

GROUND GEOPHYSICAL SURVEYS
SURPRISE LAKE EXPLORATION
SPRUCE CREEK OPTION

ATLIN MINING DIVISION
NTS 104-N-11, 12

Latitude 59°30', Longitude 133°30'

FILMED

Owned by: Surprise Lake Exploration
Work by: Placer Development Limited

R.W. Cannon, P. Eng.

October, 1985

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

14,648

STATEMENT OF EXPENDITURES - SURPRISE LAKE EXPLORATION

Geophysical Survey

Field days

B. Ott, Sept. 23, 24, 25, 26, 27	5
R. Cannon, Sept. 23, 24, 25, 26, 27	<u>5</u>
	10 man/days

Data Interpretation and Report Writing

R. Cannon 3 days

Salaries and Benefits

R. Cannon 8 x \$350	2,800.00
B. Ott 5 x \$250	1,250.00

Camp Cost @ \$30/day/man x 10 300.00

Equipment Charges

2 G-856 magnetometers @ \$400/wk. x 1	400.00
1 Kaypro computer @ \$100/wk. x 1	100.00
1 Geonics E.M.-16 @ \$200/wk. x 1	200.00

Transportation

2 return tickets to Whitehorse. 2 x \$553.70	1,107.40
1 flight (Atlin to Whitehorse) Taku Air	312.00
Truck Rental and gas for 5 days	500.00

Plotting, drafting and computer costs 2 x 250 500.00

Line cutting costs (J. Wallace) 10,260.00

Total Expenditures: \$17,729.40

RWC/cs



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Summary

The geophysical surveys on the Spruce Creek ground were conducted during the latter part of September 1985. A total of 22.4 km of line were marked at 20 m intervals along lines 200 m apart. VLF-EM readings were taken at 20 m stations while the magnetometer readings were at 10 m intervals. The VLF survey revealed two parallel strong conductors in the center of the grid at the SE portions of several lines. The magnetometer survey revealed 3 anomalous zones, 2 of which could be traced on 3 to 4 lines.

Introduction

A preliminary grid was laid out in order to locate and delineate several magnetic anomalies outlined on an airborne magnetometer survey. A NE-SW grid was established with lines at 153° Az. The line-cutting and marking of the grid was under the supervision of Jim Wallace of Atlin, B.C.

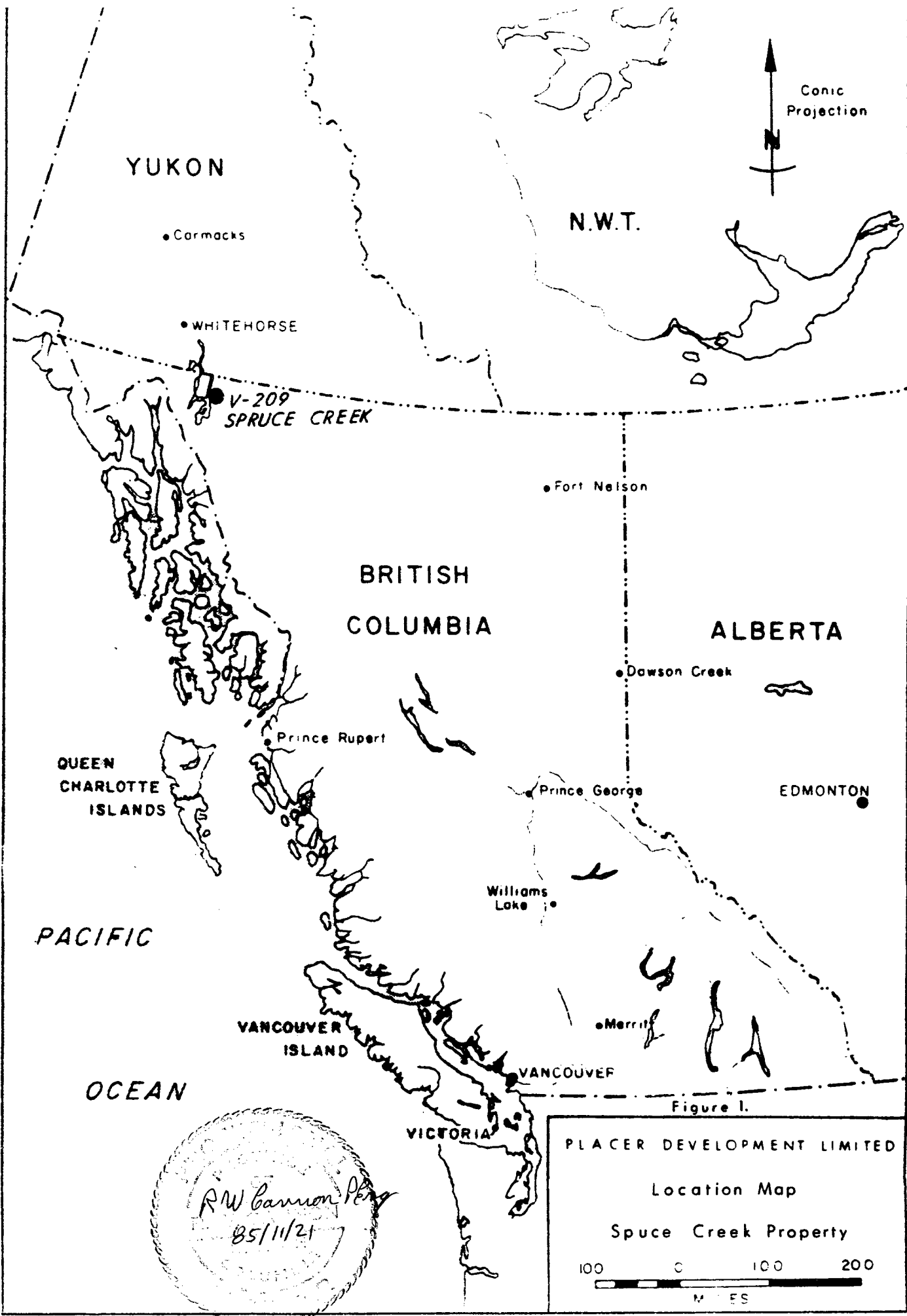
Location and Access

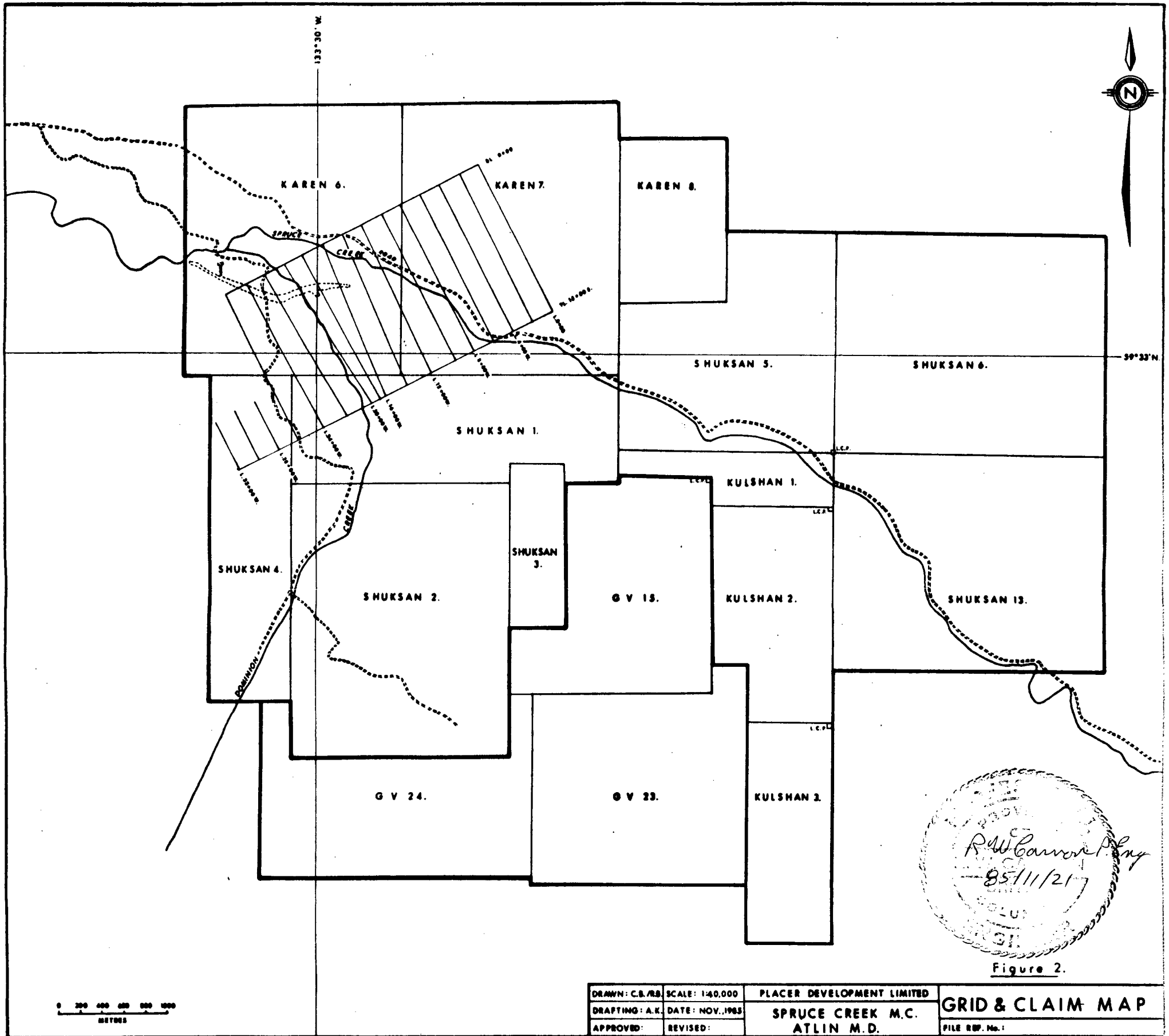
The property encompasses the area of Spruce Creek and Dominion Creek which are tributaries of Pine Creek. Access to the property located immediately east of Atlin is by means of 2 or 4 wheel drive vehicles along good gravel roads which branch off the Surprise Lake Road approximately 6 km from Atlin.

Property Status

The property consists of the following:

<u>Name</u>	<u>Units</u>	<u>Anniv. Date</u>	<u>Record No.</u>
Shuksan 1	12	July 28	1359
Shuksan 2	20	July 28	1360
Shuksan 3	3	July 28	1361





APPROVED
R. W. Cannon
 85/11/21
 REGISTRAR
 BRITISH COLUMBIA

Figure 2.

DRAWN: C.B./RS	SCALE: 1:40,000	PLACER DEVELOPMENT LIMITED	GRID & CLAIM MAP
DRAFTING: A.K.	DATE: NOV., 1985	SPRUCE CREEK M.C.	
APPROVED:	REVISED:	ATLIN M.D.	
			FILE REF. No.:

<u>Name</u>	<u>Units</u>	<u>Anniv. Date</u>	<u>Record No.</u>
Shuksan 4	12	Sept. 2	2027
Shuksan 5	16	Sept. 2	2028
Shuksan 6	20	Sept. 2	2016
Shuksan 13	20	Sept. 2	2023
Karen 6	20	July 28	1369
Karen 7	20	July 28	1370
Karen 8	8	July 28	1371
Kulshan 1	4	July 15	
Kulshan 2	12	July 15	
Kulsan 3	8	July 15	
PL 11055		Dec. 30	
PL 11056		Oct. 30	
PL 11057		Dec. 30	
PL 11058		Dec. 30	
PL 11059		Dec. 30	
PL 11060		Dec. 30	

Geophysical Surveys

VLF-EM and magnetometer surveys were conducted along 22.4 kms of line.

The VLF-EM survey was carried out using the transmitting station of Lualualei, Hawaii. The direction to the station was 215°, therefore readings were taken facing azimuth 305°, (28° off line) at 20 m intervals along the line.

Magnetometer readings were taken at 10 m stations and correction for drift and diurnal changes were made by use of a base station recording magnetometer.

Equipment Used

The magnetometer survey was conducted using two Geometrics G-856A portable proton magnetometers (memory-mag). One was used in the field mode (Ser. No. 27503) while the other was used in a base station mode (Ser. No. 27502). The internal clocks were synchronized before commencement of the survey and subsequent daily readings were dumped out to floppy disc in a Kaypro II portable computer. The data from the two magnetometers were merged and corrected for diurnal drift from an established base station value. The corrected results were plotted as field profiles and also stored on disc for eventual transfer to a Univac 1108 for final plotting.

The VLF-EM survey employed a Geonics EM-16 (Ser. No. 25) which used the following transmitting station:

Lualualei NPM 23.4 kHz

VLF readings were also entered onto floppy disc in a Kaypro II computer and field profiles of In-Phase, Quadrature and Fraser filter data were plotted. The stored data was transferred to a Univac 1108 for final processing and plotting.

Survey Results

The magnetometer survey results were plotted as plan maps of stacked profiles at a scale of 1:5000 (see plate in folder at back of report).

The VLF-EM survey results were plotted as stacked In-phase, Quadrature and positive Fraser Filter profiles on plan maps at a scale of 1:5000. The Fraser Filter data was calculated as per the method put forth by D.C. Fraser (1969, Contouring of VLF-EM data: Geophysics, v.34, p.958-967). See plate in the folder at the back of report.

Discussion of Results

Magnetometer Survey

Seven interpreted magnetic anomalies were detected as shown on Plate 0001. Anomalies 1-5 and 7 are most likely caused by ultramafics. Anomaly 6 is restricted to a single line and is quite narrow and sharp and may be caused by a magnetite rich dyke. No other significant magnetic anomalies were detected by this survey.

VLF-EM Survey

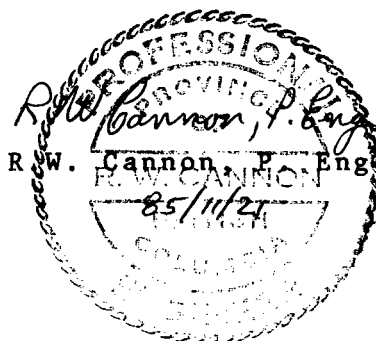
Fourteen individual strong conductors detected by the VLF surveys (see plate 0002). The No. 6 zone runs alongside magnetic anomalies 3 and 4. Zones 7 and 8 appear as two parallel faults and have magnetic anomaly 6 occurring between them. Conductive zone 1 is the only other major conductor and it does not have any related magnetic features.

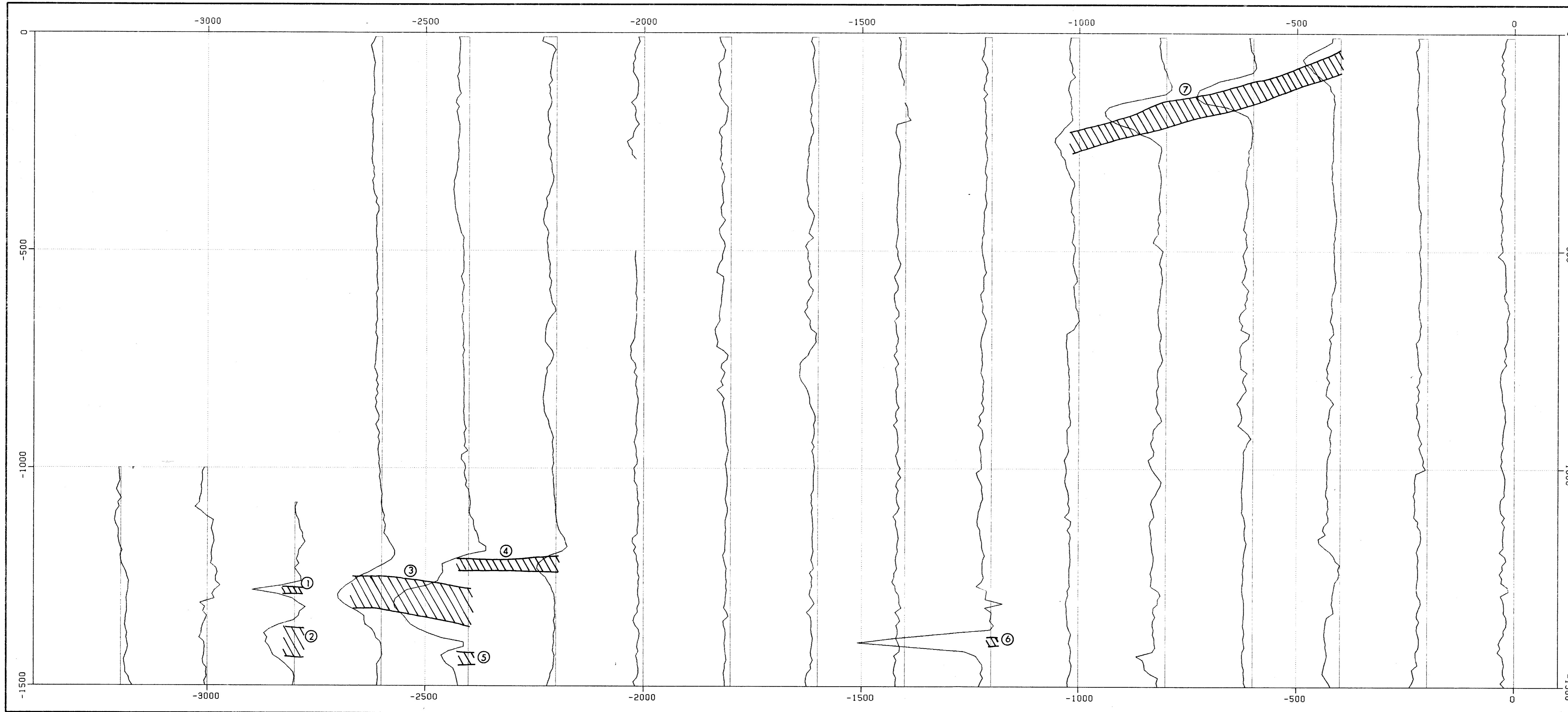
Conclusion and Recommendations

It was concluded that several magnetic anomalies which were interpreted as ultramafics warrant further work. It is recommended that these anomalies be tested by either trenching or dilling to see if they are bedrock sources of the placer gold.

RWC/cs

10:21:85



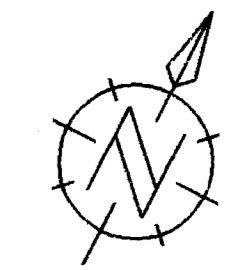


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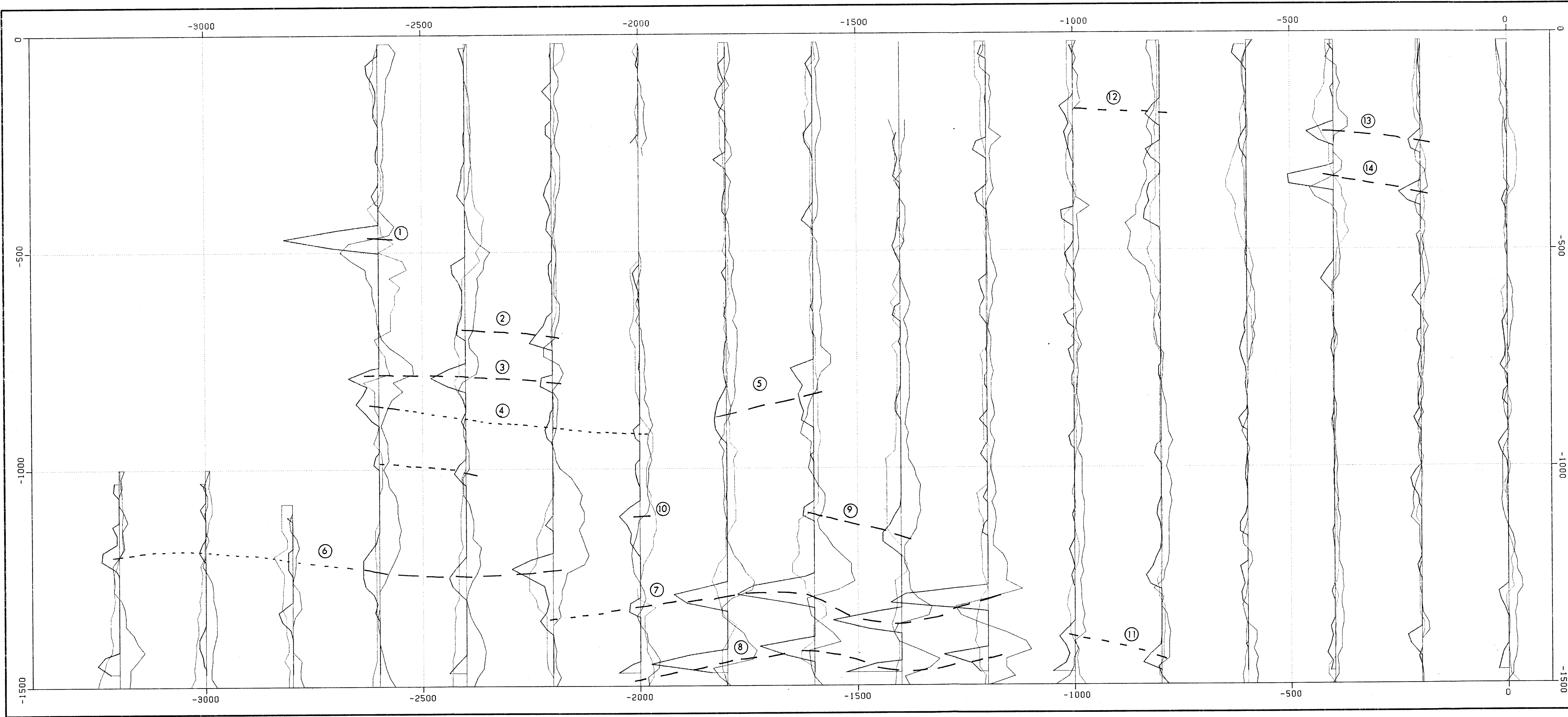
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DATA PLOTTED ON THIS MAP:
 FIELD FILE
 PROFILES: MAG EXPL-V-209.SURPRISELK/MAG
 SCALE: 500 UNITS / CM
 BASE LEVEL: 57500

DIRECTION OF NORTH AT CENTRE OF MAP



PLACER DEVELOPMENT LIMITED	
DRAWN AC	SURPRISE LAKE EXPLORATION
DATE 85/10/01	SPRUCE CREEK MAGNETIC DATA
SCALE 1:5000	
NO. 85-10-V209-38-0001	



SURPRISE LAKE SYNDICATE
 SPRUCE CREEK EM-16 DATA
 IN-PHASE MEDIUM LINE
 QUADRATURE LIGHT LINE
 FRASER FILTER DARK LINE

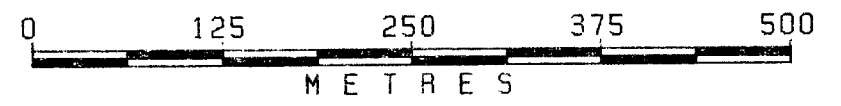
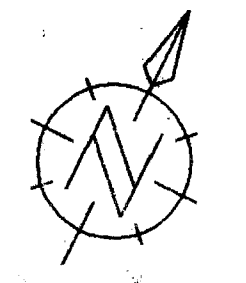
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DATA PLOTTED ON THIS MAP:

FIELD FILE
 PROFILES: IP EXPL*V-209.SURPRISELK/EMIP
 SCALE: 20.0 UNITS / CM
 BASE LEVEL: 0.0
 PROFILES: QD EXPL*V-209.SURPRISELK/EMQD
 SCALE: 20.0 UNITS / CM
 BASE LEVEL: 0.0
 PROFILES: IP EXPL*V-209.SURPRISELK/EMIP
 SCALE: 20.0 UNITS / CM
 BASE LEVEL: 0.0
 FRASER FILTER APPLIED

DIRECTION OF NORTH AT CENTRE OF MAP



PLACER DEVELOPMENT LIMITED	
DRAWN AC	SURPRISE LAKE EXPLORATION
DATE 85/10/01	SPRUCE CREEK EM-16 DATA
SCALE 1:5000	
NO. 85-10-V 209-3B-0002	