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FAIRVIEW ROUND MOUNTAIN MINES. CO.

SAN FRANCISCO, CALIF.

GEOLOGIC REPORT

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May 28, 1920

Mr. L. D. Gordon, Pres.,
Fairview Round Mountain Mines Co.,
First National Bank Bldg.,
San Francisco, Calif.

Dear Sir:

I submit herewith a geological report on the property of your Company in the Round Mountain mining district.

Accompanying the report are seven sheets of maps and sections.

Recommendations for further development are included in the report.

Yours very truly,

J. H. Farrell

S U M M A R Y .

The property of the Fairview Round Mountain Mines Company is located in the Round Mountain Mining District, Nye County, Nevada, about 55 miles north of Tonopah, the nearest railway point.

The ore deposits occur in a rhyolite flow, probably of Tertiary age, the maximum thickness of which is unknown. This formation is rather fragmental or tuffaceous in its lower portions, merging into typical rhyolite porphyry above; it overlies an old erosion surface of granite and sedimentary rocks.

The Fairview vein has a general east-west strike and dips 25 to 40 degrees north. It has produced one important stope above the 250 Ft. or main tunnel level.

The more important ore bodies are found as high grade but very narrow stringers in a sheeted zone having a N. 65 degrees W. strike and dipping 85 degrees south.

The vertical extent of the ore zone is not great - less than 100 feet usually - the veins apparently pinching out in the highly altered and kaolinized rhyolite above the granite contact. The veins have not been found to extend into the granite.

The eastern part of the mine in the known productive zone is practically worked out.

The western extension of this zone is covered by gravel wash and can only be prospected from underground.

Lateral prospecting to the south has recently developed two important parallel sheeted zones in which are stringers carrying gold.

It is thought that development should be confined to these known productive lines and their extensions east and west.

It is thought that the chance of finding these veins in the underlying granite is relatively slight but ultimately some further work should be done to make certain of this.

RECOMMENDATIONS

Surface.

The outcrop indications of even the more important ore bodies in the vertical sheeted zone, are so slight as to give little aid to surface prospecting. In general it may be said that the more rugged rhyolite outcrops showing east-west fracturing and occasional quartz veinlets, are the most promising areas to prospect. These are indicated in red on map, Sheet No. 1. They should be investigated in detail by panning the various stringers; trenching where necessary, and by sinking prospect shafts or driving tunnels to a depth of 25 or 30 feet from outcrop.

The following localities appear to be the more important:

1. 1500 N.-5400 E. The outcrop near small shaft should be crosscut either by driving from surface or from the mine workings, above the "flat" which lay above the 110 stope.

2. 1550 N.-5470 E. The outcrop east of, and below trail should be opencut.

3. 1400 N.-5400 E. Outcrop should be trenched and stringers sampled. Or this ground might be crosscut from the south branch of 116 raise.

4. 1050 N.-5520 E. The deeper prospect shaft in this vicinity should be sunk to a depth of 50 feet and the sheeted zone crosscut in both directions.

5. 1180 N.-4740 E. (Not on Fairview ground) Stringers should be prospected and shaft sunk on most promising one.

6. 620 N.-5840 E. Tunnel to nothh under this outcrop.

Underground.

Inspection of the maps will show that the main sheeted zone in the east end of the mine has been very thoroughly prospected by crosscutting and drifting on all promising stringers. Any additional ore found in this section must be picked up by intensive prospecting of pillars and veinlets not considered important enough to warrant work when first opened.

This ground has been so thoroughly prospected that the chances of important finds in this east section are practically negligible.

Among the following recommendations the more important are marked with an asterisk:*

250 Ft. Level

*7. 1085 N.-5200 E. -251 Crosscut. Drift 258 should be extended west 400 feet with alternate 50 feet crosscuts, to prospect the sheeted zone as indicated on surface.

8. 1245 N.-5100 E.-254 Drift should be continued to the west.

9. 1675 N.-5230 E.-crosscut 75 feet south.

200 Ft. and 220 Ft. Levels.

10. 1545 N.-5145 E.- 200 Foot Level. From face 202 Drift drive N. 45 E. 50 feet.

11. 1520 N.-5224 E.-220 Level. Drive south 50 feet.

110 Ft. Level.

12. 1285 N.-5255 E. Drift both ways on vertical stringer.

*13. 1200 N.-5270 E. - Drift to S. E. on most promising stringer of sheeted zone. Surface indications good for 300 feet or more to east.

14. 1640 N.-5250 E. - Drive S. 30 W. 60 feet.

325 Ft. Level

*15. 1510 N.-4960 E. Drive south face 400 feet south to prospect west extensions of 254 and 256 sheeted zones.

375 Ft. Level.

*16. 1900 N.-5080 E. Drive northwest following vein for 100 feet then crosscut south 400 feet or until fault is reached.

500 Ft. Level.

17. 1430 N.-4570 E. - Drive west 100 feet then crosscut south.

GEOLOGIC REPORT

on the

FAIRVIEW MINE

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GENERAL CONDITIONS

Scope of Report.

The following description is based upon a detailed geologic survey of the surface and the mine workings. The topographic map was made by the Company's Engineer. The geology, both surface and underground, was mapped by the writer.

In addition to the surface map, three sheets of underground maps and two sections are submitted with the report.

No systematic sampling was done, but many samples were panned by the writter and by the mine superintendant in the writer's presence. The assay returns of the daily mine samples were also available.

The report is intended to cover only the geologic features of the property, and is not concerned with operating questions.

Location and Extent of Property.

The property of the Fairview Round Mountain Mines Company is situated in the Round Mountain mining district, which is about 45 miles north of Tonopah, the nearest railroad point. The trip from Tonopah is made via Manhattan by automobile stage; the distance by road is about 55 miles.

The claims cover an area averaging about 2,200 feet wide by 3,000 feet long, with a small fraction on the east side which does not belong to the Company; a full claim not included in the main block of ground adjoins it on the northeast corner. This claim was not surveyed owing to the fact that the base map had not been completed when the writer left the property.

The ground thus far developed is comprised in an area about 800 feet wide by 1,000 feet long, in the south-eastern part of the property.

Reference to the accompanying map, Sheet 1, will give a general idea as to the situation.

Climate and Topography.

The camp lies at an elevation of 6,500 feet above sea level, and has the semi-arid climate characteristic of most parts of central and southern Nevada. The summers are warm and the winters cold but not severe. There are occasional snow storms in the valley, but the annual rain fall is scant and water is piped from streams in the higher ranges east and west of the camp.

The Fairview hill is the only marked topographic feature of the area. It rises 300 feet above the gravel wash to the north, is flat topped, and roughly circular in outline, like Round Mountain, which lies to the west, and from which the camp is named.

The property of the Fairview Round Mountain Mines Company lies east of the Round Mountain Mining Company's holdings, and north of the Fairview Extension property.

General Geology.

In the south east portion of the area mapped there is a large mass of granite which apparently forms the core of the range to the east.

This rock is exposed also in the deeper workings of the Fairview mine and in the 503 drift it may be seen cutting the shale and quartzite of the sedimentary series which is probably the earliest formation of the region.

The rhyolite contains all the productive veins of the district, except one unimportant vein in the granite east of the Fairview productive area.

So far as is known at present the rhyolite is a volcanic flow, the origin of which is unknown.

In the range forming the west side of the valley, however, a large dike of rhyolite or granite porphyry cuts the sedimentary series, and appears to have come from some intrusive mass to the north-west of the Round Mountain district, probably now deeply covered by recent wash.

The rhyolite of the Fairview area, together with included fragments of other fine textured flow rocks, doubtless belongs to the great series of Tertiary volcanics with which are associated many of the more important Nevada ore deposits.

GEOLOGY OF THE AREA

As stated above, the Fairview rhyolite is a flow which was poured out on an old land surface with low rounded hills of granite and shale. Rounded fragments of these older formations are found included in the rhyolite, along with those of probable volcanic origin.

Rhyolite Characteristics.

Marginal chilling is not pronounced, but the lower portion of the formation is distinctly more fragmental than the upper parts, and appears to be less siliceous. However, there is no evidence of a series of flows, nor of any differences in the original composition of the rock wall which would tend to localize ore deposition at different levels.

The fresh rhyolite in hand specimens is white or reddish brown. It shows glassy quartz grains usually without crystal outlines. The feldspars can rarely be identified. The ground mass of the rock probably consists of a quartz and feldspar aggregate in which crystallization has only begun. Disseminated pyrite and stringers of the same mineral are characteristic of the rhyolite in the vicinity of the ore bodies, where oxidation has not taken place, otherwise much iron staining causes the brown discoloration of the rock which is considered one of the indications of the productive formation.

Mica in the fresh rock is not prominent, but in the partly altered oxidized material it shows a typical gold yellow surface and frequently gives an excellent imitation of "high grade" gold ore.

Kaolinized Rhyolite.

Along the fractures and in the fault planes the rhyolite has been much kaolinized. Also the lower part of the formation near the granite contact, and especially in the zone of oxidation, has been generally altered.

Here the rock is white with veinlets of iron and occasionally manganese oxides. The quartz crystals have been partly destroyed but are never entirely lacking.

This altered "punky" rhyolite rarely carries gold, and no veins have yet been found to extend downward into it.

This at first suggested the idea of an underlying layer or separate flow unfavorable to the deposition of ore; but other facts which will be mentioned later do not support such an hypothesis.

Silicified Rhyolite.

The outcrop of the mineralized zones usually is more resistant than adjacent areas, and the walls of the veinlets carrying quartz and gold usually show minute quartz stringers, and sometimes replacement of the original minerals by secondary quartz.

In one locality (110 and 119 crosscuts) a well defined siliceous vein filling several inches thick in a flat vein, has the appearance of a dikelet of a different rock, but it is believed to be only a replacement of the rhyolite.

The silification of the rhyolite is considered a favorable indication and when "hard brown rhyolite" is struck, ore is usually expected.

Granite.

On surface this rock is seen to be a medium textured granite type usually somewhat altered. Quartz is quite prominent; feldspars are probably about half plagiaclose; and the mica while prominent is much altered.

There are numerous veinlets of pegmatitic quartz, feldspar and mica, occasionally carrying pyrite and low gold values. This has resulted, at times, in encouraging prospecting underground which so far has found nothing of importande in this formation.

In several places underground much sericite has developed in the granite, usually along the fractures. This indicates the possibility that mineralizing solutions may have traversed the granite, but the evidence is not sufficient to warrant extensive prospecting.

Shale and Quartzite.

The sedimentary formation is encountered only in the 503 drift on the 500 foot level. The beds are much distorted and are cut by a granite dike.

The quartzite is thin bedded and looks like a replacement of the shale into which it grades.

The exposure is not extensive enough to determine the thickness of these beds or their possible relation to veins of the productive type. At present this formation has no important relation to the problems under consideration.

Structure.

The rhyolite has been much fractured and minor "slips", along which there has been little or no movement, run in all directions

The most important fault is found on surface cutting through the center of the mineralized area, and causing an offset of the rhyolite-granite contact on the east. The strike varies from N.65 degrees W. to N. 85 degrees W.; the dip is 42 to 65 degrees south.

This fault is followed by the 160 ft. Level tunnel and is crosscut in many places. The striations indicate a horizontal movement, they vary from 5 to 10 degrees in dip, usually to the east.

The displacement along this fault has probably been 200 feet or more.

The sheeted zone which contains several small parallel veins varies a few degrees in strike from the fault and dips more steeply. It is not clear whether the fault has produced the vertical sheeting adjacent to it, or is a distinctly later fracture; but it is probable that there has been some movement along the fault subsequent to the ore deposition, and the fault itself is only slightly mineralized.

Aside from this sheeted zone which has furnished the more important ore bodies mined in the past, two similar sets of "verticals" have been encountered by the 251 crosscut, as will be seen from inspection of map (Sheet No. 2)

Several flat veins, which usually show some evidences of faulting, have been encountered.

The most important of these is the Fairview vein, followed by the 250 Ft. level tunnel. The strike varies from N. 60 degrees W. to N. 80 degrees E., the dip is from 25 to 40 degrees north. This vein is not uniformly mineralized, and on the 250 Ft. Level and below it is barren. It has produced one stope.

Another important flat vein is the one opened in the Burnt Level. Its strike is N. 15 E., dips 20 to 35 degrees west.

ORE DEPOSITS

Fairview Vein.

The first mining operations were on the Fairview vein, which was opened by a short tunnel from which a "glory hole" about forty feet in diameter was mined. Subsequently the main stope on this vein was opened from the 100 Ft. Level. It is about 175 feet long, and was carried up on the vein (which dips 25 to 30 degrees north) for 135 feet. The thickest part of the ore body was near the level where the flat vein was intersected by strong vertical sheet-

ing, here the stope is from 8 to 10 feet or more from footwall to hanging. Away from the intersection the ore body was thinner and is said to have been quite low grade. The average thickness was probably less than 6 feet.

The vein material was shattered rhyolite, with small stringers and bunches of quartz carrying gold. In mining, considerable waste was sorted and left in the stope.

The "Verticals"

The more important ore bodies have been mined in the sheeted zone shown between coordinates 1400 and 1600 N. and 5100 and 5400 E. (Sheets 2 and 3). This zone has a general trend N. 60 degrees W., dip 75 to 85 degrees S.W., its width is about 100 feet.

There are several parallel veinlets within this width and it is possible that the zone might have been open cut as a whole, but the system used of carrying stopes from 3 to 8 or 10 feet wide or the higher grade stringers is well adapted to the type of deposit. The maximum stope width occurring at an intersection, was about 18 feet.

The individual veinlets range from knife-blade stringers up to widths of one inch or more. There is usually a layer of crystalline quartz on each wall between which the gold bearing quartz occurs; sometimes these veinlets are half filled with gold, and usually the gold is coarse.

In a stope face 5 feet across there may be two or three stringers separated by practically barren rhyolite which is sorted and left in the stope.

The ore milled from these stopes on the verticals is uniformly higher grade than that from the "flats". The average of mill heads for 1918 was $21.79 per ton.

The stopes of this zone are not large, and their vertical extent is quite limited. For instance the stope above the 118 Drift is about 175 feet long and 75 feet high. Its average width is between 4 and 5 feet.

The other stopes are similarly limited, and the 110 stope appears to stop at the bottom on the flat silicified vein cut in the 119 and 110 crosscuts.

Origin of the Ores.

From what can be learned from developments to date, it seems probable that the primary mineralization consisted of a rather erratic sulphide deposition following along the lower part of the rhyolite flow and rising along flat veins having a west dip.

Where these "flats" are intersected by vertical sheeted zones the conditions were more favorable for ore deposition, and such intersections became the main circulation channels.

When the sulphide deposits were oxidized there was probably both a mechanical and chemical downward concentration of gold which produced the present ore bodies.

The facts in support of this theory are that it is very unusual to find gold on the outcrop of even the best ore bodies. The tops of the stopes are usually 15 or 20 feet from surface (See Section Sheets)

Following individual veins down, they are seen to grade into tight barren fractures with only slight iron staining in the kaolinized or "punky" rhyolite.

The "comb quartz" which lines the walls of the productive veinlets was probably deposited in open fissures and the arrangement and form of the gold particles suggests their introduction with gelatinous silica.

Native gold of the type found in the "verticals" is not found associated with the auriferous sulphides below the oxidized zone.

POSSIBILITIES OF THE PROPERTY

Lateral Development.

It is believed that the best development chance for the immediate future lies in lateral work confined to the rhyolite formation. Enough work has been done in the granite to indicate that the possibility of finding important ore bodies in it in this locality, is relatively slight.

On the other hand, the recent developments in the 251 crosscut show a repetition of sheeted zone conditions which may produce ore bodies similar to those already mined. Outcrop indications over this zone (See Sheet 1, 1100 N., 5000 E.) indicate a length of nearly 1000 feet in an east-west direction which may prove productive ground. The width of the zone ranges from 30 to 50 feet.

There seems no reason why conditions favorable to the formation of ore bodies, should not exist further to the west along the known sheeted zones and this is the second most favorable locality to prospect.

Prospecting in the Granite.

As stated above, the evidence at hand is such

as to discourage further work in this formation with the idea of finding a downward continuation of the ore bodies mined above. However, considerable money has been spent on this work and should it be desired to definitely complete it, the 505 crosscut should be extended about 100 feet on the chance that it has not gone far enough to cut the Fairview vein.

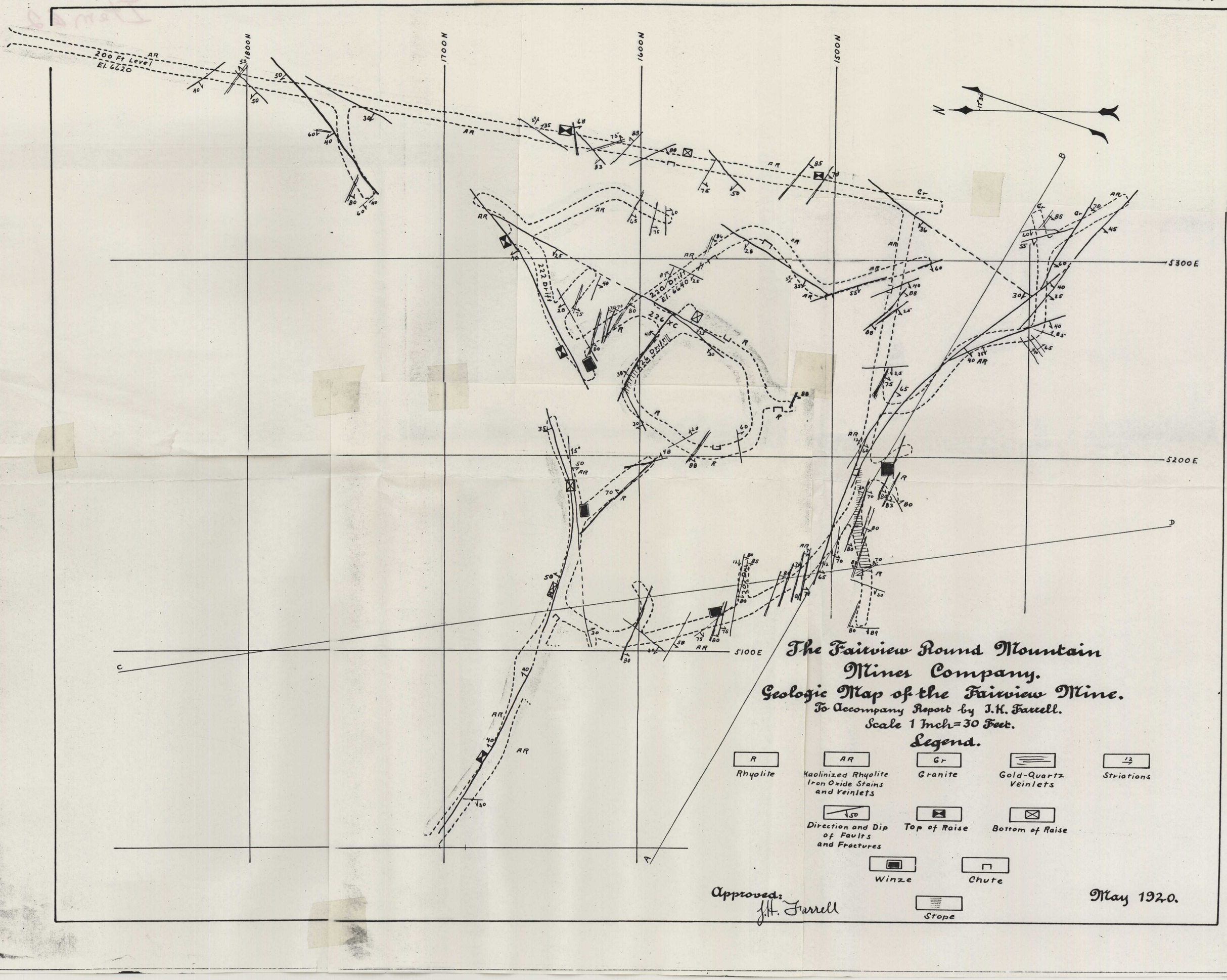
The 504 crosscut should be extended 200 feet or more and a drift (more properly a crosscut) run 200 feet south.

The writer does not consider this work sufficiently important to make it a part of the set of recommendations submitted herewith.

It is believed that if ore bodies of the productive type are to be found in the granite, they will lie well to the west or northwest of the area covered by the mine workings.

In conclusion it may be said that the development chances of the property are excellent, and that the continuations of the known productive zones both east and west should be actively prospected.

J. H. Farrell.



The Fairview Round Mountain Mines Company.

Geologic Map of the Fairview Mine.

To Accompany Report by J.H. Farrell.

Scale 1 Inch = 30 Feet.

Legend.

- R — Rhyolite
- AR — Kaolinized Rhyolite Iron Oxide Stains and Veinlets
- Gr — Granite
- Gold-Quartz Veinlets
- Striations
- Direction and Dip of Faults and Fractures
- Top of Raise
- Bottom of Raise
- Winze
- Chute
- Stope

Approved:
J.H. Farrell

May 1920.