

5481

1974

GEOPHYSICAL REPORT

ON

THE BOG CLAIMS

92P/9W, 10E

LOCATED IN

KAMLOOPS MINING DIVISION

APPROXIMATELY 50 MILES EAST OF 100 MILE HOUSE

AT COORDINATES  $51^{\circ}35'$  N. LAT.,  $120^{\circ}30'$  W. LONG.

WORK COMPLETED FOR

CITIES SERVICE MINERALS CORPORATION

405-1200 WEST PENDER STREET

VANCOUVER, B.C.

WORK BY

MORRISON & DEPAOLI I.P. SURVEYS

GEOPHYSICAL CONTRACTORS CONSULTANTS

WORK PERIOD - JULY 16 TO AUGUST 9, 1974

- SEPTEMBER 25 TO OCTOBER 21, 1974

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 5481 MAP

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
LOCATION & ACCESS	1
GRID CONTROL	2
GENERAL GEOLOGY	2
INDUCED POLARIZATION	
INTRODUCTION & THEORY	2
INSTRUMENT & PROCEDURE	3
PRESENTATION OF DATA	5
RESULTS & INTERPRETATION	5
CONCLUSIONS	6
RECOMMENDATIONS	7
LIST OF CLAIMS	8-10
DECLARATION OF EXPENSES	11-12
CERTIFICATIONS	13-15
COPIES OF CONTRACTORS INVOICES FOLLOWING PAGE 15	
<u>ILLUSTRATIONS</u>	
#1 Fig. 1 Frontispiece - Location Map	Scale 1" = 40 miles
la. LOCATION MAP	
2 Fig. 2 Claim Map 1" = 3000'	Page 7B
3, 4 Fig. 3 Bog Location Map 1"=800'	In Pocket
5 Fig. 4 I.P. Plan Res. 1"=800'	In Pocket
6 Fig. 5 I.P. Plan P.F.E. 1"=800'	In Pocket
7 Fig. 6 I.P. Geophysical Interpretation 1"=800'	In Pocket



SCALE 1" = 40 MILES

FIG. 1  
5481 MAP 1

CITIES SERVICE MINERALS CORP.  
LOCATION MAP  
SCALE 1:50,000  
TO ACCOMPANY GEOPHYSICAL  
REPORT ON BOG-FRI CLAIMS  
HEGER  
MAY 26, 1975  
#5481

NE HALLISTON

PROVINCIAL

FOREST

APPROXIMATE  
CLAIM  
OUTLINE

SKWIKWARTLT  
MOUNTAIN



51° 35'

92P10E

92P9W

120° 30'

5481  
MAP 1A

Ta Hoala  
Lake

Friendly  
Lake

PODYI  
MOUNTAIN

MLOOPS DISTRICT  
LINOGET DISTRICT

RAMLOOPS DISTRICT  
LINOGET DISTRICT

INTRODUCTION -

The Bog claim group is located in South Central British Columbia approximately 50 miles east of 100 Mile House. The property consists of 116 mineral claims owned by Cities Service Minerals Corp. and is currently being investigated for the possibility of a porphyry copper deposit. During the period July 16 to August 9, 1974 and during the period September 25 to October 21, 1974, a total of 33.4 line miles of induced polarization/resistivity surveying were completed over the property. The following report describes the instrumentation, field procedure and results obtained from this survey, and also incorporates the data from 21 line miles of induced polarization/resistivity surveying that was carried out over the same grid during 1973.

The work was executed by Morrison and DePaoli I.P. Surveys upon the request of Cities Service Minerals Corp., under the supervision of J. W. Murton and G. Hawkins.

LOCATION & ACCESS -

The property is located within the south central interior of British Columbia approximately 15 miles northeast of the small settlement of Bridge Lake. It lies within the Kamloops Mining Division at  $21^{\circ} 35' N.$  Lat.  $120^{\circ} 30' N.$  Long., within NTS Block 92 P.N.E. Access is available on a two-wheel drive secondary road which departs north from Highway 24 five miles east of Bridge Lake and one mile east of Lac des Roches. (See location map Figure 1.)

GRID CONTROL -

The control grid consists of over 50 miles of cut, chained and flagged lines. The grid was initially established in the late 1960's and several of the lines were refurbished while others were newly cut in 1974. The central baseline is at 378+00E and strikes north-south for over 18,000 feet. Perpendicular cross lines were surveyed at 800 foot intervals.

GENERAL GEOLOGY -

The property is predominantly underlain by Nicola Volcanic rocks of Triassic Age. Several stocks and dykes ranging in composition from syenite to diorite intrude the Nicola volcanic suite. Widespread pyrite mineralization is present and economic interest arises from a highgrade chalcopryite, bornite, chalcocite showing occurring on a road cut at coordinates 377+00E, 536+20N.

INDUCED POLARIZATION SURVEY -

a) Introduction & Theory -

Because of limited outcrop exposure induced polarization measurements were undertaken to determine the lateral and vertical distribution of sulphides within 500 feet of ground surface over the grid area. Apparent resistivity data taken concurrently is useful in inferring overburden depths, defining abrupt lithological changes and assessing the importance of any I.P. effects obtained.

The term induced polarization means the electrical separation (i.e. separation of charges) induced by an applied electric field. The cause of this polarization is changes in the mobilities of ions within a rock. At the interfaces between zones of different mobilities,



excesses or deficiencies of ions occur; the concentration gradients developed oppose the current flow and cause a polarizing effect. When mineral grains block the pore passages of rocks and a current is applied, a concentration of ions builds up at the electrolyte (water) - metal interface while awaiting an electrochemical reaction which must occur before the electric charge can be transferred from an ion in the electrolyte to a free electron in the metal. The forces which oppose the current flow are said to polarize the interface and the added voltage necessary to drive the current across this barrier is known as "overvoltage".

It takes a finite time to build up overvoltages and one finds that the impedances of these zones (Warburg Impedance) decreases with increasing frequency. In the frequency domain system that was employed the decrease in the Warburg Impedance was measured between current applied at 0.3 hertz (AC 1) to current applied at 5.0 hertz (AC 2).

b) Instrument & Procedure -

A multiple frequency McPhar induced polarization system Model P660, was employed in measuring the polarization and resistivity parameters. The transmitter is a manually variable voltage source. The output current can be selected from both polarities and varies from direct current to automatically alternating output frequencies of 0.05, 0.1, 0.3, 1.25 and 5.0 hertz.

On this survey the low and high frequencies employed were 0.3 and 5.0 hertz. Power was obtained from a 2-1/2 KW - 400 hertz motor generator. The maximum output current for the transmitting system is 5 amp. while the maximum output voltage is 690 volts.

The receiver employed was the A.C. P660 model. This is a potentiometer type where the amplified and filtered signal is compared with a reference voltage. It is powered by six 9V alkaline transistor batteries and draws 7.5 ma. Total weight including carrying case is 5 pounds.

An in line dipole-dipole array was employed in the survey. The dipole length was 200 feet and measurements were taken to 4 separations ( $N=1, 2, 3, 4$ ). Survey procedure required the preparation of a "set-up" station near the center of each line. The transmitter and its motor generator power supply remained stationary at the set-up position and wires in increasing 200 foot intervals were strung out in both directions. Care was taken to ensure that the wires were well separated to prevent inductive coupling effects. The ends of the wires were connected to 4 foot stainless steel rods which had been hammered into the ground. Where possible, the receiving dipole also utilized the stainless steel rods for electrode connections. Once the receiver dipole moved past the last steel rod ground connections were made via porous pots, radio contact between the receiver and transmitter operators coordinated power "on" and "off" periods.



### PRESENTATION OF DATA

Contoured plan maps of the second separation (N-2), apparent resistivity and percent frequency effect data have been prepared in Figures 4 & 5 respectively. An interpretation of the data is presented in Figure 6. As stated earlier, I.P. data from a previous 1973 survey has been incorporated into the above plan maps.

### RESULTS & INTERPRETATION -

Three major and several smaller and possibly related induced polarization anomalies are shown in Figure 6. Anomaly #1 in the north-western portion of the grid area contains the highest P.F.E. values of the survey area. Values within the anomaly exceeding 18% P.F.E. are interpreted to reflect a polarizable source of greater than 5% by volume. Outcrop near some of the high values was heavily pyritized. The anomaly is fault bounded on the east and appears quite linear. Anomalies labelled 1(a) and 1(b) are interpreted to be part of Anomaly 1. The near surface continuity of this anomaly is masked by valley bottom overburden and swamp. Figure 3(30) which displays a resurveyed segment of line 556+00N employing a 300 foot dipole length does confirm that the anomaly is present at depth and truncated on the east side, similar to Anomalies 1 and 1(b). The possibility exists that Anomaly 1 may extend southward further and connect with anomaly 5.

Anomaly 2 is characterized by P.F.E. values within the range of 5% - 10%. This is indicative of a polarizable source of 2-3% by volume. This anomaly is relatively widespread and is underlain by volcanic rock units. Anomaly 2(a) which is characterized by somewhat lower P.F.E. values is continuous with anomaly 2.

Anomaly 3 is the last major I.P. anomaly and is characterized by P.F.E. values within the range of 3-5%. The northern portion of this anomaly is associated with most of the geologic interest and it has been partially tested by two diamond drill holes. Two resistivity highs are outlined within the northern portion of the anomaly. The larger eastern most anomaly is coincident with a mapped dioritic intrusion. The high grade showing occurs 800 to 1000 feet east from an embayment along the eastern side of the anomaly. The central portion of the anomaly is relatively uniform while an increase in the P.F.E. is noted on the southern end of the anomaly.

Several continuous zones of resistivity lows suggest the presence of major faulting. One such zone trends north-northwest and terminates the eastern extent of Anomaly 1. The zone extends south to line 540+00N and may have also had some influence on anomaly 3. A second major north-south fault zone has been interpreted along a linear resistivity low which indents the eastern end of Anomaly 2 and also truncates the southeastern end of Anomaly 3.

#### CONCLUSIONS -

Induced polarization anomalies #1 and #2 outline the distribution and concentration of pyrite within Nicola Volcanic rocks. In the case of Anomaly #1 excessive amounts of pyrite are anticipated. The northern portion of anomaly #3 lies within and around intrusive rocks. Pyrite mineralization and some chalcopyrite mineralization were obtained in the three 1974 diamond drill holes which tested the anomaly. The combination of copper and pyritized volcanic and intrusive rock within the anomaly suggest that further drill testing is warranted. The high grade showing itself appears to be in altered volcanic rock with a low pyrite content.

P.F.E. values obtained range between 2-3%. The showing appears to be of limited extent, however the possibility of lateral mineral zoning should be considered. Line 548+00N, 556+00N and 564+00N which were resurveyed employing a 300 dipole length indicate that the northwestern lobe of anomaly #3 extends with depth. Syenite intrusive rocks are mapped in exposed areas 800 feet north on line 572+00N and they lend some support to the possibility of a mineralized volcanic intrusive contact along the northern margin of Anomaly 3.

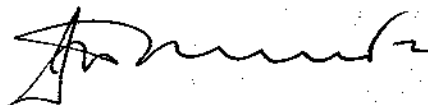
RECOMMENDATIONS

Three areas have been proposed in Figure 6 for drill testing. Final collar locations should be decided upon after a review of 1974 geological, geochemical and magnetic data.

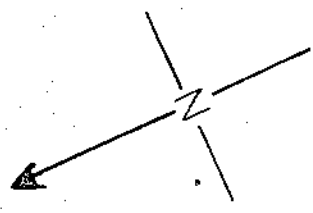
Respectfully Submitted,

G. M. DePaoli  
Geophysicist, B.Sc.

October 23, 1974  
Bridge Lake, B.C.

  
J. W. Murton, P. Eng.





1974 work

1973 work

1974 work

Al	Fri	46	Fri	47	Fri	48	Fri	49	Fri	50
Al	Fri	45	Fri	34	Fri	32	Fri	16	Fri	14
Al	Fri	44	Fri	35	Fri	33	Fri	17	Fri	15
Al	Fri	43	Fri	38	Fri	36	Fri	20	Bog	35
Al	Fri	42	Fri	39	Fri	37	Fri	19	Bog	34
Al	Fri	41	Fri	40	Fri	39	Fri	18	Bog	33
Al	Fri	16	Fri	40	Fri	39	Fri	17	Bog	32
Al	Fri	15	Fri	41	Fri	40	Fri	16	Bog	31
Al	Fri	14	Fri	42	Fri	41	Fri	15	Bog	30
Al	Fri	13	Fri	43	Fri	42	Fri	14	Bog	29
Al	Fri	12	Fri	44	Fri	43	Fri	13	Bog	28
Al	Fri	11	Fri	45	Fri	44	Fri	12	Bog	27
Al	Fri	10	Fri	46	Fri	45	Fri	11	Bog	26
Al	Fri	9	Fri	47	Fri	46	Fri	10	Bog	25
Al	Fri	8	Fri	48	Fri	47	Fri	9	Bog	24
Al	Fri	7	Fri	49	Fri	48	Fri	8	Bog	23
Al	Fri	6	Fri	50	Fri	49	Fri	7	Bog	22
Al	Fri	5	Fri	1	Fri	3	Fri	1	Bog	21
Al	Fri	4	Fri	2	Fri	4	Fri	2	Bog	20
Al	Fri	3	Fri	3	Fri	5	Fri	3	Bog	19
Al	Fri	2	Fri	4	Fri	6	Fri	4	Bog	18
Al	Fri	1	Fri	5	Fri	7	Fri	5	Bog	17
Al	Fri	1	Fri	6	Fri	8	Fri	6	Bog	16
Al	Fri	1	Fri	7	Fri	9	Fri	7	Bog	15
Al	Fri	1	Fri	8	Fri	10	Fri	8	Bog	14
Al	Fri	1	Fri	9	Fri	11	Fri	9	Bog	13
Al	Fri	1	Fri	10	Fri	12	Fri	10	Bog	12
Al	Fri	1	Fri	11	Fri	13	Fri	11	Bog	11
Al	Fri	1	Fri	12	Fri	14	Fri	12	Bog	10
Al	Fri	1	Fri	13	Fri	15	Fri	13	Bog	9
Al	Fri	1	Fri	14	Fri	16	Fri	14	Bog	8
Al	Fri	1	Fri	15	Fri	17	Fri	15	Bog	7
Al	Fri	1	Fri	16	Fri	18	Fri	16	Bog	6
Al	Fri	1	Fri	17	Fri	19	Fri	17	Bog	5
Al	Fri	1	Fri	18	Fri	20	Fri	18	Bog	4
Al	Fri	1	Fri	19	Fri	21	Fri	19	Bog	3
Al	Fri	1	Fri	20	Fri	22	Fri	20	Bog	2
Al	Fri	1	Fri	21	Fri	23	Fri	21	Bog	1
Al	Fri	1	Fri	22	Fri	24	Fri	22	Bog	1
Al	Fri	1	Fri	23	Fri	25	Fri	23	Bog	1
Al	Fri	1	Fri	24	Fri	26	Fri	24	Bog	1
Al	Fri	1	Fri	25	Fri	27	Fri	25	Bog	1
Al	Fri	1	Fri	26	Fri	28	Fri	26	Bog	1
Al	Fri	1	Fri	27	Fri	29	Fri	27	Bog	1
Al	Fri	1	Fri	28	Fri	30	Fri	28	Bog	1
Al	Fri	1	Fri	29	Fri	31	Fri	29	Bog	1
Al	Fri	1	Fri	30	Fri	32	Fri	30	Bog	1
Al	Fri	1	Fri	31	Fri	33	Fri	31	Bog	1
Al	Fri	1	Fri	32	Fri	34	Fri	32	Bog	1
Al	Fri	1	Fri	33	Fri	35	Fri	33	Bog	1
Al	Fri	1	Fri	34	Fri	36	Fri	34	Bog	1
Al	Fri	1	Fri	35	Fri	37	Fri	35	Bog	1
Al	Fri	1	Fri	36	Fri	38	Fri	36	Bog	1
Al	Fri	1	Fri	37	Fri	39	Fri	37	Bog	1
Al	Fri	1	Fri	38	Fri	40	Fri	38	Bog	1
Al	Fri	1	Fri	39	Fri	41	Fri	39	Bog	1
Al	Fri	1	Fri	40	Fri	42	Fri	40	Bog	1
Al	Fri	1	Fri	41	Fri	43	Fri	41	Bog	1
Al	Fri	1	Fri	42	Fri	44	Fri	42	Bog	1
Al	Fri	1	Fri	43	Fri	45	Fri	43	Bog	1
Al	Fri	1	Fri	44	Fri	46	Fri	44	Bog	1
Al	Fri	1	Fri	45	Fri	47	Fri	45	Bog	1
Al	Fri	1	Fri	46	Fri	48	Fri	46	Bog	1
Al	Fri	1	Fri	47	Fri	49	Fri	47	Bog	1
Al	Fri	1	Fri	48	Fri	50	Fri	48	Bog	1
Al	Fri	1	Fri	49	Fri	1	Fri	49	Bog	1
Al	Fri	1	Fri	50	Fri	2	Fri	50	Bog	1

Road

1973 work

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT

NO 5481

MAP 2

5481  
MAP 2

FIG. 2

Cities Service Minerals Corp.  
 Bog, Fri. & A.I. CLAIMS  
 SCALE 1:3000'

CLAIM STATUS AT DECEMBER 31/74

<u>Claim Name</u>	<u>Record #</u>	<u>Record Date</u>	<u>Rental Expiry Year</u>	<u>Assessment Expiry Year</u>	<u>Date Grouped</u>	
Bog	3	98409	July 26	1975	1977	Dec. 28/73
	4	10	" "	1975	1977	" "
	5	11	" "	1976	1977	" "
	6	12	" "	1976	1977	" "
	7	13	" "	1975	1976	" "
	8	14	" "	1975	1978	" "
	9	15	" "	1976	1978	" "
	10	16	" "	1976	1977	" "
	11	17	" "	1976	1979	Sept. 12/73
	12	18	" "	1977	1978	" "
	13	19	" "	1975	1977	Dec. 28/73
	14	20	" "	1977	1978	Sept. 12/73
	15	21	" "	1975	1978	Dec. 28/73
	16	22	" "	1975	1976	" "
	17	23	" "	1975	1976	" "
	18	24	" "	1975	1976	" "
	19	25	" "	1975	1979	Sept. 12/73
	20	26	" "	1976	1978	Dec. 28/73
	21	99801	Sept 14	1977	1978	Sept. 12/73
	22	02	" "	1977	1978	" "
	23	03	" "	1977	1978	" "
	24	04	" "	1977	1978	" "
	25	05	" "	1977	1978	" "
	26	06	" "	1977	1978	" "
	27	07	" "	1977	1978	" "
	28	08	" "	1977	1978	" "
	29	09	" "	1978	1978	" "
	30	10	" "	1977	1978	" "
	31	11	" "	1978	1978	" "
	32	12	" "	1977	1978	" "
	33	13	" "	1977	1978	" "
	34	14	" "	1977	1978	" "
	35	15	" "	1975	1976	Dec. 28/73
	36	16	" "	1975	1976	" "
	37	17	" "	1975	1976	" "
	38	18	" "	1975	1976	" "
	39	19	" "	1975	1976	" "
	40	20	" "	1975	1976	" "
	41	21	" "	1975	1976	" "
	42	22	" "	1975	1976	" "
	43	100194	Oct 5	1976	1977	Sept. 12/73
	44	95	" "	1977	1978	" "
	45	96	" "	1976	1977	" "
	46	97	" "	1977	1978	" "
	47	98	" "	1976	1977	" "
	48	99	" "	1977	1978	" "
	49	200	" "	1976	1977	" "
	50	201	" "	1977	1978	" "

<u>Claim Name</u>	<u>Record #</u>	<u>Record Date</u>	<u>Rental Expiry Year</u>	<u>Assessment Expiry Year</u>	<u>Date Grouped</u>	
Fri	1	126035	June 25	1975	1976	Dec. 28/73
	2	36	" "	1975	1976	" "
	3	37	" "	1975	1976	" "
	4	38	" "	1975	1976	" "
	5	39	" "	1975	1976	" "
	6	40	" "	1975	1976	" "
	7	41	" "	1975	1976	" "
	8	42	" "	1975	1976	" "
	9	43	" "	1975	1976	" "
	10	44	" "	1975	1976	" "
	11	45	" "	1975	1976	" "
	12	46	" "	1975	1976	" "
	13	47	" "	1975	1976	" "
	14	48	" "	1976	1977	" "
	15	49	" "	1976	1977	" "
	16	50	" "	1976	1977	" "
	17	51	" "	1976	1977	" "
	18	52	" "	1977	1977	Sept. 12/73
	19	53	" "	1977	1977	" "
	20	54	" "	1977	1977	" "
	21	55	" "	1977	1977	" "
	22	56	" "	1977	1977	" "
	23	57	" "	1977	1977	" "
	24	58	" "	1977	1977	" "
	25	59	" "	1977	1977	" "
	26	60	" "	1977	1977	" "
	27	61	" "	1977	1977	" "
	28	62	" "	1977	1977	" "
	29	63	" "	1977	1977	" "
	30	64	" "	1978	1978	" "
	31	65	" "	1978	1979	" "
	32	126870	Sept 14	1976	1977	Dec. 28/73
	33	71	" "	1976	1977	" "
	34	72	" "	1976	1977	" "
	35	73	" "	1976	1977	" "
	36	74	" "	1977	1978	" "
	37	75	" "	1977	1979	" "
	38	76	" "	1976	1977	" "
	39	77	" "	1976	1977	" "
	40	128102	July 5	1977	1977	Sept. 10/74
	41	03	" "	1977	1977	" "
	42	04	" "	1977	1977	" "
	43	05	" "	1977	1977	" "
	44	06	" "	1977	1977	" "
	45	07	" "	1977	1977	" "
	46	08	" "	1977	1977	" "
	47	09	" "	1977	1977	" "
	48	10	" "	1977	1977	" "
	49	11	" "	1977	1977	" "
	50	12	" "	1977	1977	" "

Supplement to orig. of Dec. which date of group.



<u>Claim Name</u>	<u>Record #</u>	<u>Record Date</u>	<u>Rental Expiry Year</u>	<u>Assessment Expiry Year</u>	<u>Date Grouped</u>
AL	1	128478	Aug 15	1975	1975
	2	79	Aug 15	1975	1975
	3	80	" "	1975	1975
	4	81	" "	1975	1975
	5	82	" "	1975	1975
	6	83	" "	1975	1975
	7	84	" "	1975	1975
	8	85	" "	1975	1975
	9	86	" "	1975	1975
	10	87	" "	1975	1975
	11	88	" "	1975	1975
	12	89	" "	1975	1975
	13	90	" "	1975	1975
	14	91	" "	1975	1975
	15	92	" "	1975	1975
	16	93	" "	1975	1975

STATEMENT OF EXPENDITURES INCURRED FOR ASSESSMENT PURPOSES ON THE BOG, FRI, and AL CLAIMS DURING THE PERIODS JULY 16 - AUGUST 9, 1974 AND SEPT. 25 - OCT. 21/74.

Invoice - Morrison contractors, 25 days during July-August work on Fri #1 group - southend of grid - 50 man days	\$5,550.00
Travel Expenses -	228.66
Invoice - Morrison contractors, 27 days during Sept. - October - work on Fri #2B & Fri #3 groups - northend of grid 54 man days -	5,500.00
I.P. Helpers - Roger Yorke, 52 days @ \$35/day	1,820.00
Ian Flanagan, 52 days @\$29/day	1,508.00
104 man days	
Linecutting & linechaining -	
E. Stairs - linecutter - 17 miles, 31 days \$48/day	1,488.00
W. Culp - linechaining, 22 days @ \$26/day	572.00
J. Kline - linechaining, 22 days @\$28/day	616.00
75 man days	
Supervision -	
G. Hawkins, project supervisor, 52 days @\$57/day	2,964.00
W. Murton, P. Eng., 2 days @ \$125/day	250.00
54 man days	
Camp Cost 337 man days @ \$14.70/man day	4,953.90
Vehicle Rental -	
I.P. Crew 2 vehicles x 52 days = 104/30 x \$580/month	2,010.66
Linecutter - 31/30 days x \$525/month	542.49
Supervisor & linechainers 52/30 x \$375/month	649.99
Report Preparation	480.00
Miscellaneous & Supplies	<u>1,500.00</u>
Total	\$30,633.70
	XXXXXXXXXXXX

*J. W. Murton*  
J. W. Murton, P. Eng.

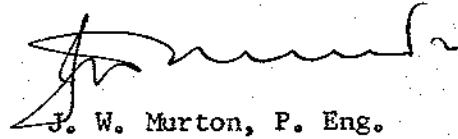
Declared before me this 5 day  
of June 1975 A.D. in the  
City of Vancouver, B.C.



*Jan June*  
Sub-mining Recorder

Of the grand total of \$30,633.70, 1/3 should be charged against the Fri #1 group which would be \$10,109.12.

Of the remainder, only 3/4 should be charged to the northern claims in the Fri #2 and Fri #3 group as 1/4 of this work was completed off the claims. Thus \$15,393.43 would apply to the northern area with 1/2 of the total applied to the Fri #3 group which would be \$7,696.71. The remainder, \$7,696.71 applies to the Fri #2 group.



J. W. Murton, P. Eng.



C E R T I F I C A T I O N

I, GARRY M. DEPAOLI, of the City of Burnaby, in the Province of British Columbia, hereby certify as follows:

1. That I am a graduate of the University of British Columbia, Vancouver, British Columbia with a Bachelor of Science Degree in combined honours, Geophysics and Geology (1969).
2. That I have practiced my profession as a Geophysicist continuously for the past 5 years in Northern Ontario, Quebec, Manitoba, Western U.S.A., Yukon Territories and British Columbia.
3. That I am a member in good standing of the Society of Exploration Geophysicists, The Geological Association of Canada, The Canadian Institute of Mining and Metallurgy, and the B.C. Society of Exploration Geophysicists.
4. That I have no interest directly or indirectly in the Bog Claim Group nor do I expect to receive any.

Garry M. DePaoli  
Geophysicist, B.Sc.

Vancouver, B.C.  
26 May 1975.

C E R T I F I C A T I O N

I, DENNIS F. MORRISON, of the City of Gravenhurst, in the Province of Ontario, hereby certify as follows:

1. That I have First Year University credits at the University of Waterloo, Waterloo Ontario.
2. That I was employed as an electronic technician during 1962-1966 for the Bell Telephone Company of Canada in Toronto.
3. That I was employed by McPhar Geophysics as an Induced Polarization Operator and Crew Chief during the period 1967-1971.
4. That I have been self-employed as an independent Induced Polarization Contractor from 1971-1974.
5. That I have comprehensive induced polarization operating experience in Newfoundland, Nova Scotia, Quebec, Ontario, Manitoba, B.C., Yukon Territories and Northwest Territories and Panama.
6. That I have no interest directly or indirectly in the Bog Claim Group nor do I expect to receive any.

D. F. MORRISON

Vancouver, B.C.  
26 May 1975.

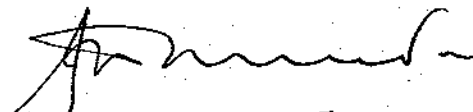
C E R T I F I C A T I O N

I, J. W. MURTON, of North Vancouver, British Columbia, do hereby certify that:

I am a member of the Association of Professional Engineers of the Province of British Columbia, registered in 1972, No. 8324.

I am a graduate of the University of Manitoba with a B.Sc. in Geology.

I have been a practising Engineer and Geologist since 1960 in Manitoba, Saskatchewan, British Columbia, South Western U.S.A. and Alaska.

  
J. W. Murton, P. Eng.

Vancouver, B.C.  
26 May 1975.

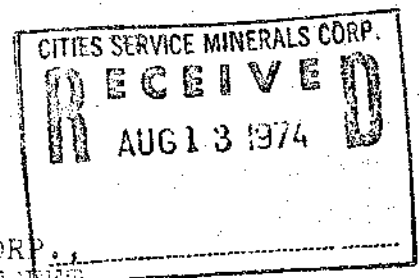




Return to master file

**DENNIS F. MORRISON**

**INDUCED POLARIZATION SURVEYS**



AUGUST 10, 1974.

CITIES SERVICE MINERALS CORP.,  
#405 - 1200 WEST PENDER STREET,  
VANCOUVER, B.C.

RE: Induced Polarization Survey over the BOG CLAIM GROUP near  
Bridge Lake, B.C.

21 Operating Days at \$250.00 per day	.....	\$5,250.00
2 Travel Days at \$100.00 per day	.....	\$200.00
1 Bad Weather Day at \$100.00 per day	.....	\$100.00
Total Amount now due and payable	.....	<u>\$5,550.00</u>

Yours very truly,

D.F. MORRISON

DPM/gmd

581 I geophysical  
Jm - KR

BY DENNIS F. ROBBISON



PROJECT DOG GROUP CLAIMS WEEK ENDING

CLIENT CITIES SERVICE MINERALS CORP.

LOCATION BRIDGE LAKE AREA B.C.

DATE	DESCRIPTION AND REASON FOR EXPENSE	EXPENSE (INVOICE)	EXF TOVE
July 16	GAS	4 75	✓
	"	4 75	✓
	"	11 35	✓
	MEALS	8 40	✓
	"	4 25	✓
Aug 10	MOTEL & MEALS (DINNER & BREAKFAST) for 6 men	150 81	✓
	GAS	8 75	✓
	"	9 30	✓
	MEAL for 4 men	8 40	✓
	INCIDENTALS (Snacks - tips - etc.) - NO RECEIPTS	17 00	

APPROVED:

CREW LEADER

CLIENTS REP.

TOTAL

228.66

ACCOUNTING USE ONLY:

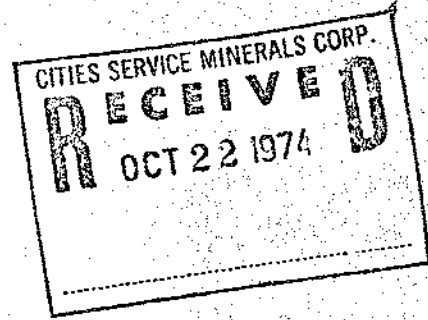
881 J geological

N.B. RECEIPTS REQUIRED FOR ALL ITEMS EXCEEDING \$2.00. RECEIPTS ONLY REQUIRED FOR MEALS WHEN DAILY CHARGE EXCEEDS \$6.00.

*From - Copy*

**DENNIS F. MORRISON**

**INDUCED POLARIZATION SURVEYS**



OCTOBER 21, 1974

CITIES SERVICE MINERALS CORP.  
Box - 1200 NEW BRIDGE STREET  
BRIDGE LAKE, B.C.

For the induced polarization survey over the BOG CLAIM GROUP near  
Bridge Lake, B.C.

20 Operating Days at \$250.00 per day	.....	\$5,000.00
1 Travel Day at \$100.00 per day	.....	\$100.00
2 Organization Days at \$100.00 per day	.....	\$200.00
2 Bad Weather Days at \$100.00 per day	.....	\$200.00
Total Amount now due and payable	.....	<u>\$5,500.00</u>

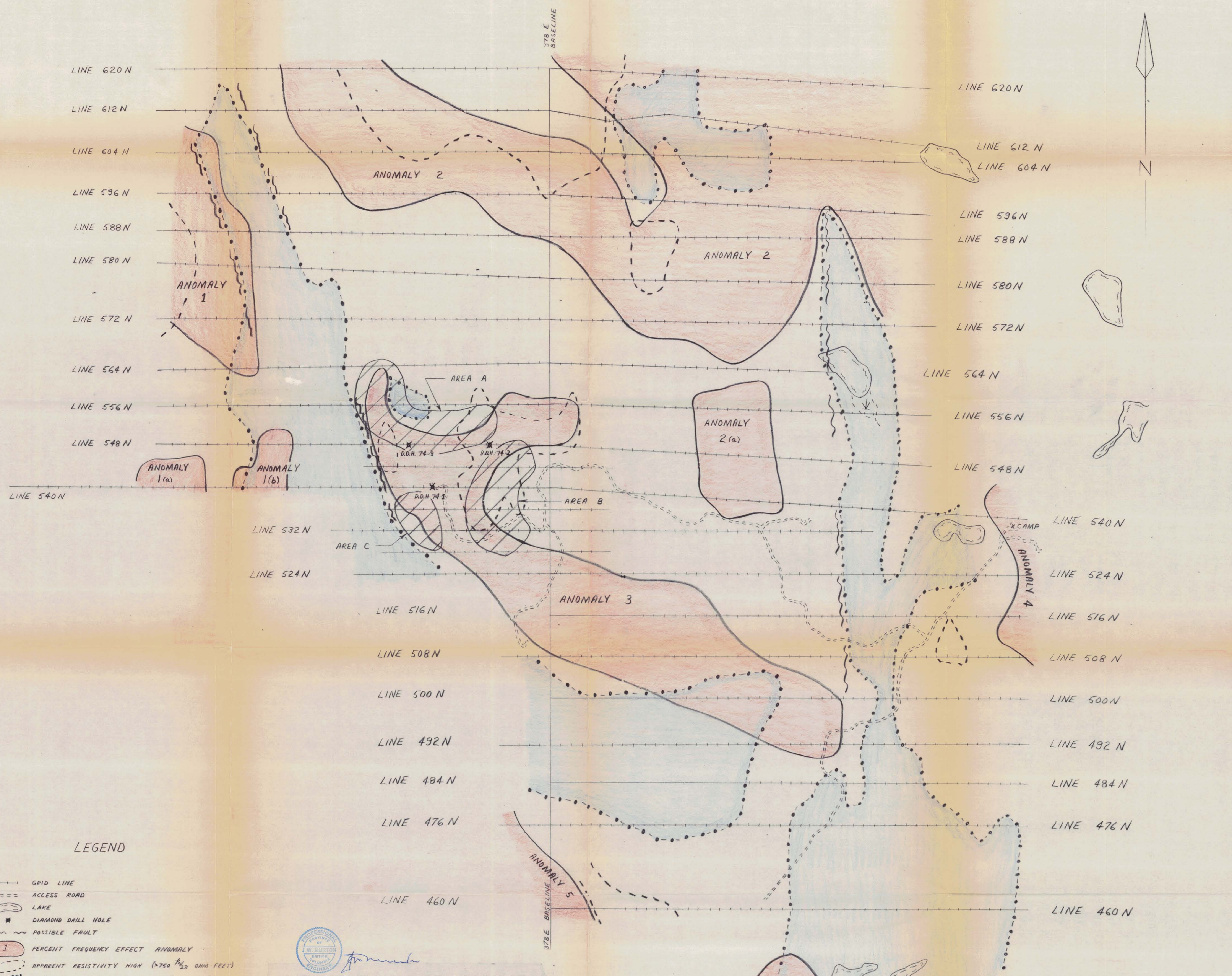
*Ch. Fort  
5812 Geophysical*

Yours very truly,

D.F. MORRISON

DFW/gmd





**LEGEND**

- GRID LINE
- ACCESS ROAD
- LAKE
- ★ DIAMOND DRILL HOLE
- POSSIBLE FAULT
- ① PERCENT FREQUENCY EFFECT ANOMALY
- APPARENT RESISTIVITY HIGH (>750  $\rho_{27}$  OHM-Feet)
- APPARENT RESISTIVITY LOW (<200  $\rho_{27}$  OHM-Feet)
- INDUCED POLARIZATION SURVEY SPECIFICATIONS  
DIPOLE - DIPole ARRAY  
DIPole LENGTH a=200 FEET  
MEASUREMENTS TO FOUR SEPARATIONS N=1,2,3,4
- INDUCED POLARIZATION SYSTEM  
McPHAR P660 FREQUENCY DOMAIN  
TX: 2.5 KW
- OPERATORS: MORRISON AND DEPAOLI
- ▨ AREAS PROPOSED FOR DRILL TESTING



**CITIES SERVICE MINERALS CORP.**  
VANCOUVER B.C. CANADA

**BOG CLAIMS**  
**GEOPHYSICAL INTERPRETATION**

SCALE IN FEET: 0 400 800 1600

DATE: OCTOBER, 1974 N.T.S. No.: 32 P. NE.

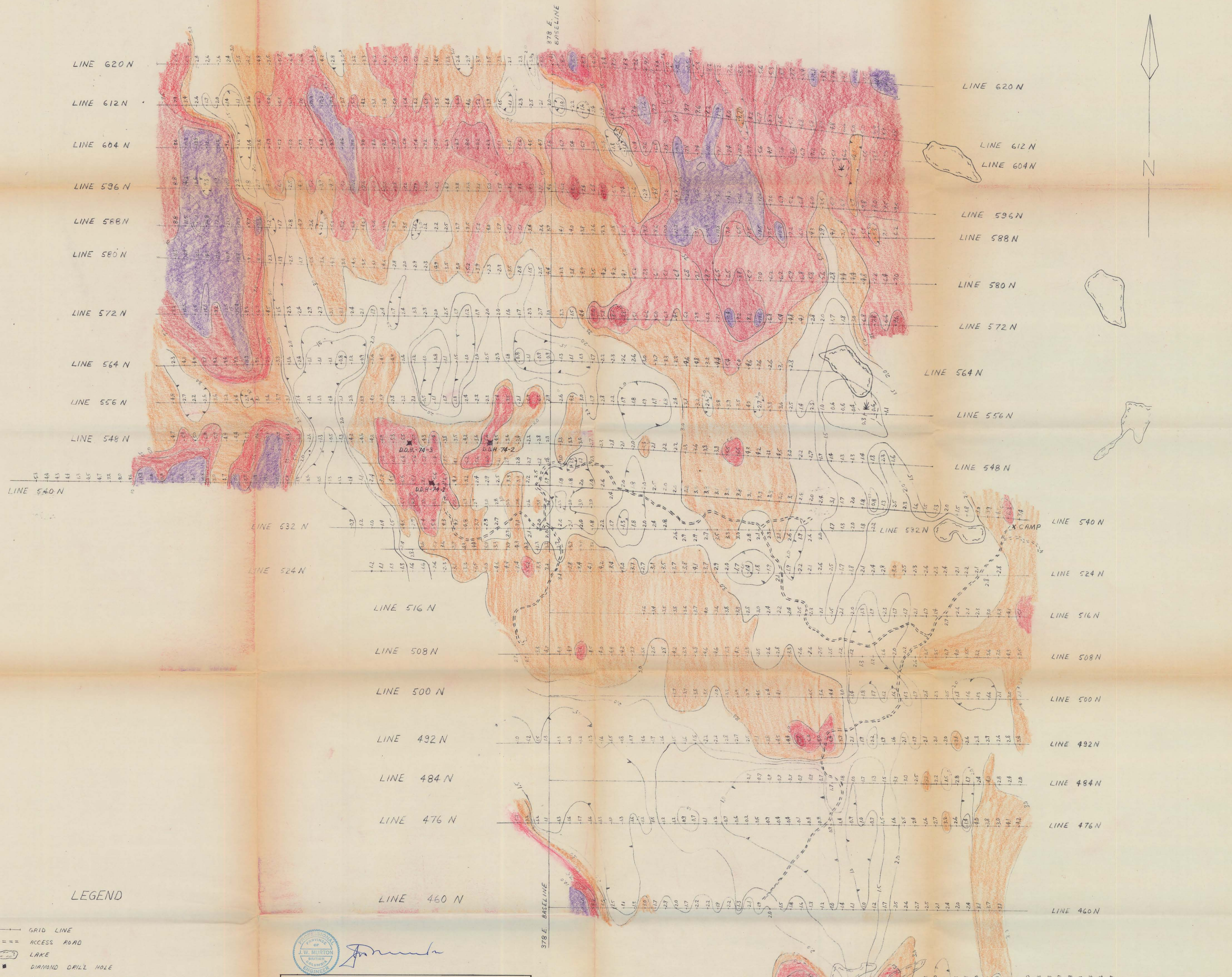
DRAWN BY: G.M.D. DRAWING No.: FIGURE 6

REVISION: TO ACCOMPANY 1974 GEOPHYSICAL REPORT BY: G.M. DEPAOLI + J.W. MURTON

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 5481 MAP 7

5481  
MAP 7





LEGEND

- GRID LINE
- ==== ACCESS ROAD
- LAKE
- DIAMOND DRILL HOLE
- PERCENT FREQUENCY EFFECT
- PERCENT FREQUENCY EFFECT CONTOUR
- CONTOUR INTERVAL 1, 1.5, 2, 3, 5, 10
- INDUCED POLARIZATION SURVEY SPECIFICATIONS  
DIPOLE - DIPOLE ARRAY  
DIPOLE LENGTH  $\alpha = 200$  FEET  
MEASUREMENTS TO FOUR SEPARATIONS,  $N=1, 2, 3, 4$
- INDUCED POLARIZATION SYSTEM  
M.P.H.R. P660 FREQUENCY DOMAIN  
TX: 2.5 KW.
- OPERATORS: MORRISON AND DEPAOLI



*W. MURTON*

CITIES SERVICE MINERALS CORP.  
VANCOUVER B.C. CANADA

BOG CLAIMS  
CONTOURED PLAN P.F.E. N=2

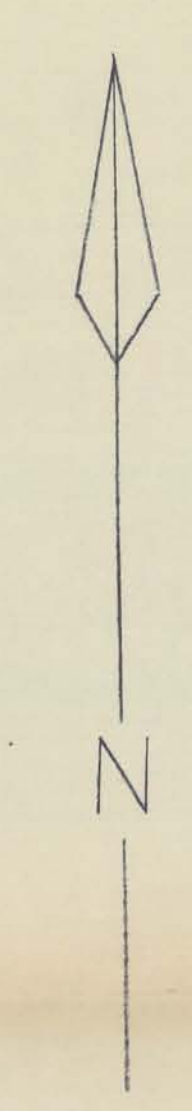
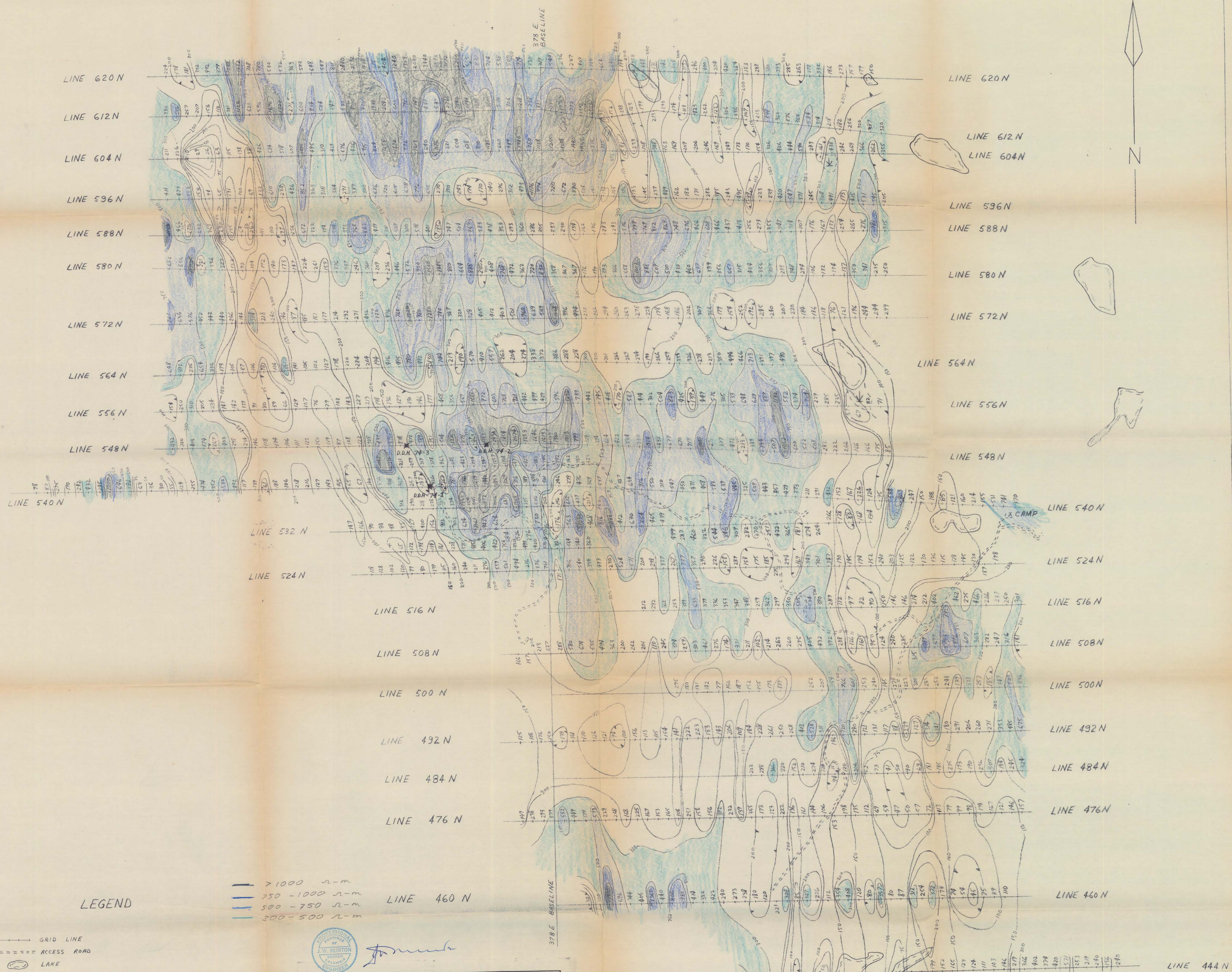
SCALE IN FEET 0 500 1000 1500	
DATE: OCTOBER 1974	N.T.S. No.: 32 P.N.E.
DRAWN BY: G.M.D.	DRAWING No.: FIGURE 5
REVISION:	TO ACCOMPANY 1974 GEOPHYSICAL REPORT BY G.M. DEPAOLI + J.W. MURTON

#6

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 5481 MAP 6

5481  
MAP 6





**LEGEND**

- GRID LINE
- == ACCESS ROAD
- LAKE
- DIAMOND DRILL HOLE
- APPARENT RESISTIVITY IN  $\rho_{a/20}$  OHM-Feet
- RESISTIVITY CONTOUR, C.I. 1, 1.5, 2, 3, 5, 7.5, 10
- INDUCED POLARIZATION SURVEY SPECIFICATIONS  
DIPOLE - DIPOLE ARRAY  
DIPOLE LENGTH a=200 FEET  
MEASUREMENTS TO FOUR SEPARATIONS N=1,2,3,4
- INDUCED POLARIZATION SYSTEM  
M-PHAR P660 FREQUENCY DOMAIN  
TX: 2.5 KW.
- OPERATORS: MORRISON AND DEPAOLI

- > 1000  $\Omega\text{-m}$
- 750 - 1000  $\Omega\text{-m}$
- 500 - 750  $\Omega\text{-m}$
- 300 - 500  $\Omega\text{-m}$



*J. Murton*

**CITIES SERVICE MINERALS CORP.**  
VANCOUVER BC CANADA

**BOG CLAIMS**  
**CONTOURED PLAN RESISTIVITY, N=2**

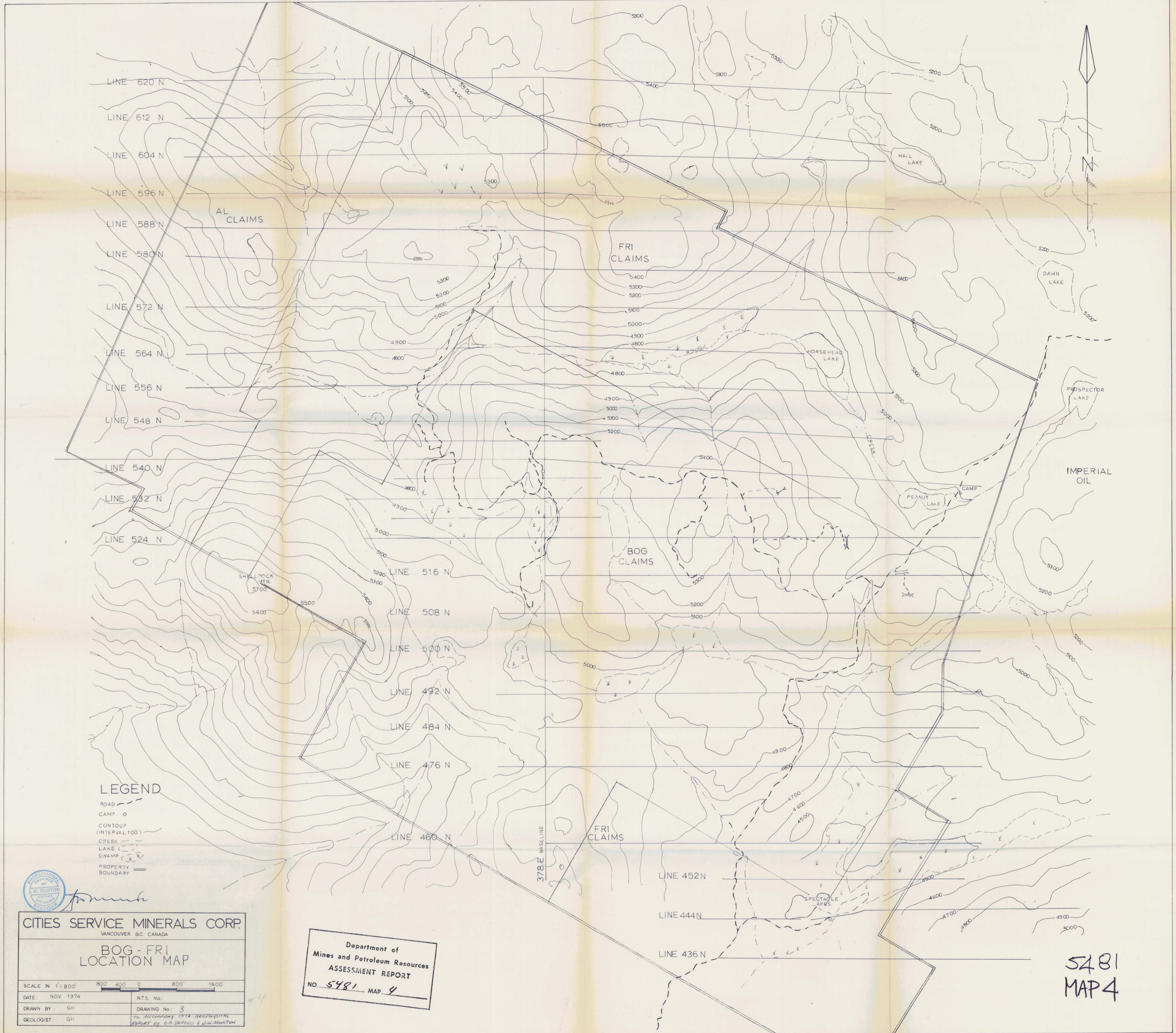
SCALE IN FEET 0 400 800 1600

DATE: OCTOBER 1974	N.T.S. No.: 92 P.N.E.
DRAWN BY: G.M.D.	DRAWING No.: FIGURE 4
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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 5481 MAP 5

5481  
MAPS





**LEGEND**

- ROAD - - - - -
- CAMP ○
- CONTOUR (INTERVAL 100)
- CREEK - - - - -
- LAKE ( )
- SWAMP ( )
- PROPERTY BOUNDARY - - - - -

PROFESSIONAL ENGINEER  
 J. W. MURTON  
 CIVIL ENGINEER

**CITIES SERVICE MINERALS CORP.**  
 VANCOUVER B.C. CANADA

**BOG - FRI LOCATION MAP**

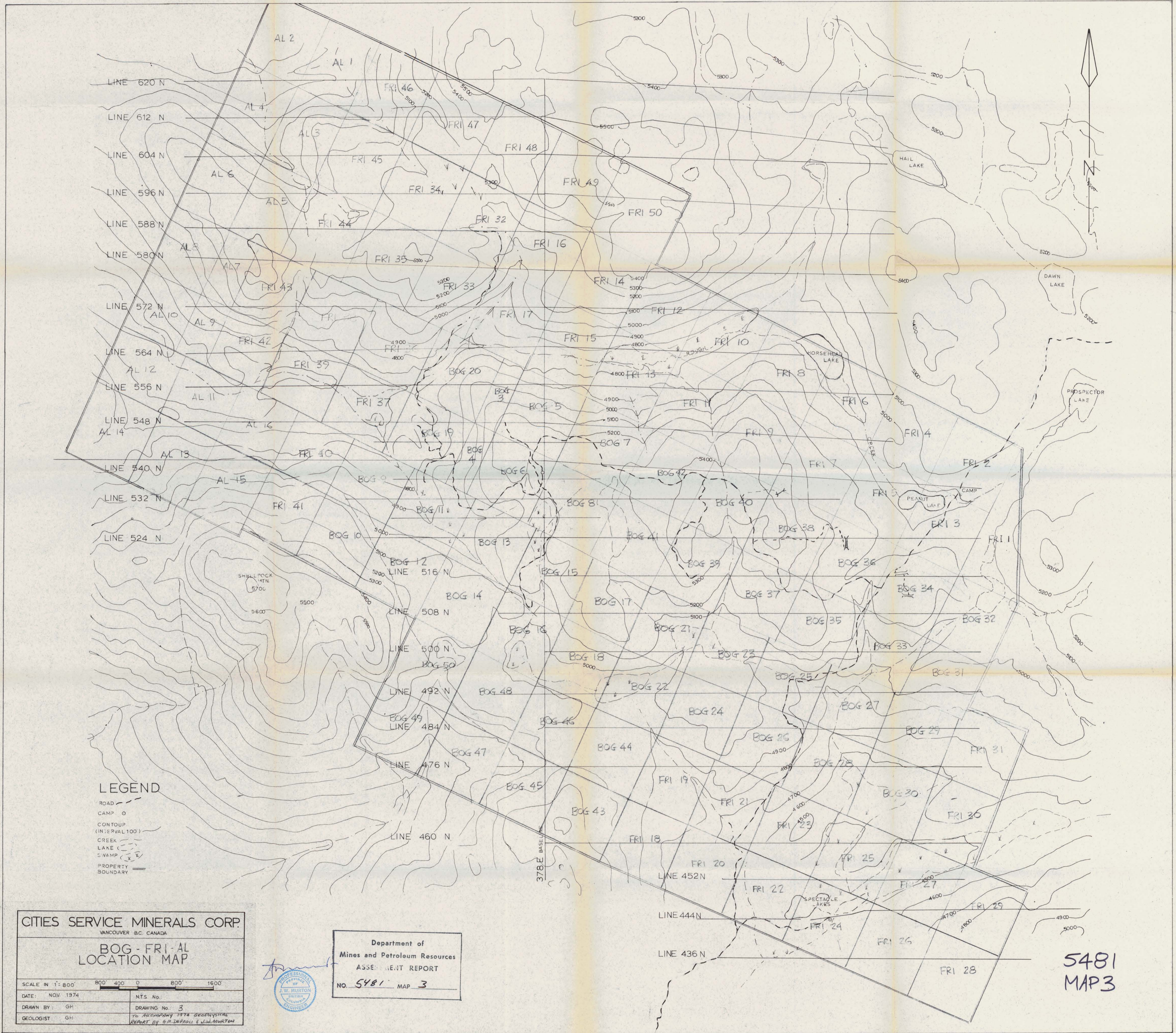
SCALE IN 1"=800'    800'    400'    0'    800'    1600'

DATE: NOV. 1974	N.T.S. No.:
DRAWN BY: GH	DRAWING No. 3
GEOLOGIST: GH	To accompany 1974 geophysical report by G.M. DEPIOLI & J.W. MURTON

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 5481 MAP 4

5481  
 MAP 4





**LEGEND**  
 ROAD ———  
 CAMP ○  
 CONTOUR (INTERVAL 100)  
 CREEK ———  
 LAKE ( )  
 SWAMP ( )  
 PROPERTY BOUNDARY - - -

**CITIES SERVICE MINERALS CORP.**  
 VANCOUVER BC CANADA

**BOG - FRI - AL  
 LOCATION MAP**

SCALE IN 1:800' 800' 400' 0 400' 800' 1600'

DATE: NOV 1974	NTS. No.
DRAWN BY: GH	DRAWING No. 3
GEOLOGIST: GH	to accompany 1974 geophysical REPORT by G.M. DEBLOU & J.W. MURTON

Department of  
 Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 5481 MAP 3

*J.W. MURTON*  
 PROFESSIONAL  
 J.W. MURTON  
 GEOLOGICAL  
 ENGINEER

5481  
 MAP 3