Site		Atik 1 average	NBM-1
Sample No.		Atik 1	NBM-1
Source		Boliden Co./Seal	NRCan
Mine		Aitik copper mine, Sweden	Acid base accounting material
Description		Tailings from downstream end of tailings pond, collected close to dam. Collected at spignots where coarser tailings settle. Plastic container labeled "sand" and "600/g CON2".	The raw material used to prepare NBM-1 was a biotic altered feldspar porphyry non-ore grade pit rock from the Bell Mine in Granisle, British Columbia and was donated by Noranda Minerals Incorporated.
XRD results		quartz, albite, microcline, phlogopite, talc, chlorite, pyrite, chalcopyrite, unmatched peaks at 5.5A, 4.3A, 3.6A.	quartz, albite, biotite, orthoclase, ankerite, kaolinite, hematite
CO2	%	0.04	
CRBNT_C	%	0.01	0.50
Al	%	7.94	7.86
Ca	%	2.27	2.30
Fe	%	6.62	4.09
K	%	3.55	2.36
Mg	%	1.23	1.39
Na	%	1.67	2.70
S	%	2.64	0.26
Ti	%	0.39	0.34
As	ppm	3.50	
Ba	ppm	930.5	1170
Be	ppm	1.55	
Bi	ppm	1.505	
Cd	ppm	***0***	
Co	ppm	61.45	
Cr	ppm	20	
Cu	ppm	478	
Ga	ppm	21.45	
In	ppm	0.115	
Mn	ppm	2165	460
Mo	ppm	11.75	
Ni	ppm	14.15	
Pb	ppm	9.85	
Sb	ppm	2.77	
U	ppm	4.45	
V	ppm	155.5	
W	ppm	24.15	
Zn	ppm	74	

Organic_C	%	0	
C	%	0.01	
S	%	2.715	
Al2O3	%	15.65	
CaO	%	3.425	
Cr2O3	%		
Fe2O3	%	10.3	
K2O	%	4.775	
LOI	%	3.55	
MgO	%	2.185	
MnO	%	0.32	
Na2O	%	2.36	
P2O5	%	0.64	
SiO2	%	54.4	
TiO2	%	0.74	
LOI	wt. %		3.45
Loss of moisture	**%**		0.32
Paste pH		6.005	8.45
Total sulfur	wt. %	3.1	0.28
Sulfate sulfur	wt. %	0.045	0.02
Sulfide sulfur	wt. %	2.915	0.26
NNP	(Kg CaCO3	-74.3	43.8

El Teniente channel ave.	El Teniente sedimen t ave.	Piquenes/Andi na average	Cauquenes/Te niente average	El Salvador average	Sarcheshmeh average	Average
		A2	T1	E2	S6/S7	
Smuda et al.	Smuda et al.	Dold & Fontbote	Dold & Fontbote	Dold & Fontbote	Khorasanipour et al.	
El Teniente, Chile	El Teniente, Chile		El Teniente, Chile	El Salvador, Chile	Sarcheshmeh, Iran	
						0.0
						0.3
8.71	8.18	8.31	9.79	8.68125		**8.5**
3.50	4.10	0.38	1.08	0.74125		2.1
3.84	3.81	6.82	5.21	7.78625	3.73	5.2
2.64	3.07	4.80	3.45	2.45625		3.2
1.99	3.02	0.88	2.27	0.49875		1.6
1.42	1.24	0.90	1.17	1		1.4
3.62	3.43					2.5
0.51	0.45	0.26	0.32	0.20125		0.4
33.00	36.00	62.00	92.90	136.25	18.45	***54.6***
382	384	721.3	470.3	418.25		639.5
						1.6
						1.5
					27.6	44.5
67	64	14.4	29.4	8.5	53	36.6
1035	921	2515.2	3037	5091.25	1205	2040.4
						21.5
						0.1
358	376	592.3	334.5	67.25	700.5	631.7
89	101	53	108.5	234.625	96.7	99.2
23	23				40	25.0
		36.9	20	22.5	45.95	27.0
						2.8
						4.5
243	230	125.5	208.9	139.875		**183.8**
						24.2
62	58	208.98	92.94	42.925	210	107.0

					0.0
					0.0
					2.7
					15.7
					3.4
					10.3
					4.8
					3.6
					2.2
					0.3
					2.4
					0.6
					54.4
					0.7
7.34	7.4				6.1
					0.3
					7.2
					1.7
					0.0
					1.6
		-28.3	-18.2	-101.6	-35.7

StDev	Average + 2s	Average - 2s	RSL Residential	RSL Industrial	Sed TEC	Sed PEC
0.35	0.95	-0.44				
0.66	9.81	7.18	7.6	10.0		
1.41	4.86	-0.76				
1.62	8.49	1.99	2.3	10.0		
0.85	4.88	1.49				
0.87	3.35	-0.13				
0.61	2.66	0.22				
1.55	5.58	-0.60				
0.11	0.57	0.14	10.0	10.0		
46.40	147.39	-38.22	0.39	1.60	9.79	33
311.44	1262.36	16.60	5400	67000		
			150	1900		
			37	450	0.99	4.98
23.94	92.40	-3.35	900	1900		
24.34	85.29	-12.06	210	450	434	111
1629.38	5299.10	-1218.40	3129	40877	31.6	149
647.41	1926.52	-663.13	1800	19000		
68.70	236.63	-38.18	390	5100		
10.81	46.66	3.41			22.7	48.6
14.32	55.68	-1.60	400	800	35.8	128
			16	200		
49.80	283.39	84.20	78	1000		
71.68	250.34	-36.38	23000	100000	121	459

2.26	10.59	1.54	
1.73	10.69	3.77	
1.99	5.68	-2.30	
0.02	0.07	0.00	
1.88	5.34	-2.17	
55.94	76.17	-147.61	

Site		Average	Standard Deviation	Average + 2s	Average - 2s	RSL Residential	RSL Industrial
CO_2	%	0.04					
Carbonate	%	0.3	0.3	0.9	-0.4		
Al	%	8.5	0.7	9.8	7.2	7.6	10
Ca	%	2.1	1.4	4.9	-0.8		
Fe	%	5.2	1.6	8.5	2.0	2.3	10
K	%	3.2	0.8	4.9	1.5		
Mg	%	1.6	0.9	3.3	-0.1		
Na	%	1.4	0.6	2.7	0.2		
S	%	2.5	1.5	5.6	-0.6		
Ti	%	0.4	0.1	0.6	0.1	10	10
As	ppm	**54.6**	46.4	147.4	-38.2	0.4	1.6
Ba	ppm	639.5	311.4	1262.4	16.6	5400.0	67000.0
Be	ppm	1.6				150.0	1900.0
Bi	ppm	1.5					
Cd	ppm					37.0	450.0
Co	ppm	44.5	23.9	92.4	-3.3	900.0	1900.0
Cr	ppm	36.6	24.3	85.3	-12.1	210.0	450.0
Cu	ppm	2040.4	1629.4	5299.1	-1218.4	3128.6	40876.7
Ga	ppm	21.5					
In	ppm	0.1					
Mn	ppm	631.7	647.4	1926.5	-663.1	1800.0	19000.0
Mo	ppm	99.2	68.7	236.6	-38.2	390.0	5100.0
Ni	ppm	25.0	10.8	46.7	3.4		
Pb	ppm	27.0	14.3	55.7	-1.6	400.0	800.0
Sb	ppm	2.8					
U	ppm	4.5				16.0	200.0
V	ppm	**183.8**	49.8	283.4	84.2	78.0	1000.0
W	ppm	24.2					
Zn	ppm	107.0	71.7	250.3	-36.4	23000.0	100000.0
Organic_C	%	0.0					
Paste pH		7.2	1.7	10.7	3.8		
Total sulfur	wt. %	1.7	2.0	5.7	-2.3		
Sulfate sulfur	wt. %	0.0	0.0	0.1	0.0		
Sulfide sulfur	wt. %	1.6	1.9	5.3	-2.2		
NNP	(Kg $CaCO_3$/t)	-35.7	55.9	76.2	-147.6		

Sediment TEC & PEC: MacDonald et al. (2000)

Sed TEC	Sed PEC
9.8	33.0
1.0	5.0
434.0	111.0
31.6	149.0
22.7	48.6
35.8	128.0
121.0	459.0

Sample ID	Mean Hardness mg/L	Median Hardness mg/L	CMC mean	CCC mean	CMC median	CCC median	Ca diss mean mg/L
CR198A	18.7	18.7	2.77	2.14	2.77	2.14	4.97
CR199A	17.6	17.6	2.62	2.03	2.62	2.03	4.67
KC100A	18.7	19.4	2.77	2.14	2.87	2.21	
KR100A	16.5	16.6	2.46	1.92	2.47	1.93	
NK100A	17.4	18.2	2.59	2.01	2.70	2.09	
NK100A1	19	19.1	2.81	2.17	2.82	2.18	
NK100D	14.1	14.1	2.12	1.68	2.12	1.68	
NK100B	20	19.9	2.95	2.26	2.94	2.25	
NK100C	23.5	24.7	3.43	2.60	3.60	2.71	
NK119A	12.9	11.7	1.95	1.56	1.78	1.43	
NK119B	11.9	11.6	1.81	1.45	1.77	1.42	
SK100A	15.1	15.7	2.26	1.78	2.35	1.84	
SK100B	17.2	17.4	2.56	1.99	2.59	2.01	
SK100B1	20	18.3	2.95	2.26	2.71	2.10	
SK100B2	14.7	14.9	2.21	1.74	2.24	1.76	
SK100C	16.8	17.1	2.50	1.95	2.55	1.98	
SK100D	18.9	19.7	2.80	2.16	2.91	2.23	
SK100E	9.16	9.16	1.41	1.16	1.41	1.16	
UT100A	28.1	28.6	4.06	3.03	4.13	3.07	

Ca median mg/L	Mg mean mg/L	Mg median mg/L	Hardness mean calc	Hardness median calc
4.97	1.54	1.54	18.7	
4.67	1.46	1.46	17.7	

Henrik K. Hansen, Juan B. Yianatos, and Lisbeth M. Ottosen, 2005, Speciation and leachability of copper in m

Grain size range µm	Median size µm	Relative mass %	Accumulated mass %	Cu content mg/kg
0 - 38	19	3.9	3.9	1230
38 - 45	42	3.9	7.8	1310
45 - 53	49	19	26.8	1260
53 - 75	64	7.1	33.9	1150
75 - 106	90	15.3	49.2	1000
106 - 150	128	9.2	58.4	1110
150 - 212	181	17.6	76.0	1140
> 212		24	100.0	1340

ine tailings from porphyry copper mining: Influence of particle size: Chemosphere, v. 60, p. 1497-1503.

TABLE 11-46

Results from Static Tests on Representative Tailings Samples, First Three Rounds c

Sample ID	Product	Paste pH (Std. Units)	Total S (%)	Sulfate (%)	Sulfide (%)
July 2004 Set					
1st Bulk Cl, Sc, TLS F66	Non-pyritic tails	7.8	0.1	0.0	0.1
1st Bulk Cl, Sc, TLS F67	Non-pyritic tails	7.8	0.1	0.1	0.1
1st Bulk Cl, Sc, TLS F68	Non-pyritic tails	7.9	0.1	0.0	0.1
1st Bulk Cl, Sc, TLS F69	Non-pyritic tails	7.7	0.1	0.0	0.1
Knelson TLS F66	Knelson TLS	8.0	0.1	0.0	0.1
Knelson TLS F67	Knelson TLS	8.2	0.1	0.0	0.1
Knelson TLS F68	Knelson TLS	8.1	0.1	0.0	0.1
Knelson TLS F69	Knelson TLS	8.0	0.1	0.0	0.1
RE 1st Bulk Cl, Sc, TLS F66	Non-pyritic tails	7.8	-	-	-
RE Knelson TLS F69	Knelson TLS	8.0	-	-	-
January 2005 Set					
Feed 1 Scavenger Tails	Scavenger	8.8	0.15	-0.01	0.15
Feed 1 Bulk Cleaner Tails	Bulk Cleaner	8.8	0.23	0.01	0.22
Feed 1 Scavenger Tails + Bulk Cleaner Tails	Non-pyritic tails	8.5	0.18	0.01	0.17
Feed 2 Scavenger Tails	Scavenger	8.6	0.17	-0.01	0.17
Feed 2 Bulk Cleaner Tails	Bulk Cleaner	8.3	0.31	-0.01	0.31
Feed 2 Scavenger + Bulk Cleaner Tails	Non-pyritic tails	8.9	0.18	0.02	0.16
November 2005 Set					
LT C1 Combined Rougher Tailing	Rougher	8.5	0.16	0.02	0.14
LT C1 Combined Pre-Cleaner Tailings	Pre-cleaner	7.8	1.82	0.09	1.73
LT C1 Calculated	Non-pyritic tails	-	0.29	0.03	0.26
LT C2 Combined Rougher Tailing	Rougher	8.6	0.09	0.01	0.08
LT C2 Combined Pre-Cleaner Tailings	Pre-cleaner	8.1	1.72	0.03	1.69
LT C2 Calculated	Non-pyritic tails	-	0.21	0.01	0.20
LT C3 Combined Rougher Tailing	Rougher	8.7	0.17	0.01	0.16
LT C3 Combined Pre-Cleaner Tailings	Pre-cleaner	7.5	3.61	0.09	3.52
LT C3 Calculated	Non-pyritic tails	-	0.43	0.02	0.42
LT C4 Combined Rougher Tailing	Rougher	8.8	0.24	-0.01	0.24
LT C4 Combined Pre-Cleaner Tailings	Pre-cleaner	7.9	4.19	0.07	4.12
LT C4 Calculated	Non-pyritic tails	-	0.54	0.00	0.54

of Metalurgical Testing, Pebble West Zone

AP (kg $CaCO_3$/t)	Fizz Rating (Unity)	$NP_{Modified}$ (kg $CaCO_3$/t)	TIC (%)	TIC (kg $CaCO_3$/t)	NP/AP (ratio)	24 hr pH	Ag (mg/kg)	As (mg/kg)
						-		
2.2	Strong	11.6	-	-	5.3	-	0.66	15
2.8	Strong	11.3	-	-	4.0	-	0.68	15
3.4	Strong	12.0	-	-	3.5	-	0.76	12
3.1	Strong	8.1	-	-	2.6	-	0.69	12
2.5	Strong	7.9	-	-	3.2	-	0.39	12
4.1	Strong	9.8	-	-	2.4	-	0.51	14
3.1	Strong	10.4	-	-	3.3	-	0.38	11
2.5	Strong	6.5	-	-	2.6	-	0.37	9
-	Strong	11.8	-	-	-	-	-	-
-	Strong	6.8	-	-	-	-	-	-
4.7	None	19.9	0.35	29.2	4.2	1.76	0.49	20
6.9	None	19.6	0.36	30.0	2.9	1.85	0.82	29
5.3	None	17.4	0.34	28.3	3.3	1.87	0.52	20
5.3	None	24.4	0.48	40.0	4.6	1.80	0.42	19
9.7	None	23.3	0.46	38.3	2.4	1.78	0.84	29
5.0	None	25.9	0.49	40.8	5.2	1.86	0.52	20
4.4	None	14.8	0.3	25.0	3.4	1.58	0.47	14.8
54.1	None	16.1	0.34	28.3	0.3	1.78	2.17	50.8
8.16	None	14.90	0.30	25.25	1.8	-	0.6	18
2.5	None	16.9	0.53	44.2	6.8	1.83	0.28	8.8
52.8	None	21.8	0.75	62.5	0.4	1.87	2.04	45.9
6.33	None	17.27	0.55	45.56	2.7	-	0.41	12
5.0	None	17.2	0.46	38.3	3.4	1.80	0.26	27.2
110.0	None	12.5	0.45	37.5	0.1	1.77	2.12	169
12.99	None	16.84	0.46	38.27	1.3	-	0.4	38
7.5	None	24.9	0.41	34.2	3.3	1.81	0.27	13.2
128.8	None	18.6	0.32	26.7	0.1	1.76	1.3	57.9
16.73	None	24.42	0.40	33.60	1.5	-	0.35	17

Cd (mg/kg)	Co (mg/kg)	Cr (mg/kg)	Cu (mg/kg)	Hg (mg/kg)	Mn (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Pb (mg/kg)
0.24	4	273	995	0.56	316	53	142.5	33.8
0.28	4.2	276	693	0.5	492	31	148	88.4
0.08	7.1	271	461	0.36	463	47	136	17.2
0.13	8.4	196	632	0.35	571	41	98.5	7.8
0.07	2.4	160	652	0.18	238	52	66.9	19.1
0.18	2.7	166	564	0.1	390	29	74.9	58
0.03	5.2	163	338	0.18	378	36	71.2	8.8
0.06	6.1	135	403	0.19	490	38	57.4	4.8
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
0.15	4.4	69	853	0.02	348	92	12.7	11.5
0.25	5.5	68	1,265	0.03	394	45	15.9	17.7
0.15	4.5	59	889	0.02	351	40	13.7	12.6
0.11	4.8	58	575	0.02	398	60	14.7	8.6
0.19	6.3	54	998	0.04	455	57	20.5	13.7
0.18	5.4	61	636	0.03	417	55	16.7	10.2
0.06	4.3	112	380	0.02	340	41.6	16.2	14.6
0.17	28.4	451	1,560	0.08	491	101	255	37.2
0.07	6.13	137.79	470	0.02	351.49	46	34.37	16.32
0.13	5.3	87	288	0.09	406	44.6	13.4	6.8
0.4	33.6	670	2,050	0.06	689	188	395	34.9
0.15	7.45	131.36	422	0.09	427.53	55	42.43	8.94
0.09	4	85	241	0.04	641	27.2	11.9	6.1
0.24	45.9	748	1,585	0.19	880	153	452	25.5
0.10	7.19	135.45	343	0.05	659.18	37	45.39	7.58
0.07	3.8	77	261	0.03	492	21.4	12.2	4.6
0.11	39	598	853	0.1	554	87.9	363	14.1
0.07	6.48	116.64	306	0.04	496.72	26	38.89	5.32

Sb (mg/kg)	Se (mg/kg)	Tl (mg/kg)	Zn (mg/kg)
0.86	1	0.11	44
0.61	0.7	0.19	42
1.1	0.8	0.35	45
0.79	0.8	0.33	58
0.67	0.7	0.07	30
0.58	0.5	0.15	32
0.74	0.6	0.31	33
0.49	0.6	0.25	43
-	-	-	-
-	-	-	-
1.16	1.3	0.33	38
1.67	1.4	0.41	47
1.18	1.2	0.33	38
1.02	1	0.29	37
1.53	1.6	0.35	45
1.05	1.3	0.36	43
2	1.8	0.34	29
5.41	7.4	0.52	52
2.26	2.2	0.35	31
0.39	1	0.23	44
1.82	6.3	0.33	97
0.5	1.4	0.24	48
0.61	0.8	0.45	39
3.12	8.8	1.2	73
0.8	1.4	0.51	42
0.39	0.7	0.49	39
1.2	7.3	0.85	48
0.45	1.2	0.52	40

TABLE 11-47

Results from Static Tests on Representative Tailings Samples, Metallurgical Testing du

Sample ID	Paste pH	C (T) (%)	CO_2 (%)	TIC ($CaCO_3$)	S (T) (%)	S (SO_4) (%)	S (S-2) (%)
Pebble West Zone							
11840-003 bulk cleaner	7.95	0.45	1.1	25.0	0.78	0.03	0.75
11840·003 pyrite (Fig2)	6.60	0.52	1.3	29.5	1.44	0.2	1.24
11840·003 bulk float (Fig2)	7.92	0.52	1.1	25.0	0.17	0.03	0.14
11840·003 Phase II sands	8.55	0.37	1	22.7	0.26	0.01	0.25
11840·003 Phase II OF	8.33	0.48	1.1	25.0	0.1	0.01	0.09
Pebble East Zone							
PP08-3365	7.95	0.06	0.2	4.55	0.23	0.02	0.21
PP08-3607	8.11	0.07	0.3	6.82	0.17	0.02	0.15
PP08·3610	7.99	0.08	0.2	4.55	0.09	0.04	0.05
PP08·3614	8.18	0.1	0.3	6.82	0.11	0.02	0.09
PP08-3849	8.45	0.06	0.2	4.55	0.11	0.01	0.1
PP08-3850	8.58	0.05	0.2	4.55	0.29	0.02	0.27
11486-003	7.93	0.07	0.3	6.8	0.15	0.04	0.11
11486-005	7.89	0.08	0.3	6.8	0.16	0.05	0.11
11480-006	8.57	0.06	0.3	6.8	0.17	0.02	0.15
11846-003 bulk	8.41	0.06	0.3	6.8	0.12	0.01	0.11
11846·003 OF	7.85	0.07	0.3	6.8	0.17	0.06	0.11
11846·003 UF	8.72	0.05	0.2	4.5	0.21	0.01	0.2

ıring 2008, Pebble West and East Zones

AP ($CaCO_3$)	NP ($CaCO_3$)	Net NP	NP/AP (ratio)	Fizz Test (visual)	Ag (mg/kg)	Al (%)	As (mg/kg)	Au (mg/kg)
23.4	17.7	-5.7	0.8	Slight	1.05	1.42	46.4	<0.2
38.8	23.0	-15.8	0.6	Slight	1.46	1.27	63.2	0.2
4.4	22.3	17.9	5.4	Slight	0.33	1.29	12.6	<10
7.8	21.1	13.3	2.7	Slight	0.29	0.97	15.9	<0.2
2.8	25.2	22.4	9.0	Slight	0.28	1.44	8.8	<0.2
6.56	4.6	-2.0	0.7	None	0.57	0.93	7.4	< 0.2
4.69	5.7	1.0	1.2	None	0.75	1.1	9.1	< 0.2
1.56	6.3	4.7	4.0	None	0.44	0.48	6.4	< 0.2
2.81	5.7	2.9	2.0	None	0.3	0.33	4.2	< 0.2
3.13	6.2	3.1	2.0	None	0.23	0.44	4.2	< 0.2
8.44	6.3	-2.1	0.7	None	0.45	0.96	9	< 0.2
3.4	6.2	2.8	1.8	Slight	0.38	0.51	14	< 0.2
3.4	6.7	3.3	1.9	None	0.57	0.72	12	< 0.2
4.7	6.2	1.5	1.3	Slight	0.28	0.54	113	< 0.2
3.4	7.2	3.8	2.1	Slight	0.29	0.64	5.5	< 0.2
3.4	8.3	4.9	2.4	None	0.55	0.73	12.6	< 0.2
6.3	7.0	0.8	1.1	Slight	0.26	0.47	12.2	< 0.2

B (mg/kg)	Ba (mg/kg)	Be (mg/kg)	Bi (mg/kg)	Ca (%)	Cd (mg/kg)	Ce (mg/kg)	Co (mg/kg)	Cr (mg/kg)
<10	40	0.64	0.7	0.85	0.31	30.7	8.2	43
<10	40	0.53	1.03	1.06	0.19	31.2	12.7	130
<10	50	0.56	0.2	1.1	0.13	28.7	4.4	53
<10	40	0.34	0.25	0.8	0.16	17.7	3.4	71
<10	50	0.56	0.44	1.07	0.1	29.1	4	46
< 10	20	0.24	0.26	0.28	0.12	16.1	4.8	33
< 10	20	0.29	0.76	0.3	0.11	19.75	5.1	38
< 10	30	0.23	0.86	0.35	0.09	11.25	3.5	11
< 10	20	0.2	0.28	0.29	0.08	7.97	2.5	6
< 10	30	0.18	0.76	0.27	0.1	7.22	2.2	141
< 10	20	0.26	0.41	0.25	0.1	15.4	5.3	108
< 10	20	0.29	0.31	0.29	0.13	11.15	3.6	24
< 10	30	0.34	1.3	0.35	0.11	15.6	4.8	34
< 10	20	0.22	0.35	0.26	0.12	9.55	2.9	101
< 10	30	0.25	0.26	0.34	0.09	13.45	3	45
< 10	30	0.33	1.98	0.35	0.13	18.15	5.1	48
< 10	20	0.19	0.5	0.25	0.15	9.89	3.3	78

Cs (mg/kg)	Cu (mg/kg)	Fe (mg/kg)	Ga (mg/kg)	Ge (mg/kg)	Hf (mg/kg)	Hg (mg/kg)	In (mg/kg)	K (%)
4.91	1180	3.07	6.68	0.09	0.07	0.1	0.03	0.7
4.06	506	3.97	5.26	0.1	0.08	0.08	0.032	0.67
4.02	312	2.8	5.53	0.09	0.06	0.03	0.019	0.73
2.51	476	2.15	4.47	0.06	0.06	0.04	0.014	0.61
4.28	142	2.65	6.03	0.06	0.07	0.03	0.017	0.72
2.46	967	1.32	4.21	0.06	0.02	< 0.01	0.015	0.43
2.92	788	1.44	5.19	0.06	0.02	0.01	0.016	0.51
1.64	308	0.85	2.01	< 0.05	0.02	< 0.01	0.014	0.17
1.22	323	0.59	1.39	< 0.05	0.02	< 0.01	0.01	0.11
0.84	414	0.57	1.64	< 0.05	0.02	< 0.01	0.009	0.19
1.75	1040	1.18	4.6	0.05	0.03	< 0.01	0.022	0.5
1.49	512	0.8	2.29	0.05	0.02	< 0.01	0.011	0.19
1.89	465	1.1	3.1	0.06	0.02	0.01	0.012	0.26
0.93	577	0.68	2.12	0.05	0.02	0.01	0.009	0.24
1.47	435	0.85	2.57	< 0.05	0.02	0.01	0.009	0.28
2.15	483	1.2	3.19	< 0.05	0.02	0.06	0.017	0.31
0.88	532	0.67	1.89	< 0.05	0.02	0.01	0.01	0.23

La (mg/kg)	Li (mg/kg)	Mg (mg/kg)	Mn (mg/kg)	Mo (mg/kg)	Na (%)	Nb (mg/kg)	Ni (mg/kg)	P (mg/kg)
15.2	7.3	1	474	65.2	0.05	0.14	22.1	850
15.1	7.2	0.92	607	25.4	0.04	0.18	27.8	890
13.7	7.5	1.05	532	24.8	0.05	0.14	13.7	1,350
9.1	4.5	0.8	394	41.7	0.03	0.14	11.3	870
15	6.7	1.05	520	10.5	0.03	0.13	14.1	1,320
7.5	14.9	0.8	113	59.1	0.01	0.13	20.1	290
9.3	18.4	0.91	127	55	0.01	0.2	23.5	340
5.7	6.1	0.28	126	21	0.01	0.11	8.5	320
3.9	4.7	0.19	97	14.2	0.01	0.11	6.6	270
3.6	4.4	0.17	97	21.7	0.01	0.13	6.3	240
7.3	15.8	0.7	95	70.1	0.01	0.13	20.6	260
5.4	9.6	0.31	103	31.7	0.01	0.14	8.7	270
7.5	10.8	0.42	131	33.3	0.01	0.17	12.2	310
4.6	7	0.26	93	57.9	0.01	0.11	7.8	260
6.8	7.8	0.37	116	36.8	0.01	0.12	9.3	290
9.1	9.5	0.44	133	34.5	0.01	0.17	13.6	310
4.9	5.3	0.24	84	78.6	0.01	0.11	7.1	230

Pb (mg/kg)	Rb (mg/kg)	Re (mg/kg)	S (%)	Sb (mg/kg)	Sc (mg/kg)	Se (mg/kg)	Sn (mg/kg)	Sr (mg/kg)
14.8	45	0.154	0.8	1.52	11.5	2.3	1.1	104
16.3	36	0.049	1.45	2.06	9.2	3.1	1.7	72.8
3.7	39.4	0.045	0.22	0.64	10.5	0.7	0.8	82.1
3.3	37.9	0.086	0.26	0.79	8.5	0.8	0.5	41.8
3.7	45.3	0.022	0.1	0.41	11.1	0.4	0.8	80.6
3.9	22.4	0.104	0.24	0.33	6.6	1.6	0.6	56.2
5.6	25.9	0.096	0.17	0.4	7.8	1.3	0.9	61
12.6	8.4	0.036	0.1	0.37	1.9	0.8	0.7	73.5
7.5	5.6	0.025	0.09	0.27	1.3	0.7	0.4	61.5
4.3	7.8	0.03	0.1	0.2	1.4	0.8	0.2	45.3
3.7	30.1	0.111	0.29	0.29	7	1.7	0.5	46.5
7.9	11	0.057	0.18	0.39	2.9	1.1	0.5	53
13.2	12.4	0.057	0.19	0.51	3.5	1.6	0.8	67.7
5.1	11.5	0.093	0.21	0.34	2.4	1.3	0.3	39.8
3.6	15.1	0.058	0.11	0.53	3.1	0.8	0.4	55.6
13.5	18.6	0.06	0.17	0.55	3.8	1.4	0.9	66.8
6.5	11.8	0.133	0.19	0.35	2.2	1.1	0.3	37

Ta (mg/kg)	Te (mg/kg)	Th (mg/kg)	Ti (mg/kg)	Tl (mg/kg)	U (mg/kg)	V (mg/kg)	W (mg/kg)	Y (mg/kg)
<0.01	0.46	2.6	0.075	0.49	0.74	118	0.68	11.6
<0.01	0.92	2.6	0.072	0.55	0.87	121	1.06	10.5
<0.01	0.12	2.2	0.097	0.37	0.67	124	0.5	13.35
<0.01	0.14	1.6	0.082	0.32	0.43	96	8.07	9.39
<0.01	0.12	2.3	0.09	0.34	0.69	123	2.78	14.05
<0.01	0.1	1.8	0.066	0.25	0.26	123	0.39	7.89
<0.01	0.1	2.2	0.071	0.27	0.29	149	0.44	8.78
<0.01	0.14	1.4	0.01	0.16	0.28	56	0.73	6.02
<0.01	0.08	1	0.009	0.11	0.2	36	0.91	4.86
<0.01	0.06	1	0.01	0.13	0.19	38	0.74	4.24
<0.01	0.08	1.9	0.066	0.31	0.24	112	0.83	7.63
<0.01	0.12	1.2	0.02	0.14	0.21	57	0.8	5.16
<0.01	0.21	1.6	0.021	0.2	0.27	81	0.79	6.48
<0.01	0.08	1	0.019	0.17	0.17	51	0.82	4.49
<0.01	0.11	1.3	0.024	0.15	0.22	68	1.15	5.67
<0.01	0.32	1.7	0.021	0.21	0.31	84	29.8	7.48
<0.01	0.08	1	0.017	0.14	0.17	47	3.23	4.58

Zn (mg/kg)	Zr (mg/kg)
238	2.7
191	2.4
138	2
51	1.4
149	2
125	<0.5
155	0.5
146	<0.5
90	<0.5
53	0.5
96	0.6
158	0.5
267	0.5
74	<0.5
149	<0.5
260	0.6
71	<0.5