

CONCLUSIONS

In conclusion, I believe the Benton Mine is capable of producing over a 10 year period 125 tons per day if a planned progressive development program is kept well ahead of mining. I also believe that a gross sum of \$110,000, a part of which expended upon development work would be recovered when the development ore was treated, is a reasonable expenditure to place the operation upon a 125 ton basis. This is essential in order to make a reasonable operating profit upon the grade of ore which the Mine is capable of producing. The grade of ore which this ore deposit will produce cannot be increased materially beyond a certain point and the only other alternative is to reduce production costs which is controlled by size of operation and skill of management.

Signed:

Elton A. Youngberg

Elton A. Youngberg

April 22, 1942,
Grants Pass, Oregon.

Elton A. Youngberg

SUNSHINE MINING & REFINING COMPANY

Allan R. Young, P.E.
Vice President — Development

877 W. Main Street • Suite 600 • Boise, Idaho 83702
(208) 345-0660 • Fax: (208) 342-0004

August 11, 1995

Mr. Joe Quimby
Dutch Mining LLC
325 Galice Road
Merlin, OR 97532

Dear Joe,

I read with much interest the reports which you sent to me on your Benton Mine Project. As it turns out, we also had a number of old reports and maps in our files.

After reviewing the data, we have reached the conclusion that this one is probably a bit too small for even us. This, coupled with the generally unfriendly environment in Oregon to mining, causes us to regretfully pass on this one at this time. I would like to be kept informed of any new developments, however, as this is a rather intriguing area.

Best of luck with your project, Joe, and give our regards to Sandy.

Yours Truly,



Allan R. Young

ARY/jkd

MEMORANDUM RE BENTON MINE

To: R. D. Leisk

From Rowland King

May 15, 1945

In April 1939 this property was examined and reported on by me. The results of this examination led to the conclusion that while the mine did have possibilities as a small gold producer, the lack of continuity of the ore bodies, the varying grade of mill heads (due largely to dilution in mining) and the narrow margin between recoveries and costs resulted in the entire project being considered unattractive. In addition, the owners had an exaggerated idea regarding the value of the property.

Since the time of my visit in 1939 and until the mine was shut down in April 1942, there was milled 50,107 tons of ore. The weighted average recovered gold was 0.211 oz. per ton @ \$35.00 equals \$7.38. Tailing losses amounted to about \$1.30 per ton, thus giving a mill heads of \$8.68.

In a fairly comprehensive report, dated April 22, 1942, Elton A. Youngberg, who had been resident manager for a year or two before the shutdown, states "An ultimate mine production of 500,000 tons can be expected on which to plan a 10-year operation of 125 tons per day", and "On a 125-ton basis, an estimated operating profit of \$2.17 per ton could be realized with adequate mining and milling equipment. (Taxes, depletion and amortization charges excluded)".

Youngberg bases his 500,000 ton estimate on extensions of possible ore in the present workings on five levels, together with the fact that the ore bodies have increased in size with no decrease in values as greater depth is attained. In addition he mentions five other veins upon which some limited amount of work has been done, and all of which he believes will produce considerable ore. He does not show any positive ore in the reserves, saying "...the ore bodies do not lend themselves to blocking out to the usual drifts and vertical raises because of their lensey nature and rake of the ore shoots".

He then gives details for Probable Ore, showing a total of 30,489 Tons	
and Possible Ore is given as	49,701 "
for a total of	80,190 Tons
which he values at \$8.546 per ton gross, or \$685,303.74.	

It is Youngberg's belief that on the basis of 125 tons per day the above reserve tonnage will show a profit of \$174,012.30. He states that "An expenditure of \$35,656.00, of which 75% would be recovered, will develop enough ore to supply a 125-ton mill 1½ years plus a possible ore reserve for an additional 2 years."

Benton Mine News, cont'd.

"A conservative estimate of \$75,000 would enlarge the capacity of the present power plant and mill to handle 125 tons per day", and finally, "The conclusion is reached that the Benton Mine is meritorious and that an expenditure of \$110,000 is advisable to make available for mining ore reserves to supply a 125-ton milling operation and to enlarge mill and power plant to that capacity".

At the time the mine shut down a winze was being sunk, in one of the ore sheets, from the lowest level. This was down 64 feet on an 80-degree dip. As sinking progressed samples were taken of the vein at both ends of the winze. The weighted average value of 23 samples was \$28.60 per ton, or 0.815 Oz. gold per ton. The average sampling width was 3.94 feet. All of the muck from the winze was milled, amounting to 432 tons, and the gold produced amounted to \$4,007.05 or \$9.27 per ton. This would indicate, on the basis of the assays, about 2 tons of waste to one ton of ore. The average width and value of the vein in this winze are of interest, and while the bottom of the winze is but 64 feet below the level it is the lowest spot in the entire mine.

Benton Mines, Inc. is capitalized for 2000 shares of no par value. All of this stock, except qualifying shares, is held by the Lewis Investment Company, an Oregon corporation. This latter company is liquidating its assets; it is a family affair and at the present time practically all assets have been converted to cash, with the exception of the Benton Mine. Apparently some pressure is being put on the managers of the Lewis Investment Company to make some disposal of the mine, and they are in a receptive frame of mind, quite different from their attitude nine years ago.

This matter was discussed at some length with Mason Bingham in Portland last month. At my request he wrote to me giving an outline of the various proposals discussed. (See his letter of April 22nd 1948).

It is my present belief that should we decide to take over the mine that a very reasonable deal could be made. While I do not advocate, under present conditions, that we undertake to operate the property, I do believe that it would be worth while to do some careful checking on all phases of the operation, and should the results of this work be favorable we could, perhaps, tie this up for a fairly nominal amount, such things as watchman's wages, taxes, assessment work, etc., until such time as conditions appeared favorable for operating it.

~~XXXXXXXXXXXX~~ 424 Symons Bldg.

May 18, 1939

Mr. Ross D. Leisk, Manager.

Sunshine Mining Co.

Kellogg, Idaho.

Dear Ross,

Herewith my notes on the Benton Group in southern Oregon.

I have attempted to boil these down and give you the principal features; should you have any questions about matters that I have not covered, or where I may have been too brief, please let me know as my original notes are fairly comprehensive.

I indicated to Messrs. Lewis and Bingham that you would probably advise them of your decision within a few weeks. They seemed to be somewhat anxious to get action of some sort started. From statements made to me it is evident that they are digging up something between \$1,000 and \$2,000 per month for expenses to supplement the million returns.

Sincerely yours,

~~XXXXXXXXXXXX~~ 424 Symons Bldg.

May 18, 1939

Mr. Mason L. Bingham,
408 Lewis Bldg.
Portland, Oregon.

Dear Mr. Bingham,

I am returning herewith the copies of the two reports made for you by Oscar Hershey; many thanks for their use. Also inclosed please find a few prints of pictures that I took while with you at the mine, the negatives are included in case you should want other copies for any reason.

My report has gone into Mr. Leisk, however, it may be some little time before he can get in touch with you after he has made a decision, as he is expected to appear before the Senate committee early next week at Washington. Just how long he will be gone is uncertain.

I wish once more to express my appreciation for the very fine treatment that you gave me; it is not often that we wandering engineers are accorded such pleasant treatment.

Your request for information regarding the new hearing device that I mentioned to you is not forgotten, but my associate, who uses it, is in Montana and I can find nothing here that will be of any benefit to you. I shall remember to take it up with him and send on the name to you as soon as he and I are together again. My best regards to Mr. Lewis and the boys at the mine.

Sincerely yours,

LEWIS INVESTMENT COMPANY

LEWIS BUILDING

333 S. W. OAK STREET

PORTLAND, OREGON

July 8, 1942

Mr. Rowland King
Sunshine Mining Co.
Star Route 1
Port Angeles, Washington

Dear Rowland:

I am enclosing your form filled out as far as possible and also a short report. I have also made three rough maps that I hope will convey such information as you may want. I hope you will pardon the rather rough way this is put together but as I don't claim to be any expert, I hope you will understand.

As I see the picture the copper claims are strictly a war baby and may not even be that. Since writing you I heard that an engineer looked at these claims and from what I gather did not think much of them.

Nevertheless I think they do look interesting. Diamond drilling is feasible and some fairly accurate information could be obtained with a few holes. We have a diamond drill machine at the mine (air driven) which could be used provided a portable compressor could be rented. You will doubtless note that I have mentioned the possibility of the country rock in the Johnson claims being underlaid by diorite. If this hypothesis is correct there might well be a connection between the Benton and the Mt. Reuben claims. The strike of the Benton diorite stock is such as would bring it under Mt. Reuben.

I also mentioned the occurrence of a vein reported to contain nickel and copper near the head of Reuben Creek. I have shown the approximate position of this on my sketch map. I have never seen this vein but it is reported to be about 1500 ft. long and 5 ft. wide. I have seen specimens, however, and they are not oxidized.

I believe that if your company should be interested, that some study should be made of ore occurrence in the Benton as I think it will be found that there is similarity between the two. Before Youngberg left I had him make a complete report so it would be available.

R King 7/3/42

As a matter of interest, although it has no bearing on this; Youngberg brought up some samples from a showing down Whiskey Creek. They were very heavy with iron and showed only a trace of gold. The rock was rather unusual so the State Bureau of Mines ran a test in the spectograph. Of all things, it showed tin. It obviously was not in commercial quantity but it was there just the same.

If there is any more information you want please let me know. I have tried to be as short as possible and stick to facts as I know them. If you thought it worth while I could come up to Port Angeles and talk the whole layout over.

We have been selling some of the equipment at the mine. All of it has gone to defense work. The next time you are in Kellogg you will see three of our thickeners in your new antimony plant.

I hope we will get a chance to have a visit sometime soon.

With kind regards, I remain

Sincerely

Marion L. Bingham

MLB BC

LEWIS INVESTMENT COMPANY

LEWIS BUILDING
TELEPHONE: BROADWAY 4793
PORTLAND, OREGON

May 11, 1939

Mr. Rowland King
424 Symons Building
Spokane, Washington

Dear Sir:

This letter is intended as an outline of a discussion between yourself, Mr. C. Hunt Lewis and Mason L. Bingham relative to the proposed sale of the Benton Group of Mines owned by Lewis Investment Company to your principals.

This preliminary discussion covered three proposals which we will take up separately. It is our understanding that these proposals are of a preliminary nature and that no definite commitment has been made by either party:

Proposal No. 1

Lewis Investment Company agrees to give an option for a period of twelve months from date of execution of contract: -- Minimum working requirements under the agreement to be ten men working twenty-five days each month; - Depreciation or rental to be paid for the use of equipment. This payment to be based on 10% royalty on the net smelter or mint returns and in no event shall the payment be less than \$750.00 for each thirty day period.

Purchase price shall be \$100,000.00 payable in four equal installments at the time option is exercised, these payments to be completed within one year, and upon completion of the \$100,000.00 payment continuing royalty payments shall be made to the Lewis Investment Company on the following scale, same to be based upon recovery value (which is Smelter or Mint returns):

On ore up to \$10.00	10%
" " \$10.00/\$15.00	12½%
" " \$15.00/20.00	15%
" " \$20.00/\$30.00	17½%
" " \$30.00/ up	20%

Proposal No. 2

In the event the purchaser elects to purchase the entire holding at a price of \$300,000.00, payments may be made as follows: 10% of purchase price to be paid on exercise of

R. King 5/11/39 Pg.2

option, balance payments in five equal installments at six months intervals. Any payments made during the option period, whether as rental on equipment or royalty shall apply on purchase price.

Proposal No. 3:

A. New corporation shall be formed to take over the assets of the Benton Group of Mines; -- Lewis Investment Company to receive 49% of the capital stock, the purchaser to receive 50% of the capital stock to be issued.

It is mutually understood in submitting this letter to your principals that all terms and conditions will of necessity have to be ratified by the respective boards of directors and stockholders before they can be binding upon either party.

This letter is written with the understanding that we will be advised within thirty days whether you have decided to drop the entire matter or whether you wish to continue further negotiations.

Yours very truly

LEWIS INVESTMENT COMPANY

BY Wm. L. Bingham
Vice President

MLB BC

LEWIS INVESTMENT COMPANY

LEWIS BUILDING
333 S. W. OAK STREET
PORTLAND, OREGON

Benton Mine

January 14, 1942

Mr. Earl K. Nixon
State Coordinator of Mines
Woodlark Building
Portland, Oregon

Dear Sir:

We enclose herewith monthly report of purchases made under priority No. P-56. You will note that this has been segregated as to purchases made under A-3 and A-8.

In regard to items under A-3: Some of these may possibly be in error owing to the fact that when the order first came out it was our understanding, after talking with you, that most items came under A-3 and revised P-56 on December 2, 1941.

You will note that there is what appears to be a substantial inventory of steel balls. This, however, is not the case, inasmuch as we were completely out of grinding balls the middle of December. These are the balls about which the writerspoke to you several weeks ago.

We will be very glad to answer any questions that may arise.

Yours very truly

LEWIS INVESTMENT COMPANY

BY *W. L. Benjamin*

MLB BC

RECEIVED
JAN 15 1942

STATE DEPT OF GEOLOGY
& MINERAL IND.

Benton Mine

LEWIS INVESTMENT COMPANY

LEWIS BUILDING
333 S. W. OAK STREET
PORTLAND, OREGON

December 13, 1941

Mr. Earl K. Nixon
State Emergency Coordinator for Mines
Woodlark Building
Portland, Oregon

Dear Sir:

We are enclosing herewith list
of purchases made under P-56 - Mine
Serial 33-5 for the month of November 1941.

If the form in which the report
is made out is not satisfactory, please
advise us as to any further requirements
you may have.

Yours very truly

LEWIS INVESTMENT COMPANY

BY *M. L. Bingham*

MLB BC

RECEIVED
DEC 5 1 1941

STATE DEPT. OF GEOLOGY
& MINERAL INDUSTRY

Benton Mine

RECEIVED
MAR 31 1944
STATE DEPT OF GEOLOGY
& MINERAL INDS.

March 21, 1944

Serial Number Unit
Resources Section
1416 Temporary R Bldg.

Lewis Investment Company
333 S Oak Street
Portland, Oregon

Gentlemen:

There has been some confusion about the mine serial number 33-5, which was reinstated as a non-metallic operation for the mining of siliceous flux, for the Takoma Smelter. The confusion arises in part from the fact that the commercial value in your product is represented largely by its gold content.

After consultation with the Section of Non-Metallic Minerals it appears that the small scale of your operation does not require the use of a mine serial number, inasmuch as you can obtain your operating supplies under Preference Rating Order No. P-56 without the number. Furthermore, as a former gold mine you are permitted to continue the production of gold ore not in excess of one hundred tons per month without the use of a serial number.

In view of these considerations we are cancelling the mine serial number 33-5, and for your information we are enclosing herewith a revised copy of Order P-56.

Very truly yours,

A. S. Knoisen
Director, Mining Division
Administrator, Order P-56

JVL:ej

cc: Miss Kernsey
Mr. Dixon
Mr. Nixon ✓

LEWIS INVESTMENT COMPANY

RECEIVED
OCT 14 1941

LEWIS BUILDING
333 S. W. OAK STREET
PORTLAND, OREGON

STATE DEPT OF GEOLOGY
& MINERAL INDS,

October 11, 1941

Mr. Earl K. Nixon
Oregon Emergency Coordinator for Mines
702 Woodlark Building
Portland, Oregon

Dear Sir:

Referring to your circular letter of
October 9th in regard to certain information
you desire on the Benton Mine.

Please be advised that our production
is 1800 tons per month. Average number of
employees is forty-seven.

If there is any further information you
desire kindly advise us.

Yours very truly

LEWIS INVESTMENT COMPANY

BY M. L. Bingham

MLB BC

November 25, 1940

Mr. Mason Bingham
Lewis Investment Co.
Lewis Building
Portland, Oregon

Dear Mr. Bingham:

Confirming our telephone conversation, following is a list of men taken from our application file for the position of assayer:

Colver F. Anderson, 440 Chestnut St., Ashland—O.S.C. grad.
29 yrs. old— experience as assayer & cyanide mill helper

Chas. J. Durway, 528—9th Ave., Spokane—W.S.C. Grad., 32 yrs.
old— Experience as assayer, sampler, cyanide man

Everett S. Frye, Greenan & Co., Beowawe, Nevada—W.S.C. grad—
32 yrs. old—experienced as assayer, chemist, mill testing

James S. Miller, Golden, Colorado. Col. School of Mines, grad.
in 1937, experienced as assayer and sampler

Ronald C. Whiting, Rio Tinto, Nevada. Univ. of Utah grad., 33
yrs. old, experienced as miner, engineer, assayer

Clarence W. Beede, 227 S.W. Front Ave., 33 yrs. old - ex-
perienced as assayer, chemist and ore testing. Apparently
not technical graduate

H. R. Bramel, Route 2, Hood River. Grad. of Stanford.

Yours very truly,

F. W. Libbey
Mining Engineer

OREGON STATE GAME COMMISSION

616 Oregon Building
Portland, Oregon

March 8, 1940

REGISTERED

Lewis Investment Company
Lewis Building
Portland, Oregon

Attention Mr. Albert Burch

Gentlemen:

It was brought to our attention sometime ago that the Benton Mine operated by your firm on Whiskey Creek, a tributary of the Rogue River, is using a cyanide process and that the tailings were being deposited into Whiskey Creek.

An analysis of the water taken by our biologist shows that there was sufficient cyanide in not only Whiskey Creek but also for a distance below the mouth of the creek in Rogue River to kill fish life.

Therefore, this is your official notice to cease depositing deleterious chemicals, such as cyanide, into the waters of Whiskey Creek. We would refer you to Section 39-603, Oregon Code 1935 Supplement, which you will note provides that there shall be no substance deposited "which do or may render the waters of a stream or any other body of water destructive of fish life".

We believe there are methods that you can use to remove the cyanide from the water and still permit the continuance of your mining operations. This, however, is something that would have to be worked out by your concern.

Very truly yours

OREGON STATE GAME COMMISSION

F. B. Wire
State Game Supervisor

FBW k

*Benton
Mine*

MALARKEY SABIN & HERBRING
Atty at Law
1111 Wilcox Building
Portland, Oregon
March 11, 1940

C O P Y

Oregon State Game Commission
616 Oregon Building
Portland, Oregon

Att'n Mr. Wire

Gentlemen:

The Lewis Investment Company has asked us to reply to your letter of March 8, 1940, in which you state that your biologist has reported that sufficient cyanide is escaping from the Company's mill to kill fish in Whiskey Creek and in the Rogue River for a distance below Whiskey Creek. This report is a great surprise to the officers of the Company as they have had several tests made during periods of low water -- when the cyanide content of the water would be greatest -- and have been assured that the amount of cyanide in the water was negligible and harmless. Also, fish were observed in the stream all last summer and fall and they appeared to be leading a healthy and happy life.

As a result of your letter the Company is again having tests made to ascertain the facts and what needs to be done. In the meantime, if you care to discuss the situation, the writer will be available at your convenience.

Very truly yours

MALARKEY, SABIN & HERBRING

By Robert L Sabin, Jr.

S M

Benton M. M.

October 11, 1938

Mr. Ed Stenger, Manager
Benton Mine
Glendale, Oregon

Dear Mr. Stenger:

This morning I received the assay report on the sample of material which I sent to the Baker Assay Laboratory, which material was thought to contain molybdenum. The report shows "nil" in molybdenum. I suspect then that the mineral in question was graphite or some other material which I did not identify.

I had a very nice talk the other day with Mr. Lewis and Mr. Bingham and told them that Mr. Swartley and I enjoyed the trip to the mine very much, that we appreciated your courtesy, and that particularly we could understand and appreciate that you have a darn tough job of mining; that, further, you have a very interesting problem in exploration. We urge that no efforts be spared to determine the lateral extent, both up and down, especially ^{to} the south of the orebody which you are now mining.

Cordially and sincerely yours,

EKN:vm

Director

cc: Mr. M. L. Bingham,
Lewis Investment Company

Hladky Frank

From: Beaulieu John
To: Hladky Frank; Wiley Tom
Subject: FW: Benton Gold's Dutch Mining
Date: Tuesday, October 01, 1996 3:19PM

From: Throop Allen H
To: Lynch Gary W; Hull Don; Beaulieu John; ARENDT Jack
Subject: Benton Gold's Dutch Mining
Date: Tuesday, October 01, 1996 1:42PM

I talked to Will Beach today. he is currently in charge of mining related activities for Dutch Gold.

He says that they are currently moving slowly but work in progress includes:

- 1) Consolidation of all of the milling equipment at the Merlin site. They are selling some of it and saving some. This means that all the equipment stored at the Gold Bug is being moved into town. A good sign as far as DOGAMI is concerned.
- 2) They are doing an extensive grade sampling program. Will wonders never cease?

They have no current plans to speed up development activities and are not currently doing any underground work other than sampling. He promised to get in touch with us before they started any renewed mining activity.

Bruce Goddard
739 Manor Drive
Reno, Nev. 89509
(702) 323-6728

*Benton
mine
1-26-1977*

104 East 10th St.
Rolla, Missouri
April 21, 1941

Mr. E. A. Youngberg, Superintendent
Lewis Investment Company
Benton Mine
Box 268
Grants Pass
Oregon

Via Registered Mail

Dear Mr. Youngberg:

Enclosed is a paper written about the Benton Mine in connection with my employment at the mine during the summer of 1940. The paper is as nearly correct as I could make it; I do not believe that there are any glaring mistakes.

The paper has been sent to the St. Louis Section of the American Institute of Mining and Metallurgical Engineers. If it should happen that the paper is of sufficient merit to be sent to the Institute headquarters in New York for entry in the national contest, would you give your permission allowing it to be sent there? The reason for the request is that the prize-winning papers in the national contest, may be published by the Institute.

Enclosed is a self-addressed stamped envelope for your convenience.

Sincerely yours,

Arthur Wm. Brune

Arthur Wm. Brune

Gulf Mineral Resources Co.

August 28, 1979

Wayne S. Cavender
VICE-PRESIDENT - EXPLORATION

1720 So. Bellaire St.
Denver, CO 80222

Mr. Len Ramp
Oregon Dept. of Geology and
Mineral Industries
Box 417
Grants Pass, Oregon 97526

Dear Len:

While cleaning out my briefcase, I came upon your calling card and got to thinking about our conversation a few weeks ago, when I was in Grants Pass. Although my initial interest was the Benton Mine, I recall that we spent some time talking about the energy situation and its impact on the extractive industries. Accordingly, I thought that you might be interested in seeing a booklet on energy that Gulf has prepared and which helps to provide a better understanding of the present-day energy problems. A copy is enclosed.

I enjoyed making your acquaintance and hope to see you again, the next time I am in Grants Pass.

Regards,

Wayne Cavender

WSC:jm
Enclosure



P. R. HINES
PORTLAND, OREGON

AMERICAN MANGANESE STEEL CO.
STEPHENS ADAMSON MFG. CO.
WILLIAMS P. CRUSHER & P. CO.
MOORE STEAM TURBINES
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COMPLETE DESIGNS FOR MINING
METALLURGICAL, ROCK,
SAND & GRAVEL PLANTS
MATERIAL HANDLING
FLOTATION LABORATORY

668 N. Tillamook Street,
February 1939

Brittania Mining & Smelting Co.,
Britannia Beach, B.C.

Attention of George C. Selfridge

Dear Mr. Selfridge;-

The enclosed report is a copy of the one submitted to Mr. Browning and Mr. Brennan.

It may come in handy for secondary matters such as equipment and machinery. The maps may serve for plotting up your own work. It should give you more time to devote the vital facts.

The mill production has been brought up to date and the mill records are at the mine and also the Portland office. The actual bullion returns are on file at the Portland office and if you wish to check these this can be quickly done.

This report leaves open one important question. It is not certain whether the mine should be considered one with several fair sized quartz fissures in it which would be mined selectively on a basis of 50-75 tons daily or whether its a large zone containing several quartz fissures of good width plus other small stringers separated by zones of barren and pyritized diorite of a grade of around \$6-7.00 and would be mined with a cheap method for the whole 30-40 ft width on a scale of 200-500 tons a day depending on ore reserves developed.

There is not enough sound evidence to come to a sound conclusion. The mine sampling does not check with the mill heads. The development work was done using the quartz fissures as a guide in drifting, consequently perhaps more quartz has been milled than would be representative of the whole zone. On the other hand there has been many remarks about the fissures fingering out and coming back in again. Considerable of the work has been in the diorite and the mill feed always shows a large preponderance to quartz. If the mill heads checked with the sampling which has been largely in the quartz it would make a different answer. As the mill feed is well washed and hand sorted on a screen of the mill the nature of the feed is quite well known as many assays have been made to guide sorting. This shows an average of 15% barren diorite has been sorted out. The feed so far has been I would say about 60% diorite on an average. We don't sort out diorite with veinlets or pyrite.

of diorite

follows

I had occasion several years ago to check over every thing at the Oriole mine nearby. The metallurgical characteristics of the ore are the same as the Benton. The ore itself was badly crumpled up stringer of quartz about 12" wide lying underneath a hanging wall of quartz porphyry separated by several inches of gouge and forming a smooth straight hanging wall. The schist adjacent was well sheared and had many veinlets of quartz and much altered schist well pyritized. We mined this in widths of 4 to 5 feet so that the pyritized schist was at least 75% of the ore. Careful stope and development sampling was done and the schist sampled separately from the quartz. The pyritized schist went as well as the high grade quartz frequently. The mill feed checked with the mine sampling and of 3500 tons mine and milled it averaged \$9.30.

Metallurgical tests show plainly the gold is associated largely with the pyrite and requires much finer grinding than the gold in the quartz.

Its a matter of judgement to decide just how truly the mill feed is representative of the whole zone. The mill head based upon the actual ^{gold} recovered in bullion plus the tail assay average for cleanup period is more accurate than mine sampling on a gold ore. The fact remains the waste raise was not completed until January and no attempt to segregate waste from ore in the mine previously, as there was only one ore pass. *The pyritized diorite always runs \$3.50-4.00*

I have suggested several times the way to decided the question was to carefully sample the whole zone width dividing it up into classes and measuring these widths and taking individual width samples, to find out the proportions of barren diorite, pyritized diorite and its value and the relative proportion of quartz and its value. Also that some cross cuts are needed for this purpose.

I won't go into it why this has not been done nor why the sampling has not been kept plotted up as a guide. The assay map in the report I plotted from their records as well as possible under the circumstances.


The geology has been obscured by the small amount of ground opened up to date. I am revising my own opinion of several months ago due to development south of the Kansas raise. I was convinced some time ago that the strike and dip of the quartz fissures were not coincident with that of the Benton gouge wall and of the general trend of the zone. I also have not so far been able to reconcile the belief that the ore shoot pitches southerly if the quartz fissures are the controlling ore feature as their intersection with the Benton gouge wall would have to pitch in the opposite direction.

The fact that the development work south is picking up ore seems to definitely dispose of the zone being cut by a fault in the vicinity of the Kansas raise. It now appears be a zone of fracturing opened up by the forces along the Benton gouge wall.

These things all bear upon the characteristics and nature of the ore body. There is a difference of opinion among the organization on this main question. My own view favors looking at it as a large tonnage possibility and mining the whole width and doing this should yield about \$6- 7.00 average after sorting out some 20% waste.

I have brought up these points first to bring the report up to date and also to raise the questions so they will not be overlooked when you come to considering the matter and forming your own conclusions.

Yours very truly,



P.R. Hines.

PRH-hs

