

COMINCO LTD.

EXPLORATION
N.T.S. 82K/10E
82K/9W

WESTERN DISTRICT
7 DECEMBER 1978

GEOLOGICAL MAPPING AND ROCK GEOCHEMICAL

SURVEY ON THE STAN MINERAL CLAIMS

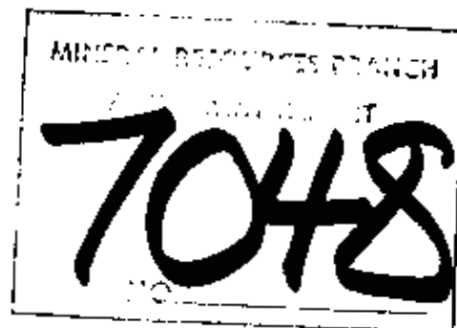
RADIUM HOT SPRINGS AREA

GOLDEN MINING DISTRICT, B.C.

50°38'N 116°32'W

WORK PERFORMED

28 JULY-28 AUGUST 1978



DECEMBER 1978

R.L. WRIGHT

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COMINCO LTD.

EXPLORATION
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WESTERN DISTRICT
7 DECEMBER 1978

GEOLOGICAL MAPPING AND ROCK GEOCHEMICAL
SURVEY ON THE STAN MINERAL CLAIMS

RADIUM HOT SPRINGS AREA
GOLDEN MINING DISTRICT
BRITISH COLUMBIA

SUMMARY

A geological mapping and rock sampling program was carried out on the STAN claims which cover the northern portion of the Horsethief Batholith, located 35 kilometres west of Radium Hot Springs, B.C. The work consisted of semi-detailed geological mapping and prospecting with the aid of scintillometers, and sampling of the bedrock at evenly distributed stations in order to determine broad patterns of geochemical enrichment in bedrock which might represent haloes around mineralization. Sampling consisted of 154 rock samples and 8 stream silts. All samples were analyzed for Cu, Pb, Zn, Ag, Mo, W, U and Sn. In addition, 11 rock samples collected in 1977 but not analyzed until 1978 are herein reported.

Results show a relatively uniform distribution of geochemical values with isolated high values on the Stan 4 and Stan 6 claims. Rock geochemistry and stream silts do not appear to reflect high values obtained in heavy mineral concentrates collected in 1977.

Further work is recommended to follow-up these scattered anomalous values.

LOCATION

Latitude: 50°38'N
Longitude: 116°32'W
N.T.S.: 82K/10E and 82K/9W
Golden Mining Division, B.C.

The claims are at the headwaters of Forster Creek and are accessible by 40 km of logging roads from Radium Hot Springs. Elevation ranges from approximately 1500 to 3000 metres, with heavy forests up to 2000 m. Extremely rugged topography and extensive glaciers and talus slopes made large areas of the claim group inaccessible to bedrock sampling. Access to higher elevations was by helicopter.

HISTORY

Interest in the general area has been strong for a number of years. In the mid-fifties placer sands and gravels of the Bugaboo, Vowell and Forster Creeks were found to contain considerable amounts of uranium. Work was

done by Quebec Metallurgical Industries, but they later allowed their leases to lapse. No further work was done until Bugaboo Mines Ltd. re-staked in the area in 1966 and flew a spectrometric survey, with interest again on the placer deposits of Forster and upper Bugaboo Creeks. Canadian Johns-Manville Co. Ltd. staked claims in the Forster Creek area in 1970 and 1971 and did a number of surveys, including various geochemical programmes, radiometric and induced polarization surveys. Some drilling was done.

No previous work had been done by Cominco in this area prior to 1977. The claims were staked in response to the GSC Open File 341 released in December 1976. A preliminary program in 1977 indicated anomalous concentrations of uranium and tungsten in heavy mineral concentrates from stream sediments. This work results in the 1978 program of mapping and more detailed sampling.

OWNERSHIP

6 claims comprising 77 units owned 100% by Cominco Ltd.

Date staked : December 24, 1976, January 3, 1977
Date recorded : January 6, 1977
Date assessment work due: January 6, 1979

ROCK GEOCHEMISTRY AND ANALYTICAL PROCEDURE

The field work was conducted by R.L. Wright, MSc. 1974, assisted by D.J. Nowak and B. McTaggart.

Rock samples were collected from relatively evenly spaced (approximately 250 metres apart) locations on accessible parts of the property with fill-in samples collected using helicopter support. Several stream silt samples were also taken to augment or verify results of the 1977 program. Rock samples collected in 1977 but not analyzed until 1978 are included in this report.

Rock samples were reduced to a powder by a jaw crusher, and ring pulveriser. Cu, Pb, Zn and Ag were determined by atomic absorption following extraction by hot 20% nitric acid. Molybdenum and tungsten determinations were done by pyrosulphate fusion and HCl extraction followed by thiocyanate colourimetry. Analyses of uranium were done fluorimetrically after hot nitric acid extraction. Tin was determined by X-ray fluorescence. Stream silts were dried and sieved, and the -80 mesh fraction was analyzed by the same procedures. All analytical work was performed by Cominco's Vancouver Research Laboratory.

All rock analyses, including results from 1977 were statistically treated to determine thresholds, means, and standard deviations. Some elements such as tin and silver were not amenable to this treatment because of the high proportion of samples assaying below detection limit.

GEOLOGY

The claim group overlies the Lower to Middle Cretaceous Horsethief Batholith, which intrudes Upper Proterozoic sediments of the Mount Nelson Formation. The intrusion is a quartz monzonite, composed of 3-5 cm pink K-feldspar phenocrysts in a coarse to medium grained matrix of grey quartz, white plagioclase, muscovite and biotite. The proportion of K-feldspar phenocrysts varies randomly throughout the intrusive from less than 5% to over 50% in some places. Along the contact, in the northeast corner of Stan 6, the matrix is a fine-grained pink aplite with rounded quartz "eyes" and the typical K-feldspar phenocrysts. Granite and granodiorite occur locally, due apparently to local variations in the proportions of the rock forming minerals. Evidence of multiple intrusions is lacking. Accessory minerals in the quartz monzonite are reported (Reesor, GSC Memoir 369, 1973) to include pyrochlore, euxenite, uraninite, anatase, lepidocrocite, epidote, allanite, magnetite, ilmenite, rutile, sphene, apatite, fluorite and zircon.

A small area of country rock is exposed in the northeast corner of Stan 6. This consists of predominantly of grey quartzite and calcareous quartzite with minor disseminated pyrite. Minor dolomite float was found in this area, but could not be traced to outcrops. The sediments have been moderately deformed about a NS horizontal axis, resulting in a pronounced subvertical, NS striking fabric in the sediments. The only fabric in the intrusive is a pronounced jointing. This information is presented in Plate 4.

Mineralization on the property occurs in two locations. Sample 134 from the north contact is an aplite dike containing small amounts of disseminated molybdenite. Sample 37, from within the intrusive (on Stan 4) is a 1 centimetre-wide quartz-muscovite vein containing 1.7% uranium in very finely disseminated form, possibly as uraninite.

RESULTS AND INTERPRETATION

Sample locations and analytical results are presented in Plates 5 to 8 inclusive.

Copper (Plate 5)

Copper analyses range from 2 to 52 ppm with a geometric mean of 4 ppm. The cumulative probability plot indicates 2 sample populations with a threshold of 8 ppm for the upper population. On the map, these values concentrate in two areas, the contact zone in the northeast corner of Stan 6, and in the east wall of the cirque around the LCP for claims 1-4. The threshold for anomalous copper values is 40 ppm (2.5 cumulative percent); this indicates two samples 134a and 51a which are within the aforementioned "enriched" areas.

Molybdenum (Plate 5)

Molybdenum analyses range from 1 to 450 ppm; due to a high proportion of values below the detection limit, the geometric mean, 1 ppm, is not significant. The remaining values indicate a bimodal population with a

threshold of 15 ppm for the higher values. These values occur in the contact zone, and as two isolated occurrences on the south side of Forster Creek. The threshold for anomalous molybdenum values is 30 ppm (2.5 cumulative percent).

Lead (Plate 6)

Lead analyses range from 3 to 280 ppm with a geometric mean of 6 ppm and a threshold for anomalous values of 30 ppm (2.5 cumulative %). These values occur in two principal areas, a broad zone centred on the LCP in the southern claim block, and a cluster in the contact zone of Stan 6.

Zinc (Plate 6)

Zinc analyses range from 2 to 66 ppm with a geometric mean of 23 ppm and a threshold of 40 ppm (2.5 cumulative %). Again these values are clustered in the central portion of Stan 1-4 claims, and in the contact zone on Stan 6.

Silver (Plate 6)

Silver analyses range from 0.4 to 2.4 ppm, with the vast majority of results being below detection limit. The only detectable silver values occur in a cluster at the centre of Stan 1-4 claims.

Tin (Plate 7)

Tin analyses range from 10 to 720 ppm with the majority of results being below the detection limit. Based on a 2.5% cumulative probability limit, the threshold is approximately 35 ppm. This indicates 2 anomalous values, one in the contact zone of Stan 6, the other on the ridge east of North Star Glacier on Stan 4.

Tungsten (Plate 7)

Tungsten analyses range from 2 to 1250 ppm with a geometric mean of 7 ppm and a threshold of 30 ppm (2.5 cumulative %). Widely scattered anomalous values occur in the central portion of Stan 1-4 and in the contact zone of Stan 6.

Uranium (Plate 8)

Uranium analyses range from 0.1 to 17,000 ppm with a geometric mean of 4 ppm. The cumulative probability plot indicates two populations, a lower group with a maximum threshold of approximately 1.0 ppm, corresponding to the sediments north of the contact on Stan 6, and a second group greater than 1.0 ppm corresponding to the intrusion. A threshold of 20 ppm (2.5 cumulative %) indicates two anomalous samples occurring on Stan 4. The high value of 17,000 ppm comes from a 1 cm wide quartz-muscovite veinlet in unaltered quartz monzonite.

CONCLUSIONS

A program of semi-detailed geological mapping and rock geochemistry on the Stan Group, on the northern part of the Horsethief Batholith, has indicated scattered weakly to strongly anomalous values of Cu,Pb,Zn,Ag, Mo,W,U and Sn. Determination of the significance of these values requires further field examinations.

Report by: R.L. Wright
R.L. Wright
Geologist

Endorsed by: D.W. Heddie
D.W. Heddie
Assistant Manager
Exploration, West. Dist.

Approved for
Release by: G. Harden
G. Harden, Manager
Exploration
Western District

RLW/gk

Distribution:

Mining Recorder (2)
Administration (1)
Western District (1)
RLW/DLC (2)

COMINCO LTD.

EXPLORATION
N.T.S. 82K/10E
82K/9W

WESTERN DISTRICT
7 DECEMBER 1978

APPENDIX I

STATEMENT OF EXPENDITURES

Cost of geological mapping and rock geochemistry survey on the Stan Mineral Claims - Radium Hot Springs Area, Golden Mining Division, B.C.

SALARIES

RLW field (28 days @ 117.92/day) - July 28-August 28/78	\$ 3,301.76
office (5 days @ 88.00/day)	440.00
DJN field (8 days @ 82.50/day) - July 28-August 4/78	660.00
BM field (20 days @ 64.38/day) - August 8-August 28/78	1,287.60

TRANSPORTATION

Air fares	278.45
Truck rental - (July and August)	678.00
Gas, oil, servicing, etc.	203.74
Freight	24.95

HELICOPTER

9.5 hours @ \$340/hour	3,230.00
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FIELD COSTS

Food - 56 man days @ 13.55/day	758.80
Motel	354.38
Scintillometer rentals	893.58
Field gear	873.07

ASSAYS

8 stream silts @ 13.40/sample	107.20
154 rock samples @ 14.30/sample	2,202.20
11 rock samples @ 13.70/sample	150.70
	<u>\$15,444.43</u>

Signed: R.L. Wright.
R.L. Wright
Geologist

COMINCO LTD.

EXPLORATION
N.T.S. 82K/10E
82K/9W

WESTERN DISTRICT
7 DECEMBER 1978

APPENDIX II

IN THE MATTER OF THE B.C. MINERAL ACT AND
IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL
PROGRAM CARRIED OUT ON THE
STAN MINERAL CLAIMS
LOCATED IN THE GOLDEN MINING DIVISION
OF THE PROVINCE OF BRITISH COLUMBIA
MORE PARTICULARLY N.T.S. 82K/10E AND 82K/9W

A F F I D A V I T

I, ROBERT L. WRIGHT OF THE CITY OF VANCOUVER IN THE PROVINCE OF BRITISH COLUMBIA, MAKE OATH AND SAY:

1. That I am employed as a Geologist by Cominco Ltd., and as such have a personal knowledge of the facts to which I hereinafter depose:
2. That annexed hereto and marked as Appendix I to this my affidavit is a true copy of expenditures on a geological and geochemical program carried out on the STAN Mineral Claims.
3. That the said expenditures were incurred between the twenty-eighth day of July and twenty-eighth day of August 1978 for the purpose of mineral exploration on the above noted claims.

R.L. Wright

R.L. Wright
Geologist

COMINCO LTD.

EXPLORATION
N.T.S. 82K/10E
82K/9W

WESTERN DISTRICT
7 DECEMBER 1978

APPENDIX III

STATEMENT OF QUALIFICATIONS

I, ROBERT L. WRIGHT, OF THE CITY OF VANCOUVER, PROVINCE OF BRITISH COLUMBIA, HEREBY CERTIFY:

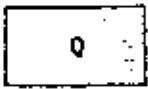
1. THAT I am a Geologist residing at 1859 Napier Street, Vancouver, British Columbia with a business address at 2200-200 Granville Street, Vancouver, British Columbia.
2. THAT I graduated with a B.Sc. in Geology from McMaster University, Hamilton, Ontario in 1971 with a M.Sc. in Geology from the University of British Columbia in 1974.
3. THAT I have practised Geology with Cominco Ltd. from 1975 to 1978.

DATED THIS 11 DAY OF DECEMBER 1978 AT VANCOUVER, BRITISH COLUMBIA.

Signed: R.L. Wright.
R.L. Wright, M.Sc.

CENOZOIC

QUATERNARY



UNCONSOLIDATED SEDIMENTS:
silt, sand, gravel

CRETACEOUS



Quartz monzonite
Granodiorite

JURASSIC



Granodiorite

MESOZOIC

PURCELL MOUNTAINS

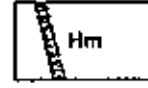
WINDERMERE (HADRYNIAN)

HORSETHIEF CREEK GROUP
Grey, black, and green slate and argillite, quartz pebble conglomerate, quartzite, feldspathic quartzite and grit; red slate and arenaceous slate; minor blue-grey and black limestone; equivalent mica schist, schistose quartzite and grit, as well as marble in the more metamorphosed zones in the southwest part of the map-area; Hh1, slates dominant; Hh2, pebble conglomerate, grit, and quartzite are dominant; Hh3, limestone and slate



TOBY FORMATION: pebble, cobble, and boulder polymictic conglomerate and breccia (matrix variously of quartzite, argillite, and limestone)

PURCELL (HELIKIAN)



MOYIE INTRUSIONS: meta-quartz diorite and diorite



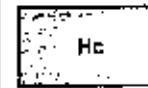
MOUNT NELSON FORMATION: buff weathering grey, cream and purple dolomite and dolomitic limestone, purple, grey and black argillite and slates; white quartzite



DUTCH CREEK FORMATION: grey, green and black argillite and slate, buff dolomitic slate; thin-bedded, buff weathering dolomite, green, argillaceous quartzite



KITCHENER-SIYEH FORMATION: laminated, buff weathering, dolomitic and calcareous argillite and quartzite, green and black argillite; grey and pink quartzite; minor purple argillite



CRESTON FORMATION: massive and laminated, green and grey weathering, green and grey argillaceous quartzite and quartzite, green argillite



DUTCH CREEK and KITCHENER-SIYEH FORMATIONS: undivided

PROTEROZOIC

- Geological boundary (defined, approximate, assumed).....
- Bedding, tops known (horizontal, inclined, vertical, overturned).....
- Bedding, tops unknown (inclined).....
- Igneous primary foliation (inclined, vertical).....
- Cleavage (inclined, vertical).....
- Schistosity (inclined, vertical).....
- Lamination (horizontal, inclined).....
- Fault (defined, approximate, assumed).....
- Anticline (defined, approximate).....
- Syncline (defined, approximate).....
- Anticline and syncline (overturned).....
- Anticline or syncline (arrow indicates plunge).....
- Anticline and syncline (general trend).....

7048

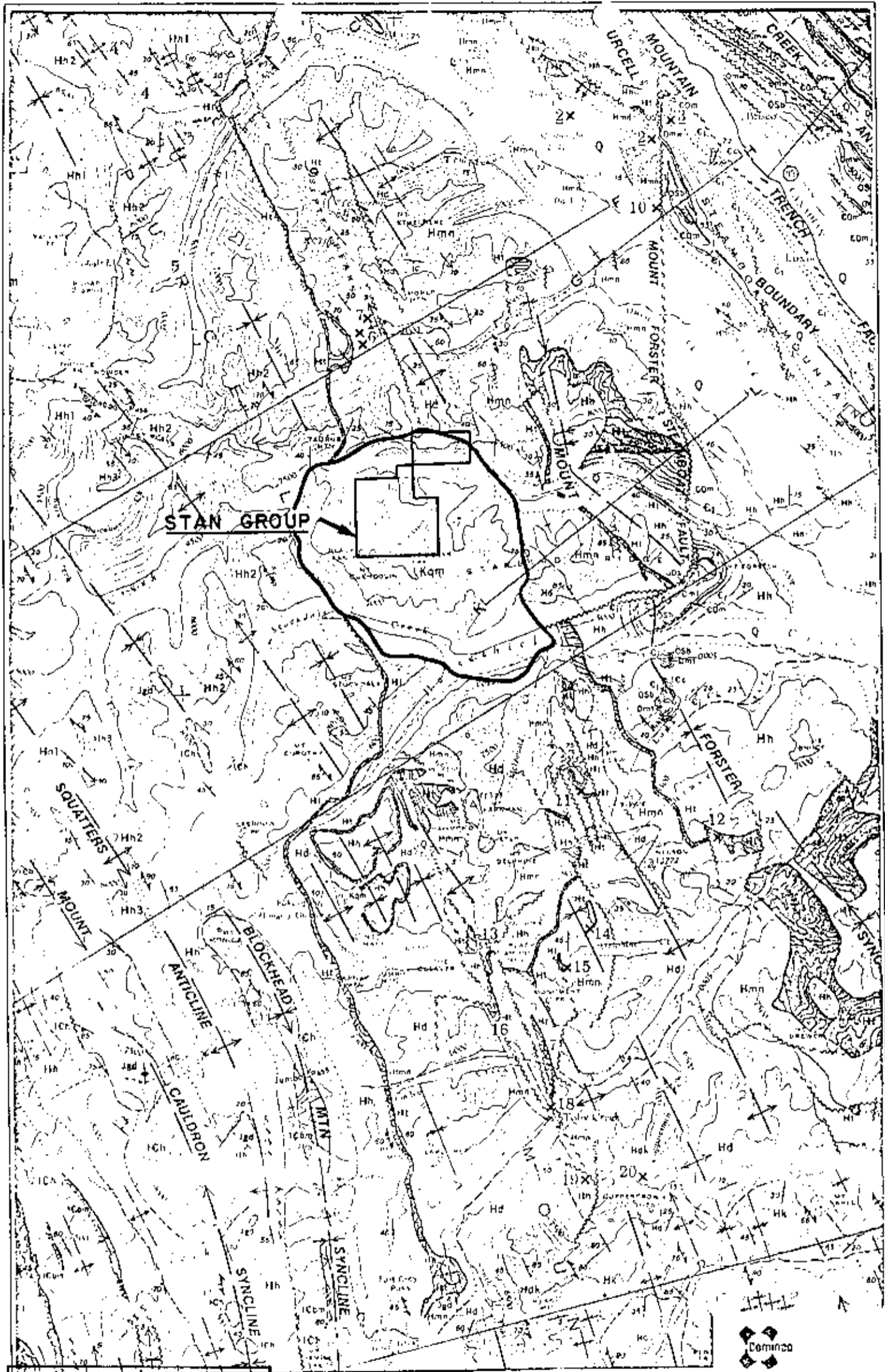
Geology by J.E. Reesor 1953-1956 and part of 1957

Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

LEGEND

ref. GSC Memoir 369, J.E. Reesor, 1973

Scale: _____ Date: _____ Plate: 3a



MINERAL RESOURCES BRANCH

ASSESSMENT REPORT

7048
NO.

REGIONAL GEOLOGY
STAN GROUP

Scale 1" = 4 miles

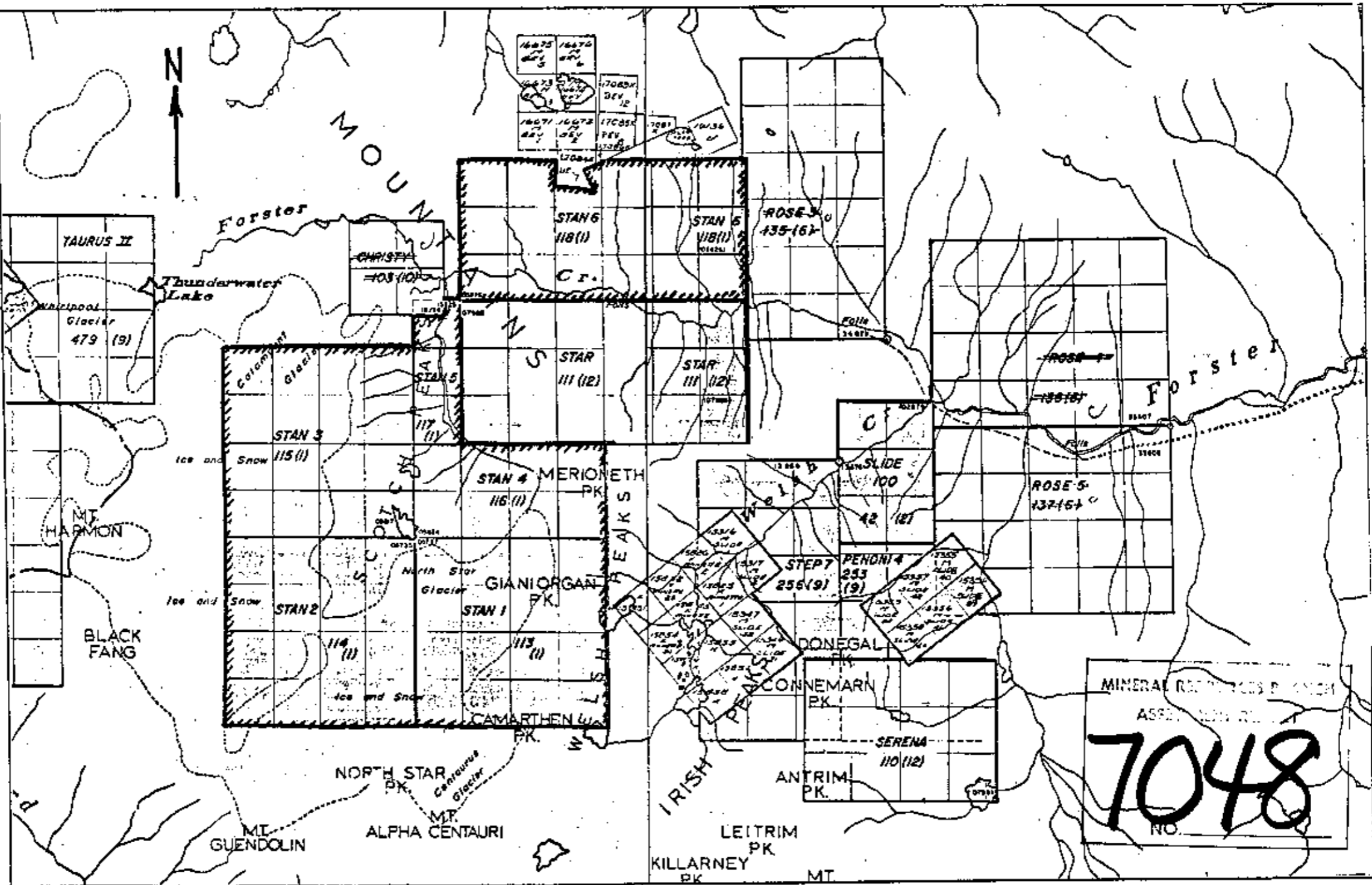
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Plate 3

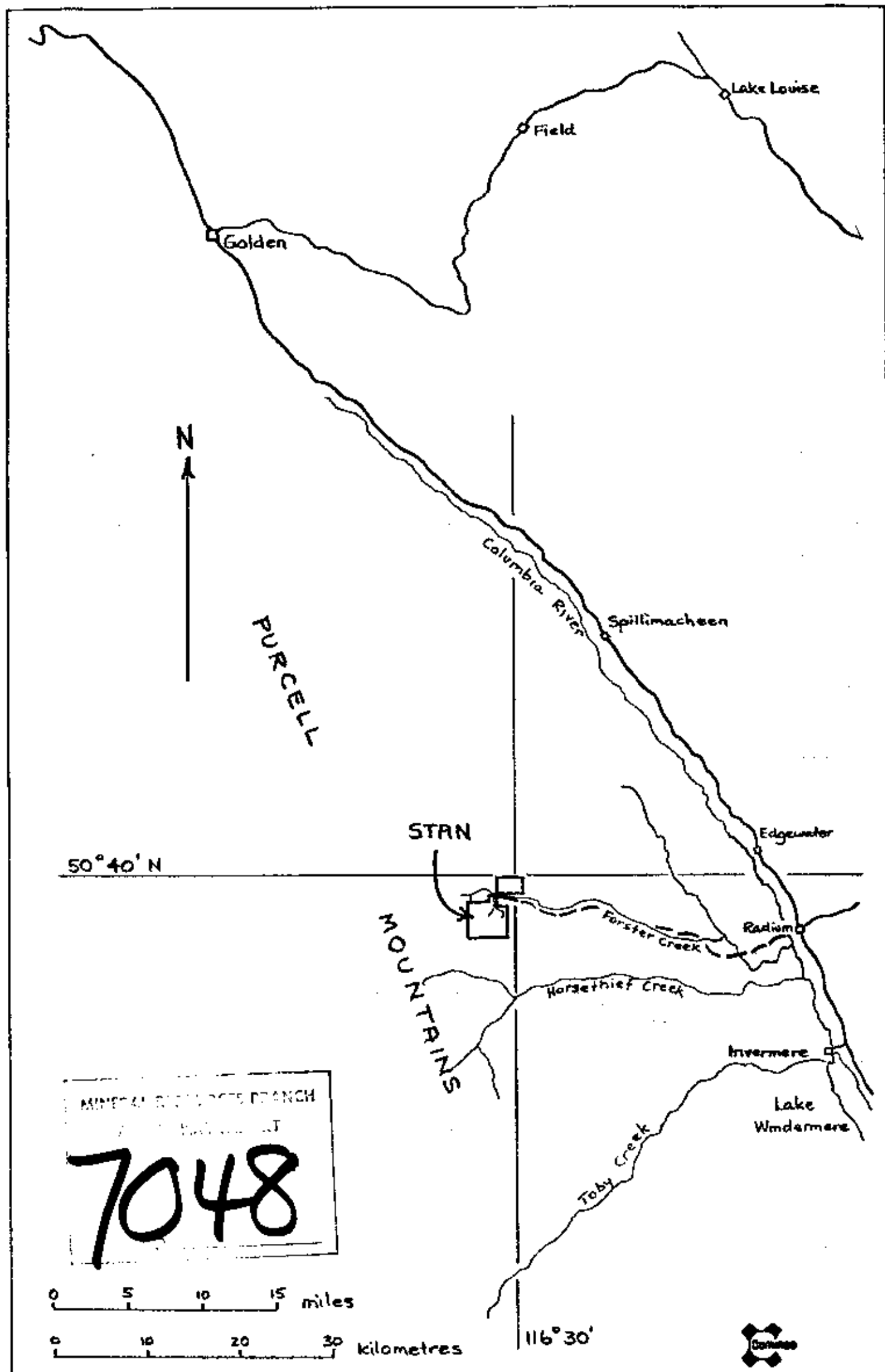
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Revised by:	Revised by:
DATE	DATE

Scale: 1:50,000
 Date: Dec 8, 1978
 Plate: 2

**STAN GROUP
 Claim Map**



MINERAL RESOURCES ACT
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7048
 NO.



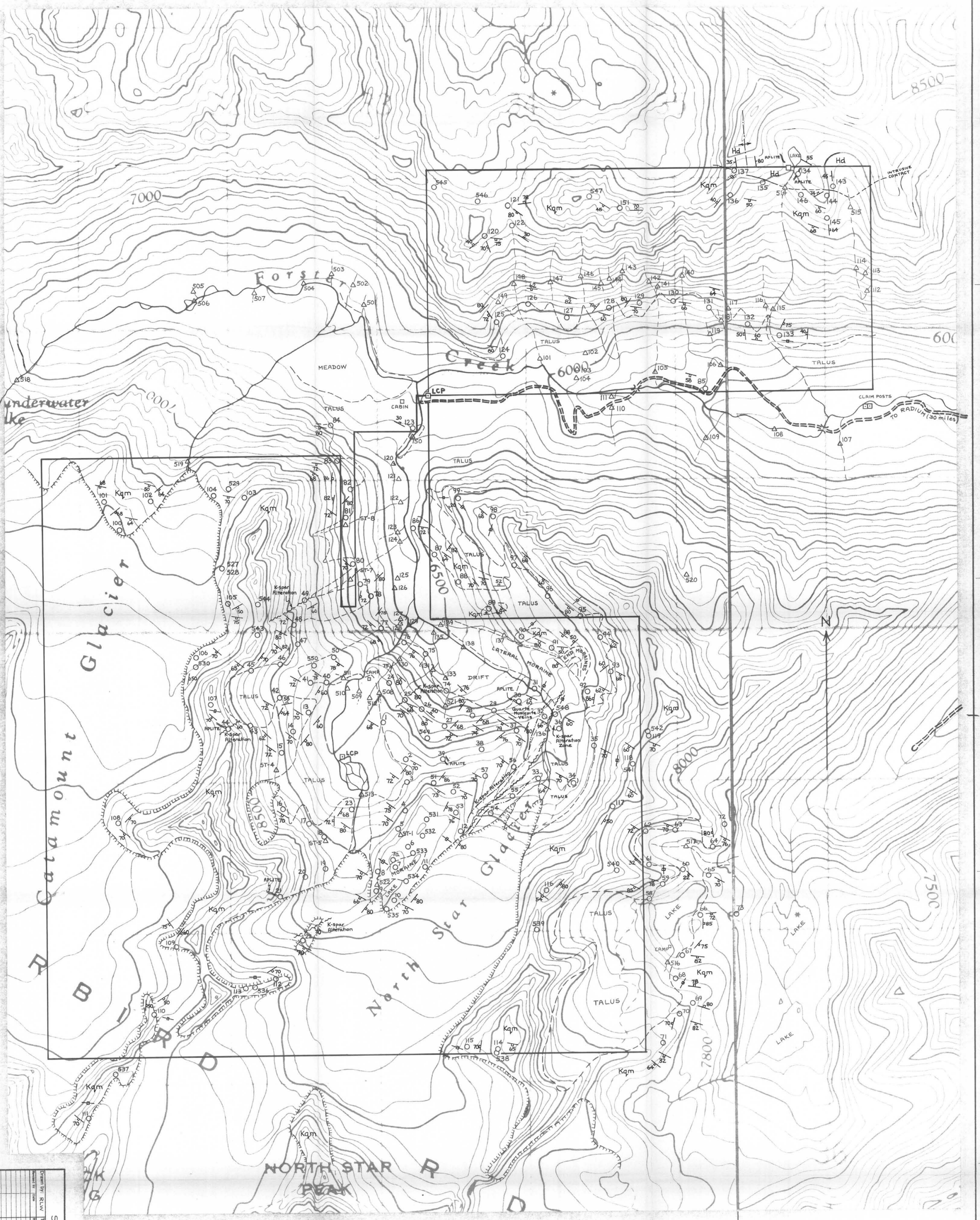
MINERAL SERVICES BRANCH
 7048

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Revised by	Date	Revised by	Date

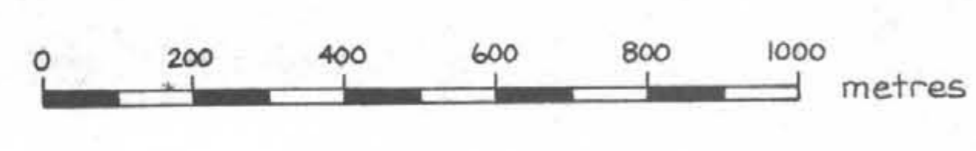
STAN PROPERTY
 Location Map

NTS 82K/10E, 9W Golden M.D.

Scale: 1:500,000 Date: Dec. 8, 1978 Plate: 1

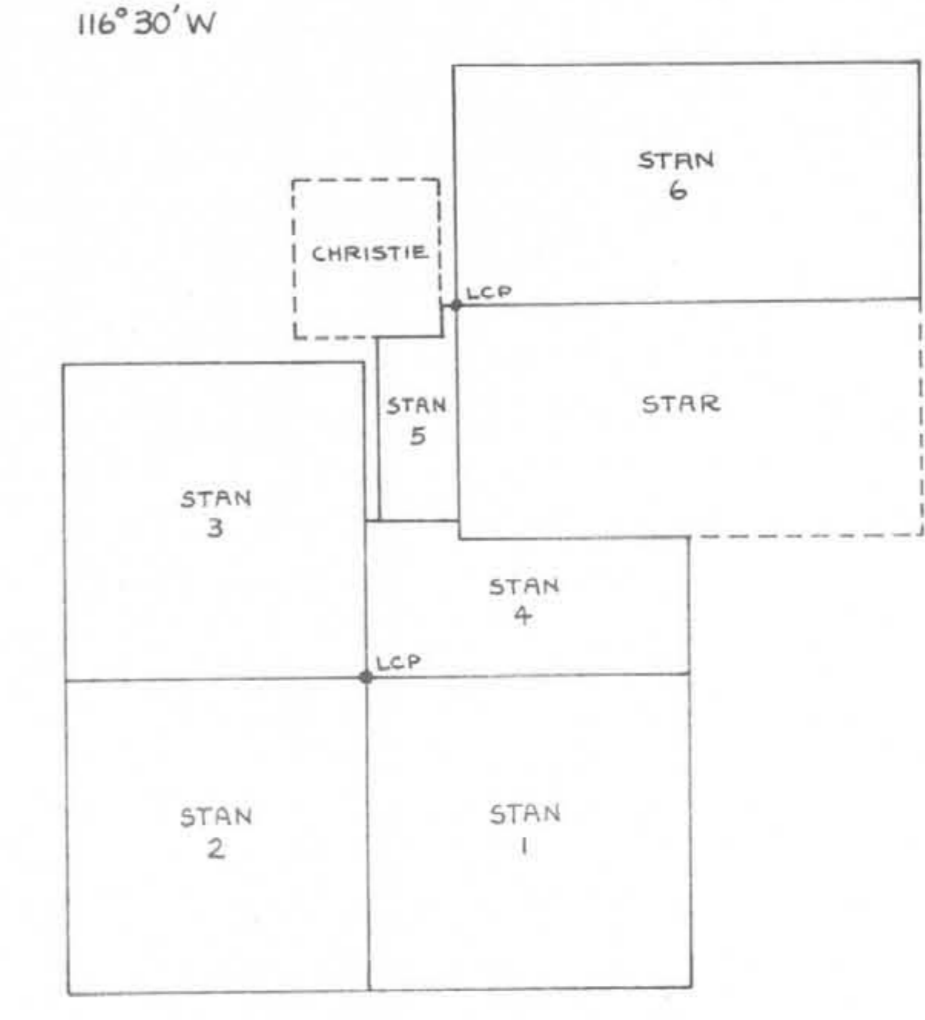


STAN PROPERTY
 GEOLGY
 R. L. Wright
 Golden, MD.
 824/06 #9W



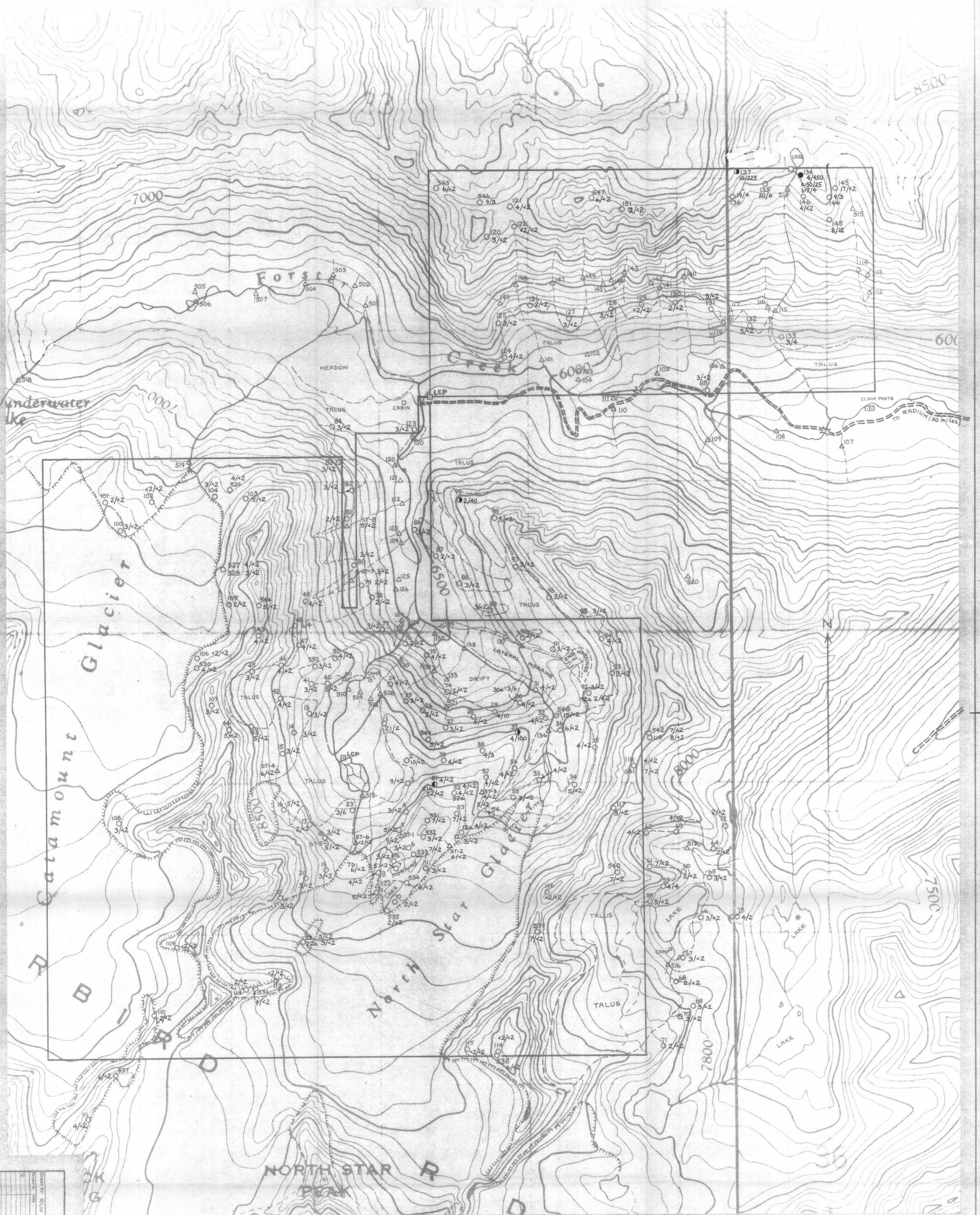
- 107 O ROCK SAMPLE LOCATION & FIELD NUMBER
- 107 Δ STREAM SILT LOCATION & FIELD NUMBER
- 74° / 40° JOINT ATTITUDE : inclined ; vertical
- 30° / 30° BEDDING ATTITUDE : inclined ; vertical
- FAULT ZONE ; with dip angle

- PLEISTOCENE, RECENT
 - Glacial Ice
 - Overburden : Drift, talus, moraines (as indicated)
- CRETACEOUS
 - Kqm Quartz Monzonite
- PROTEROZOIC (HELIKIAN)
 - Hd Dutch Creek Formation :
Predominantly grey argillaceous quartzite

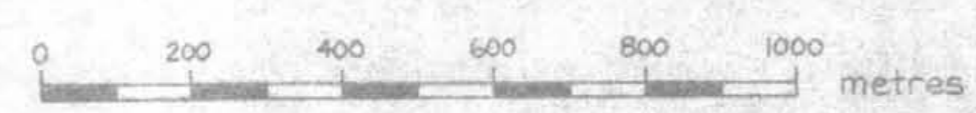


116° 30' W

Scale: 1:10,000
 Date: NOV. 10, 1978
 Page: 4

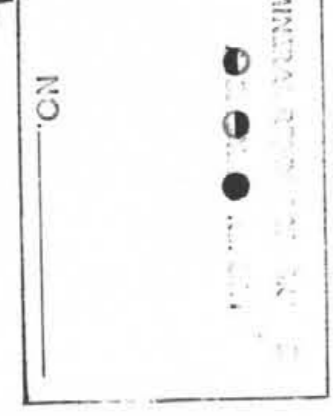


STAN PROPERTY
 Cu and Mo GEOCHEMISTRY
 R. L. Wright
 Golden, CO
 3270 FLEWELLAN

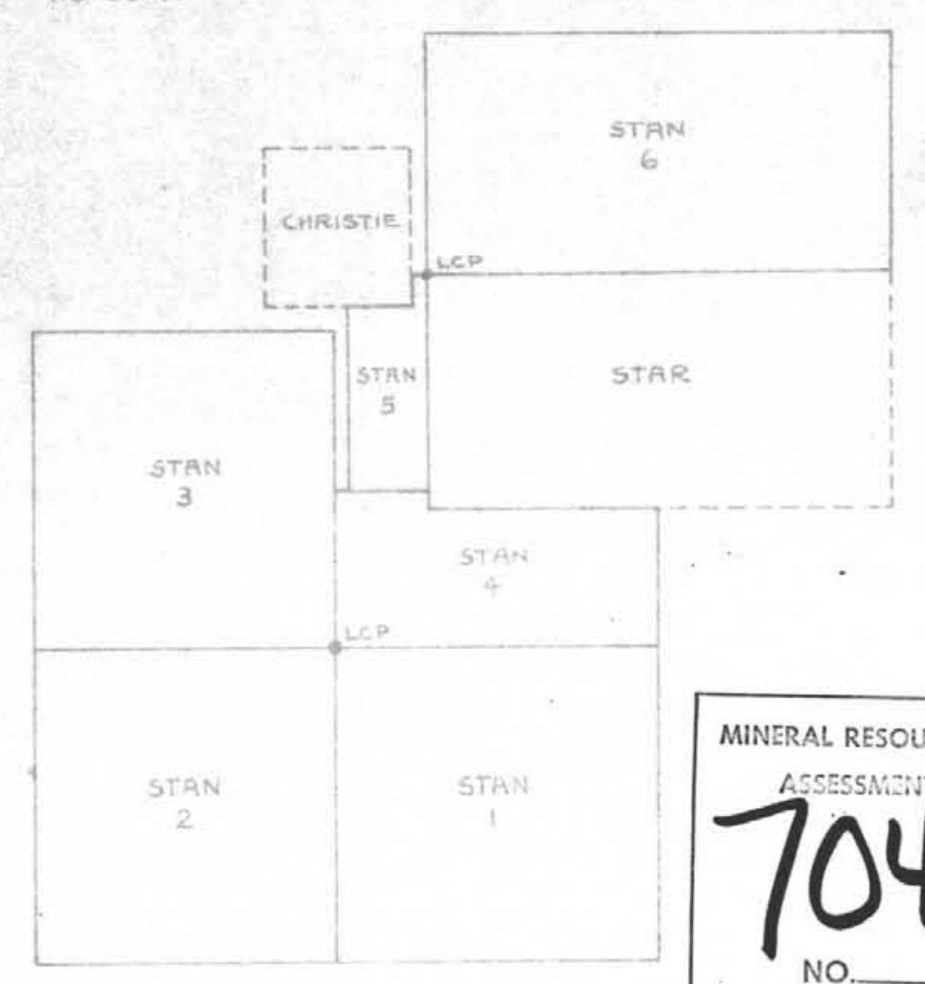


- 107 O ROCK SAMPLE LOCATION # FIELD NUMBER
- 107 Δ STREAM SILT LOCATION # FIELD NUMBER

O 12/7 Cu (ppm) / Mo (ppm)



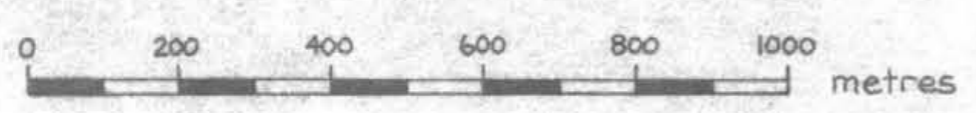
116° 30' W



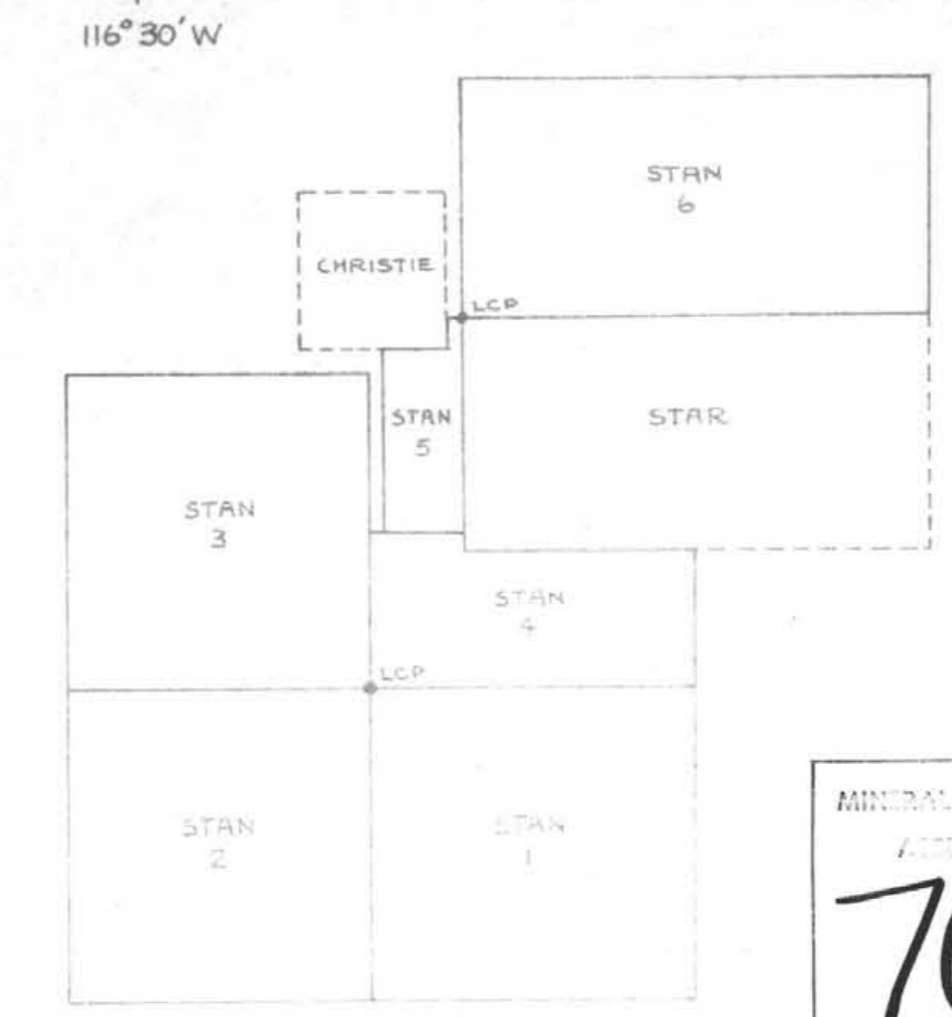
MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
7048
 NO.



STAN PROPERTY
 R.L. Wright
 Golden, M.D.
 B2 K1/0E #3W

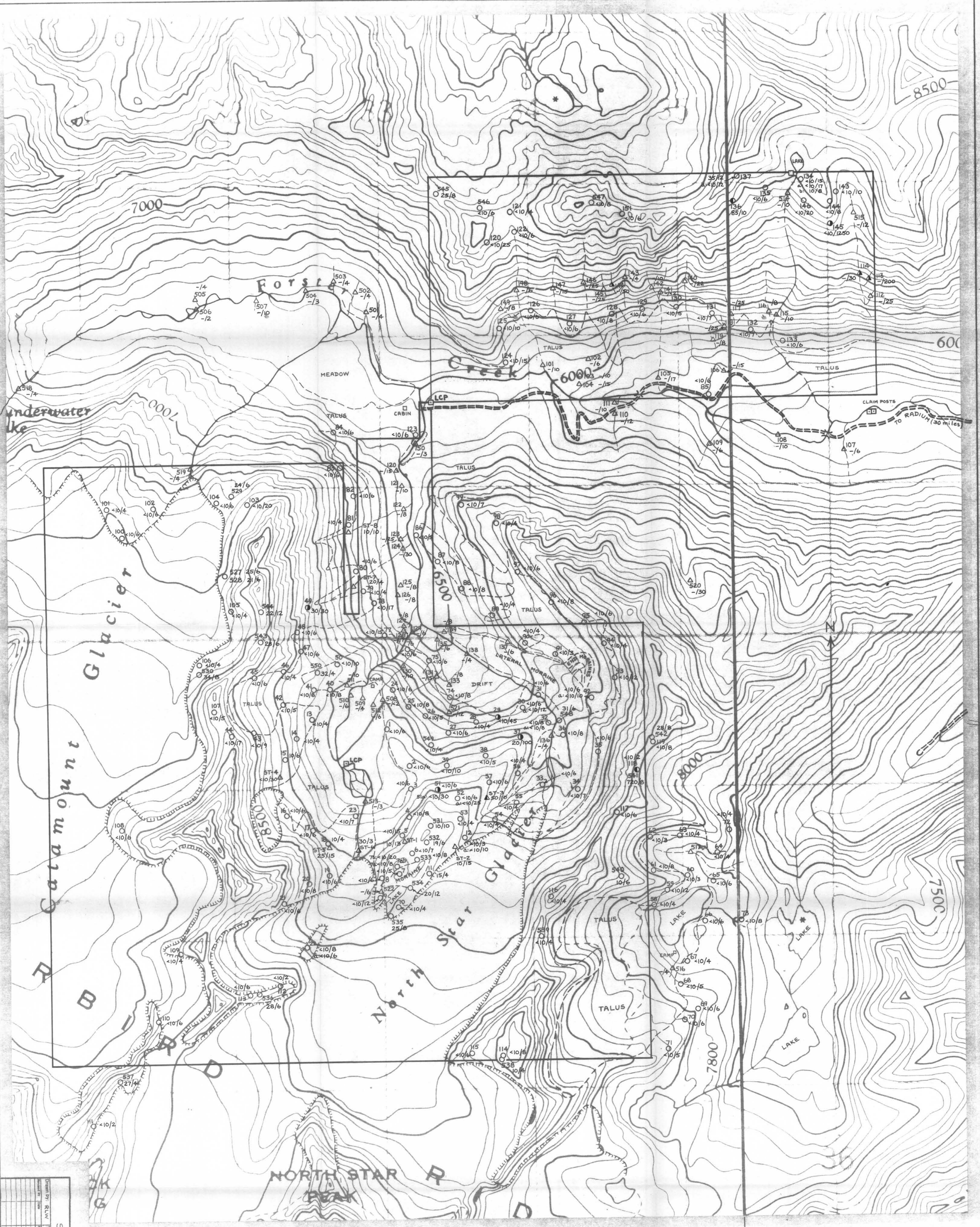


- 107O ROCK SAMPLE LOCATION & FIELD NUMBER
 - 107A STREAM SILT LOCATION & FIELD NUMBER
- 07/22/2.0 Pb(ppm) / Zn(ppm) / Ag(ppm)
- Anomalous Lead value (Threshold 30 ppm)
 - Anomalous Zinc value (Threshold 40 ppm)
 - Anomalous Silver value (Threshold 1.0 ppm)
 - Anomalous Lead and Zinc and/or Silver values

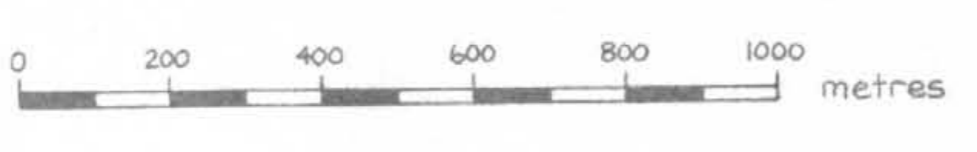


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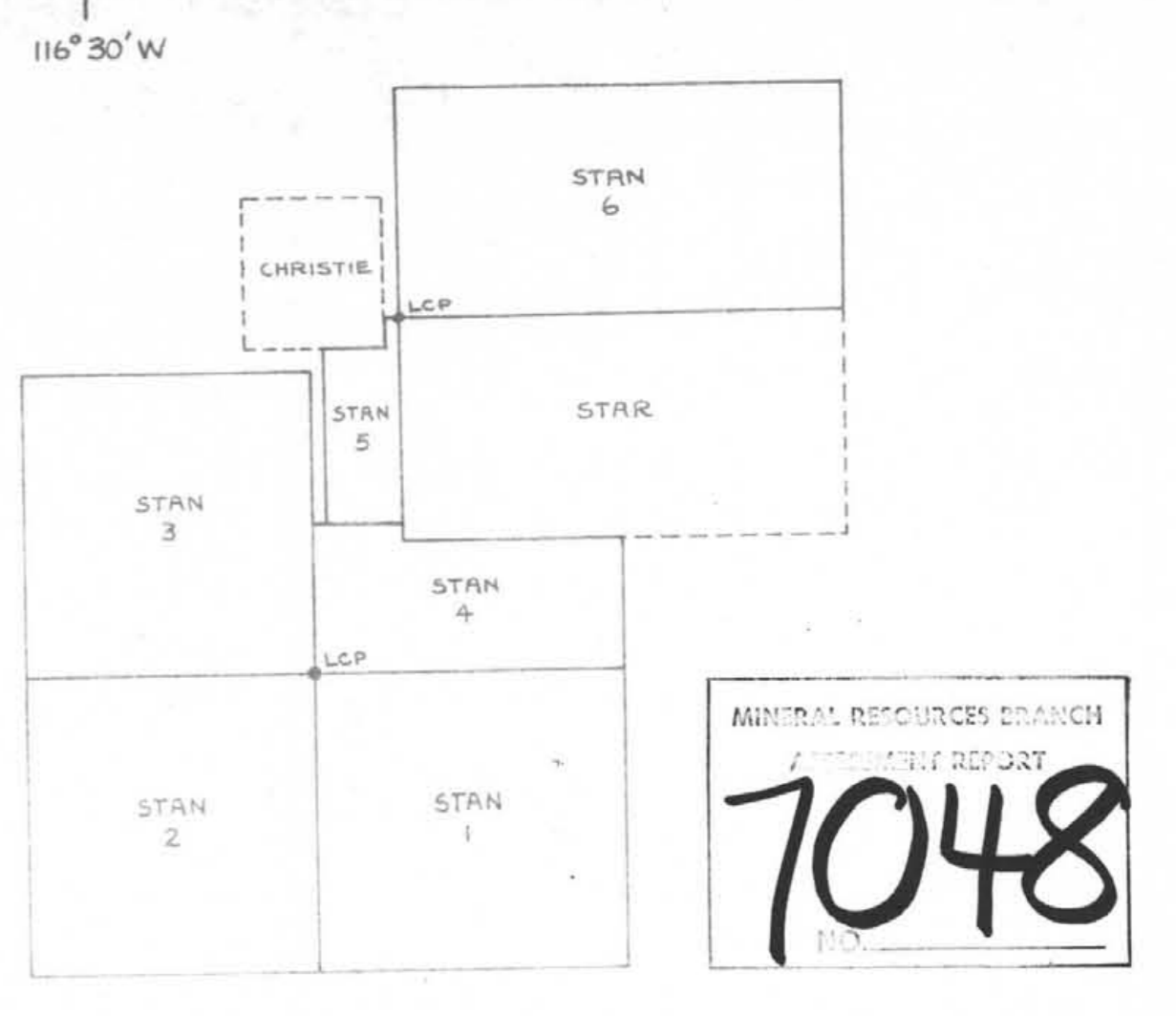
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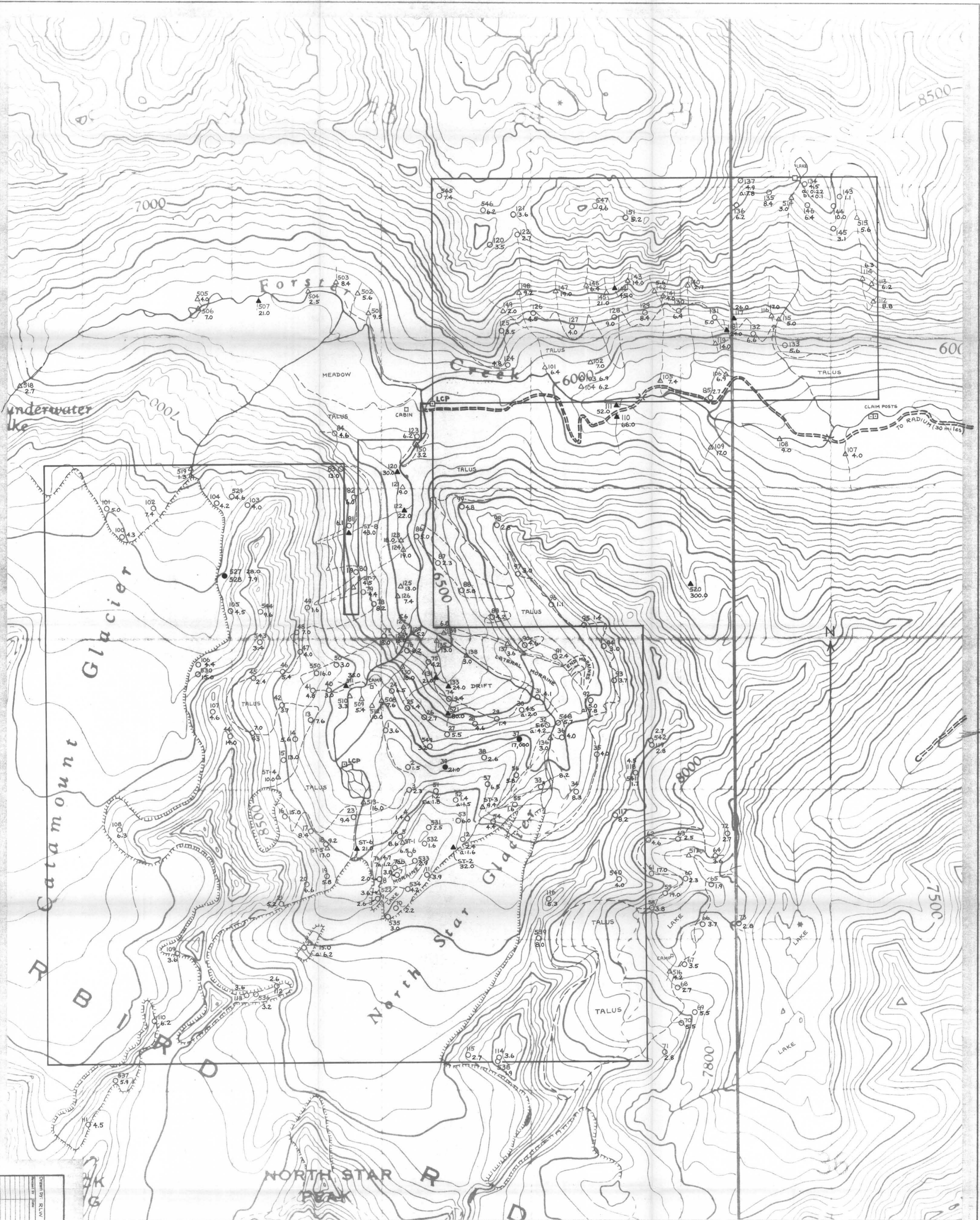
STAN PROPERTY
 R. L. Wright
 Sn and W GEOCHEMISTRY
 Scale: 1:10,000
 Date: NOV. 10, 1978
 Sheet: 7



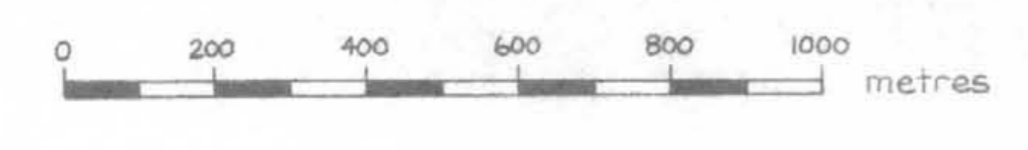
- 107 O ROCK SAMPLE LOCATION & FIELD NUMBER
- 107 Δ STREAM SILT LOCATION & FIELD NUMBER
- O <10/12 Sn (ppm) / W (ppm)
- Anomalous Tin value (Threshold 35 ppm.)
- Anomalous Tungsten value (Threshold 30 ppm.)
- Anomalous Tin and Tungsten values



MINERAL RESOURCES BRANCH
 REPORT NO. 7048

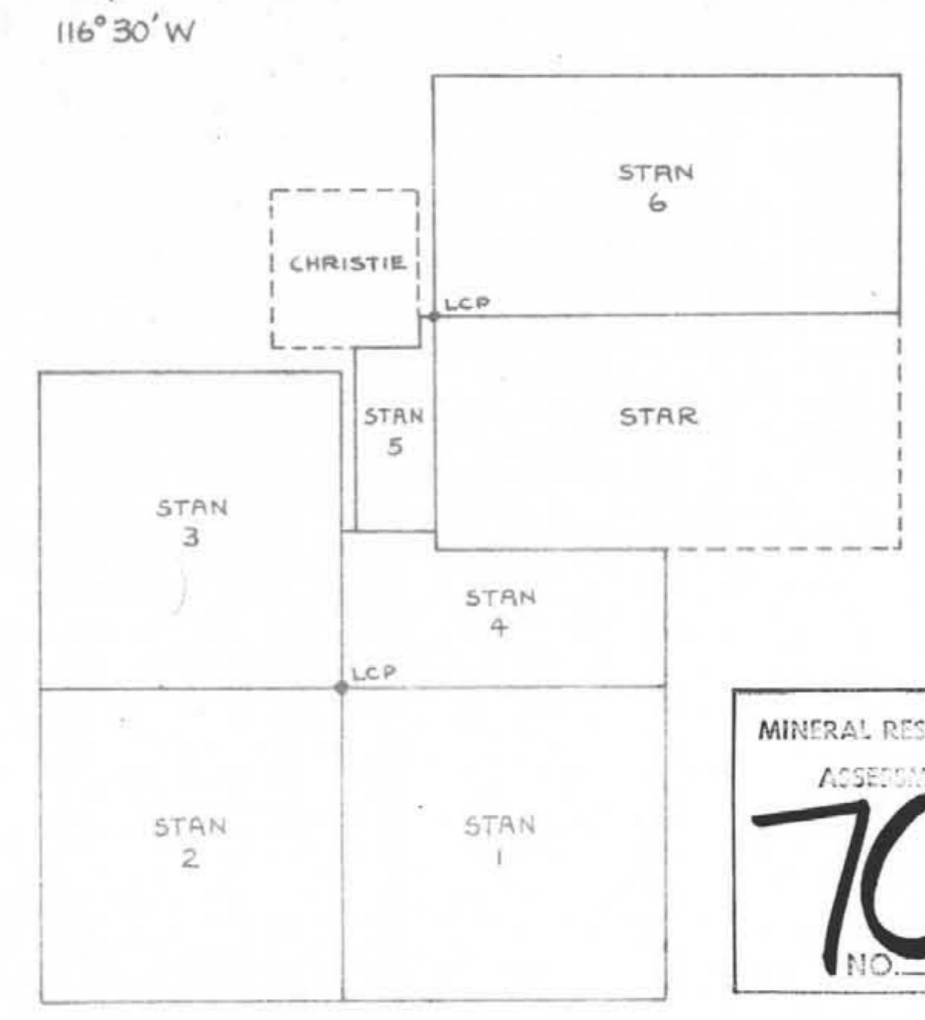


STAN PROPERTY
 U GEOCHEMISTRY
 R.L. Wright
 Golden, M.D.
 82 K/OE # 9W



- 107 ROCK SAMPLE LOCATION & FIELD NUMBER
- △ 107 STREAM SILT LOCATION & FIELD NUMBER
- 12.0 U (ppm)
- Anomalous Uranium value (Threshold 20 ppm)

8405



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
7048
 NO.