UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality map of heavy-mineral-concentrate and rock samples from the Black Rock Desert Wilderness Study Area (NV-020-620), Humboldt County, Nevada

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STUDIES RELATED TO WILDERNESS

Bureau of Land Management Wilderness Study Areas

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine their mineral values, if any. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of the Pinto and Elephant Mountains areas in the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada.

INTRODUCTION

In the spring of 1984, the U.S. Geological Survey conducted a follow-up geochemical sampling of the Pinto Mountain and Elephant Mountain areas in the west portion of the Black Rock Desert Wilderness Study Area, Humboldt

Desert Wilderness Study Area comprises 319,594 acres, or about 499 mi^2 (1,292 km^2) in southwest Humboldt County, Nevada, of which the U.S. Geological Survey was asked to study 174,300 acres, or about 272 mi^2 (704 km^2). To study the 174,300 acres, samples were collected in an area of about 6,400 acres, 10 mi^2 (26 km^2). Throughout this report, "Wilderness Study Area" and "study area" refer to the 174,300 acre area, which the U.S. Geological Survey studied. The study area is 40 mi (64 km) east of Gerlach, Nevada, by Nevada State Highway 47, which is a graveled road. There are dirt roads around the perimeter of the study area but no road access to the interior (fig. 1).

Ninety percent of the area is covered by Pleistocene lake sediment. The remainder is underlain by welded and non-welded siliceous ash-flow tuff, rhyolite flows, shallow volcanic intrusives, basalt, shale, mudstone, siltstone, sandstone, and carbonate sediments. These volcanic and sedimentary units crop out in the west and northwest side of the study area. There are several active hot springs in the west and northwest part of the wilderness study area as well as deposits from inactive hot springs.

The Pleistocene lake bed in the study area has been incised by intermittent streams which drain into the study area. Little vegetation is found in the study area. The elevation of the study area is approximately 4,000 ft (1,219 m), and the area is nearly flat except for the Pinto and Elephant Mountains in the northwest part of the study area which are approximately 5,000 ft (1,524 m) in elevation.

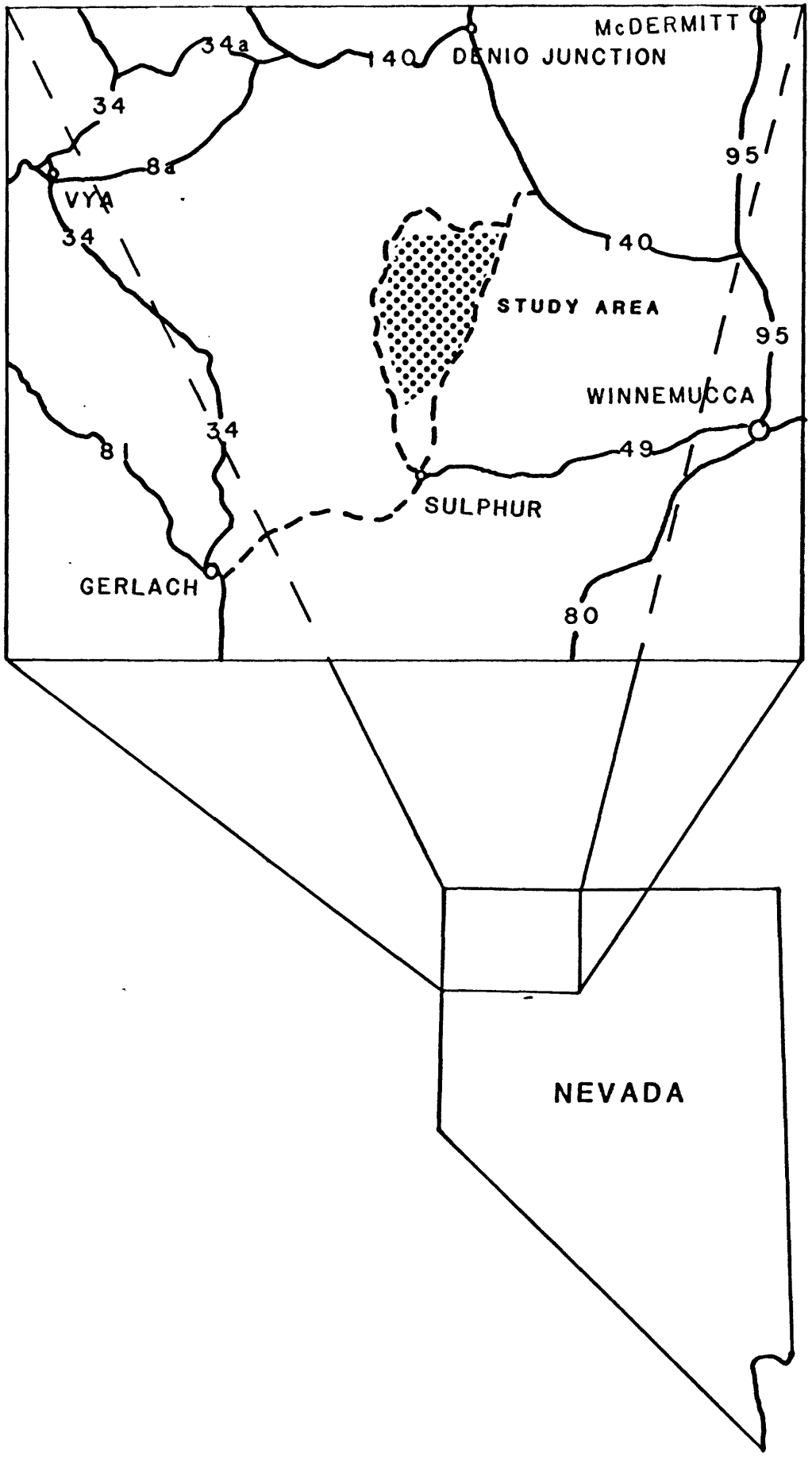

Figure 1. Location of Black Rock Desert Wilderness Study Area (NV-020-620), Humboldt County, Nevada.

METHODS OF STUDY

Sample Media

Heavy-mineral-concentrate samples provide information about the chemistry of certain minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which may be ore related, permits determination of some elements that are not easily detected in stream-sediment samples.

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. Analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

Sample Collection

Heavy-mineral concentrates were collected at 5 sites and 32 rock samples were collected at 16 sites (plate 1).

Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from active alluvium primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on USGS topographic maps (scale = 1:24,000). Each sample was composited from several localities within an area that may extend as much as 100 ft from the site plotted on the map. Each bulk sample was sieved with a 2.0-mm (10-mesh) screen to remove the coarse material. The less than 2.0-mm fraction was panned until most of the quartz, feldspar, organic material, and clay-sized material were removed.

Rock samples

Rock samples were collected from outcrops or exposures in the vicinity of the plotted site location. Samples were collected from unaltered, altered, and mineralized rocks (table 5).

Sample Preparation

After air drying, bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned. The resultant heavy-mineral sample was separated into three fractions using a large electromagnet (in this case a modified Frantz Isodynamic Separator). The most magnetic material, primarily magnetite, was not analyzed. The second fraction, largely ferromagnesian silicates and iron oxides, was saved for archival storage. The third fraction (the least magnetic material, which may include the nonmagnetic ore minerals, zircon, sphene, etc.) was split using a Jones splitter. One split was hand ground for spectrographic analysis; the other split was saved for mineralogical analysis. These magnetic separates are the same separates that would be produced by using a Frantz Isodynamic Separator set at a slope of 15 and a tilt of 10 with a current of 0.1 ampere to remove the magnetite and ilmenite, and a current of 1.0 ampere to split the remainder of the sample into paramagnetic and nonmagnetic fractions.

Rock samples were crushed and then pulverized to minus 0.15 mm with ceramic plates.

Sample Analysis

Spectrographic method

The heavy-mineral-concentrate and rock samples were analyzed for 31 elements using semiquantitative, direct-current arc emission spectrographic methods. The analyses for heavy-mineral-concentrate samples were performed by analysts in the Branch of Exploration Geochemistry using the method of Grimes and Marranzino (1968); analyses for rock samples were performed by analysts in the Branch of Analytical Chemistry using the method of Myers and others (1961). The elements analyzed and their lower limits of determination are listed in table 1. For arsenic (As), gold (Au), cadmium (Cd), and thorium (Th), the lower limit of determination of the two analytical methods varies. The values in the parentheses are the limits of determination for Myers and others (1961). Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence level and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (iron, magnesium, calcium, and titanium) are given in weight percent; all others are given in parts per million (micrograms/gram). Analytical data for the heavy-mineral concentrate and rock samples from this study in the Black Rock Desert Wilderness Study Area are listed in tables 3 and 4, respectively.

Chemical methods

Other analytical methods used on samples from the Black Rock Desert Wilderness Study Area are summarized in table 2. The analytical method used for determining As, Bi, Cd, Sb, and Zn is a modification and adaption for the inductively coupled plasma method (ICP) based on the method of O'Leary and Viets (1986).

Analytical results for heavy-mineral-concentrate and rock samples are listed in tables 3 and 4, respectively.

ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into a computer-based file called Rock Analysis Storage System (RASS). This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1977).

DESCRIPTION OF DATA TABLES

Tables 3 and 4 list the analyses for the heavy-mineral concentrates and rocks, respectively. For the two tables, the data are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers correspond to the numbers shown on the site location maps (plate 1). Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; "icp" indicates inductively coupled plasma; and "aa" indicates atomic absorption. A letter "N" in table 3 indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in table 1. If an element was observed but was below the lowest reporting value, a "less than" symbol (<) was entered in table 3 in front of the lower limit of determination. For table 4, the letter N is not used and a "less than" symbol (<) indicates that an element, observed or not observed, is below the detection limit in table 1. If an element was observed but was above the highest reporting value, a "greater than" symbol (>) was entered in the tables in front of the upper limit of determination. Because of the formatting used in the computer program that produced tables 3 and 4, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Ag, and Be) carry one or more nonsignificant digits to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeros. Descriptions of rock samples are listed in table 5.

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TABLE 1.--Limits of determination for the spectrographic analysis of rocks, based on a 10-mg sample

[The values shown are the lower limits of determination assigned by the Grimes and Marranzino method, except for those values in parentheses, which are the lower values assigned by the Myers and others method. The spectrographic limits of determination for heavy-mineral-concentrate samples (Grimes and Marranzino) are based on a 5-mg sample, and are therefore two reporting intervals higher than the limits given for rocks. Analysts: Leon A. Bradley, David L. Fey (rocks), Gordon W. Day (heavy-mineral concentrates)]

Elements	Lower determination limit		Upper determination limit
	Percent		
Iron (Fe)	0.05		20
Magnesium (Mg)	.02		10
Calcium (Ca)	.05		20
Titanium (Ti)	.002		1
	Parts per million		
Manganese (Mn)	10		5,000
Silver (Ag)	0.5		5,000
Arsenic (As)	200	(700)	10,000
Gold (Au)	10	(15)	500
Boron (B)	10		2,000
Barium (Ba)	20		5,000
Beryllium (Be)	1		1,000
Bismuth (Bi)	10		1,000
Cadmium (Cd)	20	(30)	500
Cobalt (Co)	5		2,000
Chromium (Cr)	10		5,000
Copper (Cu)	5		20,000
Lanthanum (La)	20	(30)	1,000
Molybdenum (Mo)	5		2,000
Niobium (Nb)	20		2,000
Nickel (Ni)	5		5,000
Lead (Pb)	10		20,000
Antimony (Sb)	100		10,000
Scandium (Sc)	5		100
Tin (Sn)	10		1,000
Strontium (Sr)	100		5,000
Vanadium (V)	10		10,000
Tungsten (W)	50		10,000
Yttrium (Y)	10		2,000
Zinc (Zn)	200		10,000
Zirconium (Zr)	10		1,000
Thorium (Th)	100	(200)	2,000

TABLE 2.--Chemical methods used

AA = atomic absorption; ICP = inductively coupled plasma spectroscopy

Element or constituent determined	Sample Type	Method	Determination limit (micrograms/ gram or ppm)	Reference
Gold (Au)	rock	AA	0.1	Modification of Thompson and others, 1968.
Mercury (Hg)	rock	AA	0.02	Koirtyohann and Khalil, 1976.
Arsenic (As)	rock	ICP	5	Crock and others, 1983, and modification of O'Leary and Viets, 1986.
Antimony (Sb)	rock	ICP	2	
Zinc (Zn)	rock	ICP	2	
Bismuth (Bi)	rock	ICP	2	
Cadmium (Cd)	rock	ICP	0.1	

TABLE 3. ANALYSES OF THE NONMAGNETIC FRACTION OF THE HEAVY MINERAL CONCENTRATE SAMPLES FROM THE BLACK ROCK DESERT WILDERNESS STUDY AREA, HUMBOLDT COUNTY, NEVADA.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe- % s	Mg- % s	Ca- % s	Ti- % s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
85BR022	41 14 49	118 55 0	.2	.05	5	.2	100	N	N	N	<20	>10,000
85BR024	41 14 56	118 55 22	.2	.10	5	.2	100	N	N	N	<20	>10,000
85BR025	41 17 2	118 54 1	.5	.05	2	.1	100	N	N	N	<20	5,000
85BR031	41 21 26	118 48 33	.1	.05	5	.5	70	N	N	N	<20	>10,000
85BR033	41 22 15	118 47 25	.2	.05	2	.5	100	N	N	N	<20	>10,000

TABLE 3. --Continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
858R022	<2	N	N	N	N	<10	200	N	N	N	20
858R024	2	N	N	N	N	<10	150	N	N	N	N
858R025	<2	N	N	N	N	<10	50	N	N	N	100
858R031	N	N	N	N	N	N	100	N	N	N	N
858R033	<2	N	N	N	N	<10	100	N	N	N	N

TABLE 3. --Continued

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
85PR022	N	20	1,000	2,000	20	N	300	N	>2,000	N
85PR024	N	20	N	2,000	20	N	500	N	>2,000	N
85PR025	N	20	N	500	20	N	200	N	>2,000	N
85PR031	N	20	N	2,000	20	N	100	N	>2,000	N
85PR033	N	50	N	1,000	20	N	200	N	>2,000	N

TABLE 4. ANALYSES OF THE ROCK SAMPLES FROM BLACK ROCK DESERT WILDERNESS STUDY AREA, HUMBOLDT COUNTY, NEVADA.

Sample	Latitude	Longitude	Fe- % s	Mg- % s	Ca- % s	Ti- % s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s
85BR018R	41 15 30	118 56 15	1.5	.15	.70	.070	150	<.5	<700	<15	15	500	1.5	<10
85BR019R	41 15 33	118 56 12	1.5	.07	.70	.070	150	<.5	<700	<15	10	500	1.5	<10
85BR020R1	41 14 35	118 55 12	.3	.03	.50	.015	150	<.5	<700	<15	30	500	1.5	<10
85BR020R2	41 14 35	118 55 12	.7	.30	.70	.050	150	<.5	<700	<15	30	700	1.5	<10
85BR020R3	41 14 35	118 55 12	.7	.15	.70	.050	20	<.5	<700	<15	<10	300	1.5	<10
85BR021R1	41 14 38	118 55 12	1.5	.15	.30	.015	150	<.5	<700	<15	10	300	1.5	<10
85BR021R2	41 14 38	118 55 12	1.5	.30	.50	.050	100	<.5	<700	<15	<10	700	1.5	<10
85BR023R1	41 10 7	118 55 52	.7	.20	1.00	.150	70	<.5	<700	<15	15	700	1.5	<10
85BR023R2	41 10 7	118 55 52	1.5	.20	.20	<.002	30	<.5	<700	<15	<10	30	1.5	<10
85BR023R3	41 10 7	118 55 52	1.5	<.02	.15	.015	15	<.5	<700	<15	<10	50	<1.0	<10
85BR024R	41 14 56	118 55 22	1.5	.07	.50	.030	70	<.5	<700	<15	15	150	3.0	<10
85BR025R1	41 17 2	118 54 1	1.5	.30	.70	.200	300	<.5	<700	<15	15	1,500	1.5	<10
85BR025R2	41 17 2	118 54 1	1.5	.20	.30	.200	300	<.5	<700	<15	15	1,500	1.5	<10
85BR026R1	41 16 57	118 54 0	1.0	.30	.70	.030	300	<.5	<700	<15	15	700	3.0	<10
85BR026R2	41 16 57	118 54 0	.7	.15	.70	.030	1,500	<.5	<700	<15	15	1,000	2.0	<10
85BR026R3	41 16 57	118 54 0	.7	.15	.70	.030	150	<.5	<700	<15	15	500	2.0	<10
85BR026R4	41 16 57	118 54 0	.7	.03	.30	.010	1,500	<.5	<700	<15	15	300	<1.0	<10
85BR026R5	41 16 57	118 54 0	.7	.30	.70	.030	200	<.5	<700	<15	15	300	3.0	<10
85BR027R	41 17 10	118 53 47	1.5	.50	1.50	.200	200	<.5	<700	<15	15	1,500	1.5	<10
85BR028R1	41 16 59	118 53 49	.7	.70	1.50	.030	700	<.5	<700	<15	<10	300	1.5	<10
85BR028R2	41 16 59	118 53 49	3.0	.70	3.00	.300	300	<.5	<700	<15	15	700	1.5	<10
85BR029R1	41 16 45	118 53 20	1.5	.15	3.00	.300	300	<.5	<700	<15	<10	1,000	1.5	<10
85BR029R2	41 16 45	118 53 20	3.0	1.50	3.00	.300	300	<.5	<700	<15	10	700	1.0	<10
85BR029R3	41 16 45	118 53 20	3.0	.50	2.00	.300	200	<.5	<700	<15	<10	700	1.5	<10
85BR030R	41 21 50	118 51 46	.2	.70	15.00	.010	70	<.5	<700	<15	<10	700	<1.0	<10
85BR031R	41 21 26	118 48 33	3.0	.05	1.50	.150	30	<.5	<700	<15	15	700	1.5	<10
85BR032R	41 21 45	118 47 19	.1	.07	15.00	.007	300	<.5	<700	<15	30	150	2.0	<10
85BR033R1	41 22 15	118 47 25	1.5	.15	.30	.150	15	<.5	<700	<15	30	700	1.0	<10
85BR033R2	41 22 15	118 47 25	3.0	3.00	7.00	.150	700	<.5	<700	<15	<10	200	1.5	<10
85BR034R1	41 14 35	118 54 20	2.0	.10	1.50	.200	300	<.5	<700	<15	<10	700	1.5	<10
85BR034R2	41 14 35	118 54 20	1.0	.15	.70	.200	150	<.5	<700	<15	<10	1,500	1.5	<10
85BR034R3	41 14 35	118 54 20	.7	.15	.70	.030	200	<.5	<700	<15	15	1,500	1.5	<10

TABLE 4. --Continued

Sample	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s
85BR018R	<30	<5	<10	<5	100	10	30	<5	20	<100	5	<10	100	15
85BR019R	<30	<5	<10	5	70	7	30	<5	300	<100	7	<10	<100	15
85BR020R1	<30	<5	<10	<5	<30	<5	<20	<5	15	<100	<5	<10	100	<10
85BR020R2	<30	<5	<10	15	<30	<5	<20	<5	15	<100	7	<10	150	20
85BR020R3	<30	<5	<10	<5	100	15	20	<5	15	<100	<5	<10	<100	15
85BR021R1	<30	<5	<10	<5	<30	<5	<20	<5	15	<100	<5	<10	<100	15
85BR021R2	<30	<5	<10	7	150	7	20	<5	15	100	7	<10	<100	15
85BR023R1	<30	<5	15	7	30	<5	<20	<5	15	<100	7	<10	300	30
85BR023R2	<30	<5	<10	<5	<30	<5	<20	<5	<10	<100	<5	<10	<100	<10
85BR023R3	<30	<5	<10	<5	<30	<5	<20	<5	<10	<100	<5	<10	<100	15
85BR024R	<30	<5	<10	<5	70	<5	20	<5	30	<100	<5	<10	<100	15
85BR025R1	<30	<5	<10	<5	30	<5	<20	<5	15	<100	7	<10	150	30
85BR025R2	<30	<5	<10	<5	30	<5	<20	<5	30	<100	7	20	100	30
85BR026R1	<30	<5	<10	<5	<30	<5	20	<5	15	<100	<5	<10	300	<10
85BR026R2	<30	<5	<10	<5	<30	<5	<20	<5	15	<100	<5	<10	300	15
85BR026R3	<30	<5	<10	<5	<30	<5	<20	<5	15	<100	<5	<10	200	<10
85BR026R4	<30	<5	<10	<5	<30	<5	<20	<5	15	<100	<5	<10	<100	<10
85BR026R5	<30	<5	<10	<5	<30	<5	20	<5	15	<100	<5	<10	150	<10
85BR027R	<30	<5	<10	<5	70	<5	<20	<5	15	<100	7	<10	150	30
85BR028R1	<30	<5	<10	7	30	<5	<20	<5	15	<100	<5	<10	150	15
85BR028R2	<30	7	<10	7	30	<5	<20	<5	15	<100	15	<10	300	70
85BR029R1	<30	<5	<10	<5	50	<5	<20	<5	15	<100	7	<10	300	15
85BR029R2	<30	10	30	15	<30	<5	<20	7	15	<100	15	<10	300	150
85BR029R3	<30	<5	<10	<5	30	<5	<20	<5	15	<100	7	<10	300	30
85BR030R	<30	<5	<10	5	<30	<5	<20	<5	<10	<100	<5	<10	700	<10
85BR031R	<30	<5	30	7	<30	<5	<20	<5	10	<100	<5	<10	700	30
85BR032R	<30	<5	<10	<5	<30	<5	<20	<5	<10	<100	<5	<10	300	<10
85BR033R1	<30	<5	30	7	30	<5	<20	<5	10	<100	7	<10	300	70
85BR033R2	<30	7	30	7	<30	<5	<20	7	10	<100	7	<10	300	70
85BR034R1	<30	<5	<10	<5	30	<5	<20	<5	15	<100	7	<10	200	15
85BR034R2	<30	<5	<10	<5	50	<5	<20	<5	15	<100	7	<10	150	15
85BR034R3	<30	<5	<10	<5	30	<5	<20	<5	15	<100	<5	<10	200	<10

TABLE 4. --Continued

Sample	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp	Hg-ppm aa	Au-ppm aa
85BR018R	<50	50	<200	300	<200	42	<2	.2	<2	47	<.02	<.1
85BR019R	<50	30	<200	300	<200	42	<2	.2	<2	58	.02	<.1
85BR020R1	<50	<10	<200	50	<200	<5	<2	<.1	<2	8	<.02	<.1
85BR020R2	<50	10	<200	70	<200	<5	<2	<.1	<2	28	.02	<.1
85BR020R3	<50	30	<200	300	<200	25	<2	<.1	<2	17	<.02	<.1
85BR021R1	<50	<10	<200	30	<200	<5	<2	.1	<2	120	.03	<.1
85BR021R2	<50	50	<200	300	<200	12	<2	.3	<2	61	<.02	<.1
85BR023R1	<50	15	<200	100	<200	<5	<2	<.1	<2	21	.04	<.1
85BR023R2	<50	<10	<200	15	<200	<5	<2	<.1	<2	<2	.02	<.1
85BR023R3	<50	<10	<200	20	<200	7	<2	<.1	<2	3	.02	<.1
85BR024R	<50	50	<200	200	<200	13	<2	.2	<2	91	<.02	<.1
85BR025R1	<50	15	<200	200	<200	<5	<2	.2	<2	36	<.02	<.1
85BR025R2	<50	30	<200	200	<200	<5	<2	.2	<2	22	<.02	<.1
85BR026R1	<50	30	<200	150	<200	<5	<2	<.1	<2	45	.02	<.1
85BR026R2	<50	15	<200	150	<200	<5	<2	<.1	<2	39	<.02	<.1
85BR026R3	<50	15	<200	100	<200	<5	<2	.1	<2	52	<.02	<.1
85BR026R4	<50	<10	<200	30	<200	<5	<2	<.1	<2	36	<.02	<.1
85BR026R5	<50	50	<200	150	<200	<5	<2	<.1	<2	42	.03	<.1
85BR027R	<50	30	<200	200	<200	<5	<2	.2	<2	40	.04	<.1
85BR028R1	<50	15	<200	70	<200	<5	<2	<.1	2	11	.21	<.1
85BR028R2	<50	30	<200	150	<200	<5	<2	.2	<2	42	.05	<.1
85BR029R1	<50	50	<200	200	<200	<5	<2	.5	<2	68	.03	<.1
85BR029R2	<50	15	<200	100	<200	<5	<2	.2	<2	51	.11	<.1
85BR029R3	<50	20	<200	200	<200	<5	<2	.3	<2	53	.02	<.1
85BR030R	<50	15	<200	15	<200	10	<2	.7	<2	14	.03	<.1
85BR031R	<50	<10	<200	70	<200	100	<2	.3	5	<2	500.00	<.1
85BR032R	<50	<10	<200	15	<200	21	<2	<.1	6	4	1,300.00	<.1
85BR033R1	<50	10	<200	70	<200	50	<2	<.1	<2	5	1.40	<.1
85BR033R2	<50	30	<200	100	<200	<5	<2	1.7	5	35	.53	.1
85BR034R1	<50	30	<200	200	<200	<5	<2	.2	<2	79	.18	<.1
85BR034R2	<50	30	<200	150	<200	<5	<2	.1	<2	22	.65	<.1
85BR034R3	<50	<10	<200	100	<200	<5	<2	<.1	<2	9	.13	<.1

TABLE 5.--Description of rocks from the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada

Sample number	Description
85 BR018R1	Tufa
19R	Dacite
20R1	Ash flow tuff
20R2	Tufa
20R3	Fine-grained volcanic
21R1	Yellow powdery coating
21R2	Jasperoid
23R1	Tufa
23R2	Jasperoid
23R3	Ash flow tuff
24R	Fine-grained volcanic
25R1	Tufa
25R2	Tufa
26R1	Jasperoid breccia
26R2	Jasperoid breccia
26R3	Jasperoid breccia
26R4	Tufa
26R5	Tufa
27R	Tufa
28R1	Ash flow tuff
28R2	Tufa
29R1	Chert
29R2	Ash flow tuff
29R3	Jasperoid
30R	Tufa
85BR031R	Tufa
32R	Tufa
33R1	Ash flow tuff
33R2	Ash flow tuff
34R1	Ash flow tuff
34R2	Jasperoid breccia
34R3	Rhyolite