

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

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PRELIMINARY GEOLOGIC MAP AND GEOCHEMICAL DATA,
CHEENEETNUK RIVER AREA, ALASKA

By
W.G. Gilbert

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PRELIMINARY GEOLOGIC MAP AND GEOCHEMICAL DATA,
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This report is a preliminary summary of DGGs field data collected during the 1977, 1978, and 1979 field seasons in the CheeneetnuK River area, which includes parts of the Lime Hills D-5 and McGrath A-4 and A-5 Quadrangles, Alaska. Plate 1 is a compilation of field maps and includes a generalized description for all major rock units. Analytical values for potassium-argon ages are given in table 1. Plate 2 indicates rock and stream-sediment-sample locations; analytical values for these samples are given in table 2.

Additional stratigraphic, paleontological, and structural information is reported in Potter and others (1980), and Gilbert (1980), and W.G. Gilbert, R.B. Blodgett, M.W. Henning, and A.W. Potter are preparing a report describing the stratigraphy and paleoenvironment of Paleozoic rocks in the area, with a summary of biostratigraphy. In addition, reports on the geology of the McGrath A-4 Quadrangle (W.G. Gilbert and J.T. Kline) and McGrath A-5 Quadrangle (W.G. Gilbert) are in preparation.

Fossil identifications were made by A.K. Armstrong, D.I. Axelrod, W.B.N. Berry, R.B. Blodgett, Thomas DeKeyser, J.T. Dutro, Jr., Gerhard Hahn, M.R. House, J.G. Johnson, D.L. Jones, Frithjof Lütke, Bernard Mamel, W.A. Oliver, Jr., A.R. Ormiston, A.W. Potter, D.M. Rohr, and Norman Savage.

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- Wahrhaftig, Clyde, Wolfe, J.A., Leopold, E.B., and Lanphere, M.A., 1969, The coal-bearing group in the Nenana coal field, Alaska: U.S. Geological Survey Bulletin 1274-D, p. D1-D30.

Table 1. Analytical data for ^{40}K - ^{40}Ar age determinations¹

Field sample No.	Rock type	Mineral dated	K_2O (wt %)	Sample weight (g)	^{40}Ar rad (moles/g) $\times 10^{-11}$	^{40}Ar rad		Age \pm 1.0 (m.y.)
						$\frac{^{40}\text{Ar}}{^{40}\text{K}} \times 10^3$	$\frac{^{40}\text{Ar}}{\text{total}}$	
78WG151B	biotite granite	biotite	7.862	0.1558	45.338	2.336	0.869	39.8 \pm 1.2
			7.807					
			$\bar{x} = 7.835$					
79WG68	hornblende andesite	hornblende	2.980	0.7131	15.853	2.179	0.751	37.1 \pm 1.1
			2.947					
			2.913					
			2.903					
			$\bar{x} = 2.936$					

¹ Analyses by B.J. Spell and D.L. Turner, Geophysical Institute, University of Alaska, Fairbanks.

Table 2. Analytical values for rock and stream-sediment samples (reported in ppm unless otherwise indicated)

Sed. spl.	Rock spl.	Field no.	AA analytes										Emission-spec analytes										Remarks
			Au	Ag	Cu	Pb	Zn	Mn	Mo	Sb	Co	Cr	Hg	Tl	Fe	D	Be	Sn	W	Bi			
1		79MG76	0.01	0.1	20	12	80	27	2	0	30	<20	1500	>15	51	100	2	<20	<50	<20			
2		79MG77	0.10	0.2	20	16	95	31	2	0	30	<20	1500	>15	51	70	2	<20	<50	<20			
3		79MG73	0.01	0.0	15	10	55	18	1	0	30	<20	1500	15	31	70	2	<20	<50	<20			
4		79MG74	0.12	0.3	15	16	63	29	2	0	30	<20	2000	>15	51	70	2	<20	<50	<20			
5		79MG75	0	0.1	19	12	86	28	2	0	30	<20	1500	>15	51	70	2	<20	<50	<20			
6		79MG72	0.03	0.2	25	12	105	45	2	0	30	<20	2000	>15	51	150	2	<20	<50	<20			
7		79MG106	0.0	0	3	12	70	2	3	0	<10	<20	300	700	2000	<10	<1	<20	<20	pink dolomite			
8		79MG187	0.0	2	7	22	10	5	3	4	<10	<20	100	700	2000	<10	<1	<20	<20	cinnebar (?) cementing limestone breccia			
9		79MG59	0.04	0.2	23	17	126	33	1	2	20	<20	2000	7000	31	100	1	<20	<50	<20			
10		79MG40	0.02	0.6	12	38	34	11	1	2	10	<20	1000	3000	21	20	1	<20	<50	<20			
11		79MG199	0.1	1	214	8	50	51	3	0	50	500	3000	15	21	13	<1	<20	<20	cinnebar-bearing, diabase dikes			
12		79MG200	0.0	2	4	17	50	14	4	6	<10	<20	300	700	15	<10	<1	<20	<20	cinnebar in shattered algal limestone			
13		79MG79	0.04	0.1	23	15	120	30	1	0	30	<20	2000	>15	31	100	2	<20	<50	<20			
14		79MG78	0.01	0.1	25	12	100	39	1	0	30	<20	1500	15	31	100	2	<20	<50	<20			
15		79MG214	0.0	4	5	21	10	2	5	7	<10	<20	200	700	3000	<10	<1	<20	<20	<20			
16		79MG41	0.02	0.1	20	16	143	32	1	0	30	<20	1500	5000	31	150	2	<20	<50	<20			
17		79MG42	0.01	0.3	31	10	176	47	5	1	30	<20	1000	>15	100	2	<20	<50	<20	<20			
18		79MG44	0.01	0.1	16	10	65	21	0	0	20	<20	700	15	21	150	1	<20	<50	<20			
19		79MG43	0.02	0.1	17	16	90	19	0	2	20	<20	100	>15	1.5	150	1	<20	<50	<20			
20		79MG45	0.06	0.1	18	11	80	32	1	0	30	<20	1500	7000	51	100	2	<20	<50	<20			
		79MG46	0.03	0.1	19	15	91	33	1	0	20	<20	700	15	21	100	1	<20	<50	<20			
21		79MG47	0.01	0.3	19	21	60	35	1	0	20	<20	1200	5000	21	100	1	<20	<50	<20			
22		79MG55	0.05	0.4	26	18	90	38	4	0	20	<20	1000	15	21	100	1	<20	<50	<20			
23		79MG57	0.04	0.1	20	17	69	36	2	0	30	<20	1500	>15	21	150	1	<20	<50	<20			
24		79MG56	0.04	0.1	21	22	127	30	2	5	30	<20	2000	15	31	150	2	<20	<50	<20			
		79MG193	0.0	0	81	113	100	0	2	0	<10	<20	<5	<50	51	10	<1	<20	<20	<20	gossan		
		79MG192	0.0	3	26	320	6000	8	3	0	<10	<20	50	500	101	30	<1	<20	<20	<20	gossan		
28		79MG59	0.02	0.1	30	16	119	49	2	0	30	<20	1500	>15	51	200	2	<20	<50	<20			
29		79MG58	0.03	0.1	24	15	122	36	3	5	20	<20	1500	>15	51	150	1	<20	<50	<20			
30		79MG63	0.04	0.1	27	13	91	49	1	0	30	<20	2000	>15	51	150	1	<20	<50	<20			
31		79MG62	0.03	0.2	29	13	94	50	2	0	20	<20	1000	>15	51	150	1	<20	<50	<20			
32		79MG60	0.02	0.1	29	16	95	50	2	0	20	<20	1500	7000	31	1000	2	<20	<50	<20			
33		79MG61	0.01	0.2	37	16	158	71	12	0	30	<20	1500	>15	51	150	2	<20	<50	<20			

Map no.	Field no.	AA analyses										Emission-spect analyses										Remarks
		Au	Ag	Cu	Pb	Zn	Bi	Mo	Sb	Co	Cr	Mn	Fe	Ca	Na	K	Li	Si	Al			
34	79MG69	0.05	0.2	17	13	67	29	3	0	30	<20	1000	15	55	150	1	<20	<50	<20			
35	79MG68	0.08	0.3	14	18	50	14	0	20	<20	1000	15	50	1	<20	<50	<20					
36	79MG71	0.06	0.1	19	12	GA	30	2	0	<20	2000	15	55	70	1	<20	<50	<20				
37	79MG70	0.06	0.1	24	14	03	49	2	0	<20	1500	>15	75	100	2	<20	<50	<20				
38	79MG158	ND	3.1	6	40	5	12	4	5	<10	500	100	2000	<5	<1	<20	<50	<20				
39	79MG58	ND	0.9	17	19	61	20	3	10	10	<20	1000	15	55	50	<1	<20	<50				
40	79MG59	ND	0.9	16	20	61	37	4	ND	20	<20	1000	15	1.55	30	<1	<20	<50				
41	79MG67	0.05	0.1	10	15	>0	21	3	0	30	<20	1000	3000	7000	30	1	<20	<50				
42	79MG66	0.07	0.1	15	15	55	25	3	0	20	<20	2000	15	35	50	1	<20	<50				
43	79MG56	ND	1.0	12	37	34	22	6	ND	10	<20	700	1500	15	10	1	<20	<50				
44	79MG02	ND	0.7	20	10	96	41	2	ND	30	<20	1500	15	75	70	2	<20	<50				
45	79MG61	ND	0.5	22	17	60	34	3	ND	20	<20	1000	15	75	70	<1	<20	<50				
46	79MG60	ND	0.5	17	14	03	57	2	ND	20	<20	1500	7000	25	50	<1	<20	<50				
47	79MG65	ND	0.5	16	15	06	50	2	ND	20	<20	1000	15	55	50	<1	<20	<50				
48	79MG62	ND	0.6	19	17	103	64	3	ND	20	<20	1000	15	75	70	<1	<20	<50				
49	79MG04	ND	0.7	17	19	113	56	3	ND	30	<20	1000	15	25	70	1	<20	<50				
50	79MG63	ND	0.6	14	15	97	50	2	ND	30	<20	000	15	35	100	1	<20	<50				
51	79MG06	ND	0.6	15	15	90	53	2	ND	20	<20	1000	7000	1.55	70	2	<20	<50				
52	79MG07	ND	0.6	16	15	102	56	3	ND	30	<20	1500	7000	35	70	1	<20	<50				
53	79MG08	ND	0.5	11	15	75	37	1	ND	30	<20	500	3000	75	50	1	<20	<50				
54	79MG92	ND	0.6	16	19	00	50	3	ND	20	<20	1000	15	55	70	1	<20	<50				
55	79MG91	0.01	0.5	9	12	64	61	4	ND	30	<20	500	3000	1.55	50	1	<20	<50				
56	79MG93	ND	0.7	14	16	105	50	2	ND	30	<20	1000	15	35	50	1	<20	<50				
57	79MG94	ND	0.9	18	20	99	44	2	ND	30	<20	1500	15	55	70	2	<20	<50				
58	79MG95	0.04	0.9	25	24	125	58	5	ND	30	<20	2000	>15	75	50	2	<20	<50				
59	79MG90	0.02	1.0	24	23	135	62	4	ND	30	<20	1500	15	75	50	2	<20	<50				
60	79MG09	0.02	0.9	24	25	111	77	7	ND	30	<20	1000	7000	55	50	2	<20	<50				
61	79MG3	0.05	0.00	25	16	123	57	8.0	0	NO SAMPLE												
62	79MG2	0.04	0.94	65	20	179	57	3.4	0	NO SAMPLE												
63	79MG1	0.02	0.50	30	17	130	54	4.0	0	<10	<20	1500	15	25	200	<1	<20	<20				
64	79MG218	0.02	0.35	79	11	57	32	4	3	<10	20	2000	15	55	300	<1	<20	<20				
65	79MG51	ND	0.0	79	25	350	209	6	4	30	<20	1000	2000	25	100	2	<20	<50				
66	79MG50	ND	0.7	42	20	146	81	5	ND	30	<20	1500	>15	55	100	2	<20	<50				
67	79MG54	ND	0.7	26	20	110	61	4	ND	30	<20	1000	15	55	70	2	<20	<50				
68	79MG52	ND	0.5	13	15	90	44	3	ND	20	<20	1000	15	25	50	1	<20	<50				
69	79MG53	ND	1.7	10	52	22	16	5	ND	<10	<20	500	2000	15	<5	<1	<20	<50				
70	79MG110	0.02	1.9	15	30	52	20	5	3	<10	<20	1500	3000	25	20	<1	<20	<50				
71	79MG55	ND	1.6	17	30	48	26	5	ND	<10	<20	1000	3000	15	20	2	<20	<50				
72	79MG64	0.05	0.0	14	14	47	23	1	0	30	<20	2000	>15	55	30	>1	<20	<50				
73	79MG65	0.05	0.1	15	13	56	21	5	0	30	<20	2000	15	35	30	1	<20	<50				
74	79MG141	ND	3.4	7	41	7	12	5	7	<10	<20	100	1500	1.55	<5	<1	<20	<50				
75	79MG66	ND	0.6	33	21	115	62	11	ND	20	<20	1600	15	15	70	1	<20	<50				

Structure fillings in brecciated dolomite

Ilmenitic sillstone

effused dolomite breccia

Table 2 (cont.)

Sed. sp. no.	Rock sp. no.	Map no.	AA analyses											Emission-spectroanalyses										Remarks
			Au	Ag	Cu	Pb	Zn	Ni	Mo	Sb	Co	Cr	Mn	Il	Fe	D	Be	Sn	K	Bi				
76			ND	0.7	33	21	109	50	7	10	20	<20	1000	15	25	70	1	<20	<50	<20				
77			ND	0.5	39	22	132	47	4	10	20	<20	1000	15	55	70	1	<20	<50	<20				
78			0.01	2.7	212	15	01	83	9	10	30	<20	500	15	55	50	<1	<20	<50	<20	gypsum in fault zone			
79			ND	0.7	36	26	146	69	6	10	20	<20	1000	15	25	100	2	<20	<50	<20				
80			ND	0.4	25	15	101	43	2	10	10	<20	1200	15	25	70	1	<20	<50	<20				
81			ND	0.4	29	20	152	59	5	10	20	<20	500	7000	55	70	1	<20	<50	<20				
82			0.02	0.7	133	17	20	65	7	1	<10	<20	70	>15	25	300	<1	<20	<50	<20				
83			0.0	0	32	15	50	25	2	0	<10	<20	200	5000	1.55	70	<1	<20	<20	<20	pyritic calc-siltstone			
84			ND	0.5	20	19	106	69	4	10	20	<20	1000	>15	25	70	1	<20	<50	<20				
85			0.01	0.1	31	16	99	77	4	0	20	<20	1500	>15	35	200	1	<20	<50	<20				
86			0.02	0.1	18	10	82	27	1	0	30	<20	1500	>15	25	100	1	<20	<50	<20	quartzite			
87			0.0	1	74	10	20	40	3	0	<10	<20	1000	15	25	70	<1	<20	<20	<20				
88			0.02	0.1	23	15	140	36	2	0	30	<20	1500	>15	25	100	2	<20	<50	<20	limestone			
89			0.0	2	3	15	10	5	4	0	<10	<20	1500	700	35	<10	<1	<20	<20	<20	limestone			
90			0.0	0	210	13	20	51	4	0	<10	20	1000	>15	25	300	<1	<20	<20	<20				
91			0.0	2	06	13	50	36	3	0	10	<20	2000	>15	1.55	500	<1	<20	<20	<20	pyritic mudstone			
92			0.0	2	46	7	60	35	4	0	10	<20	100	>15	25	300	<1	<20	<20	<20	sheared mudstone			
93			0.01	0.1	24	16	160	48	1	0	30	<20	2000	>15	35	200	2	<20	<50	<20				
94			0.07	2.2	21	20	620	37	3	0	20	<20	1000	15	15	150	1	<20	<50	<20				
95			0.03	0.1	23	14	100	36	2	0	30	<20	2000	15	35	100	1	<20	<50	<20				
96			2.16	7.9	23	22	88	27	2	0	30	<20	1500	>15	55	100	2	<20	<50	<20				
97			ND	0.6	17	16	131	29	3	10	50	<20	2000	15	75	70	2	<20	<50	<20				
98			0.1	0.2	30	28	2500	130	25	3	30	<20	1000	200	55	50	<1	<20	<20	<20				
99			ND	0.6	17	18	125	36	3	10	30	<20	1500	15	75	50	2	<20	<50	<20				
100			ND	0.7	24	21	104	53	4	10	30	<20	1500	15	75	50	2	<20	<50	<20				
101			ND	0.7	20	20	115	38	3	10	30	<20	1000	15	75	70	1	<20	<50	<20				
102			ND	0.6	18	17	122	55	4	10	30	<20	1000	15	75	100	1	<20	<50	<20				
103			ND	0.6	20	21	119	65	3	10	20	<20	1500	15	75	70	1	<20	<50	<20				
104			ND	0.7	20	21	131	70	3	10	30	<20	2000	15	75	100	2	<20	<50	<20				
105			ND	0.7	25	21	137	65	4	10	30	<20	1000	15	55	100	2	<20	<50	<20				
106			ND	0.4	34	23	147	44	4	10	30	<20	1500	>15	75	100	5	<20	<50	<20				
107			ND	0.4	35	22	175	56	3	10	20	<20	1500	15	55	70	1	<20	<50	<20	red-stained limestone			
108			ND	3.5	8	37	12	13	6	4	<10	<20	500	1500	5000	<5	<1	<20	<50	<20	breccia			
109			ND	0.5	37	16	80	42	4	10	20	<20	1000	15	55	70	1	<20	<50	<20				
110			ND	1.5	14	37	32	21	5	3		INSUFFICIENT SAMPLE												
111			ND	0.6	41	21	128	54	4	10	20	<20	1500	15	55	70	2	<20	<50	<20				
112			ND	0.5	50	18	92	49	3	10	20	<20	1500	15	75	100	1	<20	<50	<20				
113			ND	0.6	70	22	101	55	4	10	20	<20	1500	15	75	100	1	<20	<50	<20				
114			ND	1.1	15	24	52	27	5	5	20	<20	1000	5000	25	70	2	<20	<50	<20				
115			ND	1.7	9	33	10	15	5	5	10	<20	<5	1000	5000	<5	<1	<20	<20	<20				

Table 2 (cont.)

Sed. no.	Field no.	AA analyses										Emission-spec analyses										Remarks
		Au	Ag	Cu	Pb	Zn	Ni	Mo	Sb	Co	Cr	Mn	Ti	Fe	B	Sr	M	W	Bi			
116	78G48	ND	1.6	9	33	18	15	4	4	10	<20	500	2000	5000	<5	<1	<20	<20	<20	argillite in gossan		
117	78G79a	ND	1.9	201	17	53	50	6	4	30	<20	1000	15	1.5x	1500	1	<20	<50	<20	argillite in gossan		
117	78G79c	ND	1.3	184	13	52	59	5	1	20	<20	1000	5000	3x	1500	1	<20	<50	<20	argillite in gossan		
117	78G79d	0.02	1.7	224	13	25	55	8	7	10	<20	1500	5000	1x	30	1	<20	<50	<20	some		
117	78G79e	ND	1.3	154	11	24	52	7	ND	20	<20	1000	1x	5x	30	2	<20	<50	<20	same		
110	78G74	ND	0.6	70	20	107	31	4	10	20	<20	1500	1x	2x	50	<1	<20	<20	<20	pyritic argillite		
119	78G25	ND	1.7	7	33	10	11	5	6	20	<20	1000	5000	5x	70	1	<20	<50	<20			
120	79G05	0.0	0.7	170	24	30	75	4	0	10	<20	1000	3000	1.5x	1000	<1	<20	<20	<20			
121	77G22	0.00	0.34	38	12	143	40	4.0	0	<10	<20	1000	1x	2x	70	<1	<20	<20	<20			
122	77G21	0.00	43.3	322	10	79	40	19.0	0	NO SAMPLE												
123	78G100	ND	2.1	17	30	32	21	4	5	10	<20	1000	1500	1x	15	<1	<20	<50	<20			
123	78G109	0.01	2.0	8	27	20	13	6	4	10	<20	500	700	1x	10	<1	<20	<50	<20			
124	78G107	0.01	2.4	4	35	7	19	4	2	10	<20	100	200	2000	<5	<1	<20	<50	<20			
125	78G44	ND	1.6	5	32	7	10	4	4	20	<20	<5	700	2000	<5	<1	<20	<20	<20			
126	78G132b	ND	2.5	112	22	15	63	10	0	30	<20	1000	1x	5x	500	2	<20	<50	<20	gossan in dolomite		
126	78G132c	ND	1.6	05	26	26	57	17	1	20	<20	1500	1x	5x	150	2	<20	<50	<20	same		
127	78G131	ND	1.2	50	43	20	60	3	ND	20	<20	1000	>1x	3x	1000	2	<20	<50	<20	flaestone gossan		
128	78G49	ND	1.8	10	33	13	19	4	5	10	<20	200	2000	5000	5	<1	<20	<20	<20			
129	78G101	ND	1.1	230	15	80	64	7	ND	20	<20	2000	1x	3x	20	<1	<20	<50	<20	limonitic chert-argillite		
130	77G4	0.00	0.50	52	14	170	60	6.6	0	NO SAMPLE												
131	77G5	0.00	0.40	44	13	129	43	5.6	0	<10	<20	1000	1x	2x	50	<1	<20	<20	<20			
132	77G248	0.04	0.43	126	30	5	68	7	0	<10	<20	50	1x	3x	500	1	<20	<20	<20	sulfide-bearing chert		
133	78G46	ND	0.9	50	20	129	40	3	ND	10	<20	1500	3000	3x	70	1	<20	<50	<20			
134	78G45	ND	0.8	48	16	114	30	3	ND	20	<20	1500	1x	5x	70	2	<20	<50	<20			
135	77G14	0.00	0.41	41	10	120	37	1.7	0	<10	<20	1500	5000	2x	50	1	<20	<20	<20	pyritic argillite		
136	77G236	0.04	0.09	290	26	150	46	7	0	<10	<20	2000	3000	2x	150	<1	<20	<20	<20			
137	77G13	0.00	0.54	45	17	152	47	3.3	0	<10	<20	2000	5000	2x	70	2	<20	<20	<20	gossan		
138	77G203b	0.02	0.33	350	6	43	92	11	0	<10	<20	1500	1x	3x	30	<1	<20	<20	<20			
139	77G7	0.00	0.37	46	12	135	49	4.7	0	<10	<20	1500	1x	3x	100	<1	<20	<20	<20			
140	77G6	0.00	0.24	29	19	155	63	7.5	0	NO SAMPLE												
141	77G10	0.03	0.39	37	20	161	50	3.1	0	NO SAMPLE												
142	77G11	0.00	0.33	44	12	161	49	2.8	0	<10	<20	2000	1x	1.5x	100	<1	<20	<20	<20	argillite hornfels		
143	77G6	0.0	0.9	90	29	140	78	2	0	<10	<20	300	1x	1.5x	500	<1	<20	<20	<20			
144	77G8	0.00	0.43	28	17	142	55	0.6	0	NO SAMPLE												
145	77G9	0.00	0.73	31	20	137	60	0.0	0	NO SAMPLE												
146	78G101	ND	0.9	32	22	255	132	6	10	30	<20	5000	3000	5x	100	1	<20	<50	<20			
147	78G102	0.02	1.0	45	10	117	84	7	10	30	<20	2000	7000	3x	500	1	<20	<50	<20			
148	78G96	0.02	0.9	19	22	97	60	3	ND	30	<20	1500	7000	5x	100	<1	<20	<50	<20			
149	78G97	ND	0.8	17	20	126	64	3	10	20	<20	1500	5000	5x	100	<1	<20	<50	<20			
150	78G98	0.01	0.9	18	22	107	43	3	ND	20	<20	1000	5000	3x	70	1	<20	<50	<20			

Table 2 (cont.)

Map no.	Rock sp.	Field no.	AA analyses										Emission-spec analyses										Remarks
			Au	Ag	Cu	Pb	Zn	Ni	Hg	Sb	Co	Cr	Mn	Ti	Fe	U	Sn	W	Bi				
151			0.01	0.7	14	16	122	53	3	10	20	<20	2000	5000	21	100	1	<20	<50	<20			
152			10	1.1	32	23	144	60	5	10	30	<20	1500	7000	51	500	1	<20	<50	<20			
153			0.00	0.31	41	14	193	48	3.7	0	<10	<20	1500	5000	1.51	100	<1	<20	<20	<20			
154			0.02	1.0	47	22	169	51	4	3	20	<20	1500	7000	11	200	2	<20	<50	<20			
155			0.01	1.1	29	21	144	55	5	10	20	<20	1000	3000	11	70	1	<20	<50	<20			
156			10	1.7	34	21	175	63	5	10	20	<20	1500	11	1.51	300	2	<20	<50	<20			
	158		0.02	0.8	34	28	618	115	9	10		INSUFFICIENT SAMPLE										black alluvium	
			0.0	0	99	11	80	41	19	0	<10	<20	100	2000	1.51	70	<1	<20	<20	<20			
	159		10	0.7	28	23	193	76	8	10	20	<20	1000	11	21	50	1	<20	<50	<20			
	160		10	0.7	46	19	42	36	44	4	<10	<20	100	5000	11	100	2	<20	<50	<20			
161			10	1.0	8	15	1170	1470	155	10	30	20	1000	11	21	70	2	20	<50	<20			
162			0.04	2.4	7	22	801	670	91	10	30	<20	1500	1000	71	10	1	<20	<50	<20			
163			10	0.4	2	21	720	234	54	0	10	<20	1500	200	71	<10	<1	<20	<20	<20			
164			0.01	1.8	17	31	67	55	7	3	20	<20	700	11	51	70	2	20	<50	<20			
165			0.08	0.34	39	12	115	43	4.0	0	<10	<20	1000	5000	1.51	50	<1	<20	<20	<20			
166			0.02	0.17	30	75	204	54	6.6	0	<10	<20	1000	11	1.51	30	1	<20	<20	<20			
167			0.03	0.34	42	12	137	45	3.7	0	<10	<20	2000	11	31	100	<1	<20	<20	<20			
168			0.04	0.23	27	11	105	53	1.1	0	<10	<20	1000	11	31	70	<1	<20	<20	<20			
169			0.02	0.19	32	15	127	50	1.9	0	<10	<20	1000	11	21	100	<1	<20	<20	<20			
170			0.01	0.31	37	15	120	60	2.7	0	<10	<20	700	11	21	100	<1	<20	<20	<20			
171			0.03	0.19	33	14	119	63	3.0	0	<10	<20	1500	11	21	100	<1	<20	<20	<20			
172			0.02	0.18	35	14	153	51	2.3	0	<10	<20	1000	11	21	100	<1	<20	<20	<20			
173			0.02	0.37	32	11	144	41	4.0	0	<10	<20	500	5000	31	70	<1	<20	<20	<20			
174			0.0	1	7	15	60	7	6	0	<10	<20	200	500	11	<10	<1	<20	<20	<20			
175			10	0.7	47	27	224	74	9	10	20	<20	1000	11	51	100	1	300	50	<20			
176			10	0.6	49	27	192	80	5	10	20	<20	1000	5000	21	100	2	20	50	<20			
177			10	0.6	45	26	106	79	6	10	30	<20	1000	5000	21	100	2	20	<50	<20			
178			10	0.3	26	10	114	57	2	10	20	<20	1200	11	31	70	1	<20	<50	<20			
179			10	0.5	26	18	117	60	3	10	30	<20	1500	>11	51	100	5	<20	<50	<20			
180			10	0.5	20	19	114	71	3	10	20	<20	1000	11	51	70	2	<20	<50	<20			
181			10	0.3	28	21	102	66	3	10	20	<20	1000	11	21	70	1	<20	<50	<20			
182			10	0.5	30	20	112	59	2	10	20	<20	1200	>11	51	100	1	<20	<50	<20			
183			0.1	0.5	61	18	80	52	3	0	10	20	3000	>11	21	10	<1	<20	<20	<20			
184			0.05	0.4	26	20	110	47	4	3	30	<20	2000	11	51	100	2	<20	<50	<20			
185			0.02	0.1	23	16	113	43	3	0	30	<20	5000	>11	71	100	1	<20	<50	<20			
186			0.06	0.5	33	24	135	60	6	3	30	<20	2000	11	71	100	2	<20	<50	<20			

Table 2 (cont.)

Sed. spl.	Map no. Rock Field no.	AA analyses										Emission-spect analyses										Remarks
		Au	Ag	Cu	Pb	Zn	Ni	Mb	Sb	Co	Cr	Mn	Ca	Fe	U	Do	Sn	N	BI			
187		0.06	0.3	37	18	123	64	9	0	20	20	1300	>15	55	100	2	<20	<50	<20			
	79MG00																					
188	79MG108	0.0	0.2	15	15	0	4	3	0	<10	<20	1500	900	25	<10	<1	<20	<20	<20	ref calcite veins		
189	79MG107	0.0	0.2	6	12	10	4	3	0	<10	<20	2000	500	25	<10	<1	<20	<20	<20	limonitic limestone		
190	79MG31	0.07	-0.1	39	10	149	64	3	2	30	<20	1500	>15	75	150	1	<20	<50	<20			
191	79MG30	0.0	0.1	104	13	30	5	3	0	<10	<20	3000	700	25	<10	<1	<20	<20	<20	altered limestone		
192	79MG30	0.05	0.2	40	21	150	72	4	0	30	<20	1500	>15	55	200	2	<20	<50	<20			
193	79MG29	0.02	0.3	50	20	151	67	5	0	30	<20	2000	>15	55	100	2	<20	<50	<20			
194	79MG28	0.02	0.4	57	20	175	83	12	3	30	<20	1500	15	75	200	2	<20	<50	<20			
195	79MG27	0.03	0.2	42	20	177	64	3	1	20	<20	1500	15	75	200	3	<20	<50	<20			
196	79MG22	0.02	0.2	101	18	169	66	1	0	30	<20	1000	15	55	150	2	<20	<50	<20			
197	79MG23	0.03	0.2	35	17	104	55	0	0	30	<20	1500	>15	75	150	1	<20	<50	<20			
198	79MG24	0.02	0.2	41	20	139	67	1	0	30	<20	1500	15	25	150	1	<20	<50	<20			
199	79MG21	0.05	0.1	30	17	109	57	1	0	30	<20	2000	15	35	100	1	<20	<50	<20			
200	79MG20	0.03	0.2	32	17	160	74	2	0	30	<20	1000	15	25	150	2	<20	<50	<20			
201	79MG19	0.02	0.1	33	11	137	110	2	0	30	<20	2000	>15	25	100	1	<20	<50	<20			
202	79MG16	0.0	0.2	105	16	140	179	2	0	70	20	2000	>15	25	30	<1	<20	<20	<20	altered volcanic rock		
203	79MG15	0.0	0.2	113	15	120	100	3	0	30	20	3000	>15	25	100	<1	<20	<20	<20	andesite		
204	79MG40	ND	0.3	20	10	103	56	7	ND	20	<20	2000	15	55	70	2	<20	<50	<20			
205	79MG38	ND	0.7	44	17	107	147	3	ND	50	50	2000	>15	75	50	2	<20	<50	<20			
206	79MG39	ND	0.3	37	14	104	109	3	ND	30	30	2000	>15	55	50	2	<20	<50	<20			
207	79MG37	ND	0.8	59	10	114	171	3	ND	50	70	1500	>15	105	100	3	<20	<50	<20			
208	79MG36	ND	0.5	45	24	114	71	2	ND	30	<20	700	15	35	70	2	<20	<50	<20			
209	79MG41	ND	0.4	33	10	120	71	3	ND	50	70	1000	15	75	70	1	<20	<50	<20			
210	79MG17	0.04	0.20	32	14	121	6	1,2	0	NO SAMPLE												
211	79MG16	0.00	0.18	26	14	90	47	0.0	0	<10	<20	1500	15	55	70	<1	<20	<20	<20			
212	79MG8	ND	0.7	40	31	125	63	3	ND	30	<20	1000	7000	25	100	3	20	<50	<20			
213	79MG9	ND	0.6	32	26	119	61	4	1	20	<20	1000	15	55	100	2	<20	<50	<20			
214	79MG11	ND	0.5	30	23	112	60	3	1	100	<20	>3000	150	75	50	2	<20	<50	<20			
215	79MG10	ND	0.5	32	21	130	64	4	ND	30	<20	1000	>15	25	100	2	<20	<50	<20			
216	79MG17	ND	0.8	33	24	241	07	6	1	20	<20	1000	15	35	70	2	<20	<50	<20			
217	79MG10	ND	0.6	31	22	150	72	3	ND	20	20	700	15	25	70	2	20	<50	<20			
218	79MG26	ND	0.5	24	17	114	52	2	ND	20	<20	1000	15	75	100	2	<20	<50	<20			
219	79MG27	ND	0.3	20	20	100	62	2	ND	20	<20	1000	15	35	100	1	<20	<50	<20			
220	79MG28	ND	0.3	30	20	93	55	2	ND	20	<20	1000	15	35	100	2	<20	<50	<20			
221	79MG29	ND	0.4	27	20	117	60	2	ND	20	<20	1000	15	25	100	<1	<20	<50	<20			
222	79MG30	ND	0.5	30	20	99	57	2	ND	20	<20	1000	15	25	70	1	<20	<50	<20			

Table 2 (cont.)

Sed. no.	Rock type	Field no.	AA analyses										Emission-spect analyses										Remarks
			Au	Ag	Cu	Pb	Zn	Ni	Mo	Sb	Co	Cr	Mn	Ti	Fe	B	De	Sn	N	Bi			
223	MD	70M031	ND	0.5	24	19	108	64	1	ND	30	<20	1500	>1%	5%	70	1	<20	<50	<20			
224	MD	70M033	ND	0.5	34	22	111	62	2	ND	30	<20	1000	1%	5%	70	2	<20	<50	<20			
225	MD	70M034	ND	0.7	45	17	112	154	3	16	50	500	1500	>1%	10%	50	1	<20	<50	<20			
226	MD	70M035	MD	0.7	53	19	110	127	3	ND	30	50	1000	>1%	10%	70	1	<20	<50	<20			
227	MD	70M036	MD	1.2	117	16	112	300	5	ND	50	700	2000	>1%	10%	20	1	<20	<50	<20			
228	MD	70M037	MD	0.01	55	13	142	160	2	0	70	500	2000	>1%	5%	50	1	<20	<50	<20			
229	MD	70M038	MD	0.02	33	12	94	92	1	0	50	100	1200	>1%	7%	70	1	<20	<50	<20			
230	MD	70M039	MD	0.7	52	18	111	129	3	ND	30	200	1500	>1%	10%	70	2	<20	<50	<20			
231	MD	79GL117	MD	0.0	3	13	0	3	3	0	<10	<20	2000	500	1.5%	<10	<1	<20	<20	<20			
232	MD	79M038	MD	0.04	42	18	116	73	2	0	30	20	2000	>1%	5%	150	1	<20	<50	<20			
233	MD	79M039	MD	0.17	37	13	113	04	2	0	50	50	1500	>1%	3%	100	1	<20	<50	<20			
234	MD	79M037	MD	0.01	0.0	33	14	107	04	1	0	50	2000	>1%	3%	100	2	<20	<50	<20			
235	MD	79M035	MD	0.04	0.1	52	8	101	133	0	50	50	2000	>1%	5%	50	2	<20	<50	<20			
236	MD	79M013	MD	0.0	0.1	97	13	100	330	3	0	1000	2000	>1%	2%	10	<1	<20	<20	<20			
237	MD	79M09	MD	0.0	0.0	142	5	0	16	2	0	<10	<5	5000	10	<1	<20	<20	<20	<20			
238	MD	79M08	MD	0.0	0.3	81	11	20	29	3	0	<20	500	1%	1%	10	<1	<20	<20	<20			
239	MD	79M062	MD	0.1	0.3	44	17	70	130	5	0	<10	<20	3000	1%	<10	<1	<20	<20	<20			
240	MD	79M01	MD	0	0.2	37	21	161	102	3	0	30	<20	1%	3%	100	1	<20	<50	<20			
241	MD	79M02	MD	0	0.4	44	13	105	146	2	0	30	<20	>1%	1.5%	100	1	<20	<50	<20			
242	MD	79M05	MD	0	0.4	35	13	114	58	2	0	20	<20	7000	1%	100	1	<20	<50	<20			
243	MD	79M06	MD	0	0.2	30	16	142	46	2	0	20	<20	5000	2%	100	2	<20	<50	<20			
244	MD	79M07	MD	0.02	0.2	40	18	113	31	1	30	<20	1000	>1%	7%	150	1	<20	<20	<20			
245	MD	79M08	MD	0.09	0.1	29	14	112	44	1	0	30	<20	>1%	5%	100	2	<20	<50	<20			
246	MD	79M0102	MD	0.0	0.0	102	8	120	30	4	0	<10	<20	1500	1%	5%	<1	<20	<20	<20			
247	MD	79M014	MD	0.04	0.0	34	13	113	06	1	0	50	<20	>1%	7%	100	7	<20	<50	<20			
248	MD	79M013	MD	0.03	0.1	34	13	109	48	1	0	30	<20	1%	5%	100	1	<20	<50	<20			
249	MD	79M006	MD	0.1	0.3	12	35	10	11	3	9	<10	<20	1000	3000	<10	<1	<20	<20	<20			
250	MD	79M016	MD	0.01	0.1	41	21	146	60	1	0	30	<20	>1%	1.5%	150	2	<20	<50	<20			
251	MD	79M015	MD	0.02	0.1	38	16	113	57	1	0	50	<20	>1%	2%	100	<1	<20	<50	<20			
252	MD	79M010	MD	0.04	1.0	40	64	116	63	1	0	30	<20	>1%	3%	150	2	<20	<50	<20			
253	MD	79M017	MD	0.07	0.3	39	23	107	35	0	0	30	<20	1%	2%	150	1	<20	<50	<20			
254	MD	79M07a	MD	0.1	0.4	6900	12	00	4600	2	0	70	<20	5000	5%	150	<1	<20	<20	<20			
255	MD	79M07b	MD	0.1	0.0	1000	10	70	2350	3	0	50	<20	1%	5%	20	<1	<20	<20	<20			
256	MD	79M025	MD	0.03	0.1	34	10	113	49	1	0	30	<20	1%	5%	150	1	<20	<50	<20			
257	MD	79M026	MD	0.01	0.2	41	18	120	57	0	0	30	<20	1%	7%	150	1	<20	<50	<20			
258	MD	79GL113	MD	0.0	0	102	9	60	420	2	0	1500	2000	1%	5%	10	<1	<20	<20	<20			
259	MD	79M012	MD	0.02	0.0	35	16	107	57	0	0	30	<20	>1%	7%	150	1	<20	<50	<20			
260	MD	79M011	MD	0.0	1	274	12	110	68	5	0	30	<20	>1%	2%	30	<1	<20	<20	<20			
261	MD	79M003	MD	0.0	0.3	63	14	60	239	4	0	50	1000	>1%	3%	<10	<1	<20	<20	<20			
262	MD	79M09	MD	0.01	0.2	48	20	118	54	3	0	30	<20	1%	3%	150	1	<20	<50	<20			
263	MD	79M095	MD	0.2	0.1	141	4	10	37	2	0	<10	<20	50	7000	<10	<1	<20	<20	<20			

sulfide-bearing andesite
quartz vein
quartz-carbonate vein
gossan in thin-bedded limestone

altered black shale

red-stained limestone

malachite-stained diorite
unaltered core of base dike

malic dike

quartz vein

Table 2 (cont.)

Map no.	Rock spl.	Field no.	AA analysis										Emission-spec. analysis										Remarks
			Au	Ag	Cu	Pb	Zn	Al	Mo	Sb	Co	Cr	Mn	Ti	Fe	B	Be	Sn	W	Bi			
263		796L115	0.0	1	229	12	100	21	4	0	20	<20	2000	1%	2%	30	<1	<20	<20	<20			
264		794G10	0	0.2	54	19	109	56	1	0	30	<20	1000	>1%	5%	130	2	<20	<50	<20			
265		794G11	0.02	0.1	41	21	100	57	1	0	30	<20	700	7000	7%	100	2	<20	<50	<20			

ND - No data