

016513

Property File

THE BAKER CREEK LIMESTONE PROSPECT

093P023

Prime Lime + Marble

INTRODUCTION

At the request of Mr. Earl E. Curry, Chairman of the Board of Precambrian Shield Resources Limited, the writer examined a limestone prospect on the Sukunka River, south of Chetwynd and approximately 200 road kilometres southwest of Dawson Creek in northeastern British Columbia. The Baker Creek limestone prospect is held by Karey Shearing for his wholly owned company (Prime Lime and Marble Company) under an application for Crown Land for the purpose of limestone quarrying. The area is southwest of the "Northeast Coal Development" and west of the B.C. Rail construction. The writer, assisted by Robert Clarke, visited the property on the 2nd of August, 1983. Mr. Shearing's address is Box 96, Pouce Coupe, B.C., VOC 2C0. Telephone (604) 786-5557.

Interest in the limestone deposits in the area has increased due to the lime transportation subsidy offered by the Alberta government to those Alberta farmers with requirements to remedy acid soil conditions. The Peace River district of northwestern Alberta and northeastern British Columbia contains the largest extent of acid soil in those provinces, a condition that is worsened by the extensive use of chemical fertilizers. High quality limestone is used in the pulp industry. Processing of limestone for the production of hydrated lime and calcium chloride may also be of interest to local markets.

No geological map of the lease area was available to the writer but the west adjacent map indicates that the limestone horizons examined are of Mississippian age. These same horizons intersect Highway 97 near Pine Pass and Mr. Shearing is actively pursuing the acquisition of a lease in that region as it is approximately the same distance from Dawson Creek. Dawson Creek is the centre of the Peace River District in that the main farming areas are within 200 road kilometres. The 200 kilometre distance is key to the top subsidy range in the Alberta government offer to Alberta farmers.

Visually, the limestone "core horizons" appear very clean and offer easy quarrying since a "hogs-back" of these "core beds" has little overburden and is free of apparently lower quality hanging-wall limestone beds. In fact the

"core beds", which have a nearly vertical attitude and are thickly bedded in nature with an apparent homogeneity in composition, tend to "weather-up" differentially in comparison with thinly bedded overlying and underlying beds of less homogeneous limestone.

Mr. Shearing estimates that a test run of 20,000 tonnes could be quarried, trucked to Dawson Creek, crushed and sized for a total cost of \$390,000 or \$19.50 per ton. This figure includes the cost of building three kilometres of road along the Sukunka River valley. If sold locally to British Columbia farmers at \$25.00 per ton at Dawson Creek, it would undercut Trilime Resources' current price of \$44.00 per ton at Dawson Creek. If sold to Alberta farmers at a price of \$15.00 per tonne at the quarry site, the Alberta transportation subsidy would be triggered. Due to a precedence set in southern Alberta, a trucking distance from quarry to a central crushing site and then an additional trucking distance to user would result in a double or 400 kilometre maximum subject to subsidy. Actual freighting costs, if lower than the allowable, would accrue to the benefit of the user, reducing his \$15.00 per tonne quarry price.

Without experience in operating a quarry for agricultural limestone or dealing with the Alberta government on the transportation subsidy, the actual numbers are all very speculative, however, Mr. Shearing's proposal of a 20,000 ton test-run with the product based out of Dawson Creek has merit. If actual costs were to be as high as \$25.00 per ton f.o.b. Dawson Creek, it seems likely that the product could be sold with little or no loss and valuable experience gained. The product would have to be available during October so there is quite a short time remaining for the test run to be implemented. Mr. Shearing indicates that the British Columbia government would be cooperative in issuing the working permit necessary to build the road and to commence quarrying, as long as there are sufficient reserves and merit to the overall operation to warrant the disruption to the natural state of the lease area.

Mr. Shearing would be agreeable to a modest net-profit arrangement on a long-term operation but has little interest in or background for the actual quarrying and preparation aspects of the venture. He would be interested in the marketing of agricultural limestone in the Peace district as he has a long-term business association with that region. Personal relationships with individual farmers would be necessary for the success of an agricultural

limestone business.

The writer does not expect results for five samples submitted for analysis to Cantest Laboratories of Vancouver until mid August. Visually, limestone "core beds" are expected to be in excess of 95% calcium carbonate, which would be adequate for agricultural limestone. The writer suggests that Precambrian contact Mr. Shearing for meetings in Calgary immediately if Precambrian finds the proposals to be of interest but, no actual commitments should be made until results of the analyses are received.

## GEOLOGY

The limestone horizons of most interest strike north to N20W and dip 75° to 85° to the west. These relatively thick-bedded horizons are fine-grained, light brownish-grey on the fresh surface and light grey on the weathered surface. No geological map of the immediate area was available at the time of the examination but the west adjacent map 11-1961 Pine Pass indicates that these horizons are of Mississippian age. The only other readily accessible area for these units is at Pine Pass on Highway 97, approximately the same distance from Dawson Creek (see "Map 1", Provincial Parks of B.C. Map). These "core beds" form a spine on the south flank of Mount Merrick (see "Map 2", Sukunka River, topographic sheet, scale 1:50,000). The local configuration of the outcropping of these beds in a "hogs back" ridge with no significant overburden or overlying beds is not likely to be duplicated at Pine Pass and lends itself to easy quarrying with only minor stripping. Map 3 shows the Baker Creek lease of Mr. Shearing and the Westmin lease to the southeast. Apparently Westmin have just completed an engineering and market study of this limestone prospect and are probably keying on the same "core beds". Mr. Shearing was told by Westmin engineers that they are contemplating development of a deposit grading more than 97 percent calcium carbonate.

The main break in slope of the "core beds" outcropping is designated as Point A (see Map 4, scale 1:50,000) and occurs at 2,700 feet in elevation. From Point A the "hogs back" extends south-southeasterly for 330 metres with no significant overburden. The no overburden situation, along the sides of the ridge, probably ranges from approximately 20 metres vertical at the southeast to 50 metres vertical at Point A over a length of 330 metres.

Assuming a minimum width of 45 metres, length of 330 metres and a vertical quarry depth of 30 metres, a potential of very clean quarry product, well in excess of 1,000,000 tonnes is readily available. The "core beds" probably greatly exceed the 45 metres assumed. Stripping of overburden from the hanging wall western flank of the ridge would make a much larger tonnage available. Stripping further to the southeast along the ridge would expose significant tonnages near the valley floor. Large reserves to the northwest at elevations above 2,700 feet are obvious (see Map 4).

Four grab-chip samples to represent 5 metre cross-sections were taken near Point A. Sample 3290 includes the 5 metre section westerly from Point A followed by 3291 and 3292, each representing 5 metres. Sample 3293 extends from Point A easterly for 5 metres. This 20 metre section should give an indication of the grade of the 45 metre minimum suggested above. Wider expanses were readily available below the Point A site but offered flat, impossible-to-chip" sampled surfaces. For proper sampling, shallow trenches across the ridge could easily be blasted and would have a cost advantage to drilling. Sample 3294 was a picked sample of the cleanest limestone available but is not expected to vary significantly from the grab-chip samples.

#### **ENGINEERING CONSIDERATIONS**

If a full scale quarry operation is to be established on the Baker Creek lease, then a wide ranging engineering study would be required so as to maximize the recovery of clean limestone at the lowest possible quarrying cost and also to minimize changes to the local environment. However, the nature of the exposed portion of the deposit along the "hogs back" ridge is such that a 20,000 tonne test-run would not upset pit design for future large scale exploitation of the deposit. It is the understanding of the writer that the government of British Columbia would issue a permit to commence road building and open a quarry, if a submission is made that there are adequate reserves and grade to warrant the disruption to the local environment that such activity would cause.

Road construction along the Sukunka River valley from the existing road access to the site would amount to 3 kilometres. No significant grades would be encountered on this road as the 2,500 foot contour could be followed for about 1 1/2 kilometres rising to plus 2,600 feet over the final 1 1/2

kilometres.

## MARKETING CONDITIONS

The Agriculture Canada Publication 1521/E on the subject of "Farming acid soils in Alberta and northeastern British Columbia" and Alberta Agriculture's "Agriculture Lime Freight Assistance Program" outline accompany this report.

Mr. Shearing has prepared three outlines relating to costs for a test-run of 20,000 tonnes and effects of the Alberta subsidy on costs of agricultural lime to Alberta users (see Appendix). The only comment the writer has regarding costs as outlined are that no provision was made for drilling and blasting since he anticipated the use of talus material. Even if enough clean talus material was available, there would be some cost for the blasting of oversize material.

## LIMESTONE QUARRY SITES

Map 1 indicates the location of the Baker Creek lease, Westmin lease and Pine Pass area. The Trilime Resources lease is near Bear Lake. Mr. Shearing has interest in some leases in the Bowrun River area, which is too distant from the Peace district to be of interest for agricultural lime purposes. The Bowrun deposit is metamorphic and the marble from that area is not only an attractive building-quality stone but has a very high calcium carbonate content.

## SUMMARY

The writer has attempted to present the Baker Creek limestone prospect with an emphasis on the geological setting with only token remarks to the material handling and marketing aspects. Precambrian's coal division staff will be able to assess the quarrying and related material handling problems. Personal discussions with Mr. Shearing and investigations initiated by Precambrian will clarify marketing potential.

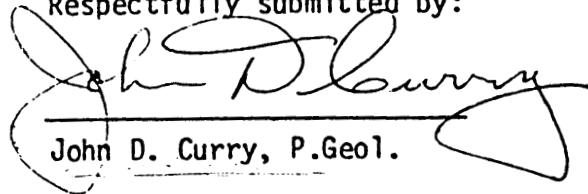
Clean appearing, nearly vertical dipping, "core bed" limestone horizons with a minimum thickness of 45 metres are overburden-free for a length of 330

metres below the 2,700 foot elevation over an average, vertical overburden-free depth of 30 metres. This volume contains greater than 1,000,000 tonnes of easily mineable material. Stripping of the western flank of the limestone ridge and the overburdened ridge southeast of the overburden-free section would expose an even greater reserve. Above the 2,700 foot elevation, much greater reserves of the "core bed" horizons are available. Geologically and topographically the site appears ideal.

If the five preliminary samples grade in excess of 95 percent calcium carbonate and carry no significant amounts of those elements considered toxic for agricultural use, it is recommended that Precambrian pursue the proposal through the use of its in-house engineering group and discussions with Mr. Shearing.

Christina Lake, B.C.  
August 8, 1983

Respectfully submitted by:



John D. Curry, P.Geol.

442 - P.233  
"JACK" CURRY IN  
CHRISTINA LAKE : 447-6605



# CAN TEST LTD.

938 023  
Property File

To: 1523 WEST 3rd AVENUE, VANCOUVER, B.C. V6J 1J8 • TELEPHONE (604) 734-7278 • TELEX 04-54210  
John D. Curry - Prime Lime And Marble Ltd.

## PLASMA SPECTROGRAPHIC ANALYSIS CERTIFICATE

Christina Lake, B.C.

File No. 9545E

VOH 1EO

Date Aug. 28/8

Attention: Sukunka River Quarry

We hereby Certify that the following are the results of plasma spectrographic analysis made on limestone samples submi

Sample Identification		3290	3291	3292	3293	3294	DETECTION LIMIT
<b>MAJOR COMPONENTS</b>	<b>Percent (%)</b>						
Silica	SiO <sub>2</sub>	L	L	L	L	L	0.5
Alumina	Al <sub>2</sub> O <sub>3</sub>	0.045	0.13	0.12	0.087	0.10	0.01
Iron	Fe <sub>2</sub> O <sub>3</sub>	0.054	0.060	0.054	0.063	0.054	0.01
Calcium	CaCO <sub>3</sub>	94.6	93.9	94.9	93.7	96.2	0.01
Magnesium	MgO	0.23	0.26	0.26	0.42	0.27	0.01
Sodium	Na <sub>2</sub> O	L	L	L	L	L	0.01
Potassium	K <sub>2</sub> O	0.010	0.025	0.027	0.018	0.022	0.01
Sulphur	SO <sub>3</sub>	-	-	-	-	-	-
Loss On Ignition	L.O.I.	-	-	-	-	-	-
<b>TRACE COMPONENTS</b>	<b>Parts Per Million (P.P.M.)</b>						
Antimony	Sb	L	L	L	L	L	15.
Arsenic	As	L	L	L	L	L	30.
Barium	Ba	22.1	9.85	5.30	7.10	9.31	0.1
Beryllium	Be	L	L	L	L	L	0.3
Bismuth	Bi	L	L	L	L	L	50.
Boron	B	-	-	-	-	-	-
Cadmium	Cd	L	L	L	L	L	1.
Chromium	Cr	5.00	4.00	L	3.37	L	4.
Cobalt	Co	L	L	L	L	L	5.
Copper	Cu	6.05	L	L	3.20	L	2.
Lead	Pb	28.8	10.0	8.46	22.4	12.6	10.
Manganese	Mn	28.6	29.5	22.4	26.5	24.8	0.3
Molybdenum	Mo	L	L	L	L	L	4.
Nickel	Ni	7.45	L	L	4.70	L	3.
Phosphorus	PO <sub>4</sub>	84.3	74.5	68.3	69.3	68.0	40.
Silver	Ag	L	L	L	L	L	0.5
Strontium	Sr	179.	190.	184.	200.	186.	0.1
Tin	Sn	L	L	L	L	L	3.
Titanium	Ti	510.	22.5	22.6	21.6	15.2	1.
Tungsten	W	-	-	-	-	-	-
Uranium	U	-	-	-	-	-	-
Vanadium	V	2.07	1.86	1.85	1.43	1.35	1.
Zinc	Zn	4.78	4.70	7.76	4.12	2.70	2.

L = less than.

CAN TEST LTD.

Spectroscopist