

GEOLOGICAL-GEOCHEMICAL

REPORT

for

MR. JOSEPH PARADIS

on the

H & N GROUP

MINERAL CLAIMS

GREENWOOD AREA, B.C.

by

S. A. Mouritsen P.Eng.

Consultant

CALGARY, ALBERTA

ENG 3/66

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PREFACE

This geological report on the H and M group, in the Greenwood M.D., was prepared from data obtained in the field from July 15, 1966 to August 2, 1966.

The data was obtained by ground traverse using a Brunton compass for direction and pacing distances. The traverses off trails or roads are marked on the map by dashed lines. The outcrops are indicated by short dashes crossing the line of traverse. The traverses were tied into the Crown Grant posts shown on the geological map.

Outcrops are common in the mapped area and reasonably accurate control can be maintained. The exception is the north and west slopes of Wright mountain. Here dense forest and overburden cover the rocks and exposure is poor. Two outcrops along the old mill road indicate that the rocks are sedimentary in this portion of the claim area.

There were no detailed geology reports available on the claims and the survey was started from minimum data.

The survey gives a reasonable picture of the geology of the area. The accuracy of the control is within sixty feet at all tie points. The magnetic declination correction used was twenty-two and one-half degrees.

INTRODUCTION

This report covers a geological survey and a geochemical survey of the H group and the Crown Grants, Lady of the Lake (11642); Silver Duck Fr. (11648), Rob Roy (11153) and Falcon (11640). The Crown Grants are under lease number M-219. The geological survey was detailed and each claim was traversed by compass and pace. Where time allowed a chain and compass survey was run.

The surveys were carried out between July 16th and August 3rd, 1966.

The object of the surveys was to determine the most likely areas for mineral deposits to guide additional exploration in the future, and to compile maps of a technical nature.

The geochemical report is included as an appendix to the geological report.

LOCATION AND ACCESS

The claims are located between McCarren and Cidon creeks on the west and Wright Mountain to the east. The claims are shown in plan on the geological map.

Access to the claims is by a road leading from Highway #3 from Grand Forks. The claims can also be reached from Greenwood via Highway #3 to Boundary Falls and then by road eastward and southward along McCarren creek.

The mean elevation is 4000 feet above sea level and the terrain is moderately mountainous.

There are numerous trails crossing the claims that have been constructed by timber operators.

PROPERTIES

The property consists of 24 contiguous claims and four Crown Grant leases held by Joseph Paradis. These claims were staked in July 1964.

The names and record numbers are as follows:

H-37 to H-60 inclusive-Record No. 21943 - 21966 inclusive.

Crown Grants:

Lady of the Lake	11642
Silver Duck	11642
Rob Roy	11153
Falcon	11640

The Crown Grants are under lease #219.

REGIONAL GEOLOGY

Three rock groups are represented in the area. The oldest rocks are Palaeozoic sedimentary rocks of Permian? age. These rocks are common in the north and central portions of the claim group. The rocks strike northwest-southeast and dip from 45° to 75° northeast.

The next oldest rocks are Mesozoic Lower Cretaceous ultra-basic intrusives. These rocks are serpentine, talc, and where unaltered are pyroxenites. (On the easterly slope of Wright Mountain).

The youngest rock is granodiorite and diorite. This granitic rock varies from a grey granodiorite to a rock of equal proportions of light and dark minerals (diorite).

The sedimentary rocks are metamorphosed and schisty and consist of argillites, chlorites schists, limestones, and silicified limestones. There are numerous quartz veins and calcite stringers

Greenish and black argillites are predominant.

The ultrabasic intrusives are altered to serpentinite and talc.

The granodiorite and diorite are fresh looking rocks.

DETAILED GEOLOGY

Sedimentary rocks - Permian? - Marchist group.

Argillites - On claim H-43. The rock is black to sooty black, somewhat calcareous, fine-grained, dense, bedding obscure.

- On claim H-55. Schistose, grey to black, sometimes chlorite, completely replaced by quartz at two points.

- On claim H-38. Greyish-black, schistose, foliated, pyritic, laminated with calcite stringers. Highly altered to brown and greenish schist near the serpentine contact.

- On the old No. 7 and the Rob Roy and Falcon. Highly altered, foliated laminations, green to black. Pyrite altered to limonite. Near the serpentine contact the rock is schistose, micaceous and sometimes completely altered to rusty soft "mess" indicating movement along bedding planes near the contacts. The open cut on No. 7 generally follows such a zone. The quartz vein followed such a shear zone and a fault has been indicated on the map along this cut. The mineralized quartz on the No. 7 and Rob Roy followed these zones. Isomphyre dikes also are injected along the shear zones indicating that the serpentine contact could also follow a zone of weakness.

Quartzite - Brownish quartzite is present as thin beds in the argillite in the north portion of the area. The largest beds

of quartzite are in the form of silicified argillite. The silicified argillite is pink and shows minor oxidized iron streaks. One zone four and one-half feet wide and one two and one-half feet wide were found that were completely quartz replacements.

Limestone - Limestones are for the most part silicified and altered so that schistose zones are present in the rock. The limestone alternates with argillite along the northeast boundary of the serpentine. The limestone alternates between nearly pure crystalline lime to almost complete quartz replacement. The original sediments also varied from calcareous shales to shales and limestone to argillaceous limes. Some of the argillites are calcareous. The dark calcareous rocks have been included in the argillites. Limestone and altered limestone occurs only in the northern portion of the claim area. Limestone beds were exposed in the bulldozer cuts on the east end of the No. 7 and the west central portion of the Rob Roy. An outcrop of limestone was also found on a traverse in the north half of the Rob Roy. This area of the claims is largely covered by overburden and the extent of the limestone cannot be mapped out.

The sediments strike west-northwest and dip from 45° to 75° to the northeast. The structure appears to be homoclinal and no tight folding was observed. There are minor changes in strike from the southeast to northwest. Minor faults with displacements of only a few feet were observed on the silicified beds in the argillite on Bright Mountain.

The changes in strike and dip have probably been caused by

minor variations in uplift and compressions coincident with the two periods of igneous intrusions.

The ultrabasic intrusives are largely altered to serpentine and talc. These rocks form a large area trending north-westerly-southeasterly through the claims in two separate bands with an argillite zone between them. The serpentine is altered to talc near the contacts and at the head of Geommas creek. The talc zone near the northeast contact (No. 7 and Bob Roy) is laminated green and yellowish and forms a white powder when crushed. An unaltered zone on the east slope of Wright Mountain is a dark green medium grained crystalline pyroxenite.

Granodiorite and Diorite - The granodiorite and diorite are genetically related rocks gradational from one to the other locally. They are fresh looking rocks cutting both the sediments and the serpentine. The contacts are not clean and large blocks of country rock are included in the granodiorites along the contacts. In the neighborhood of the Mabel and Ore Crown Grants the argillites appear to be roof pendants and remnants in the granodiorite. The shaft in the Mabel is sunk in a remnant of argillite in the diorite. This evidence indicates the argillite was stopped out from underneath and that the argillite in this area probably forms a shell of varying thickness over the granodiorite. North of the Mabel shaft, the granodiorite is in contact with the serpentine. The serpentine is altered along the contact but the granodiorite shows little chilling at the contact.

Other Rocks - The only other rocks present are dike rocks. These rocks are in narrow zones and are usually sills. A sill was found at the closure of the road loop at the north end of claim

H-44. This is a dark basic rock lacking in quartz. A similar sill occurs along the open cut at the No. 7 mine. A porphyry dike is present at the south end of the Jack of Spades Crown Grant. This is a basic dike in serpentine with white feldspar phenocrysts up to one half inch in diameter. Narrow amesite (2 feet wide) occurs at the east end of the No. 7 and extend into the Rob Roy. These sills and dikes are probably more basic magmatic offshoots from the granodiorite. Their origin cannot be definitely determined. It is possible that they originate from the Coryell intrusives to the north because they bear a resemblance to the darker syenite porphyry dikes related to these intrusives.

MINING GEOLOGY

The area has been prospected from the late eighteen hundreds to the present. The area has been extensively mined, pitted, trenched, tunnelled and shafted where mineralization was observed in outcrops. Active mining operations were carried out at the City of Paris, the Lexington, the King Midas (Habel) and the No. 7. The largest operation was the No. 7. The No. 7 mine appears to have been a high-grading operation because there is considerable ore grade rock in the dumps, tunnels and shafts. Good grade ore is piled between two shallow shafts on the Rob Roy Crown Grant.

The ore deposits in the area are all "contact type." The No. 7 and the Rob Roy follow quartz veins in the shear zones along the contact between the serpentine and the argillite. The Ore showings and the King Midas (Habel) are along the contact zone of the diorite and the serpentine and the argillite and the diorite respectively.

The principle minerals are argentiferous galena, gold, chalcoc-

pyrite, bornite, ruby silver and the copper carbonates azurite and malachite.

The main prospective lead resulting from the geological survey is the contact zone along the argillite and serpentine southeast from the old No. 7 mine. The quartz veins uncovered by the bulldozer cuts along this contact varied from four inches to fourteen inches in width (The results of assays on these veins and the associated shear zones are not available at the time of this report).

Other prospects--The contact between the granodiorite and serpentine and the granodiorite and argillite shows high grade copper samples and should be prospected further in the claims lying in the southwest portion of the claim area and in the area covered by the old Canada fraction. Geophysical and geochemical methods will have to be employed in these areas because of extensive overburden.

High grade gold quartz veins should be present in the serpentine belt. These deposits will probably be small but rich. Other minerals that should be watched for are nickel and chromite within the serpentine belt.

The area has timber for mining purposes. Water is in short supply and if commercial quantities of ore are found systems of conserving water for mining use must be designed.

Road building is at a minimum. The area is easily accessible and many existing trails and logging roads exist throughout the claim area.

RECOMMENDATIONS

1. The claim area should be explored and prospected along all contact zones by geochemical and geophysical methods and bulldozer trenching.

2. Drilling below the mine area should be done on the old No. 7 and extending into the Rob Roy.

3. All tunnels, shafts and dumps should be systematically sampled to determine the economics of reworking or rejuvenating the old mines.

CONCLUSIONS

1. The claims have a good geologic setting and replacement bodies should be looked for in the north portion of the claims where limestone is becoming more common.

2. The ore bodies found to date have been of the "contact type" and more ore deposits should be looked for along the contacts.

MAPS SUBMITTED

1. Claim Location map
2. Geological map
3. Geochemical map

Respectfully submitted,

S. A. Mountain
S. A. Mountain, P. Eng.

CERTIFICATE

This is to certify that I, Stanley A. Mouritson, am:

1. A consulting geologist and geophysicist,
2. A graduate of the University of Manitoba, 1946,
3. A member of the Association of Professional Engineers of Alberta and British Columbia.

And that:

4. I maintain an office at Rm. 804 - 630 - 17th Avenue S. W., Calgary, Alberta,
5. I have practised my profession for more than twenty years,
6. I do not have any interest in the claims mentioned in this report either directly or indirectly and that I do not expect to receive any interest in the claims,
7. I have personally done or supervised the work undertaken and reported on in this report.

S. A. Mouritson
S. A. Mouritson, P.Eng.

APPENDIX

GEOCHEMICAL REPORT

GEOCHEMICAL REPORT

INTRODUCTION

The geochemical survey as reported here was carried out from July 26, 1966 to August 2, 1966. The chemist was supplied by James Millar & Associates, consulting mining engineers. Mr. Andrews is an honours graduate in chemistry from the University of Alberta.

PROCEDURE

The survey was tied into the points established by the geological survey. The lines were run by Brunton compass and holes were dug every two hundred feet. The holes were dug through the humus layer into the grey silty clay. A sample of the grey soil was taken in a small clean glass vial, corked and labelled. The location of each sample was marked by a blue flag showing the line and station number so that the sample could be duplicated if necessary.

The samples were tested qualitatively by the Rubenic acid method for copper.

DISCUSSION OF RESULTS

The results of the survey indicated several potential areas to be further prospected for copper. These anomalous zones trend in the direction of the strike of the sedimentary beds in the area. The main zones of interest have been outlined by configuration contours on the geochemical map.

This map is an overlay taken from² the geology map of the area which was drawn up by S. A. Mouritsen. The map shows the locations of the soil samples taken to date in this group of claims and the apparent showing of these samples when tested for copper using the Ruboanic acid test.

The symbols used are an arbitrary breakdown of the copper tests into four categories.

The X - indicates very little copper showing in the soil sample tested.

O - indicates a showing of copper in the soil sample.

≠ - indicates a copper showing in the soil sample which is just above the overall background of the area.

▲ - indicates an anomalous showing of copper in the soil sample tested that is definitely above background.

Note: The numbers associated with these symbols on the legend of the map are not quantitative, but only give a scale for the symbols.

In this map of the H and M group of mineral claims there seems to be some pattern to the soil samples containing the higher amount of copper, and this pattern seems to follow the strike of the sediments through the claim group in most cases.

However, due to the incomplete soil sampling program a clear pattern of the higher readings cannot be traced through the areas of greater overburden. It appears as if the copper tests which show the greatest are scattered at random, but an explanation may be found in the difference in the soil hor-

izon sampled. An attempt was made in this soil sampling program to obtain samples from the same soil horizon each time. However, as augers were not obtainable in the short length of time allowed on the project, soil sampling was done with a mattock and thus the careful control over the soil horizon sampled each time was not possible.

There remains a large area to the north east in the claim group which is unsampled and which is fairly heavily overburdened. This area should be sampled as soon as possible in order to complete any picture which may be developing from the testing of the soil samples for copper. Also the soil samples from these claims should be tested for the heavy metals such as lead, silver and zinc.

No conclusions can be drawn from the geochemical results until they are correlated with the geological study made by Mr. S. A. Mouritsen.

Respectfully submitted,

R. G. Andrews

R. G. Andrews

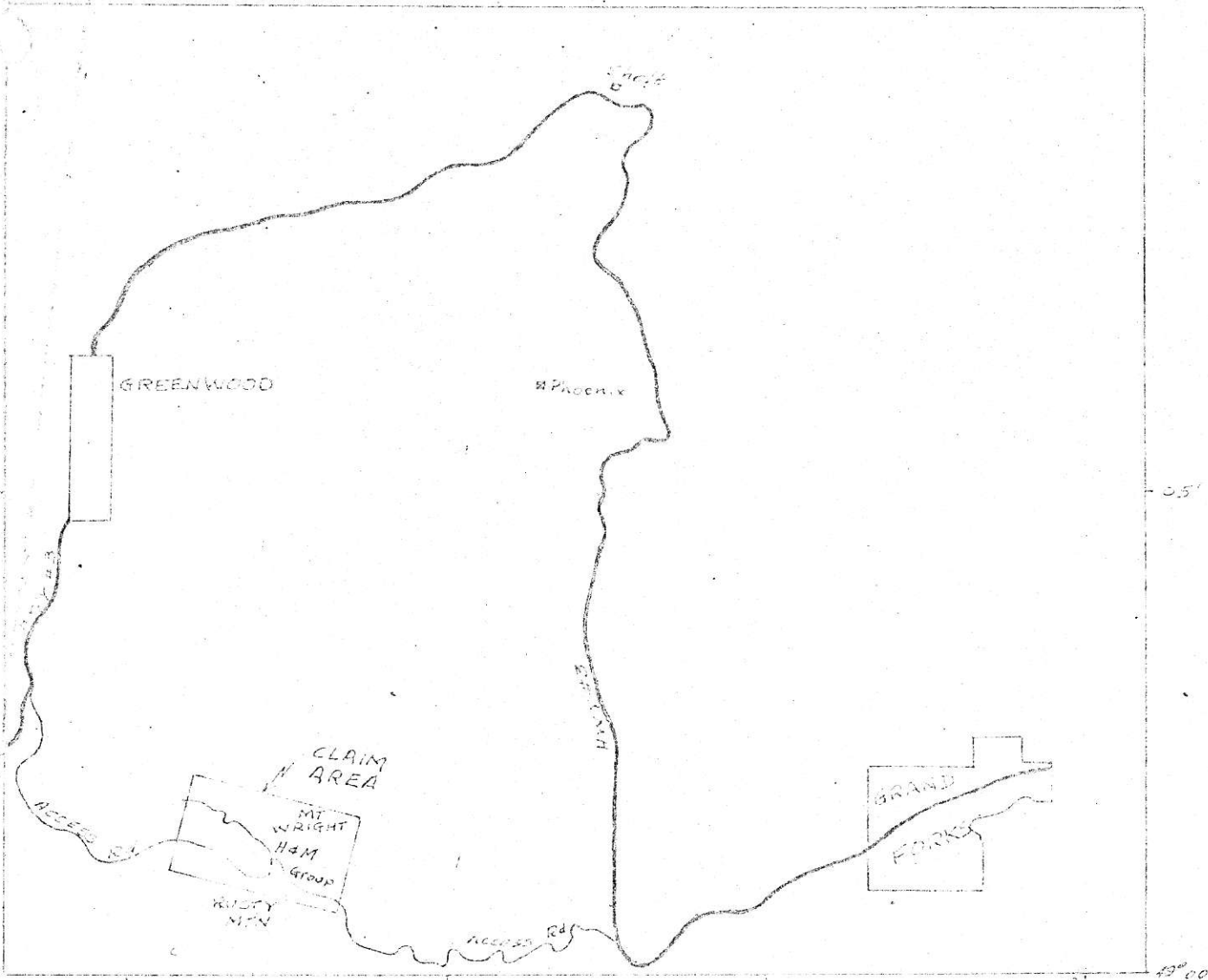
S. A. Mouritsen

AFFIDAVIT OF EXPENDITURE

The following monies were spent on a geological and geochemical survey on the H and M group claims from July 15, 1966 to August 3, 1966.

Professional fees S.A. Mouritsen P. Eng. 19 days at \$100.00 per day -----	\$ 1900.00
Student assistant- 19 days at \$20.00 per day ----	\$ 380.00
Motel office- 18 days at \$ 11.00 per day -----	\$ 198.00
Board- 19 days at \$7.00 per day -----	\$ 133.00
Car Expense 1388 miles at \$ 0.10 per mile -----	\$ 138.80
Sub-total -----	\$ 2749.80
Geochemical Survey (James Millar & Associates)- Assays	\$ 550.71 \$ 80.00
TOTAL COST -----	\$ 3380.51

Certified: S. A. Mouritsen
S. A. Mouritsen P. Eng.



CLAIM LOCATION