UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

CHEMICAL ANALYSES AND STATISTICAL SUMMARIES FOR SAMPLES OF ROCK, MINUS-60-MESH (0.25-mm) STREAM SEDIMENT, AND NONMAGNETIC HEAVY-MINERAL CONCENTRATE, PYRAMID ROADLESS AREA, EL DORADO COUNTY, CALIFORNIA

by

M. A. Chaffee, D. L. Fey, D. J. Grimes, and

R. W. Leinz

Open-File Report 83-644

1983

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. 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 Pyramid Roadless Area in the Lake Tahoe Basin Management Unit and in El Dorado National Forest, El Dorado County, California. The Pyramid Roadless Area (5023) was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

CONTENTS

Page

Introduction---------- 1
Sample collection and preparation---------- 1
Rock samples---------- 2
Minus-60-mesh (0.25-mm) stream-sediment samples---------- 2
Nonmagnetic heavy-mineral-concentrate samples---------- 2
Chemical analysis---------- 2
Description of tables 1-4---------- 4
Description of tables 5-7---------- 21
References---------- 25

ILLUSTRATIONS

Plate 1.--Map showing geochemical sample sites----------In pocket

TABLES

Table 1.--Lower limits of analytical determination---------- 5
2.--Data for rock samples---------- 6
3.--Data for stream-sediment samples----------9
4.--Data for concentrate samples---------- 15
5.--Summary statistics for rock samples---------- 22
6.--Summary statistics for stream-sediment samples---------- 23
7.--Summary statistics for concentrate samples---------- 24

INTRODUCTION

Geochemical sampling was conducted in the Pyramid Roadless Area, El Dorado County, California, during the summer of 1982. This report includes a map showing the locations of all sites sampled in this program (plate 1), a tabulation of the lower limits of determination used in the various analytical methods (table 1), a tabulation of chemical analyses for samples of rock, minus-60-mesh (0.25-mm) stream sediment, and nonmagnetic heavy-mineral concentrate from stream sediment (tables 2, 3, and 4, respectively), and summary statistics for the elements listed in tables 2-4 (tables 5-7). Tables 2-4 and 5-7 list selected data provided by computer programs in the U.S. Geological Survey RASS-STATPAC System (VanTrump and Miesch, 1977).

SAMPLE COLLECTION AND PREPARATION

Chemical analyses for a total of 35 rock samples, 90 stream-sediment samples, and 88 nonmagnetic heavy-mineral-concentrate samples are listed in this report (tables 2-4). The number of samples analyzed for each medium yields an approximate sample density of 1 sample/1.5 mi^2 (1 sample/3.8 km^2) for the rock samples and 1 sample/0.6 mi^2 (1 sample/1.5 km^2) for the other two media.

Most of the rock samples are of unaltered material. These samples provide background information on element abundances in rocks that have not been affected by hydrothermal alteration or mineralization. In addition, some altered and(or) mineralized rocks were collected to characterize geochemically and mineralogically anomalous areas. Although each sample was selected to be representative of the rocks exposed in the vicinity of the sample site, the actual areal extent of influence of the chemical information provided by a specific sample is not known; the sampling program was designed only to provide some general information of the geochemical nature of the rock units present.

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

Concentrate samples were processed from the same active alluvium used to make minus-60-mesh (0.25-mm) stream-sediment samples. The analyses of the concentrate samples provide information about the chemistry of a limited number of minerals present in rock material eroded from the drainage basin upstream from each sample site. Wet panning and a heavy-liquid gravity separation technique were used to remove most of the common rock-forming minerals, such as quartz, feldspars, and clay minerals, and a magnetic separation technique was used to remove the more highly magnetic minerals, leaving a concentrate that commonly contains minerals associated with many types of mineral deposits. The selective concentration of ore-related minerals permits determination of some elements that are not easily detected in stream-sediment samples. The chemical composition of a concentrate may also indicate specific minerals. For example, the barium content in a stream-sediment sample is predominantly the sum of barium in the mineral barite plus barium substituted in feldspars, clay minerals, and possibly other minerals, whereas the barium in a concentrate sample is essentially all in barite.

Rock samples

All rock samples were collected from outcrops that were considered to be representative of exposures in the vicinity of the plotted site location. Wherever possible the samples were hand cobbed to remove any obviously weathered material. All samples were crushed and pulverized to at least minus-100-mesh (0.15-mm) material before analysis.

Minus-60-mesh (0.25-mm) stream-sediment samples

The material for the stream-sediment samples was active alluvium collected primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on 1:62,500-scale topographic maps. Each sample was composited from active alluvium collected from several locations within an area that may extend as much as 50 ft (15 m) from the site plotted on the map. The resulting sample was air dried and the portion that passed through a screen with 0.25-mm openings (a 60-mesh screen) was saved and pulverized to at least minus-100-mesh (0.15-mm) material before analysis.

Nonmagnetic heavy-mineral-concentrate samples

The bulk sample of active stream-sediment material was collected and composited in a manner similar to that used for the minus-60-mesh (0.25-mm) stream-sediment samples. Each bulk sample was passed through a 10-mesh (2.0-mm) screen to remove the coarse material. The sediment passing through the screen was wet-panned until most of the quartz, feldspar, organic material, and clay-sized material was removed. The sample was air dried and passed through an 18-mesh (1.0-mm) sieve; the minus-18-mesh material was saved. Any light material remaining in the concentrate was then removed by allowing the heavier fraction of the sample to settle through bromoform (specific gravity 2.86). The heavier fraction was cleaned in acetone and air dried. The highly magnetic material was next removed from the rest of the heavy-mineral sample using a Frantz Isodynamic Magnetic Separator set at 0.2 amperes and oriented so that the magnetic coil, covered with a mylar sheet, was in a horizontal plane. The weaker magnetic material was then separated from the nonmagnetic material using the same procedure with the Frantz instrument but using a 1.8-ampere setting. The resulting nonmagnetic sample was split into two fractions; one fraction was ground for the analysis and the other fraction was saved for mineralogical studies.

CHEMICAL ANALYSIS

All three types of samples were analyzed for 31 elements (Ag, As, Au, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, La, Mg, Mn, Mo, Nb, Ni, Pb, Sb, Sc, Sn, Sr, Th, Ti, V, W, Y, Zn, and Zr) using a six-step semiquantitative emission spectrographic method (Grimes and Marranzino, 1968). Because of the limited amount of sample material, the nonmagnetic heavy-mineral concentrates were only analyzed spectrographically. The rock and stream-sediment samples were also analyzed for As, Zn, Cd, Sb, and Bi by a modification of the atomic-absorption spectrometric method of Viets (1978) and for U using a modification of the fluorometric method of Centanni and others (1956). Analysis was done partly in the field and partly in U.S. Geological Survey laboratories near Golden, Colorado.

The spectrographic analytical values are reported as the approximate geometric midpoints (0.15, 0.2, 0.3, 0.5, 0.7, and 1.0 or appropriate powers of ten of these values) of concentration ranges whose respective boundaries are 0.12, 0.18, 0.26, 0.38, 0.56, 0.83, and 1.2 (or appropriate powers of ten of these values). In general, the precision of the spectrographic method is plus or minus one reporting value of the value given by the analyst approximately 83 percent of the time and plus or minus two reporting values of the value given by the analyst 96 percent of the time (Motooka and Grimes, 1976). Because all of the samples for this report were analyzed by the same analyst using the same spectrographic instrument, our experience indicates that better precision can be expected in this study.

Each spectrographic film includes analytical spectra for up to 22 field samples and one reference standard sample. The reference standard sample is included with each set of field samples to monitor the quality of the analyses from film to film.

For the six elements analyzed by atomic absorption spectrometry or fluorometry the reporting values vary with the element and with the concentration level for any given element. Precision for these analytical methods is commonly reported as a percent relative standard deviation (% RSD), and is based on replicate analyses of samples selected to provide information at different concentration levels. In general, the precision for each method tends to be lowest for those samples containing a given element at or near its lower limit of determination. For the six elements discussed here, the reported ranges of percent relative standard deviation, as determined by replicate analysis of a limited sample set, are as follows:

Element	Range of % RSD	Source of data
As	4.4-49	J. D. Sharkey, written commun., 1983
Zn	3.7-42	J. D. Sharkey, written commun., 1983
Cd	0- 154	J. D. Sharkey, written commun., 1983
Sb	0- 72	J. D. Sharkey, written commun., 1983
Bi	4.8- 5.2	J. D. Sharkey, written commun., 1983
U	6.8-14.2	R. M. O'Leary and A. L. Meier, written commun., 1982

As an example to use in interpreting these ranges one might consider zinc, whose range is shown as 3.7-42% RSD. This range indicates that a reported zinc value listed in tables 2 or 3 should be within ± 42% (usually much less) of the mean value for that sample. As was the case for the spectrographic analyses, a reference standard sample was analyzed with each batch of field samples to monitor the quality of the analyses.

DESCRIPTION OF TABLES 1-4

Table 1 lists the lower limits of analytical determination for the three types of samples collected for this report. Because of matrix interference problems, the spectrographic technique was modified for the analysis of nonmagnetic heavy-mineral-concentrate samples. As a result, the lower limits of determination for the elements analyzed for this type of sample are all raised two reporting values above the normal lower-limit value.

Tables 2-4 list the chemical analyses for the samples of rock, minus-60-mesh (0.25-mm) stream sediment, and nonmagnetic heavy-mineral concentrate, respectively. For the three sample sets the data are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers coincide with the numbers on the site location map (plate 1). In tables 2-4, rock samples are suffixed by RK, stream-sediment samples by SS, and concentrate samples by KN. Columns 2 and 3 list the latitude (north) and longitude (west), respectively, for each sample site in degrees, minutes, and seconds. Column headings showing the letter "s" below the element symbol are emission spectrographic analyses. In a similar manner, the letters "cm" indicate colorimetric determinations for arsenic and the letters "inst" indicate fluorometric determinatins for uranium. All element concentrations are given in parts per million (ppm), except those for Fe, Mg, Ca, and Ti, which are given in percent (pct).

If a given element was looked for but not detected in a sample, then the letter "N" was entered in the tables in place of an analytical value. If an element was observed but was below the lowest reporting value, then a "less than" symbol (<) was entered in the tables in front of the lower limit of determination. If an element was observed but was above the highest reporting value, then 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 2-4, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Be, and U) carry one or more nonsignificant zeroes to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeroes. The last column in table 2 gives the rock name for each rock sample. These names are taken from the units shown on the geologic map of the Pyramid Roadless Area (Armstrong and others, 1983).

For the semiquantitative spectrographic method used, the elements As, Bi, Cd, Sb, and Zn have lower limits of analytical determination that are usually above normal concentrations for these elements in the selected sample media. To obtain more useful analyses, these elements were analyzed using other, more sensitive methods on the rock and stream-sediment samples, and the spectrographic analyses for these five elements have been deleted from the rock and stream-sediment data sets (tables 2 and 3). The spectrographic analyses for the elements Au, Nb, Sn, W, and Th in the rock samples; for Ag, Au, Sn, and W in the stream-sediment samples; and for Cd, Sb, and Zn in the concentrate samples were in every case below their respective lower limits of determination. Consequently, these elements have also been deleted from tables 2, 3, and 4, respectively. For the same reason the atomic absorption analyses for Cd, Sb, and Bi in the rock samples and for Bi in the stream-sediment samples have been deleted.

Table 1.--Lower limits of analytical determination for samples of rock, minus-60-mesh (0.25-mm) stream sediment, and nonmagnetic heavy-mineral concentrate, Pyramid Roadless Area, California

[(--) indicates not analyzed. "aa" following the element symbol indicates atomic absorption analysis; "inst" indicates fluorometric analysis; no suffix indicates spectrographic analysis. The values listed for Fe, Mg, Ca, and Ti are in percent; all others are in parts per million]

Element	Lower limit of determination	
	Rock and stream sediment	Heavy-mineral concentrate
Fe	0.05	0.1
Mg	0.02	0.05
Ca	0.05	0.1
Ti	0.002	0.005
Mn	10	20
Ag	0.5	1.0
As	200	500
Au	10	20
B	10	20
Ba	20	50
Be	1	2
Bi	10	20
Cd	20	50
Co	5	10
Cr	10	20
Cu	5	10
La	20	50
Mo	5	10
Nb	20	50
Ni	5	10
Pb	10	20
Sb	100	200
Sc	5	10
Sn	10	20
Sr	100	200
V	10	20
W	50	100
Y	10	20
Zn	200	500
Zr	10	20
Th	200	500
As-aa	10	--
Zn-aa	5	--
Cd-aa	0.1	--
Sb-aa	1.0	--
Bi-aa	2	--
U-inst	0.05	--

Table 2.--Data for rock samples, Pyramid Roadless Area, California

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Co-ppm s
PY002RK	39 1 35	120 10 32	2.0	.7	2.0	.30	500	N	<10	1,000	1.0	7
PY011RK	38 59 0	120 6 28	.7	.1	.2	.05	150	N	10	500	1.0	<5
PY013RK	38 57 6	120 6 42	7.0	2.0	5.0	.70	1,000	N	20	500	N	30
PY014RK	39 1 5	120 8 45	5.0	1.5	2.0	.50	700	N	10	1,000	<1.0	20
PY016RK	38 56 6	120 6 5	3.0	1.0	1.5	.50	500	N	30	500	1.0	15
PY017RK	38 56 47	120 5 57	5.0	2.0	3.0	.50	700	N	15	1,000	<1.0	30
PY025RK	38 50 43	120 5 34	3.0	1.0	2.0	.50	500	N	70	700	1.5	10
PY027RK	38 50 33	120 5 21	5.0	1.0	1.5	.50	700	N	20	700	1.0	10
PY028RK	38 50 35	120 4 49	5.0	1.5	5.0	.50	1,000	N	15	500	1.0	10
PY029RK	38 50 44	120 4 49	5.0	1.5	2.0	.50	500	N	50	500	1.0	20
PY030RK	38 52 27	120 5 43	3.0	1.5	2.0	.50	700	N	10	1,000	<1.0	15
PY031RK	38 52 37	120 5 41	7.0	2.0	7.0	.70	1,000	N	70	500	1.0	30
PY032RK	38 52 45	120 5 17	5.0	3.0	5.0	.50	1,000	N	20	700	1.0	20
PY033RK	38 52 22	120 4 53	7.0	2.0	3.0	.70	1,000	N	70	700	1.0	30
PY040RK	38 48 50	120 7 7	2.0	1.0	1.5	.50	500	N	10	1,000	1.0	10
PY050RK	38 49 6	120 12 49	5.0	1.5	2.0	.50	1,000	N	10	1,000	1.0	20
PY054RK	38 51 27	120 14 50	1.5	.5	1.5	.10	300	N	<10	700	1.0	7
PY056RK	38 51 6	120 14 30	10.0	5.0	7.0	1.00	1,000	N	<10	500	N	50
PY057RK	38 51 35	120 13 29	3.0	1.5	5.0	.30	500	N	10	500	1.0	10
PY060RK	38 51 1	120 16 26	2.0	1.0	1.5	.30	500	N	15	1,000	1.0	10
PY061RK	38 50 55	120 17 52	2.0	.7	1.5	.20	500	N	10	1,000	1.0	7
PY066RK	38 53 0	120 18 22	2.0	.7	1.5	.30	300	N	10	700	1.0	7
PY068RK	38 52 29	120 18 22	2.0	1.0	1.5	.20	300	N	10	700	1.5	5
PY070RK	38 52 58	120 20 40	2.0	.5	1.5	.20	300	N	10	500	1.0	5
PY074RK	38 53 54	120 19 10	2.0	.5	1.0	.20	500	N	10	700	1.0	7
PY077RK	38 54 31	120 20 46	5.0	3.0	7.0	.50	1,000	N	<10	700	<1.0	30
PY082RK	38 56 20	120 17 0	5.0	.5	3.0	.30	700	N	20	700	1.0	10
PY083RK	38 55 36	120 18 4	5.0	1.5	2.0	.30	1,000	N	<10	1,000	<1.0	15
PY085RK	38 55 23	120 19 14	5.0	1.5	3.0	.50	1,000	N	10	1,000	<1.0	20
PY088RK	38 49 12	120 11 33	3.0	1.5	2.0	.50	700	<.5	10	1,000	<1.0	15
PY090RK	38 55 22	120 16 7	5.0	1.5	5.0	.50	1,000	N	15	1,000	1.0	10
PY091RK	38 54 35	120 15 1	3.0	1.0	3.0	.50	500	N	10	700	<1.0	10
PY095RK	38 55 46	120 16 58	3.0	1.5	2.0	.30	1,000	N	10	1,000	1.0	10
PY096RK	38 56 7	120 20 37	5.0	2.0	3.0	.50	1,000	N	<10	1,000	<1.0	20
PY098RK	38 52 53	120 13 52	5.0	1.5	3.0	.50	500	N	10	700	<1.0	10

Table 2.--Data for rock samples, Pyramid Roadless Area, California

Sample	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s	V-ppm s	Y-ppm s	Zr-ppm s	Zn-ppm aa	U-ppm inst
PY002RK	15	<5	20	N	<5	15	7	200	70	20	70	40	.76
PY011RK	N	7	20	N	<5	20	N	<100	<10	<10	20	5	2.40
PY013RK	50	50	20	N	20	<10	15	500	200	15	50	30	.26
PY014RK	15	<5	20	N	7	10	10	200	100	20	70	35	.42
PY016RK	10	7	20	N	5	10	7	200	70	15	100	20	2.60
PY017RK	30	50	20	N	20	10	15	500	100	20	70	35	.54
PY025RK	10	<5	30	N	<5	<10	10	200	70	20	150	15	1.30
PY027RK	10	15	70	N	<5	10	10	200	100	30	300	30	1.90
PY028RK	20	100	30	N	5	15	15	500	200	30	70	30	2.60
PY029RK	10	15	30	N	5	10	10	200	100	30	150	25	1.40
PY030RK	10	10	30	N	5	15	10	300	100	20	150	35	.80
PY031RK	70	100	50	7	7	10	30	500	300	30	100	40	.77
PY032RK	70	15	30	<5	30	N	30	300	200	20	100	45	.21
PY033RK	15	30	30	N	10	20	20	200	150	30	200	50	.96
PY040RK	<10	10	20	N	<5	10	5	200	70	10	100	35	1.30
PY050RK	10	30	20	N	7	15	10	200	150	15	30	35	3.80
PY054RK	N	N	20	N	N	15	<5	200	30	<10	<10	15	2.10
PY056RK	300	50	20	N	200	<10	20	700	200	20	100	60	.16
PY057RK	10	10	20	N	5	20	5	500	100	10	70	20	5.80
PY060RK	N	5	20	N	<5	15	5	300	50	<10	70	25	2.40
PY061RK	N	7	30	N	<5	20	5	300	70	15	70	25	4.00
PY066RK	N	10	30	N	N	15	<5	300	70	<10	150	10	2.70
PY068RK	N	15	20	N	N	15	<5	300	50	10	100	35	8.00
PY070RK	N	5	30	N	N	15	5	200	50	<10	100	20	2.10
PY074RK	N	<5	<20	N	N	20	<5	200	50	10	70	20	5.40
PY077RK	10	20	20	N	10	10	15	500	200	20	70	25	.48
PY082RK	<10	5	30	N	5	15	7	500	100	15	100	35	2.60
PY083RK	10	10	20	N	<5	20	7	500	100	10	70	40	1.30
PY085RK	<10	7	<20	N	<5	10	7	500	100	10	100	25	.46
PY088RK	10	15	20	N	7	15	7	300	100	10	50	15	1.40
PY090RK	10	15	30	N	<5	15	7	500	100	15	70	25	1.80
PY091RK	<10	10	<20	N	5	10	10	500	100	10	100	20	2.20
PY095RK	N	<5	30	N	N	15	7	300	70	15	100	55	3.70
PY096RK	15	15	20	N	10	10	10	500	150	10	50	30	.45
PY098RK	10	7	30	N	7	15	7	300	100	15	30	20	.96

Table 2.--Data for rock samples, Pyramid Roadless Area, California

Sample	ROCK UNIT NAME
PY002RK	GRANODIORITE TO ALASKITE
PY011RK	GRANODIORITE TO ALASKITE
PY013RK	NORITIC ROCKS
PY014RK	GRANODIORITE TO ALASKITE
PY016RK	GRANODIORITE TO ALASKITE
PY017RK	GRANODIORITE TO ALASKITE
PY025RK	GRANODIORITE TO ALASKITE
PY027RK	GRANODIORITE TO ALASKITE
PY028RK	METASEDIMENTARY ROCKS
PY029RK	GRANODIORITE TO ALASKITE
PY030RK	GRANODIORITE TO ALASKITE
PY031RK	METAVOLCANIC ROCKS
PY032RK	METAVOLCANIC ROCKS
PY033RK	GRANODIORITE TO ALASKITE
PY040RK	GRANODIORITE TO ALASKITE
PY050RK	GRANODIORITE TO ALASKITE
PY054RK	GRANODIORITE TO ALASKITE
PY056RK	PORPHYRITIC OLIVINE BASALT
PY057RK	GRANODIORITE TO ALASKITE
PY060RK	GRANODIORITE TO ALASKITE
PY061RK	GRANODIORITE TO ALASKITE
PY066RK	GRANODIORITE TO ALASKITE
PY068RK	GRANODIORITE TO ALASKITE
PY070RK	GRANODIORITE TO ALASKITE
PY074RK	GRANODIORITE TO ALASKITE
PY077RK	GRANODIORITE TO ALASKITE
PY082RK	GRANODIORITE TO ALASKITE
PY083RK	GRANODIORITE TO ALASKITE
PY085RK	GRANODIORITE TO ALASKITE
PY088RK	GRANODIORITE TO ALASKITE
PY090RK	GRANODIORITE TO ALASKITE
PY091RK	GRANODIORITE TO ALASKITE
PY095RK	GRANODIORITE TO ALASKITE
PY096RK	GRANODIORITE TO ALASKITE
PY098RK	GRANODIORITE TO ALASKITE

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
PY001SS	39 2 58	120 9 36	5.0	2.0	5.0	.5	1,000	20	500	1.0
PY002SS	39 1 35	120 10 32	7.0	2.0	5.0	.5	1,000	20	500	1.0
PY003SS	39 1 32	120 10 18	2.0	.5	2.0	.3	1,000	10	500	1.5
PY004SS	39 2 18	120 9 6	3.0	1.5	3.0	.3	700	30	500	1.0
PY005SS	39 0 57	120 7 37	3.0	1.5	3.0	.5	1,000	15	500	1.0
PY006SS	39 0 39	120 7 29	3.0	1.5	3.0	.3	700	10	700	1.5
PY007SS	39 0 10	120 6 47	5.0	1.5	5.0	.5	700	15	700	1.0
PY008SS	38 59 37	120 6 35	7.0	2.0	5.0	.5	1,000	30	500	1.0
PY009SS	38 59 27	120 6 36	7.0	3.0	5.0	.5	1,000	70	500	1.0
PY010SS	38 59 23	120 6 35	3.0	2.0	3.0	.3	1,000	50	300	1.0
PY011SS	38 59 0	120 6 28	7.0	1.5	2.0	.5	1,000	20	300	1.0
PY012SS	38 57 26	120 6 32	5.0	1.0	3.0	.5	500	20	300	<1.0
PY013SS	38 57 6	120 6 42	5.0	1.0	3.0	.5	700	50	300	1.0
PY014SS	39 1 5	120 8 45	3.0	.7	3.0	.3	700	<10	500	1.5
PY015SS	39 1 11	120 8 47	3.0	1.0	5.0	.5	1,000	15	700	1.5
PY016SS	38 56 6	120 6 5	3.0	1.5	5.0	.5	700	70	500	<1.0
PY018SS	38 55 27	120 5 13	5.0	1.5	5.0	.5	1,000	50	500	1.0
PY019SS	38 55 16	120 4 50	5.0	3.0	3.0	.5	700	150	500	<1.0
PY020SS	38 55 15	120 4 47	5.0	2.0	5.0	.5	1,000	200	500	1.0
PY021SS	38 55 17	120 4 38	7.0	3.0	5.0	.7	1,000	200	700	1.0
PY022SS	38 53 57	120 4 17	7.0	3.0	7.0	.5	1,000	200	500	1.0
PY023SS	38 51 51	120 2 54	5.0	.7	2.0	.7	1,500	20	700	1.5
PY024SS	38 51 18	120 2 32	1.5	.5	1.5	.3	500	30	500	1.5
PY025SS	38 50 43	120 5 34	3.0	1.0	2.0	.5	1,000	150	500	1.5
PY026SS	38 50 37	120 5 29	7.0	3.0	3.0	.5	1,000	200	300	1.0
PY027SS	38 50 33	120 5 21	5.0	1.5	3.0	.5	500	200	700	1.0
PY028SS	38 50 35	120 4 49	2.0	.7	3.0	.5	500	70	500	1.5
PY029SS	38 50 44	120 4 49	3.0	.7	2.0	.5	500	70	500	1.5
PY030SS	38 52 27	120 5 43	5.0	2.0	5.0	.5	1,000	200	500	1.0
PY033SS	38 52 22	120 4 53	3.0	1.5	2.0	.5	700	100	300	2.0
PY034SS	38 49 23	120 4 9	7.0	2.0	5.0	.7	1,000	50	500	<1.0
PY035SS	38 49 18	120 4 22	5.0	1.5	5.0	.7	700	70	500	1.0
PY036SS	38 49 13	120 4 47	5.0	1.5	5.0	.5	700	30	300	1.0
PY037SS	38 49 8	120 4 54	5.0	2.0	5.0	.5	1,000	50	500	1.0
PY038SS	38 48 55	120 5 4	5.0	1.5	3.0	.5	1,000	50	700	1.0
PY039SS	38 48 46	120 6 19	5.0	1.5	5.0	.5	500	30	1,000	1.0
PY040SS	38 48 50	120 7 7	5.0	1.5	3.0	.5	1,000	20	700	1.5
PY041SS	38 48 34	120 8 11	5.0	2.0	5.0	.5	700	20	700	1.0
PY042SS	38 47 25	120 10 7	7.0	1.5	3.0	.5	1,000	15	700	1.0
PY043SS	38 47 29	120 11 2	10.0	1.5	2.0	.5	1,000	20	700	<1.0
PY044SS	38 47 31	120 11 14	3.0	1.5	5.0	.5	700	10	700	1.5
PY045SS	38 47 33	120 11 25	7.0	1.5	5.0	.7	1,000	10	700	1.0
PY046SS	38 47 32	120 11 33	7.0	1.5	3.0	.5	700	10	500	1.0
PY047SS	38 47 29	120 11 39	5.0	1.5	5.0	.5	1,000	10	500	1.0
PY048SS	38 47 27	120 13 8	5.0	2.0	5.0	.5	1,000	20	700	1.0

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California

Sample	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s
PY001SS	20	70	20	50	N	N	20	15	20	200
PY002SS	20	50	20	20	<5	N	10	15	20	200
PY003SS	7	15	10	50	N	N	5	10	7	150
PY004SS	10	30	15	20	N	N	15	15	20	200
PY005SS	10	20	N	20	N	N	5	15	20	200
PY006SS	10	20	20	<20	N	N	5	15	20	200
PY007SS	20	20	<5	30	N	N	10	20	20	200
PY008SS	20	50	15	20	N	N	10	15	20	200
PY009SS	20	50	15	30	N	<20	10	15	30	200
PY010SS	10	20	7	30	N	N	10	10	15	200
PY011SS	15	100	7	50	N	N	15	15	20	200
PY012SS	15	50	10	<20	N	N	10	15	10	200
PY013SS	20	50	15	30	N	N	15	10	15	200
PY014SS	7	20	10	20	N	N	<5	10	10	200
PY015SS	10	15	7	20	N	N	10	20	20	300
PY016SS	10	20	10	30	N	N	7	10	10	300
PY018SS	10	50	30	30	N	N	30	15	15	300
PY019SS	30	150	70	<20	7	N	30	10	20	200
PY020SS	20	150	70	30	7	N	50	15	30	200
PY021SS	30	150	70	50	N	N	50	20	30	200
PY022SS	30	200	50	30	N	N	30	15	30	200
PY023SS	7	15	10	50	N	<20	5	20	10	150
PY024SS	5	<10	<5	<20	N	N	5	15	10	150
PY025SS	15	15	15	30	N	N	15	15	15	200
PY026SS	30	200	20	30	5	N	70	10	30	200
PY027SS	15	50	20	30	15	N	15	15	15	150
PY028SS	7	30	15	30	N	N	10	20	15	200
PY029SS	10	20	20	30	N	N	10	20	10	200
PY030SS	30	100	50	100	N	N	20	30	20	300
PY033SS	15	20	20	30	N	N	5	10	10	150
PY034SS	30	70	20	20	N	N	10	15	20	200
PY035SS	15	50	20	30	N	N	15	15	15	300
PY036SS	20	30	30	30	N	N	15	15	20	300
PY037SS	20	30	20	30	N	N	15	10	15	300
PY038SS	10	20	10	30	N	N	10	10	30	200
PY039SS	15	15	15	30	N	N	10	15	15	500
PY040SS	15	20	15	30	N	N	15	50	20	300
PY041SS	15	30	15	20	N	N	7	15	15	300
PY042SS	20	50	20	20	N	N	10	20	15	300
PY043SS	30	100	20	30	N	N	10	10	30	200
PY044SS	10	15	15	30	N	N	10	15	15	300
PY045SS	20	30	15	<20	N	N	20	20	20	300
PY046SS	15	50	15	20	N	N	10	10	15	200
PY047SS	15	30	10	20	N	N	15	15	20	200
PY048SS	20	20	15	30	N	N	10	20	20	200

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California

Sample	V-ppm s	Y-ppm s	Zr-ppm s	Th-ppm s	As-ppm aa	Zn-ppm aa	Cd-ppm aa	Sb-ppm aa	U-ppm inst
PY001SS	150	30	200	N	20	30	N	N	2.80
PY002SS	200	30	150	N	N	40	N	N	3.60
PY003SS	70	20	150	N	N	55	N	N	54.00
PY004SS	100	20	70	N	N	40	N	N	3.60
PY005SS	100	30	300	N	N	70	N	N	7.70
PY006SS	100	30	300	N	N	45	N	N	8.50
PY007SS	100	30	150	N	N	50	N	40	20.00
PY008SS	150	50	500	N	N	25	N	N	1.40
PY009SS	200	50	700	N	N	20	N	N	54.00
PY010SS	100	30	100	N	N	15	N	N	9.90
PY011SS	200	30	700	N	N	30	N	N	9.00
PY012SS	150	30	200	N	N	15	N	N	27.00
PY013SS	150	30	300	N	N	35	N	N	14.00
PY014SS	100	20	200	N	N	50	N	N	30.00
PY015SS	100	30	500	N	N	30	N	N	5.90
PY016SS	100	20	150	N	N	10	N	7	2.10
PY018SS	200	20	30	N	70	120	.8	N	18.00
PY019SS	200	20	200	N	50	135	.6	N	1.20
PY020SS	200	20	100	N	N	140	.4	N	2.30
PY021SS	200	30	200	N	20	70	N	N	1.00
PY022SS	150	20	100	N	N	40	N	N	.62
PY023SS	70	30	500	N	N	50	N	N	8.10
PY024SS	30	30	300	N	N	15	N	N	3.00
PY025SS	100	30	300	N	N	30	N	N	2.70
PY026SS	150	30	200	N	N	30	N	N	1.40
PY027SS	70	20	200	N	20	20	N	N	6.80
PY028SS	70	20	300	N	N	190	.7	N	3.00
PY029SS	100	20	200	N	N	60	N	N	7.00
PY030SS	150	50	500	N	30	120	.3	N	3.40
PY033SS	100	20	150	N	N	50	N	N	5.20
PY034SS	200	30	500	N	N	40	N	N	4.30
PY035SS	150	20	150	N	N	70	N	N	1.80
PY036SS	150	30	300	N	N	40	N	N	2.20
PY037SS	150	30	300	N	N	30	N	N	4.10
PY038SS	150	30	700	N	N	15	N	N	1.90
PY039SS	100	20	500	N	N	30	N	N	2.90
PY040SS	100	20	300	N	N	35	N	N	11.00
PY041SS	100	20	200	N	N	45	N	N	1.90
PY042SS	200	20	300	N	N	50	N	N	14.00
PY043SS	300	30	>1,000	N	N	40	N	N	13.00
PY044SS	100	20	500	N	N	25	N	N	2.80
PY045SS	150	20	200	N	N	20	N	N	3.60
PY046SS	150	20	150	N	N	25	N	N	5.00
PY047SS	150	20	200	N	N	25	N	N	2.80
PY048SS	100	20	200	N	N	40	N	N	4.20

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California--continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
PY049SS	38 49 21	120 12 38	5.0	1.5	3.0	.5	700	15	300	1.5
PY051SS	38 50 10	120 13 27	5.0	1.0	2.0	.5	1,000	10	500	1.5
PY052SS	38 50 23	120 13 59	3.0	.7	2.0	.5	500	10	500	1.0
PY053SS	38 51 19	120 14 56	3.0	1.5	3.0	.5	700	10	500	1.0
PY055SS	38 51 10	120 14 41	3.0	.3	1.5	.2	2,000	<10	300	1.5
PY057SS	38 51 35	120 13 29	3.0	1.0	2.0	.5	700	<10	300	1.0
PY058SS	38 51 25	120 13 22	3.0	1.5	3.0	.5	1,000	15	500	1.5
PY059SS	38 51 5	120 16 32	3.0	1.0	3.0	.5	700	15	700	1.5
PY060SS	38 51 1	120 16 26	5.0	1.0	5.0	.5	700	15	500	1.0
PY061SS	38 50 55	120 17 52	2.0	1.0	2.0	.5	1,000	10	700	1.0
PY062SS	38 50 50	120 17 56	3.0	1.5	5.0	.5	500	15	500	1.0
PY063SS	38 51 32	120 18 19	3.0	1.0	2.0	.5	700	<10	700	1.5
PY064SS	38 52 39	120 16 51	2.0	.7	2.0	.2	500	10	500	1.5
PY065SS	38 52 36	120 16 34	5.0	1.0	3.0	.3	700	15	700	1.0
PY066SS	38 53 0	120 18 22	2.0	.5	2.0	.3	500	<10	500	2.0
PY067SS	38 52 56	120 18 20	5.0	.7	2.0	.3	700	<10	500	1.5
PY068SS	38 52 29	120 18 22	5.0	.5	2.0	.2	500	10	500	1.5
PY069SS	38 52 25	120 18 24	5.0	1.0	3.0	.3	500	15	500	1.5
PY070SS	38 52 58	120 20 40	2.0	1.0	3.0	.3	700	10	700	1.5
PY071SS	38 52 50	120 20 35	5.0	.5	1.5	.3	500	10	500	1.5
PY072SS	38 55 57	120 21 11	7.0	2.0	5.0	.7	1,500	15	700	1.0
PY073SS	38 55 42	120 20 40	5.0	1.5	3.0	.3	700	10	700	<1.0
PY074SS	38 53 54	120 19 10	3.0	1.0	3.0	.5	700	15	700	1.0
PY075SS	38 53 50	120 19 2	3.0	.7	2.0	.3	700	10	700	1.5
PY076SS	38 54 12	120 20 32	3.0	1.0	1.5	.5	500	<10	500	1.0
PY077SS	38 54 31	120 20 46	2.0	1.0	2.0	.2	500	<10	700	1.0
PY078SS	38 54 37	120 20 46	3.0	1.0	2.0	.5	700	<10	500	1.0
PY079SS	38 54 52	120 21 19	7.0	2.0	3.0	.5	1,000	10	700	1.0
PY080SS	38 56 42	120 17 3	3.0	.7	1.5	.5	700	50	500	1.5
PY081SS	38 56 41	120 17 7	3.0	1.0	1.5	.5	1,000	30	700	1.5
PY082SS	38 56 20	120 17 0	2.0	1.0	3.0	.3	500	20	700	2.0
PY083SS	38 55 36	120 18 4	5.0	.7	2.0	.3	500	20	500	1.0
PY084SS	38 55 26	120 18 9	5.0	1.5	5.0	.5	700	15	500	1.5
PY086SS	38 49 20	120 11 10	5.0	1.5	3.0	.7	1,000	15	300	1.0
PY087SS	38 49 22	120 10 15	5.0	2.0	5.0	.7	1,000	20	300	1.5
PY089SS	38 56 2	120 19 7	3.0	1.5	3.0	.3	700	20	700	1.0
PY090SS	38 55 22	120 16 7	2.0	1.0	5.0	.2	700	15	700	1.0
PY091SS	38 54 35	120 15 1	3.0	1.0	3.0	.3	700	15	500	1.0
PY092SS	38 54 30	120 15 1	3.0	1.5	3.0	.3	700	20	700	1.5
PY093SS	38 54 26	120 15 9	3.0	1.5	5.0	.7	1,000	10	500	1.0
PY094SS	38 55 37	120 17 7	3.0	1.5	3.0	.3	700	10	500	<1.0
PY095SS	38 55 46	120 16 58	3.0	1.5	3.0	.5	700	10	500	1.0
PY097SS	38 52 12	120 3 32	1.0	.3	1.5	.3	700	20	500	2.0
PY098SS	38 52 53	120 13 52	5.0	2.0	5.0	.5	1,000	15	700	1.0
PY099SS	38 52 47	120 13 51	5.0	2.0	5.0	.7	1,000	20	500	1.0

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California--continued

Sample	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sc-ppm s	Sr-ppm s
PY049SS	15	30	10	30	N	N	15	15	10	200
PY051SS	10	10	7	30	N	20	N	20	10	300
PY052SS	7	20	5	20	N	<20	5	10	10	300
PY053SS	15	30	10	30	N	N	15	20	10	300
PY055SS	20	15	15	30	N	<20	N	50	7	150
PY057SS	10	15	7	20	N	N	7	20	15	200
PY058SS	15	20	10	20	N	N	10	20	15	300
PY059SS	10	20	15	50	5	N	7	20	10	200
PY060SS	10	20	5	20	N	N	5	15	15	300
PY061SS	10	50	15	50	N	N	15	15	7	200
PY062SS	10	20	7	20	N	N	7	10	10	300
PY063SS	10	30	15	30	N	N	7	15	10	200
PY064SS	7	15	15	30	N	N	N	20	7	200
PY065SS	15	20	15	30	N	N	5	15	10	500
PY066SS	7	15	15	20	N	N	5	15	5	300
PY067SS	7	15	20	30	N	N	10	15	5	200
PY068SS	7	20	20	100	5	N	N	15	5	200
PY069SS	7	15	30	30	N	N	<5	30	7	300
PY070SS	7	10	5	20	N	N	<5	15	10	200
PY071SS	7	15	20	<20	<5	N	<5	20	5	200
PY072SS	30	150	20	50	<5	N	50	20	30	500
PY073SS	15	50	10	20	N	N	50	15	10	300
PY074SS	10	15	5	30	N	N	<5	15	15	300
PY075SS	7	10	10	20	N	N	5	20	5	300
PY076SS	10	15	10	20	N	N	7	20	7	300
PY077SS	7	15	5	20	N	N	<5	10	10	200
PY078SS	10	20	10	20	N	N	7	15	10	200
PY079SS	20	100	15	20	N	N	15	10	20	300
PY080SS	10	30	10	20	N	N	10	15	10	150
PY081SS	30	150	20	30	N	N	100	15	15	200
PY082SS	7	10	7	30	N	N	<5	15	10	300
PY083SS	10	20	7	20	N	N	5	15	10	200
PY084SS	10	15	10	20	N	N	<5	15	10	300
PY086SS	20	50	20	30	N	<20	10	15	15	300
PY087SS	30	70	20	30	5	N	30	15	20	200
PY089SS	10	20	10	30	N	N	15	15	15	500
PY090SS	7	<10	7	20	N	N	<5	20	10	300
PY091SS	10	15	10	20	N	N	7	20	10	300
PY092SS	10	20	10	20	N	N	5	20	15	500
PY093SS	10	20	7	30	N	N	5	15	15	300
PY094SS	10	15	<5	20	N	N	7	15	15	300
PY095SS	10	20	7	20	N	N	5	10	10	300
PY097SS	<5	N	N	<20	N	N	N	15	7	150
PY098SS	15	20	15	20	N	N	7	50	10	300
PY099SS	15	50	10	30	N	N	20	15	15	300

Table 3.--Data for stream-sediment samples, Pyramid Roadless Area, California--continued

Sample	V-ppm s	Y-ppm s	Zr-ppm s	Th-ppm s	As-ppm aa	Zn-ppm aa	Cd-ppm aa	Sb-ppm aa	U-ppm inst
PY049SS	70	20	50	N	N	15	N	N	.85
PY051SS	100	30	500	N	N	10	N	N	20.00
PY052SS	100	30	500	N	N	10	N	N	.53
PY053SS	70	20	300	N	N	15	N	N	4.80
PY055SS	70	20	700	N	N	75	.2	N	3.70
PY057SS	70	20	300	N	N	15	N	N	1.40
PY058SS	100	20	300	N	N	20	N	N	3.40
PY059SS	70	20	150	N	N	25	N	N	9.60
PY060SS	150	20	1,000	N	N	10	N	N	4.00
PY061SS	100	20	300	N	N	25	N	N	8.00
PY062SS	100	30	300	N	<10	15	N	N	5.40
PY063SS	100	20	500	N	N	20	N	N	48.00
PY064SS	70	20	300	N	N	30	N	N	9.60
PY065SS	100	20	200	N	N	20	N	N	3.20
PY066SS	70	10	200	N	N	30	N	N	22.00
PY067SS	100	15	200	N	N	35	N	N	8.00
PY068SS	150	20	500	N	N	25	N	N	16.00
PY069SS	70	20	300	N	N	30	N	N	43.00
PY070SS	70	20	150	N	N	10	.1	N	8.00
PY071SS	100	15	300	N	N	25	N	N	32.00
PY072SS	200	50	1,000	N	N	45	N	N	1.40
PY073SS	100	20	300	N	N	15	N	N	2.70
PY074SS	100	30	300	N	N	10	N	N	4.20
PY075SS	70	15	300	N	N	15	N	N	120.00
PY076SS	70	20	100	N	N	15	N	N	4.30
PY077SS	70	15	200	N	N	15	N	N	2.70
PY078SS	150	20	300	N	N	30	N	N	1.80
PY079SS	200	20	500	N	N	20	N	N	1.40
PY080SS	100	20	300	N	N	20	N	N	3.20
PY081SS	100	20	300	N	N	50	.2	N	2.10
PY082SS	70	20	200	N	<10	15	N	N	2.10
PY083SS	100	20	300	N	N	20	N	N	2.10
PY084SS	100	20	300	N	N	15	N	N	5.60
PY086SS	200	50	500	N	N	20	N	N	.70
PY087SS	150	30	500	N	N	20	N	N	.80
PY089SS	100	20	300	N	N	20	N	N	2.70
PY090SS	70	15	100	N	N	15	N	N	3.00
PY091SS	70	20	200	N	N	20	N	N	2.50
PY092SS	100	20	300	N	N	20	N	N	6.20
PY093SS	100	30	500	N	N	10	N	N	1.90
PY094SS	70	20	500	N	N	15	N	N	2.60
PY095SS	100	20	300	N	N	10	N	N	3.20
PY097SS	30	20	200	N	N	10	.2	N	4.80
PY098SS	100	20	300	<100	N	15	N	N	3.40
PY099SS	100	30	70	N	<10	15	N	N	11.00

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California

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
PY001KN	39 2 58	120 9 36	.7	.50	3.0	>2.0	500	500	<500	>1,000	150
PY002KN	39 1 35	120 10 32	.7	.15	15.0	>2.0	300	7	N	N	20
PY003KN	39 1 32	120 10 18	.7	.50	3.0	>2.0	500	N	N	N	<20
PY004KN	39 2 18	120 9 6	.5	.15	3.0	>2.0	200	N	N	N	30
PY005KN	39 0 57	120 7 37	.7	.07	.5	1.5	150	N	N	<20	<20
PY006KN	39 0 39	120 7 29	.7	.05	.7	1.0	100	N	N	N	<20
PY007KN	39 0 10	120 6 47	.7	.30	10.0	>2.0	500	N	N	N	20
PY008KN	38 59 37	120 6 35	.5	.15	10.0	>2.0	500	N	N	N	<20
PY009KN	38 59 27	120 6 36	.5	.10	10.0	>2.0	700	2	N	N	<20
PY010KN	38 59 23	120 6 35	.5	.10	10.0	>2.0	500	N	N	N	<20
PY011KN	38 59 0	120 6 28	.3	.07	3.0	>2.0	300	N	N	N	30
PY012KN	38 57 26	120 6 32	.7	.20	7.0	>2.0	500	N	N	N	30
PY013KN	38 57 6	120 6 42	.7	.20	7.0	>2.0	700	N	N	N	20
PY014KN	39 1 5	120 8 45	.5	.20	3.0	>2.0	200	N	N	N	20
PY015KN	39 1 11	120 8 47	.3	.07	7.0	>2.0	300	N	N	N	20
PY016KN	38 56 6	120 6 5	.5	.07	15.0	>2.0	500	N	N	N	20
PY018KN	38 55 27	120 5 13	.7	.15	15.0	>2.0	1,000	N	N	N	20
PY019KN	38 55 16	120 4 50	.7	.20	5.0	>2.0	500	70	700	300	70
PY020KN	38 55 15	120 4 47	1.0	.70	15.0	>2.0	1,000	20	N	70	100
PY021KN	38 55 17	120 4 38	2.0	.70	15.0	2.0	1,000	N	N	N	200
PY022KN	38 53 57	120 4 17	1.5	.70	10.0	>2.0	500	7	N	50	200
PY023KN	38 51 51	120 2 54	.5	.07	5.0	>2.0	700	2	N	20	20
PY024KN	38 51 18	120 2 32	.5	.10	3.0	>2.0	700	N	N	N	30
PY025KN	38 50 43	120 5 34	.5	.10	3.0	>2.0	150	N	N	N	50
PY028KN	38 50 35	120 4 49	.5	.10	3.0	>2.0	300	N	N	N	50
PY029KN	38 50 44	120 4 49	.7	.15	10.0	>2.0	300	N	500	N	100
PY030KN	38 52 27	120 5 43	.5	.15	2.0	2.0	150	N	<500	N	100
PY033KN	38 52 22	120 4 53	.7	.30	10.0	>2.0	300	5	N	N	150
PY034KN	38 49 23	120 4 9	.3	.10	2.0	>2.0	300	N	N	N	20
PY035KN	38 49 18	120 4 22	.5	.15	10.0	>2.0	500	N	N	N	<20
PY036KN	38 49 13	120 4 47	.7	.10	3.0	>2.0	300	N	N	N	20
PY037KN	38 49 8	120 4 54	.3	.10	3.0	>2.0	200	N	N	N	20
PY038KN	38 48 55	120 5 4	.7	.10	5.0	>2.0	500	N	N	N	20
PY039KN	38 48 46	120 6 19	.7	.05	10.0	>2.0	700	N	N	N	<20
PY040KN	38 48 50	120 7 7	.5	.10	7.0	>2.0	500	N	N	N	30
PY041KN	38 48 34	120 8 11	.5	.20	7.0	>2.0	700	N	N	<20	<20
PY042KN	38 47 25	120 10 7	.5	.10	5.0	>2.0	500	N	N	N	20
PY043KN	38 47 29	120 11 2	.3	.03	2.0	2.0	150	5	N	N	20
PY044KN	38 47 31	120 11 14	.5	.15	5.0	>2.0	500	N	N	N	20
PY045KN	38 47 33	120 11 25	.5	.20	5.0	>2.0	700	N	N	N	<20
PY046KN	38 47 32	120 11 33	.5	.20	5.0	>2.0	300	N	N	N	<20
PY047KN	38 47 29	120 11 39	.7	.20	5.0	>2.0	300	N	N	N	20
PY048KN	38 47 27	120 13 8	.5	.10	3.0	>2.0	200	N	N	N	<20
PY049KN	38 49 21	120 12 38	.5	.15	5.0	>2.0	300	N	N	N	<20
PY051KN	38 50 10	120 13 27	.7	.07	3.0	>2.0	300	N	N	N	<20

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
PY001KN	700	N	N	<10	30	N	<50	30	50	N
PY002KN	700	N	N	10	<20	<10	150	150	N	N
PY003KN	700	N	N	<10	20	<10	50	N	70	N
PY004KN	300	N	N	10	<20	<10	50	N	N	15
PY005KN	300	N	N	15	N	10	70	N	50	15
PY006KN	500	N	N	10	N	<10	50	N	50	10
PY007KN	300	N	N	10	30	N	200	N	70	N
PY008KN	300	N	N	15	20	15	500	N	<50	N
PY009KN	150	N	N	15	20	<10	500	<10	50	N
PY010KN	100	N	N	15	20	10	700	N	50	N
PY011KN	300	N	N	10	<20	N	200	150	100	N
PY012KN	200	N	N	20	<20	<10	500	N	70	N
PY013KN	200	N	N	20	<20	15	500	<10	<50	N
PY014KN	300	N	N	10	20	N	70	N	<50	N
PY015KN	300	N	N	15	20	150	150	N	<50	N
PY016KN	150	N	N	15	20	<10	1,000	20	70	N
PY018KN	100	N	N	10	30	N	300	N	<50	N
PY019KN	300	N	N	30	20	N	500	15	100	10
PY020KN	500	N	N	<10	50	15	300	N	<50	15
PY021KN	300	N	N	50	70	N	50	N	<50	15
PY022KN	700	N	500	<10	30	N	100	N	100	<10
PY023KN	150	N	N	20	<20	30	150	N	<50	10
PY024KN	200	N	N	10	<20	10	150	N	150	N
PY025KN	500	N	N	<10	N	N	<50	N	N	N
PY028KN	300	N	N	10	30	10	150	30	<50	15
PY029KN	300	N	150	10	20	20	100	100	<50	10
PY030KN	500	<2	100	15	N	N	50	15	<50	<10
PY033KN	500	N	N	20	20	N	50	N	<50	<10
PY034KN	200	N	N	10	<20	<10	500	<10	<50	N
PY035KN	200	N	30	10	<20	10	700	N	<50	10
PY036KN	200	N	N	10	<20	10	300	N	N	10
PY037KN	300	N	N	10	<20	15	300	N	N	<10
PY038KN	200	N	N	15	20	10	700	<10	<50	<10
PY039KN	100	N	N	15	<20	N	1,500	15	150	N
PY040KN	700	N	N	10	20	N	700	50	100	N
PY041KN	300	N	N	15	<20	<10	1,000	<10	<50	<10
PY042KN	700	N	N	20	<20	20	300	<10	70	N
PY043KN	700	<2	N	15	N	30	100	N	N	N
PY044KN	500	<2	N	15	<20	15	300	N	<50	<10
PY045KN	300	N	N	15	<20	15	200	N	<50	<10
PY046KN	300	N	N	20	<20	10	200	N	50	10
PY047KN	300	N	N	10	<20	15	70	N	N	10
PY048KN	700	N	N	20	<20	30	70	15	N	10
PY049KN	150	N	N	10	20	<10	300	<10	<50	15
PY051KN	300	N	N	15	N	15	100	N	N	10

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California

Sample	Pb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zr-ppm s	Th-ppm s
PY001KN	N	50	30	<200	150	2,000	150	>2,000	200
PY002KN	500	30	<20	300	150	500	500	>2,000	<200
PY003KN	<20	30	100	N	200	500	500	>2,000	200
PY004KN	<20	50	30	N	150	100	700	>2,000	200
PY005KN	20	100	70	N	50	N	1,000	>2,000	2,000
PY006KN	N	70	50	N	70	<100	1,000	>2,000	2,000
PY007KN	<20	30	70	N	300	N	1,000	>2,000	1,000
PY008KN	30	30	50	N	300	<100	1,000	>2,000	5,000
PY009KN	20	20	100	N	300	N	1,000	>2,000	2,000
PY010KN	30	50	70	N	300	N	1,500	>2,000	2,000
PY011KN	20	15	50	N	200	700	500	>2,000	1,500
PY012KN	30	20	70	N	200	N	1,000	>2,000	3,000
PY013KN	30	30	20	N	200	100	700	>2,000	5,000
PY014KN	20	30	50	N	200	150	700	>2,000	300
PY015KN	100	70	100	N	300	N	1,000	>2,000	1,500
PY016KN	<20	15	70	N	300	N	500	>2,000	300
PY018KN	N	15	20	N	500	N	300	>2,000	N
PY019KN	<20	15	50	<200	300	200	300	>2,000	200
PY020KN	<20	20	<20	N	300	200	300	>2,000	<200
PY021KN	N	15	<20	200	300	150	100	>2,000	<200
PY022KN	<20	10	<20	500	200	100	200	>2,000	<200
PY023KN	70	100	30	N	100	N	1,500	>2,000	>5,000
PY024KN	30	20	100	N	150	N	700	>2,000	1,500
PY025KN	N	30	N	N	200	500	300	>2,000	<200
PY028KN	20	70	30	N	200	100	1,000	>2,000	500
PY029KN	150	50	1,000	N	200	300	700	>2,000	1,000
PY030KN	N	15	N	<200	100	700	200	>2,000	<200
PY033KN	<20	50	70	N	300	500	700	>2,000	<200
PY034KN	<20	50	<20	<200	200	<100	500	>2,000	1,500
PY035KN	<20	50	20	N	300	N	1,000	>2,000	1,500
PY036KN	<20	70	<20	<200	150	N	1,000	>2,000	2,000
PY037KN	20	50	<20	<200	150	N	700	>2,000	2,000
PY038KN	20	50	30	N	200	N	1,000	>2,000	5,000
PY039KN	30	15	70	N	700	<100	700	>2,000	2,000
PY040KN	20	10	50	N	300	500	500	>2,000	1,500
PY041KN	20	70	50	<200	300	100	700	>2,000	2,000
PY042KN	<20	20	N	200	150	100	500	>2,000	5,000
PY043KN	30	10	30	200	70	N	200	>2,000	3,000
PY044KN	50	30	20	<200	150	<100	700	>2,000	5,000
PY045KN	50	70	20	N	200	100	1,000	>2,000	5,000
PY046KN	30	70	30	N	200	100	1,000	>2,000	5,000
PY047KN	30	70	<20	N	150	N	700	>2,000	3,000
PY048KN	70	70	20	N	150	N	1,000	>2,000	>5,000
PY049KN	30	70	30	N	200	N	1,000	>2,000	1,500
PY051KN	30	70	20	N	150	N	1,000	>2,000	5,000

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California--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
PY052KN	38 50 23	120 13 59	3.0	.50	5.0	>2.0	1,000	N	N	N	<20
PY053KN	38 51 19	120 14 56	.5	.15	15.0	>2.0	1,000	N	N	N	20
PY055KN	38 51 10	120 14 41	.7	.20	10.0	>2.0	1,000	N	N	N	<20
PY057KN	38 51 35	120 13 29	.5	.10	10.0	>2.0	1,000	N	N	N	<20
PY058KN	38 51 25	120 13 22	.7	.10	15.0	>2.0	1,000	N	N	N	N
PY059KN	38 51 5	120 16 32	.5	.10	15.0	>2.0	700	N	N	N	50
PY060KN	38 51 1	120 16 26	.5	.10	10.0	>2.0	700	N	N	N	20
PY061KN	38 50 55	120 17 52	.5	.10	7.0	>2.0	1,000	20	N	70	20
PY062KN	38 50 50	120 17 56	.7	.20	7.0	>2.0	700	N	N	N	20
PY063KN	38 51 32	120 18 19	.5	.10	15.0	>2.0	700	N	N	N	30
PY064KN	38 52 39	120 16 51	.5	.15	7.0	>2.0	1,000	N	N	N	50
PY065KN	38 52 36	120 16 34	.7	.20	10.0	>2.0	1,000	N	N	N	20
PY066KN	38 53 0	120 18 22	.5	.07	7.0	>2.0	500	N	N	N	30
PY067KN	38 52 56	120 18 20	.5	.15	7.0	>2.0	700	N	N	N	30
PY068KN	38 52 29	120 18 22	.5	.07	7.0	>2.0	700	N	N	N	30
PY069KN	38 52 25	120 18 24	.5	.10	10.0	>2.0	700	N	N	N	20
PY070KN	38 52 58	120 20 40	.7	.30	10.0	>2.0	500	N	N	N	50
PY071KN	38 52 50	120 20 35	1.5	.50	5.0	>2.0	1,500	N	N	N	50
PY072KN	38 55 57	120 21 11	.7	.20	5.0	>2.0	500	N	N	N	<20
PY073KN	38 55 42	120 20 40	.7	.30	7.0	>2.0	700	N	N	N	20
PY074KN	38 53 54	120 19 10	1.0	.20	7.0	>2.0	700	N	N	N	50
PY075KN	38 53 50	120 19 2	1.0	.50	7.0	>2.0	700	N	N	N	50
PY076KN	38 54 12	120 20 32	1.5	.50	15.0	>2.0	1,000	N	N	N	30
PY077KN	38 54 31	120 20 46	.5	.10	5.0	>2.0	500	N	N	N	100
PY078KN	38 54 37	120 20 46	.7	.15	7.0	>2.0	500	N	N	N	30
PY079KN	38 54 52	120 21 19	.5	.30	5.0	>2.0	300	N	N	N	20
PY080KN	38 56 42	120 17 3	.7	.10	5.0	>2.0	500	N	N	N	100
PY081KN	38 56 41	120 17 7	.7	.50	7.0	>2.0	700	N	N	N	70
PY082KN	38 56 20	120 17 0	.7	.10	7.0	>2.0	500	100	N	500	30
PY083KN	38 55 36	120 18 4	.7	.30	10.0	>2.0	700	N	N	N	50
PY084KN	38 55 26	120 18 9	.5	.10	10.0	>2.0	700	N	N	N	20
PY086KN	38 49 20	120 11 10	.3	.20	10.0	>2.0	200	N	N	N	<20
PY087KN	38 49 22	120 10 15	.7	.20	15.0	>2.0	700	N	N	N	20
PY089KN	38 56 2	120 19 7	.7	.50	10.0	>2.0	300	N	N	N	70
PY090KN	38 55 22	120 16 7	1.0	.20	7.0	>2.0	700	N	N	N	30
PY091KN	38 54 35	120 15 1	.7	.20	10.0	>2.0	700	N	N	N	30
PY092KN	38 54 30	120 15 1	1.0	.30	10.0	>2.0	700	N	N	N	30
PY093KN	38 54 26	120 15 9	.5	.15	10.0	>2.0	700	N	N	N	<20
PY094KN	38 55 37	120 17 7	.7	.20	10.0	>2.0	700	N	N	N	20
PY095KN	38 55 46	120 16 58	.5	.10	10.0	>2.0	700	N	N	N	<20
PY097KN	38 52 12	120 3 32	.5	.07	7.0	>2.0	700	N	N	N	20
PY098KN	38 52 53	120 13 52	.5	.10	10.0	>2.0	700	N	N	N	30
PY099KN	38 52 47	120 13 51	.5	.15	15.0	>2.0	1,000	N	N	N	20

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California--continued

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
PY052KN	300	N	N	20	30	15	500	<10	<50	N
PY053KN	50	N	N	15	20	<10	700	15	70	N
PY055KN	150	N	N	30	20	10	500	15	150	N
PY057KN	<50	N	N	20	20	10	1,000	15	50	N
PY058KN	50	N	N	15	<20	15	700	<10	70	N
PY059KN	50	N	N	15	20	10	300	15	70	N
PY060KN	200	N	N	15	20	<10	500	<10	70	N
PY061KN	100	N	N	15	20	10	200	N	70	N
PY062KN	150	N	N	15	20	20	500	N	50	N
PY063KN	300	N	N	15	<20	15	300	<10	100	N
PY064KN	300	N	2,000	70	<20	30	500	150	70	N
PY065KN	300	N	N	20	20	20	300	10	70	N
PY066KN	300	N	N	70	<20	30	200	50	<50	<10
PY067KN	100	N	N	15	20	20	200	20	<50	N
PY068KN	200	N	2,000	50	20	30	300	200	50	N
PY069KN	200	N	N	15	20	10	300	<10	50	N
PY070KN	300	N	N	15	20	10	300	20	100	N
PY071KN	100	N	N	50	20	30	>2,000	70	<50	10
PY072KN	500	N	N	15	<20	15	300	<10	N	<10
PY073KN	300	N	N	20	20	15	300	<10	<50	<10
PY074KN	500	N	N	50	<20	20	300	150	100	N
PY075KN	300	N	N	20	20	15	500	<10	150	N
PY076KN	200	N	N	10	20	<10	500	10	100	N
PY077KN	300	N	N	15	<20	10	200	N	50	<10
PY078KN	200	N	N	15	30	15	100	N	50	N
PY079KN	500	N	N	20	<20	15	300	N	N	10
PY080KN	300	N	N	15	100	10	200	30	70	<10
PY081KN	500	N	N	15	100	15	200	N	<50	10
PY082KN	300	N	N	20	<20	20	100	<10	N	N
PY083KN	200	N	N	15	30	15	200	10	70	N
PY084KN	150	N	N	20	20	<10	500	10	100	N
PY086KN	200	N	N	10	20	N	300	N	70	N
PY087KN	<50	N	N	10	30	N	700	10	150	N
PY089KN	500	N	N	10	50	<10	50	N	<50	10
PY090KN	200	N	N	15	20	10	200	15	100	N
PY091KN	300	N	N	15	<20	15	150	N	70	N
PY092KN	100	N	N	10	30	<10	500	10	100	N
PY093KN	<50	<2	N	15	50	<10	700	20	150	N
PY094KN	70	N	N	10	30	N	500	15	100	N
PY095KN	<50	N	N	20	30	<10	500	30	100	N
PY097KN	200	N	N	10	N	10	100	N	70	N
PY098KN	200	N	N	10	20	N	500	20	100	N
PY099KN	70	N	N	15	30	<10	500	15	70	N

Table 4.--Data for concentrate samples, Pyramid Roadless Area, California--continued

Sample	Pb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zr-ppm s	Th-ppm s
PY052KN	30	30	70	N	300	N	700	>2,000	2,000
PY053KN	20	20	100	N	300	<100	700	>2,000	1,000
PY055KN	50	30	100	N	200	<100	1,000	>2,000	3,000
PY057KN	50	20	70	N	500	<100	700	>2,000	2,000
PY058KN	30	30	150	N	500	N	1,000	>2,000	5,000
PY059KN	50	30	100	N	200	200	1,000	>2,000	3,000
PY060KN	20	20	70	N	300	100	700	>2,000	2,000
PY061KN	50	30	100	N	300	150	700	>2,000	5,000
PY062KN	50	50	30	N	200	N	700	>2,000	3,000
PY063KN	30	30	100	N	200	300	700	>2,000	5,000
PY064KN	200	30	30	N	200	1,000	1,000	>2,000	>5,000
PY065KN	70	30	100	N	300	300	700	>2,000	5,000
PY066KN	150	50	30	N	150	500	700	>2,000	>5,000
PY067KN	150	30	50	N	300	100	700	>2,000	5,000
PY068KN	200	50	50	N	200	1,000	700	>2,000	>5,000
PY069KN	20	20	70	N	500	200	1,000	>2,000	2,000
PY070KN	100	20	150	N	150	700	700	>2,000	3,000
PY071KN	200	20	<20	N	300	700	2,000	>2,000	>5,000
PY072KN	20	50	20	N	150	<100	700	>2,000	3,000
PY073KN	50	50	70	N	500	N	1,000	>2,000	5,000
PY074KN	200	30	70	N	150	1,500	700	>2,000	>5,000
PY075KN	50	30	100	<200	300	700	700	>2,000	5,000
PY076KN	20	30	100	N	500	150	1,000	>2,000	1,500
PY077KN	20	30	30	N	200	100	500	>2,000	2,000
PY078KN	30	50	30	N	200	N	1,000	>2,000	5,000
PY079KN	30	50	20	<200	100	N	500	>2,000	3,000
PY080KN	30	20	50	N	300	500	700	>2,000	3,000
PY081KN	30	30	70	N	300	<100	700	>2,000	3,000
PY082KN	50	50	50	N	200	<100	700	>2,000	5,000
PY083KN	70	20	70	N	300	150	700	>2,000	5,000
PY084KN	30	20	70	N	300	<100	500	>2,000	2,000
PY086KN	<20	20	20	<200	200	N	500	>2,000	200
PY087KN	<20	15	100	N	500	N	1,000	>2,000	300
PY089KN	20	30	30	200	200	<100	500	>2,000	700
PY090KN	30	20	100	N	200	200	500	>2,000	3,000
PY091KN	30	20	100	N	500	<100	700	>2,000	3,000
PY092KN	20	15	70	N	300	N	1,000	>2,000	1,500
PY093KN	20	15	100	N	500	<100	700	>2,000	1,500
PY094KN	20	10	100	N	300	300	700	>2,000	700
PY095KN	30	15	100	N	300	100	700	>2,000	2,000
PY097KN	30	50	150	N	150	100	1,000	>2,000	3,000
PY098KN	20	15	70	N	500	200	700	>2,000	1,500
PY099KN	<20	20	70	N	300	150	700	>2,000	1,000

DESCRIPTION OF TABLES 5-7

Tables 5, 6, and 7 give summary statistics for the analyses of the samples of rock, minus-60-mesh (0.25-mm) stream sediment, and nonmagnetic heavy-mineral concentrate listed in tables 2, 3, and 4, respectively. All values in the Range of values and Percentiles columns are significant to the number of digits shown.

Table 5.--Summary statistics for the analytical values determined for the 35 rock samples in table 2, Pyramid Roadless Area, California

[All concentrations are in parts per million except those for Fe, Mg, Ca, and Ti, which are in percent. "aa" following the element symbol indicates atomic absorption analysis; "inst" indicates fluorometric analysis; no element suffix indicates emission spectrographic analysis. "N" means not detected at the lower limit of determination shown in parentheses]

Element	Range of values	Percentiles				
		50	75	90	95	98
Fe	0.7 - 10	5	5	7	7	10
Mg	0.1 - 5	1.5	1.5	2	3	5
Ca	0.2 - 7	2	3	5	7	7
Ti	0.05 - 1.0	0.5	0.5	0.7	0.7	1.0
Mn	150 - 1000	700	1000	1000	1000	1000
Ag	N(0.5) - <0.5	N(0.5)	N(0.5)	N(0.5)	N(0.5)	<0.5
B	<10 - 70	10	20	50	70	70
Ba	500 - 1000	700	1000	1000	1000	1000
Be	N(1) - 1.5	1	1	1	1.5	1.5
Co	<5 - 50	10	20	30	30	50
Cr	N(10) - 300	10	15	50	70	300
Cu	N(5) - 100	10	15	50	100	100
La	<20 - 70	20	30	30	50	70
Mo	N(5) - 7	N(5)	N(5)	N(5)	<5	7
Ni	N(5) - 200	5	7	20	30	200
Pb	N(10) - 20	15	15	20	20	20
Sc	N(5) - 30	7	10	20	30	30
Sr	<100 - 700	300	500	500	500	700
V	<10 - 300	100	150	200	200	300
Y	<10 - 30	15	20	30	30	30
Zr	<10 - 300	70	100	150	200	300
Zn-aa	5 - 60	30	35	45	50	55
U-inst	0.16 - 8.0	1.4	2.6	4.0	5.4	5.8

Table 6.--Summary statistics for the analytical values determined for the 90 minus-60-mesh (0.25-mm) stream-sediment samples in table 3, Pyramid Roadless Area, California

[All concentrations are in parts per million except those for Fe, Mg, Ca, and Ti, which are in percent. "aa" following the element symbol indicates atomic absorption analysis; "inst" indicates fluorometric analysis; no element suffix indicates emission spectrography analysis. "N" means not detected at the lower limit of determination shown in parentheses]

Element	Range of values	Percentiles				
		50	75	90	95	98
Fe	1 - 10	5	5	7	7	7
Mg	0.3 - 3	1.5	1.5	2	3	3
Ca	1.5 - 7	3	5	5	5	5
Ti	0.2 - 0.7	0.5	0.5	0.7	0.7	0.7
Mn	500 - 2000	700	1000	1000	1000	1500
B	<10 - 200	15	30	70	200	200
Ba	300 - 1000	500	700	700	700	700
Be	<1 - 2	1	1.5	1.5	1.5	2
Co	<5 - 30	10	20	30	30	30
Cr	N(10) - 200	20	50	100	150	200
Cu	N(5) - 70	15	20	20	50	70
La	<20 - 100	30	30	50	50	100
Mo	N(5) - 15	N(5)	N(5)	<5	5	7
Nb	N(20) - 20	N(20)	N(20)	N(20)	<20	<20
Ni	N(5) - 100	10	15	30	50	70
Pb	10 - 50	15	20	20	30	50
Sc	5 - 30	15	20	20	30	30
Sr	150 - 500	200	300	300	500	500
V	30 - 300	100	150	200	200	200
Y	10 - 50	20	30	30	50	50
Zr	30 ->1000	300	500	500	700	1000
Th	N(100) - <100	N(100)	N(100)	N(100)	N(100)	N(100)
As-aa	N(10) - 70	N(10)	N(10)	N(10)	20	30
Zn-aa	10 - 190	25	40	60	120	135
Cd-aa	N(0.1)- 0.8	N(0.1)	N(0.1)	N(0.1)	0.3	0.6
Sb-aa	N(1) - 40	N(1)	N(1)	N(1)	N(1)	7
U-inst	0.53- 120	3.6	8.5	20	43	54

Table 7.--Summary statistics for the analytical values determined for the 88 nonmagnetic heavy-mineral-concentrate samples in table 4, Pyramid Roadless Area, California

[All concentrations are in parts per million except those for Fe, Mg, Ca, and Ti, which are in percent. All analyses are by emission spectroscopy. "N" means not detected at the lower limit of determination shown in parentheses]

Element	Range of values	Percentiles				
		50	75	90	95	98
Fe	0.3 - 3	0.5	0.7	1.0	1.5	2.0
Mg	0.03- 0.7	0.15	0.2	0.5	0.5	0.7
Ca	0.5 - 15	7	10	15	15	15
Ti	1 - >2	>2	>2	>2	>2	>2
Mn	100 - 1500	500	700	1000	1000	1000
Ag	N(1) - 500	N(1)	N(1)	5	20	100
As	N(500) - 700	N(500)	N(500)	N(500)	N(500)	500
Au	N(20) - 500	N(20)	N(20)	<20	70	500
B	N(20) - 200	20	30	100	100	200
Ba	<50 - 700	300	300	500	700	700
Be	N(2) - <2	N(2)	N(2)	N(2)	N(2)	<2
Bi	N(20) - 2000	N(20)	N(20)	N(20)	100	2000
Co	<10 - 70	15	20	20	50	70
Cr	N(20) - 100	20	20	30	50	100
Cu	N(10) - 150	10	15	20	30	30
La	<50 - 1500	300	500	700	1000	1500
Mo	N(10) - 200	<10	15	50	150	150
Nb	N(50) - 150	50	70	100	150	150
Ni	N(10) - 15	N(10)	<10	10	15	15
Pb	N(20) - 500	30	50	100	200	200
Sc	10 - 100	30	50	70	70	100
Sn	N(20) - 1000	50	70	100	100	150
Sr	N(200) - 500	N(200)	N(200)	<200	200	300
V	50 - 700	200	300	500	500	500
W	N(100) - 2000	100	200	700	700	1500
Y	100 - 2000	700	1000	1000	1000	1500
Zr	>2000 - >2000	>2000	>2000	>2000	>2000	>2000
Th	N(200) - >5000	2000	5000	5000	>5000	>5000

REFERENCES

Armstrong, A. K., Chaffee, M. A., and Scott, D. F., 1983, Mineral resource potential map of the Pyramid Roadless Area, central Sierra Nevada, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1616-A, scale 1:62,500.

Centanni, F. A., Ross, A. M., and DeSesa, M. A., 1956, Fluorometric determination of uranium: Analytical Chemistry, v. 28, no. 11, p. 1651-1657.

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Motooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analysis: U.S. Geological Survey Circular 738, 25 p.

VanTrump, George, Jr., and Miesch, A. T., 1977, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Viets, J. G., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylylmethylammonium chloride: Analytical Chemistry, v. 50, no. 8, p. 1097-1101.