3440

COMINCO LTD.

EXPLORATION WESTERN DISTRICT

# GEOLOGICAL AND GEOCHEMICAL REPORT ON THE

# IAM 1-4; IAM 9-24; MARY J 1-4 AND SIR 1-6 CLAIMS

## SITUATED WEST OF WEAVER LAKE IN THE NEW WESTMINSTER MINING DIVISION

LAT.: 49° 22' N LONG.: 121° 55' W

92 H /5W


REPORT BY

R.F. NICHOLS

SUPERVISED BY

D.W. HEDDLE, P. ENG.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3440 MAP

C O M I N C O  L T D.

EXPLORATION WESTERN DISTRICT

# GEOLOGICAL AND GEOCHEMICAL REPORT ON THE IAM 1-4; IAM 9-24; MARY J 1-4 AND SIR 1-6 CLAIMS SITUATED WEST OF WEAVER LAKE IN THE NEW WESTMINSTER MINING DIVISION

LAT.: 49° 22' N LONG.: 121° 55' W

| GROUP | NO. OF CLAIMS | CREDIT REQUESTED |
|---|---|---|
| IAM GROUP | 30 | 27 claim years |

The located claims include the following names and record numbers:

| CLAIM | RECORD NO. | CREDIT REQUESTED | TOTAL |
|---|---|---|---|
| IAM 1-4 | 18161 - 18164 | 1 year each | 4 |
| IAM 9-11 | 21569 - 21571 | 1 year each | 3 |
| IAM 12-22 | 25795 - 25805 | 1 year each | 11 |
| IAM 23 & 24 | 26060 & 26061 | 1 year each | 2 |
| MARY J 1-4 | 21122 - 21125 | 1 year each | 4 |
| SIR 1-3 | 26909 & 26911 | - | - |
| SIR 4-6 | 26912 - 26914 | 1 year each | 3 |
| | | TOTAL CREDIT REQUESTED | 27 |

Work was carried out between June 4, 1971 and October 20, 1971.

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EXPLORATION WESTERN DISTRICT

# GEOLOGICAL AND GEOCHEMICAL REPORT ON THE IAM 1-4; IAM 9-24; MARY J 1-4 AND SIR 1-6 CLAIMS SITUATED WEST OF WEAVER LAKE IN THE NEW WESTMINSTER MINING DIVISION

LAT.: 49° 22' N LONG.: 121° 55' W

## TABLE OF CONTENTS



#1 Location Map
2 Geol + Geochem Grid Loc.
3 Copper Geochem.
4 Lead Geochem.
5 Zn "
6 Silver Geochem.
7 Molybdenum Geochem.

## INTRODUCTION

Geologic mapping and a soil geochemical survey were carried out in a search for Cu-Zn mineralization on the IAM GROUP. The survey was conducted by R.F. Nichols and F.D. Gill with the assistance of C.D. Saville and R.A. Gannicott. N.L. Szabo oriented the geochemical sampling. Work was done between June 4, 1971 and October 20, 1971.

The IAM, MARY-J and SIR claims are located in the New Westminster mining division at latitude 49° 22' N and longitude 121° 55' W. The claims cover typical Coast range topography, with elevations ranging from 2000 feet to 4600 feet above sea level. The area between 3000 and 4000 feet is largely overburden covered. Outcrop exposure on the remainder of the claim group is in the order of 10% of the surface area.

Access to the claim group is by the Hemlock Valley ski road, and is approximately 14 miles north of Harrison Mills.

## HISTORY

Four claims were staked on a Cu-Zn showing in 1966. Subsequent staking in 1968, 1969, and 1971 has brought the total to 30 claims. Past work has mainly involved trenching in the showings area.

## GEOLOGY

The claims are underlain by Harrison Lake formation volcanics of middle Jurassic age. Acid to intermediate volcanic flows and pyroclastics characterize the Harrison belt rocks.

Dacitic to andesitic pyroclastic units predominate on the property. The units strike NE and display shallow dips to the SE. Tuffaceous size material occurs on the northern portion of the claims at the higher elevations, and grades progressively into coarser lapilli size, through to breccia size fragmentals to the southeast. Minor intercalated flows and an intrusive quartz-feldspar porphyry plug were also mapped in the area.

### Rock Units

(a) Breccia

A volcanic breccia unit, some 1000 feet thick, underlies a large area in the southeast portion of the claims. Compositionally, the breccia falls into the dacite range, with local variations occasionally encountered. Breccia size fragments include dacite feldspar porphyry, as well as rhyolitic and andesitic material. In one locality variolitic dacite to andesite fragments are also present.

The outcrop character of the unit graphically displays the variation in composition. The more dominant dacite member is compact and resistant to weathering, resulting in the formation of bluffs and cliffs. Local occurrences of a dark olive green andesite breccia tend to be low profile in outcrop and display differential weathering of the andesitic matrix and the more resistant acidic (dacite and rhyolite) fragments.

A narrow, sinuous, and vertical pipe of rhyolitic volcanic breccia, and agglomerate appears to crosscut the dacitic and andesitic breccia unit; in one locality on the south-eastern part of the claims:

(b) Lapilli Tuff

The lapilli tuff unit appears to be compositionally similar to the underlying dacitic breccia unit. Distinction of the two units is made on the basis of size classification of the fragments. Lapilli fragments range from 4-32 mm, where as breccia size fragments exceed 32 mm. The lapilli fragments are predominately rhyolitic to dacitic, with some andesitic fragments also present. The overall percentage of lapilli size fragments to matrix is low, however, local increases in fragment content have been noted.

...continued...

(c) Bedded Tuffs

Massive to bedded tuffs in the dacite to andesite compositional range overlie the lapilli tuff unit. The unit has been mapped over a thickness of 1200 feet, and has not been completely delineated to the north of the claim group.

Epidote, occasionally acicular in habit, occurs sporadically throughout the tuffs. Chlorite is locally developed as small clots.

(d) Intrusive Phases

A quartz-feldspar porphyry occurs in a plug like form cutting through the tuff and lapilli tuff units. Quartz and feldspar phenocrysts range in size from 1/10 to 1/2 inch across and are subhedral to auhedral in form. The matrix varies from light to dark green in color and is rhyodacitic in composition. The plug has a diameter of approximately 500 feet and lies between the 4100 and 4300 elevations.

A few thin dacite feldspar sills have also been mapped. Usually columnar jointing is developed in the sills.

Structure

The majority of structural attitudes are obtained from the bedded tuffs, and average between 050-075/20-35° S.E. The structural picture is a simple one, with the various rock units trending northeast and dipping to the southeast. The strike ranges from 030-070, and the dip varies between 10-35° S.E. Generally, the dips appear to flatten to the southeast part of the claims.

Mineralization

The only mineralization found on the claim group occurs in a rhyolite volcanic breccia and agglomerate unit which is in part weakly mineralized with pyrite, sphalerite, galena, and chalcopyrite. Mineralization occurs within the finer grained pyroclastic matrix, rimming fragments and sometimes lies in fractures within the acid fragments.

The breccia unit appears to be a narrow, sinuous, and vertical pipe which has been traced about 3/8 mile from the 2300-2800 foot contour. It varies in width from 200-300 feet, and throughout its traced length cuts through a more or less horizontal sequence of dacitic to andesitic breccias, and minor thin bedded tuffs.

Selected, representative grab samples from the mineralized porition of the breccia pipe returned low values in Ag, Pb and Zn and only Tr amounts of Cu.

| | | | |
|---|---|---|---|
| Sample No. 45264 | 0.19 oz Ag. | 0.11% Pb | 0.17% Zn |
| 45265 | 0.18 oz Ag. | 0.06% Pb | 0.04% Zn |

GEOCHEMISTRY

Method

The survey was performed by the writer, N.L. Szabo, with assistance from R.F. Nichols and C.D. Saville, Data on procedures is as follows:

Soil Survey

A total of 224 samples were collected at 100' intervals along lines spaced at 200'. Lines were run with the aid of a chain and Brunton compass. Orientation surveys performed in the vicinity of the property indicated the $B_1$ horison the most suitable for sampling and this horizon was sampled during this survey where possible.

...continued...

Sample Preparation and Analysis

All samples were air dried then sieved. The -80 mesh fraction was then analyzed for copper, lead, zinc, silver, and molybdenum. Analysis for copper, lead, zinc and silver was by atomic absorption using a hot nitric acid attack to bring ions into solution. Molybdenum was determined colourimetrically (see Appendix 1). The regional thresholds (x + 2S) were derived for the metals and are as follow: $Cu_t$ = 29.4 ppm, $Pb_t$ = 47.6 ppm, $Zn_t$ = 128.4, and $Ag_t$ = 0.95 ppm. Probability plots indicated a local molybdenum threshold of 4 ppm.

Data Presentation

The following geochemical plans accompany this report.

| | | |
|---|---|---|
| Plate 2 | Grid Location. | |
| Plate 3 | Copper Geochemistry | Scale 1" = 400'. |
| Plate 4 | Lead Geochemistry | Scale 1" = 400'. |
| Plate 5 | Zinc Geochemistry | Scale 1" = 400'. |
| Plate 6 | Silver Geochemistry | Scale 1" = 400'. |
| Plate 7 | Molybdenum Geochemistry | Scale 1" = 400'. |

Results

Eleven areas were found to contain greater than threshold copper values on the grid. Three out of the eleven anomalies were single sample anomalies. All anomalies were generally small in size and low in magnitude and are probably of little significance.

Three samples were found to contain greater than threshold lead values on the grid, and these "anomalies" are probably of no significance.

Only one sample was found to contain an above threshold zinc value.

Fourteen areas were found to contain anomalous silver values. Five of these are single sample anomalies. The silver anomalies are roughly coincident with the copper anomalies. All anomalies are barely above threshold and are probably of little significance.

Seven molybdenum anomalies were found on the grid. Four of these are single sample anomalies, and the other three are small in size and magnitude as well.

CONCLUSIONS

The only mineralization encountered was found in the rhyolite breccia pipe, and no economic values are indicated here.

The geochemical coverage indicated no anomalies that present targets for further exploration.

ATTACHMENTS

Statement of Expenditures
Statutory Declaration of Expenditures
Statement of Qualifications
Molybdenum Analysis Procedure

| | | |
|---|---|---|
| IAM - 1 | Location Map | 1" = 4 miles. |
| IAM - 2 | Geology and Geochemistry Grid Location | 1" = 400' |
| IAM - 3 | Copper Geochemistry | 1" = 400' |
| IAM - 4 | Lead Geochemistry | 1" = 400' |
| IAM - 5 | Zinc Geochemistry | 1" = 400' |
| IAM - 6 | Silver Geochemistry | 1" = 400' |
| IAM - 7 | Molybdenum Geochemistry | 1" = 400' |

...continued...

Report by: Ron F. Nichols
R.F. Nichols,
Geologist

Endorsed by: D.W. Heddle
D.W. Heddle, P. Eng.
Chief Geologist,
West. Dist., Exploration

Approved for
Release by: W.T. Irvine
W.T. Irvine, P. Eng.
Manager, Exploration
Western District

RFN/mjb
December 16, 1971

DISTRIBUTION

Administration
Mining Recorder (2)
West. Dist. File
RFN

EXHIBIT A

C O M I N C O  L T D.

EXPLORATION — WESTERN DISTRICT

1971 - GEOLOGICAL & GEOCHEMICAL SURVEY

EXPENDITURES

IAM GROUP, WEST OF WEAVER LAKE

NEW WESTMINSTER MINING DIVISION

92H 5/W

| | | | |
|---|---|---|---|
| SALARIES | | | |
| Geology and Geochemistry | | | |
| R.F. Nichols | 15 days @ $55/day | $825 | |
| F.D. Gill | 5 days @ $70/day | $350 | |
| N.L. Szabo | 3 days @ $65/day | $195 | |
| C.D. Saville | 10 days @ $42/day | $420 | |
| R.H. Gannicott | 1 day @ $37/day | $ 37 | |
| | | | $1,827.00 |
| GEOCHEMICAL ANALYSIS - 224 samples @ $2.35/sample | | | $ 528.00 |
| DOMICILE | | | $ 150.00 |
| TRANSPORTATION | | | $ 221.00 |
| GENERAL GEOLOGY SUPPLIES | | | $ 37.00 |
| TOTAL EXPENDITURE | | | $2,743.00 |

Work was performed between June 4 and October 20, 1971.

Ron F. Nichols

Ron F. Nichols,
Geologist

This Is Exhibit "A" To The Statutory Declaration Of
R. F. Nichols Declared Before Me This 7TH Day Of January, 1972 A.D.

A Commissioner For Taking Affidavits
For British Columbia

A Commissioner for taking Affidavits
within British Columbia

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of

STATUTORY DECLARATION RELATING TO EXPENDITURES ON A GEOCHEMICAL AND GEOLOGICAL SURVEY OF CERTAIN OF THE SIR AND IAM MINERAL CLAIMS, NEW WESTMINSTER MINING DISTRICT.

I, R. F. NICHOLS

of City of Vancouver

in the Province of British Columbia, do solemnly declare that

1. I personally was responsible for carrying out the surveys and preparing the accompanying geochemical and geological report on certain mineral claims situated in the New Westminster Mining District.

2. Copies of the said report are being filed with the Mining Recorder in Vancouver.

3. Attached hereto, and marked with the letter "A" upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geological - geochemical survey of the said claims showing in addition the period during which the said survey was carried out.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the city of
of ~~Vancouver~~ NEW WESTMINSTER, in the
Province of British Columbia, this
day of January 1972, A.D.

Ron F. Nichols

A Commissioner for taking Affidavits within British Columbia or
~~A Notary Public in and for the Province of British Columbia.~~
A Commissioner for taking Affidavits
within British Columbia

C O M I N C O  L T D.

EXPLORATION WESTERN DISTRICT

## STATEMENT OF QUALIFICATIONS

R. F. Nichols was responsible for carrying out the geological and geochemical surveys on the SIR 1-6 and IAM 1-4; IAM 20 & 22 claims and for the preparation of this report. Mr. Nichols graduated as a Bachelor of Science from the University of British Columbia in Geology in 1967, and has been working in a responsible capacity for Cominco Ltd. since May 1967.

I consider him to be an experienced and capable geologist.

D. W. Heddle

D. W. Heddle, P. Eng.

# MOLYBDENUM ANALYSIS

REAGENTS:

1. Thiocyanate solution: Dissolve 5 g. of ammonium thiocyanate in 100 m. water.

2. Stannous chloride solution: Dissolve 20 g. $SnCl_2$ in 34 ml. concentrated HCl. Heat if necessary. Add water to 200 ml. To insure stability, add a piece of metallic tin to the solution. Prepare daily.

PROCEDURE:

1. Weigh out 0.2 g. of sample into an 18 mm. x 150 mm. test tube.

2. Extract metal using a pyrosulphate fusion. Cool. Add 10 ml. of 10% HCl and place in a hot water bath to facilitate solution.

3. Transfer a 5 ml. aliquot to a 16 mm. x 150 mm. test tube.

4. Add 1 ml. tyiocyanate solution. Shake.

5. Add 1 ml. stannous chloride solution. Shake until the red colour disappears.

6. Add water to the 10 ml. mark.

7. Add 0.5 ml. isopropyl ether.

8. Stopper the test tube and shake for 30 seconds.

9. Allow phases to settle and compare against standards.

Notes: If above top standard, additional isopropyl ether may be added.

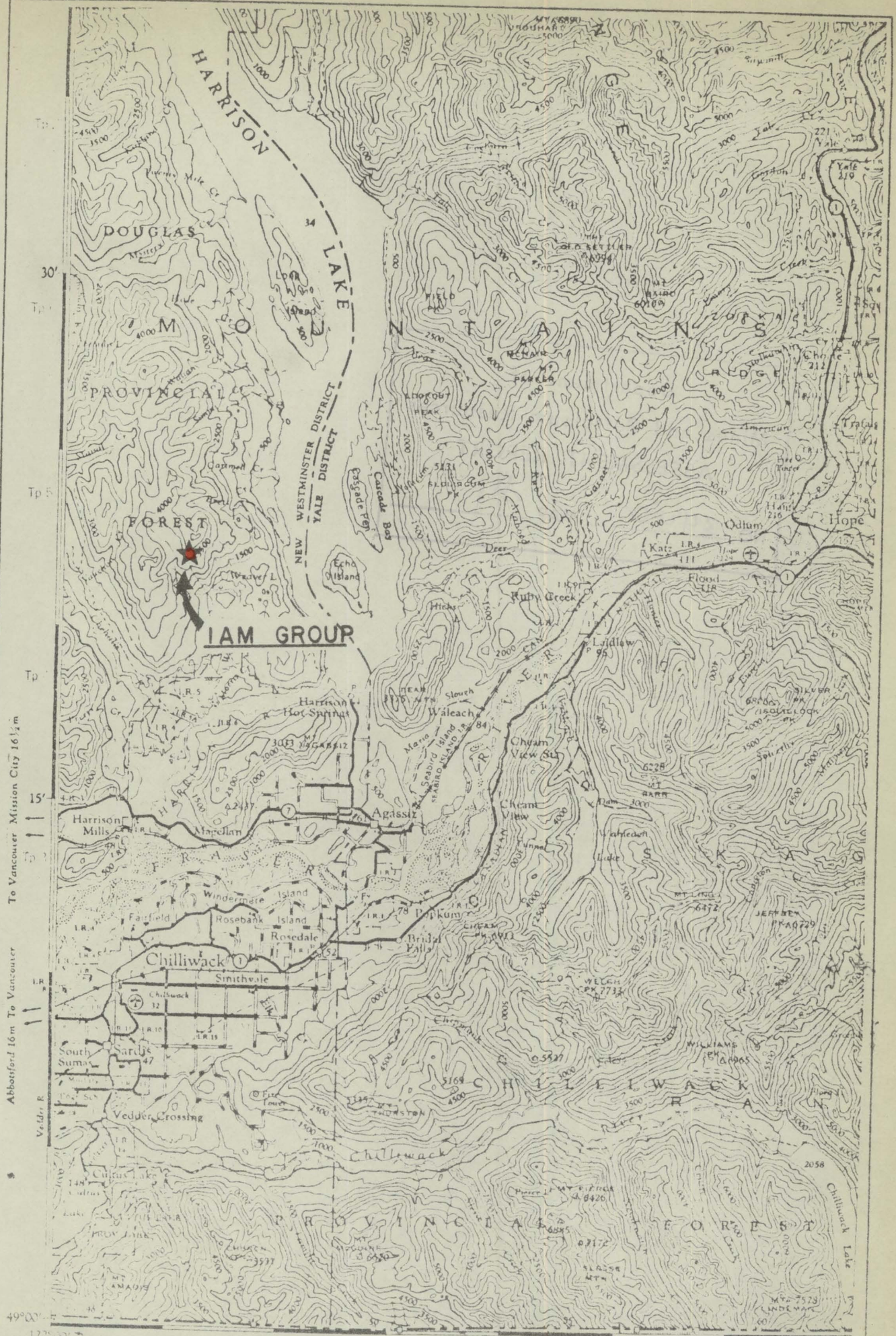
Possible V interference. pH conditions prevent extraction of W.

PREPARATION OF STANDARDS:

1. To a series of 10 test tubes add the following amounts of 1 microgram/ml. standard molybdenum solution: 0, 0.2, 0.4, 0.8, 1.0, 1.5, 2.0, 3.0, 4.0 ml.

2. Add 0.5 ml. of 1% ferric chloride in 1 N HCl.

3. Follow steps 4 to 8 of the molybdenum procedure.




To accompany geological and geochemical report
by R.F. Nichols on the SIR 1-6; IAM 1-4 and
IAM 20 & 22 claims in the New Westminster Mining District dated Dec.16/71

IAM GROUP

Cominco

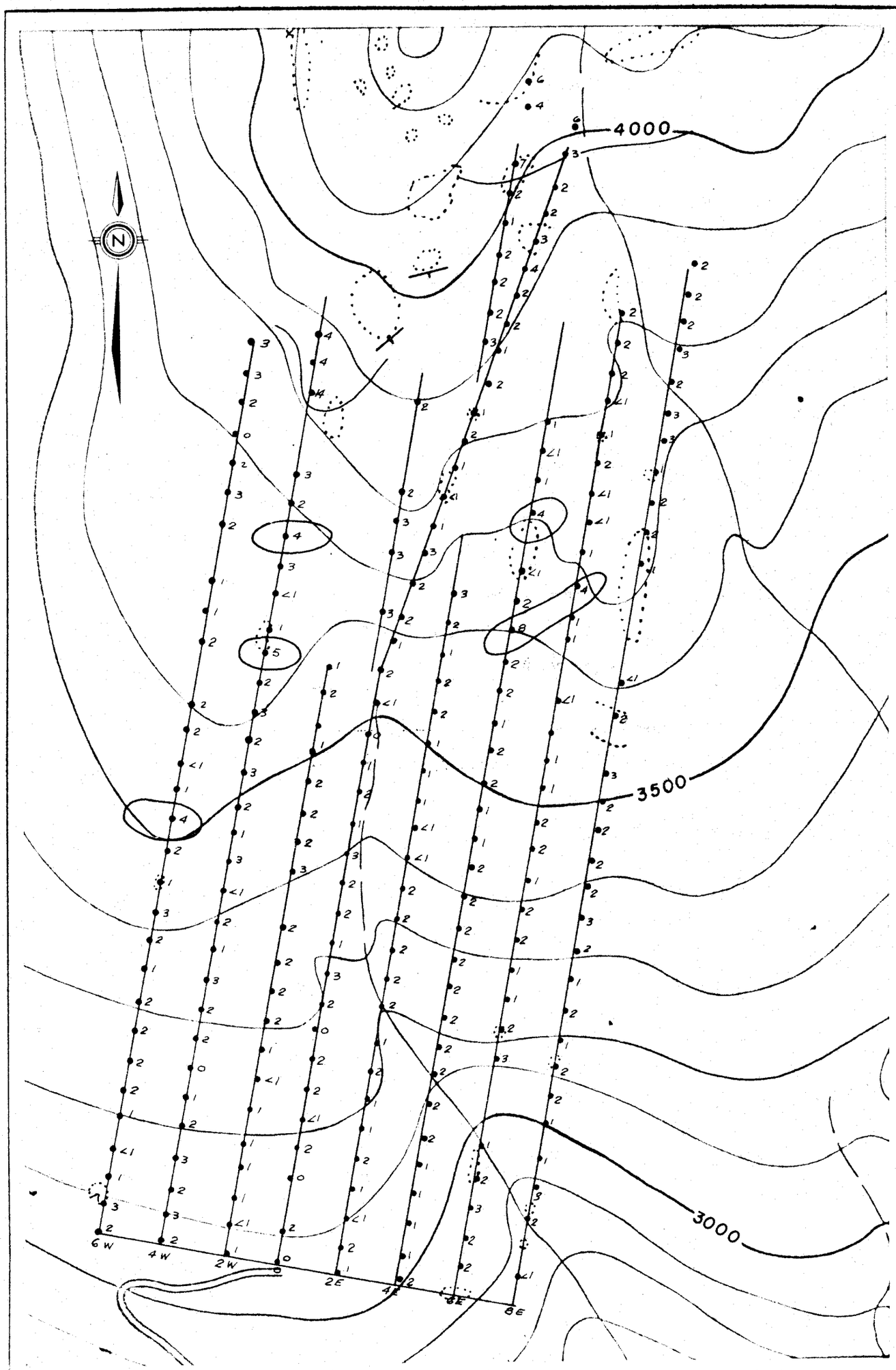
| Drawn by: | Traced by: WRS |
|---|---|
| Revised by: Date | Revised by: Date |

# LOCATION MAP

Scale: 1" = 4 MILES | Date: FEBRUARY / 71. | Plate: IAM - 1

BCIL-2187-C

210-0810




To accompany geological and geochemical report by R. F. Nichols on the SIX 1-6, IAM 1-6 and IAM 20 & 22 claims in the New Westminster Mining District dated Dec. 17/71.

# IAM GROUP

Cominco

| Drawn by: WRS | Traced by: WRS | | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

## MOLYBDENUM GEOCHEMISTRY

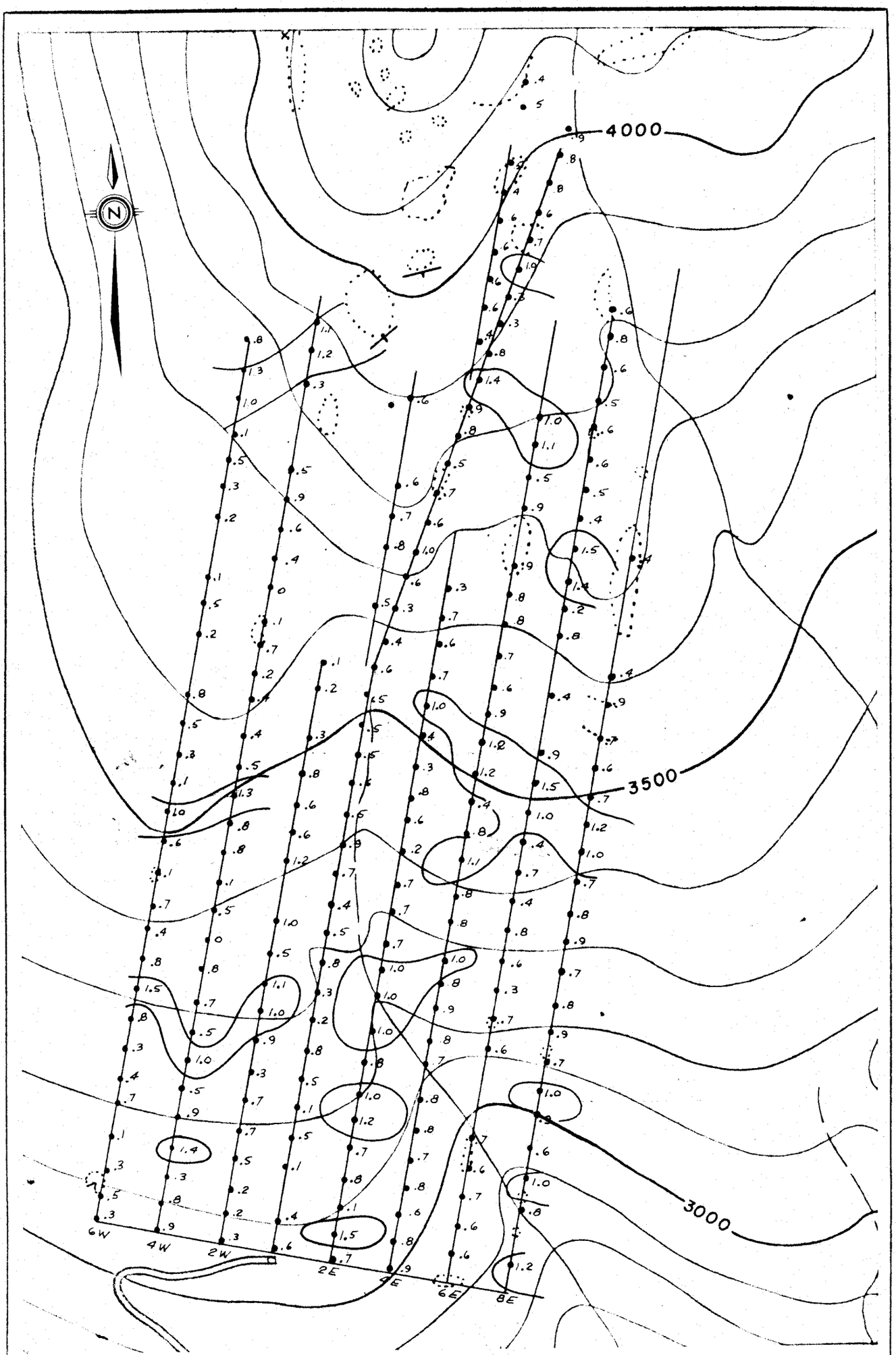
Scale: 1" = 400'

Date: DECEMBER / 71

Plate: IAM – 7

BCIL-2187-C

210-0610




To accompany geological and geochemical report by R. F. Nichols on the SIR 1-6; IAM 1-4 and IAM 20 & 22 claims in the New Westminster Mining Dist. Dated Dec.16/71.

IAM GROUP

Cominco

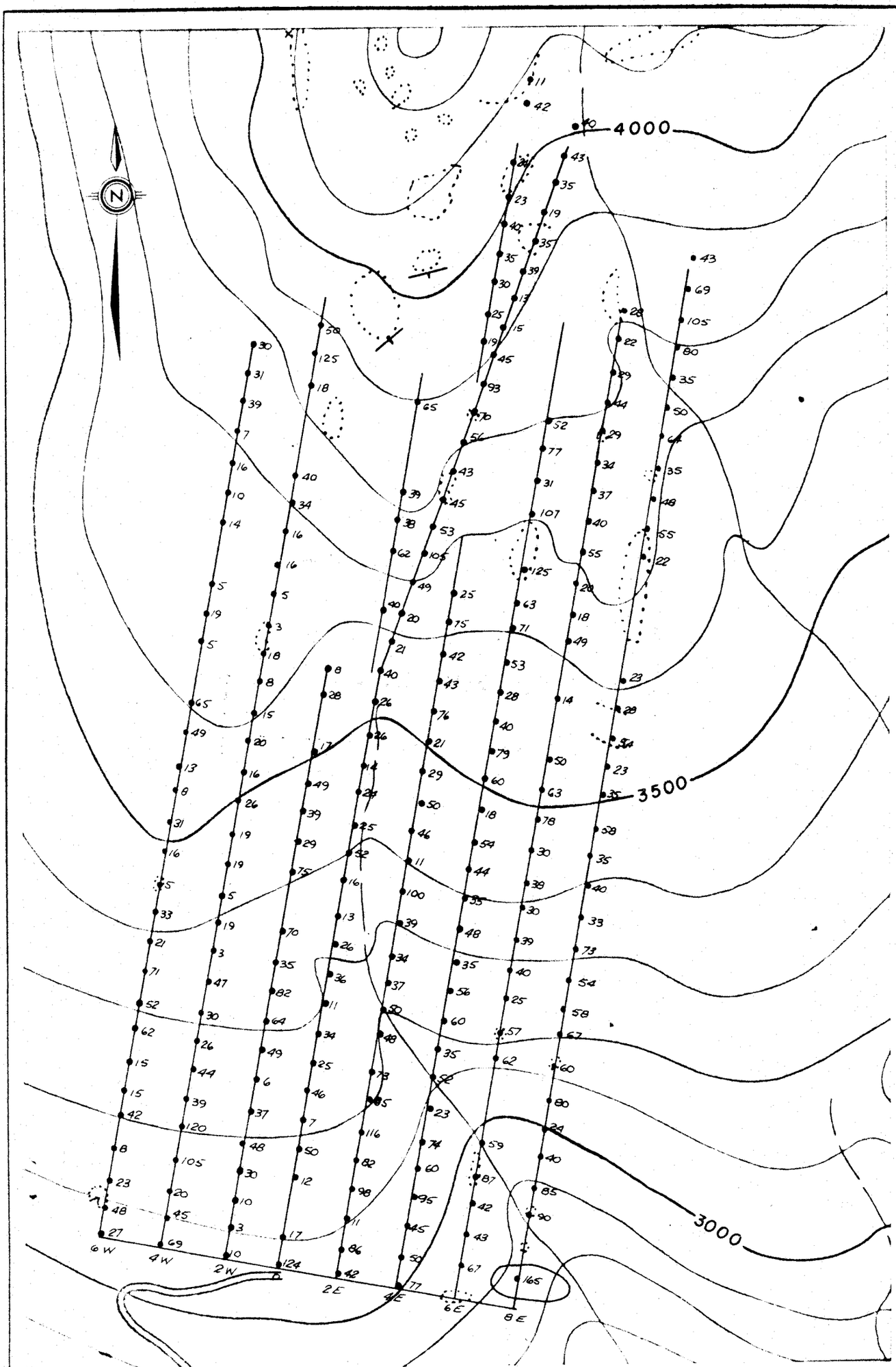
| Drawn by: WRS | | Traced by: WRS | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

# SILVER GEOCHEMISTRY

Scale: 1" = 400'

Date: DECEMBER / 71

Plate: IAM – 6




To accompany geological and geochemical report by R. F. Nichols on the SIR 1-6; IAM 1-4 and IAM 20,& 22 claims in the New Westminster Mining District dated Dec.16/71

IAM GROUP

Cominco

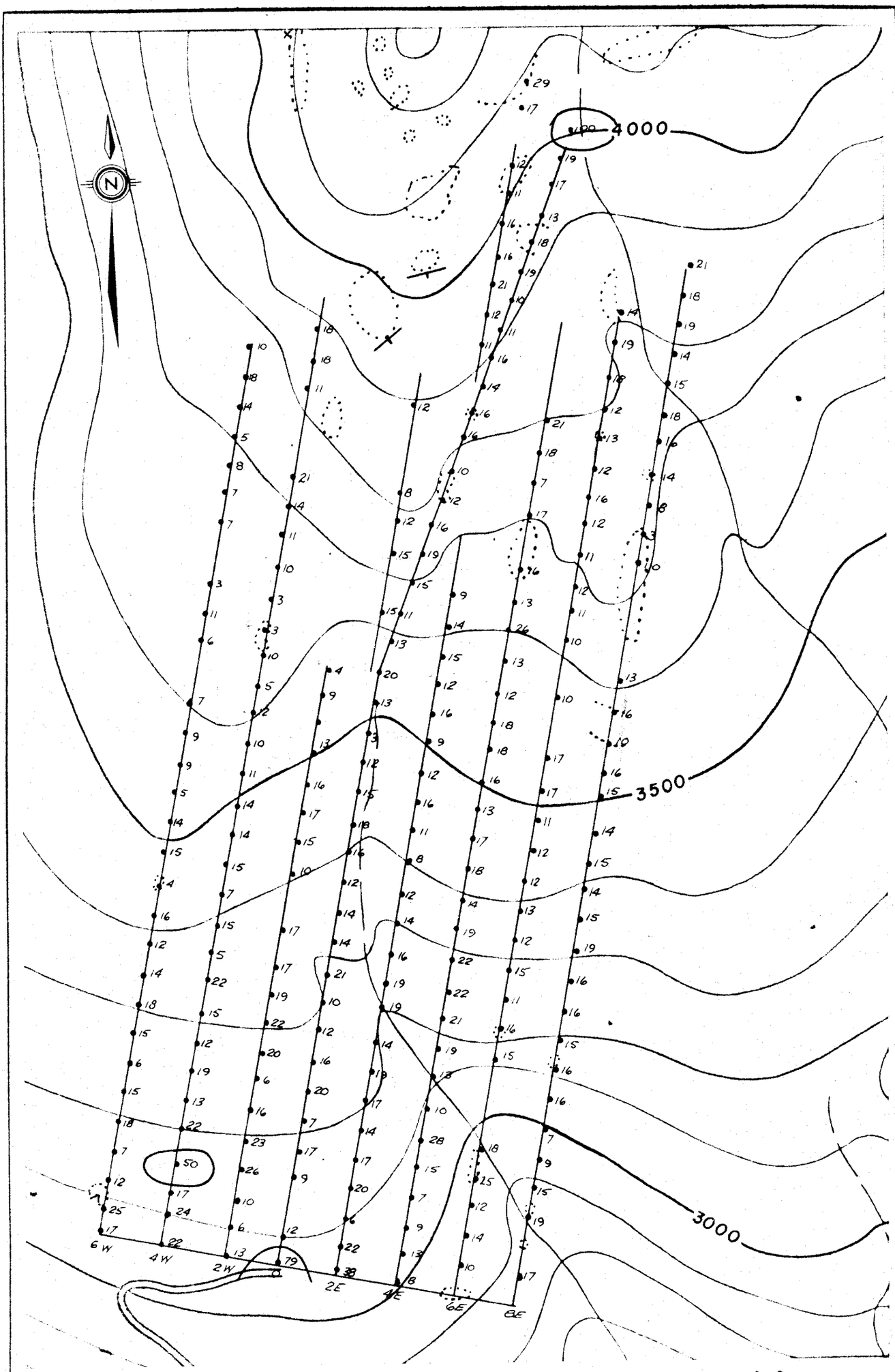
| Drawn by: WRS | | Traced by: WRS | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

# ZINC GEOCHEMISTRY

Scale: 1" = 400'

Date: DECEMBER / 71

Plate: IAM – 5




To accompany geological and geochemical report by R.F. Nichols on the SIF 1-6; IAM 1-4 and IAM 20 & 22 claims in the New Westminster Mining District dated Dec.10/71

# IAM GROUP

Cominco

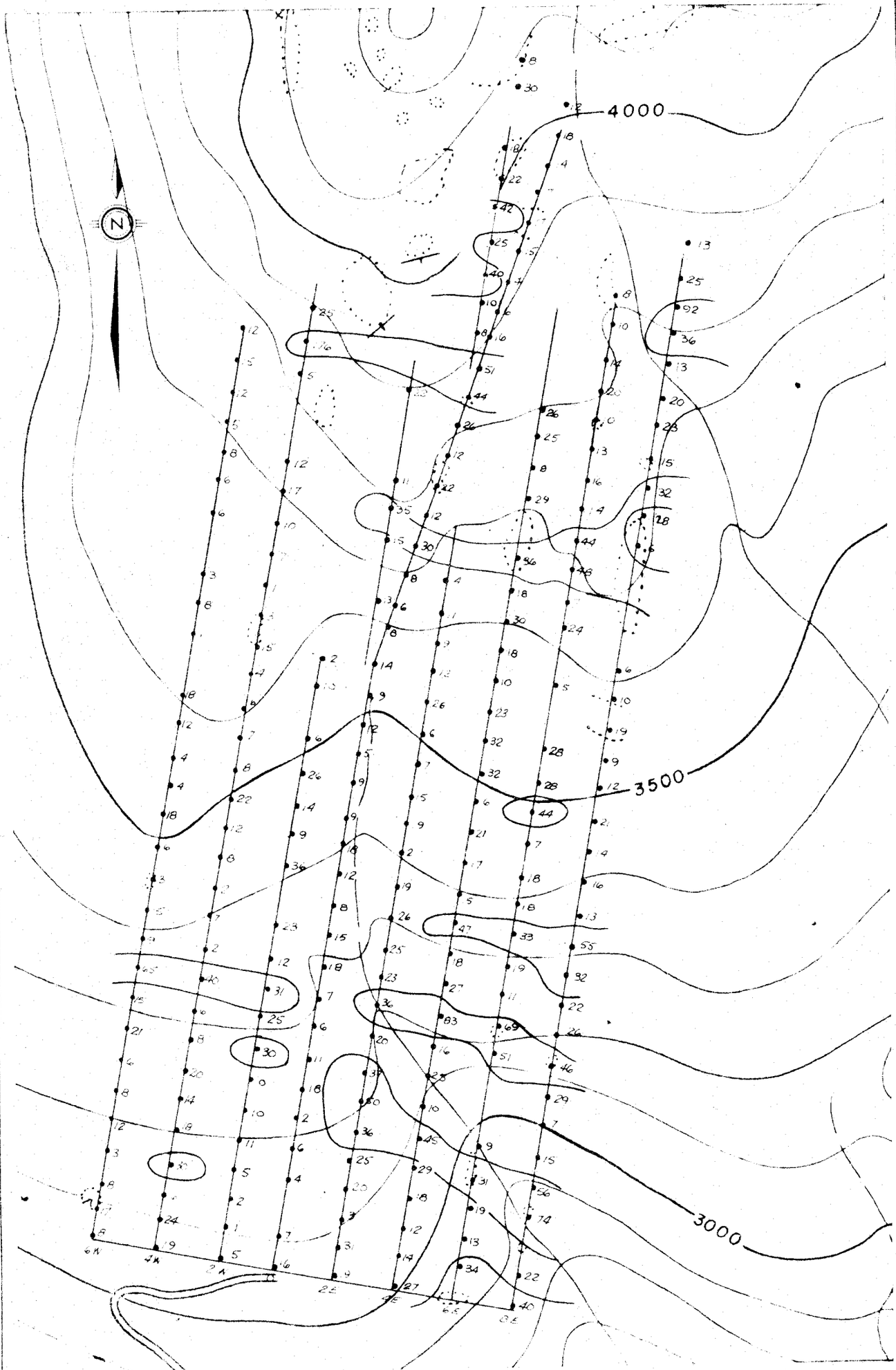
| Drawn by: WRS | | Traced by: WRS | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

## LEAD GEOCHEMISTRY

Scale: 1" = 400'

Date: DECEMBER / 71

Plate: IAM-4




To accompany geological and geochemical report by R.F. Nichols on the SIR 1-6; IAM 1-4 and IAM 20 & 22 claims in the New Westminster Mining District dated Dec.16/71

IAM GROUP

Cominco

| Drawn by: WRS | | Traced by: WRS | |
|---|---|---|---|
| Revised by | Date | Revised by | Date |
| | | | |

# COPPER GEOCHEMISTRY

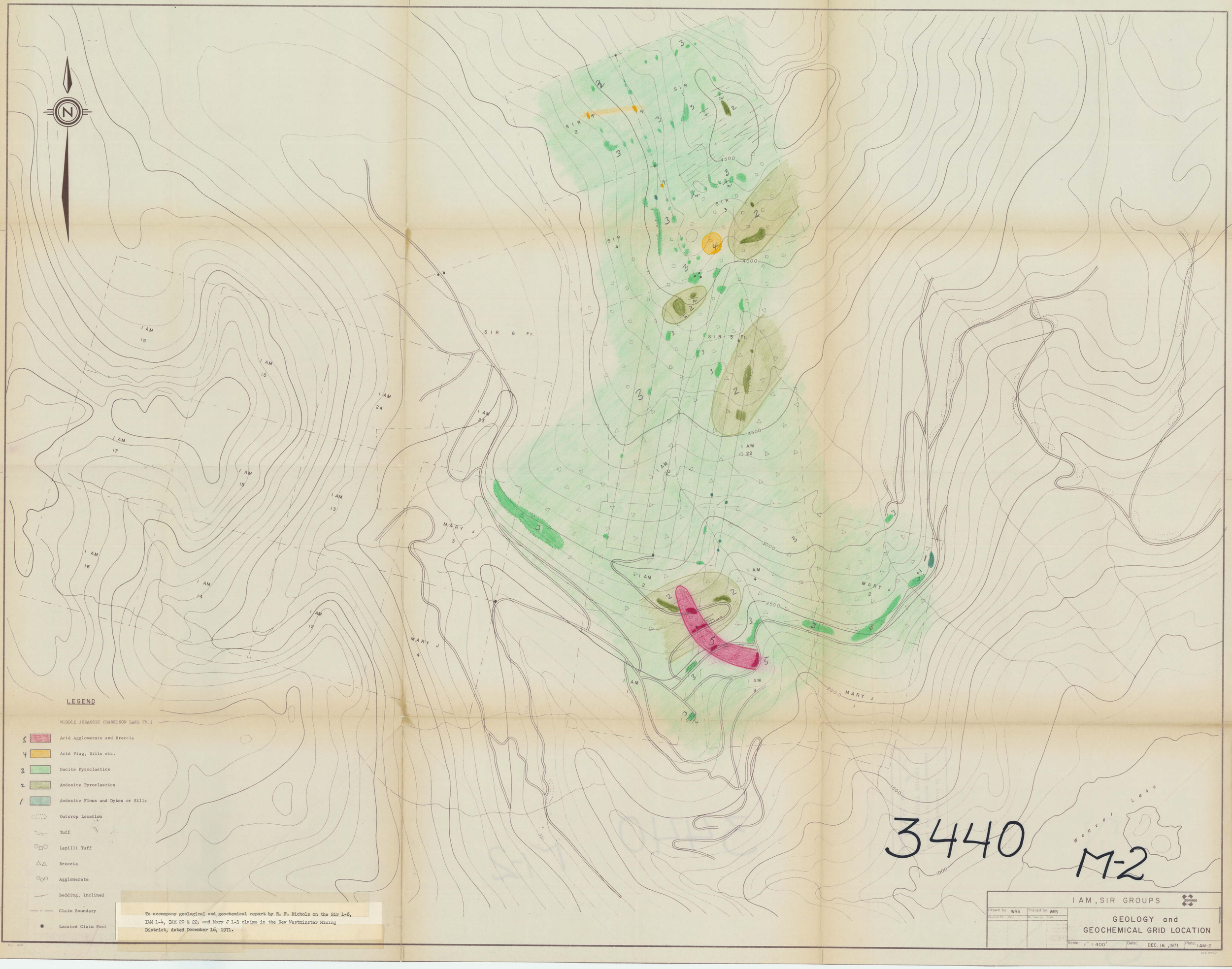
Scale: 1" = 400'

Date: DECEMBER / 71

Plate: IAM – 3

BCIL-2187-C

210-0610




## LEGEND

MIDDLE JURASSIC (HARRISON LAKE FM.)

- 5 — Acid Agglomerate and Breccia
- 4 — Acid Plug, Sills etc.
- 3 — Dacite Pyroclastics
- 2 — Andesite Pyroclastics
- 1 — Andesite Flows and Dykes or Sills
- Outcrop Location
- Tuff
- Lapilli Tuff
- Breccia
- Agglomerate
- Bedding, Inclined
- Claim Boundary
- Located Claim Post

To accompany geological and geochemical report by R. F. Nichols on the Sir 1-6, IAM 1-4, IAM 20 & 22, and Mary J 1-3 claims in the New Westminster Mining District, dated December 16, 1971.

3440

M-2

# I AM, SIR GROUPS

## GEOLOGY and GEOCHEMICAL GRID LOCATION

Drawn by: WRS | Traced by: WRS | Scale: 1" = 400' | Date: DEC. 16, 1971 | Plate: IAM-2