UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

A HYDROCHEMICAL RECONNAISSANCE STUDY OF THE WALKER RIVER BASIN, CALIFORNIA AND NEVADA

By

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Open-File Report 83-740

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

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1983

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ABSTRACT

During 1975 and 1976, a large number of water and sediment samples were collected from the Walker River Basin. Additional surface water samples were collected during 1980 and 1981. Data are given herein for chemical analyses of snowmelt, tributary, river, spring, well, lake, reservoir, lake sediment pore fluid, tufa, lake and river sediment samples. These data provide the basis for consideration of processes which govern the chemical evolution of large closed basin hydrologic systems in the Basin and Range Province of the Southwestern United States.

INTRODUCTION

The Walker River Basin, a part of the Basin and Range Province, is located in west-central Nevada and adjacent areas of California (fig. 1). The 10,900 km^2 basin is drained by the east and west forks of the Walker River and by numerous small ephemeral tributaries (fig. 2). The entire drainage area forms a closed basin with no external outlet.

The purpose of this report is to make available all chemical data collected by us on the system since 1975. These data serve as a basis for future studies of the geochemical evolution of this system.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to Jim Hainline, formerly associated with the Desert Research Institute (DRI), Reno, Nevada, who participated in most of the sample collection activities and to Pat Harris and Jim Hideker, of the Water Quality Laboratory (DRI), who supervised all of the chemical analyses excepting neutron activation analyses. Helen Michel, of the Lawrence Berkeley Laboratory, Berkeley, California, and Charles Smith, of the Lawrence Livermore National Laboratory, Livermore, California, were responsible for the neutron activation studies. Thanks go also to C. M. Skau of the University of Nevada, Reno, who gave us access to his collection of snow samples and to A. S. Van Denburgh, of the Carson City office of the U.S. Geological Survey, who made available historical data on the chemical composition of Walker Lake. The critical reviews of this paper by G. I. Smith and Blair Jones, both of the U.S. Geological Survey are much appreciated. The work upon which the release 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 the National Uranium Resource Evaluation program sponsored by the U.S. Department of Energy, as authorized under W-7405-Eng-48; in part by Directors Development funds from the Lawrence Berkeley Laboratory, as authorized under U.S. Department of Energy contract W-7405-Eng-48; and in part by the U.S. Geological Survey, purchase no. 2-9150-2130.

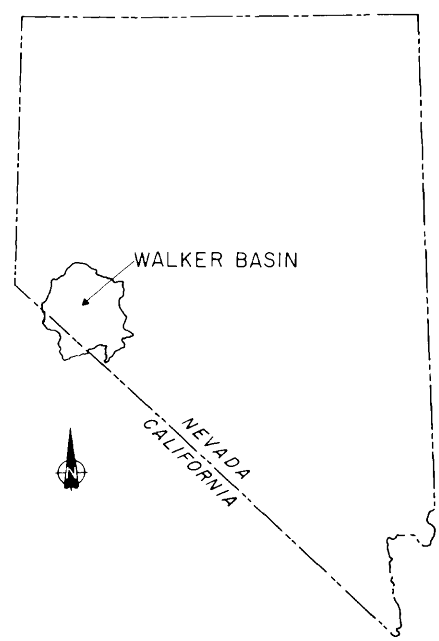

Fig. 1. Location of the Walker River Basin.

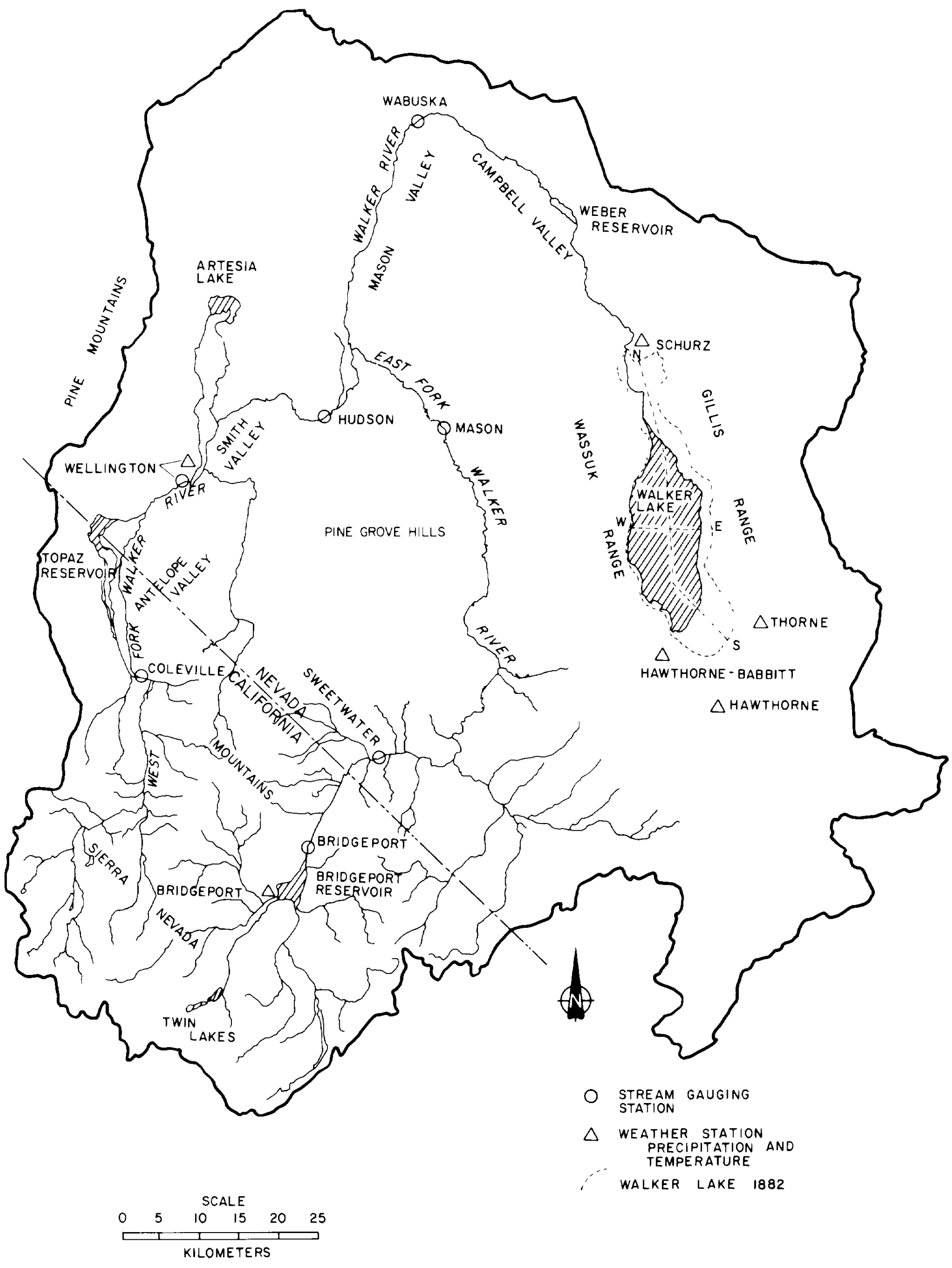

Fig. 2. Walker River drainage system.

METHODS

The data presented in this report are for samples collected during two time periods: 1975 to 1976 and 1980 to 1981. Neutron activation analyses (NAA) of various solid and liquid samples were done at two laboratories. Samples taken during 1975 to 1976 were analyzed at the Lawrence Livermore National Laboratory (see Benson and Leach, 1979, for discussion of analytical procedures). Neutron activation analyses as well as X-ray fluorescence (XRF) analyses of samples collected in 1980 to 1981 were performed at the Lawrence Berkeley Laboratory (see Asaro and others, 1981 and Giauque and others, 1977, for a discussion of analytical procedures). Other analyses of samples collected during both field seasons were done at the Water Quality Laboratory of the Desert Research Institute, Reno, Nevada. Methods of analysis were primarily those discussed in American Public Health Association (1971) and were tabulated in Benson and Leach (1979).

Measurements of temperature, pH, alkalinity, dissolved oxygen, and Eh of springs, wells, river, and reservoir samples, were made in the field. Dissolved oxygen contents of well samples were obtained with an air calibrated Yellow Springs model 57 oxygen meter. The 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. 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. Geothermal waters were diluted 10:1 with distilled deionized water to slow the polymerization of silica.

Water samples taken from Walker Lake were collected using Van Dorn bottles. Dissolved oxygen, temperature, and pH measurements were done _in situ_ using a Hydrolab Surveyer model 6D. Alkalinity titrations were initially done in the field until it was determined that alkalinity data determined in the laboratory were in excellent agreement with field data. Preservation and filtration procedure used for Walker Lake water samples were identical with those procedures discussed above.

Samples at and below the sediment-water interface of Walker Lake were taken, respectively, by Eckman Dredge and coring devices. Of seven cores taken, six were obtained using a Phleger gravity corer containing a plastic liner. The cores ranged in length from 77 to 180 cm. An additional 4.5 m core was obtained using a Mackareth coring device. After core recovery, the 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^{o} 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. This was done to prevent ion exchange and precipitation reactions. A study of fluid chemistry as a function of amount extracted showed that the first few milliliters were often subject to chemical mixing processes brought on by shearing processes which occurred along the liner wall during penetration of the coring device. Therefore, the first 5 ml of extracted fluid was routinely discarded. Measurements of pH and Eh were made on the next extracted aliquot. The remaining extracted fluid was filtered through a 0.1 μm membrane into two vials. 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.

Sulfide determinations were made by electrode on several extractions from core E. Standards of 1, 5, 10, 50, and 100 mg/l sulfide prepared from $Na_2S \cdot nH_2O$ were made up in a 25 percent SAOB preservative. Two ml of pore fluid was filtered through a 0.45 μm membrane attached to a collecting syringe. The solution was then injected into a vial containing 2 ml of 50 percent SAOB preservative. The sulfide measurement was then made and compared to a plot of the logarithmic concentrations of sulfide standards versus millivolts.

Several core samples, 10-20 cm in length, were radiocarbon dated at the Center for Climatic Research in Madison, Wisconsin. These samples received acid treatment prior to analysis in order to prevent contamination from carbonate precipitates.

The mineralogic composition of the principal silicate and carbonate minerals contained in several cores was semi-quantitatively determined by X-ray diffraction techniques (see Spencer, 1977, for a summary of the methods involved). Cation exchange capacities as well as concentrations of sodium, potassium, calcium, and magnesium occupying exchange sites in 10 samples of sediment from core G were also determined (see Spencer, 1977, for a discussion of analytical methods).

Results of NAA of dredged and cored sediments reflect not only the composition of the sediment itself, but also the composition of dissolved solids evaporated onto the sediment prior to analyses. A study of the potential degree of contamination resulting from this process was made using data for the 60-70 cm interval of core B. Given the relative amount and composition of the pore fluid, as well as the amount and composition of the solid (including evaporated contaminant), calculations showed that significant (>2%) contamination occurred with respect to only five elements: sodium, bromine, arsenic, antimony, and ruthenium. Pore fluid data were lacking for six elements: gadolinium, gold, lutetium, mercury, rubidium, and terbium; hence the degree of contamination for these elements could not be assessed.

THE DATA

Figure 3 shows the locations of wells (table 1), creeks (table 2), reservoirs (table 2), springs (table 3), and river and tributary sites (tables 4 and 5) sampled in 1975. Note that total alkalinity is expressed as ppm bicarbonate, and total dissolved orthophosphorus as ppm phosphate in these and most other tables presented in this work. On figure 4, the locations of shallow wells in the agriculturally-developed Mason Valley are shown. In tables 1 through 5 data resulting from NAA begins with the uranium (U) entry. The chemical compositions of shallow ground water sampled from these

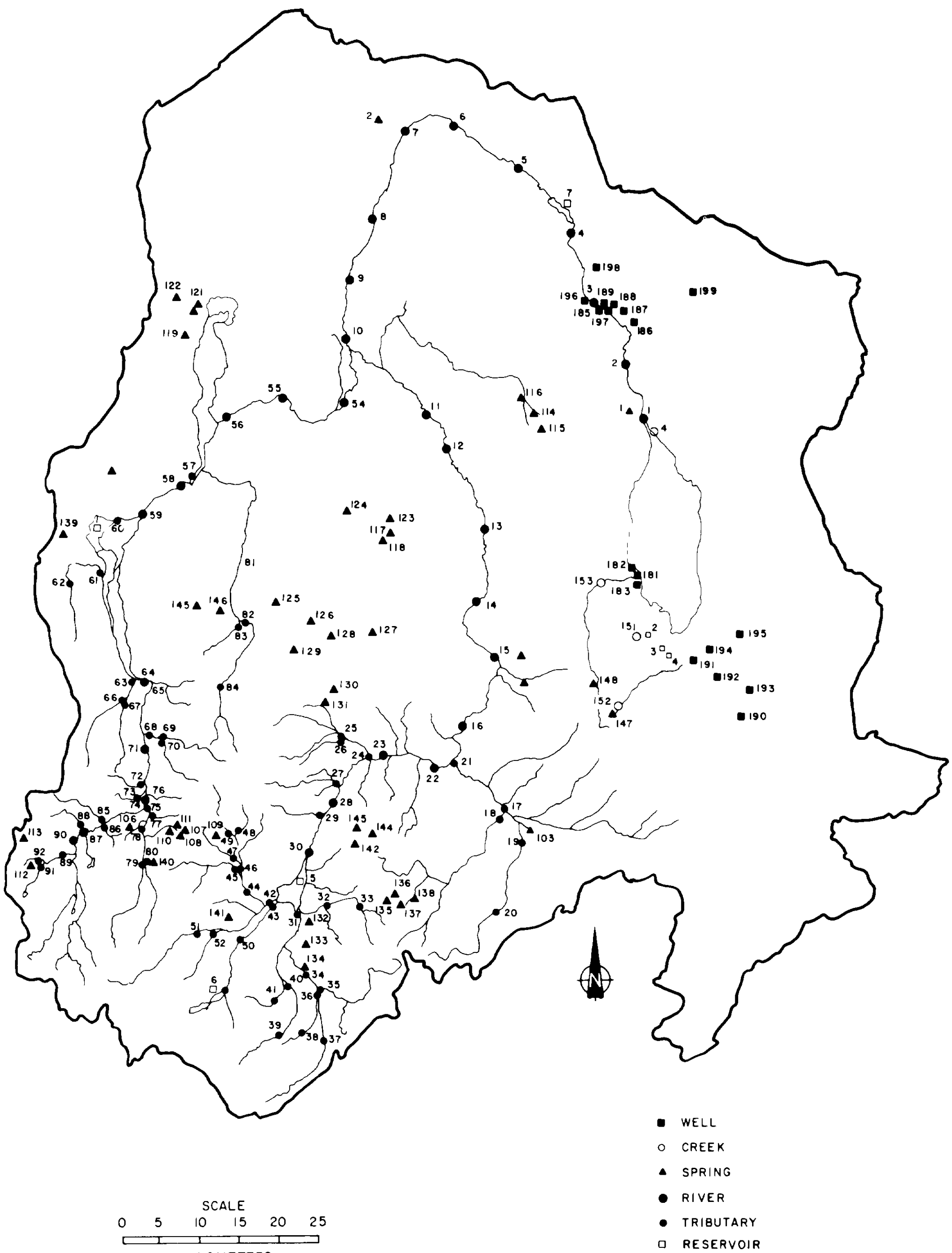

Fig. 3. Sample locations

Table 1.--Chemical compositions of well waters in the Walker Basin

[Locations in AMS coordinates; depth of well in meters (m); temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts; analyses for chemical constituents reported in parts per million (ppm) and parts per billion (ppb); one gram per kilogram (1 g/1 kg = 1 ppm = 10^3 ppb]

WALKER BASIN WELLS

Site	Coordinates	Depth (m)	DATE	T°C	pH	EC	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)
WW 1	4279250N347650E		6/10/75	16.0	8.23	1286	3.2	3.6	286	10.8	150	138
WW 2	4280200N346850E		6/10/75	17.0	7.95	421	1.4	.54	92.0	1.98	10.6	61
WW 3	4278425N347750E		6/11/75	19.0	8.05	842	17.6	4.71	155	8.34	63.0	114
WW 5	4312200N342800E	116	8/12/75	18.0	7.72	247	4.9	.54	46.0	3.0	6.7	24.0
WW 6	4310600N346875E	30	8/12.75	25.0	7.38	491	48.0	11.7	34.0	7.0	30.6	80.0
WW 7	4312350N345900E		8/12/75	19.0	7.22	593	48.6	11.8	59.6	6.9	25.3	72.0
WW 8	4312550N344200E	14	8/12/75	16.0	7.02	992	87.5	23.4	89.0	6.7	37.4	148
WW 9	4312600N343800E		8/12/75	17.0	7.12	827	85.0	19.3	66.3	6.7	25.3	108
WW 10	4261500N360300E		8/13/75	23.0	7.35	1105	106	23.0	78.0	5.7	78.4	321
WW 11	4268600N354650E		8/13/75	49.5	7.75	1146	63.8	4.5	162	5.9	55.8	363
WW 12	4266500N357850E		8/13/75	24.0	7.50	1146	77.5	16.0	126	5.9	68.0	340
WW 13	4264950N361350E	129	8/13/75	27.5	7.52	1167	82.0	9.7	188.	11.9	85.6	405
WW 14	4269550N356200E	113	8/13/75	26.0	7.42	1115	74.0	8.4	138.	7.4	52.9	193
WW 15	4271700N359600E	168	8/13/75	39.5	8.62	816	18.2	.25	135.	4.4	60.4	204
WW 16	4313350N340300E	31	8/14/75	20.0	7.95	409	15.8	2.22	65.5	6.5	15.8	59.0
WW 17	4311900N343100E	23	8/14/75	20.0	7.82	257	13.4	2.05	39.0	3.0	6.8	28.3
WW 18	4317350N341150E	10	8/14/75	26.0	7.58	452	36.9	8.17	47.5	4.3	11.1	49.0
WW 19	4314000N354000E		8/14/75	14.0	9.41	3010	2.7	.08	672	9.2	296	338

Site	HCO_3 (ppm)	SiO_2 (ppm)	PO_4 (ppm)	F (ppm)	B (ppm)	Br (ppm)	DO (ppm)	Al (ppm)	Li (ppm)	Fe (ppm)	Sr (ppm)	NO_3 (ppm)	As (ppm)
WW 1	383	20	1.30	3.57	2.00	1.40	1.5	.04	.03	.03	.09	.35	.040
WW 2	173	19	.46	.35	.49	.15	8.2	.04		.04		3.3	
WW 3	245	21	.15	.95	.90	1.26	4.4	.04	.02	.01	.21	1.8	
WW 5	110	56	.34	1.25	.25		2.2	.24	.02	.10	.04	.13	.080
WW 6	145	52	.09	.27	.17	.76	2.4	.20	.04	.02	.36	.40	
WW 7	236	42	.37	.44	.51	.52	4.0	.18	.04	.02	.39	3.9	.040
WW 8	378	42	1.64	.74	.78	.60	2.7	.33	.04	.42	.65	.09	.060
WW 9	375	32	.03	.25	.67	.40	2.1	.20	.04	.42	.68	.75	.007
WW 10	110	29		.21	1.25	.86	3.9	.09	.02	.01	.62	.71	
WW 11	51.5	106		1.57	1.01	1.10	2.3	.21	.15	.01	.87	.22	.020
WW 12	96.3	24		.90	1.82	.88	5.6	.05	.03	.02	.52	.62	
WW 13	134	58	.03	1.09	2.20	1.00	3.3	.04	.15	.02	.70	.40	
WW 14	260	44	.06	2.85	1.15	.66	4.3	.17	.33	.03	1.29	51	.060
WW 15	61.3	136	.06	3.35	1.02	.64	2.0	.05	.05	.03	.11	.04	.100
WW 16	148	49	.19	1.43	.37	.58	2.2	.04	.01	.06	.12	.58	.080
WW 17	111	42	.06	.84	.27	.20	2.8	.12	.02	.01	.12	.35	.040
WW 18	214	26		.57	.32	.28	2.8	.21	.03	.01	.28	.80	
WW 19	542	38	1.98	8.56	8.10	3.50	3.5	.15		.01	.12	.09	.710

Table 1.--Chemical compositions of well waters in the Walker Basin--(continued)

WALKER BASIN WELLS (continued)

	U (ppb)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cr (ppb)	Co (ppb)	Fe (ppb)	Mo (ppb)	Rb (ppb)	Ru (ppb)	Sc (ppb)
WW 1	9.3±0.2	72±8	44±35	132±1	4.4±1.2	3.5±0.4	.23±0.2	63±13	64±6		.61±29	26±2
WW 2	.71±0.1			55.8±0.5	2.6±0.9	3.8±0.3	.20±.02	46±26				25±3
WW 3	3.3±0.1		89±23	55.3±0.6	12.7±0.9	2.1±0.3	.66±.19		14±3			
WW 5		92±3			8.2±1.6	6.4±1.1	.79±.25					25±11
WW 6	3.2±0.4	14±2		18.0±1.4	43±2	9.5±1.2	.80±.20	218±112				127±13
WW 7	17.1±0.6	19±3	81±26	14.6±1.7	42±3	7.0±1.3	1.06±.19		30±13		1.8±0.9	87±13
WW 8	49±1	38±3	254±41	8.6±2.5	64±3		.78±.20	417±93	163±29		2.1±1.3	26±20
WW 9	61±1	6.3±1.8	152±45	7.9±1.6	62±3	5.0±1.3		293±116	130±29		5.2±1.7	51±12
WW 10	15.0±0.6		115±33	21±2	15.0±0.6	4.4±1.1	.35±.30		76±23			53±10
WW 11		22±6		12±4	51±3	4.8±1.4				25±8		40±10
WW 12	7.6±1.4			12±3	67±4	31±2		680±120				
WW 13	7.3±1.0	18±6		50±4	74±5	20±2	.66±.19		118±28	25±8		42±11
WW 14	23.2±0.9	55±4	93±72	37±3	65±4	7.9±1.6	2.23±.27		93±23		1.8±1.4	57±15
WW 15		72±4		17±2	13±3	3.5±1.2						
WW 16	5.0±0.6	77±3		16±1	12±2	6.7±1.3						
WW 17	3.2±0.4	39±2		12±1	21±4	7.6±1.8						
WW 18	6.3±0.4			15±1	29±2	11±2						

	Na (ppm)	Sr (ppm)	Ta (ppb)	W (ppb)	Zn (ppb)	Zr (ppb)
WW 1	25.0±0.4	.10±.02		56±3	17±1	38±8
WW 2				12±7	178±4	
WW 3		.21±.05		8±2	187±4	12±9
WW 5	52±2			28±3	518±27	
WW 6	37±1				564±39	
WW 7	58±2	.60±.14	.12±.08		546±36	
WW 8	92±2	.88±.16			373±19	146±61
WW 9	64±3	.83±.14			447±29	
WW 10	76±2	.76±.21			474±16	
WW 11	152±10	1.09±.18		48±6	431±17	
WW 12	123±5	.74±.16	.43±.13		185±22	
WW 13	181±9	.85±.15			289±20	
WW 14	132±1	1.61±.24		20±4	343±22	114±66
WW 15	132±2			128±5	232±56	
WW 16	62±2			10±2	138±50	
WW 17			4.7±2.5	13±2	316±19	
WW 18					663±23	

Table 3.--Chemical compositions of spring waters in the Walker Basin

[Locations in AMS coordinates; temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts; analyses for chemical constituents in parts per million (ppm), parts per billion (ppb) and parts per trillion (ppt)]

WALKER BASIN SPRINGS

Site	Coordinates	Date	T°C	pH	EC	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	F (ppm)	B (ppm)	Br (ppm)	Al (ppm)	Fe (ppm)	Sr (ppm)	NO_3 (ppm)
WS 1	4300750N345625E	6-10-75	16.0	8.70	1109	2.0	2.1	249	11.3	63.0	128	392	30	.39	3.4	1.5	2.1	.15	.01	.13	.09
WS 2	4337900N313900E	6-11-75	80.0	7.60	1570	30.0	.26	276	11.5	42.5	520	65.7	86	.06	7.2	1.2	.71	.13		1.3	.09
WS 3	4247100N334100E	6-11-75	13.0	7.80	265	16.7	8.0	26.9	3.3	13.5	18.4	120	42	.09	.19	.20	.12	.06		.16	6.6
WS 4	4265900N333200E	6-11-75	21.0	7.70	405	42.1	10.6	25.2	2.6	6.2	54.5	185	44	.21	.19	.12		.04	.02	.33	.09
WS 5	4269950N332700E	6-11-75	16.0	7.50	609	39.4	14.5	57.5	11.7	12.5	137	178	57	.06	.34	.17	.56	.05	.01	.33	.27
WS 6	4247950N284200E	6-18-75	10.0	6.83	303	37.7	10.2	13.0	2.8	4.2	7.7	189	28	.06	.10	.08	.20	.02	.01	.50	.84
WS 7	4246675N291325E	6-18-75	8.0	7.01	118	8.3	2.2	14.7	1.0	1.0	3.1	75.7	34	.33	.09	.09		.04	.02	.05	1.2
WS 8	4247300N291150E	6-18-75	8.0	6.70	115	6.2	1.6	18.4	1.0	.80	3.4	69.5	38	.42	.13	.09		.03			.58
WS 9	4246100N294800E	6-18-75	14.0	6.93	45	4.0	1.6	3.5	.55	.30	2.4	28.6	18	.06	.08	.05	.15	.03	.01	.05	.09
WS 10	4247000N290200E	6-18-75	59.0	6.78	2653	23.9	9.5	580	40.4	165	243	1120	107	.36	4.2	7.8	.05	.19	.02	1.5	.04
WS 11	4247300N290200E	6-18-75	11.0	6.62	172	.80	.30	39.6	2.8	1.4	4.1	112	53	.72	.16	.05	.06	.05	.01		1.8
WS 12	4242100N272925E	6-18-75	19.0	6.35	2490	54.4	12.1	520	27.5	60.0	116	1460	99	.09	2.1	1.3	.92	.16		2.0	0.4
WS 13	4244800N271300E	6-18-75	3.0	6.62	57	6.1	2.6	2.3	1.0	.30	2.0	37.3	17		.08	.08	.12	.02			.22
WS 14	4299650N334350E	6-19-75	19.0	7.80	227	22.8	3.9	16.8	1.8	19.0	26.9	68.3	21	.06	.09	.07	.54	.04		.13	2.5
WS 15	4297575N335150E	6-19-75	13.1	7.40	223	20.3	3.6	21.0	1.8	19.2	26.1	64.6	20		.09	.06	.42	.03		.12	4.9
WS 16	4301400N332800E	6-19-75	15.5	7.22	242	23.0	4.1	18.3	1.7	21.0	27.4	73.8	23	.09	.09	.07	.37	.02		.13	3.1
WS 17	4283200N316500E	6-19-75	19.7	7.95	730	80.2	18.4	35.0	4.0	21.2	210	140	23		.17	.11	.70	.40	.03	.60	3.9
WS 18	4283050N315800E	7-14-75	15.6	7.30	787	85.9	18.8	37.0	3.5	22.0	229	148	26	.18	.14	.08	.40	.35	.02	.60	9.0
WS 19	4308700N291400E	7-15-75	61.5	8.98	500	.15	88.5	1.1	23.0	14.2	34.1	53		2.9	.25	.32	.63	.05	.30		
WS 20	4311550N292250E	7-15-75	19.8	7.53	320	25.8	4.5	32.7	1.0	10.4	65.0	90.4	24	.06	.38	.09	.14	.67	.02	.20	.53
WS 21	4311900N292250E	7-15-75	18.5	7.42	298	18.2	2.5	40.4	.93	7.7	41.8	105	27	.03	.55	.18	.14	.20		.10	2.0
WS 22	4325600N289250E	7-15-75	13.8	7.70	153	17.6	4.0	8.7	.79	2.0	5.2	83.3	17		.08	.05	.06	.16	.01	.20	2.5
WS 23	4285700N316200E	7-23-75	14.5	7.70	535	44.3	15.1	43.2	1.4	21.6	54.5	224	30	.03	.25	.08	.91	.84	.06	.40	.13
WS 24	4287600N311200E	7-23-75	13.5	7.32	1403	141	55.6	63.0	6.6	53.1	387	326	20		.24	.08	1.2	.17	.03	2.0	.09
WS 25	4276200N302500E	7-24-75	14.0	7.38	368	32.2	10.5	24.6	7.4	7.9	29.6	181	66	.12	.18	.04	.27	.33	.04	.20	.09

Table 2.--Chemical compositions of miscellaneous lakes, reservoirs and creeks in the Walker Basin

[Locations in AMS coordinates; temperatures in degrees celsius (°C); electrical conductivity (EC) in millivolts; analyses for chemical constituents reported in parts per million (ppm), and parts per billion (ppb)]

Chemical compositions of miscellaneous lakes, reservoirs, and creeks in the Walker Basin

Nr	Site	Location	Date	T^oC	pH	EC	Total Alkalinity (ppm HCO_3)	Cl (ppm)	SO_4 (ppm)	F (ppm)	Na (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)	SiO_2 (ppm)
WZ 1	Topaz Reservoir	4284450N279450E	8-19-75	18	7.9	113	64	2.4	4.8	.17	7.4	1.5	12	2.3	10
WZ 2	Rose Creek Reservoir	4272450N347650E	8-20-75	16	8.2	141	74	1.8	12	.08	5.7	1.0	20	2.2	13
WZ 3	Cat Creek Reservoir	4267550N350700E	8-20-75	20	7.9	255	136	3.9	21	.20	12.0	2.3	32	5.0	22
WZ 4	Black Beauty Reservoir	4266800N352050E	8-20-75	19	8.2	231	117	3.7	22	.14	12.1	1.7	28	4.8	19
WZ 5	Bridgeport Reservoir	4240450N305350E	8-25-75	20	8.4	166	100	1.3	7.5	.11	9.1	2.7	20	3.4	18
WZ 6	Lower Twin Lake	4226000N295250E	8-25-75	17.5	7.1	43	24	0.1	4.3	.11	1.3	0.5	6.2	0.72	6
WZ 7	Weber Reservoir	4325000N337500E	9-05-75	20.6	9.1	948	--	49	117	2.3	134	14	33	21	32
WC 1	Rose Creek	4271800N347400E	8-19-75	8	8.0	142	78	1.7	10	.08	5.8	0.8	19	2.3	13
WC 2	Cat Creek	4262600N345300E	8-21-75	7	7.1	122	68	1.7	7.2	.08	7.0	1.8	15	2.5	20
WC 3	Cottonwood Creek	4278300N342550E	8-21-75	8	7.5	167	101	2.6	13.0	.13	9.3	1.0	19	5.9	23

Nr	Al (ppm)	Sr (ppm)	Li (ppm)	B (ppm)	U (ppb)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Mo (ppb)	Na (ppm)	Ru (ppb)
WZ 1	.03	.11	.02	.14	1.6±0.2	5.2±0.7		5.8±0.5	10±1		7.2 ± 0.3	
WZ 2	.05	.08	<.01	.08	4.4±0.2	3.2±0.8	72±34	7.4±0.4	17±1	22±8	5.6 ± 0.2	
WZ 3	.09	.24	.01	.09	12.7±0.3		76±24	18.3±0.8	32±2	43±8	11.4 ± 0.6	1.4±0.8
WZ 4	.09	.16	<.01	.10	7.3±0.3		81±37	17.2±0.7	27±2	29±9	11.3 ± 0.5	
WZ 5	.12	.22	.02	.12	1.0±0.2	6.5±0.8		7.2±0.6	18±2		8.4 ± 0.2	
WZ 6	.08	.04	<.01	.05	0.6±0.1			2.6±0.3	6±1		1.55 ± .03	
WZ 7	.12	.29	.03	1.6	14.4±0.3	33±2		35±1	40±1		41±1	
WC 1	.05	.09	<.01	.06	4.5±0.2	1.7±0.6		7.8±0.5	18±1	21±9	5.4±0.2	2.4±0.9
WC 2	.08	.08	<.01	.08	5.6±0.2			9.0±0.5	13±1		6.6±0.3	
WC 3	.12	.10	<.01	.10	1.3±0.2			13.6±0.6	15±1		8.8±0.3	

Table 3.--Chemical compositions of spring waters in the Walker Basin--(continued)

WALKER BASIN SPRINGS (continued)

Site	K (ppm)	Rb (ppb)	Ru (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppm)	Ta (ppb)	W (ppb)	Zn (ppb)
WS 1										
WS 2										
WS 3	3.1±1.1					24.1±0.1	.36±.10			
WS 4						25.6±0.9	.34±.09			
WS 5	14±3				57±11	55.2±0.3	.51±.16			34±21
WS 6	4.2±1.2				36±12	12.4±0.4				24±9
WS 7					83±13	14.3±0.4				78±13
WS 8				172±51	111±15	17.7±0.8				
WS 9				52±15		3.5±0.1			4.9±0.6	
WS 10		185±15				528±27	1.4±0.2			
WS 11						40.2±1.6				
WS 12		110±13				501±21	2.0±0.2			
WS 13						2.37±0.6			2.6±0.3	
WS 14						16.9±0.7				73±17
WS 15						16.5±0.7				
WS 16						16.8±1.0				370±19
WS 17			7.2±1.8		280±24	39.2±1.3				2536±80
WS 18			7.4±1.4		104±16	40.1±1.8	.86±.23			607±25
WS 19		22±6			54±11	95±5			60±3	467±36
WS 20					117±22	34.2±1.0		.36±.25	9.7±1.5	2053±45
WS 21					39±12	42.1±1.6		.24±.13	20.4±1.7	549±23
WS 22			1.1±0.9			9.1±0.5				557±25
WS 23					172±19	43.3±1.7	.60±.16			1243±35
WS 24					117±18	64.7±2.7	2.4±0.4			1457±38
WS 25	9.5±2.3				79±14	24.3±1.1	.48±.18			1258±52

Table 3.--Chemical compositions of spring waters in the Walker Basin--(continued)

WALKER BASIN SPRINGS (continued)

Site	U (ppb)	Sb (ppb)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppb)	Cr (ppb)	Co (ppb)	Fe (ppb)	Mo (ppb)
WS 1											
WS 2											
WS 3	9.03±0.38		8.4±1.3	88±39	34.8±1.1	22±3		3.5±1.3	671±205		42±17
WS 4	14.2±0.4		22.4±1.4	135±43	28.7±1.1	37±4		4.0±1.6			47±12
WS 5			73.1±2.3	85±28	34.8±1.6	41±3		7.0±2.1			
WS 6	2.8±0.3		6.5±0.9		12.0±0.8	40±4		5.3±1.6	696±216		
WS 7			11.6±1.0		9.6±0.7	11±4		10.9±1.6	1204±255		
WS 8			10.5±1.2		9.7±0.8	14±4		6.4±1.6	734±224		
WS 9			1.7±0.5		5.2±0.4	13±2		4.5±1.6		662±126	
WS 10		9.2±1.0	1141±26		217±12	40±5	120±1				
WS 11							66±.19				
WS 12					122±19	53±5	63±1		1228±292		
WS 13			3.2±0.4		3.2±0.3	13±2		5.5±1.3			
WS 14	6.4±0.3		2.8±0.9		43.2±0.9	17±2					
WS 15	7.6±0.3		3.0±0.9		45.0±0.9	17±2					
WS 16	4.6±0.3		5.6±1.1		47.2±0.9	23±4		6.6±1.4			
WS 17	61.4±1.4				57.3±1.2	106±5		13.8±2.4	2606±341		145±17
WS 18	53.8±1.0	2.6±0.2	5.7±1.9		49.5±1.7	94±3		6.0±1.9	1730±266		110±17
WS 19			31±3		18.1±1.8	10±2	11.7±0.4	3.1±1.2	507±163		
WS 20	7.6±0.3			102±33	23.0±1.0	41±3		7.1±2.2			57±11
WS 21	4.0±0.4		9.8±1.3		32.5±1.1	24±3					67±10
WS 22	6.4±0.2		2.2±0.7	65±23	16.3±0.5	32±3	.54±.27	3.6±1.3			33±5
WS 23	14.9±0.4		6.6±1.4	185±42	47.6±1.2	63±4		8.3±1.5	745±179	380±98	38±11
WS 24	34.2±0.8			208±62	168±2	333±8		9.2±2.2			83±13
WS 25	1.3±0.3		36.5±1.8		50.1±1.2	43±3					

Table 3.--Chemical compositions of spring waters in the Walker Basin--(continued)

WALKER BASIN SPRINGS (continued)

Site	K (ppm)	Rb (ppb)	Ru (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppm)	Ta (ppb)	W (ppb)	Zn (ppb)
WS 26	14±4		3.3±1.9			40.0±1.7	.50±.20			561±27
WS 27						13.8±0.5				
WS 28			12.6±2.1			58±3	.83±.14			
WS 29					26±11	35.7±1.6				
WS 30					88±14	25.5±1.0				703±25
WS 31						65±3			16±3	
WS 32		287±17				1038±6	5.0±0.5		127±31	
WS 33		296±19				1028±38	4.3±0.4			
WS 34	7.0±0.6	19±6				15.2±0.6	.28±.08			
WS 35	1.7±0.4				109±16	5.4±0.2				868±63
WS 36	3.0±0.6			63±24	70±13	8.1±0.3				866±28
WS 37	2.7±0.5				103±18	3.58±.04				911±28
WS 38	1.6±0.3				148±19	2.9±0.1				783±26
WS 39	1.7±0.5			110±25		4.1±0.2				
WS 40					21±12	5.4±0.2		.34±.18	4.1±0.8	238±20
WS 41		61±10				266±15	1.9±0.4		332±13	152±15
WS 42			2.0±1.5		62±19	6.9±0.2				584±27
WS 43	.81±.16				68±12	4.5±0.2			1.9±0.4	92±12
WS 44						4.2±0.2				64±14
WS 45			2.2±1.4			17.0±0.5	.33±.11	4.5±3.1		246±43
WS 46					55±15	24.9±1.2				540±29
WS 47					53±13	5.16±.06				23±8
WS 48	3.3±0.7					14.3±0.6				
WS 49										

Table 3.--Chemical compositions of spring waters in the Walker Basin--(continued)

WALKER BASIN SPRINGS (continued)

Site	U (ppb)	Sb (ppb)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppb)	Cr (ppb)	Co (ppb)	Fe (ppb)	Mo (ppb)
WS 26	28.4±0.6		27.6±2.2		77.4±1.6	40±3		6.6±1.9			96±17
WS 27	1.2±0.3	1.1±0.4	3.4±0.9		31.5±0.9	14±2		5.8±1.7			
WS 28	124±1		9.5±2.8		155±2	57±3			917±262		296±22
WS 29	1.9±0.4		5.0±1.8		61.3±1.4	24±3		6.3±2.0	1208±252		75±14
WS 30	9.5±0.4		6.2±1.4		65.2±1.4	27±3		4.8±1.2	1242±327	287±175	
WS 31	2.6±0.4		36.0±2.8		41.4±1.8	5.8±1.9	2.2±0.2		718±332		52±12
WS 32		12.5±1.8	1250±34		415±15	34±8	310±3		1122±284		
WS 33		5.3±1.4	1654±74		460±14	65±9	328±3				
WS 34	1.4±0.4		5.5±0.8		20.6±1.0	21±4	1.1±0.2	4.5±1.4	647±233		
WS 35			6.2±0.6		15.3±0.6	13±2	2.4±0.2	6.6±1.6	746±258		
WS 36			4.9±0.8		19.0±0.6	13±2	1.4±0.3	4.2±1.5	966±233		
WS 37		.97±.16	6.8±0.7		11.4±0.6	27±5		8.6±2.0	966±224		
WS 38		1.2±0.3	38.3±0.7		8.8±0.4	13±3	2.1±0.3	6.4±1.6	1234±614		
WS 39			3.1±0.4		6.4±0.4						
WS 40	.46±.24				6.9±0.5	15±2		3.9±1.2	618±187		
WS 41		2.2±0.9	148±10		21±5	22±3	58±1				
WS 42	25.8±0.5			99±76	10.5±0.6	24±2					46±9
WS 43			4.8±0.5	219±30	9.7±0.4	5.2±2.0			946±241		
WS 44	2.8±0.2				7.8±0.4	12±3					
WS 45	20.6±0.6			88±69	31.7±1.0	19±2					58±11
WS 46	6.4±0.7				42.6±1.6	23±3					
WS 47	.71±.17				8.7±0.5	9.5±1.8					
WS 48	.95±.53				38.5±0.8	27±3					
WS 49											

Table 3.--Chemical compositions of spring waters in the Walker Basin--(continued)

WALKER BASIN SPRINGS (continued)

Site	Coordinates	Date	T°C	pH	EC	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	F (ppm)	B (ppm)	Br (ppm)	Al (ppm)	Fe (ppm)	Sr (ppm)	NO_3 (ppm)
WS 26	4272750N306800E	7-24-75	16.0	7.30	500	33.0	17.4	40.4	9.0	17.1	28.5	254	66	.34	.18	.06	.57	.92	.15	.30	1.6
WS 27	4272350N314700E	7-24-75	20.0	7.75	199	14.9	7.0	14.3	4.3	4.7	5.4	112	70		.11	.06	.12	.04	.02	.10	.35
WS 28	4271250N309200E	7-24-75	10.0	7.75	785	63.2	27.9	60.9	8.5	27.6	57.0	380	46	.68	.32	.14	.84	.11	.01	.60	1.3
WS 29	4269450N304700E	7-24-75	20.0	7.15	362	29.8	8.0	34.5	1.5	5.6	20.0	203	44	.12	.28	.08	.53	.05	.06	.10	.53
WS 30	4264650N309700E	7-24-75	18.5	7.50	308	22.8	8.0	26.8	5.0	13.1	30.5	127	29	.15	.23	.06	.57	.15	.02	.10	.93
WS 31	4262900N308400E	7-24-75	17.0	9.15	335	4.7	.81	62.6	1.3	7.7	63.1	75.1	32	.06	2.3	.17	.40	.02			1.4
WS 32	4235300N307100E	7-25-75	38.0	7.08	4808	16.8	16.3	1160	43.9	215	867	1820	92	1.55	4.6	10.6	2.41	.19	.06	5.6	.40
WS 33	4232800N306500E	7-25-75	32.0	7.00	4900	30.1	18.5	1150	57.1	221	858	1930	54	1.86	4.4	11.4	2.4	.36	.03	5.3	.22
WS 34	4229000N307000E	7-25-75	17.0	7.50	282	20.7	11.3	15.2	6.8	3.0	27.1	135	64	.22	.11	.06		.04		.20	2.6
WS 35	4238100N316300E	7-25-75	9.0	7.00	68	5.5	1.6	5.6	1.5	1.8	3.1	34.5	34	.22	.08	.02	.23	.15	.01	.06	2.2
WS 36	4238800N316750E	7-25-75	8.0	6.70	114	9.1	2.8	8.3	2.7	3.3	3.1	58.4	35	.25	.08	.05	.20	.23	.01	.09	2.5
WS 37	4237650N318400E	7-25-75	9.0	7.09	48	3.6	1.2	3.5	2.1	1.2	2.0	22.9	19	.06	.08	.04		.11	.02		1.8
WS 38	4238400N319800E	7-25-75	8.0	6.25	32	1.8	5.9	3.1	1.0	1.1	5.0	9.0	19	.31	.06	.02		.16	.01		1.8
WS 39	4283200N275150E	8-06-75	11.5	6.72	69	6.8	1.9	4.5	1.6	1.1	1.9	35.7	35	.19	.09	.03	.21	.07	.02	.13	1.5
WS 40	4243650N286450E	8-06-75	10.0	7.41	160	17.3	7.7	5.0	2.0	.70	2.4	105	37	.12	.06	.01	.16	.18	.03	.22	1.6
WS 41	4235650N296450E	8-06-75	62.0	7.41	1495	15.4	4.0	290	10.3	25.0	311	428	228		8.2	1.0	4.1		.11	1.6	.09
WS 42	4245550N312400E	8-07-75	8.0	7.00	144	21.3	1.3	7.3	1.1	1.2	2.9	91.1	24	.03	.27	.04	.06	.10	.01	.14	.13
WS 43	4247300N312550E	8-07-75	7.0	6.70	55	5.6	1.5	3.6	.85	1.2	6.0	20.9	23		.07	.03	1.6	.08		.05	3.0
WS 44	4246650N314550E	8-07-75	7.5	7.85	68	10.7	.54	3.8	.50	.80	2.5	36.9	15	.09	.12	.02	.15	.09		.06	2.7
WS 45	4274675N292200E	8-07-75	12.0	7.01	226	22.9	5.02	18.9	1.7	5.5	6.6	134	32	.19	.20	.07	.21	.15	.12	.23	1.7
WS 46	4274150N295150E	8-07-75	15.0	7.60	280	24.3	7.52	25.0	1.2	8.0	9.9	161	26	.09	.14	.07	.27	.26	.03	.19	3.5
WS 47	4261550N344650E	8-21-75	9.0	6.79	89	9.7	2.0	5.5	1.1	1.5	4.1	48.5	21	.12	.08	.09		.06		.06	.09
WS 48	4265650N342000E	8-21-75	10.0	6.29	238	29.8	4.5	13.9	3.9	2.5	4.4	153	40	.12	.20	.05		.14		.20	.09
WS 49	4290400N281300E	7-24-75	17.5	7.83	518	66.3	16.4	19.3	1.3	7.3	147	132	23	.09	.06	.02		.04	.01	.30	4.2

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975

[Site locations depicted on figure 3; temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts (mV); analyses for chemical constituents in parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt)]

WALKER RIVER SYSTEM (25 June 1975)

Site	T°C	pH	EC (MV)	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	Al (ppm)	Fe (ppm)	NO_3 (ppm)
WR 1	18.5	7.51	237	20.4	5.10	23.2	3.76	7.2	21.2	113	18.4	.28	.53	.06	.66
WR 2	16.5	7.10	224	20.3	4.70	20.7	3.49	6.6	18.4	109	17.7	.25	.37	.03	.49
WR 3	17.3	7.17	224	20.3	4.78	20.2	3.23	6.6	17.4	109	16.9	.25	.28	.03	.40
WR 4	15.9	7.38	224	20.1	4.80	20.3	3.10	6.1	17.9	109	17.5	.18	.35	.03	.27
WR 5	16.0	7.57	227	20.0	4.72	20.3	3.18	6.8	20.2	107	15.9	.09	.18	.04	.27
WR 6	15.9	7.25	220	19.6	4.61	20.3	3.06	6.2	17.9	106	15.9	.12	.20	.05	.31
WR 7	15.6	7.39	218	19.0	4.61	20.4	2.77	6.4	18.2	106	15.3	.09	.15	.05	.27
WR 8	15.4	7.39	182	17.0	4.13	15.4	2.13	4.7	14.2	91.6	14.1	.09	.12	.05	.31
WR 9	15.1	7.03	176	16.4	4.04	14.7	2.00	2.9	13.2	89.4	13.3	.12	.22	.06	.31
WR 10	16.0	7.23	174	16.3	4.04	14.6	1.96	4.7	12.9	88.2	14.1	.03	.29	.06	.27
WR 11	13.9	7.15	194	21.9	4.29	13.1	2.53	2.4	14.1	106	18.3	.09	.29	.09	.22
WR 12	11.2	7.14	193	21.2	4.19	13.0	2.65	2.5	14.3	103	17.8	.06	.39	.13	.09
WR 13	12.5	7.20	184	20.7	4.04	12.6	2.49	2.4	13.9	99.1	17.6		.21	.11	.04
WR 14	14.0	7.14	183	20.4	4.19	13.4	2.54	2.3	14.0	99.1	17.7	.09	.35	.17	.13
WR 15	14.0	7.00	173	20.1	3.78	11.1	2.36	2.1	13.2	93.7	16.3		.35	.17	
WR 16	16.2	7.14	169	19.4	3.78	11.0	2.27	1.9	12.2	91.6	16.6	.03	.19	.11	.44
WR 17	20.2	7.35	199	17.3	5.28	14.0	3.67	4.3	23.9	86.3	38.6	.28	.41	.05	
WR 18	17.0	6.93	100	6.6	2.34	8.8	3.33	2.6	5.0	53.6	41.7	.25	.47	.14	
WR 19	15.0	7.43	188	16.9	4.92	13.2	3.58	4.0	22.3	82.5	39.3	.22	.40	.04	
WR 20	15.5	7.27	153	12.9	3.88	12.3	4.18	3.6	9.3	80.6	39.3	.34	.10	.08	
WR 21	16.5	7.70	264	17.6	5.63	29.2	6.15	7.2	18.1	133	45.9	.40	.16	.06	
WR 22	16.5	7.23	161	18.9	3.60	10.0	2.58	1.8	9.6	88.9	15.1	.06	.16	.10	
WR 23	14.0	7.12	158	18.5	3.52	10.1	2.58	1.7	11.1	87.8	14.9	.06	.39	.18	
WR 24	11.2	7.30	276	34.4	6.71	11.7	3.15	1.6	33.5	129	33.1	.18	.08	.07	.04
WR 25	11.2	7.42	291	38.4	6.90	10.6	2.47	1.6	37.4	131	31.1	.25	.08	.08	.18
WR 26	8.8	6.63	70	9.4	1.37	2.0	.52	.4	14.0	24.2	10.2	.09	.04	.01	.27
WR 27	13.0	6.85	50	5.5	1.30	3.0	1.02	.5	3.4	27.3	16.0	.06	.27	.08	
WR 28	16.4	7.05	137	16.2	2.92	8.6	1.62	1.6	8.6	77.8	12.5		.24	.04	
WR 29	11.7	7.00	63	5.9	2.06	3.9	2.05	.6	2.6	38.7	24.8	.06	.30	.13	

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975) (continued)

Site	K (ppm)	Rb (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppb)	Th (ppt)	W (ppb)	Yb (ppt)	Zn (ppb)	Zr (ppb)
WR 1					23.1±0.4					414±97	
WR 2	3.7±1.1			88±3	20.2±0.4	240±33				457±11	26±9
WR 3	3.1±0.6			54±2	20.1±0.3	200±45		5.5±1.0		371±5	28±17
WR 4			37±33		22.3±0.3					410±48	
WR 5	4.8±1.1				29.4±0.2	722±139		5.3±2.2		334±119	
WR 6					20.3±0.2			14.9±10.6			
WR 7	3.4±1.1				20.4±0.2			15.0±106		500±83	
WR 8					15.3±0.2					632±84	
WR 9	2.5±0.7		32±27		14.6±0.2			11.1±7.8		337±63	
WR 10					14.6±0.4					461±63	
WR 11	3.9±0.8				13.2±0.3					157±153	870±108
WR 12	3.1±0.5	2.3±0.3		22±1	14.1±0.2	205±12	33±10			47±1	10.2±4.7
WR 13	3.0±0.5	3.3±0.7		52±2	12.1±0.3	241±45	32±12			433±7	
WR 14	3.4±0.7				13.2±0.3					567±49	
WR 15	3.0±0.5			125±16	11.1±0.5					572±23	
WR 16	2.7±0.6			43±11	10.6±0.2					357±18	
WR 17	5.6±1.7			82±16	13.8±0.1	655±167				777±30	
WR 18	3.3±0.9			38±11	8.6±0.3	504±168				516±24	
WR 19	4.0±0.4	5.0±0.5		93±2	13.6±0.3	211±60		10.7±7.0	33±11	809±11	
WR 20	5.2±0.7			31±10	15.1±0.3					594±19	
WR 21	8.6±1.7				29.9±0.8					998±178	
WR 22	2.8±0.5		48±39		10.8±0.3					284±38	
WR 23	2.0±0.5	3.0±0.9	54±34	115±3	9.4±0.2	266±56	44±15	2.6±0.6		723±17	
WR 24				65±15	11.2±0.4	750±208		1.9±1.2		983±32	
WR 25			59±38	32±14	10.3±0.4					417±30	
WR 26			29±11	67±14	2.16±.05					770±27	
WR 27	1.2±0.2			37±23	2.86±.02			7.2±0.2		92±12	
WR 28	1.8±0.4	2.9±0.3		40±1	8.99±.18	127±9	73±6		17±7	14±1	9.2±2.8
WR 29		3.1±0.3	15±8	32±1	3.70±.06	94±20	24±6		18±3	202±2	

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975) (continued)

Site	U (ppb)	Sb (ppt)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppt)	Cr (ppb)	Co (ppt)	Fe (ppb)	Mo (ppb)
WR 1	6.33±0.23		16.1±1.7		10.4±0.7	20.7±3.5		18.9±5.0			33±7
WR 2	5.08±0.17		11.5±0.9	73.3±7.2	18.8±0.5	18.7±0.5		4.1±0.3	321±21	79±13	23±5
WR 3	5.00±0.13	235±64	11.3±0.5	74.7±5.4	14.0±0.5	20.3±0.4		10.2±0.4	296±21	104±12	17±2
WR 4	6.07±0.22		16.2±1.3		14.6±0.6	18.8±2.2		19.8±1.7			27±6
WR 5	7.14±0.20		15.3±1.2		13.3±0.6	26.2±1.8					28±6
WR 6	5.53±0.20		10.7±1.4		10.5±0.7	17.3±3.3					24±6
WR 7	5.98±0.22		10.6±1.4		10.6±0.7	22.5±3.0					22±6
WR 8	4.38±0.21		8.4±1.2		10.3±0.6	20.1±2.7					18±6
WR 9	4.07±0.21		6.8±1.2		3.4±0.5	18.4±2.3					18±5
WR 10	3.75±0.17		6.2±1.5		5.2±0.6	20.2±3.0					20±6
WR 11	1.93±0.16		5.5±1.0		13.5±0.6	22.7±2.5		7.6±2.0			31±7
WR 12	1.94±0.06	207±15	6.1±0.6	58.8±1.8	10.8±0.6	17.3±0.4		0.75±0.14	136±14	89±6	13±1
WR 13	1.85±0.09		4.7±0.3	59.6±4.6	3.9±0.2	20.1±0.4		1.9±0.2	258±20	117±12	12±2
WR 14	2.01±0.19		6.6±2.2		8.2±0.8	23.8±2.6					
WR 15	1.47±0.31		8.5±0.8		8.5±0.7	19.4±2.0			1090±228	398±94	
WR 16	1.28±0.26		6.7±0.7		8.5±0.6	24.1±3.2		3.7±1.1	664±256		
WR 17			8.0±1.4		16.7±0.8	22.2±2.6			1143±204		
WR 18		2190±260	6.0±0.8		13.2±0.7	8.8±1.4					
WR 19	0.55±0.05	385±24	5.4±0.7	64.3±3.5	14.9±0.9	21.1±0.5			501±15	39±8	5.4±1.1
WR 20		700±250	9.4±1.7		23.4±0.8	14.6±1.6			542±177		
WR 21	2.85±0.25	670±250	34.7±4.2		26.6±1.3	25.3±2.9					20±8
WR 22	1.00±0.31				7.1±1.4	19.4±2.6					17±10
WR 23	1.25±0.13		3.4±0.2	41.0±5.2	3.1±0.2	20.5±0.4		0.72±0.19	184±16	168±14	9.6±2.4
WR 24	0.99±0.27		5.5±0.9		9.4±0.7	37.7±2.3			964±200		35±10
WR 25	0.78±0.30		6.1±1.1		11.0±0.7	36.2±2.2			681±197		
WR 26					3.4±0.3	13.1±2.2					
WR 27	0.96±0.10	133±54	2.9±0.1		6.2±0.4	8.2±2.3		8.1±1.3	696±532	2244±203	13±2
WR 28	1.32±0.03	89±8	3.3±0.4	42.7±2.1	7.5±0.6	12.6±0.3		136±8	99±9	186±7	8.7±0.7
WR 29	0.61±0.04	59±9	4.2±0.8	52.0±2.0	6.6±0.6	6.3±0.1	178±10	0.47±0.13	60±6	64±5	4.8±0.6

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975) (continued)

Site	T°C	pH	EC (MV)	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	Al (ppm)	Fe (ppm)	NO_3 (ppm)
WR 30	14.2	7.18	140	17.1	2.99	9.0	2.08	1.7	9.2	78.9	12.6	.28	.23	.11	
WR 31	4.6	6.98	104	13.4	2.53	4.6	1.20	.5	9.1	56.0	15.7		.19	.22	.13
WR 32	18.3	7.70	154	12.2	3.96	10.9	5.52	3.6	11.3	77.1	55.2		.46	.09	.04
WR 33	18.4	7.20	129	9.2	3.24	9.4	5.38	3.2	7.9	66.4	55.1	.43	.30	.08	.09
WR 34	5.5	6.85	78	9.2	1.22	3.1	.76	.4	6.4	35.6	12.4	.49	.16	.13	.13
WR 35	6.2	7.85	289	24.0	7.41	28.7	3.96	5.7	8.5	173	47.7		.07	.26	.09
WR 36	4.3	6.87	63	9.0	.98	2.6	.75	.3	6.3	31.1	11.2	.52	.07	.12	.04
WR 37	2.7	6.77	54	8.0	.78	2.0	.64	.3	8.2	23.7	9.2		.07	.05	.18
WR 38	9.5	6.96	70	9.8	1.16	3.5	.50	.3	3.0	41.7	14.8		.19	.07	.13
WR 39	6.5	6.40	36	5.2	.47	1.4	.73	.3	8.5	11.9	6.1		.07	.01	.13
WR 40	4.8	6.16	36	5.3	.49	1.5	.46	.1	8.4	12.3	5.7		.07		.13
WR 41	7.2	6.80	59	7.0	1.55	3.0	.64	.2	5.4	30.8	15.7	.09	.10	.06	
WR 42	2.6	6.87	58	6.6	1.58	3.3	.94	.5	3.4	33.4	11.6		.10	.06	.09
WR 43	6.4	6.74	54	7.5	1.17	2.3	.68	.4	4.1	29.9	8.5		.06	.05	.13
WR 44	12.9	7.13	105	9.8	3.24	7.1	2.26	1.8	3.3	63.6	28.8	.09	.11	.05	.22
WR 45	12.3	7.33	108	10.7	3.71	6.2	1.90	.6	2.4	68.8	27.2	.12	.09	.01	
WR 46	20.8	7.10	96	8.6	2.24	7.8	3.13	.7	2.3	61.4	38.3	.28	.14	.20	.04
WR 47	22.2	7.30	149	14.6	4.74	10.8	2.51	1.4	3.2	93.9	29.8	.28	.07	.19	.04
WR 48	17.0	7.05	100	9.9	3.21	4.6	3.42	.8	5.8	56.7	22.8	.06	.06	.01	.04
WR 49	13.8	6.90	62	5.5	1.80	4.0	1.59	.6	2.7	33.4	24.1	.06	.08	.03	.13
WR 50	5.0	6.76	40	5.0	1.08	1.9	.65	.2	3.2	23.5	8.7		.07	.03	.22
WR 51	4.5	6.68	38	5.0	1.03	1.6	.61	.2	3.2	22.1	7.9		.05	.03	.09
WR 52	6.0	6.70	41	4.9	1.06	2.1	.88	.3	3.6	23.2	12.4		.07	.02	.13
WR 53	11.0	6.70	48	7.0	.82	2.0	.60	.3	4.5	25.1	6.4		.04		
WR 54	11.9	7.15	139	13.0	3.56	11.3	1.89	4.3	7.1	74.2	12.3	.09	.05	.02	.49
WR 55	12.1	7.03	142	13.5	2.62	11.6	2.13	4.3	7.3	75.4	12.4	.12	.07	.06	.31
WR 56	14.4	7.15	132	12.1	3.27	10.7	1.63	4.1	6.3	71.2	11.2	.06	.15	.06	.22
WR 57	16.5	6.90	105	10.2	2.68	8.0	1.38	3.7	4.3	57.6	9.4		.05	.03	.09
WR 58	16.2	7.00	106	10.4	2.71	8.2	1.30	3.7	4.6	57.6	9.8		.10	.03	.40
WR 59	15.0	6.98	112	10.5	2.75	9.3	1.37	3.7	5.1	60.0	10.2	.03	.05	.04	.13
WR 60	14.0	6.73	98	9.8	2.58	7.1	1.29	3.6	3.9	54.6	8.6	.03	.06	.04	.09
WR 61	6.2	8.21	346	37.8	16.50	14.4	4.64	2.1	6.6	229	39.6	.37	.07	.07	

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975)

Site	K (ppm)	Rb (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppb)	Th (ppt)	W (ppb)	Yb (ppt)	Zn (ppb)	Zr (ppb)
WR 30	2.1±0.3	2.6±0.3	24±6	43±1	7.99±.21	174±8	77±6	6.1±4.3		5.8±0.4	7.8±2.4
WR 31	1.4±0.2	1.1±0.3		3.7±0.4	5.61±.08	97±9				29±1	
WR 32	5.7±0.4	7.3±0.7		56±2	11.1±0.2	143±17				39±1	
WR 33	5.2±0.5	8.6±0.4	22±4	43±1	10.1±0.2	144±6	64±6			17±1	
WR 34	.89±.13	1.3±0.3	8.3±2.9	43±1	3.00±.06	177±43			42±4	368±11	
WR 35	5.2±0.4	6.7±0.4	21±8	12±1	15.3±0.4	316±11	19±5	4.5±0.8		26±1	
WR 36	.66±.13	.48±.13		4.5±0.4	2.78±.04	49±5	8.4±2.7	4.3±0.7		5.0±0.3	
WR 37	.58±.11	.83±.22	6.2±2.6	5.0±0.4	1.99±.04	36±3	11±3	2.9±0.6		4.5±0.3	
WR 38	.41±.10	.46±.16	7.0±4.2	3.6±0.3	3.52±.05	64±6	11±3			9.6±0.4	
WR 39	.40±.07	.61±.14	4.2±1.5	2.7±0.4	1.37±.03	23±3	6.2±2.0			7.8±0.4	
WR 40	.46±.07	.54±.15	6.8±1.4	16±1	1.23±.01			1.8±1.1	21±4	211±2	
WR 41	.60±.13	.45±.16	4.6±2.1	17±1	2.58±.07	52±5	9.3±2.6	1.7±0.5		103±8	
WR 42	.91±.14	.70±.24		13±1	3.18±.08	81±5	18±5			186±2	
WR 43	.72±.10	.78±.17		3.9±0.4	2.18±.02	51±5				34±2	
WR 44	2.1±0.4	2.7±0.3		28±1	7.77±.11	133±7	30±6		19±8	216±2	4.9±2.8
WR 45	1.8±0.4	2.6±0.2	6.3±3.5	9.3±0.5	5.73±.03	151±6				18±1	
WR 46	.14±.03	4.5±0.6		5.1±0.4	.42±.02	139±19				5.7±0.4	
WR 47	2.8±0.4	2.5±0.3		24±1	9.96±.05	224±8			21±8	241±3	10.1±5.3
WR 48	3.2±0.2	3.0±0.8		2.9±1.4	4.73±.05	107±16				30±2	
WR 49	1.4±0.2	1.3±0.2		21±1	3.47±.08	49±13	19±5		12±5	142±2	
WR 50	.65±.09	.73±.25	7.5±1.8	37±1	1.46±.01	97±20	16±4		16±3	348±4	
WR 51	.57±.07	.72±.23	13±2	46±1	1.41±.01	111±32	37±4		17±3	372±4	
WR 52	.83±.08		6.4±2.0	32±1	1.74±.01	91±17			18±2	317±12	
WR 53	.60±.09	.71±.12		4.6±0.4	1.92±.03	47±6				40±2	2.2±1.4
WR 54	2.0±0.3	1.4±0.3	67±34	70±1	9.88±.05	174±38	29±9	10.1±7.1	58±7	409±6	10.0±6.2
WR 55	1.7±0.4	1.4±0.2		44±1	10.4±0.3	174±37	38±8		38±5	320±5	11.6±4.7
WR 56				36±2	10.6±0.2	142±23		2.5±1.1		233±4	
WR 57			57±32		7.64±.43				246±23		
WR 58	1.5±0.3	1.6±0.3	15±7	42±1	7.62±.04	145±34	36±8		19±5	287±5	9.7±3.7
WR 59		1.6±0.3		61±1	7.58±.27	146±32	28±8		63±6	513±6	14.6±6.0
WR 60	1.6±0.3	1.9±0.3	11±6	35±1	5.78±.03	128±27	22±8		30±7	260±4	11.4±4.1
WR 61	5.3±0.6	2.5±0.4		20±1	12.8±0.1	492±42				213±4	104±10

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975)

Site	U (ppb)	Sb (ppt)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppt)	Cr (ppb)	Co (ppt)	Fe (ppb)	Mo (ppb)
WR 30	1.29±0.04	105±9	3.6±0.2	49.8±2.4	7.7±0.9	13.4±0.02	122±9		108±7	214±8	7.2±0.7
WR 31	0.52±0.02	65±8	0.63±0.09	42.0±1.3	5.1±0.6	10.9±0.2		9.4±0.2	304±10	177±7	5.6±0.5
WR 32			3.8±0.4	78.0±7.7	26.7∓0.3	11.0±0.4		0.97±0.17	114±13	71±8	
WR 33	0.21±0.03	148±10	2.8±0.2	84.2±2.4	23.0±1.1	9.3±0.2	64±8		117±7	128±5	2.4±0.6
WR 34	0.20±0.02	88±13	1.00±0.07	45.3±1.5	4.3±0.3	10.4±0.2		4.2±1.2	83±6	135±6	2.6±0.3
WR 35	0.60±0.04	244±12	6.4±0.6	106±3	17.6±0.6	21.4±0.3	248±12	3.1±1.2	326±11	350±8	4.4±0.6
WR 36	0.18±0.01	93±8	0.72±0.08	52.9±1.3	4.6±0.6	7.7±0.1			94±6	114±5	3.0±0.3
WR 37	0.10±0.01	52±5	0.61±0.06	35.6±0.9	4.2±0.5	6.5±0.1		6.6±0.2	134±7	147±5	3.0±0.2
WR 38	0.25±0.01	175±7	0.86±0.12	52.5±1.6	4.7±0.6	8.3±0.2			59±7	76±6	2.5±0.4
WR 39	0.26±0.01	18±5	0.43±0.06	31.8±1.5	2.9±0.4	4.3±0.1			39±5	17±3	4.4±0.3
WR 40	0.22±0.01	50±18	0.39±0.04	28.7±1.7	3.6±0.9	6.1±0.1		7.4±2.3	31±4	23±3	4.7±0.4
WR 41	0.12±0.01	46±6	0.72±0.08	34.7±1.6	3.6±0.4	6.1±0.1			55±5	74±4	2.7±0.3
WR 42	0.47±0.02	840±16	0.83±0.08	45.0±1.4	3.5±0.4	6.5±0.1	26±14	4.4±0.1	188±8	101±5	4.9±0.4
WR 43	0.45±0.01	873±10	0.53±0.07	43.6±1.0	3.2±0.3	6.1±0.1		1.3±0.1	68±6	66±4	6.1±0.4
WR 44	0.84±0.04	125±9	1.7±0.2	71.8±2.2	7.5±0.6	9.2±0.1	38±9		136±6	103±5	5.2±0.5
WR 45	0.45±0.02	47±6	1.5±0.1	62.5±1.7	6.1±0.6	8.8±0.1	34±4		54±6	29±3	1.7±0.3
WR 46	0.46±0.19	70±36	0.21±0.03	8.3±1.1	0.46±0.02	0.91±0.10	74±15	1.0±0.2	74±8	124±10	
WR 47	1.67±0.05	213±14	2.6±0.3	85.1±2.2	11.8±0.9	14.3±0.2		3.9±1.6	333±11	43±5	8.7±0.6
WR 48	1.53±0.03	123±24	2.0±0.1	71.3±4.3	7.8±0.6	9.5±0.3	178±27	5.6±1.5			12.5±0.9
WR 49	0.73±0.02	75±6	0.67±0.11	42.2±1.3	5.2±0.5	5.1±0.1	36±5		52±5	69±4	6.0±0.4
WR 50	0.50±0.01	29±20	0.34±0.05	41.9±1.5	2.2±0.6	6.2±0.2		5.4±1.9	17±3	31±3	4.8±0.4
WR 51	0.54±0.01	96±9	0.38±0.05	43.2±1.5	2.8±0.4	6.4±0.1		7.7±2.0	46±5	62±4	5.3±0.4
WR 52	0.17±0.01	25±6	0.40±0.06	36.6±1.5	3.1±0.4	6.4±0.1		1.0±0.1	26±4	109±4	3.0±0.4
WR 53	0.74±0.02	104±6	0.67±0.06	36.8±1.4	3.1±0.4	6.2±0.1	23±4			12±3	9.5±0.4
WR 54	2.74±0.07	118±13	5.7±0.4	50.1±3.2	12.5±0.5	13.6±0.2		9.4±0.3	212±13	135±10	12.8±1.3
WR 55	2.81±0.06	90±10	6.7±0.5	45.9±2.1	11.6±0.7	13.3±0.2	67±10	24.5±0.2	307±10	179±8	11.6±0.9
WR 56	2.75±0.15		5.0±0.3	50.4±4.2	4.8±0.3	11.9±0.4		4.1±0.2	142±17	81±10	7.0±3.1
WR 57	1.52±0.26		6.2±0.7		7.9±0.6	14.9±1.7		6.2±1.6			
WR 58	1.94±0.05	153±14	5.3±0.2	52.2±2.4		11.5±0.2		.09±.14	94±8	65±5	9.5±0.9
WR 59	1.77±0.04	124±13	4.7±0.3	41.7±2.7		11.7±0.2		.05±.15	86±8	63±6	8.8±0.9
WR 60	1.51±0.04	82±9	4.3±0.2	37.2±1.4		9.8±0.2	47±8		87±7	60±5	8.0±0.6
WR 61	19.2±0.2	197±15	2.2±0.3	73.0±3.4		38.2±0.4		.65±.16	215±13	75±8	38±2

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975) (continued)

Site	T°C	pH	EC (MV)	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	Al (ppm)	Fe (ppm)	NO_3 (ppm)
WR 62	11.0	7.60	239	24.7	9.84	11.1	3.81	1.6	3.1	153	38.1	.09	.09	.04	1.20
WR 63	6.3	7.00	90	9.8	2.64	5.3	1.38	.8	2.7	55.8	27.0	.06	.11	.13	
WR 64	3.9	6.82	48	5.9	1.28	3.2	.47	.6	2.9	28.5	8.9		.03	.03	.18
WR 65	7.0	7.10	107	13.0	1.99	7.6	1.37	1.4	2.6	64.7	17.5	.03	.04	.18	.11
WR 66	9.0	6.93	48	4.7	1.17	4.3	.85	.6	2.1	31.3	21.2	.03	.22	.06	.04
WR 67	9.3	7.02	105	11.9	3.33	5.2	1.47	.7	2.1	67.1	30.3	.15	.22	.16	.13
WR 68	12.2	6.95	83	8.1	2.42	4.1	2.63	.7	5.4	45.4	33.0	.12	.08	.06	.13
WR 69	11.0	6.97	93	10.1	2.93	3.9	1.73	.7	8.5	47.1	27.8	.09	.11	.03	
WR 70	13.2	6.88	76	7.6	2.28	4.3	3.09	.8	3.4	44.5	35.9	.15	.12	.03	.18
WR 71	3.0	6.68	46	5.5	1.25	2.7	.48	.6	2.7	27.5	8.0		.05	.03	.04
WR 72	2.6	6.90	57	7.1	1.40	3.5	.85	.5		37.4	23.9		.07	.07	
WR 73	5.4	7.10	107	11.1	3.24	6.1	1.55	2.1	4.5	62.1	31.6	.09	.06	.04	.13
WR 74	3.0	7.05	69	7.3	1.52	5.3	.86	1.7	3.9	38.1	11.0		.04	.03	
WR 75	3.2	6.85	71	7.5	1.56	5.5	.89	1.5	4.4	39.8	11.3	.06	.06	.04	.04
WR 76	14.9	6.98	72	6.3	1.79	5.3	2.72	.7	2.0	44.5	33.0	.18	.10	.05	.40
WR 77	12.3	8.50	769	28.0	8.40	139.0	12.40	56.0	58.0	293	56.2	.49	.11	.05	.13
WR 78	5.6	6.68	45	5.9	1.22	2.1	.53	.3	2.3	27.5	9.5	.03	.13	.04	.04
WR 79	6.7	6.68	38	6.1	1.06	1.6	.41	.2	1.9	25.8	7.9		.07	.02	
WR 80	7.4	6.73	46	5.7	1.41	2.1	.85	.3	2.3	28.2	11.6		.13	.11	
WR 81	12.5	7.03	68	7.6	1.65	4.1	1.27	.8	3.9	37.7	19.3	.06	.23	.05	
WR 82	10.1	6.85	65	7.3	1.59	3.8	1.26	.8	3.8	35.5	18.4	.09	.24	.05	
WR 83	19.5	7.19	129	11.8	3.16	11.8	1.49	3.2	3.2	74.6	26.2	.22	.32	.09	
WR 84	14.1	6.95	53	2.9	1.28	2.9	1.31	.5	4.2	28.5	16.2	.06	.32	.05	
WR 85	10.2	6.77	34	4.2	.98	2.0	.80	.4	.9	22.8	11.9	.03	.17	.02	
WR 86	14.7	7.42	214	25.3	4.11	14.4	1.12	1.0	17.8	114	17.4	.06	.11	.03	.04
WR 87	9.0	6.72	32	4.4	1.01	1.5	.48	.2	.4	22.1	5.8		.17	.02	
WR 88	9.7	6.75	30	3.6	1.06	1.5	.79	.3	.9	20.0	10.2		.11		
WR 89	8.7	6.83	48	6.0	1.67	2.0	.40	.3	.8	31.5	8.0		.18	.01	
WR 90	8.6	6.65	30	4.3	.97	1.3	.44	.3	1.2	20.9	5.6		.09	.01	
WR 91	9.4	7.05	61	6.9	2.70	2.2	.51	.3	1.0	40.0	10.1	.03	.15	.01	
WR 92	6.7	6.68	33	5.4	.63	1.4	.17	.2	.9	22.8	5.7	.16	.01		.13

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975)

Site	K (ppμ)	Rb (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppb)	Th (ppt)	W (ppb)	Yb (ppt)	Zn (ppb)	Zr (ppb)
WR 62	3.9±0.6	7.7±0.4		2.9±0.5	10.5±0.1	195±7				2.4±0.3	17.4±2.8
WR 63	1.1±0.3	1.7±0.2	15±6	22±1	4.08±.18	84±6	51±4			14.1±0.6	6.4±2.4
WR 64		1.0±0.2	14±8	11±1	2.31±.12	56±5	24±4			2.4±0.3	4.0±3.0
WR 65	1.3±0.3			5.6±0.6	6.29±.13	92±11	26±13		35±15	6.5±0.6	264±22
WR 66	.86±.21	1.5±0.2	15±4	15±1	2.98±.16	43±4	30±4			6.3±0.5	
WR 67	1.5±.03	2.2±0.3		23±1	4.49±.22	125±20	41±11		18±12	182±3	7.6±4.5
WR 68	2.5±0.2	6.0±0.6		71±2	3.36±.34				40±7	645±5	
WR 69	1.8±0.2	2.8±0.3		18±1	3.22±.19	99±21				138±2	
WR 70	2.8±0.3	6.8±0.5	20±6	65±2	4.12±.20	179±47	19±6		36±6	504±13	
WR 71	.30±.11	.88±.19	5.3±3.0	9.4±0.4	2.12±.09	60±5	14±3			10.6±0.5	
WR 72	.67±.15	1.7±0.4		33±1	2.67±.11	85±22	47±7			221±4	28±8
WR 73	1.2±0.2	1.4±0.3		26±1	5.25±.08	95±8	40±10			27±1	13.8±5.7
WR 74	.82±.32	2.6±0.2		8.7±0.5	5.28±.04	109±8	14±4	2.2±0.6		7.7±0.4	
WR 75	.90±.20	2.2±0.3		42±1	5.01±.02	136±25			33±4	270±6	
WR 76	2.4±0.2	5.9±0.4	27±4	33±1	4.87±.02	114±13	38±9		18±8	70±2	
WR 77		45±1		14±2	134±1	608±27				115±2	
WR 78					1.97±.03	458±114					
WR 79	.46±.10	1.1±0.2	5.5±1.6	7.8±0.6	1.58±.03	71±4				8.6±0.7	
WR 80			55±17		2.26±.03	620±117					
WR 81	1.2±0.2				4.07±.07			2.5±1.7		194±15	
WR 82					3.76±.06	578±124				171±24	
WR 83					11.6±0.4	656±209		2.6±1.2		180±15	
WR 84	1.2±0.2	1.6±0.4	12±3	32±1	2.63±.07	119±22	18±7	2.4±0.4	42±5	254±5	
WR 85	.81±.26	1.7±0.3	10±3	35±1	1.86±.02	78±21	12.5±5.5		48±5	309±4	
WR 86				3.7±0.7	8.42±.25	403±10				44±1	
WR 87	.32±.06	.82±.26	7.9±1.9	40±1	1.61±.03	582±158		1.8±0.3		320±8	
WR 88	.63±.08	.89±.29	16±2	35±1	1.53±.03			1.4±0.3		266±4	
WR 89	.29±.10	1.0±.3	8.7±2.2	35±1	1.90±.04	161±37	10.1±4.2	1.1±0.4	42±4	300±8	
WR 90	.32±.07	.90±.25	11±2	36±1	1.23±.02	532±144	21±6		47±4	309±8	
WR 91		1.2±0.4	9.0±2.7	42±1	2.05±.03	117±22			40±4	266±4	
WR 92	.16±.05		10±2	35±1	1.36±.02	110±20	16±9		20±5	286±9	

Table 5.--Chemical compositions of Walker River waters on August 27, 1975

[Site locations depicted on figure 3; temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts (mV); analyses for chemical constituents in parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt)]

WALKER RIVER SYSTEM (27 August 1975)

Site	T°C	pH	EC (MV)	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	Alkalinity (HCO_3) (ppm)	SiO_2 (ppm)	Dissolved Ortho-phosphorus (PO_4) (ppm)	Al (ppm)	Fe (ppm)	NO_3 (ppm)
WR 1	28.1	8.65	438	34.0	8.55	45.6	6.14	3.5	49.5	197	26.2	.50	.13		.22
WR 3	23.8	8.43	416	34.4	8.21	43.1	7.73	2.5	45.7	199	24.5	.50	.17	.08	.44
WR 4	23.9	8.61	364	30.1	7.29	36.1	7.39	.5	36.5	174	23.9	.56	.14		.35
WR 5	21.0	8.51	455	37.0	8.83	46.0	5.12	13	52.9	207	25.7	.37	.12	.01	.58
WR 6	18.7	8.29	455	37.2	8.83	45.2	5.12	2.7	52.8	207	24.7	.37	.18	.04	.53
WR 7	16.9	8.12	466	37.9	9.15	47.7	4.96	5.3	57.3	206	26.3	.37	.18	.02	.44
WR 8	16.0	7.80	368	32.3	7.65	35.3	4.38	10	35.3	178	25.0	.31	.11	.04	.02
WR 9	16.5	7.72	318	27.3	6.50	29.8	3.86	8.5	29.6	153	23.9	.22	.12	.05	.80
WR 10	17.5	8.02	314	27.7	6.46	29.7	3.88	8.4	31.1	151	21.6	.19	.11	.03	.89
WR 11	18.0	7.92	208	23.1	4.42	12.9	3.18	2.1	13.1	115	21.6	.19	.15	.09	.53
WR 12	19.0	7.90	208	22.9	4.23	13.1	3.36	2.2	13.8	112	21.5	.19	.24	.09	.58
WR 13	16.0	7.70	208	23.2	4.34	14.1	3.28	2.5	12.9	112	22.8	.29	.18	.09	.75
WR 14	16.0	8.05	198	22.1	4.06	12.0	2.92	2.3	12.3	108	21.0	.19	.20	.22	.58
WR 15	17.0	8.10	187	21.5	3.86	11.2	2.82	2.2	11.1	105	21.0	.19	.15	.07	.58
WR 16	20.0	8.03	184	21.9	4.11	10.5	2.90	1.6	10.9	104	21.0	.19	.21	.12	.44
WR 22	20.0	7.90	178	21.3	3.77	9.7	2.67	1.4	9.2	103	20.3	.12	.17	.07	.53
WR 23	20.0	8.30	176	21.5	3.75	9.9	2.67	1.4	9.3	103	20.0	.19	.18	.10	.62
WR 28	19.0	7.70	171	21.5	3.63	9.7	2.69	1.4	8.1	102	19.3	.19	.20	.09	.58
WR 30	17.0	8.30	168	20.7	3.52	9.6	2.79	1.4	8.2	99.8	18.2	.12	.16	.09	.22
WR 54	20.0	8.30	302	24.0	6.91	29.7	4.91	.9	24.1	147	20.4	.22	.16	.06	.75
WR 55	21.0	8.40	302	24.7	7.18	30.7	5.04	.2	24.1	148	21.0	.22	.12	.05	.75
WR 56	23.0	8.43	270	21.5	5.80	28.2	3.62	9.1	22.1	132	18.2	.12	.09	.01	.40
WR 58	17.1	7.81	135	12.5	3.44	10.0	1.75	4.3	6.8	70.2	27.7	.06	.07	.04	.09
WR 64	12.8	7.98	108	10.7	2.32	8.5	1.65	2.2	6.5	59.3	12.8		.07	.03	.09
WR 71	13.0	7.85	107	10.8	2.42	8.1	1.35	2.1	6.6	58.3	12.4	.06	.08	.03	.09
WR 74	16.0	8.19	167	14.3	3.07	18.8	2.18	4.7	10.5	90.3	14.5	.09	.10	.08	.09
WR 87	12.0	7.49	63	7.3	1.95	2.6	1.02	.2	2.5	36.9	15.7		.06	.02	.13
WR 90	15.5	7.30	49	6.2	1.31	1.9	.50	.1	3.1	27.0	7.2	.03	.02		.09

Table 5.--Chemical compositions of Walker River waters on August 27, 1975--(continued)

WALKER RIVER SYSTEM (27 August 1975) (continued)

Site	U (ppb)	Sb (ppt)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppt)	Cr (ppb)	Co (ppt)	Fe (ppb)	Mo (ppb)
WR 1	15.0±0.4	536±182	29.7±1.4	111±52	24.7±1.1	30.1±1.5		7.5±1.2	833±196		61±9
WR 3	14.3±0.5	745±223	26.5±2.12	91±30	23.8±1.3	32.8±2.1		4.4±1.1			52±14
WR 4	10.7±0.5		30.2±2.2		22.3±1.3	25.0±2.8					
WR 5	14.4±0.4		18.6±1.6	125±55	17.5±1.4	34.5±2.3			465±413		56±12
WR 6	11.0±0.4		11.4±1.3	55±39	12.1±1.0	36.2±1.7			546±198		45±8
WR 7	15.0±0.5		17.6±1.8	110±63	19.9±1.2	37.0±2.2					68±12
WR 8	10.7±0.4		9.9±1.0	119±24	13.0±0.9	28.3±1.6					28±8
WR 9	7.58±0.28		7.8±0.8	114±44	12.4±0.8	23.9±1.7					24±6
WR 10	8.03±0.32		8.2±0.8	87±17	12.3±0.8	24.0±1.6			609±169		31±9
WR 11	1.90±0.26		6.6±0.6	64±16	6.7±0.5	19.5±1.3	143±101	1.6±0.8	1680±260	1810±210	
WR 12	5.90±0.32		6.4±1.1	62±48	12.9±0.8	17.3±1.7			421±381		33±11
WR 13											
WR 14	2.02±0.18		5.7±0.7	48±24	6.5±0.5	21.1±1.9					
WR 15	1.42±0.31		8.7±1.0	70±41	9.3±0.7	24.0±3.0		7.1±1.9			
WR 16											
WR 22	1.80±0.23		5.1±0.6		5.7±0.4	19.3±1.7					
WR 23	1.64±0.03	141±14	6.8±0.2	63.1±3.6		17.7±0.2	143±31	23.9±0.3	403±16	279±29	11.2±0.5
WR 28	1.49±0.03	156±12	6.5±0.2	60.4±3.4	8.0±0.6	15.9±0.2	150±24	30.7±0.4	506±55	311±30	10.7±0.5
WR 30	1.50±0.03	146±11	6.8±0.2	53.3±2.8		16.7±0.3	110±25	30.2±0.4	472±62	227±25	10.8±0.5
WR 54	6.74±0.24		7.0±0.8	99±78	16.4±0.7	19.4±1.6					41±16
WR 55	8.06±0.47		11.8±1.7	115±30	24.1±1.2	35.1±5.1		5.6±1.4	896±239		
WR 56											
WR 58	1.61±0.20		4.4±0.7		6.8±0.5	10.9±1.4					
WR 64	2.35±0.22		7.6±0.9		6.0±0.7	7.8±1.5					
WR 71	0.61±0.20		4.4±0.6		3.3±0.4	8.9±1.4	260±190				
WR 74	0.44±0.02	131±19	22.7±0.3	60±3		9.7±0.2	1586±63	15.8±0.3	256±58	124±31	6.6±0.4
WR 87	0.17±0.01	46±7	1.01±0.08	28.9±1.6		5.3±0.1	104±26	7.9±0.2	114±23	58±4	5.8±0.2
WR 90	0.19±0.01	35±6		33.3±1.6		4.2±0.1	54±10	10.8±0.2	105±12	85±7	2.4±0.2

Table 5.--Chemical compositions of Walker River waters on August 27, 1975--(continued)

WALKER RIVER SYSTEM (27 August 1975) (continued)

Site	K (ppµ)	Rb (ppb)	Sm (ppt)	Sc (ppt)	Na (ppm)	Sr (ppb)	Th (ppt)	W (ppb)	Yb (ppt)	Zn (ppb)	Zr (ppb)
WR 1	6.0±1.5				46.7±0.2	534±73		6.5±1.1			
WR 3	7.2±1.9		170±150		43.8±0.2						
WR 4					39.0±2.2			5.9±1.6			
WR 5	6.3±1.9				46.3±0.2	443±105		5.2±1.5			
WR 6			202±114		17.9±0.1	394±92					
WR 7					47.5±0.2						
WR 8	1.6±0.4				14.3±0.1	441±74				10±9	
WR 9					12.2±0.5	301±103					
WR 10					11.8±0.5	364±93		2.6±0.6			
WR 11			89±75		9.42±.22	326±65					
WR 12					10.6±0.1						
WR 13											
WR 14					5.11±.25	328±73					
WR 15	11±4		58±15		10.9±0.5						
WR 16											
WR 22					4.00±.10	372±94				19±7	
WR 23	3.6±1.1	15±7	40±3		8.61±.09	258±27	77±18				
WR 28	3.8±1.2		39±3		7.81±.07	285±21	67±15				
WR 30		16±3	21±3		8.10±.08	280±26	39±13			3.1±2.2	
WR 54					14.0±0.5	367±68					
WR 55					25.9±1.2						
WR 56											
WR 58					4.05±.10						
WR 64					7.96±.15	632±107					
WR 71					3.35±.11						
WR 74		5.8±1.8	5.3±2.3	7.0±2.7	13.5±0.4	247±54					
WR 87			5.2±1.1	6.9±1.6	2.30±.03	69±14					
WR 90		1.4±0.4	4.6±1.4	5.5±0.6	1.71±.05	61±8				1.1±0.6	

Table 4.--Chemical compositions of Walker River and tributary waters on June 25, 1975--(continued)

WALKER RIVER SYSTEM (25 June 1975) (continued)

Site	U (ppb)	Sb (ppt)	As (ppb)	Ba (ppb)	Br (ppb)	Ca (ppm)	Cs (ppt)	Cr (ppb)	Co (ppt)	Fe (ppb)	Mo (ppb)
WR 62	4.34±0.06	228±13	3.9±0.4	44.2±1.6		24.8±0.3	14±8		165±10	49±5	11.7±0.8
WR 63	1.19±0.03	93±9	1.1±0.1	33.2±1.5		7.6±0.1			80±7	111±6	4.8±0.5
WR 64	0.64±0.03	43±9	1.7±0.1	33.5±1.7		4.4±0.1	44±6		41±5	34±3	3.5±0.4
WR 65	57.5±0.6			37.4±3.8		10.7±0.2			64±16	203±15	98±4
WR 66	0.89±0.03	61±15	0.79±0.12	17.5±1.2		3.4±0.1			29±6	36±4	3.8±0.5
WR 67	1.19±0.04	12±10	1.1±0.1	41.9±1.4		11.3±0.2			141±13	102±6	3.5±0.5
WR 68	1.39±0.05	33±19	0.8±0.2	66.9±2.7		11.2±0.2			102±8	64±7	10.4±0.7
WR 69	2.38±0.04	53±9	1.0±0.1	50.5±1.6		9.2±0.1			59±6	37±4	10.6±0.5
WR 70	0.68±0.03	82±19	1.0±0.2	65.2±1.8		9.3±0.2			100±7	91±6	7.7±0.6
WR 71	0.30±0.01	76±6	1.6±0.1	14.2±0.8		4.2±0.1	50±5		43±6	31±3	2.7±0.3
WR 72	4.24±0.06	42±17		37.4±2.0		5.1±0.1	50±11		59±10	52±7	9.1±0.7
WR 73	1.98±0.04	53±13	1.8±0.2	42.4±2.4	20.6±0.3	9.9±0.2	73±10	.88±.16	79±10	62±6	8.9±1.0
WR 74	0.32±0.02	326±13	6.4±0.2	53.7±1.7	4.4±0.5	6.6±0.1	378±9	4.3±1.3	60±7	39±6	3.9±0.4
WR 75	0.29±0.02	217±16	6.7±0.2	42.0±1.8	4.2±0.5	8.2±0.1	422±16	2.7±0.2	64±7	60±5	4.3±0.5
WR 76	0.10±0.03	67±12	1.1±0.2	76.8±2.6	6.3±0.5	6.1±0.2	72±13	5.0±1.2	112±8	104±6	2.2±0.4
WR 77	0.91±0.07	1680±60	264±4	76.9±5.8	36.4±1.5	21.5±0.3	22600±194	2.2±0.3	206±46	110±14	17.3±1.7
WR 78			3.1±0.6		2.9±0.3	10.4±2.5		4.2±1.6			
WR 79	0.36±0.01	60±6	0.57±0.04	38.8±1.4	2.3±0.3	4.8±0.1	54±6	6.9±1.4	30±6	14±3	4.9±0.3
WR 80	0.24±0.19	455±174	1.4±0.4		3.1±0.4	7.0±1.9		4.3±1.4			
WR 81			2.8±0.6		6.3±0.4	9.3±1.4		4.4±1.9			
WR 82			4.3±0.7		5.2±0.5	6.4±1.4					
WR 83	2.15±0.22				22.5±0.8	12.3±2.2					
WR 84	0.26±0.02	84±11	1.1±0.1	55.4±2.2	3.6±0.3	6.9±0.1	41±10		68±7	46±5	6.1±0.5
WR 85	0.33±0.02	4000±33	1.8±0.1	33.0±2.0	2.6±0.3	6.0±0.2		3.4±0.2	73±11	40±6	2.6±0.6
WR 86		17±10	3.5±0.9	24.0±1.0	7.8±0.7	17.0±0.4		2.0±0.2	49±6	18±3	
WR 87	0.21±0.01		0.31±0.05	32.6±1.5	2.3±0.2	5.6±0.1		2.0±0.1	44±6	32±4	2.6±0.4
WR 88	0.12±0.02	32±7	0.43±0.05	33.7±1.9	2.1±0.3	4.7±0.1		7.8±0.2	164±8	57±5	5.9±0.4
WR 89	0.15±0.02		0.45±0.08	39.9±1.8	2.1±0.3	7.0±0.2	50±12	.14±.13	49±6	23±4	1.6±0.4
WR 90	0.28±0.02	46±14	0.36±0.06	31.4±1.8	2.1±0.2	5.4±0.1		1.8±0.1	101±7	88±5	1.6±0.3
WR 91	0.16±0.02		0.42±0.07	41.1±1.6	2.4±0.3	8.0±0.02		.55±.14	86±7	25±4	1.8±0.4
WR 92	0.19±0.01		0.32±0.05	34.3±1.6	1.7±0.3	5.7±0.1		4.3±1.7	174±8	22±4	

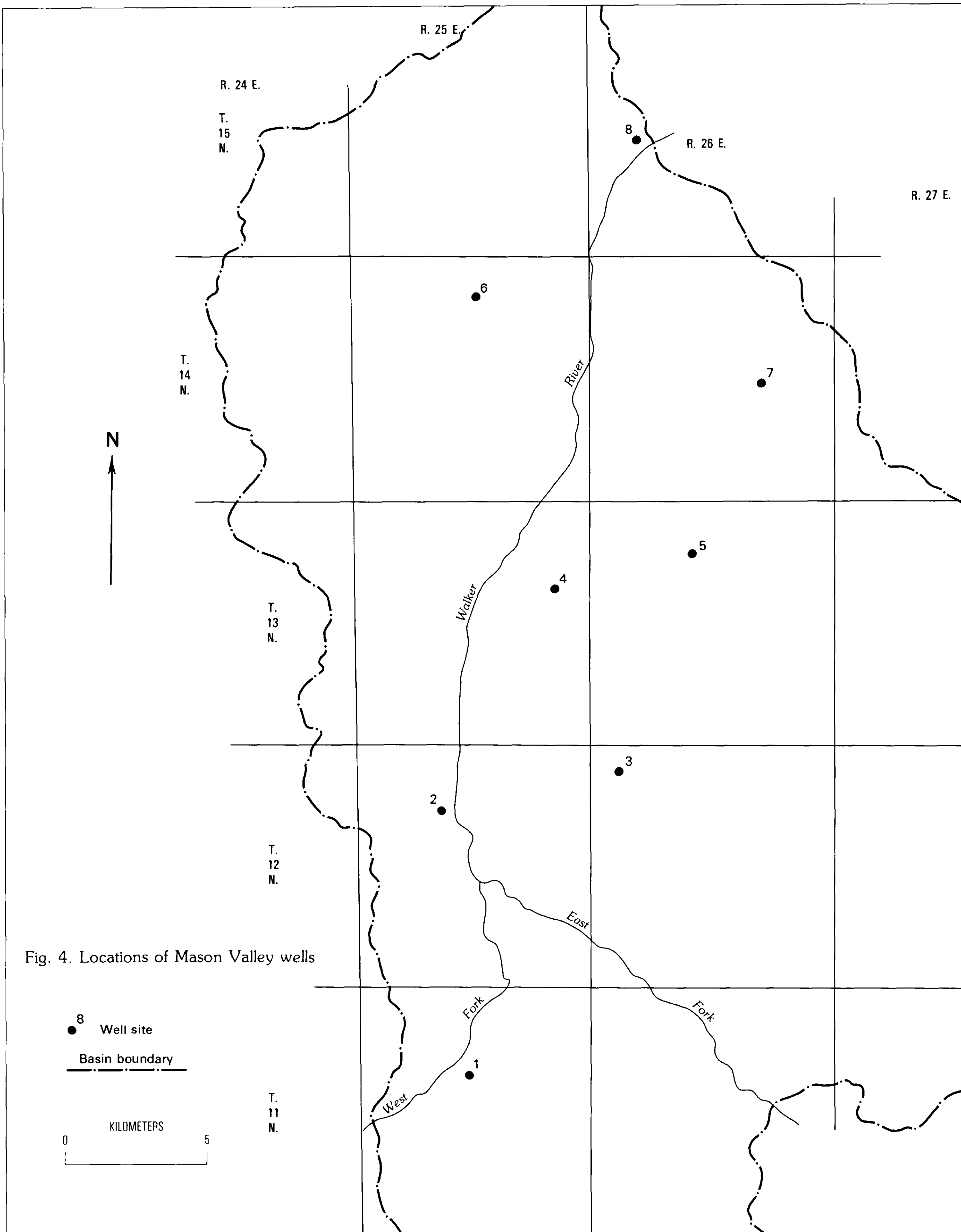

Fig. 4. Locations of Mason Valley wells

wells and reported in Huxel and Harris (1969) are given in table 6. The compositions of several snow samples collected in the east-central Sierra Nevada (fig. 5) are shown in table 7; in this table, data resulting from NAA begins with the entry for antimony (Sb) in the second row.

Chemical data for water samples taken in Walker Lake from above and below the sediment-water interface have been tabulated in a variety of ways (tables 8-15). Figures 6 and 7 show respectively the locations of sites from which samples were taken from the water column and of sites from which cores were recovered.

Table 8 gives the major element chemical compositions of Walker Lake samples collected from 1881 through 1975. These data were selected from a larger data set on the basis of electrical balance and, in the case of the 1882 and 1937 samples, simple availability.

The chemical compositions of samples taken from the water column at site 14 (fig. 6) are tabulated as a function of time for the period 5-2-75 through 6-2-76, in table 9. In table 10, the chemical compositions of samples taken from various sites and depths in Walker Lake are shown for a single time frame (7-9-75). Note that data resulting from NAA begin with the uranium (U) entry in the third row.

Dissolved oxygen and temperature data in the Walker Lake water column at site 14 for the period 4-30-75 through 4-30-76 are displayed in tables 11 and 12 respectively.

The chemical compositions of Walker Lake pore fluids extracted from core sections are reported in tables 13 and 14. In table 13, 0 cm depth data corresponds to a sample taken from the water mass immediately overlying the core site. Other core depths correspond to the center point of 10 cm core sections.

Chemical compositions of Walker River (WR) samples collected during the period 1-29-81 through 8-28-81 and Walker Lake (WL) surface samples collected on 12-4-80 are listed in table 15. The river samples came from three localities: the WRW set came from the west fork of the Walker River, 20 km south of the town of Walker, California (site 64 of fig. 3); WRRC came from Robinson Creek, just south of its termination into Upper Twin Lake, a reservoir on the east fork of the Walker River (fig. 2); and WRWR came from the south end of Weber Reservoir (fig. 2). The numbers in parentheses beside the Walker Lake (WL) samples refer to the filter size (μm) and the "X" in parentheses refers to analysis by X-ray fluorescence. The lower data set beginning with the sodium (Na) entry was obtained by NAA.

NAA of sediments taken from just below the sediment-water interface at sites depicted on figure 6 and from core locations shown on figure 7, are listed in tables 16 and 17 respectively. The mineralogy of certain of the core samples as well as the cation exchange capacities of core G samples are given in table 18. The chemical compositions of two tufa (WLT) samples from the Walker Lake area as well as the chemical composition of a composite sample of Walker River sediment (WRS) collected in the vicinity of site 1 (fig. 6), are shown in table 19. The numbers in parentheses indicate sediment size range and "I" refers to a sample that was ignited prior to analysis.

Table 6.--Chemical compositions of Mason Valley Wells

[Data taken from Huxel and Harris, 1969; well depth in meters (m); temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts (mV); analyses for chemical constituents in parts per million (ppm)]

WALKER BASIN MASON VALLEY WELLS

Site	Location	Depth (m)	Date	T°C	pH	EC	Ca (ppm)	Mg (ppm)	Na (ppm)	K (ppm)	Cl (ppm)	SO_4 (ppm)	HCO_3 (ppm)	SiO_2 (ppm)	F (ppm)	B (ppm)
MW 1	11/25-9dd1		6-8-65	16	7.8	700	76	14	62	6.4	16	37	397	43	.3	.4
MW 2	12/25-9cb1	37	6-9-65	18	8.0	982	113	15	72	6.2	65	196	274	53	.5	.7
MW 3	12/26-6cd1	62	6-8-65	16	7.9	509	63	3.4	36	5.5	7.8	38	259	54	.3	.2
MW 4	13/25-13ba2	14	6-8-65	14	7.7	323	25	5.7	30	4.0	12	53	102	49	.7	.2
MW 5	13/26-9ac1	18	6-8-65	16	7.6	928	72	7.4	112	1.7	89	219	117	65	2.5	.6
MW 6	14/25-3cc1	18	6-9-65	14	8.0	233	22	4.9	19	3.9	4.7	17	119	52	.5	.2
MW 7	14/26-23cb1	23	6-9-65	13	7.7	528	28	3.2	79	2.9	22	116	132	55	1.2	.3
MW 8	15/26-20bd1	26	6-9-65	18	7.8	605	14	2.7	109	3.0	30	128	130	53	4.7	.9

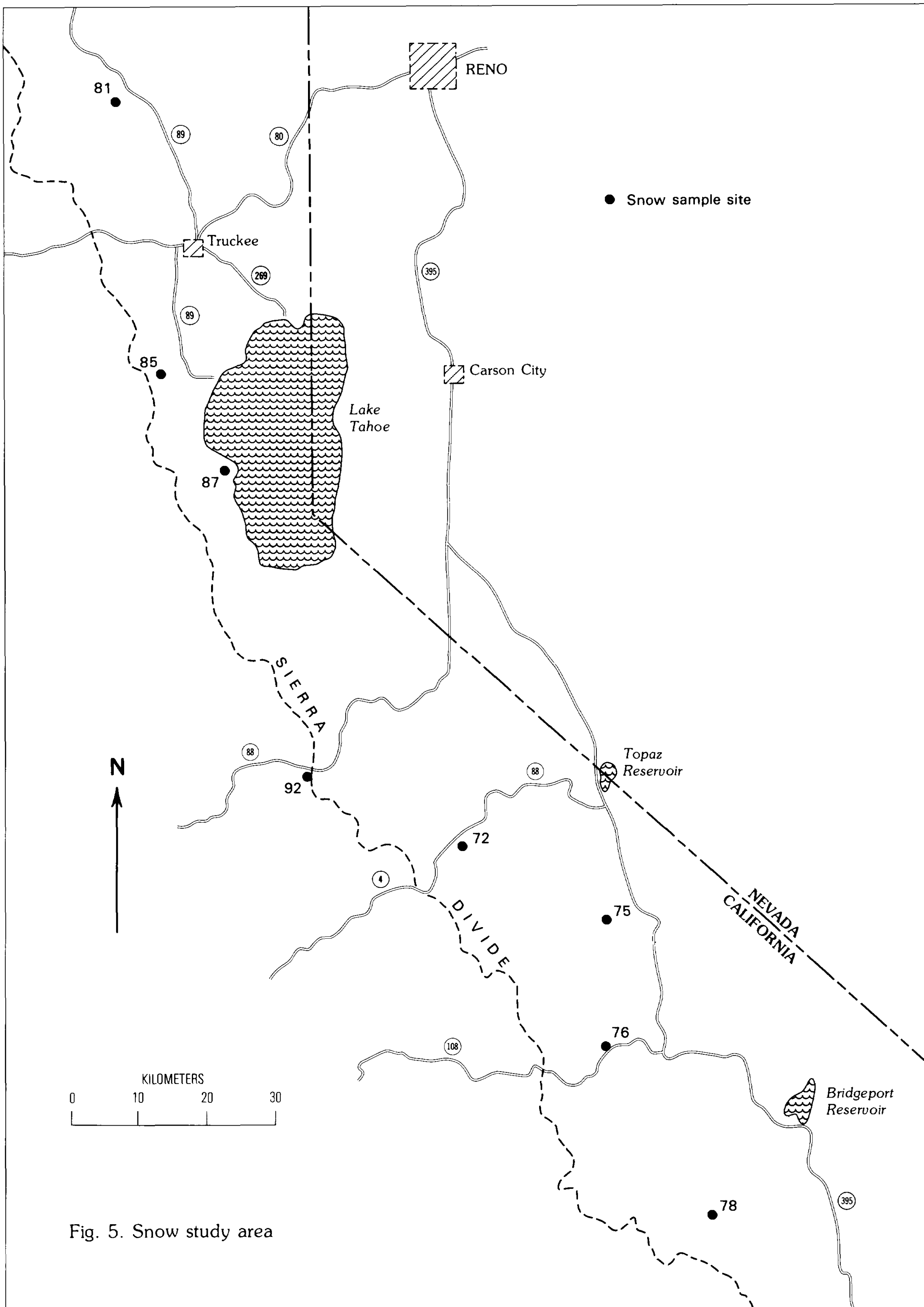

Fig. 5. Snow study area

Table 7.--Chemical composition of snow in the east-central Sierra Nevada

[Elevation in meters (m); analyses for chemical constituents in parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt)]

Site	Date	Location	Elevation (m)	pH (lab)	HCO_3 (ppm)	Cl (ppm)	SO_4 (ppm)	SiO_2 (ppm)	Na (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)
SQ 72	3-27-75	Silver Creek	1950	5.9	.2	<.05	.15	<.05	.21	.07	.09	.030
SQ 75	3-27-75	Little Antelope	1890	5.6	<.1	<.05	<.05	<.05	.19	.06	.13	.021
SQ 76	3-27-75	Sonora Pass	2070	5.6	<.1	<.05	.10	.06	.06	.02	.02	.006
SQ 78	3-27-75	Upper Twin Lake	2220	5.6	<.1	<.05	.12	<.05	.07	.05	.06	.008
SQ 81	4-22-75	Independence	1950	5.4	.1	.07	.08	.10	.04	<.01	.03	.007
SQ 85	4-22-75	Alpine Meadows	2070	5.5	.3	.09	.26	<.05	.10	<.01	.04	.006
SQ 87	4-22-75	General Creek	1920	5.6	.1	.30	.13	<.05	.03	<.01	.04	.005
SQ 92	4-22-75	Carson Pass	2620	5.4	.1	.08	.13	<.05	.04	<.01	.04	.008

Site	Sb (ppt)	As (ppt)	Br (ppb)	Ca (ppm)	Ce (ppt)	Cs (ppt)	Co (ppt)	Au (ppt)	Fe (ppb)	La (ppt)	Mo (ppb)
SQ 72	19.6±2.3	96±2	-	.12±.02	34±8	18±4	66±5	.55±.07	39±3	20±2	.30±.04
SQ 75	7.4±1.7	-	-	.11±.01	-	-	-	.16±.06	13±2	7.8±1.8	.29±.04
SQ 76	-	-	-	.027±.009	-	-	-	.15±.05	-	-	1.00±.05
SQ 78	-	-	-	-	-	-	42±7	-	-	16±3	.48±.11
SQ 81	-	-	2.9±0.5	-	-	-	48±7	-	-	-	.50±.09
SQ 85	-	-	2.7±0.5	-	-	-	50±1	-	-	-	.57±.12
SQ 87	5.9±1.5	-	-	.04±.01	-	-	12±3	.23±.07	-	-	.21±.04
SQ 92	6.3±2.0	-	-	.04±.01	-	-	10±3	-	-	-	.20±.04

Site	Sm (ppt)	Sc (ppt)	Na (ppm)	Th (ppb)	U (ppt)	Zn (ppb)
SQ 72	4.1±0.2	9.6±0.7	.21±.01	.61±.23		62±23
SQ 75	1.9±0.2	3.9±0.3	.11±.01	-	-	27±13
SQ 76	-	-	.055±.004	-	-	-
SQ 78	2.3±0.5	1.8±0.4	.050±.007	-	-	-
SQ 81	1.1±0.3	2.6±0.4	.024±.005	-	29±3	-
SQ 85	-	-	.068±.008	-	-	-
SQ 87	0.5±0.2	0.8±0.2	.027±.005	-	-	16±10
SQ 92	0.8±0.2	1.6±0.2	.025±.006	-	-	35±12

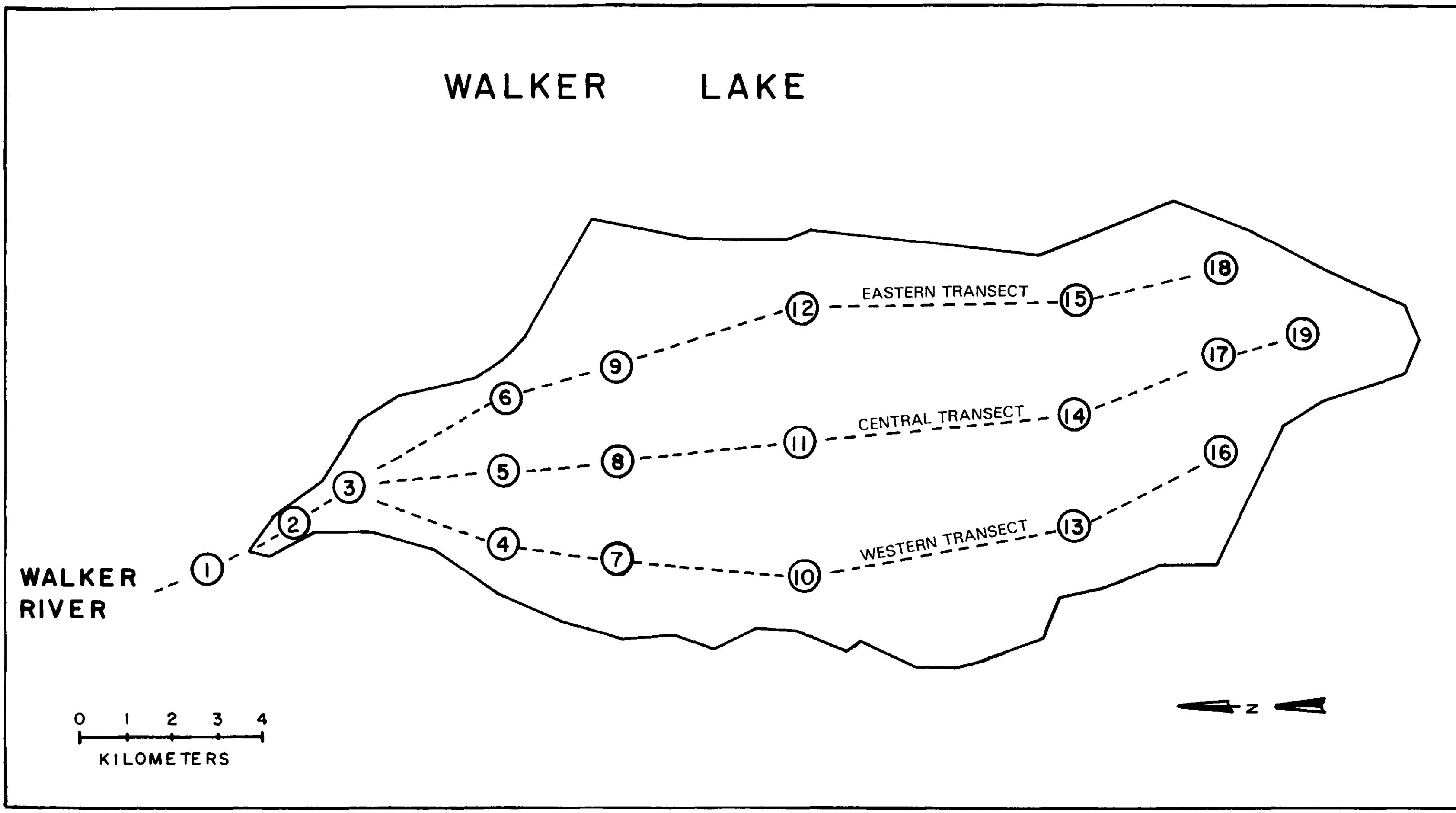

Fig. 6. Water and sediment sampling stations, Walker Lake, Nevada

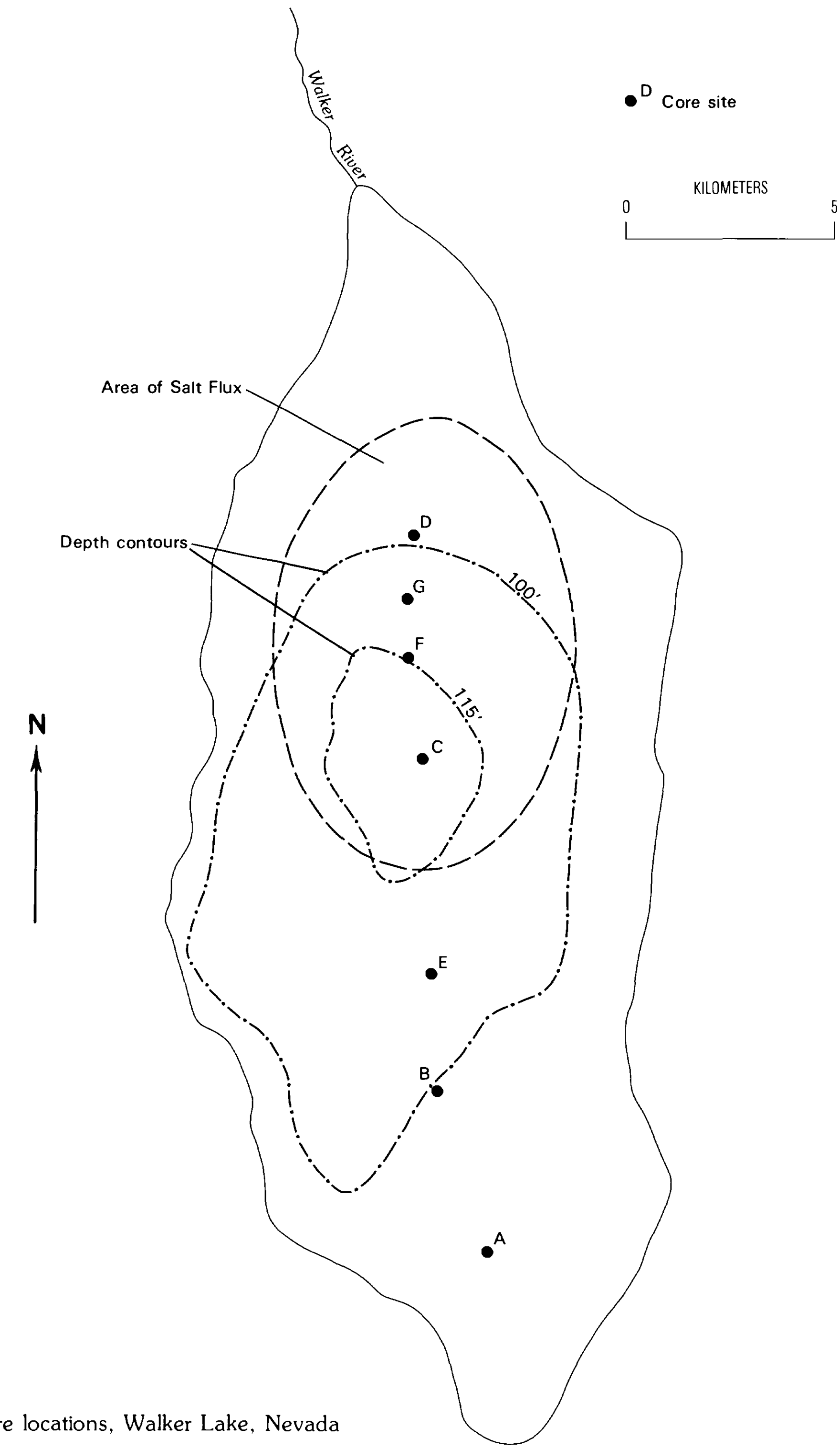

Fig. 7. Core locations, Walker Lake, Nevada

Table 8.--Selected chemical analyses of Walker Lake reported for the period 1881-1975

[Lake volume in cubic kilometers (km^3); analyses for chemical constituents in parts per million (ppm); total mass of dissolved solids in units of 10^{10} kilogram (kg)]

CHEMICAL COMPOSITION OF WALKER LAKE 1882-1975 (ppm)

Sample NR	Date	Volume (km3)	Ca	Mg	Na	K	Total Alkalinity (HCO_3)	SO_4	Cl	SiO_2	pH	TDS	Total Dissolved Mass (10^{10} kg)	Data Source
1	09/ ?/1882	10.7	27	39	860	-	-	530	590	7.5	-	-	-	Russel (1886)
2	08/31/1937	6.48	24	66	1680	-	1590	1090	1090	-	-	5650	3.66	Miller (1953)
3	10/16/1941	6.30	18	-	1910	-	1640	1110	1240	-	-	6120	3.86	Miller (1953)
4	11/14/1952	5.18	14	85	2073		1820	1329	1430	9.0	9.1	6790	3.52	Public Works Dept., Twelfth Naval Dist. (unpub.)
5	10/04/1955	4.75	16	102	2360	137	2170	1530	1610	1.7	9.3	7950	3.78	U.S. Geol. Surv. (unpub.)
6	11/15/1956	4.76	16	97	2350	114	2170	1520	1690	2.2	9.2	7980	3.80	U.S. Geol. Surv. (unpub.)
7	11/20/1958	4.68	7.2	105	2330	95	2210	1500	1630	5.6	9.2	7910	3.70	U.S. Geol. Surv. (unpub.)
8	12/20/1963	3.99	6.4	123	2830	157	2580	1820	1950	1.4	9.7	9500	3.79	U.S. Geol. Surv. (unpub.)
9	10/06/1965	3.79	4.6	129	-	-	2630	1960	2120	-	9.4	-	3.73	U.S. Geol. Surv. (unpub.)
10	02/18/1966	3.83	4.2	123	3020	159	2610	1920	2010	0.5	-	9840	3.77	U.S. Geol. Surv. (unpub.)
11	04/07/1966	3.85	11	120	2880	184	2680	1890	1960	0.5	9.4	9770	3.76	U.S. Geol. Surv. (unpub.)
12	12/13/1972	3.68	7.6	130	3100	170	2820	2000	2100	0.2	9.5	10400	3.83	U.S. Geol. Surv. (unpub.)
13	01/05/1975	3.55	6.2	129	3020	159	2930	1930	2320	0.1	9.2	10400	3.69	U.S. Geol. Surv. (unpub.)

Table 9.--Chemical compositions of water samples taken as a function of depth at site 14 in Walker Lake during the period May 5, 1975, through June 2, 1976

[Sampling depth in meters (m); temperature in degrees celsius (°c); analyses for chemical constituents in parts per million (ppm) samples taken on November 3, 1975, are from site 11 (see fig. 6 for location)]

WALKER LAKE SITE 14 (concentrations in ppm)

Date	Depth (m)	T°C	pH (lab)	Alkalinity (HCO_3)	Cl	SO_4	F	Na	K	Ca	Mg	SiO_2	Al	Sr
5-2-75	1	9.9	9.4	2890	2280	2050	20.3	3250	161	9.9	148	0.6	.03	2.9
	5	8.2	9.3	2900	2290	2140	17.5	3300	167	10.5	147	1.0	.03	3.0
	10	8.0	9.3	2900	2260	2110	17.5	3270	165	10.4	146	0.7	.05	3.1
	20	7.5	9.3	2900	2300	2070	19.8	3200	173	9.9	147	0.8	.02	3.0
	28	6.0	9.3	2900	2280	2150	20.2	3280	163	8.7	138	1.0	.02	3.1
7-9-75	1	22.5	9.4	2680	2230	2000	16.2	3200	153	12.5	161	0.1	.05	3.1
	5	19.9	9.4	2660	2220	2000	16.6	3130	149	10.8	157	0.1	.06	3.1
	10	16.0	9.4	2660	2220	1980	16.7	3230	154	11.5	155	0.1	.08	3.1
	20	11.2	9.4	2710	2270	2030	16.9	3360	156	11.0	166	0.8	.05	3.2
	28	9.5	9.4	2710	2280	2060	16.4	3350	156	11.5	161	0.1	.06	3.1
9-2-75	1	21.0	9.4	2830	2320	1890	16.5	2920	146	11.5	126	<.1	.02	2.9
	5	20.5	9.4	2860	2220	1980	17.5	3030	146	11.3	129	0.4	<.01	3.0
	10	20.5	9.4	2830	2210	1970	17.0	3010	165	11.5	129	0.3	<.01	3.0
	20	11.5	9.4	2820	2320	1970	17.5	3080	167	11.3	131	<.1	<.01	3.0
	28	9.5	9.3	2820	2290	2030	17.0	2990	165	10.3	127	0.4	<.01	2.9
11-3-75*	1	13.6	9.5	2870	2290	2080	17.5	3090	175	11.0	127	1.1	.02	2.9
	5	13.3	9.4	2850	2260	2040	17.8	3160	165	10.9	127	1.1	.02	2.9
	10	13.2	9.4	2860	2280	2160	17.8	3130	170	10.7	123	1.3	.05	3.0
	20	13.2	9.4	2860	2230	2220	17.0	3160	170	11.5	127	0.9	.01	3.0
	28	9.3	9.2	2870	2290	2240	17.5	3200	177	10.7	124	1.9	.02	3.0
1-7-76	1	6.0	9.3	2770	2340	2000	16.5	3040	162	11.0	125	0.9	-	3.2
	5	6.0	9.3	2770	2260	2070	15.8	3060	191	10.7	128	0.7	-	3.2
	10	6.0	9.3	2770	2280	2080	15.8	3060	164	11.2	128	0.8	-	3.1
	20	6.0	9.4	2770	2280	2280	16.0	3030	157	11.1	132	0.8	-	3.1
	28	6.0	9.4	2770	2310	2100	17.5	3030	239	11.0	124	1.0	-	3.0
3-18-76	1	10.0	9.0	3000	2170	2070	18.0	3050	170	11.0	134	0.5	-	3.0
	5	8.0	9.3	2980	2160	2020	17.8	3030	160	10.9	136	0.4	-	3.0
	10	6.0	9.3	2980	2160	2000	17.5	3030	160	10.8	135	0.5	-	3.0
	20	6.0	9.3	2990	2170	2000	18.0	3070	170	11.7	138	0.6	-	3.0
	28	6.0	9.3	2980	2170	1980	17.8	3080	163	11.0	138	0.6	-	3.0
6-2-76	1	18.5	9.4	2930	2330	2080	17.3	3060	162	10.3	130	1.2	-	2.9
	5	16.5	9.3	2950	2280	2130	17.3	3090	166	10.4	131	1.1	-	2.9
	10	15.5	9.3	2930	2240	1980	17.5	3090	166	14.2	131	1.1	-	2.9
	20	9.5	9.4	2910	2240	2230	17.5	3060	164	10.4	127	1.1	-	2.9
	28	8.0	9.4	2910	2260	2030	17.5	3090	168	10.4	131	1.3	-	3.0

*Site 11

Table 10.--Chemical compositions of a set of samples taken synoptically from Walker Lake on July 9, 1975

[Depth in meters (m); temperature in degrees celsius (°C); electrical conductivity (EC) in millivolts (mV); analyses for chemical constituents in parts per million (ppm) and parts per billion (ppb)]

WALKER LAKE - July 9, 1975

SITE	Depth (m)	EC	T°C	pH	Total Alkalinity (HCO_3)	Cl (ppm)	SO_4 (ppm)	F (ppm)	Br (ppm)	Na (ppm)	K (ppm)	Ca ppm)	Mg (ppm)	SiO_2 (ppm)
WL 3-1	1	12,100	16.2	9.4	2760	2120	2020	15.3	4.8	2980	151	13.3	159	0.13
WL 3-10	10	12,300	17.	9.4	2720	2210	2070	16.0	3.7	3140	163	10.8	161	0.09
WL 8-1	8	12,500	21.5	9.4	2700	2200	2020	16.2	15.2	3080	163	13.3	157	0.05
WL 8-30	30	13,000	8.5	9.4	2720	2280	2060	16.6	12.5	3340	157	10.8	162	0.09
WL 14-1	1	12,400	22.5	9.4	2680	2230	2000	16.2	8.1	3200	153	12.5	161	0.08
WL 14-25	25	12,900	9.5	9.4	2710	2280	2060	16.4	6.4	3350	156	11.5	161	0.08

	Al (ppm)	Sr (ppm)	Li (ppm)	As (ppm)	B (ppm)	Cu (ppm)	Zn (ppm)	Dissolved Orthophosphorus P (ppm)	Dissolved Nitrate N (ppm)	Dissolved Ammonium N (ppm)
WL 3-1	.05	2.9	.92	.66	16.1	.006	.005	.44	.03	2.8
WL 3-10	.05	3.1	.96	.68	17.2		.009	.50	.03	.07
WL 8-1	.07	3.0	.95	.65	17.7	.005	.015	.54	.03	.02
WL 8-30	.06	3.2	.99	.65	17.9	.006	.005	.53	.04	.43
WL 14-1	.05	3.1	.96	.64	17.2	.005	.005	.50	.11	.01
WL 14-25	.06	3.1	.99	.69	17.4	.010	.010	.64	.05	.28

	U (ppb)	Sb (ppb)	As (ppm)	Ba (ppm)	Br (ppm)	Co (ppb)	Mo (ppb)
WL 3-1	131±4	6.2±0.7	.87±.11		4.65±.05	1.7±0.5	818±71
WL 3-10	130±5	4.7±0.8	.83±.11	.26±.21	4.63±.05	1.7±0.5	656±111
WL 8-1	134±4	6.8±1.1	.72±.11	.27±.21	5.07±.05		770±57
WL 8-30	128±4	7.6±0.8	.76±.10	.30±.23	4.86±.04		673±48
WL 14-1	129±4	6.0±0.7	.99±.13	.29±.23	4.85±.06		841±68
WL 14-25	129±4	6.4±0.7	.86±.10		4.77±.04		722±67

	Ru (ppb)	Na (ppm)	Sr (ppm)	W (ppb)	Zr (ppm)	Ce (ppb)	La (ppb)	Nd (ppb)
WL 3-1	17.2±2.8	2940±12	3.2±0.4		1.14±.17	18±2	102±8	22±11
WL 3-10	7.5±5.0	2990±20	3.3±0.3		.76±.17	19±2	113±7	13±8
WL 8-1	11.3±4.8	3020±130	2.4±0.3	369±98	.90±.40	29±3	144±7	
WL 8-30	7.5±5.6	2930±140	3.9±0.4		.69±.02	28±3	82±5	
WL 14-1	9.6±5.5	3010±110	2.7±0.3		.96±.25	22±3	91±5	
WL 14-25	13.0±4.1	2990±70	3.2±0.4		.87±.22	26±3	100±5	

Table 11.--Dissolved oxygen concentrations (ppm) in Walker Lake at Site 14 as a function of time and depth (m) for the period 4-30-75 through 4-30-76

Depth (m)	4-30-75	5-17-75	5-30-75	6-11-75	7-8-75	7-15-75	7-29-75	8-22-75	9-2-75
1	11.7	12.8	13.8	16.7	11.1	10.8	8.9	8.8	9.3
3						10.8	8.9	8.5	9.2
4							8.8	8.4	9.2
5	11.9	12.9	10.8	12.6	10.9	10.5			
6							8.5	8.2	9.1
8						9.0	6.5	8.0	8.9
9							5.8		
10	12.1	12.7	10.8	10.7	7.8	7.9	5.6	7.9	8.2
12							4.4	7.8	8.1
13						6.9		6.9	
14							4.2	3.0	6.0
15	12.1	11.8	10.0	9.4	6.1	5.9			
16							4.2	1.7	1.5
18							4.2	0.3	0.5
20	11.9	10.3	8.4	8.5	5.7	5.0	4.0	0.1	0.2
22							3.7	0.1	0.1
24							3.2	0.1	0.1
25	11.3	9.6	7.2	6.8	2.5	4.2			
26							3.0	.05	0.1
28	11.3						2.8	0.0	0.1

Depth (m)	9-22-75	11-3-75	11-19-75	12-1-75	12-15-75	2-10-76	3-5-76	4-2-76	4-30-76
1	10.4	8.5	7.9	10.4	11.1	12.1	12.2	10.8	9.0
3	10.2						12.1		
4	10.2						12.0		
5		7.8	7.5	10.0	10.9	12.0		10.4	9.2
6	10.0						12.0		
8	9.8						11.8		
9									
10	7.4	7.8	7.4	9.9	10.7	12.2	11.8	10.4	9.0
12	4.2						11.8		
13									
14	2.5						11.8		
15		7.8	7.3	9.9	10.6	12.2		10.8	8.8
16	0.0						11.6		
18	0.0						11.6		
20	0.0	7.7	7.3	9.8	10.5	13.0	11.8	9.8	8.4
22	0.0						11.6		
24	0.0						11.7		
25		0.2	7.2	9.8	10.5	13.0		10.0	8.1
26	0.0						11.6		
28	0.0	0.0		9.6	10.4	12.8		10.2	7.9

Table 12.--Temperature (°C) of Walker Lake at site 14 as a function of time and depth (m) for the period April 30, 1975, through April 30, 1976

TEMPERATURE (°C) OF WALKER LAKE AT SITE 14 FOR THE PERIOD 4-30-75 THROUGH 4-30-76

Depth (m)	4-30-75	5-17-75	5-30-75	6-11-75	7-8-75	7-15-75	7-29-75	8-22-75	9-2-75
1	9.9	15.3	15.3	19.5	22.5	22.5	23.1	20.5	21.0
2						22.5	23.5	20.0	20.5
4							23.0	20.0	20.5
5	8.2	13.9	12.8	15.2	19.9	22.0			
6							23.0	20.0	20.5
8						19.0	19.5	20.0	20.5
9							18.0		
10	8.0	10.9	11.6	13.2	16.0	16.5	18.0	20.0	20.5
12							16.0	20.0	20.5
13						15.6		19.5	
14							14.5	16.0	20.0
15	8.0	9.1	11.2	10.7	14.0	14.0			
16							14.2	12.5	16.5
18							13.5	12.0	13.0
20	7.5	7.4	9.0	9.2	11.3	12.0	12.5	10.5	11.5
22							12.0	10.0	11.0
24							11.7	10.0	10.5
25	6.9	7.2	8.4	8.7	9.5	10.2			
26							11.4	9.5	9.5
28	6.0						10.7	9.5	9.5

Depth (m)	9-22-75	11-3-75	11-19-75	12-1-75	12-15-75	2-10-75	3-5-76	4-2-76	4-30-76
1	22.0	13.8	10.8	14.3	8.1	5.3	5.5	7.5	14.5
2	21.8						5.5		
4	21.3						5.0		
5		13.0	10.8	9.3	8.1	5.0		6.5	9.5
6	21.0						4.8		
8	21.0						4.8		
9									
10	20.5	13.0	10.8	9.0	8.0	5.0	4.5	6.3	9.0
12	19.0						4.5		
13							4.5		
14	18.0								
15		13.0	10.8	8.8	7.9	5.0		6.3	8.8
16	14.5						4.5		
18	12.5						4.5		
20	11.5	13.0	10.6	8.8	7.9	5.0	4.5	6.3	7.8
22	10.8						4.5		
24	10.0						4.5		
25		11.5	10.6	8.8	7.9	4.8		6.2	7.8
26	9.5						4.5		
28	9.3	10.0		8.8	7.9	4.8		6.2	7.8

Table 13.--Chemical compositions of Walker pore fluids

[Sample depths in centimeters (cm) below sediment-water interface; measured redox potential (Eh) in volts; analyses for chemical constituents in parts per million (ppm); weight percent water (wt. % H_2O) calculated from sample weight before and after heating]

WALKER LAKE SITE 14

Core	Depth (cm)	pH	Eh (volts)	Total Alkalinity (HCO_3)	Cl	SO_4	Na	K	Ca	Mg	SiO_2	Mn	Fe	Al	Pb	Total Dissolved Ortho-phosphorus (PO_4)	Dissolved (NO_3)	%H_2O	HTO**	U
A	0	9.5	.016	2940	2130	2010	3140	175	12	125	1.4	.025	.027	0.02	-	1.8	-	100	-	-
	5	8.9	-.029	2900	2400	1950	2920	167	8	120	19.5	.065	.180	0.17	-	2.9	-	78	-	-
	30	8.6	-.006	1880	1960	1350	2460	107	28	61	49.7	.230	.310	1.70	-	2.9	-	76	-	-
	65	8.6	-.006	1210	1190	1910	1660	64	28	38	38.4	.040	.120	0.13	-		-	18	-	-
B	0	9.4	.042	2890	2160	2000	3190	146	12	135	1.5	.020	<.010	<0.01	-	1.1	-	100	-	
	5	8.8	-.060	2180	1760	1540	2400	121	15	84	11.5	.065	<.010	<0.01	-	3.1	-	89	-	.083
	35	8.7	-.077	2400	1960	1170	2290	117	26	88	41.1	.390	.019	<0.01	-	11.6	-	85	-	-
	65	8.8	-.092	1990	1600	310	1770	98	36	86	44.6	.470	.800	<0.01	-	18.2	-	82	-	.032
	95	8.6	-.102	2130	1170	134	1450	65	49	78	52.0	.480	.110	0.18	-	16.6	-	79	-	.006
	120	8.8	-.107	1920	1070	177	1160	54	57	68	51.1	.290	<.010	<0.01	-	14.5	-	78	-	.006
C	0	9.4	.034	2890	2090	2100	3010	146	12	136	1.7	.040	<.010	<0.01	-	1.4	-	100	-	-
	5	8.6	-.033	2830	2210	1730	2900	132	14	78	21.5	.240	.025	<0.01	-	10.5	-	89	-	.114
	35	8.6	-.027	3700	2650	2790	4460	133	13	46	36.3	.260	.180	<0.01	-	26.3	-	85	-	-
	65	8.8	-.027	6580	3540	4600	7120	162	10	20	47.5	.250	.190	<0.01	-	51.2	-	82	-	.087
	95	9.0	-.037	9400	4120	6810	9540	181	7	22	51.3	.150	.300	<0.01	-	62.8	-	78	-	.067
D	0	9.5	-.017	2870	2160	2140	2930	165	12	128	2.1	.020	.030	0.05	-	1.4	-	100	-	-
	5	9.0	-.057	3010	2380	2080	3110	181	16	120	11.9	.640	.540	2.30	-	4.4	-	87	-	.120
	35	8.8	-.090	3560	2850	1330	3470	228	17	44	41.6	.200	-	<0.01	-	24.1	-	85	-	.066
	65	9.0	-.097	5070	3280	1550	4920	197	12	14	50.2	.550	.800	0.33	-	41.8	-	83	-	.048
	95	9.0	-.097	6880	4380	1780	6450	225	11	11	58.7	.175	.090	0.13	-	51.8	-	79	-	.040
E	0	9.4	-.015	2900	2080	2000	3010	169	11	130	2.7	.020	<.010	<0.01	-	1.2	-	100	-	-
	5	8.9	-.080	2640	2040	1770	2930	167	13	96	18.0	.125	.440	1.10	-	6.0	-	87	-	.065
	15	8.7	-.060	2660	2040	1630	3000	157	17	95	27.9	.400	.760	1.30	-	9.5	-	85	-	-
	25	8.6	-.099	2360	2080	1210	2820	134	22	76	30.3	.210	.610	1.60	-	12.2	-	84	-	-
	35	8.6	-.073	2640	2150	1100	2750	105	21	64	37.5	.213	.220	0.73	-	15.8	-	85	-	-
	45	8.5	-.102	2730	2210	825	2710	149	34	104	40.0	.420	.460	1.20	-	16.7	-	86	-	.026
	55	8.5	-.061	2920	2230	608	2290	124	34	89	45.2	.320	.480	1.60	-	22.0	-	87	-	-
	65	8.5	-.101	2970	2160	111	2220	107	42	85	47.9	.650	.170	0.78	-	25.2	-	85	-	.017
	75	8.4	-.098	3020	2330	70	2260	102	46	86	48.8	.320	.450	0.83	-	26.1	-	83	-	-
	85	8.4	-.103	2920	2000	43	2230	99	48	84	50.5	.280	.200	0.53	-	27.2	-	84	-	-
	95	8.6	-.063	2840	2100	38	2250	102	46	78	51.8	.240	.150	0.40	-	28.6	-	83	-	.057
	105	8.6	-.115	2960	2230	18	2340	102	50	70	57.2	.070	<.010	0.02	-	30.8	-	81	-	-
	115	8.7	-.055	3000	2100	67	2390	103	49	73	50.0	.010	<.010	0.17	-	31.6	-	79	-	.048
	125	8.7	-.047	3070	2230	59	2440	86	48	70	50.3	.070	<.010	0.03	-	31.4	-	78	-	-
	135	8.1	-.140	2960	2370	63	2450	89	47	61	48.4	.100	<.010	0.04	-	34.2	-	79	-	<.064
	145	8.4	-.115	3030	2360	56	2640	89	42	57	48.3	.380	<.010	0.09	-	35.2	-	78	-	-
	155	8.6	-.115	3170	2740	61	2720	102	40	55	50.5	.200	<.010	0.02	-	35.8	-	73	-	.014
	165	8.4	-.121	2960	3000	188	2840	99	39	50	48.8	.160	<.010	0.04	-	37.8	-	71	-	-
	175	8.3	-.131	3360	3120	42	3100	118	34	41	44.2	.130	-	0.16	-	41.4	-	56	-	-

*Calculated using Zobell solution standard

**10^{-9} µCi/ml

Table 13.--Chemical compositions of Walker pore fluids--(continued)

WALKER LAKE SITE 14 (continued)

Core	Depth (cm)	pH	Eh (volts)	Total Alkalinity (HCO_3)	Cl	SO_4	Na	K	Ca	Mg	SiO_2	Mn	Fe	Al	Pb	Total Dissolved Ortho-phosphorus (PO_4)	Dissolved (NO_3)	$\%H_2O$	HTO**	U
F	15±	-	-	-	2210	-	3150	191	21	85	29	-	-	-	.017	16.5	-	-	960	-
	25	-	-	-	2310	-	3220	158	27	75	48	-	-	-	.018	19.7	1.2	-	490	-
	45	-	-	-	2750	-	3390	145	30	58	52	-	-	-	.013	30.3	3.1	82	480	-
	65	-	-	-	3350	-	3690	135	30	43	50	-	-	-	.020	42.7	1.3	83	500	-
	85	8.5	-	3990	3660	1590	4420	136	25	30	53	-	-	-	.022	54.6	3.1	78	370	-
	105	8.6	-	4560	3980	2200	5150	144	18	21	51	-	-	-	.023	65.7	2.7	66	220	-
	125	8.7	-	5730	5360	2530	6490	170	11	7	56	-	-	-	.021	81.7	2.4	76	160	-
	145	8.8	-	6780	6520	3190	8000	209	7	3	60	-	-	-	.033	89.4	6.6	70	140	-
	165	8.7	-	7920	8000	3880	9690	238	6	2	64	-	-	-	.013	94.1	4.0	73	130	-
	175	8.8	-	8300	8310	4180	10120	244	6	2	65	-	-	-	.006	99.9	3.8	71	(350)	-
G	45	8.7	-	3480	3770	2230	4330	208	28	40	34	-	-	-	-	-	-	81	-	-
	95	8.9	-	5040	5180	2330	5850	220	20	13	34	-	-	-	-	-	-	80	-	-
	145	9.2	-	5700	6710	2960	7430	246	6.9	4.9	61	-	-	-	-	-	-	78	-	-
	195	9.0	-	7660	8310	4100	9730	303	6.5	1.6	78	-	-	-	-	-	-	80	-	-
	245	9.3	-	10000	10500	5550	12380	284	5.4	1.0	66	-	-	-	-	-	-	75	-	-
	295	9.3	-	11600	12800	7000	14500	455	5.2	1.6	52	-	-	-	-	-	-	36	-	-
	345	9.2	-	14800	15800	8960	18700	604	4.8	2.3	47	-	-	-	-	-	-	45	-	-
	395	9.5	-	17300	18200	11000	21600	676	3.1	0.9	57	-	-	-	-	-	-	50	-	-
	450	9.3	-	18000	19200	12500	23200	703	3.9	0.5	77	-	-	-	-	-	-	68	-	-

*Calculated using Zobell solution standard

**10^{-9} µCi/ml

Table 14.--Chemical compositions of selected Walker Lake pore fluids obtained by neutron activation analysis (NAA)

[Sample depth in centimeters (cm) below the sediment-water interface; analyses for chemical constituents in parts per million (ppm) and parts per billion (ppb)]

NEUTRON ACTIVATION ANALYSIS OF WALKER LAKE PORE FLUIDS

Core	Depth (cm)	Sb (ppb)	As (ppm)	Ba (ppm)	Br (ppm)	Ca (ppm)	Ce (ppb)	Cr (ppb)	Co (ppb)	Eu (ppb)	Hf (ppb)
B	1-10	20±1	.51±0.5	-	2.82±.03	18±5	30±3	-	3.0±0.7	-	-
	60-70	49±1	.90±.07	.42±.10	3.51±.03	44±5	31±3	-	4.4±0.7	-	-
	90-100	26±1	.32±.03	.34±.06	1.67±.02	42±4	-	-	4.7±0.5	-	-
	120-132	11±1	.10±.02	.14±.12	1.34±.01	46±6	-	15±5	2.7±0.4	1.1±0.7	-
C	1-10	20±1	.64±.08	.31±.24	3.29±.03	16±4	32±6	-	3.6±0.7	-	-
	60-70	39±1	1.5±.1	-	6.79±.05	-	19±4	-	4.8±0.8	-	-
	90-100	46±1	2.4±.2	-	9.36±.06	-	21±5	-	6.6±1.0	-	-
D	1-10	16±1	.65±.08	-	3.74±.03	13±4	33±2	-	2.5±0.6	-	-
	30-40	31±1	.75±.07	.29±.10	3.81±.03	24±6	21±3	-	3.4±0.6	-	-
	60-70	34±1	.78±.07	.31±.24	4.42±.03	-	16±3	-	4.2±0.6	-	-
	90-100	43±1	1.2±.1	-	5.95±.03	-	15±4	25±5	5.5±0.7	-	-
E	1-10	33±1	.74±.07	.69±.20	3.21±.03	75±10	21±3	25±7	2.0±1.0	-	3.7±0.5
	40-50	46±1	.58±.05	.41±.11	2.97±.03	38±9	-	-	3.5±0.8	-	-
	60-70	52±1	.64±.06	.56±.08	2.95±.03	44±4	-	-	3.7±0.5	-	-
	90-100	43±1	.95±.06	.45±.11	3.82±.03	46±6	-	-	6.0±0.8	-	-
	110-120	50±1	.97±.06	.42±.10	3.23±.02	28±8	-	-	5.2±0.8	-	-
	130-140	38±1	.77±.06	.46±.10	3.11±.03	53±6	-	-	4.9±0.5	-	-
	150-160	53±1	.70±.05	.41±.09	2.75±.03	52±9	3±1	21±4	4.6±0.5	-	-

Table 14.--Chemical compositions of selected Walker Lake pore fluids obtained by neutron activation analysis (NAA)-(continued)

NEUTRON ACTIVATION ANALYSIS OF WALKER LAKE PORE FLUIDS (continued)

Core	Depth (cm)	La (ppb)	Mo (ppm)	Ru (ppb)	Sc (ppb)	Sr (ppm)	W (ppb)	U (ppb)	Zn (ppb)	Zr (ppm)
B	1-10	64±4	1.13±.07	24±4	-	3.1±0.4	.21±.06	83±2	-	1.1±0.3
	60-70	22±2	.18±.04	-	-	2.3±0.4	-	32±2	-	-
	90-100	-	-	-	.20±.03	1.5±0.2	-	5.8±1.1	102±19	-
	120-132	-	.11±.02	-	-	2.1±0.7	-	6.5±1.2	-	-
C	1-10	39±3	.85±.06	9±5	-	-	-	114±3	88±27	.88±.27
	60-70	39±3	.43±.04	14±4	-	-	-	87±4	-	-
	90-100	31±4	.48±.09	-	-	-	-	67±3	-	-
D	1-10	74±4	.74±.04	23±3	.10±.03	2.8±0.3	-	120±2	-	1.4±0.2
	30-40	33±2	.38±.03	14±4	.16±.03	2.4±0.7	-	66±2	85±22	.73±.18
	60-70	23±2	.34±.04	8±5	-	0.7±0.3	-	48±2	63±22	-
	90-100	20±2	.32±.04	-	-	-	-	40±3	-	-
E	1-10	35±4	.39±.06	-	.18±.14	2.8±0.6	-	65±3	69±29	-
	40-50	9±2	.14±.04	-	-	2.6±0.5	-	26±2	-	-
	60-70	16±2	.10±.03	-	-	2.7±0.3	-	17±2	68±20	-
	90-100	-	-	-	-	1.1±0.4	.27±.07	<6	-	-
	110-120	-	-	-	-	1.9±0.5	.11±.05	<5	-	-
	130-140	-	-	-	-	2.0±0.6	-	<6	68±20	-
	150-160	9±2	.09±.03	3.7±2.6	.04±.02	2.4±0.3	.16±.05	14±1	-	-

Table 15.--Chemical compositions of selected Walker River (WR) and Walker Lake (WL) samples taken in 1980 and 1981

[Sample locations are discussed in the text; numbers in parenthesis refer to filter size in micrometers: analyses for Na, K, Ca, Mg, Cl, total alkalinity reported as HCO_3, SO_4, SiO_2, Fe, Al, Ga, As, and Sr are in parts per million; analyses for Mn, Dy,for Mn, Dy, U, Ba, Mo, Lu, W, La, Cs, Cr, Ni, Rb, Zn, Zr, and Nb in parts per billion; analyses for Sm, Sc, Co, Sb, Th, Tb, Ta, Ce, Hf, Yb, Ir, and Eu in parts per trillion]

Sample site -- Date ----	WRW1 1/29/81	WRW2 3/4/81	WRW3 4/1/81	WRW4 5/14/81	WRW5 6/25/81	WRW6 7/24/81	WRW7 8/28/81	WRRC 5/14/81	WRWR 5/14/81	WL(0.45) 12/4/80	WL(0.10) 12/4/80	WL(0.1[illegible]) 12/4/80
T (°C)	1.	7.	9.	10.	17.	18.	19.	7.	16.5	11.0	11.8	11.8
pH	7.9	7.85	8.0	7.8	8.2	8.2	8.45	7.3	8.6	9.6	9.6	9.6
Na	16.	14.	13.	3.2	4.5	9.3	15.	2.3	70.	--	--	--
K	2.1	1.7	1.5	.63	.79	1.5	2.1	.41	6.0	--	--	--
Ca	7.5	8.6	8.4	2.8	5.0	12.	16	2.1	36.	--	--	--
Mg	3.3	3.3	2.9	1.4	1.4	2.8	3.4	.44	11.	--	--	--
Cl	4.5	3.3	4.0	0.6	1.5	2.8	3.5	0.2	22.	--	--	--
HCO_3	78.	79.	72.	28.	36.	71.	89	14	230.	--	--	--
SO_4	11.	8.7	7.5	2.2	3.0	7.0	9.8	2.8	76.	--	--	--
SiO_2	13.	17.	16.	8.0	9.0	13.	15	5.9	16.	--	--	--
							Neutron-activation analyses					
Na	13.0 ± 0.3	10.0 ± 0.2	8.9 ± 1.0	2.13 ± 0.14	3.15 ± 0.06	4.39 ± 0.09	7.10 ± 0.14	1.32 ± 0.02	57. ± 13	3,430. ± 40	3,700. ± 30	--
K	1.74 ± 0.45	.92 ± 0.36	--	.46 ± 0.11	.37 ± 0.13	<.74	--	.29 ± 0.10	5.1 ± 1.8	--	--	--
Ca	7.8 ± 1.8	11.5 ± 1.2	10.6 ± 1.6	4.3 ± 0.4	8.0 ± 0.6	7.41 ± 0.57	13.3 ± 1.0	3.40 ± 0.21	--	--	--	--
Mg	<3.3	2.2 ± 0.2	2.3 ± 0.7	.76 ± 0.29	2.6 ± 0.6	1.50 ± 0.45	2.92 ± 0.75	<.54	--	--	--	--
Cl	3.5 ± 0.8	2.2 ± 0.2	2.3 ± 0.2	.457 ± 0.022	2.46 ± 0.04	.98 ± 0.04	1.54 ± 0.06	.261 ± 0.019	--	2,080. ± 70	2,250. ± 70	--
Fe	.050 ± 0.005	.045 ± 0.006	.078 ± 0.004	.029 ± 0.002	.032 ± 0.002	<.066	<.015	.024 ± 0.002	.329 ± 0.023	<.24	<.66	--
Al	<.24	<.04	<.59	<.061	.11 ± 0.02	<.14	<.21	<.031	--	--	--	--
Ga	--	--	--	--	--	--	--	--	--	<4.2	<3.2	--
As	--	--	--	--	--	--	--	--	--	<1.5	<1.4	0.8 ± 0.1
Br	--	--	--	--	--	--	--	--	--	5.89 ± 0.23	5.53 ± 0.25	5.5 ± 0.6
Sr	--	--	--	--	--	--	--	--	--			3.5 ± 0.4
Mn	<53.0	<2.6	--	6.26 ± 0.14	23. ± 5	3.97 ± 0.09	--	20.8 ± 0.4	<146.	<180.	<300.	--
Dy	<1.2	<.32	--	<.016	<.047	<.026	--	<.018	<2.1	<21.	<28.	--
U	2.68 ± 0.02	2.17 ± 0.02	1.82 ± 0.01	.233 ± 0.002	.420 ± 0.004	.641 ± 0.005	.289 ± 0.004	.55 ± 0.04	12.1 ± 0.07	147. ± 2	155. ± 3	600. ± 400
Ba	18.0 ± 2.0	17.0 ± 2.1	15.5 ± 1.4	5.88 ± 0.62	8.68 ± 0.75	12.9 ± 0.8	50.5 ± 1.5	4.58 ± 0.54	54.1 ± 9.3	<540.	<920.	--
Mo	2.19 ± 0.25	1.55 ± 0.21	1.56 ± 0.17	.522 ± 0.048	.89 ± 0.08	1.17 ± 0.12	1.10 ± 0.11	2.12 ± 0.16	14.6 ± 1.5	220. ± 50	280. ± 60	300. ± 100
Lu	<.07	<.049	<.021	<.0014	<.013	<.020	<.021	<.0057	<3.7	--	--	--
W	<.59	.38 ± 0.09	<.25	<.091	<.12	<.17	--	<.126	3.3 ± 0.6	--	--	--
La	<.34	<.19	<.37	<.13	<.16	<.21	2.07 ± 0.10	<.11	<1.7	--	--	--
Cs	.578 ± 0.012	.583 ± 0.013	.552 ± 0.011	.073 ± 0.002	.132 ± 0.009	.172 ± 0.004	.353 ± 0.008	.040 ± 0.002	.044 ± 0.01	.048 ± 0.016	.049 ± 0.019	--
Cr	.339 ± 0.036	.181 ± 0.040	.199 ± 0.025	.098 ± 0.012	.138 ± 0.016	.163 ± 0.018	.109 ± 0.031	.076 ± 0.011	.78 ± 0.13	<11.0	<9.	--
Ni	.386 ± 0.133	.98 ± 0.15	5.07 ± 0.18	.629 ± 0.069	.368 ± 0.080	<.35	.66 ± 0.13	1.47 ± 0.09	1.04 ± 0.52	<3.8	4.2 ± 1.8	--
Rb	3.07 ± 0.17	3.24 ± 0.17	2.92 ± 0.13	1.07 ± 0.06	1.32 ± 0.07	1.95 ± 0.10	2.83 ± 0.15	.683 ± 0.049	1.52 ± 0.29	--	--	<140.
Zn	10.9 ± 0.3	2.38 ± 0.17	2.97 ± 0.14	2.66 ± 0.11	15.9 ± 0.3	3.19 ± 0.12	4.00 ± 0.17	6.96 ± 0.14	5.6 ± 0.7	18.9 ± 1.2	22.0 ± 1.0	--
Zr	--	--	--	--	--	--	--	--	--	--	--	<120.
Nb	--	--	--	--	--	--	--	--	--	--	--	<110.
Sm	<16.8	<7.0	<8.3	2.36 ± 0.40	<2.9	<4.2	401. ± 2	1.74 ± 0.49	<102.	<850.	<940.	--
Sc	18.6 ± 0.7	4.77 ± 0.60	5.09 ± 0.42	5.87 ± 0.25	32.5 ± 0.5	6.66 ± 0.28	8.39 ± 0.40	8.05 ± 0.27	9.7 ± 1.9	<19.	27. ± 9	--
Co	20.0 ± 6	16.4 ± 5.8	50.2 ± 5.0	2.7 ± 1.9	18.3 ± 2.8	7.4 ± 2.5	14.7 ± 4.3	37.7 ± 2.7	94. ± 22	<140.	200. ± 40	--
Sb	133.0 ± 10	76.0 ± 8.9	87.0 ± 7.1	29.9 ± 3.3	43.4 ± 4.6	45.2 ± 4.2	65.4 ± 5.9	24.1 ± 2.9	224. ± 26	5,600. ± 400	6,800. ± 400	--
Th	<3.9	<4.1	<2.8	3.2 ± 0.6	<4.6	<4.4	<3.2	5.7 ± 0.6	<14.	<300.	<400.	--
Tb	<3.1	<2.5	<1.7	2.4 ± 0.4	.91 ± 0.46	23.6 ± 0.9	.126 ± 0.004	<.89	<14.9	--	--	--
Ta	3.4 ± 1.8	<5.1	<4.4	<1.7	<2.4	<2.3	<2.1	<1.4	<20.	<20.	<20.	--
Ce	<31.	<32.	<21.	<8.9	<10.7	<14.	541. ± 13	<9.1	<142.	<3,300.	<3,300.	--
Hf	<4.7	<4.9	<3.3	<1.5	<1.8	<2.3	<3.8	<1.5	<23.	<140.	<260.	--
Yb	<4.8	<5.3	<3.4	3.2 ± 0.8	<3.8	19.9 ± 1.2	104. ± 3	<3.8	<75.	--	<2,600.	--
Ir	--	--	--	--	--	--	--	--	--	<1.0	<1.7	--
Eu	--	--	--	--	--	--	--	--	--	<12.	<89.	--

Table 16.--Chemical compositions of Walker Lake bottom sediments

(Analyses for chemical constituents in parts per million (ppm) and parts per thousand (ppt)]

WALKER LAKE BOTTOM SEDIMENT COMPOSITIONS

Site	Sb (ppm)	As (ppm)	Ba (ppm)	Br (ppm)	Ca (ppT)	Ce (ppm)	Cs (ppm)	Cr (ppm)	Co (ppm)	Eu (ppm)
2	2.1	25	1040	1.8	22	66	12.2	44	14.2	1.09
3	2.9	31	970	6.3	28	62	12.2	34	13.7	1.01
4	4.4	67	700	45	63	49	8.9	25	11.3	0.66
5	4.0	65	590	72	73	44	7.8	23	9.7	0.59
6	3.0	31	810	8.7	43	58	5.1	20	8.0	0.56
7	5.5	47	740	34	80	48	8.6	23	10.9	0.62
8	5.2	76	660	78	89	42	7.1	21	9.3	0.52
9	5.8	68	650	59	85	44	7.4	21	9.6	0.59
10	4.7	55	670	53	93	46	7.7	21	10.3	0.57
11	4.1	55	620	73	86	43	7.4	20	9.7	0.53
12	5.2	70	700	66	85	45	7.7	21	9.9	0.57
13	3.9	39	660	49	88	46	7.3	22	9.9	0.54
14	4.3	67	590	79	70	42	6.8	21	9.1	0.49
15	3.7	69	550	101	69	37	6.0	17	8.2	0.44
17	6.1	49	660	38	76	51	6.1	24	9.0	0.58

Site	Gd (ppm)	Au (ppm)	Hf (ppm)	Fe (ppT)	La (ppm)	Lu (ppm)	Hg (ppm)	Mo (ppm)	Nd (ppm)	K (ppT)
2	-	.014	4.7	37.6	36.2	.26	1.7	29	30	23
3	9	-	4.0	36.9	33.2	.28	1.5	39	27	26
4	-	.036	2.9	29.8	27.3	.22	.11	77	22	19
5	-	.041	2.6	25.5	27.5	.19	.85	131	20	16
6	-	.010	3.1	17.1	31.0	.28	.062	34	23	30
7	-	.022	2.3	29.2	28.7	.11	.54	100	23	19
8	11	.030	2.2	23.9	25.0	.17	.55	27	21	13
9	9	.030	2.3	25.9	26.4	.19	.34	160	21	17
10	-	.042	2.4	26.8	28.1	.18	-	181	22	17
11	13	.032	2.3	25.4	23.8	-	1.5	161	21	17
12	6	-	2.4	26.2	23.5	.19	2.0	135	22	18
13	-	.042	2.5	26.1	25.9	.21	.28	118	21	15
14	8	.047	2.4	23.6	24.1	.15	.69	180	20	16
15	-	.043	2.0	21.0	24.8	.16	.13	206	18	15
17	-	.019	3.3	22.4	25.9	.28	1.3	47	22	21

Site	Rb (ppm)	Ru (ppm)	Sm (ppm)	Sc (ppm)	Na (ppT)	Sr (ppm)	Ta (ppm)	Tb (ppm)	Th (ppm)	W (ppm)	U (ppm)	Tb (ppm)	Zn (ppm)	Zr (ppm)
2	122	2.0	5.4	11.0	29.4	600	1.31	0.63	14.6	6.4	5.2	1.89	90	200
3	120	1.8	4.9	10.6	29.3	750	1.02	0.59	13.9	6.9	6.4	1.69	94	180
4	83	1.8	3.6	8.4	42.8	900	0.76	0.43	11.7	8.6	10.9	1.48	87	180
5	72	3.0	3.4	7.3	54.5	790	0.69	0.40	10.4	9.8	17.3	1.27	65	230
6	118	-	4.2	4.8	29.8	960	1.20	0.52	14.0	-	6.4	1.77	50	150
7	75	-	3.5	8.2	36.4	930	0.75	0.43	11.4	6.8	16.9	1.35	84	250
8	65	3.5	2.7	6.8	49.8	920	0.52	0.35	9.3	10.2	24.2	1.05	63	260
9	70	-	3.0	7.1	45.5	1020	0.60	0.38	10.5	9.8	18.8	1.08	79	250
10	70	3.5	3.1	7.4	41.6	820	0.64	0.40	11.0	10.2	24.5	1.24	77	280
11	65	3.4	3.0	7.1	48.2	960	0.56	0.39	10.4	9.5	16.2	1.15	67	260
12	69	-	3.3	7.4	47.4	1010	0.58	0.41	10.4	7.7	18.2	1.22	69	280
13	75	2.7	3.3	7.4	36.5	1000	0.73	0.41	11.8	6.4	16.4	1.19	72	210
14	65	2.8	3.1	6.7	64.2	900	0.65	0.37	9.9	12.4	15.2	1.17	64	220
15	59	2.4	2.6	5.9	83.0	810	0.59	0.35	9.3	14.5	16.4	0.91	64	220
17	90	2.1	3.9	6.3	32.2	1340	0.99	0.52	13.9	4.5	10.4	1.72	63	190

Table 17.--Chemical compositions of sediments taken from Walker Lake by gravity coring

[Depth of sample in centimeters (cm) below sediment-water interface; analyses for chemical constituents in parts per million (ppm) and parts per thousand (ppT)]

WALKER LAKE CORED SEDIMENT COMPOSITIONS

Core	Depth (cm)	Sb (ppm)	As (ppm)	Ba (ppm)	Br (ppm)	Ca (ppT)	Ce (ppm)	Cs (ppm)	Cr (ppm)	Co (ppm)	Eu (ppm)	Gd (ppm)	Au (ppm)
B	1	3.7±0.1	40±1	616±29	54.5±1.3	77±3	48±2	7.5±0.2	20±1	9.5±0.1	.55±.03	13±4	.029±.008
	10	3.7±0.1	36±2	589±39	58.4±1.2	95±3	43±2	6.8±0.2	17±1	8.6±0.2	.51±.02	13±4	.037±.012
	30	2.7±0.2	16±2	524±41	31.8±1.2	83±3	50±2	9.9±0.3	25±1	11.7±0.2	.63±.03	13±6	.012±.007
	40	2.3±0.1	19±1	736±22	37.3±1.2	53±1	56±2	11.0±0.2	25±1	12.1±0.2	.76±.03	18±4	.085±.008
	50	1.9±0.2	17±1	599±44	33.3±1.2	48±2	55±2	10.5±0.3	27±2	12.0±0.2	.69±.03	-	-
	60	1.8±0.1	20±1	634±40	27.5±1.1	52±2	56±2	10.6±0.3	27±1	12.0±0.2	.72±.03	12±4	-
	70	1.7±0.1	16±1	524±34	21.0±1.0	75±2	50±1	10.0±0.2	25±1	11.2±0.2	.65±.02	12±6	-
	90	1.8±0.1	18±1	512±33	20.3±1.0	74±2	47±1	8.8±0.2	24±2	10.1±0.1	.62±.02	16±5	-
	100	1.8±0.1	20±1	627±32	17.9±0.9	45±1	57±1	10.8±0.2	27±1	11.8±0.2	.73±.03	9±6	.014±.008
	120	1.8±0.2	18±1	514±33	14.1±1.1	48±1	57±1	9.8±0.3	27±1	10.5±0.2	.67±.02	16±5	-
	130	1.4±0.1	17±1	560±30	8.2±1.1	53±1	53±1	8.3±0.2	24±1	8.7±0.2	.57±.02	9±5	-
	150	1.4±0.1	19±1	570±27	9.5±1.0	49±1	62±1	8.6±0.2	23±1	8.3±0.2	.64±.02	8±5	-
C	10	3.5±0.1	23±1	541±34	30.1±1.0	89±2	55±1	10.6±0.2	26±1	12.6±0.2	.75±.02	6±4	.082±.005
	60	1.4±0.1	17±1	540±30	41.6±1.2	69±1	50±1	9.7±0.2	24±1	11.6±0.2	.69±.02	12±5	.334±.009
	70	1.2±0.1	21±2	602±37	55.1±1.2	55±1	52±1	9.7±0.2	24±1	11.0±0.2	.66±.03	14±5	-
	90	1.3±0.2	23±2	507±27	50.1±1.3	48±1	55±1	11.0±0.2	26±1	12.3±0.2	.74±.02	8±5	-
	100	1.3±0.1	25±2	560±29	39.5±1.1	49±1	56±1	9.7±0.2	26±1	10.6±0.2	.66±.02	10±6	-

Core	Depth (cm)	Hf (ppm)	Fe (ppT)	La (ppm)	Lu (ppm)	Hg (ppm)	Mo (ppm)	Nd (ppm)	K (ppT)	Rb (ppm)	Ru (ppm)	Sm (ppm)
B	1	2.68±.08	25.6±0.3	-	.211±.009	1.3±0.4	119±6	21±1	17±4	73±2	2.1±0.9	3.0±0.2
	10	2.22±.08	23.2±0.3	22.6±0.4	.208±.009	1.1±0.3	125±8	19±2	14±5	63±2	2.7±1.1	2.8±0.2
	30	2.65±.10	32.7±0.4	25.8±0.2	.251±.011	2.1±0.2	50±4	23±2	16±3	82±3	1.8±1.2	3.7±0.2
	40	3.14±.11	35.3±0.3	30.1±0.4	.087±.015	1.8±0.2	40±4	25±2	20±3	91±4	-	4.4±0.1
	50	3.09±.11	34.6±0.3	29.4±0.5	.195±.017	-	60±5	24±2	17±4	84±3	1.6±1.1	4.2±0.1
	60	3.42±.11	35.4±0.3	30.4±0.4	.248±.016	-	66±5	24±2	18±3	91±4	1.4±1.0	4.0±0.2
	70	3.11±.12	32.6±0.4	25.9±0.3	.242±.016	2.6±0.3	68±6	25±3	15±2	83±3	1.9±1.0	3.7±0.2
	90	3.00±.09	28.8±0.3	25.2±0.3	.231±.016	81±46	76±4	21±2	16±2	86±2	2.1±0.9	3.7±0.2
	100	3.37±.10	34.4±0.4	29.9±0.3	.070±.027	.30±.28	43±4	22±2	17±2	100±3	2.2±1.0	4.2±0.2
	120	3.47±.10	31.9±0.3	29.7±0.5	.295±.010	-	70±5	27±2	19±4	105±3	2.0±1.1	3.8±0.3
	130	3.35±.08	27.4±0.3	28.4±0.3	.286±.010	-	40±4	24±2	22±2	110±3	1.8±0.8	4.0±0.2
	150	3.80±.08	27.4±0.3	33.2±0.4	.308±.009	-	25±3	25±2	25±3	116±4	1.6±0.7	4.4±0.2
C	10	3.08±.08	34.5±0.3	28.2±0.2	.255±.009	-	105±3	26±1	17±3	81±3	2.8±1.0	4.0±0.1
	60	3.16±.08	32.4±0.3	27.3±0.4	.240±.009	-	81±5	24±2	16±4	80±3	-	3.8±0.1
	70	3.00±.09	32.6±0.4	28.1±0.4	.194±.016	-	82±5	24±2	-	82±3	2.4±1.0	3.9±0.1
	90	3.18±.14	35.8±0.3	30.5±0.4	.251±.009	-	71±5	25±2	19±8	93±3	2.4±0.8	4.4±0.2
	100	3.54±.09	31.6±0.3	30.2±0.4	.258±.015	-	68±5	26±2	22±5	108±4	2.4±0.8	4.3±0.1

Core	Depth (cm)	Sc (ppm)	Na (ppT)	Sr (ppm)	Ta (ppm)	Tb (ppm)	Th (ppm)	W (ppm)	U (ppm)	Yb (ppm)	Zn (ppm)	Zr (ppm)
B	1	7.2±0.1	38±2	867±66	.66±.05	.42±.04	10.9±0.2	8.9±1.6	17.0±0.7	1.13±.07	69±5	241±49
	10	6.5±0.1	35±2	981±111	.61±.05	.39±.04	9.9±0.2	6.5±1.3	16.2±0.7	1.01±.06	73±6	239±57
	30	9.5±0.1	22.8±0.3	591±66	.68±.07	.51±.06	13.8±0.3	6.1±2.0	13.8±0.5	1.35±.08	97±8	189±56
	40	10.4±0.1	25.9±0.3	1016±65	.71±.06	.56±.03	13.4±0.2	6.4±1.3	8.7±0.4	1.57±.05	95±6	185±52
	50	9.9±0.1	22.4±0.3	516±29	.70±.05	.51±.05	12.8±0.2	7.9±1.6	9.9±0.4	1.08±.06	107±10	160±51
	60	10.0±0.1	21.0±0.3	506±36	.76±.05	.54±.05	13.2±0.2	7.0±1.4	10.9±0.4	1.47±.07	90±8	237±58
	70	9.6±0.1	16.4±0.8	413±71	.75±.07	.50±.05	12.0±0.2	5.7±0.7	11.5±0.6	1.50±.07	79±6	189±70
	90	8.4±0.1	14.8±1.3	423±99	.76±.06	.48±.04	11.4±0.2	4.7±0.9	10.8±0.4	1.35±.08	72±6	204±67
	100	10.1±0.1	16.0±0.5	704±62	.85±.06	.58±.04	14.5±0.2	6.8±0.9	8.1±0.3	1.51±.10	88±7	186±68
	120	9.3±0.1	16.2±0.2	320±72	.99±.06	.58±.03	14.5±0.2	6.4±1.4	10.8±0.5	1.90±.08	89±7	208±62
	130	7.6±0.1	17.5±0.5	778±75	1.18±.06	.57±.03	15.0±0.2	5.3±0.9	8.5±0.4	1.90±.07	68±5	190±64
	150	8.02±.06	18.8±0.2	548±66	1.22±.05	.62±.03	16.0±0.2	4.4+1.1	6.1±0.3	2.04±.07	70±5	159±57
C	10	10.1±0.1	26.2±0.2	425±92	.73±.05	.52±.04	13.1±0.2	7.7±0.7	19.0±0.3	1.45±.07	103±8	214±51
	60	9.2±0.1	47±2	357±61	.77±.08	.48±.04	12.3±0.2	10.3±1.7	10.8±0.4	1.56±.07	77±6	204±63
	70	9.4±0.1	57±2	818±113	.67±.05	.49±.04	12.5±0.2	8.6±1.5	13.0±0.5	1.42±.08	86±6	227±58
	90	10.4±0.1	60±3	305±68	.74±.06	.55±.03	13.6±0.2	11.2±1.6	8.9±0.5	1.63±.07	89±6	189±54
	100	8.8±0.1	55±3	618±58	1.05±.06	.56±.04	15.6±0.2	9.5±1.5	12.1±0.4	1.92±.08	80±6	206±49

Table 19.--Chemical composition of Walker Lake tufas (WLT) and Walker River sediment bedload (WRS).
[Analyses for Na, K, Ca, Mg, Sr, Al, Fe, and Cl in weight percent; analyses for elements in parts per million; numbers in parentheses refer to particle size in micrometers (μm); I refers to a sample which was ignited before analysis]

Sample site	WL3T	WL4T	WRS (<45 μm)	WRS (<45 μm, I)	WRS (45-65 μm)
Percent insoluble	1.6	0.75	--	--	--
Age (yr B.P.)	12,300	2,180	--	--	--
		Atomic adsorption analyses			
Na	0.14	0.53	--	--	--
K	.039	.028	--	--	--
Ca	33.6	35.6	--	--	--
Mg	1.5	.45	--	--	--
Sr	.084	.073	--	--	--
		Neutron activation analyses			
Na	2.13 ± 0.04	.72 ± 0.1	2.14 ± 0.4	2.26 ± 0.4	2.33 ± 0.4
K	.16 ± 0.7	<.32	1.58 ± 0.40	2.27 ± 0.21	2.11 ± 0.15
Ca	35.8 ± 0.8	36.7 ± 0.8	3.3 ± 0.6	2.2 ± 0.7	3.8 ± 0.6
Mg	1.8 ± 0.2	<0.6	1.2 ± 0.8	1.9 ± 0.8	1.8 ± 0.7
Al	.11 ± 0.2	<0.38	7.8 ± 0.1	8.6 ± 0.2	7.8 ± 0.1
Fe	.329 ± 0.009	.318 ± 0.009	3.66 ± 0.05	3.92 ± 0.05	3.31 ± 0.05
Cl	<.08	.21 ± 0.02	<.29	<.30	<.25
Mn	96. ± 2	41.6 ± 0.6	>1,200.	3,105. ± 60	2,290. ± 45
Dy	.63 ± 0.04	8.4 ± 0.1	3.61 ± 0.25	3.62 ± 0.34	3.33 ± 0.19
U	1.78 ± 0.02	20.8 ± 0.1	5.50 ± 0.05	5.89 ± 0.05	4.97 ± 0.05
Ba	727. ± 15	120. ± 12	2,000. ± 23	1,186. ± 24	1,053. ± 22
Mo	1.27 ± 0.33	<3.5	2.32 ± 0.60	1.86 ± 0.65	2.25 ± 0.62
Lu	.108 ± 0.008	.626 ± 0.022	.329 ± 0.017	.349 ± 0.018	.292 ± 0.016
W	1.20 ± 0.39	2.47 ± 0.76	7.97 ± 1.27	9.66 ± 1.48	7.32 ± 1.32
La	2.74 ± 0.35	17.3 ± 0.6	35.8 ± 0.9	37.8 ± 1.0	33.6 ± 0.9
Sm	.427 ± 0.006	6.86 ± 0.02	5.26 ± 0.02	5.57 ± 0.02	4.89 ± 0.02
Sc	.79 ± 0.01	.74 ± 0.01	11.42 ± 0.05	12.28 ± 0.05	11.12 ± 0.04
Co	.894 ± 0.054	.761 ± 0.066	16.4 ± 0.3	17.1 ± 0.3	14.7 ± 0.3
Sb	.12 ± 0.03	.18 ± 0.04	1.60 ± 0.14	1.82 ± 0.15	1.58 ± 0.14
Th	1.02 ± 0.02	10.2 ± 0.1	15.2 ± 0.1	17.6 ± 0.1	13.3 ± 0.1
Cs	.675 ± 0.047	.283 ± 0.051	9.80 ± 0.23	10.34 ± 0.24	9.24 ± 0.23
Cr	1.85 ± 0.29	2.51 ± 0.29	42.1 ± 0.9	44.7 ± 0.9	37.6 ± 0.9
Ni	3.9 ± 1.8	<4.8	19.6 ± 6.8	20.8 ± 7.1	24.0 ± 6.8
Rb	8.1 ± 1.1	<2.6	99.2 ± 4.6	113. ± 5	105. ± 4
Tb	.085 ± 0.010	1.20 ± 0.04	.823 ± 0.035	.865 ± 0.033	.865 ± 0.033
Zn	4.5 ± 1.3	5.9 ± 1.8	61. ± 5	79. ± 5	74. ± 5
Ta	<.062	<.047	.803 ± 0.057	.889 ± 0.060	.787 ± 0.057
Ce	4.84 ± 0.10	42.2 ± 0.2	72.9 ± 0.3	77.1 ± 0.4	67.6 ± 0.3
Hf	.084 ± 0.016	<.04	7.86 ± 0.05	8.21 ± 0.06	5.98 ± 0.05
Yb	.59 ± 0.02	4.2 ± 0.06	2.25 ± 0.06	2.44 ± 0.06	2.18 ± 0.05

Table 18.--Bulk mineralogy of Walker Lake core samples together with exchange population of Walker Lake clays and mole percent of magnesium calcite fraction

[Depth in meters (m) below sediment-water interface; bulk mineralogy in weight percent (wt pct); cation exchange capacity (CEC) of clay fraction in milliequivalents per 100 grams (meqx10^{-2}g)]

Core	Depth (m)	Solid (wt pct)	Quartz (wt pct)	Feldspar (wt pct)	Calcium Carbonate (wt pct)	Clay (wt pct)	Monohydro-calcite (wt pct)	Calcite (wt pct)	Magnesium in calcite (Mole percent)	CEC (meq x 10^{-2}g)	Exchangeable Cations Na (meq x 10^{-2}g)	Ca	K_2	Mg
B	0.05	11	11	9	24	45	24							
	0.35	15	9	9	19	49	4	15	11					
	0.65	18	10	9	21	44	18	3	11					
	0.95	21	16	10	20	47	3	17	12					
	1.25	25	10	10	11	44	8	3	10					
C	0.05	11	10	8	25	48	25							
	0.35	15	10	12	12	48	12							
	0.65	18	10	13	19	46	12	7	11					
	0.95	22	10	10	14	50	10	4	12					
D	0.05	13	10	7	26	40	26							
	0.35	15	12	12	21	42	21							
	0.65	17	11	12	16	50	7	9	10					
	0.95	21	10	11	19	50		19	10					
E	0.05	13	7	7	22	48	22							
	0.15	15	6	6	24	45	24							
	0.55	13	11	10	10	52	10							
	0.95	17	8	10	14	50	14							
	1.35	21	10	15	8	47	5	3	11					
	1.55	27	11	11	15	50		15	10					
	1.65	29	8	10	16	50		16	10					
G	0.05	12	10	8	24	45	24			71	32	28	4	7
	0.45	19	12	13	21	39	18	3	11	110	65	28	12	5
	0.95	20	12	15	19	41	7	12	12	112	28	63	8	13
	1.45	22	9	8	20	50		20	12	120	30	76	7	7
	1.95	20	7	7	30	45		30	7	123	45	62	8	7
	2.45	25	26	19	28	20		28	5	125	48	50	17	10
	2.95	64	27	32	13	20		13	<3	122	50	46	10	16
	3.45	55	20	15	24	34		24	<3	123	55	40	13	15
	3.95	50	23	10	22	40		22	<3	118	58	43	12	5
	4.60	32	10	10	23	48		23	<3	102	62	20	8	12

The amounts of sodium, potassium, magnesium, and strontium in the acid-soluble portions of a variety of tufas from the Walker Lake area are listed on table 20. The sites from which these samples were collected are shown in Benson (1978).

On table 21, results are shown of an experiment in which 75 l of Walker Lake water were evaporated by sunlamp during a 17 day period. X-ray diffraction analyses of the precipitated solids indicated the presence of halite (NaCl), 'henardite (Na_2SO_4), sulphohalite ($Na_6ClF(SO_4)_2$) and schairerite ($Na_2SO_4.Na(F,Cl)$). Table 22 lists ^{14}C ages, $\delta^{13}C$ values, and dissolved sulfide contents of certain Walker Lake core samples.

SUMMARY

The results of major, minor, and trace element analyses of water and sediment samples taken from the Walker River Basin have been tabulated in this report. Analyses of snow samples from the bordering Sierra Nevada are also included. The 1975 to 1976 sampling program was designed in order to: (1) obtain a general overview of the hydrochemistry of the Walker Basin system, (2) define the effects of agriculture on the chemistry of the surface water system, and (3) provide a data base for future research into the chemical evolution of this system. The 1980 to 1981 sampling program was designed to supplement earlier data and in particular provide data on the seasonal changes of river chemistry at a site uncontaminated by agricultural processes.

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Table 20.--Sodium, Potassium, Magnesium and Strontium Concentrations of Tufas in the Walker Lake (WL) Basin

Sample	Ele (m)	Age (yr BP)	Na (wt.%)	K (wt.%)	Mg (wt.%)	Sr (wt.%)
WL-1a	1312.2	25,280±750	.53	.069	1.3	.18
WL-1b	1312.2		.22	.034	1.2	.19
WL-2	1324.1	12,340±160	.13	.028	1.5	.09
WL-3	1327.4	12,275±160	.14	.039	1.5	.08
WL-4	1210.7	2,185±80	.53	.028	.45	.07
WL-5a	1215.5	1,335±75	.28	.027	.25	.04
WL-5b	1215.5		.36	.021	.60	.09
WL-5b'	1215.5		.35	.022	.61	.10
WL-6	1222.2	1,720±80	.30	.020	.81	.11
WL-7	1229.3	1,205±75	1.0	.039	1.4	.18
WL-8	1236.3	<185	.57	.025	.95	.10
WL-9a	1244.1	4,445±95	.29	.024	2.2	.16
WL-9b	1244.1		.24	.022	2.5	.21
WL-9c	1244.1		.63	.033	2.1	.24
WL-10a	1251.5	2,970±85	.28	.016	2.6	.13
WL-10b	1251.5		.17	.012	2.7	.11
WL-10b'	1251.5		.17	.013	2.7	.19
WL-11a	1253.3	>40,000	.13	.067	1.4	.09
WL-11b	1253.3		.23	.020	1.4	.18
WL-11c	1253.3		.22	.021	1.4	.17
WL-11d	1253.3		.18	.017	1.9	.15
WL-12	1292.4	>40,000	.073	.046	1.2	.09
WL-13a	1299.4	>40,000	.10	.048	.70	.17
WL-13b	1299.4		.11	.030	.53	.14
WL-13b'	1299.4		.11	.030	.53	.13
WL-14a	1318.0	12,240±160	.10	.028	1.3	.08
WL-14b	1318.0		.11	.019	1.6	.10
WL-15	1327.1	11,850±160	.11	.042	1.5	.09
WL-17	1327.7	21,480±370	.04	.067	1.2	.23

Table 21.--Trends in chemical composition of Walker Lake water during evaporation

[Temperature in degrees celsius (°C); analyses for chemical constituents in parts per million (ppm)]

COMPOSITION (mg/l) OF WALKER LAKE WATER AS A FUNCTION OF EVAPORATION

Sample	Date	T°C	pH	Σ ALK As HCO_3	Cl	SO_4	Na	K	Ca	Mg	Sr	SiO_2	TDS	Volume Remaining (%)
WLE-00	1/23/76	18.8	9.3	2850	2280	2080	3120	160	11	130	3.1	0.8	10,500	100
WLE-01	1/25/76	32.0	9.35	3560	2730	2440	3650	213	13	160	3.6	0.75	12,800	86.7
WLE-02	1/26/76	30.8	9.50	3930	3030	2600	3900	220		180	3.2	0.70	13,900	78.4
WLE-03	1/27/76	32.8	9.45	4290	3410	2920	4270	225	16	190	3.8	0.50	15,000	70.8
WLE-04	1/28/76	28.1	9.45	4850	3730	3240	4870	285	18	210	4.3	<0.25	17,200	61.9
WLE-05	1/29/76	27.8	9.48	5660	4310	3740	6000	303		240	4.9	<0.25	20,300	53.2
WLE-06	2/02/76	25.2	9.45	11,400	8680	7150	11,500	651	42	500	10.6	<0.25	39,900	26.3
WLE-07	2/04/76	30.8	9.40	17,100	13,300	11,600	18,000	922	38	730	10.2	<0.25	61,700	16.2
WLE-08	2/05/76	27.6	9.35	24,000	18,100	16,000	25,000	1400	25	920	7.2	<0.25	85,400	11.2
WLE-09	2/06/76	28.7	9.19	33,600	28,200	25,600	40,500	2200	26	1020	8.8	<0.25	131,000	7.4
WLE-10	2/07/76	38.0	9.05	55,400	48,300	45,800	65,000	3030	52	660	17.2	<0.25	218,000	4.1
WLE-11	2/08/76	25.6	9.23	81,400	89,400	89,000	125,000	8250	14	400	3.2	<0.25	393,000	~0.3
WLE-12	2/09/76			76,600	80,900	60,000	124,000	13,500	12	270	3.7	<0.25	356,000	

Table 22.--Radiocarbon ages and $\delta^{13}C$ values for cored sediment samples together with dissolved sulfide ($S^{=}$) concentrations in pore fluids from core E, Walker Lake

[Depth in centimeters (cm) below sediment-water interface; radiocarbon (^{14}C) age in years before present (yr BP); $\delta^{13}C$ relative to Peedee belemnite standard; and dissolved sulfide in parts per million (ppm)]

Core	Depth (cm)	^{14}C age (yr BP)	$\delta^{13}C$ (0/00)	$S^{=}$(ppm)
B	0-10	modern	---	
	50-70	450 ± 50	-27.0	
	120-140	1020 ± 60	-27.4	
D	30-50	645 ± 55	-30.0	
	80-100	985 ± 55	-27.2	
E	0-10	modern	---	
	70-90	315 ± 55	---	
	110-130	595 ± 55	---	
	150-170	840 ± 55	---	
E	0-10		46	
	10-20		15	
	20-30		72	
	30-40		21	
	40-50		140	
	50-60		40	
	60-70		42	
	70-80		32	
	80-90		32	
	90-100		16	
	100-110		45	
	110-120		110	
	120-130		33	
	130-140		51	
	140-150		22	
	150-160		11	
	160-170		15	
	170-177		13	