UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality maps of heavy-mineral-concentrate and rock samples from the South McCullough Wilderness Study Area (NV-050-435), Clark County, Nevada

By

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CONTENTS

ILLUSTRATIONS

TABLES

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 South McCullough Wilderness Study Area (NV-050-435), Clark County, Nevada.

INTRODUCTION

In April, 1985, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the South McCullough Wilderness Study Area (NV-050-435) in Clark County, Nevada.

The South McCullough Wilderness Study Area comprises about 19,558 acres (30 square miles) in southern Clark County and lies about 30 miles southwest of Boulder City (see fig. 1). Unimproved dirt roads reach the boundary of the area from Highway 95 on the east, Interstate 15 on the west, and the McCullough Pass road on the north. The topographic and geologic setting of the area is described by Longwell and others (1965) and Bingler and Bonham (1972). Elevations range from about 3,200 feet to 7,026 feet on McCullough Mountain. The area includes the north trending McCullough range from McCullough Pass southward about 12 miles. The range is composed predominantly of Precambrian metamorphic and igneous rocks, consisting of strongly crumpled and foliated mica schist, chlorite schist and quartz-feldspar gneiss, locally intruded by small plutons of brecciated, coarse grained gray to pink Precambrian granite, both of which are locally cut by pegmatite dikes. Lower slopes on the northeast flank are unconformably overlain by Tertiary gravel, sand, tuff, breccias, and flows of generally andesitic composition. The valleys flanking the range on the east and west are filled with Quaternary alluvium.

Vegetation is typical of the eastern Mohave Desert and consists of sparse growths of creosote on the alluvial fans and scrub oak, juniper and ponderosa pine near the tops of the mountain ridges.

METHODS OF STUDY

Sample Media

Analyses of stream-sediment samples represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits.

Heavy-mineral-concentrate samples provide information about the chemistry of a limited number of 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.

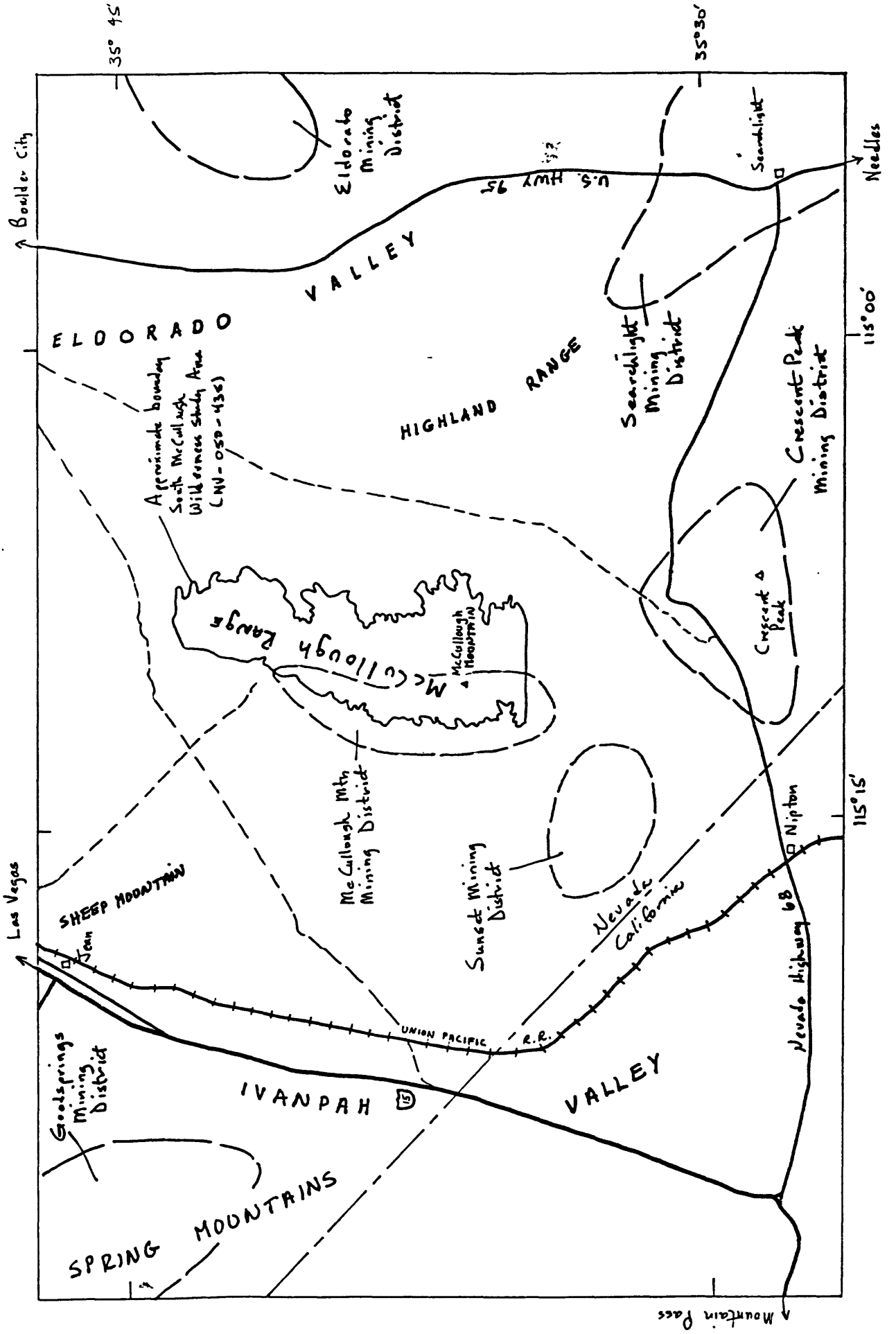

Figure 1. Location map of the South McCullough Wilderness Study Area, Clark County, Nevada.

Sample Collection

Samples were collected at 52 sites within or on drainages originating within the South McCullough Wilderness Study Area (plate 1). At all sites both a stream-sediment sample and a heavy-mineral-concentrate sample were collected. At two of these sites rock samples were also collected. Sampling density was about one sample site per 0.6 square miles. The area of the drainage basins sampled ranged from 0.2 to 2.0 square miles. Sufficient heavy-mineral concentrate for spectrographic analysis (5 mg) was recovered from all sample sites.

Stream-sediment samples

The stream-sediment samples consisted of active alluvium collected primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on USGS topographic maps (scale = 1:62,500). Each sample was composited from several localities within an area that may extend as much as 50 feet from the site plotted on the map. Stream-sediment samples were saved for archival storage and not analyzed.

Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from the same active alluvium as the stream-sediment samples. Each bulk sample was screened 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 sited location.

Sample Preparation

The stream-sediment samples were only saved for archival storage and not analyzed. The heavy-mineral-concentrate sample was air dried and sieved through an 80-mesh stainless steel screen. Bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned in the field. 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 ferromagnesium silicates and iron oxides, was saved for archival storage. The third fraction (the least magnetic material which may include the nonmagnetic ore minerals and 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 were produced by using a Frantz Isodynamic Separator set at a slope of 15 degrees and a tilt of 10 degrees 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 samples and rock samples were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). The elements analyzed and their lower limits of determination are listed in table 1. 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 intervals 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 are listed in table 2 for both heavy-mineral-concentrate and rock samples.

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 (Van Trump and Miesch, 1977).

DESCRIPTION OF DATA TABLES

Table 2 lists the analyses for heavy-mineral-concentrate and rock samples. 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 map (plate 1). A letter "N" in the tables 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 the tables in front of the lower limit of determination. If an element was not looked for in a sample, two dashes (--) are entered in the tables in place of the analytical value. Because of the formatting used in the computer program that produced the data tables, 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.

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Myers, A.T., Havens, R.G., and Dunton, P.J., 1961, A spectrochemical method for the semiquantitative analyses of rocks, minerals, and ores: U.S. Geological Survey Bulletin 1084-I, p. 1207-1229.

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TABLE 1.--Limits of determination for the spectrographic analysis of heavy-mineral-concentrate and rock samples 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 are based on a 5-mg sample, and are therefore two reporting intervals higher than the limits given for rocks.]

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.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK 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-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
MA001H	35 40 13	115 7 20	.10	.10	50.0	.30	700	N	N	N	<20	500	<2.0
MA002H	35 39 46	115 6 58	.50	.50	5.0	1.00	200	N	N	N	<20	2,000	<2.0
MA003H	35 38 11	115 8 35	.20	.05	20.0	.10	500	N	N	N	<20	100	<2.0
MA004H	35 36 57	115 8 50	.20	.05	20.0	.10	700	N	N	N	<20	500	<2.0
MA005H	35 35 33	115 7 47	.20	.10	10.0	.50	200	N	N	N	<20	300	<2.0
MA006H	35 34 50	115 7 47	.50	.10	10.0	.70	200	N	N	N	20	100	2.0
MA007H	35 35 5	115 11 22	.20	.10	5.0	.70	200	N	N	N	<20	500	<2.0
MA008H	35 36 58	115 12 10	.20	.05	20.0	.20	500	N	N	N	<20	200	<2.0
MA009H	35 37 42	115 13 0	.20	.05	20.0	1.50	500	N	N	N	<20	7,000	<2.0
MA010H	35 39 5	115 12 22	.20	.05	10.0	.20	500	N	N	N	<20	200	<2.0
MA011H	35 40 50	115 12 14	.20	.50	10.0	1.00	200	N	N	N	<20	500	<2.0
MA012H	35 40 20	115 10 39	.20	.07	10.0	.20	150	N	N	N	<20	700	<2.0
MA013H	35 44 16	115 7 51	.50	1.00	15.0	.70	200	N	N	N	<20	2,000	<2.0
MG001H	35 41 8	115 7 17	.20	.50	2.0	.20	100	N	N	N	<20	1,000	<2.0
MG002H	35 40 19	115 6 20	.20	.50	5.0	.70	100	N	N	N	20	500	<2.0
MG003H	35 38 8	115 8 37	.20	.05	20.0	.10	500	N	N	N	<20	100	<2.0
MG004H	35 36 54	115 8 54	.20	.05	10.0	.10	500	N	N	N	<20	>10,000	<2.0
MG005H	35 35 57	115 7 20	.20	.10	5.0	.20	200	N	N	N	<20	200	<2.0
MG006H	35 34 31	115 9 5	.20	.10	5.0	1.00	150	N	N	N	<20	700	<2.0
MG007H	35 35 30	115 11 59	.10	.05	10.0	.50	200	N	N	N	<20	100	<2.0
MG008H	35 36 52	115 12 8	.20	.05	20.0	.50	200	N	N	N	<20	200	<2.0
MG009H	35 38 18	115 12 15	.20	.05	20.0	.50	200	N	N	N	<20	200	<2.0
MG010H	35 39 24	115 12 30	.20	.05	10.0	1.00	200	N	N	N	<20	500	<2.0
MG011H	35 41 3	115 11 47	.10	.05	50.0	.10	500	N	N	N	<20	1,000	<2.0
MG012H	35 41 32	115 9 43	.20	.05	5.0	.50	150	N	N	N	<20	500	<2.0
MH001H	35 43 55	115 6 25	.20	.20	5.0	.50	70	N	N	N	<20	300	<2.0
MH002H	35 43 38	115 6 47	.20	.50	5.0	.70	100	N	N	N	<20	500	<2.0
MH003H	35 43 8	115 6 50	.50	.70	5.0	1.00	100	N	N	N	20	500	2.0
MH004H	35 42 51	115 6 57	.50	.20	5.0	1.00	200	N	N	N	<20	300	2.0
MH005H	35 42 19	115 7 10	.20	.20	1.0	.50	100	N	N	N	<20	500	2.0
MH006H	35 42 6	115 7 47	.50	1.00	5.0	1.50	200	N	N	N	<20	2,000	<2.0
MH007H	35 40 24	115 8 22	.20	.15	10.0	.50	200	N	N	N	<20	200	<2.0
MH008H	35 39 57	115 9 47	.20	.05	20.0	.50	500	N	N	N	<20	1,000	<2.0
MH009H	35 39 18	115 8 59	.20	.10	10.0	1.00	200	N	N	N	<20	150	<2.0
MH010H	35 38 59	115 9 47	.20	.05	10.0	.70	200	N	N	N	<20	2,000	<2.0
MH011H	35 39 0	115 9 37	.20	.05	20.0	.15	500	N	N	N	20	200	<2.0
MH012H	35 39 46	115 8 36	.20	.05	10.0	.50	150	N	N	N	<20	1,000	<2.0
MH013H	35 38 53	115 7 47	.20	.20	10.0	.20	150	N	N	N	<20	700	<2.0
MH014H	35 39 32	115 6 26	.70	.50	5.0	.70	200	N	N	N	<20	1,000	<2.0
MH015H	35 41 27	115 7 41	.20	.20	5.0	.50	200	N	N	N	<20	2,000	<2.0
MH016H	35 40 41	115 6 27	.50	1.00	5.0	1.50	150	N	N	N	<20	1,000	<2.0
MH017H	35 37 20	115 6 58	.20	.05	5.0	.50	150	N	N	N	<20	100	<2.0
MH018H	35 36 50	115 8 42	.50	.10	10.0	.70	200	N	N	N	<20	200	2.0
MH019H	35 36 35	115 7 7	.20	.05	5.0	.20	150	5.0	N	N	<20	200	<2.0
MH020H	35 34 37	115 9 3	.50	.07	10.0	.50	200	N	N	N	<20	200	<2.0

TABLE 2.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK COUNTY, NEVADA--Continued

Sample	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	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
MA001H	N	N	N	N	<10	150	N	N	N	<20	N	10	N	N
MA002H	N	N	N	20	<10	200	N	N	N	20	N	10	N	1,000
MA003H	N	N	N	N	<10	150	N	N	N	20	N	10	N	200
MA004H	N	N	N	N	<10	150	20	N	N	20	N	10	N	200
MA005H	N	N	N	N	<10	100	N	N	N	30	N	10	N	200
MA006H	N	N	N	N	<10	200	N	<50	N	20	N	10	N	300
MA007H	N	N	N	N	<10	70	N	N	N	20	N	10	N	N
MA008H	N	N	N	N	<10	150	N	N	N	<20	N	10	N	200
MA009H	N	N	N	N	<10	200	N	<50	N	50	N	30	N	200
MA010H	N	N	N	N	<10	150	<10	N	N	50	N	50	N	N
MA011H	N	N	N	N	<10	700	N	N	N	30	N	20	20	1,500
MA012H	N	N	N	N	<10	50	N	N	N	30	N	30	N	200
MA013H	N	N	N	50	<10	150	N	<50	N	30	N	10	N	1,000
MG001H	N	N	N	N	<10	100	N	N	N	30	N	10	N	500
MG002H	N	N	N	N	<10	50	N	N	N	500	N	10	N	300
MG003H	N	N	N	N	<10	150	N	N	N	30	N	10	N	200
MG004H	N	N	N	N	<10	100	N	N	N	20	N	10	N	200
MG005H	N	N	N	N	<10	150	N	N	N	20	N	10	N	200
MG006H	N	N	N	N	<10	100	N	N	N	20	N	10	N	200
MG007H	N	N	N	N	<10	100	N	N	N	30	N	10	N	N
MG008H	N	N	N	N	<10	150	N	N	N	30	N	10	N	200
MG009H	N	N	N	N	<10	150	N	N	N	50	N	10	N	N
MG010H	N	N	N	N	<10	100	N	N	N	30	N	20	N	N
MG011H	N	N	N	N	<10	150	N	N	N	<20	N	10	N	200
MG012H	N	N	N	N	<10	50	N	N	N	20	N	10	N	200
MH001H	N	N	N	N	<10	50	N	N	N	20	N	10	N	500
MH002H	N	N	N	N	<10	50	N	N	N	30	N	20	N	500
MH003H	N	N	N	N	<10	70	N	N	N	50	N	10	N	1,000
MH004H	N	N	N	20	<10	150	N	N	N	20	N	10	N	500
MH005H	N	N	N	N	<10	100	N	N	N	70	N	10	N	500
MH006H	N	N	N	50	<10	150	N	N	N	30	N	10	20	1,000
MH007H	N	N	N	N	<10	150	N	N	N	30	N	10	N	200
MH008H	N	N	N	N	<10	150	N	N	N	30	N	20	N	200
MH009H	N	N	N	N	<10	100	N	50	N	20	N	10	N	N
MH010H	N	N	N	N	<10	70	N	N	N	50	N	50	N	N
MH011H	N	N	N	N	<10	150	N	N	N	30	N	10	N	200
MH012H	N	N	N	N	<10	70	N	N	N	30	N	20	N	200
MH013H	N	N	N	N	<10	150	N	N	N	30	N	10	N	500
MH014H	N	N	N	20	<10	100	N	N	N	20	N	10	N	500
MH015H	N	N	N	N	<10	150	N	N	N	20	N	10	N	1,000
MH016H	N	N	N	N	<10	100	N	70	N	30	N	10	N	500
MH017H	N	N	N	N	<10	100	N	N	N	20	N	10	N	200
MH018H	N	N	N	20	<10	100	N	N	N	20	N	10	N	200
MH019H	N	N	N	N	<10	50	N	N	N	20	N	10	N	200
MH020H	N	N	N	N	<10	50	N	N	N	20	N	10	N	200

TABLE 2.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK COUNTY, NEVADA--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
MA001H	20	N	2,000	N	>2,000	N
MA002H	50	N	200	N	>2,000	N
MA003H	<20	N	700	N	>2,000	N
MA004H	20	700	1,000	N	>2,000	N
MA005H	50	N	200	N	>2,000	N
MA006H	50	150	200	N	>2,000	N
MA007H	20	N	200	N	>2,000	N
MA008H	20	N	700	N	>2,000	N
MA009H	20	N	1,500	N	>2,000	N
MA010H	20	150	700	N	>2,000	<200
MA011H	50	N	300	N	>2,000	<200
MA012H	20	N	1,000	N	>2,000	N
MA013H	50	N	200	N	>2,000	N
MG001H	20	N	100	N	>2,000	N
MG002H	30	N	150	N	>2,000	N
MG003H	20	N	1,000	N	>2,000	N
MG004H	20	100	1,000	N	>2,000	N
MG005H	20	N	200	N	>2,000	N
MG006H	30	150	200	N	>2,000	N
MG007H	20	N	500	N	>2,000	N
MG008H	20	<100	1,000	N	>2,000	N
MG009H	20	N	1,000	N	>2,000	N
MG010H	20	N	1,000	N	>2,000	<200
MG011H	<20	N	1,500	N	>2,000	N
MG012H	20	N	200	N	>2,000	N
MH001H	20	N	100	N	>2,000	N
MH002H	50	N	300	N	>2,000	N
MH003H	50	N	200	N	>2,000	N
MH004H	20	N	200	N	>2,000	N
MH005H	50	N	200	N	>2,000	N
MH006H	50	N	500	N	>2,000	<200
MH007H	20	N	500	N	>2,000	N
MH008H	<20	<100	700	N	>2,000	N
MH009H	30	N	500	N	>2,000	N
MH010H	20	100	700	N	>2,000	N
MH011H	<20	<100	700	N	>2,000	N
MH012H	20	100	500	N	>2,000	N
MH013H	50	200	200	N	>2,000	N
MH014H	50	N	150	N	>2,000	N
MH015H	20	<100	200	N	>2,000	N
MH016H	50	N	150	N	>2,000	300
MH017H	20	N	200	N	>2,000	N
MH018H	50	500	200	N	>2,000	N
MH019H	20	N	200	N	>2,000	N
MH020H	20	N	300	N	>2,000	N

TABLE 2.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK COUNTY, NEVADA--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
MH021H	35 35 0	115 11 22	.20	.10	10.0	1.00	200	N	N	N	<20	200	<2.0
MH022H	35 36 13	115 12 8	.20	.05	10.0	1.00	200	N	N	N	<20	150	<2.0
MH023H	35 36 30	115 13 22	.20	.05	10.0	.70	200	N	N	N	<20	300	<2.0
MH024H	35 38 48	115 11 58	.20	.07	10.0	.50	300	N	N	N	<20	1,000	<2.0
MH025H	35 40 24	115 12 25	.10	.05	20.0	.70	500	N	N	N	<20	300	<2.0
MH026H	35 40 12	115 10 36	.15	.05	20.0	.70	500	N	N	N	<20	500	<2.0
MH027H	35 43 10	115 9 7	.30	.20	10.0	.50	100	N	N	N	<20	2,000	<2.0
MA004R	35 36 57	115 8 50	3.00	1.50	1.5	.30	700	<.5	<700	<15	<10	200	1.5
MA013R	35 44 16	115 7 51	3.00	7.00	3.0	.50	1,000	<.5	<700	<15	<10	500	1.5

TABLE 2.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK COUNTY, NEVADA--Continued

Sample	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	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
MH021H	N	N	N	N	<10	150	N	50	N	20	N	10	N	200
MH022H	N	N	N	N	<10	100	N	N	N	100	N	50	N	N
MH023H	N	N	N	N	<10	100	N	N	N	30	N	10	N	N
MH024H	N	N	N	N	<10	100	N	N	N	30	N	10	N	200
MH025H	N	N	N	N	<10	50	N	N	N	50	N	50	N	200
MH026H	N	N	N	N	<10	150	N	N	N	30	N	20	N	N
MH027H	N	N	N	N	<10	50	N	N	N	20	N	10	N	500
MA004R	<10	<30	15	15	30	70	<5	<20	20	10	<100	15	<10	300
MA013R	<10	<30	20	200	20	70	<5	<20	100	15	<100	15	<10	700

TABLE 2.--SPECTROGRAPHIC ANALYSIS OF HEAVY-MINERAL-CONCENTRATE AND ROCK SAMPLES FROM THE SOUTH MCCULLOUGH MOUNTAINS WILDERNESS STUDY AREA, CLARK COUNTY, NEVADA--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s
MH021H	50	N	500	N	>2,000	N
MH022H	20	<100	700	N	>2,000	N
MH023H	20	100	700	N	>2,000	<200
MH024H	20	100	1,000	N	>2,000	<200
MH025H	20	N	2,000	N	>2,000	N
MH026H	20	N	150	N	>2,000	N
MH027H	20	N	200	N	>2,000	N
MA004R	100	<50	30	<200	150	<200
MA013R	150	<50	20	<200	150	<200