

2386

GEOPHYSICAL REPORT ON THE
ATHENA MINES LTD. (NPL) PROPERTY
STEWART, BRITISH COLUMBIA
SKEENA MINING DIVISION

BY

R. E. Renshaw, P. Eng.

October, 1969

55°-57' N Lat.
129°-57' W Long.

R. E. RENSHAW, P.ENG.
CONSULTING GEOLOGIST

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**Department of
Mines and Petroleum Resources**

ASSESSMENT REPORT

NO. **2386** MAP

R. E. RENSHAW P. ENG.
GEOLOGICAL ENGINEER
MINING GEOLOGIST

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ATHENA MINES LTD. (NPL) PROPERTY
STEWART, BRITISH COLUMBIA
SKEENA MINING DIVISION

INTRODUCTION

The Directors of Athena Mines Ltd. (NPL) wished to do some exploration work on their Gold Cliff property at Stewart, B. C. before adverse weather conditions prevailed.

It was decided that the best way to do this was by geophysical methods. Accordingly, Waterton Airex Ltd. were employed to make an airborne geophysical survey. This was completed on October 11th, 1969.

The survey measured radioactivity, electro-magnetic, and magnetometer effects.

The area covered was 11,000 feet long and 8,500 feet wide. Thirty-five runs were made each spaced 250 feet apart. Readings were taken at every 250 feet and as far as possible 500 feet above the ground elevation.

LOCATION MAP
ATHENA MINES LTD. (NPL)

Skeena Mining Division
TO ACCOMPANY REPORT BY R.E. RENSHAW, P. ENG.
R.E. Renshaw
October, 1969

GOLD CLIFF GROUP
ATHENA MINES LTD. (NPL)

BRITISH COLUMBIA
MAIN HIGHWAYS, CITIES & TOWNS

Scale
0 10 20 30 40 50 60 70 80 Miles

This property lies about 3/4 mile north of the mining town of Stewart on the west side of Bear River and extends to the International Boundary line between Alaska and British Columbia.

Geographically the central portion of the claims is located at 55°-57' North Latitude and 129°-57' West longitude.

TOPOGRAPHY

Elevations on the claims range from about 200 feet at Bear River to about 5,500 feet on the eastern slopes of Mount Dolly. The terrain slopes fairly steeply to the east and inclinations of 35 degrees are common. In spite of the slope most of the area is covered by a thin mantle of glacial debris which increases in thickness towards Bear River, which is the main drainage of the area.

CLAIMS

The property of Athena Mines Ltd. (NPL) consists of 12 Crown Granted Mineral claims containing 523.6 acres. These are held by Mineral Leases Numbers 215 and 216.

Mineral Lease 215

Gold Fraction	Lot 4996	
Gold Cliff #1	4989	
Gold Cliff #1 Fr.	4997	
Gold Cliff #2 Fr.	4990	Total Acres M 215 = <u>397.21</u>
Gold Cliff #2	4987	
Gold Cliff #3 Fr.	3265	
Gold Cliff #4	4988	
Gold Cliff #5	4992	
Gold Cliff #6	3268	

CLAIMS CONT'D.

Mineral Lease 215			397.21 Acres
<u>Mineral Lease 216</u>			
Jerry Dog	Lot 4986		
Barney	4994	M. 216	126.46 Acres
Tom	4993		
		TOTAL -----	523.67 Acres

Some open ground lies to the north of the claim group and should be staked to protect the northern extension of the vein systems.

GEOLOGY

The northern section of the claims are underlain by volcanic and sedimentary formations of Jurassic and/or Triassic age which have been intruded by granitic rocks of the Coast Range batholith of Jura-Cretaceous age.

North-south faulting along the valley of the Bear River and associated north-east and north-west faulting and shearing are part of the ore controls in the area.

Veins on the Gold Cliff group extend from the granite and into the volcanics and sediments. The width of the veins seem dependant upon the rock type intruded. Similarly the mineral content seems related to the rock type.

The probably geological history of the claim area is as shown on the following page.

RECENT AND PLEISTOCENE

Recent alluvium and glacial drift

MESOZOICJURA-CRETACEOUS

Mineralization

Faulting

Coast Range Intrusives

mostly granodiorite, quartz diorite

JURASSICBear River Formation

tuff, breccia, greenstone, argillite

JURASSIC and/or TRIASSICBitter Creek Formation

argillite, quartzite, limestone,
tuff, and lava.

Alteration in the Coast Range Intrusives consists of the development of pink feldspars, chlorite, and some epidote. In the vicinity of shears or faults kaolin and sericite may be prominent.

Alteration in both the Bear River and Bitter Creek formations consists of chloritization, silicification particularly in the limestone up to the point where it is difficult to recognize it as an original limestone: and the development of garnet, and wollastonite approaching a skarn.

PROCEDURE

A flight grid was laid out 11,000 feet long and 8,500 feet wide. Thirty-five runs were made each spaced 250 feet apart. Readings were taken every 250 feet and as far as possible 500 feet above the ground elevation.

1. EQUIPMENTA. Aircraft

The aircraft used was a Piper 235 Cherokee which has been modified for geophysical use.

B. Radioactivity

Radioactive effects were measured by a 24 tube Nuclio-meter Model DR-299

C. Electromagnetic

A 200 feet long copper coil mounted on the bottom of the aircrafts transmits a field of 1,000 cycles per second. A towed bird with a receiving coil at 90 degrees angle to the transmitting coil receives the signals which are taped automatically.

This method has been approved by the Geological Survey of Canada, Technical Surveys Branch and also by the University of British Columbia, Department of Geophysics.

D. Magnetometer

A PMF-3 fluxgate magnetometer which has been modified for airborne use measured the magnetic effects. This instrument has also been approved by the previous cited agencies.

RESULTS

1. Radioactivity

Readings of radioactivity measured in MR/HR have been recorded and those showing radioactivity higher than .001 MR/HR have been shown as anomalous. Along flight line No. 5 there is a zone showing fairly consistent radioactivity paralleled by a similar zone along line No. 7.

These can be related to a series of north-south shears and fractures showing stratigraphic and structural incompetence reflected by the major north-south fault along Bear River. This appears to co-incide with some of the strikes of joints and shears recorded by the author on a previous visit and examination of the property. It does not appear to have any genetic connection with the granite contact. Isolated and sporadic radioactive highs are present and common in the granitic intrusion to the south; others can be attributed to tension cross fractures off the secondary breaks within the sedimentary and volcanic assemblage.

2. Magnetic

The aeromagnetic survey has outlined areas of positive highs and negative lows. On the Tom and Gold Cliff 2 a magnetic low some 2,000 feet long, trending

N 25° E, and up to 600 feet wide truncates the regional shearing.

On the Gold Cliff No. 5 and Gold Cliff 2 and 3 Fractions a magnetic high is present in a "T" shape. The bar of the "T" parallels in part the contact of the granites and the sedimentary-volcanic contact. The stem of the "T" has a northwesterly trend which agrees with northwesterly faulting also present in the area.

3. Electromagnetic

- A. The magnetic low as mentioned previously has a distinct EM anomaly passing through, truncating the long axis and trending northeasterly.
- B. The magnetic high in both parts of the "T" have EM anomalies in a northeast and northwest direction. This can be attributed to structural breaks and geological contacts

On line 18 where the showings on Gold Cliff No. 4 are located, is a northern extension of the magnetic high and the electromagnetic anomaly.

- C. There is a north-south trending EM anomaly which co-incides with the radioactivity high.
- D. There is a northeast and also a northwest trend to the EM anomalies.

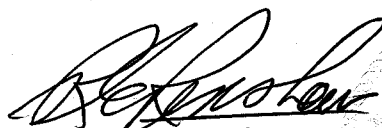
SUMMARY AND CONCLUSIONS

- 1. The results of the combined geophysical surveys show there is a prominent north-south trend which is related to the major regional faulting along the Bear River.

2. The northeast trend is related to shearing and faulting associated with the contact between the Coast Range Intrusives and the sedimentary and volcanic rocks of the Bear River formation.
3. The northwest trend of the anomalies which extends from the granites into the sediments is related to the known direction of faulting, shearing and emplacement of mineralized quartz veins.
4. The above interpretation is based upon a study of the geophysical maps plus field observations of the geology.

RECOMMENDATIONS

1. Ground based geophysical surveys should be used to pinpoint the location of the major zones indicated.
2. Stripping, blasting, and sampling as recommended in my previous reports and letters should be done.



R. E. Renshaw, P. Eng.
Consulting Geologist
Vancouver, B. C.



R. E. RENSHAW P.ENG.
GEOLOGICAL ENGINEER
MINING GEOLOGIST

CERTIFICATE OF QUALIFICATION - ATHENA MINES LTD.

I, Rodney E. Renshaw, hereby certify that:

1. I reside at and maintain an office at #64-845 Hornby St., Vancouver, British Columbia.
2. I am a graduate of the University of British Columbia and hold the degree of Bachelor of Applied Science in Geological Engineering.

I have also taken two years post graduate studies in geology and geophysics.
3. I am a Registered Professional Engineer of the Province of British Columbia and hold Certificate #2135.
4. I have been practising my profession as a Consulting Geologist during the past 23 years.
5. This report is based upon my personal examination of the Athena Mines Ltd. (NPL) Gold Cliff property plus the interpretation of the geophysical data supplied by Waterton Airex Surveys Ltd.
6. I have no interest, direct or indirect in the claims or shares of the Company, nor do I expect to receive any.



R. E. Renshaw, P. Eng.
Consulting Geologist
Vancouver, B.C.
October, 1969

35 RUNS - 11000' LONG

44 A1 READINGS PER RUN - 1 MIN. 6 SEC.

RUNS, 250' APART. RECORDED READINGS, 250' APART. ALT. 500' ABOVE GROUND.

FILM - 30-70-25

MAG. VAR. 28°

GUIDE MAP USED FOR

AIRBORNE GEOPHYSICAL RECONNAISSANCE

OCT. 11/69 WATERTON AIREX LTD.

AIRBORNE GEOPHYSICS

PAT. NO. 756939 CANADA (1967)

Charles Stewart pers.

HON. CHARLES STEW



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LEGEND

RECENT AND PLEISTOCENE

Recent alluvium and glacial drift

EARLY CRETACEOUS OR LATE JURASSIC

6 Quartz porphyry and quartz diorite dykes (the broad zone is of closely spaced dykes)

5 COAST RANGE INTRUSIVES (mainly granodiorite)

JURASSIC

4 Augite porphyrite, augite syenite, gabbro

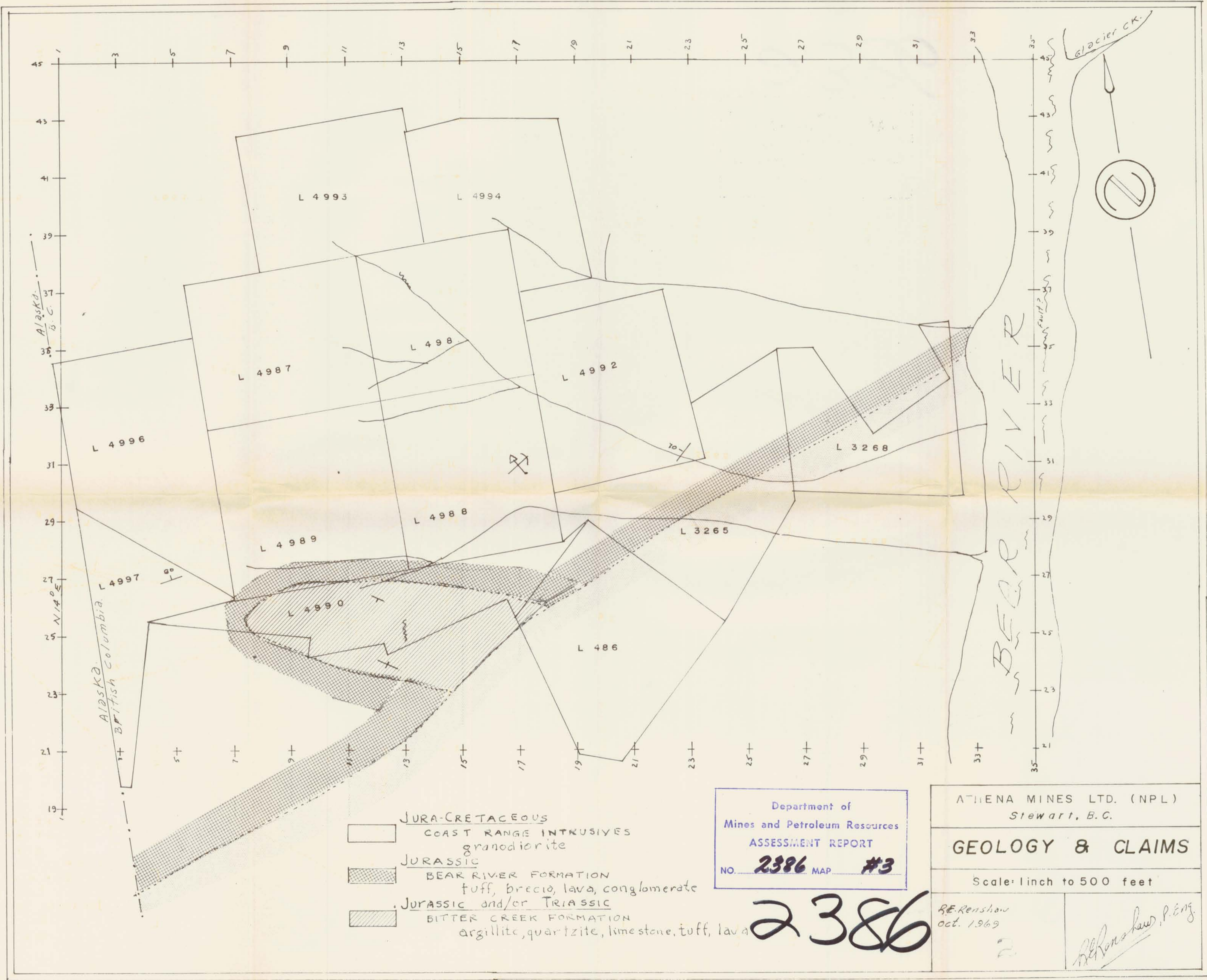
2 BEAR RIVER FORMATION (tuff, breccia, lava, argillite)

JURASSIC (and, or) TRIASSIC

1 BITTER CREEK FORMATION (argillite, quartzite, limestone, tuff, lava)

Refer to plan Oct '69

MESOZOIC



- JURA-CRETACEOUS
- COAST RANGE INTRUSIVES
granodiorite
- JURASSIC
- BEAR RIVER FORMATION
tuff, breccia, lava, conglomerate
- JURASSIC and/or TRIASSIC
- BITTER CREEK FORMATION
argillite, quartzite, limestone, tuff, lava

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ATHENA MINES LTD. (NPL)
Stewart, B.C.

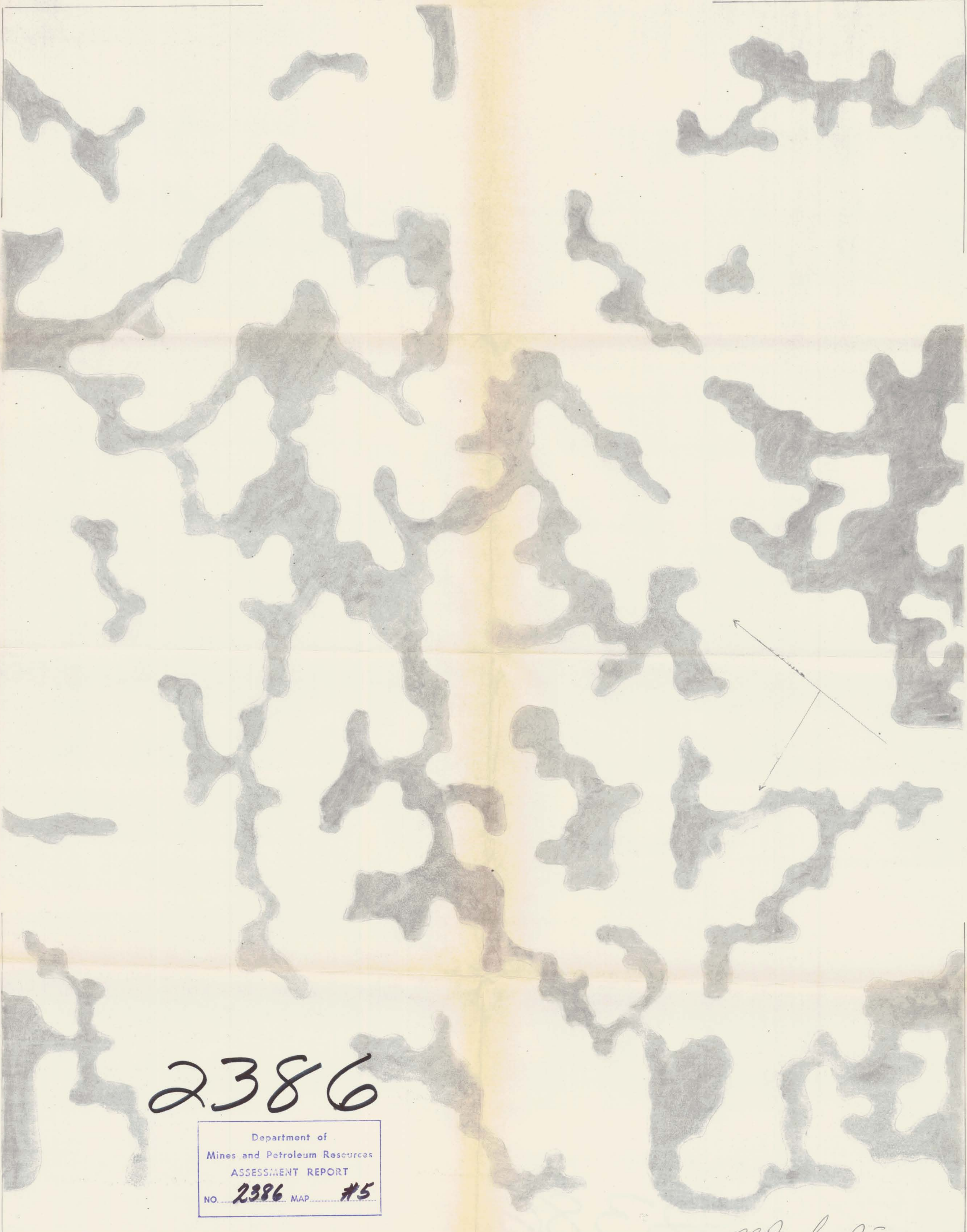
GEOLOGY & CLAIMS

Scale: 1 inch to 500 feet

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AREA OF ELECTROMAGNETIC ACTION

4
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Consulting Geologist
October, 1969



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3 R. Renshaw, P. Eng
Consulting Geologist
October 1969

● = .001 Mm/ha Radioactivity = MAC-NEGATIVE = MAC-POSITIVE "HIGH"

