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SKETCH-REPORT
ON THE
NEVADA BIRCH CREEK MINING CO.'S PROPERTY,
SITUATED IN
REESE RIVER MINING DISTRICT,
LADDER COUNTY,
NEVADA.

By J. L. Madden, M. E.,
Austin, Nevada,
April 22, 1921.

TITLE.

The Nevada Birch Creek Mining Co.'s property, which is the subject of this report, comprises a group of eight claims; namely, Golden West, Golden Glow, Golden Crown, Golden Eagle, Golden Gate, Rainbow, Morning Star, and Valley View, situated on the east slope of the Toiyabe Mountain Range, about twelve miles south-east of the town of Austin, in Reese River Mining District, Lander County, Nevada.

The title, to date, is United States mineral location. As yet, no United States mineral survey has been made of the property. Since there have been no conflicts on lines, or adverse possession to included ground, since the original discovery, it is the object of the Company to defer the final surveys until more exploitation is done on the different vein systems in the lower or No. 2 tunnel, in order to determine as accurately as possible the true course, dip and angle of each, so as to check surface measurements, and make necessary corrections in the final survey. However, the notices of location have been duly filed and recorded in the office of the County Recorder of Lander County, Nevada, and all United States assessments, and local laws and regulations, have been strictly complied with; therefore the legal status of the property has been kept in such shape as to warrant, at the present time, a U.S. mineral survey, and application for U.S. mineral patent for each claim.

LOCATION.

As hereinbefore mentioned, the property is about 12 miles south-east of the town of Austin, on the east slope of the Toiyabe Mountain Range, the same range in which are the famous Austin silver mines, having a record production of fifty million dollars. The Nevada Birch Creek properties are gold-bearing veins, and are

situated low down on the east slope of the mountain range, on low rolling hills adjoining the level land of Smoky Valley.

From Austin there is a good wagon road, of easy grade, which leads direct to the mines. Ten miles of this road is over the newly constructed portion of the Lincoln Highway across the Toiyabe range, and does not exceed a six per cent grade.

Twelve miles south from this group are the Kingston Mines, gold-bearing also; and further south, and in plain view, are the prosperous Round Mountain Gold Mines, both placer and quartz, which have been in active operation for nearly fourteen years, with record production in dividends. Higher up on the mountain range, and due west of this group, but in a different formation, are silver bearing vein systems, owned by other companies; of which some are in active operation.

FUEL and WATER.

Birch Creek, which is close to the mines, is a never-failing source of water supply, with sufficient water therein available for power, as well as for household purposes. This stream flows within one half-mile of the mines, on the south side of the latter. The mountains surrounding the canyon are heavily timbered, particularly with ~~pinus~~ pinon (black pine), and higher up on the mountains, white pine grows profusely; some of the latter trees are large enough for saw-logs and mine timbers.

GEOLOGY

The upper formation of the Toiyabe range is principally composed of series of different granites; the older series occupying the peaks or high ridges. Lower down on the range are the Monzanites, the argentiferous copper bearing formation, the same formation that the Austin mines are in; while lower down and adjoining the monzanite formation is a muscovite granite

formation, which appears to form the hanging wall of the Nevada Birch Creek mines. Along the same plane as the muscovite granite formation, and lower down, masses of rhyolite and andesite protrude; and near by are the aqueous rocks. The volcanic intrusions are the diorites and basalts and their respective porphyries and schists. The aqueous or sedimentary formations are principally cherty lime, silicious dykes, hard granular blue lime, and also quartzites.

MINERALOGICAL FEATURES.

The mineralogical features of the Nevada Birch Creek mines have the same definite characteristics as those of the Cripple Creek mines, Colorado; also, a number of the geological features of Birch Creek mines are identical with those occurring in Round Mountain and Goldfield vein systems. Both the geological and mineralogical features of these vein systems differ materially from the nearby silver bearing systems of Austin and the immediate vicinity. However, some of the free gold extracted from different rich deposits contained an appreciable amount of silver; but in the main vein system the predominating metal is gold of \$18.00 per oz. The geological features prove conclusively that the fissures, and mineral depositions therein, of the vein systems which belong to this formation are gold bearing throughout.

TYPES and VEINS.

The veins of the Birch Creek group may be separated into several distinct types. The main or master vein has a strike northeasterly by southwesterly (see map), dips northerly, and has an average width of one hundred feet. From this vein numerous veins and veinlets branch. These smaller veins may in turn successively subdivide until they finally die out.

The strike of this vein is through the north portion of the

Golden Eagle and Golden Glow claims, the center of the Golden Crown, and the south portion of the Golden West; and it is intersected by both No. 1 and No. 2 tunnels.

There are also special cases of crossing and intersecting veins and lodes, of which the north and south vein which has its northerly strike through the Golden Glow and Valley View claims is particularly mentioned further on; and described here, also, as follows:

This vein system geologically resembles a fissured dyke intrusion, which is probably the mineralizing agent; and where intersected in the upper tunnel shows a heavy oxidized iron carbonate ore, which has been pretty thoroughly leached. This cross vein intersects the main or master vein about where the upper, or No. 1 tunnel, which is 140 ft. in length, ends; but it has not, as yet, reached the hanging wall. At the intersection of these two veins rich gold ore deposits were found. In fact, the drift, and the north and south openings resembling a stope, were ribbed with minute seams showing gold profusely even by candle light.

The west vein, which is a large north and south vein having a course through the Golden Crown, Rainbow, and Morning Star claims, has been only superficially prospected in the form of assessment work, and but little is known as regards its values and possibilities. However, I dare say the prospects are as favorable geologically for a rich gold deposition at its intersection with the master vein as in the former instance in the case of the east north and south vein.

Appended to this report is the assay sheet showing the

values of the different samples taken; which will give the average layman a good idea of the richness of this vein system, and the fortune awaiting the lucky investor who has the intuition and foresight to develop this oreshoot in the lower or No. 2 tunnel.

PAY SHOTS.

Junctions of two larger veins, or of branches or feeders, with a main vein, are frequently sites of ore deposition. Most of the ore, in such cases, is on the main vein; but some ore is also found along the cross or branch veins for some distance from the junction. In veins parallel with, and at or near the contact of porphyry dykes, pay shoots of ore are sometimes found at the junctions of the minor branches; but they commonly occur irregularly along the fractured zone.

The same mineralogical features and displacements as found in the veins of the Birch Creek mines, as herein described, also occur in the Round Mountain mines further south. Solidification of the porphyry dykes caused fissures, which contained loose, angular fragments of ore, in these fractures, and formed a consolidated breccia with the ore minerals, constituting the matrix; which is quite noticeable in the veins intersected in the tunnels.

DEVELOPMENTS and VALUES.

The developments on the property consist of two tunnels. No. 1 or upper tunnel, which is 140 ft. in length, is in vein matter one hundred feet in width carrying appreciable gold values throughout. A portion of this tunnel is through the rich ore shoot, whence the samples in assay sheets No.'s 1 and 2 were taken. These samples were taken at the intersection of the north and south vein with the main or master vein. The character of

ore in this tunnel shows marked geological features of the latter (the N.E. & S.W.) vein system. However, the richest deposits of gold ore are more strongly featured by the mineralizing agents in the north and south, or fissured dyke intrusive vein; which proves conclusively that this vein system is of recent origin, and is the principal mineralizing factor.

From this tunnel, on its south side, two short laterals, about thirty feet apart, are extended south on the vein. The west lateral is extended so as to connect with the 140 ft. (or first) raise from No. 2 or lower tunnel. The east lateral is extended to develop the main or master vein (N.E. & S.W.), and is wholly in that.

Very high grade ore exists in seams, which remain undeveloped, between these two laterals, and on both south and north sides of the tunnel; the north side being more developed on the rich streaks.

On the north side of the tunnel, opposite the east lateral just spoken of as running south, a drift has been extended north, some fifty feet, in ore, some being very rich; and in this drift, at about twenty feet from the tunnel, a winze is put down some thirty feet, and immediately over this winze a raise has been extended some thirty feet to the surface. The greater portion of this north drift, winze, and raise, are in the rich ore shoot; and from these workings the greater portion of the high assays given in sheet No. 2 of assays have been taken.

The average backs available above this tunnel No. 1 level would be about thirty feet vertically.

The development work done in either tunnel, as yet, is not sufficient to clearly demonstrate the true angle or dip of the

veins, further than that the dip of all the veins is northerly; but it can be stated that the north and south veins are much steeper than the main (N.E. & S.W.) or master vein.

No. 2, or lower tunnel, is five hundred feet in length. In a distance of one hundred feet from the portal the tunnel intersects the main (N.E. & S.W.) or master vein, and continues in this vein for nearly one hundred feet, where it intersects the cross or fissured dyke intrusive vein for thirty feet, at which point it penetrates a porphyry structure for a distance of twenty feet, then enters a muscovite granite formation to its end. At the latter point a raise is put up to the surface a distance of 175 ft. wholly in this formation.

At 375 ft. from the portal of this tunnel No. 2 a raise is put up a distance of 140 ft. to connect with No. 1 tunnel level; at about the center of the ore body.

This tunnel No. 2 is driven almost easterly and westerly, and cuts the main or master vein diagonally and the cross vein almost at a right angle.

At the depth struck in this tunnel the main or master vein is composed principally of quartz, stained with peroxide of iron, the quartz having been shattered into finely divided pieces by compression, intermixed therewith being streaks of calcium fluorides, porphyry and fluorites; and afterwards having been recompressed into its original form again, with every trace of lamination, dip and angle distinctively indicative of its original form before all compression.

The shattering and upward movement of the older or master vein was caused by the intrusion and fissuring of the north and south cross vein or dyke; and its recompression afterwards was the effect of a downward settling movement.

From a geological and mineralogical point of view it can be plainly seen that the cross vein is the mineralizing agent; therefore at the closer contacts and junctions of these various vein formations, quartz, calcium-fluorides, porphyry, fluorites, and hematites, these constitute both the matrix and the source of deposition of the gold and silver values, especially of the gold. In the development of the ore shoot in the upper or No. 1 tunnel it is the combination of quartz, as the base, with either calcium-fluorides, and hematites, or with porphyry, fluorites and hematites, that produce rich gold values. However, the latter combination, that is, quartz, porphyry, fluorites and hematites, yielded the rich values in assay sheet No. 2.

In this No. 2 tunnel, the first or east raise, which was put through to intersect the rich ore shoot in the upper, or No. 1 tunnel, was done by guess work for the outcome or intersection with the upper tunnel; as no survey had been made. Thus, connection was made by driving a lateral south. The point of connection is 30 ft. south of the tunnel No. 1; and is 20 ft. too far west to intersect any of the seams or veinlets carrying rich ore. The greater portion of this raise is in a leached, brown and yellowish stained, irony, oxidized porphyry ore, carrying low grade gold values; but not too low to be profitably mined and milled. No drifting was done at any point in this raise; and no development was done on this irony-porphry ore body to determine its extent and values. This irony-porphry ore body is the north and south, or fissured dyke intrusive vein, and should be exploited for high grade values; which, doubtless, it would be found to contain. However, it appears that the objective of the raise was merely that it might answer as a means for ventilation.

The last 125 ft. of this tunnel, and the second, or west raise at its end, were unwarranted; as the average miner, even though possessed of less knowledge of practical geology as applied to underground mining, would know from surface indications and surroundings; and, when he encountered the muscovite granite, would know he was in the wall rock, and that it was useless to penetrate further, or upraise. This work should have been done on the vein system passed through, where exploitation for the rich ore streaks, if found at this level, would enhance immensely the value of the property. However, as it stands, no development of this character has been done, or even contemplated. It is evident that such streaks, indicative of the rich ores above, have been passed through. Moreover, it is probable that in their haste to expedite the driving of this lower tunnel (No. 2) cheaply and quickly, they failed to observe closely the crossing of minute seams, veins or veinlets carrying rich gold values; or any of the geological features indicative thereof; but risked the loss of a rich ore shoot for footage and time saved in the running of the tunnel, which, in the aggregate, amounted to a very small sum. These indications, when once passed through and not then carefully noted, immediately become, to the naked eye, obliterated, and are not easily located again without a diagram or reference map.

In mentioning herein that the wall rock was muscovite granite, reference is now made to this as being the hanging wall formation. As yet, developments have not given the opportunity to definitely state the character of the foot wall formation. However, judging by surface indications, it may be a rhyolite or andesite. Fragmentary pieces of the latter are exposed in the surface detritus on the foot-wall side.

CONCLUSION.

This property has the earmarks of making a large, lowgrade milling proposition; and may, in its operations, develop some extensively rich ore shoots. Exploration should be immediately undertaken, in the lower tunnel (No. 2), to determine the extent and richness of the ore bodies in the veins passed through; which should consist of laterals, cross-drifts, intermediate raises, and some winzes driven below the present tunnel No. 2, which would block out sufficient tonnage in such condition that a closely approximate value could be estimated, to include, as a whole, the entire area as average mill grade- that is to say, approximately from an eye view stand-point, as the veins in the hill stand, undeveloped, over this tunnel. At a conservative estimate of 100,000 tons of ore in a block of ground measuring 50 ft. on each side of the tunnel, by 100 ft. in width, and by 140 ft. as the average backs, and averaging value of this by the 200 tons now on the upper tunnel dump (No. 1), which is estimated to yield \$20.00 per ton, according to Supt. J. H. Ingram's sampling, there would be \$2,000,000 in sight. In the aggregate this seems large; but a conservative estimate shows the tonnage is there, and doubtless, greater tonnage; and this can profitably mined and milled over as low in value as \$5.00 or \$6.00 per ton.

The character of the ore indicates that the mineral deposition is of deep-seated origin; hence due caution must be exercised in the location of the site for a deep shaft, to develop the deeper ore bodies. Exploitation of the ore shoots from the lower tunnel (No. 2) should determine the rake and trend of these ore shoots; which would be sufficient

information to locate the proper site for a deep working shaft.

No mistake has been made in driving these two tunnels to develop the property, other than what has been hereinbefore mentioned as regards the extension of lower tunnel (No. 2).

The initial development did not warrant a shaft; even for the reason, alone, that the course and dip of the veins, and the rake and trend of the ore shoots, were unknown; therefore, in the initiative development, no safe conclusion could be arrived at with shaft work.

J L Madden
Mining Engineer

San Francisco, Nov.

April 22nd 1921

ASSAYS.

SHEET No. 1.

Assay sheet showing assay results of samples taken by J. H. Ingram, Superintendent of the property from September, 1919, to June, 1920.

Also appended hereto is the assay sheet of the rich, or high grade streaks, hereinbefore mentioned as minute seams; these samples also being taken by Mr. Ingram, and assayed by H. W. Young of Reno, Nevada.

In this sheet No. 1 the samples are supposed to count as averages of workable streaks of ore developed in No. 1, or upper tunnel. All the samples were taken and O.K'd by Mr. Ingram, who was a practical miner, and had charge of the underground work for other prominent mining companies previously to his engagement with the Nevada Birch Creek Mining Co.

Assay certificates by H. W. Young.

			Gold oz.	Silver oz.	Value per ton.
Dec. 23, 1919.	Top of Hill.	No. 1,	3.60	.40	\$ 72.53
"	Flat Voin.	" 2,	15.18	4.10	323.05
"	Sen. Grab-sample				
"	No. 1 Tunnel dump.	" 3,	1.00	.40	20.53
"	" 1 "	" 4,	197.20	11.80	3959.79
"	(Qtz.)"	" 5,	1.58	.60	32.39
Jan. 14, 1920.		No. 1	21.36	6.40	435.84
"		" 2	4.12	2.20	85.37
Feb. 18, "		" 29	.04	none	.80
"		" 30	1.44	.80	29.84
"		" 31	8.24	2.20	167.68
Mar. 1 "		" 32	.68	.40	14.12
"		" 33	.08	none	1.60
"		" 34	1.04	.80	21.58
"		" 35	1.52	.60	31.18

Assay certificates by J. H. Trolson.

		Gold oz.	Silver oz.	Value per ton.
Jan. 13, 1920.	One paper sack	16.60	7.40	\$341.60
"	Two canvass sacks	2.80	1.80	48.34

(N.B. A correction has to be made of the statement preceding these certificates.

The samples of this sheet No. 1 were taken by J. H. Ingram; the samples for sheet No. 2, appended, by William E. Cummings, who succeeded J. H. Ingram as Superintendent.

Regarding the qualifications of Cummings I may add that he is now underground superintendent of the Betty O'Neal mine at Battle Mountain.

It may also be added that J. H. Trolson, in above, is the local assayer.)

ASSAYS (continued).

SHEET No. 2

Assay Certificates by H. W. Young, Reno, Nevada.

			Gold oz.	Silver oz.	Value per ton
July 13, 1920.	Lot 71		11.76	4.90	\$ 240.00
" 21, "	" 84		20.92	8.20	426.60
" 23, "	" 97		305.02	18.40	6118.80
" 26, "	" 148		2076.72	123.20	41856.60
" 29, "	" 193		4281.64	1740.40	87373.20
" 30, "	" 219		1924.50	641.50	39131.50
Aug. 2, "	" 207		421.52	140.50	8570.90

Assay Certificates by R. H. Officer & Co., Salt Lake City, Utah.

		Gold oz.	Silver oz.	Value per ton Gold @ \$20. per oz. Silver \$ 1. " "
July 26, 1920.	No. 98	111.30	31.90	\$2257.90
" 27, "	118	431.84	131.36	8768.16
" 30, "	203	3900.46	1712.70	79721.90
" 31, "	216	1762.355	662.98	35910.08
Aug. 2, "	224	167.42	60.58	3403.98

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