

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GEOCHEMICAL MAPS OF SELECTED ELEMENTS AND RESULTS OF
SPECTROGRAPHIC ANALYSES FOR HEAVY-MINERAL
CONCENTRATES FROM THE WESTERN HALF OF THE
TALKEETNA MOUNTAINS QUADRANGLE, ALASKA

By

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This report is preliminary and has not been edited or reviewed for
conformity with U.S. Geological Survey and nomenclature

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INTRODUCTION

During the summer of 1975 a geochemical reconnaissance study was made in the western half of the Talkeetna Mountains 1:250,000-scale quadrangle, Alaska, as part of the Alaska Mineral Resource Assessment Program (AMRAP). This report includes analytical results for nonmagnetic heavy-mineral concentrates from stream sediment collected at 304 sites (table 1), sample location map (fig. 1), and geochemical maps with frequency histograms of Ag, As, Au, Cu, Mo, Pb, Sn, W, and Zn (figs. 1-5). Analytical data for 295 stream sediment and 200 rock samples collected in the Talkeetna Mountains quadrangle are available in U.S. Geological Survey Open-File Report (Miller and others, 1977).

SAMPLING

The geochemical sampling was done by a U.S. Geological Survey field party consisting of G. C. Curtin, R. C. Karlson, L. Garnezy, and S. P. Johnson. All sampling was done using a helicopter.

Stream sediments from which the heavy minerals were concentrated were collected from the active channel of streams draining areas ranging from 5 to 10 km². The sediment in most of these streams, ranges in size from fine to coarse sand, pebbles, and cobbles, and is composed mainly of detrital material that has been mechanically introduced into a stream from bedrock, glacial debris, and colluvium. The composition of the sediment approximates that of the weathering rock within a drainage basin.

The heavy minerals in the stream sediment can reflect the presence of outcropping or subcropping mineralized rock with the drainage basin upstream from the sample site and are especially useful for determining the distribution of heavy metals and resistate heavy minerals.

SAMPLE PREPARATION

The heavy-mineral concentrates were preliminarily prepared in the field by panning to remove the bulk of the light minerals. The panned samples were sieved through a 20-mesh (0.8 mm) stainless steel screen in the laboratory. The minus 20 mesh fraction was separated with bromoform into two fractions: (1) a light-mineral fraction having a specific gravity of 2.86 or less and (2) a heavy-mineral fraction having a specific gravity of greater than 2.86. The heavy-mineral fraction was saved and separated magnetically. Magnetite was first removed from the sample using a hand magnet. The remaining fraction was then passed through a Frantz Isodynamic Separator until a nonmagnetic fraction was obtained at a setting of 0.6 amperes. This fraction mainly contains muscovite, sphene, zircon, apatite, rutile, anatase, and tourmaline. Ore minerals such as sulfides and gold also occur in this fraction. The nonmagnetic heavy-mineral fraction was ground to a minus 150 mesh and then analyzed by a 30 element semiquantitative spectrographic method (Grimes and Marranzino, 1968). These analytical results are listed in table 1. The remainder of the heavy minerals were saved for future analysis.

DISCUSSION

The copper and molybdenum map (fig. 3) for the heavy-mineral concentrates outlines several areas of interest. The area of greatest interest is that of Iron Creek (T. 25 and 26 N., R. 2-4 E.). Iron Creek has been prospected since the early 1900's (Capps, 1919). The copper here occurs as fillings and replacement along shear zones a few feet thick in andesite-greenstones, which are amygdaloidal lava flows and some coarser-grained intrusives (Capps, 1940). Capps (1940) describes the ore as consisting of abundant copper carbonates and bornite near the surface. Beneath these surface minerals are the primary minerals pyrite, arsenopyrite, chalcopyrite, and specular hematite.

The areas where anomalous values of Cu and Mo occur in the heavy-mineral concentrates seem to be primarily confined to these andesite-greenstones. Varying amounts of Pb and Ag (figs. 2 and 4) are associated with the anomalous Cu and Mo values. Anomalous amounts of Pb and Ag suggest the presence of argentiferous galena, a mineral that has been found in other areas within the quadrangle (Berg and Cobb, 1967).

A silver-lead lode along a southern tributary to Gold Creek (T. 31 N., R. 1 W.) about 11 kilometers east of the Gold Creek Station on the Alaska Railroad is described by Berg and Cobb (1967). Here a vertical dike composed of quartz and feldspar with disseminated blebs of argentiferous galena cuts Cretaceous sediments. Anomalous Cu and Mo in the heavy-mineral concentrates near this lode suggest that the lode also contains Cu and Mo minerals.

A series of anomalous Au, Ag, and Pb values (figs. 2 and 4), and scattered high Cu, Mo, Sn, and W values (figs. 3 and 5) trending northeast between Chuniilna Creek and the Susitna River (T. 29-31, N., R. 1 and 2 W.) includes the known occurrences at Gold Creek. The close association of Au, Ag, and Pb throughout this zone is rather striking. Lode deposits in the Portage Creek area in T. 32 N., R. 1 E. (Capps and Short, 1926; Richter, 1963) to the northeast are along the extension of the strike of this zone.

The Mint ore body, which is included in the Portage Creek lodes, is a highly altered andesite dike intruding Cretaceous slates and phyllites (Capps and Short, 1926). The lode is about 25 feet wide and consists of quartz-sulfide veinlets in a breccia zone associated with the dike rock. The ore minerals within these veinlets include pyragerite, arsenopyrite, with lesser miagerite, pyrite, galena, and tennantite (Berg and Cobb, 1967; Capps and Short, 1926).

Molybdenite and chalcopyrite occurrences, also in the Portage Creek area, are associated with a quartz monzonite stock intruding Cretaceous greywacke and slate (Richter, 1963).

Two other anomalous areas within the western part of the Talkeetna Mountains quadrangle merit mentioning. These areas are: (1) an area near the Talkeetna River in the central part of the quadrangle (T. 28 N., R. 4 and 5 E.), and (2) the area west of the Bald Mountain (T. 26 N., R. 4 W.) near the west boundary of the quadrangle.

The area near the Talkeetna River is described by Rose (1967) as being vein Cu mineralization in andesite-greenstone which appear identical to the greenstones in the Iron Creek area. The heavy-mineral concentrates collected in the Falls Creek area in 1975 indicated anomalous Cu at only sample site 127 (fig. 2). However, the heavy-mineral concentrates at another site (114) contained anomalous amounts of Ag and Au (fig. 2). A sample of greenstone taken from Ocher Creek, a tributary to Little Falls Creek, contained 1.26 ppm Au and 9.5 ppm Ag (Anderson, 1969). These greenstones are a likely source of the anomalous Au and Ag values found in the heavy-mineral concentrate samples.

A single site west of Bald Mountain is anomalous in Au, Ag, Mo, and Pb (figs. 2, 3, and 4). The elemental association seen at this site resembles the element association in the heavy-mineral concentrates from the Gold Creek area, and the mineralization may be similar.

REFERENCES

- Anderson, R. E., 1969, Preliminary geochemistry and geology, Little Falls Creek area, Talkeetna Mountains quadrangle, Alaska: Alaska Division Mines and Geology, Geochem. Rept. 19, 16 p.
- Berg, H. C., and Cobb, E. H., 1967, Metalliferous lode deposits of Alaska: U.S. Geological Survey Bull. 1246, 254 p.
- Capps, S. R., 1919, Mineral resources of the western Talkeetna Mountains, U.S. Geological Survey Bull. 692, p. 187-205.
- , 1940, Geology of the Alaska Rail Road region: U.S. Geological Survey Bull. 907, 201 p.
- Capps, S. R., and Short, M. N., 1926, A ruby silver prospect in Alaska: U.S. Geological Survey Bull. 783, p. 89-95.
- Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating current spark emission spectrographic field methods for the semiquantitative analyses of the geological materials: U.S. Geological Survey Circ. 591, 6 p.
- Miller, R. J., Curtin, G. C., Hopkins, R. T., and Csejtey, Bela, Jr., 1977, Spectrographic and chemical analyses of stream sediment and rock samples from the western part of the Talkeetna Mountains quadrangle, Alaska: U.S. Geological Survey Open-File Report 77-471, 141 p.
- Richter, D. H., 1963, Geology of the Portage Creek-Susitna River area, Alaska: Alaska Division of Mines and Minerals Geol. Rept. 3, 2⁺ sheets.

Rose, A. W., 1967, Geology of an area on the upper Talkeetna River,
Talkeetna Mountains quadrangle, Alaska: Alaska Division of
Mines and Minerals Geol. Rept. 32, 7 p.

2001 TABLE 1.--Semi-quantitative spectrographic results for nonmagnetic heavy-mineral concentrates collected in the Talkeetna Mountains quadrangle, Alaska.

[Iron, Mg, Ca, Ti values in percent. All other values in ppm. Lower sensitivity limits shown above element symbol in column headings. L = undetermined amount present below lower sensitivity limit; N = element was looked for but not found; G = undetermined amount present above value shown. G1 = reference sample.]

Field No.	Tag No.	(.1)	(.05)	(.1)	(.005)	(20)	(1)	(500)	(20)	(20)	(20)	(50)	(2)	(20)	(50)	(10)	(20)	(10)	(50)	(10)	(50)	(10)
		Fe %	Mg %	Ca %	Ti %	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni	
1	632	1.5	.2	.7	.2	200	N	N	N	L	1000	2	N	N	L	L	L	100	L	L	L	
2	633	5	.2	.7	.7	1000	N	N	N	70	200	L	N	N	50	100	70	50	N	L	50	
3	634	3	1.5	10	G1	1000	N	N	N	20	200	L	N	N	10	20	20	20	150	N	L	10
4	635	7	3	7	1	1000	N	N	N	30	200	L	N	N	30	150	500	50	N	L	50	
5	636	3	1	10	G1	1000	N	N	N	50	100	L	N	N	10	100	20	200	L	L	10	
6	637	7	3	7	G1	2000	N	N	N	100	50	L	N	N	20	100	150	50	N	L	50	
7	638	2	.7	10	G1	700	N	N	N	20	100	L	N	N	20	50	20	150	N	L	L	
8	639	2	1	10	G1	1000	N	N	N	15	50	L	N	N	20	50	150	300	L	L	L	
9	640	3	1.5	10	G1	1000	N	N	N	30	70	L	N	N	10	20	50	300	N	L	L	
10	641	3	.2	10	G1	1000	N	N	N	10	50	L	N	N	L	50	50	300	L	L	L	
11	642	.5	.15	10	G1	1000	N	N	N	L	L	L	N	N	L	20	30	500	N	L	L	
12	643	3	.2	10	G1	1500	N	N	N	50	500	L	N	N	L	20	50	200	N	L	L	
13	644	2	.7	10	G1	1000	N	N	N	L	L	L	N	N	L	70	500	L	L	L	L	
14	645	2	.15	10	G1	1000	N	N	N	L	L	L	N	N	L	150	700	L	L	L	L	
15	646	10	.2	10	1	1500	N	N	N	10	150	L	N	N	15	30	20	50	N	L	20	
16	647	5	.2	7	1	1000	N	N	N	10	150	L	N	N	20	70	200	50	N	L	30	
17	648	7	3	7	.7	1500	N	N	N	50	100	L	N	N	20	200	20	50	N	L	50	
18	649	5	3	7	.5	1500	N	N	N	20	100	L	N	N	20	100	20	50	N	L	50	
19	650	3	.2	7	G1	1000	N	N	N	10	100	L	N	N	10	70	10	200	N	L	L	
20	651	3	1	7	1	1500	N	N	N	50	500	L	N	N	15	20	50	50	N	L	10	
21	652	5	.7	7	.7	1000	N	N	N	L	100	L	N	N	15	20	30	200	N	L	10	
22	653	3	1.5	7	.7	1000	N	N	N	L	100	L	N	N	20	100	10	200	N	L	10	
23	654	10	3	10	G1	3000	N	N	N	10	100	L	N	N	20	100	10	100	N	L	10	

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
Q1	632	50	N	L	N	200	20	N	20	N	200
1	633	N	N	30	N	200	200	N	100	N	1000
2	633	N	N	50	N	200	300	N	700	N	G/1000
3	634	N	N	50	N	200	300	N	100	N	G/1000
4	635	N	N	50	N	300	300	N	1000	N	G/1000
5	636	N	N	30	N	500	300	N	70	N	G/1000
6	637	N	N	100	N	200	300	N	500	N	G/1000
7	638	N	N	100	20	200	500	N	1000	N	G/1000
8	639	N	N	100	20	200	500	N	1000	N	G/1000
9	640	N	N	100	20	200	500	N	1000	N	G/1000
10	641	N	N	G/100	20	200	500	N	1000	N	G/1000
11	642	N	N	100	20	200	500	N	1000	N	G/1000
12	643	N	N	100	N	200	300	N	700	N	G/1000
13	644	N	N	G/100	20	200	500	N	1000	N	G/1000
14	645	N	N	G/100	20	200	500	N	1000	N	G/1000
15	646	N	N	30	N	1500	300	N	70	N	1000
16	647	N	N	20	N	200	300	N	50	N	G/1000
17	648	N	N	30	N	200	300	N	70	N	200
18	649	N	N	20	N	200	200	N	20	N	150
19	650	N	N	100	N	200	300	N	500	N	G/1000
20	651	N	N	20	N	1500	200	N	100	N	G/1000
21	652	N	N	15	N	700	150	N	200	N	G/1000
22	653	N	N	100	N	200	300	N	300	N	G/1000
23	654	N	N	30	N	500	300	N	150	N	G/1000

G = Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1) Fe %	(.05) Mg %	(.1) Ca %	(.005) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
G-1	//////////	1.5	.2	1	.2	200	N	N	N	L	1000	2	N	N	L	L	L	100	L	L	L
25	CGC 655	5	3	10	G1	1500	N		N	50	200	L			20	100	150	100	N		30
26	656	5	2	10	G1	1500	150		300	10	200				15	70	20	100	100		20
27	657	10	1	7	1	1000	L		N	10	2000				30	50	150	200	1000		20
28	658	3	2	10	1	1000	N			10	100				10	100	L	100	N		30
29	659	3	1.5	10	G1	1000				10	100				10	70	150	300			20
30	660	3	2	10		1000				10	100				10	70	L	150			20
31	661	3	1.5	15		1000				10	70				10	70	L	300			20
32	662	7	.5	10		1500				10	70				20	300	70	300			100
33	663	.5	2	10		1000				20	70				10	100	10	300			30
34	664	10	3	7	↓	2000				20	50				20	70	70	50	N		30
35	665	3	2	15	G1	2000				10	20				10	100	20	G1000	L		20
37	666	10	3	10	1	1500				20	100				30	100	30	50	N		50
38	667	5	5	15	1	1500				10	50				20	700	20	50			100
39	668	7	3	10	1	1500				10	100				20	100	70	50			50
40	669	10	3	10	1	2000				20	100				30	150	20	70			50
41	670	7	3	7	G1	2000				10	100				20	150	30	50			30
42	671	10	3	10	1	2000				10	100				30	150	20	70			50
43	672	5	3	10	1	2000				10	150				20	100	L	100			20
44	673	7	3	10	G1	2000				10	100				20	150	10	200			30
45	674	7	3	10	G1	1500				10	100				20	200	10	300			30
46	675	10	5	10	1	5000				10	70				20	150	L	200			20
47	676	3	2	10	G1	1000	↓	↓	↓	15	50	↓	↓	↓	15	200	10	300	↓	↓	20
48	677	15	5	10	G1	5000	N	N	N	10	70	L	N	N	30	200	30	200	N	L	30

REMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc.

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
G-1	//////////	50	N	L	N	200	20	N	L	N	200
25	CCG 6555	N		50	N	500	300		100		G/1000
26	6576	150		50	50	500	300		200		
27	6577	50		30	N	500	200		100		
28	6578	N		20	N	500	200		100		
29	6579			50	N	500	300		300		
30	660			20	N	500	200		200		
31	661			100	20	500	200	↓	200		
32	662			100	L	200	300	N	500		↓
33	663			100	L	200	300	150	500		G/1000
34	664			50	N	200	500	N	50		1000
35	665			50	70	200	300	N	1500		G/1000
37	666			50	N	200	300	500	50		1000
38	667			50		200	300	N	50		G/1000
39	668	↓		30		300	300		20		700
40	669	N		50		200	200		70		G/1000
41	670	L		50		200	200		70		
42	671	N		50		500	500		50		
43	672			70		500	200		100		
44	673			70		300	300		200		
45	674			100		200	300		300		
46	675			100		300	300		150		
47	676	↓	↓	100	↓	200	300	↓	700	↓	↓
48	677	N	N	100	N	200	500	N	70	N	G/1000

G = Greater than value shown. N = Not detected at limit of detection, or at value shown. ↓ = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1%) Fe %	(.05%) Mg %	(.1%) Ca %	(.005%) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni	
G-1	678	1.5	.2	1	.2	300	N	N	N	L	1000	2	N	N	L	L	L	100	L	L	L	1
49	678	G20	1	5	.5	1000	N	N	N	20	200	L	N	N	200	L	700	50	N	L	30	2
50	679	10	3	7	.5	2000	N	N	N	10	100	L	N	N	50	150	100	50	N	L	30	3
51	680	5	5	10	1	1500	N	N	N	10	2000	L	N	N	10	50	50	50	N	L	20	4
52	681	7	2	7	.7	1500	5	N	N	20	300	L	N	N	20	50	50	50	N	L	30	5
53	682	7	1.5	7	1	1500	N	N	N	20	500	L	N	N	15	20	20	50	N	L	20	6
54	683	10	3	10	1	1500	N	N	N	15	700	L	N	N	30	100	200	50	N	L	70	7
55	684	20	3	10	.5	1500	2	N	N	20	1500	L	N	N	50	50	200	50	N	L	100	8
56	685	7	3	5	.5	1000	N	N	N	15	300	L	N	N	20	150	150	50	N	L	30	9
57	686	3	.7	5	.5	1000	N	N	N	10	500	L	N	N	15	30	30	50	N	L	20	10
58	687	7	5	10	1	1500	N	N	N	20	65000	L	N	N	20	100	500	50	N	L	30	11
59	688	10	3	10	1	1500	N	N	N	10	200	2	N	N	20	100	70	70	N	L	30	12
60	689	7	3	10	.7	1000	N	N	N	20	65000	L	N	N	20	200	70	50	N	L	50	13
61	690	20	3	7	1	2000	L	N	N	20	1000	L	N	N	50	100	1500	50	N	L	70	14
62	691	15	2	2	.7	2000	N	N	N	70	1500	2	N	N	20	70	100	50	N	L	30	15
63	692	15	5	7	1	2000	N	N	N	20	1000	L	N	N	50	500	500	50	N	L	70	16
64	693	15	2	5	.7	2000	N	N	N	30	3000	L	N	N	20	110	100	70	N	L	50	17
65	694	7	3	7	G1	1000	N	N	N	20	300	2	N	N	20	150	100	70	N	L	50	18
66	695	20	3	5	.2	1500	N	N	N	20	3000	L	N	N	500	150	2000	50	N	L	100	19
67	696	5	5	7	.3	1500	N	N	N	15	150	L	N	N	30	300	50	50	N	L	100	20
68	697	5	5	10	1	1000	N	N	N	10	100	L	N	N	50	100	500	50	N	L	70	21
69	698	2	.7	10	G1	1000	N	N	N	50	200	L	N	N	L	20	500	500	30	100	20	22
70	699	5	2	15	1	1000	N	N	N	20	100	L	N	N	50	100	150	50	N	L	30	23
71	700	5	1	10	G1	1000	N	N	N	50	500	L	N	N	30	20	500	500	N	L	20	24

REMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses.

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
//////////	//////////										
G-1	//////////	50	N	L	N	200	20	N	L	N	200
49	678	L	N	20	N	L	200	N	50	L	500
50	679	70	N	50	N	200	300	N	30	L	150
51	680	N	N	30	N	200	300	200	50	N	300
52	681	N	N	50	N	200	300	N	30	500	50
53	682	N	N	30	N	200	300	N	50	L	200
54	683	L	N	30	N	200	300	N	30	L	150
55	684	50	N	20	N	200	200	N	20	L	50
56	685	N	N	30	N	200	200	N	30	N	6/1000
57	686	N	N	10	N	200	100	N	20	N	150
58	687	30	N	20	N	500	200	N	50	N	150
59	688	20	N	50	N	200	300	N	100	N	1000
60	689	L	N	50	N	500	200	N	50	N	6/1000
61	690	20	N	50	N	500	500	N	50	N	300
62	691	L	N	30	N	200	200	N	70	N	200
63	692	L	N	50	N	200	300	N	50	N	6/1000
64	693	30	N	50	N	200	200	N	200	N	1000
65	694	N	N	70	N	200	300	N	200	N	6/1000
66	695	L	N	20	N	200	100	N	20	N	150
67	696	N	N	50	N	200	200	N	15	N	1000
68	697	N	N	20	N	300	200	N	50	N	6/1000
69	698	L	N	100	N	500	500	N	1000	N	6/1000
70	699	N	N	30	N	500	150	N	30	N	6/1000
71	700	N	N	70	N	500	150	N	500	N	6/1000

= Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1) Fe %	(.05) Mg %	(.1) Ca %	(.005) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
72	CSC 701	620	.2	2	61	65000	N	N	N	50	100	L	N	N	10	L	200	200	N	L	L
73	702	620	.05	3	61	65000	N	N	N	50	100	L	N	N	10	L	150	150	N	L	L
74	703	3	1	7	61	1000	N	N	N	50	200	L	N	N	20	L	200	200	L	L	L
75	704	5	.2	7	.3	1500	N	N	N	L	300	L	N	N	10	L	500	200	N	L	L
76	705	5	.5	10	1	2000	N	N	N	L	1000	L	N	N	10	L	150	50	20	L	L
77	706	2	1.5	15	61	1000	N	N	N	20	200	L	N	N	50	L	300	200	10	L	L
78	707	10	1	7	.5	1500	N	N	N	20	1000	L	N	N	20	L	300	50	N	L	L
79	708	7	.7	7	1	1500	N	N	N	20	300	L	N	N	50	L	200	50	N	L	L
80	709	1.5	.07	10	61	700	N	N	N	20	100	L	N	N	L	L	2000	300	N	L	L
81	710	5	.3	7	.7	1500	N	N	N	L	300	L	N	N	20	L	300	500	N	L	L
82	711	3	1.5	10	.7	1000	N	N	N	L	200	L	N	N	100	L	300	50	N	L	L
83	712	2	.5	10	61	700	N	N	N	20	100	L	N	N	10	L	2000	500	N	L	L
84	713	10	1.5	7	61	1000	N	N	N	20	100	L	N	N	200	20	700	100	N	L	L
85	714	3	1.5	10	61	1000	N	N	N	100	150	L	N	N	10	L	150	300	N	L	L
86	715	1	.2	10	61	700	N	N	N	L	100	L	N	N	15	L	50	200	N	L	L
87	716	10	3	7	61	2000	N	N	N	50	200	L	N	N	20	20	50	200	N	L	L
88	717	2	.7	15	61	1000	N	N	N	L	150	L	N	N	L	L	150	200	N	L	L
89	718	20	1.5	5	.3	700	N	N	N	L	500	L	N	N	700	150	1000	50	N	L	200
90	719	15	5	7	.7	2000	N	N	N	300	100	L	N	N	15	300	30	50	N	L	10
91	720	15	3	7	.7	1500	N	N	N	L	2000	L	N	N	300	150	500	50	N	L	L
92	721	10	2	10	.7	1500	7	1000	N	62000	5000	L	N	N	15	200	1000	50	N	L	L
93	722	1	1	7	.3	200	N	N	N	L	100	L	N	N	10	20	1500	50	N	L	L
94	723	7	1.5	7	.5	700	N	N	N	20	100	L	N	N	200	50	500	50	N	L	70

REMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses.

Field No.	Tag No.	(20) Pb	(200) Sb	(0) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
72	CDC 701	L	N	50	N	200	700	N	700	N	1000
73	702	L	N	70	N	200	1000	N	500	N	1000
74	703	L	N	L	N	500	300	N	500	N	1000
75	704	20	N	5	N	1500	30	N	50	N	300
76	705	L	N	15	N	1500	100	N	200	N	1000
77	706	L	N	L	N	700	200	N	500	N	1000
78	707	L	N	10	N	1000	100	N	50	N	1000
79	708	L	N	10	N	1500	100	N	100	N	1000
80	709	L	N	L	N	200	300	N	1000	N	1000
81	710	L	N	10	N	1000	100	N	500	N	1000
82	711	L	N	10	N	1000	100	N	50	N	1000
83	712	L	N	L	N	300	300	N	1000	N	1000
84	713	L	N	L	N	200	200	N	500	N	1000
85	714	20	N	L	N	500	500	N	1000	N	1000
86	715	L	N	L	N	200	200	N	700	N	1000
87	716	L	N	100	N	500	500	N	300	N	1000
88	717	20	N	30	N	300	500	N	700	N	1000
89	718	L	N	20	N	L	100	N	30	N	1000
90	719	L	N	100	N	L	500	N	50	N	1000
91	720	L	N	L	N	L	200	N	200	N	1000
92	721	L	N	30	N	L	200	N	150	N	1000
93	722	70	N	15	N	300	30	N	20	N	1000
94	723	L	N	10	N	300	70	N	10	N	1000

G = Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1%) Fe %	(.05%) Mg %	(.1%) Ca %	(.005%) Ti %	(20) Mn	(1.1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
90	724	20	7	10	.7	5000	N	N	N	L	100	L	N	N	50	700	200	50	N	L	200
96	725	10	5	10	1	2000	N	N	N	L	150	L	N	N	100	150	200	50	N	L	100
97	726	15	7	10	.7	2000	N	N	N	L	300	L	N	N	50	500	50	50	N	L	200
98	727	5	3	10	.7	1500	N	N	N	L	150	L	N	N	15	150	15	50	N	L	50
99	728	5	7	10	.7	2000	N	N	N	L	50	L	N	N	20	300	50	50	N	L	150
100	729	10	7	10	1	1500	N	N	N	L	100	L	N	N	30	200	70	50	N	L	150
101	728	.5	.15	7	.15	50	N	N	N	L	150	L	N	N	L	L	L	L	N	L	L
102	731	15	3	7	1	1500	N	N	N	L	200	L	N	N	100	100	150	50	L	L	50
103	732	7	1	15	.6	700	N	N	N	L	150	L	N	N	150	30	100	50	N	L	L
104	733	15	3	7	.5	1500	1	N	N	100	100	L	N	N	200	200	10000	50	700	L	100
105	734	15	5	7	.6	3000	N	N	N	20	100	L	N	N	100	200	200	50	N	L	100
106	735	1	.2	15	.6	700	N	N	N	L	700	L	N	N	L	L	10	100	L	L	L
107	736	20	3	5	1	2000	N	N	N	50	5000	L	N	N	100	100	200	50	50	L	50
108	737	20	1.5	7	.7	1000	N	N	N	50	5000	L	N	N	500	30	1500	50	N	L	50
109	738	3	12	10	.6	700	N	N	N	L	5000	L	N	N	20	L	150	300	L	100	L
110	739	20	5	7	1	1500	N	N	N	20	700	L	N	N	50	700	500	50	N	L	200
111	740	5	15	10	1	700	N	1000	N	L	500	L	N	N	L	50	50	50	N	L	20
112	741	3	1.5	15	.6	700	N	N	N	L	200	L	N	N	L	30	10	100	.10	L	L
113	742	1.5	1	15	1	500	N	N	N	L	300	L	N	N	L	20	10	50	N	L	L
114	743	2	1	5	.6	500	200	N	500	30	100	L	N	N	L	30	30	50	N	L	L
115	744	2	1.5	10	.6	500	N	N	N	20	200	L	20	N	L	50	L	50	N	L	30
116	745	15	1	5	1	700	N	N	N	50	200	L	N	N	300	20	300	50	N	L	20
117	746	1.5	.7	10	.6	700	N	N	N	20	500	L	N	N	L	20	20	200	N	L	L

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MARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(20) W	(20) Y	(500) Zn	(20) Zr
90	724	L	N	100	N	200	500	N	50	N	700
96	725	L	N	50	N	200	300	N	50	N	1000
97	726	L	N	70	N	L	500	N	30	N	1000
98	727	L	N	30	N	300	300	N	20	N	1000
99	728	L	N	50	N	L	300	N	L	N	20
100	729	L	N	70	N	L	500	N	30	N	200
101	730	L	N	L	N	300	L	N	20	N	1000
102	731	L	N	20	N	200	300	N	30	N	1000
103	732	L	N	20	N	200	300	N	200	N	1000
104	733	L	N	50	N	200	300	100	20	N	1000
105	734	L	N	100	N	200	500	N	70	N	1000
106	735	L	N	10	N	500	150	N	150	N	1000
107	736	50	N	50	N	200	500	N	30	1000	100
108	737	L	N	20	N	200	150	300	70	N	1000
109	738	L	N	L	30	200	300	100	700	N	150
110	739	50	N	50	N	200	500	N	150	N	1000
111	740	20	N	10	N	300	100	N	50	N	1000
112	741	L	N	L	N	300	300	100	300	N	1000
113	742	L	N	20	N	300	70	L	70	N	1000
114	743	L	N	20	N	200	700	N	20	N	1000
115	744	L	N	L	N	300	100	N	50	N	1000
116	744	L	N	30	N	200	300	L	70	N	1000
117	746	L	N	20	N	500	200	500	200	N	1000

= Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1.) Fe %	(.05) Mg %	(.1.) Ca %	(.005) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
118	747	5	1	5	.3	700	N	N	N	L	200	L	N	N	150	20	100	50	N	L	20
119	748	5	2	15	.7	100	N	N	N	20	50	L	N	N	30	100	100	50	N	L	20
120	749	10	.1	7	1	300	N	N	N	20	5000	L	N	N	150	20	100	50	L	L	L
121	756	1.5	2	7	61	500	L	N	N	20	200	L	N	N	L	L	20	150	N	L	L
122	751	7	.3	3	1	500	N	N	N	L	5000	L	N	N	20	L	20	50	N	L	L
123	752	3	.5	10	1	500	N	N	N	200	5000	L	N	N	10	L	100	70	N	L	20
124	753	7	.1	3	.7	300	N	N	N	200	5000	L	N	N	150	L	20	50	N	L	L
125	754	15	.5	7	1	500	N	N	N	200	5000	L	N	N	150	L	200	50	N	L	20
126	755	3	.3	5	1	300	N	N	N	30	5000	2	N	N	10	20	20	50	N	L	L
127	756	20	.5	7	1	1000	N	N	N	20	1000	L	N	N	500	L	1000	50	70	L	20
128	757	3	.2	5	61	500	N	N	N	L	5000	L	N	N	10	L	30	50	N	L	L
129	758	15	.15	10	1	500	N	N	N	100	1000	L	N	N	300	20	200	50	N	L	10
130	759	3	1	7	1	700	N	1000	N	20	3000	L	N	N	15	20	50	100	N	L	L
131	760	15	.2	5	61	500	5	N	N	30	5000	L	N	N	50	20	150	50	N	L	20
132	761	3	.7	10	.7	700	N	L	N	20	150	L	N	N	15	L	20	50	N	L	L
133	762	20	.15	5	61	300	2	N	N	30	5000	L	N	N	300	20	700	50	100	L	20
134	763	5	1.5	15	1	500	N	N	N	L	5000	L	N	N	30	20	500	50	N	L	L
135	764	10	.15	15	61	500	N	N	N	L	5000	L	N	N	20	L	200	50	10	L	L
136	765	10	.15	3	61	500	1	N	N	20	5000	L	N	N	10	L	5000	300	N	L	L
137	766	1	.15	10	61	500	N	N	N	L	1000	2	N	N	L	L	50	100	N	L	L
138	767	2	.5	7	1	500	N	N	N	20	5000	2	N	N	L	L	50	100	N	L	L
139	768	7	.7	7	61	500	N	N	N	20	5000	L	N	N	15	100	500	100	N	L	L
140	769	10	3	10	1	500	N	N	N	20	55000	L	N	N	30	20	150	50	N	L	200

EMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination in parentheses

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Field No.	Tag No.	(.1.) Fe %	(.05) Mg %	(.1.) Ca %	(.005) Ti %	(20) Mn	(1.) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
19 G-1	19 770	2	.3	.7	.2	300	N	N	N	L	1000	.2	N	N	L	L	10	200	L	L	L
	ccc 770	7	1	7	1	1000	N	N	N	20	1000	L	N	N	70	L	200	50	N	L	10
	771	1	.3	10	1	500	N	N	N	L	500	L	N	N	L	L	L	50	N	L	L
	772	1.5	.2	10	1	300	N	N	N	L	65000	L	N	N	L	L	L	50	N	L	L
	773	1.5	.7	10	.1	1000	N	N	N	L	65000	L	N	N	L	L	10	50	N	L	L
	774	3	1.5	10	.3	1000	N	N	N	L	3000	L	N	N	L	50	L	50	N	L	L
	775	10	.2	5	.7	500	N	N	N	L	65000	L	N	N	100	L	150	50	N	L	20
	776	10	1.5	7	1	700	N	N	N	50	65000	L	N	N	100	L	200	50	N	L	20
	777	1	3	10	.15	1000	N	N	N	L	65000	L	N	N	L	L	L	50	N	L	L
	778	10	1	7	1	1500	N	N	N	50	2000	L	N	N	20	50	70	50	N	L	20
	779	3	5	15	.3	1500	N	N	N	L	65000	2	N	N	20	200	15	50	N	L	30
	780	3	1	7	.5	700	N	N	N	200	1500	L	N	N	10	20	30	50	N	L	10
	781	3	.7	7	61	700	N	N	N	50	500	L	N	N	10	50	50	50	N	L	10
	782	10	1	7	.7	700	N	N	N	.150	65000	50	N	N	50	50	700	50	N	L	30
	783	5	2	7	.7	1000	N	N	N	70	5000	2	N	N	15	100	50	50	L	L	30
	784	3	2	10	.7	700	N	N	N	500	65000	L	N	N	15	100	50	50	N	L	30
	785	10	2	7	1	1500	N	N	N	20	1500	L	N	N	100	20	300	50	N	L	20
	786	1.5	.2	20	1	700	N	N	N	L	200	L	N	N	10	L	30	500	N	L	L
	787	10	2	10	.7	1500	N	N	N	20	500	L	N	N	15	70	50	50	N	L	20
	788	10	2	7	1	1000	N	N	N	L	1000	L	N	N	100	100	150	50	N	L	50
	789	2	2	10	.7	1000	N	N	N	20	1500	L	N	N	10	20	30	50	N	L	15
	790	3	1	15	.5	700	N	N	N	50	200	L	N	N	L	20	30	50	N	L	15
	791	1.5	1	10	.5	700	N	N	N	20	700	L	N	N	L	L	10	150	N	L	L
	792	3	2	10	1	1000	N	N	N	20	300	L	N	N	10	100	10	70	N	L	10

MARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
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20

G-1	11111111	70	N	L	N	300	30	N	L	N	200
141	770	L	N	20	N	300	150	200	70	N	61000
142	771	L	N	20	N	300	100	N	150	N	61000
143	772	L	N	20	N	500	70	N	150	N	61000
145	773	L	N	20	N	1500	100	N	200	N	61000
146	774	L	N	20	N	200	70	N	1000	N	61000
147	775	150	N	20	N	2000	70	N	70	L	61000
149	776	L	N	30	N	1500	200	N	50	N	700
150	777	L	N	20	N	200	20	N	200	N	61000
151	778	L	N	50	N	300	200	N	50	N	500
152	779	L	N	30	N	500	200	N	150	N	500
153	780	L	N	20	N	200	200	N	20	N	100
154	781	L	N	30	N	200	200	N	70	N	200
155	782	20	N	20	N	1000	200	N	20	N	100
156	783	20	N	20	N	200	200	N	100	N	1000
157	784	L	N	10	N	1500	100	N	100	N	1000
158	785	L	N	20	N	300	200	100	50	N	61000
159	786	L	N	10	N	300	100	N	700	N	61000
160	787	L	N	30	N	300	200	N	20	N	200
161	788	L	N	30	N	300	200	200	30	N	150
162	789	L	N	15	N	300	150	L	50	N	500
163	790	L	N	L	N	200	200	N	20	L	50
164	791	L	N	10	N	300	70	N	200	N	61000
165	792	L	N	20	N	300	200	150	100	N	61000

= Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

20a

Field No.	Tag No.	(.1%) Fe %	(.05%) Mg %	(.1%) Ca %	(.005%) Ti %	(20) Mn	(.1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(0) Co	(20) Cr	(0) Cu	(50) La	(0) Mo	(50) Nb	(0) Ni
1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70		
1	71-78	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70
2	166	793	2	15	.3	1000	N	N	N	50	306	L	N	N	15	500	30	50	N	L	50
3	167	794	2	10	61	700	N	N	N	26	206	L	N	N	10	50	L	150	N	50	L
4	168	795	7	5	15	1500	N	N	N	100	1000	L	N	N	20	1000	50	50	N	L	150
5	169	796	3	2	10	1000	N	N	N	36	150	L	N	N	10	200	20	70	N	L	20
6	170	797	3	1.5	10	1000	N	N	N	20	500	L	N	N	10	150	20	50	N	L	20
7	171	798	5	1.5	5	1000	N	N	N	50	5000	L	N	N	20	150	70	50	N	L	20
8	172	799	3	1.5	15	1000	N	N	N	20	100	L	N	N	10	50	10	50	N	L	10
9	173	800	3	2	15	1000	N	N	N	20	200	L	N	N	10	70	70	50	N	L	20
10	174	801	3	1	7	1000	N	N	N	70	300	L	N	N	10	30	20	50	N	L	10
11	175	802	1.5	1	7	700	N	N	N	20	300	L	N	N	L	50	L	70	N	L	L
12	176	803	3	2	10	1000	N	N	N	100	1000	L	N	N	10	200	20	50	N	L	20
13	177	804	5	2	10	1500	N	N	N	50	200	L	N	N	10	150	30	50	N	L	20
14	178	805	5	3	10	1500	N	N	N	50	300	L	20	N	10	300	30	50	N	L	20
15	179	806	2	1	15	1000	N	N	N	L	200	L	N	N	10	20	30	100	N	L	L
16	180	807	3	1	10	1000	N	N	N	L	200	L	N	N	L	L	20	100	N	L	L
17	181	808	10	1	7	1000	N	N	N	L	300	L	N	N	150	L	500	50	N	L	L
18	182	809	3	.2	10	500	N	N	N	L	200	L	20	N	20	L	500	100	L	L	L
19	183	810	3	.7	15	1000	N	N	N	L	300	L	N	N	10	L	50	50	N	L	L
20	184	811	15	.5	5	700	N	N	N	20	200	L	N	N	20	100	1000	50	N	L	L
21	185	812	3	.5	10	700	N	N	N	L	1500	L	N	N	20	L	150	50	L	L	L
22	186	813	3	.5	15	1000	N	N	N	L	1500	L	N	N	20	L	100	200	N	L	L
23	187	814	3	.5	20	1000	N	N	N	L	300	L	N	N	10	50	50	1000	100	L	L
24	188	815	3	2	10	1000	N	N	N	L	2000	L	20	N	20	50	70	50	N	L	L

REMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses.

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Field No.	Tag No.	(20) Pb	(200) Sb	(40) Sc	(20) Sn	(200) Sr	(20) V	(400) W	(20) Y	(500) Zn	(20) Zr
1	71-78	1-7	22-28	29-35	36-42	43-49	64-70	1-7	8-14	15-21	22-28
2	166	L	N	30	N	200	200	N	L	N	20
3	167	L	N	30	N	300	200	N	200	N	61000
4	168	L	N	50	N	200	300	N	100	N	50
5	169	L	N	50	N	300	200	N	100	N	61000
6	170	L	N	30	N	300	200	N	100	N	200
7	171	L	N	20	N	500	200	N	20	N	150
8	172	L	N	30	N	300	200	N	20	N	200
9	173	L	N	20	N	200	200	N	20	N	200
10	174	L	N	20	N	300	200	N	20	N	200
11	175	L	N	20	N	700	150	N	70	N	61000
12	176	L	N	20	N	500	200	N	20	N	300
13	177	L	N	30	N	700	300	N	50	N	700
14	178	50	N	30	N	L	300	N	70	N	61000
15	179	L	N	50	N	500	200	N	300	N	61000
16	180	L	N	20	N	500	300	N	300	N	61000
17	181	L	N	20	N	500	300	N	70	N	1000
18	182	L	N	20	N	500	200	200	300	N	61000
19	183	30	N	30	N	1500	200	N	300	N	61000
20	184	L	N	20	N	L	200	1500	300	N	61000
21	185	50	N	20	N	500	150	N	200	N	61000
22	186	L	N	20	N	700	300	N	700	N	61000
23	187	20	N	30	50	500	300	500	700	N	61000
24	188	L	N	20	N	500	200	100	150	N	61000

G = Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1%) Fe %	(.05%) Mg %	(.1%) Ca %	(.005%) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
6-1	11111111	1.5	.2	1	.2	200	N	N	N	L	1000	2	N	N	L	L	10	100	L	L	L
189	222 816	3	3	10	1	1000	N	N	N	30	3000	L	N	N	10	150	100	70	N	L	30
190	817	7	.7	7	1	700	N	N	N	L	1000	L	N	N	50	20	150	50	N	L	10
191	818	2	.7	5	61	500	N	N	N	20	150	L	N	N	L	20	10	70	N	50	L
192	819	5	.7	7	1	700	N	N	N	20	5000	L	N	N	15	20	70	50	N	L	L
193	820	2	1.5	10	61	700	N	N	N	20	500	L	N	N	10	L	.70	150	N	50	L
194	821	5	1.5	5	61	700	N	N	N	L	500	L	N	N	10	70	10	150	N	100	L
195	822	3	1	10	61	700	N	N	N	20	200	L	N	N	10	30	10	150	N	50	L
196	823	3	2	10	1	700	N	N	N	20	200	L	N	N	10	100	15	50	N	50	20
197	824	7	1	10	61	700	N	N	N	20	2000	L	N	N	15	70	150	1000	100	L	L
198	825	3	1.5	10	61	1000	N	N	N	50	300	L	N	N	10	50	10	100	N	L	L
199	826	2	.7	10	61	1000	N	N	N	50	200	L	N	N	10	30	10	700	N	100	L
200	827	5	.3	10	61	700	2	N	N	L	5000	L	N	N	15	20	100	300	15	500	L
201	828	3	1	5	1	700	N	N	N	L	700	L	N	N	10	20	L	100	N	50	10
202	829	1.5	.15	15	61	700	N	N	N	L	100	L	N	N	L	20	15	300	20	1000	L
203	830	5	1	15	61	1000	N	N	N	20	700	L	N	N	15	20	50	200	N	50	L
204	831	15	.2	15	61	500	N	1000	N	L	5000	L	N	N	100	20	200	500	N	L	L
205	832	2	1.5	20	1	700	N	N	N	L	300	L	N	N	15	150	15	500	N	L	L
206	833	5	1.5	10	1	1000	N	N	N	L	500	L	N	N	10	30	10	50	N	L	L
207	834	5	1	10	1	1000	N	N	N	20	1500	L	N	N	10	50	10	50	N	L	L
208	835	3	1.5	3	.5	700	N	N	N	L	1000	L	N	N	10	20	20	50	N	L	L
209	836	2	1	10	61	1000	N	N	N	50	200	L	N	N	10	20	10	200	N	100	L
210	837	5	.7	10	61	1500	N	N	N	L	1000	L	N	N	10	50	50	50	N	50	10
211	838	2	.2	10	61	1000	N	N	N	50	200	L	N	N	10	20	30	200	N	100	L

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MARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc.

Field No.	Tag No.	(.1) Fe %	(.05) Mg %	(.1) Ca %	(.005) Ti %	(20) Mn	(.1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
233	861	2	1	10	G1	1000	N	N	N	20	200	L	N	N	15	50	10	150	N	100	L
232	860	3	1	10	G1	1000	N	N	N	20	200	L	N	N	15	50	10	150	N	50	L
231	859	15	.5	7	G1	1500	3	1000	N	150	1000	2	50	N	70	100	300	100	N	L	150
230	858	5	.5	7	G1	1500	N	N	N	30	1000	L	N	N	15	70	100	100	N	300	30
229	857	10	.5	2	G1	1000	N	N	N	200	1000	2	N	N	20	150	150	100	N	L	100
228	856	3	3	15	G1	1000	N	N	N	L	200	L	N	N	15	150	10	200	50	L	L
227	855	15	.2	7	G1	700	N	N	N	50	300	L	N	N	15	100	50	1000	N	100	100
226	854	15	.3	5	G1	1000	1	N	N	200	700	L	N	N	50	150	300	300	N	200	100
225	853	5	1	5	G1	1000	N	N	N	70	1500	L	N	N	10	150	1000	150	70	50	50
224	852	5	.5	15	G1	700	5	500	N	300	700	L	L	N	20	150	100	300	N	L	50
223	851	2	.7	2	G1	1000	N	N	N	50	1000	L	N	N	10	50	20	50	N	50	20
222	850	20	.3	15	G1	700	100	500	500	100	700	L	N	N	10	100	500	300	15	L	200
221	849	1.5	.2	7	G1	700	N	N	N	L	700	L	N	N	10	20	20	100	N	700	L
220	848	1.5	.15	10	G1	1000	N	N	N	20	500	L	N	N	15	30	100	150	N	1000	L
219	847	5	1	2	G1	700	10	N	N	2000	1500	5	100	N	100	150	100	100	N	70	70
218	846	15	.5	5	G1	1000	10	N	N	100	3000	2	N	N	100	100	1000	200	N	50	200
217	845	3	.7	7	G1	1500	15	N	50	50	500	L	N	N	10	30	500	150	N	200	10
216	844	3	.7	10	G1	1500	N	N	N	700	300	L	.20	N	50	30	300	200	10	70	10
215	843	5	.7	2	G1	1000	N	N	N	L	500	2	N	N	L	20	20	500	N	L	10
214	842	7	1.5	10	G1	1000	N	N	N	L	500	2	N	N	L	20	20	500	N	L	10
213	841	5	1	2	G1	1000	3	N	N	20	700	2	50	N	20	200	1000	300	15	100	10
212	840	5	.5	7	G1	1000	2	1000	15	30	300	L	N	N	10	70	200	300	L	200	10
211	839	5	.5	7	G1	1000	2	1000	15	30	300	L	N	N	10	70	200	300	L	200	10
210	840	5	.5	7	G1	1000	3	N	N	30	1000	2	50	N	10	50	150	100	20	L	10
209	841	7	1.5	10	G1	1000	N	N	N	20	700	2	N	N	20	200	1000	300	15	100	10
208	842	5	.7	2	G1	1000	N	N	N	L	500	2	N	N	L	20	20	500	N	L	10
207	843	3	.7	10	G1	1500	N	N	N	700	300	L	.20	N	50	30	300	200	10	70	10
206	844	3	.7	7	G1	1500	15	N	50	50	500	L	N	N	10	30	500	150	N	200	10
205	845	15	.5	5	G1	1000	10	N	N	100	3000	2	N	N	100	100	1000	200	N	50	200
204	846	5	1	2	G1	700	10	N	N	2000	1500	5	100	N	100	150	100	100	N	70	70
203	847	1.5	.15	10	G1	1000	N	N	N	20	500	L	N	N	15	30	100	150	N	1000	L
202	848	1.5	.2	10	G1	1000	N	N	N	100	500	L	N	N	10	50	20	200	N	700	L
201	849	1.5	.2	7	G1	700	N	N	N	L	700	L	N	N	10	20	20	100	N	700	L
200	850	20	.3	15	G1	700	100	500	500	100	700	L	N	N	10	100	500	300	15	L	200
199	851	2	.7	2	G1	1000	N	N	N	50	1000	L	N	N	10	50	20	50	N	50	20
198	852	5	.5	15	G1	700	5	500	N	300	700	L	L	N	20	150	100	300	N	L	50
197	853	5	1	5	G1	1000	N	N	N	70	1500	L	N	N	10	150	1000	150	70	50	50
196	854	15	.3	5	G1	1000	1	N	N	200	700	L	N	N	50	150	300	300	N	200	100
195	855	15	.2	7	G1	700	N	N	N	50	300	L	N	N	15	100	50	1000	N	100	100
194	856	3	3	15	G1	1000	N	N	N	L	200	L	N	N	15	150	10	200	50	L	L
193	857	10	.5	2	G1	1000	N	N	N	200	1000	2	N	N	20	150	150	100	N	L	100
192	858	5	.5	7	G1	1500	N	N	N	30	1000	L	N	N	15	70	100	100	N	300	30
191	859	15	.5	7	G1	1500	3	1000	N	150	1000	2	50	N	70	100	300	100	N	L	150
190	860	3	1	10	G1	1000	N	N	N	20	200	L	N	N	15	50	10	150	N	50	L
189	861	2	1	10	G1	1000	N	N	N	20	200	L	N	N	15	50	10	150	N	100	L

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MARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
6-1	//////////	50	N	L	N	200	L	N	L	N	200
212	839	70	N	30	20	300	150	100	500	N	61000
213	840	50	N	20	N	200	200	N	50	L	1000
214	841	20	N	L	20	200	200	100	500	N	61000
215	842	L	N	20	N	200	100	N	50	N	1000
216	843	30	N	20	300	300	150	100	300	N	61000
217	844	L	N	20	30	200	150	100	500	N	61000
218	845	700	N	20	N	500	200	N	200	L	61000
219	846	20	N	20	N	200	300	61000*	100	L	61000
220	847	L	N	10	100	200	150	N	1000	L	1000
221	848	L	N	10	50	L	150	N	1000	L	1000
222	849	20	N	10	70	5000	100	N	700	N	700
223	850	700	N	20	N	2000	200	N	700	L	61000
224	851	L	N	15	N	200	150	N	300	N	61000
225	852	200	N	10	N	2000	100	N	200	N	50
226	853	L	N	30	N	700	150	N	500	L	1000
227	854	50	N	50	N	500	200	L	500	L	61000
228	855	L	N	20	N	1500	100	N	300	L	1000
229	856	L	N	20	N	500	200	N	300	N	61000
230	857	50	N	20	N	300	200	200	200	L	61000
231	858	L	N	30	L	200	200	N	300	N	61000
232	859	200	N	20	N	700	200	N	200	L	700
232	860	L	N	20	150	500	200	L	300	N	61000
233	861	L	N	20	50	300	200	N	200	N	61000

= Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

* APPROX 15000

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Field No.	Tag No.	(.1) Fe %	(.05) Mg %	(.1) Ca %	(.005) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
G-1	///////	1.5	.2	.7	.2	200	N	N	N	L	1000	2	N	N	L	20	10	100	N	L	L
235A	CGC 862	2	1.5	2	.5	200	N	N	N	20	700	L	N	N	10	30	10	50	N	L	L
235B	863	3	2	10	1	700	N	N	N	50	200	L	N	N	10	50	L	100	N	L	L
236	864	1	.1	1.5	.7	2000	N	N	N	L	700	L	N	N	L	L	L	50	N	L	L
237	865	3	1	7		150	N	N	N	30	200	L	N	N	10	50	20	200	N	.50	L
238	866	3	1	7		1000	N	N	N	30	300	L	N	N	10	50	20	200	N	70	L
239	867	3	.5	10		1000	N	N	N	20	200	L	N	N	10	20	100	200	N	L	L
240	868	.7	.05	10		700	N	N	N	L	100	L	N	N	10	L	L	300	10	150	L
241	869	2	.7	15		700	N	N	N	L	200	L	N	N	15	L	500	200	15	100	L
242	870	2	.2	15	.5	700	N	N	N	L	50	L	N	N	L	20	200	700	50	100	L
243	871	20	.7	5		700	L	N	N	20	100	L	N	N	700	70	700	70	L	L	700
244	872	1.5	.15	5		500	N	N	N	L	300	L	N	N	10	L	200	200	L	100	L
245	873	.7	.05	10		700	N	N	N	L	100	L	N	N	10	L	L	500	L	200	L
246	874	3	1	7		700	N	N	N	20	2000	L	N	N	15	30	L	100	N	70	L
247	875	.7	.1	10		700	N	N	N	L	200	L	N	N	10	L	10	300	10	150	L
248	876	2	1	10		700	N	N	N	L	150	L	N	N	10	100	L	100	N	L	L
249	877	3	.3	15		1000	N	N	N	20	1000	L	N	N	15	20	150	500	20	50	L
250	878	3	.5	7		700	N	N	N	L	200	2	30	N	15	30	L	100	N	50	L
251	879	2	.7	15		200	N	N	N	L	50	L	N	N	10	50	20	100	N	50	L
252	880	3	1	10		700	N	N	N	L	100	L	20	N	15	100	20	100	10	L	L
253	881	3	1.5	10		700	N	N	N	L	200	L	30	N	10	100	L	50	N	L	L
255	882	2	.5	10		1000	N	N	N	L	200	L	N	N	10	20	L	200	N	50	L
257	883	2	.7	7		700	N	N	N	L	200	L	N	N	10	20	20	50	N	L	L
258	884	2	.05	10		500	N	N	N	L	50	L	N	N	15	L	700	200	70	50	L

EMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc. Lower limits of determination are in parentheses

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
//////////											
G-1	//////////	50	N	L	N	300	20	N	N	N	200
235A	CCC 862	L	N	15	N	300	100	N	20	N	G/1000
235B	863	L	N	10	N	300	150	N	150	N	G/1000
236	864	L	N	L	N	300	30	N	100	N	G/1000
237	865	L	N	10	N	300	200	N	150	N	G/1000
238	866	L	N	10	N	500	200	200	200	N	G/1000
239	867	L	N	15	N	200	200	N	300	N	G/1000
240	868	L	N	15	30	200	200	N	700	N	G/1000
241	869	L	N	10	N	200	200	N	500	N	G/1000
242	870	L	N	15	50	L	500	N	1500	N	G/1000
243	871	L	N	10	N	L	30	150	100	N	G/1000
244	872	L	N	L	N	200	200	N	500	N	G/1000
245	873	L	N	L	30	200	200	N	500	N	G/1000
246	874	L	N	10	N	300	200	N	300	N	G/1000
247	875	L	N	L	N	300	200	N	500	N	G/1000
248	876	L	N	15	N	300	70	N	150	N	G/1000
249	877	L	N	15	50	200	300	N	1000	N	G/1000
250	878	20	N	15	20	200	200	100	200	N	G/1000
251	879	20	N	10	150	200	150	L	700	N	G/1000
252	880	20	N	10	N	300	70	100	100	N	G/1000
253	881	20	N	10	N	500	100	N	50	N	G/1000
255	882	L	N	10	N	300	200	N	500	N	G/1000
257	883	L	N	10	N	500	150	N	300	N	G/1000
258	884	L	N	15	30	200	300	1000	1000	N	G/1000

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= Greater than value shown. N = Not detected at Limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

Field No.	Tag No.	(.1)	(.05)	(.1)	(.005)	(20)	(1)	(500)	(20)	(20)	(50)	(2)	(20)	(50)	(10)	(20)	(10)	(50)	(10)	(50)	(10)	(50)	(10)
		Fe %	Mg %	Ca %	Ti %	Mn	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni		
27																							
1	G-1	1.5	.2	.7	.2	200	N	N	N	L	1000	2	N	N	L	L	10	100	N	L	L		
2	259	CCC 885	.1	10	G1	700	N	N	N	L	L	L	N	N	10	L	10	300	20	200	L	L	
3	260	886	.15	7	G1	500	N	N	N	150	1000	L	N	N	10	L	500	300	L	50	L	L	
4	261	887	.15	15	G1	700	N	N	N	20	50	L	N	N	L	20	200	200	L	150	L	L	
5	262	888	.15	10	G1	700	N	N	N	20	50	L	N	N	L	L	100	300	20	100	L	L	
6	263	889	.1	10	G1	500	N	N	N	L	50	L	N	N	L	L	100	300	20	100	L	L	
7	264	890	.15	10	G1	700	N	N	N	L	50	L	N	N	L	L	200	200	30	200	L	L	
8	265	891	.1	15	G1	500	N	N	N	L	L	L	N	N	L	L	50	200	L	100	L	L	
9	266	892	.15	15	G1	700	N	N	N	L	50	L	N	N	L	L	300	300	20	100	L	L	
10	267	893	.15	15	G1	700	N	N	N	L	50	L	N	N	L	L	100	300	20	100	L	L	
11	269	894	.15	10	G1	700	N	N	N	L	50	L	N	N	L	L	70	500	50	200	L	L	
12	270	895	.1	15	G1	1000	N	N	N	L	100	L	50	N	L	L	70	500	10	200	L	L	
13	271	896	.1	15	G1	700	N	N	N	L	100	L	N	N	L	L	70	500	20	200	L	L	
14	272	897	.05	15	G1	1000	N	N	N	L	L	L	50	N	L	L	30	500	15	200	L	L	
15	273	898	.05	15	G1	1000	N	N	N	L	L	L	N	N	L	L	20	1000	10	300	L	L	
16	275	899	.05	15	G1	1000	N	N	N	L	L	L	N	N	L	L	20	1000	L	300	L	L	
17	276	900	.2	15	G1	700	N	N	N	L	150	L	N	N	10	30	10	500	L	200	L	L	
18	277	901	.3	10	G1	700	N	N	N	20	150	L	N	N	15	20	1000	200	10	150	L	L	
19	279	902	1	10	G1	700	N	N	N	L	100	L	N	N	20	50	1000	150	L	150	L	L	
20	280	903	.7	10	G1	700	N	N	N	20	100	L	N	N	20	50	150	50	100	L	L	L	
21	281	904	1.5	15	G1	700	N	N	N	L	70	L	N	N	L	30	L	300	N	L	L	L	
22	282	905	.7	15	G1	1000	N	N	N	30	100	L	N	N	L	30	10	50	N	L	L	L	
23	283	906	.5	15	G1	1000	N	N	N	100	200	L	N	N	10	30	200	300	N	100	L	L	
24	284	907	.5	10	G1	700	N	N	N	70	700	L	N	N	20	30	100	100	N	100	L	L	

EMARKS: Fe, Mg, Ca, and Ti reported in %; all other elements reported in ppm. Results are in the series 1, 1.5, 2, 3, 5, 7, 10, etc.

Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
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1	G-1	50	N	L	N	200	L	N	N	N	200
2	259	L	N	L	50	L	500	N	1000	N	G/1000
3	260	L	N	L	L	200	200	L	700	N	G/1000
4	261	L	N	L	50	200	500	N	700	N	G/1000
5	262	L	N	10	50	L	500	L	1000	N	G/1000
6	263	L	N	L	20	L	300	N	1000	N	G/1000
7	264	L	N	L	50	L	500	L	1000	N	G/1000
8	265	L	N	L	N	200	300	N	700	N	G/1000
9	266	L	N	L	20	200	300	L	700	N	G/1000
0	267	L	N	L	L	L	300	N	700	N	G/1000
1	269	L	N	L	20	L	500	N	1000	N	G/1000
2	270	20	N	L	50	L	300	N	200	N	G/1000
3	271	L	N	L	20	L	300	N	700	N	G/1000
4	272	L	N	L	50	L	300	N	1000	N	G/1000
5	273	L	N	L	50	L	500	N	1000	N	G/1000
6	275	L	N	L	50	L	500	N	1000	N	G/1000
7	276	L	N	L	30	L	500	N	1000	N	G/1000
8	277	L	N	L	L	L	300	150	700	N	G/1000
9	279	L	N	L	N	200	300	N	500	N	G/1000
0	280	L	N	L	N	200	150	100	300	N	G/1000
1	281	L	N	L	N	200	100	N	700	N	G/1000
2	282	L	N	L	N	500	100	N	30	N	G/1000
3	283	L	N	L	L	300	200	N	500	N	G/1000
4	284	L	N	L	N	300	150	N	100	N	G/1000

G = Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

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Field No.	Tag No.	(.1%) Fe %	(.05) Mg %	(.1%) Ca %	(.005) Ti %	(20) Mn	(1) Ag	(500) As	(20) Au	(20) B	(50) Ba	(2) Be	(20) Bi	(50) Cd	(10) Co	(20) Cr	(10) Cu	(50) La	(10) Mo	(50) Nb	(10) Ni
TM G-1	920	1.5	.2	.7	.2	200	N	N	N	L	1000	2	N	N	L	20	10	100	N	L	L
285	908	3	1	10	G-1	1000	N	N	N	70	300	L	N	N	10	100	50	100	N	50	L
286	909	2	.7	10	G-1	1000	N	N	N	50	500	L	N	N	10	50	10	50	N	L	10
287	910	G20	.2	3	.5	300	2	L	N	50	5000	L	N	N	300	20	500	50	N	L	20
288	911	3	1	10	1	1000	N	N	N	70	150	L	N	N	10	70	20	70	N	50	10
289	912	7	1.5	7	1	700	N	N	N	20	G5000	L	N	N	20	150	70	70	N	L	L
290	913	2	.15	7	G-1	1000	N	N	N	100	700	L	N	N	10	30	70	100	N	300	L
291	914	3	2	10	1	1000	N	N	N	20	500	L	N	N	10	200	20	50	N	L	L
292	915	3	1	7	1	1000	N	N	N	20	500	L	N	N	10	70	20	50	N	L	L
293	916	2	1.5	10	1	1000	N	N	N	20	150	L	N	N	10	70	50	70	N	L	10
294	917	3	2	15	.7	1000	N	1000	N	200	G5000	L	N	N	20	100	30	50	N	L	10
295	918	3	1	10	G-1	1000	N	N	N	20	G5000	L	N	N	10	70	500	70	N	L	10
296	919	3	1.5	10	1	1000	N	N	N	L	G5000	L	N	N	10	200	10	50	N	L	L
297	920	2	.5	15	G-1	700	N	N	N	20	300	L	N	N	15	50	70	150	N	L	L
298	921	G20	.2	1	.5	150	N	N	N	20	5000	L	N	N	150	L	500	50	N	L	30
299	922	2	.5	15	G-1	1000	N	N	N	20	200	L	N	N	L	20	50	300	N	200	L
300	923	5	1	10	1	1000	N	N	N	L	500	L	N	N	10	L	10	50	N	L	L
301	924	10	3	7	1	1500	N	N	N	20	300	L	N	N	20	100	10	50	N	L	L
302	925	15	1.5	7	1	1000	N	N	N	20	5000	L	N	N	200	50	700	50	N	L	10
303	926	5	1	15	1	1000	N	N	N	L	300	L	N	N	20	50	100	200	N	L	L
304	927	5	5	7	.7	1000	N	N	N	50	100	L	N	N	20	1000	L	50	N	L	20
305	928	15	.7	10	G-1	1000	N	N	N	20	500	L	N	N	200	30	1500	70	N	L	50
306	929	10	1.5	7	.7	1000	N	500	N	20	500	L	N	N	30	150	300	50	300	L	20
307	930	10	2	7	1	1500	N	N	N	50	500	L	N	N	20	200	70	50	N	L	50

MANDS: Fe Mn Ca and Ti reported in %; all other elements reported in ppm
 Percentages in the columns are in the units indicated in the column headers

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Field No.	Tag No.	(20) Pb	(200) Sb	(10) Sc	(20) Sn	(200) Sr	(20) V	(100) W	(20) Y	(500) Zn	(20) Zr
TM G-1	904	50	N	L	N	200	20	N	L	N	200
	905	L	N	L	N	300	200	N	200	N	G/1000
	906	L	N	20	N	500	150	N	30	N	500
	287	150	N	20	N	200	70	N	50	N	1000
	288	L	N	20	N	500	150	N	70	L	700
	289	20	N	30	N	500	200	N	100	N	G/1000
	290	L	N	20	20	200	200	N	300	N	G/1000
	291	L	N	30	N	300	200	N	150	N	G/1000
	292	L	N	20	N	500	200	N	70	N	G/1000
	293	L	N	20	N	200	200	N	70	N	G/1000
	294	L	N	20	N	1000	100	N	70	N	G/1000
	295	L	N	20	N	500	200	N	100	N	G/1000
	296	L	N	L	N	500	200	N	100	N	G/1000
	297	L	N	L	N	500	200	N	300	N	G/1000
	298	L	N	10	N	200	70	N	L	500	200
	299	L	N	10	50	200	300	N	700	N	G/1000
	300	L	N	30	N	700	200	N	20	N	1000
	301	L	N	50	N	300	200	N	70	N	G/1000
	302	L	N	30	N	700	200	N	50	N	G/1000
	303	L	N	L	N	500	100	N	200	N	G/1000
	304	L	N	20	N	300	200	N	50	N	G/1000
	305	L	N	30	N	500	200	N	200	N	G/1000
	306	L	N	30	N	500	200	100	30	L	1000
	307	L	N	50	N	300	300	N	50	N	1000

Greater than value shown. N = Not detected at limit of detection, or at value shown. L = Detected, but below limit of determination, or below value shown.

