FRANCES RIVER SYNDICATE

Results of Field Program 1963

AREAS PROSPECTED

1. Gusty Lakes - Beaver River
2. Quartz Lake
3. Thistle Creek
4. Oscar Lake
5. Coal - West Coal Rivers, Caesar Lakes
6. Hyland River - Hyland Lake

1. GUSTY LAKES - BEAVER RIVER AREA

Beaver River Area

Prospectors Hundere and Ritco spent 7 weeks on the La Biche River sheet both north and south of the Beaver River from late May until the middle of July. Davis and Fairley mapped the "Beaver River Uplift" for 5 days early in June.

With the exception of the area mapped by the geologists and a small section north of the Beaver the area is underlain by quartzites, shales, argillites and lesser amounts of limestone striking generally north to northeast. The uplifted area south of the Beaver River has a core composed of a syenite intrusive body 3 to 4 miles long in a north-south direction and a mile or more across. Associated with the syenite are gneisses, serpentinized limestone and extensive hornfelsed argillite. Metamorphism is predominately outside the southern contact of the syenite. South of the intrusion narrow beds of basaltic volcanic rock, for the most part brecciated are interbedded with silicified argillite. Minor intrusions of syenite and trachyte are reported a few miles to the west of the uplifted area but sparseness of outcrop made it impossible to determine the extent of these bodies. North of the Beaver River a smaller intrusive body of similar syenitic composition was found.

Molybdenite was found disseminated in the gneissic rocks south of the main syenite body on the uplifted area. A picked specimen ran 0.13% MoS_2 with a trace of gold and silver. Molybdenite was also found associated with the syenite intrusion north of the Beaver River. A specimen of Fluorite-actinolite skarn south of the Beaver River was sent in for spectrographic analysis. The results included Au - trace, Ag .004% (2.56 oz/ton), 1.3% Pb, 8.0% Zn (check), .001% Cu and .006% Mo.

Traces of chalcopyrite were found in the volcanic rocks mentioned above.

A bed of hematite iron formation occurs in quartzite and quartz pebble conglomerate just NE of the main syenite intrusion. The bed is 3 to 5 feet thick and can be traced for over 200 feet along strike.

North of the Beaver River aerial reconaissance and prospecting on the ground has outlined numerous transported limonite deposits. In general outcrops are scarce in these areas and the deposits are difficult to explain. However, one such deposit located the previous year during a helicopter reconaissance on the Coal River sheet was visited by the writer. This deposit crops out in a creek canyon south of the Beaver River north-northwest of Toobally Lake. A section through this deposit shows a capping of from 20 to 30 feet of poorly consoli-

dated powdery siliceous material underlain by a similar thickness of interbedded massive limonite and brown sandy material. Below this is 60 to 100 feet of brown, loose sandstone showing contorted secondary structures. This in turn is underlain by 200 to 250 feet of mostly massive limonite to the bottom of the section. Whether this is a truly bedded deposit or simply related to the present erosion surface could not be properly determined. If bedded the plan dimensions of the deposit could be 400 to 600 feet by 1000 to 2000 feet. A specimen sent in for spectrographic analysis yielded the following results: Pb - 0.9%, Mg - 3.0%, Mn - 1.0%, Si - 10%, Ti - 0.1% and Zn - 0.1%. All these limonite deposits are closely related to pink quartzite, often pyritic. It is the writers opinion that the white, powdery, siliceous material referred to above is leached from the quartzite and the limonite is derived from the pyrite contained within the quartzite and concentrated by anomalous groundwater conditions.

Results from silt samples taken in the Beaver River area have outlined at least two areas of anomalous zinc values. Three samples from the section at the north end of the "Beaver River Uplift", south of the Beaver River, yield anomalous zinc values by field test. These samples have since been checked in the lab and have yielded 270, 290 and 300 ppm. Opposite this area, on the north side of the Beaver, 9 silts have given values from 250 to 450 ppm zinc.

The background value for copper varied from less than 10 ppm to 20 or 30 ppm. Only one sample southeast of the large syenite intrusion was higher than this, 50 ppm. Higher values derived from minor amounts of chalcopyrite in volcanic rocks may be expected in this area.

Because of the occurrence of molybdenite associated with syenite all silts were run for this metal but no values as high as 10 ppm were recorded. A more sensitive test is probably necessary for molybdenum.

GUSTY LAKES - TOOBALLY LAKES AREA

Toobally Lakes Area

Prospectors Anderson and Mickle spent three weeks in late May and early June prospecting the area northwest and west of the northernmost Toobally Lake. For ten days in July Hundere and Ritco prospected northeast and north of Gusty Lakes while at the same time Fairley, Anderson, and Mickle prospected and mapped down Gusty Creek to Toobally Lake to complete the coverage of that area. Earlier in the year Davis and Fairley had spent one week mapping northwest of Toobally Lake.

The area northwest of Toobally Lake is underlain by pink to white, fine to coarse grained quartzite and feldspathic quartzite apparently resting conformably on older volcanic rocks that are for the most part amygdaloidal greenstone. The strike of the formations is generally northwest to north with small to moderate southwest and north-

east dips. Dykes and sills of gabbro have intruded these rocks. There is evidence of high angle normal faulting in a north-south direction. A small deposit of barite in one fault zone indicates some hydrothermal activity. Although little time was spent on the east side of Toobally Lake the rocks encountered were mostly shale and quartzite with some basic sills. The sediments have a northerly strike and a moderate westerly dip.

South of Gusty Lake around lat. 60° 20' north the rock is limestone to dolomite (medium grained, grey, brown and mottled pink) generally flat lying. To the east the bedding steepens with a north strike and westerly dip. There is a change to sandy dolomite, then phyllite, sandstone-quartzite and argillite. Dips gradually increase to 60° in this area. Also in this region there are numerous sills, sometimes porphyritic and amygdaloidal andesite and basalt. Further east approaching Toobally Lake the rocks are varieties of greywacke and the westerly dip lessens. Finally shale occurs on both sides of the lake. At higher elevations on either side of Toobally Lake there is a white quartzite suggesting an angular unconformity between it and the previously mentioned series. Somewhere near lat. 60° 26' north and south of Gusty Lakes there is probably an east-west fault. This is indicated by an apparent displacement of the stratigraphy around Gusty Lakes of 2 miles to the west.

Mineralization was not impressive throughout this area. A little galena replacement in some phyllitic limestone and some copper mineralization in calcite stringers within a greenstone volcanic and also within quartz stringers in phyllite. Float of fine grained galena in quartz vein material was picked up on the west side of Toobally Lake 3 miles below its north end.

Background values for zinc are somewhat lower than those in the Beaver River area to the east. Most samples ran from 50 or less ppm to 120 ppm. The highest value is 180 ppm on the south fork of the large creek draining into Toobally Lake from the west, 5 miles upstream. Three miles northeast of the largest of the Gusty Lakes two silts ran 70 and 40 ppm copper. This is considerably higher than background values that are generally less than 10 ppm.

CONCLUSIONS AND RECOMMENDATIONS

The small amounts of copper and lead mineralization found west of Toobally Lake does not recommend the area for further prospecting. With the exception of the two higher copper values in silt northeast of Gusty Lake geochemical results are not much above background.

The "Beaver River Uplift" is a more geologically anomalous area although none of the known mineral occurrences are of significant size or grade. Some of the alkali rock types are reminiscent of specimens

from the Ice River Complex. These rocks will be investigated in the lab this winter with the possible presence of uranium or rare earth minerals to be checked. The presence of sphalerite in the tremdite-actinolite skarn, which carried 8% Zinc, in addition to higher zinc values in silt make the area north, west and south of the large syenite intrusion worthy of further work. This should be in the form of detailed geochemical sampling along with prospecting and geologic mapping by one two-man party. The crew should extend coverage to the west toward Toobally Lake. Six weeks would probably be necessary to carry out this program. In light of geochemical results the possibility of more detailed work north of the Beaver River should be considered.

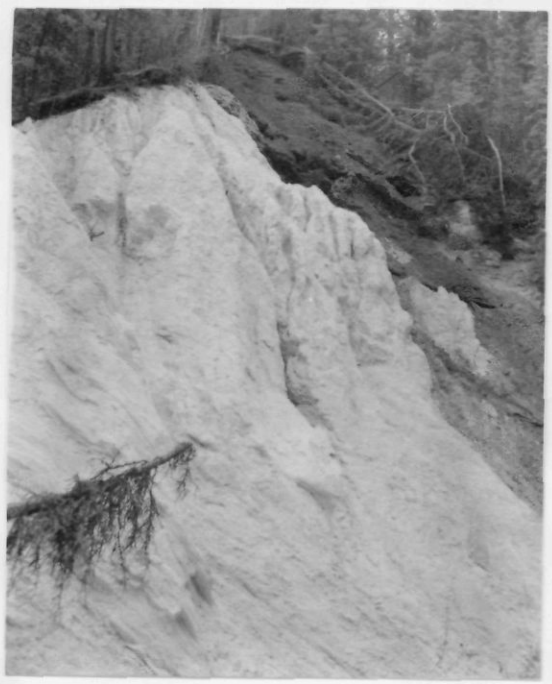
R. E. Gordon Davis

R. E. Gordon Davis

November, 1963.

The transported limonite deposit
NW of Toobally Lake

The leached capping on this
deposit



2. 2. QUARTZ LAKE AREA

Introduction

On the strength of air-photo interpretation and a helicopter reconnaissance previously done by Aho and Davis, the area delineated on the location map, approx. 100 square miles, was closely prospected and silt sampled (tests for zinc and copper). Geological mapping was not as intensive.

Prospectors Mickle and Anderson spent approximately 3 weeks in the area, Davis, 2 days, and the writer 6 days.

The McMillan property was closely looked at to determine the favourable structural environment.

Weather conditions during this time considerably hindered progress.

Geology

Rock types favourable to mineralization are widespread in the form of limestone, limey phyllite and limey shale. Others are quartzite, sandstone and quartz diorite. The sedimentary rocks are generally of low metamorphic grade but increase towards the north.

The light green phyllite, varying to a schist, is thin-laminated and contains lenses and stringers of calcite. Frequently replacement mineralized with pyrite, limonite and siderite, the McMillan showing of pyrite, galena, sphalerite occurs mainly in this type.

The shale is generally black, thin laminated or thin bedded, fine grain and equigranular. Frequently limey, it may contain pyrite mineralization.

The grey, micaceous, quartzite forms many of the higher areas. Sometimes laminated and phyllitic, it can take on crinkling and accordian folding. It might be more correct to call it a metamorphosed greywacke. The dirty sandstones interbedding with the quartzites are probably just a lesser grade.

Quartz-pebble conglomerate only occurs at the McMillan showing as a small outcrop beneath some phyllite. It has medium to coarse grained white pebbles with little matrix.

Other than pyritization (showing mainly in stream outcrops), the only other mineralization found was galena in a little float

1½ miles SW of Moose Lake.

Interbedding of phyllite-quartzite and shale-phyllite-limestone is very common.

Structurally, the area is complex. Bedding and foliation differ widely, though the most common is a NE strike and moderate NW dip. North, north-west, and westerly trending faults are evidenced topographically and by rust zones and gouge. The skarn zones of the McMillan showing occur on what are reportedly thrust faults, however, irregular folding evidenced in a cross-section would indicate some sort of a relationship of folding-faulting, perhaps a gleits-bretter effect.

Silt Sampling

Initially, many of the samples were field tested for zinc. These indicated the McMillan showing may be larger than the reported 1800 foot length and 250 ft. width. High readings were obtained in the next creek to the east; however, nothing further to the west was indicated.

Further laboratory results indicate some anomalous zinc areas (with 120 to 130 ppm) NNW of Quartz Lake and West of Moose Lake, also the hight of land East of Moose Lake which is associated with the Quartz diorite intrusion, and another hight of land North of Quartz creek where it drains Quartz Lake.

Anomalous copper concentrations of 30 to 50 ppm were found in three samples 2 miles south of Quartz Lake, in the one sample north of Quartz Creek, and two samples NW of Moose Lake.

High copper concentrations usually coincide with high zinc concentrations, but the converse is not true.

Background zinc concentrations are probably between 80 and 100 ppm. This would correspond to about 1½ ml. of dithizone in the field testing. Background copper concentration is about 20 ppm.

Zinc and copper concentrations toward the north and south ends of the prospected area become less.

Recommendations

Since much of the geology shown on the map is prospector information, and also since there are some anomalous geochemical areas, further geologic mapping, structural interpretation and

geochemistry or geophysics of these anomalous areas could be recommended if any other work is being done in the general area. A geologist and assistant could accomplish this in about 10 days with reasonable conditions.

The former owners of the McMillan Property did a great deal of diamond drilling. This is probably the only way of properly recognizing the structure since there is a scarcity of outcrop. Much of the core remains in order on the sites and could be logged.

John F. Fairley

John F. Fairley

November, 1963.

3. Thistle Creek Area

Introduction

At the end of the field season in September the proposed Thistle Ck. prospecting area, 80 miles south of Dawson City[1] was approximately two thirds covered.

Long known for placer gold, there is a small known showing of replacement galena, and also reported float in the dredgings of Thistle Cr. It is an area of discontinuity in the regional structure.

Prospecting in an unglaciated area such as this is difficult due to the continuous overburden.

Bragg and the writer spent three weeks, Anderson and Mickle 2 weeks, and Davis a few days, here.

Geology

Rock type is uniformly the Yukon Group gneiss. It has a complete range of mafic content from 0 to 100 %. Composition includes muscovite, biotite, hornblende-actinolite, feldspar and quartz, with garnet and pyrite occasionally. Some sections may be called an amphibolite or serpentinized rock and these often contain pyrite. There is some remobilization giving quartz rods, boudinage, and injection gneiss structures.

The only limestone occurance is a one foot bed, unaltered, on a ridge between Phillips and Dollar Creek.

On a ridge near the head of Australia Ck a garnet, chlorite, biotite skarn with a granophyric texture occurs, but no mineralization.

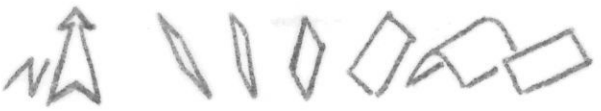
On the E. branch of Neebur Ck. there is a hornblende-garnet hornfels, with some pyrite, magnetite, epidote.

[1] See "Proposed Prospecting in the Thistle Mt. District" Aho, 1962

The pegmatite veins are also prevalent throughout the area. It is not certain, but some of them may actually be quartz remobilization into vein structures. Generally coarse-grained, they usually contain large K-feldspar crystals. Pyrite, biotite, magnetite are often present but not in any discernable trend. Quartz float in the Thistle Ck. dredge tailings near Australia Ck. contain small amounts of medium crystallized galena, but unless they were blasted off bedrock their original position is doubtful. Quartz float specimens on Barker Ck. contain a little chalcopyrite and possible sphalerite, but the adjacent silt samples did not respond. The pegmatities are scattered, do not follow any orientations.

Creek pannings, particularly from Thistle Ck., contain cassiterite, pyrrhotite, magnetite, galena, hematite, pyrite, gold, silver and flakey gold, usually free, was occasionally associated with quartz. None of these except pyrite and hematite occurred in any great quantity.

Structurally, the area is not uniform. A stereonet plot of poles to foliation indicated little except a lack of W dips. However, there seems to be a trend:



An AEM Magnetometer (vertical component, plus or minus 50 gammas) owned by Mickle indicated a 500 to 1200 gamma anomaly on Telford Ck.-Brewer Ck. at the 2200 - 2300 foot level. It was apparently caused by magnetite in an orthogneiss.

Silt sampling for zinc was mostly done in the field. Since the results from the lab have been returned, the buffer used in the field has come under suspicion. The high background of 90 ppm. should have been detectable, and statistically, some of those field tested should have concentrations around 130 ppm. The two west ridges of Thistle Mt. may be anomalous with creeks showing concentrations of 100 to 130 ppm. zinc. Further lab results for the field tested samples are forthcoming. Background copper concentration is 20-30 ppm., and the few values over this have no particular distribution.

Recommendations

Microscopic examination of the pannings (approx. 25) should be done this winter.

Generally better weather conditions and easy access to this area make it feasible for late season work. Since, geochemically there is a rather high background for zinc, the structure is anomalous regionally, and the originally proposed area has not been completed, the writer feels another two to three weeks work by a prospector and geologist would be worthwhile.

Further reconnaissance examination should first be concentrated in the creek bottoms with float examination, panning, and geochemistry before ridge traverses are made. Sidehill outcrop or float is scanty.

John F. Fairley

John F. Fairley
November, 1963

4. OSCAR LAKE - STEWART LAKE AREA

The area around Stewart Lake and westerly towards the Frances River is very difficult to prospect due to the heavy overburden of glacial drift and low lying forested terrain masking the geological structure. It is, therefore, difficult to follow the rock sequences and their structural continuity. Rock out-crops are scarce, and appear mainly where the present stream channels have cut through to bedrock.

Due to the scarcity of outcrop throughout this portion of the area and other low lying areas of the map sheet, and hence the lack of continuity of rock sequences, most of the sedimentary rocks were typed into one undifferentiated category. However, wherever possible, an attempt was made to differentiate the rocks into different categories. The general structure of these sedimentary rocks and low grade metamorphics is one of a complex system of folding and faulting. Since these features are also masked by overburden and continuity of features difficult to follow, no definite general trend of either folding or faulting could be established.

From the west end of Stewart Lake, a belt of ultrabasic rocks run northerly, continuing on to the east of Oscar Lake. This belt conforms to the anomaly picked up by aeromagnetic survey. Fingers or dikes of ultrabasics exist elsewhere than this main, north trending belt. Associated with these ultrabasics, minor amounts of chalcopyrite (and nickel?) were observed in the country rocks in contact with them, as well as in the ultrabasics themselves. Crysotile asbestos was found in some of the serpentinized peridotites as cross fibres in veins 1/8" thick. Slip fibre was found also. Much of the ultrabasics are altered to a dolomite-magnesite complex, and as such are hard to distinguish from sedimentary-metamorphic dolomite.

The sedimentary rocks, however, have been domed upwards by the intrusion of the granitic batholith extending from a point northwest of Oscar Lake, northerly to Mt. Murray. Very little alteration of the sedimentary rocks is to be observed along the contact zones, except for some of the rocks along the southeast portion of the granitics. Here, the sedimentary rocks have been subjected to considerable feldspathization and silicification. These rocks have been typed out separately. (Minor amounts of chalcopyrite and pyrrhotite were associated with this complex). However, over most of the rest of the contact between the granite and the sedimentary rocks, the altered zone is only a few inches to a few feet. In some cases limestone that had not been skarnized lay in contact with the granite. Four miles northwest of Oscar Lake massive pyrrhotite and chalcopyrite was found in lenses within limestone, along the contact. This occurrence was of no economic value.

Just west of Murray Lake, flourite and minor amounts of chalcopyrite were observed in limestone, and again just north of Murray Lake along the western contact lies a bed of chert and limestone, which is highly garnetized. Of all the mineralization observed in the area, none was found of any size or potential. Perhaps the most interesting was the chalcopyrite found associated with the ultrabasics of the area. In testing the silts of the area for zinc, most reached the endpoint before two mls. of dithazone were added; in many zinc was not detectable. All but a few of the silt samples were run in the lab for zinc and copper. Background values for zinc were mostly between 50 and 100 ppm with slightly higher results south of the granite batholith. Copper ranged from 30 to less than 10 ppm. No anomalous results were reported.

In consideration of the area as a whole, it is unlikely that any interesting mineralization of economic potential is to be found within the map area.

D.K. Bragg

5. COAL - WEST COAL RIVERS, CAESAR LAKES AREA

Prospectors Hundere and Ritco spent 5 weeks prospecting along the contact of the batholith between the Coal and West Coal Rivers from late July until the first week in September. The area covered was from peak 6907 to Caesar Lakes. Initial interest in the area resulted from helicopter reconaissance out of Quartz Lake in 1962. At that time a few miles of the contact were flown and one magnetite bearing skarn zone checked on the ground. A brief helicopter reconaissance was carried out early in August of this year.

The batholith contacts sedimentary rocks throughout the area prospected. Shale, slate, chert, argillite and limestone striking north to northeasterly are the dominant rock types. In the valley south of Caesar Lakes the sediments are restricted to a belt 2 to 5 miles wide between the large batholith on the east and another granitic body on the west side of the valley.

Six noteworthy mineral occurrences were reported. Travelling clockwise around the contact the first deposit (1) is the magnetite-skarn zone located the previous year. Magnetite makes up 10 - 25% of a principally garnet rock lying against the intrusive contact in a steeply dipping body 20 to 30 feet wide. Next to this zone is a one foot width of garnet-calcite skarn carrying 5 - 10% chalcopyrite. The mineralization is only exposed along strike for 20 feet. No further evidence of significant mineralization was found at this locality.

Showing (2) was found approximately 1000 feet east of the granite contact in a small outcrop about 8 feet by 8 feet. Sphalerite and lesser amounts of galena make up about 15% of the specimen which is light grey chert. The mineralization appears to be related to an east-west cross fracture.

The third showing is a mile inside the granite batholith. Galena and pyrite occur in fracture zone spaced over more than 100 feet along a creek bottom. A picked specimen sent in for assay carried 3.5% Pb, 1.24 oz/ton Ag and .003 oz/ton Au. The area immediately surrounding the mineralized zones is covered by overburden.

Mineralized float was picked up in the pass 3 miles northeast of peak 6638, locality (4). Galena, sphalerite, and a trace of chalcopyrite make up about 5% of a quartz-calcite epidote skarn. Only a small amount of such float was found and no sulphide mineralization was located in place.

Showing (5) is on top of the ridge 6 miles west of peak 7050. Sulphide mineralization is in skarn and appears to be related to 2

faults, one trending northeast, the other northwest, separated by a few hundred feet or more. Sphalerite with very minor amounts of galena and magnetite make up to 25 or 30% of the rock in very irregular zones never more than a few feet across and discontinuous along strike.

Showing (6) is 5 miles south of Caesar Lakes on the west side of the valley. Galena, chalcopyrite, sphalerite and pyrrhotite occur in skarn near the granite contact. Mineralized widths seldom exceed more than a few inches. These showings had been staked by William Paulosk in August 1960. A few thousand feet to the northwest along the granite contact quartz veins carrying small amounts of galena, chalcopyrite, sphalerite and pyrite were found. They occur in a 25' wide rust zone and individual veins are up to 3 or 4 feet wide.

Results from the limited amount of silt sampling that was done indicate a background of 80 to 150 ppm zinc and 10 ppm or less copper. Higher values probably reflect the numerous, small replacement type deposits that are described above. The highest value of 370 ppm zinc is from the drainage a mile or so below showing (5).

CONCLUSIONS AND RECOMMENDATIONS

Of all the areas prospected this season the section between the Coal and West Coal Rivers seems the most mineralized. In the opinion of the prospectors none of the showings are worthy of further work although the area as a whole may be worth more prospecting, particularly if some geologic information could be obtained from the G.S.C. or companies that have worked in the area. The intrusive contact along the main valley of the Coal and north of the area prospected lies east of the mountains and for the most part is covered by low swampy ground with little or no outcrop. Little is known of the geology east and southeast of Caesar Lakes but this area has been prospected before so any obvious mineral deposits have probably been found. This is also true of the west side of the West Coal - Caesar Lakes valley. The whole region is generally more rugged and much better exposed than those prospected to the south. It is therefore possible to put heavier emphasis on conventional prospecting rather than geochemistry.

R. E. Gordon Davis

R. E. Gordon Davis

November, 1963.

6. HYLAND RIVER - HYLAND LAKE AREA

Anderson and Mickle prospected for 2 weeks in August south of Hyland Lake, east of the Hyland River. The ridge east of the Hyland was prospected for 15 miles south of the lake and a small area further east, south of peak 6748 was also investigated. A brief fixed-wing aerial reconnaissance of the area preceded the ground party.

A belt of phyllite, quartzite and limestone lies in the valley east of the Hyland River. Granitic rocks contact the sediments on both the east and west making up most of the higher ground.

Investigation of rust zones spotted from the air proved disappointing. Only small amounts of pyrite and pyrrhotite with a trace of galena and sphalerite were found. The limited amount of silt sampling that was carried out outlined one anomalous area south of peak 6748. This is an area of good exposure and prospecting failed to turn up any base metal sulphide showings. In the area generally no quantity of mineralization sufficient to encourage further prospecting was found.

R. E. Gordon Davis

November, 1963.

PROPERTY EXAMINATIONS

1. Lucky Lake
2. Wopus Group - Boswell River
3. Bill Group - Hyland River
4. Red Group - Hoole River

(Maps in back pocket)

LUCKY CLAIM GROUP, N. W. T.

R. E. Gordon Davis July 5-8, 1963
J. F. Fairley Aug. 8-13, 1963

Introduction

On July 5th R. E. G. D. and Don Taylor of Watson Lake visited the GB claim group staked by the Mackenzie Syndicate in 1959. The claim group in the Logan Mts. just inside the N. W. T. 25 miles NW of Seaplane Lake at Lat. 61 33 N, Long. 127 30. Access is gained from Lucky Lake in the headwaters of the Coal River. Most of the ground had come open and the purpose of the trip was to restake the open claims for Taylor, giving the Syndicate first refusal on an option agreement; also to gain preliminary information on mineralization control and potential. Sulphide mineralization of which galena and sphalerite are the most important is found in highly variable concentrations in skarn zones near intrusive contacts against limy sedimentary rocks. Twenty-eight claims were staked, a rough map was made and 14 silt-samples were collected.

J. F. F., Bragg, and Meindle continued this examination with some detailed mapping and sampling over a six-day period.

History

The property was originally discovered and staked by prospectors working for Northwestern Explorations Ltd. under G. H. Noel in 1955. The extent of work done at this time is not known. In early 1959 the property was restaked by the MacKenzie Syndicate managed by Len White after the showings were brought to their attention by Buster Groat who had been a packer for Northwestern. In 1959 and 1960 geologic and geophysical surveys were carried out as well as a very small amount of trenching. All but 19 out of a total of 88 claims staked by the MacKenzie Syndicate had expired by this spring.

Geology

General

Most of the mineral claims are underlain by very fine-grained cherty, argillaceous, often limy sediments much of which have been metamorphosed to calc-silicate hornfels. Sill-like and irregular bodies of feldspar porphyry have intruded the sediments north of a batholith of granodiorite the contact of which lies along the southern and eastern boundary of the claim group. Skarn zones usually a few hundred feet along and up to forty or fifty feet thick occur in favourable limy beds often along intrusive contacts. The sedimentary rocks strike northeasterly with steep northwesterly dips.

Rock Types

The most common sedimentary rocks are a siliceous argillite and chert. This rock may be finely laminated or massive. Colour ranges from light grey or brown to black. Near intrusive contacts limy members of this sequence have been metamorphosed to calc-silicate hornfels and skarn. Small bodies of crystalline, light grey limestone and fine-grained black limestone are found within the sedimentary formation. Fine-crystalline, disseminated pyrite is common in the sedimentary units.

Intrusive Rocks

The batholithic rocks to the south are medium to coarse-grained biotite-hornblende granodiorite. It is notably jointed and fractured. The granite in some extensive NE fracture zones is pyritized, and altered to kaolin, sericite, and chlorite. The sills, dykes, and irregular shaped intrusive bodies within the sedimentary sequence are mostly feldspar-biotite porphyry and less commonly quartz-feldspar porphyry. The groundmass of these rocks is usually aphanitic.

Skarn and Sulphide Mineralization

The most important mineralization is found in a bed consisting chiefly of actinolite (plumose aggregates up to two inches long), epidote, garnets, some calcite, perhaps some diopside. Lenses of white limestone and chert occur. A bed facies consists of a lighter green epidote-chlorite rock. The mineralization is variable, probably depending on jointing and faulting. In a general way mineralization seems to increase in the proximity of the feldspar-porphyry dykes. The main showing is 3000 feet long, located on the north side of Caribou Ck. Widths vary from 30 ft. at the SW to over 50 ft. at the NE. Other showings of this type occur towards the NE end of the property, and also one 600 ft. x 80 ft. bordering Caribou Ck. on the S side.

Though pockets of mineralization could contain up to 15% combined sulphides, the overall assay was far less. Other sulphides present are pyrite and chalcopyrite.

Some of the siliceous limy argillite (or black chert) is metasomatized with sphalerite and pyrite occuring in the fractures. The assays are not impressive.

Pyrolusite, as stain and scaly deposit, is prevalent in all rocks, also limonite.

Structure

Steep NW dips are fairly consistent throughout all beds. Two sets of joints, one striking at right angles to the bedding and nearly vertical, and the other parallel but dipping steeply SE, have largely controlled the porphyry intrusion. Right-handed NNW faults, near vertical, further complicate the mineralized zones. They are probably latter to the jointing and sills and dykes.

Silt Sampling

High readings on the north fork of Caribou Ck. indicated the mineralized zone found in the second examination. Otherwise, nothing unusual was noted in the results.

Sampling

Owing to the large number of areas to be covered, channel samples were not taken, rather, chip samples as judged to be representative. In some cases results were further averaged (weighted by area or length) to obtain a central tendency for one area.

Recommendation

Assay values were not high enough to warrent further examination of this property.

The highest silver, lead, zinc values ocurred on a small, narrow showing, and even these values are too low to be interesting. (see sample 7).

The most continuous showing, on the north side of Caribou Ck. near its head, (see sample 6) has an approx. potential of 12,000 tons per vertical foot, and assays 7.9% combined lead and zinc, 1 ounce per ton silver. Though half the surface area may be obscured by talus, the porphyry dyke intrusion would compensate, making the 12,000 tons per foot figure reasonable.

2. Wopus Claims - Boswell River

The Wopus claims are on the north side of the Boswell River opposite Red Mountain Creek approximately 50 miles northeast of Whitehorse. The exact location is 61° 02' north, 133°40' west. The writer visited the property from July 19 to July 24 with Gerry Leverman of Whitehorse. Access to the property was by helicopter from Quiet Lake on the Canol Road. Another route is by float plane to the mouth of the Boswell on the Teslin River and then by trail to the property, a distance of 25 miles.

The initial discovery of mineralization in the area was as early as 1915. In 1929 an adit was driven 120 feet. Little work was done on the ground between 1931 and 1951 when the property was restaked by John Mohagen of Whitehorse. Since then numerous hand trenches have been put in. At present Mohagen and two partners hold 24 claims.

The dominant rocks underlying the upper Boswell River are quartz-biotite schist, chlorite schist, schistose quartzite and lesser amounts of crystalline limestone of pre-Middle Mississippian Age. These metamorphic rocks are confined to a northwest trending belt between the Quiet Lake Batholith on the northeast and a stock of quartz diorite on the southwest. Smaller bodies of granite porphyry and felsite, usually a few hundred to a few thousand feet wide and elongated in the plane of foliation of the schists are widely distributed throughout the metamorphic section. The Quiet Lake Batholith, when observed, is coarse-grained porphyritic granite, often pegmatitic at its borders with the older rocks. Two bodies of serpentine are reported in the vicinity of the claims near the granite contact. Only one of these bodies was encountered by the writer. It is circular in plan, 220 feet across, reddish-grey weathering, green to black on fresh surfaces. The schist adjacent to the serpentine is pyritic and weathered rusty to black.

Quartz veins, mostly in the foliation of the schist are found in a northwesterly striking belt near the granite contact. Individual veins may be persistent for over one thousand feet with widths varying from a few feet to twenty feet; the average widths would be in the order of 5 to 8 feet. Smaller, less persistent, veins occupy cross-structures striking northeasterly with steep dips. The veins of the western part of the claim group seem to be spatially related to quartz and feldspar porphyry bodies and felsite removed by as much as 3000 or 4000 feet from the contact of the Quiet Lake Batholith. Galena as blebs and

stringers filling fractures with very little replacement is irregularly distributed through most of the veins that were investigated. At lower levels in the vein near the old portal pyrrhotite, pyrite, chalcopyrite and molybdenite are also present but in no significant quantity although this may indicate some mineral zoning at depth. The best mineralization occurs in cross-structures within the northwesterly trending veins. The best widths observed would be from 6 inches to 2 feet of 20 to 40 percent galena. These zones are sharply limited in length by the width of the main vein and continuity to depth could only be investigated by re-opening the old adit or by drilling. From a few inches to two or three feet of the wall-rock outside the veins may be mineralized by finely disseminated pyrite.

The best assay reported is 131.5 oz/ton silver with 66.3 percent lead. The silver-lead ratios varies from 2.0 to 3.3 with 2.4 average. G.H. Noel of Northwestern Explorations obtained one section 2.5 feet wide assaying 102.5 oz/ton silver and 45.2 percent lead. Gold values very from a trace to 0.02 oz/ton lead. No other metals appear to be of any significance.

The distribution of quartz veins indicates a close relationship, particularly with the contact of the granite batholith and to a lesser extent with the minor intrusive bodies. This is also true of barren quartz veins outside the claim group to thesoutheast across the Boswell River. The persistent vein systems lie in shear fractures along the northwesterly trending, steeply southwest dipping foliation of the schist. The sulphide mineralization appears to be controlled to a large extent by northeasterly striking fractures severely limited in strike length. An effort was made to outline more competent beds of quartzite or limestone within the section. More siliceous rocks are present in thickness of a few tens of feet but in general the schists themselves are siliceous and competent. Where quartz veins were enclosed by more quartzose rock no significant difference in vein widths or continuity could be proven. Crystalline limestone, very irregular in thickness, sometimes up to 50 feet thick is present in a few places but no idea of the effect of this rock on the nature of the vein systems was obtained.

The small size potential of any of the mineralized sections in the veins makes the present showings uneconomic. Any further work on the claim group and the adjacent area should be in the form of detailed prospecting.

In addition to the mapping of the claim group and adjacent areas a brief helicopter reconnaissance of the granite body on top of Red Mountain, 4 miles to the southwest, was carried out. This body and the surrounding slates and argillites are conspicuously rusty. Fresh speciments of the granite were found to contain up to 5 or 10 percent pyrite. The porphyry body itself was not accurately outlined but appeared to be a few thousand feet wide and at least 2 or 3 miles long. The general environment suggested to the writer the circumstances under which porphyry copper mineralization might be found although no copper minerals were identified. More detailed prospecting of the Red Mountain area using geochemical methods should be considered.

R.E. Gordon Davis

R. E. Gordon Davis
October, 1963

References

G.H. Noel (1955) - Summary Report on Mobs Group - Boswell River Area. Private report for Northwestern Exploration Ltd. supplied by Mr. Leverman

E.J. Lees (1963) - Geology of Teslin - Quiet Lake Area, Yukon; Geol. Surv. of Canada, Memoir 203.

3. Bill Claim Group - Hyland River

The claims lie on the east side of the east fork of the Hyland River 115 miles north of Watson Lake at latitude 61° 43' north and longitude 128° 20' west. Bill Peters of Watson Lake discovered mineralized float during construction of the Canada Tungsten Road in 1962. The showing is within a few feet of the road at about mile 160.

Arsenopyrite and minor galena occur in small pockets and veins of quartz on the hanging wall of a shear zone striking N40°E and dipping 75° NE. At the time the writer visited the property, in late July, a D7 bulldozer was trenching the showing. The trench was 8 to 10 feet deep and exposed bedrock for a length of 30 to 40 feet. A five foot shear zone composed mostly of grey-green gouge with some pieces of quartz and sulphide vein material was encountered. The wall rocks on either side of the fault zone are sheared greywacke and shale striking ESE with a steep northerly dip.

The freshest vein material from the hanging wall averaged 0.18 oz/ton gold and 2.35 oz/ton silver across 4 to 8 inches. Lead values and silver-lead ratios are erratic with the highest ratio 1.05. A channel sample across the gouge carried o.02 oz/ton gold.

There are no exposures of the fault zone nearby and except for outcrops of greywacke on the steep slope to the river a few hundred feet west, no other outcrops were seen near the showing. The slope above the road is moderate and covered by at least a few feet of overburden.

Unlees mineralized float carrying considerably higher gold or silver values can be found by surface prospecting or shallow test pits no further bulldozer trenching is justified.

R E Gordon Davis

R. E. Gordon Davis
October, 1963

4. Red Claim Group - Hoole River

The Red Claim Group is at the headwaters of the Hoole and Ings Rivers 120 miles northwest of Watson Lake at latitude 61°19' north, longitude 131°12' west. Acess is by float plane to the small lake at the head of the Hoole and then by trail to the showing 1 1/2 miles to the southwest. The property had been staked by Darryl Reinke of Vanderhoof while prospecting for Cassiar Asbestos in 1961 and was allowed to lapse in August of this year. The property was brought to the writer's attention by Mr. Reinke in September.

The third week of September the writer, accompanied by Jake Hundere and Pete Ritco, examined the property. Bad weather and snow conditions made any work difficult and the party was only able to spend two days on the showing, most of which entailed digging test pits along the strike of the mineralized zone.

Galena, pyrite and minor sphalerite occur in outcrops of calc-silicate hornfels, marble and breccia at an elevation of 5300 feet on a steep north facing slope most of which is covered by talus of slate and phyllite, the dominent country rocks. The favourable limy rocks are perhaps 50 to 100 feet thick contained in a predominantly slate and phyllite section striking 10° north of west and dipping steeply bounded by the Tintina fault a mile to the north and the St. Cyr fault a few thousand feet south. The mineralization occurs as blebs and stringers replacing the limy rocks. Mineralization is generally very sparse except in trench 9 (see sketch) where a four foot section might run as high as 40 to 50 percent lead. This trench as well as 8 were put in by Cassiar in 1961. Cassiar was reported to have obtained 10% lead, 5% zinc, 7 oz/ton silver and $0.80 per ton gold across 10 feet. A picked specimen was reported to carry 40% lead, 5% zinc and 10 oz/ton silver.

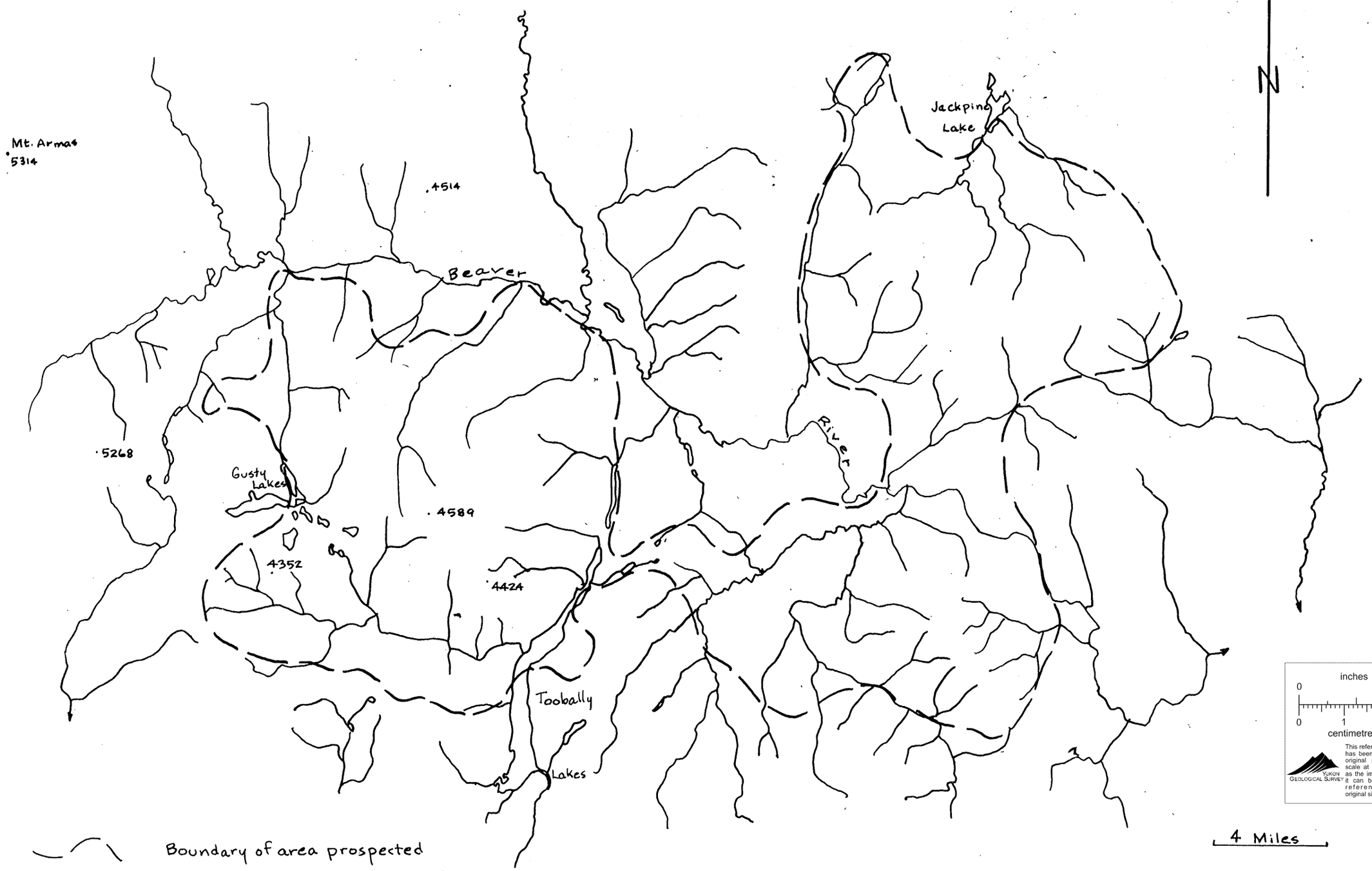
With the exception of trenches 8 and 9 all test pits shown on the sketch were dug by the crew this September. Favourable limy bedrock was reached within 3 to 5 feet in all but pits 1 and 4 which bottomed in talus. Pit 7 encountered a maximum width of 2 to 3 feet of galena mineralization that by visual estimate would run 10 to 20 percent lead. Otherwise only rare pockets of galena and sphalerite usually less than one inch across were found.

The irregular and sparse distribution of galena in the favourable section as well as a reported silver-lead ratio of 0.7 or less make the showing undeserving of further work. The only other mineralization that was seen was as float in the valley below the showing and was similar to the showing and presumably derived from the same zone. Unfortunately most of the surrounding area could not be investigated, although it is believed to have been well prospected by both Cassiar and Canex Aerial Explorations.

R.E. Gordon Davis

R. E. Gordon Davis
October, 1963

GUSTY LAKES - BEAVER RIVER AREA



G. Davis
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GUSTY LAKES - BEAVER RIVER AREA

Geology and Geochemistry

Legend

Rock Types

- Quartzite, quartz pebble conglomerate
- Limestone, limy dolomite
- Shale
- Argillite, Hornfelsed argillite
- Sandstone, greywacke, conglomerate
- Volcanic rocks, mainly greenstone, andesite, basalt and breccia
- Syenite
- Gabbro

Structure

- Bedding
- Foliation
- Joint
- Fault
- Zn Mineral occurrance
- R Transported limonite deposit

1 Mile (approx)

Geochemistry

- Silt sample site — Cu ppm / Zn ppm; x < 10 ppm
- Zn Field Test
  - 0 mls. of dithizone to end point
  - 1-2 "
  - 3-5 "
  - 6-10 "
  - >10 "
- Dithizone solution strength 0.01 gm. per 100 cc.

Beaver River

Gusty Lakes

Jackpine Lake

Spruce Creek

Toobally L.

BEAVER R I V E R

Gordon Davis
Nov. 1963

QUARTZ LAKE AREA

Approx. Scale 1in. = 1mi.

N

Legend :

- shale
- phyllite, schist; usually limey
- quartzite; grey, micaceous
- sandstone, usually impure
- quartz pebble conglomerate
- quartz diorite
- limestone

mineralization is directly noted

/ bedding / jointing / fault

/ foliation / lineation

Silt sample site

a/b — laboratory, [Cu] in ppm.
" , [Zn] in ppm.

Field testing for [Zn]; values in ml. of Dithizone to end-point (green-grey solution)

○ 0 ● 3-5 ● 10+

● 1-2 ● 6-10

inches
0 1
centimetres
0 1 2

This reference scale bar has been added to the original image. It was scaled at the same ratio as the image, therefore it can be used as a reference for the original size.

Quartz Creek

Quartz Lake

McMillan Property

pyrite, galena, sphalerite

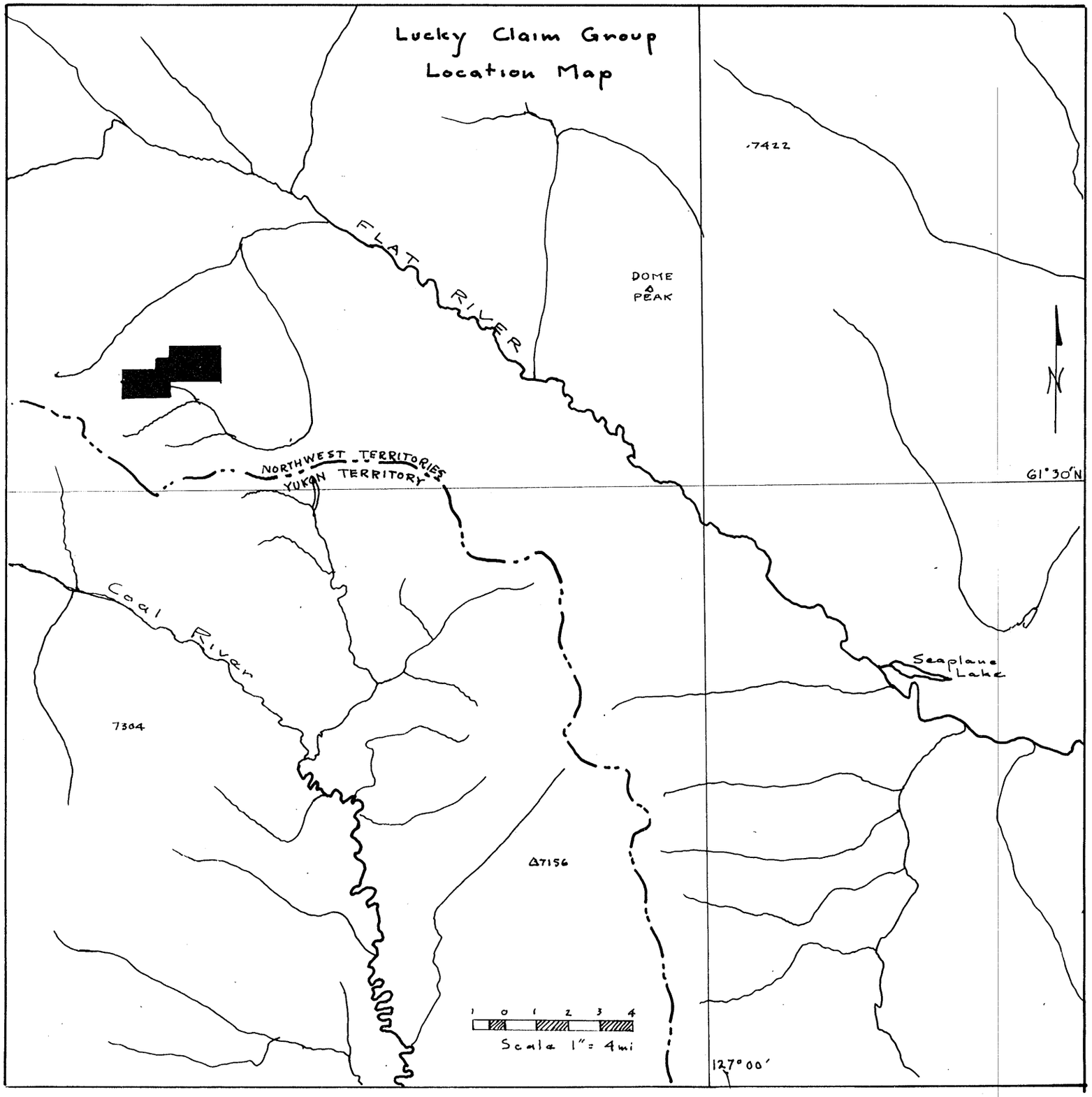
galena float

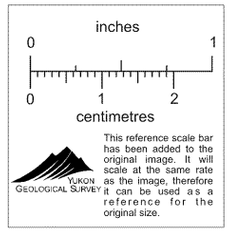
pyrite

4865

5013

RIVER


Lucky Claim Group
Location Map
7422
FLAT RIVER
DOME
PEAK
N
NORTHWEST TERRITORIES
YUKON TERRITORY
61°30'N
Coal River
Seaplane
Lake
7304
Δ7156
1 0 1 2 3 4
Scale 1" = 4mi
127°00'


inches
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centimetres
YUKON
GEOLOGICAL SURVEY
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Lucky Claim Group

1" = 1000 ft

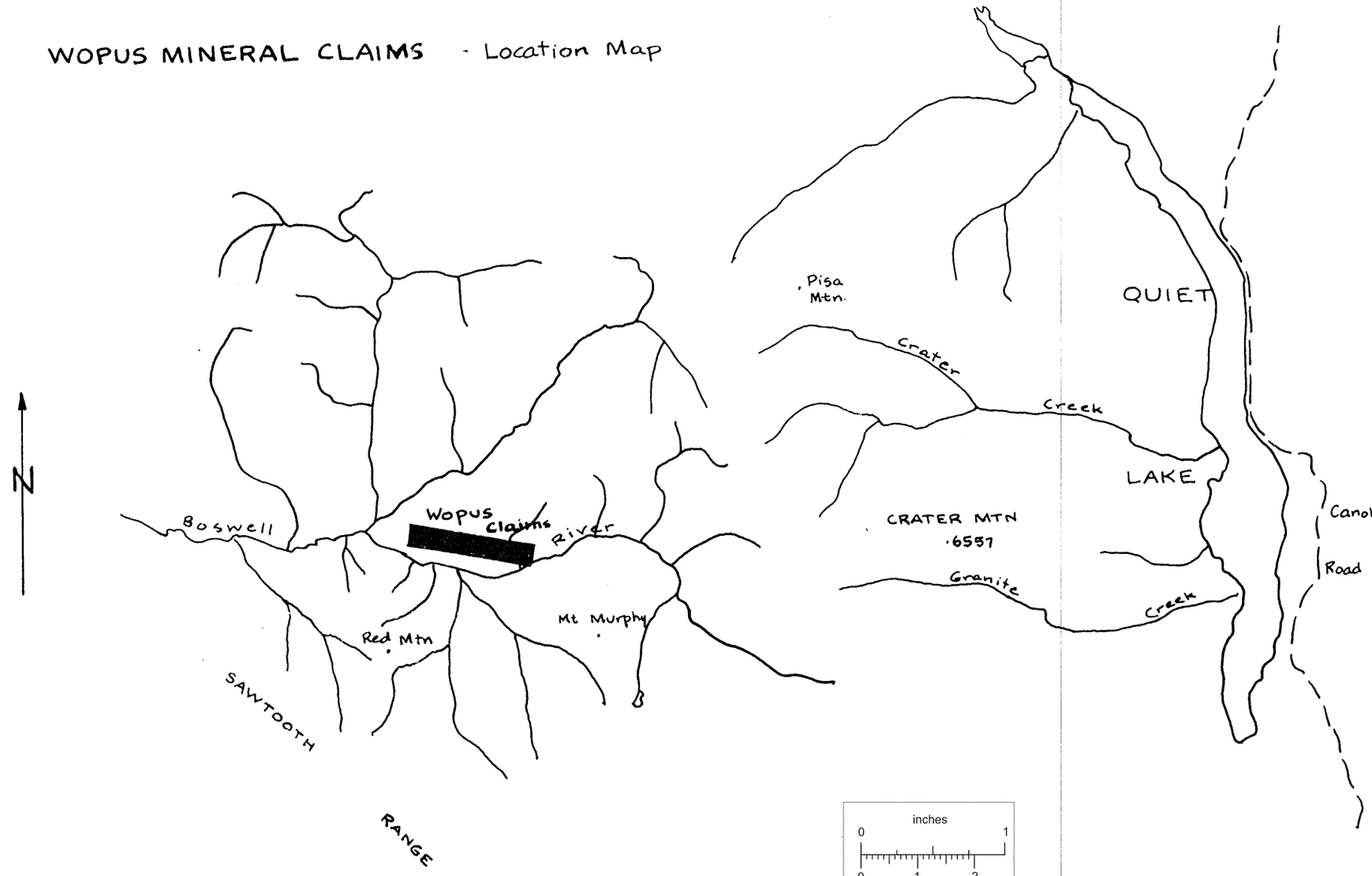
August, 1963

Legend

- Granite
- Feldspar Porphyry
- Sediments
- Skarn
- Bedding
- Jointing
- Fault
- Geologic Contact

Sample No.	Assays Ag (oz/T)	Pb (%)	Zn (%)
①	trace	0.1	0.1
②	0.27	2.0	1.6
③	0.06	1.8	1.8
④	0.30	0.5	2.9
⑤	0.54	1.7	1.9
⑥	1.03	3.3	4.6
⑦	8.06	4.6	5.4
⑧	.30	3.7	2.7

WOPUS MINERAL CLAIMS - Location Map



inches
0 1
0 1 2
centimetres

YUKON GEOLOGICAL SURVEY

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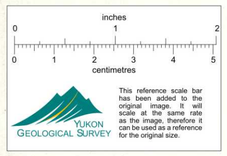
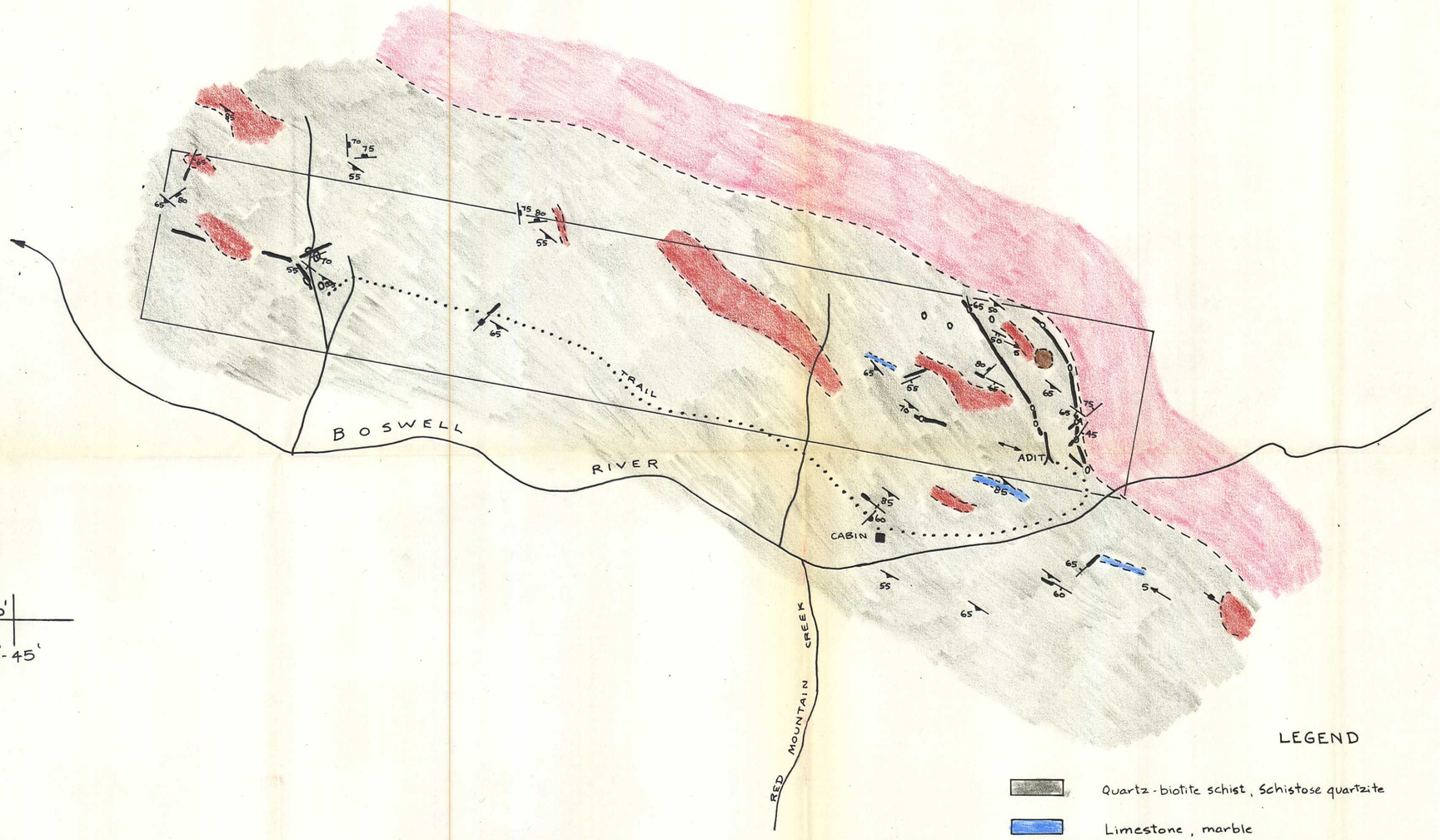
WOPUS MINERAL CLAIMS - BOSWELL RIVER , YUKON

GEOLOGY





61° - 00'

133° - 45'

1500 Ft.

LEGEND

- Quartz - biotite schist , Schistose quartzite
- Limestone , marble
- Quiet Lake Batholith - Granite
- Granite porphyry , Felsite
- Serpentine
- Quartz vein (scale exhaggerated)
- Test pit
- Schistosity
- Axial plane cleavage
- Joint
- Lineation
- Vein attitude
- Geologic contact - approximate
- Boundary of claims

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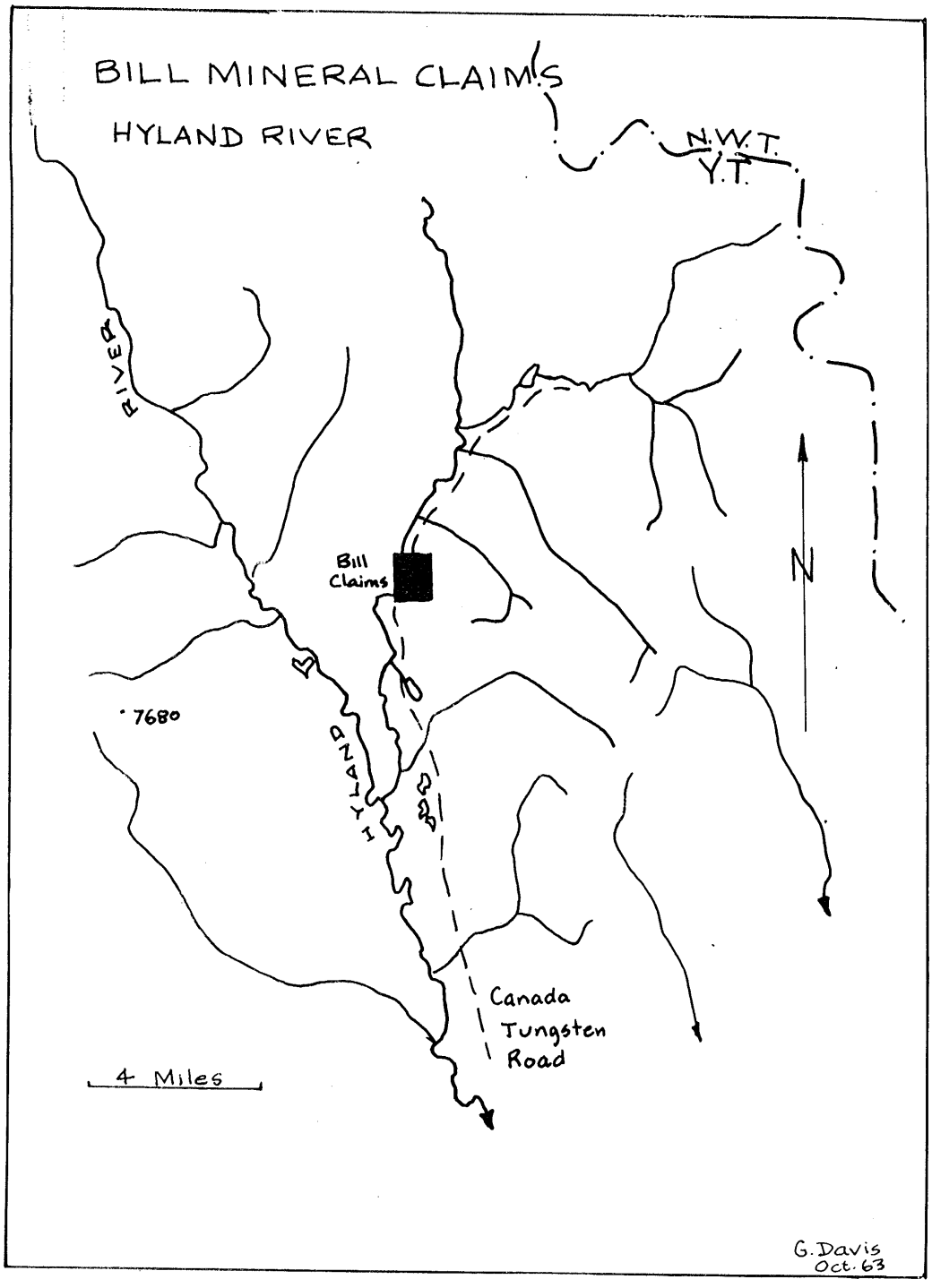
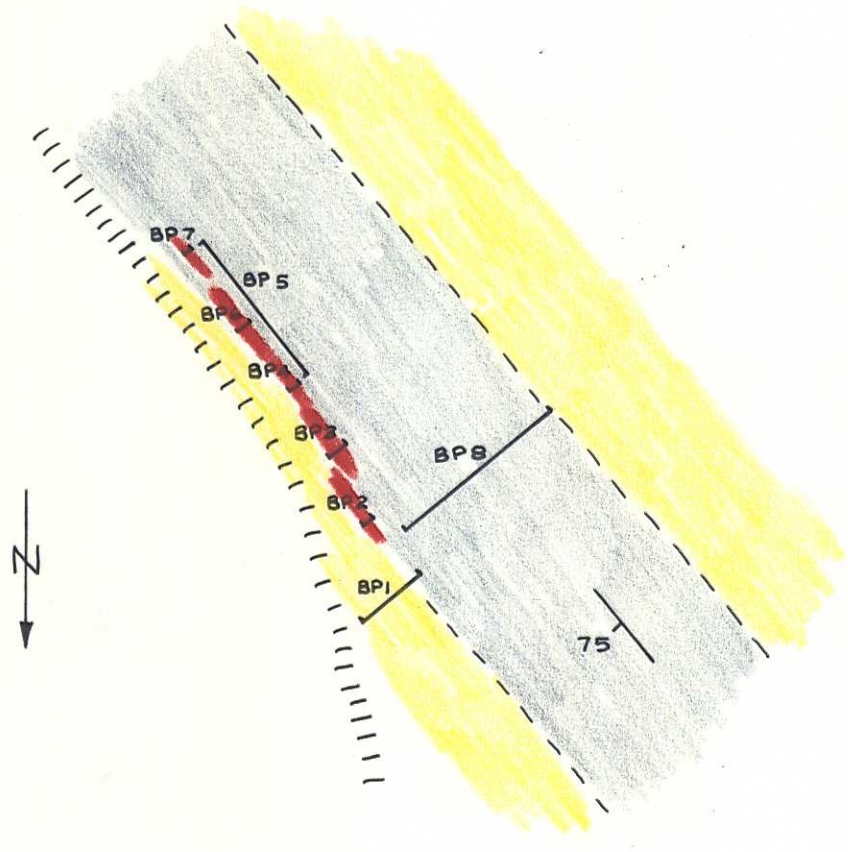
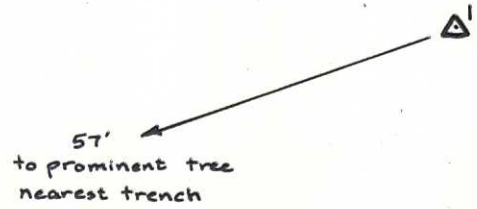
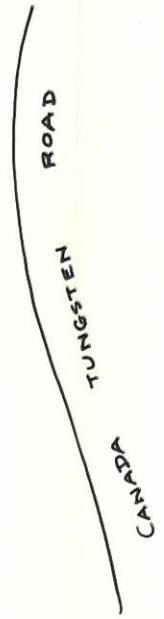


BILL MINERAL CLAIMS



5 feet



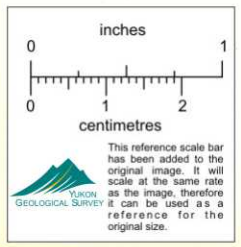


LEGEND

- Greywacke, minor shale
- Fault gouge
- Quartz vein, varying amounts of sulphide
- BP — Channel sample

Assays

Sample No.	Gold oz/ton	Silver oz/ton	Lead	Type of material sampled
BP 1	trace	trace		Oxidized hanging wall
2	.26	2.94	2.8	Massive arsenopyrite in quartz, some galena
3	.13	2.50	0.5	Arsenopyrite in quartz some gouge.
4	.08	.34	Nil	Mostly gouge some arsenopyrite in quartz
5	.01	trace		Fault gouge
6	.14	1.60	Nil	Massive arsenopyrite in quartz
7	.06	.76	Nil	Gouge and quartz
8	.02	trace		Fault gouge



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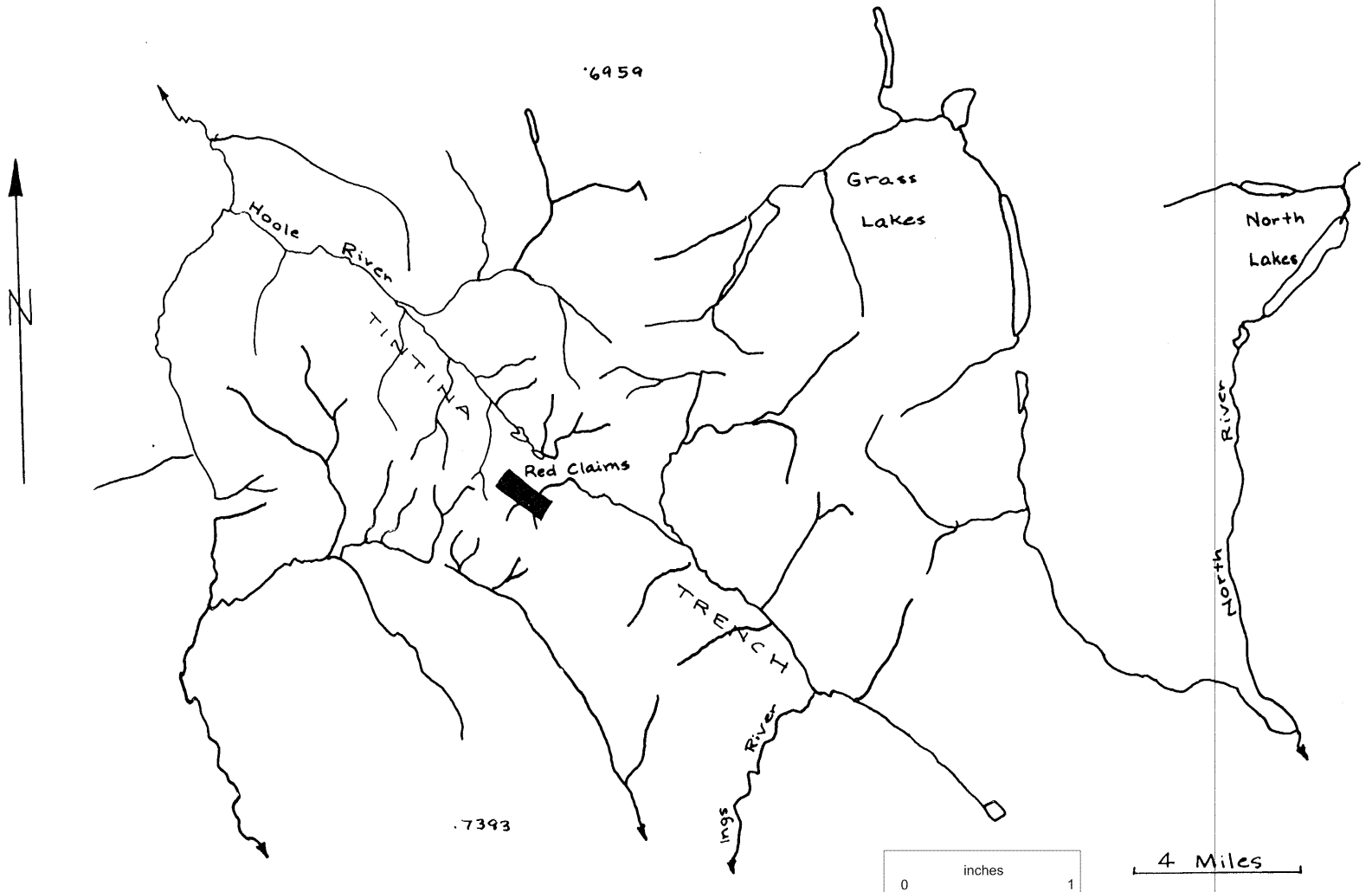
RED MINERAL CLAIMS - HOOLE RIVER



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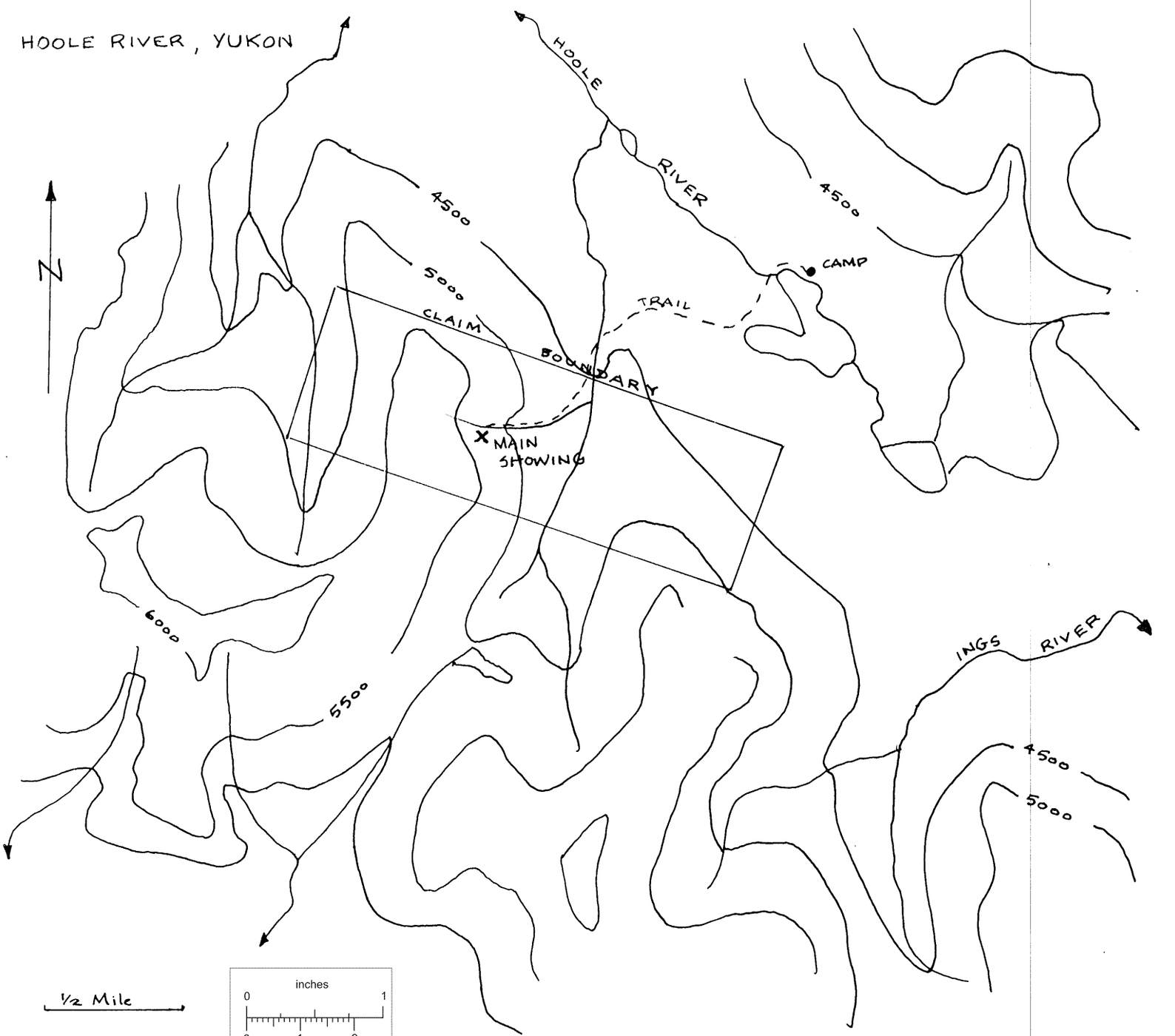
Oct-63

RED MINERAL CLAIMS

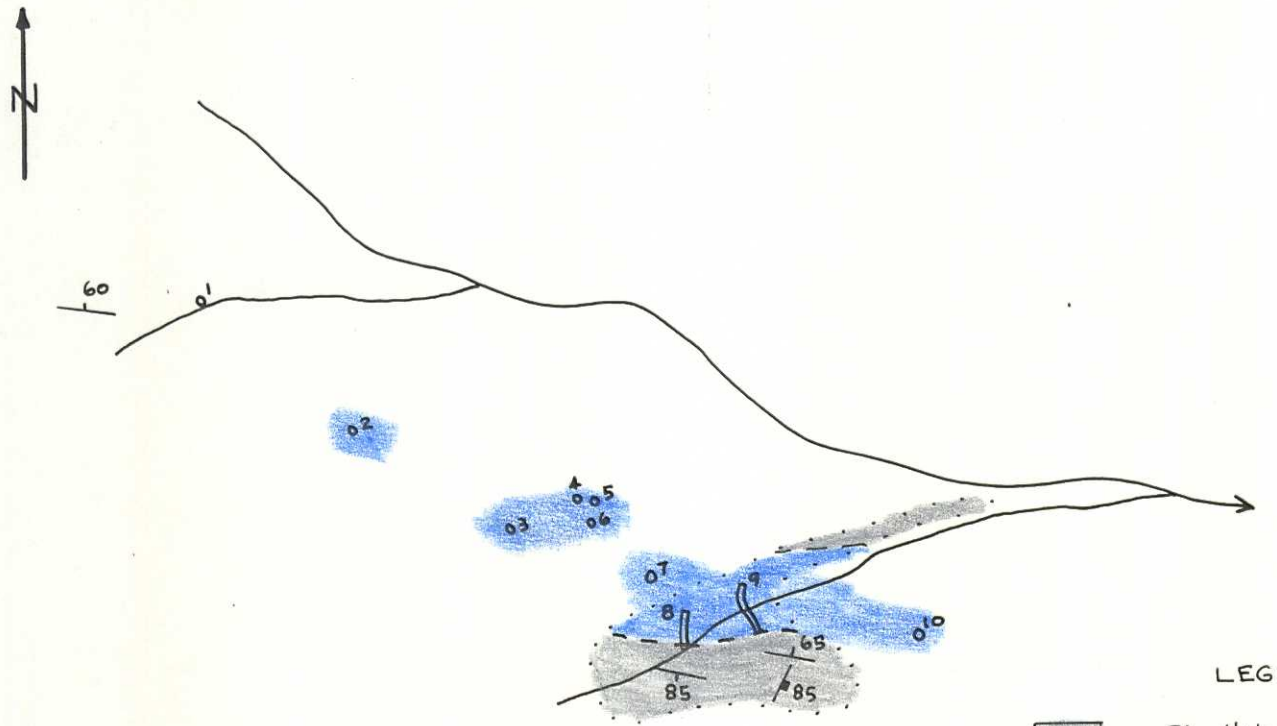
HOOLE RIVER, YUKON



G. Davis
Oct. 1963

RED MINERAL CLAIMS

HOOLE RIVER, YUKON



250 Feet

LEGEND

- Phyllite, slate
- Calc-silicate hornfels, marble, breccia.
- Bedding
- Joint
- Area mostly outcrop
- Trench
- o Test pit