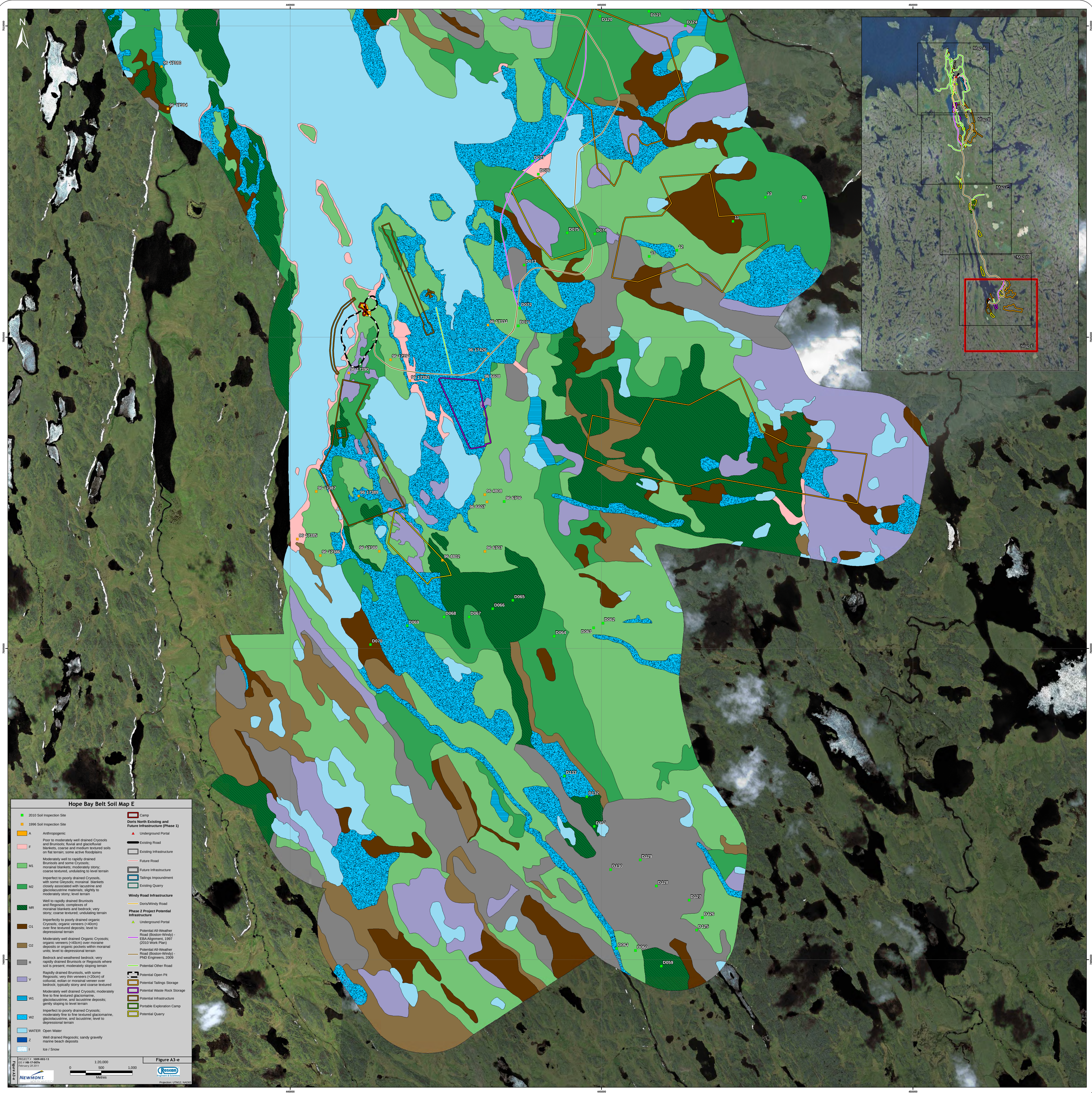




Appendix 4

ALS Laboratory Results



RESCAN ENVIRONMENTAL SERVICES
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Date Received: 08-SEP-10
Report Date: 12-OCT-10 15:48 (MT)
Version: FINAL

Certificate of Analysis

Lab Work Order #: L929006
Project P.O. #: NOT SUBMITTED
Job Reference:
Legal Site Desc:
C of C Numbers:

Comments:

Amber Springer
Account Manager

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-1	L929006-2	L929006-3	L929006-4	L929006-5
		15-AUG-10	15-AUG-10	15-AUG-10	15-AUG-10	16-AUG-10
		D06 (0-10)	D06 (10-20)	D10 (0-10)	D10 (10-20)	D20 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.09	6.69	6.13	7.05	7.35
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.36	0.71	0.60	0.20	11.1
Metals	Aluminum (Al) (mg/kg)	15200	14300	7230	7250	10300
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	5.6	<5.0
	Barium (Ba) (mg/kg)	82.7	76.2	21.8	29.2	81.4
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	3040	3170	1780	2120	11100
	Chromium (Cr) (mg/kg)	47.6	48.1	23.8	22.1	81.8
	Cobalt (Co) (mg/kg)	9.8	11.9	7.9	8.3	16.7
	Copper (Cu) (mg/kg)	20.1	16.9	21.3	31.4	38.2
	Iron (Fe) (mg/kg)	23200	23800	15100	15100	23600
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	21.8	21.9	9.7	10.0	10.0
	Magnesium (Mg) (mg/kg)	8480	7980	4710	4790	7790
	Manganese (Mn) (mg/kg)	243	340	212	192	790
	Mercury (Hg) (mg/kg)	0.0094	<0.0050	0.0069	<0.0050	0.0543
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	24.7	25.2	15.2	16.0	53.5
	Phosphorus (P) (mg/kg)	395	413	235	269	715
	Potassium (K) (mg/kg)	2950	2520	550	820	1110
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	480	310	<200	<200	<200
	Strontium (Sr) (mg/kg)	21.3	19.5	8.21	9.02	33.3
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	1180	1060	509	527	351
	Uranium (U) (mg/kg)	1.37	1.32	0.297	0.370	0.378
	Vanadium (V) (mg/kg)	51.2	50.9	32.0	32.8	46.3
	Zinc (Zn) (mg/kg)	44.7	39.7	25.3	30.1	47.1

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-6	L929006-7	L929006-8	L929006-9	L929006-10
		16-AUG-10	16-AUG-10	16-AUG-10	17-AUG-10	17-AUG-10
		D20 (10-20)	D21 (0-10)	D21 (10-20)	D29 (0-10)	D29 (10-20)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	7.67	5.17	5.56	6.45	6.17
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.25	3.74	2.25	4.08	3.43
Metals	Aluminum (Al) (mg/kg)	12200	21100	19500	18600	20900
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	5.2
	Barium (Ba) (mg/kg)	39.7	112	107	100	121
	Beryllium (Be) (mg/kg)	<0.50	0.64	0.59	0.53	0.58
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	7590	3760	3630	9020	7320
	Chromium (Cr) (mg/kg)	74.5	62.8	58.6	51.8	60.6
	Cobalt (Co) (mg/kg)	17.1	11.4	10.1	10.3	12.9
	Copper (Cu) (mg/kg)	67.7	25.4	24.4	28.4	31.0
	Iron (Fe) (mg/kg)	26700	29000	27400	25500	30500
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	16.4	30.5	29.2	26.9	31.1
	Magnesium (Mg) (mg/kg)	10700	10900	10200	10000	11700
	Manganese (Mn) (mg/kg)	619	255	225	358	368
	Mercury (Hg) (mg/kg)	0.0155	0.0159	0.0100	0.0263	0.0141
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	48.3	31.1	28.6	26.2	32.5
	Phosphorus (P) (mg/kg)	321	602	552	536	516
	Potassium (K) (mg/kg)	1160	4390	3930	3330	3790
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	510	480	1030	730
	Strontium (Sr) (mg/kg)	23.4	30.0	28.0	36.4	29.8
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	746	1440	1340	1210	1400
	Uranium (U) (mg/kg)	0.774	1.63	1.62	1.03	1.47
	Vanadium (V) (mg/kg)	50.3	64.3	60.2	53.8	64.6
	Zinc (Zn) (mg/kg)	46.5	54.2	50.4	55.8	60.9

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-11	L929006-12	L929006-13	L929006-14	L929006-15
		17-AUG-10	17-AUG-10	19-AUG-10	19-AUG-10	19-AUG-10
		D32 (0-10)	D32 (10-20)	D38 (0-10)	D38 (10-20)	D43 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	5.09	5.44	5.17	5.69	7.15
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.02	1.09	0.71	0.19	4.20
Metals	Aluminum (Al) (mg/kg)	8640	8250	3380	3630	16400
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	39.7	44.0	12.8	15.4	93.0
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	0.56
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	2270	2120	984	1270	9410
	Chromium (Cr) (mg/kg)	26.2	25.7	8.2	9.6	45.7
	Cobalt (Co) (mg/kg)	6.1	5.2	2.7	3.6	9.4
	Copper (Cu) (mg/kg)	12.1	13.8	2.5	3.7	16.5
	Iron (Fe) (mg/kg)	15300	13100	7800	8610	22800
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	12.7	12.5	5.1	6.0	27.3
	Magnesium (Mg) (mg/kg)	5280	4810	2040	2320	9550
	Manganese (Mn) (mg/kg)	132	116	68.3	84.3	248
	Mercury (Hg) (mg/kg)	0.0056	0.0082	<0.0050	<0.0050	0.0175
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	14.6	14.1	<5.0	5.3	24.3
	Phosphorus (P) (mg/kg)	478	456	125	211	406
	Potassium (K) (mg/kg)	1220	1280	380	410	3960
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	240	250	<200	<200	630
	Strontium (Sr) (mg/kg)	13.0	12.5	5.88	6.67	79.9
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	584	527	335	344	996
	Uranium (U) (mg/kg)	0.748	0.735	0.249	0.332	0.837
	Vanadium (V) (mg/kg)	31.8	29.2	19.1	20.9	47.2
	Zinc (Zn) (mg/kg)	28.9	30.6	10.7	11.6	51.0

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-16	L929006-17	L929006-18	L929006-19	L929006-20
Grouping Analyte						
SOIL						
Physical Tests	pH (pH)	7.64	5.28	5.79	5.91	6.16
Organic / Inorganic Carbon	Total Organic Carbon (%)	3.21	19.3	36.4	4.77	2.40
Metals	Aluminum (Al) (mg/kg)	16000	626	2390	17400	19700
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	102	36.0	48.4	116	136
	Beryllium (Be) (mg/kg)	0.53	<0.50	<0.50	0.56	0.63
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	9000	11700	14000	4610	4580
	Chromium (Cr) (mg/kg)	43.6	<2.0	5.8	53.0	62.4
	Cobalt (Co) (mg/kg)	8.9	3.6	5.8	11.5	13.2
	Copper (Cu) (mg/kg)	21.8	5.6	9.1	23.8	26.5
	Iron (Fe) (mg/kg)	21900	4080	25200	25500	30300
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	26.2	<2.0	<2.0	26.2	31.8
	Magnesium (Mg) (mg/kg)	9200	2530	2100	10100	11500
	Manganese (Mn) (mg/kg)	246	226	112	308	337
	Mercury (Hg) (mg/kg)	0.0108	0.158	0.0695	0.0165	0.0091
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	23.5	<5.0	15.1	28.1	34.4
	Phosphorus (P) (mg/kg)	356	674	943	591	607
	Potassium (K) (mg/kg)	3140	830	<200	4370	4840
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	640	540	380	530	450
	Strontium (Sr) (mg/kg)	77.3	54.3	61.9	31.4	31.5
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	945	18.7	64.4	1200	1250
	Uranium (U) (mg/kg)	0.988	<0.050	0.219	1.88	1.97
	Vanadium (V) (mg/kg)	47.2	<2.0	9.4	57.3	64.9
	Zinc (Zn) (mg/kg)	48.6	26.5	9.0	50.9	59.1

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-21	L929006-22	L929006-23	L929006-24	L929006-25
		22-AUG-10	22-AUG-10	22-AUG-10	22-AUG-10	23-AUG-10
		D59 (0-10)	D59 (10-20)	D61 (0-10)	D61 (10-20)	D70 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.70	7.05	6.26	6.30	6.03
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.53	0.26	5.92	1.26	2.76
Metals	Aluminum (Al) (mg/kg)	5000	3680	14200	11200	3580
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	22.4	21.7	77.1	60.0	21.3
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	2470	2410	6190	4210	1800
	Chromium (Cr) (mg/kg)	17.5	13.8	41.3	34.7	9.0
	Cobalt (Co) (mg/kg)	6.2	4.9	7.2	6.6	<2.0
	Copper (Cu) (mg/kg)	22.1	16.2	13.0	12.6	5.9
	Iron (Fe) (mg/kg)	10700	8910	19700	17300	6690
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	8.6	5.7	21.8	18.3	6.4
	Magnesium (Mg) (mg/kg)	3740	2370	7990	6340	1650
	Manganese (Mn) (mg/kg)	108	83.8	240	182	41.5
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	0.0201	0.0059	0.0099
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	15.2	10.5	20.0	16.0	<5.0
	Phosphorus (P) (mg/kg)	325	363	490	579	326
	Potassium (K) (mg/kg)	540	490	2890	2640	230
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	<200	510	380	210
	Strontium (Sr) (mg/kg)	8.52	8.67	32.0	24.8	8.51
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	381	357	815	740	235
	Uranium (U) (mg/kg)	0.345	0.380	1.10	1.27	0.344
	Vanadium (V) (mg/kg)	23.7	20.9	43.3	40.3	15.1
	Zinc (Zn) (mg/kg)	18.4	15.5	57.3	33.7	9.6

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-26	L929006-27	L929006-28	L929006-29	L929006-30
		23-AUG-10	24-AUG-10	24-AUG-10	24-AUG-10	24-AUG-10
		D70 (10-20)	D72 (0-10)	D72 (10-20)	D76 (0-10)	D76 (10-20)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.15	4.53	5.09	4.96	5.67
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.68	2.59	2.54	3.27	1.64
Metals	Aluminum (Al) (mg/kg)	3810	16600	16600	16700	8450
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	20.5	73.1	81.9	102	52.6
	Beryllium (Be) (mg/kg)	<0.50	<0.50	0.51	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	1740	3280	3150	2550	2260
	Chromium (Cr) (mg/kg)	9.0	47.1	47.9	39.9	22.8
	Cobalt (Co) (mg/kg)	<2.0	6.4	6.6	8.4	5.0
	Copper (Cu) (mg/kg)	4.7	28.6	30.4	26.2	12.7
	Iron (Fe) (mg/kg)	5160	19400	19200	22900	13800
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	7.0	18.8	20.0	21.9	12.6
	Magnesium (Mg) (mg/kg)	1810	6430	6590	7200	4210
	Manganese (Mn) (mg/kg)	44.8	135	130	147	108
	Mercury (Hg) (mg/kg)	<0.0050	0.0193	0.0116	0.0206	0.0065
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	17.4	18.0	20.8	10.9
	Phosphorus (P) (mg/kg)	386	531	473	412	405
	Potassium (K) (mg/kg)	230	1810	1680	3110	1710
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	290	250	290	220
	Strontium (Sr) (mg/kg)	7.89	27.4	23.8	21.5	15.1
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	283	1080	992	977	646
	Uranium (U) (mg/kg)	0.393	1.63	1.71	1.12	0.790
	Vanadium (V) (mg/kg)	13.3	50.6	50.3	46.0	30.1
	Zinc (Zn) (mg/kg)	8.9	34.6	35.4	46.3	22.9

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-31	L929006-32	L929006-33	L929006-34	L929006-35
		27-AUG-10	27-AUG-10	27-AUG-10	27-AUG-10	26-AUG-10
		D108 (0-10)	D108 (10-20)	D109 (0-10)	D109 (10-20)	D96 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	5.68	5.60	5.48	4.13	4.40
Organic / Inorganic Carbon	Total Organic Carbon (%)	5.64	4.31	42.1	34.1	0.50
Metals	Aluminum (Al) (mg/kg)	10200	9060	907	6910	2390
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	30.2	30.3	24.0	33.7	9.3
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	3560	4940	4630	2760	1110
	Chromium (Cr) (mg/kg)	24.3	23.7	<2.0	14.5	6.5
	Cobalt (Co) (mg/kg)	9.0	6.4	<2.0	2.3	<2.0
	Copper (Cu) (mg/kg)	20.9	23.7	4.3	4.9	1.6
	Iron (Fe) (mg/kg)	18400	17100	1200	9750	4620
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	14.6	7.0	<2.0	2.7	4.0
	Magnesium (Mg) (mg/kg)	5460	3400	1100	1390	1380
	Manganese (Mn) (mg/kg)	327	201	10.4	24.9	59.7
	Mercury (Hg) (mg/kg)	0.0504	0.0620	0.104	0.0442	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	15.9	12.8	<5.0	8.1	<5.0
	Phosphorus (P) (mg/kg)	425	770	530	735	193
	Potassium (K) (mg/kg)	410	370	440	590	270
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	<200	<200	<200	<200
	Strontium (Sr) (mg/kg)	16.2	19.3	29.3	23.5	5.01
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	719	454	36.4	260	165
	Uranium (U) (mg/kg)	0.428	0.798	0.062	0.609	0.219
	Vanadium (V) (mg/kg)	36.0	30.7	2.5	14.6	9.9
	Zinc (Zn) (mg/kg)	38.6	26.7	17.3	10.6	9.7

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-36	L929006-37	L929006-38	L929006-39	L929006-40
		26-AUG-10	26-AUG-10	26-AUG-10	25-AUG-10	25-AUG-10
		D96 (10-20)	D99 (0-10)	D99 (10-20)	D82 (0-10)	D82 (10-20)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.35	6.53	6.40	5.90	5.95
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.20	1.45	1.49	0.76	1.61
Metals	Aluminum (Al) (mg/kg)	2300	16300	16600	3030	3480
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	9.5	104	105	17.8	23.1
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	1200	4250	4470	1620	1930
	Chromium (Cr) (mg/kg)	6.5	46.3	47.3	11.1	10.6
	Cobalt (Co) (mg/kg)	<2.0	8.8	10.2	2.2	2.6
	Copper (Cu) (mg/kg)	1.3	18.8	17.7	4.4	7.0
	Iron (Fe) (mg/kg)	4700	23100	22800	7960	8310
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	3.8	21.1	22.0	5.3	5.5
	Magnesium (Mg) (mg/kg)	1400	7720	8000	1760	1920
	Manganese (Mn) (mg/kg)	47.1	202	249	56.4	63.8
	Mercury (Hg) (mg/kg)	<0.0050	0.0079	0.0090	<0.0050	0.0071
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	21.6	21.7	<5.0	<5.0
	Phosphorus (P) (mg/kg)	216	523	559	292	280
	Potassium (K) (mg/kg)	250	3850	3970	510	420
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	370	380	<200	<200
	Strontium (Sr) (mg/kg)	5.08	25.2	26.4	7.27	8.89
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	187	1210	1230	348	357
	Uranium (U) (mg/kg)	0.218	1.22	1.21	0.397	0.453
	Vanadium (V) (mg/kg)	10.2	53.2	54.2	19.4	20.0
	Zinc (Zn) (mg/kg)	7.3	46.2	48.4	8.8	9.8

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-41	L929006-42	L929006-43	L929006-44	L929006-45
		25-AUG-10	25-AUG-10	23-AUG-10	23-AUG-10	28-AUG-10
		D88 (0-10)	D88 (10-20)	D65 (0-10)	D65 (10-20)	D119 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	5.30	5.87	5.56	4.92	5.08
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.77	0.25	0.24	3.83	0.46
Metals	Aluminum (Al) (mg/kg)	3280	2910	2650	3670	2960
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	18.3	19.1	16.6	18.1	21.3
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	1270	1310	1440	1340	1230
	Chromium (Cr) (mg/kg)	8.5	8.2	8.8	12.0	10.3
	Cobalt (Co) (mg/kg)	2.7	3.0	<2.0	2.6	<2.0
	Copper (Cu) (mg/kg)	5.7	18.4	5.2	4.8	2.3
	Iron (Fe) (mg/kg)	7500	7100	6310	7460	7600
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	6.5	4.9	4.6	5.2	4.9
	Magnesium (Mg) (mg/kg)	2000	1740	1620	2450	1960
	Manganese (Mn) (mg/kg)	59.5	62.3	48.8	57.9	54.8
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	<0.0050	0.0129	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	5.4	<5.0
	Phosphorus (P) (mg/kg)	203	259	360	267	214
	Potassium (K) (mg/kg)	520	470	420	530	700
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	<200	<200	<200	<200	<200
	Strontium (Sr) (mg/kg)	6.86	6.12	6.58	8.22	6.74
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	357	279	231	377	407
	Uranium (U) (mg/kg)	0.392	0.324	0.422	0.344	0.281
	Vanadium (V) (mg/kg)	16.4	14.9	14.3	17.5	19.8
	Zinc (Zn) (mg/kg)	9.9	8.3	7.8	11.2	9.9

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L929006-46	L929006-47	L929006-48	L929006-49	L929006-50
		28-AUG-10	28-AUG-10	28-AUG-10	29-AUG-10	29-AUG-10
		D119 (10-20)	D122 (0-10)	D122 (10-20)	D132 (0-10)	D132 (10-20)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	5.50	5.02	5.94	5.09	6.17
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.49	2.42	2.71	1.67	0.43
Metals	Aluminum (Al) (mg/kg)	3480	6280	8800	3470	2850
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	28.0	35.0	46.1	21.4	15.1
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	1350	2070	2550	1710	1340
	Chromium (Cr) (mg/kg)	13.1	18.6	24.9	10.5	9.2
	Cobalt (Co) (mg/kg)	2.5	3.2	3.7	3.4	2.4
	Copper (Cu) (mg/kg)	5.7	6.9	8.8	9.1	7.1
	Iron (Fe) (mg/kg)	7890	9940	13000	7340	6590
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	6.7	10.2	12.2	6.4	4.8
	Magnesium (Mg) (mg/kg)	2270	3070	3910	1910	1590
	Manganese (Mn) (mg/kg)	60.6	70.9	92.0	64.8	51.1
	Mercury (Hg) (mg/kg)	<0.0050	0.0099	0.0160	0.0117	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	5.0	8.3	10.9	5.6	<5.0
	Phosphorus (P) (mg/kg)	243	489	582	295	269
	Potassium (K) (mg/kg)	750	890	1130	480	360
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	240	<200	240	<200	<200
	Strontium (Sr) (mg/kg)	7.77	14.7	19.3	7.84	5.50
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	403	415	514	280	240
	Uranium (U) (mg/kg)	0.412	0.807	0.923	0.482	0.319
	Vanadium (V) (mg/kg)	20.7	21.7	27.3	16.7	15.3
	Zinc (Zn) (mg/kg)	12.2	23.3	33.4	9.6	7.7

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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C-TOT-ORG-LECO-SK Soil Organic Carbon by combustion method SSSA (1996) p. 973
 Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight loss after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:

Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:

Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

HG-CCME-CVAFS-VA Soil CVAFS Hg in Soil (CCME) BCMELP CSR SALM METHOD 8/EPA 245.7

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-200.2-CCMS-VA Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PH-1:2-VA Soil CSR pH by 1:2 Water Leach BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

VA ALS LABORATORY GROUP - VANCOUVER, BC, CANADA

SK ALS LABORATORY GROUP - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg milligrams per kilogram based on dry weight of sample.

mg/kg ww milligrams per kilogram based on wet weight of sample.

mg/kg lwt milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L milligrams per litre.

< - Less than.

D.L. The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



RESCAN ENVIRONMENTAL SERVICES
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Date Received: 20-SEP-10
Report Date: 05-OCT-10 13:19 (MT)
Version: FINAL

Certificate of Analysis

Lab Work Order #: L933907
Project P.O. #: NOT SUBMITTED
Job Reference: 1009-002-13 HOPE BAY PROJECT 2010
Legal Site Desc: HOPE BAY PROJECT
C of C Numbers:

Dean Watt
Account Manager

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L933907-1	L933907-2	L933907-3	L933907-4	L933907-5
		12-JUL-10	12-JUL-10	14-JUL-10	14-JUL-10	15-JUL-10
		8 (0-10)	8 (10-20)	13 (0-10)	13 (10-20)	14 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.03	6.22	5.70	6.05	6.63
Organic / Inorganic Carbon	Total Organic Carbon (%)	2.07	3.85	0.22	<0.10	1.10
Metals	Aluminum (Al) (mg/kg)	17300	19100	2700	3350	18700
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	93.2	106	15.3	22.6	117
	Beryllium (Be) (mg/kg)	<0.50	0.52	<0.50	<0.50	0.59
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	4100	5130	1210	1850	4620
	Chromium (Cr) (mg/kg)	52.2	56.8	9.4	10.5	58.8
	Cobalt (Co) (mg/kg)	10.4	11.9	<2.0	3.1	13.8
	Copper (Cu) (mg/kg)	13.8	17.0	4.7	7.8	19.1
	Iron (Fe) (mg/kg)	26300	29100	7130	7950	29700
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	26.8	29.4	5.9	6.5	33.3
	Magnesium (Mg) (mg/kg)	10200	11400	1760	2250	11300
	Manganese (Mn) (mg/kg)	286	362	47.7	67.2	330
	Mercury (Hg) (mg/kg)	0.0107	0.0205	<0.0050	<0.0050	0.0079
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	23.3	27.3	<5.0	5.3	29.8
	Phosphorus (P) (mg/kg)	402	512	310	393	584
	Potassium (K) (mg/kg)	3890	4380	510	760	4400
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	520	510	<200	<200	460
	Strontium (Sr) (mg/kg)	23.2	29.5	5.22	7.10	24.7
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	1220	1330	255	325	1230
	Uranium (U) (mg/kg)	1.06	1.26	0.396	0.547	1.75
	Vanadium (V) (mg/kg)	58.0	63.5	16.7	17.6	64.6
	Zinc (Zn) (mg/kg)	47.4	54.8	8.4	10.4	51.3

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L933907-6	L933907-7	L933907-8	L933907-9	L933907-10
		15-JUL-10	15-JUL-10	15-JUL-10	16-JUL-10	16-JUL-10
		14 (10-20)	18 (0-10)	18 (10-20)	21 (0-10)	21 (10-20)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.32	6.27	6.42	6.46	6.42
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.47	0.97	0.85	1.52	2.92
Metals	Aluminum (Al) (mg/kg)	19200	9170	10900	22500	23200
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	112	46.3	53.5	127	135
	Beryllium (Be) (mg/kg)	0.59	<0.50	<0.50	0.61	0.63
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	4860	2560	3180	5470	5650
	Chromium (Cr) (mg/kg)	60.9	29.2	33.1	65.3	65.8
	Cobalt (Co) (mg/kg)	13.5	5.4	5.9	13.6	14.4
	Copper (Cu) (mg/kg)	17.8	10.5	12.4	24.8	27.7
	Iron (Fe) (mg/kg)	30600	14600	16200	33100	33800
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	31.6	14.9	18.2	34.6	37.3
	Magnesium (Mg) (mg/kg)	11300	5870	6740	13700	14200
	Manganese (Mn) (mg/kg)	324	122	138	345	413
	Mercury (Hg) (mg/kg)	0.0069	<0.0050	<0.0050	0.0078	0.0099
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	29.4	14.8	17.3	32.3	34.7
	Phosphorus (P) (mg/kg)	600	448	529	446	531
	Potassium (K) (mg/kg)	4500	2140	2660	5480	6020
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	490	310	410	710	680
	Strontium (Sr) (mg/kg)	27.1	15.3	20.4	30.2	33.3
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	1330	660	757	1540	1490
	Uranium (U) (mg/kg)	1.64	0.841	0.961	1.57	1.59
	Vanadium (V) (mg/kg)	66.6	32.9	37.2	72.7	72.0
	Zinc (Zn) (mg/kg)	52.0	23.8	29.0	57.1	61.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L933907-11	L933907-12	L933907-13	L933907-14	L933907-15
		16-JUL-10	16-JUL-10	16-JUL-10	16-JUL-10	18-JUL-10
		22 (0-10)	22 (10-20)	23 (0-10)	23 (10-20)	29 (0-10)
Grouping	Analyte					
SOIL						
Physical Tests	pH (pH)	6.46	7.52	6.00	6.15	5.62
Organic / Inorganic Carbon	Total Organic Carbon (%)	0.98	0.17	1.78	2.61	5.89
Metals	Aluminum (Al) (mg/kg)	8630	12800	21900	22500	12500
	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	33.6	69.4	134	131	71.0
	Beryllium (Be) (mg/kg)	<0.50	<0.50	0.66	0.65	<0.50
	Bismuth (Bi) (mg/kg)	<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)	3100	3940	4320	5040	4000
	Chromium (Cr) (mg/kg)	34.5	42.7	65.6	67.2	35.8
	Cobalt (Co) (mg/kg)	9.2	11.3	12.9	14.7	8.7
	Copper (Cu) (mg/kg)	22.6	35.1	26.2	25.6	15.3
	Iron (Fe) (mg/kg)	16800	22300	30900	32700	19900
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)	11.5	19.0	35.6	34.4	19.0
	Magnesium (Mg) (mg/kg)	6540	9770	13000	13200	8750
	Manganese (Mn) (mg/kg)	278	301	294	360	230
	Mercury (Hg) (mg/kg)	0.0067	<0.0050	0.0101	0.0106	0.0273
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	23.2	30.2	35.0	35.7	19.7
	Phosphorus (P) (mg/kg)	284	442	490	578	385
	Potassium (K) (mg/kg)	1040	2630	4770	4710	3580
	Selenium (Se) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)	240	510	510	520	530
	Strontium (Sr) (mg/kg)	11.1	17.3	26.8	29.1	24.2
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)	523	744	1470	1510	928
	Uranium (U) (mg/kg)	0.342	0.416	2.23	2.05	1.35
	Vanadium (V) (mg/kg)	35.2	46.0	71.7	73.3	43.6
	Zinc (Zn) (mg/kg)	22.8	37.9	59.0	61.0	36.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID	L933907-16	L933907-17	L933907-18	L933907-19	L933907-20
		Description					
		Sampled Date	18-JUL-10				
		Sampled Time					
		Client ID	29 (10-20)	11 (0-10)	11 (10-20)	16 (0-10)	16 (10-20)
Grouping	Analyte						
SOIL							
Physical Tests	pH (pH)		6.14	6.24	7.28	6.59	7.05
Organic / Inorganic Carbon	Total Organic Carbon (%)		3.34	1.20	0.10	1.22	7.32
Metals	Aluminum (Al) (mg/kg)		21300	3450	9250	2190	13600
	Antimony (Sb) (mg/kg)		<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)		128	19.2	60.5	13.8	109
	Beryllium (Be) (mg/kg)		0.56	<0.50	<0.50	<0.50	<0.50
	Bismuth (Bi) (mg/kg)		<20	<20	<20	<20	<20
	Cadmium (Cd) (mg/kg)		<0.50	<0.50	<0.50	<0.50	<0.50
	Calcium (Ca) (mg/kg)		5910	1070	3580	1240	13800
	Chromium (Cr) (mg/kg)		59.4	8.5	30.5	7.6	41.8
	Cobalt (Co) (mg/kg)		13.7	2.2	8.3	2.0	9.3
	Copper (Cu) (mg/kg)		27.6	6.2	19.4	5.7	40.3
	Iron (Fe) (mg/kg)		32000	7470	16200	6020	20400
	Lead (Pb) (mg/kg)		<30	<30	<30	<30	<30
	Lithium (Li) (mg/kg)		33.9	9.1	16.9	4.4	24.0
	Magnesium (Mg) (mg/kg)		13900	1910	6360	1390	8730
	Manganese (Mn) (mg/kg)		369	48.2	211	39.7	234
	Mercury (Hg) (mg/kg)		0.0084	0.0064	<0.0050	<0.0050	0.0239
	Molybdenum (Mo) (mg/kg)		<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)		32.0	<5.0	18.9	<5.0	28.5
	Phosphorus (P) (mg/kg)		538	177	303	288	521
	Potassium (K) (mg/kg)		5200	480	1910	370	2860
	Selenium (Se) (mg/kg)		<0.50	<0.50	<0.50	<0.50	<0.50
	Silver (Ag) (mg/kg)		<2.0	<2.0	<2.0	<2.0	<2.0
	Sodium (Na) (mg/kg)		840	<200	320	<200	550
	Strontium (Sr) (mg/kg)		35.3	6.93	13.7	4.56	30.9
	Thallium (Tl) (mg/kg)		<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)		<5.0	<5.0	<5.0	<5.0	<5.0
	Titanium (Ti) (mg/kg)		1470	309	665	176	746
	Uranium (U) (mg/kg)		1.94	0.379	1.06	0.345	1.30
	Vanadium (V) (mg/kg)		69.9	16.8	35.6	14.0	41.3
	Zinc (Zn) (mg/kg)		59.4	10.5	25.1	6.9	36.4

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
SR:COC	Sample Received, Not Listed on Submitted Chain of Custody / Analytical Request Form - samples # 11 (0-10), 11 (10-20), 16 (0-10), 16 (10-20) - extra not on CoC

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TOT-ORG-LECO-SK	Soil	Organic Carbon by combustion method Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)	SSSA (1996) p. 973

Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight loss after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.

Reference for Total C:

Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

Reference for Inorganic C:

Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5

HG-CCME-CVAFS-VA	Soil	CVAFS Hg in Soil (CCME)	BCMELP CSR SALM METHOD 8/EPA 245.7
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This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A
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This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PH-1:2-VA	Soil	CSR pH by 1:2 Water Leach	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL
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This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA
SK	ALS LABORATORY GROUP - SASKATOON, SASKATCHEWAN, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg milligrams per kilogram based on dry weight of sample.

mg/kg ww milligrams per kilogram based on wet weight of sample.

mg/kg lwt milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L milligrams per litre.

< - Less than.

D.L. The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.