Table 9

Trace elements in limonite precipitates and rocks Keno Hill district, Yukon

106 D/1

Sample Number	Cu	Pb	Zn	Ni	Co	As	Sb	Mo	W	U	Sn	Ag	F	Ba	Remarks
1a	4	35	140	2.5	2.5	1	0.5	12.0	768	0.9	10	ND	150600	47	Skarn
1b	2	5	10	2.5	2.5	1	0.5	0.5	2	2.3	2	ND	225	42	Dolomite
2	12	2.5	120	85	15	1	0.5	0.5	2	1.1	ND	ND	1500	6461	Phyllite
3a	24	2.5	120	80	2.5	8	3.0	17.0	2	13.5	3	1.0	570	6757	Graphitic phyllite
3b	20	2.5	230	50	2.5	1	1.0	1.0	2	1.7	ND	0.3	790	1383	Limestone
4	72	5	60	15	2.5	6	0.5	0.5	2	1.1	7	0.2	255	1152	Graphitic phyllite
5	150	5	5	160	2.5	8	2.0	2.0	2	8.6	ND	1.3	505	5666	Rusty quartz vein
6	2	2.5	70	2.5	2.5	1	0.5	0.5	2	1.1	5	0.5	160	954	Phyllitic quartzite
7	8	2.5	5	20	2.5	2	0.5	0.5	2	0.3	7	ND	145	740	Phyllitic quartzite
8	2	5	50	25	2.5	10	4.0	2.0	2	4.1	5	ND	830	3067	Phyllite (black)
9	8	2.5	110	45	2.5	1	0.5	0.5	2	2.5	4	ND	425	892	Phyllite
10	2	2.5	120	60	2.5	70	2.0	2.0	2	5.5	4	ND	920	2404	Phyllite
11	2	2.5	130	15	2.5	6	0.5	0.5	2	1.7	3	ND	310	514	Greenstone (1% py)
12	2	5	40	15	5	14	0.5	2.0	2	0.9	5	ND	160	1386	Phyllite (5% py)
13	2	5	20	2.5	2.5	4	4.0	2.0	2	0.8	4	0.3	155	1300	Phyllite (2-5% py)
14	2	2.5	1600	15	2.5	4	0.5	0.5	2	0.4	ND	ND	1950	128	Limonite precipitate
15a	8	2.5	900	2.5	2.5	1	0.5	0.5	2	0.1	ND	ND	590	10	Limonite precipitate
15b	44	2.5	900	2.5	2.5	48	24.0	13.0	2	2.6	ND	ND	1080	88	Limonite precipitate
16a	110	2.5	140	45	15	5	1.0	0.5	2	0.7	ND	ND	545	285	Greenstone
16b	60	2.5	2900	290	20	1	2.0	0.5	2	0.7	ND	ND	410	363	Quartz vein in greenstone
17	8	2.5	40	2.5	2.5	60	0.5	18.0	2	0.2	ND	ND	1340	128	Limonite precipitate
18	2	2.5	100	60	55	4	0.5	1.0	2	3.0	10	ND	485	1362	Phyllite (dark grey)
19	120	2.5	180	65	55	1	2.0	1.0	2	0.3	ND	ND	305	559	Greenstone
20	110	2.5	70	85	45	1	0.5	1.0	2	0.3	ND	ND	220	179	Greenstone
21	320	2.5	180	2.5	55	1	2.0	1.0	2	0.2	ND	ND	340	926	Greenstone
22a	36	2.5	40	70	20	48	0.5	5.0	2	5.8	9	ND	ND	2128	Phyllite
22b	72	2.5	60	55	10	1	2.0	1.0	2	3.8	8	ND	1110	9674	Greenstone
23	96	2.5	80	130	40	1	0.5	1.0	2	0.3	4	ND	310	2867	Greenstone
24	44	2.5	70	120	35	1	0.5	1.0	2	0.3	ND	ND	205	364	Greenstone
25	8	15	20	20	5	2	0.5	1.0	2	1.7	1	ND	560	571	Phyllite
26	16	10	20	20	10	2	0.5	1.0	2	2.4	6	ND	535	411	Phyllite
27	2	10	10	10	2.5	1	0.5	1.0	2	1.8	3	ND	545	504	Phyllite
28	2	2.5	10	2.5	2.5	1	3.0	6.0	2	2.2	6	1.2	495	4091	Phyllite (graphitic)
29	2	5	70	2.5	2.5	12	0.5	0.5	2	3.9	9	ND	700	2893	Phyllite
30	2	10	60	2.5	2.5	4	20.0	0.5	2	4.0	7	ND	410	2798	Phyllite
31	2	5	10	5	2.5	6	0.5	4.0	2	4.6	6	ND	830	2529	Phyllite (graphitic)
32	2	15	10	2.5	2.5	2	1.0	0.5	2	0.9	2	0.4	50	119	Quartzite

106 D/2

33	140	2.5	30	2.5	2.5	1	0.5	0.5	2	0.2	2	ND	100	78	Dolomite
34	220	5	50	5	2.5	1	0.5	0.5	2	0.2	4	ND	50	52	Dolomite
35	2	2.5	5	2.5	2.5	28	1.0	0.5	0.5	0.8	1	0.4	70	117	Dolomite
36	180	45	130	30	5	20	0.5	0.5	2	2.9	5	ND	590	592	Phyllite
37	2	2.5	5	2.5	15	1	0.5	0.5	2	1.0	ND	ND	830	55	Limestone
38	2	15	20	5	2.5	2	0.5	1.0	2	0.5	Tr.	ND	325	65	Limestone
39	2	5	5	2.5	10	1	0.5	0.5	2	0.6	1	ND	120	74	Limestone
40	2	10	50	35	15	1	2.0	0.5	2	3.1	4	ND	930	798	Phyllite
41	2	2.5	110	30	2.5	6	0.5	0.5	2	2.2	6	0.6	410	1415	Phyllite
42	28	15	120	40	5	22	1.0	0.5	2	2.5	5	ND	350	667	Phyllite
43	24	10	100	45	20	1	0.5	0.5	2	2.4	3	ND	770	562	Phyllite
44	4	2.5	40	2.5	2.5	1	0.5	0.5	2	2.0	7	ND	730	1667	Phyllite
45	2	5	50	15	2.5	6	1.0	0.5	2	2.0	7	ND	75	498	Quartzite
46	2	2.5	1700	105	2.5	1	0.5	14.0	2	7.9	ND	ND	155	129	Limonite precipitate
47	32	5	110	70	10	12	0.5	5.0	2	3.5	4	ND	1430	833	Quartz-sericite Schist
48	32	20	100	35	5	1	0.5	0.5	2	1.4	5	ND	700	1005	Sheared greenstone (10% magnetite crystals)
49	160	2.5	180	120	10	22	0.5	0.5	2	0.3	1	ND	780	189	Greenstone
50	4	5	20	5	2.5	2	0.5	0.5	2	1.6	5	ND	315	996	Quartzite
51	36	15	130	35	20	1	1.0	2.0	2	4.3	Tr	ND	700	2280	Quartzite (rusty weathering)
52	16	15	140	60	10	4	0.5	2.0	2	3.1	10	ND	580	1234	Quartzite
53a	4	15	140	55	15	32	0.5	0.5	2	3.4	2	ND	770	1552	Phyllite (1% py)
53b	88	15	230	55	20	14	1.0	1.0	2	3.6	1	ND	820	530	Phyllite (1% py)
54	44	15	160	45	20	2	1.0	6.0	2	4.3	Tr	ND	730	2062	Phyllite quartzite (1% py)
55	2	10	70	15	2.5	4	0.5	0.5	2	3.8	7	ND	465	1155	Phyllite
56	40	20	40	2.5	2.5	1	1.0	0.5	2	1.9	3	0.3	505	4146	Phyllite (graphitic)
57	16	2.5	40	2.5	2.5	2	3.0	5.0	2	3.4	6	ND	740	3093	Phyllite
58	8	2.5	40	2.5	2.5	2	0.5	1.0	2	0.8	Tr	ND	1750	632	Limonite precipitate
59	24	15	130	50	15	16	0.5	3.0	2	4.9	6	ND	1270	2409	Phyllite
60	52	2.5	120	65	25	1	0.5	0.5	2	0.3	ND	0.3	610	614	Greenstone
61	44	2.5	140	10	5	1	0.5	0.5	2	1.0	1	ND	590	535	Greenstone
62	68	2.5	80	100	5	36	0.5	0.5	2	0.3	4	ND	350	523	Greenstone
63a	380	2.5	180	30	40	40	0.5	1.0	2	0.7	ND	ND	505	136	Greenstone
63b	2	2.5	360	95	25	8	2.0	2.0	2	4.4	2	ND	770	1721	Phyllite (10% py)
63c	12	2.5	90	35	5	1	0.5	3.0	2	6.2	3	ND	770	1232	Greenstone (10% py)
63d	2	2.5	380	105	40	48	0.5	0.5	2	0.4	ND	ND	462	493	Quartz vein (Rusty)
64	8	2.5	280	2.5	5	1	0.5	1.0	2	1.0	ND	ND	1000	1080	Limonite Precipitate
65	24	5	70	25	2.5	4	0.5	1.0	2	2.9	3	ND	620	1273	Quartzite
66	2	5	20	2.5	2.5	1	1.0	0.5	2	2.0	8	ND	750	3924	Phyllite (graphitic)
67	8	2.5	90	5	2.5	1	0.5	0.5	2	1.7	6	ND	465	4300	Phyllite
68	20	5	40	2.5	2.5	1	0.5	3.0	2	3.9	9	ND	885	3319	Phyllite (1-5% py)
69	2	2.5	20	2.5	2.5	1	0.5	0.5	2	0.9	5	ND	455	2887	Phyllite
70	2	2.5	70	5	2.5	1	0.5	1.0	2	3.2	5	ND	670	2602	Phyllite
71a	44	2.5	140	30	2.5	1	0.5	2.0	2	6.7	6	ND	800	3055	Quartzite
71b	4	40	50	5	2.5	1	0.5	3.0	2	2.8	6	ND	730	3014	Quartzite
71c	40	2.5	90	105	60	1	0.5	0.5	2	0.2	ND	ND	295	171	Greenstone
71d	2	10	140	20	2.5	2	0.5	3.0	2	4.7	2	ND	725	3680	Limonite precipitate
72a	56	2.5	110	95	30	4	0.5	0.5	2	0.6	ND	ND	595	184	Greenstone
72b	2	10	50	15	2.5	14	0.5	3.0	2	1.7	7	ND	330	746	Quartzite
73	2	2.5	100	10	2.5	1	0.5	0.5	2	1.0	1	ND	960	400	Limonite precipitate
74	2	2.5	10	2.5	2.5	1	0.5	0.5	2	0.6	5	ND	55	139	Quartzite

106 D/3

75a	2	2.5	1800	195	180	36	0.5	3.0	2	2.9	ND	ND	430	1019	Limonite precipitate
75b	64	45	320	35	2.5	2	1.0	2.0	2	2.5	6	0.5	435	1055	Limonite precipitate
76a	76	15	210	45	5	14	0.5	7.0	2	2.6	ND	ND	6650	1704	Limonite precipitate
76b	4	2.5	160	50	2.5	1	2.0	0.5	2	1.4	6	ND	390	3655	Phyllite
77	44	10	90	35	2.5	2	0.5	0.5	2	1.5	5	ND	2200	757	Quartz vein
78	170	45	190	160	25	14	0.5	0.5	2	4.2	1	0.4	300	1700	White precipitate (alunite)
79	80	50	600	45	2.5	10	1.0	2.0	2	1.9	<1	0.3	350	1175	Limonite precipitate
80	4	10	30	20	2.5	34	1.0	0.5	2	1.7	4	ND	395	515	Phyllite quartzite
81	4	5	10	5	2.5	1	0.5	0.5	2	1.6	Tr	ND	335	168	Limestone
82	28	65	1300	50	2.5	2	1.0	1.0	2	3.1	2	0.4	715	1658	Limonite precipitate
83a	76	2.5	110	95	15	1	0.5	3.0	2	0.2	Tr	ND	200	277	Greenstone
83b	2	5	120	65	5	2	1.0	1.0	2	3.5	9	ND	690	590	Phyllite
83c	120	5	240	2.5	2.5	2	0.5	2.0	2	2.5	ND	ND	610	1678	Limonite precipitate
84	4	2.5	20	2.5	2.5	1	0.5	0.5	2	0.2	3	ND	140	107	Quartz vein
85	32	5	220	70	2.5	4	3.0	3.0	2	3.3	5	ND	400	1357	Limonite precipitate
86	2	5	10	2.5	2.5	2	0.5	1.0	2	0.6	5	ND	20	72	Quartzite
87	4	2.5	30	15	10	1	0.5	0.5	2	0.5	8	ND	410	247	Quartzite
88a	4	2.5	550	50	10	30	1.0	18.0	2	1.0	ND	ND	430	2274	Limonite precipitate
88b	116	2.5	600	25	2.5	2	1.0	0.5	2	2.1	ND	ND	730	3333	Limonite precipitate
89	20	35	130	55	10	2	3.0	6.0	2	4.2	5	ND	1135	787	Limestone
90	2	2.5	10	5	5	1	0.5	0.5	2	0.2	ND	ND	370	92	Limestone
91	2	60	150	50	15	26	0.5	0.5	2	3.6	8	ND	1050	1478	Phyllite
92	12	15	950	375	190	65	1.0	3.0	2	2.5	5	ND	400	1558	Limonite precipitate
93	12	2.5	110	45	10	2	1.0	2.0	2	2.4	5	ND	410	987	Phyllite
94	40	10	10	2.5	2.5	6	0.5	0.5	2	1.1	Tr	ND	210	118	Limestone
95	24	2.5	70	10	2.5	10	0.5	0.5	2	2.3	6	ND	930	626	Phyllite
96a	76	5	250	35	2.5	10	1.0	3.0	2	2.5	3	ND	595	1742	Limonite precipitate
96b	2600	65	320	30	20	1	2.0	3.0	2	1.3	3	1.2	570	3087	Greenstone with qtz. vein (1% cp; 2-3% py)
97	68	2.5	140	90	10	12	0.5	1.0	2	0.7	ND	ND	500	304	Greenstone
98	4	2.5	70	10	2.5	10	0.5	4.0	2	3.1	5	ND	450	1442	Phyllite
99	2	2.5	110	25	2.5	12	0.5	1.0	2	4.9	7	ND	890	2414	Phyllite
100a	2	2.5	60	2.5	2.5	2	2.0	1.0	2	2.8	9	ND	540	2416	Quartzite
100b	2	2.5	120	2.5	2.5	2	0.5	1.0	2	1.3	ND	ND	580	1071	Limonite precipitate
101	12	2.5	90	10	2.5	1	1.0	0.5	2	4.5	3	ND	1100	2562	Phyllite
102	2	2.5	70	2.5	2.5	2	2.0	2.0	2	1.7	5	ND	320	928	Limonite precipitate
103	12	5	10	2.5	2.5	1	0.5	0.5	2	0.8	3	ND	440	346	Quartzite
104	24	2.5	230	15	2.5	14	0.5	2.0	2	7.1	ND	ND	1070	680	Limonite precipitate
105	2	5	10	2.5	10	2	0.5	0.5	2	0.7	6	ND	95	250	Phyllitic quartzite
106	80	5	5	95	5	10	1.0	3.0	2	4.7	6	0.3	670	2668	Greenstone

106 D/3 (cont'd.)

Sample Number	Cu	Pb	Zn	Ni	Co	As	Sb	Mo	W	U	Sn	Ag	F	Ba	Remarks
107	20	2.5	130	25	2.5	12	1.0	1.0	2	2.3	3	ND	300	621	Greenstone (1% py)
108	12	10	80	40	2.5	12	1.0	0.5	2	2.5	ND	ND	430	1240	Phyllite
109	40	10	80	2.5	2.5	8	4.0	3.0	2	2.8	ND	ND	620	1956	Limonite precipitate
110	2	2.5	120	2.5	2.5	2	1.0	1.0	2	0.2	ND	ND	1090	188	Limonite precipitate
111a	8	2.5	40	2.5	2.5	1	1.0	0.5	2	0.1	ND	ND	525	65	Limonite precipitate
111b	20	2.5	120	2.5	2.5	4	0.5	0.5	2	0.2	ND	ND	885	201	Limonite precipitate
112	100	2.5	220	125	15	8	2.0	0.5	2	0.2	ND	0.1	245	82	Greenstone
113a	44	2.5	200	20	5	8	0.5	3.0	2	2.4	1	0.9	580	1455	Limonite precipitate
113b	8	2.5	60	10	5	1	0.5	0.5	2	0.1	10	ND	60	63	Quartz vein
113c	64	2.5	160	15	5	6	2.0	3.0	2	2.4	4	ND	740	1496	Limonite precipitate
114	28	2.5	60	15	2.5	1	0.5	0.5	2	2.0	6	ND	785	3885	Phyllite
115	2	2.5	650	20	2.5	2	1.0	0.5	2	2.4	Tr	ND	1330	470	Limonite precipitate
116	60	2.5	110	40	2.5	12	0.5	0.5	2	0.7	ND	ND	1000	205	Greenstone

106 D/4

117	2	2.5	800	85	15	36	0.5	0.5	2	1.3	ND	ND	470	220	Limonite precipitate
118	2	2.5	950	90	15	28	0.5	1.0	2	0.8	ND	ND	215	268	Limonite precipitate
119a	2	5	500	65	2.5	220	2.0	5.0	2	4.2	1	ND	175	169	Limonite precipitate
119b	2	2.5	240	40	105	14	2.0	0.5	2	2.0	3	ND	100	752	Limonite precipitate
120	8	2.5	10	10	2.5	1	0.5	4.0	2	2.6	ND	ND	505	936	Limestone
121a	4	2.5	20	2.5	20	1	0.5	0.5	2	1.7	7	ND	330	637	Quartzite
121b	2	2.5	10	2.5	2.5	1	0.5	0.5	2	0.7	5	ND	135	176	Quartzite
122	2	2.5	20	2.5	2.5	1	1.0	0.5	2	0.5	ND	ND	190	149	Quartz-carbonate vein
123	2	2.5	10	2.5	2.5	1	0.5	0.5	2	0.4	6	ND	ND	239	Quartzite
124	2	2.5	10	2.5	2.5	1	0.5	0.5	2	1.4	ND	ND	135	53	Limestone
125	4	10	110	45	10	1	0.5	0.5	2	1.7	6	ND	885	1465	Slate
126	2	5	10	2.5	5	1	0.5	0.5	2	1.9	6	ND	140	213	Quartzite
127	2	2.5	50	20	10	1	0.5	0.5	2	2.3	3	ND	430	1102	Quartzite
128	4	2.5	5	2.5	5	1	0.5	0.5	2	0.3	ND	ND	315	86	Limestone
129	72	10	100	40	10	6	0.5	0.5	2	1.7	ND	ND	670	6637	Slate
130	2	2.5	5	2.5	2.5	1	1.0	0.5	2	1.3	3	ND	115	35	Limestone
131	2	2.5	5	2.5	2.5	1	1.0	0.5	2	0.8	ND	ND	145	32	Limestone
132	16	2.5	210	100	2.5	12	0.5	0.5	2	0.6	11	ND	500	264	Greenstone
133	28	2.5	60	75	2.5	0.5	0.5	0.5	2	1.4	8	ND	1010	9661	Slate
134	76	15	110	2.5	2.5	1	1.0	0.5	2	1.9	5	ND	145	800	Quartzite
135	2	5	40	35	2.5	1	1.0	0.5	2	1.0	4	ND	180	13392	Limonite precipitate
136	16	2.5	50	65	2.5	2	0.5	1.0	2	1.9	1	ND	790	6682	Slate
137	4	10	5	5	2.5	1	1.0	1.0	2	2.4	Tr	ND	550	766	Phyllitic quartzite
138	24	2.5	50	30	2.5	1	0.5	2.0	2	1.1	3	ND	620	20146	Slate
139	24	2.5	90	35	15	1	0.5	0.5	2	1.3	5	ND	1050	1407	Quartz-sericite schist
140	2	2.5	100	50	10	1	1.0	0.5	2	1.9	12	ND	1060	2138	Phyllite
141	2	2.5	20	15	2.5	1	0.5	1.0	2	2.7	6	ND	575	575	Quartzite
142	52	2.5	120	150	20	2	0.5	0.5	2	0.9	3	ND	710	6971	Grit
143	2	2.5	20	5	2.5	2	2.0	1.0	2	3.5	5	ND	460	872	Sericitic quartzite
144	2	2.5	10	2.5	2.5	1	0.5	0.5	2	0.9	6	ND	150	144	Grit
145	8	2.5	20	10	2.5	1	1.0	1.0	2	2.0	3	ND	210	253	Sericitic quartzite
146a	20	145	2200	40	10	560	1100	0.5	2	3.7	10	0.5	690	625	Sericite schist from Pb-Sb occurrence
146b	56	>400	>4000	10	2.5	5000	18.0	0.5	0.5	8.2	ND	14	910	627	Gossan (Pb-Zn occurrence in sericite schist)
147	20	2.5	20	10	10	1	1.0	1.0	2	1.3	6	ND	140	106	Quartzite
148a	4	2.5	60	2.5	2.5	36	2.0	0.5	2	0.6	ND	ND	145	101	Limonite precipitate (stream bank)
148b	2	2.5	5	2.5	2.5	8	3.0	0.5	2	0.4	3	ND	125	191	Quartzite
148c	16	2.5	360	65	5	38	1.0	1.0	2	2.4	ND	1.8	455	597	Limonite precipitate (pond)
148d	20	2.5	40	2.5	2.5	150	8.0	0.5	2	0.4	ND	ND	290	63	Yellow scum (precipitate)
148e	8	10	40	2.5	2.5	500	24.0	4.0	2	0.5	10	0.2	290	48	Green scum (precipitate)
148f	4	2.5	10	2.5	2.5	44	4.0	0.5	2	0.2	ND	0.9	545	91	Limonite precipitate (stream)
149a	4	2.5	170	2.5	2.5	4	2.0	1.0	2	0.2	Tr	ND	170	70	Gossan in quartzite
149b	56	2.5	180	5	2.5	1	1.0	0.5	2	1.2	ND	ND	1370	416	Gossan in quartzite
150	120	2.5	20	10	2.5	1	0.5	0.5	2	1.0	4	ND	255	250	Quartzite (sheared)
151	12	5	110	45	25	2	0.5	0.5	2	2.1	9	ND	670	1239	Quartz-sericite schist
152	16	2.5	240	95	95	104	30.0	0.5	2	4.1	ND	ND	420	432	Limonite precipitate
153	2	2.5	20	2.5	10	60	1.0	0.5	2	0.9	8	ND	270	315	Quartzite
154	8	15	50	20	5	8	0.5	0.5	2	4.1	3	ND	790	1490	Granite
155	8	25	90	55	15	16	0.5	0.5	2	5.9	6	ND	400	1592	Greenstone (sheared)
156	8	2.5	5	10	5	2	0.5	4.0	20	4.4	10	ND	490	1914	Granite
157a	28	2000	180	5	2.5	220	400.0	17.0	20	8.9	ND	5.1	220	262	Quartz vein (boulder)
157b	2	140	20	2.5	2.5	16	6.0	0.5	92	7.6	7	0.4	500	107	Granite
158a	2	10	30	20	5	4	0.5	16.0	112	5.4	7	ND	1500	2168	Granite (trace mo)
158b	68	>400	>4000	5	5	900	22000	14.0	12	6.3	5	6.0	100	58	Arsenopyrite in quartz vein
159a	4	20	20	10	2.5	8	0.5	16.0	16	3.5	3	ND	410	1978	Quartz porphyry
159b	2	10	30	25	5	2	1.0	0.5	2	2.1	3	ND	180	355	Quartzite
160	2	5	10	2.5	2.5	16	0.5	0.5	2	1.7	2	ND	270	454	Quartzite
161	12	10	20	15	10	16	0.5	1.0	36	5.6	3	ND	950	2142	Granodiorite
162	20	10	20	15	5	120	6.0	0.5	2	1.9	3	ND	530	576	Quartz vein
162a	280	80	210	40	220	540	8.0	0.5	16	7.7	3	ND	705	954	Gossan
162b	16