5.6	1.5	8.6	2.8	14.6	<.5
7-28-72	---	7.4	96	54	3.5	2.9	6.4	1.6	9.5	2.9	18.2	<.1
8-31-72	17.0	7.5	91	56	2.8	3.0	6.7	1.5	8.9	2.8	12.2	<.1
9-28-72	10.0	7.2	88	47	2.8	2.9	5.5	1.5	8.4	2.8	12.2	<.1
10-27-72	8.0	7.4	96	51	4.1	3.0	6.2	1.6	9.1	3.2	15.0	.20
12-01-72	3.0	7.2	100	54	2.4	3.1	6.2	1.6	9.3	3.0	16.0	.14
1-03-73	1.0	7.4	95	47	4.0	3.0	5.4	1.3	9.0	2.8	15.8	1.1
2-01-73	.0	7.1	103	48	6.1	3.4	6.3	1.4	9.2	3.1	17.0	.71
3-01-73	3.5	7.4	126	53	11.3	4.0	9.4	1.7	10.4	3.4	17.0	.33
4-02-73	2.0	7.1	114	50	7.0	3.6	7.0	1.5	9.6	3.2	18.5	.20
5-01-73	4.0	7.1	77	37	4.2	2.8	4.6	.96	7.5	2.2	18.0	.46
5-31-73	9.5	7.2	54	29	1.8	1.9	2.8	.71	5.8	1.8	15.0	.21
7-03-73	11.0	7.3	82	45	1.6	2.6	4.4	1.2	7.5	2.6	16.2	.16
7-31-73	15.5	7.0	88	48	1.6	2.4	5.2	1.5	8.0	2.7	15.8	.20
9-04-73	11.0	7.0	82	45	1.8	2.4	4.9	1.4	8.5	2.2	14.6	.29
10-04-73	9.0	7.0	82	44	5.0	2.6	5.7	1.7	8.1	2.4	14.7	.11
11-01-73	8.0	7.4	93	52	2.2	2.9	6.1	1.7	9.0	2.9	15.7	.09
11-29-73	3.5	6.9	98	46	5.2	3.2	5.7	1.5	9.3	2.9	16.6	.66
1-03-74	.0	7.0	89	44	4.8	3.1	4.9	1.3	8.7	2.8	15.0	.56
1-31-74	3.0	7.5	88	46	4.6	2.8	5.3	1.3	8.5	2.7	16.0	.71
2-28-74	3.4	7.5	97	51	4.0	2.7	6.0	1.6	9.2	2.7	14.3	.18
4-03-74	4.5	7.1	78	43	2.9	1.7	4.1	1.5	7.8	2.4	16.7	.17
5-02-74	7.0	7.0	80	45	1.8	1.6	4.9	1.4	8.0	2.3	15.1	.09
6-05-74	9.5	6.9	58	34	1.3	1.2	2.7	.96	6.6	1.8	16.1	.08
7-03-74	12.0	6.9	65	37	1.4	2.3	3.0	1.1	6.6	2.0	14.9	.03
8-01-74	15.0	7.5	79	45	1.6	2.2	4.3	1.4	7.7	2.5	15.1	.11
8-28-74	14.5	7.1	81	46	2.0	2.1	4.3	1.5	8.3	2.5	15.9	.14
10-02-74	13.0	7.4	82	42	4.2	2.0	5.0	1.4	8.1	2.6	14.5	.21
11-07-74	9.0	7.3	89	51	2.1	2.2	4.8	1.6	8.4	2.8	14.1	.16
12-05-74	3.0	7.3	98	56	4.1	2.2	6.4	1.5	9.5	3.0	14.8	.31
1-02-75	.0	7.3	88	49	2.7	2.7	5.3	1.5	8.6	2.7	13.7	.22
1-29-75	1.0	7.4	90	51	3.2	3.3	5.1	1.5	9.6	2.8	14.2	.31
2-26-75	3.0	7.4	90	46	5.0	3.0	5.0	1.2	8.8	3.1	14.3	.31
4-03-75	4.0	7.1	104	52	5.4	3.2	6.2	1.3	9.9	3.2	16.3	.27
4-30-75	4.5	7.1	99	49	4.9	4.1	6.0	2.2	9.3	3.1	15.2	.22
6-04-75	7.0	6.8	61	25	2.3	2.6	3.5	.94	6.4	1.9	12.9	.04
7-02-75	9.0	6.8	69	39	2.2	1.5	3.9	1.2	6.9	2.2	14.4	.04
7-30-75	12.5	6.8	70	42	1.2	1.9	3.3	1.0	7.8	2.3	14.6	.13
9-03-75	12.5	6.8	80	44	1.4	2.8	3.9	1.2	7.7	2.4	13.3	.22
10-02-75	12.0	7.1	76	41	3.5	2.1	3.9	1.2	7.4	2.4	13.9	.18
11-05-75	6.0	7.2	87	48	3.0	3.0	5.0	1.2	8.6	2.8	14.4	.22
12-04-75	3.5	7.1	99	53	3.4	3.3	6.0	1.6	9.4	2.9	14.7	.18
1-07-76	1.0	6.9	98	54	3.4	3.2	6.1	1.6	9.4	2.9	14.4	.27
2-05-76	.0	6.9	99	54	2.3	3.7	6.3	1.8	9.2	3.0	14.5	.27
3-04-76	2.0	6.8	102	51	3.4	3.7	6.5	1.6	9.7	2.9	15.2	.40

Table 4.--*Chemical composition of Truckee River at Farad, California, upstream from irrigation diversions, January 2, 1968, through June 4, 1980*--Continued

Date	T°C	ph	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
4-01-76	6.0	6.8	87	46	3.1	2.3	4.5	1.3	8.5	2.9	12.9	.22
5-06-76	7.0	6.5	72	39	2.2	2.0	3.2	1.1	7.3	2.4	11.1	.13
6-02-76	12.0	7.0	76	43	2.0	2.5	4.4	1.4	7.9	2.6	12.3	.25
6-30-76	14.0	7.4	92	52	2.3	2.9	5.3	1.5	9.6	2.7	12.4	.09
8-05-76	15.0	7.5	69	51	2.5	3.0	5.5	1.6	8.9	2.6	15.1	.31
9-01-76	16.0	7.3	89	52	2.2	3.1	5.4	1.6	9.6	2.8	8.1	.27
10-05-76	13.5	7.5	85	49	1.2	2.7	3.8	1.5	9.0	3.0	11.8	.18
11-03-76	8.0	7.4	106	55	3.7	3.1	6.4	1.7	9.5	3.1	11.9	.53
12-01-76	2.0	7.8	105	56	3.6	3.4	6.1	1.7	10.4	3.1	13.5	.44
1-05-77	1.6	7.8	108	56	3.4	3.2	6.2	1.6	10.7	3.2	12.3	.66
2-02-77	1.7	7.6	108	58	2.8	3.3	6.2	1.7	10.3	3.2	13.1	.40
3-02-77	---	7.7	110	57	3.6	4.1	6.8	1.8	10.6	3.2	15.0	.44
4-05-77	6.2	8.0	105	57	3.5	3.8	6.3	1.8	10.1	3.3	13.5	.27
4-25-77	8.0	7.8	93	50	2.6	3.3	5.2	1.5	9.3	2.8	12.5	.31
5-23-77	10.0	7.7	90	48	2.9	3.8	5.2	1.5	8.9	2.8	14.5	.27
7-06-77	14.0	7.5	92	54	2.3	3.0	5.8	1.8	9.1	3.0	14.5	.37
8-04-77	16.0	7.7	105	62	2.4	3.2	5.4	1.8	10.7	3.6	11.0	.24
9-07-77	17.0	8.0	110	66	2.0	2.5	5.2	1.9	11.4	4.0	11.0	.30
10-06-77	9.0	8.2	174	77	11.8	5.6	11.5	2.0	14.6	5.5	21.4	.86
11-03-77	6.5	7.9	172	80	10.5	5.8	11.1	2.3	15.2	5.5	23.6	1.5
12-01-77	2.0	7.8	178	76	10.8	8.2	11.0	2.2	15.3	5.6	24.0	2.9
1-05-78	3.0	7.5	175	54	17.5	10.6	12.5	1.7	14.1	4.5	19.2	3.5
2-03-78	3.0	7.5	137	54	9.2	7.2	8.3	1.7	11.8	4.1	21.7	2.3
3-02-78	4.0	7.6	135	56	9.8	6.0	8.1	1.7	12.0	4.1	20.4	1.5
4-06-78	5.0	7.4	98	42	6.4	3.2	6.0	1.2	8.5	2.8	18.2	.66
5-04-78	8.0	7.4	81	44	1.8	3.1	4.0	1.2	8.5	2.7	14.8	.93
6-07-78	9.5	7.5	59	29	2.0	3.0	3.3	.84	5.7	1.6	15.0	.18
7-05-78	11.0	7.6	73	37	1.8	2.3	3.6	1.1	7.1	2.2	17.2	.40
8-02-78	16.0	7.6	96	51	3.2	2.2	5.6	1.5	9.5	2.8	16.5	.31
9-07-78	12.0	8.1	104	57	3.3	2.9	6.2	1.7	9.8	2.9	15.2	.18
10-05-78	12.0	7.9	92	44	4.4	3.1	5.0	1.4	8.4	2.8	15.6	.35
11-02-78	8.0	7.6	112	54	5.3	3.2	6.7	1.7	9.9	3.2	15.8	.13
12-07-78	.0	7.2	109	54	5.0	3.6	5.7	1.6	10.2	3.4	15.5	.18
1-04-79	1.0	7.6	106	52	4.2	3.4	5.4	1.6	9.6	3.4	13.7	.18
2-01-79	.0	7.5	130	59	9.0	5.0	7.9	1.8	12.3	4.1	19.3	.51
3-07-79	5.0	7.8	135	57	9.8	4.5	8.7	1.6	11.5	3.7	17.3	.27
4-06-79	6.0	7.7	125	54	9.0	4.3	7.1	1.6	11.8	3.8	19.3	.40
5-04-79	8.0	7.4	77	41	2.0	3.0	3.8	1.2	7.7	2.5	14.3	.35
6-07-79	11.0	7.3	68	33	2.5	2.3	3.4	.94	6.5	2.0	14.4	.07
7-11-79	13.5	7.6	102	55	4.5	3.0	6.4	1.7	9.9	2.9	14.8	.22
8-08-79	16.0	7.6	108	58	4.2	3.3	7.1	1.7	10.9	3.0	14.0	.13
9-05-79	12.0	7.9	110	58	4.5	3.9	6.8	1.7	10.4	3.2	15.7	.22
10-03-79	11.0	7.9	88	48	2.8	2.9	5.0	1.5	8.6	2.9	14.5	.22
11-07-79	5.0	7.8	109	46	9.4	3.7	7.7	1.6	9.1	2.9	13.5	.13
12-05-79	.3	7.4	103	50	5.0	3.4	5.7	1.4	9.7	3.2	13.9	.09
1-09-80	3.5	7.5	116	52	7.8	3.7	7.6	1.5	10.5	3.3	17.1	.35
2-06-80	4.0	7.5	120	50	9.0	4.4	7.7	1.6	11.0	3.5	18.8	.80
3-05-80	2.0	7.1	120	44	11.0	3.7	8.4	1.3	9.2	3.2	17.8	.71
4-09-80	6.0	8.2	112	48	7.5	4.2	6.8	1.2	9.7	3.2	17.3	.09
5-07-80	5.0	7.7	69	32	2.9	2.7	3.6	.88	6.6	1.9	16.7	<.01
6-04-80	9.0	7.2	68	34	2.0	2.0	3.5	1.1	6.5	2.0	15.0	<.10

Table 5.--*Chemical composition of Truckee River at 11 sampling stations and sites from Tahoe City, California, to Nixon, Nevada, June 4 and September 3, 1975*

[Analyses are shown for high- (6-4-75) and low- (9-3-75) flow seasons; dissolved constituents: HCO_3, bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; NO_3, nitrate; SiO_2, silica, reported in milligrams per liter; T°C, temperature in degrees Celsius; SC, specific conductance, reported as micromhos per centimeter at 25° Celsius]

Date and station or site (fig. 1)	Location	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
	June 4, 1975, high flow (84 cubic meters per second) at Farad, California											
1	At Tahoe City	7.1	86	52	1.8	2.8	6.0	2.1	8.8	2.4	11.4	<.01
2	Upstream from Donner Creek	7.2	68	41	1.8	3.0	5.8	1.2	7.2	1.9	13.1	.13
3	Upstream from Martis Creek	6.7	65	35	3.1	2.8	4.2	1.0	6.7	1.8	11.3	.09
4	Downstream from Martis Creek	6.7	66	35	2.8	2.7	4.1	1.1	6.7	1.9	12.4	.09
5	At Farad	6.8	61	25	2.3	2.6	3.5	.9	6.4	1.9	12.9	.04
6	At Boynton Lane	6.7	65	36	2.1	3.0	3.5	1.0	6.8	2.1	13.8	.22
7	At Vista gage	6.8	82	44	3.4	3.7	5.3	1.3	7.5	2.4	14.4	.27
8	Downstream from Tracy powerplant	6.9	84	44	3.3	3.8	5.7	1.3	7.8	2.6	14.4	.27
9	Downstream from Derby Dam	6.8	86	45	3.4	3.9	5.7	1.4	7.9	2.7	15.5	.44
10	At Wadsworth	6.8	87	44	3.4	3.9	5.8	1.6	8.4	2.7	15.4	.66
11	At Nixon	6.9	99	46	5.0	5.8	7.0	1.4	8.9	2.9	15.7	1.0
	September 3, 1975, low flow (24 cubic meters per second) at Farad, California											
1	At Tahoe City	6.9	88	51	1.6	2.1	5.2	1.5	8.3	2.4	12.3	.18
2	Upstream from Donner Creek	7.0	92	52	2.1	2.8	5.6	1.6	9.3	2.7	13.3	.27
3	Upstream from Martis Creek	7.0	94	52	2.9	2.6	5.4	1.5	8.9	2.7	13.3	.40
4	Downstream from Martis Creek	7.0	95	52	2.9	2.8	5.3	1.7	8.9	2.8	13.7	.31
5	At Farad	6.8	80	44	1.4	2.8	3.9	1.2	7.7	2.4	13.3	.22

Table 5.--*Chemical composition of Truckee River at 11 sampling stations and sites from Tahoe City, California, to Nixon, Nevada, June 4 and September 3, 1975*--Continued

Date and station or site (fig. 1)	Location	pH	SC	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	NO_3
	September 3, 1975, low flow (24 cubic meters per second) at Farad, California--Continued											
6	At Boynton Lane	6.8	95	51	2.1	3.6	4.6	1.5	8.9	3.0	16.1	.27
7	At Vista gage	7.1	163	70	7.3	11.0	11.6	2.4	13.1	4.8	18.3	.97
8	Downstream from Tracy powerplant	6.8	208	100	10.1	12.4	14.9	7.4	14.6	5.8	22.4	---
9	Downstream from Derby Dam	7.1	166	72	6.5	11.8	11.5	2.6	13.2	4.8	19.3	1.7
10	At Wadsworth	7.7	176	77	7.7	12.4	12.8	2.5	13.9	4.9	18.6	1.4
11	At Nixon	7.3	217	84	13.5	17.4	17.2	2.5	16.1	5.9	19.7	1.2

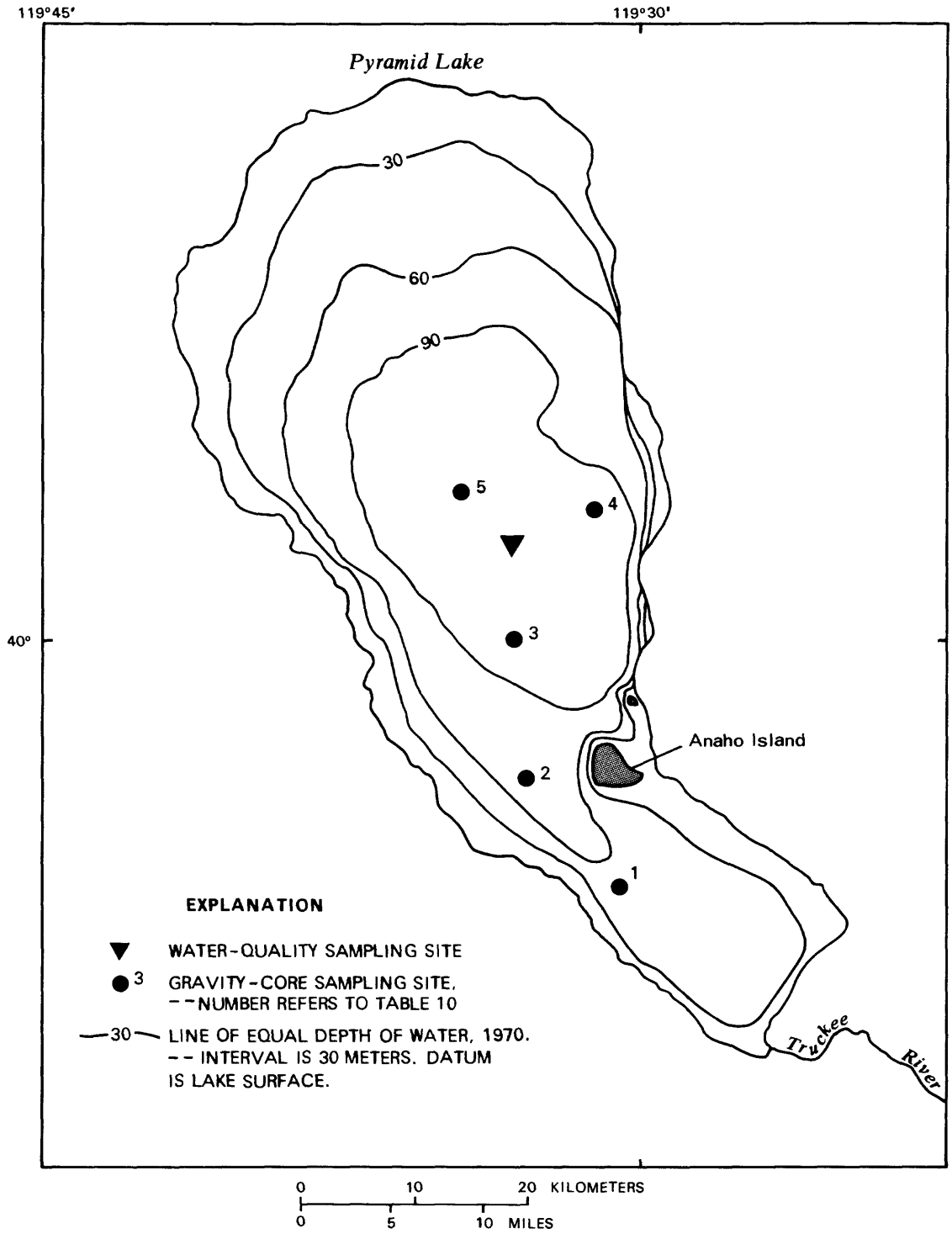

Figure 3.--Location of water-quality sampling and gravity-core sites in Pyramid Lake, Nevada.

Table 6.--*Selected chemical analyses of Pyramid Lake, Nevada, 1882-1973*

[Dissolved constituents: Ca, calcium; Mg, magnesium; Na, sodium; HCO_3, total alkalinity reported as bicarbonate, SO_4, sulfate; Cl, chloride; SiO_2, silica; dissolved solids reported in milligrams per liter]

Date	Lake volume (cubic kilometers)	pH	Ca	Mg	Na	K	HCO_3	SO_4	Cl	SiO_2	Dissolved solids (sum of constituents)	Dissolved mass (10^{10} kilograms)	Data source
9- ?-1882	37.1	9.0	18	80	1180	73	---	182	1430	---	---	---	Russell (1885)
?- ?-1913	36.9	9.0	16	78	1250	100	1010	183	1460	---	3920	14.5	Jones (1925)
2-13-1951	27.5	9.2	8	111	1540	160	1400	265	1920	---	5114	14.1	*
9-19-1955	27.1	9.1	10	113	1630	134	1390	264	1960	---	5260	14.3	*
11-10-1956	27.4	9.1	11	107	1620	125	1370	255	1960	1.4	5220	14.3	*
9-09-1957	27.1	9.0	4	107	1660	106	1360	334	1930	---	5270	14.3	*
10-22-1958	27.2	8.9	7.2	110	1610	99	1360	280	1920	1.3	5190	14.1	Roberson (1974)
3-26-1959	27.1	8.9	7.2	117	1630	120	1370	274	1980	---	5280	14.3	*
1-15-1964	25.3	9.4	8.8	121	1770	120	1500	266	2080	---	5620	14.2	*
9-23-1967	25.2	9.1	13	120	1670	133	1470	324	2050	.6	5570	14.0	**
10-01-1967	25.2	9.2	14	118	1650	135	1370	345	2050	.6	5480	13.8	**
3-19-1971	26.0	9.2	8.2	118	1660	124	1490	281	2090	.9	5460	14.2	**
7- ?-1973	26.1	8.9	5.9	105	1630	104	1430	270	2010	.7	5320	13.9	**
10-19-1973	26.1	9.3	7.8	116	1560	98	1420	280	2030	1.3	5160	13.7	**

*U.S. Geological Survey, Carson City office, unpublished data.
**Desert Research Institute, Reno office, unpublished data.

at the water-quality site depicted in figure 3 are shown in table 7. Temperature of Pyramid Lake as a function of depth from January 1, 1976, through November 2, 1977, is shown in table 8; dissolved-oxygen concentrations of Pyramid Lake as a function of depth from January 1, 1976, through November 2, 1977, are shown in table 9. Chemical compositions of pore fluids extracted from five sediment cores from Pyramid Lake (fig. 3) are shown in table 10. Chemical composition of samples collected from the the Truckee River at Farad, California, in 1981 are shown in table 11. The station at Farad (fig. 1) is located upstream from all major irrigation diversions from the Truckee River. The chemical composition of Pyramid Lake on December 4, 1980, also is shown in table 11; note that neutron-activation analysis for a large number of trace elements was done for the first time in 1981. Results for an experiment in which 75 L of Pyramid Lake water were evaporated from a fish tank by sunlamp during 21 days are presented in table 12. Results of atomic adsorption of carbonate precipitates from the Pyramid Lake basin are shown in table 13; results of X-ray diffraction anaysis of carbonate precipitates from Pyramid Lake basin are shown in table 14.

Table 7.--*Chemical composition of water samples collected as a function of depth in Pyramid Lake, Nevada, November 6, 1975, through December 13, 1976*

[T°C, temperature, in degrees Celsius; dissolved constituents: HCO_3, total alkalinity reported as bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; SiO_2, silica; B, boron; Sr, strontium; Al, aluminum; Li, lithium; Mo, molybdenum; NO_3, nitrate as nitrogen; NO_2, nitrite as nitrogen; NH_4, ammonium as nitrogen; orthophosphate and total phosphorus as total phosphorus; As, arsenic; F, fluoride; total organic nitrogen, reported in milligrams per liter]

Date	Depth (meters)	T°C	pH	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	B
11-6-75	5	12.8	9.3	1420	2030	280	1560	98	9.0	116	1.3	---
	11	12.7	9.3	1420	1960	295	1590	98	9.0	121	1.0	---
	22	11.7	9.2	1420	1960	305	1560	101	9.0	123	1.6	---
	54	6.4	9.2	1440	1960	317	1590	98	9.2	115	2.7	---
	86	6.0	9.1	1450	1940	290	1590	98	8.8	117	3.3	---
1-28-76	1	6.3	9.2	1440	1990	274	1600	98	9.2	115	.9	11.6
	40	6.5	9.3	1460	2010	272	1600	100	9.0	116	1.1	11.5
	80	6.1	9.2	1470	2010	267	1600	98	8.9	115	2.3	12.2
2-22-76	1	6.3	9.2	1420	1940	275	1610	103	9.3	112	.9	10.8
	40	6.5	9.2	1420	1910	266	1610	106	9.3	113	.9	11.2
	80	6.1	9.2	1420	1920	270	1630	104	9.2	113	1.3	11.3
3-16-76	1	8.5	9.2	1430	1920	265	1600	109	9.3	115	1.0	11.8
	40	5.9	9.2	1430	1930	263	1600	109	9.2	115	1.0	11.2
	80	6.0	9.2	1420	1920	259	1600	109	9.3	114	1.0	11.2
4-21-76	1	---	9.1	1440	2020	281	1620	109	9.3	114	.9	10.8
	40	---	9.1	1430	2030	287	1600	109	9.2	115	1.0	11.7
	80	---	9.2	1440	2030	287	1600	109	9.2	116	1.2	10.6
5-19-76	1	13.5	9.2	1420	2040	267	1600	105	8.9	111	.8	10.9
	40	7.5	9.2	1430	2030	270	1600	107	8.6	111	1.1	11.6
	80	6.0	9.2	1440	2030	268	1610	107	8.7	112	1.3	11.6
6-22-76	1	---	9.2	1440	2040	279	1610	111	8.9	115	1.0	---
	40	---	9.2	1420	2040	281	1600	111	8.6	116	1.0	---
	80	---	9.2	1430	2040	280	1610	111	8.5	115	1.2	---
7-20-76	1	---	9.1	1430	2040	266	1620	112	9.5	115	.9	13.1
	40	---	9.1	1410	2060	261	1600	109	9.2	113	1.1	9.1
	80	---	9.1	1420	2040	261	1610	107	9.2	113	1.4	9.0
8-17-76	1	19.5	9.2	1430	2060	263	1620	108	9.6	116	1.6	10.1
	40	7.5	9.1	1430	2030	259	1600	108	9.1	114	1.2	10.6
	80	6.4	9.2	1430	2020	259	1590	106	9.1	113	1.8	10.9
9-21-76	1	---	9.2	1450	2030	263	1600	106	9.0	115	.8	10.2
	40	---	9.2	1460	1980	259	1600	109	8.6	115	1.3	10.0
	80	---	9.2	1450	1970	253	1600	113	8.9	111	1.9	9.2
10-27-76	1	16.0	9.3	1420	2020	269	1620	108	9.0	113	1.1	---
	40	7.8	9.2	1450	2020	267	1550	111	8.8	113	1.2	---
	80	6.4	9.2	1400	2030	269	1590	111	8.7	113	1.6	---
11-22-76	1	14.1	9.3	1420	2070	278	1600	112	9.1	114	.9	10.2
	40	7.8	9.2	1400	2060	275	1580	108	8.7	110	1.5	10.6
	80	6.6	9.2	1390	2010	276	1600	107	8.5	112	2.0	10.0
12-13-76	1	10.0	9.2	1440	2020	285	1600	116	9.2	116	.9	10.0
	40	7.5	9.2	1410	2000	275	1580	113	8.9	114	1.5	10.7
	80	6.5	9.2	1410	2000	275	1600	112	9.1	114	2.5	10.0

Table 7.--*Chemical composition of water samples collected as a function of depth in Pyramid Lake, Nevada, November 6, 1975, through December 13, 1976*--Continued

Sr	Al	Li	Mo	NO_3	NO_2	NH_4	Ortho-phosphate	Total phosphorus	As	F	Total organic nitrogen
---	---	---	<.03	---	---	---	---	---	---	---	---
---	---	---	<.01	---	---	---	---	---	---	---	---
---	---	---	.01	---	---	---	---	---	---	---	---
---	---	---	.07	---	---	---	---	---	---	---	---
---	---	---	.13	---	---	---	---	---	---	---	---
.11	.02	.73	.05	.05	<.01	<.01	.08	.10	.10	1.6	.99
.11	.02	.75	.06	.05	<.01	<.01	.08	.09	.11	1.6	.90
.10	.02	.74	.09	.17	.01	.02	.14	.14	.11	1.6	.86
.09	.01	.73	.08	.08	---	---	.10	.09	---	1.6	---
.10	.03	.73	.08	.10	---	---	.10	.09	---	1.6	---
.09	.02	.73	.08	.05	---	---	.11	.11	---	1.6	---
.09	.01	---	.06	.07	---	---	.10	.11	---	---	---
.09	.01	---	.05	.07	---	---	.09	.11	---	---	---
.09	.01	---	.06	.07	---	---	.09	.10	---	---	---
.11	<.01	.79	.05	.03	<.01	.01	.09	.10	.10	---	.85
.11	.01	.78	<.05	.04	<.01	.01	.09	.10	.10	---	.76
.10	.01	.76	.05	.06	<.01	.01	.09	.10	.11	---	.81
.09	.02	---	<.05	.20	---	---	.08	.11	---	---	---
.08	.01	---	.05	.03	---	---	.09	.10	---	---	---
.08	<.01	---	<.05	.06	---	---	.09	.11	---	---	---
---	---	---	---	<.01	---	---	.09	.09	---	---	---
---	---	---	---	.05	---	---	.10	.09	---	---	---
---	---	---	---	.09	---	---	.10	.09	---	---	---
.09	---	---	.06	.03	---	---	.07	.09	---	---	---
.08	---	---	.07	.08	---	---	.09	.09	---	---	---
.08	---	---	.07	.09	---	---	.09	.09	---	---	---
---	---	---	.03	<.01	<.01	.02	.08	.08	.10	---	.70
---	---	---	.04	.11	<.01	.03	.10	.11	.09	---	.82
---	---	---	.03	.15	<.01	.02	.11	.12	.08	---	.56
.09	---	.73	.05	.02	---	---	.07	.09	---	---	---
.09	---	.74	.04	.09	---	---	.09	.10	---	---	---
.08	---	.74	.03	.12	---	---	.10	.11	---	---	---
---	---	---	---	.01	---	---	.07	.08	---	---	---
---	---	---	---	.12	---	---	.10	.10	---	---	---
---	---	---	---	.14	---	---	.11	.10	---	---	---
---	---	---	<.05	.02	<.005	.04	.07	.09	.09	---	---
---	---	---	<.05	.11	.005	.03	.10	.11	.08	---	---
---	---	---	<.05	.12	.014	.04	.12	.13	.10	---	---
---	---	---	.06	.02	---	---	.08	.09	---	---	---
---	---	---	<.05	.11	---	---	.09	.11	---	---	---
---	---	---	<.05	.11	---	---	.14	.15	---	---	---

Table 8.--*Temperature of Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977*

Depth (meters)	Temperature (degrees Celsius)										
	1-27-76	4-20-76	5-7-76	6-14-76	7-13-76	7-28-76	8-11-76	9-8-76	10-6-76	11-9-76	11-29-76
.5	6.5	10.0	11.2	15.8	21.6	23.6	21.5	19.9	18.1	14.8	11.9
2	6.3	7.9	10.5	15.5	21.1	22.2	20.9	19.9	18.0	14.6	11.9
4	6.1	7.4	10.2	14.6	20.6	21.7	20.8	19.9	18.0	14.6	11.9
6	6.1	7.3	10.1	14.3	19.6	21.6	20.7	19.9	17.9	14.5	11.9
8	6.1	7.3	10.1	14.2	19.2	21.4	20.6	19.8	17.9	14.5	11.9
10	6.1	7.2	10.0	14.0	17.3	20.6	19.9	19.8	17.9	14.5	11.9
12	6.1	7.2	9.9	14.0	16.7	20.4	19.7	19.8	17.9	14.5	11.9
14	6.1	7.2	9.9	14.0	15.9	19.5	18.9	19.8	17.9	14.5	11.9
16	6.1	7.2	9.9	13.9	14.8	14.6	17.2	19.8	17.9	14.5	11.9
18	6.2	7.3	9.9	13.9	14.4	13.0	14.4	19.8	17.5	14.4	11.9
20	6.3	7.2	9.6	13.8	12.6	12.2	12.9	18.4	16.8	14.4	11.9
22	6.4	---	---	---	10.8	---	12.2	15.8	13.6	14.0	11.9
25	6.4	7.2	7.5	11.2	9.3	9.3	10.4	12.8	11.1	10.2	11.9
30	6.5	7.1	7.1	8.5	8.0	8.0	8.5	8.7	9.2	8.4	8.9
35	6.5	7.0	6.9	7.5	7.6	7.6	7.6	7.6	7.9	7.3	8.0
40	6.5	7.0	6.8	7.2	7.3	7.2	7.1	7.2	7.2	7.0	7.5
45	6.5	7.0	6.6	7.0	7.0	7.0	6.8	7.0	6.8	6.8	7.1
50	6.5	7.0	6.6	6.8	6.8	6.8	6.7	6.8	6.6	6.6	6.8
55	6.4	6.7	6.5	6.6	6.7	6.6	6.6	6.6	6.6	6.4	6.7
60	6.4	6.6	6.4	6.5	6.6	6.5	6.5	6.5	6.4	6.3	6.5
65	6.3	6.4	6.3	6.4	6.4	6.4	6.4	6.4	6.3	6.2	6.4
70	6.1	6.4	6.3	6.3	6.3	6.4	6.3	6.3	6.2	6.2	6.3
75	6.1	6.4	6.2	6.2	6.2	6.3	6.2	6.2	6.2	6.1	6.1
80	6.1	6.3	6.2	6.1	6.2	6.3	6.2	6.2	6.1	6.0	6.1
85	6.1	6.3	6.1	6.1	6.1	6.2	6.2	6.2	6.0	6.0	6.0
90	---	6.2	6.1	6.1	6.1	---	6.2	6.2	6.0	6.0	6.0
~92	---	6.2	6.1	6.1	6.1	---	---	---	6.0	---	6.0

Table 8.--*Temperature of Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977*--Continued

Depth (meters)	Temperature (degrees Celsius)											
	1-16-77	2-9-77	3-11-77	4-13-77	5-12-77	6-8-77	7-12-77	7-27-77	8-3-77	9-13-77	10-5-77	11-2-77
.5	6.9	6.8	6.6	9.8	10.0	15.6	21.2	22.0	25.2	21.3	16.7	14.7
2	6.8	6.7	6.6	9.8	10.0	15.1	21.0	22.0	23.6	21.3	16.6	14.7
4	6.8	6.7	6.6	9.6	9.9	13.8	20.9	21.9	22.9	21.1	16.5	14.5
6	6.8	6.7	6.6	9.0	9.9	13.2	20.8	21.1	22.2	21.0	16.5	14.4
8	6.8	6.6	6.6	9.0	9.9	12.9	20.8	20.6	21.8	20.9	16.3	14.4
10	6.8	6.6	6.6	8.1	9.8	12.5	20.6	17.8	21.5	20.8	16.1	14.4
12	6.8	6.6	6.6	7.6	9.8	11.9	17.2	15.7	20.1	20.8	15.8	14.4
14	6.8	6.6	6.5	7.5	9.7	11.6	14.6	14.0	16.4	20.8	15.5	14.4
16	6.8	6.6	6.5	7.4	9.4	11.5	13.7	13.0	15.1	19.0	15.2	14.4
18	6.8	6.6	6.5	7.4	8.9	10.5	11.6	11.3	12.5	14.4	13.8	14.4
20	6.8	6.6	6.5	7.2	8.8	10.3	10.3	10.4	11.6	11.8	12.7	14.3
22	6.8	6.6	6.5	7.0	8.6	10.2	9.8	10.0	11.0	10.9	11.7	14.3
25	6.8	6.6	6.5	6.8	8.5	9.8	9.4	9.5	10.0	9.9	10.3	14.3
30	6.8	6.6	6.5	6.6	7.9	8.5	8.7	8.8	9.0	8.9	9.1	13.7
35	6.8	6.6	6.5	6.6	7.6	7.6	7.9	8.2	8.1	8.2	8.1	9.3
40	6.8	6.6	6.5	6.6	7.2	7.4	7.5	7.7	7.7	7.5	7.5	8.4
45	6.8	6.6	6.5	6.6	7.0	7.0	7.2	7.3	7.3	7.3	7.1	7.8
50	6.8	6.6	6.5	6.5	6.9	6.8	7.0	---	7.0	7.1	6.9	7.3
55	6.8	6.6	6.5	6.5	6.8	6.8	6.9	6.9	6.9	7.0	---	7.0
60	6.8	6.6	6.5	6.5	6.8	6.7	6.8	---	6.8	---	6.8	6.9
65	6.7	6.6	6.5	6.5	6.7	6.7	6.8	6.8	6.7	6.8	---	6.8
70	6.6	6.5	6.5	6.5	6.7	6.7	6.7	---	6.7	---	6.7	6.7
75	6.2	6.5	6.5	6.5	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
80	6.2	6.5	6.5	6.5	6.7	6.7	6.7	---	6.7	6.7	6.7	6.7
85	6.3	6.4	6.5	6.4	6.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7
90	6.4	6.4	6.5	6.5	6.6	6.6	6.6	6.6	6.7	6.7	6.7	6.7
~92	---	6.4	6.5	---	---	---	---	---	6.7	6.7	6.7	6.7

Table 9.--*Dissolved-oxygen concentration in Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977*

Depth (meters)	Dissolved oxygen (milligrams per liter)										
	1-27-76	4-20-76	5-7-76	6-.1-76	7 13 76	-28-76	8-11-76	9-8-76	10-6-76	11-9-76	11-29-76
.5	8.9	11.0	11.2	11.3	9.3	8.0	8.1	9.0	8.0	8.6	8.9
2	8.9	11.5	10.5	11.5	9.5	8.3	8.2	9.0	8.0	8.7	8.9
4	9.1	11.3	10.2	11.6	9.7	8.5	8.3	9.1	8.0	8.7	9.0
6	9.0	11.0	10.1	11.6	10.0	8.5	8.3	9.1	8.0	8.7	9.0
8	9.0	10.8	10.1	11.7	10.2	8.4	8.3	9.1	8.0	8.7	9.0
10	9.0	10.6	10.0	11.6	10.6	8.5	8.3	9.1	8.0	8.7	9.0
12	9.0	10.6	9.9	11.6	10.6	8.6	8.2	9.1	7.9	8.7	9.0
14	9.0	10.6	9.9	11.6	10.4	8.4	8.2	9.1	7.9	8.7	8.9
16	9.0	10.6	9.9	11.6	10.2	8.2	8.4	9.0	7.9	8.7	8.9
18	9.0	10.5	9.9	11.5	10.1	7.8	7.7	9.0	7.6	8.7	8.9
20	9.0	10.5	9.6	11.5	9.5	7.8	7.1	8.6	7.4	8.7	8.9
22	---	---	---	---	9.2	---	7.1	7.6	6.0	8.3	8.9
25	8.8	10.5	7.5	11.4	9.4	7.9	7.5	7.0	6.2	6.5	8.9
30	8.8	10.5	7.1	11.6	9.8	7.9	8.0	8.4	6.6	7.1	8.9
35	8.9	10.5	6.9	11.4	9.9	8.0	8.2	8.7	7.0	7.6	7.9
40	8.9	10.4	6.8	11.1	9.7	8.2	8.2	8.4	7.4	7.6	7.5
45	8.9	10.5	6.6	10.8	9.8	8.2	8.1	8.4	7.1	7.7	6.8
50	8.6	10.3	6.6	10.8	9.6	8.2	8.0	8.7	7.8	7.6	8.0
55	8.4	10.2	6.5	10.8	9.2	8.2	8.0	8.2	7.5	7.7	7.7
60	7.7	10.1	6.4	10.8	9.3	8.2	7.8	8.2	7.5	7.4	7.3
65	6.5	10.0	6.3	10.9	9.4	7.1	7.8	8.2	7.3	7.1	7.6
70	4.9	9.9	6.3	10.6	9.3	6.9	8.0	8.0	7.5	7.1	7.2
75	3.7	9.9	6.2	10.3	9.0	6.6	6.7	8.0	6.3	6.7	6.6
80	3.3	9.7	6.2	9.8	8.6	5.8	5.5	7.0	6.5	6.6	5.7
85	2.8	9.7	6.1	8.8	7.2	4.6	5.0	5.6	5.1	1.5	3.8
90	---	9.5	6.1	8.1	6.2	---	3.9	4.3	2.3	.1	.2
~92	---	6.3	6.1	7.7	.2	---	---	---	2.2	---	.1

Table 9.--*Dissolved-oxygen concentration in Pyramid Lake, Nevada, as a function of depth, January 27, 1976, through November 2, 1977*--Continued

Depth (meters)	Dissolved oxygen (milligrams per liter)											
	1-16-77	2-9-77	3-11-77	4-13-77	5-12-77	6-8-77	7-12-77	7-27-77	8-3-77	9-13-77	10-5-77	11-2-77
.5	9.8	10.6	11.6	11.3	11.2	10.1	10.2	10.2	10.0	10.0	9.6	9.0
2	9.6	10.6	10.9	11.3	11.2	10.3	10.3	10.2	9.6	10.1	9.6	9.0
4	9.7	10.5	10.9	11.4	11.2	10.6	10.3	10.2	9.2	10.1	9.6	9.2
6	9.6	10.5	10.9	11.6	11.2	10.6	10.3	10.6	9.0	10.1	9.5	9.2
8	9.6	10.5	10.9	11.6	11.2	10.6	10.3	10.8	9.0	9.8	9.0	9.1
10	9.6	10.5	10.9	11.7	11.2	10.6	10.4	11.9	9.0	9.6	8.8	9.1
12	9.6	10.5	10.9	11.6	11.2	10.5	10.6	12.1	9.2	9.5	8.4	9.1
14	9.6	10.5	10.9	11.5	11.2	10.4	10.8	12.1	10.4	9.5	8.4	9.1
16	9.6	10.4	10.9	11.4	11.2	10.4	11.7	11.8	10.4	8.4	8.2	9.1
18	9.6	10.4	10.8	11.4	11.1	10.1	11.0	11.4	9.9	8.4	7.4	9.1
20	9.6	10.4	10.8	11.3	11.1	10.0	11.5	11.4	9.5	8.8	7.5	9.1
22	9.6	10.4	10.8	11.1	11.0	10.0	10.4	10.7	9.3	8.6	7.5	9.0
25	9.5	10.4	10.8	11.0	11.0	9.7	10.2	10.3	8.6	8.3	7.2	8.1
30	9.4	10.4	10.7	10.9	10.9	9.5	10.2	10.0	8.5	8.3	6.8	6.8
35	9.4	10.4	10.7	10.9	10.8	9.5	9.8	9.9	8.2	8.3	8.2	6.5
40	9.4	10.3	10.6	10.8	10.7	9.6	9.6	10.1	8.1	8.6	7.9	6.1
45	9.3	10.3	10.6	10.8	10.6	9.6	9.5	9.2	7.6	8.5	7.7	6.1
50	9.3	10.3	10.6	10.8	10.6	9.6	10.0	---	8.7	8.8	7.6	7.0
55	9.3	10.3	10.6	10.7	10.6	9.5	10.2	9.6	8.8	7.9	---	7.9
60	9.3	10.3	10.6	10.7	10.5	9.4	10.2	---	8.9	---	8.3	8.1
65	8.9	10.2	10.5	10.7	10.4	9.4	10.4	10.3	8.8	7.8	---	8.3
70	5.0	10.0	10.5	10.7	10.4	9.4	9.8	---	8.1	---	7.7	7.5
75	3.1	9.9	10.5	10.7	10.4	9.4	9.7	10.4	8.0	7.8	---	5.0
80	3.4	9.7	10.5	10.7	10.4	9.3	9.4	---	7.6	---	4.4	2.8
85	4.2	9.6	10.5	10.7	9.3	7.6	7.1	7.4	5.5	4.2	2.8	1.7
90	9.1	8.9	10.5	10.7	9.1	6.6	6.2	4.9	3.6	2.6	2.2	.6
~92	---	8.7	10.5	10.7	9.0	5.8	---	---	---	---	2.0	---

Table 10.--*Chemical composition of pore fluids in gravity cores from Pyramid Lake, Nevada*

[Sample depth in cm (centimeters) below sediment-water interface; measured redox potential, Eh, in volts; dissolved constituents: HCO_3, total alkalinity reported as bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; SiO_2, silica; Mn, manganese; Fe, iron; Al, aluminum; Pb, lead; PO_4, total dissolved orthophosphorus; NO_3, nitrate, reported in milligrams per liter; Eh was calculated using a Zobell solution standard]

Core	Depth (cm)	pH	Eh (volts)	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	Mn	Fe	Al	Pb	PO_4	NO_3
1	0	9.2	---	1410	2020	290	1580	111	7.7	115	1.6	---	---	---	---	.2	.1
	5	8.9	.360	1480	2050	175	1550	114	11	112	29	---	---	---	---	37	.8
	25	8.4	.322	1530	1900	39	1420	98	14	106	44	---	---	---	---	30	1.3
	45	8.4	.343	1540	1860	17	1430	104	15	105	49	---	---	---	---	25	.8
	65	8.3	.333	1500	1730	21	1320	96	15	100	46	---	---	---	---	18	.8
	85	8.3	.323	1460	1560	<3	1240	80	16	100	42	---	---	---	---	17	1.5
	105	8.2	.375	1510	1470	8	1240	78	18	99	41	---	---	---	---	15	1.7
	125	8.2	.390	1620	1500	9	1290	87	17	96	46	---	---	---	---	18	1.4
	145	8.3	.352	1590	1500	<3	1260	83	18	90	46	---	---	---	---	17	1.3
	170	8.2	.342	1690	1540	<3	1330	85	18	96	37	---	---	---	---	19	1.1
2	0	9.1	---	1420	2030	277	1600	107	8.4	114	1.2	<.005	<.01	---	---	---	.1
	5	8.4	.320	1560	2030	92	1550	106	18	119	41	.39	.04	.07	---	8.8	.4
	25	8.4	.355	1660	2070	25	1520	112	17	126	46	.38	.03	.06	---	7.6	.8
	45	8.3	.363	1560	1870	18	1480	124	14	116	55	.18	.03	.04	---	6.5	2.7
	65	8.2	.378	1570	1880	13	1410	110	15	114	45	.17	.03	.05	---	6.8	.9
	85	8.1	.391	1560	1730	10	1380	107	14	112	53	.19	.02	.05	---	6.9	.7
	105	8.2	.405	1620	1670	<3	1340	110	14	111	42	.21	.02	.03	---	6.5	.9
	125	8.1	.403	1590	1570	<3	1330	103	14	111	47	.25	.01	.03	---	7.4	.7
	145	8.1	.413	1660	1600	<3	1330	98	14	112	48	.27	.02	.01	---	6.8	.9
	175	8.0	.393	1730	1590	<3	1310	99	16	115	54	.33	.03	.01	---	7.1	1.1
3	0	9.0	---	1440	2000	267	1600	112	8.9	115	2.1	<.005	<.01	.02	---	.2	.4
	5	9.1	.083	1500	2120	143	1590	128	17	108	23	.20	.03	<.01	---	3.1	.2
	25	8.7	.017	1710	1960	35	1520	118	20	141	37	.48	.02	<.01	---	19	<.04
	45	8.7	.303	1850	1930	<3	1480	118	20	164	38	.66	<.01	<.01	---	28	.3
	65	8.7	.348	1960	1860	4	1460	111	20	187	42	.61	<.01	<.01	---	31	.3
	85	8.8	.382	2080	1760	16	1420	126	23	205	40	.74	.07	.02	---	26	.4
	105	8.8	.400	2030	1670	8	1350	128	23	211	46	.77	.02	<.01	---	38	.1
	125	8.7	.380	2230	1670	<3	1290	124	25	222	49	.94	<.01	<.01	---	48	.1
	145	8.5	.385	2330	1670	5	1280	122	25	247	53	1.06	<.01	<.01	---	36	1.0
	180	8.0	.405	2510	1610	6	1260	127	26	270	53	1.15	<.01	<.01	---	44	1.0
	200	8.1	.390	2720	1640	8	1270	139	27	287	51	1.28	<.01	<.01	---	17	1.0

Table 10.--*Chemical composition of pore fluids in gravity cores from Pyramid Lake, Nevada*--Continued

Core	Depth (cm)	pH	Eh (volts)	HCO_3	Cl	SO_4	Na	K	Ca	Mg	SiO_2	Mn	Fe	Al	Pb	PO_4	NO_3
4	0	9.2	---	1430	2000	275	1610	111	9.0	116	.8	.01	<.01	.01	---	.1	.1
	5	8.6	.203	1520	2000	119	1560	110	16	117	32	.26	.02	<.01	---	3.7	.5
	25	8.5	.213	1520	2030	123	1510	110	15	134	34	.29	.02	.01	---	3.8	.8
	45	8.2	.403	1880	1860	11	1410	140	17	161	44	.45	.02	<.01	---	12	.9
	65	8.1	.413	2030	1840	10	1360	123	19	190	59	.60	.04	.01	---	15	.9
	85	8.1	.408	2160	1800	<3	1320	124	20	204	46	.70	.03	.01	---	15	.9
	105	8.1	.418	2220	1730	<3	1370	113	21	227	62	.86	.04	.01	---	18	1.4
	125	8.0	.403	2360	1730	<3	1340	121	21	240	60	1.04	.07	<.01	---	17	1.2
5	0	9.3	---	1420	2080	256	1610	113	9.0	114	1.6	<.005	.01	---	<.0025	.2	.2
	5	8.9	-.047	1570	1930	128	1560	123	17	109	31	.30	.06	.03	.010	6.8	<.04
	25	8.5	-.005	1700	1890	47	1540	124	18	142	40	.49	.05	.02	.007	23	.3
	45	8.3	.310	1820	1820	21	1480	122	20	166	59	.54	.04	.02	.003	40	.2
	65	8.1	.313	1910	1820	4	1450	115	22	196	46	.69	.02	.01	.003	43	.3
	85	8.4	.385	1970	1750	<3	1350	124	22	199	48	.63	.02	.01	<.0025	38	.7
	105	8.1	.387	2090	1640	<3	1290	108	24	215	49	.84	.03	<.01	<.0025	48	1.0
	125	8.5	.365	2210	1640	<3	1290	126	24	237	52	.92	<.01	<.01	<.0025	48	---
	155	8.1	.388	2380	1620	<3	1240	135	23	271	50	.48	<.01	<.01	<.0025	50	1.9

Table 11.--*Chemical composition of water samples collected from Truckee River at Farad, California, and from Pyramid Lake, Nevada, 1981*

[Dissolved constituents: Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; Cl, chloride; HCO_3, total alkalinity as bicarbonate; SO_4, sulfate; SiO_2, silica; Fe, iron; Al, aluminum, reported in milligrams per liter; Mn, manganese; Dy, dysprosium; U, uranium; Ba, barium; Mo, molybdenum; Lu, lutetium; W, tungsten; La, lanthanum; Cs, cesium; Cr, chromium; Ni, nickel; Rb, rubidium; Zn, zinc, reported in micrograms per liter; Sm, samarium; Sc, scandium; Co, cobalt; Sb, antimony; Th, thorium; Th, terbium; Ta, tantalum; Ce, cerium; Hf, Hafnium; Yb, ytterbium, reported in 10^{-3} micrograms per liter; T, temperature, reported in degrees Celsius; TRFARAD refers to the Farad, California, station on the Truckee River (see fig. 2 for location)]

	Farad, California						Pyramid Lake, Nevada
Sample---	TRFARAD 1	TRFARAD 2	TRFARAD 3	TRFARAD 4	TRFARAD 5	TRFARAD 6	
Date---	1-29-81	3-4-81	4-1-81	5-14-81	6-25-81	7-24-81	12-4-80
Constituents							
T	2	7	7	10	19	17	—
pH	7.8	8.1	8.2	8.1	8.2	8.4	—
Na	8.0	7.4	8.9	4.8	6.9	7.6	—
K	1.8	1.6	1.6	1.3	1.7	1.9	—
Ca	5.5	6.8	6.8	3.8	7.5	7.8	—
Mg	3.2	3.6	3.8	2.3	2.7	2.9	—
Cl	6.5	9.8	9.1	1.4	3.9	4.5	—
HCO_3	54	57	56	41	54	58	—
SO_4	3.6	5.0	5.5	1.6	3.8	3.4	—
SiO_2	16	18	19	7.8	14	14	—
Na	3.00 ± .06	6.98 ± .13	6.73 ± .13	2.87 ± .06	4.83 ± .09	5.00 ± .10	1640 ± 15
K	<.95	1.10 ± .25	1.27 ± .20	1.14 ± .40	1.41 ± .19	— ±	—
Ca	12.9 ± .9	5.82 ± .70	<6.1	7.0 ± .4	8.0 ± .6	8.10 ± .62	—
Mg	2.07 ± .75	<3.65	<2.3	1.5 ± .3	2.6 ± .6	2.33 ± .54	—
Cl	2.54 ± .10	6.79 ± .14	7.0 ± 1.0	1.33 ± .04	2.46 ± .04	2.33 ± .06	1940 ± 15
Fe	.106 ± .007	.075 ± .004	.063 ± .003	.043 ± .003	.065 ± .003	<.007	<.096
Al	<.10	<.094	<.31	<.47	2.46 ± .04	<.11	—
Mn	5.98 ± .16	6.94 ± .75	20.3 ± .7	12.8 ± .2	23 ± 5	—	<81
Dy	<.030	<2.34	<.20	<.015	<.047	—	<14
U	.196 ± .004	.319 ± .004	.167 ± .003	.118 ± .002	.455 ± .004	.434 ± .004	17.2 ± .7
Ba	18.5 ± 1.8	17.7 ± 1.4	14.2 ± 1.3	13.3 ± 1.0	14.0 ± .9	15.4 ± .9	<290
Mo	.71 ± .09	1.06 ± .10	1.08 ± .09	.31 ± .05	2.06 ± .16	2.6 ± .2	55 ± 14
Lu	<.006	<.008	<.003	<.003	<.015	<.021	—
W	.46 ± .09	.70 ± .10	.54 ± .08	.134 ± .040	.67 ± .10	—	—
La	<.21	<.14	<.26	<.19	<.11	<.17	—
Cs	.248 ± .010	.555 ± .011	.442 ± .009	.110 ± .003	.321 ± .007	.315 ± .007	.34 ± .01
Cr	.883 ± .048	.504 ± .028	.269 ± .022	.085 ± .019	.165 ± .018	.186 ± .021	<3
Ni	1.55 ± .23	3.73 ± .15	1.50 ± .10	.78 ± .13	.724 ± .079	.48 ± .09	2.5 ± .7
Rb	1.17 ± .15	2.45 ± .12	2.08 ± .10	1.58 ± .10	2.08 ± .09	2.32 ± .11	—
Zn	3.49 ± .39	4.3 ± .2	1.63 ± .09	2.14 ± .14	1.45 ± .11	1.42 ± .09	13.9 ± .5
Sm	2.9 ± 1.0	<4.8	<3.9	<1.9	<4.1	<2.9	<390
Sc	13.2 ± .8	9.77 ± .37	3.86 ± .26	3.93 ± .70	3.18 ± .28	3.18 ± .25	18 ± 3
Co	106 ± 10	53.7 ± 3.7	28.1 ± 2.6	23.3 ± 3.5	24.8 ± 2.6	11.6 ± 2.4	160 ± 10
Sb	9.7 ± 5.2	45.5 ± 4.5	44.4 ± 4.6	23.5 ± 3.5	40.1 ± 3.9	42.4 ± 4.2	2400 ± 2000
Th	7.8 ± 2.1	<2.8	<2.4	<2.1	<1.8	<4.1	<81
Tb	2.5 ± 1.1	<2.2	<2.0	<3.0	3.4 ± .6	48.6 ± 1.9	—
Ta	<4.4	<1.8	<1.6	<2.8	<1.7	<1.9	<10
Ce	<37	<18	<18	<14	<12	<15	<710
Hf	<2.7	<3.7	<3.3	<2.3	<2.1	<2.5	<91
Yb	<.89	6.1 ± 1.9	<5.9	<8.3	5.7 ± 1.2	40.3 ± 1.6	<1500

Table 12.--*Trends in chemical composition of water from Pyramid Lake, Nevada, during 21-day evaporation experiment using 75 liters of water*

[T°C, temperature in degrees Celsius; dissolved constituents: HCO_3, total alkalinity expressed as bicarbonate; Cl, chloride; SO_4, sulfate; Na, sodium; K, potassium; Ca, calcium; Mg, magnesium; Sr, strontium; SiO_2, silica; DS, summation of dissolved solids, reported in milligrams per liter]

Sample number	Date	T°C	pH	HCO_3	Cl	SO_4	Na	K	Ca	Mg	Sr	SiO_2	DS	Volume remaining (percent)
PLE-00	1/29/76	10.5	9.27	1460	2010	272	1600	109	9.0	120	.11	1.1	5570	100
PLE-01	2/02/76	25.8	9.30	2050	2810	364	2260	152	11.5	160	.19	1.4	7810	71.5
PLE-02	2/04/76	26.4	9.25	2380	3410	392	2700	200	7.8	200	.18	1.1	9290	59.6
PLE-03	2/06/76	29.4	9.25	3120	4080	601	3380	240	5.7	240	.06	1.2	11,700	47.3
PLE-04	2/07/76	30.8	9.25	3670	4890	688	3900	285	4.8	300	.03	1.4	13,700	41.2
PLE-05	2/10/76	22.7	9.27	6000	8650	1190	7200	480	6.0	490	<.01	0.2	24,000	23.2
PLE-06	2/13/76	24.1	9.20	10,700	16,400	2010	13,000	826	9.5	900	.03	0.4	43,800	11.8
PLE-07	2/17/76	17.6	9.08	23,700	52,700	5680	39,000	2700	16.0	680	.02	<.25	124,000	2.8
PLE-08	2/18/76	18.0	8.90	97,400	160,000	33,600	143,000	14,100	6.7	540	<.01	<.25	449,000	~.5
PLE-09	2/19/76	22.5	8.65	53,000	188,000	32,900	137,000	15,000	2.2	190	<.01	<.25	426,000	---

Table 13.--*Chemical composition of tufa from the Pyramid Lake basin, Nevada*

Sample number	Altitude (meters)	Weight percent			
		Sodium	Potassium	Magnesium	Strontium
PL-6	1228.0	.28	---	1.5	.20
PL-6'	1228.0	.11	.049	1.6	.21
PL-7	1228.6	.14	---	1.2	.27
PL-7'	1228.6	.11	.034	1.2	.30
PL-8	1238.7	.12	---	.84	.22
PL-8'	1238.7	.19	.023	.91	.25
PL-9	1248.8	.26	---	.98	.20
PL-9'	1248.8	.08	.027	.97	.23
PL-10	1262.2	.51	---	.95	.23
PL-10'	1262.2	.09	.007	.95	.26
PL-11	1276.5	.14	---	1.1	.14
PL-11'	1276.5	.07	.029	1.2	.17
PL-12	1301.8	.11	---	1.6	.20
PL-12'	1301.8	.16	.009	1.6	.23
PL-13a	1203.4	.19	---	1.2	.25
PL-13a'	1203.4	.20	.024	1.2	.30
PL-13b	1203.4	.19	---	.90	.25
PL-13b'	1203.4	.12	.028	.87	.29
PL-14	1209.1	.22	---	1.2	.30
PL-14'	1209.1	.24	.007	1.3	.40
PL-15	1230.5	.41	---	.71	.21
PL-15'	1230.5	.14	.012	.76	.26
PL-16	1237.5	.77	---	.78	.23
PL-16'	1237.5	.17	.016	.81	.28
PL-17a	1259.7	.04	---	.53	.15
PL-17a'	1259.7	.06	.011	.50	.17
PL-17b	1259.7	.08	---	.49	.17
PL-17b'	1259.7	.05	.007	.47	.18
PL-17c	1259.7	.05	---	.40	.14
PL-17c'	1259.7	.06	.008	.46	.18
PL-17d	1259.7	.12	---	.37	.11
PL-17d'	1259.7	.06	.009	.49	.17
PL-17e	1259.7	.12	---	.55	.14
PL-17e'	1259.7	.05	.007	.54	.14
PL-18	1267.4	.27	---	.70	.17
PL-18'	1267.4	.12	.007	.77	.20
PL-19	1276.8	.22	---	1.3	.18
PL-19'	1276.8	.10	.012	1.4	.19
PL-20a	1311.2	.09	---	1.1	.21
PL-20a'	1311.2	.13	.013	1.2	.22
PL-20b	1311.2	.20	---	1.0	.17
PL-20b'	1311.2	.10	.018	1.2	.21

Table 13.--*Chemical composition of tufa from the Pyramid Lake basin, Nevada*--Continued

Sample number	Altitude (meters)	Weight percent			
		Sodium	Potassium	Magnesium	Strontium
PL-21	1325.0	.11	---	1.7	.22
PL-21'	1325.0	.10	.007	1.7	.24
PL-23a	1257.9	.16	---	.83	.22
PL-23a'	1257.9	.18	.012	.81	.24
PL-23b	1257.9	.16	---	.86	.22
PL-23b'	1257.9	.24	.012	.86	.24
PL-23c	1257.9	.21	---	.74	.21
PL-23c'	1257.9	.22	.009	.73	.21
PL-23d	1257.9	.22	---	.55	.16
PL-23d'	1257.9	.26	.011	.56	.17
PL-23e	1257.9	.35	---	.56	.18
PL-23e'	1257.9	.24	.011	.55	.16
PL-24	1257.9	.13	---	1.6	.22
PL-24'	1257.9	.12	.029	1.6	.24
PL-38a	~1181	.10	---	.46	.13
PL-38a'	1181	.11	.016	.58	.18
PL-38b	1181	.06	---	.48	.15
PL-38b'	1181	.07	.007	.45	.16
PL-38c	1181	.15	---	.48	.12
PL-38c'	1181	.06	.009	.49	.14
PL-41	~1311	.26	---	1.3	.18
PL-41'	1311	.08	.014	1.2	.19
PL-42	1319	.08	---	1.1	.10
PL-42'	1319	.03	.018	1.1	.11
PL-43a	~1328	.10	---	1.2	.16
PL-43a'	1328	.10	.031	1.1	.17
PL-43b	1328	.12	---	1.3	.15
PL-43b'	1328	.08	.022	1.4	.18
PL-44a	1257.9	.19	.023	.71	.18
PL-44b	1257.9	.28	.023	.82	.18
PL-44c	1257.9	.23	.017	.64	.15
PL-44d	1257.9	.13	.018	.58	.14

Table 14.--*Carbonate mineralogy of greater than 2-micrometer fraction of sediment in gravity cores from Pyramid Lake, Nevada*

[Small content of calcite prevented determination of magnesium content by X-ray diffraction; monohydrocalcite was not detected]

Core number	Depth (centimeters)	Weight percent	
		Aragonite	Calcite
1	1	3	5
	10	6	3
	60	7	3
	100	7	5
	140	9	3
2	1	6	3
	60	9	5
	120	10	3
	180	8	3
3	1	8	3
	10	10	<3
	50	12	3
	100	13	3
	150	10	3
	205	12	3
4	1	9	3
	60	13	3
5	50	11	3
	60	11	3

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