2396

Reconnaissance Geochemical Report

Largo Mines Ltd.

Pimainus Creek South Area Claims

no deposit plotted

Kamloops M. D., B. C.

92I/6E,W

Approximate Co-ordinates: Longitude 121°15'

Latitude 50°25'

Report by: L. W. Saleken, B. Sc.,
Geologist

January 1970

Electronics Surveys

517 - 602 West Hastings Street, Vancouver, British Columbia, Canada ✡ Telephone 688-4342

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SUMMARY

The Pimainus Creek, South area claims, are located 6 miles east of Spences Bridge between Pimainus Creek and Nicola River. The South area consists of 176 mineral claims that are owned by Largo Mines Ltd. (N.P.L.), Vancouver, B. C.

A reconnaissance geochemical soil survey was conducted on the group to determine mineralized areas. An interpretation of the Government aeromagnetic map was done by R. H. Parker, whose report is included in the appendix. A total of ten anomalous zones of copper response were detected. A magnetic anomaly, Area B, is shown to exist on the western part of the South area.

Recommendations for the South area include line cutting, soil sampling and a ground magnetic survey.

INTRODUCTION

The report is a discussion of the survey procedure and results of a reconnaissance geochemical soil survey conducted on the Pimainus Creek, South area claim group for Largo Mines Ltd. (N.P.L.), Vancouver, B. C. The survey was conducted by S. Wagenitz between October 24 and December 10, 1969.

The nature of the reconnaissance survey was to detect abnormal copper concentration which may be related to mineralization and to a magnetic anomaly, Area B, outlined by R. H. Parker, "Examination of Government Aeromagnetic Survey, Largo Mines Ltd., Pimainus Creek Claim Group, November - December 1969". R. H. Parker's report is included as part of the appendix.

The analysis, conclusions and recommendations of this report are based on the writer's experience and field work in the general vicinity of the South area. The writer has done geochemical and geological work on the North area of the Pimainus Claim Group.

LOCATION AND ACCESS

Approximate Co-ordinates: Longitude 121°15'
(centre of claims) Latitude 50°25'

The Pimainus Creek, South area claim group, is located on the south-western fringe of the Highland Valley mining camp, Kamloops Mining Division, B. C. The claims are bounded to the north-east by Pimainus Creek. The group is approximately 6 miles due east of the community of Spences Bridge.

Access to the claims is by the Pimainus Lakes gravel road. The road is situated 12 miles east of Spences Bridge along Highway 8 near the confluence of Skuhun Creek. The claims are located about 15 miles along the road which is only accessible by four wheel drive vehicle.

PROPERTY

The Pimainus Creek, South area claim group consists of 179 full size and fractional mineral claims located south of Pimainus Creek. The South area consists of the following groups of claims:

a) Don 1 - 131 (incl.)

b) Ken 1 - 24 (incl.)

c) RWS 1 - 2 (incl.)

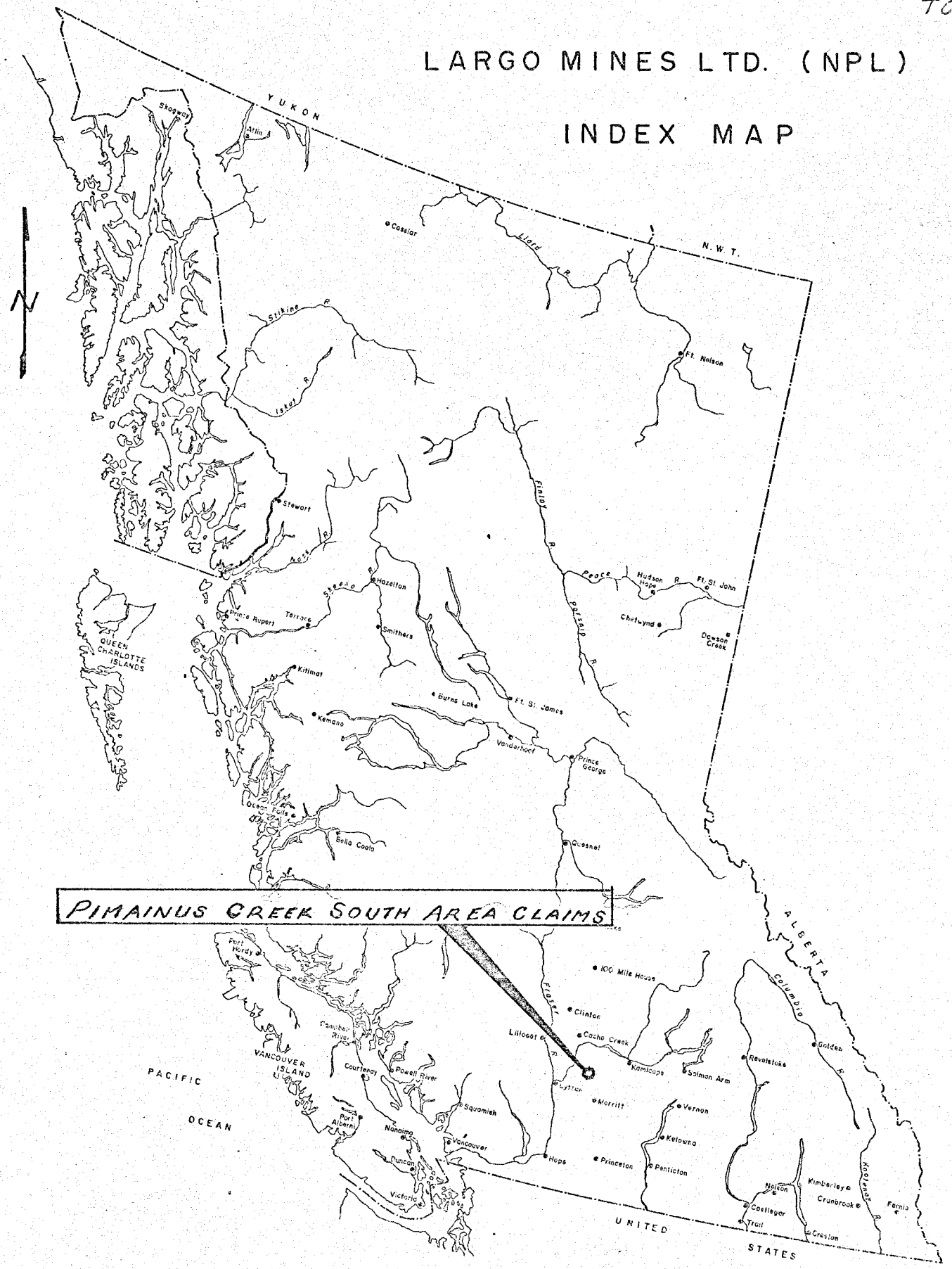
d) Pat 8, 10, 12, 14, 16, 18, 20, 32, 34, 36, 38, 39

Claim Name	Recording Number	Recording Date
Don 1 - 131 (incl.)	77202 - 77332	March 10, 1969
Ken 1 - 24 (incl.)	77333 - 77356	"
RWS 1 - 2 (incl.)	77357 - 77358	"
Pat 8	77366	"
10	77368	"
12	77370	"
14	77372	"
16	77374	"
18	77376	"
20	77378	"
32	77380	"
34	77382	"
36	77384	"
38	77386	"
39	77387	"

The approximate location of these claims is shown on figure 1.

LARGO MINES LTD. (NPL)

INDEX MAP



PHYSIOGRAPHY

The Pimainus Creek, South area claim group, lies in the southern portion of the Thompson plateau. The plateau is a gently rolling upland of low relief lying between 4,000 and 5,000 feet A.S.L. Local relief on the group is moderate. Tributaries of Pimainus Creek and Nicola River drain the area. The bedrock is covered by a mantle of glacial drift.

Climate is generally of the dry belt type, influenced by elevations and the Coast Range Mountains. Average precipitation is greater than 15 inches per year. Temperatures vary with seasons with minimum winter conditions reaching 40 degrees below zero.

Pine, fir and other conifers along with scrub brush inhabit the valleys and hillsides.

GENERAL GEOLOGY

As indicated on the geological map (S. Duffell & K.C. McTaggart, 1952), the South area is largely underlain by Lower Cretaceous Spences Bridge Group rocks in contact with Jurassic Guichon Creek batholith.

The Spences Bridge group is composed of an accumulation of lavas, pyroclastic rocks and minor sediments. The lavas are andesitic to dacitic in composition with minor amounts of rhyolites and basalts. Breccias and agglomerates are intercalated with the volcanics. The lavas are commonly red, green, mauve, purple and black in color with textures ranging from porphyritic to amygdaloidal. Quartz, calcite and zeolites are associated with the lavas. Where the volcanic rocks are decomposed, secondary products of saussurite, carbonate, iron oxides, and chlorite are present (S. Duffell & K. C. McTaggart, 1952).

Structurally, the Spences Bridge group is one of gentle folds, with dip from 10 to 40 degrees and a general trend to the northwest. Steep dips, slickensided surfaces and sheared rocks indicate faulted contacts near the boundaries of the group. Dykes of Tertiary age cut the group in many places.

Guichon Creek batholith, Hybrid phase granodiorites (K.E. Northcote, 1969) occur to the north and north east of the Spences Bridge rocks. Rocks of the batholith are granodiorite to diorite in composition

and altered to chlorite, epidote and sericite in several areas. The batholith appears to extend underneath the Spences Bridge group as indicated by the geological maps. Economic mineralization is known to be associated with the Hybrid phase (K.E. Northcote, 1969). North of the South area, along the north slopes of Pimainus Creek, the old Toketic iron deposit is located. Specular hematite, massive pyrite and minor chalcopyrite occurs with the deposit.

GEOCHEMICAL ENVIRONMENT

The South area is covered by a mantle of transported drift of varying thickness. The exposed outcrop on the claims is about 10% and consists of black-red amygdaloidal to vesicular andesites.

The soil is a glacial drift having a moderate to poorly developed eluvial horizon. The B horizon is located 6 to 8 inches below the surface and ranges in color from brown-red to yellow-red. An organic layer approximately 2 to 4 inches thick constitutes the surface horizon (L-H). The soil is moderately drained. According to the taxonomic system of soil classification, the soil is of the order of brunisolic to podzolic.

Brunisolic soils by definition are well to imperfectly drained soils developed under forest, mixed forest and grass and fern, or heath and tundra vegetation, with brownish colored sola and without marked eluvial horizons (6). Podzolic soils by definition are well and imperfectly drained soils developed under forest or heath, having under virgin conditions organic surface horizons (L-H), light brown eluviated horizons (Ae) and illuvial (B) horizons with accumulations of organic matter, sesquioxides or clay or any combinations of these (6).

SURVEY AND ANALYTICAL METHODS

Field work on the South area was done between October 24 to December 10, 1969 under the supervision of S. Wagenitz. A two man crew carried out a reconnaissance soil survey along a sample grid of 2800 foot line spacing and 100 foot sample intervals. A chain and compass was used for control. The claim location lines along with several traverse lines were sampled. The location of the sample stations and lines appear on figure 1. Breakdown of the sample location lines are as follows:

Sample L.L.	Direction L.L.	Length L.L.
D1	East - West	18,700
D2	"	22,800
D3	"	18,000
D5	"	14,000
T1	North - South	2,300
T2	"	3,000
T3	"	6,000
T5	"	4,000
K1	Northwest	10,000

The samples were taken from the B horizon, 6 to 8 inches below surface, of the soil profile. Consistancy in sampling was maintained in order to insure optimum results. The samples were tested for copper in ppm by hot HCl-acid extraction method; T.S.L. Laboratories Ltd., 325 Howe Street, Vancouver 1, B. C., did the analysis. A total of 995 soil samples were collected.

DISCUSSION OF GEOCHEMICAL RESULTS

The results and location of individual soil samples collected appear on figure 1. The location and interpretation of the geochemical anomalies appear on figure 2. A histogram of the results is included as part of the text.

The analytical method used for interpreting the results is described as follows:

a) All values that exceeded the threshold value (25 ppm) were considered significant. Two or more values that appeared as a cluster were grouped. Single values were ignored.

b) The mean of each group was calculated.

c) An anomalous value was established for each group by dividing the group mean by the regional background mean (15 ppm).

d) The importance of the anomalous value was determined by its order of magnitude.

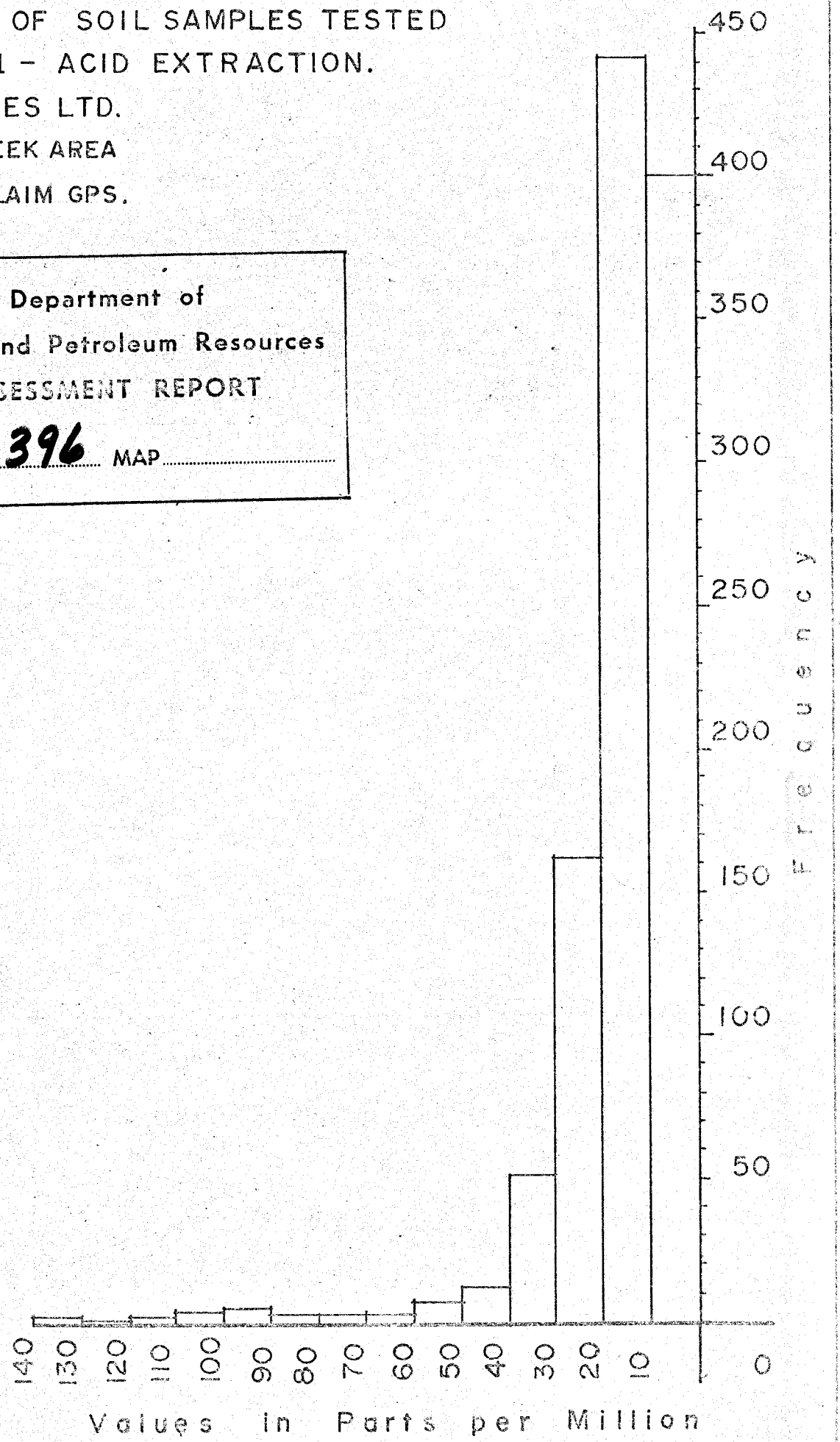
e) Several anomalous values were grouped where possible, and identification numbers assigned, refer to figure 2.

The regional background for the South area is 15 ppm. Threshold is 25 ppm, refer to histogram.

The following anomalous zones occur on the South area claims and are listed in decreasing order of importance:

Anomalous Zone	Sampled L.L.	Claim Location	Magnitude
A1	T5	Don 11, 12	5
A2	T3	Don 76	3.5
A3	T5	Don 14	2.5
A4	D5	Don 114, 115	2.3
A5	D1	Don 116, 117	2.3
A6	D2	Don 31, 32	2.3
A7	T3	Ken 5	2.2
A8	D2	Don 9, 10	2.0
A9	D3	Don 75, 76	2.0
A10	D1	Don 118, 119	2.0

HISTOGRAM OF SOIL SAMPLES TESTED
BY HOT HCl - ACID EXTRACTION.
LARGO MINES LTD.
PIMAINUS CREEK AREA
DON & KEN CLAIM GPS.



CONCLUSIONS

1. The Pimainus Creek, South area claims, are located on the southwestern fringe of the Highland Valley mining camp.

2. From the geological maps, it is probable that the Spences Bridge volcanic rocks are underlain by Guichon Creek batholith, Hybrid phase granodiorites. The Hybrid phase rocks are known to contain sulphide mineralization.

3. The geochemical environment and ground conditions in the South area are suitable for effective geochemical prospecting.

4. A total of ten anomalous zones were located by reconnaissance soil survey (fig. 2). A1 and A2 are high order anomalies which require further investigation.

5. The aeromagnetic anomaly, Area B, is approximately located along the western edge of the South area and has a SE-NW trend (R. H. Parker). Geochemical anomalies A2, A5, A6, A9, A10 appear to have a SE-NW trend and may be related to the aeromagnetic response.

RECOMMENDATIONS

1. Anomalous areas on the South area claims should be surveyed and located accurately.

2. The aeromagnetic anomaly, Area B, should be accurately located.

3. A 500 foot line grid should be constructed using a chain and compass over areas that are geochemically and aeromagnetically responsive.

4. Additional soil sampling should be conducted to test the located anomalous zones. 100 foot sample intervals should be used.

5. General prospecting should be conducted over the entire South area claims on a scale of 1 inch equals 1500 feet.

6. A geological map, scale 1 inch equals 500 feet, should be constructed over anomalous areas.

7. A ground magnetometer survey should be done over areas of interest.

8. Additional assessment of the South area depends on the results of the preceeding recommendations.

Respectfully submitted,

L. W. Saleken

L. W. Saleken, B. Sc.,
Geologist

BIBLIOGRAPHY

1. Barakso, J. J., Rowles, C. A., and Lavkulich, L. M., 1969, Geochemical Prospecting in B. C. Western Miner, June, 1969, pp 22 - 32.

2. Carr, J. M., 1966, Geology of the Bethlehem and Craigmont Deposits, Tectonic History and Mineral Deposits of the Western Cordillera, C.I.M.M., Special Vol. No. 8, pp 321 - 328.

3. Cockfield, W. E., 1948, Geology and Mineral Deposits of the Nicola Map Area, British Columbia, G.S.C. Mem. 249.

4. Duffell, S. and McTaggart, K. C., 1952, Ashcroft Map-Area, British Columbia, G.S.C. Mem. 262.

5. Hawkes, H. E. and Webb, J. S. 1962, Geochemistry in Mineral Exploration, Harper's Geoscience Series, New York.

6. Report on the Sixth Meeting of the National Soil Survey Committee of Canada, Laval University, Quebec, 1965.

Geotronics Surveys

517 · 602 West Hastings Street, Vancouver, British Columbia, Canada ✱ Telephone 688-4342

RESUME OF LEONARD WILLIAM SALEKEN, B. Sc.

EDUCATION

Graduate of the University of British Columbia, Faculty of Science, Geology, B. Sc.

Member of the Canadian Institute of Mining and Metallurgy (C.I.M.M.) and the Geological Association of Canada (G.A.C.)

TECHNICAL AND FIELD EXPERIENCE

Summers of 1964, 1965, 1966: engineering aide, Materials Testing Branch, B. C. Dept. of Highways in engineering geology, soils investigation and analysis, gravel exploration, hydrological field testing, surveying; drill crew supervision.

Summer, 1967: assistant geologist, Duval Corporation in general prospecting for base metals using geochemical and geological methods; geological mapping and property evaluation.

May 1968 - October 1969: exploration geologist, Denison Mines Ltd., Vancouver, B. C. in uranium prospecting, geological mapping and interpretation, report writing, geochemical surveys, radiometric surveys (ground and airborne), office management, personnel hiring and public relations. Field specialization: sedimentary uranium. Particular interests: Tertiary Stratigraphy and Volcanism.

October, 1969: Consultant, Geotronics Surveys Ltd., Vancouver, B. C.

L. W. Saleken

L. W. SALEKEN, B. Sc.
Consultant Geologist

E. P. SHEPPARD & ASSOCIATES LTD.
CONSULTING GEOLOGISTS
314-402 WEST PENDER STREET,
VANCOUVER 3, B.C.

February 19, 1970

Mr. Tom Rolston
Geotronics Surveys
517-602 W. Hastings Street
Vancouver, B. C.

Dear Mr. Rolston:

At your request I have reviewed the reports listed in References below in order to evaluate the economic potential of the Largo Mines Ltd. Pimainus Creek South Area Claims, Kamloops M.D., B. C. I have also read the report and examined the maps prepared by employees of your company on a reconnaissance geochemical survey carried out on the claims.

The location, access and general descriptions of the claims are adequately described in the Reconnaissance Geochemical Report referred to above.

The major reference for a geologic evaluation of the claims is J. M. Carr's 1966 "Geology of the Bethlehem and Craigmont Deposits, Tectonic History and Mineral Deposits of the Western Cordillera,"C.I.M.M., Special Vol. No. 8, pp 321-328.

From a study of the geologic maps referenced above and Map 932A, it appears that the claims are underlain by Lower Cretaceous Spences Bridge Group rocks in contact with Jurassic Guichon Creek batholith.

The Spences Bridge group is composed of lavas, pyroclastics and minor sediments. Where the volcanic rocks are decomposed, secondary products of saussurite, carbonate, iron oxides and chlorite are observed. (S. Duffell & K. C. McTaggart, 1952).

The Guichon Creek batholith in the vicinity of the Spences Bridge rocks is granodioritic to dioritic in composition and altered to chlorite, spidote, sericite in several areas. This is known as Hybrid phase granodiorites. Economic mineralization is known to be associated with this Hybrid phase: i.e., the Toketic iron deposit. Specular hematite, massive pyrite and minor chalcopyrite occur with the deposit.

The geochemical results are shown on two map sheets; (1) the actual traverses, and (2) the outlined anomalous zones, as follows:

A1 - located in Claims Don 11 & 12, 2200' in length north-south, over 200' in width. This anomaly has a magnitude of 5. A8 - 800' W, lies in Claims Don 9 & 10; an east-west striking anomaly approximately 1000' in length by 200' wide, exhibiting a magnitude of 2.0. These anomalous areas are outlined by only one traverse line. These areas should be surveyed in detail to outline their proper shape and extent.

The remaining anomalous zones are in the order of 3.5 to 2.0. A2, A9 are similar in attitude to A1 and A8, and A7 appears to be a continuation of a northwesterly trend indicated by the alignment of A1 and A2. These anomalous zones are significant as they are of the highest order represented in the survey. A2, A5, A10, A6 and A9 coincide with an aeromagnetic anomaly located along the western edge of the south area and exhibits a northwesterly trend.

It is felt that further detailed geochemical surveying around the present outlined anomalous areas is required. This survey should be accompanied by a ground magnetometer survey controlled by a grid. This will accurately locate the aeromagnetic anomaly mentioned above. Geological mapping is considered essential over the anomalous areas.

The geochemical report, accompanied by suitable maps, submitted by your company shows careful preparation, and I am satisfied that the field work performed was of the same high caliber as that carried out on assignments where your crews were under my direct supervision.

Respectfully submitted,

E. P. Sheppard

E. Percy Sheppard, P. Eng.
Consulting Geologist

EPS:d

CONT...

Pimainus Creek South Area Claims

REFERENCES

1. Barakso, J. J., Rowles, C. A., & Lavkulich, L. M., 1969, "Geochemical Prospecting in B.C.", Western Miner, June 1969, pp 22-32.

2. Carr, J. M.,1966, "Geology of the Bethlehem and Craigmont Deposits, Tectonic History and Mineral Deposits of the Western Cordillera", C.I.M.M., Special Vol. No. 8, pp 321-328.

3. Cockfield, W. E., 1948, "Geology & Mineral Deposits of the Nicola Map Area, British Columbia", G.S.C. Mem. 249.

4. Duffell,S. & McTaggart, K.C., 1952, Ashcroft Map Area, British Columbia, G.S.C. Mem. 262.

5. Hawkes, H.E. & Webb, J.S.,1962, "Geochemistry in Mineral Exploration", Harper's Geoscience Series, New York.

6. Report on the Sixth Meeting of the National Soil Survey Committee of Canada, Laval University, Quebec, 1965.

EPS:d

Geotronics Surveys

COST BREAKDOWN:

Expenses incurred to conduct line cutting and geochemical survey on the Coubird, BS, Ken, Pat ,Don and Scot groups of mineral claims

November 1 to December 20, 1969:

Wages: P. Skinner, 2 months @ $800.00	$ 1,600.00	
D. Morris, 2 months @ $600.00	1,200.00	
D. Kirshner, one month @ $600.00	600.00	
L. Salston, 4 days (December) @ $100.00	400.00	
T. Ralston, 15 days @ $75.00	1,075.00	
4 wheel drive vehicle, 3 months @ $450.00	1,350.00	
Camp, 2 months @ $500.00	1,000.00	
		$ 7,225.00

January 1 to February 28, 1970:

Wages: K. Calambo, 6 weeks @ $200.00	$ 1,200.00	
P. Skinner, one week @ $200.00	200.00	
G. Chaisser, 4 weeks @ $200.00	800.00	
B. Conley, one week @ $200.00	200.00	
J. Dubois, one week @ $200.00	200.00	
Ski-Doo rental, 2 months @ $500.00	1,000.00	
Camp, 2 months @ $500.00	1,000.00	
Survey materials, 5 months @ $50.00	250.00	
		$ 4,850.00

Reports, maps and engineering fees:		
Airmag. interpretation	$ 600.00	
Jay Zone	650.00	
North	600.00	
Printing costs	300.00	
		$ 2,150.00
Soil sample analysis		1,277.65
		$ 15,502.65

October 20 to December 20, 1969:

Wages: N. Nesbitt, 2 months @ $600.00	$ 1,200.00	
H.S. Wagemiks, 3 months @ $1,000.00	3,000.00	
Camper rental, 2 months @ $140.00	280.00	
4 wheel drive vehicle	1,250.00	
Survey materials	100.00	
Mapping and report	600.00	
Engineering fees	400.00	
Camp supplies, 2 men, 43 days @ $15.00	1,290.00	
one man, 7 days @ $15.00	105.00	
Soil sample assays	1,235.75	
		$ 9,460.75
Total Costs:		$ 24,963.40

Declared before me at the City of Vancouver, in the Province of British Columbia, this 10 day of March 1970, A.D.

Joan Turner

A Commissioner for taking Affidavits in British Columbia

SUB-MINING RECORDER

N

KEN Gp. 1-9

KEN Gp. 11-24

PAT Gp. 1-39

DON Gp. 1-131

T1 T2 T3 T4 T5

D1 D2 D3 D4 D5

A1

LEGEND

—— LOCATED CLAIMS

--- ASSUMED LOCATION OF CLAIMS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2396 MAP #2

2396

L.W. Saleken Feb 9, 1970.

To accompany Reconnaissance Geochemical Report
Prepared by L.W. Saleken, B.Sc. Dated Jan. 1970

LARGO MINES LTD. (N.P.L.)

Pimainus Creek - South Area

Kamloops M.D., B.C.

Geochemical – Soil Sample
type of survey
P.P.M. Cu by hot HCl, Acid Extraction

scale	date	job no.	sheet no.	drawn by
1" = 1000'	JAN 1970	69-45	1.	A.B.O.

Geotronics Surveys Ltd.
Geophysical Surveys, Ground & Airborne
317 – 602 West Hastings Street, Vancouver, British Columbia

N

KEN Gp. 1-9

PAT Gp. 1-39

KEN Gp. 11-24

DON Gp. 1-131

A1 A2 A3 A4 A5 A6 A7 A8 A9 A10

D1 D2 D3 D4 D5

T1 T2 T3 T4 T5

LOCATED CLAIMS

ASSUMED LOCATION OF CLAIMS

LEGEND

MAGNITUDE

2 - 3

3 - 5

5

2396

L.W. Salsken Feb 3, 1970

LARGO MINES LTD. (N.P.L.)

PIMAINUS CREEK - SOUTH AREA

KAMLOOPS M.D., B.C.

GEOCHEMICAL ANOMALOUS ZONES

To accompany Reconnaissance Geochemical Report
Dated January 1970 Prepared by L.W. Salsken, B.Sc.

scale	date	job no.	sheet no.	drawn by
1" = 1000'	FEB. 1970	69-45	2.	A.B.J.

Geotronics Surveys Ltd.
Geophysical Surveys, Ground & Airborne
517 - 666 West Hastings Street, Vancouver, British Columbia.

2396

N

COWBIRD
1 – 6

T. J. M.

Gp. 1-8.

BAR Gp. 1 – 40

PAT 40-43

D. S. 1-36

COWBIRD Gp.

KEN 1-9

KEN 11-24

D.S. Gp.

KEN Gp.

PAT 1-39

DON Gp.

PAT Gp.

SCOT Gp.

DON 1-131

PIMAINUS CREEK

L-40N
L-35N
L-30N
L-25N
L-20N
L-15N
L-10N
L-5N
L-0
L-42S
L-47S
L-52S
L-57S
L-62S
L-67S
L-72S
L-77S
L-82S
L-87S
L-92S
L-97S
L-102S
L-107S
L-112S
L-117S

B.L.1
B.L.2
15E
30E
45E

LEGEND

— LOCATED CLAIMS
--- UNLOCATED CLAIMS

2396

L.W. Saleken March 1970
Refer to Reconnaissance Geochemical Report,
prepared by L. W. Saleken, B.Sc., Dtd. Jan 1970

LARGO MINES LTD (N.P.L.)

PIMAINUS CREEK, KAMLOOPS M.D.

CLAIM LOCATION MAP

COWBIRD : D.S. : KEN : PAT : DON & SCOT CLAIM GROUPS

scale	date	job no.	sheet no.	drawn by
1" = 1000	Mar. 1970	69-45	1.	A.B.O.

Geotronics Surveys Ltd.