AR98-081

CONFIDENTIAL

Zeolite Exploration Brow of Mountain Road West North Mountain, Nova Scotia

Submitted by

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For

WTC Resources Ltd Kentville, NS



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Kentville, NS

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SUMMARY

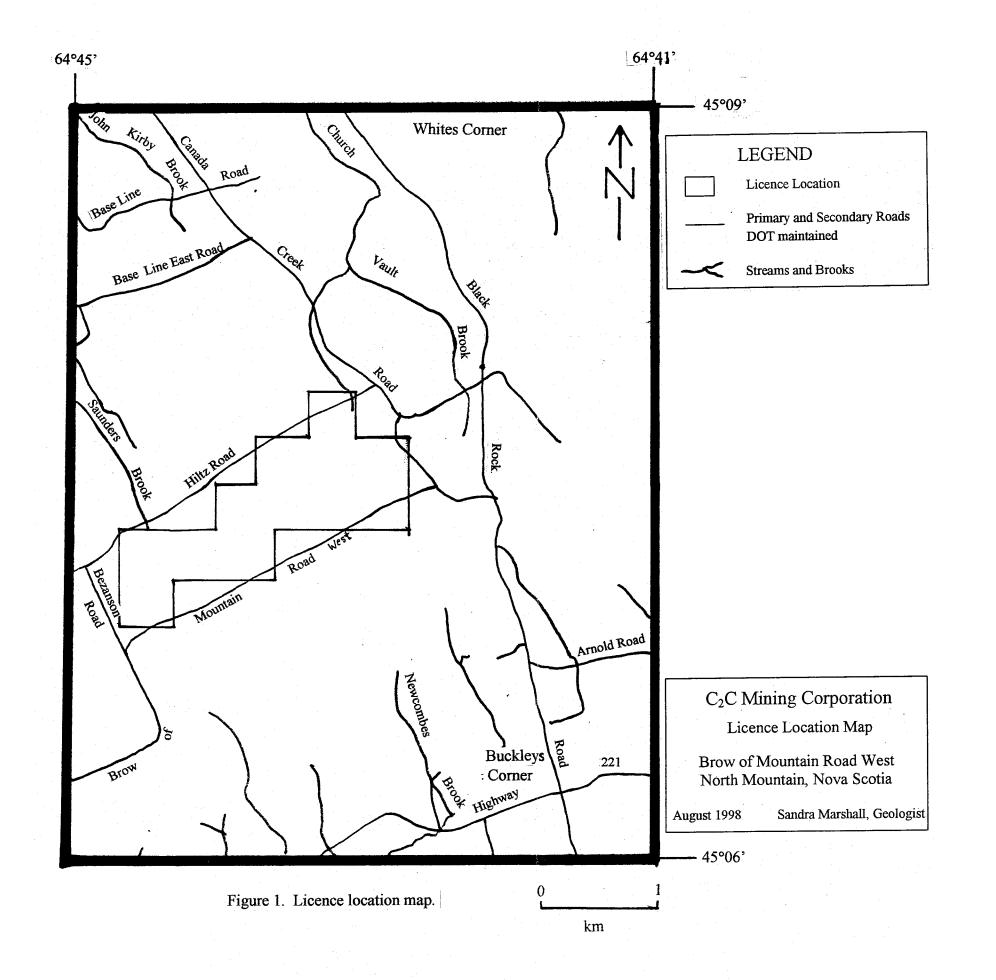
Exploration on the licence held by C₂C Mining Corporation at Brow of Mountain Road West on the North Mountain continues into its second year. Assessment work has consisted of a diamond drill program, geological mapping and laboratory testing. Two diamond drillholes were drilled to determine the size and extent of the amygdaloidal basalt sections and to provide information for the overall stratigraphic sequence of the numerous basalt flows in the area. The drillholes encountered two amygdaloidal sections with a zeolite concentrations averaging 10% to 20% by volume and averaged 4 meters vertically. The second amygdaloidal section averaged 2 ½ to 3 meters vertically and the third amygdaloidal section was only present in the second drillhole, which was estimated at 2 ½ meters vertically. Proven reserve estimations cannot be calculated from the data during this drill program. Possible ore estimations have been calculated at 1,000,000 tonnes. Specific gravity tests have been conducted with results indicating the amygdaloidal basalts have a specific gravity that is lower than the massive flows. The specific gravity is directly affected by the amount of zeolite in the basalt and results will be lower for higher concentrations of zeolite and vice versa. Visual logging of crystal shape in core specimens has been performed to determine the types of zeolite in this region. Results to date have determined that heulandite/clinoptilolite and stilbite are the most prominent zeolites, followed by lesser amounts of thomsonite, scolecite (?) and mordenite (?) (listed in decreasing order). Preliminary tests have been run using methylene blue that will aid in zeolite identification, determination of porosity and permeability and measurement of the CEC for the region.

INTRODUCTION

C₂C Mining Corporation (C₂C) has been conducting geological exploration on the North Mountain since 1996. In the fall of 1997, an exploration diamond drill program was initiated to provide insight on the stratigraphic nature of the basalt flows, to locate areas with the highest zeolite concentrations and provide ore reserve estimates. It was also planned that the drillholes would provide information to predict the location of other zeolite rich layers of amygdaloidal basalt in other locations on the North Mountain. The core from these drillholes at Brow of Mountain Road West were used to determine vertical extent of the deposit, stripping ratios, zeolite identification, tonnage estimates and ore grades. Separation of the zeolite from the basalt has, in the past, been problematic and generally unsuccessful. In recent years, advances in the technology for magnetic separation have provided an economically viable method for separating the zeolite from the basalt. C₂C continues to focus its efforts on refining this method and increasing the percentage recovery of the zeolite. It has become evident that each different location outlined in this drill program has its own unique characteristics that have to be defined and quantified. These characteristics are outlined using XRD, SEM, methylene blue tests, pH tests, thin section work and visually characterizing each deposit. Eventually, each separate region will have a typical analysis sheet that quantifies the characteristics of the deposit and will help define the best possible use for the ore being extracted at each site. This particular site is in the early stages of evaluation and initial testing is continuing.

LOCATION AND ACCESS

The property is located in Kings County, between the Brow of Mountain Road West (grave), the Hiltz Road (gravel), the Bezanson Road (listed but not maintained gravel road) and the Canada Creek Road (paved) on the North Mountain (Fig 1). The roads leading to this site are all in good repair. In the Spring, the gravel roads are closed to heavy machinery. There is a parcel of Crown Land within this claim and a major landowner in the area is Mr. Leon Fuller. A wilderness campground is located adjacent



to the Crown Land, north side of the Brow of Mountain Road West, and one residential dwelling is located nearby. Commercial and residential logging is active in this area.

LICENCE TABULATION

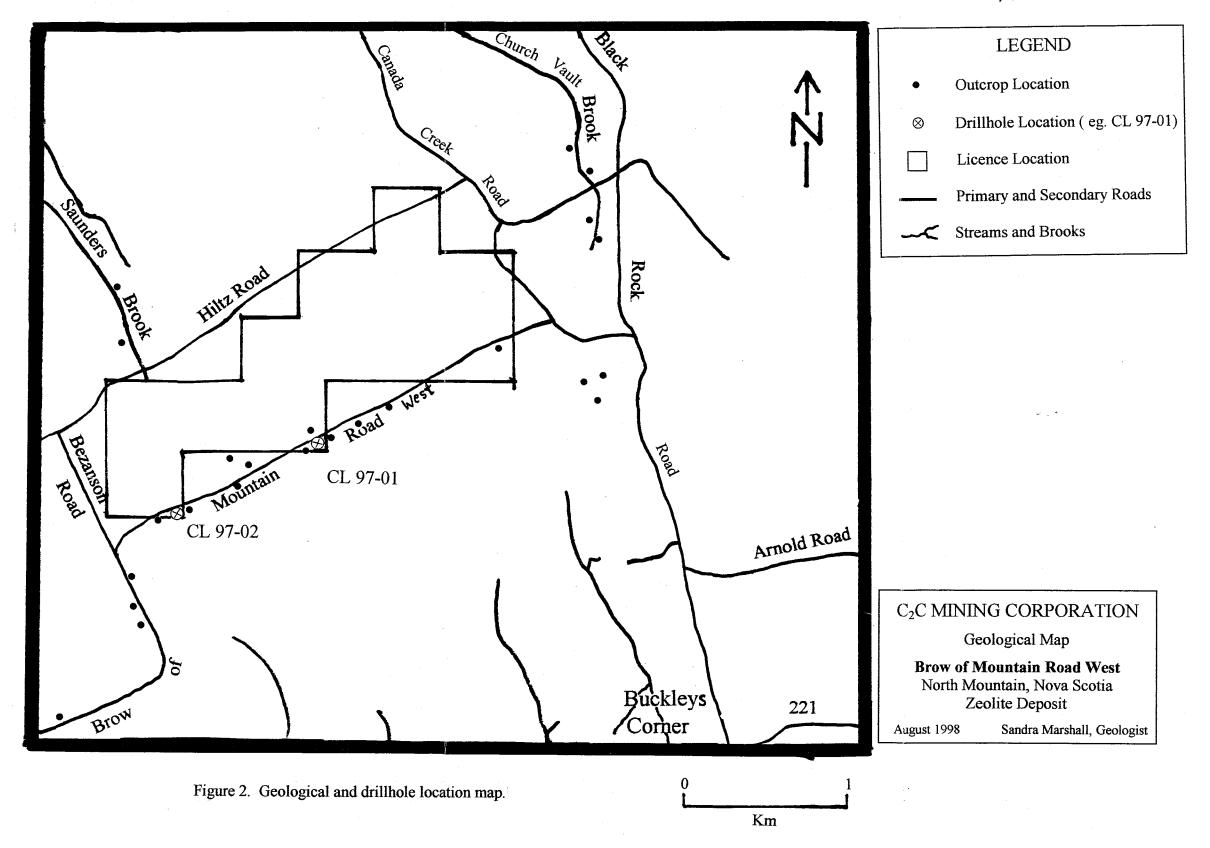
Licence No.	Map Sheet	Tract	Claim	Date of Issue
02589	21 H 2A	107	NOP	August 28, 1996
	21 H 2A	108	FJKLQ	
	21 H 2D	11	BCDF	

C₂C Mining Corporation of Kentville, NS holds the licence and the assessment report was submitted by Sandra Marshall, geologist for the company.

GEOLOGICAL WORK

GEOLOGICAL MAPPING

Geological mapping was conducted at Brow of Mountain Road West in the fall of 1997 to locate suitable sites for diamond drilling and to determine a stratigraphic sequence for the area. Follow-up fieldwork was conducted in the summer 1998. The area is being actively logged but no outcrop could be located in the woods. The road was recently upgraded and ditches were dug, exposing fresh outcrop (Fig 2). The bedrock is amygdaloidal basalt from the basalt flow locally known as the Blomidon Flow. There appears to be a relatively thin till cover in this region, averaging 1 to 2 meters, based upon previous work in this are and observations along the new cut face on Brow of Mountain Road West. Stripping ratios will therefore be in an economical range for this site. There are no streams or brooks located in the region.



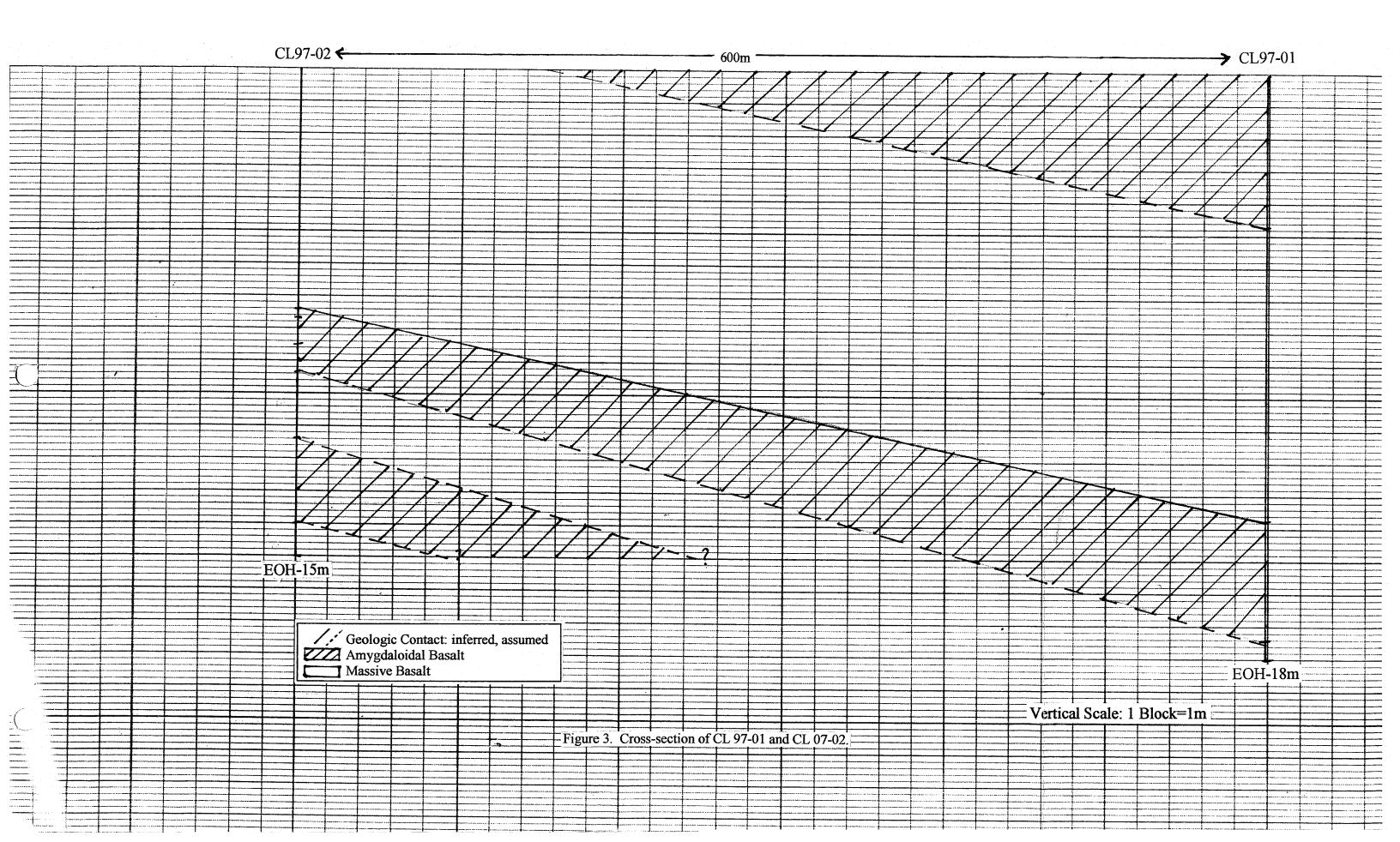
DIAMOND DRILL RESULTS

C₂C Mining Corporation conducted an exploration drill program in the fall of 1997 intended to locate areas of highest zeolite concentration on North Mountain, Nova Scotia. Preliminary geological investigations outlined areas with high potential for suitable zeolite concentrations and diamond drilling was completed to determine the size, extent and concentration of the amygdaloidal zones and also to obtain a general stratigraphic sequence in each area. The drill program commenced on October 23rd, 1997 and was completed on December 2nd, 1997. Drilling was done on November 26th and 27th, 1997 for licence 02589 on Brow of Mountain Road West. Diamond drillholes CL 97-01 (18 m) and CL 97-02 (15 m) were drilled in amygdaloidal basalt bedrock (Fig 2 for location and Appendix A for drillhole logs) within the Department of Transportation right of way on Brow of Mountain Road West. The core is BQ size (1 3/8") and is currently stored at the field office location in the Kentville Industrial Park.

Results to date have outlined two main amygdaloidal flows with zeolite concentrations averaging 10 % and 20% respectively, and a potential third flow which was only encountered in CL 97-02, with a very low zeolite concentration of less than 5%. Approximate thickness for the flows are 4 m, $2\frac{1}{2}$ to 3 m and 1-2 m respectively. (Figure 3 for cross-section). There is very little overburden in the area and each drillhole started on bedrock. Possible ore estimations for the amygdaloidal zone are almost 1,000,000 tonnes.

TONNAGE ESTIMATES SUMMARY

Volume of material	Specific Gravity	Gross Tonnage	Tonnage Factor	Net Tonnage (Zeolite recovery)						
First Amygdaloidal Zone										
1,600,000 m ³	2.52	3,936,000 tonnes	10%	393,600 tonnes						
Second Amygdaloidal Zone										
1,200,000 m ³	2.46	2,952,000	20%	590,400 tonnes						



The volume was calculated using the distance between the drillholes, extending 200 m out to the north, south and west from drillholes CL 97-01 and CL 97-02, and using a thickness of 4 m for the first amygdaloidal zone and 3 m for the second amygdaloidal zone. The specific gravity was determined in laboratory testing and is outlined in the next section.

Ore estimations are extremely difficult to predict due the high uncertainty of amygdaloidal basalt continuity and a varying zeolite concentration further than 50 meters from away from the drillholes. Due to the nature of this drill program, only approximate reserve calculations could be performed with a high degree of uncertainty.

ANALYTICAL AND LABORATORY RESULTS

Specific Gravity

Specific gravity (SG) tests were performed on section of core from Morden Road.

Testing was completed at the company office in Kentville, NS by Sandra Marshall, geologist. The method used was a ratio of weight suspended in air and weight suspended in water. The specific gravity was calculated using the following formula:

Initial results indicate the bulk density of whole core samples of amygdaloidal basalt averages 2.46 and massive basalt averages 2.57. The following table summarizes the results:

Sample Number	Sample Location	Description	Wair (g)	W water (g)	S. G.
CL 97-01	CL 97-01 Box 1 266 – 2.73 m	Light grey, Amygdaloidal basalt	86.6	53.9	2.64
CL 97-02	CL 97-01 Box 1 9.19-9.28m	medium grey, massive basalt	201.5	122.5	2.55

CL 97-03	CL 97-01 Box 3	medium grey,	90.8	54.5	2.50
	11.94-12.00m	amygdaloidal basalt			
CL 97-04	CL 97-02 Box 1	medium grey,	100.7	61.8	2.59
	4.46 – 4.53 m	Massive basalt			
CL 97-05	CL 97-02 Box 2	light grey,	131.2	80.4	2.58
	7.39 – 7.48 m	amygdaloidal basalt			
CL 97-06	CL 97-02 Box 2	Brown,	81.7	43.3	2.13
	7.77 – 7.82 m	amygdaloidal basalt			

It was noted from specific gravity results in separate regions that red/brown amygdaloidal basalts generally had a lower SG due to higher concentrations of zeolite and lesser amounts of magnetite. Massive basalt has a standard SG of 2.71 and the samples from Brow of Mountain Road West drillcore have a SG of 2.57 due to a fine grained zeolite present in the groundmass of the basalt. Research is current and ongoing with specific gravity.

Thin Section Work

Thin sections were made of the massive basalt to determine what the mineral assemblage was for the flows in this area. It was also planned that the sections would aide in identification of the coatings present in the amygdules. The basalt contains plagioclase (albite), clinopyroxene (augite), volcanic glass and magnetite (3 – 5%). Some stilbite was identified in the section in small amygdules. The minerals lining the cavities of the amygdules (coatings) were very hard to identify, and due to a lack of crystal structure, conventional means of identification in this section were not applicable. Some high birefringent material was noted in some of the amygdules and was identified as celadonite and chlorophaeite. The rest of the coatings have been classed as clay minerals and have not yet been identified. Distinct zoning of the minerals lining some open amygdules was also noted. These zones were differentiated by a color change in plane polarized light and in a couple instances these changes were noted in the texture of the minerals.

Methylene Blue Tests

Methylene blue tests are currently being conducted to outline another method for zeolite identification. The methylene blue will dye certain types of zeolite with high surface area, can give rough field measurements for CEC and also indicate porosity and permeability in the basalt. Preliminary tests indicate methylene blue will dye only the outside edges of clear zeolite crystals (heulandite, clinoptilolite and analcite) and not the flat planar surfaces of the crystal. The white zeolite (heulandite, clinoptilolite, stilbite, thomsonite, scolecite and mordenite) does not stain in the small amygdules. The basalt stains blue quite readily which indicates a high rate of porosity with fairly good permeability. The coatings, both in the groundmass of the basalt, in open amygdules and coating zeolites) stain to a slight degree. The lighter colored coatings stain slightly and the darker ones maintain their dark color with only a slight change to the overall color. Research is currently ongoing. pH tests will be completed for this site as they will aide in determining what applications will be suitable for the amygdaloidal basalt (i.e. in concrete admixtures, soil amendments, horticulture, etc.).

CONCLUSIONS AND RECOMMENDATIONS

C₂C Mining Corporation is in the early stages of evaluating Brow of Mountain Road West as a commercial production site for zeolite. Efforts will continue to be focused on characterizing the deposit through laboratory analyses and conducting magnetic separation tests to determine percent yields for the deposits. Currently, yields from magnetic separation at other viable sites are 5 to 10% lower than estimated through visual analysis and substantial amounts of zeolite remain in the basalt fraction. Heavy mineral separation has been proven to be a viable method for extraction of the micronized zeolite from the basalt. A more detailed diamond-drilling program should be carried out to provide more information about the deposit and to outline the boundaries of the economically viable zones. Research and development should focus on product application studies and determining a suitable market region for zeolite from Morden, Nova Scotia.

Sandra L. Marshall

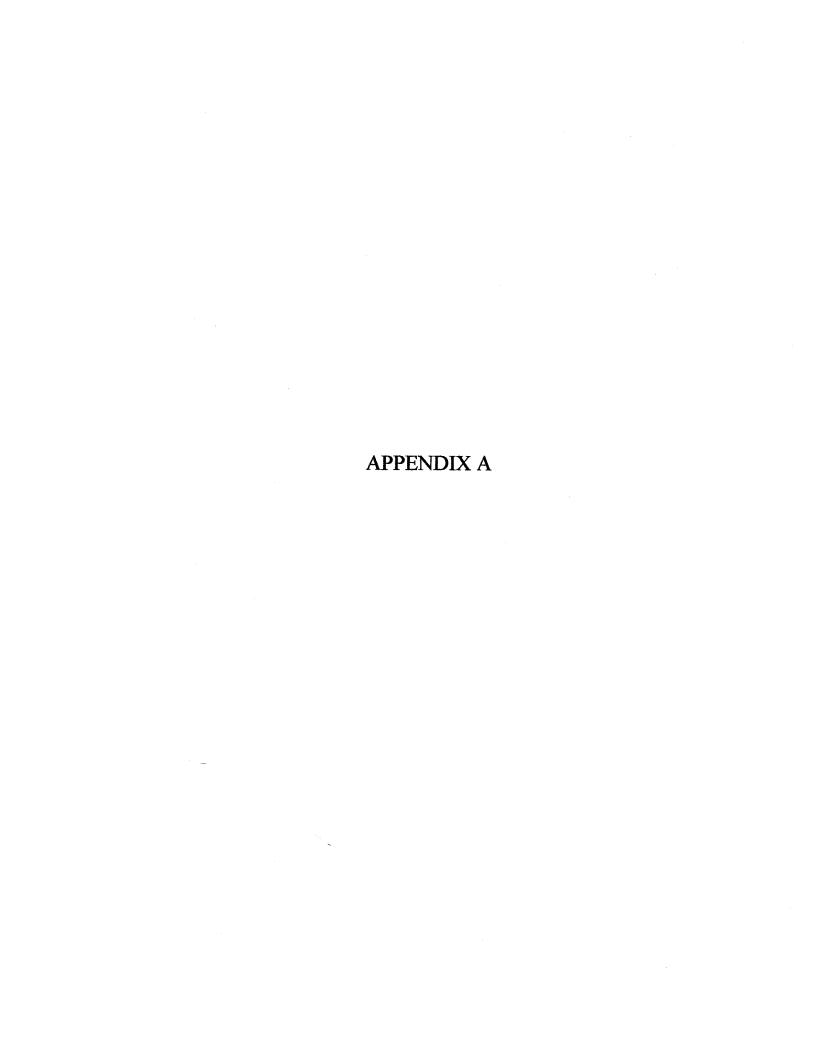
Geologist

CERTIFICATE OF THE AUTHOR

- I, Sandra L. Marshall, geologist for C₂C Mining Corporation of 11 Calkin Drive, Kentville, NS certify that:
- 1. I am a graduate of Acadia University, Wolfville and hold a BScH Geology (1997).
- 2. I have been a geologist for 2 years and have been employed with C₂C Mining Corporation since 1997.
- 3. This report is based on personal examination during the period of September 1997 to August 1998.

Sandra L. Marshall

Geologist





	21424	Form No.	1
REFS.	21421	_	ı

Department of Natural Resources		MAP 2/ H2A Form No. 10
Tratulal Nesoulces		REFS.
		21425
STATEMENT OF ASSESSMEN	T WORK EXPENDITION	BS ():00
(N.B. Complete as necessary to substantiate the total c	laimed)	E K
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5. Other laboratory		
o. Gid: a) Linecutting	. lem	
b) Picket setting	· km	
/. Geodivsical Surveys:		
Airborne: a) EM	km	卫馬力
b) Mag or Grad	tema :	
d) Combination	l-m	
e) Other8. Geophysical Surveys:	km	
Ground: a) EM	•	20
o) Seismic Soundings		
o) wagnetic/tentific	lema	
d) II/Resistivity	1	
e) Gravity	l/m	
3. Geochemical Surveys:	km	
a) Lake, stream, spring		
(seds/water)b) Rock/core/chips	samples	
c) Soil/Overhurden	samples	
		
f) Sample Collection	days	
10. Drilling:		
a) Diamond (#holes/m)	<u>2 / 33 m</u>	44125.°°
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c) Rotary (#hole/m)		
e) Reverse circulation		-
(#holes/m)	m	
f) Logging, supervision etc.	12 . 050	Y/40 1 (170 00
g) Sealing (# noies)	days@ 50.	×160,00
11. Other: (describe) Transportation en 30 Km	1000	\$300.00
		
	SUBTOTAL	5 E 2 2 E 06
OVERHEAD COSTS 12. Secretarial Services		= 2080.
14. Office Expenses (rent, heat, light etc.)		
13. Field Supplies		300.00
10. Compensation Paid to Landowners		_ _
17. Legal Fees		132.50
	SUBTOTAL	3532.50
I hereby certify that the above information is true and corr	TOTAL	<u>*58.5750</u>
assessment work credit.	oct and that it has not belon	re been submitted for
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	I am duly authorized to m	ake this certification.
(Position in Company or Licensee)	•	
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this 26th day of Regust 19 98		
Name and Address of Licensee! Cal Mining	Corporation	
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C₂C MINING CORPORATION

DIAMOND DRILL RECORD

PROPERTY:

Crown Land

HOLE NUMBER:

CL 97-02

LOCATION:

Brow of Moutain Road West

DIP:

-90

NORTHING:

0363279

START DATE:

November 27, 1997

EASTING:

DEPTH:

4997186

END DATE:

November 27, 1997 BQ

ELEVATION:

15 m

CORE DIAMETER: LOGGED BY:

Sandra Marshall

Deptl	h (m)	Basalt Section				Zeolite Secti	ion		HCL	Sample #
From	То	Color Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	Reaction	Sumpre II
0		0 to 1.5m - light grey with some open amygs lined with mustard yellow coating, coating is present throughout groundmass along with a dark green coating and a high % of white laths (~1 - 2 %). 1.5 to ~6 m - medium grey color with a green tinge. Small open amygs (1 - 2 mm) are filled with a black and dark green mineral. Green mineral is also in the groundmass with a smaller % of white laths (< 1%). 6 to 7.17 m - medium to dark grey without a green tinge. Coatings are still present - green black and white specks, just not as conc. As in above.		in 1/2 of the co drillholes. This basalt it's intru- pathway throug- mineral that ca- vugs and surro- amygs are com- instances, zeol-	ore. It is differs one has sinding, but the ghost the section of the section of the section of the section of the sect a 2 cm version of the section of the sec	erent from the caller groundmand zeolite and other. Also of note and with a thumbite (1 - 2 mm to with the black coatings aroundern. Cuts core	in' of amygdaloidal other ones noted in ass characteristics aner minerals show are is the abundant blunail. It is present thick) in the amygs a mineral and in sound the black mineral at a high angle and sent.	n other as the a definate ack in large . Some me	No reaction	SG - 2.59 4.46-4.53
7.17	7.32								No reaction	

	h (m)		Basalt Section				Zeolite Sec	tion		HCL	Sample #
From	То	Color	Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	Reaction	
		·	a 'transition zone' (??) - basalt is a The black mineral is filling some						ack.		
7.32	7.66		dark green, mustard yellow and black specks in goundmass. White laths present. Small filled amygs (~1mm) have dark green and mustard yellow minerals inside, only a few are open with just a coating inside.	7 - 10 %	2 - 5 mm	white clear pale yellow pale pink	heu/clino/st heu/clino ?? ??	dark green black	on some of the coatings black specks were noted. Identified some amygs with a dark grey to translucent appearance to them, have not seen before in core.	No reaction	SG - 2.58 7.39-7.48n
7.66		intermixed w A possible 'tra Some open ar	llow / yellowish brown color ith a light brownish red basalt. ansition zone' or a soil horizon. mygs - can see green and w and a small amount of red		section thouga pinkish/red	gh. Blotchy loc	oking. Colors olite is staine	range from whit d a yellowish col	ical amygdaloidal te to clear and also lor from the basalt/soil.	No reaction	SG - 2.13 7.77-7.82m
7.84		with a slight red tinge.	about 40% of the amygs are open with a coating inside. A large amount of blue/green and dark green coating in the basalt. More than seen in other core sections.	5 - 10%	< 3 mm (avg of 1mm)	white clear pale pink orangish pink	heu/clino/sti heu/clino ?? sti??	blue green dark green mustard yellow dark red	Amygs are very spoardic, no consistancy to section. Blue green and dark green coatings dominate section.	No reaction	
8.53		grey until 9m	can see large (~ 5mm) open amygs with a green coating and a black mineral inside the green coating.	clear heu/clino thomsonite. (except			No reaction (except for on amyg that reac				

Deptl	h (m)	Basalt Section				Zeolite Sec	tion		HCL	Sample #
From	То	Color Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	Reaction	
		change)						The orangish zeolite is in radiating bundles that fan out from edged of amygs and penetrate into the white zeolite.		L:
9.34	11.46	medium grey groundmass contains white, green and black specks. Until about 10.25 m the color is constant, but then gradually changes to a reddish brown.						No reaction		
11.46	ï	Section is amygdaloidal for first 50 cm but is very sporadic for rest of section. Can see some evidence of a 'bubble train' in some parts, but nothing consistent. Basalt color changes from reddish brown to medium grey to a medium greenish grey at end of section. Some amygs are filled with just the coating mimerals and others are just lined with the same minerals.	1 - 2 %	1 - 3 mm (some large blebs are over 10 mm)	white pinkish clear	heu/clino/sti sti? heu/clino ??	yellowish green mustard yellow	distinct zoning - noted a pinkish zeolite lining an amyg filled with white zeolit Also noted the orangish stilbite encompassed in pinkish/white zeolite amygs	No reaction	
~ 14.0	15.0	green grey See abundant dark green minerals in small amygs, white laths and black specks. At 14.72 m - a 2 mm white vein of zeolite, very low angle to core						No reaction		

E. O. H.

^{*} Drilling completed by Maritime Diamond Drilling Ltd.

C₂C MINING CORPORATION

DIAMOND DRILL RECORD

PROPERTY:

Crown Land

HOLE NUMBER:

CORE DIAMETER:

CL 97-01

LOCATION:

Brow of Moutain Road West

DIP:

-90

NORTHING:

0363808

START DATE:

November 26, 1997

EASTING:

DEPTH:

4997297

END DATE:

November 26, 1997 BQ

ELEVATION:

18 m

LOGGED BY:

Sandra Marshall

Deptl	1 (m)		Basalt Section			A MANAGE	Zeolite Secti	on		HCL	Sample #
From	То	Color	Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	Reaction	
0	4.75	dark grey	Groundmass has black, light green/blue, mustard yellow and white specks. Basalt changes to a slightly reddish medium grey at the end of section and is not as fine grained as in the first part of section. Can see more white specks and more of the green and black minerals	~10 %	1 - 5 mm	white clear pale yellow slightly pink	heu/clino/sti heu/clino ?? sti?	dark green/blue mustard yellow brown/mustard	Can see some open amygs with coatings. Also indetified thomsonite, can see the banding in some of the amygs.	No reaction	SG - 2.64 2.66-2.73m
4.75		4.75 to 5.25 m cone of black the coating the and green. Sn some blebs of 5.25 to 6.85 m	n - reddish grey with a high mineral, can see specks of roughout - mustard yellow nall white blebs (zeolite) and just mineral coatings. n - dark dark grey with larger with a black mineral, easily		a few blebs o		t 30 cm - larg		low angles and only bs in the dark grey	No reaction	TS CP9701B2 at 10.31m SG - 2.55 9.19-9.28m

Depth (m)		Basalt Section	Zeolite Section							Sample #
From To	Colo	Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	Reaction	
	1 - 3 mm and pink in the gro 6.85 to 1 the section 11.5 m at also 1-2.0	clay-like and the size ranges from n. Some amygs are filled with white ish zeolite. Can see white specks oundmass also. 3.85 m - white specks dominate on, 1-2 % but fade out around are 'replaced' by black specks, %. Also note some green specks	е							SG - 2.50 11.94-12.0m
13.85 13.8	and dark veinlets a bed. Also around so	wn colored basalt (?) with green red coatings present. Little red are visible throughtout this marker o note a mustard yellow coating ome of the zeolite ale soil horizon?		Full of zeolite (white and pink color) with a conc of ~20%.						
13.985 ~17.	reddish b starts to f end of sec	om a medium/dark grey to a rown grey to a med/light grey and ade into a reddish grey color at ction. The groundmass contains n 'coating', white and black	~25 % until around 15.0m and drops off to 7-10% and decreases to 3-5% at end of section.	1 - 5 mm	white clear pinkish darker pink pale yellow	heu/clino/sti heu/clino sti? ?? ??	dark blue/green mustard yellow dark green orange/red	Possibly some mordenite (can see some red rosetts in a couple amygs, but not a clear identification tool for mordenite) Can see some zoning of amygs (white and dark pinkish reddish) At end of section amygs are elongated and flattened and less concentrated. Note a few zeolite veinlets throughout.	No reaction	

Depth	Depth (m)		Basalt Section		Zeolite Section						Sample #
From	То	Color	Description	Conc (%)	Size (mm)	Color	Zeolite	Coatings	Description	HCL Sar Reaction	
~ 17.40		grey	Noted some small open amygs filled with dark green and black coatings. White specks also present.	One zeolite vein at 17.75 m, cuts the core horizontally and is < 2mm thick. It is white color with some green coatings and some reddish orangish staining.						No reaction	

E. O. H.

^{*} Drilling completed by Maritime Diamond Drilling Ltd.