3820 0133 FORBES

#35+ 0.71 unadjusted

Au CCC all 0.039 1.366
Ag 1-19 0.73 0.518 = 1.88
adjusted

1,-15 0.031 1.085
0.48 0.3408 = 1.43

35. 0.90 unadjusted 2.03
adjusted 1.95

35 - 1.29 51.80
2.00

400 - 8.00 21.44
16.24

600 - 15.00 34.35
25.00

FINAL REPORT

YUBA MINING DIVISION'S INVESTIGATION

of the

GOLD-SILVER PROPERTIES

at

RAWHIDS, MINERAL COUNTY, NEVADA

JUNE 1960

JOHN B. CANADA

INDEX

CONCLUSIONS

1. Although all the potential ore areas and a number of our theories at Rawhide have not been tested, (ideas generally exceed available funds), the rather extensive underground and surface sampling and actual drilling in which we assumed to be one of the largest area--Murray Hill-has indicated that the originally postulated potential of 50-60 million tons of $2.00-$2.50 ore, in one large pit, or subsequently more probably, 15-20 million tons of $3.00-$4.00 ore in several pits, are unlikely to exist. Rawhide, from present evidence, consequently has more the earmarks of ultimately developing on the order of only 7-10 million tons of $3.00-$4.00 ore, in half a dozen or more smaller pits

2. The Breccia ores on Murray and Balloon Hills do not appear to carry values materially greater than the rhyolite ores.

3. In summary, the probably ore potential as it now appears is about as follows:

Murray Hill may have a potential of 1.5 million tons of $3.00-$3.50 ore, after selective mining.

Balloon Hill may likewise have a potential of 2.5 million tons of $3.00-$4.00 ore, after selective mining.

Grant Hill may have a possible 1.0 million tons of + $3.50 ore.

Hoolihan Hill may have a potential of 1.0 million tons of + $3.50 ore which can evidently be u-graded by stage-crushing and screening.

Other Areas may ultimately contribute another 1-2 million tons.

1.5
2.5
1.0
1.0
1.0
7.0

Selective Mining

4. Although the ore indications to date have not been completely proven by sampling of all underground and surface exposures, as well as by pattern drilling, in even one area it is believed that, considering

Yuba's current economic conditions together with our present knowledge of the district, the large expenditures necessary to thoroughly prove or disprove Rawhide are probably not warranted at the present time; and the profit potential is evidently below Yuba's floor of interest. Rawhide is big, but not big enough; and the ore seems not wide enough, by and large, to make ideal operational open pits.

RECOMENDATIONS

In view of the foregoing, the field staff has made the recommendation, with a certain amount of reluctance it is true, that the Rawhide Investigation be terminated; and management has concurred in this recommendation. Accordingly, all steps necessary to close out the project have been taken.

EXPENDITURES

Yuba's field expenditures at Rawhide, for wages, assaying, diamond drilling, general expenses, and management work, have amounted to approximately $47,000 for the entire Rawhide Investigation.

For information on property and ownership, option terms, location, history, geology, and other such matters, reference is made to "INTERIM REPORT, YUBA MINING DIVISION'S INVESTIGATION OF THE GOLD-SILVER PROPERTIES AT RAWHIDE, MINERAL COUNTY, NEVADA," April 7, 1960 by J. B. Canada.

[illegible] AND PARSHIDE INVESTIGATION

In April 1959 the Rashide properties were brought to our attention. Upon the reports and maps studied, and discussion on the ground with Mr. Merrill Yost of Sacramento, who spent the greater part of two years in the early 1950's drilling the placers and sampling portions of the area--his sampling of the old shaft dumps indicating a possibility on the order of 50 million tons or more of $2.15 free-milling gold ore mineable by open-pitting--we considered Rashide to be an attractive exploration situation. Recommendation was made that Yuba option the properties and undertake a stepwise sampling and development program. The recommendation was approved, and the desirable properties were optioned.

[illegible] PROGRAM

PHASE I [illegible] was started in August and completed in October 1959. It consisted of sampling approximately 50 dumps; some surface sampling on Murray Hill, and sampling of the Orutt Crosscut Tunnel on the east side of Murray Hill. This initial sampling tended to confirm Yost's dump sampling in a general way, and likewise gave support to the possibility of a very large tonnage potential of material averaging $2.00 or more per ton. Yost's sampling of 14 dumps averaged about $3.02 per ton. Our sampling in the same general area (270 individual samples) averaged $3.18--a pretty fair check. It was concluded that the results merited our further investigation of the properties. It was subsequently recommended, and approval granted, that a small amount of preliminary diamond drilling be done to test at depth several of the more promising areas on Hooligan Hill and Murray Hill. Ten thousand dollars was authorized for this drilling of four or five holes, in Phase II.

PHASE II was initiated late in January and completed by the end of March, 1960. Two-30 drill holes (H-1 and H-2) were put down on Hooligan Hill, with indeterminate results. Another hole, B-3, was drilled at -30 on the SW end of Balloon Hill, and the hole for its entire 243 feet below the surface soil averaged $3.30,--the bottom in $16 ore. Two -30 holes were put down on the NW flank of Murray Hill: M-4 showed 92 feet of $2.53 material (the bottom 65 feet averaging $3.36, and the bottom still in $5.17 ore); and M-5, apparently drilled along or near a fault zone, cut 33 feet of $1.63 material at the bottom. Holes B-3 and M-4 were considered quite encouraging. Total footage drilled in the five holes during Phase II was 740 feet, at a drilling cost of $4380.

Concurrently with the drilling, considerable dump sampling on Hooligan and Balloon Hills was conducted, and extensive underground channel sampling was accomplished on Hooligan and Murray Hills, with one shaft also sampled on Balloon Hill.

As the result of this Phase II work we estimated that our underground and surface sampling in the Truitt-Miller shafts area on Hooligan Hill indicated an ore zone containing about 1 1/2 million tons of $2.50-$3.00 ore which, based on past operations, was _____able to up-grading by crushing and screening.

Our drilling and underground and surface sampling on Murray and Balloon Hills indicated a potential of some 7 million tons of perhaps $3.00-$3.50 ore in an area 500 feet wide and 1100 feet long. Our calculated average of the channel sampling, both surface and underground, and of the diamond drill holes in this block was $2.37, but we conjectured that selective mining and encountering of other unexposed

high-grade zones would bring the average mill-feed up to between $3.00 and $3.50 per ton.

We also speculated that our sampling and drilling had been done on the fringes of the main breccia like zone, and averaged only $2.37 presumably because much of the rock we were sampling was not breccia (which was indicated by E. W. Grutt, Jr. to average close to $4.00 from his sampling of the breccia zone on Murray Hill), but was mostly rhyolite and tuff country-rock between the several "vein" pendants peripheral to the breccia zone proper. By judiciously proportioning the $4.00 breccia ore with that recovered by selective mining, we thought it possible to up-grade the feed to the mill to perhaps $3.50 at the expense of discarding as waste only a moderate proportion of low-grade material.

We therefore concluded that if the breccia dike zone theory advanced by Grutt was valid, and if it might indeed be the largest tonnage carrier of $4.00 ore, the potential ore grade at Rawhide was considerably enhanced compared to the results we had thus far secured. We deducted that we had evidently been nibbling at the fringe-zone and "pendant veins", and omitting the central "bull's eye" breccia dike zone from our testing. We thought, however, that these breccia dikes or plugs undoubtedly had considerable depth possibilities, with near vertical or at least very steeply-dipping ore shoots, thus further enhancing the tonnage potential (our tonnage estimates had been based on a depth of only 200 feet, or about as deep as the deepest shafts we had sampled).

Our sampling, thus far, has therefore pretty well confirmed our original postulated average grade of $2.00-$3.00 per ton for the Rawhide ores which might be open-pitted, but geologically with a greatly reduced tonnage potential. Based on the much smaller tonnage potential, profitability estimates indicated that we would need ore averaging upwards of $3.50 per ton on a 3,000 T/D milling basis if we were to achieve a worthwhile return on the investment of perhaps $4.5 million estimated to put Rawhide into production. (Additional estimates have indicated that $2.50 would be just about the "break-even" grade on a 3,000 T/D operation). So the "breccia zone $4.00 potential" theory was decidedly attractive to us, and we decided to test it, in Phase III.

PHASE III was started during the latter part of March. In order to conduct more intelligently any future drilling we decided to map the surface geology in greater detail than our previous reconnissance mapping had done. Particular emphasis was placed on mapping the contacts between the breccia "dike zones" and the adjacent rhyolite and tuff formations so as to determine as accurately as possible the shape and size of the breccia zones which zones Grutt believed might constitute the principal ore potential at Rawhide (as did Lawrence Wright).

In order to test the "Breccia" theory, two diamond drill holes were authorized-one for Murray and the other for Balloon Hill. $5,000 was allotted for this drilling which was to be undertaken and completed by the end of May. These holes were located and directed so as to probe the core of the breccia dike zones as effectively as possible.

Hole M-7 was collared April 30 a few feet north of the portal to the Grutt diagnost tunnel on the east side of Murray Hill, in the breccia near the rhyolite contact, and proximate to the XC tunnel area which showed underground and on surface above showed good breccia values. With a bearing of N 70 W and a dip of -45, it was planned for a depth of 400 feet, or so long as it might continue in the breccia. By 9 May it had reached a depth of 146 feet. Observation of the core, and study of the drill-log, indicated the hole was evidently following along the contact zone which here, therefore, had a dip of closer to 45 than to vertical as had been anticipated. And, inasmuch as the assay returns for the core and sludge averaged less than $1.00, decision was made to stop the hole. The breccia near the indicated foot-wall contact certainly

did not carry the values showing a short distance away in the tunnel, so there appeared to be no good reason to continue the hole. Diamond-bit wear in the siliceous breccia-fault zone was extremely heavy, moreover; so with only a limited budget under which to operate, and pending selection of another location on Murray Hill, the drill was moved to its prepared site on the SW end of Balloon Hill where the proposed hole, B-8, was planned to cut the northward extension of the promising ore zones cut by DD Hole B-3, in the heart of the Balloon Hill breccia zone as mapped.

While the drill was being moved and set up on the new hole, B-8, several office studies were made. One was a comparison of breccia sample values resulting from the recorded sampling done by Wright and Grott, with our own sampling. Another study was made to determine the actual feasibility of selective mining of the Murray and Balloon Hills potential open-pit material we had so far sampled by our underground channels, surface outcrops, and diamond drill holes; and what grades and relative tonnage ofore and waste might be expected. These studies are covered in subsequent sections.

As a matter of some concern the breccia zone mapping indicated the zones on Murray and Balloon Hills to be rather smaller than originally anticipated. Moreover, an extensive fault zone is shown to occur in the saddle between the hills. As a result of these observations we saw that we would have to reduce the tonnage potential of Murray and Balloon Hills.

While the selective mining study indicated that selective mining might be feasible, the breccia study was not as promising so, taken

So thinking

all aspects of the Rawhide project into consideration and carefully weighing them (including the fact that it would take a really large amount of money to thoroughly prove or disprove Rawhide, and funds of such magnitude were not available currently nor in the foreseeable future), decision was made to stop the drilling and to recess the investigation. This brought Phase III (and ultimately the entire Rawhide project) to an end.

Total drilling accomplished in Phase III was 106.0 feet with contract drilling and moving charges of $1776.40.

BRECCIA ZONE SAMPLING COMPARISONS

Compilation of the sampling of average typical breccia material from the breccia zones on Balloon and Murray Hills by Wright, Grutt, and Yuba are summarized as follows:

BRECCIA SAMPLING REMARK

BALLOON HILL

WRIGHT

No. of Samples	Range $	Avg. $
30-	1.34-10.27	2.57
7-3 1/2 of Hill Only	1.52-10.27	3.27

Yuba

No. of Samples	Range $	Avg. $
7-3 1/2 of Hill	1.83-6.93	3.45

MURRAY HILL

GRUTT

8- (Small area)	1.13-7.96	3.01

YUBA

6- (Scattered)	1.80-5.06	2.95

The foregoing summarization indicates rather conclusively that although the typical breccias may range in value from pockets $1.00-$10.00, the average is nearer to $3.00 than to the approximately $4.00 we had anticipated after our conversation with Grutt. (It should be explained, however, that Grutt's sampling included 3 high-grade breccia samples in the vicinity of the Grutt Crosscut Tunnel ore zone. These 3 high-grade samples were not included in the above 8 samples. With the 3 high-grade breccia samples included, his sampling in that general area averaged $10.40. He indicates, however, that the average of all

the many breccia samples he took in his sampling on Murray Hill was $1.85 or thereabouts. If we, likewise, include on sample of$18.00 we took along the indicated outcrop of the Murray Vein extending NE from the Bald Hornet shaft, our breccia "typical" samples would average $5.10).

The average breccia samples: 30 by Wright, 8 by Crutt, and 13 by Yuba on Balloon and Murray Hills, show a close agreement, it will be noted, at about $3.00. Our hope was to demonstrate a wide and lengthy breccia-ore zone or zones along the axes of Murray and Balloon Hills which might indicate sufficient at $4.00 breccia ore (the real heart of the ore bodies, it was anticipated) to bring up to perhaps $3.25-$3.50 mill-heads the extensive $2.37 material we had found by our sampling and drilling around the fringes of the breccia zones in the postulated "pendant" vein fringe zone on the west sides of Murray and Balloon Hills. - It is evident, however, that no matter how much $3.00 breccia ore we might combine with $2.37 material, it would be mathematically impossible to achieve any mill-head greater than $3.00. And $3.00 ore is calculated to furnish an insufficiently attractive return (+ 12% only) on the $4.5 million estimated to put the properties into production on a 3,000 ton per day rate.

Incidently, relative to the "breccia", in the overall sampling he did on Balloon Hill, Wright remarks on page 3 of his May 23, 1946 "Report on Results of Pilot Sampling--Schealine Property" that the average for the (56) samples taken in the zone (all Balloon Hill) as a whole is $2.27- thirty of the fifty-six samples in this zone were of

breccia, the remainder being composed of rhyolite or dark chert. The breccia samples, averaged separately, gave $2.57 in gold and silver. This shows that the other material in the zone is nearly as well mineralized. This, incidently, seems to be what we to have found to a large extent!

SELECTIVE MINING STUDY

A study has been made into the possibility of selectively mining the higher grade material in an indicated ore zone, and discarding as waste the low-grade material outside the zone. When we first considered the Rawhide area, we envisaged a multiplicity of more-or-less parallel veins, with lower grade material intervening which might carry low mill-grade values; and our sampling and proposed drilling was aimed at determining and probable grade and tonnage ratio of this inter-vein material. As the result of our reconnaissance dump sampling during August to October last year, several potential ore-zones of large extent were outlined, and it was thought likely that the $3.18 average from our 270 individual samples in the area of interest might reflect, in a general way, the average underground mineralization in the areas. We did not finally expect that all the inter-vein material would usually actually be ore-grade, but did anticipate that most of it would very likely be.

The area in which we had the most complete sampling information was chosen for our selective mining study. This area, on Murray Hill, included the Bald Hornet, Aspinwall, and Hill Shaft workings, which we had fairly thoroughly channel-sampled; and DD Hole M-4 which was also in this general area.

A block roughly 90 feet wide (at right angles to the Bald Hornet vein-zone), 350 feet long in a northeasterly direction along the vein-zone to beyond the Aspinwall Shaft, and 200 feet deep, was investigated. All sampling data within or closely adjacent to the borders, were plotted and the weighted average calculated.