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**Analytical results and sample locality map
of stream-sediment, heavy-mineral-concentrate, and rock samples
in and adjacent to the Scorpion Wilderness Study Area,
Garfield and Kane Counties, Utah**

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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 resource potential, 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 Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.

INTRODUCTION

In June of 1986 and 1988, the U.S. Geological Survey conducted a reconnaissance geochemical survey of the Scorpion Wilderness Study Area (UT-040-082), Garfield and Kane Counties, Utah.

The Scorpion Wilderness Study Area comprises about 23 mi² (14,978 acres) in south-central Utah. The study area lies about 40 mi south of Escalante, Utah (see fig. 1) and access is provided by the improved gravel road off of U.S. Highway 12, that follows the Mormon pioneer route from Escalante to Hole-In-The-Rock.

The study area is found in the Colorado Plateau province (Thornbury, 1965) and within the Escalante Bench and Canyonlands physiographic province of Doelling (1975). The area is characterized by broad homoclinal folds that formed in the Mesozoic. Throughout the region, gently dipping sedimentary rocks ranging in age from Triassic to Jurassic have been folded into gentle anticlinal and synclinal structures with generally northerly and northwesterly directed axes. Rocks in the study area are primarily sedimentary units consisting of marine shelf and continental sediments of fluvial, eolian and alluvial origin (Bartsch-Winkler, 1989).

The study area consists of rugged mesa and canyon topography cut by rivers that flow south and southeast from the Henry Mountains north of the study area. Deeply incised canyons cut by tributaries of the Escalante River, including Twenty-five Mile Wash and Coyote Gulch, dissect the eastern part of the study area, while in the western and southern parts of the area the canyons are less well developed.

The climate of the area is arid and vegetation in the region consists primarily of desert shrubs, including sage.

METHODS OF STUDY

Sample Media

Analyses of the 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 certain minerals in rock material eroded from the drainage basin upstream from

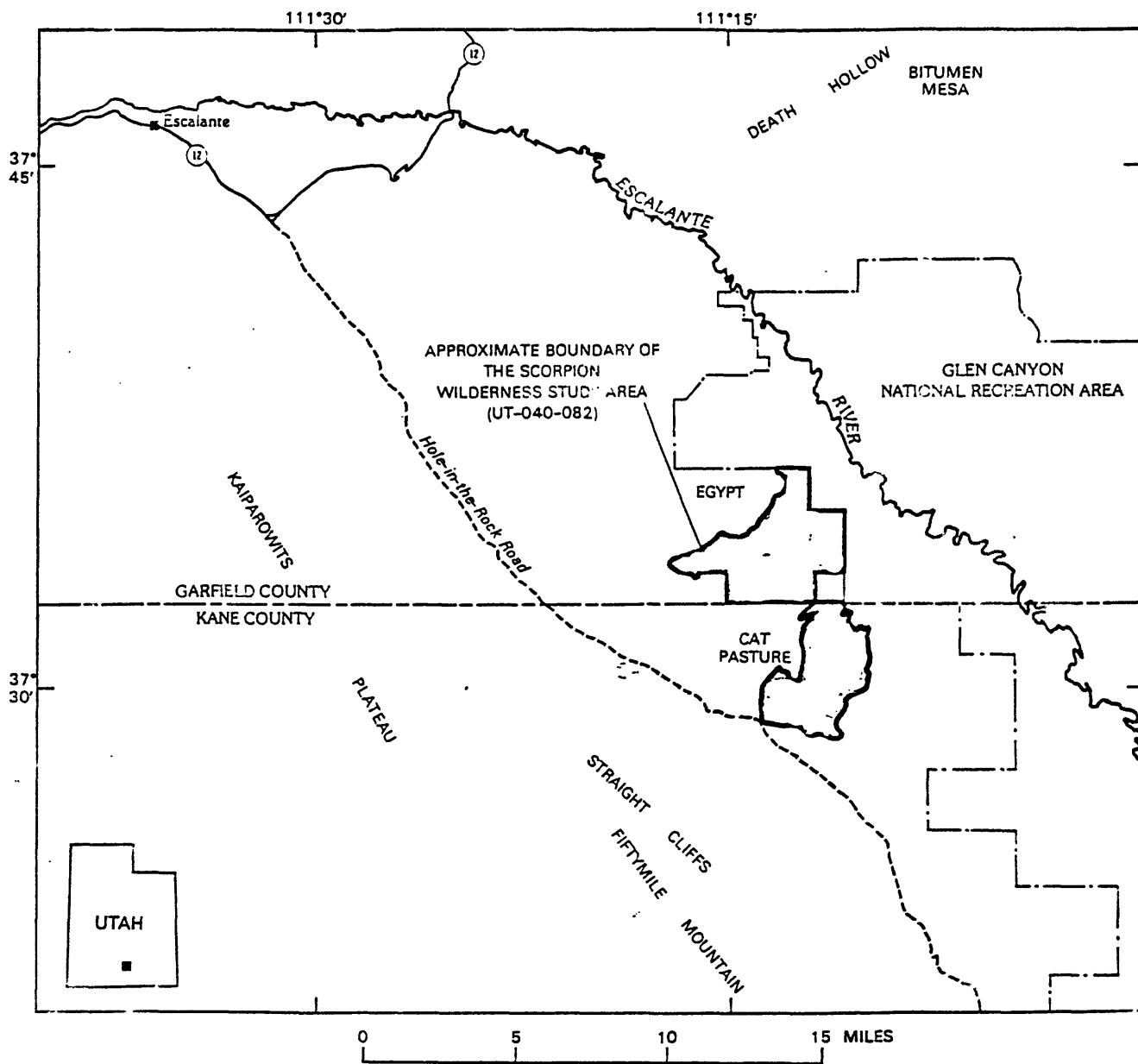


Figure 1. Location of the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah (source: Bartsh-Winkler, 1989).

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. On the other hand, 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

Stream-sediment samples were collected at 55 sites and heavy-mineral concentrates were collected at 53 sites. Rock samples were collected at 8 sites (plate 1). Sampling density was about one sample site per 0.5 mi² for the stream sediments and heavy-mineral concentrates.

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 = 1:50,000) (plate 1). Each sample was a composite from several localities within an area that may extend as much as 15 ft from the site plotted on the map.

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 various types of occurrences in the vicinity of the plotted site location to provide geochemical information in altered and unaltered rocks. Descriptions of rock samples are in table 6.

Sample Preparation

The stream-sediment samples were air dried, then sieved using 80-mesh (0.17-mm) stainless-steel sieves. The portion of the sediment passing through the sieve was ground to -100 mesh using ceramic plates and saved for analysis.

Samples that had been panned in the field were air dried and sieved to -35 mesh; bromoform (specific gravity 2.85) was used to remove the remaining quartz and feldspar. 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 (removed at a setting of 0.25 ampere), primarily magnetite, was not analyzed. The second fraction (removed at a setting of 1.75 ampere), largely ferromagnesian silicates and iron oxides, was saved for archival storage. The third fraction (the nonmagnetic 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 0.2 ampere to remove the magnetite and ilmenite, and a current of 0.6 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 stream-sediment, heavy-mineral-concentrate, and rock samples were analyzed for 31 or 35 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). In addition, some of the heavy-mineral-concentrate samples were analyzed spectro-graphically for Platinum and Palladium. 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 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 samples from the Scorpion Wilderness Study Area are listed in tables 3, 4, and 5.

Chemical methods

Samples from this study area were also analyzed by other analytical methods. Rocks and stream sediments were analyzed for U and Th using delayed neutron activation analysis or ultraviolet fluorescence, for Au using atomic absorption spectroscopy, and for As, Bi, Cd, Sb, and Zn, using inductively coupled plasma-atomic emission spectroscopy. See table 2 for a more detailed summary of these other chemical methods.

Analytical results for stream-sediment, heavy-mineral-concentrate, and rock samples are listed in tables 3, 4, and 5, respectively.

DATA STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into the Branch of Geochemistry's computer data base. 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 3-5 list the results of analyses for heavy-mineral-concentrate, stream-sediment, and rock samples, respectively. For the three 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 map (plate 1). Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; "aa" indicates atomic absorption analyses; "icp" indicates inductively coupled plasma-atomic emission spectroscopic analyses; "f" indicates fluoremetric analyses; and "dna" indicates delayed neutron activation analyses. 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. For emission spectrographic analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that the element was observed but was below the lowest reporting value. For AA and ICP analyses, a "less than" symbol (<) entered in the tables in front of the lower limit of determination indicates that the element was not detected at that determination limit. 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. If an element was not looked for in a sample, two dashes (--) are entered in tables 3-5 in place of an analytical value.

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TABLE 1.--Limits of determination for the spectrographic analysis of rocks and stream sediments, 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 a modified method of Grimes and Marranzino. 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]

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
Sodium (Na)	0.2	5
Phosphorus	.2	10
Parts per million		
Manganese (Mn)	10	5,000
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	5	(10) 2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Gallium (Ga)	5	500
Germanium (Ge)	10	100
Lanthanum (La)	20	(50) 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	(20) 10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000
Thorium (Th)	100	2,000
Platinum (Pt)	10	200
Palladium (Pd)	2	200

TABLE 2.--Chemical methods used

[AA = atomic absorption; ICP = inductively coupled plasma spectroscopy; DNA = delayed neutron activation analysis; F = fluorescence; ss = stream sediments]

Element or constituent determined	Sample type	Method	Determination limit (micrograms/ gram or ppm)	Reference
Gold (Au)	rock, ss	AA	.05	<u>Modification of</u> Thompson and others, 1968.
Gold (Au)	ss	AA	.1	Crock and others, 1987.
Arsenic (As)	rock, ss	ICP	5	Crock and others, 1987.
Antimony (Sb)	rock, ss	ICP	2	
Zinc (Zn)	rock, ss	ICP	2	
Bismuth (Bi)	rock, ss	ICP	2	
Cadmium (Cd)	rock, ss	ICP	0.1	Millard, 1976.
Thorium (Th)	rock, ss	DNA		
Uranium (U)	rock, ss	DNA		Millard, 1976.
Uranium (U)	ss	F	.05	<u>Modification of</u> Centanni and others, 1956.

Table 3. Analytical results of heavy-mineral-concentrate samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.
[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
SC100C	37 33 33	111 12 55	.5	.15	.2	.5	70	N	N
SC101C	37 33 35	111 14 45	.7	.1	<.1	1.5	200	N	N
SC102C	37 33 17	111 14 58	1	.1	.3	1.5	150	N	N
SC103C	37 33 9	111 15 32	1.5	.2	.2	2	300	N	N
SC104C	37 33 18	111 15 44	.7	.07	.2	.3	200	N	N
SC105C	37 33 21	111 17 15	.2	.05	.2	.1	50	N	N
SC106C	37 33 28	111 17 38	.5	.2	.5	.7	150	N	N
SC107C	37 33 28	111 17 58	.3	.1	<.1	.7	100	N	N
SC108C	37 33 34	111 18 24	.5	.1	.3	1	100	N	N
SC110C	37 36 28	111 13 40	1	.1	.15	1.5	300	N	N
SC111C	37 36 36	111 13 49	.7	.1	.1	2	300	N	N
SC200C	37 33 35	111 14 51	.5	.05	<.1	1.5	150	N	N
SC201C	37 33 22	111 14 3	.3	<.05	N	1	70	N	N
SC202C	37 33 13	111 15 49	1	.15	.5	2	300	N	N
SC203C	37 33 24	111 16 30	.5	.15	<.1	2	300	N	N
SC204C	37 33 31	111 17 43	.3	.15	.1	1	100	N	N
SC205C	37 33 24	111 17 56	1	.2	.1	2	500	N	N
SC206C	37 33 39	111 18 21	.3	.07	.15	2	100	N	N
SC207C	37 33 56	111 16 59	.2	.15	.1	1.5	70	N	N
SC208C	37 34 17	111 11 53	.3	.05	N	2	100	N	N
SC209C	37 34 17	111 12 0	.15	<.05	N	.3	70	N	N
SC210C	37 34 12	111 12 48	.2	<.05	N	.3	70	N	N
SK001C	37 30 26	111 12 27	1	.5	.3	>2	500	N	N
SK002C	37 30 16	111 12 12	.3	.3	.5	1.5	200	N	N
SK003C	37 30 25	111 12 35	.7	.3	1	1.5	500	N	N
SK004C	37 30 18	111 12 18	.5	.1	.2	1.5	150	N	N
SK005C	37 26 8	111 8 30	.7	.3	.5	>2	100	N	N
SK006C	37 30 0	111 13 58	.7	.5	5	2	300	N	N
SK007C	37 26 2	111 8 32	.5	.5	.5	2	150	N	N
SK008C	37 30 4	111 14 1	1.5	.7	1	>2	1,500	N	N
SK009C	37 28 57	111 13 29	.7	.2	.2	>2	100	N	N
SK010C	37 26 7	111 9 30	.3	.1	.3	2	70	N	N
SK011C	37 29 2	111 14 1	.3	.07	.15	>2	100	N	N
SK012C	37 26 27	111 10 0	.7	.15	.2	>2	200	N	N
SK013C	37 29 9	111 14 18	.5	.07	.1	2	100	N	N
SK014C	37 28 41	111 9 30	.5	.07	1	>2	150	N	N
SK015C	37 29 0	111 14 22	.3	.2	.3	1.5	70	N	N
SK016C	37 28 55	111 12 29	1	.05	<.1	>2	100	N	N
SK017C	37 27 36	111 9 39	1	.07	<.1	2	200	N	N
SK018C	37 28 55	111 12 35	.7	.07	<.1	>2	150	N	N
SK019C	37 27 44	111 10 5	.7	.07	<.1	>2	150	N	N
SK020C	37 30 2	111 12 43	.5	.07	<.1	>2	150	N	N
SK021C	37 28 12	111 10 20	1.5	.07	<.1	>2	200	N	N
SK022C	37 30 0	111 12 35	1.5	.15	.2	2	700	N	N
SK023C	37 27 44	111 10 22	.5	.1	.1	>2	150	N	N
SK024C	37 28 36	111 11 43	.3	.07	<.1	>2	150	N	N
SK025C	37 27 12	111 7 59	.7	.1	<.1	>2	200	N	N
SK026C	37 28 28	111 11 23	1.5	.5	.5	>2	700	N	N
SK028C	37 28 10	111 10 41	.5	.15	.1	>2	70	N	N
SK030C	37 27 6	111 8 52	.5	.1	.1	>2	100	N	N
SK032C	37 26 56	111 8 22	.5	.15	.1	>2	100	N	N
SK034C	37 26 49	111 11 30	.3	.2	.2	>2	50	N	N
SK036C	37 26 46	111 11 38	.3	.1	.1	>2	100	N	N

Table 3. Analytical results of heavy-mineral-concentrate samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s
SC100C	N	50	>10,000	<2	N	N	N	<20	N	N
SC101C	N	150	>10,000	<2	N	N	N	30	N	N
SC102C	N	70	>10,000	<2	N	N	N	100	N	50
SC103C	N	200	>10,000	<2	N	N	10	150	N	70
SC104C	N	70	>10,000	N	N	N	N	150	N	50
SC105C	N	20	>10,000	N	N	N	N	<20	N	N
SC106C	N	150	>10,000	N	N	N	N	50	N	N
SC107C	N	100	>10,000	<2	N	N	N	20	N	N
SC108C	N	20	>10,000	<2	N	N	N	70	N	50
SC110C	N	150	10,000	N	N	N	10	50	N	N
SC111C	N	300	>10,000	<2	N	N	N	50	N	N
SC200C	N	150	10,000	<2	N	N	N	50	N	N
SC201C	N	150	500	<2	N	N	N	50	N	N
SC202C	N	150	>10,000	<2	N	N	10	70	N	150
SC203C	N	150	2,000	<2	N	N	N	50	N	N
SC204C	N	150	10,000	N	N	N	N	70	N	N
SC205C	N	200	10,000	<2	N	N	N	50	N	70
SC206C	N	70	>10,000	<2	N	N	N	20	N	50
SC207C	N	100	7,000	<2	N	N	N	50	N	N
SC208C	N	100	500	<2	N	N	N	50	N	N
SC209C	N	50	300	N	N	N	N	50	N	N
SC210C	N	50	700	<2	N	N	N	50	N	N
SK001C	N	150	>10,000	N	N	N	N	100	N	N
SK002C	N	70	>10,000	N	N	N	N	70	N	N
SK003C	N	70	>10,000	N	N	N	N	70	N	N
SK004C	N	70	>10,000	N	N	N	N	50	N	N
SK005C	N	50	>10,000	N	N	N	N	100	N	300
SK006C	N	300	>10,000	N	N	N	N	150	N	<100
SK007C	N	100	>10,000	N	N	N	N	50	N	150
SK008C	N	300	>10,000	N	N	N	N	200	N	N
SK009C	N	100	>10,000	N	N	N	N	100	N	N
SK010C	N	70	>10,000	N	N	N	N	70	N	100
SK011C	N	50	>10,000	N	N	N	N	20	N	N
SK012C	N	150	10,000	N	N	N	N	150	N	200
SK013C	N	70	>10,000	N	N	N	N	100	N	N
SK014C	N	150	10,000	N	N	N	N	100	N	N
SK015C	N	50	>10,000	N	N	N	N	30	N	N
SK016C	N	150	10,000	N	N	N	N	100	N	N
SK017C	N	150	700	N	N	N	N	100	N	N
SK018C	N	150	2,000	N	N	N	N	100	N	N
SK019C	N	150	500	N	N	N	N	100	N	N
SK020C	N	150	2,000	N	N	N	N	150	N	N
SK021C	N	200	500	N	N	N	N	150	N	N
SK022C	N	150	>10,000	N	N	N	N	150	N	N
SK023C	N	300	1,500	N	N	N	N	150	N	N
SK024C	N	300	700	N	N	N	N	150	N	N
SK025C	N	500	500	N	N	N	N	200	N	N
SK026C	N	500	5,000	N	N	N	N	200	N	150
SK028C	N	200	5,000	N	N	N	N	150	N	N
SK030C	N	300	700	N	N	N	N	200	N	N
SK032C	N	200	5,000	N	N	N	N	200	N	N
SK034C	N	200	7,000	N	N	N	N	100	N	N
SK036C	N	100	10,000	N	N	N	N	100	N	N

Table 3. Analytical results of heavy-mineral-concentrate samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	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	W-ppm s
SC100C	N	<50	N	<20	N	--	N	1,000	50	N
SC101C	N	N	N	<20	N	--	30	1,000	100	N
SC102C	N	<50	N	<20	N	--	N	>10,000	100	N
SC103C	N	N	N	20	N	--	70	1,500	100	N
SC104C	N	N	N	N	N	--	N	>10,000	70	N
SC105C	N	N	N	N	N	--	N	>10,000	50	N
SC106C	N	N	N	N	N	--	N	>10,000	70	N
SC107C	N	N	N	N	N	--	N	1,000	50	N
SC108C	N	N	N	<20	N	--	N	3,000	70	N
SC110C	N	N	N	N	N	--	N	1,000	70	N
SC111C	N	N	N	N	N	--	N	1,500	50	N
SC200C	N	N	N	N	N	--	N	2,000	50	N
SC201C	N	N	N	N	N	--	N	N	30	N
SC202C	N	N	N	20	N	--	N	10,000	100	N
SC203C	N	N	N	<20	N	--	N	3,000	100	N
SC204C	N	N	N	20	N	--	N	>10,000	70	N
SC205C	N	N	N	<20	N	--	20	10,000	100	N
SC206C	N	N	N	20	N	--	70	>10,000	100	N
SC207C	N	N	N	30	N	--	N	>10,000	70	N
SC208C	N	N	N	N	N	--	N	1,000	70	N
SC209C	N	N	N	N	N	--	N	700	50	N
SC210C	N	N	N	N	N	--	20	1,000	50	N
SK001C	N	<50	<10	N	N	70	N	3,000	100	N
SK002C	N	N	N	N	N	10	N	7,000	30	N
SK003C	N	N	N	N	N	15	N	>10,000	50	N
SK004C	N	N	N	N	N	20	N	10,000	50	N
SK005C	N	N	N	N	N	100	N	700	100	N
SK006C	N	N	<10	N	N	50	N	1,500	70	N
SK007C	N	N	<10	N	N	50	N	1,000	50	N
SK008C	N	<50	N	N	N	30	N	>10,000	70	N
SK009C	N	N	<10	N	N	50	N	10,000	70	N
SK010C	N	<50	N	N	N	30	N	3,000	50	N
SK011C	N	N	<10	N	N	70	N	1,000	100	N
SK012C	N	N	<10	N	N	100	N	500	100	N
SK013C	N	N	N	N	N	70	N	2,000	70	N
SK014C	N	N	N	N	N	100	N	200	100	N
SK015C	N	N	N	N	N	20	N	>10,000	30	N
SK016C	N	N	N	N	N	50	N	500	100	N
SK017C	N	N	10	N	N	100	N	200	100	N
SK018C	N	N	<10	N	N	100	N	200	100	N
SK019C	N	N	N	N	N	70	N	N	100	N
SK020C	N	N	N	N	N	70	N	200	70	N
SK021C	N	N	N	N	N	100	N	200	100	N
SK022C	N	N	<10	N	N	50	N	>10,000	70	N
SK023C	N	N	N	N	N	70	N	300	70	N
SK024C	N	N	N	N	N	70	N	200	100	N
SK025C	N	N	<10	N	N	100	N	200	100	N
SK026C	N	<50	N	N	N	70	N	700	150	N
SK028C	N	N	<10	N	N	100	N	300	100	N
SK030C	N	N	N	N	N	100	N	200	100	N
SK032C	N	N	<10	N	N	70	N	200	100	N
SK034C	N	N	N	N	N	70	N	300	100	N
SK036C	N	N	N	N	N	100	N	200	100	N

Table 3. Analytical results of heavy-mineral-concentrate samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Pd-ppm s	Pt-ppm s	Na-pct. s	P-pct. s	Ga-ppm s	Ge-ppm s
SC100C	150	N	>2,000	N	--	--	--	--	--	--
SC101C	500	N	>2,000	N	--	--	--	--	--	--
SC102C	300	N	>2,000	N	--	--	--	--	--	--
SC103C	500	N	>2,000	N	--	--	--	--	--	--
SC104C	100	N	>2,000	N	--	--	--	--	--	--
SC105C	30	N	>2,000	N	--	--	--	--	--	--
SC106C	150	N	>2,000	N	--	--	--	--	--	--
SC107C	200	N	>2,000	N	--	--	--	--	--	--
SC108C	200	N	>2,000	N	--	--	--	--	--	--
SC110C	200	N	>2,000	N	--	--	--	--	--	--
SC111C	200	N	>2,000	N	--	--	--	--	--	--
SC200C	200	N	>2,000	N	--	--	--	--	--	--
SC201C	300	N	>2,000	N	--	--	--	--	--	--
SC202C	300	N	>2,000	N	--	--	--	--	--	--
SC203C	300	N	>2,000	N	--	--	--	--	--	--
SC204C	200	N	>2,000	N	--	--	--	--	--	--
SC205C	300	N	>2,000	N	--	--	--	--	--	--
SC206C	300	<500	>2,000	N	--	--	--	--	--	--
SC207C	200	N	>2,000	N	--	--	--	--	--	--
SC208C	200	N	>2,000	N	--	--	--	--	--	--
SC209C	150	N	>2,000	N	--	--	--	--	--	--
SC210C	200	N	>2,000	N	--	--	--	--	--	--
SK001C	500	N	>2,000	<200	N	N	N	N	N	N
SK002C	100	N	>2,000	N	N	N	N	N	N	N
SK003C	150	N	>2,000	N	N	N	N	N	N	N
SK004C	200	N	>2,000	N	N	N	N	N	N	N
SK005C	700	N	>2,000	<200	N	N	N	N	<10	N
SK006C	500	N	>2,000	N	N	N	N	N	N	N
SK007C	500	N	>2,000	N	N	N	N	N	N	N
SK008C	300	N	>2,000	N	N	N	N	N	N	N
SK009C	700	N	>2,000	N	N	N	N	N	N	N
SK010C	300	N	>2,000	N	N	N	N	N	N	N
SK011C	700	N	>2,000	N	N	N	N	N	10	N
SK012C	700	N	>2,000	<200	N	N	N	N	<10	N
SK013C	500	N	>2,000	N	N	N	N	N	N	N
SK014C	700	N	>2,000	N	N	N	N	N	N	N
SK015C	200	N	>2,000	N	N	N	N	N	N	N
SK016C	700	N	>2,000	N	N	N	N	N	<10	N
SK017C	500	N	>2,000	N	N	N	N	N	N	N
SK018C	500	N	>2,000	<200	N	N	N	N	20	N
SK019C	700	N	>2,000	N	N	N	N	N	<10	N
SK020C	500	N	>2,000	N	N	N	N	N	N	N
SK021C	700	N	>2,000	N	N	N	N	N	N	N
SK022C	300	N	>2,000	N	N	N	N	N	N	N
SK023C	500	N	>2,000	N	N	N	N	N	N	N
SK024C	500	N	>2,000	N	N	N	N	N	N	N
SK025C	700	N	>2,000	N	N	N	N	N	N	N
SK026C	500	N	>2,000	N	N	N	N	N	N	N
SK028C	700	N	>2,000	N	N	N	N	N	<10	N
SK030C	700	N	>2,000	N	N	N	N	N	N	N
SK032C	700	N	>2,000	N	N	N	N	N	N	N
SK034C	500	N	>2,000	N	N	N	N	N	N	N
SK036C	700	N	>2,000	N	N	N	N	N	N	N

Table 4. Analytical results of stream-sediment samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.
[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
SC100S	37 33 33	111 12 55	.5	.5	1	.15	100	N	N	N
SC101S	37 33 35	111 14 45	.3	.2	.5	.07	30	N	N	N
SC102S	37 33 17	111 14 58	.7	.7	1.5	.15	200	N	N	N
SC103S	37 33 9	111 15 32	1	.7	1.5	.2	200	N	N	N
SC104S	37 33 18	111 15 44	.5	.5	1.5	.1	150	N	N	N
SC105S	37 33 21	111 17 15	1	1	2	.2	300	N	N	N
SC106S	37 33 28	111 17 38	.7	1	1.5	.2	200	N	N	N
SC107S	37 33 28	111 17 58	1.5	.7	2	.3	500	N	N	N
SC108S	37 33 37	111 18 24	1	1	5	.2	500	N	N	N
SC110S	37 36 28	111 13 40	1	1	3	.2	500	N	N	N
SC111S	37 36 36	111 13 49	1	1	7	.3	500	N	N	N
SC200S	37 33 35	111 14 51	.5	.5	1	.15	70	N	N	N
SC201S	37 33 22	111 14 3	.3	.15	.07	.1	50	N	N	N
SC202S	37 33 13	111 15 49	1	.5	1.5	.2	200	N	N	N
SC203S	37 33 24	111 16 30	.3	.5	1	.15	100	N	N	N
SC204S	37 33 31	111 17 43	1	1	2	.2	500	N	N	N
SC205S	37 33 24	111 17 56	.7	.7	1.5	.15	150	N	N	N
SC206S	37 33 39	111 18 21	1	.5	1.5	.15	200	N	N	N
SC207S	37 33 56	111 16 59	1	1	2	.2	300	N	N	N
SC208S	37 34 17	111 11 53	.3	.15	.05	.1	20	N	N	N
SC209S	37 34 17	111 12 0	.2	.1	<.05	.07	15	N	N	N
SC210S	37 34 12	111 12 48	.5	.2	.3	.15	70	N	N	N
SC211S	37 34 12	111 12 48	1	.7	2	.2	300	N	N	N
SK001S	37 30 26	111 12 27	.5	.5	2	.1	150	N	N	N
SK002S	37 30 16	111 12 12	1	.7	3	.15	200	N	N	N
SK003S	37 30 25	111 12 35	1	.7	2	.15	150	N	N	N
SK004S	37 30 18	111 12 18	.7	.7	3	.1	200	N	N	N
SK005S	37 26 8	111 8 30	.7	.3	1	.2	150	N	N	N
SK006S	37 30 0	111 13 58	.5	.5	2	.07	150	N	N	N
SK007S	37 26 2	111 8 32	.7	.3	1.5	.15	200	N	N	N
SK008S	37 30 4	111 14 1	1	.7	2	.1	150	N	N	N
SK009S	37 28 57	111 13 29	1	.7	2	.15	300	N	N	N
SK010S	37 26 7	111 9 30	.7	.3	1.5	.07	100	N	N	N
SK011S	37 29 2	111 14 1	.5	.3	1.5	.1	100	N	N	N
SK012S	37 26 22	111 10 0	.3	.15	.5	.1	70	N	N	N
SK013S	37 29 9	111 14 18	.7	.3	1.5	.15	200	N	N	N
SK014S	37 28 41	111 9 30	.2	.15	.5	.07	70	<.5	N	N
SK015S	37 29 0	111 14 22	1	1	3	.15	200	N	N	N
SK016S	37 28 55	111 12 29	.2	.07	.3	.07	50	N	N	N
SK017S	37 27 36	111 9 39	.3	.1	.2	.07	70	N	N	N
SK018S	37 28 55	111 12 35	.2	.1	.1	.05	50	N	N	N
SK019S	37 27 44	111 10 5	.3	.07	.07	.07	70	N	N	N
SK020S	37 30 2	111 12 43	.3	.07	.1	.07	70	N	N	N
SK021S	37 28 12	111 10 20	.2	.05	.05	.07	50	N	N	N
SK022S	37 30 0	111 12 35	.7	.7	2	.1	200	N	N	N
SK023S	37 27 44	111 10 22	.2	.07	.15	.05	50	N	N	N
SK024S	37 28 36	111 11 43	.2	.05	.05	.05	30	N	N	N
SK025S	37 27 12	111 7 59	.2	.05	.1	.03	50	N	N	N
SK026S	37 28 28	111 11 23	.2	.15	.5	.05	70	N	N	N
SK026AS	37 28 17	111 11 10	.3	.2	1	.15	150	N	N	N
SK028S	37 28 10	111 10 41	.3	.15	.5	.07	70	N	N	N
SK030S	37 27 6	111 8 52	.15	.07	.07	.05	30	N	N	N
SK032S	37 26 56	111 8 22	.2	.15	.3	.07	50	N	N	N
SK034S	37 26 49	111 11 30	.3	.2	1.5	.07	70	N	N	N
SK036S	37 26 46	111 11 38	.3	.15	.7	.07	70	N	N	N

Table 4. Analytical results of stream-sediment samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	B-ppm s	Ba-ppm s	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
SC100S	30	700	<1	N	N	5	50	N	N	N	N	10
SC101S	30	300	<1	N	N	N	70	<5	N	N	N	N
SC102S	30	500	<1	N	N	5	50	5	N	N	N	N
SC103S	70	500	<1	N	N	N	10	5	20	N	N	N
SC104S	30	300	<1	N	N	5	100	5	N	N	N	10
SC105S	100	500	<1	N	N	5	10	10	N	N	N	10
SC106S	50	200	<1	N	N	5	10	7	N	N	N	10
SC107S	50	500	<1	N	N	5	20	10	70	N	N	15
SC108S	70	300	<1	N	N	5	15	10	20	N	N	15
SC110S	50	500	<1	N	N	5	50	5	N	N	N	10
SC111S	50	1,000	<1	N	N	5	100	7	N	N	N	N
SC200S	20	300	<1	N	N	N	10	5	N	N	N	N
SC201S	20	200	<1	N	N	5	10	<5	N	N	N	N
SC202S	50	500	<1	N	N	5	30	7	N	N	N	10
SC203S	20	300	<1	N	N	5	<10	5	N	N	N	N
SC204S	100	700	<1	N	N	5	20		N	N	N	<5
SC205S	50	300	<1	N	N	5	15	7	N	N	N	10
SC206S	50	700	1	N	N	7	15	5	N	N	N	10
SC207S	70	300	1	N	N	5	20	15	N	N	N	10
SC208S	70	300	<1	N	N	5	10	N	N	N	N	10
SC209S	30	200	<1	N	N	N	10	N	N	N	N	10
SC210S	20	500	<1	N	N	5	15	N	N	N	N	<5
SC211S	70	300	<1	N	N	5	20	5	30	N	N	N
SK001S	50	700	N	N	N	N	10	7	N	N	<20	<5
SK002S	50	1,000	N	N	N	<10	<10	10	N	N	<20	<5
SK003S	50	500	N	N	N	<10	<10	10	N	N	<20	<5
SK004S	30	700	N	N	N	<10	15	7	N	N	<20	<5
SK005S	20	300	N	N	N	N	15	5	N	N	<20	<5
SK006S	50	300	N	N	N	N	<10	7	N	N	<20	<5
SK007S	30	1,000	N	N	N	N	50	5	N	N	<20	<5
SK008S	70	500	N	N	N	<10	<10	7	N	N	<20	<5
SK009S	70	700	N	N	N	<10	15	7	N	N	<20	<5
SK010S	20	500	N	N	N	N	<10	5	N	N	<20	<5
SK011S	30	300	N	N	N	N	<10	5	N	N	<20	<5
SK012S	50	300	N	N	N	N	<10	5	N	N	<20	<5
SK013S	70	700	N	N	N	N	50	5	N	N	<20	<5
SK014S	10	300	N	N	N	N	<10	5	N	N	<20	<5
SK015S	70	500	N	N	N	<10	<10	10	N	N	<20	<5
SK016S	20	300	N	N	N	N	<10	<5	N	N	<20	<5
SK017S	30	300	N	N	N	N	15	5	N	N	<20	<5
SK018S	50	300	N	N	N	N	10	5	N	N	<20	<5
SK019S	10	200	N	N	N	N	<10	5	N	N	<20	<5
SK020S	20	300	N	N	N	N	15	<5	N	N	<20	<5
SK021S	30	200	N	N	N	N	<10	<5	N	N	<20	<5
SK022S	50	500	N	N	N	<10	30	10	N	N	<20	<5
SK023S	30	300	N	N	N	N	10	5	N	N	<20	<5
SK024S	30	300	N	N	N	N	<10	5	N	N	<20	<5
SK025S	30	300	N	N	N	N	<10	5	N	N	<20	<5
SK026S	20	300	N	N	N	N	<10	5	N	N	<20	<5
SK026AS	30	300	N	N	N	N	50	7	N	N	<20	<5
SK028S	30	300	N	N	N	N	<10	5	N	N	<20	<5
SK030S	50	150	N	N	N	N	<10	5	N	N	<20	<5
SK032S	30	300	N	N	N	N	<10	5	N	N	<20	<5
SK034S	30	300	N	N	N	N	<10	7	N	N	<20	<5
SK036S	30	300	N	N	N	N	<10	7	N	N	<20	<5

Table 4. Analytical results of stream-sediment samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	Pb-ppm s	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	Na-pct. s
SC100S	N	N	N	N	100	30	N	<10	N	200	N	--
SC101S	N	N	N	N	100	10	N	<10	N	1,000	N	--
SC102S	N	N	N	N	150	30	N	15	N	700	N	--
SC103S	N	N	N	N	100	30	N	15	N	1,000	N	--
SC104S	N	N	N	N	300	30	N	10	N	50	N	--
SC105S	10	N	<5	N	500	30	N	10	N	300	N	--
SC106S	<10	N	<5	N	200	50	N	10	N	500	N	--
SC107S	<10	N	<5	N	200	50	N	150	N	1,000	N	--
SC108S	<10	N	5	N	150	70	N	10	N	200	N	--
SC110S	<10	N	<5	N	150	50	N	10	N	300	N	--
SC111S	<10	N	7	N	200	70	N	15	N	700	N	--
SC200S	N	N	N	N	100	20	N	10	N	1,000	N	--
SC201S	N	N	N	N	N	10	N	<10	N	500	N	--
SC202S	N	N	<5	N	150	50	N	10	N	200	N	--
SC203S	N	N	N	N	150	30	N	<10	N	500	N	--
SC204S	N	N	N	N	200	70	N	10	N	500	N	--
SC205S	10	N	N	N	150	20	N	<10	N	150	N	--
SC206S	N	N	<5	N	150	50	N	10	N	150	N	--
SC207S	N	N	5	N	200	50	N	10	N	200	N	--
SC208S	N	N	N	N	N	20	N	<10	N	200	N	--
SC209S	N	N	N	N	N	20	N	<10	N	200	N	--
SC210S	<10	N	<5	N	100	15	N	10	N	1,000	N	--
SC211S	N	N	5	N	100	50	N	15	N	1,000	N	--
SK001S	<10	N	N	N	<100	10	N	<10	N	150	N	.5
SK002S	10	N	<5	N	100	20	N	10	N	100	N	.5
SK003S	10	N	<5	N	200	20	N	10	N	300	N	1
SK004S	<10	N	<5	N	<100	10	N	<10	N	300	N	.5
SK005S	<10	N	<5	N	<100	<10	N	20	N	>1,000	N	.3
SK006S	10	N	N	N	100	<10	N	<10	N	150	N	.5
SK007S	<10	N	N	N	<100	<10	N	10	N	1,000	N	.3
SK008S	10	N	<5	N	150	15	N	<10	N	150	N	.7
SK009S	10	N	<5	N	100	15	N	10	N	500	N	.7
SK010S	<10	N	N	N	<100	<10	N	10	N	500	N	.5
SK011S	<10	N	N	N	<100	<10	N	<10	N	100	N	.3
SK012S	<10	N	N	N	<100	<10	N	<10	N	700	N	.3
SK013S	<10	N	N	N	<100	<10	N	10	N	>1,000	N	.3
SK014S	<10	N	N	N	<100	N	N	<10	N	150	N	.3
SK015S	10	N	<5	N	200	20	N	10	N	700	N	.7
SK016S	N	N	N	N	<100	N	N	<10	N	>1,000	N	<.2
SK017S	<10	N	N	N	<100	N	N	15	N	700	N	.2
SK018S	<10	N	N	N	<100	N	N	<10	N	200	N	.2
SK019S	<10	N	N	N	<100	N	N	<10	N	200	N	.2
SK020S	<10	N	N	N	<100	<10	N	<10	N	300	N	.2
SK021S	<10	N	N	N	<100	N	N	<10	N	500	N	.2
SK022S	<10	N	<5	N	150	10	N	10	N	500	N	.5
SK023S	<10	N	N	N	<100	N	N	<10	N	200	N	.3
SK024S	<10	N	N	N	<100	N	N	<10	N	200	N	.2
SK025S	<10	N	N	N	<100	N	N	<10	N	200	N	.2
SK026S	<10	N	N	N	<100	<10	N	<10	N	200	N	.3
SK026AS	<10	N	N	N	<100	<10	N	15	N	300	N	.3
SK028S	<10	N	N	N	<100	<10	N	<10	N	500	N	.3
SK030S	<10	N	N	N	<100	N	N	<10	N	500	N	<.2
SK032S	<10	N	N	N	<100	N	N	<10	N	500	N	.2
SK034S	<10	N	N	N	<100	<10	N	<10	N	200	N	.2
SK036S	<10	N	N	N	<100	<10	N	<10	N	700	N	.2

Table 4. Analytical results of stream-sediment samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.--Continued

Sample	P-pct. s	Ga-ppm s	Ge-ppm s	Au-ppm aa	U-ppm f	U-ppm dna	Th-ppm dna	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
SC100S	--	--	--	N	--	1.16	3.2	<5	<2	<.1	<2	7
SC101S	--	--	--	N	--	.502	<1.2	<5	<2	<.1	<2	<2
SC102S	--	--	--	N	--	1.54	3.2	<5	<2	.2	<2	14
SC103S	--	--	--	N	--	1.32	2.6	<5	<2	.2	<2	20
SC104S	--	--	--	N	--	1.48	4.73	<5	<2	.2	<2	10
SC105S	--	--	--	N	--	1.46	4.1	<5	<2	.1	<2	14
SC106S	--	--	--	N	--	1.55	4.2	<5	<2	.2	<2	17
SC107S	--	--	--	N	--	2.7	7.18	<5	<2	.3	<2	20
SC108S	--	--	--	N	--	1.68	5.53	<5	<2	.2	<2	19
SC110S	--	--	--	N	--	1.11	4.7	<5	<2	.1	<2	10
SC111S	--	--	--	N	--	1.04	2.9	<5	<2	.2	<2	9
SC200S	--	--	--	N	--	.39	1.9	<5	<2	<.1	<2	4
SC201S	--	--	--	N	--	.33	1.9	<5	<2	<.1	<2	5
SC202S	--	--	--	N	--	2.32	5.3	<5	<2	.3	<2	19
SC203S	--	--	--	N	--	.561	2.8	<5	<2	.1	<2	8
SC204S	--	--	--	N	--	1.41	4.99	<5	<2	.2	2	12
SC205S	--	--	--	N	--	.895	4.64	<5	<2	<.1	<2	11
SC206S	--	--	--	N	--	1.54	5.02	<5	<2	.2	<2	20
SC207S	--	--	--	N	--	1.47	6.55	<5	<2	.2	<2	16
SC208S	--	--	--	N	--	<.16	2.4	<5	<2	<.1	<2	3
SC209S	--	--	--	N	--	<.16	2.45	<5	<2	<.1	<2	3
SC210S	--	--	--	N	--	.591	3.2	<5	<2	<.1	<2	4
SC211S	--	--	--	N	--	1.91	8.61	<5	<2	.2	<2	15
SK001S	N	<5	N	N	.25	--	--	6	<2	<.1	<2	7
SK002S	N	5	N	N	.45	--	--	<5	<2	.2	<2	14
SK003S	N	7	N	N	.8	--	--	<5	<2	.1	<2	10
SK004S	N	5	N	N	.4	--	--	<5	<2	.1	<2	11
SK005S	N	<5	N	N	.45	--	--	<5	<2	<.1	<2	8
SK006S	N	5	N	N	.25	--	--	<5	<2	<.1	<2	8
SK007S	N	<5	N	N	.5	--	--	<5	<2	<.1	<2	7
SK008S	N	7	N	N	.55	--	--	<5	<2	<.1	<2	10
SK009S	N	5	N	N	.25	--	--	<5	<2	<.1	<2	9
SK010S	N	<5	N	N	.3	--	--	<5	<2	<.1	<2	8
SK011S	N	<5	N	N	.45	--	--	<5	<2	<.1	<2	6
SK012S	N	<5	N	N	.45	--	--	<5	<2	.1	<2	7
SK013S	N	<5	N	N	.3	--	--	<5	<2	<.1	<2	6
SK014S	N	<5	N	N	.3	--	--	<5	<2	<.1	<2	5
SK015S	N	5	N	N	.65	--	--	<5	<2	.2	<2	12
SK016S	N	N	N	N	.3	--	--	<5	<2	<.1	<2	3
SK017S	N	<5	N	N	.2	--	--	<5	<2	<.1	<2	5
SK018S	N	<5	N	N	.15	--	--	<5	<2	<.1	<2	3
SK019S	N	<5	N	N	.1	--	--	<5	<2	<.1	<2	4
SK020S	N	<5	N	N	.25	--	--	<5	<2	<.1	<2	3
SK021S	N	<5	N	N	.1	--	--	<5	<2	<.1	<2	3
SK022S	N	5	N	N	.5	--	--	<5	<2	<.1	<2	8
SK023S	N	<5	N	N	.4	--	--	<5	<2	<.1	<2	4
SK024S	N	<5	N	N	.15	--	--	<5	<2	<.1	<2	3
SK025S	N	<5	N	N	.2	--	--	<5	<2	<.1	<2	5
SK026S	N	<5	N	N	.25	--	--	<5	<2	<.1	<2	4
SK026AS	N	<5	N	N	.25	--	--	<5	<2	<.1	<2	5
SK028S	N	<5	N	N	.15	--	--	<5	<2	<.1	<2	4
SK030S	N	<5	N	N	.25	--	--	<5	<2	<.1	<2	3
SK032S	N	<5	N	N	.05	--	--	<5	<2	<.1	<2	5
SK034S	N	<5	N	N	<.05	--	--	<5	<2	<.1	<2	6
SK036S	N	<5	N	N	.15	--	--	<5	<2	<.1	<2	5

Table 5. Analytical results of rock samples collected from the Scorpion Wilderness Study Area, Garfield and Kane Counties, Utah.
[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
SC105R	37 33 21	111 17 15	<.05	.05	10	.02	N	N	N	N
SC204R	37 33 31	111 17 43	.2	2	5	.05	300	N	N	N
SK006R	37 30 0	111 13 58	.1	.7	1.5	.05	300	N	N	N
SK012R	37 26 22	111 10 0	.15	.05	10	.03	700	N	N	N
SK017R	37 27 36	111 9 39	2	.02	20	.015	>5,000	N	N	N
SK018R	37 28 55	111 12 35	.3	.07	.7	.07	150	N	N	N
SK020R	37 30 2	111 12 43	.3	.05	10	.01	700	N	N	N
SK030R	37 27 6	111 8 52	2	1.5	7	.2	300	N	N	N

Sample	B-ppm s	Ba-ppm s	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
SC105R	10	N	<1	N	N	N	N	<5	N	N	N	N
SC204R	50	150	<1	N	N	N	N	<5	N	N	N	<5
SK006R	20	>5,000	N	N	N	<10	<10	10	N	N	<20	<5
SK012R	<10	150	N	N	N	N	<10	5	N	N	<20	<5
SK017R	N	700	N	N	N	70	<10	10	N	N	<20	50
SK018R	30	300	N	N	N	N	70	5	N	N	<20	<5
SK020R	N	70	N	N	N	N	<10	5	N	N	<20	5
SK030R	50	300	1.5	N	N	<10	30	15	N	N	<20	10

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	Th-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Na-pct. s
SC105R	N	N	N	N	500	150	10	N	N	N	<10	--
SC204R	N	N	N	N	N	N	70	N	N	N	100	--
SK006R	N	N	N	N	200	N	20	N	N	N	70	<.2
SK012R	<10	N	<5	N	<100	N	N	N	<10	N	20	<.2
SK017R	N	N	N	N	200	N	15	N	10	N	30	<.2
SK018R	<10	N	N	N	<100	N	<10	N	N	N	100	.2
SK020R	<10	N	<5	N	<100	N	<10	N	<10	N	15	<.2
SK030R	15	N	7	N	200	N	70	N	15	N	70	.7

Sample	P-pct. s	Ga-ppm s	Ge-ppm s	Th-ppm dna	U-ppm dna	Au-ppm aa	As-ppm icp	Bi-ppm icp	Cd-ppm icp	Sb-ppm icp	Zn-ppm icp
SC105R	--	--	--	<1.6	<.17	N	<5	<2	<.1	<2	<2
SC204R	--	--	--	<1.5	.619	N	<5	<2	<.1	4	12
SK006R	N	<5	N	<0	.964	N	<5	<2	<.1	<2	10
SK012R	N	N	N	2	<0	.14	<5	<2	.7	<2	4
SK017R	N	N	N	<0	.423	N	10	<2	.6	<2	11
SK018R	N	<5	N	1.7	.401	N	<5	<2	<.1	<2	6
SK020R	N	N	N	<0	.18	N	<5	<2	<.1	<2	3
SK030R	N	15	N	12.3	3.13	N	6	<2	.4	<2	41

Table 6. Description of rock samples

SC105R	Gypsum; float in channel
SC204R	White, massive, fine-grained sandstone; outcrop
SK006R	White, massive, fine-grained sandstone, with small black mineral present; outcrop
SK012R	Red, coarse-grained sandstone; outcrop
SK017R	Fe-Mn concretion from red sandstone; outcrop
SK018R	Red coarse-grained sandstone; outcrop
SK020R	Weathered, red coarse grained sandstone; outcrop
SK030R	Limey shale; outcrop
