

PICKANDS MATHER & CO.

EXPLORATION REPORT ON THE DIANE CLAIMS

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CLINTON

DEC 3 - 1973

MINING RECORDER

MAPS

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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. **4768** MAP

PICKANDS MATHER & CO.

Exploration Report

PROPERTY: Diane Claims (93A-2E)  
PERIOD: August 24 to September 13, 1973  
DATE: October 22, 1973  
FIELD WORK DONE BY: Arnold Pollmer, Geologist  
SUPERVISED BY: H.J. Wahl, P. Eng.

SUMMARY:

The objective of the 1973 program on the Diane Claim group was to establish a cut-line grid system and more positively delineate geochemical anomalies detected during the 1972 sediment survey.

Line cutting totalled (40.21 miles) 212,400 feet and was hampered by heavy undergrowth of young cedar and Devil's club. Geochemical soil samples were taken at each 100-foot station on 32.5 miles of line. The work revealed a number of linear Cu and Cu-Zn anomalies of considerable length located throughout the property. These responses are suggestive of vein or fracture-type bedrock mineralization or possibly conformable, stratigraphically controlled occurrences. Recommendations for further work include provisions for electromagnetic surveys over the geochemically anomalous Cu-Zn areas to verify bedrock conductivity. Additionally, hand trenching over the anomaly highs to check for near surface exposures of mineralization is also recommended. Should these results lend encouragement, then test drilling could be considered.

A mercury vapor survey conducted at 2400 x 500-foot spacings, gave some initially encouraging results in comparison with anomalous soil geochemistry.

Geological mapping was done over the entire property totalling approximately 210,00 linear feet. This disclosed a predominance of Triassic and/or Jurassic basalts. Little mineralization or alteration was observed. Outcrop exposure is not present in the geochemically anomalous regions.

INTRODUCTION

History:

The 1972 geochemical sediment sampling program revealed a copper-molybdenum anomaly along the western shore of McNeil Lake.



64	62	55	56	57		
68275	68273	68271	68266	68268		
63	61	59	56	58		
68274	68272	68270	68267	68269		
54	52	50	43	45	47	
68265	68263	68261	68254	68256	68258	
53	51	49	44	46	48	
68264	68262	68260	68255	68257	68259	
42	40	38	29	31	33	35
68253	68251	68249	68240	68242	68244	68246
41	39	37	30	32	34	36
68252	68250	68248	68241	68243	68245	68247
28	26	24	15	17	19	21
68239	68237	68235	68226	68228	68230	68232
27	25	23	16	18	20	22
68238	68236	68234	68227	68229	68231	68233
14	12	10	1	3	5	7
68225	68223	68221	68212	68214	68216	68218
13	11	9	2	4	6	8
68224	68222	68220	68213	68215	68217	68219

MCNEIL  
LAKE



**GROUP 2**

**GROUP 1**

Department of  
Mines and Geotectonic Resources  
ASBESTOS DEPARTMENT  
NO. **4768** #1

PICKANDS MATHER & CO.  
VANCOUVER B.C.  
**MIDDLE BELT PROJECT  
DIANE CLAIMS  
RECORD NOS.**  
**CARIBOO MD**  
SCALE: 1" = 1/2 MI.  
DATE: Oct. 1973  
REVISIONS  
NO.

SCALE 1000 0 1000 2000 3000 4000 5000 6000 7000 FT.  
1/2 mile to 1 inch

Further sampling on tributaries running into McNeil Lake verified that the area directly west of the lake was anomalous. Later that summer a block of 64 claims was staked over the anomalous regions.

OWNERSHIP

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

PROPERTY DESCRIPTION

Sixty-four full size claims, being the Diane Nos. 1 through 64 inclusive; Record Nos. 68212 through 68275.

Date Staked: October 18-23, 1972  
Date Recorded: October 31, 1972  
Date Assessment work done: August 24 to September 13, 1973

For the application of a certificate of work, the DIANE CLAIM PROPERTY, has been divided into (2) groups (Diane Group Nos. 1 and 2), containing 34 and 30 claims respectively. Note; Figure 1

Location: Center of Property 52°05'00"N, 120°35'52"W  
N.T.S. Number: 93A-2E  
Country: Canada  
Mining Division: Cariboo  
Province: British Columbia  
Distance: Approximately 10 miles north of east-end of Canim Lake.  
Access: Restricted to helicopter or float plane. Closest access road is five miles to the north from the Hendrix Lake road.

TOPOGRAPHY:

The Diane claims are situated on the eastern slope of a long north-south trending ridge paralleling McNeil Lake. The crest of the ridge runs along the western perimeter of the property, to an elevation of 5,500 feet, sloping down to 3,500 feet elevation at McNeil Lake.

Drainage runoff from the property is to the east directly into McNeil Lake with the exception of one creek which runs northward into Gotchen Lake.

Soils on the property are primarily youthful with little zonal development. An exception to this are soils with well developed B horizons located in a depression running north-south in the center of the property.

#### EXPLORATION

Project Initiation: (August 24, campsite chosen & BL. started)

On August 27-28, 1973 a camp was established on the north central end of the property by Bud Harrington and the line cutting crew under the supervision of Marc Leonard. Line cutting of the 13,600-foot base line continued the following day. On completion of the picket base line, grid lines 4500 feet long, were cut and soil sampled to the west.

The eastern half of the grid system required the assistance of a Bell 47G-3B1 helicopter, belonging to Highland Helicopters.

The line cutting and survey crews were picked up on the lake by helicopter after their long descent from the ridge top. The services of the helicopter were required from September 5, 1973 to the job completion on September 12, 1973.

Line cutting down the eastern slope was hazardous due to the thick vegetation of cedar, Tag alder and thickets of Devil's club.

Line Cutting: (40 man-days)

A blazed line and picket line grid system was cut over the entire claim group. The north-south base line ran down the center of the property, with perpendicular eastwest lines cut at 800-foot intervals. Two N-S tie-lines were cut on the outer grid boundaries for accurate line control. The total footage cut was 209,900 feet, (39.7 miles) and all lines had stations marked at each 100-foot interval.

GEOLOGICAL MAPPING: (10 man-days)

Outcrops found on and between the grid lines were described and mapped according to their location. Rock samples were labelled using the coordinates of the line and nearest station. Some outcrops situated between the lines were not mapped.

The outcrops located were generally restricted to ridge crests, with the remainder of the property being covered by overburden and dense vegetation.

Geological mapping failed to discover any mineralization other than disseminated pyrite found in random locations. Only slight siliceous alteration was found, and that too was located in random pods throughout the property.

Little rock type variation was found, with the predominant rock being basalt.

Mercury Vapor Survey: (11 man-days) (109 samples)

A mercury vapor survey was performed on the property at 500-foot intervals on lines 144N, 120N, 96N, 72N, 48N, 24N. The air temperature, ground temperature, barometric pressure and weather conditions were recorded at the onset and completion of each survey.

The soil gas samples were collected during a period of over 3 hours on -80 Mesh gold plated silver screens 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 analyzed 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 values in nanograms of mercury.

Geochemical Work: (18 man-days)

Soil samples were taken with a grub hoe, within a 25-foot radius of each 100-foot station. Approximately 171,600 (32.5 miles) feet were sampled and additional samples were taken where lines intercepted a stream drainage. This totalled 1,691 samples. Soil types and slope direction/gradient were recorded on location. Samples were placed in kraft paper soil sample bags and labelled according to line and station coordinates.

The assaying was done by:

Fraser Laboratories Ltd.  
1175 West 15th Street  
North Vancouver, B.C.

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

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 <sub>0</sub> | Organic litter - non decomposed to partly decomposed organic matter |
| A <sub>1</sub> | Decomposed organic matter - may contain some mineral soil           |

- A<sub>2</sub> Leached sandy gray horizon
- B<sub>1</sub> Accumulation horizon - Consists of mineral soil, usually reddish-brown to orange in color due to high content of iron.
- B<sub>2</sub> Yellow - brown material soil; contains much less iron than B<sub>1</sub> horizon.
- C Parent material: bedrocks, glacial overburden or residual deposits.

THERE WERE

<u>Number</u>	<u>Class</u>	<u>% Total</u>
211	A horizon samples	12.53
994	B	58.73
23	C	1.41
1	S	.07
127	L	7.46
88	M	5.22
<u>247</u>	N	<u>14.55</u>
1691		99.97/100.00

GEOLOGY

Regional Setting:

According to the G.S.C. map, covering the area in which the property is situated, the claims are underlain by Triassic and/or Jurassic age rocks. The rock types constituting this group are; green andesitic tuff, agglomerate, breccia and flows, slaty argillite, graywacke, chert, minor conglomerate and limestone. The physiographic location of the property is within the Quesnel Highland plateau.

Rock types:

Triassic and/or Jurassic

A. Basalt, basalt porphyry & amygdaloidal basalt: By far the most predominant rock type occurring on the property. Pillow structures present in one outcrop situated at line 56N stations 20-25W.

Weathered Surface: Varying shades of brown to dark gray with some iron oxide staining.

Fresh Surface: Gray aphanitic texture often with pods of light silicified zones containing disseminated pyrite. Black hornblende phenocrysts clearly visible in basalt porphyry. Amygdaloidal fillings of quartz and epidote visible in the amygdaloidal basalts. Occasional inclusions of dacite were sometimes evident in the basalts.

B. Dacite: Very similar texturally and compositionally to the Dacite found on the Chris claims, approximately 8 air miles south.

Weathered surface: Dark to light brown and gray, some iron oxide staining.

Fresh surface: Texture medium grained, color light and dark green: Crystals of hornblende, epidote, and biotite, plus laths of plagioclase are noticeable. Areas of silicified pods show as lighter green areas.

C. Welded tuff: Occurrences in one outcrop flanked on either side by basalts.

Weathered surface: Banding of light and dark brown layers. Surface irregular due to differential weathering.

Fresh surface: Aphanitic texture, gray in color with a high percentage of disseminated pyrite and moderate silicification. Compositionally a silica-rich volcanic ash.

Graywacke: Occurrence in the center ridge of the property.

Weathered surface: Dark brown and gray, appears slaty: Quite fractured and marked by iron staining.

Fresh surface: Color black, texture of fine granular fragments with intermixed pyrite. Greater concentration of pyrite along fractures.

#### Mineralization

The geological mapping failed to produce any significant mineralization from all of the outcrops located on the property. Minor amounts of disseminated pyrite were found in small sporadic silicified zones and along fractures. Some chalcopyrite was found in a boulder located along McNeil Lake near line 112N.

#### Alteration

Scattered zones of silicified basalt were found usually occurring in oval pods of varying dimensions.

#### MERCURY VAPOR SURVEY INTERPRETATION

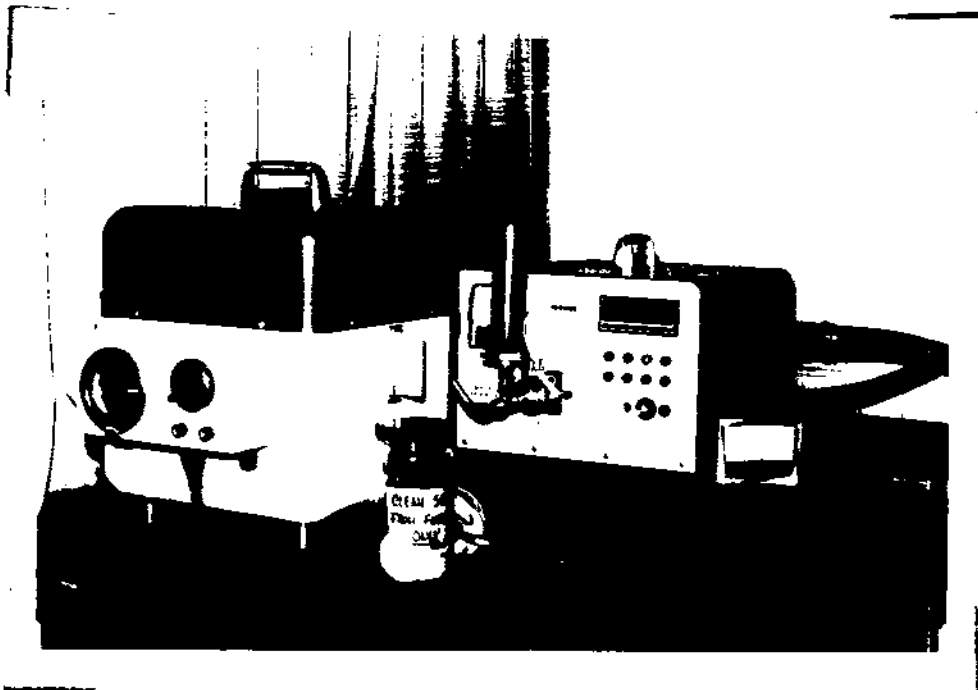
The objective of the Hg-Vapor survey technique is to identify areas of higher mercury content in soil gas as contrasted to surrounding areas, where the Hg content is negligible. Its application as an exploration technique is still in a very elementary stage. It has however, given encouraging results 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:



MERCURY VAPOR EQUIPMENT



Dome with screen in chimney



"Geomet" model 103 c/w induction furnace

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.

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.

#### RESULTS OF DIANE CLAIMS VAPOR SURVEY

An evaluation of the mercury vapor survey results must consider the fact that the location of geochemical soil anomalies was not known prior to its application. Additionally, the narrow nature of the resultant soil anomalies, was in retrospect, a poor match for the wide-spaced Hg-Vapor survey points employed. Nonetheless, there are anomalous Hg-Vapor results which correlate with soil geochemical anomalies.

Hg-Vapor correlations with soil geochemical anomalies are as follows:

<u>1144N-10E</u>	A peak vapor reading of 2.0 ng is directly associated with soil Zn values of + 300 ppm.
<u>1120N-25W</u>	A peak vapor reading of 1.2 ng is coincident with Zn results of + 300 ppm, and Cu results of 150-160 ppm.
<u>196N-5W</u>	2.8 ng: associated with 57 ppm Cu, 108 ppm Zn.
<u>14E to 19E</u>	1.0 to 1.2 ng: associated with 104 ppm Zn, 174 ppm Cu.
<u>35E</u>	2.6 ng: associated with 260 to 320 ppm Cu, + 100 ppm Zn.
<u>15W</u>	2.6 ng: no Cu association, no Zn association.
<u>5W</u>	3.2 ng: associated with 100-150 ppm Cu, 155 ppm Zn.
<u>124N-35 to 50E</u>	0.4 to 1.4 ng: associates with broad area of 70 to + 100 ppm Cu, with negligible Zn results.

In general then, the Hg-vapor survey adds additional evidence that soil geochemical results are most likely caused by bedrock sulphides. Furthermore, it is probable that the vapor anomalies would most closely approximate the true bedrock position of sulphides, as test work has shown little lateral migration of Hg-vapors emanating from known sulphide ore bodies.

#### GEOCHEMICAL INTERPRETATION:

The 1973 soil geochemical survey confirmed the results of the initial sediment survey conducted last year. The strongest most persistent soil results occurred in the northern sector of the property.

#### Northern Sector:

Both copper and zinc anomalies appear lenticular with a north-south trend when contoured. An area of 6,000 x 3,000 feet in the northeast quarter has a series of linear zinc and copper highs ranging from 100 to + 300 ppm zinc, and 70 to + 100 ppm copper. In the northwestern sector a similar anomaly pattern exists. This elongate pattern could be caused by mineralization in fractures, vein-type concentrations, or stratigraphically controlled sulphides.

#### Southern Sector:

Fewer copper and zinc anomalies occur in this region. One large copper anomaly straddling line 84N between stations 20-29E ranges from 100 ppm to 255 ppm. The remaining anomalies are linear shaped with a north-south trend. Some zinc anomalies ranging from 100-200 ppm are situated in the southeastern quarter. Again the linear anomalies would tend to indicate one or more of the type-mineralizations noted above. It should be noted that the geochemical results flank the outcrop positions, but generally the anomalies do not lie within any of the outcrop areas.

#### CONCLUSIONS:

The Diane Claims are underlain by a Triassic or Jurassic age volcano-sedimentary sequence of basalts, dacites, tuffs, and greywackes. In view of the scattered, random rock outcroppings, it is difficult to estimate what structural form(s) prevail within these formations. Some outcrop areas on the property show the effects of silica alterations, with attendant pyrite, the intensity and pervasiveness of which is at present unknown.

The soil geochemistry has revealed the existence of a number of narrow, linear Cu, Zn, and Cu-Zn, anomalies, some of which display lengths in excess of 4000 feet. Metal values for zinc range to 408 ppm, while values for copper reach a maximum of 660 ppm. These anomalies tend to occur in areas where there is no immediate outcrop. These anomalies are considered to reflect vein, shear, and/or fracture style mineralization of unknown grade and extent.

While insufficient in its detail, the Hg-vapor survey shows in general a good coincidence with the soil geochemical results, although the physical extent of the vapor survey should have been greater. These results tend to confirm the presence of bedrock sulphides.

RECOMMENDATIONS

Any further evaluation of the results to date should include the undernoted:

1. Some 6 to 10 test pits should be blasted over the high soil anomalies.
2. A ground EM survey of some 15 to 20 line miles should be performed over areas of stronger geochemical response, especially combined Cu-Zn anomalies.
3. Contingent on 1 & 2, a test drilling program would be required to evaluate the resulting targets.

Submitted by:

H. J. W for "A.P."  
Arnold Pollmer, Geologist

Approved by:

H. J. W  
H. J. Wahi, Regional Geologist,  
P. Eng., British Columbia 8990

ATTACHMENTS

1. Map, 1" = 400 feet, Diane Claims, Geology (Figure D-1)
2. Map, 1" = 400 feet, Diane Claims, Zinc in soils (Figure D-2)
3. Map, 1" = 400 feet, Diane Claims, Copper in soils (Figure D-3)
4. Map, 1" = 400 feet, Diane Claims, Hg-Vapor Survey (Figure D-4)

REFERENCES

1. G.S.C. Map 1 - 1963, Quesnel Lake, British Columbia, 1" = 4 miles, 1962.
2. Petrographic report for Pickands Mather & Co., by Geotec Consultants Ltd., November 16, 1972.

Declared before me at the *City*  
of *Vancouver*, in the  
Province of British Columbia, this *30th*  
day of *November*, 1973, A.D.



*J. J. Wake* **SUB - MINING RECORDER**  
A Commissioner for taking Affidavits within British Columbia  
A Notary Public in and for the Province of British Columbia

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

-- Field costs:

Labor:

Geologist and assistants	\$2,584.55	
Line cutters	<u>6,272.67</u>	\$ 8,857.22

Equipment		139.35
Supplies		560.57

Contracts:

Air service	4,300.00	
Assaying	<u>2,725.00</u>	<u>7,025.00</u>

\$16,582.14

The above statement of field costs for the Diane 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:

1. equipment amortization of the mercury vapor monitor and related accessories, which is charged at the rate of \$40/per operating day.
2. wages of cook which amounted to \$707.27, not included in official accounting statements.

  
 \_\_\_\_\_  
 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.

## 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.

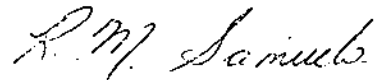
Method:

- 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.



McNeil  
DE-227

A fine grained argillaceous greywacke. Disseminated pyrite and pyrrhotite.

Mineralogy:

Grains:	feldspar	- 10%
	hornblende	- 25
	volcanic ppy fragments	- 5
Matrix:	quartz-feldspar	- 32
	epidote	- 10
	carbonate	- 10
	chlorite	- 3
Opagues:	pyrite and pyrrhotite	- 5

Textures:

Equigranular subangular and angular feldspar, hornblende and volcanic fragments closely packed and cemented together in a micro-crystalline quartzo-feldspathic, carbonate, epidote matrix. Opaque blebs of pyrrhotite and pyrite are evenly distributed throughout the matrix.

Alteration:

Moderate calc-epidote-chlorite alteration of sedimentary constituents.

Discussion:

Mineralization probably associated with the introduction of propylitic alteration minerals.

McNeil  
QS-45W

A fine grained, dark green tuffaceous sandstone.

Mineralogy:

Fragments: crystal tuff - 80%  
Matrix: quartz-feldspar - 20

Textures:

Various-sized subangular to subrounded crystal tuff fragments tightly pecked and cemented in a quartzo-feldspathic matrix. The crystal tuff fragments are very similar to McNeil 84S-30E [i.e.] feldspar and hornblende subhedral and anhedral crystals engrained in an epidote-chlorite-feldspar-glass matrix.

Alteration:

Very little alteration.

Discussion:

Rock specimen probably represents part of a volcano-sedimentary sequence of tuffs, agglomerates, sediments, etc.

McNeil  
845-30E

A dark grey green, porphyritic crystal tuff. Some of the phenocrysts are pitted.

Mineralogy:

Phenocrysts:	quartz	- 2%
	plagioclase	- 20
	hornblende	- 15
Matrix:	epidote, feldspar, chlorite, glass	- 53

Textures:

Fine to coarse grained, euhedral to anhedral prisms and laths of hornblende along with pod-shaped and round quartz and albite phenocrysts preferably oriented and evenly distributed in a micro crystalline, homogeneous epidote-feldspar-chlorite, glass matrix. Abundant glass shards in matrix.

Alteration:

Devitrification of tuff matrix. Partial to complete chlorite-epidote replacement of amphibole.

Discussion:

Minor propylitic alteration.

## PICKANDS MATHER &amp; CO.

## Hg. VAPOR SURVEY

LOCALITY: Diane Claims DATE: September 6, 1973  
 LINE: L-96N & L-144N WEATHER: Sunny  
 SAMPLING PERIOD: From: 9:00 (Sept. 6) To: 14:00 (Sept 6)  
 SCREEN USED: -80 Mesh (Gold-Silver) Hg. SENSOR COLLECT TIME: 4 minutes  
 TEMP. START SURVEY 68°F OPERATOR: M.A. Leonard  
 TEMP END SURVEY 74°F ATMOSPHERIC PRESSURE START: over scale  
 ATMOSPHERIC PRESSURE END: At 12:00 A.M.

STATION	TIME	BACKGROUND DVM	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	20:41		15			
L-96N-45W	:46		18	19	0	0
40W	:51	organic & shade	17	24	0	0
35W	:56		11	26	0	0
BKG	21:01		27			
30W	:06		14	27	0	0
25W	:12	animal dis-	13	25	0	0
20W	:18	turbed p. Sunny	14	20	0	0
BKG	:24		16			
15W	:29	p. Sunny	25	12	13	2.6
10W	:34		11	9	2	.1
5W	:39	organic	24	8	16	3.2
BKG	44		8			
00	:49	organic	12	9	3	.2
5E	:54		22	10	12	2.8
10E	22:00		9	12	0	0
BKG	:05		14			
15E	:10	P. Sunny	21	14	7	1.0
20E	:15	Shade, organic	21	13	8	1.2
25E	:20	P. Sunny	2	11	0	0
BKG	26		10			
30E	:31	Shade, organic	10	10	0	0
35E	:37	P. Sunny	26	13	13	2.6
40E	:43	organic (p. Sunny)	23	21	2	0.1

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: September 6, 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	:49		25			
45E	:54	p.Sun, organic	22	25	0	0
51E	23:00	P.Sunny	10	24	0	0
L-144N-35W	:05	Shade	14	24	0	0
BKG	:11		24			
L-144N-30W	23:16	Shade	13	24	0	0
:25W	:22	P.Sunny	25	25	0	0
:20W	:28	Shade	26	25	1	0.1
BKG	:33		25			
15W	:39	P.Sunny	10	24	0	0
10W	:44	Shade	26	22	4	0.6
5W	:59		23	19	4	0.6
BKG	:55		18			
00	24:00		14	18	0	0
5W	:05	P.Sunny	24	19	5	0.8
10E	:10		33	22	11	2.0
BKG	:15		24			
15E	:20	Shade	11	25	0	0
20E	:25		21	25	0	0
25E	:30		16	24	0	0
BKG	135		22			
30E	:40	Shade	9	20	0	0
Base Station	:45		72	18	54	17.2
BKG	:55		16			

REMARKS:

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: Diane Claims DATE: September 7, 1973  
 LINE: L-120N WEATHER: Overcast & Cold up to 11:00 A.M.  
 SAMPLING PERIOD: From: 9:00 Sept. 7 To: Then Sunny 15:00 Sept. 7  
 SCREEN USED: -80 Mesh Ag-Au Hg. SENSOR COLLECT TIME: 4 Minutes  
 TEMP. START SURVEY 65°F OPERATOR: M.A. Leonard  
 TEMP END SURVEY 74°F at 12:00 A.M. ATMOSPHERIC PRESSURE START: Over  
 ATMOSPHERIC PRESSURE END: Scale

STATION	TIME	BACKGROUND CHECK NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	20:27	#	#9			
L-120N-45W	:32	P.Sunny	6	7.5	0	0
40W	:37	"	5	6	0	0
35W	:42	"	5	5	0	0
BKG	:47		5			
30E	:53	Shade	8	5	3	0.4
25W	:58	P.Sun, Organic	13	6	7	1.2
20E	:03	Shade, Organic	9	6	3	0.4
BKG	21:08		7			
15W	:13	Animal dis-	8	7	1	0.1
10W	:19	turbed	5	7	0	0
5W	:24	P. Sunny	6	7	0	0
BKG	:29		7			
00	:34	Shade	9	6	3	0.4
5E	:39		11	6	5	0.8
10E	:44		5	5	0	0
BKG	:49		5			
15E	:55		6	5	1	0.1
20E	:60		9	6	3	0.4
25E	22:05		6	7	0	0
BKG	:10		7			
30E	:15		7	7	0	0
35E	:20		7	6	1	0.1
40E	:25		7	5	2	0.2
BKG	10:31		3			

REMARKS: . Lamp Check 9.83 Volts

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: Diane Claims DATE: September 8, 1973  
 LINE: L-24N WEATHER: Sunny (Clear)  
 SAMPLING PERIOD: From: 9:00 To: 14:00  
 SCREEN USED: -80 Mesh Screens Hg. SENSOR COLLECT TIME: 4 minutes  
 TEMP. START SURVEY 60°F OPERATOR: M.A. Leonard  
 TEMP END SURVEY 68°F ATMOSPHERIC PRESSURE START: 736mm at 1:30  
 ATMOSPHERIC PRESSURE END: \_\_\_\_\_

STATION	TIME	<del>XXXXXXXXXX</del> <del>XXXXX</del> NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Hg. Hg.
BKG	:59		15			
L-24N-45W 40W 35W	16:04 :09 :14	P.Sunny	15 12 5	13 11 9	2 1 0	0.2 0.1 0
BKG	:19		8			
30E 25W 20E	:24 :29 :34	P.Sunny	10 0 10	7 7 7	3 0 3	0.4 0 0.4
BKG	:39		8			
15W 10W 5W	:44 :49 :54		4 4 1	6 4 2	0 0 0	0 0 0
BKG	:59		0			
BL 5E 10E	17:04 :09 :14	P.Sunny " "	1 0 13	0 0 0	1 0 13	0.1 0 2.5
BKG	:19		0			
15E 20E 25E	:24 :29 :34	P.Sunny " "	3 6 6	0 2 3	3 4 3	0.4 0.6 0.4
BKG	:39		3			
30E 35E 40E	:44 :49 :54	P.Sunny " P.Sun. & Organic	3 5 8	3 2 0	0 3 8	0 0.4 1.4
BKG	:59		0			
45E 50E	18:04 :09	Shade Organic P.Sunny	4 9	0 1	4 8	0.6 1.4
BKG	:14		2			

REMARKS:

Lamp Check 9.83 Volts

## PICKANDS MATHER &amp; CO.

## Hg. VAPOR SURVEY

LOCALITY: Diane Claims DATE: September 8, 1973  
 LINE: L-72N WEATHER: Sunny  
 SAMPLING PERIOD: From: 9:00 To: 14:00 Sept. 8  
 SCREEN USED: -80 Mesh Ag-Au Hg. SENSOR COLLECT TIME: 4 Min  
 TEMP. START SURVEY 60 F OPERATOR: M A Leonard  
 TEMP END SURVEY 68 F ATMOSPHERIC PRESSURE START: 736mm at 1:30  
 ATMOSPHERIC PRESSURE END: \_\_\_\_\_

STATION	TIME	BACKGROUND CHECK NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Hg. Hg.
BKG	21:00		15			
L-72N-40W	:05		18	13	5	0.8
35W	:10		16	11	5	0.8
30W	:15		8	7	1	0.1
BKG	:20		6			
25W	:25		23	7	16	3.2
20W	:36		9	13	0	0
15W	:41		7	15	0	0
BKG	:46		16			
10W	:51		9	16	0	0
5W	:56		12	17	0	0
BL	22:02		3	17	0	0
BKG	:07		17			
5E	:12		0	17	0	0
10E	:17		11	16	0	0
15E	:22		12	15	0	0
BKG	:27		15			
20E	:33		2	12	0	0
25E	:38		13	8	5	0.8
30E	:43		7	6	1	0.1
BKG	:48		5			
35E	:53		6	5	1	0.1
40E	:58		16	7	9	1.6
BKG	23:04		8			

REMARKS:



## PICKANDS MATHER &amp; CO.

## Hg. VAPOR SURVEY

LOCALITY: Diane Claims DATE: Sept. 10/73  
 LINE: L9M WEATHER: Sunny  
 SAMPLING PERIOD: From: 09:00 Sept. 9 To: 14:00 Sept. 9  
 SCREEN USED: -80 Mesh Au-Ag Hg. SENSOR COLLECT TIME: 4 Minutes  
 TEMP. START SURVEY 65 F OPERATOR: A. Pollmer  
 TEMP END SURVEY 70 F ATMOSPHERIC PRESSURE START: \_\_\_\_\_  
 ATMOSPHERIC PRESSURE END: \_\_\_\_\_

STATION	TIME	CONDITIONS OR NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Hg. Hg.
BKG	12:00					
L-48N-45W	12:06	Part sun	08	3	5	0.8
40W	12:11	No Sun	07	5	2	0.4
35W	12:16	Sunny	05	7	0	0
BKG	12:21		08			
L-48N-30W	12:26	Sun.	13	8	5	0.8
25W	12:31	Sun	07	8	1	0.1
20W	12:36	Sun	02	7	0	0
BKG	12:41		07			
L-48N-15W	12:46	Sun	03	7	0	0
10W	12:51	Part Sun	07	6	1	0.1
05W	12:57	Sun	07	6	1	0.1
BKG	13:02		06			
L-48N BL	13:07	Shade	07	6	1	0.1
05E	13:12	Part Sun	06	7	0	0
10E	13:17	Shade	11	7	4	0.6
BKG	:22		8			
L-48N-15E	:26 + 1	Organic	8	8	0	0
20E	:31 "	Part Sun	9	8	1	0.1
25E	:36 "	Part Sun	8	8	0	0
BKG	:41		8			
30E	:46 + 1		5	8	0	0
35E	:51 + 1	Part Sun, Organic	7	8	0	0
40E	:56 "	Shade	6	8	0	0

REMARKS:

PICKANDS MATHER & CO.

Hg. VAPOR SURVEY

LOCALITY: \_\_\_\_\_ DATE: Sept 10/73  
 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 <del>XXXXXXXX</del> NOTE	READING DVM	CORRECTION DVM (-)	CORRECTED DVM	Ng. Hg.
BKG	14:01 +1		8			
45E	:06 "	Shade	5	8	0	0
50E	:11 "	Shade, organic	7	7	0	0
BKG	14:17		7			

REMARKS:  
Lamp Check 9.83 Volts.

APPENDIX I

Staff and Labor Statistics

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

LINE CUTTERS

Walter Arsenault piecework rate  
32 Earl Street, Kirkland Lake, Ontario

Mike Callaghan piecework rate  
680 Lynas Lane, Richmond, B.C.

Norman Gilmour piecework rate  
17 Queen Street, Kirkland Lake, Ontario

Garry McAuley piecework rate  
45 Government Road, Kirkland Lake, Ontario

GEOLOGISTS AND ASSISTANTS

Marc A. Leonard (geologist)  
260 E, 16th Street, North Vancouver, B.C.

Arnold Pollmer (geologist) \$850/month  
c/o Eagle Creek, B.C.

Patrick Harrington (camp manager) \$960/month  
66 Fourth Street, Kirkland Lake, Ontario

Abraham Wall (senior field assistant) \$850/month  
Suite 4, 1550 Comox Street, Vancouver, B.C.

COOK

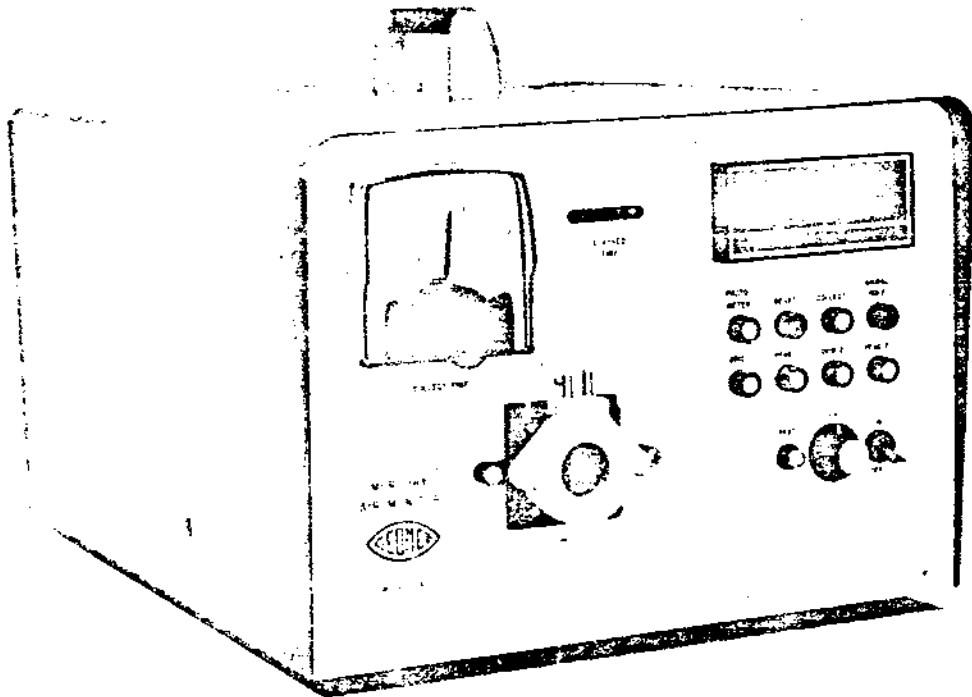
Rita Harrington \$850/month  
66 Fourth Street, Kirkland Lake, Ontario

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

<u>CAMP SITE LOCATION</u>		Total Days
Abraham Wall	August 24	1
Marc A. Leonard	August 24	1
		<hr/>
		2
 <u>LINE CUTTING, CAMP MOBILIZATION &amp; DEMOBILIZATION</u>		
Walter Arsenault	August 27 to Sept. 9	14
Mike Callaghan	Sept. 2 - 8	7
Norman Gilmour	August 27 to Sept. 9	14
Garry McAuley	August 27 to Sept. 9	14
Patrick Harrington	August 26 - 28	
	Sept. 10, 11, 12	6
Arnold Pollmer	Sept. 11, 12, 13	3
Abraham Wall	Sept. 13	1
		<hr/>
		59
 <u>SOIL SAMPLING</u>		
Patrick Harrington	August 29, 30, 31	
	Sept. 1,2,3,4	7
Abraham Wall	Sept. 6,8	2
Walter Arsenault	Sept. 9,10	2
Mike Callaghan	Sept. 9,10,11	3
Norman Gilmour	Sept. 10,11,	2
Garry McAuley	Sept. 10,11	2
		<hr/>
		18
 <u>MERCURY VAPOR SURVEY</u>		
Patrick Harrington	Sept. 5-9	5
Marc A. Leonard	Sept. 5-9	5
Arnold Pollmer	Sept. 10	1
		<hr/>
		11
 <u>GEOLOGICAL WORK</u>		
Marc A. Leonard	August 29	
	Sept. 10,11	3
Arnold Pollmer	Sept. 3-9	7
		<hr/>
		10
 <u>COOK</u>		
Rita Harrington	August 26 to Sept. 11	17
		<hr/>
Total		117



# MERCURY AIR MONITOR

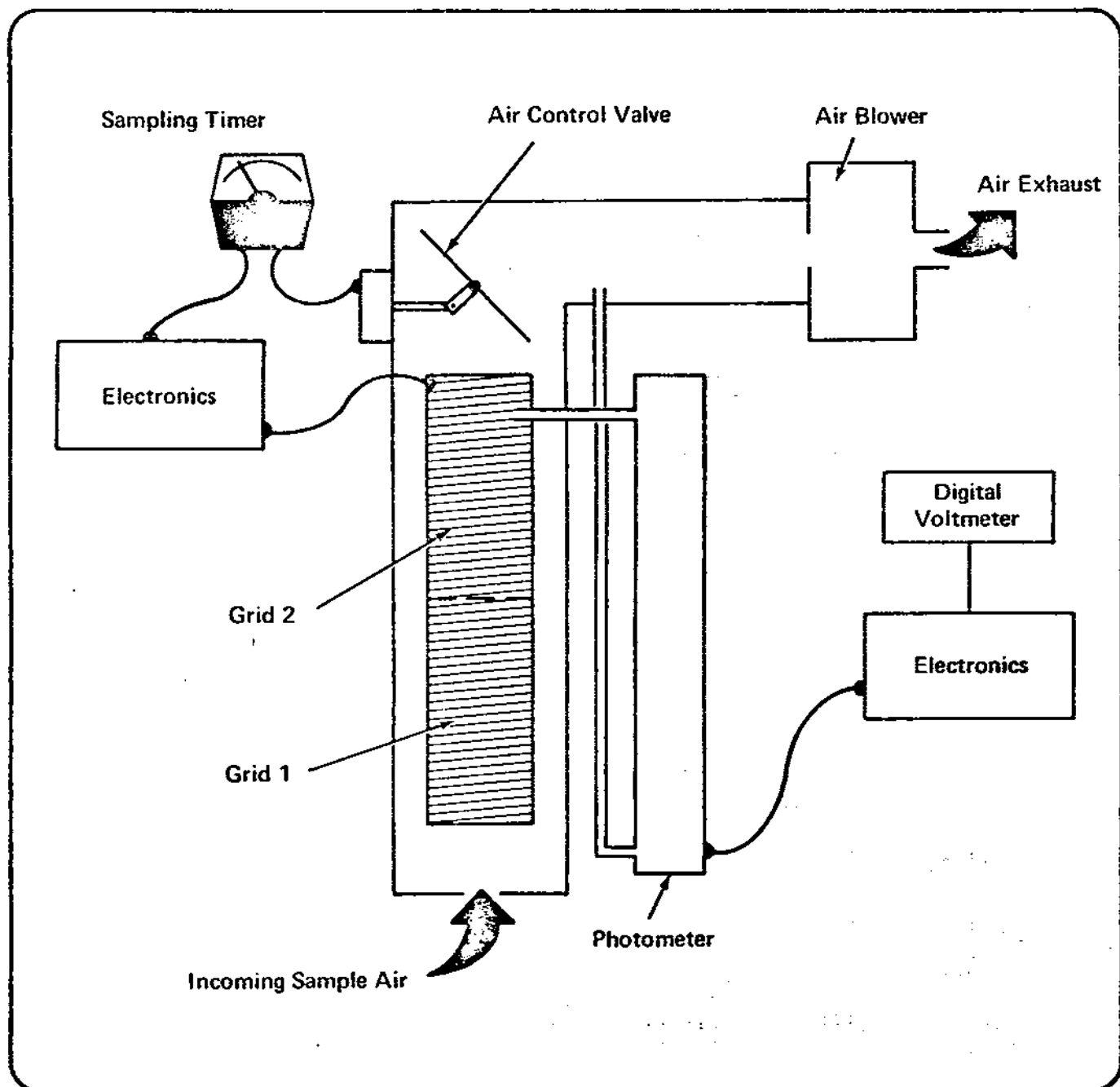


MODEL 403

# 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



# 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

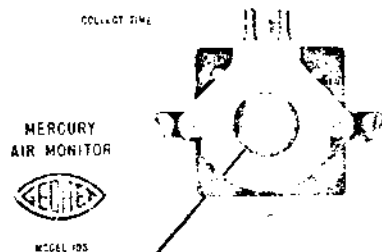
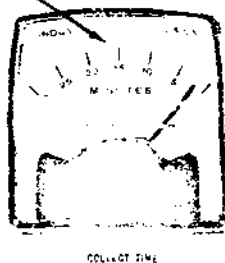
# Features

**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

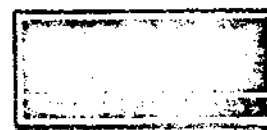
**SPAN ADJUSTMENT (Side)**



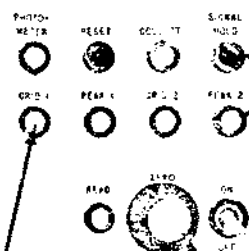
**SAMPLE AIR INLET**

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.



**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)**

**ZERO ADJ. KNOB**  
adjusts zero signal level.

# Specifications

Detector	Automatic Sampler and Ultraviolet Photometer (253.7 nm)
Response Range	1 - 1,000,000 Nanograms/Meter <sup>3</sup>
System Sensitivity	1 Nanogram/Meter <sup>3</sup>
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.

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## Options

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

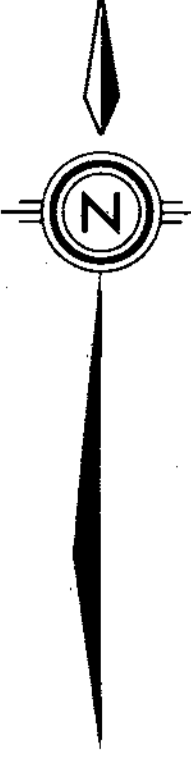
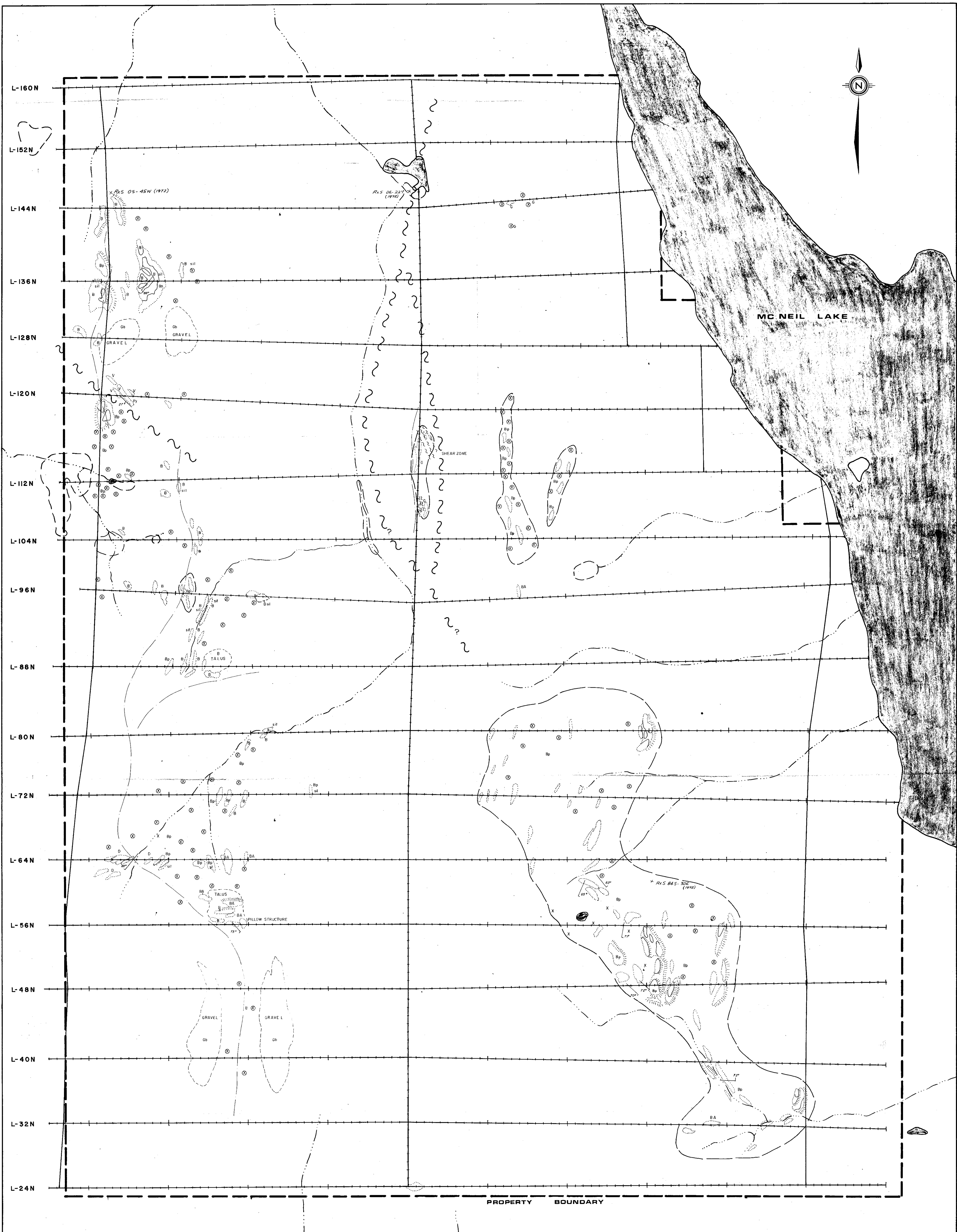
*Science Serving Society*

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



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





**LEGEND**

- LAKE
- SWAMP
- CREEK
- CUT LINES**
  - Strike and dip, bedding, joints
  - Ridges
  - Escarpment
  - Fault zones ?
  - Shear zones
  - Claim boundary
  - Rock Sample Location
  - Petrographic Report

**GEOLOGICAL LEGEND**

- Gb Gravel, Largely basalt fragments, pebbles
- Overburden, glacial drift
- TRIASSIC (?) JURASSIC (?)**  
(Stratigraphic positions unknown)
  - B Basalt
  - Bp Basalt porphyry
  - Ba Basalt amygdaloid
  - D Dacite
  - T Welded tuffs (siliceous)
  - Y Graywacke
  - Float Occurrence

**ABBREVIATIONS**

- sil. Silicified zone
- Py Pyrite

To accompany exploration report on the Diane Claims, McNeil Lake, Cariboo M.D., by H. J. Wahl, P. Eng., period August 27, to September 11, 1973.

*29 Nov 1973*  
*A. J. Blake*

**4768-M2**

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. **4768** MAP #2

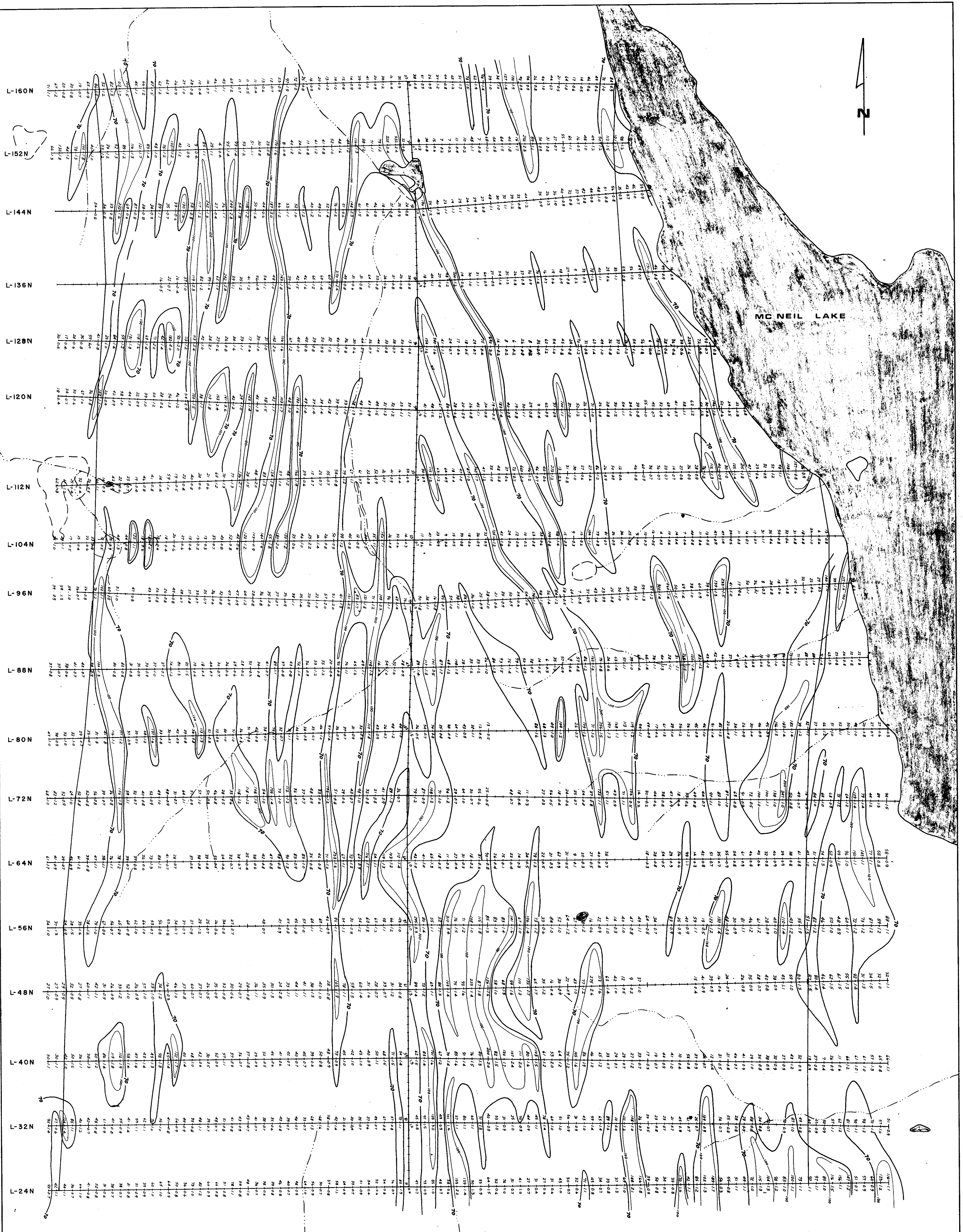
PICKANDS MATHER & CO.  
VANCOUVER B.C.

**MIDDLE BELT PROJECT**

**DIANE CLAIMS**  
**GEOLOGICAL**  
**MAP**



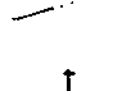
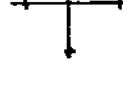
SCALE 400 0 400 800 FT.  
400 feet to 1 inch

DATE: 27, OCT. 1973  
ND. D-1



MC NEIL LAKE

**LEGEND**

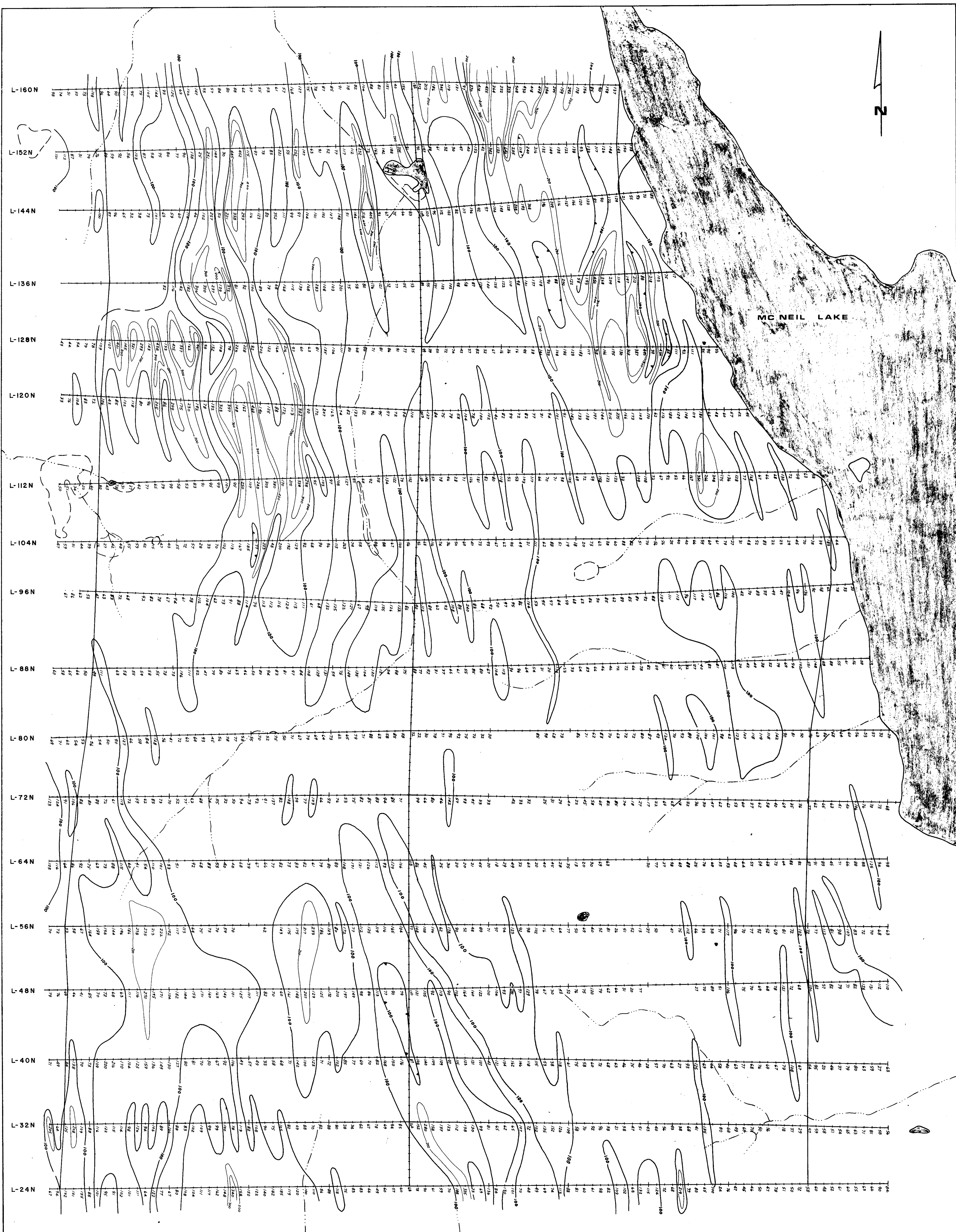
-  LAKE
-  SWAMP
-  CREEK
-  CUT LINES
- CU-AG IN PPM**

TO ACCOMPANY EXPLORATION  
 REPORT ON THE DIANE CLAIMS,  
 McNEIL LAKE, CARIBOO M.D.,  
 BY H.J. WAHL, PERIOD 27 AUGUST  
 1972 TO 12 SEPTEMBER, 1973  
 NO. 4768 #3


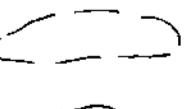
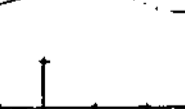


**MIDDLE BELT PROJECT**  
**DIANE CLAIMS**  
**COPPER IN SOILS**

SCALE 400 0 400 800 FT.  
 400 feet to 1 inch  
 DATE: 17 OCT. 73  
 NO. D-3

1 Nov 1973  
 H. J. Wahl  
**4768-M3**



**LEGEND**

-  LAKE
-  SWAMP
-  CREEK
-  CUT LINES
-  ZN IN PPM

To ACCOMPANY EXPLORATION  
 REPORT ON THE DIANE CLAIMS,  
 McNEIL LAKE, CARIBOO M.D.,  
 BY H.J. WAHL, PERIOD 27 AUGUST  
 TO 17 SEPTEMBER, 1973

Department of  
 Mines and Technical Surveys

NO. 4768 #4

RICKANBS MATHER & CO.  
 VANCOUVER

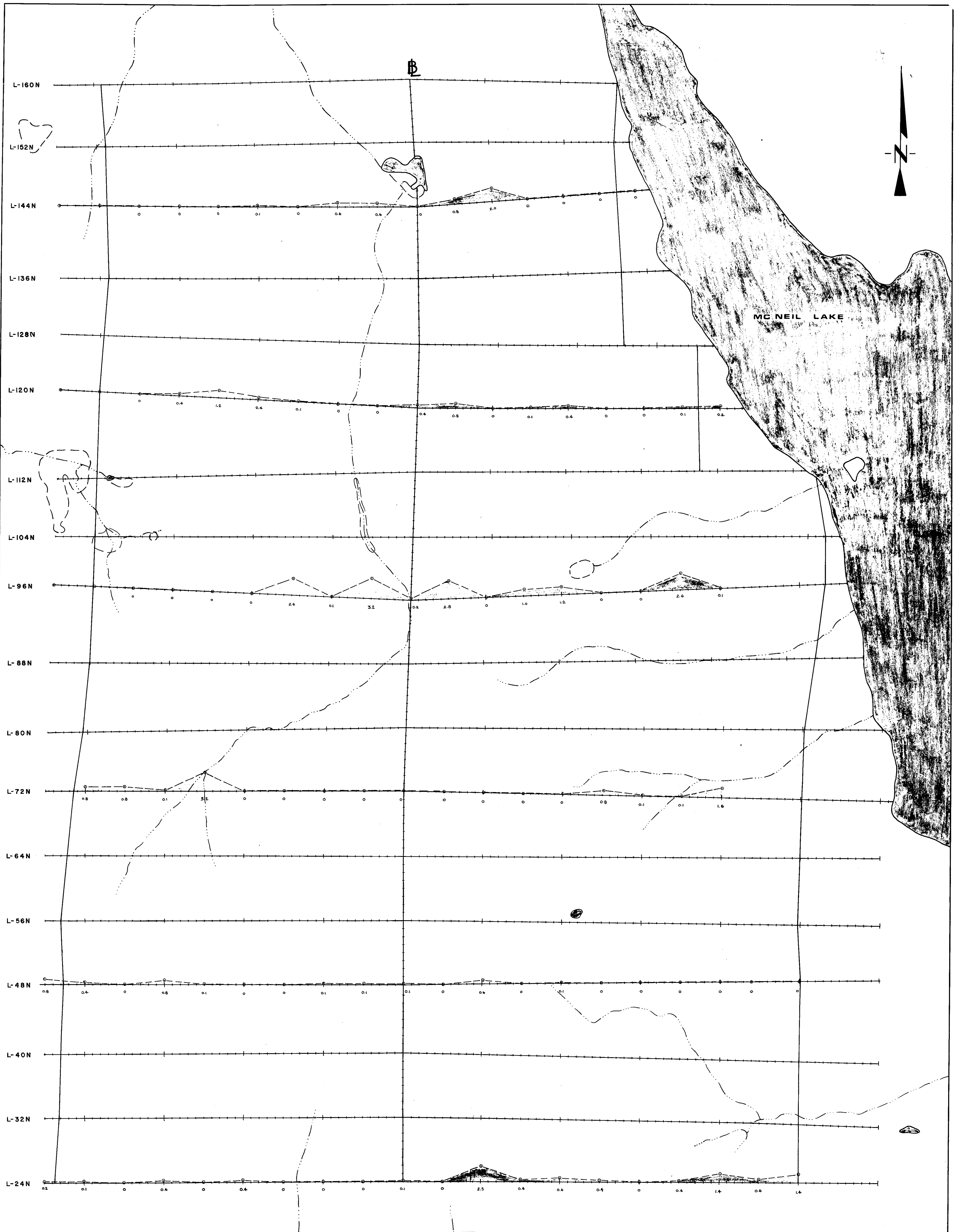
MIDDLE BELT PROJECT

**DIANE CLAIMS**  
**ZINC IN SOILS**

SCALE 400 feet to 1 inch  
 DATE: 17 OCT. 1973  
 NO. D-2

*1 Nov. 1973  
 F. Blake*

**4768-M4**



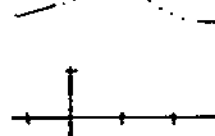



MC NEIL LAKE

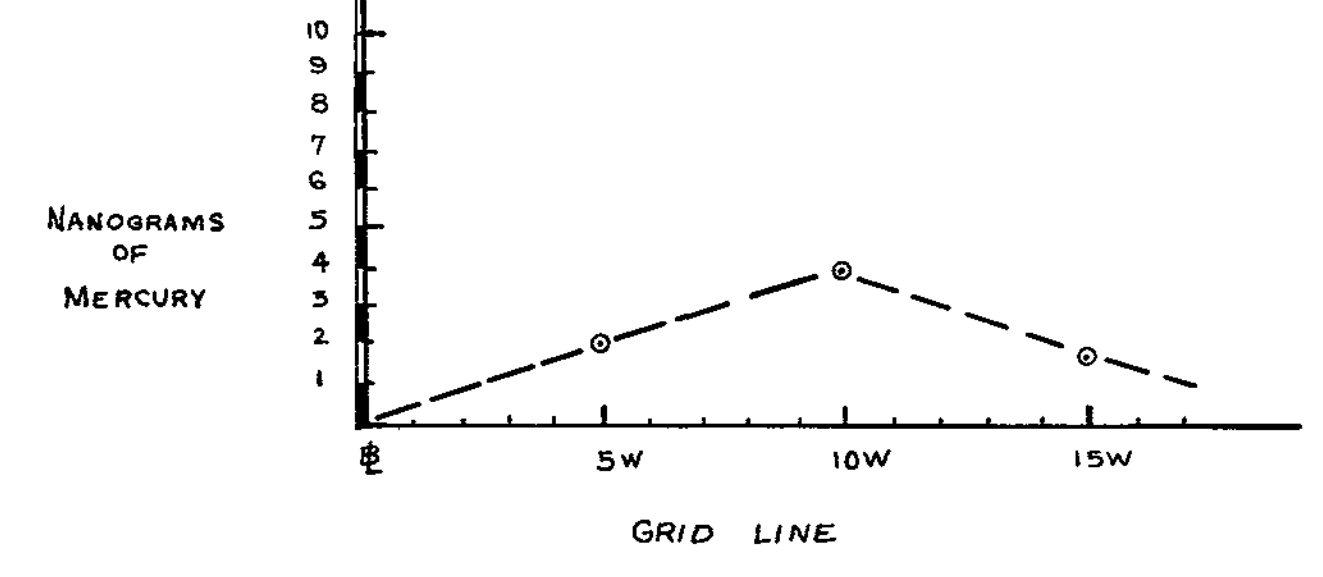
L-160N  
L-152N  
L-144N  
L-136N  
L-128N  
L-120N  
L-112N  
L-104N  
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L-88N  
L-80N  
L-72N  
L-64N  
L-56N  
L-48N  
L-40N  
L-32N  
L-24N

B

**LEGEND**

-  LAKE
-  SWAMP
-  CREEK
-  CUT LINES

**MERCURY VAPOR PROFILE**



Department of  
Mines and Technical Resources  
NO. 4768 #5  
29 Nov. 1973  
H. J. Wahle

PICKARDS MATHER & CO.  
VANCOUVER B.C.

**MIDDLE BELT PROJECT**  
**DIANE CLAIMS**  
**MERCURY VAPOR SURVEY**

TO ACCOMPANY EXPLORATION REPORT  
ON THE DIANE CLAIMS, MCNEIL LAKE,  
CARIBOO, M.D. BY H.J. WAHL, P. ENG.,  
PERIOD 27 AUG. TO 11 SEPT., 1973.

SCALE 400 0 400 800 FT.  
400 feet to 1 inch  
DATE: Nov, 1973  
NO. D-4

**4768-M5**