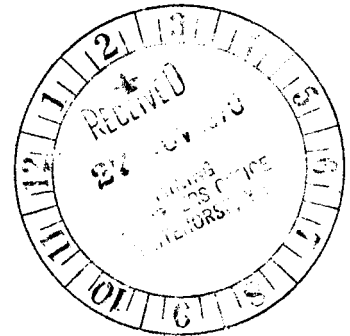


GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

JOHNNY - CASH GROUP

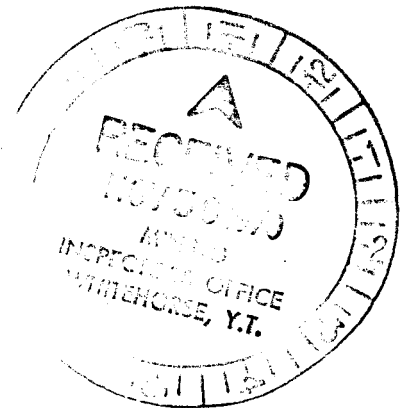
Big Creek Area
Yukon Territory



Longitude: 137°37'W

Latitude : 62°25'N

CLAIM SHEET 115-I-5



Work done in the period
July 6 - July 15, 1970

By:

WAYNE J. ROBERTS

and

DRAGAN BRABEC

This report has been examined by the Geological Evaluation Unit and is recommended to the Commission to be considered as a report of the amount of

\$2,447.42

ATLAS EXPLORATIONS LIMITED

October 30, 1970

work done under Section 63 of the Yukon Quartz Mining Act.

Commissioner of Yukon Territory

LIST OF CLAIMS

<u>Claim Number</u>	<u>Grant Number</u>	<u>Recording Date</u>
CASH 1-48	Y39873 - Y39920	November 13, 1969
JOHNNY 49-88	Y44922 - Y44961	December 18, 1969



4162

MT. PITT
5271

PROSPECTOR
MTN
6482

Johnny-Cash
Group

KLAZA
MTN
6362

TRITOP PK
6079

FREEGOLD
MTN
4772

KEY MAP

Johnny-Cash Group

Scale: 1" = 4 miles

VICTORIA
MTN
6136

MT. HANSEN

Mines

(abandoned)

ATLAS EXPLORATIONS LIMITED

(N.P.L.)

330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

JOHNNY - CASH GROUP

INTRODUCTION

The Cash Group of 48 claims was staked in the late fall of 1969 to cover heavy metal anomalies discovered in Big Creek and on of its tributaries by Coranex Limited during their 1967 field season. The Cash Group was optioned by Atlas and the Johnny (49-88) claims were staked for additional coverage of limonitic stained outcrops on the western bank of Big Creek. During July, 1970, the Johnny - Cash Group was mapped geologically and all drainages were silt sampled.

LOCATION AND ACCESS

The Johnny - Cash Group is located in the southeastern portion of the Dawson Range, approximately 50 miles northwest of the town of Carmacks and 6 miles southeast of Prospector Mountain. It is centered at Longitude $137^{\circ} 37'$ West and Latitude $62^{\circ} 25'$ North. The location of the claim group is shown on the Key Map.

Access to the Johnny - Cash Group is by helicopter in the summer and by a tote road from Revenue Creek on the Freegold

Mountain road, during the winter months. The Klazan airstrip located 5 miles to the southeast on Burgis Creek may accomodate smaller fixed wing aircraft.

REGIONAL GEOLOGY

The Johnny - Cash Group is located in an area of rather complex intrusive activity in the southeastern portion of the Dawson Range. The claim group covers the contact of a northwest - southeast trending elongate batholith of probable Jurassic age with Precambrian, Yukon Group Metasediments. The batholith, composed of porphyritic hornblende syenite, is terminated on the northeastern side by Big Creek, a major linear. Major lineations and foliations within the batholith trend in a northwest - southeast direction. A coarse grained granite, intrusive into the syenite, occurs along the southwestern contact and an arm of this granite occurs along the southwest border of the claim group.

GEOCHEMICAL SURVEY

a) Sampling Techniques

The Geochemical Survey involved a detailed sampling of active sediments (silts) from all streams within the claim group area. Samples were taken above each stream confluence and at 1000 foot intervals along major streams. Material of silt to sand size, collected in Kraft paper bags, was received by the Atlas Explorations Laboratory in Whitehorse for analysis.

Stream channels in a few areas did not contain sediment suitable for sampling, and in such cases samples were taken from the B-horizon of soils on adjoining slopes.

A total of 89 samples were collected and analyzed for four elements.

b) Analytical Methods

After drying, all silt and soil samples were sieved to -80 mesh and the fines retained for analysis. 0.5 grams of each sample was digested with aqua regia, diluted and allowed to settle. The concentrations of Cu, Pb and Zn in the solutions were determined with a Perkin-Elmer 303 AA spectrophotometer. Mo content was determined colorimetrically by the thiocyanate-stannous chloride method using iso-propyl ether for extraction of the Mo complex.

Performance of the analytical techniques was continually controlled by including a soil sample selected as standard with every 20 samples to be analyzed. Analytical precision calculated from the replicate analyses was generally better than $\pm 30\%$ copper and zinc, and $\pm 50\%$ for lead and molybdenum. A relatively lower precision for lead is due to considerable noise encountered in AA determinations of this metal. Mo precision was considerably reduced by the fact that most samples contain Mo in concentrations close to the lower detection limit of the method used, and in many cases to interferences from organic matter.

Lower detection limit for all four elements sought was 2 ppm.

c) Presentation of Data

All analytical results are plotted on a 1000-foot to the inch map accompanying this report.

INTERPRETATION OF RESULTS

a) Copper

Concentrations of copper in the samples analyzed vary from 4 to 167 ppm. However, only 4 values exceed 100 ppm, while most are lower than 30 ppm. The latter value may be taken as a tentative threshold for copper in the stream sediments of the area investigated. Relatively low copper background is probably caused by the abundance of syenite on the property.

Two copper highs occur in a soil overlying an area of limonite-stained quartzite and diorite in the valley of Big Creek. Copper enrichment in these soils is not reflected in the silts of Big Creek sampled downstream from this anomaly.

Another copper anomaly was found in soil near a pyritic gossan in the northwest part of the property.

The only silt anomalous in copper occurs in a south tributary of Big Creek in the middle of the claim group.

INTERPRETATION OF RESULTS (cont'd)

b) Lead

Lead values, ranging from 3-800 ppm, are mostly lower than 30 ppm and concentrations above that level can probably be considered as anomalous. Copper-high soils in the gossan areas are also high in lead. An exceptionally high value (800 ppm) was found in the soil of the gossan area in the northwest part of the property. A tributary which joins Big Creek near the gossan is slightly anomalous in lead for some 2000 feet upstream. The silt sample high in copper is also slightly anomalous in lead.

c) Zinc

Zinc values vary from 21 to 420 ppm, most values being lower than 100 ppm. Higher values are grouped with copper and lead highs, mostly in soils of gossan zones and in several stream sediments at the northwest corner of the property.

d) Molybdenum

Molybdenum values are mostly within the range 1-4 ppm with exception of one peak at 20 ppm in a gossan soil.

TABLE OF GEOLOGIC FORMATIONS

Tertiary	13	-	Aphanitic light tan brown to grey rhyolite porphyry to felsite.
	10	-	Medium to coarse grained tan to creamy granite.
	9c	-	Medium grained hypidiomorphic quartz monzonite.
Mesozoic - Jurassic and Later	9b	-	Medium to coarse grained black massive amphibolite.
	9a	-	Coarse grained porphyritic hornblende syenite, often gneissoid.
	8	-	Medium grained hornblende diorite.
	7	-	Aphanitic dark green andesite to dark grey to black basalt.
Precambrian	1	-	Biotite quartz schist to quartzite.

DETAILED GEOLOGY

The oldest rock unit observed on the property consists of Precambrian, Yukon Group Metasediments including intervals of quartz biotite schist, banded quartzite, and minor amounts of limestone. The banded quartzite intervals predominate with minor interbeds of quartz-biotite schist. The rock units are found in the valley of Big Creek in the northwest portion of the claim group. The general trend of the units is in an east-west orientation dipping south at 25 to 40 degrees.

The limonitic staining of the quartzite along the western bank of Big Creek appears to be caused by Tertiary dyke activity. Locations of all outcrops and interpreted geology may be observed on the accompanying geology map located in the pocket of this report.

A small outcrop of dark green aphanitic andesite to basalt was observed to the north of the Johnny - Cash Group and was not found to be significant. Intrusive into this unit, was a small body of medium grained, light grey hornblende diorite. It contained two areas of limonitic rich material that were sampled.

The major portion of the claim group is underlain by Unit No 9a. It is composed of a coarse grained hypidiomorphic to porphyritic hornblende syenite. It is distinctly grey often with a pinkish tinge. Large phenocrysts of potassium feldspar up to 1 inch in size occur somewhat aligned in a

matrix of medium to coarse grained black hornblende and fine grained orthoclase. Compositionally the rock unit is estimated to be 25% microcline phenocrysts, 25% hornblende, 25% orthoclase, 15% plagioclase, 5% quartz and the remainder accessory minerals including magnetite and apatite. Hornblende phenocrysts reach up to 1 inch in length and show euhedral crystal form in local segregations.

A noticeable foliation of hornblende and microcline phenocrysts was observed in a southeast - northwest orientation generally parallel to the longest dimension of the batholith. In localities the syenite appears gneissoid. Major fractures consist of epidote and chlorite fillings. Little or no alteration was noted in this unit.

A black massive coarse grained amphibolite appears to be a later segregation of the syenite and was mapped as Unit 9b. The amphibolite consists of approximately 95% black subhedral hornblende phenocrysts with up to 4% associated magnetite and 1% orthoclase. It is possible that this material caused the aeromagnetic "high" anomaly coincident with the observed outcrop.

Unit 9c consists of a medium grained hypidiomorphic quartz monzonite and appears to be a minor unit associated with the syenite batholith. Only rubble was found and it is thought that a small segregation exists in the northwestern portion of the large batholith in the Big Creek valley. No alteration or mineralization was noted in the rock type.

Unit 10, a coarse to medium grained, tan to creamy leucocratic granite was observed to the southwest of the Johnny - Cash claims. Compositionally the granite consisted of 55% orthoclase, 30% quartz, 15% plagioclase, and very minor amounts of biotite. This unit weathers tan and is readily discernable from the syenite which weathers grey.

Small dykes up to 5 feet in width of probable Tertiary age were found cutting the syenite and the Yukon Group quartzites. Limonite and visible pyrite was noted where the felsite or rhyolite porphyry dykes cut the quartzite band. This rock type was mapped as Unit 13 and consisted of aphanitic light grey tan to creamy siliceous material. The Big Creek valley appears to be oriented along two predominant structural trends. A major linear trending northwest - southeast and the abrupt change in direction by a smaller linear in an northeast orientation. The displacement of the Yukon Group - syenite contact across Big Creek appears to support this phenomena.

ECONOMIC GEOLOGY

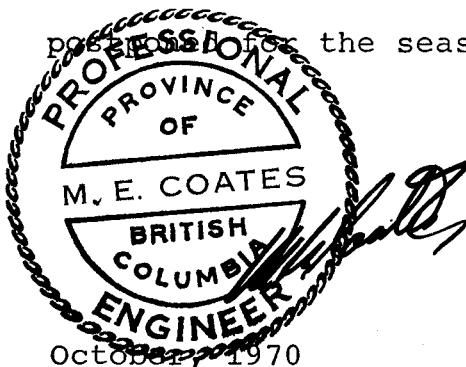
Mineralization consisting of pyrite and hematite was noted in two localities within the Johnny - Cash Group. A small outcrop of massive hematite was noted in the Big Creek valley, its location is shown on the accompanying geology map. The hematite appears to be a segregation in the Yukon Group metasediments and is not thought to be important.

Disseminated anhedral pyrite was found in the limonitic stained quartzite on the western bank of Big Creek. No economic minerals were observed on the claim group. A small limonite segregation in Unit 8 north of the claim group was located and sampled. It showed interesting values of over 100 ppm copper and up to 20 ppm molybdenum.

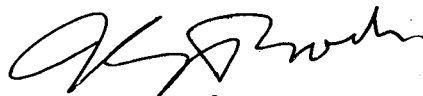
CONCLUSIONS AND RECOMMENDATIONS

Anomalous values for copper, lead, and zinc show a good mutual correlation and occur mostly in soils sampled over gossans, they are not reflected as anomalous values in the silts of Big Creek, probably due to its relatively large size causing considerable dilution of any anomalous material. Several anomalous sites in the smaller tributaries may be of interest for further follow-up. Possible continued investigation should include soil sampling at 200 foot intervals along traverses parallel to drainage across the two gossan areas and copper anomalous stream in the middle of the property.

Since there is little evidence of alteration or economic mineralization present on the Johnny - Cash Group it is recommended that future plans for continued assessment be possible for the season.



Respectfully submitted,


Wayne J. Roberts
Geologist

C

R

JOHNNY

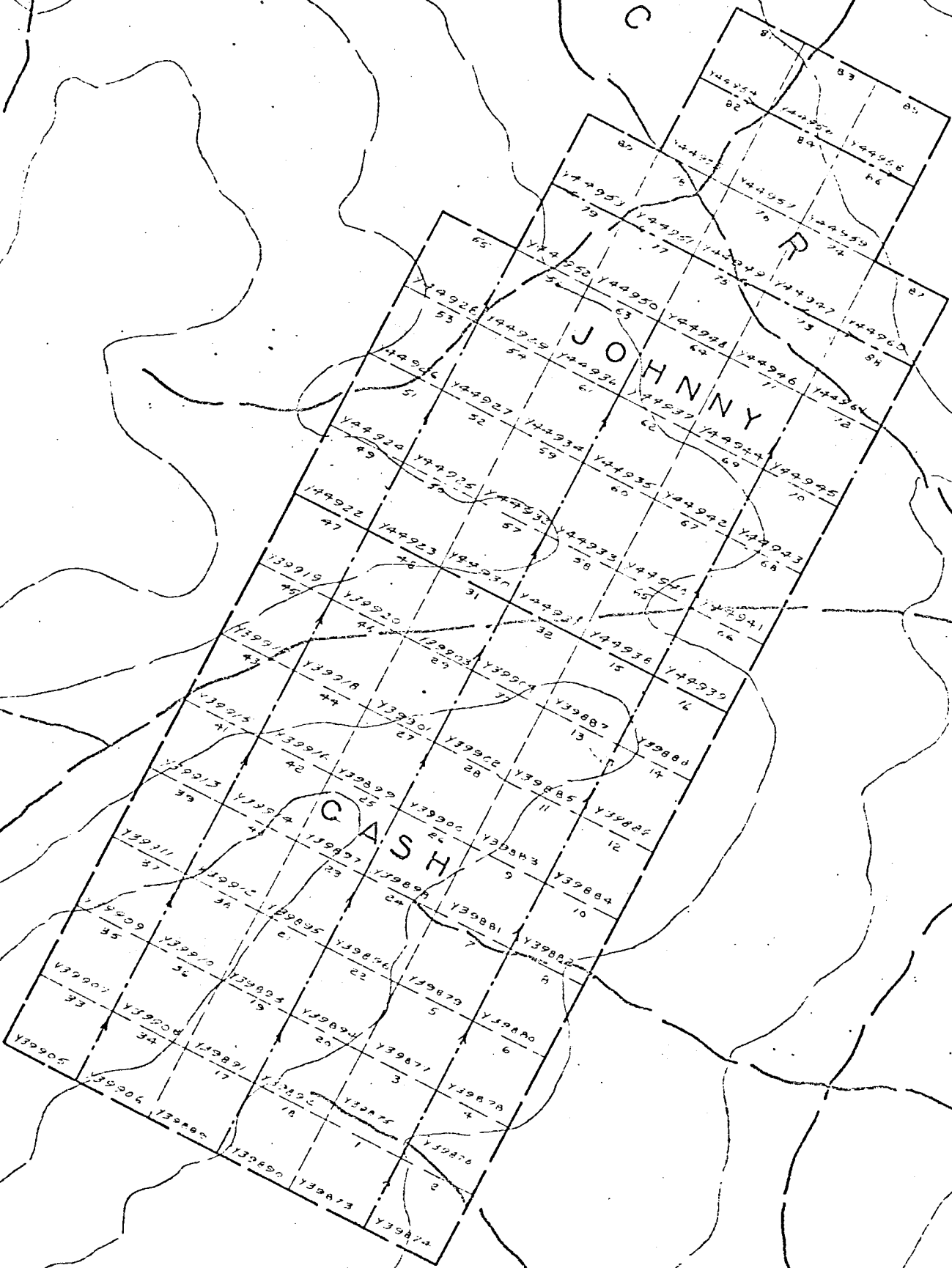
E

E

CASH

K

3000



SUMMARY OF COSTS

	<u>Schedule</u>	<u>Geology</u>	<u>Geo- physics</u>	<u>Geo- chemistry</u>	<u>Total</u>
Wages:					
General	"A"	393.07	-	55.41	448.48
Report Writing	"D"	90.67	-	-	90.67
Helicopter	"C"	673.08	-	-	673.08
Assays	"B"			195.80	195.80
Supplies:					
General	"C"	390.71	15.10	-	405.81
Transportation	"C"	203.26			203.26
Camp Costs	"C"	70.00	-	30.00	100.00
Expediting	"E"	<u>96.75</u>	<u>-</u>	<u>11.08</u>	<u>107.83</u>
		<u>1,917.54</u>	<u>15.10</u>	<u>292.29</u>	<u>2,224.93</u>
Administration Charge 10%					<u>222.49</u>
					<u><u>\$2,447.42</u></u>

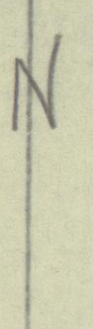
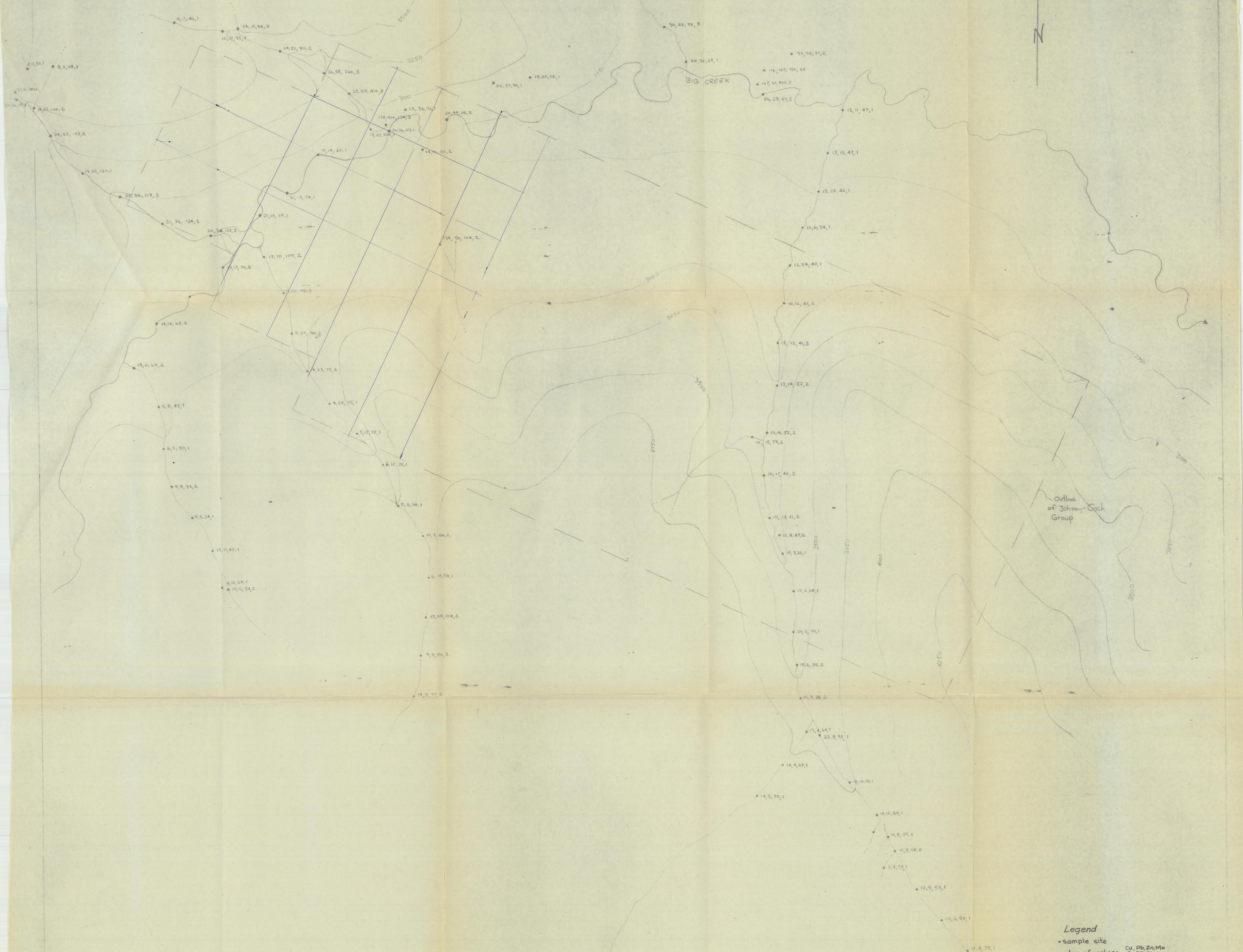


Legend

- Bedding Limonitic staining, Gossan
- Jointing Limit of outcrop
- Foliation Assumed fault
- light tan brown to grey felsite to rhyolite porphyry
- medium grained tan to creamy granite
- medium grained Monzonite
- black massive hornblende - amphibolite
- coarse grained, hornblende syenite, often gneiss
- medium grained - hornblende diorite
- Aphanitic green andsite to basalt
- Biotite quartz schist to quartzite


Tertiary
Mesozic
Jurassic
&
Later
Precambrian

ATLAS EXPLORATIONS LIMITED			
Johnny Cash Mineral Claims			
Geology			
N. T. S.:			SCALE:
115-1-6			1" = 1000'
DATE OF SURVEY:	13-7-70	PARTY CHIEF:	W.J.R.
DATE DRAFTED:		DRAFTED BY:	J.A.D. W.J.R.
DATE REVISED:		REVISED BY:	
CHECKED BY:		FIGURE No.:	



Outline of Johnny-Cash Group

Legend
 • sample site
 order of values Cu, Pb, Zn, Mo
 4, 25, 71.1
 all samples in p.p.m

ATLAS EXPLORATIONS LIMITED		
Johnny Cash Mineral Claims		
GEOCHEMICAL VALUES MAP		
N. T. S.:		SCALE:
115 I 6		1" = 1000'
DATE OF SURVEY:	13-7-70	PARTY CHIEF: W.J.R.
DATE DRAFTED:	20-11-70	DRAFTED BY:
DATE REVISED:		REVISED BY:
CHECKED BY:		FIGURE No.: