Boulder Lithogeochemistry Study
Deer Lake area (NTS 92P/9)

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Introduction

This report describes the results of a surface boulder lithogeochemical study carried out in September 1998 over a 10 km^2 area south of Deer Lake, B.C. The study compares surface boulder geochemistry and lodgement till geochemistry down-ice from an area containing sulphide mineralization. Several other boulder geochemical studies have demonstrated the application of this technique for mineral exploration in Canada (Earle *et al.,* 1998; Earle *et al*., 1990). The location of the Deer Lake area is shown in Figure 1. The locations of the 23 boulder sample sites, known mineral occurrences and lodgement till samples collected in the area as part of a regional till geochemical survey (Paulen *et al*., 2000) are shown in Figure 2. Bedrock geology, mineral occurrences and the distribution of gold, arsenic and copper are briefly described in this Geofile Report. All of the geochemical data are included, along with a preliminary interpretation of the results.

Geology

The area at the south end of Deer Lake is underlain by a northwest trending belt of Late Triassic to Jurassic Nicola Group volcanic, sedimentary and intrusive rocks (Campbell and Tipper, 1971). From north to south, beginning at the north end of Deer lake, the sequence of east-west striking Nicola Group rocks comprises andesite, siltstone, limestone and andesite. A small hornblende diorite body 200-300 metres south of the lake intrudes the limestone and andesite. There are two mineral occurrences in the area where boulder samples were taken (Figure 2). The PYCU occurrence (MINFILE 092P 136), west of Deer lake, is reported to contain up to 10 percent pyrite and pyrrhotite disseminated in volcanic rocks that have been intruded by pyroxenite, gabbro and granite. The Lakeview occurrence (MINFILE 092P 010) southwest of Deer lake is a small skarn with lenses of chalcopyrite, magnetite, pyrite and pyrrhotite close to the limestone-diorite. Bedrock in the Deer lake area is partly covered by 1-2 m of lodgement till deposited by a northwest to southeast ice advance.

Sample collection

Composite boulder samples were collected using procedures described by Earle *et al*., (1990). Thirteen samples were collected at 50 m intervals along an east-west line and eleven samples were collect at 100 to 150 m intervals along a road running northwest (Figure 2). At each site a composite boulder sample was collected by taking chips from ten or more boulders found within approximately 20 metres of the sample site. Samples were taken from the largest and most angular boulders observed, without bias toward material of a specific lithology or apparent alteration. At each site the numbers of boulders of different lithologies, the average size, the average angularity, the relative density and any other relevant information regarding boulders (e.g. presence of sulphides) was recorded. This information together with sample location coordinates (UTM NAD 27) is listed in Table 1. A duplicate boulder sample (DL8B111) was taken at site DL8B110. These two samples were taken from separate sets of boulders.

Sample Analysis

Composite boulder samples were jaw crushed to - 4 mm size at the British Columbia Geological Survey laboratory. The - 4 mm size of the samples and a blind duplicate sample (DL8B110) were steel milled to < 0.150 mm (-100 mesh) by ACME Analytical Ltd., Vancouver, B.C . The milled samples and a reference standard were analysed for minor and trace elements by neutron activation analysis (INA) at Activation laboratories Ltd., Ancaster, Ontario and by aqua regia digestion-inductively coupled plasma emission/mass spectroscopy (ICP-ES/MS) by ACME Analytical Ltd.

Results

The INA and ICP-ES/MS analytical results for the boulder samples are listed in Table 1. Data for selected trace elements in the duplicate boulder samples (DL8B110 and DL8B111) and in the blind duplicate crushed rock samples (DL8B110 and DL8B110REP) are shown in Table 2. The results indicate that for most trace elements (e.g. Au, Cu, Pb, Zn, Mo) the percentage mean difference (%DIFF) for the duplicate crushed rock samples is less than 20 percent, but for the duplicate boulder samples the percentage mean difference can range from 1 percent (e.g. Ag) to more than 200 percent (e.g. Au). The median and third quartile values for all elements are also listed in Table 1 and values at or above the third quartile are identified in bold type. The distributions of gold, arsenic and copper in the boulder and till samples are shown in Figures 3, 4 and 5. Till geochemistry is distinguished from boulder geochemistry by open symbols.

Table 2. Results of duplicate boulder and duplicate crushed rock sample analyses. The % DIFF = (ABS(X1-X2)/(X1+X2)/2)) x 100 where X1 and X2 and the first and second duplicate analyses.

		Field Duplicates			Laboratory Duplicates		
Element	Units	DLB8B110	DLB8B111	% DIFF	DLB8B110	DLB8B110R	% DIFF
Au	ppb	<2	13	273	<2	<2	0
Ag (ICP)	ppb	60.5	60.1	1	60.5	63.2	4
As (INA)	ppm	25.4	35.1	32	25.4	23.4	8
As (ICP)	ppm	21.8	32.2	39	21.8	23.1	6
Ba	ppm	990	890	11	990	890	11
Cd	ppm	0.28	0.60	73	0.28	0.34	19
Co (INA)	ppm	33	26	24	33	32	3
Co (ICP)	ppm	22	20	10	22	22	0
Cr	ppm	167	116	36	167	161	4
Cu	ppm	49.8	92.6	60	49.8	48.6	2
Fe (INA)	%	6.90	5.96	15	6.90	6.72	3
Fe (ICP)	%	3.71	3.54	5	3.71	3.68	1
Mo (ICP)	ppm	1.2	9.2	154	1.2	1.4	15
Mn (ICP)	ppm	592	528	11	592	601	2
Ni (ICP)	ppm	34	32	6	34	35	3
Pb (ICP)	ppm	4.3	5.1	17	4.3	3.6	12
Sb (INA)	ppm	4.7	5.1	8	4.7	4.6	2
Sb (ICP)	ppm	1.1	1.8	48	1.1	1.3	17
Sc (INA)	ppm	27.9	20	33	27.9	27.6	1
Se (ICP)	ppm	2	7.1	112	2	1.9	5
V (ppm)	ppm	87	116	29	87	86	1
Zn (ppm)	ppm	60.5	60.1	1	60.5	63.2	4

The highest gold (86 ppb) in boulders occurs at station DL8B119 whereas the highest copper (830 ppm), molybdenum (18.7 ppm), arsenic (72.2 ppm) and silver (1774 ppb) occurs at station DL8B120, 100 metres to the north-west of DL8B119. By comparison to the boulder sample geochemistry, a basal till sample (989195) approximately 150 metres north-east has 360 ppb gold, 52.2 ppm arsenic and 1067 ppm copper. Geochemical profiles for gold, arsenic, copper and silver in boulder samples from sites along the ice-flow direction from DL8B121 to DL8B116 are shown in Figure 6. The distribution of these elements is consistent with a bedrock source for the mineralized boulders in the area between the Lakeview occurrence and site for DL8B119. There is a smaller gold-copper-lead-silver boulder geochemical anomaly at the western end of the east-west line of samples (Stations DL8B101, DL8B103).

Conclusions

A boulder geochemical survey near Deer Lake in south-central British Columbia has identified a significant gold-arsenic-copper-silver-molybdenum anomaly extending several hundred metres down ice from an area containing skarn-type sulphide mineralization. The head of the boulder geochemical anomaly is close to a strong gold- arsenic-copper geochemical anomaly in lodgement till.

References

Campbell, R.B. and Tipper, H.W. (1971): Geology of Bonaparte Lake map area, British Columbia; *Geological Survey of Canada*, Memoir 363.

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Earle, S., Sketchley, D. and Levson, V., (1998): Application of composite boulder lithogeochemistry to exploration for porphyry deposits in British Columbia; *In* Proceeding volume of Pathways ’98 Symposium, Vancouver, 1998.

Paulen, R.C., Bobrowsky, P.T., Lett, R.E., Jackaman, W., Bichler, A.J. and Wingerter, C. (2000): Till geochemisty of the Chu Chua-Clearwater area B.C. (Parts of NTS 92P/8 and 92P/9); *B.C. Ministry of Energy and Mines* Open File 2000-17.

Table 1. Boulder sample field and analytical data

SAMPLE	UTM-EAST CO-ORDINATE (NAD 27)	UTM-NORTH CO-ORDINATE (NAD 27)	NUMBER OF VOLCANIC BOULDERS SAMPLED	NUMBER OF INTRUSIVE BOULDERS SAMPLED	NUMBER OF CARBONATE BOULDERS SAMPLED	NUMBER OF CHERT BOULDERS SAMPLED	AVERAGE BOULDER SIZE (CM)	ANGULARITY	DENSITY BOULDERS AT SAMPLE SITE	COMMENTS
DLB8B101	681518	5711606	10				30	SA	L	
DLB8B102	681567	5711610	11		1		35	SA	M	
DLB8B103	681616	5711613	10				40	A	M	sulphides
DLB8B104	681666	5711617	10				40	A	M	
DLB8B105	681715	5711621	10			1	35	A	M	
DLB8B106	681764	5711624	9		1		30	A	M	
DLB8B107	681813	5711628	10				30	A	M	
DLB8B108	682108	5711650	9	1			40	A	M	
DLB8B109	682059	5711646	10				30	A	M	
DLB8B110	682010	5711643	10				30	A	M	Duplicate
DLB8B111	682010	5711643	10				30	A	M	Duplicate
DLB8B112	681961	5711639	9		1		25	A	M	
DLB8B113	681911	5711635	10				25	A	M	sulphides
DLB8B114	681862	5711632	12				30	A	M	
DLB8B115	683135	5711038	10				35	A	H	
DLB8B116	682957	5710969	11				45	A	H	sulphides
DLB8B117	682800	5711139	10				40	A	H	sulphides
DLB8B118	682631	5711120	9	1			45	A	H	
DLB8B119	682514	5711319	11				40	A	H	
DLB8B120	682401	5711449	9	1			30	A	H	
DLB8B121	682154	5711460	10				30	A	H	
DLB8B122	681298	5711467	10				40	A	H	
DLB8B123	681424	5711442	10				35	A	M	
DLB8B124	681581	5711401	10				40	A	H	sulphides
DLB8B125	681760	5711328	6	4			40	A	M	

Table 1. Boulder sample field and analytical data

ELEMENT	Au	Ag	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	Mo	Na	Ni	Rb	Sb	Sc	Se	Sr	Ta	Th	U	W	Zn	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu
UNITS	ppb	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
METHOD	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
DETECTION	2	5	0.5	50	0.5	1	1	5	1	0.01	1	1	0.01	20	15	0.1	0.1	3	0.05	0.5	0.2	0.5	1	50	0.5	3	5	0.1	0.2	0.5	0.2	0.05
DLB8B101	**22**	-5	**23.8**	440	-0.5	**9**	28	121	-1	6.69	2	-1	2.05	**-33**	-15	**3.8**	24.4	-3	-0.05	-0.5	2.6	1.9	-1	**164**	**12.6**	26	**14**	3.7	**1.5**	-0.5	**2.3**	0.32
DLB8B102	-2	-5	18.8	**670**	-0.5	**11**	29	**189**	-1	7.9	2	-1	1.42	-31	40	3.2	22.8	-3	**0.07**	-0.5	2	-0.5	-1	99	10.2	24	**14**	3.5	1.3	-0.5	2	0.35
DLB8B103	**28**	-5	10.6	620	-0.5	6	29	111	-1	6.82	2	3	2.27	**-35**	-15	2.6	27	-3	-0.05	-0.5	2.6	1.4	-1	156	-0.5	**27**	12	3.5	**1.4**	-0.5	**2.6**	0.37
DLB8B104	8	-5	18.2	550	-0.5	**10**	28	64	-1	7.83	1	-1	1.55	-32	33	**3.8**	26	-3	**0.07**	-0.5	2.5	**2.3**	-1	140	16	34	**15**	**4.4**	**1.5**	-0.5	**2.5**	0.35
DLB8B105	17	-5	**40.1**	**890**	-0.5	7	31	82	2	7.13	2	3	1.73	**-34**	**60**	3	25	-3	-0.05	-0.5	2.1	2.1	-1	87	12.2	26	12	**3.9**	1.3	**0.8**	2.1	0.33
DLB8B106	-2	-5	11.6	440	-0.5	**9**	29	25	-1	7.92	1	**10**	1.49	**-34**	25	2.8	**35.9**	-3	0.06	-0.5	1.8	-0.5	1	**166**	10.3	21	11	**4.1**	**1.4**	-0.5	2.2	0.3
DLB8B107	10	-5	17.4	360	-0.5	8	**34**	57	-1	8.7	2	-1	1.26	**-34**	-15	**4.8**	**36**	-3	-0.05	-0.5	1.5	-0.5	1	146	10	24	**13**	**3.9**	**1.4**	-0.5	2.2	0.33
DLB8B108	10	-5	9.3	500	-0.5	**11**	**33**	**149**	-1	7.48	1	-1	1.65	**-35**	-15	2.5	**31.2**	-3	-0.05	-0.5	**3.1**	1	-1	**159**	11.6	24	10	3.1	1.2	-0.5	1.6	0.23
DLB8B109	3	-5	12.9	590	-0.5	7	**46**	**232**	-1	7.6	1	-1	1.55	**-34**	44	1.6	**33.5**	-3	**0.09**	0.7	1.1	1.3	-1	**186**	7.7	15	7	2.6	0.9	-0.5	1.7	0.25
DLB8B110	-2	-5	**25.4**	**990**	-0.5	8	**33**	**167**	-1	6.9	2	2	2.19	**212**	**58**	**4.7**	**27.9**	-3	**0.11**	-0.5	2.3	-0.5	-1	-50	10.1	23	11	3.1	1.2	-0.5	2.1	0.33
DLB8B111	13	-5	**35.1**	**1000**	-0.5	**9**	26	116	-1	5.96	2	**7**	**2.18**	-32	**55**	**5.1**	20	**8**	-0.05	-0.5	**3.2**	**3.7**	-1	150	16	**27**	12	3.6	1.3	**0.6**	2.2	0.32
DLB8B112	8	-5	14.5	420	-0.5	**11**	28	54	-1	7.75	1	**7**	1.17	-29	-15	2.9	**27.9**	**-3**	**0.09**	-0.5	1.2	-0.5	**2**	130	8.9	19	**13**	3.4	1.3	-0.5	1.6	0.29
DLB8B113	**29**	-5	14	440	-0.5	7	**42**	**163**	-1	**9.28**	-1	-1	1.62	**-34**	32	2.9	**29.7**	-3	-0.05	-0.5	2.6	1.9	-1	143	11.4	25	11	3.5	**1.4**	-0.5	1.8	0.29
DLB8B114	4	-5	18.3	600	-0.5	8	**33**	**126**	-1	**8.92**	1	-1	1.46	**-35**	**59**	2.6	**36.3**	-3	-0.05	-0.5	1.1	-0.5	-1	159	8.5	21	12	4.2	**1.4**	-0.5	2.1	0.3
DLB8B115	**19**	-5	10.9	560	-0.5	7	31	71	-1	7.08	1	-1	1.87	-32	-15	2.1	**29.4**	-3	**0.08**	-0.5	2	2.4	-1	178	11.8	25	**15**	3.6	1.3	-0.5	2.2	0.29
DLB8B116	15	-5	10.7	630	-0.5	**10**	**42**	**170**	-1	8.46	2	-1	1.42	**-35**	43	2.6	**33.9**	-3	0.06	-0.5	1.4	-0.5	-1	147	8	18	9	3.2	1.3	-0.5	2.2	0.32
DLB8B117	-2	-5	11	520	-0.5	7	32	68	-1	**8.59**	-1	-1	2.01	**-34**	-15	2.3	**33.1**	-3	-0.05	-0.5	1.7	-0.5	-1	173	**14.2**	**30**	**13**	**4.3**	**1.7**	**0.6**	**2.3**	0.36
DLB8B118	**75**	-5	12.3	590	-0.5	**9**	31	24	1	8.16	1	**4**	1.87	-32	-15	2.9	27.1	-3	-0.05	-0.5	**3.5**	1.6	**2**	140	11.2	24	11	3	1.1	**0.6**	1.9	0.31
DLB8B119	**86**	-5	20.8	290	-0.5	**15**	**34**	37	-1	10.7	1	**11**	0.86	-28	-15	3.5	18.2	-3	-0.05	-0.5	2.1	2.2	-1	153	10.6	24	10	3.3	1.3	-0.5	1.9	0.28
DLB8B120	**47**	-5	**72.2**	640	-0.5	**9**	28	36	-1	7.15	2	**21**	1.38	-32	-15	**9.4**	22.2	-3	-0.05	-0.5	**3.3**	**3.5**	2	142	**16.5**	**29**	**17**	3.5	1.1	-0.5	**2.3**	0.37
DLB8B121	7	-5	19.1	**990**	-0.5	6	31	124	3	7.02	2	2	2.1	-34	**45**	3	20.8	-3	**0.07**	-0.5	2.8	1.8	-1	130	11.8	23	11	3.2	1.2	-0.5	1.9	0.3
DLB8B122	4	-5	6.2	**690**	-0.5	6	**33**	67	2	8.45	2	-1	2.21	**-38**	-15	1.9	**32.7**	-3	-0.05	-0.5	**4.6**	**2.5**	**2**	194	**14.8**	**35**	**16**	**4.1**	1.2	**0.7**	**2.8**	0.39
DLB8B123	4	-5	10.2	610	-0.5	8	**34**	103	-1	7.28	1	-1	1.98	**-37**	**52**	2.4	**33.8**	-3	-0.05	-0.5	2.7	1.6	-1	-50	12.3	**29**	**13**	3.7	**1.5**	-0.5	2	0.3
DLB8B124	7	-5	**25.9**	**690**	-0.5	**9**	25	116	4	**9.05**	2	6	1.91	**-33**	-15	4	18.5	-3	-0.05	-0.5	**3.4**	**3.8**	-1	154	**13.9**	25	12	3.2	1.1	-0.5	**2.5**	0.37
DLB8B125	7	-5	7.8	420	-0.5	6	27	49	2	6.1	2	-1	2.43	**-37**	**82**	2.7	27.2	-3	-0.05	-0.5	**3.3**	**2.8**	1	153	12.4	**28**	**13**	3.6	**1.4**	-0.5	**2.5**	**0.42**
Median	8	-5	14.5	590	-0.5	8	31	103	-1	7.75	2	-1	1.73	-34	25	2.9	27.9	-3	-0.05	-0.5	2.5	1.6	-1	150	11.6	25	12	3.5	1.3	-0.5	2.2	0.32
3 Quantile	19	-5	20.8	670	-0.5	9	33	126	-1	8.46	2	4	2.05	-32	45	3.8	33.1	-3	0.07	-0.5	3.1	2.3	1	159	12.6	27	13	3.9	1.4	-0.5	2.3	0.35

Table 1. Boulder sample field and analytical data

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	ELEMENT	Tl	Hg	Se	Te	Ga
UNITS	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	UNITS	ppm	ppb	ppm	ppm	ppm
METHOD	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	METHOD	ICP	ICP	ICP	ICP	ICP
DETECTION	0.1	0.1	0.1	0.1	1	1	1	1	0.01	0.1	5	0.1	1	1	0.2	0.1	0.1	1	0.01	0	1	1	0.01	1	0.01	3	0.01	0.01	0.01	2	DETECTION	0.2	10	0.3	0.2	0.1
DL8B101	0.4	**204.5**	**47.8**	**96.4**	**800**	**44**	20	628	3.03	14.3	7	-0.1	2	**116**	**0.68**	**1.1**	-0.2	81	**2.72**	0.117	5	**92**	1.32	40	0.12	**6**	1.75	0.04	0.11	-2	DL8B101	-0.2	**11**	-0.3	**0.2**	6.6
DL8B102	1.6	135.6	**17.9**	**69.5**	**454**	**48**	21	**805**	4	14	**13**	-0.1	-2	**136**	**0.43**	**1.3**	-0.2	99	**3.52**	**0.149**	6	**97**	1.46	**96**	0.14	**25**	1.92	0.04	0.09	-2	DL8B102	-0.2	-10	1.2	**0.2**	6.6
DL8B103	1.5	**200.5**	**7.2**	59.2	**311**	**38**	23	679	4.17	9.6	9	-0.1	2	84	0.25	0.7	-0.2	99	1.82	0.095	6	**73**	1.61	45	0.15	5	1.82	0.05	0.13	-2	DL8B103	-0.2	-10	-0.3	**0.2**	6.2
DL8B104	0.2	165	**6.1**	57.6	225	12	21	673	3.71	12.9	10	-0.1	-2	92	0.17	0.8	-0.2	78	1.79	**0.179**	6	40	1.45	44	0.12	**5**	2	**0.07**	0.11	3	DL8B104	-0.2	**43**	0.3	**0.2**	5.8
DL8B105	1.3	135.1	3.6	66	190	29	23	644	4.31	**41.2**	10	-0.1	-2	74	0.24	0.7	-0.2	**132**	1.31	**0.166**	**7**	60	1.52	48	0.14	4	1.93	0.05	0.11	-2	DL8B105	-0.2	**15**	-0.3	-0.2	**7.9**
DL8B106	**10.2**	111.3	4.1	64.3	214	10	23	**745**	4.47	10.9	10	-0.1	-2	81	0.24	0.6	-0.2	**130**	2.14	0.137	5	19	1.66	48	**0.21**	6	**2.32**	**0.07**	0.11	-2	DL8B106	-0.2	-10	**3.4**	**0.2**	**7.4**
DL8B107	0.7	175.6	4.1	**67.2**	212	16	**26**	**923**	**5.38**	**17.7**	**11**	-0.1	-2	**150**	0.26	**1.8**	-0.2	**135**	**2.93**	0.13	5	23	2.09	51	0.16	8	**2.49**	0.05	**0.15**	-2	DL8B107	-0.2	-10	0.3	**0.2**	**7.3**
DL8B108	0.4	115.4	4.5	57.4	156	28	21	598	3.71	7.2	8	-0.1	2	**196**	**0.35**	0.6	-0.2	109	**4.69**	0.128	5	**102**	1.52	31	0.14	4	1.74	0.04	**0.21**	-2	DL8B108	-0.2	-10	-0.3	-0.2	6.3
DL8B109	0.4	91.1	3.5	62.8	163	**51**	**35**	**741**	**4.51**	10.3	7	-0.1	-2	99	0.12	0.4	-0.2	119	1.7	0.108	4	**175**	**2.39**	36	0.13	4	**2.25**	0.03	**0.14**	-2	DL8B109	-0.2	-10	-0.3	**0.2**	**7.2**
DL8B110	1.2	49.8	4.3	60.5	108	34	22	592	3.71	**21.8**	7	-0.1	-2	98	0.28	**1.1**	-0.2	87	1.69	0.095	5	67	1.48	**58**	0.12	4	1.86	**0.06**	0.12	-2	DL8B110	-0.2	-10	**2**	-0.2	6.1
DL8B111	**9.2**	92.6	**5.1**	60.1	227	32	20	528	3.54	**32.2**	9	-0.1	2	**178**	**0.6**	**1.8**	-0.2	116	**3.99**	**0.148**	**8**	70	0.96	48	0.08	**7**	1.13	0.03	0.12	-2	DL8B111	-0.2	-10	**7.1**	**0.3**	5.1
DL8B112	**2.9**	129.9	3.5	61.7	152	21	20	675	4.15	12.9	**11**	-0.1	-2	95	**0.32**	1	-0.2	**162**	**3.65**	0.106	5	31	1.61	37	0.13	4	**2.16**	0.04	0.04	-2	DL8B112	-0.2	**14**	-0.3	-0.2	6.2
DL8B113	0.5	111.9	4.4	64.3	220	**43**	**33**	**746**	**5.54**	13.4	**11**	-0.1	-2	96	0.15	0.7	-0.2	**129**	1.64	0.126	4	**121**	**2.26**	**69**	0.16	**9**	**2.31**	0.04	0.11	-2	DL8B113	-0.2	10	1.1	**0.2**	**7.5**
DL8B114	0.5	97.9	4.4	**67.3**	194	22	21	**767**	**4.9**	16.1	**14**	-0.1	-2	85	0.31	0.7	-0.2	126	1.87	**0.158**	4	69	**2.01**	**89**	0.15	**5**	**2.16**	0.04	**0.14**	-2	DL8B114	-0.2	**11**	0.8	-0.2	**7.6**
DL8B115	0.7	170.9	4	58	214	20	22	427	3.56	10.7	7	-0.1	-2	70	0.25	0.7	-0.2	82	1.38	0.17	5	28	1.19	49	**0.19**	4	1.46	**0.06**	**0.14**	-2	DL8B115	-0.2	-10	1.3	**0.3**	4.7
DL8B116	0.7	**262.4**	2.6	45.9	220	**74**	32	663	4.4	9.9	8	-0.1	-2	52	0.11	0.4	-0.2	78	1.46	0.074	3	61	**1.72**	**56**	**0.19**	4	1.85	**0.06**	0.1	-2	DL8B116	-0.2	**15**	**2.5**	-0.2	4.7
DL8B117	1	**235.6**	2.7	63.1	182	26	23	629	4.38	9	9	-0.1	-2	45	0.21	0.4	**0.3**	109	0.83	0.14	**7**	34	**1.71**	49	**0.2**	3	**2.01**	0.05	0.07	-2	DL8B117	-0.2	-10	0.3	**0.2**	5.6
DL8B118	**2.3**	**313.4**	4.4	58.9	**425**	17	23	**689**	4.13	11.3	6	-0.1	2	73	0.19	0.6	-0.2	107	1.75	0.091	5	14	1.22	39	0.15	**5**	1.69	0.04	0.07	**2**	DL8B118	-0.2	-10	0.8	**0.2**	5.6
DL8B119	**6.8**	**579.7**	2.6	53.6	**928**	13	**29**	627	**5.65**	**21.7**	**13**	-0.1	-2	43	0.23	0.9	-0.2	113	**3.26**	0.131	5	18	0.67	23	0.1	**5**	1.17	0.02	0.06	2	DL8B119	-0.2	10	**3**	**0.3**	4.9
DL8B120	**18.7**	**830**	3.5	**66.7**	**1774**	**43**	22	563	2.66	**73.3**	9	-0.1	2	95	**0.39**	**5.3**	-0.2	155	1.48	0.102	**7**	13	0.78	**57**	0.15	**5**	1.28	0.04	0.09	-2	DL8B120	-0.2	-10	**2.8**	**0.5**	5.3
DL8B121	1.3	130.5	4.6	49.9	**311**	27	**27**	647	**4.78**	**19.4**	**12**	-0.1	2	**140**	0.17	1	-0.2	86	2.09	**0.141**	6	**83**	**1.69**	49	0.11	4	1.6	0.05	**0.24**	-2	DL8B121	0.2	**11**	**4.8**	0.2	3.9
DL8B122	0.7	46.9	4.3	**67.1**	75	22	23	636	**4.77**	4.6	**11**	-0.1	**4**	64	0.17	0.5	-0.2	**151**	1.04	0.13	**9**	52	1.67	36	**0.21**	3	1.97	**0.06**	0.13	-2	DL8B122	-0.2	-10	-0.3	0.2	**8.6**
DL8B123	0.6	133.1	**5.5**	57.3	203	24	**24**	623	3.51	7.6	**13**	-0.1	-2	75	0.19	0.5	-0.2	95	1.61	0.117	**7**	63	1.51	49	**0.17**	4	1.88	**0.06**	0.09	-2	DL8B123	-0.2	-10	0.5	-0.2	5.3
DL8B124	**3.1**	126.2	3.2	37.3	148	19	18	602	4.37	**23.2**	**13**	-0.1	2	57	0.1	**1.3**	-0.2	100	2.5	0.134	**7**	47	0.76	**69**	0.1	3	1.23	0.04	0.09	-2	DL8B124	-0.2	-10	1.6	-0.2	4.1
DL8B125	1.6	160.9	**7.4**	**93.4**	209	17	19	554	3.06	7.4	8	-0.1	3	64	0.6	0.7	-0.2	100	1.29	0.133	**7**	28	1.47	30	**0.22**	4	1.78	0.06	**0.17**	-2	DL8B125	-0.2	**17**	-0.3	-0.2	5.5
Median	1.2	135.1	4.3	61.7	214	26	23	644	4.17	12.9	10	-0.1	-2	85	0.24	0.7	-0.2	109	1.79	0.13	5	60	1.52	48	0.15	4	1.86	0.05	0.11	-2	Median	-0.2	-10	0.8	0.2	6.1
3 Quantile	2.3	200.5	5.1	66.7	311	38	24	689	4.51	19.4	11	-0.1	2	99	0.32	1.1	-0.2	129	2.72	0.141	7	73	1.69	56	0.17	5	2.01	0.06	0.14	-2	3 Quantile	-0.2	11	2	0.2	7.2

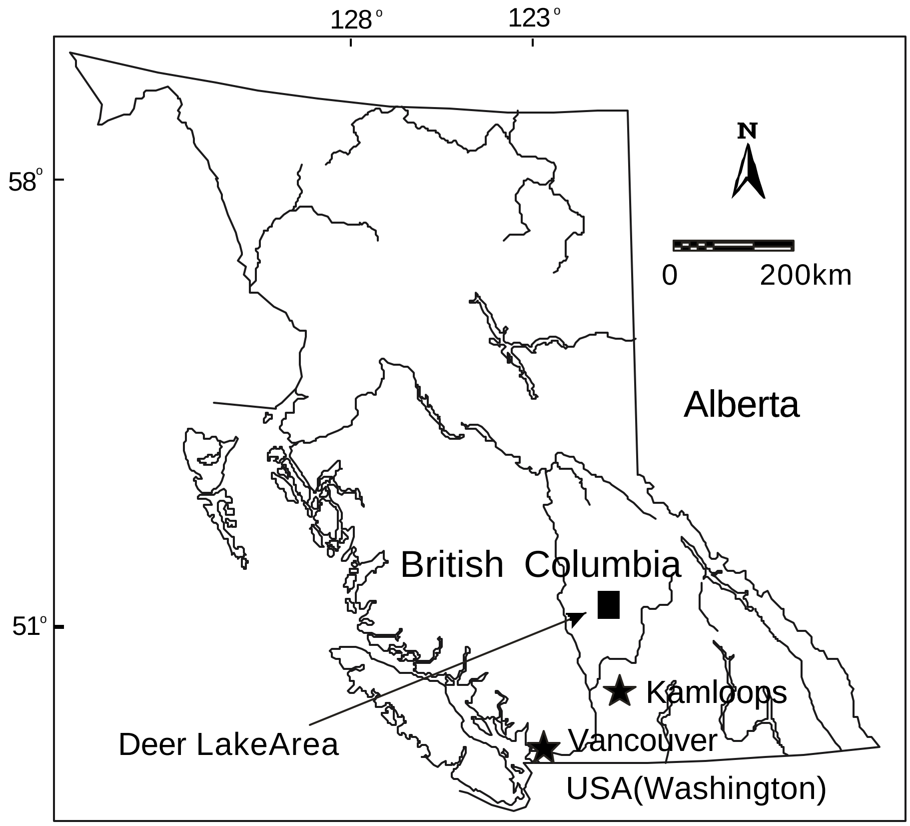
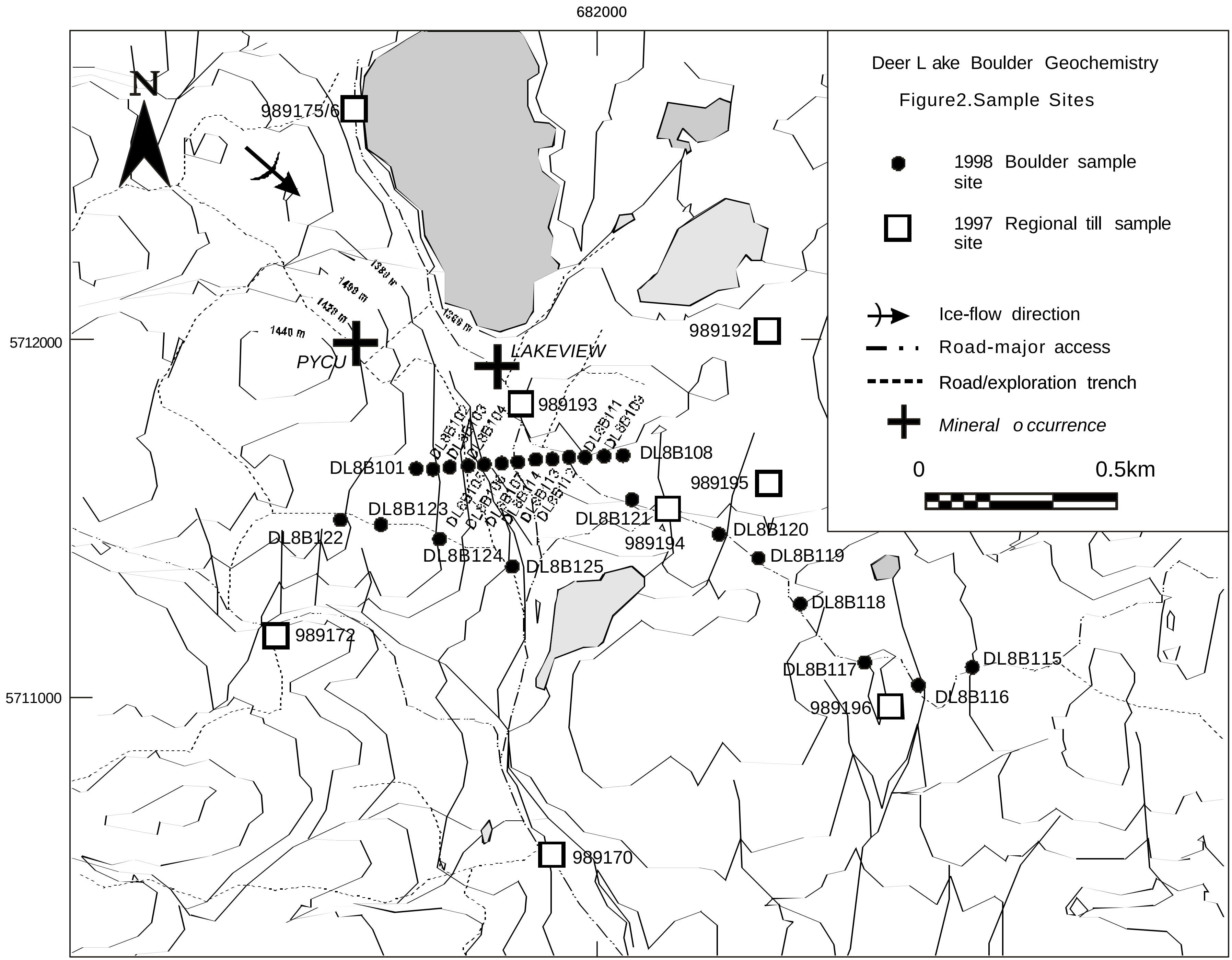


Figure 1.Location of the Deer Lake area


682000
5712000
5711000
N
Deer L ake Boulder Geochemistry
Figure2.Sample Sites
1998 Boulder sample site
1997 Regional till sample site
Ice-flow direction
Road-major access
Road/exploration trench
Mineral o ccurrence
0
0.5km
989175/6
1380 m
1400 m
1420 m
1440 m
1360 m
PYCU
LAKEVIEW
989192
989193
989195
989194
989172
989196
989170
DL8B101
DL8B108
DL8B121
DL8B120
DL8B119
DL8B118
DL8B117
DL8B116
DL8B115
DL8B122
DL8B123
DL8B124
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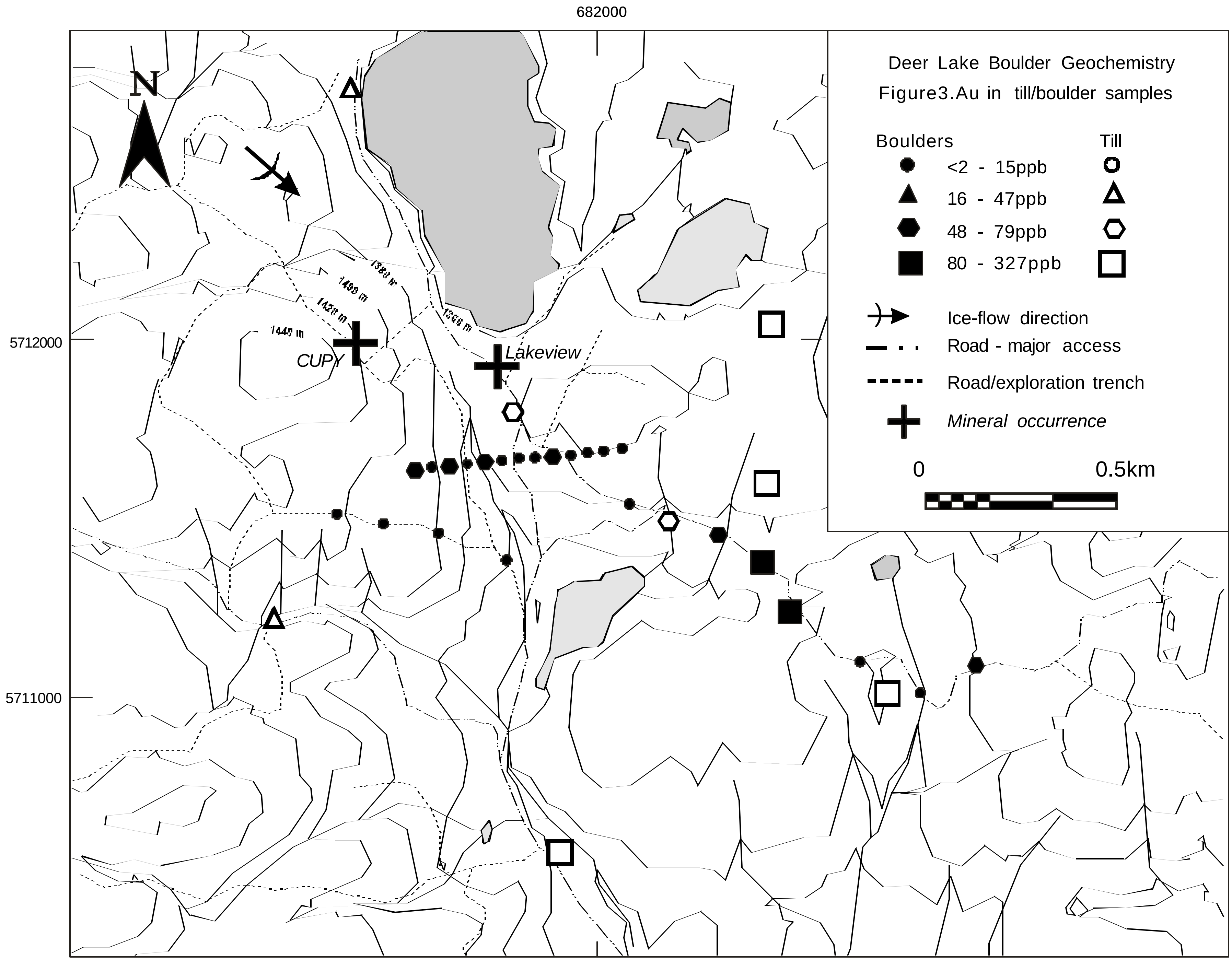
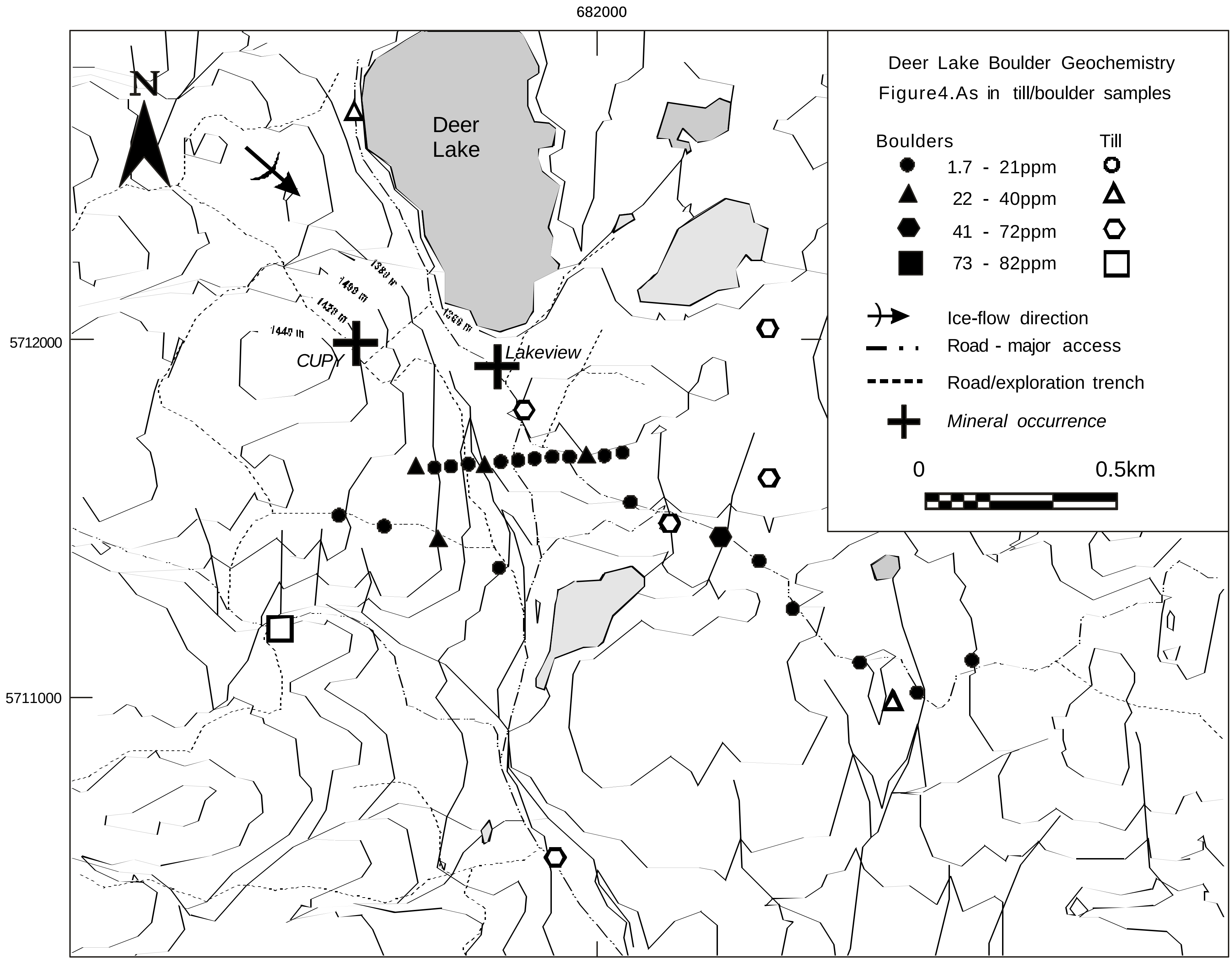
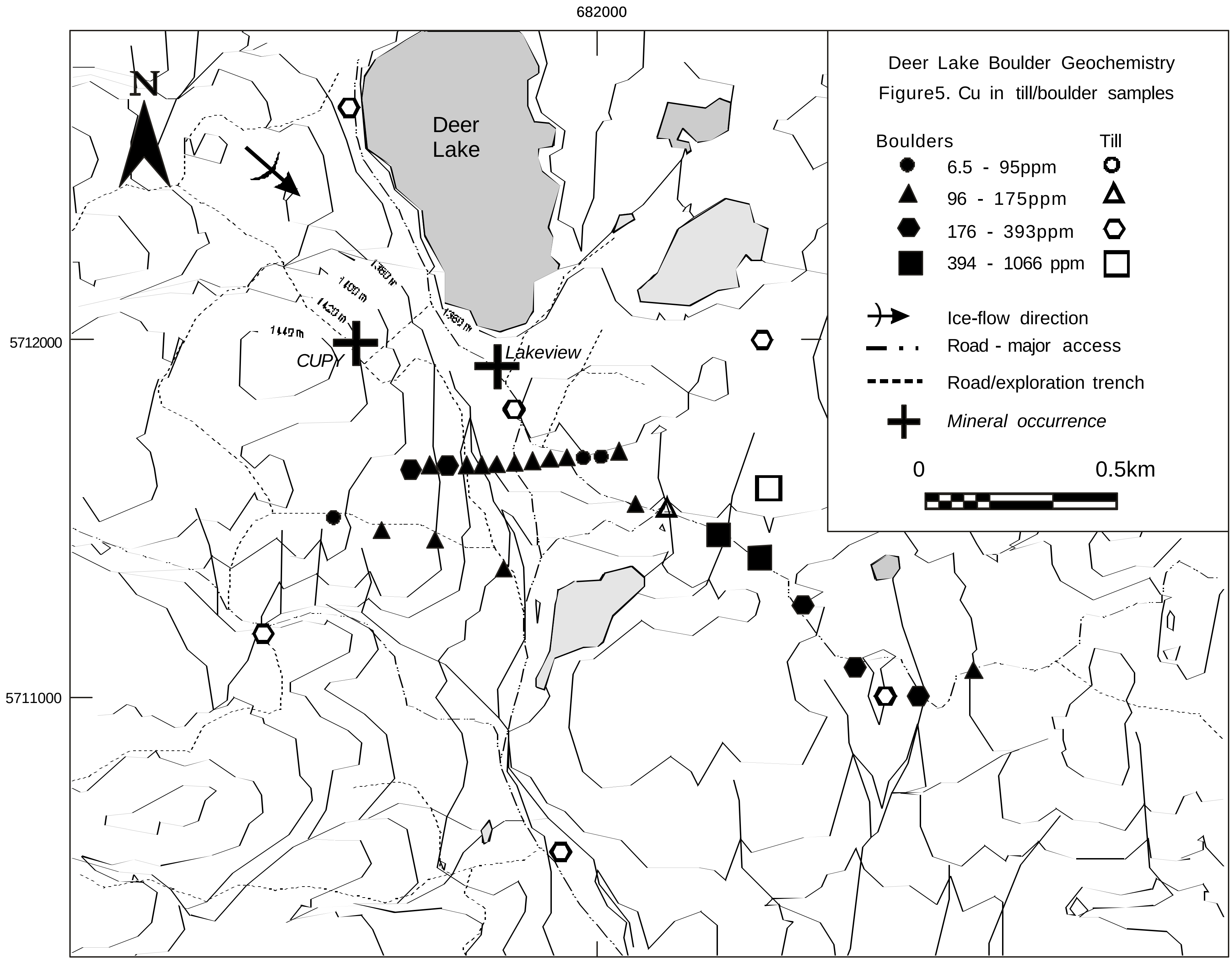

682000
5712000
5711000
N
CUPY
Lakeview
Deer Lake Boulder Geochemistry
Figure3.Au in till/boulder samples
Boulders
Till
<2 - 15ppb
16 - 47ppb
48 - 79ppb
80 - 327ppb
Ice-flow direction
Road - major access
Road/exploration trench
Mineral occurrence
0
0.5km


682000
5712000
5711000
N
Deer Lake
CUPY
Lakeview
Deer Lake Boulder Geochemistry
Figure4.As in till/boulder samples
Boulders
Till
1.7 - 21ppm
22 - 40ppm
41 - 72ppm
73 - 82ppm
Ice-flow direction
Road - major access
Road/exploration trench
Mineral occurrence
0
0.5km



682000
5712000
5711000
N
Deer Lake
CUPY
Lakeview
Deer Lake Boulder Geochemistry
Figure5. Cu in till/boulder samples
Boulders
Till
6.5 - 95ppm
96 - 175ppm
176 - 393ppm
394 - 1066 ppm
Ice-flow direction
Road - major access
Road/exploration trench
Mineral occurrence
0
0.5km

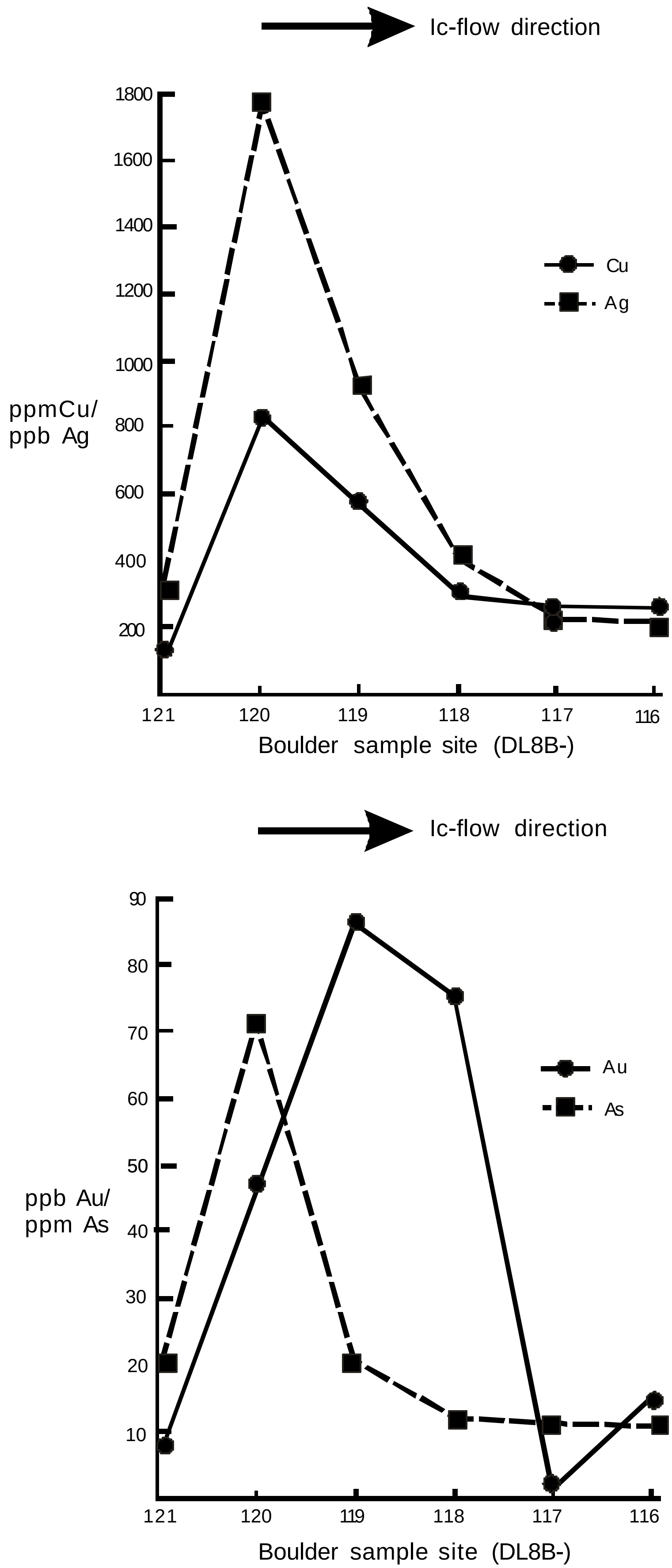


Figure6. Down-ice boulder geochemistry profiles