

**REPORT ON THE REVENUE GROUP OF LODE MINING CLAIMS IN THE
VOLCANO MINING DISTRICT
ELMORE COUNTY, IDAHO**

January 3, 1932

Frank E. Johnesse, M.E.
Consulting Geologist
Boise, Idaho

Editor's note

The original text from which this report was drawn contains several obsolete references to costs of constructing power lines, maintaining camp accommodations, etc. Because these references and cost estimates are well over 50 years old and no longer have any relevance to the geology or mineralogy of the area, they have been omitted.

Property

This property is situated in Section 20, 21, and 22, T.2S., R.11E., B.M., in the Volcano Mining District, Elmore County, Idaho, 10 miles southwest of Hill City, Idaho, a station of the Camas Prairie branch of the O.S.L. Railroad, at an altitude of 6,200' above level. This group of eleven claims embraces an area of a little over 180 acres of lode claim locations, as per the accompanying map which was constructed from plats of preliminary surveys made by the owners of the three merged properties included in the group.

History

The Volcano District has been known since 1870 when prospectors in search of gold and silver discovered that it contained many strong mineral bearing outcrops. Numerous old prospect holes bear evidence of their search for rich pockets of these precious metals, but the ore proved to be mostly of a milling grade which, due to the high cost of milling and lack of transportation facilities, did not prove attractive at the time.

The Webster Mine, about 1.5 miles east of this group, consisting of a small vein of copper/silver ore, has had limited development, and has produced several car loads of high grade ore from a shallow depth. It has not been developed below the water level, is on the strike of the south vein of the Revenue group, and is the easterly extension of same.

The Blackstone Mine, about 2.5 miles west in the same mineral belt and having the same general geological occurrence, has been developed to a depth of about 60' exposing a 6.5' vein of high grade silver/gold ore, carrying a little copper. A 200' shaft has been sunk on the Opportunity vein, which is nearby in the same district and has the same general occurrence. The vein at this depth is still oxidized, but is strong, well defined, and carries average values across 5.5' of 7 ounce silver, \$2.60 in gold, and a little copper. This is considered a good showing under existing conditions, and will no doubt carry good copper values in the sulphide zone.

Veins and Development

The outcrop of three well defined veins and a strong porphyry dike are visibly traceable throughout the entire length of the group. These veins are nearly parallel and strike north 50° east, and have an apparent dip of about 65° to the northwest. The outcrop of the north vein, which is very prominent, and in places stands up boldly for several feet above the surface, will average from 16' to 80' wide; the middle or Divide vein from 4' to 6' wide; and the south or Revenue vein from 10' to 16' wide. The mineralized porphyry dikes lying between the two main quartz veins are from 59' to 300' wide, and can be traced on the surface for 6,000'. They have about the same general strike and dip as the quartz veins. The surface development is limited to the several shafts and cross-cuts shown on the blueprint, none of which are more than 35' in depth.

The driving of the proposed tunnel has been under way the past 2 years and is now in a distance of 1400'. It is 5.5' by 8', and has already penetrated the first or north vein where it was found to carry the disseminated iron and copper sulphides by the geophysical test and surface outcrop.

Geology

This mineral zone follows the apex of a granite range of mountains about 20 miles in length and from 5 to 7 miles wide, lying between the Snake River Valley and Camas Prairie, being separated by the latter from the main Sawtooth-Teton ranges. It has an east and west course and a main elevation of about 6,000' above sea level. This range is flanked on the south by sedimentary rocks forming the River Valley. Camas Prairie on the north is covered by a lava flow which skirts the foothills forming the North Slope of the range. The general formation of this mineral zone, which is from 1 to 2 miles in width, is a dark greyish, coarse-grained granite, which differs somewhat in appearance from that composing the range in which it occurs. This is interspersed with dikes of aplite, a light cream colored, fine grained granite, from 20' to over 200' wide. These dikes follow the general foliation paralleling the range, and the vein system is likewise parallel. It occurs as contacts between the granite and aplite dikes, usually on the north side of the dikes. These can be readily traced by the outcrop as they are harder and have resisted disintegration better than the coarser-grained granite in which they occur.

The slick and well-defined walls of the several veins developed in the camp give evidence of extensive plain faulting. With depth, the veins assume a more or less banded structure, and usually carry several inches of kaolinite or talc on either wall. The main water level as indicated by the general topography and climate conditions, should be anywhere from 75' to 200'. On this particular group, it is probably in neighborhood of 100'.

The gangue matter in the veins is principally quartz and sericite, and the oxidation products are linonite, hematite, pyrolusite, manganite and wad. The pyrolusite is strong in all the veins in the oxidized zone. The undecomposed ores are made up of chalcopyrite, pyrite and galena, but principally of the former. Of the gold and silver values, the ratio is 80% silver to 20% gold, with the percentage changing in favor of the gold with depth, and containing more or less copper and lead values. On the whole, geological conditions are very similar to that of the Butte District in Montana.

The south or Revenue Vein is a lively looking iron stained quartz extensively honeycombed and showing some little copper and lead stain. It crops boldly, like a stone wall in places. The surface cropping carries low silver-gold values on the average, while in places they are quite pronounced. A 14' shaft revealed some specimens of copper sulphides carrying high silver values encased in a hard strata of unaltered quartz. It is an exceptionally promising looking vein and will undoubtedly carry the original copper sulphides in abundance below the zone of oxidation.

The Divide vein which shows only on the Divide and Tip Top claims is similar to the Revenue, but shows less iron stain and honeycombed conditions. It crops less boldly although it is easily traced and where opened is 9' wide. One foot of the opening is somewhat altered, with lead and copper sulphides evenly disseminated and carrying about 1 ounce of silver for each unit, along with lead, copper and a little gold to the ton.

The north vein is much larger than either of the two above mentioned. It is practically all brecciated quartz of a fine grain and along the wall is somewhat of a ribbon structure. It is not so uniformly well mineralized throughout the two other vein, although in places where it is softer and shows more erosion, it carries iron oxides and some copper and lead carbonates. At one place where it extends over onto the High Up claim, a 12' shaft exposes a strong vein, over 16' wide, heavily stained with copper and carrying appreciable values in silver and gold.

The two boldly cropping porphyry dikes between the north and south veins can be easily traced for more than 4,000' in length and from 50' to 300' wide. The capping is of a soft, porous spongy nature heavily charged with iron oxide and pyrolusite. In places it is heavily stained with copper and lead and carries low silver values of 1.5 to 5 ounces to the ton with a little gold in the leached surface capping.

There are at least two heavily vertical cross faults within the end boundaries of the group which show distinctly in the throw of the surface outcrop of the several veins. In view of the encouraging results obtained by the limited development of other veins in the district of like nature, systematic development of this group will undoubtedly terminate in the opening up of a mine of great value. The strong indications of the porphyry dikes alone justify the extensive development now underway.

Between the tunnel level and the surface there should be a zone of secondary enrichment that will yield large quantities of high grade ore.

All these veins are persistent on the strike, which is evidence that they will extend down to a considerable depth. The porphyry dike and north vein promises to develop an immense tonnage of good grade milling ore. The Revenue vein will in all probability produce high grade shipping ore.

Development Plans

To properly prospect and develop this group, good judgment would first suggest sinking on one of the veins where the surface showing is the best. However, it was deemed advisable to drive a tunnel to the first vein. This was done in view of the fact that the nature of the veins is identical

with those of the Blackstone, Opportunity and Falun Veins which have all shown up so favorably at depth when developed. Consideration was also given to the fact that the group is situated in the same district and mineral zone as these other claims, and the fact that the topography affords an ideal cross-cut tunnel site.

As a result of this program, the tunnel has, within 1,400', cut the first or north vein at a depth of 400' and will, within 2,160', cut all the veins in the group at approximately the same depth.

Treatment and Possible Tonnage

The character of the ore is such that it will yield a high recovery from simple flotations, requiring no complicated metallurgical process. The several claims show strong for a distance of 3' to 5000' on the surface and should produce an ore tonnage that will supply a reduction plant of large capacity for many years to come.

Conclusion

The potential value of this group of claims lies in its system of exceptionally large veins and the strong probability that the very highly stained gossins or croppings of the sericite porphyry dikes overlie the valuable ore bodies. This conclusion is drawn from the fact that a 32' shaft sunk on a smaller parallel vein revealed lead and copper sulphides of a good grade. While the gossin may be much thicker in the larger veins, there is no doubt that they will show large quantities of commercial ore at a comparatively shallow depth.

In the Butte Mining District no ore of commercial value was found at the surface, and the vein croppings which but slight copper stain with low silver values, were found to extend down to a depth of 100' to as deep as 300' in the extreme. Below this leached or impoverished zone and above the original sulphides, there was always a zone of secondary enrichment making a very high grade ore. The geological occurrence of the vein system of this property is identical with that of the Butte District. A geophysic examination which was made 2 years ago at a cost of \$5,000 indicates large bodies of sulphide ore underlying the leached outcrops. This is a new and scientific method of prospecting by electrical methods that has proven of great value and has been approved by the U.S. Geological Survey.

One very significant indication is the prevalence of pyrolusite (manganese oxide) in the veins of the district. In the famous Butte, Montana and Virginia City, Nevada Districts, where the vein occurrences are of a very similar nature, this usually found led to a valuable ore body and is, in fact, considered an almost infallible sign.

The property bears all the ear marks of a large mine; every indication points to large bodies of commercial ore with depth. Even the big dike carries an iron gossan with lead stain which is a good indication for finding sulphides of commercial value below the oxidized zone, and which the big tunnel now underway will soon determine.

F.E. Johnesse, M.E.
January 3, 1932