UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOCHEMICAL DATA FOR SAMPLES OF ROCK, STREAM SEDIMENT, AND NONMAGNETIC HEAVY-MINERAL CONCENTRATE FROM THE TUNNEL RIDGE WILDERNESS STUDY AREA, KLAMATH MOUNTAINS, CALIFORNIA

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Open-File Report 84-887

1984

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Bureau of Land Management Wilderness Study Area

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and U.S. Bureau of Mines to conduct mineral surveys on certain areas 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 summarizes the results of a mineral survey of the Tunnel Ridge Wilderness Study Area (CA-030-402), Trinity County, California.

SUMMARY

A reconnaissance geochemical survey of the Tunnel Ridge Wilderness Study Area, Trinity County, California was conducted by the U. S. Geological Survey in 1983 and was based on results of 31-element emission spectrographic analyses of 31 rock samples, 27 stream-sediment samples, and 27 nonmagnetic heavy-mineral concentrate samples. These analyses have identified slightly anomalous concentrations of copper in Gwin Gulch, silver in Pennsylvania Gulch, and silver, copper, and nonmagnetic iron in Clear Gulch. Stronger anomalous concentrations of lead, silver, and nonmagnetic iron were identified in two adjacent drainage basins on the southwest side of Little Bally. Despite the geologic setting and local history of lode and placer gold mining in the region, gold was not detected in any of the rock or stream-sediment samples that were collected for this study.

INTRODUCTION

A reconnaissance geochemical survey of the Tunnel Ridge Wilderness Study Area in northwestern California was conducted in order to provide information on the mineral resource potential of the area. This report contains analytical data and statistical summaries derived from geochemical analyses of 85 samples collected in 1983 by the U.S. Geological Survey. The geology, geochemical interpretation, and mineral resource potential of the wilderness study area are treated elsewhere (Diggles and Kennedy, 1985; Kennedy and others, 1985).

Tunnel Ridge Wilderness Study Area is located in the southern part of the Klamath Mountains, Trinity County, California (fig. 1). The area encompasses 4,623 acres of Bureau of Land Management administered public land about 35 mi west-northwest of Redding and about 5 mi northwest of Weaverville, the nearest town. The wilderness study area is bordered on the northwest, north, and east by Trinity National Forest and the Weaver Bally Roadless Area, and on the south by Clear Gulch. The west side of the area approximately follows the southerly trend of Canyon Creek. Tunnel Ridge, a southerly trending spur of Weaver Bally (mountain), dominates the southern half of the area. The northern half is cut by deep canyons that traverse the area from east to west. The terrain is mountainous with moderate to steep slopes; elevations range from about 1,600 ft in Clear Gulch, to about 5,900 ft on the flank of Weaver Bally. Access to the study area is provided by several light duty dirt and gravel roads that join the paved Canyon Creek road from Junction City. Most of the study area is accessible only by foot.

The geochemical evaluation of the wilderness study area is based on geochemical analyses of 31 rock samples (table 7), 27 stream-sediment samples (table 8), and 27 nonmagnetic heavy-mineral concentrate samples (table 9).

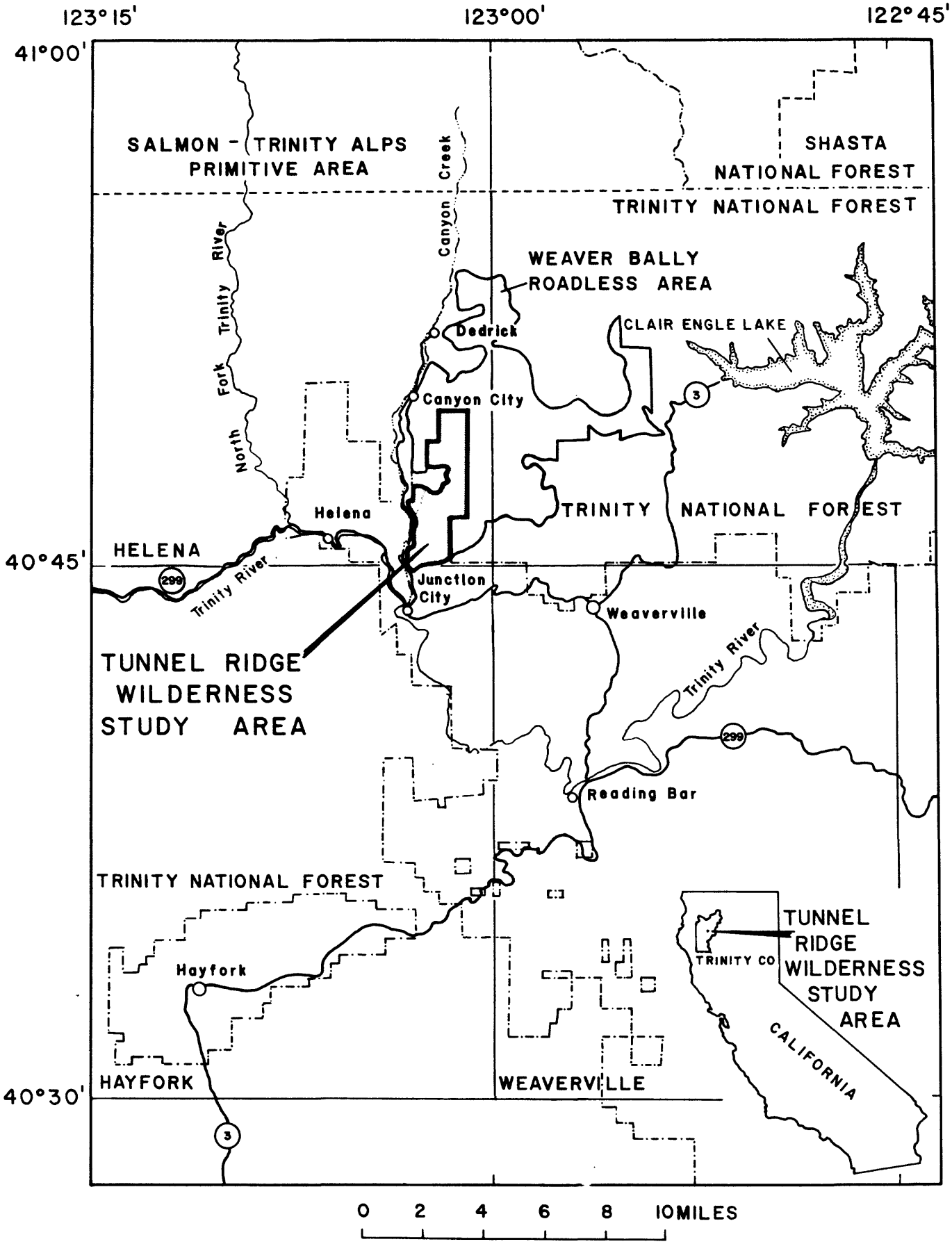


Figure 1.--Index map showing location of Tunnel Ridge Wilderness Study Area, Trinity County, California

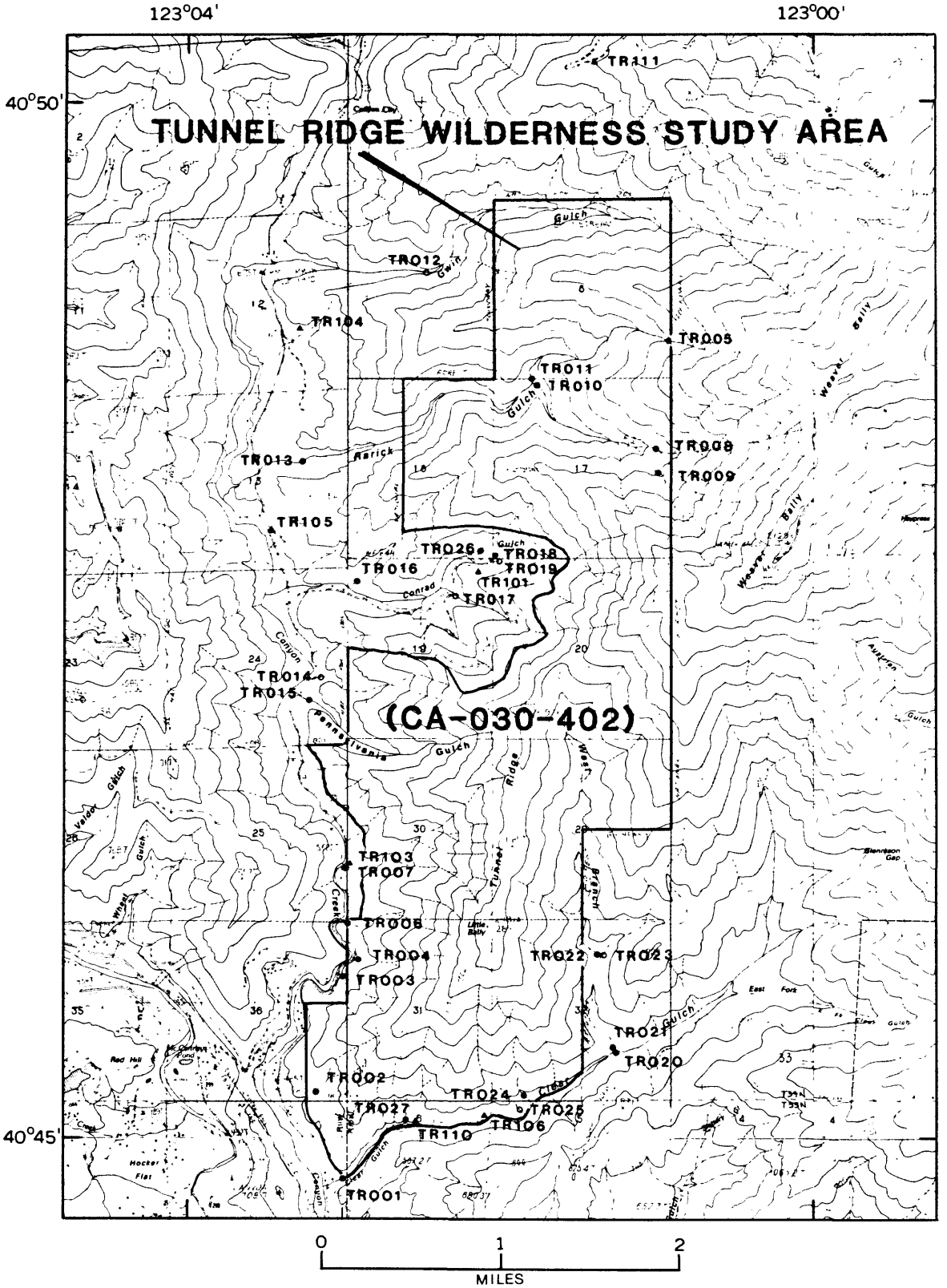


Figure 2.--Map showing locations of sampling sites in the Tunnel Ridge Wilderness Study Area (▲, rock; o, stream sediment and panned concentrate; ●, rock, stream sediment, and panned concentrate)

The locations of the 33 sampling sites are shown on figure 2; geographic coordinates for each of these are given in tables 7 through 9. Statistical summaries for all detected elements are given in tables 4 through 6, and frequency tables and histograms for all rock, stream-sediment, and heavy-mineral concentrate samples are given in tables 10 through 12.

GEOLOGIC SETTING

Tunnel Ridge Wilderness Study Area is located in the southeast corner of the Helena 15′ quadrangle, the geology of which has been mapped by Cox (1956, 1967). Preliminary geologic maps of the adjacent Weaverville and Hayfork 15′ quadrangles also have been published (Irwin, 1963, 1974). The geology of the Weaver Bally Roadless Area, which borders the study area on the north and east, is discussed by Blake (1985).

The wilderness study area is situated in the central metamorphic belt of the Klamath Mountains geologic province (Irwin, 1960; 1972, fig. 1). The central metamorphic belt is one of several arcuate (convex westward) lithic belts that are thought to represent eastward-dipping thrust slices of oceanic crust and island arcs that were accreted to the continental margin during the Mesozoic (Irwin, 1972, 1981).

The central metamorphic belt extends for about 100 mi in a north-south direction, and ranges in width from less than a mile in the north to about 12 mi in the south. The belt underthrusts the eastern Klamath belt to the east, and in turn is underthrust by the western Paleozoic and Triassic belt (North Fork terrane) on the west. Most of the granitic plutons that intrude the central metamorphic belt are along its eastern margin. The belt consists of two penecontemporaneous formations, the Salmon Hornblende Schist and the Abrams Mica Schist. Structurally the Salmon lies below the Abrams, and is a 0.5- to 1-mi-thick mafic metavolcanic unit that underwent amphibolite-facies metamorphism during Devonian time. The Tunnel Ridge area is underlain only by the Salmon Schist. Andesitic and dacitic dikes intrude the granitic and metamorphic rocks throughout the region. Dikes are often associated with gold-bearing quartz veins within the Salmon schist (Cox, 1967; Hotz and others, 1972; Irwin, 1977; Huber and others, 1983).

The Salmon Hornblende Schist is composed primarily of hornblende, oligoclase or albite, and clinozoisite (Cox, 1956, 1967). The texture varies from schistose in the south to migmatitic in the north. Potassium-argon determination of hornblende has established the age of metamorphism as Devonian (Irwin, 1981). Dike rocks of andesitic to dacitic composition crop out at several locations within the study area. Potassic alteration, silicification, and propylitization of the dikes has taken place and is greatest within the migmatite (Gaps, 1983).

SAMPLE COLLECTION AND PREPARATION

Sampling stations were located at bedrock outcrops and first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on 1:24,000-scale U.S. Geological Survey topographic maps. At each sampling site, a rock sample, a stream-sediment sample, and a bulk stream-sediment sample to be used for panning were sought. When water was available, the bulk sample was pan-concentrated at the sampling site. At some sites only one or two of the three sample types were collected, depending upon their availability. A total of 31 rock samples, 27 stream-sediment samples, and 27 nonmagnetic heavy-mineral-concentrate samples were analyzed. The analytical

data for these samples are listed in tables 7 through 9. The approximate sampling density was 1 sample per 0.24 sq mi for rocks, and 1 sample per 0.27 sq mi for sediments.

Sample numbers

Sampling sites were assigned a station location number composed of a two-letter prefix denoting the name of the study area, followed by a three digit number. Sample types are designated by a suffix following the sample number; RK for rock samples, SS for stream-sediment samples, and KN for heavy-mineral concentrate samples. Rocks that were not collected at stream sites have numbers in the series 001-099; samples collected in stream drainages have numbers in the series 100-199. The station location map (fig. 2) shows the stations and station-numbers of all sampling sites in the study area.

Rock samples

At most stations, representative rock samples were collected within 50 ft of the sediment sampling site. A small number of samples were collected from outcrops that were conspicuously iron stained. Conspicuously weathered material was avoided. Samples were crushed, split, and ground to minus-300 mesh in a pulverizer with ceramic plates; a split of this material was saved for analysis.

Stream-sediment samples

Most samples were collected at first- and second-order streams. Samples of organic-free sediment were collected whenever possible. The samples are composites of material collected at several places in the stream channel. Coarse sediment was avoided. Areas with only fine-grained sediment often have natural concentrations of low-density quartzo-feldspathic minerals and would not be representative of all possible rock types located upstream. Fine-grained heavy minerals tend to occur with coarser grained quartzo-feldspathic minerals and rock fragments because of their similar behavior during deposition. Thus, poorly sorted coarse sand- to silt-size material was most desirable. All material was passed through an 8-mesh stainless steel screen on site to remove pebbles before further processing. Wet samples were air dried, then sieved through a 60-mesh stainless-steel screen in an aluminum frame. The minus-60-mesh fraction was pulverized to minus-300 mesh in a pulverizer with ceramic plates and a split of this material was saved for analysis.

Nonmagnetic heavy-mineral concentrate samples

The bulk material for the heavy-mineral concentrate samples was collected as described for stream-sediment samples. Each bulk sample was passed through an 8-mesh stainless-steel screen to remove coarse material. The remaining sediment was wet panned to remove organic and clay-size material and to concentrate the heavy minerals. The remaining sample was air dried, sieved to minus-18-mesh, and separated into light and heavy fractions by floatation in bromoform (sp. gr. 2.86). The denser fraction was saved and the less dense material discarded. Highly magnetic minerals, primarily magnetite and ilmenite, were removed with a hand magnet and the remaining fraction separated into magnetic and nonmagnetic portions with a Frantz Isodynamic Separator set

at 0.6 amperes and 15 degree forward and 15 degree side angles. The resulting nonmagnetic sample was split into two fractions; one fraction was ground in an agate mortar for analysis and the other fraction was saved for future mineralogical studies.

ANALYTICAL GEOCHEMICAL PROCEDURES

Emission spectrography

Laboratory preparation and analysis was performed by the Branch of Exploration Geochemistry of the U.S. Geological Survey. All samples were analyzed for 31 elements (Ca, Fe, Mg, Ti, Mn, Ag, As, Au, B, Ba, Be, Bi, Cd, Co, Cr, Cu, La, Mn, Mo, Nb, Ni, Pb, Sb, Sn, Sr, Th, V, W, Y, Zn, and Zr) using a six-step semiquantitative emission spectrographic method similar to that described by Myers and others (1961) and Grimes and Marranzino (1968). Spectrographic analysis of heavy-mineral concentrates differs from that used for rocks and bulk stream sediments in order to limit interference caused by high concentrations of iron, calcium, titanium, manganese, and zirconium. One half of each sample was replaced with a mixture of graphite and silica. The spectral lines are recorded on film and compared against known standards; values were doubled to produce the results in table 9. Values that did not fall into one of the standard six-step reporting intervals were reported as the next higher value. This procedure raises the upper and the lower limits of detection; detection limits for each sample type are given in table 1.

The spectrographic analytical values (tables 7 through 9) are reported as the approximate geometric midpoints of concentration ranges with six intervals in each order of magnitude. The reporting values and widths between range boundaries are evenly spaced on a logarithmic-normal scale, which is consistent with the expected distribution of most elements in geologic materials (Rose and others, 1979). Analyses are reported at one of the six-step values listed in table 2, or appropriate integral powers of ten of these values.

In general, precision of the spectrographic method is plus or minus one reporting value of the value determined approximately 83 percent of the time, and plus or minus two reporting values of the value determined 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. A standard reference sample was analyzed to monitor the quality of analyses of each batch of field samples. These values are omitted from tables 7 through 9. Because the analysis of heavy-mineral concentrates by emission spectrography involves half of the amount of sample normally used in this type of analysis, and because of rounding errors on some values, the precision of these determinations is probably less than those of the other two sample types, particularly for values near the limits of detection (Diggles and others, 1980).

Atomic absorption analysis

In addition to the standard 31-element spectrographic analysis done for all samples, all nonmagnetic heavy-mineral separates were analyzed for mercury by a modified atomic absorption method (McNerney and others, 1972; Vaughn and McCarthy, 1964). In this process, mercury is vaporized by heating, passed

through the lamp beam on the atomic-absorption instrument, and measured. This analytical method produces quantitative rather than semiquantitative results.

The precision of a determination varies with the concentration of the element analyzed. Precision for these analytical methods is commonly reported as percent relative standard deviation (%RSD), and is based on replicate analyses of samples selected to provide information at different concentration levels. The precision for each method tends to be lowest for those samples with elemental concentrations at or near the lower limit of determination. For mercury, the reported range of percent relative standard deviation as determined by replicate analyses of a limited sample set is 8.2 - 30.4 %RSD (D. L. Fey, written commun.).

The analytical data for the atomic absorption analyses are presented in tables 7 through 9. In tables 10 through 12, however, these analyses are presented in terms of six-step intervals (see table 2) and thus allow statistical treatment consistent with that for the semiquantitative analyses.

ANALYTICAL RESULTS

The analytical results for iron, magnesium, calcium, and titanium are reported in percent; analytical values for all other elements are given in parts per million (ppm). The analytical results were entered into the U.S. Geological Survey Rock Analysis Storage System (RASS). A standard binary STATPAC (Statistical Package) file was generated from the RASS file using RASS program RETRIEVAL (b860). The format of a STATPAC data set is a two-dimensional data matrix with a data set identifier, row and column identifiers, row indices and a location for each row. Each row contains all analyses for a single sample; each column contains analyses of all samples for an element with a separate column for each analytical method used for an element. The data-set format has provisions for analytical-value qualification codes. The codes used are listed in table 3. A comprehensive description of the RASS-STATPAC system is given by VanTrump and Miesch (1976).

Tables 7 through 9 are listings of the analytical data for the samples of rock, minus-60-mesh stream sediment, and nonmagnetic heavy-mineral concentrate, respectively. In each of the tables, the first column contains the sample numbers; these are identical to those shown in figure 2. In table 7 (rock analyses), column 2 contains rock descriptions consisting of a rock-name code and a modifier code. In all three tables, the sample identification information is followed by four columns containing geographic location data. The four columns contain north latitudes and west longitudes in degrees, minutes and seconds followed by the Universal Transverse Mercator (UTM) coordinates for easting and northing. Columns for elements are headed with the element symbol, reporting units, and type of analysis. Percent is denoted by "pct", parts per million by "ppm", emission spectrographic analysis by "s" and atomic absorption analysis by "aa". Because of the formatting used in the computer program that produced tables 7 through 9, some of the elements listed in these tables (Ca, Fe, Mg, Ti, Ag, and Be) carry one or more nonsignificant zeros to the right of the significant digits. The analyst did not determine these elements to the accuracy suggested by the extra zeros. Tables 7 through 9 were produced by formatting the data in the STATPAC file with the program PUBLST, written by J. B. Fyfe (written commun., 1980).

Several of the elements have lower limits of analytical detection (using the semiquantitative emission spectrographic method) that are usually above the normal concentrations for these elements in natural materials. We did not find any rock samples that contained silver, arsenic, gold, bismuth, cadmium,

molybdenum, niobium, tin, thorium, tungsten, or zinc in concentrations as great as their lower limits of determination. In addition, rock samples were not analyzed for mercury. These twelve elements are deleted from tables 4 and 10. Stream-sediment samples analyzed by emission spectrography did not contain arsenic, gold, beryllium, bismuth, cadmium, lanthanum, molybdenum, niobium, tin, thorium, tungsten, or zinc in concentrations as great as their lower limits of detection. Stream-sediment samples were not analyzed for mercury. These 13 elements are deleted from tables 5 and 11. None of the nonmagnetic heavy-mineral concentrates contained arsenic, gold, barium, beryllium, cadmium, lanthanum, molybdenum, niobium, tin, thorium, tungsten, or zinc in concentrations as high as their lower limits of determination. These 12 elements are deleted from tables 6 and 12.

STATISTICAL SUMMARIES

Tables 4 through 6 give summary statistics based on data provided by computer programs in the U.S. Geological Survey RASS-STATPAC system (VanTrump and Miesch, 1976). Tables 10 through 12 are statistical summaries of the analytical data and were generated using the statistical program TOTS, written by Richard D. Koch (written commun., 1981). The program was used to divide all data not already reported in six-step class intervals into the intervals listed in table 2. The program creates frequency tables and histograms based on these intervals and computes the arithmetic means, standard deviations, geometric means, and geometric deviations of the populations. Entries in tables 10 through 12 are identified on page 27.

Values qualified with N, L, G, or H in tables 10 through 12 were not considered in the histograms; the resulting statistics are therefore biased. Many of the histograms show this bias by their truncated form.

The geometric mean of a set of analyses is the antilogarithm of the arithmetic mean of the logarithms of the analyses. This mean is an indication of central tendency and does not indicate geochemical abundance. Most elements are log-normally distributed in geologic materials (Ahrens, 1957; Siegel, 1974) and histograms based on logarithmic scales like those in tables 10 through 12 will be symmetrical for log-normal distributions. The geometric deviation of a set of analyses, the antilogarithm of the standard deviation of the logarithms of the analyses, is useful for noting the spread of a log-normally distributed population.

REFERENCES CITED

Ahrens, L. H., 1957, Lognormal-type distribution--III: Geochimica et Cosmochimica Acta, v. 11, no. 4, p. 205-212.

Blake, M. C., Jr., 1985, Geologic map and geochemical data for the Weaver Bally Roadless Area, Trinity County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1657-B, scale 1:48,000 [in press].

Cox, D. P., 1956, Geology of the Helena quadrangle, Trinity County, California: Stanford, Calif., Stanford University, Ph.D. dissertation, 123 p.

_____1967, Reconnaissance geology of the Helena quadrangle, Trinity County, California, in Short contributions to California geology: California Division of Mines and Geology Special Report 92, p. 43-55.

Diggles, M. F., Dellinger, D. A., Sutley, S. J., Fey, D. L., and Hill, R. H., 1982, Chemical data for samples of rock, stream sediment, and nonmagnetic dense-mineral concentrate in the White Mountains, Blanco Mountain, Birch Creek, and Black Canyon Roadless Areas, White Mountains, California and Nevada: U.S. Geological Survey Open-File Report 82-984, 188 p.

Diggles, M. F., and Kennedy, G. L., 1985, Geologic map and geochemical anomalies of the Tunnel Ridge Wilderness Study Area, Klamath Mountains, California: U.S. Geological Survey Miscellaneous Field Studies Map MF ____, scale 1:24,000 [in preparation].

Gaps, R. S., 1983, Mineral investigation of the Tunnel Ridge Wilderness Study Area CA-030-402 (BLM), Trinity County, California: U.S. Bureau of Mines Mineral Land Assessment MLA 52-83, 10 p.

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.

Hotz, P. E., Thurber, H. K., Marks, L. Y., and Evans, R. K., 1972, Mineral resources of the Salmon-Trinity Alps Primitive Area, California, with a section on An aeromagnetic survey and interpretation, by A. Griscom: U.S. Geological Survey Bulletin 1371-B, p. xii + B1-B267.

Huber, D. F., Nelson, S. C., Cather, E. E., and Ritchey, J. L., 1983, Mineral resource potential of the Fisher Gulch Roadless Area, Trinity County, California: U.S. Geological Survey Open-File Report 83-483, 10 p.

Irwin, W. P., 1960, Geologic reconnaissance of the northern Coast Ranges and Klamath Mountains, California, with a summary of the mineral resources: California Division of Mines Bulletin 179, 80 p.

_____1963, Preliminary geologic map of the Weaverville quadrangle, California: U.S. Geological Survey Mineral Investigations Field Studies Map MF-275, scale 1:62,500.

_____1972, Terranes of the Western Paleozoic and Triassic belt in the southern Klamath Mountains, California, in Geological Survey research 1972: U.S. Geological Survey Professional Paper 800-C, p. C103-C111.

_____1974, Reconnaissance geologic map of the Hayfork quadrangle, Trinity County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-576, scale 1:62,500.

_____1977, Review of Paleozoic rocks of the Klamath Mountains, in Stewart, J. H., Stevens, C. H., and Fritsche, A. E., Paleozoic paleogeography of the western United States., Pacific Coast Paleogeography Symposium 1: Los Angeles, Society of Economic Paleontologists and Mineralogists, Pacific Section, p. 441-454.

_____1981, Tectonic accretion of the Klamath Mountains, in Ernst, W. G., ed., The geotectonic development of California, Rubey Volume I: Englewood Cliffs, New Jersey, Prentice-Hall, p. 29-49.

Kennedy, G. L., Diggles, M. F., and Gaps, R. S., 1985, Mineral resource potential of the Tunnel Ridge Wilderness Study Area, Klamath Mountains, California: U.S. Geological Survey Miscellaneous Field Studies Map MF ____, scale 1:24,000 [in press].

McNerney, J. J., Buseck, P. R., and Hanson, R. C., 1972, Mercury detection by means of thin gold films: Science, v. 178, p. 611-612.

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.

Myers, A. T., Havens, R. G., and Dunton, P. J., 1961, A spectrochemical method for the semiquantitative analysis of rocks, minerals, and ores: U.S. Geological Survey Bulletin 1084-I, p. 207-229.

Rose, A. W., Hawkes, H. E., and Webb, J. S., 1979, Geochemistry in mineral exploration: London, Academic Press, 657 p.

Siegel, F. R., 1974, Applied geochemistry: New York, John Wiley and Sons, 353 p.

VanTrump, George, Jr., and Miesch, A. T., 1976, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Vaughn, W. W., and McCarthy, J. H., Jr., 1964, An instrumental technique for the determination of submicrogram concentrations of mercury in soils, rocks, and gas, in Geological Survey research 1964: U.S. Geological Survey Professional Paper 501-D, p. D123-D127.

Table 1.--Upper and lower limits of determination for samples of rock, stream sediment, and heavy-mineral concentrate

[All analyses by semiquantitative emission spectrography except for mercury, which was analyzed for by atomic absorption spectrometry; ppm, parts per million]

Elements and reporting units	Limits for rock and stream-sediment samples		Limits for heavy-mineral concentrate samples	
	Lower	Upper	Lower	Upper
Ca, percent	0.05	20	0.1	50
Fe, percent	.05	20	.1	50
Mg, percent	.02	10	.05	20
Ti, percent	.002	1	.005	2
Ag, ppm	.5	5,000	1	10,000
As, ppm	200	10,000	500	20,000
Au, ppm	10	500	20	1,000
B, ppm	10	2,000	20	5,000
Ba, ppm	20	5,000	50	10,000
Be, ppm	1	1,000	2	2,000
Bi, ppm	10	1,000	20	2,000
Cd, ppm	20	500	50	1,000
Co, ppm	5	2,000	10	50
Cr, ppm	10	5,000	20	10,000
Cu, ppm	5	20,000	10	50,000
Hg, ppm	1/	--	.02	2/
La, ppm	20	1,000	50	2,000
Mn, ppm	10	5,000	20	10,000
Mo, ppm	5	2,000	10	5,000
Nb, ppm	20	2,000	50	5,000
Ni, ppm	5	5,000	10	10,000
Pb, ppm	10	20,000	20	50,000
Th, ppm	100	2,000	200	5,000
Sb, ppm	100	10,000	200	20,000
Sc, ppm	5	100	10	200
Sn, ppm	10	1,000	20	2,000
Sr, ppm	100	5,000	200	10,000
V, ppm	10	10,000	100	20,000
W, ppm	50	10,000	100	20,000
Y, ppm	10	2,000	20	5,000
Zn, ppm	200	10,000	500	20,000
Zr, ppm	10	1,000	20	2,000

1/Atomic absorption analysis not performed

2/Dilution during sample preparation eliminates any upper detection limit

Table 2.--Reporting values and ranges for six-step, semiquantitative spectrographic analyses

Reporting values (class interval midpoints)	Concentration ranges	Class interval widths
1.5	1.2 - 1.8	0.6
2.0	1.8 - 2.6	.8
3.0	2.6 - 3.8	1.2
5.0	3.8 - 5.6	1.8
7.0	5.6 - 8.3	2.7
10	8.3 - 12	3.7

Table 3.--Qualification codes used in tables 7 through 12
[n refers to value of upper or lower limit of determination]

Code in tables 7 through 9	Code in tables 10 through 12	Meaning
--	B	Blank; no analysis performed
N	N	Not detected by analysis at the lower limit of determination shown in parentheses
<n	L	Detected, but below the lower limit of determination shown
>n	G	Element present in an amount greater than the upper limit of determination shown

Table 4.--Summary statistics of analytical data for rock samples from the Tunnel Ridge Wilderness Study Area

[All concentrations are in parts per million except those for Ca, Fe, Mg, and Ti, which are in percent. N, not detected at the lower limit of determination; L, detected, but below lower limit of determination; G, detected but above the upper limit of determination shown in parentheses. All analyses are emission spectrographic. There were no unqualified values reported for Ag, As, Au, Bi, Cd, Mo, Nb, Sb, Sc, Sn, Th, W, and Zn; thus, meaningful statistical information could not be derived for those elements]

Element	Range of values	Geometric mean	Geometric deviation	Percentile				
				50	75	90	95	98
Ca	0.2-20	9.6	2.9	12.5	20	20	20	G(20)
Fe	.05-20	7.9	5.4	20	G(20)	G(20)	G(20)	G(20)
Mg	.2-10	5.8	2.5	7.	10	G(10)	G(10)	G(10)
Ti	.003-1	.09	11.8	G(1)	G(1)	G(1)	G(1)	G(1)
B	10-70	14.	1.6	10	20	20	35	60
Ba	20-200	41.	2.1	L(20)	25	70	85	150
Be	1-1	1	0	1	1	1	1	1
Co	20-100	56	1.6	60	70	100	100	100
Cr	10-2,000	380	4	600	700	1,500	1,500	1,750
Cu	5-300	43	3	50	70	150	200	250
La	20-20	20	0	20	20	20	20	20
Mn	20-5,000	1,600	3.4	2,000	3,000	5,000	5,000	5,000
Ni	7-300	75	2.3	100	100	175	200	250
Pb	10-20	12	1.3	N(10)	10	12	15	18
Sr	100-500	150	1.7	N(100)	100	200	200	350
V	10-700	290	3.2	500	500	700	700	700
Y	30-100	69	1.3	70	70	100	100	100
Zr	50-150	82	1.3	70	100	100	100	125

Table 5.--Summary statistics of analytical data for minus-60-mesh stream-sediment samples from the Tunnel Ridge Wilderness Study Area

[All concentrations are in parts per million except those for Ca, Fe, Mg, and Ti, which are in percent. N, not detected at the lower limit of determination; L, detected, but below lower limit of determination; G, detected but above the upper limit of determination shown in parentheses. All analyses are emission spectrographic. There were no unqualified values reported for As, Au, Be, Bi, Cd, La, Mo, Nb, Sb, Sc, Sn, Th, W, and Zn; thus, meaningful statistical information could not be derived for those elements]

Element	Range of values	Geometric mean	Geometric deviation	Percentile				
				50	75	90	95	98
Ca	5-20	11	1.5	10	15	20	G(20)	G(20)
Fe	10-20	17	1.2	G(20)	G(20)	G(20)	G(20)	G(20)
Mg	5-10	8.3	1.2	10	10	10	G(10)	G(10)
Ti	G(1)-G(1)	G(1)	0	G(1)	G(1)	G(1)	G(1)	G(1)
Ag	7-7	7	0	N(.5)	N(.5)	N(.5)	N(.5)	3.75
B	10-100	23	1.9	20	25	60	85	100
Ba	20-70	34	1.6	30	50	70	70	70
Co	30-150	56	1.8	50	85	125	150	150
Cr	200-1,500	590	1.7	500	700	1,250	1,500	1,500
Cu	50-150	76	1.5	70	100	150	150	150
Mn	2,000-5,000	3,600	1.4	3,000	5,000	5,000	5,000	G(5,000)
Ni	50-200	94	1.6	100	150	175	200	200
Pb	10-30	14	1.5	10	20	20	25	30
Sr	100-100	100	1	100	100	100	100	100
V	300-1,000	510	1.3	500	600	700	700	850
Y	50-100	74	1.3	70	100	100	100	100
Zr	50-150	81	1.3	70	100	100	100	125

Table 6.--Summary statistics of analytical data for minus-18-mesh nonmagnetic-heavy-mineral concentrate samples from the Tunnel Ridge Wilderness Study Area

[All concentrations are in parts per million except those for Ca, Fe, Mg, and Ti, which are in percent. All analyses are emission spectrographic except as noted, aa following element symbol denotes atomic-absorption spectrometry. N, not detected at the lower limit of determination; L, detected, but below lower limit of determination; G, detected but above upper limit of determination shown in parentheses. There were no unqualified values for As, Au, Ba, Be, Cd, La, Mo, Nb, Sb, Sc, Th, W, and Zn; thus, meaningful statistical information could not be derived for those elements]

Element	Range of values	Geometric mean	Geometric deviation	Percentiles				
				50	75	90	95	98
Ca	5-50	15	1.9	20	20	30	40	50
Fe	7-7	2.3	1.6	2	3	3	4	6
Mg	.07-2	.81	2.3	1	1.5	2	2	2
Ti	G(2)-G(2)	G(2)	0.	G(2)	G(2)	G(2)	G(2)	G(2)
Ag	1-7	2.2	2.8	N(1)	N(1)	1	1.25	4.25
B	20-70	32	1.6	L(20)	20	30	40	60
Bi	500-500	500	0.	N(20)	N(20)	N(20)	N(20)	260
Co	10-70	28	1.9	20	50	70	70	70
Cr	100-2,000	560	2.2	500	1,000	1,500	1,500	1,750
Cu	10-150	53	2.1	50	100	125	150	150
Mn	200-1,500	640	1.8	700	1,000	1,500	1,500	1,500
Ni	10-50	15	1.6	10	20	20	25	40
Pb	20-3,000	100	6.1	N(20)	40	450	1,100	2,250
Sn	20-30	24	1.2	N(20)	L(20)	20	25	30
Sr	500-500	500	0	N(200)	N(200)	N(200)	N(200)	350
V	150-700	350	1.6	300	500	700	700	700
Y	50-1,000	180	2.2	200	300	500	500	750
Zr	100-300	130	1.4	100	175	200	250	G(2,000)
Hg-aa	.02-.08	.04	1.8	N(.02)	.02	.05	.06	.07

Table 7. Data for rock samples from the Tunnel Ridge Wilderness Study Area, California

[lith., lithology and modifier; SC, Salmon Hornblende Schist; QF, quartzo-feldspathic; QZ, quartz; CR, country rock; VN, vein; WW, workings, wallrock; CA, caliche; WD, workings, dump; s, spectrographic analyses]

Sample	Lith.	Latitude	Longitude	UTM Easting	UTM Northing	Ca-pct s	Fe-pct s	Mg-pct s	Ti-pct s	Ag-ppm s	As-ppm s
TR001RK	SC CR	40 44 48	123 2 59	495,795.64	4,510,428.7	10.00	10.00	10.00	1.000	N	N
TR002RK	SC CR	40 45 13	123 3 10	495,546.19	4,511,187.0	10.00	15.00	7.00	>1.000	N	N
TR003RK	SC CR	40 45 46	123 2 59	495,794.09	4,512,219.2	15.00	>20.00	7.00	>1.000	N	N
TR004RK	SC CR	40 45 51	123 2 53	495,938.58	4,512,374.5	20.00	20.00	>10.00	>1.000	<.5	N
TR005RK	SC CR	40 48 50	123 0 56	498,699.48	4,517,895.9	5.00	7.00	7.00	>1.000	N	N
TR006RK	SC CR	40 46 2	123 2 58	495,831.55	4,512,709.8	20.00	15.00	7.00	>1.000	N	N
TR007RK	SC CR	40 46 18	123 2 58	495,819.99	4,513,184.9	10.00	10.00	10.00	>1.000	N	N
TR008RK	SC CR	40 48 19	123 1 0	498,592.16	4,516,921.4	7.00	20.00	10.00	>1.000	N	N
TR009RK	SC CR	40 48 12	123 0 59	498,610.71	4,516,711.6	15.00	>20.00	7.00	>1.000	N	N
TR010RK	SC CR	40 48 37	123 1 46	497,525.36	4,517,495.5	10.00	>20.00	7.00	>1.000	N	N
TR011RK	SC CR	40 48 39	123 1 47	497,485.72	4,517,553.3	20.00	>20.00	10.00	>1.000	N	N
TR013RK	SC CR	40 48 15	123 3 15	495,422.23	4,516,812.8	10.00	>20.00	7.00	>1.000	N	N
TR015RK	SC CR	40 47 6	123 3 12	495,489.23	4,514,683.6	7.00	15.00	10.00	1.000	N	N
TR016RK	SC QF	40 47 40	123 2 54	495,915.08	4,515,740.1	10.00	20.00	>10.00	>1.000	N	N
TR018RK	SC CR	40 47 48	123 2 2	497,147.76	4,515,972.7	15.00	>20.00	7.00	>1.000	N	N
TR020RK	SC CR	40 45 25	123 1 15	498,245.07	4,511,555.5	10.00	20.00	7.00	>1.000	N	N
TR021RK	SC CR	40 45 26	123 1 16	498,220.60	4,511,592.2	20.00	>20.00	7.00	>1.000	N	N
TR022RK	SC CR	40 45 53	123 1 21	498,090.80	4,512,423.6	>20.00	>20.00	7.00	>1.000	N	N
TR024RK	SC CR	40 45 12	123 1 50	497,417.70	4,511,169.4	5.00	10.00	2.00	>1.000	N	N
TR026RK	SC CR	40 47 49	123 2 7	497,026.29	4,516,016.0	20.00	>20.00	10.00	>1.000	N	N
TR027RK	SC CR	40 45 5	123 2 35	496,358.13	4,510,940.1	20.00	20.00	7.00	>1.000	N	N
TR101C	QZ VN	40 47 43	123 2 8	497,007.63	4,515,824.0	.20	.20	.20	.030	N	N
TR103A	QZ VN	40 46 19	123 2 57	495,844.47	4,513,221.6	<.05	.05	<.02	.003	N	<200
TR104A	SC WW	40 48 54	123 3 16	495,408.65	4,518,009.4	15.00	15.00	7.00	>1.000	N	N
TR104B	CA WW	40 48 54	123 3 16	495,408.65	4,518,009.4	10.00	15.00	7.00	>1.000	N	N
TR104C	SC WD	40 48 54	123 3 16	495,408.65	4,518,009.4	15.00	20.00	10.00	>1.000	N	N
TR105A	SC CR	40 47 55	123 3 27	495,146.79	4,516,206.8	20.00	>20.00	>10.00	>1.000	N	N
TR106A	SC QF	40 45 6	123 2 5	497,057.20	4,510,990.9	15.00	20.00	7.00	>1.000	N	N
TR110A	QZ VN	40 45 4	123 2 31	496,449.34	4,510,933.4	.50	.70	.50	.070	N	N
TR111A	SC CR	40 50 11	123 1 24	498,040.60	4,520,391.5	20.00	20.00	7.00	>1.000	N	N

Table 7. Data for rock samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mn-ppm s	Mo-ppm s	Nb-ppm s
TR001RK	N	70	200	<1	N	N	50	1,500	70	N	1,500	N	N
TR002RK	N	20	N	<1	N	N	30	200	30	N	3,000	N	N
TR003RK	N	20	N	<1	N	N	100	200	50	N	2,000	N	N
TR004RK	N	50	100	N	N	N	70	2,000	100	N	2,000	N	N
TR005RK	N	10	N	1	N	N	20	100	10	N	1,000	N	N
TR006RK	N	10	N	<1	N	N	50	500	70	N	1,000	N	N
TR007RK	N	10	N	N	N	N	30	700	<5	N	2,000	N	N
TR008RK	N	20	20	N	N	N	50	300	70	N	2,000	N	N
TR009RK	N	20	30	N	N	N	70	500	50	N	2,000	N	N
TR010RK	N	15	20	N	N	N	70	500	70	N	2,000	N	N
TR011RK	N	20	<20	N	N	N	100	700	100	N	3,000	N	N
TR013RK	N	20	20	N	N	N	100	200	100	N	3,000	N	N
TR015RK	N	10	N	N	N	N	70	700	30	N	1,500	N	N
TR016RK	N	10	N	N	N	N	70	1,500	N	N	5,000	N	N
TR018RK	N	10	N	N	N	N	100	300	200	N	5,000	N	N
TR020RK	N	<10	N	N	N	N	70	500	30	N	2,000	N	N
TR021RK	N	10	30	N	N	N	70	700	50	N	2,000	N	N
TR022RK	N	15	50	N	N	N	100	1,000	200	N	2,000	N	N
TR024RK	N	10	<20	N	N	N	30	200	300	N	1,500	N	N
TR026RK	N	20	<20	<1	N	N	70	700	30	N	2,000	N	N
TR027RK	N	15	N	<1	N	N	50	700	5	N	2,000	N	N
TR101C	N	15	70	<1	N	N	N	10	5	20	50	N	N
TR103A	N	15	70	<1	N	N	N	10	N	20	20	N	N
TR104A	N	10	<20	N	N	N	50	1,500	30	N	2,000	N	N
TR104B	N	10	<20	N	N	N	30	1,000	100	N	3,000	N	N
TR104C	N	10	20	N	N	N	70	1,000	70	N	5,000	N	N
TR105A	N	10	20	N	N	N	70	700	70	N	5,000	N	N
TR106A	N	10	<20	N	N	N	30	700	5	N	3,000	N	N
TR110A	N	10	70	<1	N	N	N	15	10	N	200	N	N
TR111A	N	10	N	N	N	N	30	500	30	N	2,000	N	N

Table 7. Data for rock samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	Th-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s
TR001RK	200	10	N	--	N	500	N	200	N	30	N	70
TR002RK	100	10	N	--	N	200	N	500	N	70	N	100
TR003RK	100	15	N	--	N	100	N	700	N	100	N	100
TR004RK	300	20	N	--	N	200	N	300	N	50	N	70
TR005RK	50	N	N	--	N	100	N	500	N	70	N	70
TR006RK	50	N	N	--	N	N	N	200	N	70	N	100
TR007RK	100	N	N	--	N	200	N	200	N	50	N	70
TR008RK	70	N	N	--	N	N	N	500	N	70	N	100
TR009RK	70	N	N	--	N	N	N	700	N	100	N	100
TR010RK	100	N	N	--	N	100	N	700	N	70	N	100
TR011RK	100	N	N	--	N	N	N	500	N	100	N	100
TR013RK	70	10	N	--	N	100	N	700	N	100	N	100
TR015RK	100	N	N	--	N	N	N	300	N	50	N	50
TR016RK	150	10	N	--	N	N	N	300	N	50	N	50
TR018RK	70	N	N	--	N	N	N	700	N	70	N	100
TR020RK	70	N	N	--	N	N	N	700	N	70	N	100
TR021RK	70	N	N	--	N	N	N	300	N	70	N	70
TR022RK	100	N	N	--	N	N	N	500	N	100	N	70
TR024RK	50	N	N	--	N	100	N	500	N	70	N	70
TR026RK	100	N	N	--	N	N	N	500	N	100	N	100
TR027RK	100	N	N	--	N	100	N	500	N	70	N	100
TR101C	10	N	N	--	N	N	N	10	N	N	N	N
TR103A	10	N	N	--	N	N	N	10	N	N	N	N
TR104A	100	15	N	--	N	N	N	200	N	50	N	70
TR104B	70	N	N	--	N	200	N	200	N	70	N	70
TR104C	150	10	N	--	N	200	N	700	N	70	N	70
TR105A	200	10	N	--	N	N	N	500	N	100	N	150
TR106A	150	N	N	--	N	N	N	300	N	50	N	50
TR110A	7	N	N	--	N	N	N	20	N	N	N	N
TR111A	70	N	N	--	N	N	N	200	N	70	N	100

Table 8. Data for stream-sediment samples from the Tunnel Ridge Wilderness Study Area, California
[s, spectrographic analyses]

Sample	Latitude	Longitude	UTM Easting	UTM Northing	Ca-pct s	Fe-pct s	Mg-pct s	Ti-pct s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s
TR001SS	40 44 48	123 2 59	495,795.64	4,510,428.7	7	10	7	>1	N	N	N	20
TR002SS	40 45 13	123 3 10	495,546.19	4,511,187.0	>20	>20	10	>1	N	N	N	15
TR003SS	40 45 46	123 2 59	495,794.09	4,512,219.2	7	15	10	>1	N	N	N	20
TR004SS	40 45 51	123 2 53	495,938.58	4,512,374.5	7	15	7	>1	N	N	N	15
TR005SS	40 48 50	123 0 56	498,699.48	4,517,895.9	15	>20	10	>1	N	N	N	100
TR006SS	40 46 2	123 2 58	495,831.55	4,512,709.8	>20	>20	>10	>1	N	N	N	50
TR007SS	40 46 18	123 2 58	495,819.99	4,513,184.9	10	20	10	>1	N	N	N	10
TR008SS	40 48 19	123 1 0	498,592.16	4,516,921.4	5	15	7	>1	N	N	N	50
TR009SS	40 48 12	123 0 59	498,610.71	4,516,711.6	10	>20	10	>1	N	N	N	100
TR010SS	40 48 37	123 1 46	497,525.36	4,517,495.5	5	15	7	>1	N	N	N	30
TR011SS	40 48 39	123 1 47	497,485.72	4,517,553.3	20	>20	10	>1	N	N	N	20
TR012SS	40 49 10	123 2 28	496,538.14	4,518,498.3	15	>20	7	>1	N	N	N	20
TR013SS	40 48 15	123 3 15	495,422.23	4,516,812.8	10	20	5	>1	N	N	N	70
TR014SS	40 47 13	123 3 8	495,593.15	4,514,884.5	10	20	7	>1	N	N	N	20
TR015SS	40 47 6	123 3 12	495,489.23	4,514,683.6	7	20	7	>1	7.0	N	N	10
TR016SS	40 47 40	123 2 54	495,915.08	4,515,740.1	15	>20	10	>1	N	N	N	20
TR017SS	40 47 36	123 2 16	496,802.54	4,515,614.3	20	>20	>10	>1	N	N	N	15
TR018SS	40 47 48	123 2 2	497,147.76	4,515,972.7	20	20	7	>1	N	N	N	50
TR019SS	40 47 46	123 1 59	497,202.53	4,515,921.6	20	>20	10	>1	N	N	N	15
TR020SS	40 45 25	123 1 15	498,245.07	4,511,555.5	15	>20	10	>1	N	N	N	10
TR021SS	40 45 26	123 1 16	498,220.60	4,511,592.2	15	>20	7	>1	N	N	N	20
TR022SS	40 45 53	123 1 21	498,090.80	4,512,423.6	15	>20	10	>1	N	N	N	15
TR023SS	40 45 53	123 1 20	498,130.49	4,512,418.0	10	20	10	>1	N	N	N	20
TR024SS	40 45 12	123 1 50	497,417.70	4,511,169.4	7	20	7	>1	N	N	N	15
TR025SS	40 45 8	123 1 51	497,386.41	4,511,032.9	10	>20	10	>1	N	N	N	20
TR026SS	40 47 49	123 2 7	497,026.29	4,516,016.0	10	20	10	>1	N	N	N	20
TR027SS	40 45 5	123 2 35	496,358.13	4,510,940.1	7	>20	7	>1	N	N	N	20

Table 8. Data for stream-sediment samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mn-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
TR001SS	N	N	N	N	30	500	50	N	2,000	N	N	70
TR002SS	50	N	N	N	70	700	70	N	5,000	N	N	100
TR003SS	70	<1	N	N	50	500	100	N	5,000	N	N	100
TR004SS	30	<1	N	N	50	500	50	N	5,000	N	N	70
TR005SS	20	N	N	N	70	700	150	N	3,000	N	N	100
TR006SS	70	N	N	N	150	1,000	100	N	5,000	N	N	150
TR007SS	50	N	N	N	70	500	70	N	3,000	N	N	70
TR008SS	20	N	N	N	30	300	70	N	3,000	N	N	70
TR009SS	<20	N	N	N	100	500	100	N	3,000	N	N	70
TR010SS	<20	<1	N	N	30	200	50	N	5,000	N	N	70
TR011SS	20	N	N	N	100	700	150	N	>5,000	N	N	150
TR012SS	<20	N	N	N	70	500	50	N	3,000	N	N	50
TR013SS	20	<1	N	N	30	300	50	N	2,000	N	N	50
TR014SS	50	<1	N	N	30	500	70	N	3,000	N	N	50
TR015SS	50	<1	N	N	50	1,000	70	N	2,000	N	N	200
TR016SS	30	N	N	N	100	1,500	150	N	3,000	N	N	200
TR017SS	20	N	N	N	150	1,500	150	N	5,000	N	N	200
TR018SS	20	<1	N	N	30	500	70	N	3,000	N	N	100
TR019SS	30	N	N	N	100	700	100	N	5,000	N	N	150
TR020SS	<20	N	N	N	70	700	70	N	5,000	N	N	150
TR021SS	30	N	N	N	30	700	50	N	5,000	N	N	150
TR022SS	20	N	N	N	150	1,500	50	N	5,000	N	N	100
TR023SS	20	N	N	N	50	700	70	N	3,000	N	N	70
TR024SS	70	<1	N	N	50	300	70	N	3,000	N	N	70
TR025SS	70	<1	N	N	50	700	50	N	5,000	N	N	100
TR026SS	50	<1	N	N	30	300	150	N	5,000	N	N	70
TR027SS	30	<1	N	N	30	500	50	N	3,000	N	N	70

Table 8. Data for stream-sediment samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	Th-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s
TR001SS	N	N	--	N	100	N	300	N	50	N	50
TR002SS	15	N	--	N	100	N	500	N	70	N	100
TR003SS	30	N	--	N	100	N	500	N	70	N	150
TR004SS	15	N	--	N	100	N	500	N	100	N	70
TR005SS	20	N	--	N	N	N	300	N	100	N	70
TR006SS	20	N	--	N	N	N	500	N	100	N	100
TR007SS	20	N	--	N	N	N	500	N	50	N	70
TR008SS	10	N	--	N	N	N	500	N	50	N	70
TR009SS	30	N	--	N	N	N	700	N	70	N	70
TR010SS	10	N	--	N	N	N	300	N	50	N	50
TR011SS	10	N	--	N	N	N	500	N	100	N	100
TR012SS	15	N	--	N	N	N	500	N	100	N	100
TR013SS	15	N	--	N	100	N	500	N	70	N	100
TR014SS	20	N	--	N	100	N	500	N	70	N	70
TR015SS	N	N	--	N	N	N	500	N	50	N	100
TR016SS	20	N	--	N	N	N	700	N	100	N	100
TR017SS	10	N	--	N	N	N	700	N	100	N	100
TR018SS	10	N	--	N	N	N	500	N	70	N	70
TR019SS	10	N	--	N	N	N	500	N	100	N	100
TR020SS	N	N	--	N	N	N	700	N	50	N	70
TR021SS	10	N	--	N	N	N	500	N	70	N	70
TR022SS	15	N	--	N	N	N	1,000	N	70	N	70
TR023SS	10	N	--	N	N	N	300	N	70	N	70
TR024SS	10	N	--	N	100	N	500	N	70	N	50
TR025SS	10	N	--	N	100	N	700	N	100	N	100
TR026SS	20	N	--	N	N	N	500	N	100	N	100
TR027SS	10	N	--	N	100	N	700	N	70	N	100

Table 9. Data for nonmagnetic heavy-mineral-concentrate samples from the Tunnel Ridge Wilderness Study Area, California
[s, spectrographic analyses; aa, atomic absorption]

Sample	Latitude	Longitude	UTM Easting	UTM Northing	Ca-pct s	Fe-pct s	Mg-pct s	Ti-pct s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s
TR001KN	40 44 48	123 2 59	495,795.64	4,510,428.7	20	7.0	2.00	>2	1.5	N	N	<20
TR002KN	40 45 13	123 3 10	495,546.19	4,511,187.0	10	3.0	1.00	>2	N	N	N	<20
TR003KN	40 45 46	123 2 59	495,794.09	4,512,219.2	30	5.0	2.00	>2	1.0	N	N	30
TR004KN	40 45 51	123 2 53	495,938.58	4,512,374.5	20	3.0	1.50	>2	7.0	N	N	<20
TR005KN	40 48 50	123 0 56	498,699.48	4,517,895.9	20	3.0	1.00	>2	N	N	N	N
TR006KN	40 46 2	123 2 58	495,831.55	4,512,709.8	20	2.0	1.00	>2	N	N	N	N
TR007KN	40 46 18	123 2 58	495,819.99	4,513,184.9	15	2.0	.50	>2	N	N	N	N
TR008KN	40 48 19	123 1 0	498,592.16	4,516,921.4	20	3.0	2.00	>2	N	N	N	70
TR009KN	40 48 12	123 0 59	498,610.71	4,516,711.6	20	1.5	.70	>2	N	N	N	N
TR010KN	40 48 37	123 1 46	497,525.36	4,517,495.5	20	2.0	1.50	>2	N	N	N	30
TR011KN	40 48 39	123 1 47	497,485.72	4,517,553.3	30	3.0	.50	>2	N	N	N	N
TR012KN	40 49 10	123 2 28	496,538.14	4,518,498.3	20	1.5	.70	>2	N	N	N	N
TR013KN	40 48 15	123 3 15	495,422.23	4,516,812.8	50	3.0	1.00	>2	N	N	N	20
TR014KN	40 47 13	123 3 8	495,593.15	4,514,884.5	15	3.0	1.50	>2	N	N	N	N
TR015KN	40 47 6	123 3 12	495,489.23	4,514,683.6	7	1.5	.50	>2	N	N	N	N
TR016KN	40 47 40	123 2 54	495,915.08	4,515,740.1	10	1.0	.30	>2	<1.0	N	N	N
TR017KN	40 47 36	123 2 16	496,802.54	4,515,614.3	7	2.0	.70	>2	N	N	N	50
TR018KN	40 47 48	123 2 2	497,147.76	4,515,972.7	5	.7	.07	>2	N	N	N	<20
TR019KN	40 47 46	123 1 59	497,202.53	4,515,921.6	50	2.0	1.00	>2	N	N	N	<20
TR020KN	40 45 25	123 1 15	498,245.07	4,511,555.5	10	2.0	1.00	>2	N	N	N	N
TR021KN	40 45 26	123 1 16	498,220.60	4,511,592.2	5	1.5	.10	>2	N	N	N	N
TR022KN	40 45 53	123 1 21	498,090.80	4,512,423.6	7	3.0	1.00	>2	N	N	N	N
TR023KN	40 45 53	123 1 20	498,130.49	4,512,418.0	7	2.0	.70	>2	N	N	N	N
TR024KN	40 45 12	123 1 50	497,417.70	4,511,169.4	7	2.0	.70	>2	N	N	N	<20
TR025KN	40 45 8	123 1 51	497,386.41	4,511,032.9	20	3.0	1.50	>2	N	N	N	20
TR026KN	40 47 49	123 2 7	497,026.29	4,516,016.0	20	2.0	1.00	>2	N	N	N	<20
TR027KN	40 45 5	123 2 35	496,358.13	4,510,940.1	20	3.0	2.00	>2	<1.0	N	N	30

Table 9. Data for nonmagnetic heavy-mineral-concentrate samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mn-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s
TR001KN	N	<2	N	N	70	1,500	150	N	700	N	N	50	50
TR002KN	N	<2	N	N	50	300	70	N	500	N	N	20	700
TR003KN	N	N	N	N	50	1,000	100	N	1,500	N	N	20	1,500
TR004KN	N	N	N	N	20	700	50	N	700	N	N	20	3,000
TR005KN	N	<2	500	N	70	1,000	100	N	1,000	N	N	10	150
TR006KN	N	N	N	N	50	500	50	N	1,000	N	N	10	200
TR007KN	N	N	N	N	30	300	50	N	300	N	N	10	N
TR008KN	N	N	N	N	20	1,000	70	N	700	N	N	10	N
TR009KN	N	N	N	N	N	200	20	N	1,000	N	N	N	N
TR010KN	N	N	N	N	30	500	100	N	1,500	N	N	10	20
TR011KN	N	N	N	N	70	2,000	150	N	300	N	N	N	N
TR012KN	N	<2	N	N	15	200	50	N	500	N	N	10	N
TR013KN	N	<2	N	N	70	1,000	100	N	1,000	N	N	N	20
TR014KN	N	<2	N	N	20	700	70	N	700	N	N	10	N
TR015KN	N	<2	N	N	20	1,500	50	N	200	N	N	N	N
TR016KN	N	<2	N	N	20	300	20	N	500	N	N	N	N
TR017KN	N	<2	N	N	20	500	30	N	500	N	N	30	N
TR018KN	N	<2	N	N	N	200	20	N	200	N	N	N	N
TR019KN	N	<2	N	N	10	300	50	N	1,000	N	N	10	30
TR020KN	N	<2	N	N	10	1,000	100	N	700	N	N	20	N
TR021KN	N	<2	N	N	20	500	50	N	200	N	N	20	N
TR022KN	N	<2	N	N	70	1,500	100	N	500	N	N	15	20
TR023KN	N	<2	N	N	50	1,500	150	N	500	N	N	20	20
TR024KN	N	<2	N	N	30	100	10	N	500	N	N	10	N
TR025KN	<50	N	N	N	20	500	20	N	1,500	N	N	15	N
TR026KN	N	N	N	N	10	300	20	N	1,000	N	N	15	N
TR027KN	<50	<2	N	N	20	700	50	N	1,500	N	N	20	50

Table 9. Data for nonmagnetic heavy-mineral-concentrate samples from the Tunnel Ridge Wilderness Study Area, California - (continued)

Sample	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	Th-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Hg-ppm aa
TR001KN	N	--	N	N	N	300	N	100	N	100	.06
TR002KN	N	--	N	N	N	300	N	200	N	100	.04
TR003KN	N	--	<20	N	N	500	N	300	N	150	.02
TR004KN	N	--	<20	N	N	200	N	200	N	150	.02
TR005KN	N	--	N	N	N	700	N	300	N	200	.08
TR006KN	N	--	N	N	N	200	N	200	N	>2,000	.06
TR007KN	N	--	N	N	N	150	N	150	N	100	<.02
TR008KN	N	--	20	N	N	700	N	200	N	200	.04
TR009KN	N	--	20	N	N	300	N	500	N	200	<.02
TR010KN	N	--	<20	N	N	700	N	500	N	150	<.02
TR011KN	N	--	30	N	N	500	N	300	N	150	<.02
TR012KN	N	--	<20	N	N	500	N	300	N	150	<.02
TR013KN	N	--	20	N	N	500	N	500	N	300	<.02
TR014KN	N	--	<20	N	N	500	N	200	N	100	<.02
TR015KN	N	--	<20	N	N	300	N	50	N	100	N
TR016KN	N	--	N	N	N	500	N	100	N	100	<.02
TR017KN	N	--	N	N	N	200	N	70	N	100	<.02
TR018KN	N	--	N	N	N	200	N	100	N	100	<.02
TR019KN	N	--	N	N	N	700	N	1,000	N	200	<.02
TR020KN	N	--	30	N	N	200	N	100	N	100	<.02
TR021KN	N	--	N	N	N	200	N	50	N	100	<.02
TR022KN	N	--	N	N	N	300	N	50	N	100	<.02
TR023KN	N	--	<20	N	N	300	N	70	N	100	<.02
TR024KN	N	--	N	N	N	300	N	100	N	100	.02
TR025KN	N	--	N	N	N	500	N	200	N	100	<.02
TR026KN	N	--	<20	N	N	300	N	500	N	200	<.02
TR027KN	N	--	N	500	N	500	N	200	N	150	N

EXPLANATION OF TABLES 10 THROUGH 12

S = spectrographic analysis
AA = atomic absorption analysis
VALUE = the analytical value
NO. = number of occurrences of this value
% = NO. as percent of total number of data values (ANAL)
CUM = number of unqualified records at and below this value
CUM %
(col 1)= unqualified values at or below this value, as percent of ANAL
(col 2)= unqualified values above this value, as percent of ANAL
TOT CUM = number of values (N, L, + unqual.) at or below this value
TOT CUM %
(col 1)= values not B at or below this value, as percent of ANAL
(col 2)= values not B above this value, as percent of ANAL

B - value = number of values qualified with 'B' (= no data)
- percent = percent of all records read (READ)
T - value = number of values qualified with 'T' (= trace)
- percent = percent of all values not B, H, or OTHER (ANAL)
H - value - number of values qualified with 'H' (=interference)
- percent = percent of all values not B, H, or OTHER (ANAL)
N - value = number of values qualified with 'N' (= not detected)
- percent = percent of all values not B (ANAL)
L - value = number of values qualified with 'L' (= less than)
- percent = percent of all values not B (ANAL)
G - value = number of values qualified with 'G' (= greater than)
- percent = percent of all values not B (ANAL)
UNQUAL = number of unqualified data values
- percent = percent of values not B (ANAL)
ANAL = total number of valid data values (= unqualified = N, L, T, or G)
READ = number of samples read

MIN = minimum unqualified value
MAX = maximum unqualified value
AMEAN = arithmetic mean of unqualified values
SD = standard deviation of the unqualified values
GMEAN = geometric mean of unqualified values
GD = geometric deviation of unqualified values
VALUES = number of data values used to compute the above statistics.

Table 10. Frequency tables and histograms for rock samples

S-CA%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.200	1	3.33	1	3.3	96.7	2	6.7	93.3
2	0.500	1	3.33	2	6.7	93.3	3	10.0	90.0
3	5.000	2	6.67	4	13.3	86.7	5	16.7	83.3
4	7.000	2	6.67	6	20.0	80.0	7	23.3	76.7
5	10.000	8	26.67	14	46.7	53.3	15	50.0	50.0
6	15.000	6	20.00	20	66.7	33.3	21	70.0	30.0
7	20.000	8	26.67	28	93.3	6.7	29	96.7	3.3

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	1	1	0	28	30	30	VALUES
0.0	0.0	0.0	0.0	3.3	3.3	0.0	93.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.200	20.00	12.668	6.10	9.639	2.88	28

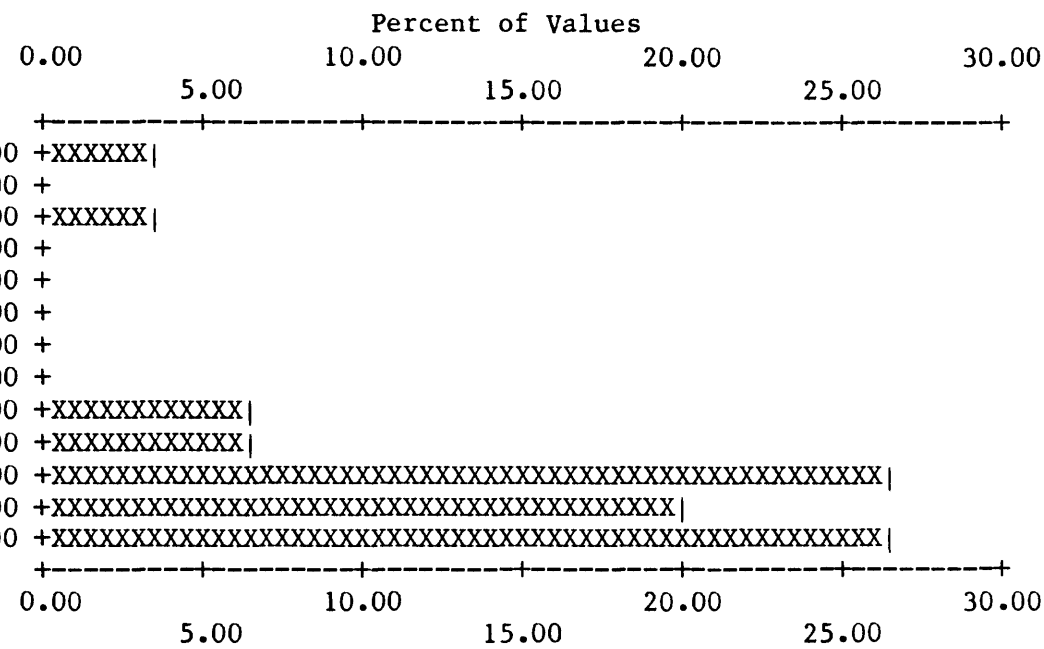


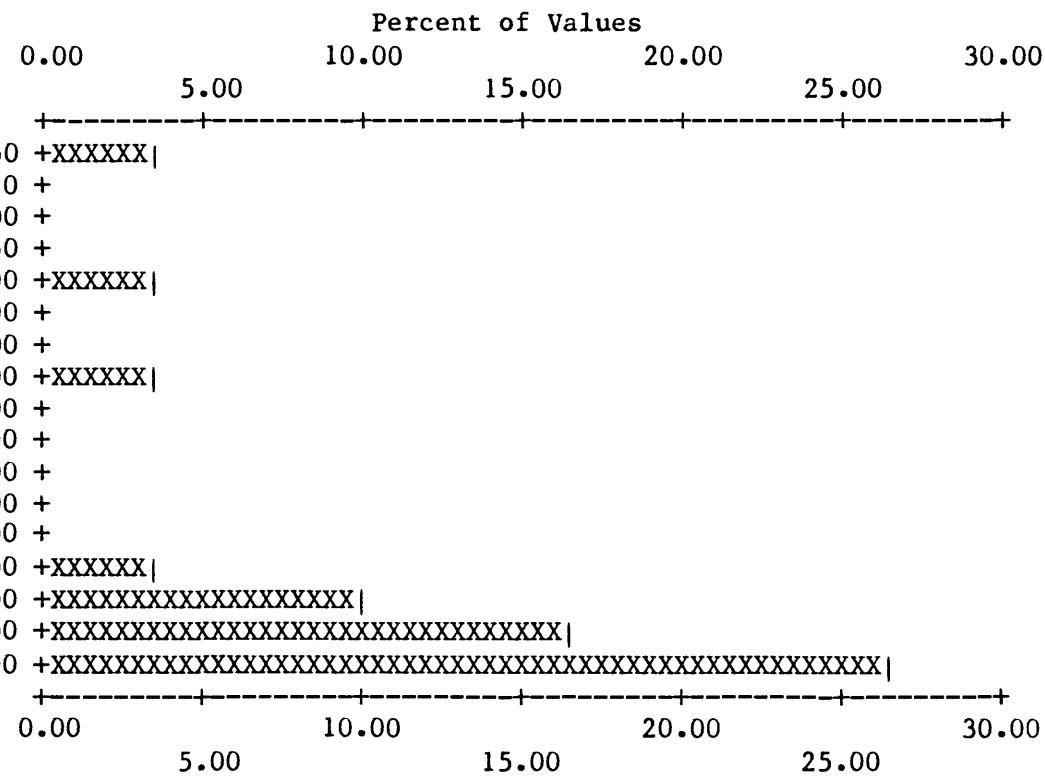
Table 10. Frequency tables and histograms for rock samples - (continued)

S-FE%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.050	1	3.33	1	3.3	96.7	1	3.3	96.7
2	0.200	1	3.33	2	6.7	93.3	2	6.7	93.3
3	0.700	1	3.33	3	10.0	90.0	3	10.0	90.0
4	7.000	1	3.33	4	13.3	86.7	4	13.3	86.7
5	10.000	3	10.00	7	23.3	76.7	7	23.3	76.7
6	15.000	5	16.67	12	40.0	60.0	12	40.0	60.0
7	20.000	8	26.67	20	66.7	33.3	20	66.7	33.3

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	10	0	20	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	33.3	0.0	66.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.050	20.00	13.648	7.07	7.924	5.41	20



Each increment (each X or | plotted) = 0.500 %

Table 10. Frequency tables and histograms for rock samples - (continued)

S-MG%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.200	1	3.33	1	3.3	96.7	2	6.7	93.3
2	0.500	1	3.33	2	6.7	93.3	3	10.0	90.0
3	2.000	1	3.33	3	10.0	90.0	4	13.3	86.7
4	7.000	16	53.33	19	63.3	36.7	20	66.7	33.3
5	10.000	7	23.33	26	86.7	13.3	27	90.0	10.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	1	3	0	26	30	30	VALUES
0.0	0.0	0.0	0.0	3.3	10.0	0.0	86.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.200	10.00	7.104	2.65	5.786	2.51	26

```
                         Percent of Values
       0.00               20.00               40.00               60.00
                10.00               30.00               50.00
        +---------+---------+---------+---------+---------+---------+
  0.200 +XX|
  0.300 +
  0.500 +XX|
  0.700 +
  1.000 +
  1.500 +
  2.000 +XX|
  3.000 +
  5.000 +
  7.000 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|
 10.000 +XXXXXXXXXXXXXXXXXXXXXX|
        +---------+---------+---------+---------+---------+---------+
       0.00               20.00               40.00               60.00
                10.00               30.00               50.00

       Each increment (each X or | plotted) =      1.000 %
```

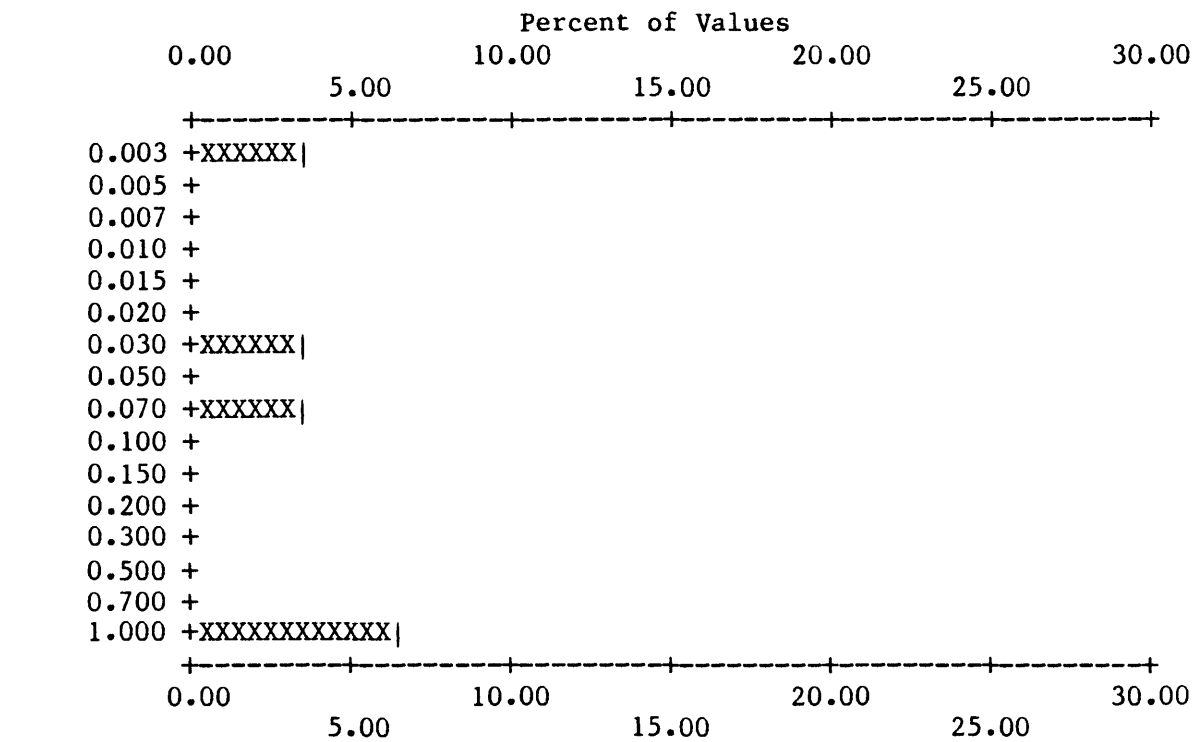
Table 10. Frequency tables and histograms for rock samples - (continued)

S-TI%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.003	1	3.33	1	3.3	96.7	1	3.3	96.7
2	0.030	1	3.33	2	6.7	93.3	2	6.7	93.3
3	0.070	1	3.33	3	10.0	90.0	3	10.0	90.0
4	1.000	2	6.67	5	16.7	83.3	5	16.7	83.3

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	25	0	5	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	83.3	0.0	16.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.003	1.00	0.421	0.53	0.091	11.84	5



Each increment (each X or | plotted) = 0.500 %

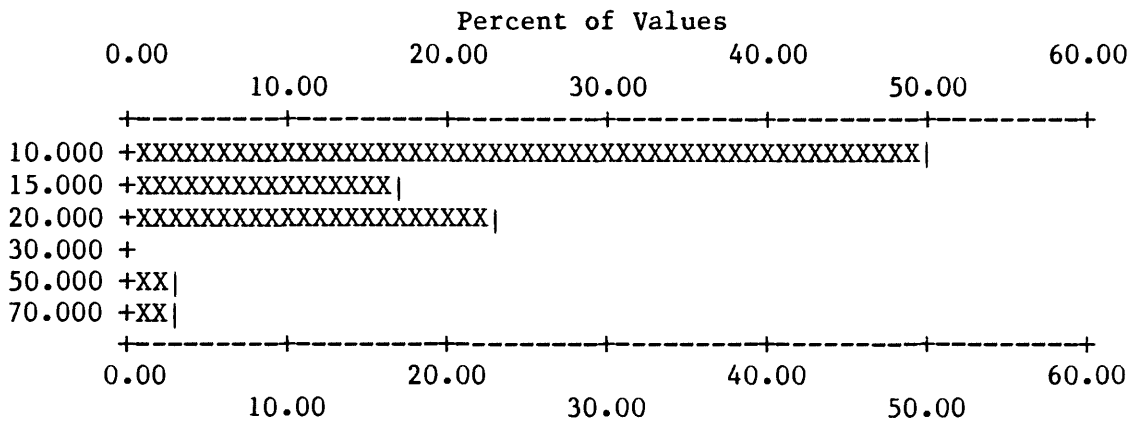
Table 10. Frequency tables and histograms for rock samples - (continued)

S-B

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	15	50.00	15	50.0	50.0	16	53.3	46.7
2	15.000	5	16.67	20	66.7	33.3	21	70.0	30.0
3	20.000	7	23.33	27	90.0	10.0	28	93.3	6.7
4	50.000	1	3.33	28	93.3	6.7	29	96.7	3.3
5	70.000	1	3.33	29	96.7	3.3	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	1	0	0	29	30	30	VALUES
0.0	0.0	0.0	0.0	3.3	0.0	0.0	96.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	70.00	16.724	12.97	14.331	1.64	29



Each increment (each X or | plotted) = 1.000 %

Table 10. Frequency tables and histograms for rock samples - (continued)

S-BA

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	5	16.67	5	16.7	83.3	22	73.3	26.7
2	30.000	2	6.67	7	23.3	76.7	24	80.0	20.0
3	50.000	1	3.33	8	26.7	73.3	25	83.3	16.7
4	70.000	3	10.00	11	36.7	63.3	28	93.3	6.7
5	100.000	1	3.33	12	40.0	60.0	29	96.7	3.3
6	200.000	1	3.33	13	43.3	56.7	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	11	6	0	0	13	30	30	VALUES
0.0	0.0	0.0	36.7	20.0	0.0	0.0	43.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	200.00	55.385	50.93	41.207	2.14	13

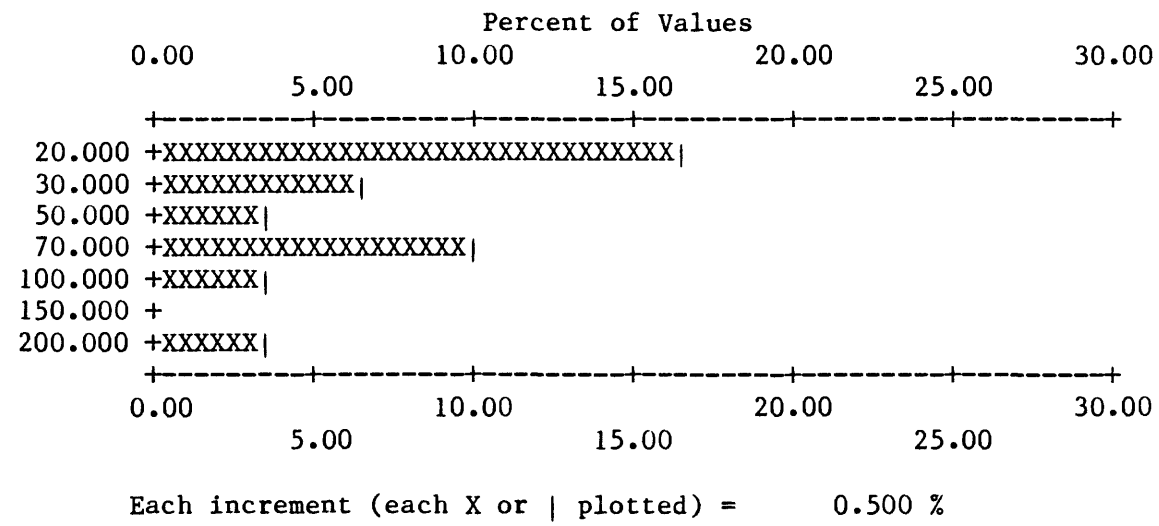


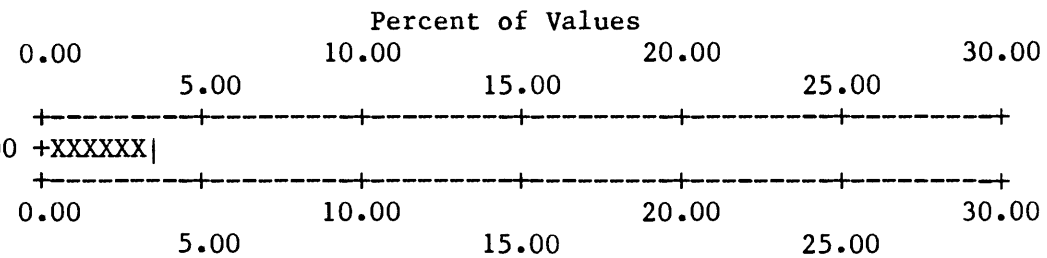
Table 10. Frequency tables and histograms for rock samples - (continued)

S-BE

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	1.000	1	3.33	1	3.3	96.7	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	20	9	0	0	1	30	30	VALUES
0.0	0.0	0.0	66.7	30.0	0.0	0.0	3.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
1.000	1.00	1.000	0.00	1.000	--	1



Each increment (each X or | plotted) = 0.500 %

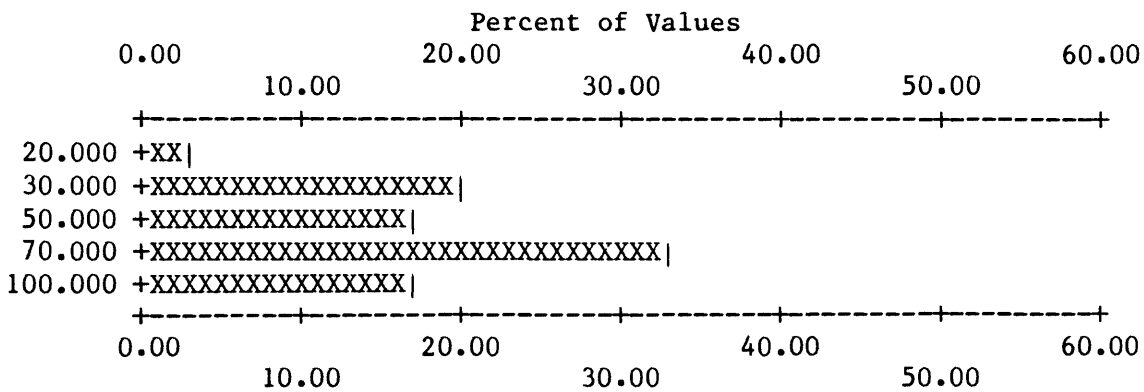
Table 10. Frequency tables and histograms for rock samples - (continued)

S-CO

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	1	3.33	1	3.3	96.7	4	13.3	86.7
2	30.000	6	20.00	7	23.3	76.7	10	33.3	66.7
3	50.000	5	16.67	12	40.0	60.0	15	50.0	50.0
4	70.000	10	33.33	22	73.3	26.7	25	83.3	16.7
5	100.000	5	16.67	27	90.0	10.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	3	0	0	0	27	30	30	VALUES
0.0	0.0	0.0	10.0	0.0	0.0	0.0	90.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	100.00	61.111	25.17	55.565	1.59	27



Each increment (each X or | plotted) = 1.000 %

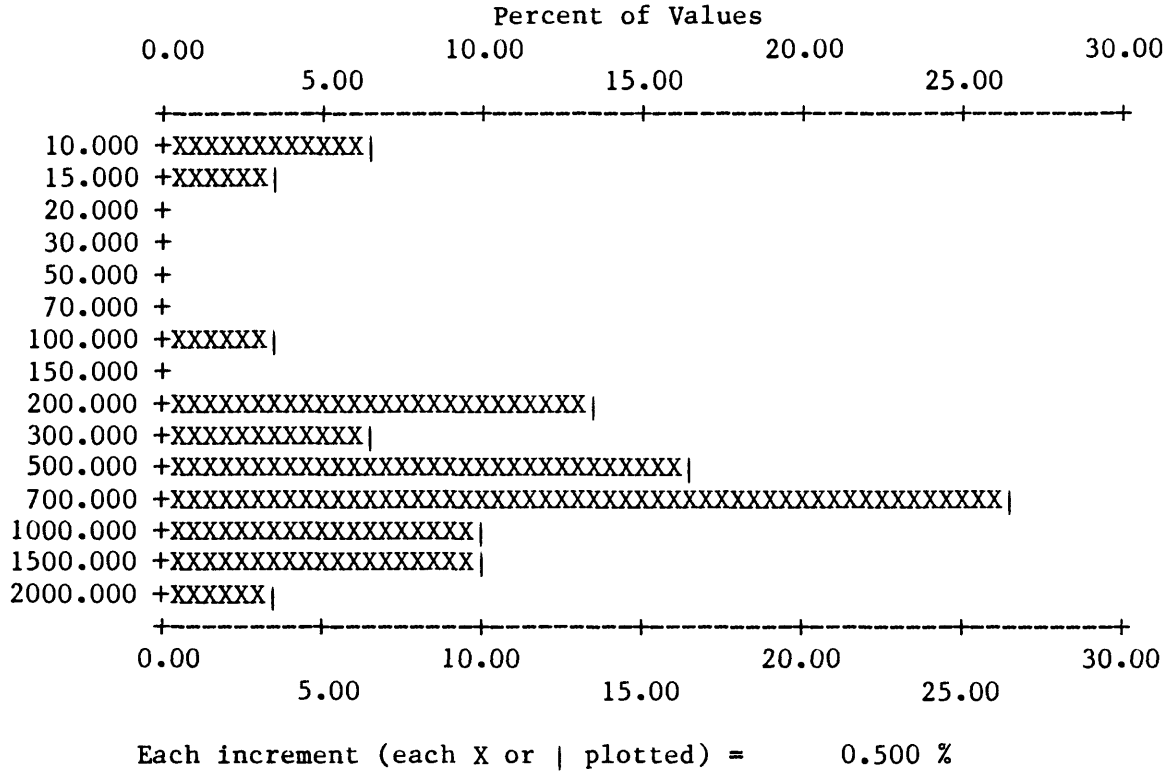
Table 10. Frequency tables and histograms for rock samples - (continued)

S-CR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	2	6.67	2	6.7	93.3	2	6.7	93.3
2	15.000	1	3.33	3	10.0	90.0	3	10.0	90.0
3	100.000	1	3.33	4	13.3	86.7	4	13.3	86.7
4	200.000	4	13.33	8	26.7	73.3	8	26.7	73.3
5	300.000	2	6.67	10	33.3	66.7	10	33.3	66.7
6	500.000	5	16.67	15	50.0	50.0	15	50.0	50.0
7	700.000	8	26.67	23	76.7	23.3	23	76.7	23.3
8	1000.000	3	10.00	26	86.7	13.3	26	86.7	13.3
9	1500.000	3	10.00	29	96.7	3.3	29	96.7	3.3
10	2000.000	1	3.33	30	100.0	0.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	30	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	2000.00	637.833	493.60	380.756	3.97	30



Each increment (each X or | plotted) = 0.500 %

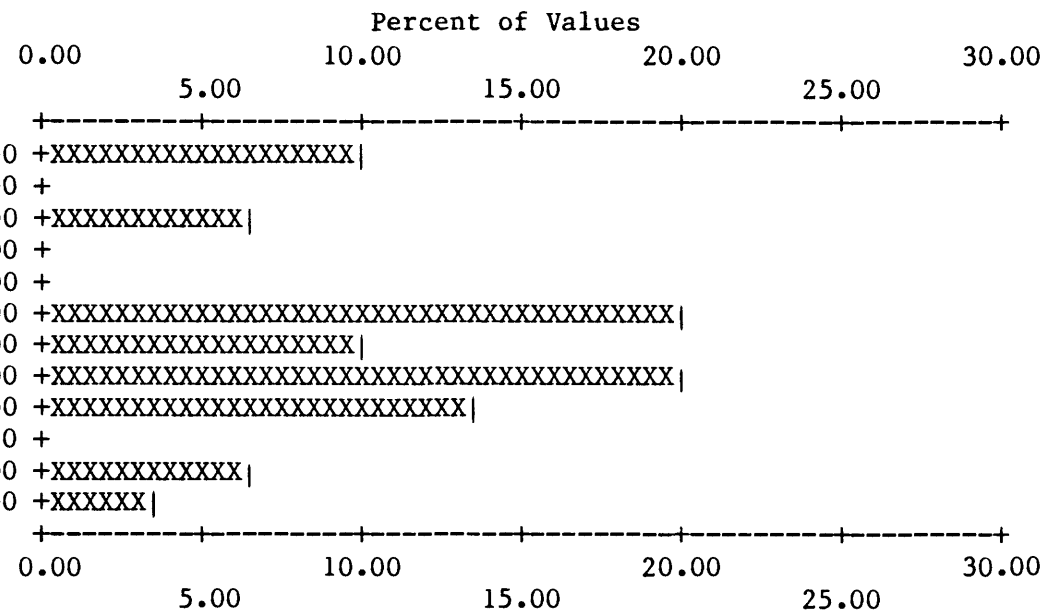
Table 10. Frequency tables and histograms for rock samples - (continued)

S-CU

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	5.000	3	10.00	3	10.0	90.0	6	20.0	80.0
2	10.000	2	6.67	5	16.7	83.3	8	26.7	73.3
3	30.000	6	20.00	11	36.7	63.3	14	46.7	53.3
4	50.000	3	10.00	14	46.7	53.3	17	56.7	43.3
5	70.000	6	20.00	20	66.7	33.3	23	76.7	23.3
6	100.000	4	13.33	24	80.0	20.0	27	90.0	10.0
7	200.000	2	6.67	26	86.7	13.3	29	96.7	3.3
8	300.000	1	3.33	27	90.0	10.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	2	1	0	0	27	30	30	VALUES
0.0	0.0	0.0	6.7	3.3	0.0	0.0	90.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
5.000	300.00	69.815	68.21	43.378	3.02	27



Each increment (each X or | plotted) = 0.500 %

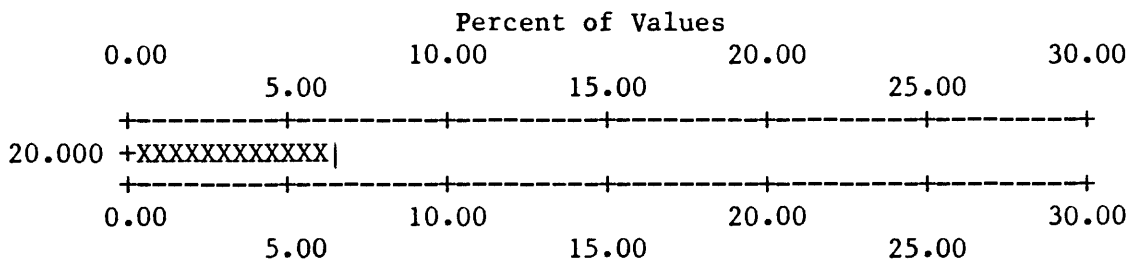
Table 10. Frequency tables and histograms for rock samples - (continued)

S-LA

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	2	6.67	2	6.7	93.3	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	28	0	0	0	2	30	30	VALUES
0.0	0.0	0.0	93.3	0.0	0.0	0.0	6.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	20.00	20.000	0.00	20.000	--	2



Each increment (each X or | plotted) = 0.500 %

Table 10. Frequency tables and histograms for rock samples - (continued)

S-MN

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	1	3.33	1	3.3	96.7	1	3.3	96.7
2	50.000	1	3.33	2	6.7	93.3	2	6.7	93.3
3	200.000	1	3.33	3	10.0	90.0	3	10.0	90.0
4	1000.000	2	6.67	5	16.7	83.3	5	16.7	83.3
5	1500.000	3	10.00	8	26.7	73.3	8	26.7	73.3
6	2000.000	13	43.33	21	70.0	30.0	21	70.0	30.0
7	3000.000	5	16.67	26	86.7	13.3	26	86.7	13.3
8	5000.000	4	13.33	30	100.0	0.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	30	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	5000.00	2259.000	1348.06	1575.697	3.42	30

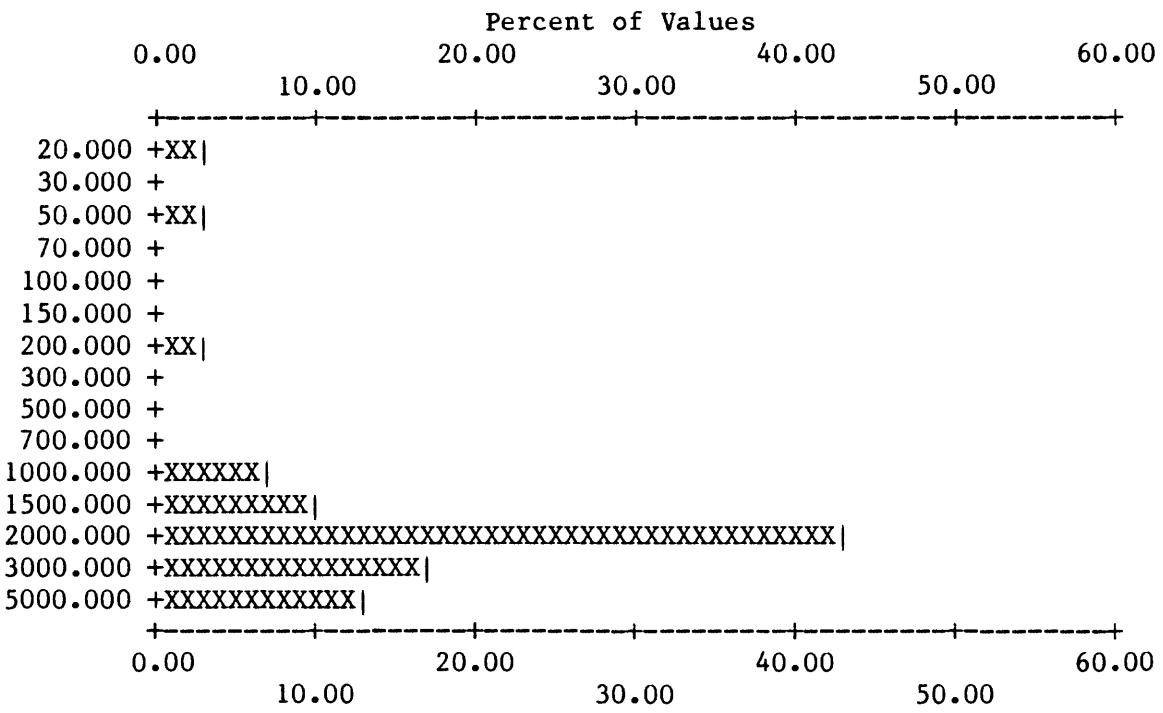


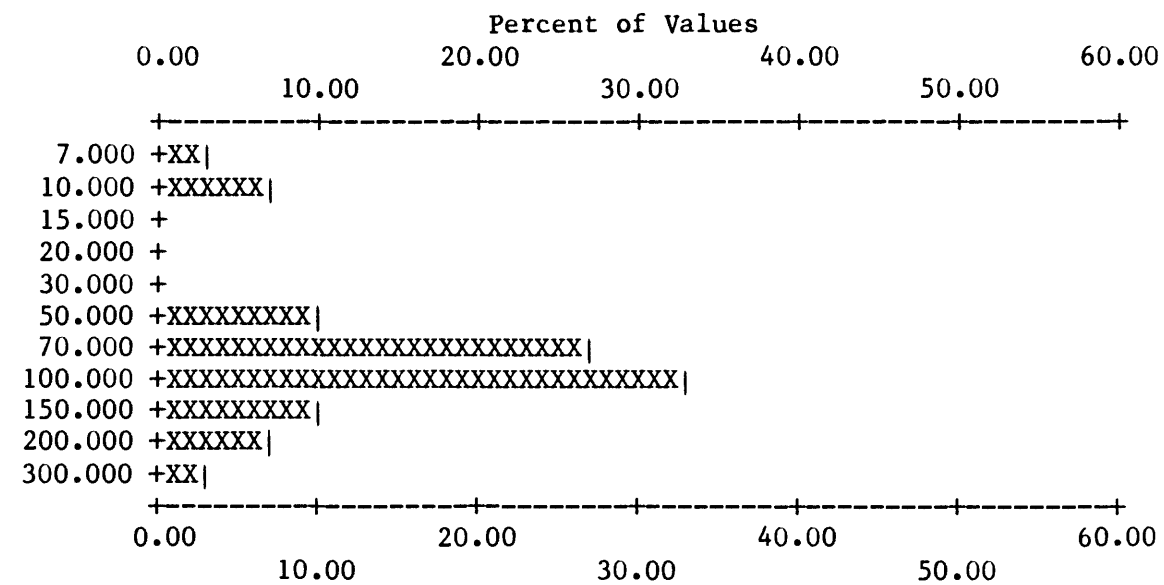
Table 10. Frequency tables and histograms for rock samples - (continued)

S-NI

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	7.000	1	3.33	1	3.3	96.7	1	3.3	96.7
2	10.000	2	6.67	3	10.0	90.0	3	10.0	90.0
3	50.000	3	10.00	6	20.0	80.0	6	20.0	80.0
4	70.000	8	26.67	14	46.7	53.3	14	46.7	53.3
5	100.000	10	33.33	24	80.0	20.0	24	80.0	20.0
6	150.000	3	10.00	27	90.0	10.0	27	90.0	10.0
7	200.000	2	6.67	29	96.7	3.3	29	96.7	3.3
8	300.000	1	3.33	30	100.0	0.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	30	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
7.000	300.00	96.233	60.64	75.337	2.31	30



Each increment (each X or | plotted) = 1.000 %

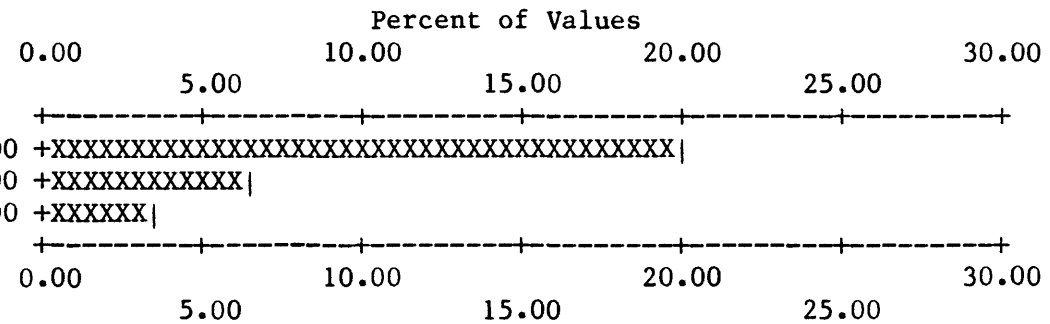
Table 10. Frequency tables and histograms for rock samples - (continued)

S-PB

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	6	20.00	6	20.0	80.0	27	90.0	10.0
2	15.000	2	6.67	8	26.7	73.3	29	96.7	3.3
3	20.000	1	3.33	9	30.0	70.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	21	0	0	0	9	30	30	VALUES
0.0	0.0	0.0	70.0	0.0	0.0	0.0	30.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	20.00	12.222	3.63	11.819	1.30	9



Each increment (each X or | plotted) = 0.500 %

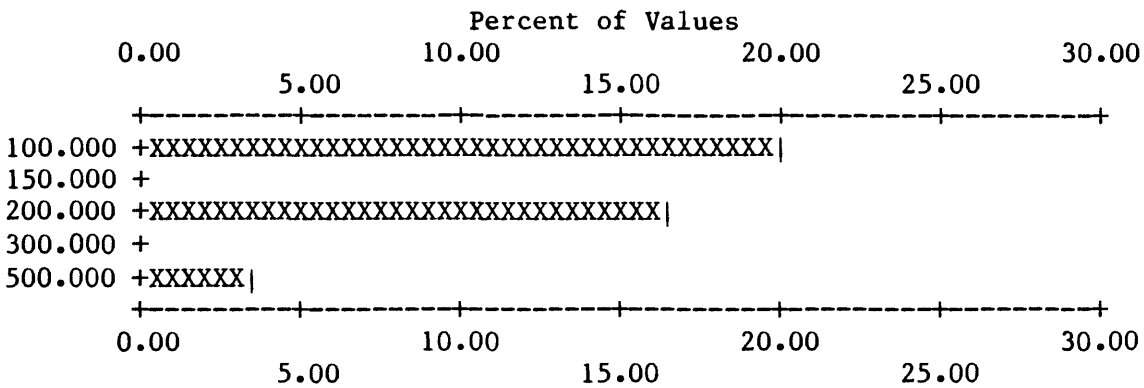
Table 10. Frequency tables and histograms for rock samples - (continued)

S-SR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	100.000	6	20.00	6	20.0	80.0	24	80.0	20.0
2	200.000	5	16.67	11	36.7	63.3	29	96.7	3.3
3	500.000	1	3.33	12	40.0	60.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	18	0	0	0	12	30	30	VALUES
0.0	0.0	0.0	60.0	0.0	0.0	0.0	40.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
100.000	500.00	175.000	113.82	152.643	1.66	12



Each increment (each X or | plotted) = 0.500 %

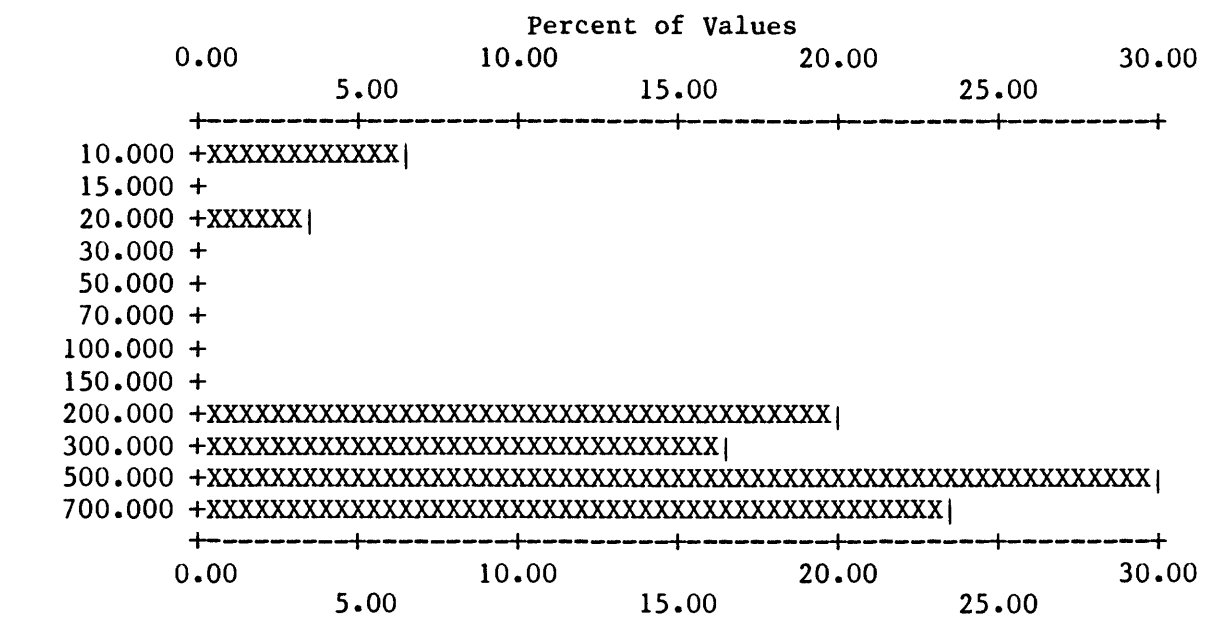
Table 10. Frequency tables and histograms for rock samples - (continued)

S-V

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	2	6.67	2	6.7	93.3	2	6.7	93.3
2	20.000	1	3.33	3	10.0	90.0	3	10.0	90.0
3	200.000	6	20.00	9	30.0	70.0	9	30.0	70.0
4	300.000	5	16.67	14	46.7	53.3	14	46.7	53.3
5	500.000	9	30.00	23	76.7	23.3	23	76.7	23.3
6	700.000	7	23.33	30	100.0	0.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	30	30	30	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	700.00	404.667	224.22	286.181	3.18	30



Each increment (each X or | plotted) = 0.500 %

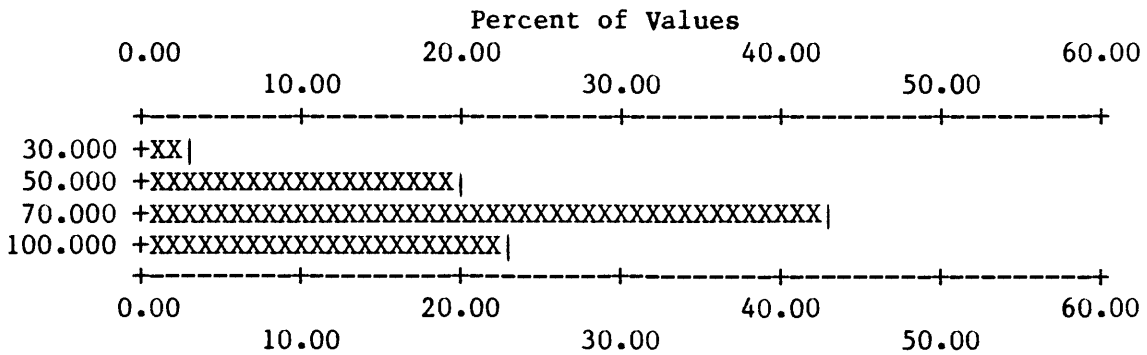
Table 10. Frequency tables and histograms for rock samples - (continued)

S-Y

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	30.000	1	3.33	1	3.3	96.7	4	13.3	86.7
2	50.000	6	20.00	7	23.3	76.7	10	33.3	66.7
3	70.000	13	43.33	20	66.7	33.3	23	76.7	23.3
4	100.000	7	23.33	27	90.0	10.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	3	0	0	0	27	30	30	VALUES
0.0	0.0	0.0	10.0	0.0	0.0	0.0	90.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
30.000	100.00	71.852	19.81	69.049	1.34	27



Each increment (each X or | plotted) = 1.000 %

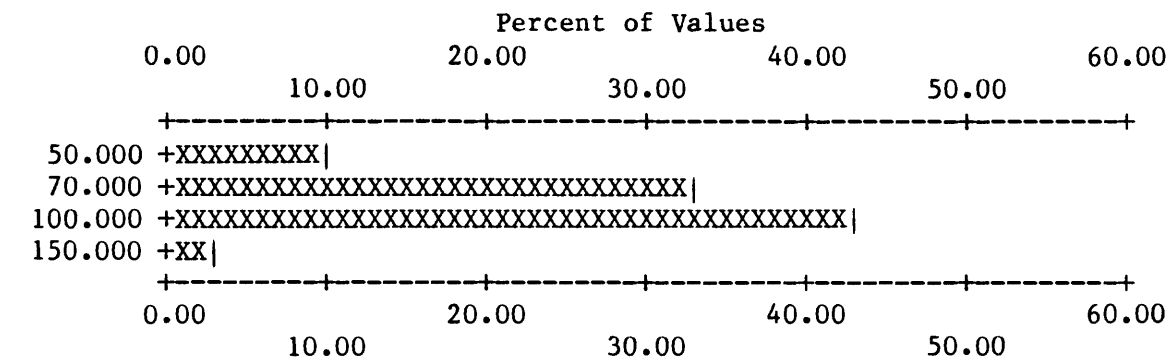
Table 10. Frequency tables and histograms for rock samples - (continued)

S-ZR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	3	10.00	3	10.0	90.0	6	20.0	80.0
2	70.000	10	33.33	13	43.3	56.7	16	53.3	46.7
3	100.000	13	43.33	26	86.7	13.3	29	96.7	3.3
4	150.000	1	3.33	27	90.0	10.0	30	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	3	0	0	0	27	30	30	VALUES
0.0	0.0	0.0	10.0	0.0	0.0	0.0	90.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	150.00	85.185	22.42	82.357	1.31	27



Each increment (each X or | plotted) = 1.000 %

Table 11. Frequency tables and histograms for stream-sediment samples

S-CA%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	5.000	2	7.41	2	7.4	92.6	2	7.4	92.6
2	7.000	6	22.22	8	29.6	70.4	8	29.6	70.4
3	10.000	7	25.93	15	55.6	44.4	15	55.6	44.4
4	15.000	6	22.22	21	77.8	22.2	21	77.8	22.2
5	20.000	4	14.81	25	92.6	7.4	25	92.6	7.4

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	2	0	25	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	7.4	0.0	92.6			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
5.000	20.00	11.680	4.93	10.695	1.54	25

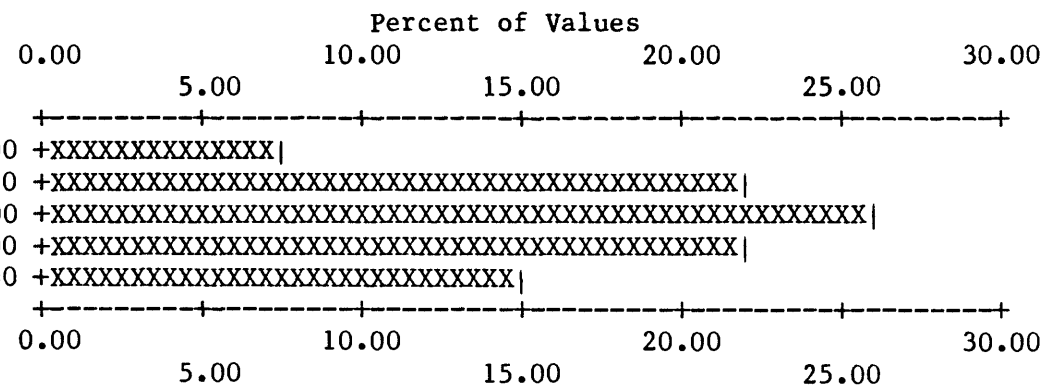


Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-FE%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	15.000	4	14.81	5	18.5	81.5	5	18.5	81.5
3	20.000	8	29.63	13	48.1	51.9	13	48.1	51.9

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	14	0	13	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	51.9	0.0	48.1			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	20.00	17.692	3.30	17.355	1.24	13

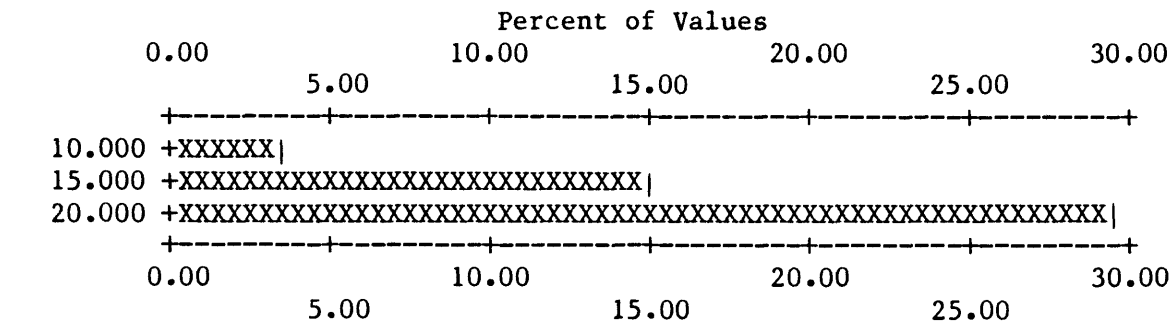


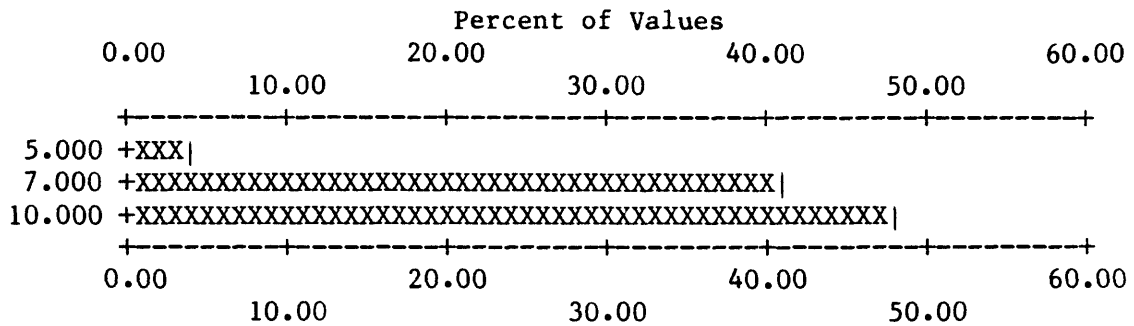
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-MG%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	5.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	7.000	11	40.74	12	44.4	55.6	12	44.4	55.6
3	10.000	13	48.15	25	92.6	7.4	25	92.6	7.4

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	2	0	25	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	7.4	0.0	92.6			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
5.000	10.00	8.480	1.66	8.314	1.23	25



Each increment (each X or | plotted) = 1.000 %

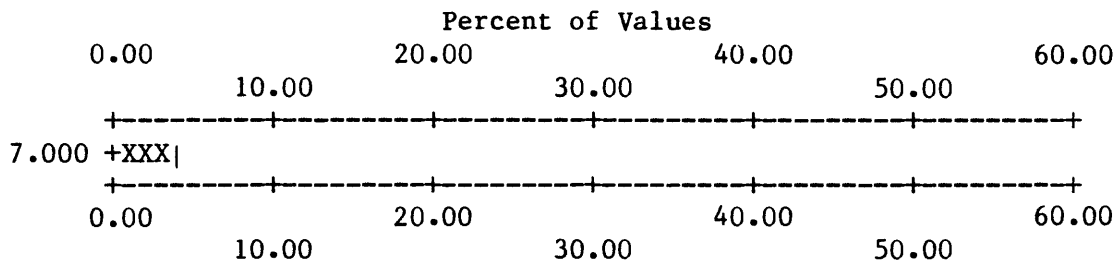
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-AG

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	7.000	1	3.70	1	3.7	96.3	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	26	0	0	0	1	27	27	VALUES
0.0	0.0	0.0	96.3	0.0	0.0	0.0	3.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
7.000	7.00	7.000	0.00	7.000	--	1



Each increment (each X or | plotted) = 1.000 %

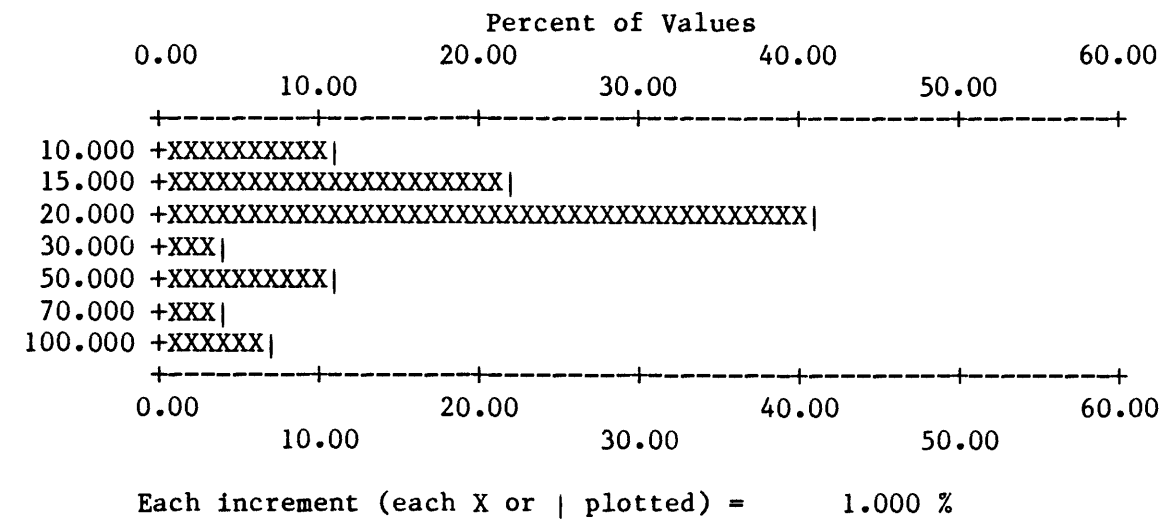
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-B

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	15.000	6	22.22	9	33.3	66.7	9	33.3	66.7
3	20.000	11	40.74	20	74.1	25.9	20	74.1	25.9
4	30.000	1	3.70	21	77.8	22.2	21	77.8	22.2
5	50.000	3	11.11	24	88.9	11.1	24	88.9	11.1
6	70.000	1	3.70	25	92.6	7.4	25	92.6	7.4
7	100.000	2	7.41	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	100.00	29.259	24.99	23.040	1.91	27



Each increment (each X or | plotted) = 1.000 %

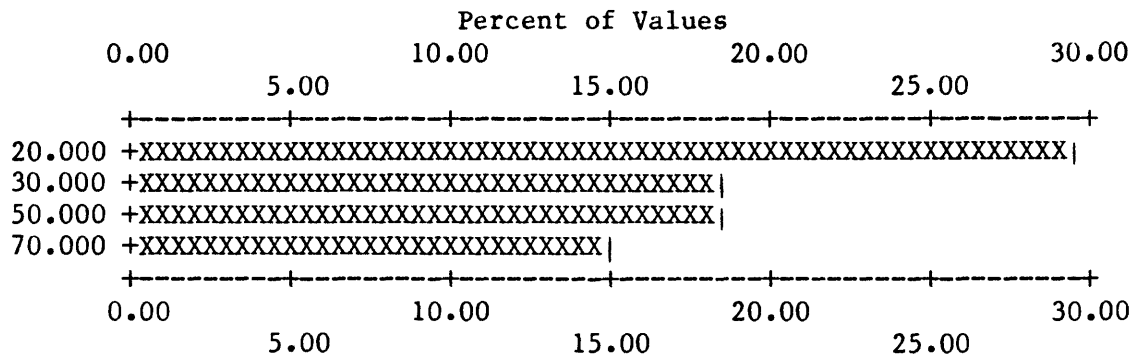
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-BA

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	8	29.63	8	29.6	70.4	13	48.1	51.9
2	30.000	5	18.52	13	48.1	51.9	18	66.7	33.3
3	50.000	5	18.52	18	66.7	33.3	23	85.2	14.8
4	70.000	4	14.81	22	81.5	18.5	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	1	4	0	0	22	27	27	VALUES
0.0	0.0	0.0	3.7	14.8	0.0	0.0	81.5			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	70.00	38.182	19.18	33.917	1.64	22



Each increment (each X or | plotted) = 0.500 %

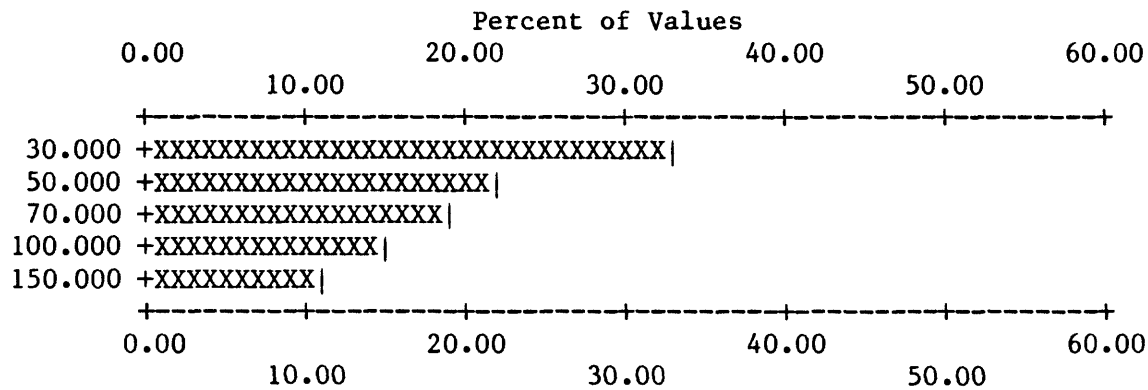
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-CO

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	30.000	9	33.33	9	33.3	66.7	9	33.3	66.7
2	50.000	6	22.22	15	55.6	44.4	15	55.6	44.4
3	70.000	5	18.52	20	74.1	25.9	20	74.1	25.9
4	100.000	4	14.81	24	88.9	11.1	24	88.9	11.1
5	150.000	3	11.11	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
30.000	150.00	65.556	38.76	56.194	1.75	27



Each increment (each X or | plotted) = 1.000 %

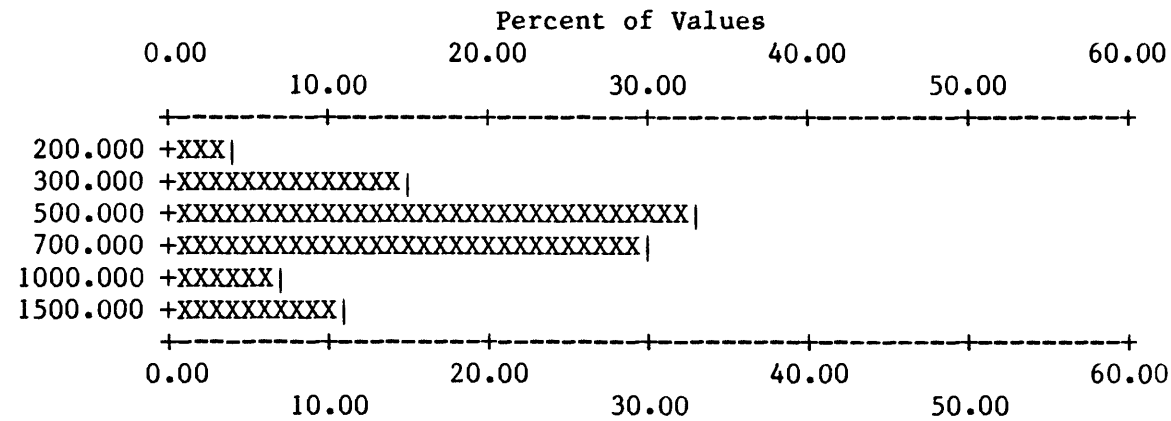
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-CR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	200.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	300.000	4	14.81	5	18.5	81.5	5	18.5	81.5
3	500.000	9	33.33	14	51.9	48.1	14	51.9	48.1
4	700.000	8	29.63	22	81.5	18.5	22	81.5	18.5
5	1000.000	2	7.41	24	88.9	11.1	24	88.9	11.1
6	1500.000	3	11.11	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
200.000	1500.00	666.667	357.34	588.809	1.66	27



Each increment (each X or | plotted) = 1.000 %

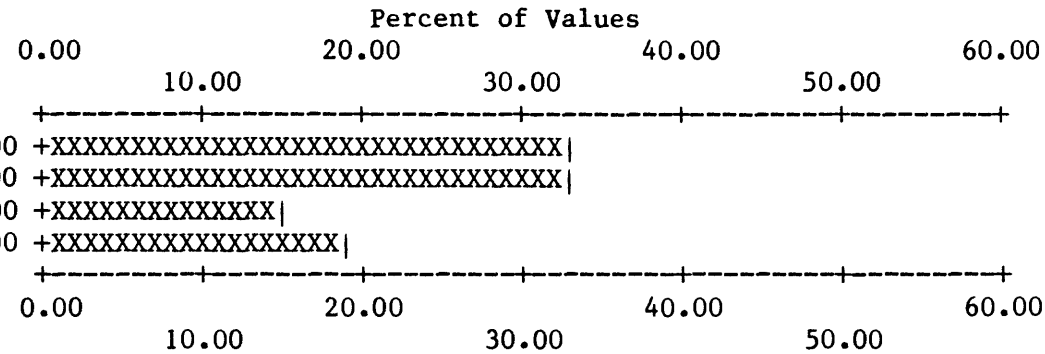
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-CU

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	9	33.33	9	33.3	66.7	9	33.3	66.7
2	70.000	9	33.33	18	66.7	33.3	18	66.7	33.3
3	100.000	4	14.81	22	81.5	18.5	22	81.5	18.5
4	150.000	5	18.52	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	150.00	82.593	36.65	75.968	1.50	27



Each increment (each X or | plotted) = 1.000 %

Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-MN

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	2000.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	3000.000	11	40.74	14	51.9	48.1	14	51.9	48.1
3	5000.000	12	44.44	26	96.3	3.7	26	96.3	3.7

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	1	0	26	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	3.7	0.0	96.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
2000.000	5000.00	3807.692	1166.85	3624.055	1.39	26

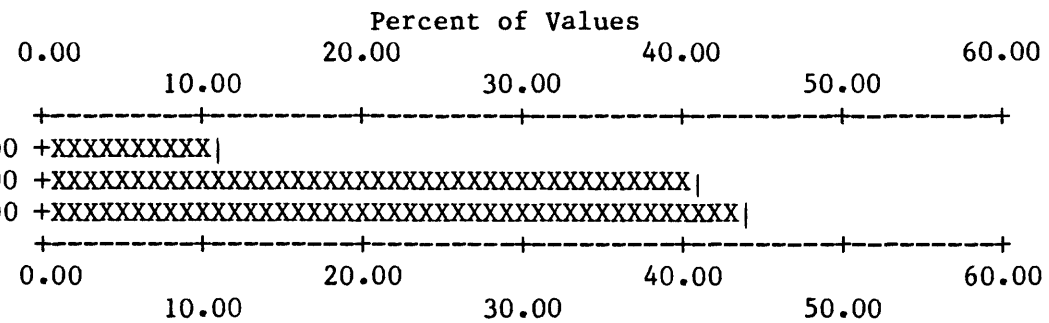


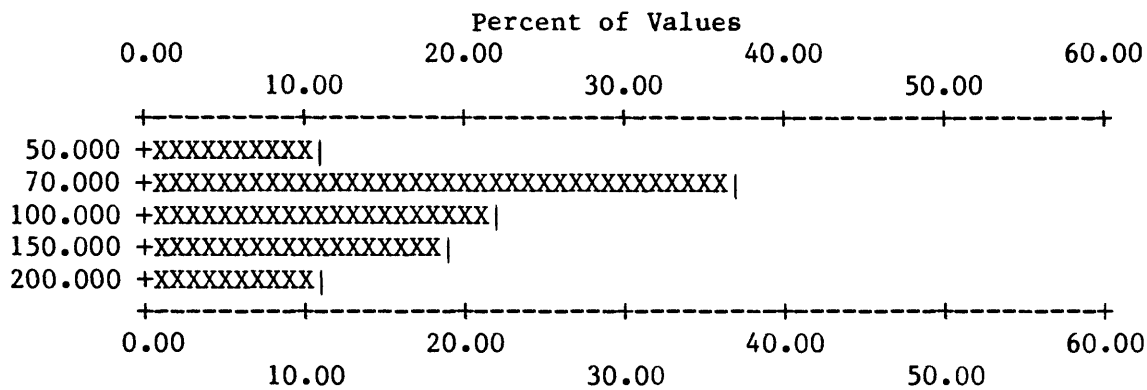
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-NI

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	70.000	10	37.04	13	48.1	51.9	13	48.1	51.9
3	100.000	6	22.22	19	70.4	29.6	19	70.4	29.6
4	150.000	5	18.52	24	88.9	11.1	24	88.9	11.1
5	200.000	3	11.11	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	200.00	103.704	47.49	94.458	1.54	27



Each increment (each X or | plotted) = 1.000 %

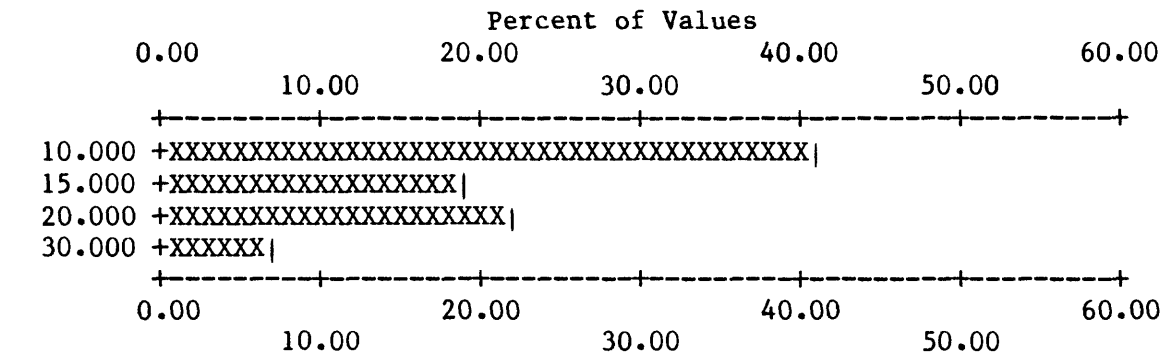
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-PB

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	11	40.74	11	40.7	59.3	14	51.9	48.1
2	15.000	5	18.52	16	59.3	40.7	19	70.4	29.6
3	20.000	6	22.22	22	81.5	18.5	25	92.6	7.4
4	30.000	2	7.41	24	88.9	11.1	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	3	0	0	0	24	27	27	VALUES
0.0	0.0	0.0	11.1	0.0	0.0	0.0	88.9			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	30.00	15.208	6.16	14.181	1.45	24



Each increment (each X or | plotted) = 1.000 %

Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-SR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	100.000	9	33.33	9	33.3	66.7	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	18	0	0	0	9	27	27	VALUES
0.0	0.0	0.0	66.7	0.0	0.0	0.0	33.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
100.000	100.00	100.000	0.00	100.000	1.00	9

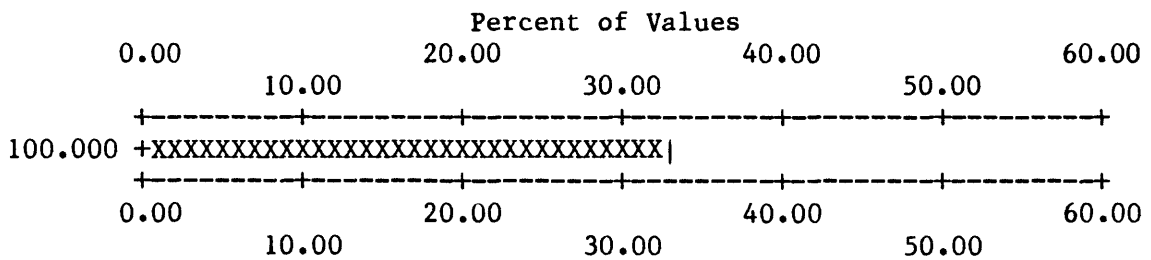


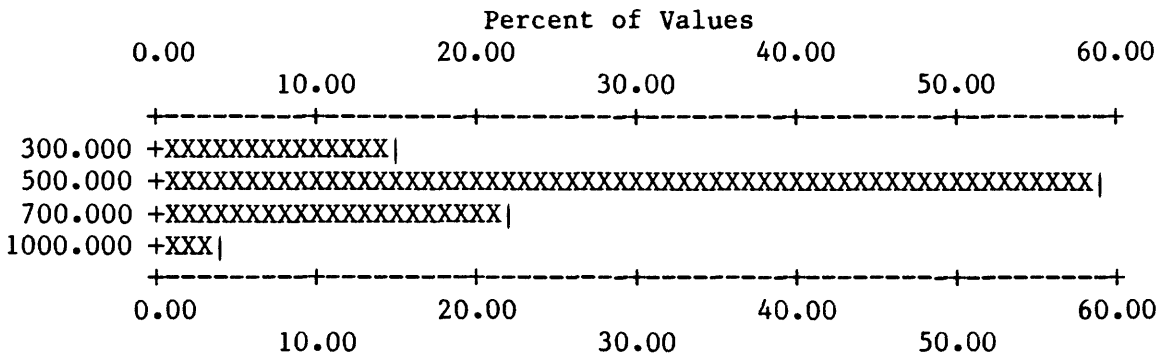
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-V

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	300.000	4	14.81	4	14.8	85.2	4	14.8	85.2
2	500.000	16	59.26	20	74.1	25.9	20	74.1	25.9
3	700.000	6	22.22	26	96.3	3.7	26	96.3	3.7
4	1000.000	1	3.70	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
300.000	1000.00	533.333	154.42	512.538	1.34	27



Each increment (each X or | plotted) = 1.000 %

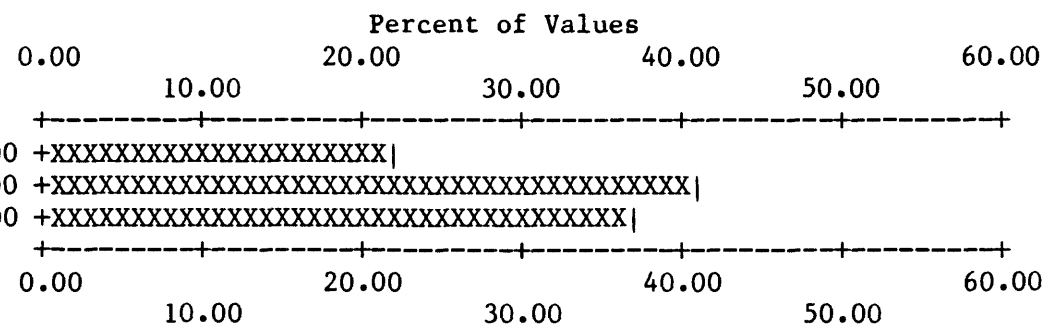
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-Y

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	6	22.22	6	22.2	77.8	6	22.2	77.8
2	70.000	11	40.74	17	63.0	37.0	17	63.0	37.0
3	100.000	10	37.04	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	100.00	76.667	19.81	74.130	1.31	27



Each increment (each X or | plotted) = 1.000 %

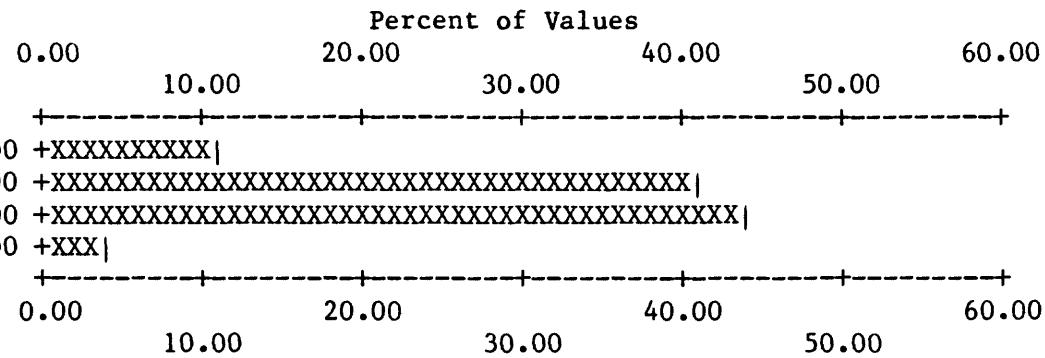
Table 11. Frequency tables and histograms for stream-sediment samples - (continued)

S-ZR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	70.000	11	40.74	14	51.9	48.1	14	51.9	48.1
3	100.000	12	44.44	26	96.3	3.7	26	96.3	3.7
4	150.000	1	3.70	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	150.00	84.074	22.41	81.277	1.31	27



Each increment (each X or | plotted) = 1.000 %

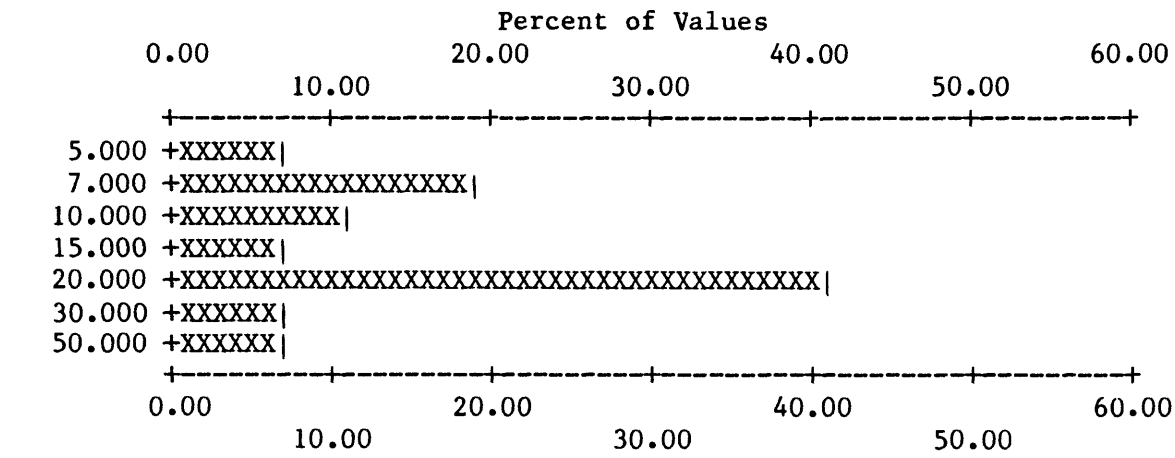
Table 12. Frequency tables and histograms for panned-concentrate samples

S-CA%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	5.000	2	7.41	2	7.4	92.6	2	7.4	92.6
2	7.000	5	18.52	7	25.9	74.1	7	25.9	74.1
3	10.000	3	11.11	10	37.0	63.0	10	37.0	63.0
4	15.000	2	7.41	12	44.4	55.6	12	44.4	55.6
5	20.000	11	40.74	23	85.2	14.8	23	85.2	14.8
6	30.000	2	7.41	25	92.6	7.4	25	92.6	7.4
7	50.000	2	7.41	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
5.000	50.00	17.963	11.66	14.853	1.89	27



Each increment (each X or | plotted) = 1.000 %

Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-FE%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.700	1	3.70	1	3.7	96.3	1	3.7	96.3
2	1.000	1	3.70	2	7.4	92.6	2	7.4	92.6
3	1.500	4	14.81	6	22.2	77.8	6	22.2	77.8
4	2.000	9	33.33	15	55.6	44.4	15	55.6	44.4
5	3.000	10	37.04	25	92.6	7.4	25	92.6	7.4
6	5.000	1	3.70	26	96.3	3.7	26	96.3	3.7
7	7.000	1	3.70	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.700	7.00	2.507	1.25	2.263	1.59	27

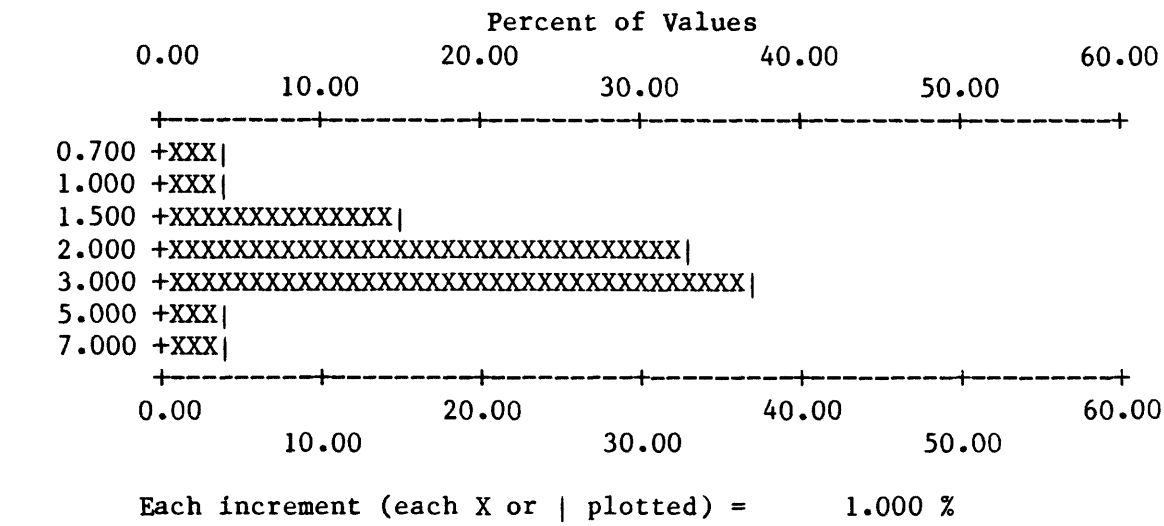


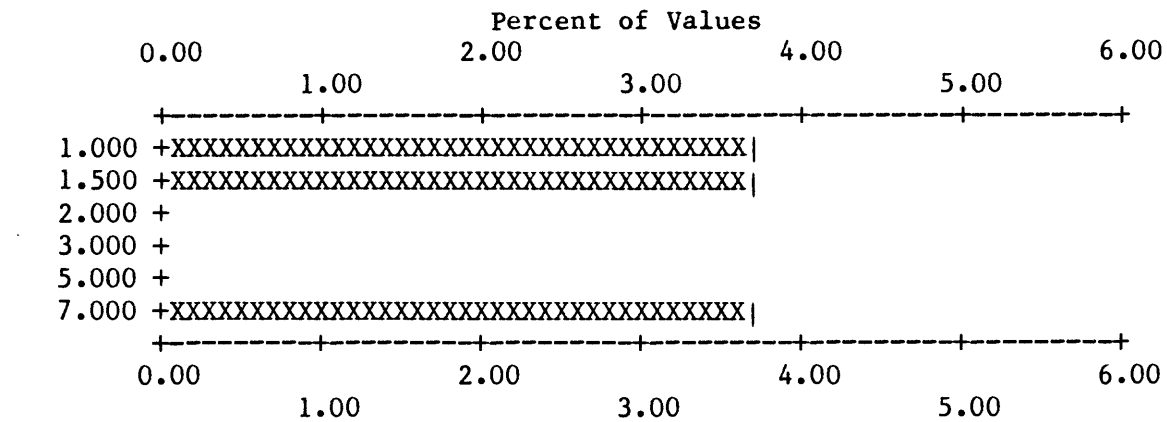
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-AG

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	1.000	1	3.70	1	3.7	96.3	25	92.6	7.4
2	1.500	1	3.70	2	7.4	92.6	26	96.3	3.7
3	7.000	1	3.70	3	11.1	88.9	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	22	2	0	0	3	27	27	VALUES
0.0	0.0	0.0	81.5	7.4	0.0	0.0	11.1			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
1.000	7.00	3.167	3.33	2.190	2.79	3



Each increment (each X or | plotted) = 0.100 %

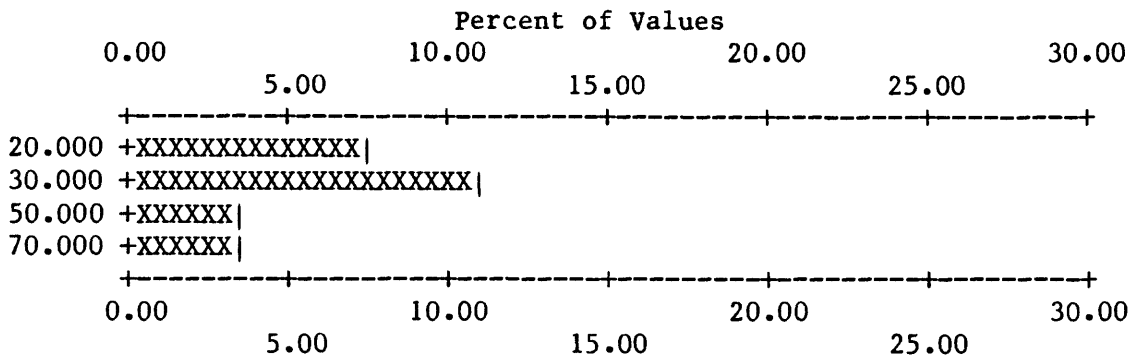
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-B

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	2	7.41	2	7.4	92.6	22	81.5	18.5
2	30.000	3	11.11	5	18.5	81.5	25	92.6	7.4
3	50.000	1	3.70	6	22.2	77.8	26	96.3	3.7
4	70.000	1	3.70	7	25.9	74.1	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	13	7	0	0	7	27	27	VALUES
0.0	0.0	0.0	48.1	25.9	0.0	0.0	25.9			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	70.00	35.714	18.13	32.439	1.58	7



Each increment (each X or | plotted) = 0.500 %

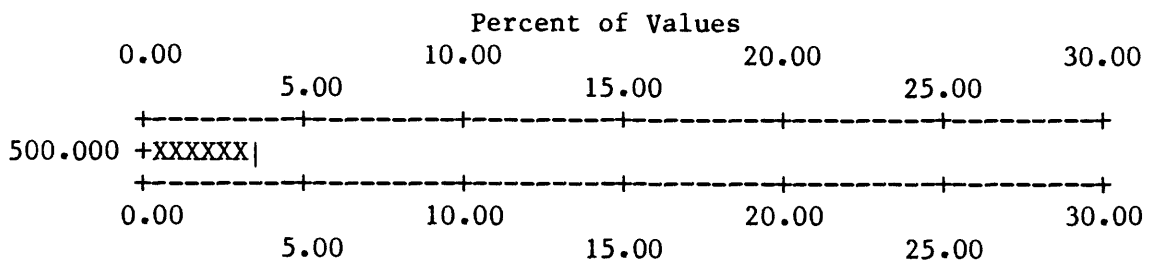
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-BI

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	500.000	1	3.70	1	3.7	96.3	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	26	0	0	0	1	27	27	VALUES
0.0	0.0	0.0	96.3	0.0	0.0	0.0	3.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
500.000	500.00	500.000	0.00	500.000	--	1



Each increment (each X or | plotted) = 0.500 %

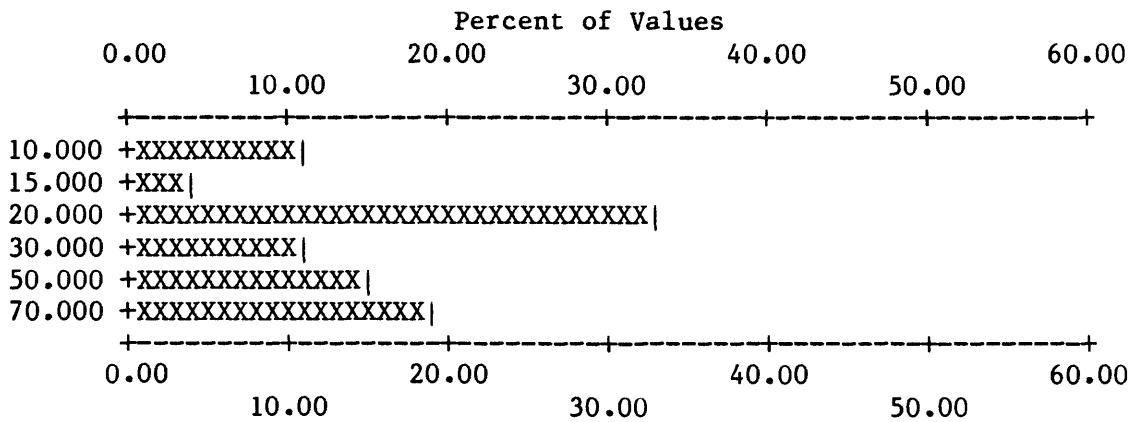
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-CO

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	3	11.11	3	11.1	88.9	5	18.5	81.5
2	15.000	1	3.70	4	14.8	85.2	6	22.2	77.8
3	20.000	9	33.33	13	48.1	51.9	15	55.6	44.4
4	30.000	3	11.11	16	59.3	40.7	18	66.7	33.3
5	50.000	4	14.81	20	74.1	25.9	22	81.5	18.5
6	70.000	5	18.52	25	92.6	7.4	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	2	0	0	0	25	27	27	VALUES
0.0	0.0	0.0	7.4	0.0	0.0	0.0	92.6			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	70.00	34.600	21.79	28.413	1.92	25



Each increment (each X or | plotted) = 1.000 %

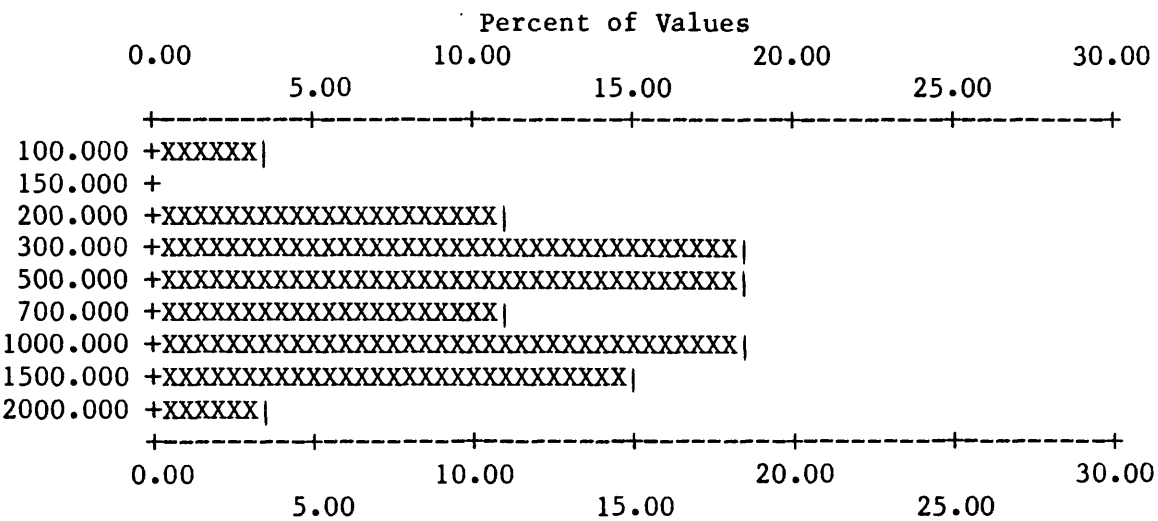
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-CR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	100.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	200.000	3	11.11	4	14.8	85.2	4	14.8	85.2
3	300.000	5	18.52	9	33.3	66.7	9	33.3	66.7
4	500.000	5	18.52	14	51.9	48.1	14	51.9	48.1
5	700.000	3	11.11	17	63.0	37.0	17	63.0	37.0
6	1000.000	5	18.52	22	81.5	18.5	22	81.5	18.5
7	1500.000	4	14.81	26	96.3	3.7	26	96.3	3.7
8	2000.000	1	3.70	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
100.000	2000.00	733.333	510.66	565.913	2.16	27



Each increment (each X or | plotted) = 0.500 %

Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-CU

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	20.000	5	18.52	6	22.2	77.8	6	22.2	77.8
3	30.000	1	3.70	7	25.9	74.1	7	25.9	74.1
4	50.000	8	29.63	15	55.6	44.4	15	55.6	44.4
5	70.000	3	11.11	18	66.7	33.3	18	66.7	33.3
6	100.000	6	22.22	24	88.9	11.1	24	88.9	11.1
7	150.000	3	11.11	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	150.00	66.667	41.69	53.373	2.07	27

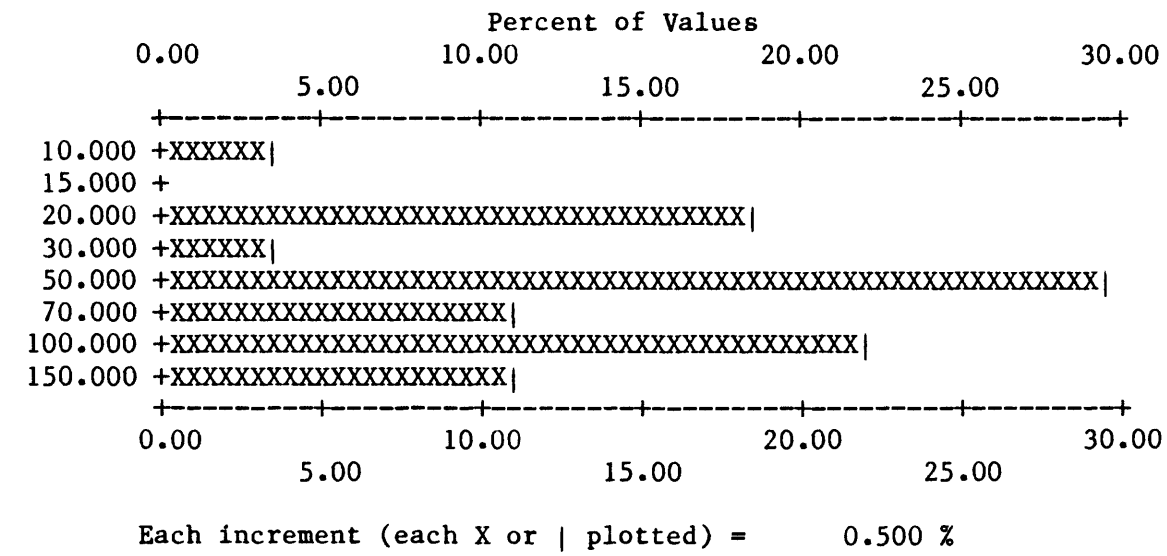


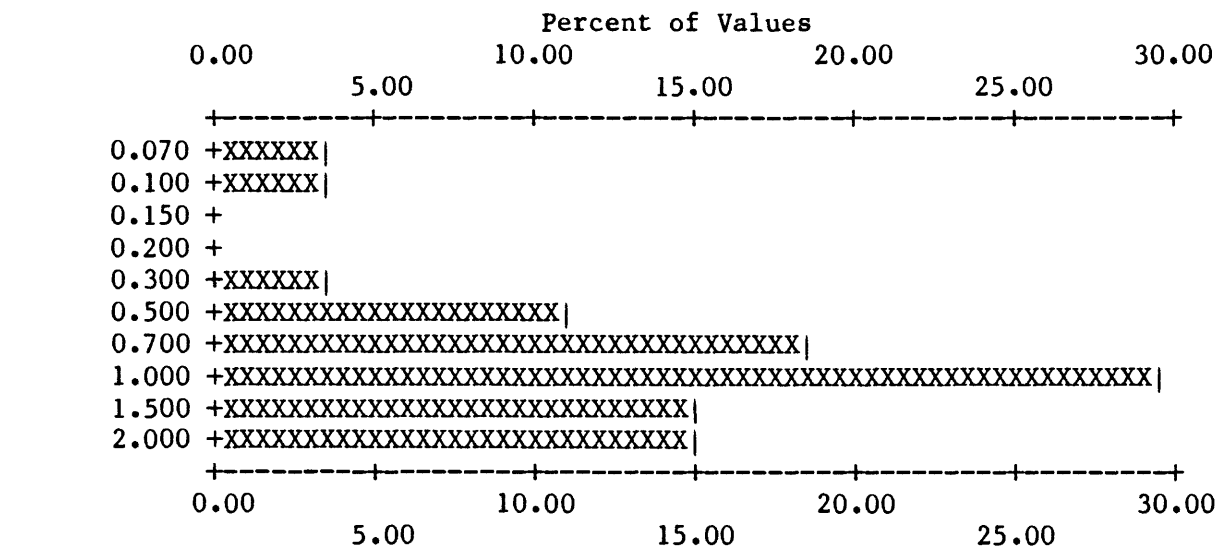
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-MG%

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.070	1	3.70	1	3.7	96.3	1	3.7	96.3
2	0.100	1	3.70	2	7.4	92.6	2	7.4	92.6
3	0.300	1	3.70	3	11.1	88.9	3	11.1	88.9
4	0.500	3	11.11	6	22.2	77.8	6	22.2	77.8
5	0.700	5	18.52	11	40.7	59.3	11	40.7	59.3
6	1.000	8	29.63	19	70.4	29.6	19	70.4	29.6
7	1.500	4	14.81	23	85.2	14.8	23	85.2	14.8
8	2.000	4	14.81	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.070	2.00	1.017	0.57	0.812	2.26	27



Each increment (each X or | plotted) = 0.500 %

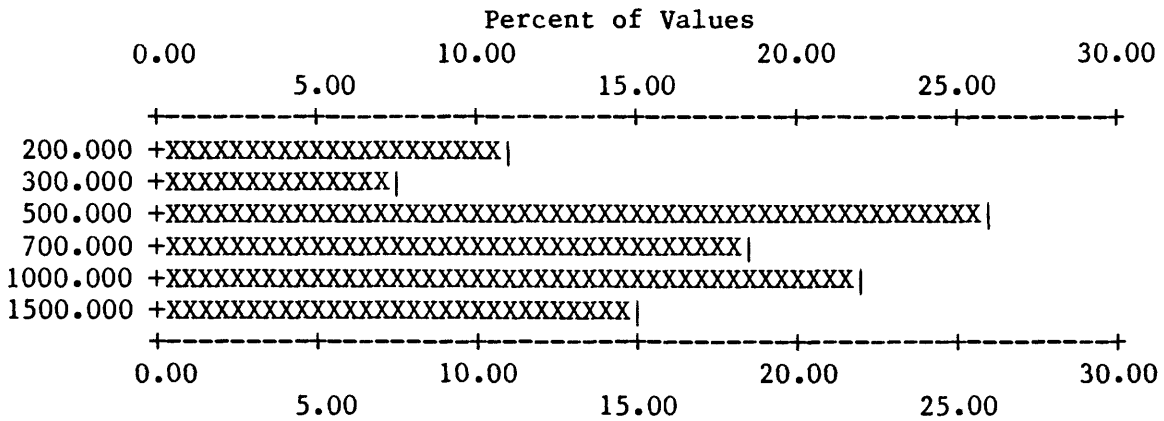
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-MN

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	200.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	300.000	2	7.41	5	18.5	81.5	5	18.5	81.5
3	500.000	7	25.93	12	44.4	55.6	12	44.4	55.6
4	700.000	5	18.52	17	63.0	37.0	17	63.0	37.0
5	1000.000	6	22.22	23	85.2	14.8	23	85.2	14.8
6	1500.000	4	14.81	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
200.000	1500.00	748.148	410.79	635.276	1.85	27



Each increment (each X or | plotted) = 0.500 %

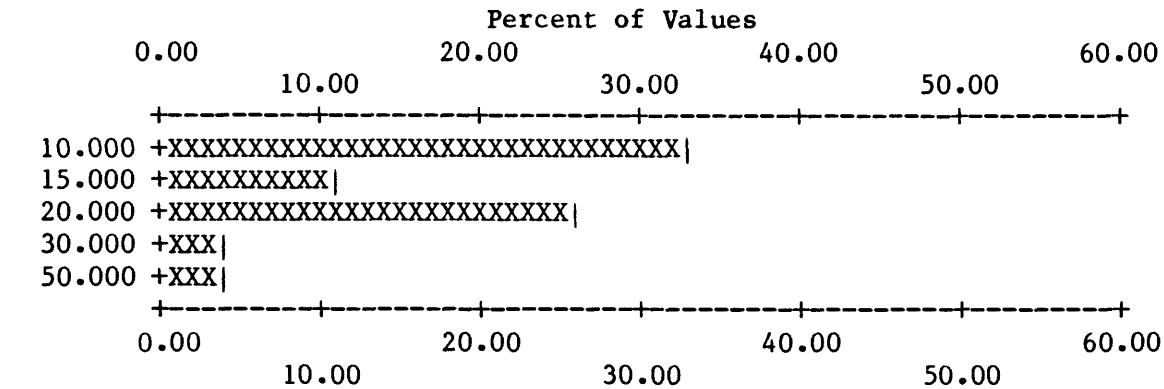
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-NI

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	10.000	9	33.33	9	33.3	66.7	15	55.6	44.4
2	15.000	3	11.11	12	44.4	55.6	18	66.7	33.3
3	20.000	7	25.93	19	70.4	29.6	25	92.6	7.4
4	30.000	1	3.70	20	74.1	25.9	26	96.3	3.7
5	50.000	1	3.70	21	77.8	22.2	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	6	0	0	0	21	27	27	VALUES
0.0	0.0	0.0	22.2	0.0	0.0	0.0	77.8			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
10.000	50.00	16.905	9.42	15.188	1.56	21



Each increment (each X or | plotted) = 1.000 %

Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-PB

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	4	14.81	4	14.8	85.2	19	70.4	29.6
2	30.000	1	3.70	5	18.5	81.5	20	74.1	25.9
3	50.000	2	7.41	7	25.9	74.1	22	81.5	18.5
4	150.000	1	3.70	8	29.6	70.4	23	85.2	14.8
5	200.000	1	3.70	9	33.3	66.7	24	88.9	11.1
6	700.000	1	3.70	10	37.0	63.0	25	92.6	7.4
7	1500.000	1	3.70	11	40.7	59.3	26	96.3	3.7
8	3000.000	1	3.70	12	44.4	55.6	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	15	0	0	0	12	27	27	VALUES
0.0	0.0	0.0	55.6	0.0	0.0	0.0	44.4			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	3000.00	480.000	906.80	101.053	6.12	12

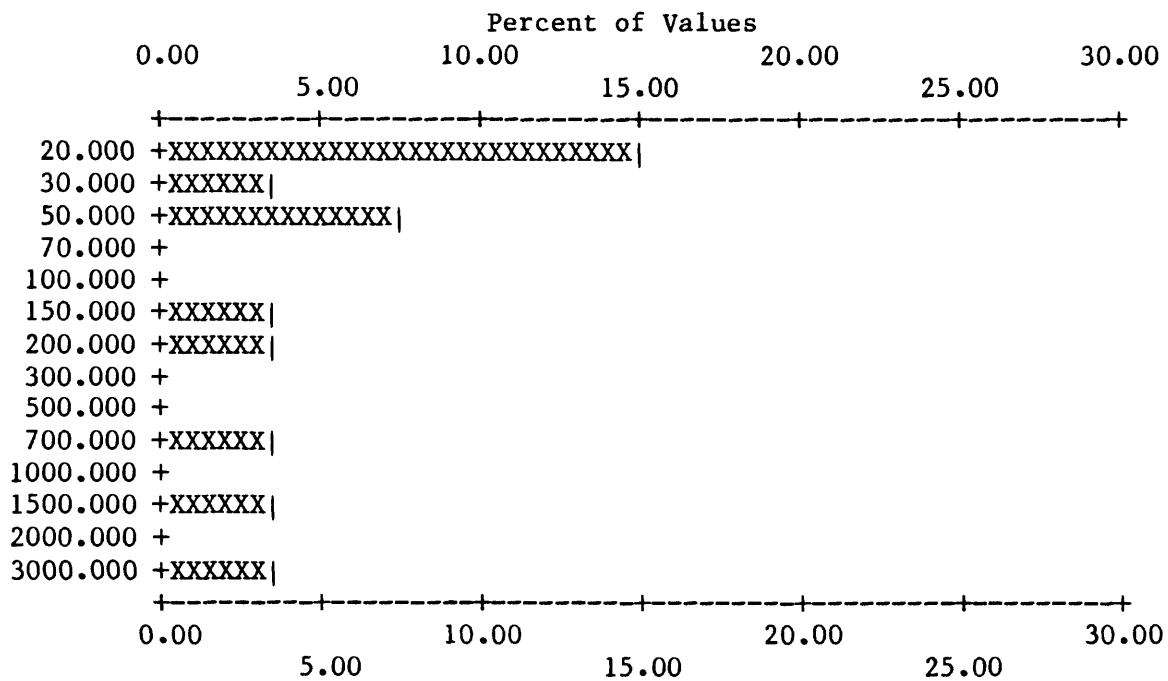


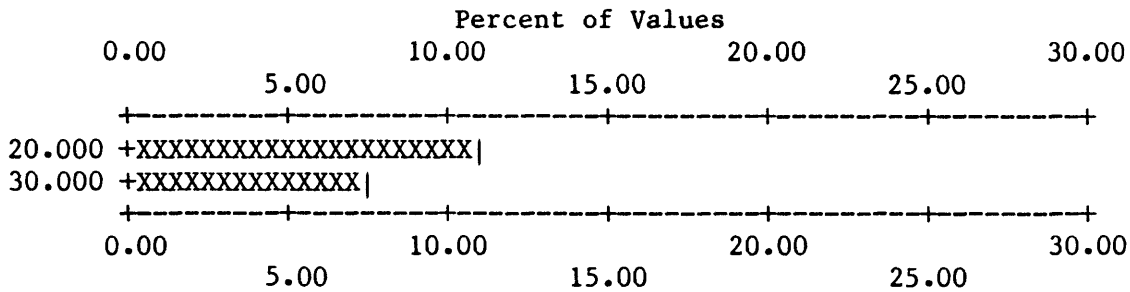
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-SN

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	20.000	3	11.11	3	11.1	88.9	25	92.6	7.4
2	30.000	2	7.41	5	18.5	81.5	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	14	8	0	0	5	27	27	VALUES
0.0	0.0	0.0	51.9	29.6	0.0	0.0	18.5			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
20.000	30.00	24.000	5.48	23.522	1.25	5



Each increment (each X or | plotted) = 0.500 %

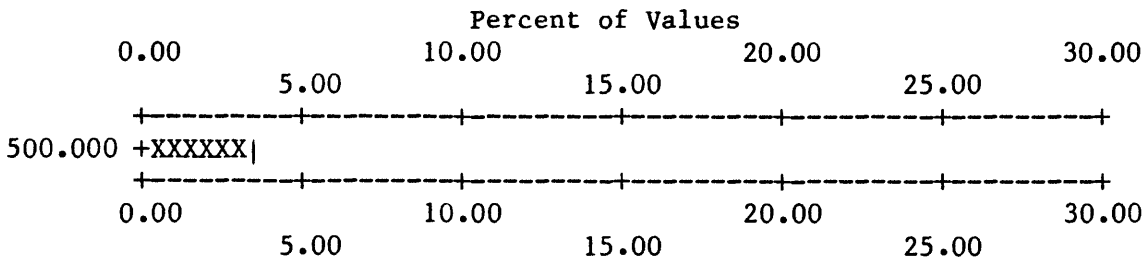
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-SR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	500.000	1	3.70	1	3.7	96.3	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	26	0	0	0	1	27	27	VALUES
0.0	0.0	0.0	96.3	0.0	0.0	0.0	3.7			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
500.000	500.00	500.000	0.00	500.000	--	1



Each increment (each X or | plotted) = 0.500 %

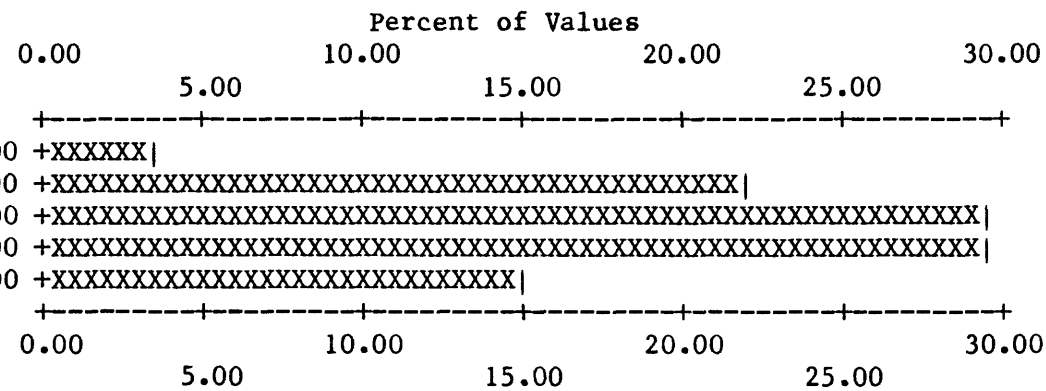
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-V

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	150.000	1	3.70	1	3.7	96.3	1	3.7	96.3
2	200.000	6	22.22	7	25.9	74.1	7	25.9	74.1
3	300.000	8	29.63	15	55.6	44.4	15	55.6	44.4
4	500.000	8	29.63	23	85.2	14.8	23	85.2	14.8
5	700.000	4	14.81	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
150.000	700.00	390.741	177.61	352.443	1.60	27



Each increment (each X or | plotted) = 0.500 %

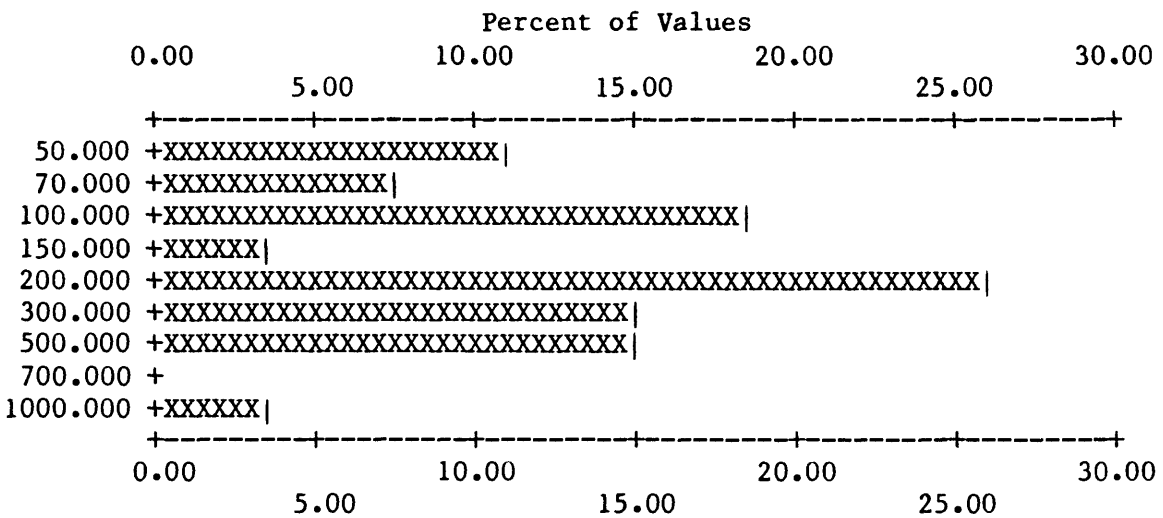
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-Y

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	50.000	3	11.11	3	11.1	88.9	3	11.1	88.9
2	70.000	2	7.41	5	18.5	81.5	5	18.5	81.5
3	100.000	5	18.52	10	37.0	63.0	10	37.0	63.0
4	150.000	1	3.70	11	40.7	59.3	11	40.7	59.3
5	200.000	7	25.93	18	66.7	33.3	18	66.7	33.3
6	300.000	4	14.81	22	81.5	18.5	22	81.5	18.5
7	500.000	4	14.81	26	96.3	3.7	26	96.3	3.7
8	1000.000	1	3.70	27	100.0	0.0	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	0	0	27	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
50.000	1000.00	242.222	209.91	178.204	2.23	27



Each increment (each X or | plotted) = 0.500 %

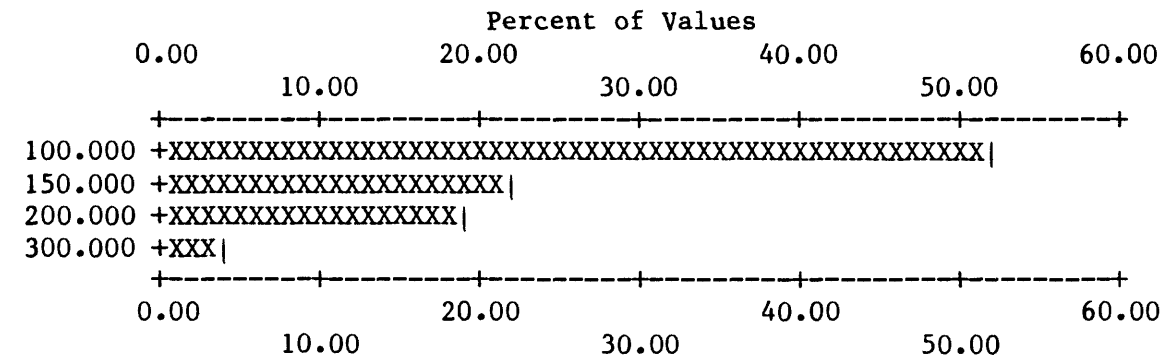
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

S-ZR

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	100.000	14	51.85	14	51.9	48.1	14	51.9	48.1
2	150.000	6	22.22	20	74.1	25.9	20	74.1	25.9
3	200.000	5	18.52	25	92.6	7.4	25	92.6	7.4
4	300.000	1	3.70	26	96.3	3.7	26	96.3	3.7

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	0	0	1	0	26	27	27	VALUES
0.0	0.0	0.0	0.0	0.0	3.7	0.0	96.3			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
100.000	300.00	138.462	51.59	130.881	1.39	26



Each increment (each X or | plotted) = 1.000 %

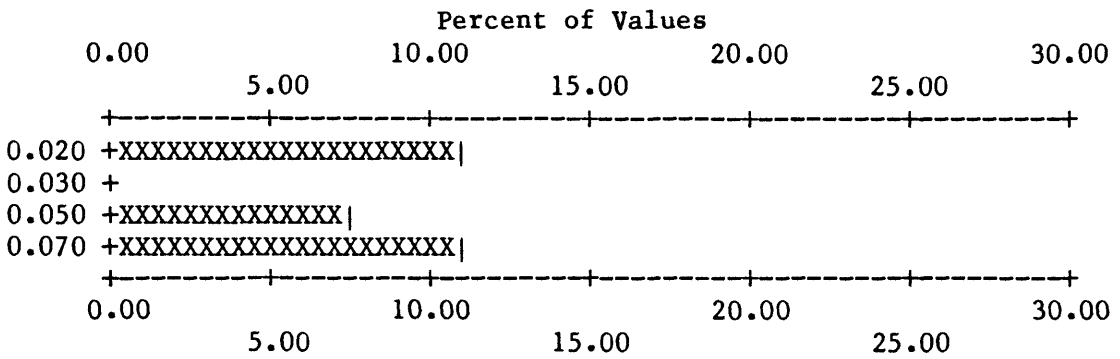
Table 12. Frequency tables and histograms for panned-concentrate samples - (continued)

AA-HG

	VALUE	NO.	%	CUM.	CUM. %		TOT CUM	TOT CUM %	
1	0.020	3	11.11	3	11.1	88.9	22	81.5	18.5
2	0.050	2	7.41	5	18.5	81.5	24	88.9	11.1
3	0.070	3	11.11	8	29.6	70.4	27	100.0	0.0

B	T	H	N	L	G	OTHER	UNQUAL	ANAL	READ	
0	0	0	19	0	0	0	8	27	27	VALUES
0.0	0.0	0.0	70.4	0.0	0.0	0.0	29.6			PERCENT

MIN	MAX	AMEAN	SD	GMEAN	GD	VALUES
0.020	0.07	0.046	0.02	0.040	1.81	8



Each increment (each X or | plotted) = 0.500 %