

GEOLOGICAL SURVEY OF WYOMING

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Office of State Geologist,

Cheyenne.

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Cheyenne, Wyo. Oct. 22, 1903.

Mr. Dudley N. Hale,

Basin, Wyo.

My dear Sir:-

Complying with your request of the 14th inst., I hand you herewith report on the Fremont Group on Copper Mountain, Fremont County, this State, and trust it will aid you in profitably opening up the property, as I believe you have a good prospect and one that fully justifies the work necessary to open it up.

Very truly yours,

Henry C. Beeler
State Geologist.

REPORT
ON
THE FREMONT GROUP OF CLAIMS,
AT
COPPER MOUNTAIN, FREMONT COUNTY, WYO.

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LOCATION.

This group of claims is located in the north-eastern part of Fremont County, Wyoming, near the 10th standard parallel, 28 miles south-east of the town of Thermopolis, Big Horn County, Wyoming, on the crest of what is locally known as Copper Mountain, a part of the Rattlesnake or Hoodoo Mountains.

The property lies eight miles west of Doranah stage station and post office on the Casper-Thermopolis stage and mail line, the line passing about eight miles north of the workings, which are about 120 miles north west of Casper.

EXTENT AND OWNERS.

The group consists of three claims, namely, the Fremont, Yankee Boy and Irish Boy, each 600 feet by 1500 feet comprising about 60 acres, and held by location and discovery under the laws of the United States and the State of Wyoming.

The owners and holdings are as follows;

H. C. McCraff,	Thermopolis, Wyo.	1/2 Interest.
Dudley H. Hale,	Basin, Wyo.	1/6 "
Willis J. Booth,	" "	1/6 "
John Luxan,	" "	1/6 "

GENERAL GEOLOGY.

The general uplift of the formations that form the southern end and rim of the Great Big Horn Basin, extends in an easterly and westerly direction and unites the Shoshone Mountains on the west with the Big Horn Ranges on the east, the connecting ranges being known as the Owl Mountains on the west and the Rattlesnake or Hoodoo Mts. on the east side of the Big Horn River, which, at about the center of the uplift, breaks through this barrier in a deep and rugged Canon showing a geological section from the Archean granites to the Cretaceous Coal formations below Thermopolis. It is on the eastern half of this section that Copper Mountain is situated, being composed of the granites and schists that form the core of this general uplift, the limestone and other sedimentary formations showing on either side.

COPPER MOUNTAIN.

At this point the range reaches an elevation of about 9000 feet, the slope from Buffalo Creek, a dry tributary to the Big Horn River, being gradual and without abrupt breaks.

The granites show principally on the eastern and northern sides of the mountain, the ridge being composed of a broad band of schists and allied rocks with bands of diorite and quartzites included.

This schist band varies from about one mile to two miles in width and shows the granite again, but in lesser degree on the west slope of the mountain.

FREMONT GROUP.

This group is located with the strike of the schist, east and west, covering the crest of the uplift, and about the center of the schist band.

These schists are of several varieties, usually a black mica schist and very fine grained and together with the quartzites and other rocks, are mineralized and show considerable evidence of alteration, especially on the surface, the rocks becoming softer as depth has been gained.

Cutting across the strike of these schists are several outcrops of white **bull** quartz, but these are practically barren and the main value is shown in a strong quartz vein, heavily mineralized, that cuts across the strike of the schists at a slight angle in an irregular manner, in the general direction of the schist band and showing a strong outcrop varying from four to six feet in width on exposed portions.

A shaft has been sunk on the ore to a depth of 43 feet at the corner end line of the Irish Boy and Yankee Boy claims, following the dip of the vein, which, at this point is slight and towards the south.

In this shaft the vein is shown 6' - 9' wide, the vein material being quartz heavily mineralized with copper carbonates, both azurite and malachite, and iron oxides, limonite and hematite; some copper glance or chalcocite has been found, giving high values in copper.

This condition extends all through the vein matter, staining the quartz and schist, and also with bunches and streaks of both the iron and copper minerals as a part of the ore proper.

The surface of the vein rarely shows much mineralization, being weathered and leached, but as the present shaft indicates, the values are encountered as depth is gained, first in the oxidized or altered forms noted above and finally as the sulphides of copper and iron, as shown in the tunnel workings, west of the Fremont Group, where the yellow sulphides of copper and iron are noted in the quartz, and it is believed this yellow pyrites or chalcopyrites will be the permanent ore of this region.

It may be stated here that this condition of an oxidized iron cap, stained with or carrying copper in the altered forms which give place to the sulphides of the same metal at permanent water level, as noted in all the copper bearing or producing districts in Wyoming and is especially marked in the present instance.

At the present stage of development no figures can be given as to the grade of ore either in gold or copper as it has been found that the surface values in both metals are but slight indications of the real values in the permanent ores, and for that reason no samples were taken for assay at this time.

It is believed that the ore will be a low grade chalcopyrite in a quartz gangue, say 2 % to 10 % in copper and suitable for concentration and smelting to a matte.

WORKINGS.

It is recommended that the present shaft be sunk to a depth of at least 100 feet or until the level of permanent water is reached, following the ore, and that no cross cuts or drifts be run until that depth is reached and something of the nature of a deposit be determined.

This can be done profitably with winding or whips and later a hoist and pump may be required as depth is gained.

The deep gulch west of the claims may be used later for drainage and working tunnel should it be necessary to construct such works, as the nature of the ground is such that reduction works would naturally be located in that direction but at the present stage the proper course is development by shaft on the cre. as above.

Numerous other cuts and shafts have been sunk on this group, but are unimportant at the present time and it is recommended that all work be confined to the main shaft as above.

TIMBER, WATER ETC.

The Fremont Group is barren of timber, but timber suitable for preliminary mining purposes, necessary cabins etc. may be had on the mountains, and sawed lumber at Thermopolis and other supply points at usual inland rates.

Water for all preliminary purposes may be had in the small creek west of the claims in the Canon mentioned as a tunnel site, and a further supply may be there developed by storage and ditches when permanent supply is required.

Thermopolis is the nearest supply point, where mining supplies of all kinds may be had at the usual prices for such materials in inland towns.

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It is believed that the showings on this property fully warrant a continuance of the work as above outlined, even under the present condition of distance from the railroad, with ~~an~~^{every} indication that a profitable body of ore will be developed.

Respectfully Submitted,

Henry C. Beecher
State Geologist.

Date of Examination
October 15, 1903.