SOUP (skam)

THIS PROSPECTUS CONSTITUTES A PUBLIC OFFERING OF THESE SECURITIES ONLY IN THOSE JURISDICTIONS WHERE THEY MAY BE LAWFULLY OFFERED FOR SALE AND THEREIN ONLY BY PERSONS PERMITTED TO SELL SUCH SECURITIES.

NO SECURITIES COMMISSION OR OTHER SIMILAR AUTHORITY IN CANADA HAS IN ANY WAY PASSED UPON THE MERITS OF THE SECURITIES OFFERED HEREUNDER AND ANY REPRESENTATION TO THE CONTRARY IS AN OFFENCE.

**PROSPECTUS** 

DATED: JANUARY 30, 1987

# LEMMING RESOURCES LTD.

(hereinafter called the "Issuer") 302-475 Howe Street Vancouver, British Columbia V6C 2B3

# 705

#### **NEW ISSUE—300,000 COMMON SHARES**

	Price to Public	Commission	Net Proceeds to be Received by Issuer (1)
Per Share	\$ .38	\$ .03	\$ .35
Total	\$114,000.00	\$9,000.00	\$105,000.00

(1) COSTS OF THIS ISSUE ESTIMATED TO BE NOT MORE THAN \$10,000.

THERE IS NO CURRENT MARKET FOR THE SECURITIES OF THE ISSUER.

A PURCHASE OF THE SECURITIES OFFERED BY THIS PROSPECTUS MUST BE CONSIDERED AS SPECULATION. ALL OF THE PROPERTIES IN WHICH THE ISSUER HAS AN INTEREST ARE IN THE EXPLORATION AND DEVELOPMENT STAGE ONLY AND ARE WITHOUT A KNOWN BODY OF COMMERCIAL ORE. NO SURVEY OF ANY PROPERTY OF THE ISSUER HAS BEEN MADE AND THEREFORE IN ACCORDANCE WITH THE LAWS OF THE JURISDICTION IN WHICH THE PROPERTIES ARE SITUATE, THEIR EXISTENCE AND AREA COULD BE IN DOUBT. SEE ALSO THE PARAGRAPH ENTITLED "RISK FACTORS" HEREIN.

THE VANCOUVER STOCK EXCHANGE HAS CONDITIONALLY LISTED THE SECURITIES BEING OFFERED PURSUANT TO THIS PROSPECTUS. LISTING IS SUBJECT TO THE ISSUER FULFILLING ALL THE LISTING REQUIREMENTS OF THE VANCOUVER STOCK EXCHANGE ON OR BEFORE AUGUST 18, 1987, INCLUDING PRESCRIBED DISTRIBUTION AND FINANCIAL REQUIREMENTS.

NO PERSON IS AUTHORIZED BY THE ISSUER TO PROVIDE ANY INFORMATION OR TO MAKE ANY REPRESENTATION OTHER THAN THOSE CONTAINED IN THIS PROSPECTUS IN CONNECTION WITH THE ISSUE AND SALE OF THE SECURITIES OFFERED BY THE ISSUER.

UPON COMPLETION OF THIS OFFERING THIS ISSUE WILL REPRESENT 21.13% OF THE SHARES THEN OUTSTANDING AS COMPARED TO 60.28% THAT WILL THEN BE OWNED BY THE CONTROLLING PERSONS, PROMOTERS, DIRECTORS AND SENIOR OFFICERS OF THE ISSUER AND ASSOCIATES OF THE AGENT. REFER TO THE HEADING "PRINCIPAL HOLDERS OF SECURITIES" ON PAGE 14 HEREIN FOR DETAILS OF SHARES HELD BY DIRECTORS, PROMOTERS AND CONTROLLING PERSONS AND ASSOCIATES OF THE AGENT. THE AGENT DOES NOT BENEFICIALLY OWN ANY SHARES OF THE ISSUER.

ONE OR MORE OF THE DIRECTORS OF THE ISSUER HAS AN INTEREST, DIRECT OR INDIRECT, IN OTHER NATURAL RESOURCE COMPANIES. REFERENCE SHOULD BE MADE TO THE ITEM "DIRECTORS AND OFFICERS" HEREIN FOR A COMMENT AS TO THE RESOLUTION OF POSSIBLE CONFLICTS OF INTEREST.

THIS OFFER IS SUBJECT TO A MINIMUM SUBSCRIPTION BEING RECEIVED ON THE OFFERING DAY, BEING THE SALE OF 300,000 SHARES. FURTHER PARTICULARS OF THE MINIMUM SUBSCRIPTION ARE DISCLOSED ON PAGES 2 AND 3 HEREIN.

WE, AS AGENT, CONDITIONALLY OFFER THESE SECURITIES SUBJECT TO PRIOR SALE, IF, AS AND WHEN ISSUED BY THE ISSUER AND ACCEPTED BY US IN ACCORDANCE WITH THE CONDITIONS CONTAINED IN THE AGENCY AGREEMENT REFERRED TO UNDER "PLAN OF DISTRIBUTION" ON PAGE 1 OF THIS PROSPECTUS.

**AGENT** 

C.M. OLIVER & COMPANY LIMITED

750 West Pender Street Vancouver, British Columbia

**EFFECTIVE DATE: FEBRUARY 19, 1987** 

of 300,000 shares is sold on the Offering Day, notice of the release of the funds will be given to the Superintendent and the net proceeds will be paid to the Issuer.

# DESCRIPTION OF BUSINESS AND PROPERTY OF THE ISSUER

The Issuer is currently engaged in the acquisition, exploration and development of natural resource properties. The Issuer owns interests in the mining properties described hereunder and intends to seek and acquire additional properties worthy of exploration and development.

#### THE PROPERTIES

# 1. BAP CLAIMS, KLIYUL CREEK, B.C.

Pursuant to an Agreement dated July 11, 1986 between BP Resources Canada Limited of 55 University Avenue, Suite 17, Toronto, Ontario, and the Issuer, the Issuer acquired 100% interest in three 2-Post Mineral Claims situated at Kliyul Creek, Johanson Lake Area, B.C.

The claims are more specifically described as follows:

NAME	RECORD NUMBER	EXPIRY DATE
BAP 10	# 128000 # 128004	August 13, 1994
BAP 14 BAP 18	# 128004 # 128008	August 13, 1994 August 13, 1994

The said 100% interest is subject to a 2.5% net smelter royalty in favour of the Vendor. In consideration of earning interest, the Issuer must spend an aggregate of \$3,700.00 for the years 1986 and 1987 on an applicable work program.

Pursuant to an Assessment Report dated September 23, 1986, and a subsequent Summary Report dated October 20, 1986 authored by C. M. Rebagliati, P.Eng., and titled Soil Geochemistry on BAP 10, 14 and 18 Mineral Claims, Omineca Mining Division and Summary Report of Phase I, Mr. Rebagliati discusses a total of 8 rock and 90 soil samples which were collected on the properties and recommends extending the soil grid to the northwest, systematically prospecting potential source area upslope and recommends further sampling to identify the source of gold enhancement found. To date Mr. Rebagliati has expended on behalf of the Issuer \$5,038.23 on exploration and report preparation.

Mr. Rebagliati's proposed budget for Phase I in his Report of July 10, 1986 has therefore been completed for the BAP Claims and Mr. Rebagliati recommends proceeding with Phase II.

## 2. SOUP CLAIMS, KLIYUL CREEK, B.C.

Pursuant to an Option Agreement dated July 31st, 1986, between Vital Mines Ltd. of 860 - 625 Howe Street, Vancouver, B.C. (the "Optionor") and the Issuer, as amended January 29, 1987 to read between the Issuer and Vital Resources Ltd., the Issuer may acquire a 51% interest in the Optionor's property. The claims are more specifically described as:

NAME	RECORD NUMBER	EXPIRY DATE
SOUP 1 - 10	26941 - 26950	August 7, 1994
SOUP 11 FR.	4206	August 15, 1994
SOUP 12*	5805	October 5, 1994
SOUP 13	5806	October 5, 1994
SOUP 14	6491	August 13, 1994

\* SOUP 12 is over staked by SOUP 14

The Issuer acquired the option to purchase the 51% interest in 14 mineral claims in the Omenica Mining Division in British Columbia for \$5,000. More specifically, the Issuer will keep the option in good standing if:

- (a) The Issuer pays \$5,000 upon the execution of this Agreement, which fee has been paid;
- (b) either:
  - (i) The Issuer incurs \$20,000 on exploration and development costs on the claims on or before December 31, 1986, which has been completed; or
  - (ii) The Issuer certifies to the Optionor that market or field conditions have delayed work so that the Issuer could not incur \$20,000 on exploration or development costs before December 31, 1986; The Issuer then pays to the Optionor an additional \$10,000 on or before December 31, 1986 and the Issuer incurs \$20,000 on exploration and development costs on the property on or before December 31, 1987.

The Issuer has expended in excess of \$20,000 prior to December 31, 1986, thereby complying with above-mentioned terms;

- (c) The Issuer is also to pay to the Optionor an additional \$10,000 on or before December 31, 1987 and the Issuer is to incur exploration and development costs on the claims on or before December 31, 1987, in an amount which when added to other exploration and development costs incurred by the Issuer on the claims, is equal to \$60,000; and
- (d) The Issuer pays to the Optionor an additional \$15,000 on or before December 31, 1988 and the Issuer incurs exploration and development costs on the claims on or before December 31, 1988 in an amount which, when added to other exploration and development costs incurred by the Issuer on the claims, is equal to \$120,000.

In the event that the Issuer fully complies with \$120,000 of expenditures and is not in arrears with payments and thereby earns its 51% interest in the claims, the parties further agree to enter into a Joint Venture Agreement to develop the claims.

The Optionor will fund its participation in a Joint Venture Agreement by way of equity financing or through working capital.

C.M. Rebagliati, P.Eng. pursuant to Summary Report on Magnetometer Survey - Rock Sampling on the Soup Claims, Omineca Mining Division dated October 20, 1986 reports the magnetometer survey proved effective in tracing magnetite bearing skarns beneath areas of extensive talus Furthermore, systematic chip sampling cover. substantiated that significant gold values are carried by Detailed results of Mr. the skarn and veins. Rebagliati's survey are attached hereto.

Mr. Rebagliati recommends further exploration for additional mineralization by extending the magnetometer survey grid to the north and south and prospecting the linear magnetic features and carefully and systematically sampling all shear zones, veins and skarns.

To date Mr. Rebagliati on behalf of the Issuer has expended \$21,451.24 on the Soup 1-14 Claims.

Phase I budget has been completed for these claims and Mr. Rebagliati has recommended proceeding with Phase II.

# 3. SOUPFR CLAIM, KLIYUL CREEK, B.C.

The Soupfr Claim, Record Number 7735, Expiry Date, August 1, 1993 was staked on behalf of the Issuer and acquired from C.M. Rebagliati, P.Eng., pursuant to Bill of Sale dated the 29th day of August, 1986 and recorded at Vancouver Sub-Recorders Office as the 16th day of October, 1986.

To date \$971.43 has been spent by the Issuer on the Soupfr Claim, which Claim is contiguous to the Soup Claims aforementioned and therefore all disclosure regarding location and access and mineralization are applicable thereto.

#### LOCATION AND ACCESS

The Claims are located in the Omineca Mining Division approximately 200 km north-northwest of Smithers and 15 km southeast of Johanson Lake.

Access to the Claims is by helicopter based at Johanson Lake, a distance of 15 km, which in turn is reached by wheel or float-equipped aircraft, or by the Omineca The road is reached from Fort St. James (360 km) Highway. or via Highway 97 from Prince George (500 km). The Dease extension of British Lake the Columbia Railway operational between Prince George and Driftwood, 65 southeast of Johanson Lake. Road access could readily be constructed along the Kliyul Creek Valley to the base of the claims.

The Claims are situated east of Kliyul Creek above tree-line on a 30 degrees to 35 degrees southwest-facing slope on which elevations range from 1,300 to 2,300 meters. Ubiquitous talus, partially covered by alpine grasses and shrubs, obscures much of the bedrock. A talus glacier bisects the Soup claim block.

To date a total of \$92,000 has been expended on the Claims of which \$70,000 has been expended by B. P. Resources Limited.

## Mineralization

The SOUP and BAP Claims lie within a well-mineralized belt hosting numerous gold prospects comprising gold-quartz veins and vein stock works, copper-gold sulphide-rich veins and auriferous magnetite skarns. Shear zone related gold mineralization is also indicated.

On the SOUP Claims gold-bearing magnetite-rich skarns ranging from 1 to 20 metres thick are intermittently exposed over a 3,200 meter strike length. At least two and possibly three conformable skarn units have been identified. In the area of the Saddle Gully Zone, where the highest gold values have been found, (up to 62.3 g/tonne over 1.5 m), offsetting fault also hosts auriferous skarn mineralization. The multiple skarn horizons and the considerable strike extent indicate that the potential to develop substantial reserves is good. In spite of the numerous exploration programs to which the property has been subjected, the multiple skarn horizons have never been thoroughly and systematically sampled to adequately identify and define gold-rich segments. With the close association of gold to magnetite, magnetometer surveying should successfully trace the multiple skarn zones through overburden covered areas.

In his Engineering Report dated July 10, 1986, C.M. Rebagliati, P.Eng. states that a detailed magnetometer survey along the projection of the skarn horizons followed by extensive hand trenching and systematic detailed sampling should prove to be the most cost effective method of exploration. Contingent upon successful trench results a program of closely spaced diamond drill holes should be contemplated.

In his Report of September 23, 1986 and subsequent Summary Report of October 20, 1986, Mr. Rebagliati recommends extending the magnetometer survey to the grid north and south and to prospect the linear magnetic features and carefully and systematically sample all shear zones, veins and skarns after a magnetometer survey proved effective in tracing the magnetite and after 45 continuous rock chip samples were collected and analyzed.

On the SOUP Claims the magnetometer survey identified and traced three skarn units. All three of the skarn zones are open to extension along strike. Careful, systematic chip sampling confirmed that both the quartz-magnetite veins and the magnetite-bearing skarns carry significant concentrations of gold and modest copper values.

Soil geochemistry on the BAP claims identified a linear zone of highly anomalous gold values trending parallel to the eastern claim boundary. The source of the anomaly within the large hydrothermal alteration aureole remains to be identified.

Mr. Rebagliati recommends a \$50,000 Phase II exploration program of magnetometer surveying, prospecting and rock sampling on the SOUP Claim prospecting complimented with extensive rock chip sampling and soil sampling on the BAP Claims.

There is no surface or underground plant or equipment on the Claims and the Claims are without a known body of commercial ore.

Oversize copies of maps 5 and 6 contained in Mr. Rebagliati's Engineering Report may be inspected at 620-625 Howe Street, Vancouver, British Columbia, during normal business hours.

#### RISK FACTORS

Mineral exploration and development are speculative businesses, marked, among other things, by unprofitable efforts resulting not only from the failure to discover mineral deposits but from finding mineral deposits which, though present, are insufficient in size to return a profit from production. The marketability of minerals acquired or discovered by the Issuer may be affected by numerous factors which are beyond the control of the issuer and which cannot be accurately predicted, such as market fluctuations, the proximity and capacity of milling facilities, mineral markets processing equipment, and such other factors government regulations, including regulations relating to royalties, allowable production, importing and exporting of minerals and environmental protection. The minerals industry is intensely competitive and the Issuer will be competing with other companies that have greater resources.

The Issuer has obtained title opinions on its land. All title opinions now in the possession of or available to the Issuer have been filed with this Prospectus at the Office of the Superintendent of Brokers for British Columbia will be available for inspection the Issuer's аt registered and records office during the primary distribution of the securities offered by this Prospectus. The mining claims of the Issuer have not been surveyed as part of a patent process and accordingly the precise

LEMMING RESOURCES LTD.

PHASE I SUMMARY REPORT

1986 KLIYUL CREEK GOLD PROJECT

BAP AND SOUP CLAIMS

JOHANSON LAKE AREA, B.C.

OMINECA MINING DIVISION

N.T.S. 94D/8

By

REBAGLIATI GEOLOGICAL CONSULTING LTD.

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## SUMMARY

The Phase I exploration program conducted in July 1986 on the SOUP and BAP claim blocks successfully relocated and substantiated the gold prospects and gold soil geochemical anomalies identified by former operators.

On the SOUP claims the magnetometer survey identified and traced three skarn units. All three of the skarn zones are open to extension along strike. Careful, systematic chip sampling confirmed that both the quartz-magnetite veins and the magnetite-bearing skarns carry significant concentrations of gold and modest copper values.

Soil geochemistry on the BAP claims identified a linear zone of highly anomalous gold values trending parallel to the eastern claim boundary. The source of the anomaly within the large hydrothermal alteration aureole remains to be identified.

The SOUP and BAP properties each have strong indications of potentially important gold mineralization and both merit further exploration.

A \$50,000 Phase II exploration program of magnetometer surveying, prospecting and rock sampling on the SOUP claim and prospecting complimented with extensive rock chip sampling and soil sampling on the BAP claims is recommended.

# INTRODUCTION

In July 1986, Rebagliati Geological Consulting Ltd. was commissioned by F. Mueller, President of Lemming Resources Ltd., to undertake a Phase I exploration program on the Company's SOUP and BAP gold properties situated at Kliyul Creek, Johanson Lake region of north central British Columbia.

Work in the district dates back to the 1930's with the discovery of placer gold at McConnal Creek. The subsequent surge of gold exploration resulted in the discovery of numerous lode gold deposits in the Goldway Peak - Kliyul Creek region. In the 1960's and 1970's the area was actively explored for porphyry copper and molybdenum deposits.

Recently the area has been subjected to renewal gold exploration. This work resulted in the discovery of multiple gold-bearing magnetite-rich skarn zones on the SOUP claims and a sizeable gold soil geochemical anomaly associated with gossanous sheared and altered ash tuffs on the BAP claims.

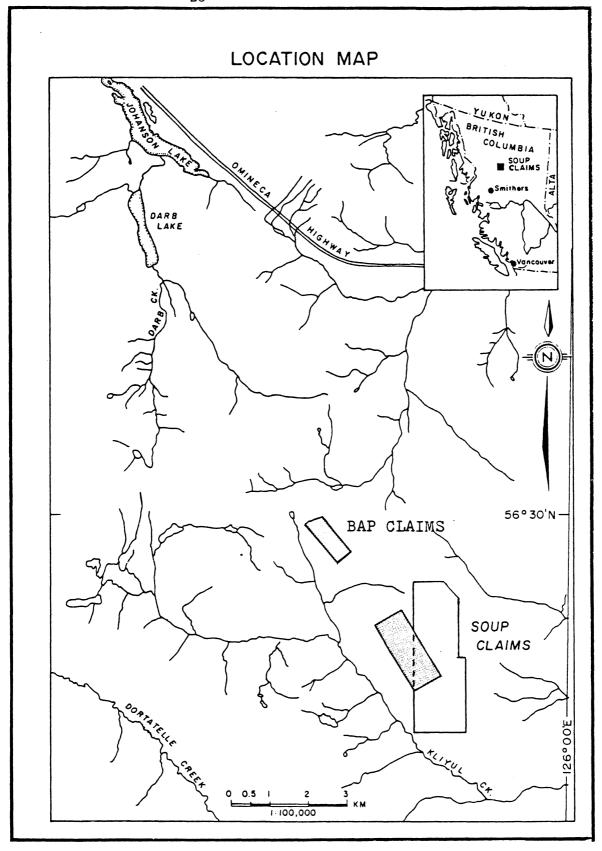
This report describes the Phase I gold exploration program conducted on the SOUP and BAP claims in July 1986.

#### **LOCATION AND ACCESS**

The claims are located at 56°28' north latitude and 126°03' longitude in the Omineca Mining Division approximately 200 km north-northeast of Smithers and 15 km southeast of Johanson Lake (NTS 94D/08, Figure 1).

Access to the property is by helicopter from Johanson Lake, a distance of 15 km, which in turn is reached from Fort St. James (400 km) or via Highway 97 from Prince George (500 km). The Dease Lake extension of the British Columbia Railway is operational between Prince George and Driftwood, 65 km southwest of Johanson Lake. Road access could readily be constructed along the Kliyul Creek Valley to the base of the SOUP claims and via an unnamed creek to the BAP claims from the Omineca Highway.

The SOUP and BAP claim groups are situated east of Kliyul Creek above treeline on a 30° to 35° southwest-facing slope on which elevations range from



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LEMMING RESOURCES LTD.
KLIYUL CREEK GOLD PROJECT

1,300 to 2,300 metres. Ubiquitous talus, partially covered by alpine grasses and shrubs, obscures much of the bedrock. A steep-walled cirque and a talus glacier bisect the SOUP claim block.

# **CLAIMS**

Two separate blocks of claims, the SOUP block and the BAP block, are held under option by the Company.

The following information for the SOUP and BAP claims was obtained from Government and Company records. The writer has not made a field examination of all the claim posts and can pass no opinion on the manner of staking, nor can he verify the position of the claims as depicted on Figure 2.

Essential claim data is listed as follows:

# Vital Pacific Resources Ltd. Option

Claim Name	Record #	<u>Units</u>	Recording Date	Expiry Date*
SOUP 1	26941	1	August 7, 1964	August 7, 1994
SOUP 2	42	1	August 7, 1964	August 7, 1994
SOUP 3	· 43	1	August 7, 1964	August 7, 1994
SOUP 4	44	1	August 7, 1964	August 7, 1994
SOUP 5	45	1	August 7, 1964	August 7, 1994
SOUP 6	46	1	August 7, 1964	August 7, 1994
SOUP 7	47	1	August 7, 1964	August 7, 1994
SOUP 8	48	1	August 7, 1964	August 7, 1994
SOUP 9	49	1	August 7, 1964	August 7, 1994
SOUP 10	50	1	August 7, 1964	August 7, 1994
SOUP 11FR	4206	1	August 15, 1981	August 15, 1994
SOUP 12	5805	12	October 5, 1983	October 5, 1994
SOUP 13	5806	12	October 5, 1983	October 5, 1994
SOUP 14	6491	12	August 13, 1984	August 13, 1994

#### Lemming Resources Ltd.

Claim Name	Record #	<u>Units</u>	Recording Date	Expiry Date*
SOUPFR	7735	1	August 1, 1986	August 1, 1993

<sup>\*</sup> Upon acceptance of assessment filed on August 1, 1986.

METRES

1500 2000

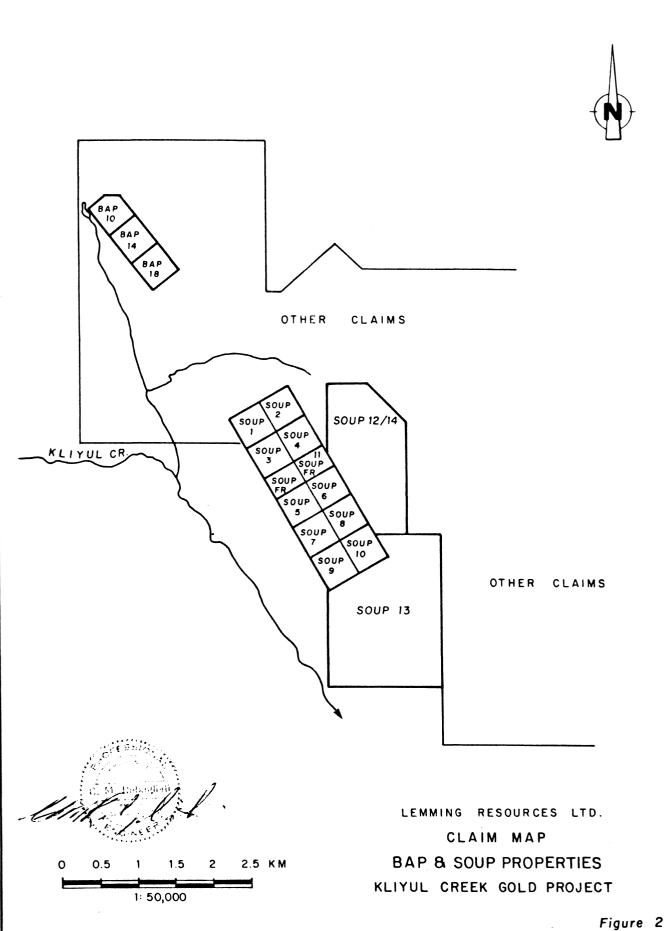
2500

1000

500

CLAIM MAP BAP & SOUP PROPERTIES KLIYUL CREEK GOLD PROJECT MIS 94 0/8,9 /10 2 DATE PAUJ.

SCALE 1:50,000



BP	Resources	Canada	Ltd.	<b>Option</b>

Claim Name	Record #	<u>Units</u>	Recording Date	Expiry Date*
BAP 10	128000	1	August 13, 1973	August 13, 1994
BAP 14	128004	1	August 13, 1973	August 13, 1994
BAP 18	128008	1	August 13, 1973	August 13, 1994

<sup>\*</sup> Upon acceptance of assessment filed on August 1, 1986.

## **EXPLORATION HISTORY**

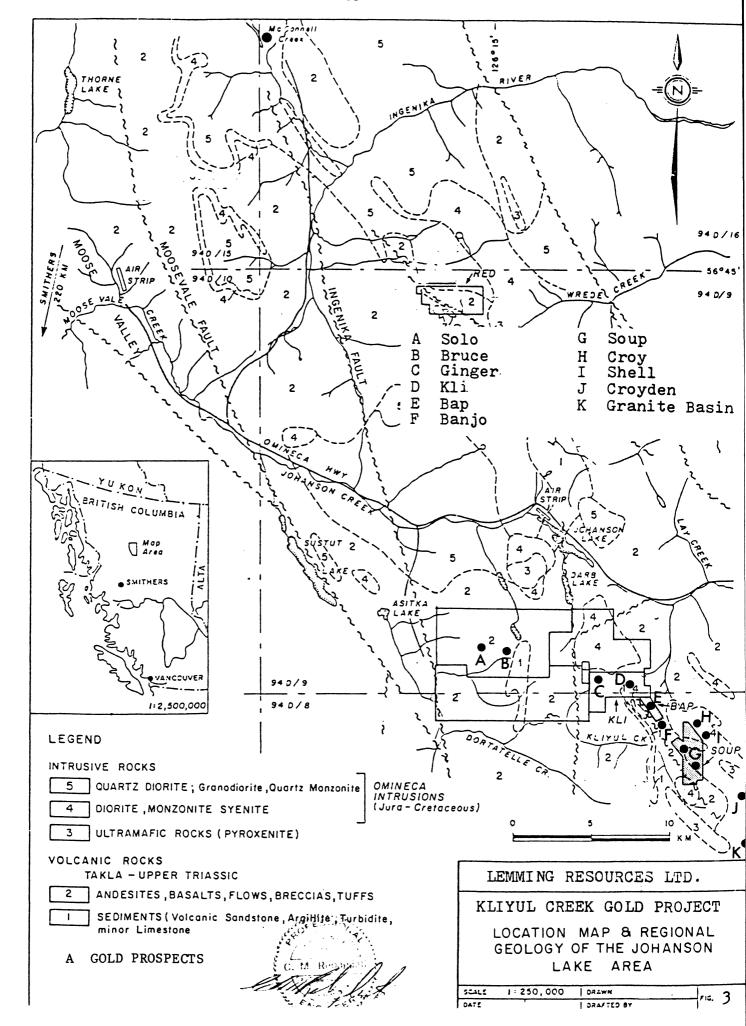
Exploration on the SOUP and BAP claims has been conducted intermittently since 1947 by several companies. This earlier work resulted in the discovery of auriferous magnetite zones on the SOUP claims and a large gold soil geochemical anomaly on the BAP claims. A more complete documentation of past exploration is provided in a report by the writer dated July 10, 1986.

The 1986 program was directed towards relocating the gold prospects on the SOUP claims and substantiating the gold soil anomalies on the BAP claims.

# REGIONAL GEOLOGICAL SETTING

The Kliyul Creek area lies in the northern extension of the Quesnel Trough, within the Intermontane Belt of the Canadian Cordillera. The Quesnel Trough forms a 30 to 60 km wide northwesterly trending assemblage of volcanic and sedimentary rocks of Upper Triassic to Lower Jurassic age Takla Group rocks whose equivalents extend from the U.S. border to north of the Stikine River (Richards 1976, Monger 1977).

The Takla Group is bordered on the east by late Paleozoic (Penn.-Perm.) metasedimentary and metavolcanic rocks of the Lay Range Assemblage (Omineca Geanticline) and on the west by Lower to Middle Jurassic rocks of the Hazelton Group (Pinchi Geanticline). The Takla volcanic rocks are an association of island-arc type calc-alkaline to alkaline flows and volcaniclastic rocks of predominantly submarine origin. The extrusive rocks are interlayered with volcanogenic sandstone, siltstone, conglomerate, argillite, laminated limestone and limestone breccia (Fig. 3).



The Takla stratigraphy is intruded by granitic to intermediate plutons of Jura-Cretaceous age which are satellitic to the Hogem Batholith. Small ultramafic bodies present in the region may be related to deep-seated faulting, while some high level subvolcanic intrusions are part of the Takla sequence.

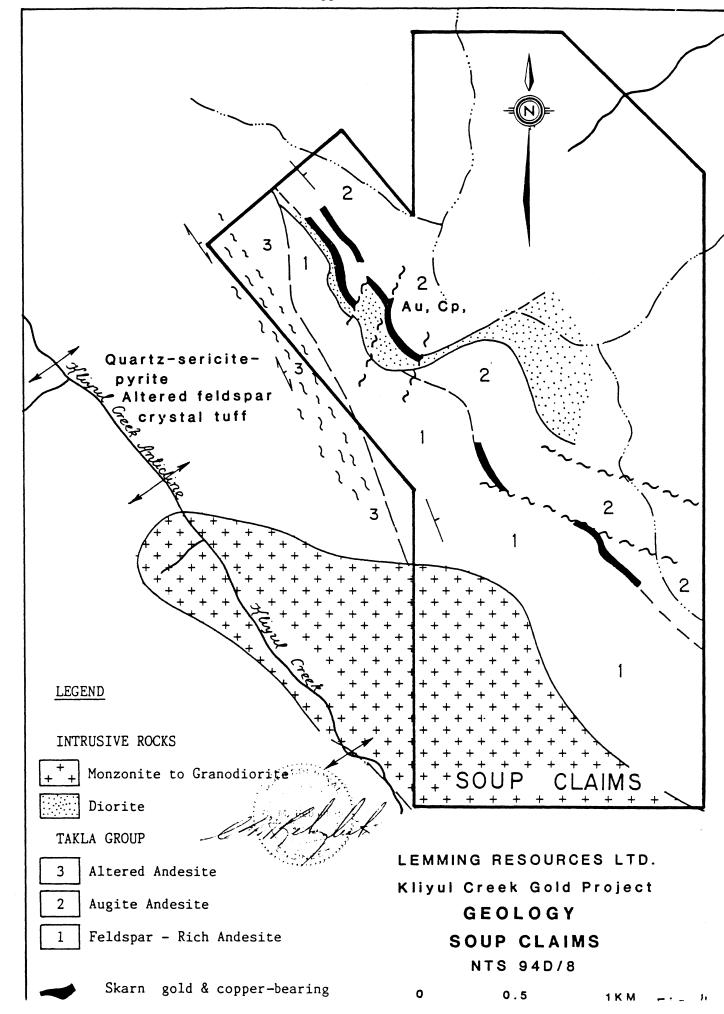
Much of the region is dissected by north and northwest trending branches of the Ingenika-Pinchi, Dortatelle and Lay Range fault systems. The northwest trending Kliyul Fault is marked by a broad zone of shearing and schistose rocks which are exposed along the southwest side of the SOUP claims, on the BAP claims and swing westward across the KLI claims.

# SOUP PROPERTY

# **GEOLOGY**

The SOUP claims are underlain largely by volcanic rocks of the Upper Triassic Takla Group. These have been intruded by diorite stocks, sills and dykes, microdiorite and feldspar porphyry dykes and by quartz monzonitic batholithic rocks (Fig. 4). A few narrow dykes of augite porphyry and mica lamprophyre also occur. Volcanic units strike north-northwesterly and dip moderately eastward and are offset by northwesterly and north to northeasterly-striking faults. Magnetite-rich, gold-copper-bearing skarn beds appear to lie parallel to the volcanic layering and are traceable for over 2,000 metres.

The stratigraphically lowest exposed rocks are grey to greenish feldspar-rich andesitic lavas. These andesites grade upward into, and at first interfinger with, beds of andesitic to basaltic augite porphyry flows and flow breccias. Both the andesite and the augite porphyry flows are intruded by augite porphyry feeder dykes. Recessive, thin calcareous andesitic tuff units, indicative of a period of sedimentation, lie at the base of the augite-bearing units. On the west side of Kliyul Creek, these units correlate with west dipping, thick beds of pyritic ash tuff, interlayered calcareous tuffs, gritty limestone and argillite which occupy the same stratigraphic position between the feldspathic andesite and the augite porphyries. The opposing dips suggest that Kliyul Creek occupies an anticlinal valley.



# MAGNETITE-GOLD-COPPER OCCURRENCES

Massive conformable lenses (or beds) of magnetite-rich skarn occurring near the base of the augite porphyry contain appreciable gold and copper. At least three parallel skarn horizons are recognized, possibly replacing calcareous tuffs. Similar-looking mineralization is present in quartz-magnetite veins occurring along cross-cutting faults which offset the skarn units. The skarn occurs in a series of intermittently exposed concordant lenses 1 to 5 metres thick, each up to several hundred metres long. Magnetite, ranging from 60 to 100%, is concentrated near the top of the horizon. Peripheral zones of disseminated magnetite 5 to 20 metres thick underlie most massive horizons and contain minor pyrite and chalcopyrite. Lenses of massive pyrite also occur within or adjacent to the zones of disseminated magnetite. Outcrops of skarn tend to be highly oxidized, forming orange-brown stain zones, and are characterized by epidote, actinolite and fine-grained garnet. Only minor calc-silicate alteration, typical of many skarn deposits, is present on the SOUP claims. The quartz-magnetite veins and replacement bodies occupy subsidiary faults and shear zones branching from or parallel to the main Saddle Gully Fault. These auriferous veins have only been observed to occur near the magnetite-bearing skarn units.

#### **MAGNETOMETER SURVEY**

Talus obscures much of the outcrop in the vicinity of the auriferous skarn and vein occurrences. A magnetometer survey was conducted to trace the magnetite-bearing skarn units and veins between and beyond outcrops areas. Two picketed base lines, totalling 725 m, were established for control. Cross lines were placed at 25 m intervals and magnetometer measurements were recorded at 5 m intervals along 2875 m of lines.

Three skarn horizons were identified (Figure 5). Each is marked by a deep linear magnetic trough. The upper, or main skarn, horizon is also marked by a discontinuous series of magnetic highs. The folded appearance of the magnetic trends is attributed to topographic effects on the surface trace of the gently to moderately east dipping skarn and is further accentuated by faulting.

The quartz-magnetite veins generally lie within a broad positive magnetic feature centered at 50 + 00 N,51 + 00 E but are not individually identifiable.

# **ROCK SAMPLING**

A total of 45 continuous rock chip samples were collected from skarn and vein occurrences to relocate previously reported auriferous zones and to determine their tenor and characteristics (Figure 6). Approximately 1 kg of rock was cut per metre of sample length.

Sample descriptions and assay results are tabulated below.

Sample Descriptions

Sample Number	Length Metres	Gold Oz/ton	Copper <u>%</u>	Description
101	0.3	2.010	0.17	Quartz magnetite vein - highly oxidized.
102	0.6	0.005	0.12	Footwall to 101 - chloritic andesite.
103	1.0	0.045	0.17	Hanging wall to 101 - chloritic andesite minor qtz, mt.
104	1.4	0.022	0.09	Footwall to 105 - chloritic andesite minor qtz, mt.
105	1.0	0.250	0.12	Highly oxidized quartz - magnetite band in chloritic andesite.
106	1.0	0.001 -	0.13	Hanging wall to 105 - chloritic andesite. Footwall to feldspar porphyry dyke.
107	1.0	0.001	0.72	Footwall to 108 - chloritic andesite - minor malachite.
108	1.0	0.790	0.41	Spongy limonite and oxidized magnetite.
109	1.0	0.292	0.09	Highly oxidized quartz magnetite.
110	1.0	0.011	0.20	Weakly oxidized chloritic andesite - minor malachite. Hanging wall to 109.
111	2.1	0.003	0.06	Highly oxidized skarn, 60% magnetite.
112	1.0	0.008	0.09	Footwall to 113 chloritic hornfelsed andesite minor quartz and magnetite.
113	1.0	0.295	0.05	Sheared quartz magnetite strike - 1500 - 750 E.
114	1.0	0.031	0.06	Hanging wall to 113 - hornfelsed chloritic andesite minor qtz + mt.
115	1.0	0.042	0.07	Hanging wall to 114 - hornfelsed chloritic andesite minor qtz + mt.
116	1.0	0.087	0.07	Hanging wall to 115 - 50% quartz + magnetite 50% chloritic hornfelsed andesite.
117	1.0	1.010	0.07	Quartz with 15% magnetite + some chloritic andesite.

Samp	le l	Desc	ript	ions

Sample Number	Length Metres	Gold Oz/ton	Copper <u>%</u>	<u>Description</u>
118	1.0	0.141	0.18	Hanging wall to 117 - chloritic andesite some qtz + mt.
119	1.0	0.130	0.05	Quartz and oxidized magnetite - minor pyrite - shear zone.
120	1.0	0.011	0.03	Oxidized pyritic sheared chloritic andesite minor qtz + mt.
121	0.7	0.019	0.23	Sheared andesite, weak quartz + magnetite - west half oxidized - east half fresh.
122	2.0	0.730	0.25	Highly oxidized - quartz + magnetite in shear zone.
123	1.0	0.165	0.34	Highly oxidized magnetite skarn.
124	1.0	0.058	0.30	Highly oxidized magnetite skarn.
125	1.0	0.060	0.18	Highly oxidized magnetite - epidote - garnet skarn.
126	1.0	0.045	0.16	Highly oxidized magnetite - epidote - garnet skarn.
127	1.0	0.081	0.13	Highly oxidized magnetite - epidote - garnet skarn.
128	1.2	0.038	0.49	Highly oxidized magnetite - epidote skarn - some chalcopyrite.
129	3.0	0.032	1.15	Highly oxidized magnetite - epidote - garnet skarn - some chalcopyrite.
130	composite	0.001	0.03	Composite grab from rubble of bleached hanging wall to skarn (#143).
131	composi te	0.004	0.06	Spongy limonite + highly oxidized magnetite skarn.
132	1.0	0.252	0.21	50% oxidized magnetite skarn with f-g andesite tuff.
133	1.0	0.018	0.13	Highly oxidized magnetite skarn - some andesite tuff.
134	1.0	0.025	0.06	Mostly and esite tuff - minor highly oxidized magnetite skarn.
135	1.0	0.069	0.08	Fairly fresh magnetite skarn.
136	1.0	0.117	0.14	Fairly fresh, banded, green calculicate - magnetite skarn.
137	1.0	0.141	0.26	Highly oxidized magnetite skarn.
138	1.0	0.022	0.11	Banded magnetite skarn and highly oxidized tuff.
139	1.0	1.680	0.17	Sulphide impregnated, silicified, sheared chloritic andesite.
140	1.0	0.032	0.34	Weakly pyritic, sheared chloritic andesite minor cpy.
141	1.0	0.193	0.06	Sheared chloritic andesite - minor quartz and seams of magnetite.
142	1.0	0.017	1.76	Sheared chloritic andesite, heavy malachite staining.
143	composi te	0.003	0.04	Highly oxidized magnetite skarn rubble.
144	composite		0.07	Highly oxidized magnetite skarn rubble.
145	composite		0.14	Highly oxidized magnetite skarn rubble.

400 + 80

457 . 754

47 . 50 %

47 . DON

48 - 23 W

48 . 30 %

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LEMMING RESOURCES LTD
KLIYUL CREEK GOLD PROJECT
SOUP CLAIMS
SADDLE GULLY SKARN ZONE
MAGNETOMETER SURVEY

. . . .

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# BAP PROPERTY

# **GEO**LOGY

The BAP claims are underlain by volcanic rocks of the Upper Triassic-Lower Jurassic Takla Group. These have been intruded by feldspar porphyry dykes and sills, minor quartz monzonite dykes and, along the southwestern side of the claims, by a stock of gabbro and biotite hornblende monzonite having an ultramafic hornblendite margin.

The strongly altered and pyritic shear zones in the feldspathic andesite near the base of the section on the SOUP claims continue northwest and are traceable to the BAP claims where they form a conspicuous gossan. Within the large hydrothermal aureole adjacent to the alkaline pluton on the BAP claims, the altered zone is mapped within a unit of fine to medium grained, andesitic ash and lapilli tuff, which overlies limestone and limey argillite. Units strike 160° and dip 20-35° east. The limestone and argillite may correlate with the calcareous tuffs which host the magnetite-gold skarns on the SOUP claims.

#### SOIL GEOCHEMISTRY

A total of 90 soil samples were collected and geochemically analyzed for gold to relocate the previously indicated anomaly. Because no soil profiles have developed over the rapidily eroding gossan, all soil samples were comprised of oxidized talus fines.

Two picketed baselines were established for grid control and samples were collected at 50 m intervals. Lines were not slope corrected.

#### MINERALIZATION

Three main types of sulphide mineralization occur on the property; sulphides in quartz veins, sulphides as smears along fractures and fracture filling and minor disseminated sulphides in pyroclastics. Intense pyrite mineralization occurs within partly chloritized and/or silicified sericitic sheared tuffs that underlie a more basic augite porphyry volcanic unit.

# **DISCUSSION OF RESULTS**

Systematic sampling of mineralized outcrops on the SOUP claims revealed that there are two distinct modes of mineralization; stratiform magnetite-calculate skarn and discordant fault or shear controlled quartz-magnetite veins and replacements. Pyrite and lesser chalcopyrite comprise a subordinate component of both the skarn and the veins.

The magnetometer survey, utilizing a 5m x 25m grid, proved to be effective in identifying and tracing the auiferous magnetite-bearing skarns beneath areas of extensive talus cover. All three of the skarn units identified are open in both directions along strike for extension. A broad, low-contrast magnetic high roughly outlined the general area of the magnetite-bearing quartz veins. However, due to their lower magnetite content, prospecting proved to be more effective in tracing the shear and fault controlled quartz-magnetite veins.

Systematic chip sampling demonstrated that the quartz-magnetite veins generally carry richer gold concentrations than the skarns, but that the relationship is reversed for copper. Samples from vein and skarn occurrences containing 0.10 oz/ton gold (3.428 g per tonne) or better are tabulated below.

Saddle Gully Zone
Samples with Greater than 0.10 oz/ton Gold
Quartz-Magnetite Veins and Replacements

Sample No.	Length m	oz/ton Gold	<u>% Cu</u>	
101	0.3	2.010	0.17	
105	1.0	0.250	0.12	
108	1.0	0.790	0.41	
109	1.0	0.292	0.09	
113	1.0	0.295	0.05	
117	1.0	1.010	0.07	
118	1.0	0.141	0.18	
119	1.0	0.130	0.05	
122	2.0	0.730	0.25	
139	1.0	1.680	0.17	
141	1.0	0.193	0.06	

#### Skarn Zones

Sample No.	Length m	oz/ton Gold	<u>% Cu</u>	
123	1.0	0.165	0.34	
132	1.0	0.252	0.21	
136	1.0	0.117	0.14	
137	1.0	0.141	0.26	

Neither pyrite nor chalcopyrite display a uniform correlation with gold.

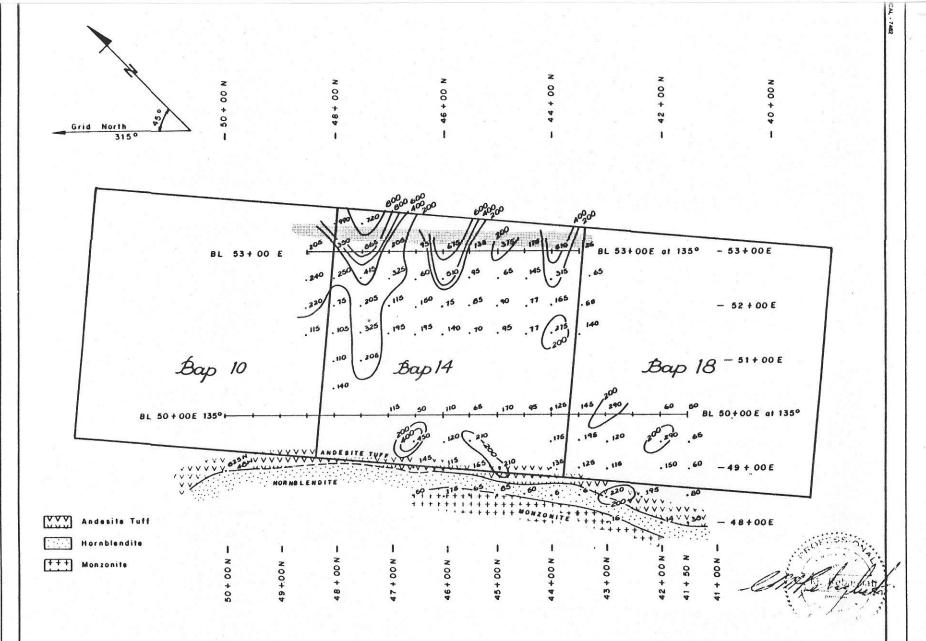
Although the quartz-magnetite veins generally carry higher gold values than the skarn, two skarn outcrops located along the main skarn horizon at 50 + 25 N and 47 + 25 N contain significant gold values. The five samples (123-127) from the 3 metre-wide 47 + 25 N locality average 0.082 oz/ton gold and the 6 m thick skarn at 50 + 25 N averages 0.104 oz/ton gold (samples 132-137).

Intense oxidation has transformed much of the magnetite in both the skarn and the veins into spongy limonitic masses and the chalcopyrite into chalcocite and malachite. The effect oxidation has had on grades of gold and copper is not known.

Systematic chip sampling has substantiated that significant gold values are carried by both the skarn and veins on the SOUP claims. Further exploration for additional mineralization can be effectively carried out by utilizing a combination of detailed magnetometer surveying and conventional prospecting. Diamond drilling will be required to successfully sample below the zone of intense surface oxidation.

On the BAP claims all soil samples derived from material originating from the alteration aureole developed adjacent to the alkaline pluton are geochemically enhanced in gold. Contoured data displays dispersion patterns consistent with that of downhill gravity migration from a northwesterly-trending source located immediately upslope from and parallel to the 53 + 00 E baseline (Figure 7). The geochemistry may reflect gold mineralization related to ductile shearing of the gossanous tuffs by the Kliyul Creek Fault which acted as a channel for hydrothermal fluids generated by the nearby monzogabbroic-ultramafic stock. Regardless of the source of the mineralization, a significant gold anomaly has been identified.

Additional soil sampling, thorough prospecting and systematic rock chip sampling is required to identify the source of the high contrast gold anomaly.



# RECOMMENDATIONS

A two-phase success-contingent exploration program is recommended to follow the successful Phase I program completed in 1986.

## Phase II

- 1. SOUP CLAIMS: Magnetometer survey, prospecting and rock chip sampling.
  - a) Extend the detailed magnetometer survey to the grid north and south to trace the three skarn horizons and to identify new magnetite-rich zones.
  - b) Prospect the linear magnetic features for skarn mineralization and the low contrast magnetic highs, particularly those near dislocated skarns, for fault and shear-controlled discordant auriferous veins and replacements.
  - c) Carefully and systematically sample all shear zones, veins and skarns.
- 2. BAP CLAIMS: Soil sampling, prospecting and rock chip sampling.
  - a) Extend the 25 m x 50 m soil grid to the northwest.
  - b) Systematically prospect the potential source area upslope from the 53 + 00 E baseline.
  - c) Quartz veins, silicified zones and all sulphide impregnated outcrops above the baseline require thorough sampling. Altered and mineralized talus blocks also require sampling to help identify the source of the gold enhancement.

And Meeting West

# PROPOSED BUDGET

<u>Phase II:</u> Geological mapping and prospecting, rock chip sampling, soil sampling and magnetometer survey.

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Salaries	\$	18,500	
Accommodation, Meals and Camp Supp	lies	4,500	
Communications		500	
Equipment Rental		4,000	
Assays		5,000	
Vehicle Expenses		3,000	
Heli∞pter		9,000	
Government Fees		2,000	
Report Preparation	-	3,500	
	Sub Total		\$ 50,000

Phase III: Diamond drilling.

Diamond drilling all inclusive 600 ft. @ 125/ft.	\$ 75,000
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TOTAL \$ 125,000

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# CERTIFICATE OF QUALIFICATIONS

I, Clarence Mark Rebagliati, of 3536 West 15th Avenue, Vancouver, B.C. hereby certify that:

- 1) I am a consulting geological engineer with offices at 3536 West 15th Avenue, Vancouver, B.C.
- 2) I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario (Mining Technology, 1966).
- 3) I am a graduate of the Michigan Technological University, Houghton, Michigan, U.S.A. (B.Sc. Geological Engineering, 1969).
- 4) I have practiced my profession continuously since graduation.
- 5) I am a member in good standing of the Association of Professional Engineers of British Columbia.
- 6) The foregoing report is based on my personal knowledge of the area resulting from regional studies, compilations and from property examinations during the periods July 21 to August 24, 1984 and July 10 to 26, 1986.
- 7) I authored a preceding report entitled Report on the Kliyul Creek Gold Project, BAP and SOUP claims, Johanson Lake Area, B.C., Omineca Mining Division, dated July 10, 1986.
- 8) I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in the securities or properties of Lemming Resources Ltd. nor of any affiliated company.
- 9) I consent to the inclusion of this report in a prospectus or statement of material facts.

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