

4733

MAPS

- #1 Geological map
- #2 Cu in Soils
- #3 Mo in Soils
- #4 Claim map
- #5 Hg Vapour Survey

CLINTON

DEC 5 - 1973

MINING RECORDER

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **4733** MAP.....

PICKANDS MATHER & CO.

EXPLORATION REPORT ON CHRIS CLAIMS

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PICKANDS MATHER & CO.

Exploration Report

PROPERTY: Chris Claims (92P - 15E)
PERIOD: July 24 to September 1, 1973
DATE: October 20, 1973
FIELD WORK DONE BY: George Dodd and Arnold Pollmer, Geologists
SUPERVISED BY: H.J. Wahl, P. Eng.

SUMMARY

The objective of the 1973 program on the Chris Claim group was to determine the validity of, and more positively delineate geochemical anomalies detected during the 1972 sediment survey.

Line cutting totalled 262,700 feet, (49.75 miles,) and was hampered by the dense bush and rugged terrain. Geochemical soil samples totalled 2095 samples. This work revealed a number of scattered anomalous areas covering the eastern and southwestern sectors of the property. A mercury vapor survey was conducted over the central portion of the grid, but results were inconclusive.

Geological mapping was done over the entire property totalling approximately 258,000 linear feet. A trace of chalcopyrite, and malachite stain were found within one of the soil-anomalous areas, near a zone of alteration. Apart from this small restricted zone, little additional mineralization was observed to conclude with certainty that the soil anomalous areas represent significant bedrock mineralization.

It is recommended that further exploration work consist of an EM survey over the southwest quadrant of the property, to determine if bedrock conductivity is associated with the soil anomalies. This survey would amount to some 7 line miles. Concurrent with the EM survey, a closer geological inspection of outcrops within or near the Cu-Ag soil anomalies is required.

INTRODUCTION

History:

The 1972 geochemical sediment sampling program revealed a copper-molybdenum anomaly in the area surrounding Christopher Lake. Consequently a group of 70 claims was staked to cover this feature.

GROUP 2

N

70 30074	68 30072	66 30070	64 30068	33 30037	35 30039	37 30041	39 30043
69 30073	67 30071	65 30069	63 30067	34 30038	36 30040	38 30042	40 30044
62 30066	60 30064	58 30062	56 30060	25 30029	27 30031	29 30033	31 30035
61 30065	59 30063	57 30061	55 30059	26 30030	28 30032	30 30034	32 30036
54 30058	53 30057	52 30056	50 30054	17 30021	19 30023	21 30025	23 30027
		51 30055	49 30053	18 30022	20 30024	22 30026	24 30028
		48 30052	46 30050	9 30013	11 30015	13 30017	15 30019
		47 30051	45 30049	10 30014	12 30016	14 30018	16 30020
		44 30048	42 30046	1 30005	3 30007	5 30009	7 30011
		43 30047	41 30045	2 30006	4 30008	6 30010	8 30012

CHRISTOPHER LAKE

L 7563

L 4994

L 4995

L 2068

L 1254

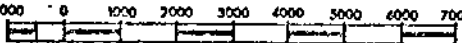
CANIM LAKE

GROUP 1

Department of
Mines and Petroleum Resources

ASSESSMENT REPORT

NO. **4733** #4

SCALE  FT.
1/2 mile to 1 inch

PICKANOS MATHER & CO.
VANCOUVER B.C.

MIDDLE BELT PROJECT
CHRIS CLAIMS
RECORD NOS.

CLINTON MD

SCALE: 1" = 1/2 Mi. REVISIONS
DATE: Oct. 1973
NO.

OWNERSHIP

Pickands Mather & Co.
 Suite 216 - 475 Howe Street
 Vancouver 1, B.C.

PROPERTY DESCRIPTION

(Fig. 1)

Seventy full size claims being the Chris Nos. 1 through 70 inclusive; Record Nos. 30005 through 30075.

Date Staked:	October 14, - 17, 1972
Date Recorded:	October 31, 1972
Date Assessment work due:	October 31, 1973

For the application of a certificate of work, the Chris Claim Property has been divided into (2) groups (Chris group Nos. 1 and 2), containing 30 and 40 claims respectively. Note Figure 1.

LOCATION

(Fig. 1)

Center of Property:	51° 54' 30" N, 120° 35' 40" W
N.T.S. Number:	92P - 15E
Country	Canada
Mining Division:	Clinton
Province:	British Columbia

Distance to 100 Mile House: Approximately 40 Air Miles.

ACCESS

Restricted to helicopter or foot trail from Canim Lake. The nearest road is five miles west of Christopher Lake.

TOPOGRAPHY

Irregular east-west trending ridges make up the eastern half of the property. These are flanked by large boulder fields with the boulders varying from 1 foot to forty feet in diameter. The western sector of the property consists largely of low ground, with swamps and lakes. Elevation ranges from 2,600 to 4,200 feet above sea level.

Drainage runoff is to the south, flowing into Canim Lake and Mahood Lake.

SOIL PROFILE

Soil development is rudimentary throughout much of the property. Little variation exists beyond rock fragments and rock flour mixed with organic debris.

The vegetation is quite dense and predominates as cedar, spruce and fir. A heavy undergrowth of young cedar and alder impedes foot travel.

EXPLORATION: Project Initiation

On August 1, 1973 a camp was established near the southwest shore of Christopher Lake by Bud Harrington, Abe Wall and the line cutting crew.

LINE CUTTING: (97 man-days)

Line cutting began on August 4, with a north-south picketed base line extending 14,400 feet.

Blazed grid: A grid of blazed and some picket lines was established over the entire claim group. These east-west oriented lines were spaced at 800-foot intervals. Two north-south tie lines were cut near the outer perimeter to maintain control.

Mini-Grid: Located between line 80N and line 144N, lines running east of the base line were cut at 400-foot intervals. The line cutting totalled 262,700 feet, (49.75miles).

GEOLOGICAL MAPPING: (11 man-days)

A geological survey was conducted over the entire property focusing on rock types, mineralization occurrence, stratigraphic boundaries, structural trends and topographical features. All outcrops crossing the grid lines were plotted only when the outcrop was large and continuous. Rock samples were marked according to their location on the grid system. A total of 258,000 linear feet was mapped.

Some disseminated chalcopyrite was found at station 11E line 100N, but for the remainder of the property the rocks showed little except for minor amounts of disseminated pyrite.

GEOPHYSICAL WORK: Mercury Vapor Survey, 109 Samples (17 man-days)

A mercury vapor survey was conducted over 7.27 miles of line in the mini-grid area. Station intervals were set at 400 feet.

The soil gas samples were collected during a period of over 3 hours on -80 Mesh gold plated silver sceans placed in the chimneys of plastic domes. The collector screens were then wrapped in "Saran Wrap" to prevent contamination, placed in kraft paper envelopes, and labelled according to line and station. The collector grids were taken to the base camp and analysed with a "Geomet" mercury air monitor model 103 (Sr. No. 024).

The electrical bond between the precious metal screen and the Hg is broken when the screen is heated. The Hg vapor passes through a tube having at one end an Ultra Violet light and at the other end a photo cell. The amount of light absorbed by the vapor is recorded on a Digital Volt Meter and the Hg value is calculated from the D.V.M. reading. The corrected DVM reading is measured against a reference curve specific to the instrument being used, to obtain the value in nanograms of mercury.

GEOCHEMICAL WORK: (23 man-days)

Soil samples were taken with a grub hoe, within a 25-foot radius of each 100-foot station. Approximately 238,000 feet, (45 miles) were sampled, and additional samples were taken where lines intercepted a stream drainage; This totalled 2095 samples. Soil types and slope direction/gradient were recorded on location. Samples were placed in a kraft paper soil sample bag and labelled according to line and station coordinates.

The assaying was done by:

Fraser Laboratories Ltd.
1175 West 15th Street
North Vancouver, B.C.
(Registered Assayer, Province of British Columbia)

The samples were assayed for copper, molybdenum, and silver.

The soil samples were classified according to the following system:

- | | |
|----------------|--|
| N | Stony soil - drift with no soil profile development. |
| S | Sand |
| L | Loam; rich organic - silty soil found in low lying areas |
| M | Decomposed moss from swamps and boggy ground |
| A ₀ | Organic litter - non decomposed to partly decomposed organic matter. |
| A ₁ | Decomposed organic matter - may contain some mineral soil. |
| A ₂ | Leached sandy grey horizon. |
| B ₁ | Accumulation horizon - Consists of mineral soil, usually reddish brown to orange in color due to high content of iron. |
| B ₂ | Yellow - brown material soil: Contains much less iron than B ₁ horizon. |
| C | Parent material: bedrocks, glacial overburden or residual deposits. |

THERE WERE :

<u>Number</u>	<u>Class</u>	<u>% Total</u>
299	A horizon samples	14.42
882	B	42.47
47	C	2.34
12	L	0.62
64	M	3.17
791	N	38.02
<u>2095</u>		<u>100.94/100.00</u>

GEOLOGY: (Map C-1)General GeologyREGIONAL SETTING

The Chris Claim group lies within the Quesnel Highland. According to G.S.C., Memoir 363, Geology of the Bonaparte Lake Map area, British Columbia, this physiographic area is underlain mainly by folded and metamorphosed Paleozoic rocks with lesser amounts of Mesozoic rock types. The ridges are largely of Cretaceous igneous intrusions.

ROCK TYPES

Jurassic - Middle Jurassic (??)

- A. Dacite, Dacite porphyry, the predominant rock type throughout the property.

Weathered surface:

Dark to light brown, gray and some iron staining. A few areas showed white CaCO_3 staining.

Fresh surface:

Light gray to chlorite green. Hornblende and epidote phenocrysts distinct in the dacite porphyry. Texture medium to fine grain, some samples contain oval-shaped, light gray silicified zones accompanied by disseminated pyrite.

- B. Agrillite: A mixture of mudstone and siltstone often banded.

Weathered surface:

Black to dark gray with brown iron oxide staining. Appears platy with small scale sedimentary structures noticeable (crossbedding and truncation).

Fresh Surface:

Aphanitic texture with noticeable layering of light siltstone with dark mudstone, fissile breakage. Some quartz stringers and pyrite within layers and fractures, parallel to bedding.

Pillow Basalts:

Found only in one outcrop located at line 12⁴N station 12E.

Weathered surface:

Gray to black with pillow structure well defined. Pillows 6 inches to 1 foot in size.

Fresh surface:

Gray aphanitic texture.

MINERALIZATION

Within a dacite outcrop situated at station 11E on line 100N, a trace of disseminated chalcopyrite and associated malachite staining was found. Approximately 150 feet north of this outcrop another outcrop showed intensive alteration (carbonate, serpentine), in which a 2 to 4 inch vein of barite was located, bounded by calcite.

Siderite, pyrite, calcite and trace chalcopyrite were found between the northeastern shore of Christopher Lake and line 10⁴N, west of the base line.

Scattered areas within the southeastern quarter showed disseminated pyrite. Usually these were accompanied by zones of silicification which occurred within the dacite, dacite porphyry and volcanic agglomerate outcrops.

Pyrite was also found in the argillite outcrops in the northeastern sector of the property, with greater concentrations along the fractures.

ALTERATION

Throughout much of the dacite, dacite porphyry and volcanic agglomerate outcrops, zones of siliceous alteration were present. These zones were not of any magnitude, nor were they concentrated in any particular region. The alteration was sporadic and ranged from small 1 inch spheres, to larger areas, whose ultimate dimensions were not apparent. Intensity varied only slightly and the altered zones usually contained pyrite mineralization.

The largest area of alteration occurs along line 100N and swings northward at Christopher Lake, terminating at line 120N station 12W.

Petrographic analysis of a rock sample taken from this area during the 1972 staking program revealed the following:

A Microcryptocrystalline, buff grey carbonatized breccia:

Mineralogy:

<u>Breccia fragments</u>	Quartz	2	%
	Carbonate	5	%
<u>Matrix</u>	Feldspar	15	%
	Carbonate	58	%
	Iron oxide	20	%

Textures:

A few various sized, pod-shaped silica and carbonate breccia fragments engrained in a massive microcryptocrystalline carbonate-feldspathic matrix. Iron oxide stain is pronounced in fracture pockets.

Alteration:

Intense carbonatization

Discussion:

Primary rock texture obliterated by carbonate alteration. Original rock possibly fine grained volcanic porphyry.

MERCURY VAPOR SURVEY INTERPRETATION (Figure C-4)

The objective of the Hg-Vapor survey technique is to identify areas of higher mercury content in soil gas as contrasted to surrounding areas, where the Hg content is negligible. Its application as an exploration technique is still in a very elementary stage. It has however, given encouraging results over known porphyry-type copper deposits in British Columbia, as documented by earlier (1972-73) test work conducted by PM & Co. Its use in the current project is based on:

1. Successful results by J.H. McCarthy (USGS Circular 609).
2. Successful tests over Valley Copper and Highmont with PM & Co. equipment in 1972.
3. The known co-association of trace Hg in British Columbia porphyry-type deposits (BCDM 1966).
4. Development of portable, efficient, and highly sensitive analytical equipment (Geomet M-103).

In addition, a survey over the Maggie deposit was found to give positive results.

The survey results are subject to a wide variety of variables including air temperature, soil temperature, atmospheric pressure, cloud cover, and surface winds.

MERCURY VAPOR EQUIPMENT

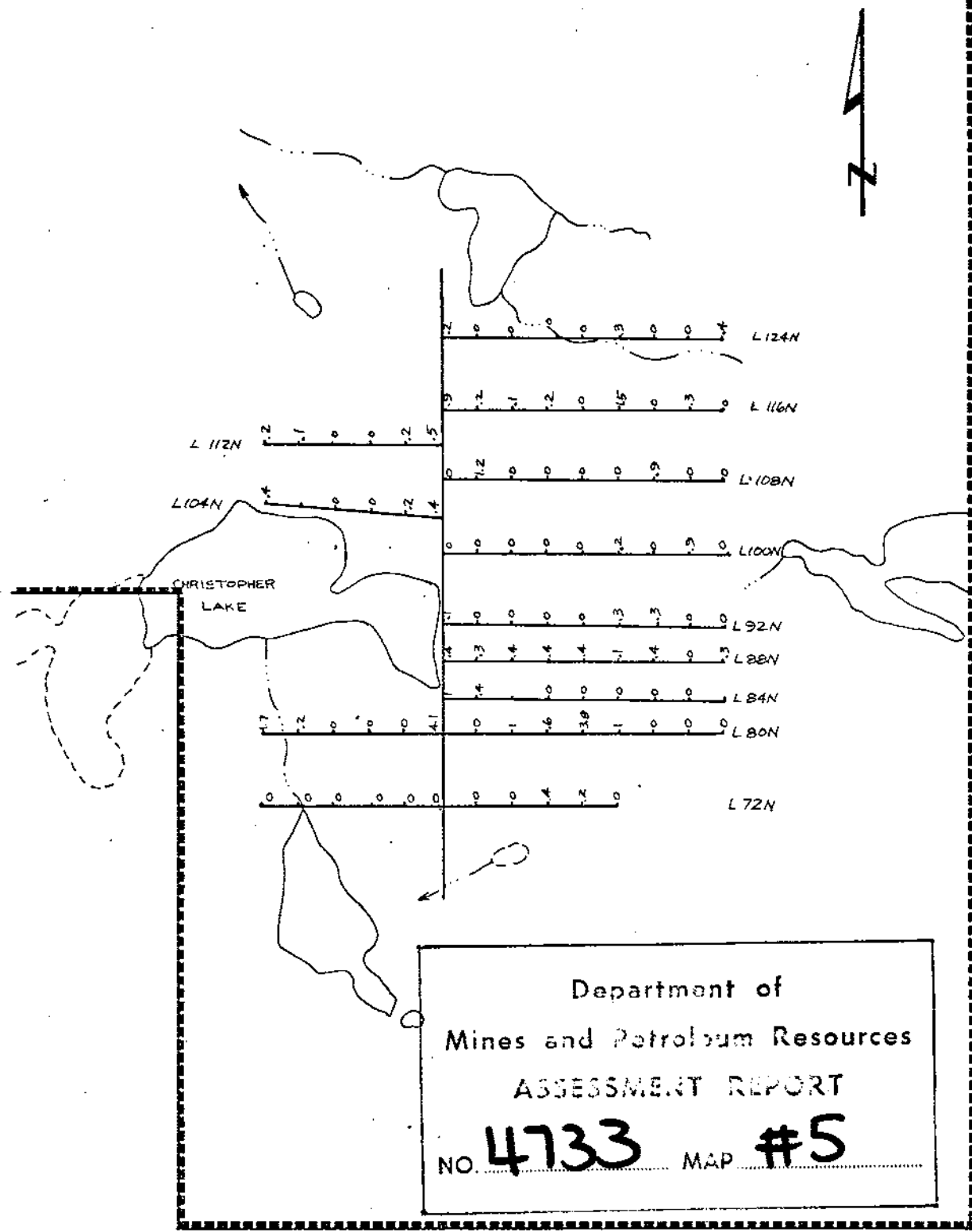


Dome with screen in chimney

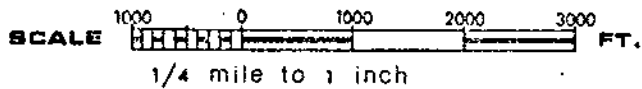


"Geomet" model 103 c/w induction furnace

CLAIM BOUNDARY



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4733 MAP #5



To ACCOMPANY EXPLORATION
 REPORT ON THE CHRIS CLAIMS,
 CHRISTOPHER LAKE AREA,
 CLINTON M.D., BY H. J. WAHL, P. ENG.
 PERIOD. 1-27 AUG 1973

PICKANDS MATHER & CO. VANCOUVER B.C.	
MIDDLE BELT PROJECT CHRIS CLAIMS HG VAPOR SURVEY VALUES IN ngms OF Hg	
SCALE: 1" = 1/4 MI.	REVISIONS
DATE: Aug. 1973	
NO. C-4	

At the present state of the art, no corrective factors can be applied to take account of survey conditions which vary from day to day. PM & Co. work has shown that results are repeatable, although the magnitude of values will vary.

The mercury vapor survey failed to lend any favorable support to the higher geochemical results found in the area to which the survey was applied. The values of the 109 readings, ranged from 0 nanograms to a high of 4.1 nanograms. However, it must be mentioned that these low results might have been caused by two unfavorable conditions present during the survey.

1. The heavy vegetation cover on the property restricted much of the sunlight required for the collection process.

2. The ascending mercury vapors normally trapped and concentrated by overburden had little interference, for much of the area surveyed had only rudimentary soil cover.

GEOCHEMICAL INTERPRETATION (Figures C-2, C-3)

The 1973 soil geochemical survey has confirmed the initial sediment geochemical anomalies, although the location of soil anomalous areas with respect to sediment anomalous areas, has shown a variance of position. The most impressive anomaly is within the southwestern quarter of the grid system, where metal patterns are broader and more continuous. The remainder of the property area shows a sporadic, irregular distribution of low and high copper values.

Southwest Sector:

Copper soil anomalies here show a linear pattern which trends north-south. The area measures approximately 4,000 x 4,400 feet flanking a small lake on all sides except to the north. The anomalous dispersion is quite consistent throughout this sector. Much of this area is covered with overburden so little outcrop is visible.

Eastern Sector:

In this area are found sporadic linear anomalies with a north-south trend, which run perpendicular to the east-west ridge pattern. This might indicate that the source of the copper anomalies stem from mineralized fracture fillings or lenses. Alternatively, a striking feature is the definite association of Cu-Mo soil anomalies with outcrop areas of black argillites. As carbonaceous argillites, especially pyritic formations, are notorious metal scavengers, their syngenetic metal content is likely the cause of anomalous soil responses in these areas.

A mentionable precaution not to be overlooked, is that soil samples collected within the large boulder fields located in this sector, might not have undergone the normal soil development processes. Such soils

as are present, represent a thin covering on a blanket of coarse rubble and boulders overlying the primary bedrock, This could account for some of the erratic high readings.

POSSIBILITIES

The most favorable appearing rock type, the carbonated breccia exposed on the northeast shore of Christopher Lake, is apparently devoid of significant base metal sulphide mineralization.

The next most promising target is the broader geochemical soil anomalies in the southwest quadrant, where overburden conditions are more normal.

Whether these anomalies are indicative of broad disseminated mineralization, or more restrictive fracture-controlled occurrences is at present unknown.

RECOMMENDATIONS

As the geochemical results were only available after field crews had left the property, a more specific geological investigation of outcrops within and near the detected soil anomalies is required. Accompanying this investigation, an EM survey of some seven line miles is further recommended to establish the presence of electrically conductive material (sulphides) below the anomalous geochemistry.

Submitted By:

HW for "A.P."
Arnold Pöllmer, Geologist

Approved By:

H.J. Wahl
H.J. Wahl, Regional Geologist
P. Eng.,
British Columbia 8990

ATTACHMENTS

1. Map (Figure 1) 1" = 1/2 mile, Chris Claims, location map
2. Map (C-1) 1" = 400 feet, Chris Claims, Geology
3. Map (C-2) 1" = 400 feet, Chris Claims Cu-Ag Geochem
4. Map (C-3) 1" = 400 feet, Chris Claims, Mo Geochem
5. Map (C-4) 1" = 1/4 mile, Chris Claims, Hg-Vapor Survey
6. Hg-Vapor Analytical reports, pages 1-6 inclusive.

REFERENCES

1. G.S.C. Memoir 363, Geology of Bonaparte Lake Map Area, British Columbia, by R.B. Campbell and H.W. Tipper, 1971.
2. Petrographic report for Pickands Mather & Co., by Geotec Consultants Ltd., November 16, 1972.

PICKANDS MATHER & CO.
 Detail of Exploration Expense
 Non ferrous Project - British Columbia
 Chris Claims - Field Costs
 January 1 to September 30, 1973
 (Canadian Funds)

Field costs:

Labor:		
Geologist and assistants	\$2,788.64	
Line cutters	4,800.18	
Cooks	<u>830.40</u>	\$ 8,419.22
Equipment		736.87
Supplies		1,900.32
Contracts:		
Air service	2,939.19	
Assaying	1,562.40	
Equipment rental and insurance	<u>78.75</u>	4,580.34
Other		<u>51.84</u>
		\$15,688.59

The above statement of field costs for the Chris Claims presents fairly expenditures for the nine months ended September 30, 1973, subject to year-end audit adjustments, in accordance with generally accepted accounting principles.

PICKANDS MATHER & CO.


 Manager of Accounting

Costs claimed for assessment work differ from total on accounting statement due to equipment amortization of the mercury vapor monitor and related accessories, which is charged at the rate of \$40/per operating day.


 H. J. Wahl, P. Eng.

STATEMENT OF QUALIFICATIONS

ARNOLD R. POLLMER

I, Arnold R. Pollmer am a graduate of the Wisconsin State University, having received a Bachelor of Science Degree in Geology in May 1972.

Prior to my graduation, I was employed as an assistant geologist for Falconbridge Nickel Mines in Sudbury (1970). I assisted with core logging, core sampling, underground mapping, and drafting with the mine development department.


Upon graduation I was employed with Davenport and Comet Industries as a junior geologist on a drill site in Kamloops, British Columbia. Later that summer I was employed by Alrae Engineering as an exploration geologist performing soil sampling, magnetometer surveys, line cutting, geological mapping and claim staking duties.

For the past year (1973) I have been employed as an exploration geologist for Pickands Mather & Co., participating and supervising various company exploration projects in a regional exploration program in central British Columbia.

I am fully conversant with the technical procedures related to the surveys being reported herein.

Date: 24 Oct. 1973

Certified true and correct:


Arnold R. Pollmer


H.J. Wahl, P. Eng.

STATEMENT OF QUALIFICATIONS

GEORGE J. DODD

I, George J. Dodd, am a graduate of the University of British Columbia, having received a Bachelor of Science Degree in Geological Science in June, 1971.


Prior to my graduation, I was employed by Orequest Exploration Syndicate of Vancouver (1969) performing soil sampling, claim staking and line cutting. In 1970, I was a summer employee of the Geological Survey of Canada, engaged in a geological mapping project in the N.W.T.

Upon graduation, I was employed variously by Newconex Canadian Exploration Ltd., The Geological Survey of Canada and latterly by Orequest Exploration Syndicate. My duties during these employments covered various types of technical surveys related to mineral exploration.

For the past two summers (1972/73), I have been employed as Exploration Geologist for Pickands Mather & Co., participating in and supervising various company exploration projects related to a regional exploration program in central British Columbia.

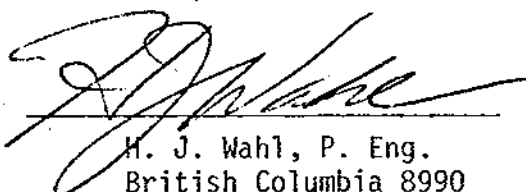
I am fully conversant with the technical procedures related to the surveys being reported herein.

Date: Aug 16, 1973.



George J. Dodd

Certified true and correct:



H. J. Wahl, P. Eng.
British Columbia 8990



FRASER LABORATORIES LIMITED

1175 W. 15th STREET, NORTH VANCOUVER, B.C.

August 17, 1973.

Mr. H. J. Wahl
Pickands Mather & Co.
Ste. 216 - 475 Howe Street
Vancouver 1, B. C.

Re: Analytical Method for Soils and Sediments

Dear Mr. Wahl:

The following is the analytical method used for your geochemical soils and lake sediments program in 1973. The large sample weight enables a good detection of lower range silver and molybdenum values.

Method:

- The samples were dried at approximately 120° F and 10 to 20 grams of minus 80 mesh was sieved.
- A 1.0 gram sample of minus 80 mesh was digested for 3 hours on a hotplate with a mixture of 2 mls nitric acid and 4 mls perchloric acid.
- The samples were diluted to 25 mls with demineralized water, and the concentration determined against matrix standards with a Techtron AA5 atomic absorption spectrophotometer.

Yours very truly,

FRASER LABORATORIES LTD.

R. M. Samuels

Registered Assayer, Province of B. C.

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: Chris Claims DATE: August 22, 1973
 LINE: 80 N-84N - 88N - 92N WEATHER: Sunny W/occ. Cloudy Periods
 SAMPLING PERIOD: From: 11:00 To: 15:00
 SCREEN USED: -80 Mesh (Au-Ag) Hg. SENSOR COLLECT TIME: 4 minutes
 TEMP. START SURVEY 52°F (ground T40F) OPERATOR: M.A. Leonard
 TEMP END SURVEY 42°F (ground T38F) ATMOSPHERIC PRESSURE START: _____
 ATMOSPHERIC PRESSURE END: _____

STATION	TIME	BACKGROUND DVM NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	23:48		0			
L80N-00	:53		20	0	20	4.1
4E	:58		0	0	0	0
8E	24:03		7	0	7	1.0
BKG	:08		0			
12E	:13		4	0	4	0.6
16E	:18		18	0	18	3.8
20E	:23		6	0	6	0.9
BKG	:28		0			
24E	:37		0	0	0	0
28E	:42		0	0	0	0
32E	:48		0	0	0	0
BKG	:53		0			
L-84N-00	1:21		7	0	7	1.0
4E	:26		3	0	3	0.4
12E	:31		0	0	0	0
16E	:37		0	0	0	0
BKG	:42		0			
20E	:47		0	0	0	0
24E	:52		0	0	0	0
28E	:57		0	0	0	0
BKG	2:02		0			
L-88N-00	:10	screen off	3	0	3	0.4
4E	:15	dome	2	0	2	0.3
8E	:20	animal distur- bed	3	0	3	0.4

REMARKS: Lamp Check 9.83 Volts

DVM, Digital Volt Meter; Ng, Nanogram, Ag, Silver
 BKG, Background Hg, Mercury Au, Gold

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: _____ DATE: August 22, 1973

LINE: _____ WEATHER: _____

SAMPLING PERIOD: From: _____ To: _____

SCREEN USED: _____ Hg. SENSOR COLLECT TIME: _____

TEMP. START SURVEY _____ OPERATOR: _____

TEMP END SURVEY _____ ATMOSPHERIC PRESSURE START: _____

ATMOSPHERIC PRESSURE END: _____

STATION	TIME	BACKGROUND DVM	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	2:25		0			
L-88N-12E	:30	fog on dome	3	0	3	0.4
16E	:35	"	3	0	3	0.4
20E	:40	:	1	0	1	0.1
BKG	:51		0			
24E	:56	fog on dome	3	0	3	0.4
28E	3:01	"	0	0	0	0
32E	:06	"	2	0	2	0.3
BKG	:11		0			
L-92N-00	:17	fog on dome	1	0	1	0.1
4E	:23	"	0	0	0	0
8E	:28	"	0	0	0	0
12E	:33		0	0	0	0
16E	:38	animal distur-	0	0	0	0
20E	:44	bed	4	2	2	0.3
BKG	:49		3			
24E	:54	fog on dome	4	2	2	0.3
28E	:59		1	1	0	0
32E	4:04		0	1	0	0
BKG	:09		1			

REMARKS:

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: Chris Claims DATE: August 23, 1973
 LINE: 104N, 27N, 80N, 112N WEATHER: Sunny w/occ. cloudy periods
 SAMPLING PERIOD: From: 11:00 To: 15:00
 SCREEN USED: -80 Mesh Ag-Au Hg. SENSOR COLLECT TIME: 4 minutes
 TEMP. START SURVEY 50°F (ground T 48°F) OPERATOR: George Dodd
 TEMP END SURVEY 34°F (ground T 35°F) ATMOSPHERIC PRESSURE START: 30.29"
 ATMOSPHERIC PRESSURE END: 30.34"

STATION	TIME	BACKGROUND DVM NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	17:09		2			
L-104N-4W 8W 12W	:14 :19 :25	1	3 0 2	2 2 0	1 0 0	0.1 0
BKG	:30		2			
16W	:35	motor stopped no reading				
BKG	22:06		0			
20W L-72N-00 4E	:10 :16 :22		2 0 0	0 0 0	2 0 0	0.4 0 0
BKG	:27		0			
8E 12E 16E	:32 :37 :42		0 2 1	0 0 0	0 2 1	0 0.4 0.1
BKG	:47		2			
20E L-72N-4W 8W	:53 :59 23:04		0 0 0	0 0 0	0 0 0	0 0 0
BKG	:10		0			
12E 16W 20W	:15 :20 :25	animal dis- turbed	0 0 0	0 0 0	0 0 0	0 0 0

REMARKS: Lamp Check 9.84 Volts.

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: _____ DATE: August 23, 1973

LINE: _____ WEATHER: _____

SAMPLING PERIOD: From: _____ To: _____

SCREEN USED: _____ Hg. SENSOR COLLECT TIME: _____

TEMP. START SURVEY _____ OPERATOR: _____

TEMP END SURVEY _____ ATMOSPHERIC PRESSURE START: _____

ATMOSPHERIC PRESSURE END: _____

STATION	TIME	REMARKS NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Hg. Hg.
BKG	23:30		0			
L-80N-00	:35	animal dis- turbed	4	0	4	0.6
4W	:41		0	0	0	0
8W	:46		0	0	0	0
BKG	24:05		1			
12W	:10	animal dis- turbed	0	1	0	0
16W	:15		2	1	1	0.1
20W	:20		11	1	10	1.7
BKG	24:25		1			
Samples of L-112N	analyzed on August 29		1973.			
BKG	16:27		1			
L-112N-00	:32		4	1	3	0.5
4W	:38		2	1	1	0.1
8W	:42		1	1	0	0
BKG	:47		1			
12W	:52		1	1.2	0	0
16W	:59		2	1.5	0.5	0.1
00W	17:04		3	1.8	1.2	0.2
BKG	:10		2			

REMARKS:

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: Chris Claims DATE: August 25, 1973
 LINE: 100N - 108N - 116N - 124N WEATHER: Partly cloudy, rain on August 24,
 SAMPLING PERIOD: From: 11:00, 24/8 To: 14:00 25/8/73
 SCREEN USED: -80 Mesh Ag-Au Hg. SENSOR COLLECT TIME: 4 minutes
 TEMP. START SURVEY 44°F (ground, 42°F) OPERATOR: M.A. Leonard
 TEMP END SURVEY 52°F (ground, 40°F) ATMOSPHERIC PRESSURE START: 40.3"
 ATMOSPHERIC PRESSURE END: 30.18"

STATION	TIME	BACKGROUND DVM NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Hg. Hg.
BKG	16:28		3			
L-100N-00	:33		1	3	0	0
4E	:38	Fog on dome	0	2	0	0
8E	:43	"	0	1	0	0
12E	:48	"	0	0	0	0
BKG	:53		0			
16E	:58		0	0	0	0
20E	17:03		1	0	1	0.1
24E	:08		0	0	0	0
28E	:13		5	0	5	0.9
BKG	:18		0			
32E	:23		0	0	0	0
L-108N -00	:29		0	0	0	0
4E	:34		7	0	7	1.2
8E	:39		0	0	0	0
BKG	:44		0			
12E						
16E	:49		0	0	0	0
20E	:54		0	0	0	0
24E	:59		5	0	5	0.9
BKG	18:04		0			
28E	:10		0	0	0	0
32E	:15		0	0	0	0
L-116N-00	:22		5	0	5	0.9
4E	:27		1	0	1	0.2
BKG	:32		0			
8E	:37		1	0.5	0.5	0.1
12E	:42		2	1	1	0.2
16E	:47		1	1.5	0	0
20E	19:11	motor stopped	14(?)	6	8	1.5

REMARKS:

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: _____ DATE: August 25, 1973

LINE: _____ WEATHER: _____

SAMPLING PERIOD: From: _____ To: _____

SCREEN USED: _____ Hg. SENSOR COLLECT TIME: _____

TEMP. START SURVEY _____ OPERATOR: _____

TEMP END SURVEY _____ ATMOSPHERIC PRESSURE START: _____

ATMOSPHERIC PRESSURE END: _____

STATION	TIME	BACKGROUND DVM NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	19:17		8			
L-116N-24E	:22		5	7.5	0	0
38E	:28		8	6.5	1.5	0.3
32E	:33		5	5.5	0	0
BKG	:38		5			
Samples of Line 124N, analyzed on August 29/1973						
BKG	15:10		6			
L-124N-00	:15		7	6	1	0.1
4E	:20		5	6	0	0
8E	:25		6	6	0	0
BKG	:30		6			
12E	:35		4	5.2	0	0
16E	:40		3	4.5	0	0
20E	:45		5	3.5	1.5	0.3
BKG	:50		3			
24E	:55		2	2.5	0	0
28E	16:01		0	2.0	0	0
32E	:07		4	1.5	2.5	0.5
BKG	:12		1			

REMARKS:

APPENDIX I

Staff and Labor Statistics

The names and addresses of personnel employed on the project are:

LINE CUTTERS

<u>Walter Arsenault</u>	piecework rate	
32 Earl Street, Kirkland Lake, Ontario		
<u>Mike Callaghan</u>	piecework rate	
680 Lynas Lane, Richmond, B.C.		
<u>Norman Gilmour</u>	piecework rate	
17 Queen Street, Kirkland Lake, Ontario		
<u>Gordon Huston</u>	piecework rate	
79 Taylor Avenue, Kirkland Lake, Ontario		
<u>Garry McAuley</u>	piecework rate	
45 Government Road, Kirkland Lake, Ontario		

GEOLOGISTS AND ASSISTANTS

<u>George Dodd</u>	(geologist)	\$850/month
Suite 206, 6821 Arcola Street, Burnaby, B.C.		
<u>Marc A. Leonard</u>	(geologist)	
260 W, 16th Street, North Vancouver, B.C.		
<u>Arnold Pollmer</u>	(geologist)	\$850/month
c/o Eagle Creek, B.C.		
<u>Patrick Harrington</u>	(camp manager)	\$960/month
66 Fourth Street, Kirkland Lake, Ontario		
<u>Abraham Wall</u>	(senior field assistant)	\$850/month
Suite 4, 1550 Comox Street, Vancouver, B.C.		

COOK

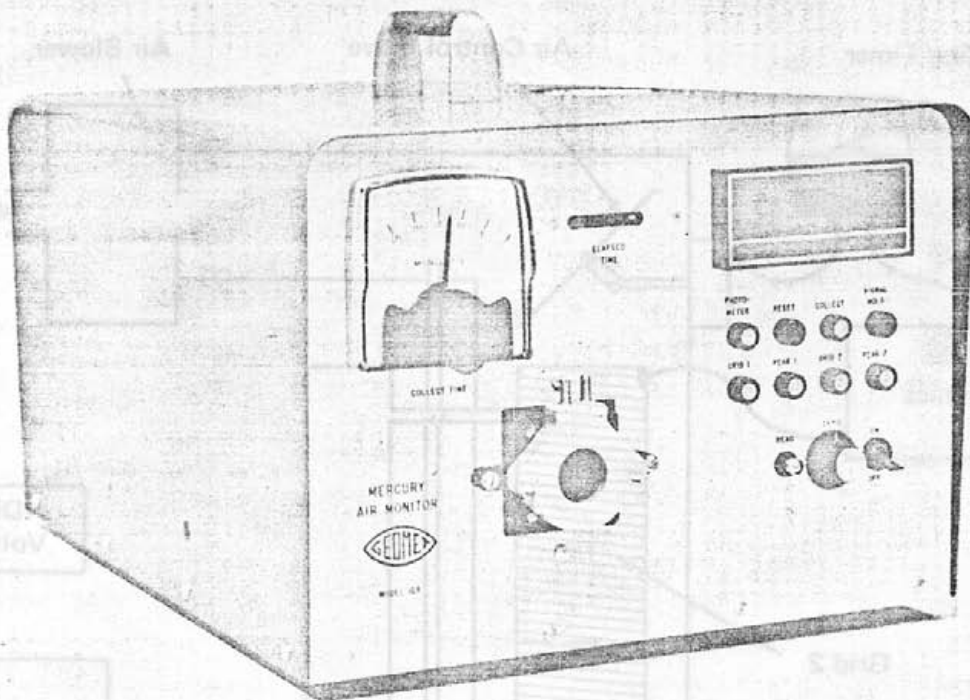
<u>Rita Harrington</u>		\$850/month
66 Fourth Street, Kirkland Lake, Ontario		

The time distribution of labor on the various phases of the project is as follows:

<u>CAMPSITE LOCATION</u>		<u>Total Days</u>
Patrick Harrington	July 24	1
Marc A. Leonard	July 24	1
Abraham Wall	July 24	<u>1</u>
		3 days
<u>LINE CUTTING, CAMP MOBILIZATION - DEMOBILIZATION</u>		
Walter Arsenault	August 3 - 26	24
Mike Callaghan	August 20 - 24	5
Norman Gilmour	August 3 - 26	24
Gordon Huston	August 3 - 17	15
Garry McAuley	August 3 - 26	24
Patrick Harrington	August 3 - 6	4
	August 18 - 20	3
Abraham Wall	August 6 - 8	<u>3</u>
		102 days
<u>SOIL SAMPLING</u>		
Patrick Harrington	August 8 - 15	9
	August 21	
Abraham Wall	August 12 - 18	8
	August 29	
Arnold Pollmer	August 19, 20	2
George Dodd	August 16, 17, 19, 20	<u>4</u>
		23 days
<u>MERCURY VAPOR SURVEY</u>		
George Dodd	August 22, 23, 25, - 29	7
Marc A. Leonard	August 22, 25, 26, 30, 31	5
Mike Callaghan	August 25 - 29	<u>5</u>
		17 days
<u>GEOLOGICAL SURVEY</u>		
Arnold Pollmer	August 18	
	August 21 - 27	8
George Dodd	August 18, 21, 24	<u>3</u>
		11 days
<u>COOK</u>		
Rita Harrington	August 6 - 21	<u>16</u>
	TOTAL	172 man days



MERCURY AIR MONITOR

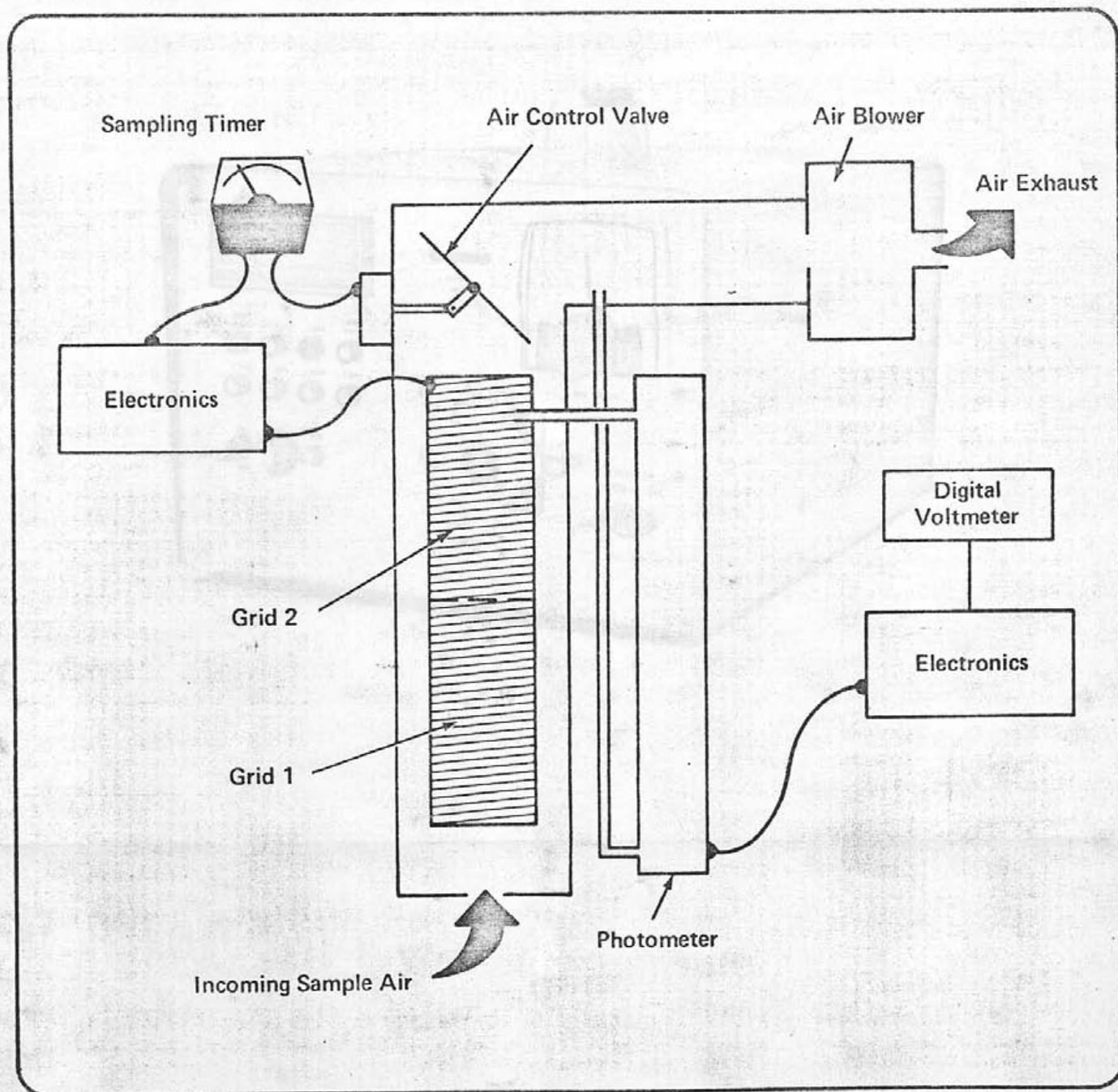


MODEL 103

Principle of Operation

The GEOMET Model 103 Mercury Air Monitor is utilized for sampling, detecting and monitoring mercury vapor and mercury bearing particulates in the atmosphere or in gas samples. Air is drawn into the instrument, at selected flow rates and sampling time cycles, across a collection grid. The instrument utilizes a unique sequential grid assembly which concentrates the mercury by amalgamation. The sequential operation separates signals generated by collected mercury from those arising from interfacing substances. Automatic heating of the grids releases a pulse of mercury vapor into a UV photometer where it is quantitated without attenuation by interferences. The peak signal value is displayed on a digital voltmeter. Connections are provided for simultaneous recording on a strip chart recorder. The collection, readout and data presentation time cycle is adjustable for continuous air monitoring over long periods of time. The instrument is also readily adaptable for automatic readout of batch air samples taken with ancillary collection systems.

Functional Diagram



Specifications

Detector	Automatic Sampler and Ultraviolet Photometer (253.7 nm)
Response Range	1 - 1,000,000 Nanograms/Meter ³
System Sensitivity	1 Nanogram/Meter ³
System Accuracy	±5%
Air Sampling Ranges	Orifice Controlled - 5, 20, 50, 100 and 175 l/minutes
Sample Timer	Manual Setting 0 - 30 or 0 -180 minutes
Collection Grid*	Three Types Available: Silver, or Gold Plate on Copper, or Gold Plate on Silver
System Response Time	Adjustable, 5 - 180 minutes
Saturation	Electronic - 10 Volt Signal
Electronics	Rapid Response, Solid State Peak-Sensing Circuitry
Light Source	Stabilized Long-Life UV Lamp
Operating Temperature Range	-10° to +125°F
Air Inlet Temperature Range	-10° to +200°F
Calibration	Readout Compared to Elemental Mercury Standard
Physical Dimensions	14" Wide x 10" High x 18" Long
Weight	Net: 35 lbs. Shipping Weight: 80 lbs.
Power Requirement	115 VAC, 60 Hz, 2 KW
Case Construction	Heavy Gauge Aluminum with Corrosion Resistant Finish

* Normally, GEOMET Mercury Air Monitor Model 103 supplied with a silver collection grid.

Options

- COLLECTION GRIDS
- CATALYTIC CONVERTER (For Reduction Of Mercury Compounds and Particulates)
- STANDARD STACK PROBES

Science Serving Society

50 Monroe Street
Rockville, Maryland 20850
301/762-5820



2814A Metropolitan Place
Pomona, California 91767
714/593-1318

Applications

THE MODEL 103 PROVIDES AN EFFICIENT LABOR SAVING METHOD FOR:

- AMBIENT AIR MONITORING – Source Identification, Boundary Levels, Pollution Control, Field Surveys.
- INDUSTRIAL INSPECTIONS – Chlor/Alkali Operations, Mercury Mining and Retorting, Coal-Burning Installations, Paint Manufacturing, Electrical Products Fabrication, Pesticide and Fungicide Production, Smelting.
- STACK MONITORING – Power Plants, Combustion Processes.
- LABORATORY GAS ANALYSIS
- ENVIRONMENTAL HEALTH MEASUREMENTS

Features

COLLECTION TIME SELECTOR

is manually adjusted for sampling increments of 0 to 30 minutes (0 to 180 min. selection optional). Black indicator shows sampling time. Red shows remaining time for sampling during cycle.

ELAPSED TIME INDICATOR

is used for correlation of instrument performance during continuous sampling operations.

TEST/NORMAL OPERATION SWITCH (Black Panel)

is used to check performance of subsystems

SPAN ADJUSTMENT (Side)

DIGITAL VOLTMETER

displays peak signal pulse of collected mercury. The meter is also used for instrument calibration and evaluation of performance.

SEQUENCE INDICATORS

are sequentially actuated and display instrument handling of sample data during collection cycles.

RECORDER & PRINTER CONNECTORS (Back Panel)

SAMPLE AIR INLET

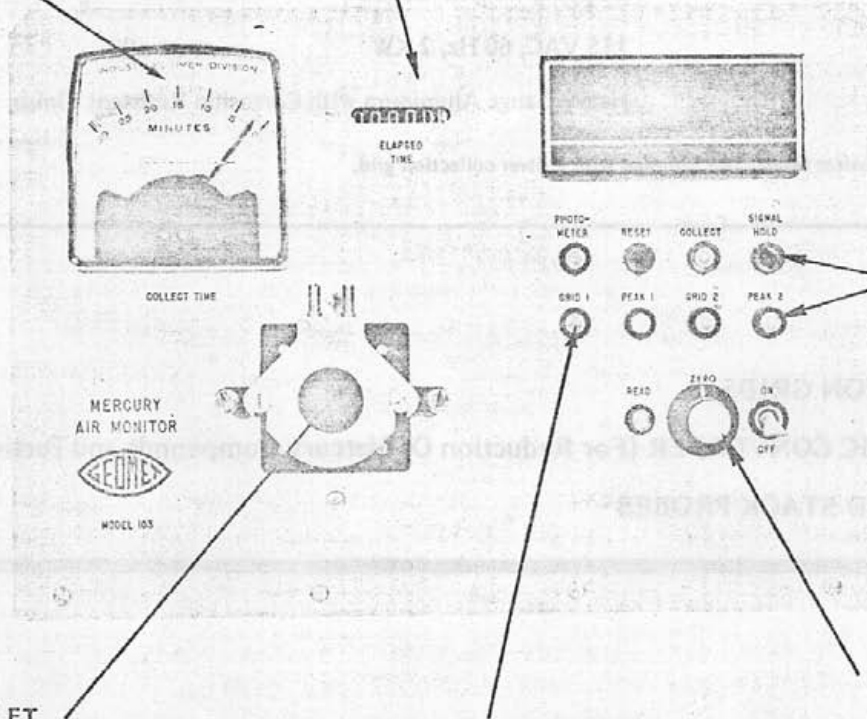
provides entrance for sampled air onto collection grid surfaces. Limiting orifices provided with the instrument are attached at this point providing selection of proper air intake volumes for specific sample applications.

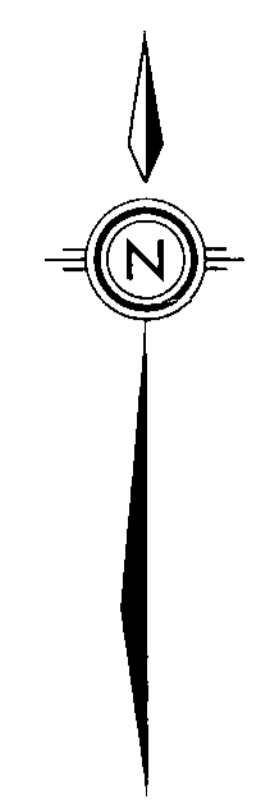
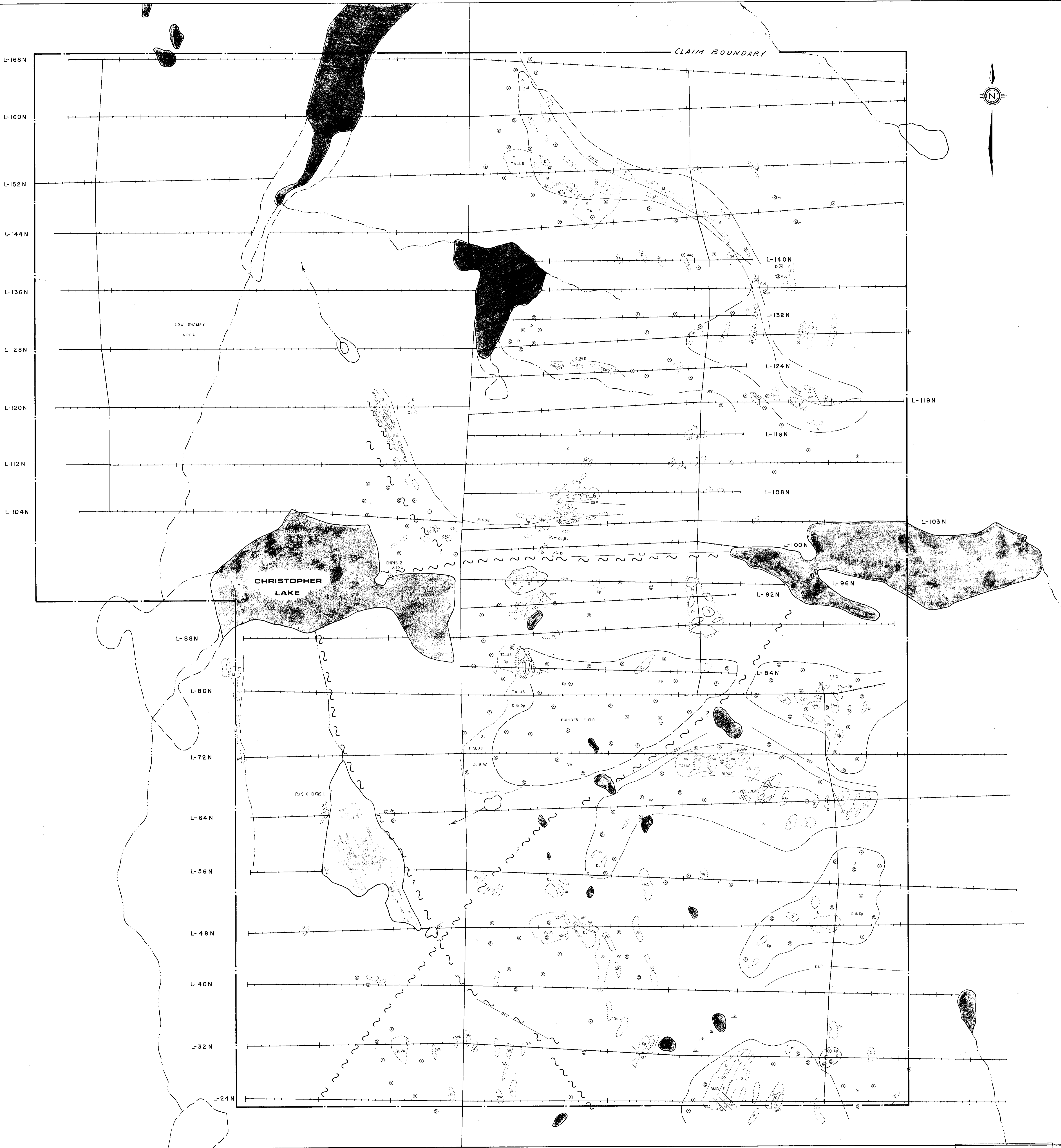
GRID INDICATOR LIGHTS

show discharge cycles of collected substances from grids. This function is synchronized with upper row of Sequence Indicators.

ZERO ADJ. KNOB

adjusts zero signal level.





LEGEND

- LAKE
- SWAMP
- CREEK
- CUT LINES
- Brecciated zone
- Jointing, strike and dip
- Fault
- Ridge
- Escarpment

- GEOLOGICAL LEGEND**
- JURASSIC - MID JURASSIC (?)
(Stratigraphic Positions Unknown)
- D Dacite
 - Dp Dacite Porphyry
 - VA Volcanic Agglomerate (Dacite fragments in a Dacite Matrix)
 - M Argillite (Mudstone and sandstone)
 - B Basalt (Pillow structure)
 - Flint
 - X R.S. Rock Sample

- ABBREVIATIONS**
- DEP Depression
 - Sil Silicified zone
 - Aug Augite
 - Ca Calcite
 - Ba Barite
 - Cp Chalcopyrite
 - Py Pyrite

4733 MI

To accompany exploration report on the Chris Claims, Christopher Lake, Clinton MD. by H.J. Wahl, P. Eng., period Aug 1-26, 1973

29 Nov 1973
H. J. Wahl

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **4733** MAP #1

PICKANDS MATHER & CO.
VANCOUVER B.C.

MIDDLE BELT PROJECT

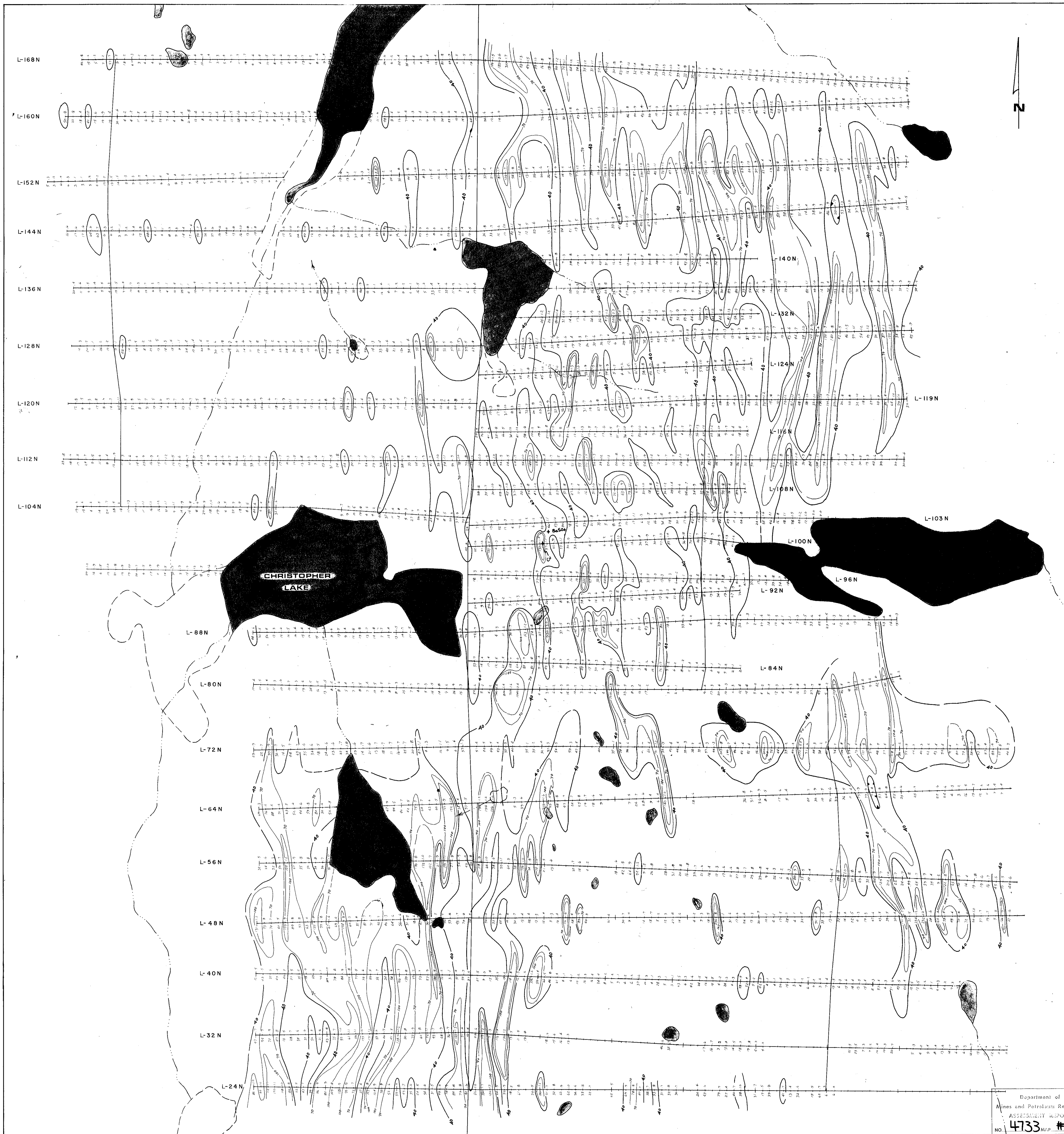
CHRIS CLAIMS

GEOLOGICAL MAP

SCALE 400 0 400 800 FT.
400 feet to 1 inch

DATE: 20, OCT. 1973

NO. C=



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4733 M2 #2

LEGEND

- LAKE
- SWAMP
- CREEK
- CUT LINES
- Cu Ag in ppm

**4733
M2**

*1 Nov 1973
F. J. Mather*

To ACCOMPANY EXPLORATION REPORT
ON THE CHRIS CLAIMS, CHRISTOPHER
LAKE AREA, CLINTON M.D.
BY H.J. WAHL, P. ENG., PERIOD
1 to 27 AUGUST, 1973

PICKANDS MATHER & CO.
VANCOUVER B.C.

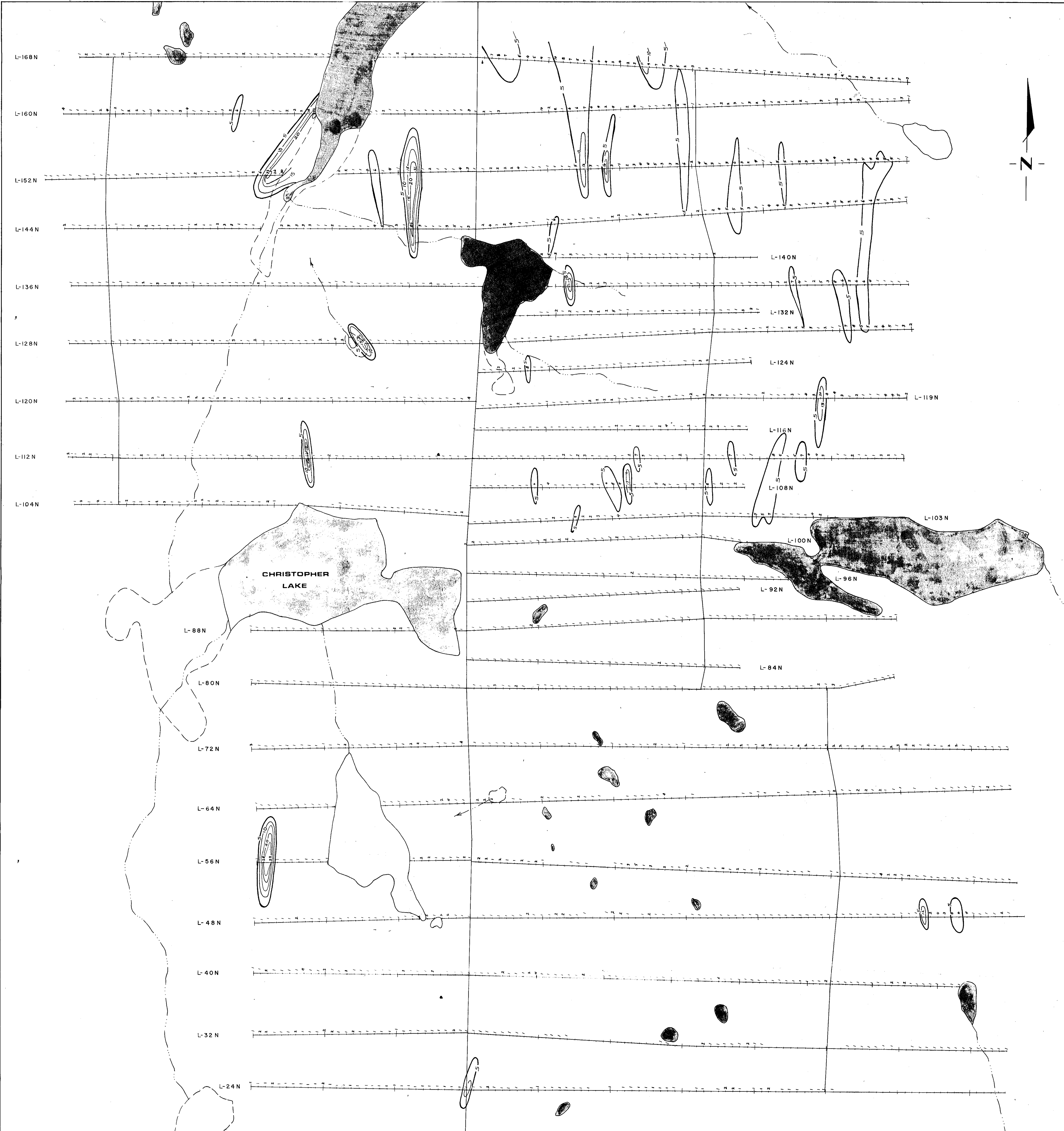
MIDDLE BELT PROJECT

CHRIS CLAIMS



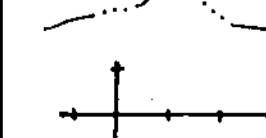

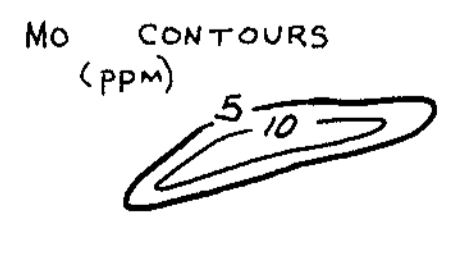
CU IN SOILS

SCALE 400 0 400 800 FT.
400 feet to 1 inch

DATE: Oct. 1973
NO. C-2



LEGEND

-  LAKE
-  SWAMP
-  CREEK
-  CUT LINES
-  No CONTOURS (ppm)

4733
M3

TO ACCOMPANY EXPLORATION REPORT
ON THE CHRIS CLAIMS, CHRISTOPHER LAKE
AREA, CLIXTON, M.D.
By H.J. WARD, F.R.S., Period 1 Aug.
To 27 Aug., 1973.

29 Nov 1973
H. Ward

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4733 MAP #3

PICKANDS MATHER & CO.
VANCOUVER

MIDDLE BELT PROJECT

CHRIS CLAIMS
MO IN SOILS

DATE: Oct., 1973
NO. C-3