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Gila

SIERRA ANCHA WILDERNESS, ARIZONA

By CHESTER T. WRUCKE,[1] U.S. GEOLOGICAL SURVEY, and

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SUMMARY

Mineral surveys conducted in 1978 show that the Sierra Ancha Wilderness has demonstrated resources of uranium, asbestos, and iron; probable and substantiated resource potential for uranium, asbestos, and iron; and a probable resource potential for fluorspar. Uranium resources occur in vein and strata-bound deposits in siltstone that underlies much of the wilderness. Deposits of long-staple chrysotile asbestos are likely in parts of the wilderness adjacent to known areas of asbestos production. Magnetite deposits in the wilderness form a small iron resource. A fluorite resource may exist in the northern part of the wilderness east of a notable flourite deposit that is located in a comparable geologic setting 1.4 mi west of the wilderness boundary. No fossil fuel resources were identified in this study.

CHARACTER AND SETTING

The Sierra Ancha Wilderness occupies an area of about 33 sq mi in the mountain region of central Arizona, about 75 mi northeast of Phoenix. The wilderness is located in the Sierra Ancha, a northerly trending mountain range that has a flat-topped crest along much of its length, and cliffs, steep slopes, and broad benches on its flanks. Higher parts of the range are thickly forested and rise to altitudes of 7000 to 7700 ft above the deeply dissected regions to the east and west. Most of the wilderness is situated on the eastern side of the Sierra Ancha, where the range descends precipitously to altitudes of 3000 to 4000 ft along Cherry Creek, located immediately east of the wilderness boundary. State Highway 288 traverses the Sierra Ancha region from the north and south, 0.2 to 3 mi west of the wilderness.

The wilderness and surrounding areas are underlain principally by a layered sequence of sedimentary and igneous rocks of Middle Proterozoic age (Bergquist and others, 1981). These rocks rest unconformably on Middle Proterozoic granites that form the basement throughout most of the region. The oldest of the Middle Proterozoic stratified sequences is the Apache Group, about 1300 ft in thickness, which comprises in ascen ing order the Pioneer Formation, the Dripping Spri Quartzite, the Mescal Limestone, and an unnam basalt. The Troy Quartzite, which is the youngest P terozoic sedimentary formation, rests unconformab on the Apache Group and is about 1000 ft thick.

Diabase, 1150 million years old, intruded the Apac Group and the Troy Quartzite mostly as sills. Dikes a numerous but insignificant in volume. Sills are indivic ally as thick as 1200 ft and aggregate about half t volume of the host strata. Where diabase was emplac in the Mescal, the original dolomite of the formati was converted almost completely to limestone. In t noncarbonate formations, a narrow selvage of hornf was commonly formed adjacent to thick sills.

The Tapeats Sandstone of Cambrian age occurs erosional remnants on the Proterozoic rocks at t localities on the crest of the Sierra Ancha. The sar stone is the youngest geologic unit in the vicinity of t wilderness, other than Cenozoic gravels and a f Quaternary landslide deposits.

The subhorizontal attitude of most strata in t wilderness reflects the location of the Sierra Ancha the Colorado Plateau structural province. However, t stratified rocks locally record significant disrupti largely from the effects of inflation by the diabase a the uplift of some blocks more than others. The Che Creek monocline east of the wilderness and the Sie Ancha monocline to the west represent deformati

[1]With contributions from James K. Otton, Andrew F. Shride, Joel R. Bergquist, Paul K. Theobald, James S. Duval, and Dolores M. Kulik (Wilson), USGS.

before and during emplacement of the diabase. Additional displacements occurred along a few faults during Cenozoic time.

MINERAL RESOURCES

The Sierra Ancha Wilderness contains resources of uranium, asbestos, iron, and possibly fluorspar. Field studies in the wilderness were conducted by the USBM and the USGS in 1978 (Otton and others, 1981).

Uranium was discovered in the Sierra Ancha region in 1950, and in the period 1953–60 a total of 2185 tons of ore averaging 0.24 percent U_3O_8 was produced from 14 mines. Most of the production was from the Red Bluff area, 2.5 mi southwest of the wilderness (outside of the area studied), and from the Workman Creek area west of the wilderness. Three uranium mines, the Big Buck, Donna Lee, and Horseshoe, have had production and are located in the wilderness; they accounted for 291 tons of ore averaging 0.14 percent U_3O_8. As of 1979, exploration was being continued in several localities.

Uranium deposits in the Sierra Ancha region occur in carbonaceous siltstone in the upper member of the Dripping Spring Quartzite. This rock underlies nearly all of the wilderness. Most of the uranium occurs as uraninite in near-vertical veins and disseminated along favorable stratigraphic zones laterally adjacent to the veins. The most extensive uranium deposits overlie diabase sills or are located near major dikes of diabase.

Most of the wilderness has resource potential for uranium, and several areas in or adjacent to the wilderness have demonstrated uranium resources in areas of substantiated resource potential. Demonstrated resources with an average grade of 0.05–0.1 percent U_3O_8 include 4 to 8 million lbs U_3O_8 along both sides of Workman Creek within 2.5 mi of the wilderness, 2 to 6 million lbs U_3O_8 at the Donna Lee mine along Bull Canyon inside the wilderness, and 1 to 5 million lbs U_3O_8 at the Big Buck mine in the wilderness about 2.5 mi east-northeast of Aztec Peak. Areas underlain by the Dripping Spring Quartzite contiguous to these localities, and the area centered about 1.5 mi east-northeast of McFadden Horse Mountain, have substantiated uranium resource potential. Uranium deposits in these areas probably range in grade from 0.01 to 0.3 percent U_3O_8 and in size from 100,000 to 2.0 million lbs U_3O_8. An area of probable resource potential underlies the central part of the wilderness, where specific geologic sites for uranium are difficult to identify because of the great depth of burial of the Dripping Spring Quartzite.

Asbestos, in the form of long fiber, low-iron chrysotile, has been produced in the Sierra Ancha region since 1913. As much as 50 to 85 percent of the fibers in these deposits are textile length (more than 1/8 in.). The only asbestos production in the wilderness has been from the Pueblo mine, which probably produced several tens of tons of fiber, as did the Lucky Strike just north of the Pueblo mine but outside the wilderness. The Reynolds Falls mine, just west of the wilderness, furnished several hundred tons of asbestos, and a few thousand tons of fiber were produced from the American Ores mine, located 1 mi west of the southwest corner of the wilderness. An area of substantiated asbestos resource potential borders a large-scale discordant diabase-Mescal Limestone contact beneath Center Mountain. If this contact is characterized by numerous steps or other irregularities over broad areas, a few deposits with contents of 200 to 10,000 tons of long-staple asbestos would be likely. If irregularities are widely spaced and of short lateral extent at this or other discordant contacts, many separate occurrences of 10 to 50 tons, and exceptionally as much as 200 tons, can be expected. A number of small areas of probable asbestos resource potential exist in the Sierra Ancha Wilderness, and one area of substantiated resource potential occurs in the area around Asbestos Point.

Iron occurs in a few small deposits in the wilderness and adjacent areas. A magnetite-bearing horizon on the southern and eastern flank of Zimmerman Point has about 15 million tons of demonstrated resources averaging 26.5 percent iron in an area of substantiated iron potential (Cerro de Pasco Corp., written commun., 1979). Magnetite beds at the Pueblo and Lucky Strike asbestos mines have been estimated by Colorado Fuel and Iron, Inc. to contain about 6 million tons of demonstrated resources averaging 40–60 percent iron (B. B. Kyle, oral commun., 1978). Although these deposits and others suggested by magnetic anomalies occur in areas of substantiated iron resource potential, they are regarded as having little promise for the recovery of iron.

Fluorspar mined during the period 1976–78 from the Mack mine on the McFadden fault, about 1.4 mi west of the wilderness, totalled approximately 30,000 tons of ore that averaged between 60 and 90 percent CaF_2. A probable resource potential for fluorspar exists along the McFadden fault in the wilderness. Scattered occurrences of copper and anomalous concentrations of barite, lead, bismuth, tin, tungsten, and molybdenum found in concentrates from stream sediment in the Sierra Ancha are not associated with known resources (Tripp and others, 1980).

Hydrothermal alteration and contact metasomatism associated with the diabase were important in the development of most of the known mineral deposits in the Sierra Ancha. The genetic relationship of diabase and uranium mineralization is suggested by (1) proximity of diabase to uranium deposits, (2) similar ages of

uraninite in veins and zircons in diabase, and (3) high temperatures of formation for the deposits. Syngenetic uranium in the carbonaceous siltstone in the upper member of the Dripping Spring Quartzite was mobilized and redeposited in fractures by hydrothermal fluids driven by heat from the diabase. The asbestos deposits formed where the Mescal Limestone was subjected to karstification and silicification prior to deposition of the Troy Quartzite and was subsequently serpentinized by heat and fluids from the diabase. Deposition of asbestos occurred generally within 25 ft above or below a diabase sill in veins developed where small-scale thrust and bedding-plane faults opened near discordant steps as diabase shouldered aside the adjacent sedimentary strata. The relationship of iron deposits to diabase is evident from magnetite stockworks formed by pyrometasomatic replacement of carbonate rock adjacent to sills and by the partial to complete conversion of sedimentary hematite in the Apache Group to magnetite by contact metamorphism during diabase intrusion.

The origin of the fluorspar deposits is uncertain. They occupy the McFadden fault, which formed during emplacement of the diabase.

SUGGESTIONS FOR FURTHER STUDY

The general geology and mineral resources of the Sierra Ancha Wilderness are moderately well known. However, careful investigations of the structural geology and stratigraphy in areas where discordant diabase intrusions transect favorable strata would provide information useful for making projections of possible concealed uranium and asbestos resources, some of which could be substantial. Additional geochemical and geophysical surveys may be helpful in defining the sources of the anomalous concentrations of barite, lead, bismuth, tin, tungsten, and molybdenum observed in the wilderness.

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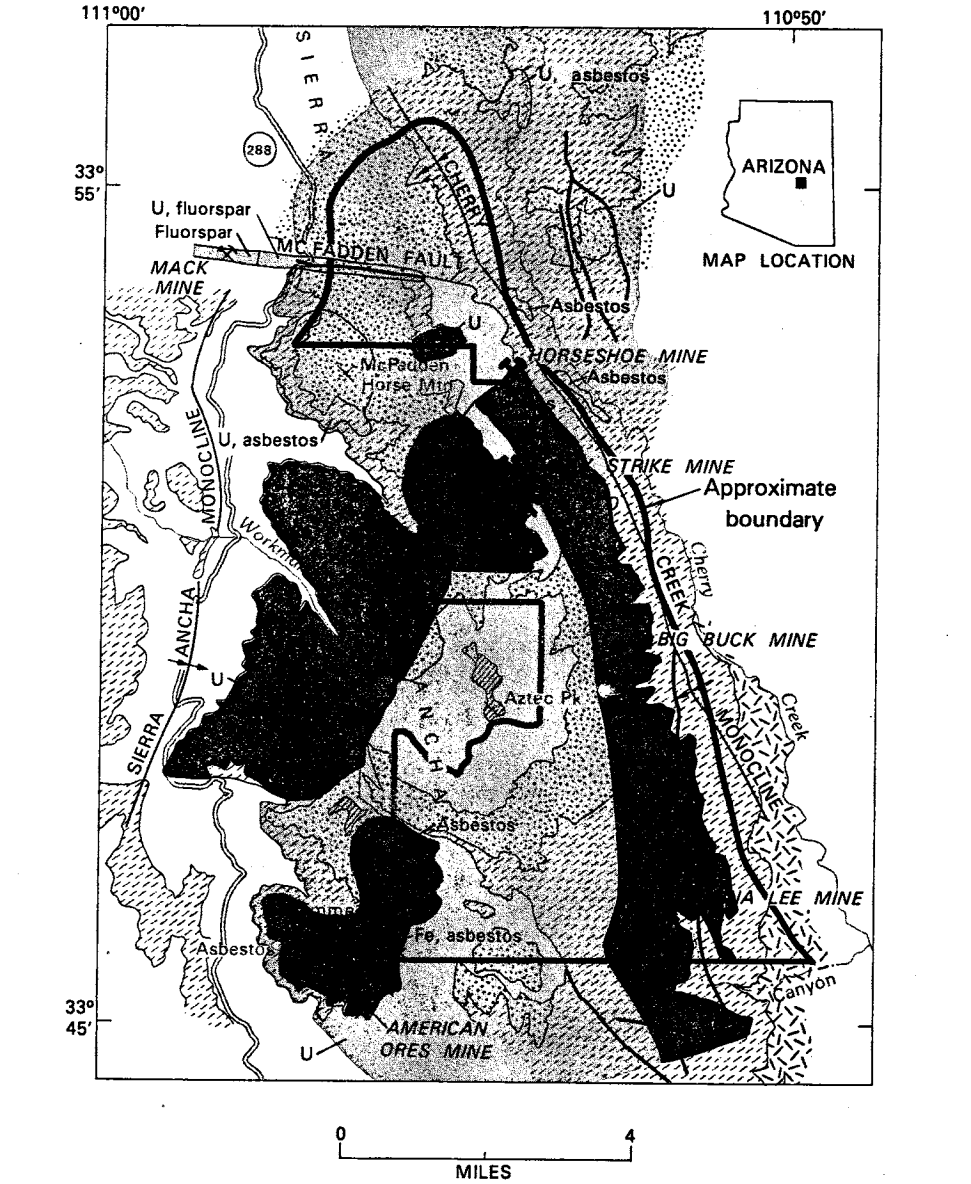

EXPLANATION

- Geologic terrane with substantiated mineral-resource potential and probable Uranium potential
- Geologic terrane with substantiated mineral-resource potential
- Geologic terrane with probable mineral-resource potential
- Fe — Iron
- U — Uranium
- Mine or deposit
- × — Mineral occurrence
- Mine
- Tapeats Sandstone (Cambrian)
- Diabase (Middle Proterozoic)
- Troy Quartzite (Middle Proterozoic)
- Apache Group (Middle Proterozic)
- Granite (Middle Proterozoic)
- Contact
- Fault

Figure 29.—Sierra Ancha Wilderness, Arizona.

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOCHEMICAL DATA FOR THE SIERRA ANCHA WILDERNESS AND SALOME AND CHERRY CREEK RARE II AREAS, ARIZONA

By

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Open-File Report 82-878

1982

This report is preliminary and have not been reviewed for conformity with U.S. Geological Survey editorial standards. Any use of trade names is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey.

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 Sierra Ancha Wilderness and Salome and Cherry Creek RARE II areas.

INTRODUCTION

A geochemical reconnaissance study was made in April and May, 1978, as part of a study of the Sierra Ancha Wilderness and Salome and Cherry Creek RARE II areas by the U.S. Geological Survey and U.S. Bureau of Mines. Interpretive maps describe the geology, Berquist and others (1981); mining, Light (1981); geochemistry, Barton and others (1980), Negri and others (1980), Tripp and others (1980); and geophysics, Duval and Pitkin (1981).

Presented herein is a description of the techniques used for collecting and analyzing the geochemical samples; and the chemical analysis data.

The location of the Sierra Ancha Wilderness and adjacent RARE II areas is shown in Figure 1. Boundaries of the areas are shown in Figure 2.

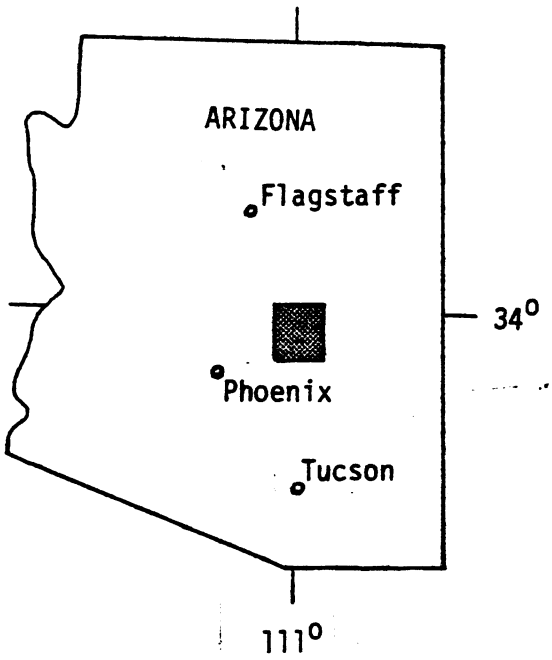

Figure 1.--Index map of study area.

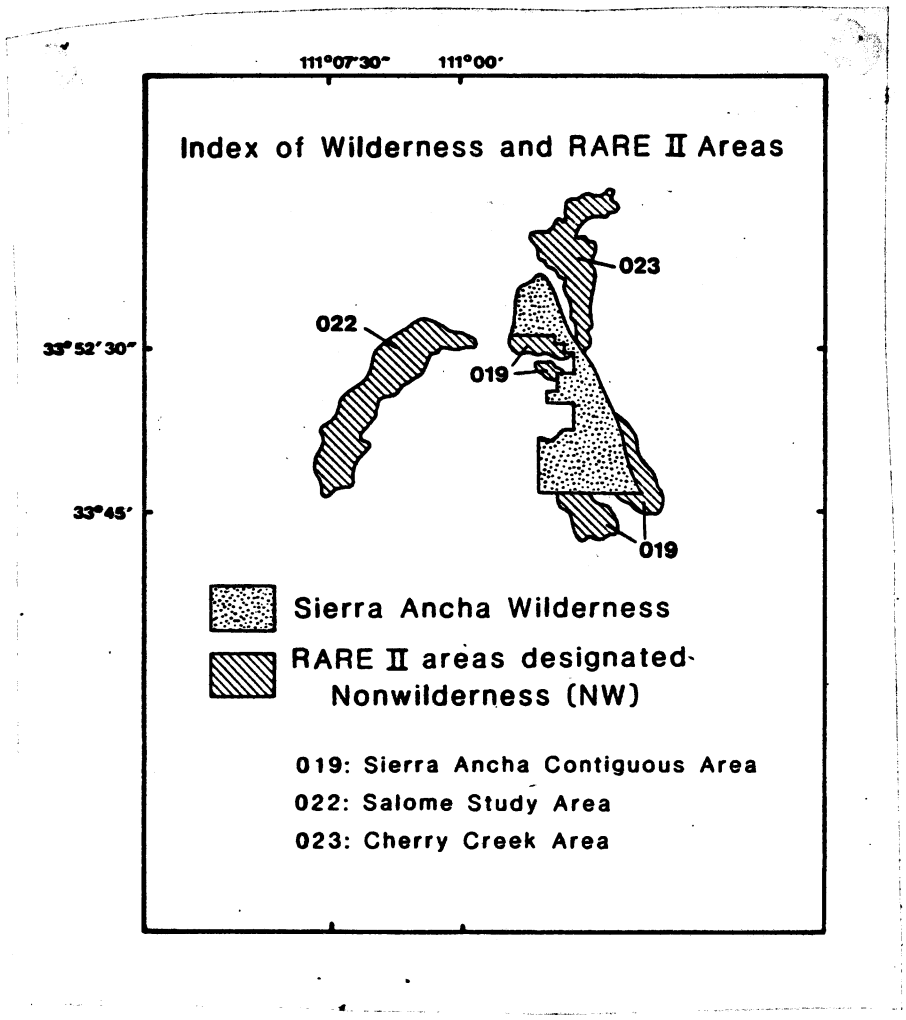

FIG. 2. Boundaries of Sierra Ancha Wilderness and Salome and Cherry Creek RARE II areas.

SAMPLE MEDIA SELECTION

Stream-transported sediments were chosen to provide as much compositing as possible. Two types were taken, the minus-30-mesh stream sediment and the nonmagnetic fraction of the heavy-mineral concentrate of the stream sediment. The minus-30-mesh stream sediment provides a geochemical cross section of the mechanically transported components of the drainage basin. Its composition is controlled mainly be the major geologic units. Minor components, such as an economic mineral deposit, can be seen in this media, but their influence is subject to significant dilution by the large amount of materials from the major units. A minus-30-mesh, rather than the more usual minus-80-mesh stream-sediment sample, was taken to reduce the influence of eolian dilution, and to speed sampling.

The nonmagnetic fraction of the heavy-mineral concentrate is used to obviate excessive dilution of ore-elements by ordinary rock minerals. Many of the ore minerals of an ore deposit are transported as detrital material that is mechanically resistant and of high specific gravity. They are concentrated in the field by panning, and later in the laboratory by heavy liquid and magnetic separation.

SAMPLE COLLECTION

Within an area of approximately 900 km^2, 215 sites were sampled (1 sample per 4 km^2). Stream channels draining basins 2 to 8 km^2 in area were sampled to provide two samples--a stream sediment and a heavy mineral concentrate. If water was not available for panning at the sampling site, two 1-liter cloth sample bags (5½ in. x 10½ in.) were filled with stream sediment passed through a 2-mm screen for panning at field camp. The panning was terminated when the heavy-minerals began to be lost, usually indicated by an abundance of magnetite, epidote, or hornblende (Theobald, 1957) or to approximately 200 grams.

Sample sites were plotted on the following topographic maps: Armer Mountain 7½', Copper Mountain 7½', Greenback Creek 7½', McFadden Peak 15', Rockingstraw Mountain 15', and Windy Hill 7½'. Location was recorded using Universal Transverse Mercator (UTM) metric grid coordinates.

Sample sites were assigned a SA prefix and a consecutive three digit number.

SAMPLE PREPARATION AND ANALYSIS

The dried minus-30-mesh stream-sediment samples were mechanically pulverized to approximately minus-150-mesh to provide a 10 mg sample for analyses for 31 elements by a six-step semiquantitative emission spectrographic method (Grimes and Marranzino, 1968). The panned concentrates were sieved to minus-30-mesh. A density separation using bromoform (specific gravity 2.80 to 2.98), separated the heavy minerals from quartz, feldspar, clay, and other low density minerals. The heavy-mineral concentrates were then split into three fractions on the basis of magnetic susceptibility, using a Frantz Isodynamic Separator. The nonmagnetic fraction obtained at 0.6 ampere primarily contains low-iron magnesium silicates, barite, apatite, sphene, zircon, tourmaline, anatase, along with most sulfide minerals and secondary minerals of base metals. This fraction was split, one part for microscopic mineral identification, and the other hand ground to provide a 5 mg sample for emission spectrographic analysis identical to the used for stream sediments.

DATA STORAGE AND PROCESSING

The emission spectrographic analytical results for the minus-30-mesh stream sediment and the nonmagnetic fraction of the heavy-mineral concentrates, along with the UTM grid coordinates of the sample site are presented on the following pages. An entry of "N" indicates the element was not detected. An entry of "<" indicates the element was detected at a concentration lower than the lowest standard for comparison. An entry of ">" indicates the concentrate to be greater then the specific highest standard. The values are reported in parts per million (ppm) except for Fe, Ca, and Mg; which are reported in percent.

The detection limits of the analytical method for stream-sediment samples are given in Table 1. The detection limits for the nonmagnetic fraction of the heavy-mineral concentrates are twice those of stream sediments, since the sample size is one-half as large.

The analyses, along with the UTM grid coordinates, are presented in Table 2 for stream sediment samples and in Table 3 for heavy mineral concentrate samples.

The analyses, along with the UTM grid coordinates, were entered in the U.S. Geological Survey computerized Rock Analysis Storage System (RASS) (VanTrump and Miesch, 1977).

Table 1.--Detection limits in parts per million for stream sediments determination by emission spectrographic method

Element	Detection limit	Element	Detection limit	Element	Detection limit
Ag	0.5	Cr	10	Sc	5
As	200	Cu	5	Sn	10
Au	10	La	20	Sr	100
B	10	Mn	10	Th	100
Ba	20	Mo	5	V	10
Be	1	Nb	20	W	50
Bi	10	Ni	5	Y	10
Cd	20	Pb	10	Zn	200
Co	5	Sb	100	Zr	10

TABLE 2.-- Spectrographic Analysis of Stream Sediments

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI	S-CD
SA001	50,246	375,340	2.0	.3	.20	1.00	150	N	N	N	20	700	2.0	N	N
SA002	50,187	375,390	2.0	.3	.15	1.00	1,500	N	N	N	20	1,500	2.0	N	N
SA003	49,964	375,077	2.0	.3	.15	1.00	300	N	N	N	20	500	1.0	N	N
SA004	50,606	375,932	5.0	3.0	1.50	>1.00	1,500	N	N	N	10	500	1.0	N	N
SA005	50,691	375,949	5.0	1.5	.70	>1.00	1,500	N	N	N	10	300	<1.0	N	N
SA006	50,613	375,773	5.0	1.0	.70	>1.00	1,500	N	N	N	10	700	1.0	N	N
SA007	50,640	375,671	5.0	2.0	1.50	>1.00	1,500	N	N	N	<10	300	1.0	N	N
SA008	50,618	375,654	5.0	2.0	1.50	1.00	1,000	N	N	N	10	500	1.0	N	N
SA009	50,630	375,560	3.0	.7	.05	1.00	300	N	N	N	10	1,500	2.0	N	N
SA010	50,657	375,579	7.0	1.5	.50	>1.00	2,000	N	N	N	<10	300	1.0	N	N
SA011	50,572	375,465	3.0	2.0	1.00	.70	700	N	N	N	<10	500	<1.0	N	N
SA012	50,572	375,480	3.0	.5	.05	.50	300	N	N	N	10	500	2.0	N	N
SA013	50,696	375,424	3.0	.7	.07	1.00	700	N	N	N	10	300	<1.0	N	N
SA014	50,728	375,398	3.0	1.5	.30	>1.00	700	N	N	N	15	700	<1.0	N	N
SA015	50,769	375,335	5.0	2.0	.70	>1.00	1,000	N	N	N	15	200	<1.0	N	N
SA016	49,343	373,287	5.0	.7	.15	>1.00	1,000	N	N	N	10	<20	<1.0	N	N
SA017	49,162	373,311	7.0	2.0	.70	>1.00	1,500	N	N	N	10	500	1.0	N	N
SA018	48,920	373,689	7.0	5.0	1.00	>1.00	1,000	N	N	N	<10	<20	<1.0	N	N
SA019	48,920	373,724	7.0	3.0	1.50	1.00	1,500	N	N	N	<10	<20	<1.0	N	N
SA020	48,988	373,809	7.0	5.0	1.50	>1.00	1,500	N	N	N	<10	<20	<1.0	N	N
SA021	48,994	373,796	10.0	5.0	1.50	>1.00	1,500	N	N	N	<10	100	<1.0	N	N
SA022	49,097	373,919	10.0	5.0	2.00	1.00	1,500	N	N	N	<10	100	<1.0	N	N
SA023	49,120	373,924	10.0	3.0	1.00	>1.00	1,500	N	N	N	<10	<20	<1.0	N	N
SA024	49,174	374,006	1.5	.7	.15	.30	1,000	N	N	N	N	150	N	N	N
SA025	49,098	374,109	1.5	1.0	.20	.30	1,000	N	N	N	N	300	N	N	N
SA026	49,110	374,174	1.5	1.0	.15	.50	700	N	N	N	N	100	N	N	N
SA027	49,142	374,194	2.0	.7	.20	.50	700	N	N	N	N	200	N	N	N
SA028	49,021	373,406	1.5	.7	.15	.70	500	N	N	N	N	200	N	N	N
SA029	48,896	373,563	1.5	.7	.15	.70	500	N	N	N	<10	200	1.0	N	N
SA030	48,895	373,566	1.5	.5	.70	.30	200	N	N	N	N	200	N	N	N
SA031	48,671	373,948	1.5	.7	.20	.70	500	N	N	N	<10	300	N	N	N
SA032	48,672	373,964	1.0	.7	.20	.70	700	N	N	N	<10	300	N	N	N
SA033	48,664	373,968	1.5	.5	.20	.70	700	N	N	N	<10	150	N	N	N
SA034	48,423	373,936	1.5	.7	.20	.50	500	N	N	N	N	150	N	N	N
SA035	48,410	374,020	2.0	.7	.15	.70	500	N	N	N	N	150	N	N	N
SA036	48,486	374,375	1.5	.7	.10	.70	500	N	N	N	N	150	N	N	N
SA037	49,464	374,580	1.0	.5	.15	.30	300	N	N	N	N	200	2.0	N	N
SA038	49,475	374,574	1.5	.3	.05	.15	700	N	N	N	N	150	3.0	N	N
SA039	49,454	374,553	1.5	.7	.50	.15	300	N	N	N	N	200	N	N	N
SA040	49,375	374,504	1.5	.5	.10	.30	200	N	N	N	N	150	N	N	N
SA041	49,384	374,485	1.5	.3	.10	.70	200	N	N	N	N	70	N	N	N
SA042	48,723	374,633	1.5	.5	.30	.50	200	N	N	N	N	150	N	N	N
SA043	48,717	374,643	1.5	.5	.20	.70	300	N	N	N	N	150	N	N	N
SA044	48,682	374,574	1.5	.7	.15	.70	300	N	N	N	N	100	N	N	N
SA045	48,668	374,593	1.5	.7	.20	.50	200	N	N	N	N	150	N	N	N

Spectrographic Analysis of Stream Sediments

Sample	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
SA001	10	20	20	N	<5	<20	10	<10	N	5	N	100	100	N	20	N	1,000
SA002	15	30	10	N	<5	<20	10	20	N	7	N	100	100	N	30	N	200
SA003	10	30	20	<20	<5	<20	20	20	N	7	N	<100	100	N	30	N	150
SA004	30	30	20	<20	<5	N	30	10	N	10	N	300	200	N	30	200	100
SA005	30	30	15	<20	N	N	30	10	N	10	N	150	200	N	10	200	150
SA006	30	30	20	<20	N	N	20	10	N	10	N	300	200	N	15	300	100
SA007	30	30	15	<20	N	N	30	10	N	7	N	300	150	N	15	300	70
SA008	20	10	30	<20	N	N	20	15	N	10	N	200	150	N	20	<200	150
SA009	15	30	10	<20	N	<20	10	15	N	5	N	<100	150	N	30	N	200
SA010	30	70	10	<20	N	N	30	10	N	7	N	150	200	N	10	300	70
SA011	30	30	15	<20	<5	N	30	<10	N	10	N	300	150	N	10	N	100
SA012	10	20	5	<20	<5	<20	5	10	N	7	N	<100	70	N	50	N	150
SA013	15	30	5	<20	N	N	10	15	N	5	N	<100	150	N	10	N	100
SA014	15	70	10	<20	N	N	15	15	N	5	N	100	150	N	15	N	200
SA015	20	50	7	<20	N	N	20	10	N	7	N	300	200	N	10	300	100
SA016	10	100	7	<20	N	N	20	<10	N	5	N	<100	200	N	N	700	70
SA017	70	30	15	<20	N	N	70	15	N	10	N	200	150	N	20	200	150
SA018	70	30	15	<20	N	N	70	<10	N	10	N	500	150	N	N	300	100
SA019	50	30	15	<20	N	N	50	<10	N	10	N	500	70	N	15	200	70
SA020	50	50	20	<20	N	N	50	10	N	10	N	300	150	N	15	200	150
SA021	100	50	20	<20	N	N	70	15	N	10	N	700	200	N	10	300	100
SA022	70	30	30	<20	N	N	70	10	N	15	N	700	100	N	20	N	100
SA023	70	70	15	<20	N	N	70	<10	N	10	N	300	200	N	10	300	70
SA024	20	30	<5	N	N	N	20	<10	N	5	N	150	50	N	<10	<200	70
SA025	20	20	15	N	N	N	20	<10	N	5	N	300	50	N	10	<200	50
SA026	20	20	5	N	N	N	30	<10	N	5	N	200	50	N	<10	<200	50
SA027	20	30	5	N	N	N	20	10	N	5	N	150	70	N	<10	<200	70
SA028	30	30	<5	N	N	N	30	<10	N	5	N	150	70	N	<10	200	70
SA029	20	15	5	N	N	N	20	10	N	5	N	100	50	N	15	<200	70
SA030	15	15	5	N	N	N	20	10	N	7	N	300	50	N	20	N	50
SA031	20	10	7	N	N	N	20	10	N	10	N	200	50	N	15	<200	70
SA032	30	10	5	N	N	N	20	<10	N	7	N	300	50	N	15	<200	70
SA033	30	20	5	N	N	N	20	<10	N	7	N	150	700	N	15	200	70
SA034	30	15	10	N	N	N	30	15	N	5	N	200	70	N	<10	<200	70
SA035	50	30	5	N	N	N	30	<10	N	5	N	200	70	N	<10	<200	70
SA036	50	15	5	N	N	N	30	<10	N	5	N	300	50	N	10	<200	70
SA037	30	15	15	N	N	N	20	<10	N	7	N	150	30	N	20	N	70
SA038	20	10	5	N	N	N	15	10	N	5	N	100	70	N	70	<200	300
SA039	20	15	5	N	N	N	20	<10	N	7	N	500	50	N	15	<200	70
SA040	30	30	15	N	N	N	30	<10	N	5	N	150	70	N	<10	200	70
SA041	30	30	5	N	N	N	30	N	N	5	N	150	70	N	<10	200	70
SA042	30	15	5	N	N	N	30	<10	N	5	N	300	50	N	<10	<200	70
SA043	30	20	5	N	N	N	30	10	N	5	N	200	50	N	15	<200	70
SA044	50	20	5	N	N	N	30	N	N	5	N	150	50	N	<10	200	70
SA045	30	10	7	N	N	N	30	<10	N	5	N	300	30	N	15	<200	70

Spectrographic Analysis of Stream Sediments--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI	S-CD
SA046	48,630	374,528	1.5	.7	.15	.70	200	N	N	N	N	150	N	N	N
SA047	48,612	374,529	5.0	3.0	1.50	1.00	1,000	N	N	N	15	300	1.0	N	N
SA048	49,289	373,577	5.0	2.0	1.50	1.00	1,000	N	N	N	15	300	1.0	N	N
SA049	49,293	373,574	5.0	3.0	1.00	>1.00	1,000	N	N	N	10	300	1.0	N	N
SA050	48,560	374,456	10.0	2.0	.30	>1.00	2,000	N	N	N	N	100	N	N	N
SA051	48,536	374,384	7.0	5.0	1.50	1.00	1,500	N	N	N	10	200	N	N	N
SA052	48,803	374,363	5.0	2.0	1.00	>1.00	1,500	N	N	N	10	300	1.0	N	N
SA053	48,809	374,360	5.0	1.5	.70	1.00	700	N	N	N	20	500	2.0	N	N
SA054	48,996	374,674	7.0	2.0	1.00	>1.00	3,000	N	N	N	10	300	N	N	N
SA055	49,018	374,612	10.0	1.5	.70	>1.00	2,000	N	N	N	10	300	1.0	N	N
SA056	49,087	374,571	7.0	2.0	1.00	1.00	1,000	N	N	N	15	500	1.0	N	N
SA057	49,091	374,567	7.0	5.0	2.00	>1.00	1,000	N	N	N	15	300	1.0	N	N
SA058	49,536	373,794	3.0	.5	.20	1.00	150	N	N	N	15	300	2.0	N	N
SA059	49,138	374,465	5.0	1.5	.30	>1.00	1,500	N	N	N	15	300	N	N	N
SA060	49,192	374,376	5.0	3.0	1.50	1.00	1,000	N	N	N	15	300	1.0	N	N
SA061	49,244	374,325	5.0	3.0	1.00	1.00	1,000	N	N	N	10	150	1.0	N	N
SA062	49,278	374,432	5.0	2.0	1.50	>1.00	1,000	N	N	N	10	150	N	N	N
SA063	49,218	374,076	7.0	1.5	.70	>1.00	1,000	N	N	N	10	150	N	N	N
SA064	49,389	373,793	1.5	.2	.10	.20	70	N	N	N	10	300	N	N	N
SA065	49,397	373,749	1.5	.7	.10	.70	200	N	N	N	15	500	1.5	N	N
SA066	49,491	374,973	7.0	3.0	.70	>1.00	1,500	N	N	N	10	150	N	N	N
SA067	49,496	374,971	5.0	1.5	.20	1.00	700	N	N	N	15	300	1.0	N	N
SA068	49,502	374,987	7.0	3.0	.70	>1.00	1,500	N	N	N	10	300	1.0	N	N
SA069	49,618	375,248	5.0	3.0	.30	>1.00	1,500	N	N	N	<10	150	N	N	N
SA070	49,626	375,254	3.0	1.0	.50	>1.00	1,000	N	N	N	20	300	1.0	N	N
SA071	49,863	375,402	2.0	.3	.20	1.00	300	N	N	N	30	700	2.0	N	N
SA072	49,775	374,836	7.0	2.0	.70	>1.00	700	N	N	N	15	300	N	N	N
SA073	48,582	374,465	5.0	.7	.50	1.00	500	N	N	N	20	700	1.0	N	N
SA074	49,625	374,036	7.0	2.0	1.00	>1.00	1,500	N	N	N	10	300	N	N	N
SA075	49,619	374,046	5.0	3.0	.70	1.00	700	N	N	N	15	300	3.0	N	N
SA076	49,590	373,847	7.0	3.0	.70	>1.00	1,000	N	N	N	20	300	3.0	N	N
SA077	49,776	373,808	7.0	2.0	.70	>1.00	1,500	N	N	N	15	200	3.0	N	N
SA078	49,734	373,843	7.0	1.5	.50	>1.00	1,500	N	N	N	10	150	N	N	N
SA079	50,454	375,100	3.0	1.0	.20	1.00	300	N	N	N	10	300	1.0	N	N
SA080	50,366	374,982	3.0	.7	.30	1.00	150	N	N	N	10	500	1.0	N	N
SA081	50,386	374,970	5.0	1.0	.30	>1.00	1,000	N	N	N	10	300	1.0	N	N
SA082	50,270	375,000	5.0	2.0	1.00	1.00	700	N	N	N	15	300	1.0	N	N
SA086	50,280	374,985	7.0	3.0	1.00	1.00	500	N	N	N	10	300	N	N	N
SA087	50,564	374,633	3.0	1.0	.30	.70	200	N	N	N	10	500	1.0	N	N
SA085	50,609	374,610	3.0	.7	.20	.50	200	N	N	N	10	300	1.0	N	N
SA086	50,681	374,491	3.0	3.0	1.00	.50	700	N	N	N	20	300	2.0	N	N
SA087	50,710	374,492	1.5	.5	.15	.30	200	N	N	N	30	200	N	N	N
SA088	50,619	374,722	2.0	.3	<.05	.50	70	N	N	N	10	300	N	N	N
SA089	50,624	374,739	2.0	.5	.05	.50	70	N	N	N	10	300	1.0	N	N
SA090	50,873	374,592	10.0	1.5	.30	1.00	150	N	N	N	10	700	2.0	N	N

Spectrographic Analysis of Stream Sediments--continued

Sample	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
SA046	30	15	5	N	N	N	30	<10	N	7	N	200	50	N	10	200	70
SA047	70	10	30	N	<5	N	70	10	N	15	N	500	150	N	20	200	100
SA048	30	10	15	N	N	N	30	10	N	10	N	200	100	N	20	<200	100
SA049	30	20	15	N	N	N	50	<10	N	15	N	200	150	N	20	200	100
SA050	100	30	5	N	N	N	50	<10	N	7	N	300	100	N	<10	300	70
SA051	100	<10	30	N	N	N	70	15	N	10	N	500	100	N	10	200	70
SA052	100	30	15	N	N	N	30	10	N	15	N	200	150	N	20	200	100
SA053	70	10	20	N	N	N	30	10	N	7	N	150	150	N	30	<200	150
SA054	30	20	10	N	N	N	20	10	N	7	N	300	150	N	30	200	100
SA055	50	30	15	N	N	N	50	10	N	10	N	150	200	N	10	200	100
SA056	50	20	30	N	N	N	50	20	N	15	N	150	100	N	30	<200	100
SA057	50	20	20	N	N	N	70	10	N	15	N	500	200	N	15	200	100
SA058	20	20	30	N	5	N	30	10	N	7	N	100	100	N	20	N	150
SA059	70	50	15	N	N	N	50	10	N	10	N	150	150	N	10	500	100
SA060	70	30	20	N	N	N	70	10	N	10	N	300	100	N	30	200	100
SA061	70	30	20	N	N	N	70	10	N	15	N	150	150	N	10	200	100
SA062	50	50	15	N	N	N	50	10	N	10	N	150	150	N	10	200	100
SA063	30	50	20	N	N	N	50	10	N	10	N	150	150	N	10	200	100
SA064	<5	20	15	N	N	N	<5	10	N	N	N	100	30	N	10	N	150
SA065	30	30	10	100	5	N	30	10	N	7	N	100	70	N	30	N	150
SA066	150	50	15	N	N	N	50	<10	N	15	N	200	200	N	10	300	100
SA067	50	50	20	N	<5	N	30	20	N	10	N	100	100	N	30	300	150
SA068	100	30	7	N	N	N	50	10	N	10	N	200	150	N	15	300	70
SA069	150	30	7	N	N	N	30	10	N	7	N	200	100	N	10	300	70
SA070	30	50	10	N	N	N	30	50	N	5	N	150	150	N	10	300	100
SA071	15	30	20	50	<5	N	50	20	N	7	N	150	100	N	30	N	1,000
SA072	30	30	10	N	N	N	50	15	N	10	N	200	200	N	20	200	150
SA073	30	30	15	N	<5	N	30	15	N	10	N	150	150	N	30	<200	200
SA074	70	50	5	N	N	N	50	<10	N	20	N	300	200	N	10	<200	100
SA075	30	30	15	N	N	N	30	10	N	10	N	500	150	N	70	200	100
SA076	50	30	5	N	N	N	50	10	N	20	N	200	200	N	10	<200	100
SA077	70	30	10	N	N	N	50	<10	N	20	N	150	200	N	20	200	100
SA078	50	50	5	N	N	N	50	<10	N	15	N	150	200	N	10	<200	150
SA079	15	15	15	N	5	N	20	<10	N	5	N	<100	100	N	20	N	150
SA080	10	10	7	N	5	N	30	<10	N	5	N	100	100	N	20	<200	700
SA081	20	30	10	N	N	N	30	<10	N	7	N	100	150	N	10	<200	150
SA082	30	50	15	N	N	N	50	10	N	15	N	200	200	N	15	200	150
SA086	50	30	20	N	<5	N	70	<10	N	10	N	500	150	N	20	<200	100
SA087	10	10	5	N	5	N	30	10	N	<5	N	<100	100	N	20	N	1,000
SA085	7	10	5	500	<5	N	5	<10	N	<5	N	<100	70	N	30	N	500
SA086	15	10	10	N	5	N	20	<10	N	7	N	100	70	N	20	N	150
SA087	5	10	5	N	<5	N	10	<10	N	<5	N	<100	50	N	10	N	200
SA088	5	10	<5	N	5	N	5	<10	N	<5	N	<100	50	N	20	N	200
SA089	10	10	<5	N	<5	N	10	<10	N	<5	N	<100	70	N	20	N	150
SA090	30	10	7	N	N	N	50	<10	N	7	N	100	150	N	30	<200	200

Spectrographic Analysis of Stream Sediments--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI	S-CD
SA091	50,777	374,715	1.5	.2	.07	.30	100	N	N	N	15	300	N	N	N
SA092	50,302	374,794	10.0	3.0	1.00	>1.00	1,000	N	N	N	10	200	1.0	N	N
SA093	50,252	374,687	5.0	3.0	2.00	>1.00	700	N	N	N	20	300	1.0	N	N
SA095	50,895	375,292	3.0	.5	.05	1.00	200	N	N	N	20	300	N	N	N
SA096	50,929	375,442	5.0	1.5	1.50	>1.00	1,000	N	N	N	20	200	1.0	N	N
SA097	50,914	375,538	2.0	.2	.05	.70	70	N	N	N	10	300	1.0	N	N
SA098	50,968	375,564	3.0	1.5	.70	1.00	700	N	N	N	15	300	1.0	N	N
SA099	50,968	375,578	5.0	2.0	1.00	>1.00	1,000	N	N	N	10	300	N	N	N
SA100	50,903	375,623	1.0	.3	.10	.15	200	N	N	N	10	150	N	N	N
SA101	50,909	375,791	7.0	3.0	1.50	>1.00	1,000	N	N	N	20	300	1.0	N	N
SA102	50,897	375,851	5.0	2.0	1.00	1.00	1,000	N	N	N	20	300	1.0	N	N
SA103	50,990	375,980	3.0	3.0	5.00	1.00	700	N	N	N	30	300	1.0	N	N
SA104	51,062	376,082	5.0	3.0	1.00	>1.00	1,000	N	N	N	15	200	N	N	N
SA105	51,062	376,082	3.0	7.0	1.50	.70	700	N	N	N	20	300	1.0	N	N
SA106	51,160	376,017	5.0	1.5	1.00	>1.00	1,000	N	N	N	<10	100	1.0	N	N
SA107	51,168	376,032	3.0	2.0	1.50	1.00	700	N	N	N	10	300	1.0	N	N
SA108	51,159	376,042	5.0	1.0	.50	1.00	700	N	N	N	20	700	3.0	N	N
SA109	41,185	375,870	5.0	2.0	1.00	>1.00	1,000	N	N	N	20	300	1.0	N	N
SA110	51,187	375,885	5.0	1.5	.15	>1.00	1,500	N	N	N	20	200	1.0	N	N
SA111	51,214	373,764	7.0	2.0	.70	>1.00	1,500	N	N	N	<10	200	N	N	N
SA112	51,171	373,800	7.0	1.5	.50	>1.00	1,500	N	N	N	15	200	N	N	N
SA113	51,168	373,814	5.0	1.0	.20	1.00	700	N	N	N	15	300	2.0	N	N
SA114	51,230	373,772	3.0	.7	.30	.50	700	N	N	N	20	300	2.0	N	N
SA115	51,120	373,104	5.0	.7	.30	1.00	1,000	N	N	N	15	300	N	N	N
SA116	51,130	373,117	7.0	1.5	.70	>1.00	1,000	N	N	N	20	300	1.0	N	N
SA117	51,290	373,220	7.0	1.0	.30	>1.00	1,000	N	N	N	15	300	N	N	N
SA118	50,968	373,329	7.0	1.5	.70	>1.00	700	N	N	N	20	500	1.0	N	N
SA119	50,942	373,386	5.0	1.0	.70	>1.00	700	N	N	N	15	500	1.0	N	N
SA120	50,890	373,442	7.0	.5	.15	1.00	300	N	N	N	10	300	N	N	N
SA121	50,793	373,569	7.0	3.0	.70	>1.00	1,000	N	N	N	10	200	N	N	N
SA122	50,934	373,661	5.0	3.0	1.00	>1.00	1,000	N	N	N	10	200	N	N	N
SA123	50,859	373,739	10.0	1.5	.50	>1.00	700	N	N	N	10	150	N	N	N
SA124	50,878	373,730	7.0	3.0	1.00	>1.00	700	N	N	N	15	300	N	N	N
SA125	50,996	374,164	10.0	2.0	.70	>1.00	1,500	N	N	N	15	300	1.0	N	N
SA126	49,870	373,770	7.0	2.0	1.50	1.00	700	N	N	N	20	700	1.0	N	N
SA127	48,286	373,928	10.0	1.5	2.00	>1.00	1,500	N	N	N	15	300	1.0	N	N
SA128	49,839	373,608	10.0	5.0	1.50	>1.00	1,000	N	N	N	20	300	N	N	N
SA129	48,364	374,120	7.0	5.0	2.00	>1.00	1,500	N	N	N	20	500	5.0	N	N
SA130	49,880	373,430	10.0	5.0	2.00	>1.00	700	N	N	N	20	300	N	N	N
SA131	49,844	373,603	10.0	1.5	.70	>1.00	700	N	N	N	30	500	1.0	N	N
SA132	49,880	373,430	7.0	2.0	1.50	1.00	700	N	N	N	20	500	N	N	N
SA133	51,262	373,511	3.0	1.0	.20	.50	500	N	N	N	30	500	3.0	N	N
SA134	51,529	373,560	7.0	1.0	.30	>1.00	1,000	N	N	N	15	150	N	N	N
SA135	51,261	373,512	10.0	2.0	.30	>1.00	1,000	N	N	N	15	300	1.0	N	N
SA136	51,262	373,511	3.0	1.5	.20	1.00	700	N	N	N	<10	300	N	N	N

Spectrographic Analysis of Stream Sediments--continued

Sample	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
SA091	5	15	5	N	<5	N	5	<10	N	<5	N	<100	50	N	30	N	700
SA092	50	30	15	N	N	N	50	<10	N	15	N	200	200	N	20	200	200
SA093	70	10	30	N	N	N	100	10	N	15	N	700	150	N	15	300	100
SA095	15	<10	10	N	<5	N	20	<10	N	5	N	100	100	N	20	N	150
SA096	30	20	20	N	N	N	15	<10	N	15	N	200	150	N	50	N	150
SA097	7	<10	<5	N	<5	N	5	<10	N	5	N	N	70	N	30	N	200
SA098	30	10	30	N	<5	N	30	<10	N	7	N	300	100	N	30	N	150
SA099	50	20	20	N	N	N	30	<10	N	10	N	300	150	N	20	<200	200
SA100	5	<10	5	N	<5	N	5	<10	N	N	N	N	50	N	10	N	150
SA101	70	10	20	N	N	N	30	<10	N	20	N	300	150	N	30	200	100
SA102	50	15	15	N	N	N	30	<10	N	15	N	200	150	N	15	200	100
SA103	70	<10	7	N	N	N	30	<10	N	10	N	200	150	N	10	<200	150
SA104	30	20	15	N	N	N	30	<10	N	7	N	200	200	N	20	<200	200
SA105	50	<10	30	N	<5	N	50	<10	N	15	N	200	100	N	30	<200	150
SA106	70	50	5	N	N	N	30	N	N	20	N	150	200	N	10	300	150
SA107	30	10	20	N	<5	N	50	<10	N	15	N	200	150	N	20	N	100
SA108	30	10	10	N	N	N	30	10	N	7	N	150	100	N	20	<200	100
SA109	70	30	20	N	N	N	50	10	N	10	N	300	150	N	20	200	100
SA110	50	50	5	N	N	N	30	<10	N	5	N	100	150	N	10	200	150
SA111	50	50	15	N	N	N	50	N	N	10	N	200	200	N	10	200	100
SA112	70	50	5	N	N	N	70	<10	N	15	N	200	200	N	<10	200	150
SA113	20	10	15	N	<5	N	20	10	N	7	N	N	150	N	15	<200	150
SA114	10	20	30	N	N	N	10	15	N	5	N	100	70	N	15	N	200
SA115	20	30	15	N	<5	N	20	<10	N	7	N	100	150	N	15	<200	150
SA116	30	50	10	N	<5	N	50	<10	N	15	N	200	200	N	15	200	150
SA117	70	100	5	N	N	N	70	<10	N	7	N	150	300	N	N	200	200
SA118	70	50	15	N	N	N	70	<10	N	15	N	200	200	N	15	200	200
SA119	30	30	20	N	N	N	30	10	N	7	N	150	150	N	15	200	150
SA120	15	30	<5	N	N	N	10	10	N	<5	N	100	100	N	10	<200	200
SA121	70	50	5	N	N	N	50	<10	N	10	N	200	200	N	10	200	150
SA122	70	70	15	N	N	N	50	<10	N	10	N	200	200	N	N	200	100
SA123	100	70	5	N	N	N	70	N	N	15	N	150	200	N	N	300	150
SA124	70	50	15	N	N	N	70	10	N	20	N	200	200	N	10	200	150
SA125	50	70	5	N	N	N	50	<10	N	15	N	200	200	N	15	300	100
SA126	50	30	30	N	<5	N	50	10	N	10	N	500	150	N	20	<200	300
SA127	50	30	20	N	N	N	50	20	N	10	N	300	150	N	N	200	150
SA128	100	10	15	N	<5	N	70	10	N	10	N	700	150	N	10	200	150
SA129	100	30	10	N	N	N	70	20	N	15	N	1,000	150	N	20	200	100
SA130	70	20	15	N	N	N	70	15	N	20	N	700	150	N	20	200	100
SA131	50	50	5	N	N	N	50	10	N	20	N	200	200	N	20	200	150
SA132	30	20	10	N	N	N	50	15	N	15	N	200	150	N	15	<200	100
SA133	30	20	10	N	5	N	20	10	N	10	N	100	100	N	30	N	150
SA134	50	50	5	N	<5	N	50	N	N	10	N	100	150	N	N	200	100
SA135	70	70	5	N	N	N	70	<10	N	15	N	150	200	N	<10	300	150
SA136	50	15	15	N	<5	N	50	20	N	7	N	100	100	N	15	N	150

Spectrographic Analysis of Stream Sediments--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI	S-CD
SA137	51,185	373,932	10.0	3.0	3.00	>1.00	1,000	N	N	N	10	300	1.0	N	N
SA138	51,066	373,820	10.0	1.0	.15	>1.00	1,000	N	N	N	20	3,000	1.0	N	N
SA139	51,068	373,831	2.0	1.0	.70	.50	300	N	N	N	<10	300	N	N	N
SA140	50,591	373,166	7.0	.7	.70	>1.00	1,000	N	N	N	30	200	1.0	N	N
SA141	50,623	375,582	10.0	.7	.70	>1.00	700	N	N	N	15	300	N	N	N
SA142	50,951	375,079	3.0	1.5	.15	1.00	300	N	N	N	50	300	2.0	N	N
SA143	50,805	375,266	3.0	.7	.20	1.00	700	N	N	N	30	300	3.0	N	N
SA144	50,834	375,173	7.0	3.0	1.00	>1.00	1,000	N	N	N	10	200	N	N	N
SA145	50,890	375,146	10.0	5.0	1.50	>1.00	1,000	N	N	N	10	200	N	N	N
SA146	50,949	374,870	7.0	5.0	1.50	1.00	1,000	N	N	N	10	300	N	N	N
SA147	50,910	375,165	7.0	3.0	1.00	>1.00	700	N	N	N	15	200	N	N	N
SA148	50,879	375,025	10.0	1.5	.70	>1.00	1,000	N	N	N	20	700	5.0	N	N
SA149	50,914	374,955	3.0	1.5	.30	1.00	300	N	N	N	15	300	1.5	N	N
SA150	50,949	374,870	7.0	7.0	1.50	>1.00	1,000	N	N	N	10	150	N	N	N
SA151	50,998	374,778	1.5	.7	.15	.70	200	N	N	N	30	300	1.5	N	N
SA152	51,063	374,740	7.0	3.0	1.50	1.00	1,000	N	N	N	15	150	1.0	N	N
SA153	51,089	374,724	10.0	.5	<.05	>1.00	1,000	N	N	N	15	200	1.0	N	N
SA154	51,114	374,668	10.0	1.5	.70	>1.00	1,000	N	N	N	20	200	1.0	N	N
SA155	51,146	374,569	10.0	1.0	.20	>1.00	700	N	N	N	30	700	1.5	N	N
SA156	51,152	374,461	2.0	.7	.70	.70	300	N	N	N	30	300	3.0	N	N
SA157	51,209	374,402	3.0	1.5	.70	>1.00	1,500	N	N	N	20	300	2.0	N	N
SA158	51,206	374,381	3.0	7.0	1.50	>1.00	1,000	N	N	N	15	300	1.0	N	N
SA159	51,261	374,339	10.0	3.0	1.00	>1.00	1,000	N	N	N	10	200	N	N	N
SA160	51,270	374,214	15.0	3.0	.70	>1.00	1,000	N	N	N	15	200	N	N	N
SA161	51,419	374,147	1.5	1.0	.70	.20	70	N	N	N	15	200	N	N	N
SA162	50,368	373,321	10.0	3.0	1.50	1.00	1,000	N	N	N	15	300	N	N	N
SA163	50,107	373,778	5.0	3.0	2.00	>1.00	1,000	N	N	N	15	300	1.0	N	N
SA164	50,259	373,492	3.0	3.0	2.00	.70	700	N	N	N	10	200	N	N	N
SA166	50,383	373,762	3.0	2.0	1.50	>1.00	1,000	N	N	N	10	200	N	N	N
SA167	50,508	373,692	3.0	2.0	2.00	1.00	700	N	N	N	10	200	N	N	N
SA168	50,500	373,686	5.0	2.0	.70	>1.00	1,500	N	N	N	10	150	N	N	N
SA169	50,410	374,431	1.5	.5	.20	.30	700	N	N	N	10	500	1.0	N	N
SA170	50,097	373,951	2.0	1.5	.50	.30	300	N	N	N	10	200	1.0	N	N
SA171	50,193	374,196	2.0	1.0	.20	.50	300	N	N	N	15	200	1.0	N	N
SA172	50,171	374,189	1.0	.5	.15	.15	70	N	N	N	10	150	1.0	N	N
SA173	50,186	374,266	3.0	1.5	.50	.70	300	N	N	N	10	300	1.0	N	N
SA174	50,410	374,431	5.0	2.0	.70	>1.00	1,500	N	N	N	10	300	1.0	N	N
SA175	50,571	374,227	7.0	5.0	1.00	>1.00	1,500	N	N	N	15	300	1.0	N	N
SA176	50,580	374,243	3.0	1.0	.30	1.00	700	N	N	N	10	300	1.0	N	N
SA177	50,442	374,178	3.0	3.0	1.50	1.00	1,000	N	N	N	15	300	1.0	N	N
SA178	50,064	374,570	10.0	5.0	2.00	1.00	700	N	N	N	15	300	N	N	N
SA179	50,158	374,496	10.0	1.5	1.00	>1.00	2,000	N	N	N	15	300	1.0	N	N
SA180	50,286	373,946	10.0	2.0	1.00	>1.00	1,500	N	N	N	15	300	N	N	N
SA181	48,725	373,704	10.0	3.0	1.50	>1.00	1,500	N	N	N	15	300	N	N	N
SA182	48,678	373,716	3.0	.5	.10	.70	300	N	N	N	10	300	N	N	N

Spectrographic Analysis of Stream Sediments--continued

Sample	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
SA137	70	10	15	N	N	N	50	10	N	10	N	150	150	N	15	300	100
SA138	50	50	10	N	N	N	50	<10	N	7	N	100	150	N	15	300	150
SA139	20	20	20	N	N	N	20	15	N	7	N	<100	70	N	10	N	150
SA140	30	30	15	N	N	N	30	10	N	7	N	150	150	N	15	200	300
SA141	20	70	10	N	N	N	50	<10	N	5	N	100	150	N	<10	200	100
SA142	15	10	15	N	<5	N	30	<10	N	7	N	<100	100	N	15	N	200
SA143	30	30	20	N	<5	N	30	20	N	7	N	<100	150	N	15	N	200
SA144	100	20	15	N	N	N	100	<10	N	15	N	300	200	N	<10	300	100
SA145	100	20	15	N	N	N	100	<10	N	15	N	500	150	N	15	300	100
SA146	100	10	15	N	<5	N	50	10	N	20	N	700	150	N	50	300	150
SA147	50	30	15	N	N	N	50	<10	N	10	N	150	150	N	10	200	200
SA148	50	30	15	N	N	N	50	15	N	10	N	100	200	N	20	300	100
SA149	30	30	15	N	<5	N	70	<10	N	7	N	<100	100	N	30	200	1,000
SA150	100	10	15	N	N	N	150	N	N	10	N	700	100	N	<10	300	100
SA151	7	50	30	N	N	N	30	10	N	5	N	N	150	N	10	N	150
SA152	100	20	15	N	<5	N	100	<10	N	10	N	300	150	N	<10	300	150
SA153	50	70	5	N	N	N	30	<10	N	7	N	<100	150	N	30	200	200
SA154	100	30	5	N	N	N	50	N	N	15	N	200	150	N	<10	300	100
SA155	30	30	20	N	<5	N	30	10	N	10	N	100	150	N	20	200	150
SA156	20	10	20	150	5	N	30	10	N	5	N	100	70	N	30	<200	700
SA157	100	30	20	N	<5	N	50	50	N	15	N	100	150	N	20	200	200
SA158	100	20	15	N	N	N	100	<10	N	20	N	500	200	N	20	200	150
SA159	100	30	10	N	<5	N	70	<10	N	20	N	500	150	N	10	300	150
SA160	70	30	15	N	N	N	70	<10	N	20	N	150	150	N	10	300	150
SA161	7	30	7	N	<5	N	30	N	N	5	N	N	70	N	15	N	200
SA162	70	30	50	N	N	N	70	<10	N	15	N	150	200	N	20	200	100
SA163	100	<10	20	N	N	N	50	<10	N	15	N	700	150	N	15	300	100
SA164	70	10	50	N	<5	N	70	<10	N	10	N	500	100	N	20	200	100
SA166	50	30	7	N	<5	N	70	<10	N	10	N	300	200	N	10	200	100
SA167	70	10	20	N	<5	N	50	<10	N	15	N	500	100	N	15	200	70
SA168	50	30	7	N	N	N	50	<10	N	10	N	200	200	N	10	300	100
SA169	10	10	20	N	<5	N	5	<10	N	5	N	N	70	N	15	N	200
SA170	7	10	5	N	5	N	10	<10	N	<5	N	N	50	N	20	N	150
SA171	7	10	5	N	<5	N	10	<10	N	<5	N	N	50	N	20	N	150
SA172	5	10	<5	N	<5	N	5	<10	N	<5	N	N	30	N	15	N	300
SA173	15	10	5	N	<5	N	30	<10	N	7	N	N	70	N	15	N	100
SA174	30	20	15	N	<5	N	70	10	N	10	N	200	200	N	15	200	70
SA175	30	20	15	N	N	N	100	<10	N	10	N	200	200	N	15	200	100
SA176	20	30	20	N	<5	N	70	50	N	5	N	100	150	N	15	200	150
SA177	50	20	30	N	<5	N	70	10	N	10	N	500	150	N	15	200	100
SA178	100	30	50	N	N	N	100	30	N	20	N	700	200	N	20	200	150
SA179	30	30	7	N	N	N	20	10	N	10	N	150	200	N	20	200	150
SA180	70	30	15	N	N	N	50	15	N	20	N	200	200	N	20	300	150
SA181	100	10	30	N	N	N	70	<10	N	20	N	500	200	N	20	300	150
SA182	10	15	5	N	<5	N	30	20	N	<5	N	N	150	N	15	<200	150

Spectrographic Analysis of Stream Sediments--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI	S-CD
SA183	48,559	373,692	10.0	1.5	.70	1.00	300	N	N	N	15	300	1.0	N	N
SA184	48,476	373,693	10.0	2.0	.70	>1.00	1,500	N	N	N	N	150	N	N	N
SA185	48,405	373,737	10.0	3.0	.70	>1.00	1,000	N	N	N	N	70	N	N	N
SA186	50,301	373,988	3.0	1.5	1.00	1.00	700	N	N	N	15	300	3.0	N	N
SA187	50,319	373,961	3.0	1.5	1.50	1.00	700	N	N	N	15	300	1.0	N	N
SA188	50,532	373,296	1.5	2.0	7.00	.30	300	N	N	N	10	500	N	N	N
SA189	50,748	373,392	3.0	.7	1.50	.70	700	N	N	N	10	700	2.0	N	N
SA190	50,421	373,233	5.0	3.0	1.50	>1.00	1,500	N	N	N	15	300	N	N	N
SA191	51,731	373,190	7.0	3.0	1.00	>1.00	1,500	N	N	N	10	150	N	N	N
SA192	51,737	373,326	5.0	2.0	1.50	>1.00	1,000	N	N	N	20	300	1.0	N	N
SA193	51,742	373,502	7.0	3.0	1.00	>1.00	2,000	N	N	N	20	500	1.0	N	N
SA194	51,889	373,716	3.0	3.0	3.00	1.00	700	N	N	N	10	300	1.0	N	N
SA195	51,611	373,733	10.0	3.0	1.00	>1.00	1,500	N	N	N	<10	200	N	N	N
SA196	51,646	373,791	5.0	2.0	1.00	>1.00	1,500	N	N	N	10	300	N	N	N
SA197	51,521	373,888	5.0	2.0	.50	>1.00	2,000	N	N	N	10	300	N	N	N
SA198	51,462	374,071	7.0	1.5	.70	>1.00	2,000	N	N	N	10	200	1.0	N	N
SA199	50,606	375,137	5.0	.5	.30	1.00	500	N	N	N	10	500	1.0	N	N
SA206	51,523	374,113	7.0	2.0	.20	>1.00	1,500	N	N	N	<10	100	N	N	N
SA209	49,829	373,983	10.0	3.0	.20	>1.00	1,500	N	N	N	N	100	N	N	N
SA210	49,648	374,319	7.0	3.0	.70	>1.00	1,500	N	N	N	10	200	N	N	N
SA211	49,676	374,584	3.0	1.0	.15	1.00	1,000	N	N	N	20	150	1.0	N	N
SA212	49,898	374,446	10.0	1.0	.15	>1.00	1,500	N	N	N	15	150	N	N	N
SA300	50,606	375,137	10.0	3.0	1.00	>1.00	1,500	N	N	N	10	200	N	N	N
SA301	50,921	373,981	10.0	2.0	1.50	>1.00	1,500	N	N	N	10	200	N	N	N
SA302	50,648	373,940	10.0	3.0	2.00	>1.00	1,500	N	N	N	10	300	N	N	N
SA303	50,631	373,945	10.0	3.0	1.00	>1.00	1,500	N	N	N	<10	200	N	N	N
SA304	50,636	373,937	10.0	3.0	.70	>1.00	1,500	N	N	N	<10	200	N	N	N
SA305	50,759	373,844	7.0	2.0	1.00	>1.00	1,500	N	N	N	15	500	1.0	N	N
SA306	49,061	373,884	10.0	1.5	.70	>1.00	1,500	N	N	N	N	150	N	N	N
SA307	49,036	374,686	7.0	3.0	2.00	>1.00	1,000	N	N	N	15	300	N	N	N
SA308	49,149	374,625	10.0	2.0	1.00	>1.00	1,500	N	N	N	15	300	N	N	N
SA310	49,425	374,544	15.0	1.5	.15	>1.00	1,500	N	N	N	N	100	N	N	N
SA311	49,370	374,231	7.0	3.0	1.00	>1.00	1,500	N	N	N	<10	200	N	N	N
SA313	48,680	373,585	3.0	.7	.20	1.00	500	N	N	N	<10	150	N	N	N
SA315	48,427	374,188	7.0	1.0	.70	>1.00	1,000	N	N	N	<10	700	N	N	N
SA316	48,434	374,249	3.0	2.0	1.50	.70	700	N	N	N	<10	300	N	N	N

Spectrographic Analysis of Stream Sediments--continued

Sample	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
SA183	30	20	30	N	N	N	70	15	N	10	N	100	150	N	15	200	300
SA184	100	70	5	N	N	N	70	<10	N	10	N	150	200	N	<10	300	150
SA185	100	100	5	N	N	N	150	N	N	15	N	100	200	N	<10	300	150
SA186	15	30	15	500	<5	N	30	<10	N	7	N	<100	150	N	30	N	150
SA187	15	30	7	N	<5	N	30	<10	N	7	N	200	150	N	30	<200	150
SA188	10	15	50	N	<5	N	50	<10	N	7	N	300	70	N	15	N	100
SA189	10	50	7	N	<5	N	20	10	N	10	N	300	100	N	30	N	100
SA190	30	50	7	N	<5	N	30	<10	N	15	N	200	200	N	10	300	70
SA191	50	70	5	N	N	N	50	<10	N	15	N	150	200	N	10	500	70
SA192	30	70	10	N	N	N	30	<10	N	7	N	150	150	N	15	200	100
SA193	30	30	20	N	<5	N	30	10	N	10	N	150	150	N	30	200	100
SA194	20	30	7	N	<5	N	30	<10	N	7	N	200	100	N	30	N	100
SA195	70	30	7	N	N	N	50	<10	N	10	N	500	150	N	<10	300	70
SA196	50	30	5	N	<5	N	30	<10	N	10	N	300	150	N	15	300	70
SA197	50	50	5	N	N	N	30	<10	N	7	N	300	150	N	15	300	50
SA198	50	50	5	N	N	N	30	<10	N	7	N	150	150	N	15	300	70
SA199	10	30	10	N	<5	N	10	<10	N	5	N	N	100	N	20	N	500
SA206	50	100	<5	N	N	N	30	N	N	7	N	200	150	N	<10	300	70
SA209	100	100	<5	N	N	N	50	N	N	7	N	200	150	N	<10	300	70
SA210	30	50	7	N	<5	N	50	<10	N	10	N	300	100	N	<10	200	100
SA211	15	70	5	N	N	N	20	<10	N	7	N	N	100	N	10	200	100
SA212	30	70	5	N	N	N	30	N	N	7	N	150	150	N	<10	300	70
SA300	50	70	5	N	N	N	50	<10	N	15	N	200	150	N	20	300	100
SA301	100	100	15	N	N	N	70	<10	N	7	N	200	150	N	10	300	100
SA302	70	70	30	N	<5	N	50	<10	N	10	N	300	150	N	20	200	200
SA303	100	150	5	N	N	N	50	<10	N	10	N	300	200	N	<10	200	70
SA304	50	150	5	N	N	N	50	<10	N	10	N	150	200	N	15	300	100
SA305	100	30	15	N	N	N	70	10	N	20	N	300	300	N	15	300	100
SA306	150	70	10	N	N	N	70	N	N	20	N	150	200	N	<10	300	100
SA307	70	50	10	N	N	N	70	<10	N	30	N	500	300	N	20	200	100
SA308	70	50	10	N	N	N	70	<10	N	20	N	500	200	N	10	300	100
SA310	100	50	<5	N	N	N	70	N	N	15	N	150	200	N	10	500	200
SA311	70	20	15	N	N	N	70	<10	N	15	N	300	150	N	<10	300	100
SA313	7	30	<5	N	<5	N	15	N	N	<5	N	N	100	N	<10	<200	200
SA315	70	50	10	N	<5	N	50	N	N	15	N	100	200	N	10	200	150
SA316	20	10	7	N	<5	N	30	N	N	30	N	200	150	N	20	<200	70

TABLE 3.-- Spectrographic Analysis of Heavy Mineral Concentrates

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI
SA001	50,246	375,340	3.0	.20	<.10	>2.00	70	N	N	N	70	1,500	20	N
SA002	50,187	375,390	15.0	.30	10.00	>2.00	500	N	N	N	150	150	10	N
SA003	49,964	375,077	3.0	1.00	1.50	>2.00	150	N	N	N	100	300	15	N
SA004	50,606	375,932	.7	1.00	30.00	.70	500	N	N	N	N	1,500	N	N
SA005	50,691	375,949	1.0	10.00	30.00	1.00	500	N	N	N	70	10,000	N	N
SA006	50,613	375,773	<.1	.05	1.50	.30	<20	N	N	N	N	100	N	N
SA007	50,640	375,671	1.0	1.50	30.00	.70	500	N	N	N	20	300	N	N
SA008	50,618	375,654	1.0	1.50	30.00	2.00	500	N	N	N	20	>10,000	N	N
SA009	50,630	375,560	.7	.05	1.00	1.50	70	N	N	N	<20	>10,000	N	N
SA010	50,657	375,579	1.0	1.50	30.00	.70	300	N	N	N	20	10,000	N	N
SA011	50,572	375,465	1.5	1.50	3.00	>2.00	200	N	N	N	70	>10,000	15	N
SA012	50,572	375,480	10.0	.20	.20	>2.00	300	N	N	N	100	10,000	30	N
SA013	50,696	375,424	7.0	.30	7.00	>2.00	200	N	N	N	70	>10,000	N	N
SA014	50,728	375,398	3.0	1.50	7.00	>2.00	200	N	N	N	20	>10,000	N	N
SA015	50,769	375,335	7.0	1.00	1.50	>2.00	200	N	N	N	50	>10,000	20	N
SA016	49,343	373,287	.7	1.00	30.00	.50	500	N	N	N	N	1,500	N	N
SA017	49,162	373,311	.7	1.50	30.00	1.00	500	N	N	N	N	1,500	N	N
SA018	46,920	373,689	1.0	3.00	30.00	1.50	700	N	N	N	N	300	N	N
SA019	48,920	373,724	1.5	3.00	30.00	2.00	700	N	N	N	N	200	N	N
SA020	48,988	373,809	1.5	2.00	30.00	1.50	700	N	N	N	N	200	N	N
SA021	48,994	373,796	1.0	2.00	30.00	.70	500	N	N	N	N	200	N	N
SA022	49,097	373,919	2.0	20.00	20.00	.50	1,500	N	N	N	70	200	N	N
SA023	49,120	373,924	2.0	3.00	15.00	>2.00	700	N	N	N	N	150	N	N
SA024	49,174	374,006	3.0	3.00	30.00	>2.00	700	N	N	N	20	200	N	N
SA025	49,098	374,109	1.5	1.50	30.00	>2.00	1,000	N	N	N	N	70	N	N
SA026	49,110	374,174	7.0	15.00	30.00	1.50	1,500	N	N	N	N	150	N	N
SA027	49,142	374,194	7.0	5.00	30.00	>2.00	700	N	N	N	N	150	N	N
SA028	49,021	373,406	1.5	2.00	30.00	.70	700	N	N	N	N	150	N	N
SA029	48,896	373,563	1.0	1.00	50.00	.70	700	N	N	N	N	150	N	N
SA030	48,895	373,566	3.0	1.50	30.00	>2.00	1,000	N	N	N	N	100	N	N
SA031	48,671	373,948	1.0	.70	50.00	1.50	700	N	N	N	N	150	N	N
SA032	48,672	373,964	3.0	5.00	50.00	1.50	700	N	N	N	N	200	N	N
SA033	48,664	373,968	1.5	1.50	30.00	1.50	700	N	N	N	N	150	N	N
SA034	48,423	373,936	3.0	3.00	30.00	>2.00	700	N	N	N	N	300	N	N
SA035	48,410	374,020	5.0	3.00	30.00	1.50	500	N	N	N	N	150	N	N
SA036	48,486	374,375	5.0	3.00	30.00	2.00	700	N	N	N	N	150	N	N
SA037	49,464	374,580	5.0	2.00	20.00	>2.00	700	N	N	N	N	200	10	N
SA038	49,475	374,574	.7	.10	10.00	>2.00	500	N	N	N	30	700	50	N
SA039	49,454	374,553	7.0	15.00	15.00	2.00	1,000	N	N	N	20	200	N	N
SA040	49,375	374,504	1.5	2.00	30.00	1.00	700	N	N	N	N	150	N	N
SA041	49,384	374,485	3.0	5.00	30.00	1.50	700	N	N	N	N	150	N	N
SA042	48,723	374,633	7.0	2.00	10.00	>2.00	300	N	N	N	20	300	N	N
SA043	48,717	374,643	5.0	5.00	15.00	>2.00	500	N	N	N	30	10,000	N	N
SA044	48,682	374,574	3.0	3.00	30.00	1.50	500	N	N	N	N	300	N	N
SA045	48,668	374,593	3.0	2.00	30.00	2.00	700	N	N	N	N	300	N	N

Spectrographic Analysis of Heavy Mineral Concentrates

Sample	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
SA001	N	<10	150	50	N	N	N	700	200	N	>200	N	N	300	N	>500
SA002	N	30	50	30	300	N	N	500	50	N	150	N	N	200	N	500
SA003	N	30	70	50	700	N	N	500	700	N	>200	N	N	300	N	500
SA004	N	<10	20	10	1,000	N	N	150	70	N	70	N	700	100	N	>500
SA005	N	<10	<20	10	700	N	N	150	<20	N	70	N	1,000	100	N	>500
SA006	N	<10	<20	<10	N	N	N	<10	<20	N	N	N	N	<20	N	50
SA007	N	<10	<20	15	1,000	N	N	70	<20	N	70	N	700	50	N	>500
SA008	N	<10	<20	<10	1,000	N	N	150	500	N	70	N	2,000	150	N	>500
SA009	N	<10	<20	<10	N	<10	N	150	150	N	50	N	3,000	70	N	200
SA010	N	<10	<20	<10	700	N	N	150	<20	N	70	N	500	70	N	>500
SA011	N	<10	70	20	300	N	N	700	30	N	>200	N	700	300	N	>500
SA012	N	<10	20	<10	N	N	N	700	20	N	>200	N	N	200	N	>500
SA013	N	<10	50	<10	N	N	N	300	150	N	150	70	3,000	200	N	500
SA014	N	<10	150	<10	N	N	N	200	200	N	100	N	2,000	300	N	500
SA015	N	<10	150	<10	N	N	N	700	700	N	>200	N	500	300	N	>500
SA016	N	<10	<20	<10	500	N	N	150	N	N	50	N	1,000	50	N	500
SA017	N	<10	<20	<10	300	N	N	10	N	N	<10	N	700	50	N	500
SA018	N	<10	<20	15	700	N	N	150	N	N	70	N	1,000	100	N	>500
SA019	N	70	20	<10	700	N	N	<10	N	N	<10	N	1,000	150	N	>500
SA020	N	<10	<20	<10	700	N	N	100	N	N	30	N	1,000	150	N	>500
SA021	N	<10	20	<10	700	N	N	150	N	N	30	N	1,000	150	N	>500
SA022	N	<10	<20	70	N	N	N	<10	150	N	<10	N	N	200	N	100
SA023	N	20	30	20	500	N	N	100	50	N	30	N	500	200	N	500
SA024	N	10	300	10	700	N	<50	15	50	N	20	N	700	200	N	500
SA025	N	<10	<20	70	700	N	N	10	N	N	10	N	500	150	N	500
SA026	N	30	70	15	700	N	N	15	N	N	30	N	1,500	150	N	500
SA027	N	20	150	15	700	N	N	15	70	N	20	N	700	200	N	500
SA028	N	<10	20	<10	500	N	N	10	100	N	15	N	700	150	N	500
SA029	N	<10	<20	<10	700	N	N	<10	N	N	10	N	1,000	70	N	500
SA030	N	<10	100	10	700	N	<50	10	20	N	30	N	700	300	N	500
SA031	N	<10	<20	<10	700	N	N	<10	N	N	<10	N	1,000	100	N	>500
SA032	N	<10	20	<10	700	N	N	<10	<20	N	20	N	1,500	150	N	>500
SA033	N	<10	<20	<10	500	N	N	<10	N	N	10	N	700	100	N	500
SA034	N	10	20	30	700	150	N	<10	10,000	N	10	N	1,000	500	N	500
SA035	N	10	20	10	700	N	N	<10	3,000	N	10	N	1,500	300	N	500
SA036	N	10	<20	15	700	N	N	<10	70	N	10	N	1,000	150	N	500
SA037	N	<10	<20	15	300	N	50	200	2,000	N	100	20	200	150	N	>500
SA038	N	<10	<20	<10	300	100	70	700	N	N	>200	100	N	70	3,000	>500
SA039	N	30	150	10	150	N	50	70	20	N	70	N	500	300	N	300
SA040	N	<10	<20	15	700	N	N	50	300	N	10	N	700	200	300	500
SA041	N	10	<20	<10	700	N	N	20	N	N	10	N	1,000	150	<100	500
SA042	N	<10	150	<10	500	N	<50	100	N	N	70	N	N	300	N	300
SA043	N	20	150	15	200	N	N	50	200	N	30	N	500	200	N	300
SA044	N	10	70	<10	500	N	N	50	20	N	20	N	1,000	150	N	500
SA045	N	10	20	10	700	N	N	200	N	N	20	N	700	150	N	500

Spectrographic Analysis of Heavy Mineral Concentrates

Sample	S-ZN	S-ZR	S-TH
SA001	N	>2,000	--
SA002	N	>2,000	--
SA003	N	>2,000	--
SA004	N	>2,000	--
SA005	N	>2,000	--
SA006	N	1,500	--
SA007	N	>2,000	--
SA008	N	>2,000	--
SA009	N	>2,000	--
SA010	N	>2,000	--
SA011	N	>2,000	--
SA012	N	>2,000	--
SA013	N	>2,000	--
SA014	N	>2,000	--
SA015	N	>2,000	--
SA016	N	>2,000	--
SA017	N	>2,000	--
SA018	N	>2,000	--
SA019	N	2,000	--
SA020	N	>2,000	--
SA021	N	>2,000	--
SA022	N	1,000	--
SA023	N	>2,000	--
SA024	N	2,000	--
SA025	N	2,000	--
SA026	N	700	--
SA027	N	>2,000	--
SA028	N	>2,000	--
SA029	N	>2,000	--
SA030	N	>2,000	--
SA031	N	>2,000	--
SA032	N	>2,000	--
SA033	N	2,000	--
SA034	N	2,000	--
SA035	N	700	--
SA036	N	>2,000	--
SA037	N	>2,000	--
SA038	N	>2,000	--
SA039	N	1,500	--
SA040	N	>2,000	--
SA041	N	>2,000	--
SA042	N	>2,000	--
SA043	N	>2,000	--
SA044	N	>2,000	--
SA045	N	>2,000	--

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI
SA046	48,630	374,528	2.0	2.00	30.00	1.50	500	N	N	N	N	150	N	N
SA047	48,612	374,529	5.0	5.00	30.00	>2.00	500	N	N	N	20	3,000	N	N
SA048	49,289	373,577	2.0	3.00	30.00	1.50	500	N	N	N	N	150	N	N
SA049	49,293	373,574	2.0	2.00	30.00	2.00	500	N	N	N	N	150	N	N
SA050	48,560	374,456	1.5	1.00	30.00	1.50	500	N	N	N	N	200	N	150
SA051	48,536	374,384	7.0	3.00	30.00	2.00	500	N	N	N	N	2,000	N	N
SA052	48,803	374,363	.7	1.00	30.00	1.00	500	N	N	N	N	150	N	N
SA053	48,809	374,360	1.0	1.00	50.00	1.50	500	N	N	N	N	3,000	N	N
SA054	48,996	374,674	.7	1.50	50.00	.50	500	N	N	N	N	150	N	N
SA055	49,018	374,612	2.0	1.00	7.00	>2.00	200	N	N	N	20	300	N	N
SA056	49,087	374,571	2.0	1.50	10.00	>2.00	300	N	N	N	20	3,000	N	N
SA057	49,091	374,567	7.0	3.00	15.00	>2.00	500	N	N	N	N	200	N	N
SA058	49,536	373,794	3.0	1.00	15.00	>2.00	500	N	N	N	150	>10,000	N	N
SA059	49,138	374,465	7.0	1.50	15.00	>2.00	1,500	N	N	N	100	3,000	N	150
SA060	49,192	374,376	3.0	2.00	30.00	1.50	700	N	N	N	N	300	N	N
SA061	49,244	374,325	2.0	2.00	30.00	1.50	700	N	N	N	N	150	N	N
SA062	49,278	374,432	2.0	3.00	30.00	2.00	500	N	N	N	N	100	N	30
SA063	49,218	374,076	3.0	1.50	30.00	>2.00	500	N	N	N	N	150	N	N
SA064	49,389	373,793	10.0	1.00	7.00	2.00	500	N	N	N	70	>10,000	N	N
SA065	49,397	373,749	15.0	1.50	7.00	3.00	500	10	N	N	N	20,000	N	N
SA066	49,491	374,973	7.0	15.00	15.00	2.00	1,500	N	N	N	N	7,000	N	N
SA067	49,496	374,971	7.0	2.00	5.00	>2.00	300	N	N	N	300	1,000	7	N
SA068	49,502	374,987	3.0	1.50	15.00	>2.00	300	N	N	N	N	700	N	N
SA069	49,618	375,248	3.0	3.00	15.00	>2.00	500	N	N	N	N	700	N	N
SA070	49,626	375,254	2.0	1.50	7.00	>2.00	300	N	N	N	300	700	5	N
SA071	49,863	375,402	1.5	.10	1.00	>2.00	150	N	N	N	20	300	20	150
SA072	49,775	374,836	1.5	.70	20.00	1.50	700	N	N	N	N	150	<2	N
SA073	48,582	374,465	3.0	1.00	20.00	>10.00	700	N	N	N	100	30,000	N	150
SA074	49,625	374,036	1.0	1.00	20.00	2.00	300	N	N	N	N	5,000	N	N
SA075	49,619	374,046	1.5	1.00	20.00	>2.00	300	N	N	N	20	300	2	N
SA076	49,590	373,847	1.5	.70	10.00	>2.00	200	N	N	N	20	500	15	N
SA077	49,776	373,808	1.0	.50	30.00	2.00	500	N	N	N	N	150	2	N
SA078	49,734	373,843	1.5	3.00	30.00	2.00	700	N	N	N	N	150	N	N
SA079	50,454	375,100	5.0	.70	1.50	>2.00	200	N	N	N	50	300	2	N
SA080	50,386	374,982	3.0	15.00	10.00	2.00	1,000	N	N	N	50	150	N	N
SA081	50,386	374,970	.7	5.00	20.00	>2.00	700	N	N	N	N	70	N	N
SA082	50,270	375,000	1.5	10.00	30.00	1.50	300	N	N	N	N	10,000	N	N
SA083	50,280	374,985	1.5	3.00	30.00	2.00	500	N	N	N	N	1,500	N	N
SA084	50,564	374,633	1.5	20.00	10.00	2.00	700	N	N	N	50	150	N	N
SA085	50,609	374,610	2.0	20.00	15.00	2.00	700	N	N	N	50	100	N	N
SA086	50,681	374,491	1.0	20.00	15.00	.30	1,000	N	N	N	150	300	N	N
SA087	50,710	374,492	1.5	15.00	10.00	>2.00	700	N	N	N	20	150	2	N
SA088	50,619	374,722	3.0	1.50	1.50	>2.00	150	N	N	N	50	5,000	20	N
SA089	50,624	374,739	7.0	1.00	1.00	>2.00	300	N	N	N	30	300	15	N
SA090	50,873	374,592	3.0	7.00	7.00	>2.00	300	N	N	N	30	1,000	N	N

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
SA046	N	<10	<20	<10	700	N	N	<10	N	N	10	N	700	100	N	500
SA047	N	20	70	150	500	N	<50	<10	700	N	30	N	700	300	N	500
SA048	N	<10	20	10	500	N	N	<10	N	N	50	N	1,000	150	N	500
SA049	N	<10	<20	10	300	N	N	<10	N	N	30	N	500	100	N	300
SA050	N	<10	<20	10	500	N	N	<10	70	N	70	N	700	100	300	500
SA051	N	30	70	30	500	N	N	<10	1,000	N	50	N	1,000	300	N	500
SA052	N	<10	<20	<10	500	N	N	<10	N	N	N	N	1,000	70	N	500
SA053	N	<10	<20	<10	500	N	N	<10	N	N	10	N	2,000	100	N	500
SA054	N	<10	<20	<10	500	N	N	<10	N	N	<10	N	1,500	50	N	500
SA055	N	<10	150	<10	200	N	<50	<10	N	N	70	N	N	300	N	500
SA056	N	<10	70	<10	300	N	<50	<10	70	N	20	N	500	200	N	300
SA057	N	15	70	<10	300	N	<50	<10	<20	N	20	N	500	300	N	300
SA058	N	15	50	15	1,500	N	<50	<10	150	N	200	N	10,000	200	N	500
SA059	N	15	150	<10	300	N	<50	<10	70	N	50	N	1,000	300	N	500
SA060	N	<10	20	<10	500	N	N	<10	<20	N	10	N	1,000	150	N	500
SA061	N	<10	30	<10	500	N	N	<10	N	N	10	N	1,000	150	N	500
SA062	N	10	70	20	500	N	N	<10	70	N	10	N	1,500	150	N	500
SA063	N	<10	100	<10	500	N	<50	<10	20	N	30	<20	700	300	N	500
SA064	N	30	100	30	300	N	50	<10	70	N	30	<20	1,000	300	N	500
SA065	N	20	150	70	700	N	<50	<10	7,000	N	50	N	7,000	700	N	700
SA066	N	70	150	50	200	N	N	<10	3,000	N	20	N	500	700	N	200
SA067	N	10	70	20	500	N	<50	500	2,000	N	200	<20	1,000	300	N	500
SA068	N	10	100	<10	500	N	<50	<10	15,000	N	30	<20	200	500	N	500
SA069	N	15	30	<10	500	N	<50	<10	700	N	50	N	700	200	N	500
SA070	N	10	150	70	200	N	<50	500	3,000	N	150	20	1,500	700	N	>500
SA071	N	<10	70	<10	100	N	<50	500	700	N	200	20	<200	300	N	>500
SA072	N	<10	50	10	300	N	N	50	70	N	20	N	700	150	N	500
SA073	N	N	<100	700	1,500	N	<300	50	300	N	200	N	5,000	500	N	1,500
SA074	N	<10	<20	10	300	N	N	20	30	N	10	N	500	150	N	300
SA075	N	10	20	10	300	N	70	20	200	N	15	50	200	300	N	500
SA076	N	10	20	15	200	N	200	50	70	N	100	100	<200	200	<100	>500
SA077	N	<10	<20	<10	300	N	100	50	<20	N	20	N	500	100	<100	>500
SA078	N	<10	20	<10	300	N	N	<10	<20	N	10	N	1,500	100	N	>500
SA079	N	<10	150	700	N	N	<50	200	3,000	N	200	N	<200	700	N	300
SA080	N	<10	<20	10	N	N	<50	150	30	N	70	N	<200	150	N	300
SA081	N	<10	<20	<10	500	N	<50	<10	<20	N	<10	N	200	300	N	500
SA082	N	<10	<20	10	200	N	N	<10	150	N	10	N	<200	200	N	300
SA083	N	<10	20	<10	300	N	N	100	1,500	N	50	N	700	300	N	>500
SA084	N	<10	<20	<10	N	N	<50	20	30	N	10	N	<200	200	N	150
SA085	N	<10	<20	10	N	N	N	100	70	N	70	N	<200	150	N	300
SA086	N	<10	<20	<10	N	N	N	<10	20	N	<10	N	<200	70	N	20
SA087	N	<10	50	<10	N	N	N	200	20	N	150	N	<200	150	N	500
SA088	N	30	100	10	200	N	<50	700	20	N	200	N	<200	300	N	>500
SA089	N	10	100	<10	N	N	<50	300	20	N	150	N	<200	300	N	>500
SA090	N	30	200	50	150	N	<50	50	15,000	N	20	N	<200	1,000	N	200

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-ZN	S-ZR	S-TH
SA046	N	700	--
SA047	N	2,000	--
SA048	N	>2,000	--
SA049	N	1,500	--
SA050	N	>2,000	--
SA051	N	>2,000	--
SA052	N	1,500	--
SA053	N	2,000	--
SA054	N	1,500	--
SA055	N	>2,000	--
SA056	N	>2,000	--
SA057	N	>2,000	--
SA058	N	>2,000	--
SA059	N	>2,000	--
SA060	N	1,000	--
SA061	N	2,000	--
SA062	N	>2,000	--
SA063	N	>2,000	--
SA064	N	>2,000	--
SA065	N	>5,000	--
SA066	1,500	2,000	--
SA067	N	>2,000	--
SA068	N	>2,000	--
SA069	N	>2,000	--
SA070	700	>2,000	--
SA071	N	>2,000	--
SA072	N	>2,000	--
SA073	N	>10,000	--
SA074	N	>2,000	--
SA075	N	>2,000	--
SA076	N	>2,000	--
SA077	N	>2,000	--
SA078	N	2,000	--
SA079	N	>2,000	--
SA080	N	>2,000	--
SA081	N	700	--
SA082	N	1,000	--
SA083	N	>2,000	--
SA084	N	2,000	--
SA085	N	>2,000	--
SA086	N	700	--
SA087	N	>2,000	--
SA088	N	>2,000	--
SA089	N	>2,000	--
SA090	1,500	2,000	--

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI
SA091	50,777	374,715	5.0	.70	1.00	>2.00	300	N	N	N	200	300	15	N
SA092	50,302	374,794	1.5	20.00	15.00	.70	1,500	N	N	N	20	150	N	N
SA093	50,252	374,687	1.5	3.00	20.00	>2.00	700	N	N	N	N	150	N	N
SA095	50,895	375,292	7.0	2.00	7.00	>2.00	150	N	N	N	30	10,000	15	N
SA096	50,929	375,442	2.0	5.00	30.00	1.00	1,000	N	N	N	N	700	N	N
SA097	50,914	375,538	5.0	.70	.50	>2.00	150	N	N	N	70	>10,000	2	N
SA098	50,968	375,564	3.0	7.00	15.00	>2.00	700	N	N	N	20	>10,000	N	N
SA099	50,968	375,578	2.0	7.00	30.00	1.50	700	N	N	N	N	1,500	N	N
SA100	50,903	375,623	5.0	3.00	2.00	>2.00	70	N	N	N	70	2,000	15	N
SA101	50,909	375,791	1.5	20.00	20.00	.30	500	N	N	N	50	2,000	N	N
SA102	50,897	375,851	1.5	>20.00	20.00	.20	500	N	N	N	100	10,000	N	N
SA104	51,062	376,082	.7	>20.00	15.00	.15	500	N	N	N	70	1,000	N	N
SA105	51,160	376,017	1.0	>20.00	15.00	.30	500	N	N	N	50	7,000	N	N
SA106	51,168	376,032	1.5	>20.00	15.00	.30	500	N	N	N	50	3,000	N	N
SA107	51,159	376,042	2.0	>20.00	15.00	.30	700	N	N	N	50	7,000	N	N
SA108	41,185	375,870	2.0	1.50	15.00	>2.00	200	N	N	N	N	>10,000	N	N
SA109	51,187	375,885	2.0	20.00	15.00	.70	1,500	N	N	N	30	>10,000	N	N
SA110	51,214	373,764	3.0	>20.00	15.00	1.00	1,000	N	N	N	70	7,000	N	150
SA111	51,171	373,800	3.0	7.00	15.00	.70	700	N	N	N	N	1,500	N	N
SA112	51,168	373,814	5.0	7.00	15.00	>2.00	300	N	N	N	N	700	N	N
SA113	51,230	373,772	10.0	3.00	7.00	>2.00	300	N	N	N	1,500	700	N	N
SA114	51,120	373,104	7.0	15.00	7.00	1.50	1,000	N	N	N	50	3,000	N	N
SA115	51,130	373,117	1.5	7.00	30.00	>2.00	500	N	N	N	N	1,000	N	N
SA116	51,290	373,220	1.5	7.00	20.00	>2.00	500	N	N	N	50	1,000	N	N
SA117	50,968	373,329	.5	1.50	30.00	1.50	300	N	N	N	20	5,000	N	N
SA118	50,942	373,386	3.0	1.50	15.00	>2.00	150	N	N	N	N	1,500	N	N
SA119	50,890	373,442	3.0	1.50	7.00	>2.00	300	N	N	N	N	300	N	N
SA120	50,793	373,569	2.0	7.00	7.00	>2.00	200	N	N	N	70	500	7	N
SA121	50,934	373,661	3.0	3.00	10.00	>2.00	500	N	N	N	N	300	N	N
SA122	50,859	373,739	3.0	15.00	7.00	>2.00	500	N	N	N	70	200	N	N
SA123	50,878	373,730	2.0	5.00	7.00	>2.00	300	N	N	N	N	100	N	N
SA124	50,996	374,164	3.0	15.00	10.00	>2.00	700	N	N	N	N	150	N	N
SA125	49,870	373,770	2.0	2.00	20.00	>2.00	700	N	N	N	20	150	30	N
SA126	48,286	373,928	2.0	7.00	10.00	1.50	500	N	N	N	30	300	N	N
SA127	48,364	374,120	3.0	7.00	10.00	1.00	500	N	N	N	N	700	N	N
SA129	49,844	373,603	2.0	5.00	20.00	2.00	700	N	N	N	N	150	N	N
SA130	49,880	373,430	1.0	20.00	20.00	.30	700	N	N	N	70	10,000	N	N
SA131	51,529	373,560	3.0	5.00	7.00	>2.00	700	N	N	N	30	500	N	N
SA132	51,261	373,512	3.0	20.00	20.00	.70	700	N	N	N	70	7,000	N	N
SA133	51,262	373,511	5.0	5.00	5.00	5.00	700	N	N	N	N	1,500	N	N
SA134	51,185	373,932	1.5	3.00	10.00	>2.00	300	N	N	N	30	200	N	N
SA135	51,066	373,820	1.5	3.00	10.00	>2.00	300	N	N	N	N	300	2	N
SA136	51,068	373,831	1.5	1.00	7.00	>2.00	300	N	N	N	N	200	N	N
SA137	50,591	373,166	2.0	20.00	20.00	.70	700	N	N	N	50	70	N	N
SA138	50,623	375,582	1.5	.50	2.00	1.50	150	N	N	N	N	>10,000	N	N

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
SA091	N	10	100	10	N	N	<50	700	1,000	N	150	N	<200	300	N	500
SA092	N	10	<20	<10	100	N	N	<10	<20	N	<10	N	<200	200	N	200
SA093	N	10	200	<10	300	N	<50	<10	<20	N	20	N	300	300	N	300
SA095	N	15	70	10	300	10	<50	100	150	N	200	N	200	300	N	>500
SA096	N	<10	<20	<10	700	N	N	100	100	N	30	N	700	100	N	>500
SA097	N	<10	30	15	N	N	<50	200	200	N	100	N	500	300	N	500
SA098	N	10	30	15	200	N	<50	100	50	N	30	N	700	200	N	500
SA099	N	10	20	<10	700	N	N	70	N	N	10	N	500	150	N	>500
SA100	N	<10	150	30	300	N	<50	200	20	N	150	N	N	300	N	>500
SA101	N	<10	<20	<10	N	N	N	<10	N	N	<10	N	700	100	N	150
SA102	N	<10	<20	<10	N	N	N	<10	N	N	<10	N	700	70	N	20
SA104	N	<10	<20	<10	N	N	N	<10	N	N	<10	N	N	20	N	N
SA105	N	<10	<20	<10	N	N	N	<10	100	N	<10	N	500	100	N	20
SA106	N	<10	<20	<10	N	N	N	<10	N	N	<10	N	500	70	N	50
SA107	N	<10	<20	<10	N	N	N	10	N	N	30	N	700	100	N	50
SA108	N	<10	50	<10	700	N	50	100	30	N	30	N	1,000	200	N	500
SA109	N	10	30	15	200	N	N	<10	20	N	<10	N	700	150	N	150
SA110	N	10	30	10	100	N	N	10	20	N	10	N	500	100	300	100
SA111	N	10	20	<10	300	N	N	10	N	N	20	N	500	100	N	500
SA112	N	20	<20	<10	150	N	<50	10	N	N	20	N	N	300	N	500
SA113	N	20	150	15	200	N	70	150	50	N	20	N	7,000	300	N	500
SA114	N	<10	30	30	N	N	N	10	30	N	10	N	500	200	N	100
SA115	N	<10	70	<10	500	N	N	10	N	N	15	N	1,500	150	N	500
SA116	N	<10	150	<10	500	N	N	10	N	N	30	N	700	300	N	500
SA117	N	<10	<20	<10	500	N	N	100	N	N	20	N	1,000	70	N	500
SA118	N	15	20	10	100	N	<50	70	N	N	70	N	N	300	N	300
SA119	N	10	30	10	200	N	N	100	30	N	70	N	N	300	N	500
SA120	N	<10	20	<10	150	N	<50	200	N	N	150	N	N	200	N	>500
SA121	N	20	200	<10	150	N	N	70	50	N	50	N	200	500	N	300
SA122	N	30	300	<10	N	N	N	100	N	N	70	N	300	300	N	200
SA123	N	20	150	<10	70	N	N	20	1,000	N	20	N	N	500	N	150
SA124	N	50	300	<10	70	N	N	100	N	N	150	N	500	200	N	500
SA125	N	300	<20	10	300	N	100	150	70	N	200	50	500	150	<100	>500
SA126	N	10	20	10	150	N	<50	150	N	N	70	N	700	150	N	500
SA127	N	15	<20	15	200	N	N	<10	700	N	50	N	1,000	200	N	300
SA129	N	10	150	10	300	N	N	10	70	N	N	N	700	300	N	>500
SA130	N	N	<20	<10	100	N	N	<10	N	N	N	N	N	50	N	200
SA131	N	10	20	15	300	N	70	500	20	N	150	N	N	200	N	300
SA132	N	10	20	150	200	N	N	70	700	N	20	N	700	300	N	300
SA133	N	N	<100	<50	1,000	N	<200	50	200	N	N	N	<1,000	500	N	700
SA134	N	70	150	<10	700	N	<50	70	50	N	100	N	N	300	N	500
SA135	N	N	300	<10	300	N	<50	150	70	N	100	N	300	500	N	>500
SA136	N	N	200	<10	200	N	<50	150	N	N	150	N	300	500	N	>500
SA137	N	N	<20	<10	N	N	N	N	70	N	N	N	N	70	N	50
SA138	N	N	<20	150	150	N	N	100	300	N	20	N	10,000	150	N	150

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-ZN	S-ZR	S-TH
SA091	N	>2,000	--
SA092	N	1,500	--
SA093	N	2,000	--
SA095	N	>2,000	--
SA096	N	>2,000	--
SA097	N	>2,000	--
SA098	N	>2,000	--
SA099	N	>2,000	--
SA100	N	>2,000	--
SA101	N	1,000	--
SA102	N	300	--
SA104	N	700	--
SA105	N	300	--
SA106	N	300	--
SA107	N	500	--
SA108	N	>2,000	--
SA109	N	1,500	--
SA110	N	>2,000	--
SA111	N	>2,000	--
SA112	N	>2,000	--
SA113	N	>2,000	--
SA114	N	>2,000	--
SA115	N	>2,000	--
SA116	N	>2,000	--
SA117	N	>2,000	--
SA118	N	>2,000	--
SA119	N	>2,000	--
SA120	N	>2,000	--
SA121	N	>2,000	--
SA122	N	>2,000	--
SA123	N	>2,000	--
SA124	N	>2,000	--
SA125	N	>2,000	--
SA126	N	>2,000	--
SA127	N	1,500	--
SA129	N	>2,000	--
SA130	N	2,000	--
SA131	N	>2,000	--
SA132	N	>2,000	--
SA133	N	>10,000	--
SA134	N	>2,000	--
SA135	N	>2,000	--
SA136	N	>2,000	--
SA137	N	700	--
SA138	N	>2,000	--

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI
SA139	50,805	375,266	3.0	2.00	10.00	>2.00	500	N	N	N	50	3,000	N	N
SA140	50,834	375,173	3.0	1.00	1.00	>2.00	300	N	N	N	100	3,000	30	N
SA141	50,890	375,146	1.5	.70	1.50	>2.00	100	N	N	N	20	1,500	20	N
SA143	50,910	375,165	3.0	1.50	2.00	>2.00	200	N	N	N	100	>10,000	N	N
SA144	50,879	375,025	1.5	15.00	10.00	3.00	500	N	N	N	30	2,000	N	N
SA145	50,914	374,955	3.0	15.00	15.00	1.50	700	N	N	N	30	1,500	N	N
SA146	50,949	374,870	3.0	15.00	15.00	2.00	700	N	N	N	30	2,000	N	N
SA147	50,998	374,778	2.0	20.00	15.00	1.00	700	N	N	N	50	700	N	N
SA148	51,063	374,740	1.5	.50	15.00	>2.00	200	N	N	N	30	300	10	150
SA149	51,089	374,724	2.0	15.00	15.00	>2.00	300	N	N	N	20	1,500	N	N
SA150	51,114	374,668	2.0	15.00	15.00	1.50	500	N	N	N	N	200	N	N
SA151	51,146	374,569	1.5	.50	7.00	>2.00	200	N	N	N	30	150	15	150
SA152	51,152	374,461	3.0	3.00	7.00	>2.00	200	N	N	N	N	2,000	N	N
SA153	51,209	374,402	.7	.30	.20	>2.00	70	N	N	N	20	300	2	N
SA154	51,206	374,381	.7	1.50	15.00	>2.00	200	N	N	N	N	700	N	N
SA155	51,261	374,339	2.0	1.00	15.00	>2.00	300	N	N	N	20	200	2	300
SA156	51,270	374,214	3.0	3.00	3.00	>2.00	300	N	N	N	70	700	2	N
SA157	51,419	374,147	3.0	2.00	10.00	>2.00	300	N	N	N	70	3,000	10	200
SA158	50,368	373,321	1.5	5.00	15.00	2.00	700	N	N	N	N	200	N	N
SA159	50,259	373,492	1.5	7.00	15.00	1.50	500	N	N	N	30	150	N	N
SA160	50,383	373,762	1.0	15.00	15.00	>2.00	700	N	N	N	50	100	N	N
SA161	50,508	373,692	1.5	15.00	10.00	>2.00	700	N	N	N	50	100	N	N
SA162	50,500	373,686	2.0	10.00	10.00	1.00	700	N	N	N	70	300	N	N
SA164	50,097	373,951	3.0	7.00	15.00	2.00	1,000	N	N	N	N	150	N	N
SA166	50,193	374,196	3.0	7.00	20.00	>2.00	700	N	N	N	N	150	N	N
SA167	50,171	374,189	1.5	2.00	10.00	.30	700	N	N	N	20	300	N	N
SA168	50,186	374,266	.7	1.50	20.00	.70	500	N	N	N	N	700	N	N
SA169	50,410	374,431	1.5	10.00	10.00	>2.00	300	N	N	N	20	100	N	N
SA170	50,571	374,227	3.0	20.00	15.00	1.00	500	N	N	N	70	200	N	N
SA171	50,580	374,243	1.5	20.00	15.00	1.50	300	N	N	N	50	150	N	N
SA172	50,442	374,178	2.0	20.00	15.00	.70	300	N	N	N	50	70	N	N
SA173	50,064	374,570	.5	1.00	30.00	1.50	300	N	N	N	N	70	N	N
SA174	50,158	374,496	1.0	3.00	30.00	.70	300	N	N	N	N	150	N	N
SA175	50,286	373,946	2.0	15.00	15.00	>2.00	300	N	N	N	50	100	N	N
SA176	48,725	373,704	1.5	3.00	30.00	>2.00	300	N	N	N	20	150	N	N
SA177	48,678	373,716	3.0	10.00	20.00	>2.00	500	N	N	N	N	150	N	N
SA178	48,559	373,692	.5	1.50	50.00	.50	500	N	N	N	N	70	N	N
SA179	48,476	373,693	1.0	1.50	30.00	.70	300	N	N	N	N	150	N	N
SA180	48,405	373,737	2.0	5.00	30.00	1.50	500	N	N	N	N	150	N	N
SA181	50,301	373,988	5.0	2.00	7.00	>2.00	200	N	N	N	20	500	10	N
SA182	50,319	373,961	3.0	20.00	15.00	2.00	300	N	N	N	30	150	N	N
SA183	50,532	373,296	1.5	15.00	30.00	1.00	300	N	N	N	20	100	N	N
SA184	50,748	373,392	1.0	15.00	30.00	2.00	300	N	N	N	20	50	N	N
SA185	50,421	373,233	2.0	7.00	15.00	1.00	300	N	N	N	20	150	N	N
SA186	51,731	373,190	.5	.50	5.00	>2.00	300	N	N	N	30	500	70	150

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
SA139	N	10	100	<10	300	N	<50	300	100	N	100	N	500	300	N	300
SA140	N	N	100	<10	150	N	N	500	100	N	150	N	N	300	N	>500
SA141	N	N	100	<10	200	N	N	500	N	N	200	N	N	300	N	>500
SA143	N	N	<20	<10	100	N	50	150	300	N	70	N	5,000	200	N	500
SA144	N	N	20	<10	100	N	N	100	70	N	20	N	200	200	N	300
SA145	N	10	<20	150	200	N	N	100	150	N	100	N	700	200	N	300
SA146	N	30	<20	150	200	N	50	20	50	N	50	N	500	100	N	200
SA147	N	15	70	<10	100	N	N	20	<20	N	30	N	N	100	N	150
SA148	N	<10	<20	<10	1,500	N	70	100	70	N	70	30	500	70	N	>500
SA149	N	10	<20	<10	N	N	N	<10	N	N	20	N	N	300	N	150
SA150	N	10	20	<10	300	N	N	20	150	N	30	N	700	150	N	300
SA151	N	<10	20	<10	300	N	100	20	70	N	100	70	N	200	N	>500
SA152	N	20	200	1,500	70	N	N	20	70	N	50	N	500	500	N	300
SA153	N	<10	<20	10	N	N	100	100	20	N	70	<20	N	150	N	300
SA154	N	<10	150	<10	150	N	N	70	70	N	50	N	200	300	N	500
SA155	N	20	20	10	200	N	<50	100	150	N	70	<20	N	200	N	>500
SA156	N	10	70	<10	200	N	50	20	300	N	20	N	500	200	N	300
SA157	N	20	70	20	300	N	<50	100	300	N	100	N	500	300	N	>500
SA158	N	10	70	15	300	N	N	<10	N	N	20	N	700	150	N	500
SA159	N	<10	20	<10	200	N	N	<10	N	N	20	N	300	150	N	300
SA160	N	<10	20	15	100	N	N	100	30	N	70	N	N	300	N	500
SA161	N	<10	50	10	300	N	<50	70	N	N	50	N	700	150	N	300
SA162	N	10	30	30	N	N	N	<10	N	N	20	70	N	200	N	70
SA164	N	30	150	700	200	N	N	<10	200	N	30	N	700	300	N	300
SA166	N	20	150	<10	200	N	N	<10	N	N	50	N	700	300	N	500
SA167	N	<10	<20	<10	N	N	N	<10	N	N	N	N	1,000	30	N	100
SA168	N	<10	<20	<10	700	N	N	<10	N	N	20	N	700	70	N	>500
SA169	N	<10	20	700	300	N	<50	70	30	N	70	N	N	300	N	>500
SA170	N	N	<20	<10	N	N	N	20	N	N	20	N	N	100	N	150
SA171	N	N	<20	<10	N	N	N	50	70	N	50	N	N	100	N	150
SA172	N	N	<20	15	N	N	N	30	150	N	30	N	N	150	N	150
SA173	N	N	<20	<10	500	N	N	<10	N	N	N	N	1,000	70	N	>500
SA174	N	N	20	<10	500	N	N	<10	20	N	20	N	1,500	100	N	>500
SA175	N	N	70	100	200	N	<50	100	1,500	N	50	N	200	500	N	500
SA176	N	10	70	10	500	N	N	<10	200	N	10	N	700	200	N	500
SA177	N	20	70	10	300	N	N	<10	700	N	20	N	700	200	N	300
SA178	N	N	<20	<10	500	N	N	<10	20	N	N	N	1,000	50	N	>500
SA179	N	N	<20	<10	500	N	N	<10	N	N	N	N	700	70	N	>500
SA180	N	10	50	10	500	N	N	<10	150	N	10	N	1,000	150	N	>500
SA181	N	20	200	300	300	N	<50	200	15,000	N	100	<20	N	700	N	>500
SA182	N	15	70	300	N	N	<50	<10	3,000	N	N	N	N	700	N	150
SA183	N	10	30	10	300	N	N	100	700	N	50	N	500	200	N	500
SA184	N	10	50	<10	500	N	N	70	30	N	30	30	500	150	N	>500
SA185	N	10	<20	70	150	N	N	10	700	N	10	N	700	200	N	150
SA186	N	N	<20	<10	300	N	N	500	100	N	>200	N	N	100	N	>500

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-ZN	S-ZR	S-TH
SA139	N	>2,000	--
SA140	N	>2,000	--
SA141	N	>2,000	--
SA143	N	>2,000	--
SA144	N	>2,000	--
SA145	N	>2,000	--
SA146	500	>2,000	--
SA147	N	>2,000	--
SA148	N	>2,000	--
SA149	N	1,500	--
SA150	N	>2,000	--
SA151	N	>2,000	--
SA152	N	>2,000	--
SA153	N	>2,000	--
SA154	N	>2,000	--
SA155	N	>2,000	--
SA156	N	>2,000	--
SA157	N	>2,000	--
SA158	N	1,500	--
SA159	N	2,000	--
SA160	N	>2,000	--
SA161	N	>2,000	--
SA162	N	2,000	--
SA164	N	2,000	--
SA166	N	>2,000	--
SA167	N	500	--
SA168	N	>2,000	--
SA169	N	>2,000	--
SA170	N	>2,000	--
SA171	N	>2,000	--
SA172	N	>2,000	--
SA173	N	700	--
SA174	N	2,000	--
SA175	1,500	>2,000	--
SA176	N	2,000	--
SA177	N	2,000	--
SA178	N	2,000	--
SA179	N	700	--
SA180	N	1,500	--
SA181	2,000	>2,000	--
SA182	1,000	2,000	--
SA183	N	>2,000	--
SA184	N	>2,000	--
SA185	N	>2,000	--
SA186	N	>2,000	--

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	X-COORD.	Y-COORD.	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA	S-BE	S-BI
SA187	51,737	373,326	.7	1.00	7.00	>2.00	300	N	N	N	20	500	15	200
SA188	51,742	373,502	.7	.70	15.00	>2.00	300	N	N	N	20	150	5	N
SA189	51,889	373,716	1.5	1.50	7.00	>2.00	500	N	N	N	20	300	2	N
SA190	51,611	373,733	2.0	3.00	30.00	>2.00	500	N	N	N	20	150	N	50
SA191	51,646	373,791	3.0	5.00	10.00	>2.00	700	N	N	N	20	1,500	N	100
SA192	51,521	373,888	.5	.70	30.00	>2.00	300	N	N	N	20	1,000	N	N
SA193	51,462	374,071	2.0	2.00	15.00	>2.00	300	N	N	N	20	5,000	5	70
SA194	51,523	374,113	.7	1.50	20.00	>2.00	300	N	N	N	20	1,500	5	70
SA195	49,829	373,983	1.5	3.00	30.00	>2.00	500	N	N	N	<20	200	N	N
SA196	49,648	374,319	1.0	1.00	30.00	1.50	500	N	N	N	N	70	N	N
SA197	49,676	374,584	.5	1.00	30.00	.70	500	N	N	N	N	70	N	N
SA198	49,898	374,446	.5	1.00	30.00	1.50	500	N	N	N	N	70	N	N
SA199	50,606	375,137	3.0	.20	.70	2.00	100	N	N	N	N	700	N	N
SA206	50,921	373,981	1.5	2.00	7.00	>2.00	300	N	N	N	N	150	N	N
SA209	50,648	373,940	1.5	7.00	7.00	>2.00	300	N	N	N	N	100	N	N
SA210	50,631	373,945	1.0	2.00	7.00	>2.00	300	N	N	N	<20	>10,000	N	N
SA211	50,636	373,937	1.5	2.00	.15	>2.00	150	N	N	N	<20	>10,000	N	N
SA212	50,759	373,844	1.0	1.50	7.00	>2.00	200	N	N	N	20	1,500	N	N
SA300	49,061	373,884	1.5	15.00	15.00	2.00	700	N	N	N	20	1,500	N	N
SA301	49,006	374,686	2.0	15.00	20.00	2.00	700	N	N	N	<20	300	N	N
SA302	49,149	374,625	1.5	3.00	20.00	1.50	700	N	N	N	N	3,000	N	N
SA303	49,425	374,544	5.0	20.00	15.00	1.50	700	N	N	N	20	1,000	N	N
SA304	49,370	374,231	2.0	7.00	20.00	2.00	500	N	N	N	<20	300	N	N
SA305	48,680	373,585	.7	3.00	50.00	.70	500	N	N	N	N	150	N	N
SA306	48,444	374,174	.7	2.00	30.00	1.50	500	N	N	N	N	100	N	<20
SA307	48,420	374,188	2.0	7.00	20.00	2.00	500	N	N	N	N	2,000	N	<20
SA308	48,434	374,249	5.0	20.00	20.00	2.00	1,000	N	N	N	20	1,000	N	N
SA309	49,770	375,057	3.0	3.00	7.00	7.00	500	N	N	N	70	7,000	N	N
SA310	48,582	374,465	1.5	3.00	30.00	1.50	700	N	N	N	N	500	N	200
SA311	48,417	374,362	3.0	7.00	30.00	1.50	700	N	N	N	N	200	N	30
SA312	50,519	374,726	1.0	.50	7.00	3.00	200	N	N	N	N	700	N	N
SA313	50,714	374,478	5.0	15.00	10.00	>2.00	700	N	N	N	30	700	N	N
SA314	51,150	375,428	3.0	1.50	7.00	>2.00	200	N	N	N	70	10,000	15	N
SA315	50,875	375,379	.7	1.50	20.00	1.50	300	N	N	N	30	>10,000	<2	<20
SA316	50,891	375,374	1.5	20.00	15.00	1.00	700	N	N	N	70	1,500	N	N

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
SA187	N	N	70	<10	300	N	<50	200	70	N	>200	50	200	200	N	>500
SA188	N	N	70	<10	700	N	<50	500	50	N	>200	N	200	200	N	>500
SA189	N	N	<20	<10	500	N	<50	500	70	N	200	50	N	150	N	>500
SA190	N	20	70	<10	700	N	N	100	150	N	50	N	200	200	N	>500
SA191	N	20	30	20	700	N	50	150	150	N	100	50	N	200	3,000	>500
SA192	N	N	<20	20	500	N	<50	100	3,000	N	30	N	500	300	N	>500
SA193	N	15	20	15	700	N	50	10	100	N	50	N	700	150	N	>500
SA194	N	N	70	<10	700	N	N	10	50	N	100	N	700	300	N	>500
SA195	N	10	50	70	500	N	N	10	100	N	10	N	1,000	200	N	>500
SA196	N	N	20	30	500	N	N	15	300	N	10	N	1,000	200	N	>500
SA197	N	N	<20	10	700	N	N	15	300	N	10	N	1,500	100	N	>500
SA198	N	N	<20	20	700	N	N	10	70	N	10	N	1,500	100	N	>500
SA199	N	N	<100	<50	N	N	N	<50	N	N	N	N	<1,000	70	N	500
SA206	N	15	700	<10	100	N	N	10	N	N	50	N	<200	700	N	150
SA209	N	10	300	<10	N	N	N	10	N	N	50	N	200	500	N	150
SA210	N	N	150	<10	200	N	N	10	N	N	50	N	1,500	200	N	500
SA211	N	N	20	<10	N	N	N	10	20	N	100	N	700	300	N	100
SA212	N	10	300	<10	N	N	N	20	N	N	50	N	<200	500	N	500
SA300	N	N	70	70	300	N	N	10	300	N	10	30	500	200	N	500
SA301	N	50	700	10	300	N	N	20	70	N	50	N	700	300	N	500
SA302	N	10	150	<10	300	N	N	10	N	N	50	N	700	200	N	500
SA303	N	20	300	<10	70	N	N	10	150	N	50	300	<200	300	N	300
SA304	N	10	150	<10	300	N	N	10	50	N	20	N	500	300	N	>500
SA305	N	N	<20	<10	500	N	N	<10	N	N	N	N	1,500	30	N	>500
SA306	N	N	<20	<10	500	N	N	<10	N	N	50	N	700	50	N	>500
SA307	N	15	150	30	200	N	N	10	100	N	10	N	700	300	N	300
SA308	N	50	300	10	200	N	N	20	700	N	70	N	700	300	N	300
SA309	N	N	70	<50	N	N	<200	30	2,000	N	N	N	<1,000	200	N	300
SA310	N	N	<20	<10	300	N	N	20	150	N	10	N	700	150	N	300
SA311	N	20	<20	20	500	N	N	10	500	N	20	N	1,000	200	N	500
SA312	N	N	N	<100	N	N	N	<100	N	N	N	N	<2,000	N	N	200
SA313	N	20	200	15	100	N	<50	30	N	N	70	N	<200	300	N	300
SA314	N	N	20	30	500	N	<50	70	50	N	50	N	500	200	N	>500
SA315	N	N	<20	10	700	N	N	<10	300	N	10	N	2,000	150	N	>500
SA316	N	N	<20	<10	100	N	<50	<10	N	N	N	N	500	150	N	150

Spectrographic Analysis of Heavy Mineral Concentrates--continued

Sample	S-ZN	S-ZR	S-TH
SA187	N	>2,000	--
SA188	N	>2,000	--
SA189	N	>2,000	--
SA190	N	>2,000	--
SA191	N	>2,000	--
SA192	N	>2,000	--
SA193	N	>2,000	--
SA194	N	>2,000	--
SA195	N	>2,000	--
SA196	N	>2,000	--
SA197	N	>2,000	--
SA198	N	>2,000	--
SA199	N	>10,000	--
SA206	N	>2,000	--
SA209	N	>2,000	--
SA210	N	>2,000	--
SA211	N	>2,000	--
SA212	N	>2,000	--
SA300	N	>2,000	--
SA301	N	>2,000	--
SA302	N	>2,000	--
SA303	N	>2,000	--
SA304	N	>2,000	--
SA305	N	1,500	--
SA306	N	>2,000	--
SA307	N	>2,000	--
SA308	N	2,000	--
SA309	N	5,000	--
SA310	N	>2,000	--
SA311	N	>2,000	--
SA312	N	20,000	--
SA313	N	>2,000	--
SA314	N	>2,000	--
SA315	N	>2,000	--
SA316	N	>2,000	--