CONTINENTAL LIME LTD.

MAGNETOMETER PROFILES AND CHIP SAMPLING OF THE CORNWALL CREEK LIMESTONE OCCURRENCE NEAR ASHCROFT, BRITISH COLUMBIA

Mineral Claims Lone Tree 1 to 4
Kamloops Mining Division

Geographic Coordinates
50° 43½' N
121° 20' W
NTS Sheet 92 I/11 W

Owner: G.D. Belik,
1815 North River Drive
Kamloops, B.C. V2B 7N4

Operator: Continental Lime Ltd.
215, 10451 Shellbridge Way
Richmond, B.C. V6X 2W8

Consultant: Halferdahl & Associates Ltd.
18, 10509 - 81 Avenue
Edmonton, Alberta T6E 1X7

Author: L. B. Halferdahl, Ph.D., P.Eng., P. Geol.

Date Submitted: 1993

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF APPENDICES

LIST OF TABLES

1. INTRODUCTION

Although some information on the quality of the limestone in the double-crested hill a short distance west of the Trans Canada Highway near Ashcroft, British Columbia, here termed the Cornwall Creek limestone occurrence, has been available since the work of Goudge (1945) in the 1930s and 1940s, Continental Lime Ltd. optioned claims covering it, in order to evaluate it in more detail. This report presents the results of a limited magnetometer survey, chemical analyses of 49 chip samples of limestone, check analyses of previous samples, and concomitant geological observations. The work was authorized by Continental Lime Ltd.

1.1 GEOGRAPHIC SETTING

1.1.1 Location and Access

The Cornwall Creek limestone occurrence is in the Intermontane Belt of southwestern British Columbia. It is about 331 km northeasterly from Vancouver along the Trans Canada Highway, and about 10 km south of Cache Creek, an important highway junction. The eastern side of the limestone occurrence is about 375 m northwesterly from the intersection of the Trans Canada Highway and the turnoff to the Town of Ashcroft about 5 km away by road. Ashcroft, with many infrastructure facilities, is in the valley of Thompson River and is served by the main lines of both the Canadian Pacific and Canadian National Railways.

The limestone occurrence may be reached from the Trans Canada Highway by driving northeasterly along a trail across a fairly flat field to the base of the limestone hill to join a northeasterly trending trail more or less parallel to the base of the limestone hill and along pipe of a formerly used irrigation system. Permission to cross this field and for access to other parts of the property may be obtained from David Belcham, P.O. Box 1209, Ashcroft, B.C. VOK 1AO, phone (604) 453-9623. Another tracked-vehicle trail ascends a dry valley near the middle of the east side of claim Lone Tree 2. This trail is blocked by large blocks of limestone about 200 to 300 m up it. Just past the blockade, a branch off this trail arcs around along a tributary valley to near the top of the hill (Fig. 2.1). It is the type of trail that may have been used many years ago for access to drill sites, but records of any drilling were not found in a search of the index to reports on assessment work in British Columbia. Gradients along the main trail and the branch trail past the blockade reach 12° to 14° so may not be suitable for a wheeled water truck.

1.1.2 Topography, Water, Vegetation

Claims Lone Tree 1 and 2 include a double-crested hill with peak elevations of more than 615 m. This hill rises steeply to precipitously above the field (elevation about 500 m) between it and the Trans Canada Highway. A southwesterly trending dry valley crosses the

eastern parts of claims Lone Tree 3 and 4, with the ground rising to an elevation of 700 m at the northeast side of claim Lone Tree 3, and continues to rise farther to the northwest. In the southeast parts of claims Lone Tree 3 and 4, gullies up to 6 to 8 m deep in the gravelly surficial cover, and tributary to the southwesterly trending dry valley indicate considerable overburden.

The southern parts of claims Lone Tree 2 and 4 are cut by the steep-sided valley of Cornwall Creek, whose water is almost all allocated to agricultural uses. However, it may be possible to obtain water for diamond drilling from the small reservoir above a control structure on Cornwall Creek on or near claim Lone Tree 4. With suitable pumps, water from it can probably be conveyed to any drillsite on the Lone Tree claims. With modest extension of an existing trail along or near the top of the ridge on the north side of Cornwall Creek, hoses can probably be moved *down* not *up* the steep valley side.

An intermittent creek flows southeasterly more or less through the middle of claims Lone Tree 1 and 3. A dugout has been constructed along it on claim Lone Tree 3, but the water in it in May 1992 was insufficient for drilling.

The vegetation consists of a few scattered pines, mostly scrub except in some of the valleys, and bushes, grasses, and cacti typical of the prevailing arid climate. Except for the cliffs and outcrops, the land is used for pasture. Reclamation and reseeding of any disturbed ground is important, because the arid climate is generally not conducive to natural revegetation. Two rattlesnakes were encountered on a hot day in early May 1992.

1.2 PROPERTY

The property consists of four two-post claims in the Kamloops Mining Division as follows (Fig. 1.3):

Claim	Tenure Number	Record Date	Present Expiry Date
Lone Tree 1-4	219850-5	1991 04 19	1996 04 19

These claims are owned by G.D. Belik of Kamloops, B.C. Their option to Continental Lime Ltd. is being terminated. Claims Lone Tree 1 and 3 are truncated along their northern boundary by 105 Mile Post Indian Reserve 2, so each is less than 25 ha. District Lot 445 covers part of the property (Fig. 2.1).

1.3 HISTORY AND PREVIOUS INVESTIGATIONS

The earliest report consulted by the writer, dealing with the regional geology of a large area surrounding the property, is that of Dawson (1895). His map (GSC Map 556) shows

the limestone just north of Cornwall Creek, that is now part of the Lone Tree claims. This part of British Columbia was subsequently traversed by other Geological Survey of Canada geologists, culminating with geological mapping at a scale of 1:253 440 by Duffel and McTaggart (1952).

Goudge (1945) examined and sampled the limestone that now forms part of the property (Appendix 1) as part of his investigations of Canadian limestone deposits.

McCammon (1959) also sampled the limestone that is now part of the Lone Tree claims (Appendix 1).

Monger and McMillan (1984) geologically mapped a large area including the property, with this work initially available as a GSC open file map, and subsequently as GSC Map 42-1989 (Monger, 1989).

In April 1991, Gary Belik of Kamloops, B.C. staked the Lone Tree claims, and subsequently optioned them to Continental Lime Ltd.

Later in 1991, Schindler (1992) geologically mapped the Lone Tree claims at a scale of 1:2500, and collected 20 chip samples of limestone, which were analyzed chemically (Appendices 2 and 3).

1.4 PURPOSE OF SURVEY

The purpose of the work was to evaluate further the quality of the limestone and to obtain information required for the spotting of diamond drillholes. The information obtained resulted in cancelling plans for diamond drilling.

1.5 SUMMARY OF WORK DONE

Four profiles totalling 870 m were surveyed by magnetometer.

Forty-nine samples of limestone with a total stratigraphic thickness of about 195 m were chipped and analyzed chemically. Geology was observed during the sampling and the magnetometry.

Check analyses on 16 samples collected in 1991 were obtained.

2. GEOLOGY

2.1 REGIONAL GEOLOGY

The property lies near the eastern boundary of the Eastern Belt of strata of the Cache Creek Group, in the part of British Columbia from which the Cache Creek strata were first described (Duffel and McTaggart, 1952). Strata of the Eastern Belt near Ashcroft are considered to be Permian in age (Monger and McMillan, 1984). They consist of variably deformed, and partly recrystallized masses of basalt, ultramafics, and melange which consists of blocks of

Pennsylvanian and early Permian carbonate in a matrix of Late Permian to Late Triassic chert and argillite. Regional faults trend mostly 10° to 20° west of north.

2.2 PROPERTY GEOLOGY

2.2.1 Stratigraphy

The sequence of sedimentary rocks on the property appears to form a moderately continuous section including a few faults (Table 2.1) with stratigraphic tops to the northeast based on orientations of corals observed during the sampling (Appendix 6, samples 5182, 6959). The sedimentary rocks are in fault contact at both top and bottom with basic volcanic rocks (Fig. 2.1). The carbonate rocks, mostly limestones, and non-carbonate rocks are about 450 m thick as measured and estimated near the base of the southeast side of the hill. The non-carbonate rocks consisting of argillite, shale, quartzite, chert, and breccia (Table 2.1) are in a layer about 50 m thick near the centre of the sedimentary sequence. The faults separating the carbonate rocks from the volcanic rocks (Fig. 2.1) seem to converge somewhat towards the northwest side of the property, so that the stratigraphic thickness of the two limestone layers and the intervening non-carbonate sedimentary rocks may be reduced from 450 m to about 200 m.

2.2.2 Structure

The sedimentary rocks strike about 125° and dip 60° to 90° NE with stratigraphic tops to the northeast. As noted (Table 2.1, Fig. 2.1) they are bounded on both top and bottom by faults. That on the southwest strikes about 155° and dips about 39° NE at the one place it was observed on claim Lone Tree 2 near the base of the scarp. Only part of the fault zone with brecciated clasts was observed. The trace of this fault on Fig. 2.1 is based on the magnetometer profiles (Fig. 3.1).

The northeast bounding fault is obscured by overburden; its position on Fig. 2.1 is based on the magnetometer profiles (Fig. 3.1).

Another prominent fault forms a cleft along the scarp 215 m northerly from the final post for claims Lone Tree 1 and 2. The cleft trends 97° and dips 76° N and appears to coincide with the attitude of the fault. In the cleft the fault zone is about 3½ m wide with irregular contacts. The fault zone consists of about 70 per cent breccia fragments in a black argillaceous matrix. The breccia fragments are up to 40 cm in maximum dimension. Some weather buffish. Most are whitish- to medium-grey limestone with sugary calcite grains 1 to 2 mm in size. About 2 or 3 m south of the cleft is what is interpreted as a splay from the main fault striking 154° and dipping

TABLE 2.1: STRATIGRAPHY OF THE PROPERTY

Near base of scarp at southeast side of hill with a few projections from the 1991 work at the top of the hill.

Unit	Thickness (m)
Basic volcanics, dark-greenish-grey, fine-grained, weather rusty	200 +
Fault, interpreted from magnetometry	?
Covered, interpreted as limestone from magnetometry	60-70
Siliceous and dolomitic limestone, variable: breccia, sugary and mottled, light- and dark-grey, coarse-grained, micritic	37¼
Fault zone, about 70 per cent angular fragments of whitish- to medium-grey sugary limestone with grains 1 to 2 mm, to 40 cm in size in black argillaceous gouge; includes 3 m of non-brecciated mottled white and grey limestone	~7
Siliceous limestone, medium- to light-grey, sucrosic	7
High-calcium limestone, medium-grey, recrystallized, grains 2 to 3 mm, few per cent brownish patches probably apatite	50
Limestone, white to dark-grey, recrystallized, mottled with whitish blobs, faults	23
Fault, with clasts of vesicular basalt, limestone, grey shale	4
Siliceous limestone, grey and white mottled, brecciated	5½
Non-carbonate rocks: argillite, shale, quartzite, chert, breccia with 25 to 30 per cent subround to angular masses to 15 cm in size in fine-grained matrix, grey-green on weathered surface and cut by a few whitish veins 1 to 3 cm thick	~50
Dolomitic and other limestone, medium- to light-grey, medium-grained, minor iron oxides (not sampled in 1992)	~75-85
Limestone and limestone breccia, mottled light-grey with blebs of white calcite with dark-grey interstices, 1 to 2 per cent rusty clay, few per cent rounded clasts of limestone in matrix of pale-greenish limy clay	28
Marble, mostly mottled lighter- and darker-grey, grain size 1 to 2 mm	16
Magnesian marble, mottled lighter- and darker-grey	8
Siliceous marble, mottled	4
High-calcium marble, mottled	5¼
High-calcium limestone, grey, medium- to coarse-grained, fossiliferous, reticulating network of iron oxides (not sampled in 1992)	~30
Siliceous limestone, medium-grey, medium- to coarse-grained, fossiliferous (not sampled in 1992)	23
Fault	?
Basic volcanics, dark	200 +

77° NE. This fault is about 30 cm wide with breccia fragments similar to those in the fault zone in the cleft.

Other faults are noted in Appendix 6. Some others can be interpreted from the magnetometer profiles (Fig. 3.1).

The steep dips and the attitude of the limestone strata with respect to the topography mean that any mining of this limestone for the manufacture of lime is likely to be from slot quarries. With the known faulting and brecciation, very detailed work will be required to learn if any of the better limestone layers are continuous enough to make such quarrying feasible.

3. MAGNETOMETER PROFILES

3.1 RATIONALE

After running a few orientation magnetometer traverses, four magnetometer profiles totalling 870 m were run across parts of the property (Fig. 2.1) in order to locate geological contacts and hence aid in spotting drillholes. However, no holes were drilled.

3.2 EQUIPMENT AND PROCEDURE

A Scintrex MP-2 proton magnetometer was used. Stations were chained by topofil and marked at 5-m intervals along each of the four profiles. At each station at least three readings mostly within 5 nT were recorded with the median or mean selected as appropriate for the reading at that station. At least every fourth station was re-occupied along each magnetometer line in order to correct for diurnal variations. No attempt was made to tie stations on any line magnetically to those on the other lines.

3.3 RESULTS

The results are plotted as four profiles in Fig. 3.1 with their locations on Fig. 2.1. They have been used in interpreting some of the geological contacts on Fig. 2.1.

4. QUALITY OF LIMESTONE

4.1 SAMPLING AND ANALYTICAL PROCEDURES

4.1.1 1991 Samples

During parts of five days from June 8 to 13, 1991, Dr. J. N. Schindler collected 20 "semicontinuous chip samples" (Schindler, 1992) from parts of outcrops mostly at or near the top of the double-crested limestone hill. These 20 samples were sent to three laboratories for analyses: Loring Laboratories Ltd., the Central Laboratory of Continental Lime Inc. in Tacoma, and Union Assay Office Inc. as follows:

Date of Report	Lab	File Number	Description
1991 07 11	Loring	34419	CaO, MgO, and SiO_2 determined by wet chemical methods in 20 samples
1991 09 25	Tacoma	-	$CaCO_3$, $MgCO_3$, Fe_2O_3, Al_2O_3, S, and Mn determined by ICP methods in 7 of the 20 samples
1992 03 26	Tacoma	-	P determined by ICP methods in the same 7 samples. This time manganese was reported as MnO with the same concentrations previously reported as Mn. They range from 83 to 346 ppm so these differences are not important.
1992 05 06	Loring	34419-1	R_2O_3 and LOI determined by wet chemical methods in 13 of the 20 samples (Appendix 2)
1992 05 27	Loring	34419-1	CaO determined by wet chemical methods as a check in 10 of the original 20 samples. 8 of these 10 samples were those previously analyzed for R_2O_3 and LOI (Appendix 2).
1992 06 05	Union Assay	479-493	CaO, MgO, SiO_2, R_2O_3, and LOI determined by wet chemical methods in 15 of the 20 samples previously analyzed by Loring (Appendix 2)

4.1.2 1992 Samples

Some 49 samples (Appendix 6) were collected by chipping outcrops for about 195 m stratigraphically across part of the southeast face of the limestone hill near its base. Chips were collected at intervals of 30/35 cm.

These 49 samples were analyzed for CaO, acid insoluble, R_2O_3, and LOI according to ASTM C25 and for MgO by standard atomic absorption techniques by Loring Laboratories Ltd., Calgary, Alberta (Appendix 5). Five of these samples with the lowest totals were also analyzed for SO_3 and P_2O_5 according to ASTM C25 by Loring Laboratories Ltd.

4.2 DISCUSSION OF ANALYTICAL RESULTS

4.2.1 1991 Samples

Tests of significant differences and regression parameters for the 1991 samples analyzed more than once are in Appendix 4. They show that only the following pairs of analyses are not significantly different at 5 per cent probability:

CaO	Loring/91 - Loring/92
MgO	Loring/91 - Tacoma
R_2O_3	Tacoma - Union Assay Loring/92 - Union Assay
LOI	Loring/92 - Union Assay

Only the following pairs of analyses have correlation coefficients of 0.8 or more:

CaO	Loring/91 - Loring/92 Loring/92 - Union Assay Loring/92 - Union Assay
MgO	Loring/91 - Tacoma Loring/91 - Union Assay Tacoma - Union Assay
SiO_2	Loring/91 - Union Assay
R_2O_3	Loring/92 - Union Assay

From this, one may conclude that the Loring analyses for CaO are consistent. The Loring analyses for MgO agree with those of Tacoma. The Union Assay analyses for R_2O_3 agree with Loring and Tacoma. The Loring determinations of LOI agree with those of Union Assay. The Loring analyses for CaO differ consistently from those of Union Assay: for the 1991 samples they are lower. The Union Assay analyses for MgO differ consistently from those of Loring and Tacoma. The Union Assay analyses for SiO_2 and R_2O_3 differ consistently from those of Loring. These statistics (Appendix 4) indicate that many determinations from the three labs do not agree.

Tacoma did not determine SiO_2. Some of the totals for the constituents determined by it are high enough that if the percentages of SiO_2 determined by Loring or Union Assay are added, the new totals will exceed 100.00 per cent. This suggests that the determinations by Tacoma of at least one constituent may be too high in some samples: probably CaO.

The totals range from 97.49 to 100.46 (Appendix 3). The highest total for the Loring analyses in which five constituents - CaO, MgO, SiO_2, R_2O_3, and LOI - were determined is 99.03 per cent: unacceptably low with the others worse, provided the reported R_2O_3 includes any P_2O_5 present. The totals for 11 of the 15 Union Assay analyses, again with five constituents, are less than 99.20 per cent, also unacceptably low. The totals for Tacoma cannot be compared directly with the totals for the other two labs because LOI was not determined by Tacoma: the

totals for the Tacoma analyses were obtained by adding in the CO_2 equivalents of CaO and MgO. Two of the seven totals for the Tacoma analyses are less than 99.00 per cent. Limestone analyses from other projects have shown that low totals can be caused by faulty LOI determinations, probably the result of the actual ignition temperature being less than 1000°C.

Indications of the correctness of the CaO determinations can also be obtained by calculating the difference between the LOI minus the CO_2 equivalents to CaO in $CaCO_3$ plus all of the MgO which is assumed to be present in dolomite. Some of the CaO is present in phosphates (Goudge, 1945, Appendices 1, 3, 5), and this phosphate is assumed to be apatite. Hence, the CaO equivalent to P must be subtracted from the determined CaO, before calculating the CO_2 equivalent to the CaO in $CaCO_3$. The percentages of P determined by the Tacoma lab were used for the 7 samples analyzed by it and applied to the same samples analyzed by the other labs. For the other 13 samples, the percentage of P was arbitrarily set at 0.5 per cent. This percentage may be high for some samples, but its selection is based on the analyses of two samples previously reported by Goudge (1945) and on five P_2O_5 determinations on samples collected in May 1992 (Appendix 5). For these 13 samples, the determined CaO was reduced by 1.51 per cent or a reduction in CO_2 equivalent of 1.18 per cent. With these reductions 10 of the 13 samples with sufficient determinations by Loring show LOI minus CO_2 equivalents acceptably positive (Appendix 3). Without these reductions 8 of the 13 samples with determinations by Loring show LOI minus CO_2 equivalents acceptably positive or close to it. With these reductions 11 of the 15 samples analyzed by Union Assay show LOI minus CO_2 equivalents acceptably positive (Appendix 3). Without such reductions, the LOI minus CO_2 equivalents for only two of the samples analyzed by Union Assay are acceptably positive or close to it. The foregoing provides a basis for suggesting that many of the CaO determinations by Union Assay err by being too high. Alternatively, if Union Assay's totals are too low because of too low determinations of LOI for the reasons previously mentioned, arbitrarily raising the Union Assay determinations of LOI to bring the totals to 100.00 will not require reducing the Union Assay CaO determinations for some samples. For all the foregoing reasons, and the fact that 7 of the 10 check CaO determinations by Loring are lower than the original Loring determinations (Appendix 3), the original Loring determinations of samples 3039 to 3058 are considered the best estimates of the CaO contents for these samples. They average 0.74 per cent lower in CaO than the Union Assay determinations for the same 15 samples (Appendix 4). In this connection the United States

National Bureau of Standards (1978) estimates an uncertainty of 0.3 per cent in the certified value of CaO in its standard argillaceous limestone.

4.2.2 1992 Samples

The analytical reports for the 1992 samples are in Appendix 5, and retabulated in Appendix 7, in which LOI minus the CO_2 equivalents have been calculated for three contents of P_2O_5: nil, 0.5 per cent and 1.0 per cent, by means of the equation:

$$CO_2 \text{ EQ} = 0.78478 \text{ [determined CaO} - 1.31693 \text{ (determined or assumed } P_2O_5)]$$
$$+ 1.09175 \text{ (determined MgO)} + 0.04231 \text{ (determined or assumed } P_2O_5)$$

The calculations in Appendix 7 show that by assigning 0.5 or 1.0 per cent P_2O_5 to the samples in which it was not determined, with concomitant reductions in the percentages of CaO contributing to the CO_2 equivalents, all but one or two of the 1992 samples have acceptably positive LOI minus CO_2 equivalents. However, the real significance of the P_2O_5 content in the Cornwall Creek limestones is that the determined CaO content must be reduced by 1.3 times the P_2O_5 content, because of its affect on the available lime after the limestone has been burned to lime. Therefore, with these reductions the 54.89 per cent CaO in sample 6963, the 1992 sample with the highest CaO content, will be effectively reduced to perhaps 54.24 or 53.69 per cent CaO. Further, sample 6963 is one of the few still having a negative value for LOI minus CO_2 equivalents, so further reduction in CaO content may be in order. Similar reductions in effective CaO content because of high P_2O_5 concentrations are applicable to many of the other 1992 samples. In short, it is concluded that because of its P_2O_5 content, limestone from the Cornwall Creek occurrence will result in lime with an unacceptable percentage of available lime.

Perhaps the non-carbonate layer of sedimentary rocks is worth sampling to learn its concentration of P_2O_5.

L. B. Halferdahl, Ph.D., P. Eng., P. Geol.

Edmonton, Alberta
1993 02 11

5. REFERENCES

Dawson, G.M. (1895) Report on the area of the Kamloops map-sheet; Geol. Surv. Can. Ann. Rept. for 1894, new series, v. VII, pt. B and map 556.

Duffel, S. and McTaggart, K. C. (1952) Ashcroft map area, British Columbia; Geol. Surv. Can. Mem. 262.

Fishl, Peter (1992) Limestone and dolomite resources of British Columbia; B.C. Min. Energy, Mines Petr. Res., Min. Res. Div., Geol. Surv. Br., Open file 1992-18 p. 72-73.

Goudge, M.F. (1945) Ashcroft *in* Limestones of Canada, Their Occurrence and Characteristics, Part V, Western Canada; Can. Bur. Mines, Rept. 811, p. 183-185.

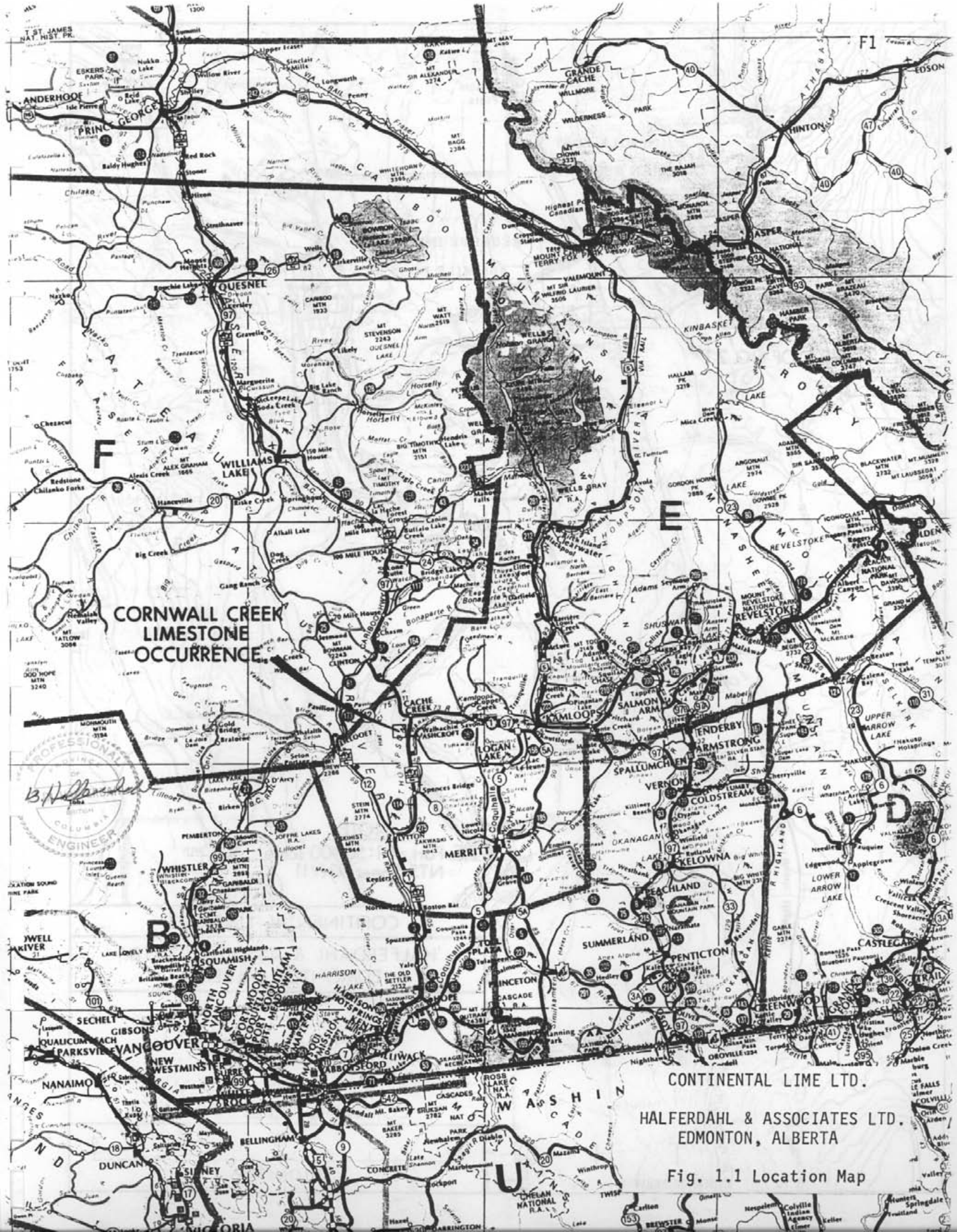
McCammon, J. W. (1959) Limestone deposits of the Ashcroft-Clinton area; B.C. Min. Mines Ann. Rept. for 1958, p. 92-93.

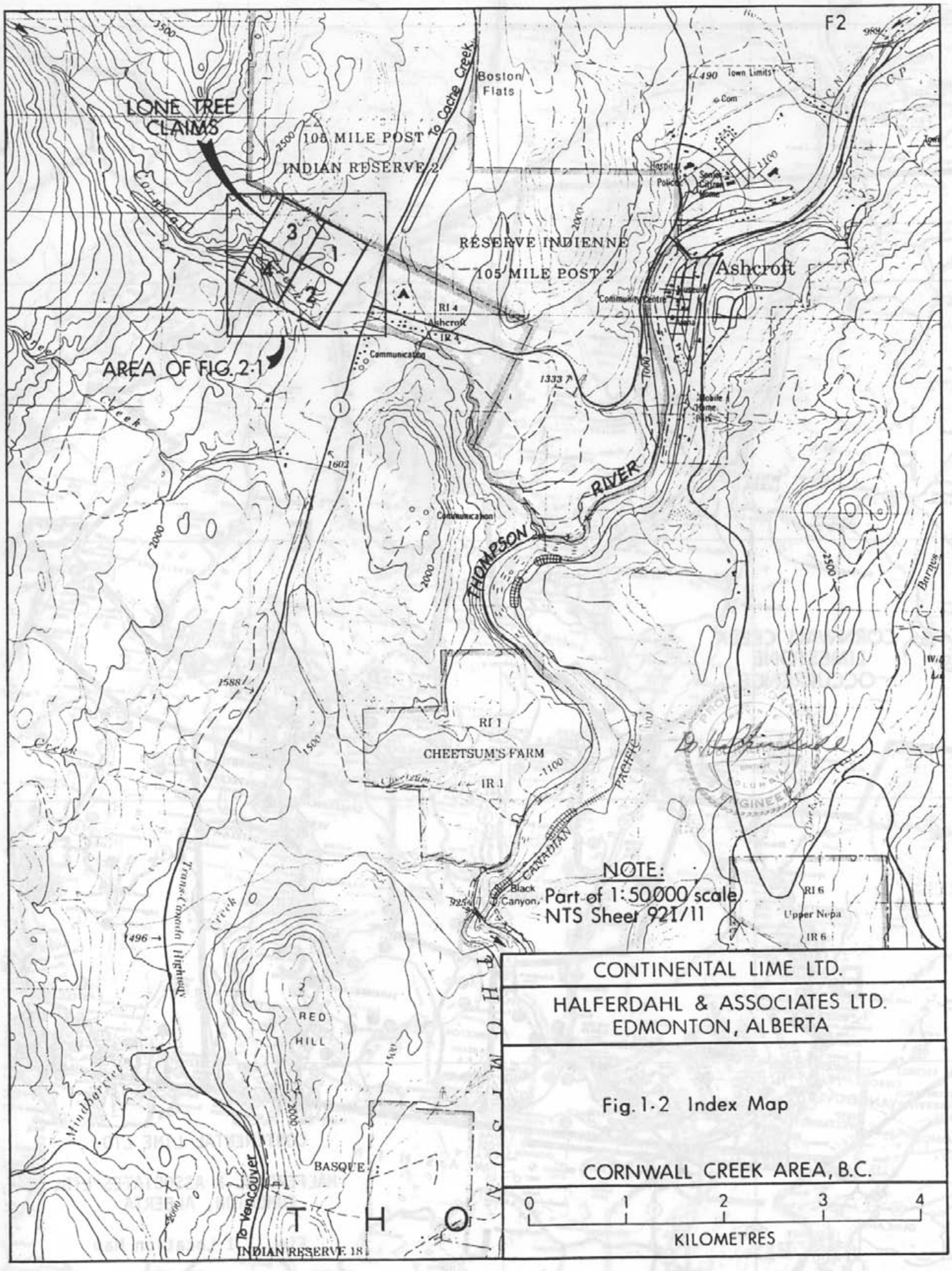
Monger, J.W.H. (1989) Geology of Hope and Ashcroft map areas, British Columbia; Geol. Surv. Can. Map 42-1989, Sheet I

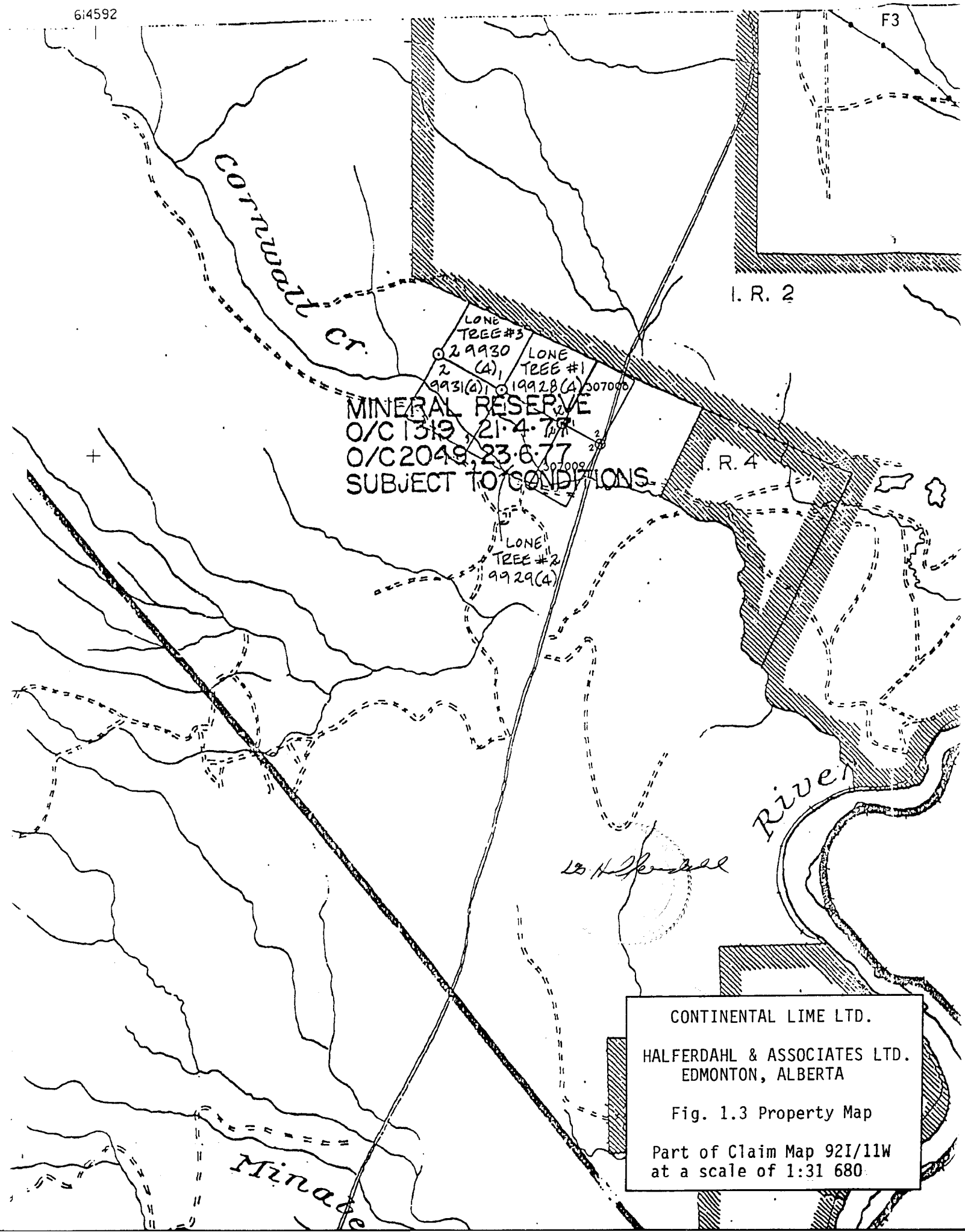
_____ and McMillan, W.J. (1984) Bedrock geology of Ashcroft (92 I) map area; Geol. Surv. Can. Open File 980, 1:125,000 map, chart, notes.

Schindler, J.N. (1992) Geological and sampling report, Lone Tree 1 to 4 claims; B.C. Min. Energy, Mines Petr. Res. assessment rept. 22278, 15 p., 6 fig., 3 appendices.

United States Bureau of Standards (1978) Certificate of analysis, standard reference material 1c, argillaceous limestone, 1 p.


CORNWALL CREEK
LIMESTONE
OCCURRENCE
F1
CONTINENTAL LIME LTD.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA
Fig. 1.1 Location Map


F2
LONE TREE CLAIMS
105 MILE POST
INDIAN RESERVE 2
RESERVE INDIENNE
105 MILE POST 2
Boston Flats
To Cache Creek
Ashcroft
AREA OF FIG. 2-1
THOMPSON RIVER
CHEETSUM'S FARM
IR 1
RI 1
RI 4
Ashcroft
IR 4
RI 6
Upper Napa
IR 6
Black Canyon
Trans-Canada Highway
RED HILL
BASQUE
INDIAN RESERVE 18
To Vancouver
Town Limits
Hospital
Police
Senior Citizens Home
Community Centre
Museum
Mobile Home Park
Communication
Cornwall Creek
Mudhorse Creek
CANADIAN PACIFIC
C.N.
C.P.
NOTE:
Part of 1:50000 scale
NTS Sheet 92I/11
CONTINENTAL LIME LTD.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA
Fig. 1-2 Index Map
CORNWALL CREEK AREA, B.C.
0 1 2 3 4
KILOMETRES

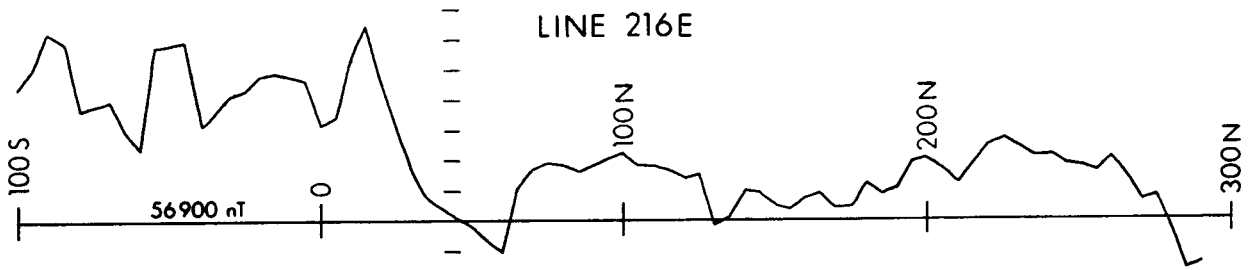


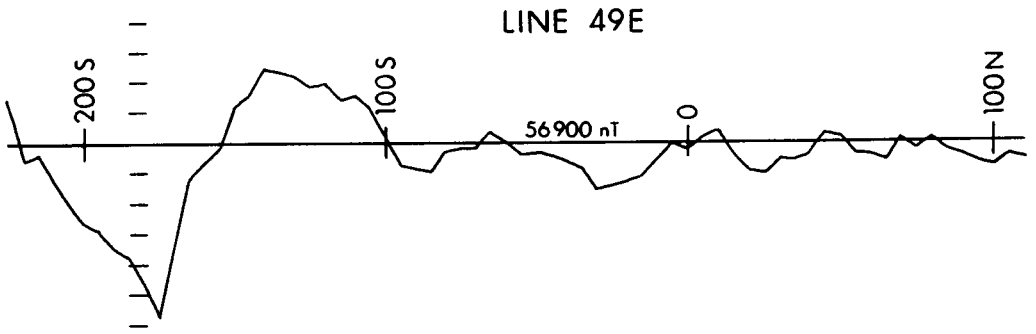
CONTINENTAL LIME LTD.

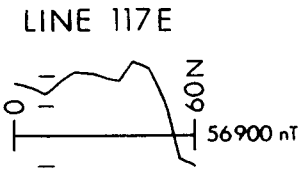
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

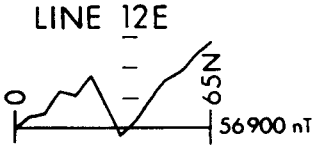
Fig. 1.3 Property Map

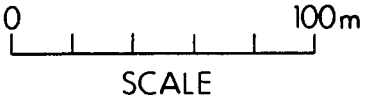
Part of Claim Map 92I/11W
at a scale of 1:31 680











NOTES

1. Horizontal scale is distance in metres.
2. Vertical scale is magnetic intensity in nano Teslas graduated at 25 nT intervals.
3. Magnetic profiles are corrected for diurnal variations.

CONTINENTAL LIME LTD.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 3-1 Magnetometer Profiles.

CORNWALL CREEK AREA, B.C.

LBH 1993-02

APPENDIX 1: SOME PREVIOUS ANALYSES OF LIMESTONE FROM THE CORNWALL CREEK OCCURRENCE

Sample	47	47A	8	9
CaO	54.36	31.43	54.77	55.12
MgO	0.14	15.68	0.27	0.31
Insol	nd	nd	0.46	0.34
SiO_2	1.98	8.20	nd	nd
R_2O_3	nd	nd	1.58	0.52
Al_2O_3	0.48	2.95	nd	nd
Fe_2O_3	0.10	1.67	0.04	0.03
P_2O_5	0.581	0.920	0.368	0.135
MnO	nd	nd	0.006	0.011
S	nil	trace	trace	nil
H_2O	nd	nd	0.01	0.01
LOI	nd	nd	42.95	43.55

47 Representative random chips covering whole deposit of light-grey, mediulm-grained limestone with thin films of rusty calcareous shale, excluding magnesian patches on hill west of Trans Canada Highway 5 km west of Ashcroft, B.C. (Goudge, 1945, p. 183-185).

47A From thin patches of the highly magnesian limestone in the same deposit (Goudge, 1945, p. 183-185).

8 Random chips of rather uniform medium-grained light-grey to mottled limestone across top of north crest (McCammon, 1959, p. 92-93).

9 Similar limestone across 150 m on the top of the south crest (McCammon, 1959, p. 92-93).

APPENDIX 2: SOME CHECK ANALYSES OF LIMESTONE SAMPLES COLLECTED IN 1991

o: CONTINENTAL LIME LTD.
90, 3025 - 12th Street .E.,
algary, Alberta
2E 7J2
ttn: John Schindler

File No. 33419-1
Date May 6, 1992
Samples 13 LIMESTONE

Certificate of Assay
LORING LABORATORIES LTD.

SAMPLE NO.	R2O3 %	L.O.I. %
SSAY ANALYSIS"		
3040	0.85	42.56
3041	0.63	42.60
3042	0.62	42.52
3045	0.37	42.53
3046	1.10	42.37
3047	2.43	41.60
3048	1.31	41.38
3049	4.17	41.61
3050	2.50	42.10
3051	5.44	41.30
3055	1.26	42.41
3056	0.71	39.32
3057	0.42	43.15

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

acts retained one month.
as retained one month
ess specific arrangements
made in advance.

Assayer

APPENDIX 2: CONTINUED

To: CONTINENTAL LIME LTD.,
190, 3025 - 12th Street N.E.,
Calgary, Alberta
T2E 7J2
Attn: John Schindler

File No. 34419-1
Date May 27, 1992
Samples

Certificate of Assay
LORING LABORATORIES LTD.

SAMPLE NO.	CaO %
"CHECK ASSAYS"	
3041	54.31
3046	53.75
3047	52.54
3049	52.64
3050	52.96
3051	51.10
3053	52.22
3055	53.81
3057	54.19
3058	52.95

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

Rejects retained one month.
Pulps retained one month
unless specific arrangements
are made in advance.

Assayer

APPENDIX 2: CONTINUED

Telephone 363-3302

Hand Sample Serial 479-493

ASSAY REPORT

UNION ASSAY OFFICE, Inc.
BRYANT L. LARSEN, President
JAMES G. STRATTON, Vice President
A.S. JOLLIFFE, Treasurer
JAMES W. GARRETT, Secretary
P.O. BOX 1528
Salt Lake City, Utah 84110
(801) 363-3302

ine Continental Lime, Inc.
190, 3025 - 12 street N.E.
Calgary, Alberta, Canada

RESULTS PER TON OF 2000 POUNDS

June 5, 1992

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	Per Cent SiO2	Per Cent CaO	Per Cent MgO	Per Cent R2O3	Per Cent LOI	IRON Per Cent	LIME Per Cent	Per Cent	Per Ce
3041			0.48	54.90	0.26	0.32	41.53				
3042			0.52	54.82	0.28	0.36	43.33				
3043			1.28	53.52	0.71	0.48	42.54				
3044			1.12	52.65	1.71	0.48	43.32				
3045			1.16	54.38	0.41	0.36	42.69				
3046			0.92	54.73	0.30	0.52	43.23				
3047			1.20	54.04	0.35	0.88	42.75				
3048			2.56	53.87	0.13	0.40	40.74				
3049			0.16	53.52	0.33	3.40	41.44				
3050			0.60	54.56	0.36	0.44	42.11				
3051			0.40	52.48	0.38	4.04	41.21				
3052			1.20	52.83	1.43	0.52	42.14				
3053			0.20	53.00	0.25	3.72	41.18				
3055			1.00	54.38	0.26	0.32	42.24				
3057			0.44	54.73	0.33	0.24	42.36				

emarks

harges $ 1,080.00

APPENDIX 3: COMPILATION OF ANALYSES OF LIMESTONE SAMPLES COLLECTED IN JUNE, 1991
(some samples were re-analyzed in May and June, 1992.)

	CaO				MgO			SiO_2	
Sample	Loring 91 07 11 34419	Tacoma[1] 91 09 25	Loring 92 05 27 34419-1	Union Assay 92 06 05	Loring 91 07 11 34419	Tacoma[1] 91 09 25	Union Assay 92 06 05	Loring 91 07 11 34419	Union Assay 92 06 05
3039	45.16	-	-	-	2.16	-	-	9.70	-
3040	54.60	55.32	-	-	0.18	0.19	-	0.64	-
3041	54.56	54.71	54.31	54.90	0.20	0.23	0.26	0.40	0.48
3042	54.48	55.38	-	54.82	0.23	0.25	0.28	0.44	0.52
3043	53.40	-	-	53.52	0.68	-	0.71	1.32	1.28
3044	52.46	-	-	52.65	1.58	-	1.71	0.86	1.12
3045	53.80	-	-	54.38	0.30	-	0.41	0.94	1.16
3046	53.70	55.45	53.75	54.73	0.27	0.29	0.30	0.30	0.92
3047	52.80	-	52.54	54.04	0.32	-	0.35	0.98	1.20
3048	53.00	-	-	53.87	0.17	-	0.13	2.50	2.56
3049	52.80	-	52.64	53.52	0.33	-	0.33	0.12	0.16
3050	53.20	55.42	52.96	54.56	0.32	0.30	0.36	0.38	0.60
3051	51.46	-	51.10	52.48	0.35	-	0.38	0.22	0.40
3052	51.70	-	-	52.83	1.41	-	1.43	0.84	1.20
3053	52.46	-	52.22	53.00	0.25	-	0.25	0.12	0.20
3054	47.40	-	-	-	1.58	-	-	8.56	-
3055	53.42	-	53.81	54.38	0.27	-	0.26	0.76	1.00
3056	49.56	-	-	-	0.23	-	-	8.28	-
3057	54.00	55.22	54.19	54.73	0.28	0.29	0.33	0.32	0.44
3058	53.06	53.23	52.95	-	1.16	1.25	-	0.48	-

1 Calculated value.

APPENDIX 3: (CONTINUED)

	R_2O_3					Others		LO I	
	Tacoma 91 09 25			Loring 92 05 06	Union Assay	Tacoma 91 03 26		Loring 92 05 06	Union Assay
Sample	Al_2O_3	Fe_2O_3	R_2O_3[2]	34419-1	92 06 05	P_2O_5[1]	MnO	34419-1	92 06 05
3039	-	-	-	-	-	-	-	-	-
3040	0.154	0.235	0.646	0.85	-	0.243	0.014	42.56	-
3041	0.105	0.097	0.286	0.63	0.32	0.073	0.011	42.60	41.53
3042	0.102	0.122	0.313	0.62	0.36	0.078	0.011	42.52	43.33
3043	-	-	-	-	0.48	-	-	-	42.54
3044	-	-	-	-	0.48	-	-	-	43.32
3045	-	-	-	0.37	0.36	-	-	42.53	42.69
3046	0.116	0.139	0.655	1.10	0.52	0.383	0.017	42.37	43.23
3047	-	-	-	2.43	0.88	-	-	41.60	42.75
3048	-	-	-	1.31	0.40	-	-	41.38	40.74
3049	-	-	-	4.17	3.40	-	-	41.61	41.44
3050	0.116	0.081	0.907	2.50	0.44	0.697	0.013	42.10	42.11
3051	-	-	-	5.44	4.04	-	-	41.30	41.21
3052	-	-	-	-	0.52	-	-	-	42.14
3053	-	-	-	-	3.72	-	-	-	41.18
3054	-	-	-	-	-	-	-	-	-
3055	-	-	-	1.26	0.32	-	-	42.41	42.24
3056	-	-	-	0.71	-	-	-	39.32	-
3057	0.042	0.056	0.215	0.42	0.24	0.092	0.025	43.15	42.36
3058	0.055	0.107	0.356	-	-	0.149	0.045	-	-

1 Calculated value.

2 Sum of Al_2O_3 + Fe_2O_3 + P_2O_5 + MnO as reported by Tacoma.

APPENDIX 3: (CONTINUED)

Sample	Total Loring	Total Tacoma[3]	Total Union Assay	Total CO_2EQ[4] Loring	Total CO_2EQ[4] Tacoma	Total CO_2EQ[4] Union Assay	LO I - CO_2EQ Loring	LO I - CO_2EQ Union Assay
3039	-	-	-	36.66	-	-	-	-
3040	98.83	99.78	-	42.80	43.38	-	-0.24	-
3041	98.39	98.42	97.49	42.96	43.11	43.30	-0.36	-1.77
3042	98.29	99.68	99.31	42.93	43.66	43.25	-0.41	0.08
3043	-	-	98.53	41.51	-	41.64	-	0.90
3044	-	-	99.28	41.76	-	42.05	-	1.27
3045	97.94	-	99.00	41.41	-	41.99	1.12	0.70
3046	97.94	100.23	99.70	42.06	43.45	42.90	0.31	0.33
3047	98.13	-	99.22	40.65	-	41.66	0.95	1.09
3048	98.36	-	97.70	40.64	-	41.28	0.74	-0.54
3049	99.03	-	98.85	40.66	-	41.23	0.95	0.21
3050	98.50	100.46	98.07	41.41	43.13	42.52	0.69	-0.41
3051	98.77	-	98.51	39.63	-	40.46	1.67	0.75
3052	-	-	98.12	40.98	-	41.89	-	0.25
3053	-	-	98.35	40.31	-	40.73	-	0.45
3054	-	-	-	37.79	-	-	-	-
3055	98.12	-	98.20	41.08	-	41.82	1.33	0.42
3056	98.16	-	-	38.01	-	-	1.31	-
3057	98.17	99.38	98.10	42.59	43.56	43.22	0.56	-0.86
3058	-	97.97	-	42.76	42.99	-	-	-

3 Differs from the Tacoma lab report because P and Mn have been added as P_2O_5 and MnO, respectively.

4 CO_2EQ is the CO_2 equivalent to the CaO in $CaCO_3$ plus that equivalent to all the MgO plus an amount to allow for chemically combined water in hydroxylapatite. These percentages for the Loring determinations are based on the 91 07 11 analytical report. CO_2EQ = 0.78478 [determined CaO - 1.31693 (determined or assumed P_2O_5)] + 1.09175 (determined MgO) + 0.04231 (determined or assumed P_2O_5). Samples without a P_2O_5 determination are assumed to contain 1.146% P_2O_5 (0.5% P).

APPENDIX 4: TESTS OF SIGNIFICANT DIFFERENCES AND REGRESSION PARAMETERS FOR THE 1991 SAMPLES

	CaO						MgO		
	Loring/91-Tacoma	Loring/91-Loring/92	Loring/91-Union Assay	Tacoma-Loring/92	Tacoma-Union Assay	Loring/92-Union Assay	Loring/91-Tacoma	Loring/91-Union Assay	Tacoma-Union Assay
DIFFERENCE									
N	7	10	15	5	5	9	7	15	5
MEAN	-1.018571	0.099	-0.744667	1.174	0.488	-0.98	-0.022857	-0.03533333	-0.034
STD. DEV.	0.716807	0.224787	0.373003	0.818477	0.362513	0.391379	0.031037	0.041772	0.016248
VARIANCE	0.513812	0.050529	0.139132	0.669904	0.131416	0.153178	0.000963	0.001745	0.000264
TEST	-3.759571	1.392723	-7.732051	3.207353	3.010098	-7.511894	-1.948489	-3.276019	-4.679096
PROB.	0.005	0.100	<0.001	0.025	0.025	<0.001	0.050	0.005	0.005
REGRESSION*									
m	0.556919	1.128376	0.841827	0.261605	-0.28554	0.752464	1.079920	1.041505	1.179347
b	24.91958	-6.92170	9.151413	39.29444	70.52009	14.11368	-0.00728	0.016074	-0.01478
r	0.5569	0.9555	0.8195	0.1390	0.4786	0.8577	0.9976	0.9925	0.8099

	SiO_2	R_2O_3			LO I
	Loring/91-Union Assay	Tacoma-Loring/92	Tacoma-Union Assay	Loring/92-Union Assay	Loring/92-Union Assay
DIFFERENCE					
N	15	6	5	5	11
MEAN	-0.182666	-0.516333	0.0992	-0.104	-0.005454
STD. DEV.	0.154206	0.488586	0.195500	0.090686	0.673395
VARIANCE	0.023780	0.238717	0.038220	0.008224	0.453461
TEST	-4.587785	-2.588597	1.134620	-2.564347	-0.026865
PROB.	<0.005	0.025	0.200	0.050	>0.500
REGRESSION*					
m	0.950576	2.465008	0.292906	0.756774	0.7
b	0.217263	-0.22154	0.236810	-0.36769	8.856721
r	0.9327	0.7819	0.6401	0.8627	0.3119

* Parameters are from equation y = mx + b; r is the correlation coefficient.

APPENDIX 5: ANALYTICAL REPORTS FOR THE 1992 SAMPLES FROM LORING LABORATORIES LTD.

To: CONTINENTAL LIME
190, 3025 - 12th Street, N.E.,
Calgary, Alberta
T2E 7J2
cc: L. B. Halferdahl

File No. 35148
Date June 26, 1992
Samples Limestone
Lone Tree Claim

Certificate of Assay
LORING LABORATORIES LTD.

Page # 1

SAMPLE NO.	CaO %	MgO %	LOI %	Acid Insol %	R2O3 %
"ASSAY ANALYSIS"			CORRECTION		
5178	53.84	0.18	42.83	0.72	0.07
5179	54.02	0.20	42.74	0.41	0.05
5180	54.24	0.25	42.83	0.36	0.03
5181	53.33	0.20	42.31	0.55	0.06
5182	53.11	0.17	42.22	0.46	0.05
5183	52.85	0.13	42.10	0.76	0.08
5184	51.04	0.22	41.06	4.86	0.10
5185	37.30	0.63	30.28	28.63	0.57
5186	47.04	0.28	38.20	11.30	0.49
5187	54.20	0.28	43.03	1.38	0.49
5188	50.84	0.88	40.95	3.39	0.78
5189	49.44	1.81	41.24	3.88	0.68
5190	54.20	0.18	42.70	1.25	0.15
5191	50.02	0.56	40.06	6.86	1.37
5192	51.94	0.32	41.12	2.35	0.34
5193	47.60	4.43	41.84	3.56	0.84
5194	53.64	0.27	42.07	2.36	0.26
5195	53.22	0.33	42.39	2.14	0.59
5196	54.26	0.22	43.11	1.55	0.21
5197	53.40	0.27	41.93	2.94	0.53

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

Rejects retained one month.
Pulps retained one month
unless specific arrangements
are made in advance.

Assayer

APPENDIX 5: CONTINUED

To: CONTINENTAL LIME
190, 3025 - 12th Street
Calgary , Alberta
T2E 7J2
Attn: John Schindler
cc: L.B. Halferdahl

File No. 35148
Date June 26, 1992
Samples Limestone
Lone Tree Claim

Certificate of Assay
LORING LABORATORIES LTD.

Page # 2

SAMPLE NO.	CaO %	MgO %	LOI %	Acid Insol %	R2O3 %
"ASSAY ANALYSIS"			CORRECTION		
5198	52.60	0.23	41.64	3.64	0.45
5199	46.24	0.83	37.87	11.07	1.80
5200	50.40	0.46	40.53	5.53	0.99
6959	54.53	0.18	42.59	0.52	0.12
6960	52.42	0.15	41.75	3.20	0.09
6961	54.40	0.17	42.35	0.76	0.06
6962	54.00	0.15	42.24	0.64	0.06
6963	54.89	0.15	41.71	0.50	0.05
6964	54.55	0.20	41.97	0.41	0.07
6965	54.26	0.30	42.64	0.67	0.08
6966	52.92	0.25	41.84	3.20	0.11
6967	54.22	0.30	42.45	0.58	0.08
6968	54.68	0.20	43.11	0.91	0.15
6969	53.84	0.33	43.05	0.83	0.10
6970	53.33	0.30	42.51	0.95	0.10
6971	53.10	0.41	42.82	0.70	0.08
6972	53.09	0.98	42.89	0.73	0.12
6973	49.60	4.08	43.14	1.24	0.25
6974	52.64	2.14	43.78	0.69	0.22

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

Rejects retained one month.
Pulps retained one month unless specific arrangements are made in advance.

Assayer

APPENDIX 5: CONTINUED

To: CONTINENTAL LIME
190, 3025 - 12th Street
Calgary , Alberta
T2E 7J2
Attn: John Schindler
cc: L.B. Halferdahl

File No. 35148
Date June 26, 1992
Samples Limestone
Lone Tree Claim

Certificate of Assay
LORING LABORATORIES LTD.

SAMPLE NO.	CaO %	MgO %	LOI %	Acid Insol %	R2O3 %
"ASSAY ANALYSIS"			CORRECTION		
6975	54.32	0.28	43.20	1.06	0.08
8124	52.06	0.23	41.21	4.94	0.62
8125	53.44	0.22	42.15	3.22	0.48
8282	52.30	0.45	41.38	4.31	0.69
8283	51.24	0.51	41.30	5.18	1.07
8284	50.30	0.61	40.55	6.65	1.43
8285	53.11	0.73	42.72	2.40	0.51
8286	52.46	0.35	42.50	3.56	0.66
8287	46.60	1.14	38.25	10.68	1.82
3000A	54.26	0.40	42.95	0.61	0.10

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

ejects retained one month.
Pulps retained one month
unless specific arrangements
re made in advance.

Assayer

APPENDIX 5: CONTINUED

To: HALFERDAHL & ASSOCIATES LTD.,
18, 10509 - 81st Avenue,
Edmonton, Alberta T6E 1X7

ATTN: L.B. Halferdahl
cc: J. Schindler

File No. 35148-1
Date July 14, 1992
Samples

Certificate of Assay
LORING LABORATORIES LTD.

SAMPLE NO.	% SO3	% P2O5
"Assay Analysis"		
5181	.02	1.40
5182	.01	1.43
5183	.02	1.53
5192	.08	1.48
6964	.01	0.67

I Hereby Certify that the above results are those assays made by me upon the herein described samples....

Rejects retained one month.
Pulps retained one month
unless specific arrangements
are made in advance.

Assayer

APPENDIX 6: NOTES ON CHIP SAMPLES AND GEOLOGY ALONG AND NEAR BASE OF SCARP ON CLAIMS LONE TREE 1 AND 2, NEAR ASHCROFT, B.C. (BELIK PROPERTY)

(Chips collected across the strata at intervals of 30 to 35 cm by J. Gorham and L.B. Halferdahl on May 22 and 23, 1992)

Samples in stratigraphic order from top (NE) to bottom (SW).

Sample Number	Stratigraphic Thickness (m)	Description and Notes
-	2)	coarse limestone breccia with blocks to 2 m in argillaceous
5199	5)	limestone matrix; fault (near fence) about 60 m up slope fault with 2-3 m of breccia comes across from south and continues along strike to top of ridge, attitude $310^{0}/70^{0}$NE, well developed joints with attitude $310^{0}/90^{0}$ to 85^{0} NE CaO 46.24, MgO 0.83, Insol. 11.07, R_2O_3 1.80, LOI 37.87, Total 97.81, LOI - $CO_2 \equiv$ 0.68*
5198	4	sugary marble and mottled limestone, massive bounded on NE by prominent joint with attitude $260^{0}/30^{0}$N CaO 52.60, MgO 0.23, Insol. 3.64, R_2O_3 0.45, LOI 41.64, Total 98.56, LOI - $CO_2 \equiv$ 0.11
5197	~5	lighter-grey coarse-grained crystalline limestone, somewhat mottled, white blebs, minor rusty clay, massive CaO 53.40, MgO 0.27, Insol. 2.94, R_2O_3 0.53, LOI 41.93, Total 99.07, LOI - $CO_2 \equiv$ -0.27
5196	5	darker-grey coarse-grained crystalline limestone, somewhat mottled, massive CaO 54.26, MgO 0.22, Insol. 1.55, R_2O_3 0.21, LOI 43.11, Total 99.35, LOI - $CO_2 \equiv$ 0.29
5195	4	dark-grey coarse-grained crystalline limestone, somewhat mottled, massive, very hard CaO 53.22, MgO 0.33, Insol. 2.14, R_2O_3 0.59, LOI 42.39, Total 98.67, LOI - $CO_2 \equiv$ 0.26
5194	2	dark-grey to mottled magnesian limestone between small splay and more prominent fault, ends in 10-20 cm fault slip CaO 53.64, MgO 0.27, Insol. 2.36, R_2O_3 0.26, LOI 42.07, Total 98.60, LOI - $CO_2 \equiv$ -0.32

* $CO_2 \equiv$ means CO_2 equivalent to CaO plus MgO as determined, without including P_2O_5.

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
5193	5 3/4	mainly mottled fine-grained limestone with few brownish-weathered micritic bands 20-30 cm thick and one very fine grained band of dark-grey dolomitic limestone 20 cm thick at 4 m : attitude 290°/~90°. Sample ends at major fault with attitude 275°/~90° (subparallel to major fault with cleft); fault bends and swells with 1 to 3 m of breccia, about 1.4 m at bottom, many subrounded limestone clasts from few cm to few 10s cm in limy argillaceous matrix CaO 47.60, MgO 4.43, Insol. 3.56, R_2O_3 0.84, LOI 41.84, Total 98.27, LOI - CO_2 ≡ -0.35
5192	4½	very fine grained to micritic limestone, few argillaceous laminae with attitude 270°/65°S, some sugary white limestone; marble texture ends at sharp joint with attitude 270°/80°N (another fault) CaO 51.94, MgO 0.32, Insol. 2.35, R_2O_3 0.34, LOI 41.12, Total 96.07, LOI - CO_2 ≡ 0.01
5191	3/4	fault breccia in limestone, subangular clasts in dark-grey argillaceous gouge, attitude 280°/85°N CaO 50.02, MgO 0.56, Insol. 6.86, R_2O_3 1.37, LOI 40.06, Total 98.87, LOI - CO_2 ≡ 0.19
5190	3	mottled white and grey limestone similar to that on south side of fault; sample ends at fault CaO 54.20, MgO 0.18, Insol. 1.25, R_2O_3 0.15, LOI 42.70, Total 98.49, LOI - CO_2 ≡ -0.03
-	2-3½	major fault in cleft, about 70% limestone breccia fragments up to 40 cm in maximum dimension, some weather buffish, most are whitish to medium-grey sugary calcite in grains 1-2 mm in size, in black argillaceous matrix, irregular contacts, attitude 277/76°N
8124	~3	medium- to light-grey sucrosic limestone with calcite grains 1-2 mm, some chips partly argillaceous, few breccia fragments; attitude of prominent joints 190°/82°E; attitude of prominent joints at east end of sample interval 177°/88°E CaO 52.06, MgO 0.23, Insol. 4.94, R_2O_3 0.62, LOI 41.21, Total 99.06, LOI - CO_2 ≡ 0.10

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
8125	4	medium- to light-grey sucrosic limestone as 8124; sample starts at splay from main fault in cleft with attitude $354^0/77^0E$; splay fault marked by breccia similar to main fault in zone ~30 cm wide CaO 53.44, MgO 0.22, Insol. 3.22, R_2O_3 0.48, LOI 42.15, Total 99.51, LOI - CO_2 ≡ -0.03
6968	3½	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite with increasing amounts in uppermost m, 5-10% brownish argillaceous patches in some chips CaO 54.68, MgO 0.20, Insol. 0.91, R_2O_3 0.15, LOI 43.11, Total 99.05, LOI - CO_2 ≡ -0.02
6967	4 1/4	medium-grey recrystallized limestone, calcite grains to 2-3 mm some white calcite, few per cent brownish argillaceous patches CaO 54.22, MgO 0.30, Insol. 0.58, R_2O_3 0.08, LOI 42.45, Total 97.63, LOI - CO_2 ≡ -0.43
6966	4	medium-grey recrystallized limestone, whitish calcite grains to 3 mm or more in darker matrix, some with 5-10% brownish argillaceous blobs CaO 52.92, MgO 0.25, Insol. 3.20, R_2O_3 0.11, LOI 41.84, Total 98.32, LOI - CO_2 ≡ 0.04
6965	3 3/4	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite, few per cent brownish argillaceous patches CaO 54.26, MgO 0.30, Insol. 0.67, R_2O_3 0.08, LOI 42.64, Total 97.95, LOI - CO_2 ≡ -0.27
6964	4	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite, few per cent brownish argillaceous patches CaO 54.55, MgO 0.20, Insol. 0.41, R_2O_3 0.07, LOI 41.97, Total 97.20, LOI - CO_2 ≡ -1.06
6963	3 1/4	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite, few brownish argillaceous blobs CaO 54.89, MgO 0.15, Insol. 0.50, R_2O_3 0.05, LOI 41.71, Total 97.30, LOI - CO_2 ≡ -1.53
6962	6 1/4	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite, few brownish argillaceous blobs; ½-m interval with 75-80% white calcite blobs to 1 cm in size separated by darker matrix CaO 54.00, MgO 0.15, Insol. 0.64, R_2O_3 0.06, LOI 42.24, Total 97.09, LOI - CO_2 ≡ -0.30

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
6961	4 1/4	medium-grey recrystallized limestone, calcite grains to 2-3 mm, some white calcite, 5-10% brownish argillaceous patches CaO 54.40, MgO 0.17, Insol. 0.76, R_2O_3 0.06, LOI 42.35 Total 97.74, LOI - CO_2 ≡ -0.53
6960	4	medium-grey recrystallized limestone, grains to 3 mm, some brownish argillaceous patches, minor chert along joints, some white calcite CaO 52.42, MgO 0.15, Insol. 3.20, R_2O_3 0.09, LOI 41.75, Total 97.61, LOI - CO_2 ≡ 0.45
6959	3 3/4	medium-grey recrystallized limestone, grains to 3 mm, ½-m coral with top to N CaO 54.53, MgO 0.18, Insol. 0.52, R_2O_3 0.12, LOI 42.59, Total 97.94, LOI - CO_2 ≡ -0.40
5178 to 5183		white to dark-grey recrystallized limestone, weathers tan to grey, mottled on scale from 2-5 mm, subrounded blobs of white limestone some individual calcite crystals surrounded by 30-60% dark-grey medium- to coarse crystalline limestone, few phantom fossils (brachiopods?) of white coarse-grained calcite; size proportion of white blobs may vary in layers (bedding?), tiny pervasive intergranular blebs of rusty clay
5178	3	CaO 53.84, MgO 0.18, Insol. 0.72, R_2O_3 0.07, LOI 42.83, Total 97.64, LOI - CO_2 ≡ 0.38
5179	3	fairly white in southernmost ½ m CaO 54.02, MgO 0.20, Insol. 0.41, R_2O_3 0.05, LOI 42.74, Total 97.42, LOI - CO_2 ≡ 0.13
5180	3	CaO 54.24, MgO 0.25, Insol. 0.36, R_2O_3 0.03, LOI 42.83, Total 97.71, LOI - CO_2 ≡ -0.01
5181	3	CaO 53.33, MgO 0.20, Insol. 0.55, R_2O_3 0.06, LOI 42.31, Total 96.45, LOI - CO_2 ≡ 0.24
5182	3	several radiating corals apparently in 2-m bed vertically up scarp at base of interval, stratigraphic tops to north CaO 53.11, MgO 0.17, Insol. 0.46, R_2O_3 0.05, LOI 42.22, Total 96.01, LOI - CO_2 ≡ 0.35

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
5183	3	sample interval ends at major fault dipping $50^{o}E$ CaO 52.85, MgO 0.13, Insol. 0.76, R_2O_3 0.08, LOI 42.10, Total 95.92, LOI - CO_2 ≡ 0.48
5184	4	dark-grey limestone with 10-20% white mottles, schistose, 1-2% dark-grey clay, ~1% rusty clay blebs CaO 51.04, MgO 0.22, Insol. 4.86, R_2O_3 0.10, LOI 41.06, Total 97.28, LOI - CO_2 ≡ 0.76
5185	3	limestone similar to 5184; interval ends at fault with attitude $320^{o}/45^{o}SW$ CaO 37.30, MgO 0.63, Insol. 28.63, R_2O_3 0.57, LOI 30.28, Total 97.41, LOI - CO_2 ≡ 0.32
5186	4	grey to brownish-grey limestone, weathers tan, medium- to coarse-grained crystalline limestone, 1-2% rusty brown clay, minor grey clay, up to 20% mottles of white limestone; interval ends at fault dipping about $50^{o}NE$ CaO 47.04, MgO 0.28, Insol. 11.30, R_2O_3 0.49, LOI 38.20, Total 97.31, LOI - CO_2 ≡ 0.98
5187	3	white and grey mottled limestone similar to that in samples 5178-5183, cut off by fault CaO 54.20, MgO 0.28, Insol. 1.38, R_2O_3 0.49, LOI 43.03 Total 99.38, LOI - CO_2 ≡ 0.19
-	~4	fault with breccia clasts of vesicular basalt, limestone, grey shale from a few cm to 50 cm in a green chloritic clay matrix; at base of cliff zone is about 3 m wide but pinches to a joint or fault about 5 m up cliff, fault dips ~$45^{o}W$, appears to be a splay of a major fault about 8 m up slope which cuts across outcrop with attitude $0^{o}/55^{o}W$ and width from tight to ~2 m
5188	2½	grey and white mottled limestone above fault breccia; series of tight folds plunge 35^{o} at azimuth 295^{o} CaO 50.84, MgO 0.88, Insol. 3.39, R_2O_3 0.78, LOI 40.95, Total 96.84, LOI - CO_2 ≡ 0.09

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
5189	3	limestone apparently at base of northerly band of limestone; breccia plunging NW just at base of this unit (scree covered) suggests a thrust or reverse fault, corroborated by argillaceous limestone fragments in covered interval to south which dips 20^{0}-40^{0} west to northwest. Because of suspected fault this unit may not persist far to depth.
		CaO 49.44, MgO 1.81, Insol. 3.88, R_2O_3 0.68, LOI 41.24
		Total 97.05, LOI - CO_2 ≡ 0.46
	~200	band not sampled (some not limestone)
8287 to 8282, 5200		mottled light-grey limestone, blebs of white calcite ¼-1 cm in size with dark-grey interstices, 1-2% rusty clay, and breccia of rounded clasts of limestone to 50 cm in matrix of pale-greenish limy clay which constitutes a few per cent of rock, so that distinguishing breccia from massive limestone may be difficult
8287	4	limestone breccia
		CaO 46.60, MgO 1.14, Insol. 10.68, R_2O_3 1.82, LOI 38.25
		Total 98.49, LOI - CO_2 ≡ 0.43
8286	4	limestone breccia
		CaO 52.46, MgO 0.35, Insol. 3.56, R_2O_3 0.66, LOI 42.50,
		Total 99.53, LOI - CO_2 ≡ 0.95
8285	4	limestone breccia; first 1.8 m covered, above is block of bedded limestone with attitude $0^{0}/30^{0}$E unconformably on breccia below
		CaO 53.11, MgO 0.73, Insol. 2.40, R_2O_3 0.51, LOI 42.72
		Total 99.47, LOI - CO_2 ≡ 0.24
8284	4	limestone breccia
		CaO 50.30, MgO 0.61, Insol. 6.65, R_2O_3 1.43, LOI 40.55
		Total 99.54, LOI - CO_2 ≡ 0.40
8283	4	limestone breccia, clasts mostly white and sugary with soft clayey matrix
		CaO 51.24, MgO 0.51, Insol. 5.18, R_2O_3 1.07, LOI 41.30,
		Total 99.30, LOI - CO_2 ≡ 0.53

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
8282	4	limestone breccia, about 90-95% limestone clasts to 2-3 m in size of mostly white sugary fine-grained marble or mottled limestone with 1-2% rusty clay, in 5% green argillaceous matrix CaO 52.30, MgO 0.45, Insol. 4.31, R_2O_3 0.69, LOI 41.38, Total 99.13, LOI - CO_2 ≡ -0.16
5200	4	limestone breccia, with limestone for last m CaO 50.40, MgO 0.46, Insol. 5.53, R_2O_3 0.99, LOI 40.53, Total 97.91, LOI - CO_2 ≡ 0.47
6969	4	medium-grey marble, grain size to 1-2 mm, 5% irregular brownish argillaceous blebs CaO 53.84, MgO 0.33, Insol. 0.83, R_2O_3 0.10, LOI 43.05, Total 98.15, LOI - CO_2 ≡ 0.44
6970	4	marble, irregularly mottled lighter and darker grey, grain size 1-2 mm, few brownish argillaceous masses in varying amounts CaO 53.33, MgO 0.30, Insol. 0.95, R_2O_3 0.10, LOI 42.51, Total 97.19, LOI - CO_2 ≡ 0.33
6971	4	marble, variable whitish and mottled darker and lighter grey, small brownish argillaceous masses, attitude of bedding? $310^{o}/76^{o}$NE CaO 53.10, MgO 0.41, Insol. 0.70, R_2O_3 0.08, LOI 42.82, Total 97.11, LOI - CO_2 ≡ 0.70
6972	4	marble, as 6971, 30-cm layer weathers a distinctive brown in first m - dolomite? This layer ends at fault striking 330^{o} CaO 53.09, MgO 0.98, Insol. 0.73, R_2O_3 0.12, LOI 42.89, Total 97.81, LOI - CO_2 ≡ 0.16
6973	4	marble, greyish, as 6971 CaO 49.60, MgO 4.08, Insol. 1.24, R_2O_3 0.25, LOI 43.14, Total 98.31, LOI - CO_2 ≡ -0.24
6974	4	marble, as 6971, one chip darker-grey and finer-grained CaO 52.64, MgO 2.14, Insol. 0.69, R_2O_3 0.22, LOI 43.78 Total 99.47, LOI - CO_2 ≡ 0.13

APPENDIX 6: CONTINUED

Sample Number	Stratigraphic Thickness (m)	Description and Notes
6975	4	marble, as 6971, some maybe large slumped blocks from cliff above CaO 54.32, MgO 0.28, Insol. 1.06, R_2O_3 0.08, LOI 43.20, Total 98.94, LOI - CO_2 ≡ 0.27
-	1 1/4	not sampled, face too smooth to chip
3000A	4	marble as 6971, mottled, fewer brown argillaceous masses CaO 54.26, MgO 0.40, Insol. 0.61, R_2O_3 0.10, LOI 42.95, Total 98.32, LOI - CO_2 ≡ -0.07

APPENDIX 7: ANALYSES OF THE 1992 LIMESTONE SAMPLES FROM THE LONE TREE CLAIMS NEAR ASHCROFT, B.C.

	Weight Per Cent										
SAMPLE	CaO	MgO	Acid Insol.	R_2O_3	SO_3	P_2O_5	LOI	Total	LOI - CO_2EQ	LOI - $CO_2EQ^{0.5}$	LOI - CO_2EQ^1
5178	53.84	0.18	0.72	0.07			42.83	97.64	0.38	0.88	1.37
5179	54.02	0.20	0.41	0.05			42.74	97.42	0.13	0.62	1.12
5180	54.24	0.25	0.36	0.03			42.83	97.71	-0.01	0.49	0.98
5181	53.33	0.20	0.55	0.06	0.02	1.40	42.31	96.45	0.24	1.63	1.63
5182	53.11	0.17	0.46	0.05	0.01	1.43	42.22	96.01	0.35	1.77	1.77
5183	52.85	0.13	0.76	0.08	0.02	1.53	42.10	95.92	0.48	2.00	2.00
5184	51.04	0.22	4.86	0.10			41.06	97.28	0.76	1.26	1.76
5185	37.30	0.63	28.63	0.57			30.28	97.41	0.32	0.82	1.31
5186	47.04	0.28	11.30	0.49			38.20	97.31	0.98	1.47	1.97
5187	54.20	0.28	1.38	0.49			43.03	99.38	0.19	0.68	1.18
5188	50.84	0.88	3.39	0.78			40.95	96.84	0.09	0.59	1.08
5189	49.44	1.81	3.88	0.68			41.24	97.05	0.46	0.96	1.46
5190	54.20	0.18	1.25	0.15			42.70	98.48	-0.03	0.46	0.96
5191	50.02	0.56	6.86	1.37			40.06	98.87	0.19	0.69	1.19
5192	51.94	0.32	2.35	0.34	0.08	1.48	41.12	96.07	0.01	1.48	1.48
5193	47.60	4.43	3.56	0.84			41.84	98.27	-0.35	0.14	0.64
5194	53.64	0.27	2.36	0.26			42.07	98.60	-0.32	0.18	0.67
5195	53.22	0.33	2.14	0.59			42.39	98.67	0.26	0.76	1.25
5196	54.26	0.22	1.55	0.21			43.11	99.35	0.29	0.78	1.28
5197	53.40	0.27	2.94	0.53			41.93	99.07	-0.27	0.22	0.72
5198	52.60	0.23	3.64	0.45			41.64	98.56	0.11	0.61	1.10
5199	46.24	0.83	11.07	1.80			37.87	97.81	0.68	1.17	1.67
5200	50.40	0.46	5.53	0.99			40.53	97.91	0.47	0.97	1.47
6959	54.53	0.18	0.52	0.12			42.59	97.94	-0.40	0.10	0.59
6960	52.42	0.15	3.20	0.09			41.75	97.61	0.45	0.94	1.44
6961	54.40	0.17	0.76	0.06			42.35	97.74	-0.53	-0.03	0.46
6962	54.00	0.15	0.64	0.06			42.24	97.09	-0.30	0.19	0.69
6963	54.89	0.15	0.50	0.05			41.71	97.30	-1.53	-1.03	-0.54
6964	54.55	0.20	0.41	0.07	0.01	0.67	41.97	97.20	-1.06	-0.39	-0.39
6965	54.26	0.30	0.67	0.08			42.64	97.95	-0.27	0.23	0.72
6966	52.92	0.25	3.20	0.11			41.84	98.32	0.04	0.53	1.03
6967	54.22	0.30	0.58	0.08			42.45	97.63	-0.43	0.07	0.56
6968	54.68	0.20	0.91	0.15			43.11	99.05	-0.02	0.48	0.97
6969	53.84	0.33	0.83	0.10			43.05	98.15	0.44	0.93	1.43
6970	53.33	0.30	0.95	0.10			42.51	97.19	0.33	0.83	1.32
6971	53.10	0.41	0.70	0.08			42.82	97.11	0.70	1.20	1.69
6972	53.09	0.98	0.73	0.12			42.89	97.81	0.16	0.65	1.15
6973	49.60	4.08	1.24	0.25			43.14	98.31	-0.24	0.26	0.75
6974	52.64	2.14	0.69	0.22			43.78	99.47	0.13	0.63	1.12
6975	54.32	0.28	1.06	0.08			43.20	98.94	0.27	0.76	1.26
8124	52.06	0.23	4.94	0.62			41.21	99.06	0.10	0.60	1.09
8125	53.44	0.22	3.22	0.48			42.15	99.51	-0.03	0.47	0.96
8282	52.30	0.45	4.31	0.69			41.38	99.13	-0.16	0.34	0.84
8283	51.24	0.51	5.18	1.07			41.30	99.30	0.53	1.03	1.52
8284	50.30	0.61	6.65	1.43			40.55	99.54	0.41	0.91	1.40
8285	53.11	0.73	2.40	0.51			42.72	99.47	0.24	0.74	1.23
8286	52.46	0.35	3.56	0.66			42.50	99.53	0.95	1.44	1.94
8287	46.60	1.14	10.68	1.82			38.25	98.49	0.43	0.93	1.43
3000 A	54.26	0.40	0.61	0.10			42.95	98.32	-0.07	0.43	0.92

NOTE: LOI - CO_2EQ means loss on ignition minus the CO_2 equivalents of CaO in $CaCO_3$ and all the MgO, which is assumed to be in dolomite.
CO_2EQ = 0.78478 [determined CaO - 1.31693 (determined or assumed P_2O_5)] + 1.09175 (determined MgO) + 0.04231 (determined or assumed P_2O_5).

APPENDIX 8: ITEMIZED COST STATEMENT

a) Personnel

J. H. Gorham, geologist May 22 to 24, 1992 2 days @ $450.00	$ 900.00	
L. B. Halferdahl, geological engineer May 5 to 8, and 22 to 24, 1992 6 days on field work 8 days between May 1992 and February 1993 compiling data and preparing report 14 days @ $500	7,000.00	
Wayne McGuire, draftsman, computer operator 71 h @ $28	1,988.00	
		$9,888.00

b) Food and Accommodation

8 man-days in motel, restaurants @ $48.11		384.88

c) Transportation

Airfares Edmonton-Kamloops-Edmonton 3 x $445.76 (B.C. part only)	$1,337.28	
4X4 pick-up truck rental, insurance, gasoline, parking	443.96	
Freight on samples	41.09	
		1,822.33

d) Magnetometer rental 4 days @ $53.50 — 214.00

e) not applicable

f) Analyses

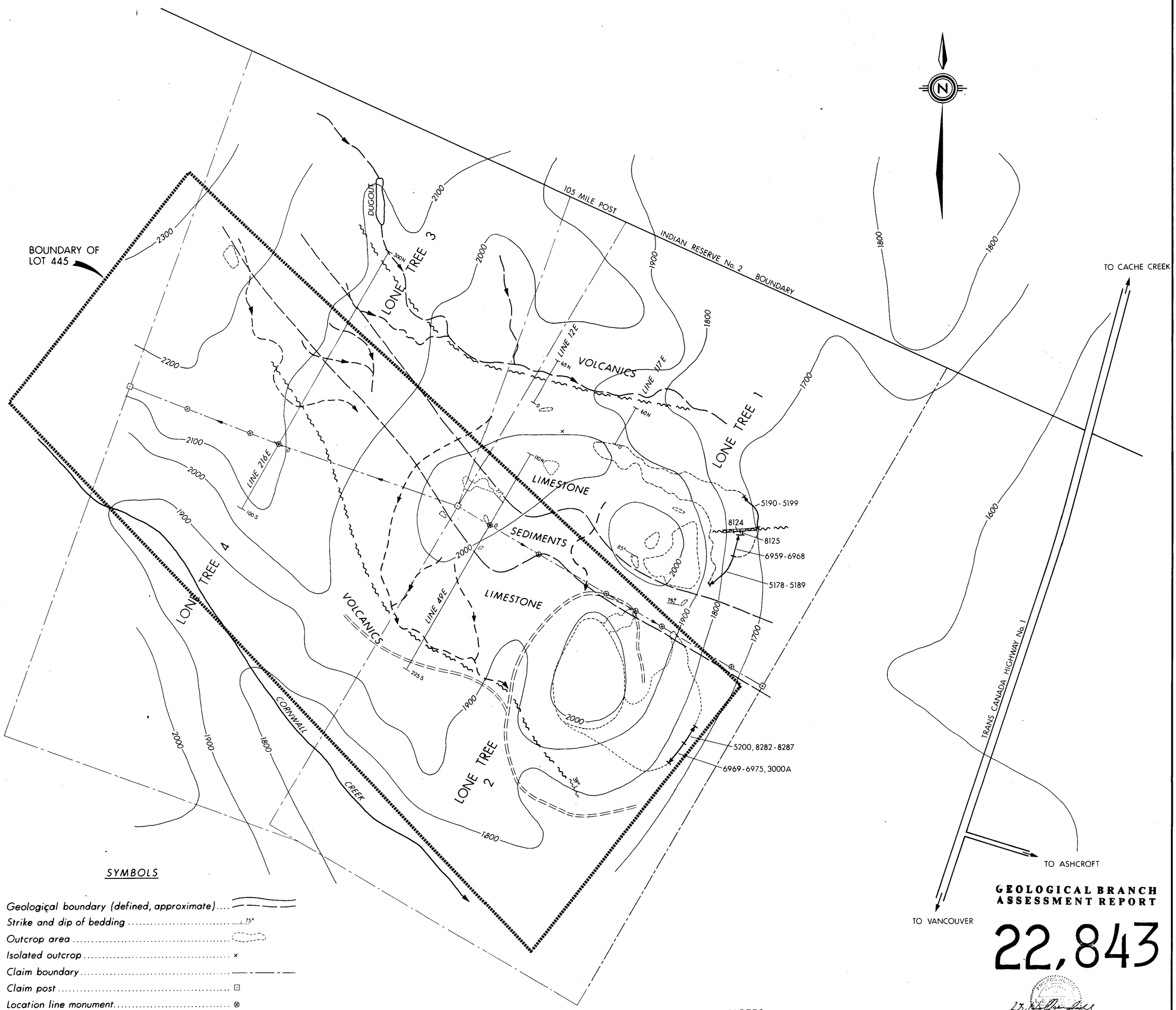
13 samples analyzed for R_2O_3 and LOI @ $15.515	$ 201.70	
10 samples re-analyzed for CaO @ $9.898	98.98	
15 samples re-analyzed for CaO, MgO, SiO_2, R_2O_3, and LOI @ $90.00	1,350.00	
49 samples prepared and analyzed for CaO, MgO, acid insolubles, R_2O_3, and LOI @ $45.475	2,228.28	
5 samples analyzed for SO_3 and P_2O_5 @ $25.68	128.40	
		4,007.35

APPENDIX 8: CONTINUED

g) Report - typing, reproduction, assembly		312.00
g) Other		
Aerial photographs	$16.05	
Long distance telephone	45.84	
Field supplies	16.95	
		78.84
		$16,707.40

APPENDIX 9: QUALIFICATIONS

L. B. Halferdahl obtained degrees in geological engineering from Queen's University, Kingston, Ontario and in geology from The Johns Hopkins University, Baltimore, Maryland. He has more than 30 years experience as a practising engineer and geologist in research and mining exploration, including consulting since 1969. He is a member of the Canadian Institute of Mining and Metallurgy, and is registered as P. Eng. and P. Geol. in the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, and registered as P. Eng. in the Association of Professional Engineers and Geoscientists of British Columbia.



SYMBOLS

- Geological boundary (defined, approximate)
- Strike and dip of bedding — 75°
- Outcrop area
- Isolated outcrop — ×
- Claim boundary
- Claim post — ⊡
- Location line monument — ⊗
- Fault (defined, approximate)
- Paved highway
- Four wheel drive road
- Dry gulley
- Elevation contour (feet A.M.S.L.) — 1800
- Sample line with direction of sampling
- Magnetometer traverse with number — LINE 49E

NOTES

Base map partly from enlargements of 1:15000 scale aerial photographs, and partly from compass and topofil measurements.

Contours are from enlargement of 1:50000 topographic map with 100' intervals.

Outcrops at top of hill are from Schindler (1992), with locations modified as on enlargements of aerial photographs.

Contacts of the central belt of non-carbonate sediments are after Schindler (1992) with extensions based on magnetometry.

GEOLOGICAL BRANCH ASSESSMENT REPORT

22,843

CONTINENTAL LIME LTD.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 2-1 Geology and 1992 Samples.

CORNWALL CREEK AREA, B.C.

LBH — Scale: 1 : 2500 (0, 50, 100, 150, 200 m) — 1993.02