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ROBERT CLARKE'S
REPORT ON THE "IMPERIAL"
GROUP OF MINERAL CLAIMS
ROCK CREEK?
BOUNDARY DISTRICT, B. C.

Copy — R. A. Sarrat.
Sept 24th 1946

ROBERT CLARKE'S REPORT ON THE IMPERIAL GROUP

JANUARY 16th. 1935.

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Dear Sir:-

Refering to our conversation of this morning, as to the two alternative proposals for the preliminary work on the Imperial Mine at Rock Creek, I append a description of the proposed work, and the cost of each programme under separate headings as follows:-

No. 1. Sinking of a winze(underground shaft) 50 feet deep at the point on the map marked "a" and driving approximately 60 ft. to the intersection of the two fissures responsible for the ore deposition. This work, I estimate, can be let on contract for about $17.50 average per foot, ar a total of $1,925.00, the work to be performed with hand tools by the present leasors. It would be safer to make this $2,000.00 in round figures to cover any possible deviation of the fissures, necessitating extra work over the distance estimated.

The time required to complete this work should not be over six or seven weeks. I anticipate we should be able to produce at least one carload of say 50 tons of sorted ore of high enough grade to ship to the smelter.

If this should average as high in value as that mined below the level, about 80 ft. further towards the south-east on the same fissure, the smelter returns should about cover the cost of the work.

No. 2. The same work to be done as in proposal No. 1, with the addition of spending a further amount of $1.000.00, making a total of $3,000.00 in one or two short raises on the ore now shown

above the tunnel level, and possibly extending the proposed new drift on the 50 foot level below the tunnel level in a south-east direction towards the winze from which the ore shipped by the leasors was mined. This work could also be contracted for about the same price and part of it could be done concurrently with that in proposal No. 1. The whole programme should be made from the bottom of the winze so as to determine the width of the main mariposite body.

It is our understanding that this preliminary development is to be done with the purpose of opening up more ore and proving up the extension of ore on the fissure towards the north-west, as well as determining the existence or otherwise of an enrichment and larger ore body at the junction or intersection of the two fissures shown on the map.

The property will then be in better condition for your client's Engineers to decide whether the installation of compressor equipment and machine drills is warranted as a step towards the development of the mine, with a view of blocking out ore reserves for future milling.

At the same time it will give data that will be useful in determining thw position of at least one or two of the favorable limestone horizons where replacement deposits can be expected, and also the most advantageous point from which the property can be developed by a main shaft.

On completion of either of the proposals submitted, in the event that the results are satisfactory, and your clients elect to proceed under the option outlined and submitted with this letter, I would suggest the installation of a small compressor of about 350 cubic feet of air per minute, driven by a Diesel unit, and the purchase

of suitable drilling equipment and tools, so that two machines can be put to work.

The cost of equipment such as I propose, would be about $7,000.00 installed. On account of the favorable situation of the property as regards transporation, these costs will be low.

Yours very trluy,

(SIGNED) "ROBERT CLARKE"

ROBERT CLARKE'S

REPORT ON THE "IMPERIAL"

GROUP OF CLAIMS; ROCK CREEK. B.C. (BOUNDARY DISTRICT)

PROPERTY & LOCATION

The group comprises 9 claims, all held by location They are named as follows: Imperial; Imperial No. 1; Imperial No.2; Badger; Badger No.1; Badger No.2; Lancashire; Helen and Emma; owned by Ola Lofstad of Greenwood B.C.

They are situated on the west bank of the Kettle River about 4 miles south of Rock Creek, the Kettle Valley branch of the Canadian Pacific Railway passing within 100 yards of the portal of the lower tunnel.

SUMMARY :

This is a very interesting prospect, being a replacement deposit in limestone.

The tunnels have been driven into the hillside, the main tunnel being about 60 feet below the upper and shorter one. A raise connects the two tunnels, and is put upon a fault carrying some ore. Total footage including crosscuts, raise and winze amounts to approximately 500 feet.

In recent work by leasors, a winze has been sunk below the tunnel and has opened up from four to six feet width of ore for a length of about 25 feet.

One shipment of 31 tons made to Trail in September gave returns as follows:-

Assay Gold .177 Ozs; Silver 23.7 Ozs. Lead 2.9% Zinc 4.9 %

A second shipment is now being taken out, and there are

about 40 tons at present in the bins; this ore is well sorted and will give a better return than the previous one.

Other samples taken on a recent examination trip gave results as follows:

	Ozs. Au.	Ag.
Mariposite waste - lower dump	.02	13.84
Dark rock with iron sulphide- only on lower dump	.16	4.04
Bottom of stope - 38" wide	.32	12.32
18 8" under brecciated Lime on N.W. 25' of stope 2'8" (heavy sulphide)	.21	9.75
N.W. end of stope 5' below drift 4½ feet	.09	13.73
At 1st. west x cut 90' S. of Stope btm. on left side	.12	17.24
Specimen black rock with fine galena	.62	141.38
Across 6 ft. S.W. end of ore chute Below level.		
1. Galena	.26	370.00
2. Quartz	.60	206.00

The last two samples were taken to determine where the best value occurred.

The deposit is similar in many respects to the limestone deposits of Utah and Neveda, differing chiefly in the character of the intrusive dykes, which in this case are serpentine and in Utah chiefly aplite and diorite.

The intrusive serpentine evidently carries some chromite as the limestones are stained with mariposite, which also occurs in places on the Mother Lode of California and is named after Mariposa County, where it was first identified. It is a chrome mica.

Whether large bodies of ore will be developed in tnis property is a matter that can only be determined by development, as there

has been no study of the thichness of the limestones, and no data is available on the sequence of the beddings as to their favourable or unfavourable character for replacement.

All other conditions are present for ore deposition, three mineralized fault fissures having been noted.

The nearest mines more or less similar in character are at Beaverdell, where the Sally, Wellington and several others are being operated at this time, but I have not had an opportunity to study these mines so as to be able to make a comparison between them and the conditions at the Imperial. As far as could be seen from outcrops, the limestones cover a considerable width, possibly 600 to 800 feet, and all the outcrops show the typical brecciation usually found in such deposits, but unfortunately, owing to the position of the workings immediately at the level of the Kettle River, there is no means of determining what rocks lie below.

A cross-section of the beddings shown in two rail road cuts indicates that a depth of possibly 800 feet of limestones will be found below the level of the lower tunnel. This furnishes ample ground for a large tonnage in the event that favourable replacement horizons occur below.

Many of the beddings seen in the railraod cuts are apparently soluble limestones, which would be favourable, and other shaly limestones may be favourable for replacement deposits.

It is ideally situated for sheap operation, being practically on the railroad, where a switch could be put in within 100 yards of the ore bins.

There is ample water in the Kettle River for all purposes, also within 200 yards of the mine, and enough timber on the property for mining requirements for several years.

The chief value is in silver which occurs in tennantite associated with galena, and also ruby silver in the quartz.

Streaks of pure galena and tennantite occur on the footwall side in the underhand stopes, up to 3" and 4" wide, but these are too irregular to mine sepatately. The high gold content is unusual in this type of deposit, and may result from the basic character of the intrusive dikes, as well as the underlying stock, no acidic rocks were seen in the vicinity. Samples taken from the dumps indicate that these could be milled after sorting out the coarse waste. There would be no mining charge against them. The tonnage would approximate 8000 tons.

A stope has been taken out between the two tunnels on the intersection mentioned later, under heading "recommendations" paragraph 2 above point marked "A" on the map.

CONCLUSIONS :

I Consider this property has all the geological conditions for ore production on a reasonably large scale, the chief requisite being further development to open up the intersections of the various fissures where the richer ore will occur, and to block out ore preparatory to milling.

Its chief value will no doubt, be in milling grade ore, but richer shoots will occur which could be shipped. The expenditure of $25,000.00 in its development is fully warranted on its present showings, with more if this expenditure proves up the ore occurrance that the small amount of work done to date indicates.

At present a shoot is proved for a length of 25 to 30 feet and a depth of 25 feet below the lower tunnel level. This shoot will eventually be about 200 feet long from the indications in the floor of the level, the bedding below the level being one of the favourable replace-

ment horizons.

The ore found in this shoot extends above the level and will probably go to the surface, though it may be narrower, depending on the character of the limestones above.

RECOMMENDATIONS :

Three principal objectives can be pointed out as follows:

1. Sinking of the present winze to 100 ft.

2. Drifting north west to a point marked "A" on the map, where an intersection with a cross fissure occurs, and where an enrichment should be found.

3. Extension of this drift further to the N. W. to get the intersection of the three main fissures shown on the map which should be about point "B" on the map.

The total amount of drifting required to reach point "B" would be about 160 feet.

Further development of fault "X" towards the south could be done later to prove up the extension of ore further into the hill.

Fault "Y" also has promise, and work should be done by drifting south east on its extension.

GEOLOGY AND ORE OCCURRENCE :

The workings are in a series of limestone beds striking in a general north-westerly direction and dipping at about 15 deg. to 20 deg. to the south-west.

These beds abut on the south and against a stock of greenstone, probably a differentiate of gabbro.

This belt of limestones apparently lies in a synclinal depression in a large body or stock of this rock, as it again outcrops about a mile toward the north, where an old tunnel shows the actual contact of the lowest beds of the limestone series with the underlying stock.

These beds on the contact are graphite shales.

Apophyses from the stock are intruded into the limestones in the form of serpentine dikes.

This has resulted in extensive fissuring and faulting with brecciation of the limestone near the faults.

Later magmatic waters have deposited silica in the fissures and have replaced or silicified the adjacent walls.

Together with the silica sulphides of lead and zinc and sulph-arsenite of copper have been deposited, all carrying varying amounts of gold and silver.

The gold is associated with arsenic in the form of arsenopyrite, and arsenic is also combined with some of the silver in the form of proustite, or ruby silver, some of which can be seen in the richer quartz ore.

Three of these mineralized faults were noted in the workings, and the stope taken out by the Hecla Company was on the intersection of one of these with a cross fault.

Two of the faults strike north-west and south-east and dip towards the north-east about 45 deg. The third strikes N. 35 deg. E. and dips N.W. 62 deg. This last is near the portal of the lower tunnel and has apparently been overlooked.

As is usual in this type of ore deposit, the width of ore varies with the character of the limestone in the enclosing walls, so that is is quite irregular.

In Utah where the carboniferous limestones have strata which are peculiarly favourable for replacement, tabular bodies of ore up to 30 feet in thickness by width of 50 feet, and length of several hundred feet occur in these favourable horizons.

In the Imperial Mine, which is an isolated operation in undeveloped country, it is impossible to form any opinion as to the probable size of the ore bodies that will be found on account of the lack of information regarding the sequence of the limestone beddings, and the frequency with which the more replaceable beds occur.

In Utah and Nevada, the favourable horizons are definitely established, and the presence of fossils in the limestones there make it possible to correlate the beddings in the different localities.

No fossils were seen in the beddings on the Imperial Mines.

EQUIPMENT :

The lower tunnel is equipped with car and track, also sorting shed and ore bin.

There is a blacksmith shop with forge and hand tools, and a trestle to the railroad, used previously to load ore before the side track was removed.

GENERAL :

Accomodations are lacking for housing a crew of men, but arrangements can be made for the use of the cabins on the Riverside property adjoining the Imperial to the south. These are at present occupied by the lessors on the Imperial and the caretaker of the Riverside Mines.

Connection with the highway could be made in a very short distance by building a bridge across the Kettle River, which would not be very expensive. This would improve considerably the means of communication with the small town at Rock Creek by eliminating about 2½ to 3 miles of poor road.

I have been informed that the C.P.R. Railroad will re-install the switch and side track for a nominal sum, provided the labour for grading was furnished.

Power connections could be made in three miles, at an approximate cost of ~~$5,000~~