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PRINTED: 12/17/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

2 of 3

PRIMARY NAME: CHARLESTON MINE

ALTERNATE NAMES:

WOOLREY
BROTHER GEORGE
MARY JO GROUP
CHARLESTON MICA

COCHISE COUNTY MILS NUMBER: 168

LOCATION: TOWNSHIP 20 S RANGE 21 E SECTION 25 QUARTER S2
LATITUDE: N 31DEG 39MIN 26SEC LONGITUDE: W 110DEG 09MIN 16SEC
TOPO MAP NAME: FAIRBANK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD
ZINC
SILVER
COPPER
MICA SERICITE
ARSENIC

BIBLIOGRAPHY:

KEITH, S.B., 1973, AZBM BULL. 187, P. 74
ADMMR CHARLESTON MINE FILE
ADMMR MAPS UPSTAIRS - DRAWER 4-FLAT FILE
AZBM BULL. 180, P. 400, 402
AYER, M.R., GEOLOGY FILE
WILSON, E.D. 1949, AZ NONMETALLICS, ABGMT BULL 155

Abandoned Mine Safety Fund Annual Report

November 15, 2001

Charleston Lead Mine

The Charleston Lead Mine lies approximately ten miles southwest of Tombstone, Arizona, partially on land managed by the Bureau of Land Management (BLM) and partially on State Land. The mine is located on an ephemeral wash two miles upstream from the San Pedro River and less than a mile from the San Pedro National Riparian Conservation Area boundary.

The mine produced base metals from underground workings. These were processed on the site in the 1940's and 1950's. Beginning in the late 1950's, clay was mined from an open pit. This operation continued through the early 1960's.

A joint project between ASMI and BLM was undertaken to remediate the site and close the dangerous openings. The project was cancelled midway through due to the issuance of a mineral exploration permit on the State Land portion of the project.

Pieces of machinery scattered around the site were collected along with the solid waste in the pit, which included autos and tires, and removed from the site.

The pit was about 50 feet deep, 500 feet long, and 150 feet wide, at its largest dimensions. Sulfides were being oxidized from the pit walls, forming iron oxide and iron sulfates and staining rainwater orange.

Waste dumps covered approximately five acres and were used to partially fill the pit. Cement mill foundations were pushed into the pit.

Remediation was expected to cost \$250,000. BLM spent \$200,000 to partially fill the open pit with overburden from the site after collecting the solid waste. Arizona State Mine Inspector's Office was committed to providing \$15,000 from the Safety Fund for closure of the four openings. In February 2000, ASMI applied for and was awarded a grant from the Western Governors Association, to supplement the project funding. Unfortunately, the project was cancelled before the final money was received or work completed.

CHARLESTON MINE

COCHISE COUNTY

Harlow L. Jones, 7902 N. Tuscany, Tucson, Arizona 85742, phone 520-742-4141, fax 520-742-3535, cell 520-907-4012 was in to tell of plans to develop an industrial mineral and metal mine operation at the Charleston Mine. He reports that he owns the 7 patented claims in Secs. 30 & 31, T20S, R20E and Secs. 25 & 36, T20S, 21E as well as a State Mineral lease in the N½, Sec. 36, T20S, R21E. The 7 patented claims are the Kit Carson, Evening Star, North Star, Buffalo, Gold Reeds, Bald Eagle, and Rad Crow. He also holds some unpatented claims in the S½, Sec. 25, T20S, R21E. A copy of the BLM Mining District Map showing the relationship of the patented claims was made for the file.

Mr. Jones explained that the State/Federal venture to clean up the Charleston Mine sight is on temporary hold bending his more detailed involvement. He stated he was in favor of any help he could get in cleaning up the site and filling in the pit that resulted from old underground workings that have caved through to the surface. The reclamation would include removing the remains of the concrete structures once used for processing sericite. The pit, concrete structures, and related trash are located on State Trust lands along the south side of the boarder between Secs. 25 and 36, T20S, R21E, just south of the southeast corner of the Rad Crow patented claim. He doesn't feel such reclamation would impact he plans for future sericite and metal production. His immediate plan is to seek an access route north from the Charleston Road over about 1000 feet of State Trust Land to his patented Kit Carson claim. (Ken A. Phillips, office interview, Harlow L. Jones, 01/08/2001)

CHARLESTON MINE

COCHISE COUNTY
TOMBSTONE DIST.

Was informed that the Charleston Mine was still idle.

AXEL L. JOHNSON - WR - 4-16-60

KAP WR 9/12/81: Access to the Charleston Lead Mine, Tombstone District, is blocked by locked gates. The property is fenced.

NJN WR 2/24/84: Fred Rothermel, Geologist with the State Land Department, reported James Stewart Co (c) is drilling at Charleston Mine, area, Cochise County. They have applied to convert some of their prospecting permits in the mine area to production leases.

CHARLESTON MINE

COCHISE

No sign of renewed activity near Charleston of either the Charleston Lead Mine, Tenneco Minerals property or othersmall mines in the area. GWI WR 9/14/72

Someone is removing the Charleston smelter slag dump but I could not find out who. I was told that the slag is being stockpiled in the St. David area. Slag is being moved from the Charleston slag dump at night. VBD WR 5/14/75

CHARLESTON MINE

COCHISE COUNTY

Talked with Chas. H. Suiter, 5008 W. Weldon, Phoenix, President of Charleston Mines Inc. James Stewart Construction Co., continue to hold option on property and paid Mr. Suiter \$80,000 to date. Advance royalty is \$100/mo. Stewart Co. is trying to get another party to participate with them. FTJ WR 12-17-65

Visited Charleston Lead mine - no one on the property. GWI WR 3-12-66

Mine visit to Charleston lead mine - locked up and Mr. Harlow Jones is reported to have left the country. GWI WR 5-14-66

The Charleston Lead mine, scene of considerable exploration and some production over many years, is said to again be working in a small way. Tombstone Epitaph Aug. 3, 1967

Visited Charleston Lead mine - Boyles Bros. drilling south edge of pit. FTJ WR 9-3-67

Visited Charleston lead mine - talked with diamond driller. GWI WR 11-11-67

Information from H. L. Jones of James Stewart Corporation, of diamond drilling at the Charleston mine. Mr. Jones reports encouraging results. FPK WR 12-8-67

Visited the Charleston lead mine - still drilling with one rig. GWI WR 3-9-68

The Fisher Construction Co. of Phoenix has continued deep drilling at the Charleston mine southwest of Tombstone. GWI QR

Boyles Bros. removed their rig from the Charleston mine in May or June. It is reported that they drilled three holes with the following depths: 2100', 3100', 4000'. The reported owners are James Stewart of the Stewart Construction Co., Phoenix; Seth Horne, Clarence Cosgrove, Harlow Jones, Clyde Davis and Dan Peterson. Clark Hughes is the project supervisor. He teaches at Sierra Vista and has a mailing address of Box 336, Tombstone 85638. GWI QR 6-1968

Visited the Charleston mine - no activity. GWI WR 9-7-68

Visited Charleston mine - one drill operating. GWI WR 9-6-69

Visited the Charleston mine - drill rig gone. GWI WR 12-6-69

Visited the Charleston mine - drilling north and west of TMR mill. GWI WR 9-5-70

Summary Report
CHARLESTON MINE
Sericite Project
Cochise County, Arizona

Fred M. Johnson, C.P.G.
Tombstone, Arizona
June 3, 1999

sericized shear varies in width from 40' to more than 120' and can be traced on surface by outcrop and float for more than 1000'. The structure strikes N80°E and dips 60°S. A small pit, approximately 50' deep, exposes the shear and sericite alteration.

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INTRODUCTION

This report presents the results of a field examination of the Charleston Mine as well as a review of all the available published and unpublished data. The Charleston Mine has the potential of producing high grade sericite, marketable in higher added value markets. High quality sericite can be substituted for 75% to 80% of the ground mica supplied to the market.

No attempt has been made to evaluate the base metals potential of the Charleston Mine.

CONCLUSIONS AND RECOMMENDATIONS

- 1) An estimate of exposed sericite material, based on field measurements, is 200,000 short tons+, containing 50% sericite. Potential for an additional resource of 780,000 tons exists at depth as indicated by drilling.
- 2) The deposit consists of a broad, highly sericitized shear zone, containing scattered base metal sulphides, and would be mineable from surface.
- 3) The sericite has been preliminarily analyzed and tested. The end product is a recoverable, white bright product marketable in higher added value markets. The sericite disintegrates on contact with water, making a clay slurry. Previous investigators report that a clean marketable sericite product was produced, and test lots were sold to users.
- 4) The land status report shows that the property is available through lease-purchase and staking.
- 5) It is recommended that an agreement be made with the present owners to acquire the property and that additional exploration be done to determine the size and grade of the resource. It is further recommended that this be followed by processing studies, product testing and market studies.

PROPERTY, LOCATION AND ACCESS

The property consists of 2 patented and 17 unpatented claims, all located in portions of Sections 25 and 36, T20S, R21E, G.&S.R.M., Cochise County, Arizona. The property is owned by:

James Stewart Co.
4020 N. 20th St.
Phoenix, AZ 85016

The mine is located approximately 7½ miles southwest of the City of Tombstone and is accessible via a paved highway and 2-wheel drive dirt roads.

Surrounding lands are open to mineral entry.

GEOLOGY

The Charleston deposit consists of chlorite, highly sericitized, Tertiary volcanic rocks, containing stringers and disseminations of fine-grained galena, sphalerite and pyrite. The sericitized shear varies in width from 40' to more than 120' and can be traced on surface by outcrop and float for more than 1000'. The structure strikes N80°E and dips 60°S. A small pit, approximately 50' deep, exposes the shear and sericite alteration.

Zones of nearly pure sericite, within the shear, and exceeding 20' in width, are visible in the pit walls. Overall, the shear is estimated to be composed of 50%+ sericite. The deposit extends in depth to more than 300' as shown on the drill section of Appendix C.

The hanging wall of the shear is composed of rhyolitic volcanoclastics and breccias. The foot wall is composed of andesite. Both lithologic units are part of the Bronco Volcanics of Tertiary age.

A geologic sketch map is attached.

RESOURCE

A resource was estimated based on lithologic observations and on measurements along the outcrop and within the pit. This estimate includes only material outside the pit and along strike, and does not include any material below the elevation of the pit floor.

Width of sericite in the west pit wall is 50', pit depth is 65' and outcrop strike 475'. A tonnage factor of 12 cubic feet was used:

$$50' \times 65' \times 475' \div 12 = 128,646 \text{ st}$$

Width of sericite in the east pit wall is 120', pit depth is 50' and outcrop strike 150':

$$120' \times 50' \times 150' \div 12 = 75,000 \text{ st}$$

$$203,646 \text{ st total}$$

ANALYSES AND MARKETING

Samples of sericite were taken in the pit for analysis and preliminary market evaluation. A resource and sample location section is attached. These were sent to Miles Industrial Minerals Research, Denver, Colorado. Those results are attached to this report as Appendices A and B. Based on these results, it appears that the sericite product would meet the requirements of the higher added value markets for ground mica.

Additional process testing, product testing and market studies are needed.

HISTORY AND PREVIOUS WORK

The Charleston Mine was discovered in the first half of the 20th Century and was located as a base metals deposit. Attempts to mine the deposit underground were hampered by loose, massive sericitically altered wallrock which caved continually into the workings. By the 1950's a pit had been opened to produce gravity-concentrated base metal sulphide and sericite. Metal concentrates were sold to International Smelter of Tooele, Utah and lots of sericite were reportedly sold to Western Chemical Co. and Dutch Boy Paints Co.

The property was closed by Tombstone Mica Co. in late 1961 after they were unable to obtain funds to purchase and install a full size plant to process sericite.

The property was examined in 1955 by Charles H. Dunning, P.E. (Mining Engineer) and in 1964 by Paul Gilmour (Geologist) of Shattuck Denn Mining Corp. Both investigators reported that the property had potential to produce marketable sericite. These

reports are attached as Appendices C and D.

Fred M. Johnson, C.P.G.

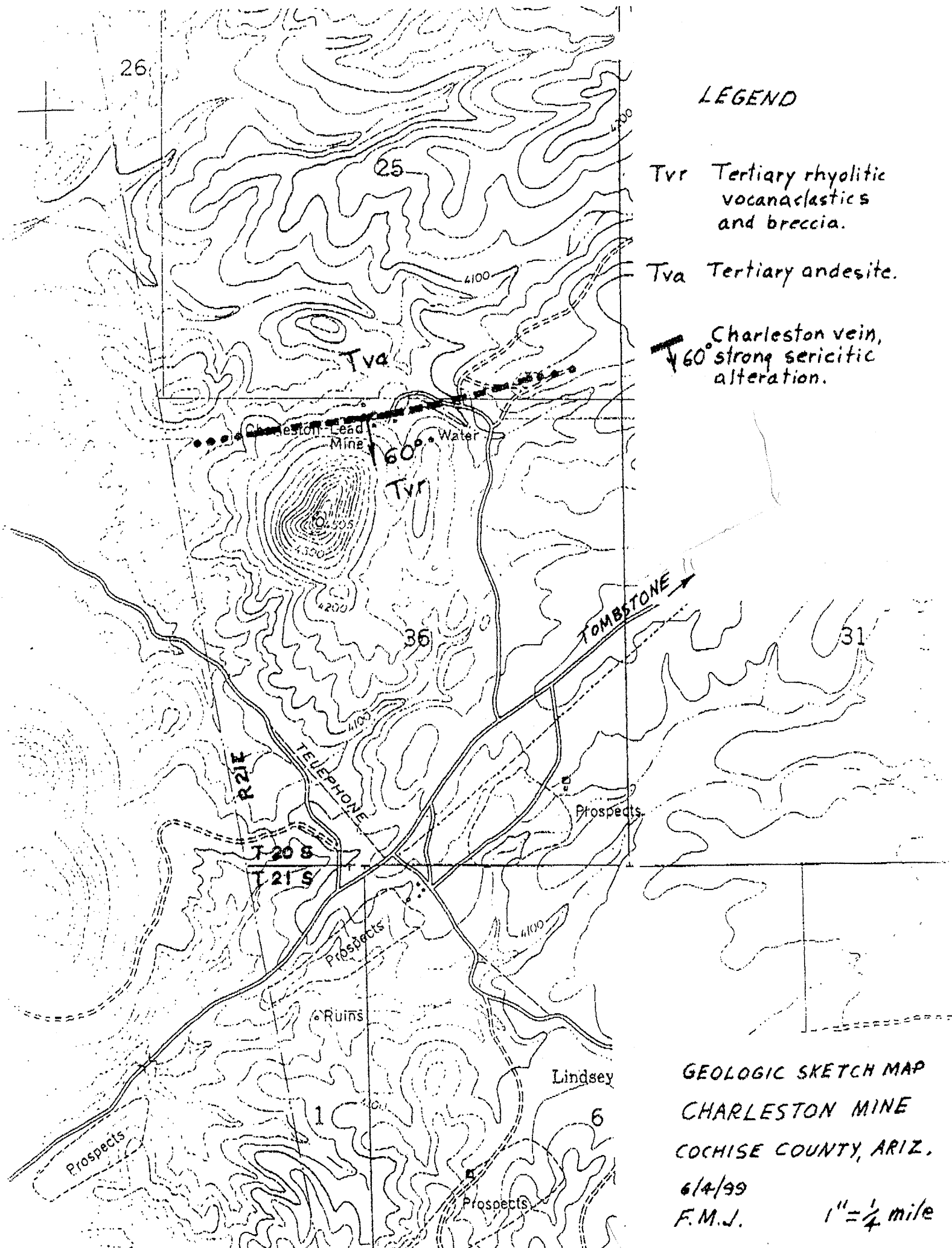
26

LEGEND

Tvr Tertiary rhyolitic
voleanaclastics
and breccia.

Tva Tertiary andesite.

Charleston vein,
60° strong sericitic
alteration.



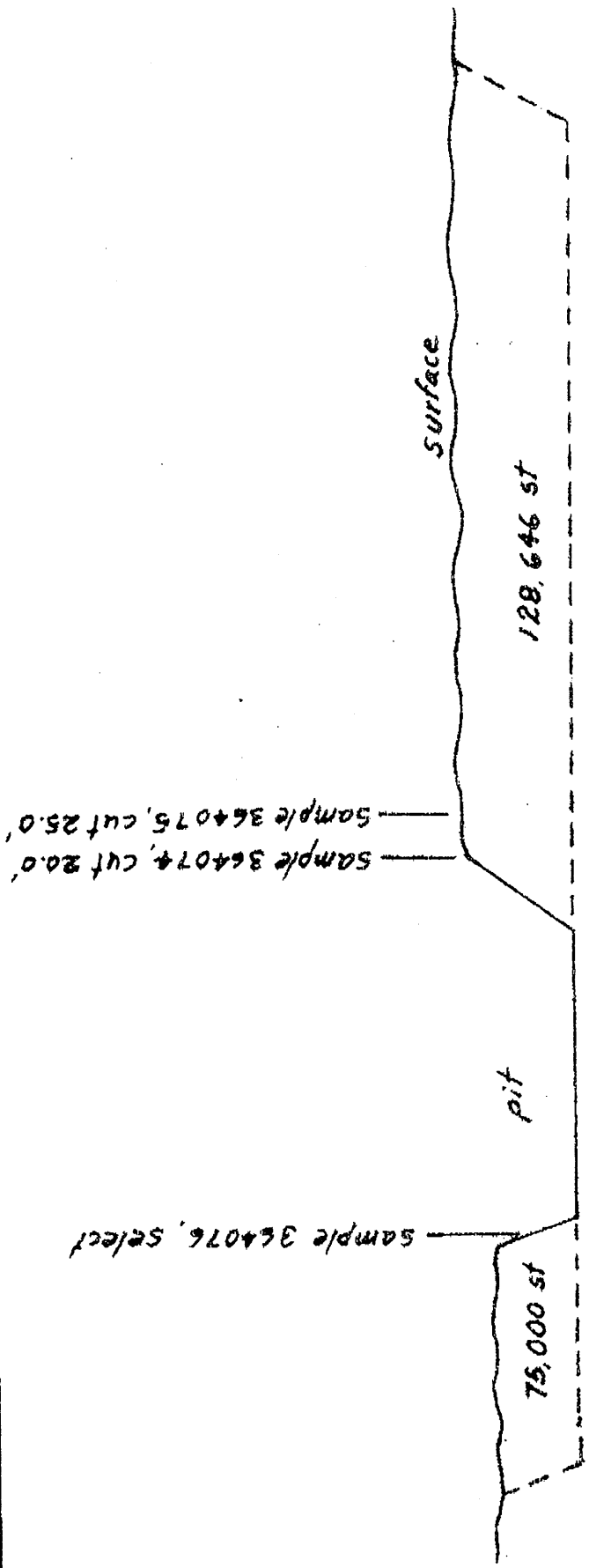
GEOLOGIC SKETCH MAP
CHARLESTON MINE
COCHISE COUNTY, ARIZ.

6/4/69

F.M.J.

1" = 1/4 mile

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



LOOKING SOUTH

RESOURCE AND SAMPLES
LONGITUDINAL SECTION
CHARLESTON PIT
F.M.J. 6/99 1"=100'

Table 1X-Ray Diffraction AnalysisSericite Samples from AZCO Mining Inc.

<u>Sample</u>	<u>% sericite</u>	<u>% Muscovite</u>	<u>% Smectite/Swelling Layers</u>
#364074	-95%	~5%	none detected
#364075	-95%	~5%	none detected
#364076	-95%	-5%	none detected

Table 1
X-Ray Diffraction Analysis

Sericite Samples from AZCO Mining Inc.

<u>Sample</u>	<u>% sericite</u>	<u>% Muscovite</u>	<u>% Smectite/Swelling Layers</u>
#364074	~95%	~5%	none detected
#364075	~95%	~5%	none detected
#364076	~95%	~5%	none detected

Table 2
Chemistry of Sericite Ore:

<u>% Concentration</u>	<u>Sericite Ore</u>	<u>Muscovite^a</u>
SiO ₂	49.51%	45.57%
Al ₂ O ₃	30.14%	36.10%
Fe ₂ O ₃	1.20%	2.48%
MnO	0.06%	trace
MgO	1.25%	0.15%
CaO	0.07%	0.21%
Na ₂ O	0.12%	0.62%
K ₂ O	8.48%	9.87%
TiO ₂	1.20%	0.20%
P ₂ O ₅	0.50%	0.03%
LOI @ 1000°C	6.26%	4.40%
% Moisture	1.07%	
Total:	99.88%	100.08%

a. Typical dry ground muscovite mica

Table 3
Physical Properties of Sericite Ore:

<u>Property</u>	<u>Value</u>
pH @ 6% solids	6.2
Photovolt Brightness with blue filter	78.0%
Amber filter	80.2%
Green filter	80.9%
Yellowness Index	2.72
Oil Absorption, ASTM D 281-84, lb/100 lb	83.8
Loose Bulk density, lb/ft ³	40.6
Specific Gravity, g/cc	2.80
Index of Refraction	1.58

CHARLESTON MINE (file)
Cochise Co.

Samples here described from the mine listed below are are contained in the AzDMMR collection of reference samples.

Date Taken: 09/12/91

Date Logged: 10/04/93

Sample Numbers: ADMMR Number: A28155 or Sample Number: 09/12/91-031

MINE: Charleston Mica

COUNTY: Cochise

LOCATION: From abandoned drying pads at abandoned sericite operation just northwest of shaft.

DESCRIPTION: Shovel sample from old drying pads.

MATERIAL: Sericite; finely ground.

COMMENTS: Operation has been long abandoned.

Date Taken: 09/12/91

Date Logged: 10/04/93

Sample Numbers: ADMMR Number: A28156 or Sample Number: 09/12/91-032

MINE: Charleston Mica

COUNTY: Cochise

LOCATION: From exposed sericite zone in west wall of pit.

DESCRIPTION: Channel sample across exposed sericite zone.

MATERIAL: Sericite

COMMENTS: Operation has been long abandoned.

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

1. Information from: Mine Visit
Address: _____
2. Mine: CHARLESTON 3. No. of Claims - Patented _____
(Cochise Co.) Unpatented _____
4. Location: Northeast of the ghost town, Charleston, approx. 1 mile north of the road
between Tombstone and Charleston (Fairbank 7½' Quad)
5. Sec. 36 Tp. 20S Range 21E 6. Mining District Tombstone
7. Owner: James Stewart Co. Phone: 264-2181
8. Address: 3033 N. Central Ave., Phoenix, AZ
9. Operating Co.: _____
10. Address: _____
11. President: Seth Horne 12. Gen. Mgr.: _____
13. Principal Metals: Lead, zinc, & sericite 14. No. Employed: _____
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down ☒ (b) Assessment work ☐ (c) Exploration ☐
(d) Production ☐ (e) Rate _____ tpd.
17. New Work Planned: There is no activity at the Charleston.

18. Misc. Notes: The zone of mineralization appears to strike E-W. On the zone,
west of a mine pit, are two shafts that are inclined to the south about 85°.
These shafts are in fair to moderately good condition. South of the west shaft,
on the hill, is a tunnel that was apparently driven easterly on the vein.
The mill is in a deteriorated condition. Three metal buildings are in
fair condition. There are thousands of feet of drill core strewn about; no core
boxes are present. Reportedly this core was produced by the James Stewart Co.
and ASARCO.

Date: November 14, 1984

Michael N. Greeley
(Signature) (Field Engineer)

NOTES ON EXPLORING

THE PROPERTY OF

CHARLESTON LEAD MINES,

SITUATED NEAR TOMBSTONE, ARIZONA

SUMMARY AND RECOMMENDATION

The Charleston Lead Mines property appears to have possibilities as a producer of sphalerite and galena with high grade sericite as a by-product.

In order to assess the property, it is recommended that geological mapping, geophysical surveying (I.P.) and diamond drilling be carried out. It is estimated that the cost of this initial exploration would be \$30,000.00.

INTRODUCTION

It is not proposed to duplicate details of location, access, ownership, general geology, etc, all of which have been described in previous reports by others.

EXPLORATION

The objective on the property appears to comprise possible concentrations of sphalerite, galena and minor amounts of chalcopyrite. Where observed these minerals are associated with sericite which appears to have been formed in a major fault or shear zone. Very fine grained, disseminated pyrite is also found in the sericitized rocks. Obviously, the property should be mapped geologically, paying special attention to the distribution of sericite and to structural features such as faults and shear zones.

It is believed that the sericite and associated pyrite would be detectable by means of an induced polarization (I.P.) survey, and since the best values in Ag, Pb, Zn, and Cu are also associated with the sericite, it is recommended that an I. P. survey of the property be carried out.

This surface work should be followed by diamond drilling. Admittedly there is some question about the core recovery to be expected when drilling the sericite, but previous work seems to indicate that acceptable core recovery can be obtained using fuel oil rather than water for flushing out the holes. It is difficult to estimate the amount of drilling required before the surface work has begun, but it is felt that about 3,000 feet of drilling would adequately test the potentiality of the shear zone and any I. P. anomalies which might be found. This footage might be expended on, say, three holes five hundred feet long and two holes seven hundred and fifty feet long - depending on the results of the geological and geophysical work. The results of this initial exploration would then dictate whether or not further work should be undertaken.

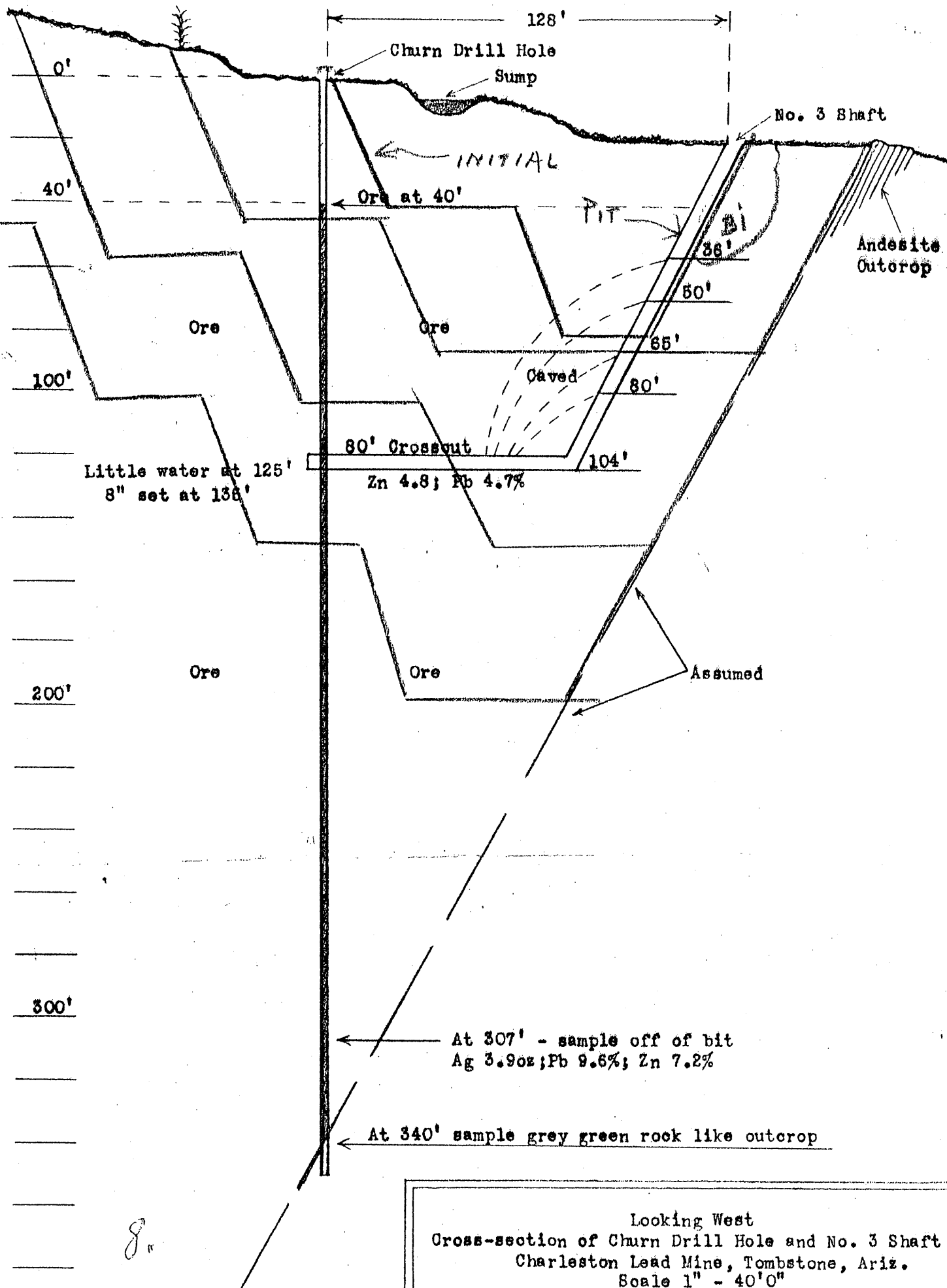
ESTIMATE OF COSTS

The cost of the preliminary exploration outlined above would be approximately as follows:

Geological mapping	\$1,000.00
Induced polarization survey	5,000.00
3000 ft. of diamond drilling	21,000.00
Supervision, assaying, contingencies, etc.	<u>3,000.00</u>
Total	\$ 30,000.00

4th March, 1965

PAUL GILMOUR



SHATTUCK DENN MINING CORPORATION
and
SUBSIDIARIES

.....Humboldt.....Office

Date.....November 9, 1964.....

TO: MR. C. R. SUNDEEN

SUBJECT: CHARLESTON LEAD MINE near
TOMBSTONE, ARIZONA

SUMMARY AND RECOMMENDATIONS

The deposit at Charleston Lead Mine appears to have distinct possibilities as a producer of high grade sericite as well as sphalerite and galena. At present, 86,000 tons containing 37.8% sericite, 3.00% lead, and 3.71% zinc have been indicated. A process for recovering the sericite is said to have been evolved; the sphalerite and galena would be removed during this process and concentrated in the normal manner. A demand for the sericite is reported to exist and lots have been sold at prices varying from \$70.00 to \$140.00 per ton.

It is recommended that enquiries be made about the marketability of the sericite and, if reasonably reassuring, an attempt be made to conclude an agreement with the James Stewart Co., the present owners of the deposit. If these negotiations are successful, a further program of exploration to determine the size of the deposit should be embarked upon.

INTRODUCTION

The Charleston mine is located about $6\frac{1}{2}$ miles southwest of Tombstone in Cochise County, Arizona. It may be reached from Tombstone by 6.7 miles of road which is presently being paved and 0.75 miles of mine road.

The property is owned by a Mr. Charles Suiter of Phoenix and has been under lease for several years to the James Stewart Co. I did not go into the details of the agreement between Suiter and James Stewart Co. but it appears to involve option payments of about \$6,000.00 p. a. and a final purchase price of \$200,000.00. All the lease-purchase agreements, etc., are available for examination in Phoenix, by, say, Shattuck Denn's legal advisors.

The property consists of 12 unpatented mining claims leased from Suiter and 8 additional claims which were secured by the James Stewart Company.

Sporadic attempts have been made to mine the deposit in the past, both for the base metals and the sericite. Since 1957 the James Stewart Co. have operated the deposit and claim to have done enough work to demonstrate both the practicability of a concentrating process and the feasibility of marketing the sericite. The principal users of the sericite which has been produced to date have been paint manufacturers who have used it as a base. There is also said to be a potential demand as an additive to moulding sand for precision castings.

GEOLOGY

The deposit crops out at the foot of the northern side of a small, isolated, hill which rises about 400 feet above gently rolling, scrub-covered terrane. The hill itself is composed of fairly siliceous rock containing abundant phenocrysts of feldspar. Mapping by the U. S. G. S. shows that this porphyry underlies a large area to the north of the mine. Immediately to the north of the small hill in question, and apparently underlying the porphyry, extends a broad band of andesite.

According to the U. S. G. S., an important east-west fault passes through the Charleston mine area. Closely-spaced joints in the porphyry which makes up the hill south of the mine strike approximately east and west and might be related to this fault. Examination of the 1:24,000 topographic map of the area suggests that prominent northeasterly-striking fractures, upwards of two miles long, cross the mine area.

Near the footwall of the porphyry, i.e., near the contact with the underlying andesite, a zone which is 100 to 400 feet wide has been extensively fractured. Within this zone lie stringers and lenses of massive sericite surrounded by sericitized porphyry. Very fine-grained cubes of pyrite occur throughout the zone of sericitization. Extremely fine-grained sphalerite and galena appears to accompany the pyrite and, locally, coarse-grained clusters of these two minerals attain a diameter of an inch or two.

Previous workers appear to have considered that the zone of sericite strikes east and west and dips to the south at about 60°. Judging by a very brief examination of the area, the sericitic zone may actually strike in a more northeasterly direction. This question could probably be resolved by geological mapping and, possibly, a geophysical survey, and should certainly be settled before planning a drilling program.

PREVIOUS EXPLORATION

A number of relatively ineffectual attempts have been made to explore and develop the bodies of sericite and the associated sulphides by means of shaft sinking and drifting, churn drilling, core drilling, trenching, the preparation of a small pit, and the use of magnetic and self-potential geophysical surveys.

The most recent work was carried out for Perforadora Latina, S. A., and consisted of five short surface drill holes, none of which were more than 80 feet apart and all five extended over a strike length of only 360 feet. Good core recovery was apparently obtained, averaging 90% in the massive sericite, and 98% in the sericitized rock. The sericitic material has the property of breaking down and forming a slurry when placed in water and this was utilized in estimating the proportion of sericite in core samples.

RESERVES

The blocks attributed to each drill hole were assumed to extend down to 305 feet below datum, the depth of the deepest intersection. The five holes indicated the presence of 86,000 tons containing 37.8% sericite, 3.0% lead, and 3.71% zinc. Silver content was apparently negligible. (Assuming 100% recoveries, 7¢ per pound for freight, smelting and refining of lead and zinc and \$100 per ton for sericite, this represents a net value at the mine of just over \$4 million.)

FURTHER WORK

Sufficient work has been done at the Charleston Lead Mine to indicate that there are distinct possibilities of developing a sizable deposit of sericite, plus significant amounts of lead and zinc sulphides.

The area should be mapped geologically to try to delineate the zone, or zones, of sericite. The advice of a geophysicist should be sought as to the possibility of using geophysics to trace the zone of fracturing and sulphide mineralization under covered areas. A preliminary examination suggested that induced polarization might be applicable, but as this method is relatively expensive an initial trial survey would be in order. Depending on the results of this work, diamond drilling could then be undertaken. A minimum of six 500 foot holes should be allowed for, with additional drilling depending on the favourable outcome of the initial work.

Because of the special problems likely to be posed by the mining and milling of the sericite, it would be advisable to have a mining engineer and metallurgist look over the property. It would also be desirable to enquire further into the marketability of the sericite.

Assuming that these enquiries are reasonably reassuring and that an amicable agreement can be worked out with James Stewart Co., measures should be taken to increase the ore reserves.

COST OF EXPLORATION

Geological mapping might cost about \$1000.00. It ought to be possible to have an I. P. survey done for under \$5,000.00, and there might be other, cheaper, geophysical methods which would prove equally suitable. The minimum drilling program envisaged of six 500 foot holes or a total of 3,000 feet of drilling, would cost around \$18,000.00 including supervision and assaying. The total cost of this program would, therefore, be about \$24,000.00, plus whatever option payments might be outstanding. Approximately half of this amount might be borne by James Stewart Co., depending on what kind of lease agreement is arranged.

ACKNOWLEDGMENTS

The information contained in this summary report was obtained from a report written by Dr. Gaines of Perforadora Latina, S. A. and from Mr. C. A. Cosgrove who accompanied the writer on a visit to the Charleston Lead Mine on Wednesday, 4th November. The writer gratefully acknowledges the help generously given by Mr. Cosgrove.

cc: Mr. La Morte

PAUL GILMOUR

Paul Gilmour

E. L.

Mr. William Zilbersher
Mineval, Inc.
1 Rockefeller Plaza
New York City, New York.

Dear Mr. Zilbersher:

At the request of Dr. R. V. Gaines, 21 Madrid, Mexico City, Mexico a copy of a report prepared for him on the Charleston Lead Mines, Tombstone, Arizona is enclosed. Some of the details of the various proposals were discussed with Dr. Gaines but are not included in order to keep the report to a minimum length.

In sinking the vertical shaft (Plan No. 1) it is proposed to use a double-drum air hoist and a 3/8 cu-yd clam shell to load shaft buckets; in sinking the inclined shaft (Plan No. 2) it is proposed to use a modified mucking pan; the same for Plan No. 3. The cross-sectional area of the shaft in Plan No. 3 may be increased if the material removed is ore.

Also discussed with Dr. Gaines was the feasibility of sinking the old shaft, No. 2 Incline, below the 82-foot level, developing ore on the 100 and 200 foot levels and raising a new working shaft. Also utilizing large diameter drill holes for working shafts.

Phelps Dodge Corporation, Copper Queen Branch, Bisbee, Arizona drill ed a considerable footage of 48-inch diameter holes with a Calyx shot drill. Most of this drilling was done in 1948-1953 with a crew of two or three men on each 8-hour shift. The advance in holes less than 250 feet deep , in limestone, would average four to six feet in eight hours, unless the core was too badly shattered to pick up with a core lifter. The drill, drill pipe, core barrels and core lifter, also the steel derrick for surface holes may still be stored at Bisbee.

After reading this letter it will be understood why a large number of alternate plans were not included in the report.

Very truly yours,

William P. Crawford

cc - R.V.G. Mexico

December 15, 1963
1823 North 40th Street
Phoenix 8, Arizona

1712

PROPOSALS FOR UNDERGROUND MINING AT THE CHARLESTON LEAD
MINES, TOMBSTONE, COCHISE COUNTY, ARIZONA

Future exploitation of the vein of sericite with subordinate amounts of lead and zinc at the Charleston Lead Mines, five miles south of Tombstone must be by underground mining methods. A recent inspection of the property by the writer and George D. Coppeck, Jr, of Consolidated Minerals, Inc., found two incline shafts open and in apparent fair condition, except for the shaft timber. One was these, Number Two, was entered and climbed to the bottom, 82-feet below the collar. Two drifts at the bottom, driven East and the West on the vein were partially open for distances of 50 to 75 feet. The other shaft, Number 5, was not entered. Co-ordinates of the two shafts listed below and other co-ordinates are from a surface map prepared by Juan M. Gomez, Mining Engineer.

Shaft No. 2

- 155, North
2395, East
Collar elev. 4160 feet

Shaft No. 5

- 140, North
2465, East
collar elev. 4148 feet

The property has no mining equipment and must be completely equipped. It is possible to acquire most of the equipment on rental-purchase plans.

Mine hoist: The question of a mine hoist with automatic controls was discussed with John Jett, Vice-President and General Manager of the Vulcan Iron Works, Englewood, Colorado. Vulcan has designed and manufactured a number of hoist installations which operate without a hoist engineer, thus reducing the labor cost. Phelps Dodge Corporation has two of these installations at the Copper

Queen Branch, Bisbee, Arizona. Headframe, sheave wheel, mine hoist with controls, electrical switches, bottom-dump skip and cage and surface ore-bin with steel erection and electrical installation costs is approximately \$36,000. The equipment is available on a rental basis.

Air compressor: electric-driven air compressors are available at various equipment dealers, also portable diesel-driven compressors. In setting up the various estimates a diesel compressor on a rental basis was considered.

Slusher and tugger hoists, rock drills, drill steel: these items have been figured on a monthly rental cost. Double and single-drum air hoists; 45 and 55-pound hand-held sinker drills for drifting and shaft sinking; 2- $\frac{1}{2}$ inch stopers for raising.

Proposed Development: The property has been worked intermittently for many years by shallow underground and open pit mining for both sericite and lead-zinc ores. The vein is reported to be eleven feet wide, averaging 36% sericite, 3% lead and 3% zinc, recoverable. The vein has recently been developed by core drilling to a depth of about 3935 feet above sea level and probably extends below this point. The writer has no information on the tonnage of ore nor on the length of the ore body.

It is proposed to develop the area for active mining and three plans have been advanced

Plan I: Sink a new vertical shaft in the footwall near the site of the mill. Drive drifts through waste on the 100 and 200 levels to the vein. This plan will require the erection of a permanent hoisting and driving at least 410 feet of drift through waste. If the ore continues below the 200 level another drift in

waste on the 300 level will be required to cut the vein.

Plan 2 : Sink a shaft in the footwall at an angle of 60 degrees, fifty feet from the vein. Drive drifts on the 100 and 200 foot levels to the vein. The cost of sinking will be higher per foot as a two-compartment incline is too restricted for most mechanical loading equipment. Timber costs may be reduced if the ground warrants. Fifty feet of drift will be required on each level to intersect the vein.

Plan 3 : Repair the No. 2 Incline to a depth of 4088 feet, the 82 foot level, retimbering and enlarging where necessary. Sink in the vein to the 100 foot level and possibly to the 200 foot level. Shaft rehabilitation and sinking to the 100 foot level may be accomplished by an air-driven hoist with a rope pull of 2,000 - 3,000 pounds. At least part of the material removed should be sericite ore. Information obtained from this work will be of value in determining whether the No. 2 Incline may serve as a working shaft. Stope development could begin on the 100 foot level and sinking in the vein below the 100 foot level could be done while mining progressed above the 100 foot level.

Data on the three plans are tabulated on the accompanying sheets.

RAISE COSTS: Raise costs are figured on a two-compartment cribbed raise, 5-ft x 9-ft, timbered with 3-inch cribbing; the chute compartment lined with 2-inch lagging. Two miners will drill, blast and timber with an advance of 5-ft in 3 man shifts. Calculated costs per foot include \$1.80 Explosives; 17.43 Timber; \$0.50 Ventilation; 0.56 pipe lines; 15.00 Labor, Total \$35.29

Charl n Lead Mines

Plan No. 1 - Sink Vertical Shaft in Foot Wall

<u>Co-ordinates</u>	<u>Elevation Collar</u>	<u>Proposed Depth</u>
- 50, North 2475, East	4135 feet	240 feet

<u>Proposed Levels and elevations</u>	<u>Size of shaft</u>
100 foot level 4035	6-Ft by 10-ft inside timber, two compartments
200 foot level 3935	

<u>Shaft Crew per 8-Hr. Shift</u>	<u>Work Schedule</u>
1 - hoist engineer	2 8-Hr shifts per work day
4 - shaftmen	6 work days per work week.

Wage Scale

Hoist engineer	\$3.396 / hour	Hourly rate including overtime
Shaftman	\$3.52 / hour	Hourly rate including overtime

Estimate Time required to sink shaft after collar excavated and timbered
36 work days

Cost Summary

Shaft Timber	\$8,000.00	
Explosives	1,318.00	
Hardware	680.00	
Air and water pipe	411.60	
Valves	50.00	
Shaft Labor	\$10,068.24	
Supervision	2,000.00	
Rental *	<u>2,176.00</u>	
	\$24,703.84	\$102.93 / Ft of shaft

* Includes rental on air compressor, rock drills, bits and on tugger hoist and 3/8 cu-yd clam shell for loading bucket.

410 feet of drifting must be driven on the 100 and 200 levels to reach the vein. Both shaft and drifts will probably be in waste.
410 feet at \$19.90 a foot totals \$8,159.00

Plan No. 1	\$24,703.84	Shaft Sinking
	<u>8,159.00</u>	Drifting
	\$32,862.84	

Charleston Lead Mines

Plan No. 2 - Inclined Shaft in Footwall

CO-ordinates Elevation Collar Proposed Length

- 70, North
2430, East

4,142 feet

279 feet

Proposed Levels and elevations

100 foot level 4035
200 foot level 3935

Size of Shaft

7-ft by 9-ft inside timber
two compartments

Shaft Crew per 8-Hr. Shift

1 - hoist engineer
4 - shaftmen

Work Schedule

2 8-Hr shifts per work day
6 work days per work week

Wage Scale

Hoist engineer \$3.396 / hour Hourly rate including overtime
Shaftmen \$3.52 / hour Hourly rate including overtime

Estimated time required to sink shaft after collar excavated and timbered

68 work days

Cost Summary

Shaft Timber	\$8,000.00
Explosives	1,318.00
Hardware	680.00
Air and water pipe	491.86
Valves	50.00
Shaft Labor	19,011.06
Supervision and OH	2,790.00
Rental *	3,092.00
	<u>\$35,432.92</u>

\$127.00 / Ft of shaft.

* Includes rental on air compressor, rock drills, drill steel, etc.

100 feet of drifting (total footage) must be driven on the 100 and 200 foot levels to reach the vein. At a cost of \$19.90 a foot drifting will amount to \$1,990.00

Plan No. 2	\$35,432.92	Shaft Sinking
	<u>1,990.00</u>	Drifting
	\$36,422.92	

Charleston Lead Mines

Rehabilitate and sink Number 2 Incline on the vein Plan. No. 3

<u>Co-ordinates</u>	<u>Elevation Collar</u>	<u>Proposed Length</u>
-155, North	4,160 feet	82 feet (already sunk)
2395, East		62.34 feet proposed to 100 level
		115.47 feet proposed to 200 level

<u>Proposed Levels and elevations</u>		<u>Size of Shaft</u>
82 Foot level	4088 feet (open)	7' by 9' inside timber
100 foot level	4035	two compartments
200 foot level	3935	

Shaft crew per 8-Hr Shift

1 - hoist engineer
4 - shaftmen

Work Schedule

2 8-Hr shifts per work day
6 Work days per work week

Wage Scale

Hoist engineer	\$3.396 / hour	Hourly rate including overtime
Shaftman	\$3.52 / hour	Hourly rate including overtime

Estimated time to sink below 82-foot level

Cost Summary

Shaft Timber	\$2,117.30	Lift to 100 foot level
	3,928.26	Lift to 200 foot level
Explosives	249.36	Lift to 100 foot level
	462.80	Lift to 200 foot level
Hardware	450.00	
Air and water lines	505.00	
Valves	50.00	
Shaft Labor	\$4,247.85	Lift to 100 foot level
	7,868.12	Lift to 200 foot level
Supervision and OH	2,300.00	
Rental *	2,750.00	
	\$24,928.69	\$140.19/ ft of shaft (1)

* Rental on air compressor, drills, tugger hoist.

(1) Does not include possible credit from sericite ore

Rehabilitation of No. 2 Incline - Surface to 82 foot level.

Mine Timber	\$300.00
Surface Track	85.00
Labor	375.00 (2)
	\$760.00

(2) Wage rate, \$23.08 / 8 hours 3 men required. Estimated time to repair - 5 work days , single shift.

= 1c

Charleston Lead Mines

The tabulation of costs for shaft sinking do not include money for a headframe, surface hoisting plant nor for an electric-drive air compressor.

Second hand hoists and compressors are available and older equipment in good condition would be satisfactory for a small mining operation of 50 - 100 tons a day. The purchase of a hoist with automatic controls should be investigated, also the complete surface plant installation offered by the Vulcan Iron Works.

Either Plan No. 1 or Plan No. 2 will require a surface hoisting plant before sinking begins. Plan No. 3, utilizing 82 feet of existing shaft requires only 62 feet of sinking to reach the 100 foot level. This sinking may be done with light equipment.

The sum of \$50,000 should be adequate for a new surface hoisting plant and air compressor installation and may be used for this estimate. It can undoubtedly be reduced by careful shopping.

Drifting: Drift costs are based upon two miners completing five feet of untimbered drift in 8 hours. The cost per foot is \$19.90 and includes mine labor, explosives, rental on equipment and mine track and ventilation. Timbered drifts have an additional cost of \$13.47 a foot for labor and timber or a total cost of \$33.37 a foot. The cross sectional area of an untimbered drift is 5-ft by 7-ft; of a timbered drift is 7-ft by 9-ft.

Stoping: Underground mining methods used by former operators included square set stoping, stull stoping and goffes. No apparent thought was given to stope pillars and evidently none of the stopes were filled to support the ground. Overhand mining methods in this type of ore are not too successful and it is suggested that the ore be mined by top slicing in stope sections eighty long, with an extraction raise at the center. Broken ore to be moved by slushing to the extraction raise. Three miners should produce 50 tons of ore in an eight hour shift.

Sketches of the mining layout have been prepared and this method is sufficiently flexible to compensate for an increase or decrease in the vein width. It is expected that at least the top two floors of each stope section will be square setted; below this the flooring to be supported on stulls.

Top slicing, properly laid out, is a beautiful method of stoping, and low cost. Estimated costs for an 80-foot section with a daily production of 50 tons are

	<u>Square set - 2 floors</u>	<u>Stulled</u>
Timber	\$3.297	\$1.111
Labor	1.528	1.528
Explosives	0.542	0.490
Clean up	<u>0.139</u>	<u>0.139</u>
Total cost a ton	\$5.506	\$3.268

William P. Crawford
William P. Crawford, EM

Phoenix, Arizona
Dec. 9, 1963

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Charleston Mine

Date December 16, 1964

District Tombstone District, Cochise County

Engineer Axel L. Johnson

Subject: Field Engineers Report. Information from George D. (Dick) Coppock, Jr.

References: Report of Nov. 30, 1961

Location: Tombstone District

Past Activity: Heron Mining Co. had an option from Stewart Co., about 2 years ago (in 1962) and put down 5 diamond drill holes.

Visited the Charleston Lead Mine and interview with Mr. Harlow Jones who is planning on opening the operation.

GWI WR Nov. 1, 1965

Date: October 28 1965

- Please give as complete information as possible and attach copies of engineer's reports, shipment returns, maps, etc. if you wish to have them available in this Department's files for inspection by prospective lessors or buyers.

(over)

12. Ore "Blocked Out" or "In Sight": ~~2~~ 2,000,000

Ore Probable: ~~4~~ 4,500,000

13. Mine Workings—Amount and Condition:

No.	Feet	Condition
Shafts 1	100'	Fair
Raises		
Tunnels		Caved
Crosscuts		
Stopes		OP

14. Water Supply: Own Well

15. Brief History:

16. Remarks:

17. If Property for Sale, List Approximate Price and Terms:

18. Signature:

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Charleston Mine

Date Nov. 30, 1961

District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Tombstone

Subject: Field Engineers Report. Information from Mel Kizziar, part owner in ~~Tucson~~ Mica Co.

References Report of July 14, 1961

Present Activity Closed down. Mr. Kizziar states that they have been closed down for about 45 days. Field engineer visited the mine on Sept. 15 and found it closed, but was informed in Tombstone that the closing was temporary. Field engineer again found it closed on a visit to the mine on Nov. 17.

Mr. Kizziar states that the company (Tombstone Mica Co.) found it necessary to close down operations, because they were unable to purify the mica product sufficiently to pass the standards of the companies in the market to purchase the product, with the milling equipment now on hand; and that they lacked funds to purchase a magnetic separator to remove the iron in the mica.

Mr. Kizziar stated that they have no definite plans at present, as to when they will resume operations at the Charleston. It will depend, he states, on their ability to obtain sufficient finances with which to purchase and install a magnetic separator. He states that they have been negotiating with a company from Florida, for a magnetic separator, and that this company will guarantee that it will do the job of removing all the iron pyrites(after roasting). The cost of this separator is \$ 25,000, which is more than the company can finance at the present time.

Mr. Kizziar stated that the Western Chemical Co. will purchase all the sericite mica they can produce, if they can purify the product sufficiently, so as to remove all the discoloration from the iron. He also states that a large number of paint companies also will purchase the product after it is sufficiently purified.

FIELD ENGINEERS REPORT

Active Oct. 1961

Charleston Mine (continued)

July 14, 1961

Tombstone District, Cochise Co.

Axel L. Johnson

Field Engineers Report.

Milling Facilities (continued)

- (3) Installation of an automatic bag house.
- (4) Installation of automatic sacking equipment.
- (5) Installation of a microsizer of West German manufacture.
- (6) Installation of bulk storage bins and equipment for storage of the mill run material.
- (7) Construction of a warehouse.
- (8) Construction of washrooms and showers for the workers.

Mr. Jones states that the old milling equipment in the mica plant is functioning properly and will need no alterations. He estimates that the capacity of the plant will be about 10 tons of pit run material per hour. The plant will be operated on a 24 hour basis, starting as soon as the additional improvements have been made, which is estimated to be from 2 to 3 months.

Mr. Jones estimates that 100 tons of pit run material will produce about 50 tons of sericite mica and 7 tons of metal table concentrates.

Mining Facilities and Equipment

Operation of the pit will not be started for some time, as there is considerable tonnage of pit run material stockpiled on the surface to keep the plant operating for several months. In the meanwhile, operators plan on doing considerable stripping and benching to make future mine operations practical and safe.

A 1 1/4 yd Marion Drag Line will be used to excavate the material in the pit, and feed it into the Cedar Rapids Crushing and Screening Plant, mentioned on page 1. The drag line will be installed on a bench at the NE corner of the pit, and it is expected that most of the ore in the pit can be reached from this location. The drag line has a 50 foot boom.

The crushing and screening plant will be located next to the drag line. The crushed and screened product from the crushing and screening plant will be hauled to the mill by trucks.

Markets and Prices

The mica product will be sold to paint and ceramic companies. The companies mentioned were Western Chemical and Dutch Boy Paints, the latter company wanting to purchase 100 tons per month.

Prices for the product were quoted as follows:

- (1) \$ 125 per ton for Grade AA material that has been sized with the microsizer.
- (2) \$ 90 per ton for Grade A material.
- (3) \$ 60 per ton for Grade B material.

All prices f. o. b. plant.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Charleston Mine

Date May 12, 1961

District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Subject: Information from Tom Doherty and Personal visit

References Reports of Sept. 24, 1959, Feb. 13, 1959, Dec. 12, 1958 and previous reports.

Location Secs 25 & 36 -- T 20 S - R 21 E. 8 miles southwest of Tombstone.

Number of Claims 20 unpatented claims ---- 12 on Federal land & 8 on State land.

Owners James Stewart Co., 3033 N. Central Ave., Phoenix, Arizona.

Operators Tombstone Mica Co., Inc., Box 517, Tombstone ---- Joint venture with James Stewart Construction Co.

Tom Doherty, Project Supt., Box 517, Tombstone, Ariz.

The six financially interested parties in the Tombstone Mica Co. are viz.:

Tom Doherty, Babe Clements, Harlow Jones, Milton Kizziar, Cornelius Chavez, & Ray Ruckert,

Principal Minerals Sericite, also containing some Lead, Zinc and Copper.

Present Mining Activity Making mill tests. 3 men working -- Tom Doherty and two others. Mr. Doherty stated that it would be another month or two before they would be ready to start production and milling.

' CHARLESTON MINE

TOMBSTONE DISTRICT, COCHISE COUNTY

' Clark Hughes, Box 517, Tombstone --- Asst. Manager of Tombstone Mica Co., Inc., Box 517, Tombstone, Arizona, who are now operating the Charleston Mine (Joint venture with James' Stewart Construction Co.)

Mr. Hughes discussed the operations at the Charleston Mine with the field engineer, and asked the field engineer to visit the property. Field Engineer visited the mine the next day, July 14, and conferred with Harlow L. Jones, Manager of the operations.

AXEL L. JOHNSON - Tombstone Conference - 7-13-61

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Charleston Mine

Date Sept. 24, 1959

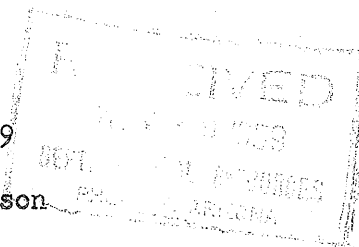
District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Wallace Tanner, Stewart Construction Co.

References Report of Feb. 13, 1959, Dec. 12, 1958, and previous reports.

Present Status Mr. Tanner reports that the mine is closed temporarily. He states that the Stewart Construction Co. intends to make arrangements or a sub-lease with an operating company for the mining operations.



DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Charleston Mine

Date Feb. 13, 1959

District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Harold Cox & Personal Visit.

References See report of Dec. 12, 1958 and previous reports.

Present Activity 10 men working on mill construction.

The company is now installing a Krebs Cycone, slurry tanks and settling tank. This is a supplementary wet process for treating the rejects from the dry process installed earlier. The oversize from a trommel in the dry circuit goes into a slurry tank, being mixed there with water to form a slurry. This slurry is then pumped into the Krebs Cyclone, the overflow from same going to the settling tank, and then back to the dry circuit, while the larger size materials goes into the Lead-Zinc stockpile.

See my report of Dec. 12, 1958 for additional information on the plant.

Previous Milling Operations Mr. Cox reports that, for the past 3 weeks, the dry milling circuit has been in operation, and from 1 to 1 1/2 tons per shift of finished sericite has been produced.

Proposed Milling Operations Mr. Cox states that the mill installation will be finished about next Monday, Feb. 16, and production will be resumed at that time. He further states that they plan to operate the mill on 2 shifts and expect to produce from 2 to 3 tons of sericite product per shift.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Charleston Mine

Date Dec. 12, 1958

District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Harold Cox, and Personal Visit.

Owners James Stewart Construction Co., 411 N. Central Ave., Phoenix, Ariz.
Local Address:- box 278, Tombstone, Ariz.
Eugene Turley, Manager
Harold Cox, Mill Superintendent.

Principal Minerals Sericite, with lead, zinc and copper.

Present Mining Activity Mill construction and stripping of waste from the pit.
No ore production at present.
3 men working, alternating between the mill and the pit.

Present Operations

(1) Mill Construction

A new milling plant, for extracting the sericite from the sulfides and drying of the sericite, is now nearing completion. This consists, principally, in dry crushing and screening of the ore, then drying it by means of a hot air heater furnace and dryer, and then treating the rejects in a wet mixer and a Krebs wet cyclone for a final separation of the remaining sericite and the sulfides.

The plant is finished with the exception of the installation of the Krebs cyclone. This has been ordered and will be installed in about 6 weeks.

Mr. Cox states that the ore from the pit averages about 15 % moisture. This has to be mixed with some dry material to bring the moisture down to about 10 % in moisture content. This is then treated in the heater furnace and dryer, and the moisture content reduced to about 0.3 % in order to make the sericite acceptable for use by industry, principally in the manufacture of paint. The finished product is sacked in 50 lb. paper sacks for shipment.

Mr. Cox stated that the finished material shipped will be minus 325 mesh, will have a bulk density of 7 to 9 lbs. per cu. ft., and will have a moisture content of about 0.3 %.

(2) Stripping operations

Stripping in the pit is being done with 1 -- Michigan front end loader and 1 -- 4 yard truck.

Proposed Plans The company plans on installing a flotation plant for concentrating the lead, zinc and copper ore, which will be separated from the sericite, after a stockpile of a few thousand tons has been accumulated. It is planned to treat additional zinc and lead ores, to be mined later, in the same plant.

Remarks Field engineer expects to submit more detailed information on the operations of the plant, together with a flow sheet of same, after milling operations have been started.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Charleston

Date September 17, 1958

District Tombstone District, Cochise Co.

Engineer Axel L. Johnson

Subject: Present Status. Information from Eugene Turley. No visit.

Owners: James Stewart Construction Co.

✓ Eugene Turley, Mgr.

✓ Harold Cox, Mill Supt.

Present Mining Activity: Mill construction. New dry process for extracting the sericite to obtain lower costs. Mill construction 1/3 completed. Expect to start production by Oct. 15th. 5 men working.

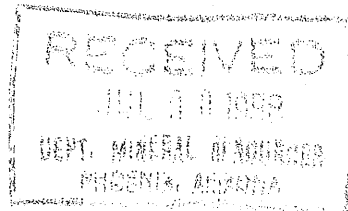
Proposed Plans: Plan on installing a flotation plant for concentrating the lead, zinc, and copper later on when price improves, and after a few thousand ton stockpile has been accumulated.

Remarks: Will visit the property later, for more detailed information.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT



Mine **Charleston Mine**

Date **July 18, 1958**

District **Tombstone District, Cochise Co.**

Engineer **Axel L. Johnson**

Subject: **Mine Report of present status. Information from Gene Turley. No Visit.**

References Reports of April 10, 1958, Dec. 6, 1957, and previous reports.

Location Secs. 25 & 36 -- T 20 S -- R 21 E. 8 miles south-west of Tombstone.

Number of Claims 20 unpat. claims --- 12 on Federal land and 8 on State land.

Owners James Stewart Construction Co., 1st National Bank Bldg., Phoenix, Ariz.
Local address, Box 278, Tombstone.

Operators Same as above. Philip S. Hoyt, Supt., Box 278, Tombstone. *10-29-62 P.O. Box 1622*

Principal Minerals Sericite, containing Lead, Zinc and Copper.

Present Mining Activity Mr. Turley reports that the Charleston Mine is closed down temporarily, pending the installation on new milling equipment. He states that they have ordered new milling equipment for the milling of the sericite by means of a new process, and that the installation of this equipment will start in 2 or 3 weeks. He states, also, that he expects mining and milling to be resumed at the Charleston some time in September, 1958.

Proposed Plans Mr. Turley stated that the company plans on installing a flotation plant for the milling of the lead-zinc-copper concentrates, obtained from the washing plant, which washes out the sericite, leaving the lead-zinc-copper as a by product. Of 30 tons of ore treated in the washing plant, about 20 tons of sericite mica, and about 5 tons of lead-zinc-copper concentrates are obtained. To date, this concentrate has been stockpiled, pending the installation of a flotation plant to treat same. Differential flotation for the separation of the lead and the ~~zinc~~ zinc would be necessary. Mr. Turley reports that they now have a concentrate pile of almost 1,000 tons, which he estimates will run about 6 % Zinc, 4 to 5 % Lead, 0.5 % Copper, and 1 Oz. Silver. According to my report of April 10, 1958, 4 Denver Sub-A flotation cells and 1 Oliver Filter Dryer have been purchased for this purpose and are on the mill site.

Remarks Mr. Turley inquired about the approximate costs of flotation for the treating of this concentrate. Field engineer recommended that samples be sent for a metallurgical analysis and cost estimate to one of the following:

- (1) Gallagher Co., Salt Lake City Utah (local representative ---
W. A. Kaattari. 1501 Oak St., Phoenix, Ariz.)
- (2) Denver Equipment Co., Denver, Colo.
- (3) George Roseveare, Arizona Bureau of Mines, Tucson, Ariz.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine CHARLESTON MINE

Date April 10, 1958

(Formerly Charleston Lead Mine)

District Tombstone Mining District, Cochise County

Engineer Axel L. Johnson

Personal visit &

Subject: Field Engineers Report. Information from Philip S. Hoyt, Supt.

References Report of Sept. 7, 1956 of Field Engineer.
Report of Chas. H. Dunning, Consulting Engineer-Aug. 25, 1955.

Location Secs. 25 & 36 - T 20S - R 21 E - 8 mi. SW of Tombstone

No. Claims 20 unpatented claims - 12 on Federal land and 8 on State land with State lease.

Owners James Stewart Construction Co., 1st National Bank Bldg., Phoenix
Local address - Box 278 Tombstone

Operators Same as above. Philip S. Hoyt, Supt., Box 278, Tombstone.

Principal Minerals Sericite, containing Lead, Zinc & Copper.

Present Mining Activity Mining sericite and lead, zinc, copper ore and treating same.
20 men working - 1 shift (14 men) mining and milling - 3 shifts 6 men drying sericite. Production about 30 tons of ore per day treated, producing about 20 tons of sericite mica and 5 tons of lead, zinc, copper concentrates per day.

Geology & Mineralization See Report of Chas. H. Dunning - Aug. 25, 1955. The shear zone containing the sericite and ore minerals is about 100 ft. wide at the location of the pit, and dips about 60 degrees to the south. Further west, the shear zone narrows down to a depth of about 10 ft. or less. In the shear zone about 20% of the material is ore and the balance is waste. The hanging wall on the south side is granodiorite. The footwall on the north side appears to be andesite.

(Also see "Geology" in my report of Sept. 7, 1956.)

Ore Values Mr. Philip Hoyt reports that for every 30 tons of ore mined from the pit, about 20 tons of sericite mica and about 5 tons of concentrates are obtained. These concentrates run about 10% lead, 6% zinc and a small amount of copper.

Ore in Sight & Probable See Dunning's Report of Aug. 25, 1955.

Present Mining Operations The ore is mined by open pit operations with a bulldozer-loader loading the ore into trucks for haulage to the washing plant, and loading the waste into trucks for haulage to the waste dump. According to Mr. Hoyt, 6 tons of waste are taken out for every ton of ore mined. 2-8 ton trucks are used.

Present Milling Operations Old Suiter Mill consisting of a drum with blades inside of same (referred to as a blade washer) followed by a revolving trommel screen and an Akins screw classifier. Ore is dumped over a

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine CHARLESTON MINE (continued)

Date April 10, 1958

District

Engineer

Subject:

3" grizzly, elevated by means of a link belt elevator to an 18 ton ore bin, and fed from ore bin to the blade washer through a chute. Capacity reported by Mr. Suiter to be 7 tons per hour. Capacity of washing plant reported by Joe Escapule is 40-45 tons per 8 hr. shift. Washing plant only run about 6 hr. per day at present on account of present shortage of water. The sericite is run into 8 concrete settling vats. The Lead, Zinc, Copper concentrates are stockpiled for future flotation. From the 8 concrete settling vats (4 put in recently) the sericite is pumped to a steam drying floor, where it is dried by steam. The sericite is then scraped off this drying floor into a bin, then fed into 2 trough dryers, where the material is thoroughly dried. The dried sericite is then pumped into a 3 compartment bin and baghouse. This material is then sacked from each bin and also from the baghouse for shipment to users.

Uses of the Sericite Product Reported by Mr. Hoyt in order of the quantity used:

- (1) Stucco products
- (2) Paints
- (3) Ceramic use

Proposed Plans The operators plan to install a flotation plant next fall, if the price of lead and zinc will justify this expenditure. 4 Denver Sub-A cells and an Oliver Filter Dryer have already been purchased and are on the premises. Differential flotation for the separation of the lead, zinc and copper is planned.

Mr. Hoyt also states that a new larger and more efficient washing plant is scheduled for construction soon. If the flotation plant is put in, the washing plant will be installed at the same time and adjacent to same.

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA



December 6, 1957

MINE - CHARLESTON MINE

(Formerly Charleston Lead Mine)

DIST.- Tombstone Mining District, Cochise County Engineer-Axel L. Johnson

SUBJECT-Field Engineers Report. Information from Chas. H. Suiter & Personal Visit.

References Report of Sept. 7, 1956 of Field Engineer.
Report of Chas. H. Dunning, Consulting Engineer- Aug. 25, 1955.

Location Secs. 25 & 36- T 20S- R 21 E - 8 mi SW of Tombstone.

No. Claims 20 unpatented claims - 12 on Federal land and 8 on State land with State lease.

Owners Chas. H. Suiter, et al., Box 347, Tombstone, Arizona.

Lessees & Operators James Stewart Construction Co.
First National Bank Bldg.,
Phoenix, Arizona,
with a contract to purchase.
Chas. H. Suiter, Supt. of Operations.

Principal Minerals Sericite, containing Lead, Zinc & Copper.

Present Mining Activity
Stripping of overburden, overlaying sericite deposit.
2 Trucks and 7 men working.

Geology & Mineralization See Report of Chas. H. Dunning - Aug. 25, 1955.

Ore Values Chas. H. Suiter reports the following values:
Lead - 3.5%; Zinc 5.5%; Copper 0.75% with Sericite with a ratio of 3 parts Sericite to one of ore (Also see Dunning's report - page 4).
Mr. Suiter also reports that the washed concentrates run from 25 to 30% of combined metal values.

Ore in Sight & Probable See Dunning's Report of Aug. 25, 1955.

Milling & Marketing Facilities

(1) Old Suiter Mill consisting of a drum with blades inside of same (referred to as a blade washer) followed by a revolving trammel screen and an Akins screw classifier. Ore is dumped over a 3" grizzly, elevated by means of a link belt elevator to an 18 ton ore bin, and fed from ore bin to the blade washer through a chute. Capacity reported by Mr. Suiter to be 7 tons per hour.

(2) Additions to date on the old mill.

(a) R.E.A. Electric power hooked up.

(b) Drilled well producing 60 gal per minute of water and installed 3,000 ft. of 6" aluminum pipe line from the well to the plant.

(c) Cyclone and cyclone pump.

- (d) 2 Launder tanks.
- (e) 4 Concrete settling vats (for settling of the sericite).

(3) Planned future Milling installations. Operators plan to install a 50 ton differential flotation mill, which will consist of ~~Fagerstrom~~ *Fagergren* Flotation Cells, Dow Chemical Separan #2610 to flocculate and settle the sericite, and a Don-Oliver 5' Filter and Dryer.

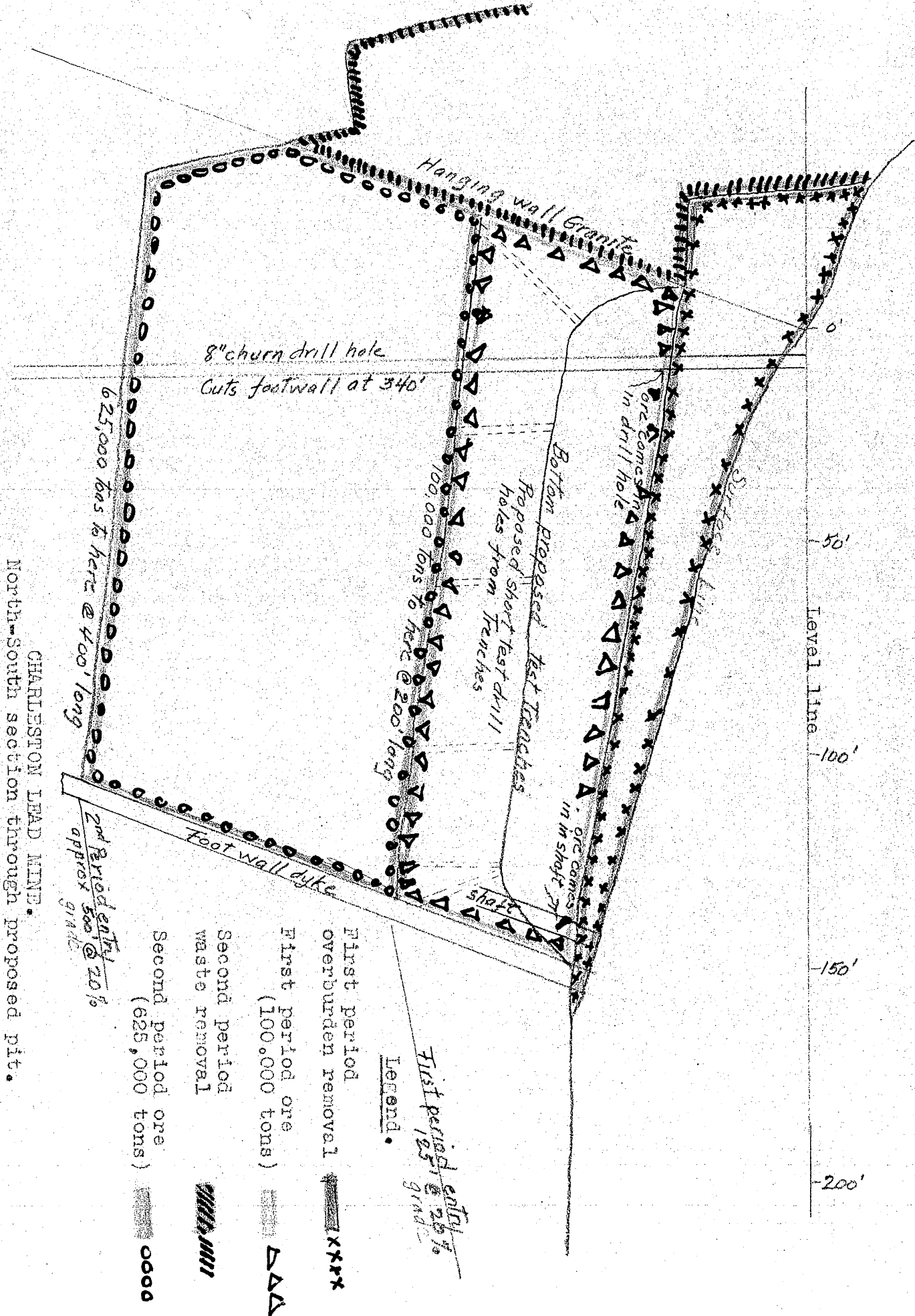
Operators expect to have this mill installation finished in from 3 to 6 months.

Present Mining Operations

Bulldozer-loader loads waste into a dump truck. Truck hauls waste to a waste dump. 2 Trucks and 7 men working.

Proposed Plans

- (1) To build a 50 ton differential flotation mill as described under Milling and Marketing Facilities - part (3).
- (2) To save the sericite, also recovered in the milling operation, for sale on the market. Mr. Suiter reports that operators have markets for the sericite for use in the paint, paper making and insecticide industries.



DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Charleston Lead Mine

Date Sept. 7, 1956

District Tombstone Mining District, Cochise Co. Engineer Axel L. Johnson

Subject: Mine Report #----- Personal Inspection and information from Ralph Godfrey, Supt.

Location Secs. 25 & 36 -- T 20 S -- R 21 E ----8 miles SW of ~~Tucson~~ Tombstone.

Number of Claims 12 unpatented claims.

Owners Chas. H. Suiter, et. al., Box 347, Tombstone, Ariz.

Lessees and Operators Morris G. Spencer, 2000 Republic Bank Bldg., Dallas, Texas.

Officers Ralph Godfrey, Supt., Mt. View Auto Court, Box 546, Tombstone, Ariz.

Principal Minerals Lead and ~~serp~~sericite.

Number of Men Employed 15 men (day shift only)---- 7 at the mine & 8 at the mill.

Production Rate About 60 tons of ore mined and milled per 8 hour shift.

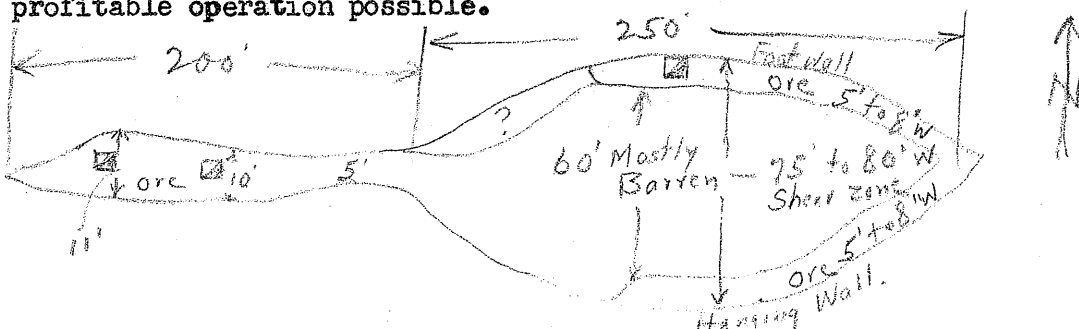
Geology Shear zone about 75 ft. wide and about 250 ft. long, dipping about 60 deg. to the south, with most of the ore concentrated on the footwall and the hanging wall. Width of the ore concentration on the foot and ~~hanging~~ hanging walls varies from 5 to 8 feet, the remaining 60 ft. in the center of the shear zone being more or less barren. (See sketch of shear zone and ore horizons below.). Country rock is rhyolite.

Ore Values Ore mined and milled was reported by Mr. Godfrey as being from 5 to 7 % in lead, and containing a large amount of ~~serp~~sericite. Attempts are being made to separate the ~~serp~~sericite in the milling operations, storing same in a pond for possible future sale. This ~~serp~~sericite contains considerable iron in the form of limonite, and may not have much market value on this account.

Milling and Marketing Facilities Ore mined is being milled in the ~~Tombstone~~ Tombstone mill, near Tombstone.

Present Operations Stripping is being done with a bulldozer, while mining operations are being conducted in the small open pit. The ore mined is loaded into trucks with a car loader, for transport to the mill about 10 miles from the mine site.

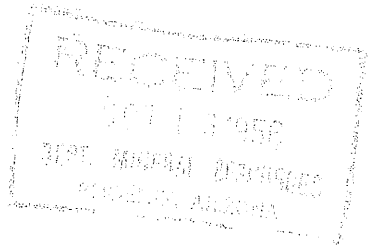
Proposed Plans Mr. Godfrey stated that they would try to get down a little deeper in the open pit, and see if the quality of the ore increased. He stated that the ore mined thus far has been of too low a grade and of too narrow width to make a profitable operation possible.



PLAN of
ORE DEPOSITS

Addendum On Sept. 24, all operations by Morris G. Spencer was reported as having been discontinued, and the mine closed down. Lease is expected to be cancelled.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT



Mine Charleston Lead Mine

Date June 30, 1956

District Tombstone Mining District, Cochise Co. Engineer Axel L. Johnson

Subject: Mine Report. Information from Ralph Godfrey, Supt.

Location Secs. 25 & 36 -- T 20 S -- R 21 E ----8 miles SW fo Tombstone.

Number of Claims 12 unpatented claims.

Owners Chas. H. Suiter, et. al., Box 347, Tombstone, Ariz.

Lessee and Operator Morris G. Spencer, 2000 Republic Bank Bldg., Dallas, Texas.

Officers Ralph Godfrey, Supt., c/o Rossi's Motel, Tombstone, Ariz.

Principal Minerals Lead and sericite.

Number of Men Working 15

Production Rate No production yet. Operators are stripping the ore body, and also repairing the mill south of Tombstone.

Milling and Marketing Facilities The mill south of Tombstone is being renovated, with necessary changes made for milling the Charleston Lead Mine ores.

Present Mine Operations The ore body is being stripped, removing from 20 to 30 feet of overburden. Mining of the ore is expected to start soon. It is expected that it will take about another month to finish the changes and improvements on the mill. In the meanwhile, the ore will be stockpiled at the mill.

Record of Shipments of
SEMI-CONCENTRATES
from Charleston Lead Mine.

Lot No	Date	Dry tons	Ag oz.	Cu %	Pb %	Zn %	Mill Returns
1	10/47	125.50	1.30	0.70	7.40	12.7	\$1855.70
2	5/48	44.32	1.32	.80	10.20	12.0	1348.97
3	6/48	82.16	1.20	.85	10.60	14.4	2283.18
4	7/48	51.57	1.00	.75	9.40	10.2	1438.91
5	8/48	47.15	1.20	.70	9.40	9.0	1328.24
6	9/48	38.97	1.05	.60	8.90	11.2	1059.33
7	9/48	44.64	1.20	.37	6.90	12.2	1108.00
8	10/48	49.65	1.80	.60	9.70	15.6	1863.74
9	11/48	33.51	1.60	.62	9.90	14.6	1431.90
10	12/48	42.95	1.20	.60	7.30	9.0	1085.61
11	12/48	37.62	1.30	.75	9.10	14.8	1472.74
12	2/49	33.06	1.20	.61	7.20	10.00	927.18
13	3/49	39.74	.80	.40	5.70	8.6	742.61
14	4/49	34.86	.80	.32	5.50	9.5	409.24
15	5/49	41.47	1.40	.55	7.80	12.9	873.15
16	6/49	55.01	3.40	1.25	15.50	22.3	2125.14
17	8/49	38.01	1.70	.75	7.30	11.5	546.93
18	9/49	40.13	1.70	1.06	10.40	15.2	915.28
19	9/50	58.10	1.20	1.05	11.00	15.9	2473.43
20	10/50	70.55	2.28	1.42	17.10	27.3	5326.52
21	10/50	28.90	1.32	.97	10.36	11.5	913.89
22	10/50	32.17	1.80	1.25	13.80	21.0	1854.19
23	6/51	122.04	1.56	.44	7.80	11.8	3825.87
Total		1190.08	33.33	17.41	218.26	313.2	37209.75
Average (not weighted)			1.45	.70	9.60	13.7	

Mill extraction approx 90%.

Ratio of concentration about 2.4 into 1.0

Total crude tonnage run, approx 2600.

Average of crude .68 .35 4.50 6.3
(Calculated)

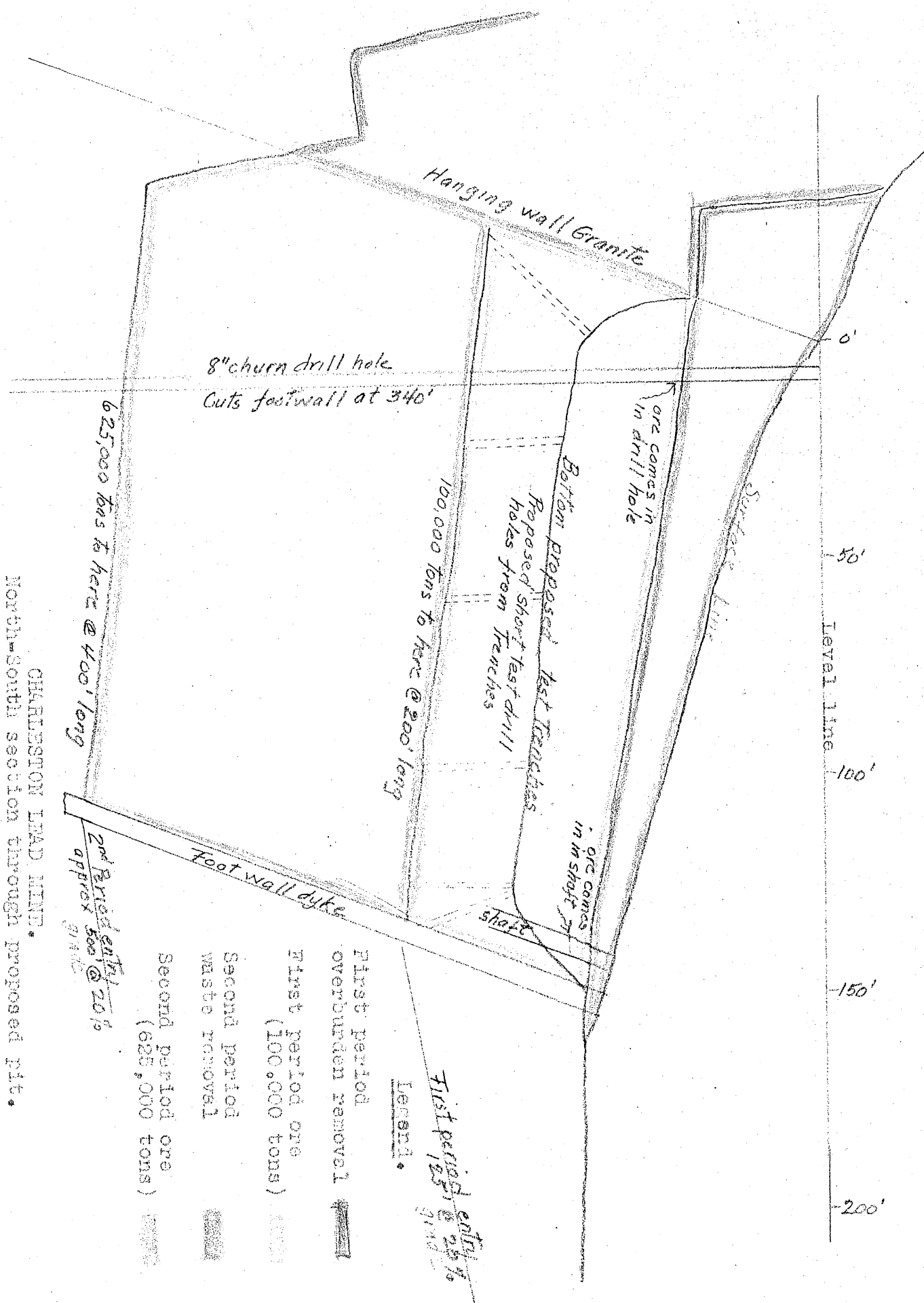
A map is available showing origin of lots. There has no doubt been some selection, but lots are scattered over large area.

Mill returns are after deduction of freight and milling (custom) charges. File of settlement sheets has been examined and is available.

Other methods of obtaining averages are somewhat higher in silver and copper, and lower in lead and zinc than above. Average as stated in report is compiled from all methods. Dollar average would be about the same by either method.

- - - - -

To accompany report, Sept, 1955, by Chas. H. Dunning.



CHARLESTON LEAD MINE.
North-South section through proposed pit.

To accompany report by Chas. T. Downing.
Scale "A" 200' Sept 1955.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Charleston Lead Mine

Date June 11, 1953

District Tombstone Mining Dist., Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report ---- Personal Inspection & information from Mr. Suiter.

Location Secs. 25 and 36 --- T 20 S --- R 21 E
8 miles south-west of Tucson. *Tombstone*

Number of Claims 12 unpatented claims.

Owners Chas. H. Suiter, et.al., Box 347, Tombstone, Ariz.

Operators Same as above. Only tailings dump operated at present.

Principal Minerals Lead and Zinc, with small amounts of Copper and Silver.
Tailings dump now being sold for its mica content.

Men Employed 2 men now working in the tailings dump, excavating the material by cutting same in blocks for hauling to Aguila.

Production Rate About 3 tons per day of the material excavated from the tailings dump.

Milling Facilities Mill on the property consists of revolving blade washers, revolving screens, Akins classifier, and slime washers. Mill is not run at present, but owners expect to start mining ore soon, and treat this ore in their mill. The lead and zinc concentrates from the mill will be sent to a flotation mill for further treatment. The tailings from the mill operation will be collected, and sold as a mica product.

Geology Fault fissure vein, from a few feet to 150 ft. in width, strikes east and west, and dips about 60 degrees to the south. The footwall is andesite, and the hanging wall is monzonite-porphyry. The gangue material in the vein or shear zone is composed of sericite and kaolin, containing irregularly scattered particles, lenses, and veinlets of galena and sphalerite, with a very small amount of chalcopyrite, and pyrite. These lead and zinc minerals do not show any oxidation, and, therefore, the concentrate product derived from the mill is readily amenable to selective flotation.

Ore Values See previous report of June 12, 1952.

Old Workings See previous report of June 12, 1952.

Probable Ore Estimated by owners to be in excess of 200,000 tons.

Present Operation 2 men are now working the old tailings dump, cutting the tailings into blocks for hauling to Aguila. About 3 tons of these tailings blocks are produced daily. This product is sold to Philip S. Hoyt, Aguila, Ariz., who picks up the material at the dump site, and hauls it to his mill at Aguila. Mr. Hoyt has been reported as hauling about 12 tons per week of this material, paying \$17.50 per ton for same, refining it in his mill at Aguila, and receiving \$30.00 per ton for the refined product.

This material is called "hydrous mica" by one laboratory, and has been classified by the Arizona Bureau of Mines as "Sericite--a finely divided muscovite mica". It contains about 34 to 37 % of Al_2O_3 and about 46 % of SiO_2 .

The tailings dump contains about 150 to 200 tons. After this quantity is exhausted, plans are being made for reopening the mine, and running the mine ore through the mill, saving the lead and zinc as described above, and collecting the tailings for sale to Philip S. Hoyt. Expected production about 500 tons per month.

(4) Mr. Chas. H. Suiter is mining the dump tailings on the tailings dump, and selling same to Philip S. Hoyt of Aguila, Ariz., as a mica product. After the material on the dump has been mined out, he intends to start mining ore from his mine, washing same in his washing plant on the site, selling the Lead-Zinc concentrates for its Lead-Zinc content, and collecting the tailings from the mill for sale to Philip S. Hoyt, as a mica product.

5-12-32

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

RECEIVED

JUL 24 1952

DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

Mine Charleston Lead Mine

Date June 12, 1952.

District Tombstone Mining Dist., Cochise Co.

Engineer Axel L. Johnson

Subject: Mine Report --- Personal Inspection & information from Mr. Suiter.

Location 8 miles south-west of ~~Tucson~~ *Tombstone*

Number of Claims 12 unpatented claims.

Owners ✓ Chas H. Suiter, et. al.
Box 347, Tombstone, Arizona.

Operator & Prospective Purchaser Ray Ryan, Evansville, Indiana has option
to Nov. 15th to purchase property.

Officers ✓ Louis Garbrecht, El Paso, Texas is Engineer in charge for
Ray Ryan.

Metals ✓ Lead and Zinc, with a small amount of Copper and Silver.

Men Employed 4 men diamond drilling.

Production Rate No production of ore.

Milling Facilities A small mill is on the property, consisting of revolving
blade washers, revolving screens, Akins classifier, and slime washers. Owner
used this mill for washing out the talc from the ore.

Geology A monzonite porphyry vein, 128 to 150 ft. wide, strikes E and W., and
dips about 60 degrees south. This vein contains the ore values.

Ore Values Mr. Suiter reports the following ore values:-
(1) Crude ore-- Lead 3.2 %; Zinc 4.6 %; Copper 0.46 %; combined 8.26 %.
(2) Washed Ore-- Lead 10.2 %; Zinc 12.0 %; Copper 0.8 %; Silver 1.32 oz.

Old Workings 5 shafts, as follows: #1 shaft (discovery shaft) 8 ft. deep;
#2 shaft--84 ft. deep; #3 shaft--- 104 ft. deep (caved 80 ft.); #4 shaft--- 75 ft.
deep (open); #5 shaft--- 88 ft. deep.
80 ft. cross cut south from #3 shaft (in ore)
Drift connecting #2 and #5 shafts.

Present Operations Ray Ryan, who has option to purchase is diamond drilling.
A 2 inch core is drilled. Two diamond drill holes have been drilled. The first
hole was lost at a depth of 240 ft., on account of caving. They are drilling the
second hole now, being down to a depth of 80 ft.

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Date October 2nd 1951

1. Mine: Charleston Lead Mine
2. Location: Sec. 25-36 Twp. 20 Range 21 Nearest Town Tombstone
Distance 7 miles Direction 30 west Road Condition good all year rock road
3. Mining District & County: Tombstone Mining Dist. Cochise County
4. Former Name of Mine: Woolery - Mary Jo Group
5. Owner: Charleston Lead Mines Co. - a partnership
Address: Box 347 Tombstone Arizona
6. Operator: Chas. H. Suter Managing Partner
Address: Box 347 Tombstone Arizona
7. Principal Minerals: Zinc and Lead Sulphide
8. Number of Claims: Twelve (12) Lode yes Placer no
Patented no Unpatented yes
9. Type of Surrounding Terrain: low hills, rolling, arroyos
10. Geology & Mineralization: see Engineers Report attached
11. Dimension & Value of Ore Body: Lode vein - 2000 ft long by 10 to 300 ft wide - proven depth by churn drill 340 ft. estimated proven potential ore body of 600,000 tons 6 to 10% Combined Lead & Zinc -

12. Ore "Blocked Out" or "In Sight":

Ore Probable: 600,000 tons

13. Mine Workings—Amount and Condition:

No.	Feet	Condition
Shafts. 4	312	one, No 3, is caved - rest in good condition
Raises. 0		
Tunnels. 1	100 -	surface used for powder magazine
Crosscuts. 4	80 -	good
Stopes. 0		

Electric power is available for large & small motor from P.E.A.

14. Water Supply: about 1000 gallons per hour from dug well in arroyo
big water can be found by drilling to 450 to 500 feet -
2 miles from San Pedro river

15. Brief History: Mine has been developed on small scale - 1190 tons
of bulk lead and zinc concentrates have been shipped -
see record attached. Estimated 600,000 tons ore proven,
property needs its own flotation mill. Too big for present
owners who wish to sell and discontinue partnership -
7000 other equipment - can be put on 100 tons day
production in 60-90 days - present production 15
tons.

16. Signature:

Chas. H. Senter, Managing Partner

17. If Property for Sale, List Approximate Price and Terms:

price open - reasonable down
payment - balance over 5 years

STATUS OF DORMANT MINES

MINE NAME: Charleston Lead Mine (Mary Jo Group)

LOCATION: Seven miles southwest of Tombstone, 3/4 mile north of Charleston Road

OWNER AND/OR LEASEE: Charleston Lead Mines Company (a partnership)

ADDRESS: Chas. H. Suiter, Principal owner and Manager, Box 347, Tombstone, Arizona

APPROXIMATE PRODUCTION (Year of 1948): 1948 First production in 1948 from development, as shown by settlement sheets.

COPPER 6427 Lbs. LEAD 87771 Lbs.

ZINC 114633 Lbs. (OTHER) Silver 600 ounces.

CHECK THE CHIEF CAUSE OF YOUR DISCONTINUED PRODUCTION:

- (A) Easily available ore worked out.
- x (B) Increased costs, but have quantity similar to past grade of ore.
- x (C) Too close a margin to develop more ore.
- x (D) Metal market too low and unstable since March 1949. Need more machinery and equipment to continue development work. All previous development work has been productive of ore, lead and zinc.

If you have ore ready to mine please give your estimate of the amount of metal (name each metal) that you could produce in one year (after allowing 60 days to get started) if there were premiums above present market prices. Name amount with a low premium, and amount at a high premium; such as:

~~Copper at 22¢ plus 5¢ premium.....1,000,000 lbs.~~
~~Copper at 22¢ plus 10¢ premium.....1,500,000 lbs.~~
 Lead at 12¢ plus 5¢ premium (not good enough)400,000 lbs.
 Lead at 12¢ plus 10¢ premium (O.K.).....800,000 lbs.
 Zinc at 15¢ plus 5¢ premium600,000 lbs.
 Zinc at 15¢ plus 10¢ premium1,200,000 lbs.

If you do not have ore ready to mine please discuss the following:

- (A) Do you think a reasonable development program would produce a justified tonnage of commercial ore at above mine?

Yes, I have a large fissure vein 80 feet wide and over 2000 feet long - so far have only proven the east 400 feet, where vein outcrops, to a depth of only 80 feet, plenty good ore.

- (B) With a premium price (guaranteed for one year) could you carry out such a development program yourself? What premium? Yes, with a 10¢ per pound premium on both lead and zinc and a direct conservation and exploration contribution, like is given the farmers and cattlemen, with which to buy needed machinery and equipment, I could carry out a development program that would result in the production of plenty of ore, lead and zinc.

- (C) If you could not do this yourself, would a quick drilling program by some government agency (at government expense) be sufficient?

Yes, 6 or 8 holes, 200 to 400 feet deep, along the strike should show up plenty of ore in a hurry, and facilitate underground development work.

- (D) Or would you prefer a loan plan similar to the arrangements during World War II?

I don't want any loan of any kind - my property is all clear and I'm going to keep it that way.

How about a combination plan in two stages such as follows?

Stage 1: Government engineers review project and, if a little drilling appears to be justified and a preliminary key to the situation, such drilling program to be agreed upon by owner and government engineer, paid for by the government, but let by contract.

Stage 2: If results of drilling (or without drilling) justify underground development and/or production equipment, same to be obtainable via a mortgage loan on property.

Please discuss the above: Stage 1. would be O.K. - Government engineers can review my project at any time and put on a drilling program and I'll co-operate with water for drilling, bunk house and etc., just so it don't cost me any money.

Stage 2. A mortgage loan on my property is out, so is any other kind of a loan.

SUGGESTIONS: A mine aid bill like the original 1949 Murray-Engle Bill (H.R. 976) would really help the small miner, the little outfits with under 200 tons a month, that will be the big mines of the future.

I suggest that the Government buy or build selective flotations mills in various sections and operate them, or else the Government should supervise every custom mill to insure more efficient milling and to protect the miner-shipper from being cheated. Premiums should not be paid by or through any custom mill, but premiums should be paid by some Government Agency directly to the producer on the presentation of certified settlement sheets. A fixed per ton milling fee should be established, and the shipper paid exactly what the mill receives for the concentrates. Smelting charges should be reduced.

DATE August 7 1950

SIGNATURE

Charles E. Swiler
Charleston Lead Mines Company

CHARLESTON LEAD MINES COMPANY

UNINCORPORATED

BOX 347

TOMBSTONE, ARIZONA

CHARLES H. SUITER
GENERAL MANAGER

August 7 1950

Honorable Chas. H. Dunning, Director
Department of Minerals Resources
Minerals Building, Fairgrounds
Phoenix, Arizona

Dear Mr Dunning:

I have filled out and am enclosing the questionnaire you sent me in your letter of July 29. I appreciate and thank you for the interest your Department is taking in behalf of the small miner.

Recently I have been writing to a number of members of Congress telling them of the plight of the small western miner, due entirely to our Government's European Aid Program and the flooding of our shores with metal produced with cheap labor paid in a devalued currency, etc. Among them was Cong. Herter of Massachusetts who led the fight that defeated the O'Mahoney bill last March.

Cong. Herter replied under date of July 28 from which I quote in part as follows: "If it is essential for us to produce more copper, lead, zinc and other strategic materials ... because of the war situation or for stockpiling, I would have no objection whatsoever to the type of aid which was given small mines during World War II. In fact, I would gladly vote for it as a war measure, and I assume that some such measure may come before us before long." I thought this might be interesting to you.

One of the serious handicaps to the small miner of complex ores that are dependent upon a custom flotation mill, is the excessive freight, milling and smelting charges and low percentages of metals paid for. Tests have given a recovery as high as 94% of my lead and zinc ore, yet Shattuck-Denn would pay me for but 61.5% for my 15.5% sulphide lead ore, as shown by enclosed settlement sheet. There should be some regulation over custom mills relative to their methods. There are only two answers - inefficient milling or deliberate cheating.

Since the Government is to blame for the predicament the small miner is in, the Government should do something about it. We have given billions to Europe and billions to the U.S. farmers - let's make a fight for a little for the small miners.

Respectfully yours,



STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

December 6, 1957

MINE - CHARLESTON MINE

(Formerly Charleston Lead Mine)

Engineer-Axel L. Johnson

DIST.- Tombstone Mining District, Cochise County

SUBJECT-Field Engineers Report. Information from Chas. H. Suiter & Personal Visit.

References Report of Sept. 7, 1956 of Field Engineer.
Report of Chas. H. Dunning, Consulting Engineer- Aug. 25, 1955.

Location Secs. 25 & 36- T 20S- R 21 E - 8 mi SW of Tombstone.

No. Claims 20 unpatented claims - 12 on Federal land and 8 on State land with State lease.

Owners Chas. H. Suiter, et al., Box 347, Tombstone, Arizona.

Lessees & Operators James Stewart Construction Co.
First National Bank Bldg.,
Phoenix, Arizona,
with a contract to purchase.
Chas. H. Suiter, Supt. of Operations.

Principal Minerals Sericite, containing Lead, Zinc & Copper.

Present Mining Activity

Stripping of overburden, overlaying sericite deposit.
2 Trucks and 7 men working.

Geology & Mineralization See Report of Chas. H. Dunning - Aug. 25, 1955.

Ore Values Chas. H. Suiter reports the following values:
Lead - 3.5%; Zinc 5.5%; Copper 0.75% with Sericite with a ratio of 3 parts Sericite to one of ore (Also see Dunning's report - page 4).
Mr. Suiter also reports that the washed concentrates run from 25 to 30% of combined metal values.

Ore in Sight & Probable See Dunning's Report of Aug. 25, 1955.

Milling & Marketing Facilities

(1) Old Suiter Mill consisting of a drum with blades inside of same (referred to as a blade washer) followed by a revolting tremmal screen and an Akins screw classifier. Ore is dumped over a 3" grizzly, elevated by means of a link belt elevator to an 18 ton ore bin, and fed from ore bin to the blade washer through a chute. Capacity reported by Mr. Suiter to be 7 tons per hour.

(2) Additions to date on the old mill.

- (a) R.I.A. Electric power hooked up.
- (b) Drilled well producing 60 gal per minute of water and installed 3,000 ft. of 6" aluminum pipe line from the well to the plant.
- (c) Cyclone and cyclone pump.

- (d) 2 Launder tanks.
- (e) 4 Concrete settling vats (for settling of the sericite).

(3) Planned future milling installations. Operators plan to install a 50 ton differential flotation mill, which will consist of ~~Fagerstrom~~ ^{FAGERSTROM} Flotation Cells, Dow Chemical Separan #2610 to flocculate and settle the sericite, and a Dow-Oliver 5' Filter and Dryer.

Operators expect to have this mill installation finished in from 3 to 6 months.

Present Mining Operations

Buildex-loader loads waste into a dump truck. Truck hauls waste to a waste dump. 2 Trucks and 7 men working.

Proposed Plans

- (1) To build a 50 ton differential flotation mill as described under Milling and Marketing Facilities - part (3).
- (2) To save the sericite, also recovered in the milling operation, for sale on the market. Mr. Suiter reports that operators have markets for the sericite for use in the paint, paper making and insecticide industries.

LEAD-ZINC QUESTIONNAIRE

October 8 1957.

Do you approve of the Emergency Lead-Zinc Committee's seeking relief for the lead-zinc industry and has it your authorization to speak for you? yes

What Arizona Mines and Mills in the lead-zinc class do you control?

(1) Charleston Lead Mine, Tombstone, Arizona

(2) _____

Which ones are operating? (1) Charleston Lead Mine stockpiling metals, byproducts
Wozelay

If not operating, when shut down? (1) _____ (2) _____

Number employed, prior to shut-down, in mine, mill or sections thereof producing lead or zinc ores? (1) _____ (2) _____

Number so employed on January 1, 1957? (1) None (2) _____

Number so employed on October 1, 1957? (1) 6 - mining (2) clay

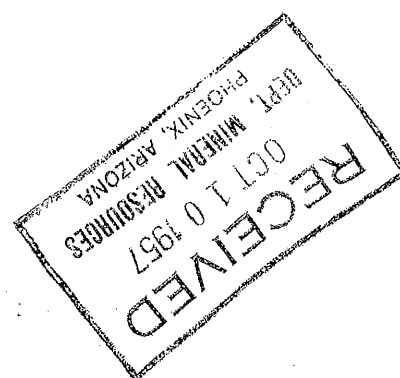
Remarks On July 1, '57 started small surface operation to mine
white clay that contains 8% metals (Lead & Zinc) - shut down
prior to low metal prices - recently found market for clay.

Charleston Lead Mine
 Company

By: Chas H. Suter
 Signature

Please fill in NOW, tear off, and mail to:

Arizona Department of Mineral Resources
 Mineral Building, Fairgrounds
 Phoenix, Arizona



BRIEF DESCRIPTION

of the

CHARLESTON LEAD MINE, TOMBSTONE, ARIZONA

LOCATED seven miles south-west of Tombstone on the Fort Huachuca highway, a good all year road. Mine elevation is 4200 feet above sea-level. Annual rainfall 14.5 inches from July to September.

PROPERTY consists of twelve unpatented mining claims, equipped with a two room furnished cabin and a four room and bath furnished modern cottage; a revolving blade washer, trommel screen, Akins classifier; head frames and ore bins; hoists and engines; water well, pipe line and pump; tools, timber, pipe, rail, etc. ELECTRIC POWER for large motors is available. The property needs its own flotation mill.

LODE VEIN is contained in a strong fissure between walls of monzonite-porphry and andesite, striking east and west through the center of our claims. Vein is about 2000 feet long by 10 to 300 feet wide. Gangue is sericite and kaolin containing Lead (Galena) and Zinc (Sphalerite) sulphide ore which is readily amenable to selective flotation. Principal rock in the area is Quartz-latitude (Uncle Sam Potphry), Quattz-monzonite, Basalt, Porphyry, Andesite and Rhyolite.

EXPLORATION and DEVELOPMENT WORK consists of surface trenching with a bull dozer to locate and expose the vein; a churn drill hole in ore from 40 feet to 340 feet; four shafts with drifts and crosscuts, all of which has proven an estimated 600,000 tons of ore, part of which can be mined by a surface operation. Ore is found within 25 feet of surface.

PRODUCTION from exploration and development as follows:

Year	Dry tons	Ag oz.	Cu %	Pb %	Zn %	Mill Paymts.
1947	125.50	1.30	0.70	7.40	12.7	\$ 1355.70
1948	472.54	1.45	0.75	9.20	12.3	14420.62
1949	282.28	1.70	0.80	8.60	12.8	6539.53
1950	187.72	1.65	1.18	13.06	18.9	10568.03
1951	122.04	1.56	0.44	7.80	11.8	3825.87

1190.08 dry tons. Total mill payments --\$ 37209.75

an average of \$31.27 per dry ton, before costs of mining and washing. The above 1190 dry tons was the washed product of approximately 2600 tons of crude ore mined and washed.

My partners and I are not able to equip and operate the property on the scale it justifies, also we wish to liquidate and dissolve our partnership, therefore we have agreed to offer the property for sale at a low price and extended terms of payment. If interested visit the mine or write the undersigned for further information at P.O.Box 347, Tombstone.


Chas. H. Suiter, Managing Partner

RECORD OF ORE MINED, WASHED AND SOLD FROM THE

CHARLESTON LEAD MINE, TOMBSTONE, ARIZONA

	LOT NO.	DATE	DRY TONS	Ag oz.	Cu %	Pb %	Zn %	NET MILL PAYTS.
	1	10/47	125.50	1.30	0.70	7.40	12.7	\$ 1355.70
80' level	2	5/48	44.32	1.32	0.80	10.20	12.0	1348.97
No. 3 shaft	3	6/48	82.16	1.20	0.85	10.60	14.4	2283.18
	4	7/48	51.57	1.00	0.75	9.40	10.2	1438.91
80. 3 dump	5	8/48	47.15	1.20	0.70	9.40	9.0	1328.24
	6	9/48	38.97	1.05	0.60	8.90	11.2	1059.33
50' level No.	7	9/48	44.64	1.20	0.37	6.90	12.2	1108.00
5 shaft	8	10/48	49.65	1.80	0.60	9.70	15.6	1863.74
	9	11/48	33.51	1.60	0.62	9.90	14.6	1431.90
	10	12/48	42.95	1.20	0.60	7.30	9.0	1085.61
50' level	11	12/48	37.62	1.30	0.75	9.10	14.8	1472.74
No. 3 shaft	12	2/49	33.06	1.20	0.61	7.20	10.0	927.18
	13	3/49	39.74	0.80	0.40	5.70	8.6	742.61
	14	4/49	34.86	0.80	0.32	5.50	9.5	409.24
72' level	15	5/49	41.47	1.40	0.55	7.80	12.9	873.15
	16	6/49	55.01	3.40	1.25	15.50	22.3	2125.14
No. 5 shaft	17	8/49	38.01	1.70	0.75	7.30	11.5	546.93
	18	9/49	40.13	1.70	1.05	10.40	15.2	915.28
	19	9/1950	58.10	1.20	1.05	11.00	15.9	2473.43
Winze 72' lev	20	10/50	70.55	2.28	1.42	17.10	27.3	5326.52
	21	10/50	26.90	1.32	0.97	10.35	11.5	913.89
No. 5 shaft	22	10/50	32.17	1.80	1.25	13.80	21.0	1854.19
	23	6/1951	122.04	1.56	0.44	7.80	11.8	3825.87

1190.08 dry tons Total net mill payments \$ 37209.75

an average of \$31.27 per dry ton, before mining, washing and trucking charges.

The last four lots, 20 to 23 inclusive, were trucked 70 miles to A. S. & R flotation mill at Patagonia, Arizona, at a trucking cost of ~~44¢~~ \$5.50 per ton. Previous lots were trucked to Tombstone at \$1.50 per ton and shipped by S.P.Ry to Bisbee, Shattuck-Denn mill at .86¢ per ton freight. Shattuck-Denn mill close down October 1st 1949.

The above 1190 dry tons was the washed product of approximately 2600 tons of crude ore.

The original mill settlement sheets are on file in our office at the mine for inspection and comparison.


Charles F. Senter
 Charleston Lead Mine.....

REPORT ON THE CHARLESTON LEAD MINE, TOMBSTONE, ARIZONA

The Mary Jo Group of Mining Claims are situated in Sections 25 and 36, Twp 20 South Range 21 East of the Gila and Salt River Base and Meridan, eight miles south-west of Tombstone, Arizona and two miles northerly from Charleston, in the Tombstone Mining District, in Cochise County, Arizona at an elevation of 4100 feet above sea level.

The property is held by possessory title and consists of twelve (12) claims comprising 228 acres more or less.

The country here is, in general, a quartz-latitude porphyry underlain by a quartz-monzonite. The latitude in a short depth merges into the monzonite which in spots shows on the surface. The quartz-latitude is the porphyry phase of the quartz-monzonite.

~~The reformed~~ A zone of shearing developed an east-west course and the minerals are found therein in veinlets, veins and lenses. The rotting and decomposition has caused a slumping and rearrangement, the lines of shearing being almost obliterated, the veinlets and lenses twisting and crossing the main course of the lode in varying angles.

The reformed minerals arising from the decomposed feldspars are sericite and kaolin; the metallic minerals are the sulphides of lead, copper, zinc and iron. The lode also contains some hard ribs or lenses of highly siliceous rock oriented with the course of the lode.

Apparently under the footwall of the lode in the approach to No. 5 shaft, a basalt rib or dike is noted and to the north and resting on part of the basalt a scab of andesite of a green color shows - a remnant of the flow rocks that covered this area at one time.

The metallic minerals - the sulphides of lead, copper, zinc and iron at 20 to 25 feet below the surface, do not show any oxidation effect, except a scarce red stain of iron oxide - and this stain was not found on the 100 foot level of No. 3 shaft (Mary Jo); for this reason the sulphides will be readily amenable to selective flotation.

The principal workings are:

Mary Jo Claim No. 1 shaft 50' slope depth at 66 degrees;
No. 2 shaft 100' slope depth at 66 degrees;
No. 3 shaft 104' slope depth at 65 degrees; with an 80 ft crosscut to the south. (these workings are old, now caved and inaccessible)
Brother George Claim: No 2 shaft 52 feet slope depth at 66 degrees,
No. 5 shaft 72 feet slope depth with a winze of 20 ft and with 6 ft from collar (intrench) to surface makes 98 feet.

The results from sampling when balanced out, gave results as follows:
Samples 1 to 18 - 6.23% Lead; 0.57% copper; 10.94% zinc
19 - 6.18% Lead; 0.52% Copper; 10.90% zinc

although No. 19 had a high value, it had practically no effect on the aggregate.

REPORT ON THE CHARLESTON LEAD MINE, TOMBSTONE, ARIZONA

page 2

A block of ground extending from 50' east of No. 3 (Mary Jo) shaft westerly to a point 100 feet west of No. 7 shaft and depth equal to No. 3 shaft contains 206,000 tons of ore of an indicated value of: Gold 0.01oz; Silver 1.5oz; Lead 6.18%; Copper 0.524%; Zinc 10.90%.

This block of ore in the owners mill, will yield recovery as follows: 70% of the Silver; 70% of the copper; 95% of the lead and zinc, - with 16% lead, 23% copper, 17% zinc, lead concentration ratio 9.3 to 1, zinc concentration ratio of 5.8 to 1. The zinc smelting rate of \$50.00 plus freight on concentrates and 10% moisture \$13.40, will leave \$30.81 per ton of crude ore or \$6,000,000.00, out of which to pay mining and mill costs.

However, a section of the above mentioned ore in shaft No. 5 has somewhat over 5000 tons carrying: Gold 0.01oz; Silver 1.8oz; Lead 12.78%; Copper 1.41%; Zinc 16.6% - this should yield at present prices, about \$42.60 per ton of crude ore or \$213,000.00 for the section quoted, increasing daily as the winze is being sunk in increasingly better ore.

As to the other constituents of the ore, the sericite and kaolin, I cannot say except that they have a considerable economic value and are well worth consideration.

It is highly probable that the mineralization will go to the depth of the quartz-monzonite sill and the mineralization will undoubtedly be there also - what the depth of the sill is I can not state.

I consider this a very valuable property and improving on depth. I recommend it.

Respectfully,

Sept. 18 1950..

Johnathan Gordon, Mining Engineer.
Tombstone, Arizona.

NOTE: In October and November 1950 and since the date of Mr Gordon's report, a churn drill hole has been drilled at a point 128 feet due south of Mary Jo No. 3 shaft, at right angle to the strike of the vein. This churn drill hole found the sericite and ore at 40 feet and continued in ore to 340 feet where the bit encountered an andesite dike that appears to outcrop at a point about 40 feet north of No. 3 shaft with an incline of about 60 degrees south. Churn drill samples have been preserved for inspection.

Also since the Gordon report, Mary Jo No. 4 shaft was sunk at a point 65 feet east of No. 3 shaft, to a depth now of 52 feet with 20 foot crosscuts north and south in ore. C.H.Suiter....

File

CHARLES H. DUNNING

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817 W. MADISON ST.
PHONE ALPINE 3-0272

MINING ENGINEER
PHOENIX, ARIZONA

RESIDENCE
1638 W. EARLE DR.
PHONE AMHERST 5-1132

REPORT ON CHARLESTON LEAD MINE.

Pursuant to request I have made an examination of the Charleston Lead Mine for the purpose of determining the feasibility of developing and equipping the property for production, and the expected economics when in production.

The property consists of twelve unpatented mining claims and is located 8 miles southwest of Tombstone, Arizona, and is owned by Mr. Charles H. Suiter of Tombstone.

General Geology.

The terrain consists of a series of volcanic flows, originally rhyolite, latite, monzonite, and allied phases, that have been highly sheared, altered and faulted. A main east-west fault exposes an old and once underlying granodiorite mass on the south which forms a definite hanging-wall for the sheared, altered, and mineralized beds immediately to the north.

A zone some 150 feet wide in these beds, paralleling this main fault, has been invaded by intrusions of mineralizing porphyry causing minor faults, crushing and shearing, and intense hydrothermal action.

This hydrothermal action has been so intense that the rhyolite has been almost completely altered to sericite, and at the same time lead, zinc, copper, and iron sulphides were deposited, together with small amounts of gold and silver. Later volcanic flows of a basaltic type once covered this terrain but have been almost completely eroded away, exposing the above mentioned conditions which were originally formed deep in the earth. Necks or vents of some of these later extrusives appear underground and on the surface.

The hydrothermal actions exhibited here are the strongest I have ever observed anywhere. The sericitization is very complete and extensive.

An area in the above condition, 150 feet or more wide and 400 feet or more long, has been fairly well prospected by one churn drill hole, 340 feet deep, several shafts up to 100 feet, 400 feet of drifts and crosscuts, and best of all the actual mining of some 2600 tons from development work.

The mineralized area however, may be much larger than the dimensions assumed above. To the east the formation is capped but was encountered in a power pole hole. To the west it opens out again after being pinched down by the granite plug. The assumed footwall to the north, an andesite dyke, may only be a false wall, and the mineralization may recur further north where

it is covered with loose gravelly overburden.

A further interesting point is that the intrusive porphyry mineralizers are of the copper producing type, similar to Bisbee. While the copper content of the Charleston is only about .5% some of our best copper ore-bodies in Arizona have a capping or margin low in copper but higher in lead and zinc, and at some depth or location in the Charleston formation there could well be important copper ore-bodies.

History

The mine has been sporadically developed and operated for several years. Before the big drop in the prices of lead and zinc in 1952-3, Mr. Suiter had built a small washing plant and was profitably treating his ore by a very simple washing process, and shipping a crude, mixed, semi-concentrate to custom mills. This operation will be mentioned in more detail further on.

At that time he was obtaining his ore from underground development work. Because of the slick, greasy nature of the sericite underground workings are difficult to hold and mining expensive. Underground mining should not again be attempted in the sericite zone. The combination of expensive mining and the drop in metal prices shut Mr. Suiter down. It has not been until the last few months that the price of lead and zinc has again risen to change the picture; and there also appears to be a strong and growing market for the sericite as a by-product.

However, the only feasible or economic way to mine the ore-body is by open pit from the surface and as there is some 30 feet of valueless overburden, such an operation requires financing.

Mining Facilities

A commercial high voltage power line crosses the property and ample power can be obtained at regular rates.

Mr. Suiter has obtained his milling water from a shallow dug well. No doubt drilled wells out on the flat would provide ample water for a larger mill.

Seven of the eight miles of road to Tombstone is a good county road, and the one mile of private road is sufficient.

Probable Tonnage

As stated above the possibilities of ore are practically unlimited; but from present development it seems reasonably certain to assume a block of ground 150 feet north and south, by 400 feet east and west, by 125 feet deep below the overburden, would make an open pit. This would amount to 625,000 tons. Deducting 20% for unmineralized "horses" and barren intrusives, some of which could be selectively shovelled and hauled to waste, would leave a net tonnage in such a block of 500,000 tons. It must be understood that such estimate, though reasonably certain because of existing development and nature of the ore occurrence, is still not technically "positive". This matter will be further discussed under the heading of "values".

Metallurgy

The sericite gangue completely disintegrates on contact with water, making a clay slurry with the mineral sulphides freed.

Mr. Suiter's plant consisted only of a drum with blades inside (like a cement mixer) followed by a small classifier. The underflow from the classifier carried 25-30 % combined metallic sulphides and was his shipping product. The overflow from classifier was run through a long trough with partitions and thence to tailing pond. The "heavies" caught by the riffles were added to the shipments.

This simple process achieved over 90% extraction but the sericite was not sufficiently cleaned of iron to be marketable as sericite, and the semi-concentrate still had to be sent to a custom mill for further concentration and the separation of lead and zinc. This was costly as a table below will show.

For a new mill the general flow sheet would be a grizzly but no crusher. A large blade or log washer, followed by an oversize classifier in open circuit. Overflow from classifier to an Humphries spiral and wet cyclones which would glean the last of the metallic sulphides. Underflow from classifier together with concentrate from spiral and cyclones to a small ball mill and thence to differential flotation cells, resulting in clean lead and zinc concentrates which are shipped to smelters.

Values and Economics

Three methods were used to determine an average assay value of the above estimated half million tons. None of these methods, in itself, could

be considered entirely accurate, but when all these methods check each other closely, the overall result should be quite reliable.

- (1) The 8" churn drill hole which reached a depth of 340 feet where it cut the andesite footwall.

This hole showed ore from 30 feet of top to bottom, and as it was vertical whereas the orebody dips about 70 degrees, it cut across the ore as well as attaining depth. Log and samples of this hole were taken by Mr. Suiter while drilling, and log is available. I sampled the sump of cuttings.

- (2) Sampling of all underground workings per assay map. (Copy of assay map available.)

This sampling was not checked by me but was done by a reliable company, but workings and the visual qualities of the ore were examined by me.

- (3) The result of Mr. Suiter's milling of all ore coming from underground work.

In this case I checked the tonnage that such work would have produced, - against the tonnage in the tailings pile - against the ratio of concentration - against the tons of concentrates and their metal content per settlement sheets, file of which is available. All three of these methods produce approximately the same result which is as follows:

Gold - trace; Silver 1.00 oz.; Copper .50%; Lead 4.00%; Zinc 5.50% .

At the present prices of lead (15¢) and zinc (12.5¢) these metals have a net value, FOB mine, after deducting freight, smelter charges, and other "deducts", per unit (1.0% or 20 lbs.) of \$1.56 for lead, and \$.86 for zinc. Copper would go with the lead and be paid for at about 20¢ per lb., unless there were sufficient quantity to make a separate copper concentrate.

The real value of the above ore, after being reduced to shippable concentrates would therefor be as follows:

Gold (Pay quantity possible)	0.00
Silver 1.00 oz. @ .75	.75
Lead 4% or units @ 1.56	6.24
Copper 10 lbs. @ 20¢	2.00
Zinc 5.50% or units @ .86	<u>4.73</u>

Total 13.72

From this average we should make an across-the-board deduction of 20% for unavoidable dilution and other contingencies, which leaves a value of \$11.00 per ton.

Charleston Lead - Page 5

While the milling process appears to extract almost 100% of the metals, a general deduction for mill losses of about 10% should be provided, leaving a final net value of \$10.00 per ton at present metal prices.

To this should be added anything received for the sericite - see later.

Operating Costs

Operating costs (not including capital costs) will vary greatly according to the efficiency of the setup and the size of the operation. Below are given two tables: one representing the use of Mr. Suiter's past and present setup; and the other representing what should be done with a proper mill for 150 ton daily (24 hrs.) crude ore and 50 tons daily for regrind and flotation. Preliminary stripping is considered as a capital expense and not included in operating costs, but subsequent stripping, on a basis of 1.5 tons (waste) to 1.0 tons (ore) is included in operating costs.

<u>Item</u>	<u>Suiter Mill (50 Tons)</u>	<u>Complete Mill (150 Tons)</u>
Stripping, mining and delivery to mill50	.50
Milling	4.00	2.00
Overhead & Miscellaneous..	2.00	1.00
Shipping to custom mill and remilling (Basis: \$9.00 per ton for semi-conc'ts.).....	<u>3.00</u>	<u>0.00</u>
Totals	9.50	3.50
Profit on \$10.00 per ton crude ore.....	<u>.50</u>	<u>6.50</u>
	10.00	10.00

The above includes no royalty or participating interest to the owner.

It will be noted that in the item of stripping and mining the costs are the same regardless of daily tonnage. This is because I have considered in each case giving a contract to parties properly equipped to excavate and pile behind the mill a considerable tonnage at a time. This would avoid the purchase of much expensive equipment and permit the use of economic heavy equipment. Obviously, in either case, the cost would be approximately the same and

should be done within the figure mentioned.

The above figures show that an over-simplified mill is not practical under present metal prices. However, the present mill, with certain additions, would make an ideal test or pilot plant to obtain positive metallurgical data, before designing a final mill, and to obtain positive average values by mining large samples and milling them.

SERICITE. The sericite angle is intriguing and has extensive possibilities. It is not positive. Sericite is a microscopic sized muscovite mica, an aluminum silicate, with a silky, greasy feel, like talc. The analysis of the Charleston sericite, which corresponds closely with the theoretical (analysis available) is:

SiO_2 - 46.25%; Al_2O_3 - 38.5%; other oxides - 11/8%; Water 4.5%

Sericite has various uses in industry and is in increasing demand. For most uses it must be iron free and Mr. Suiter, with his crude mill, has never been able to remove all the iron. I am quite sure that it can be done.

The market for sericite is one of negotiation and contracts. It is a fact that no user will "talk business" until you have a consistent supply. Once such a supply is established, and a consistent quality proven, one may enter the field through direct sales or brokers. It seems certain that at least a considerable quantity of the sericite from the Charleston ore could be sold at good prices. Approximately 75% of the crude tonnage would be sericite, and such information as is available on prices indicates a value of \$10.00 to \$30.00 FOB railhead. Its value to the Charleston might surpass that of the metals, but because of some uncertainties I have not included it at all in profit estimates. The pilot plant test runs, recommended below, should definitely establish this feature.

Recommendations

Ordinarily, in a situation such as this, one would first drill a sufficient area to positively determine a tonnage and grade to warrant stripping and opening up a pit, and the building of a suitable mill. But drilling has been found to be difficult and unreliable at the Charleston. As stated above the ore practically dissolves in water; and it is too moist to drill dry. In putting down the above mentioned churn drill hole about 40 feet of the bottom of the hole would fill up over night. Not knowing where such "sloughing off" comes from makes samples unreliable. And the heavy part of cuttings have a way of working into the pores instead of being pumped out. Core drilling produces no core. Seemingly the only successful way to drill would be to follow the bit immediately, or even precede it, with casing - and such would be quite expensive.

It is fortunate in this case that the overburden could be removed from a pit sized area cheaper than same could be drilled.

It is my recommendation therefore that first the overburden be removed from such an area, as is shown on sketch, with a bulldozer. Secondly, that trenches be put across this stripped area with a slusher as deep as possible (probably 25 feet) and that the produce from these trenches be used as samples and test material in a pilot plant. Some shallow drilling might be done from these trenches (say 25 feet) to further positively prove justifiable tonnage.

Mr. Suiter's present mill should be augmented by a larger water tank, a Humphries Spiral Classifier, and wet cyclones to obtain ultimate metal extraction and refine the sericite. The product from the slusher trenches should be used as feed for such test work, each trench milled separately to constitute exact sampling.

On completion of such work one should be sure of a justifiable tonnage and detailed metallurgical requirements.

Financial Requirements

Financial plans should be divided into three stages: The first stage would include only the stripping mentioned above and appurtenant expenses. No heavy equipment would be purchased - the work would be contracted or equipment rented. Approximately 30,000 yards should be removed at an estimated cost of 25¢ per yard or \$7,500.00; Miscellaneous expense \$2,500.00; Total: \$10,000.00.

The second stage would consist of the test trenches mentioned, improvement of the mill by the addition of the items mentioned to function as a pilot plant, and the test milling of the product from the trenches (approximately 4000 tons); Mining would cost 75¢ per ton (\$3,000.00); Mill improvements: \$4,000.00; Milling: \$16,000.00; Miscellaneous: \$2,000.00; or a total of \$25,000.00. While the product from the test milling might be shipped and should nearly cover its cost, it would be better to hold it for differential flotation.

The third stage would consist of mining and stockpiling 10,000 tons and complete rebuilding the mill. This is estimated as follows: Mining by shovel: \$5,000.00; Mill including flotation: \$50,000.00; Miscellaneous: \$10,000.00; or a total for stage 3 of \$65,000.00. Grand total: \$100,000.00.

Not included in the above estimates are any payments that must needs be made to the owner.

It will be noted that in the above plan the first stage which amounts to very little, entails all the risk, and is cheaper than a drilling program. Successive stages are predicated on the success of the preceding stage and would not be entered into unless same were successful.

Before the third stage is entered, which would require the bulk of the financing, all risk would be eliminated, except such risks as are dependent on long term economic changes and the price of metals.

It should be noted that in both operating profits and capital requirements no allowance has been included for payments to or participation by the owner. Mr. Suiter has spent considerable money and has created a very valuable property. We have discussed several types of "deal". I am sure that a reasonable one can be obtained, but the details might best be left open so they can be made to conform to the best interests of both parties.

Conclusion

The economics of the Charleston situation work out for a probable profit of some millions of dollars; and considering the very slight risk and modest financial requirements, the proposition appears to be one of unusual merit.

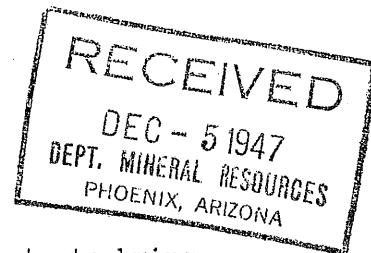
Respectfully submitted,

Char H. Dunning

August 25, 1955

DEPARTMENT OF MINERAL RESOURCES

TO ALL PRODUCERS OF COPPER, LEAD and ZINC IN ARIZONA:



This department and others are making strenuous efforts to bring about legislation which will help ameliorate the restrictions and difficulties faced by the producers of copper, lead and zinc, and other strategic minerals.

To assist in these efforts it is advisable that we have an authentic survey of the results of the President's veto of the Allen Bill, and the results that would take place if a new bill, such as the Russell Bill, were passed by Congress. The Russell Bill includes all strategic minerals.

While we have all learned to love questionnaires just as we love stomach ulcers, will you please give the answers in your best judgment to the following questions:

1. What was your approximate production in pounds per month for the period preceding the President's veto of the Allen Bill?

(Copper None Lbs.) (Lead None Lbs.) (Zinc None Lbs.)

2. What has been your average production per month since that veto has affected your price?

(Copper 1000 Lbs.) (Lead 10000 Lbs.) (Zinc 15000 Lbs.)

3. What is your estimate of your production per month for the first few months of 1948 if prices remain as they are now and no premiums are in effect?

(Copper none Lbs.) (Lead none Lbs.) (Zinc none Lbs.)

4. What is your estimate of production per month if some incentive plan such as the Russell Bill were in effect?

(Copper 3000 Lbs.) (Lead 30000 Lbs.) (Zinc 45000 Lbs.)

5. General remarks:

An addressed envelope is enclosed for your convenience, but you will have to help with the stamp.

Yours very truly,

Chas H Dunning

Chas. H. Dunning
Director

QHD:mh

Mr. Dunning - We were granted a premium of 16.65¢ per zinc last March and on the strength of this we constructed a concentrator at a cost of 10,000 which we began to operate last Oct/Nov. We are now operating at a loss.

*Thank you very much for your inquiry -
H. H. Zehner*

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Mary Jo Group

District Tombstone, Cochise, County

Former name Same

Owner Lee O. Woolery

Operator, Lessees D. L. Evans
Lee Hunt

President No corporation

Mine Supt.

Principal Metals Lead, zinc, gold, silver

Production Rate Not established

Power: Amt. & Type None

Operations: Present Idle

Date November 20, 1940

Inspected November 14, 1940

Engineer Miles M. Carpenter

Location 8 miles West from Tombstone

Address 135 Tombstone Canyon Bisbee, Ariz.
Box 1173 " "

Address Gen. Del. " "

Gen. Mgr.

Mill Supt.

Men Employed None

Mill: Type & Cap. None

MARY JO GROUP

Pb, Zn, Au, Ag

Cochise

2 - 4

T 20 S, R 21 E

Lee O. Woolery, 135 Tombstone Canyon, Bisbee

'40

Operations Planned

Develop for production.

May treat lower grade ore at a near by mill.

Number Claims, Title, etc.

12 unpatented lode claims.

Description: Topog. & Geog.

On northerly slope of a lone hill about two miles east from the San Pedro River. Principal development on claims following base of hill. Paralled claims extend to top of hill on south and into flat to the north.

Mine Workings: Amt. & Condition Principal workings are on Mary Jo and Brother George claims as follows:

Mary Jo

1 shaft 50 ft. with drifts 50 ft.

1 shaft 100 ft.

1 shaft 84 ft. with drifts 130 ft.

Brother George

1 shaft 10 ft.

1 shaft 30 ft.

1 shaft 75 ft. with drift

1 shaft 85 ft. with drift

(over)

Geology & Mineralization Country rock is medium light, fine grained porphyry leaning toward acid in composition. A fine grained dioritic dike outcrops on the footwall side of the ore zone, but a few feet removed. The ore occurs in more or less parallel veins, the whole resembling a shear zone. There has been a heavy development of sulphides and subsequent breaking down with formation of sulphuric acid solutions. Galena, sphalerite and pyrite are found in nodules, bunches and lenses.

Ore: Positive & Probable, Ore Dumps, Tailings The tonnage of positive ore is small but is reported in the face of the west drift of Mary Jo, No. 3 shaft, also in the bottom of Brother George shaft about 160 ft. distance so sinking the latter to the drift level, and connecting the two shafts would open some ore.

Mine, Mill Equipment & Flow Sheet None

Road Conditions, Route Less than one mile off the graded county road, Tombstone to Charleston
No heavy grade.

Water Supply Water for camp purposes developed on property at ranch well.

Brief History Has been known for many years but has never been extensively developed

Special Problems, Reports Filed Report of Lee O. Woolery attached

Remarks The lessees of this property are experienced in leasing any small scale mine development and appear to have a clear conception of the problem at hand. They will need additional capital to carry through any considerable development, but are in position to mine ore that is in sight.

If property for sale: Price, terms and address to negotiate. The property is open for sale of for backing of an operation. For details communicate with either of the lessees whose addresses follow:

D. L. Evans
Lee Hunt

Box 1173
Gen. Del.

Bisbee, Arizona
" "

Signed

Miles M. Carpenter, E. M.

Use additional sheets if necessary. Separate sheets on each problem.

MARY JO GROUP
OF
UNPATENTED MINING CLAIMS IN THE
TOMBSTONE MINING DISTRICT,
IN
COCHISE COUNTY, STATE OF ARIZONA

=====

The MARY JO group of mining claims, consist of twelve upatented claims. Said group of claims contains approximately 220 acres, two or three of said claims not containing full twenty acres.

These claims were located in 1928, and are on unsurveyed public domain. They are about eight miles south-westerly from Tombstone and about two miles north-easterly from Charleston.

The main line of the El Paso & Southwestern, or Southern Pacific, railroad runs through Charleston, and a spur runs from Fairbank to Tombstone.

The claims lie only about half a mile from the County highway running from Tombstone to Charleston, thence to Ft. Huachuca.

The claims lie on the northerly slope of a lone mountain, part of the claims running to the top of the mountain and others out into the flat.

Most of the work done on the property, other than the location work on each claim has been done on the Mary Jo, and Brother George Claims.

What is designated as No. 1 shaft on the Mary Jo, was put down on an incline to a depth of fifty feet. From the bottom of this shaft a drift was run south-westerly a distance of about 35 feet, and another drift about 15 feet to connect with No. 2 shaft.

What is designated as No. 2 shaft on the Mary Jo, was put down on an incline to a depth of 100 feet, and the white clay-like material was encountered at a depth of about 30 feet, and continued down the full depth of the shaft.

Shaft No. 3 on the Mary Jo, now referred to as the main working shaft, is 84 feet deep, on a 55° incline, and dips S. 20° E. A fifty-one foot drift easterly enters ore the full distance, and the face is still in ore, and a south cross cut at the end of the drift is still in ore at eight feet. An 85 foot drift running south-westerly from the bottom of the shaft enters ore the full distance, with the face still in ore. About 12 inches of the face is massive galena and zinc blende.

As no assay map is available, a record of the assays taken from time to time in the No. 3 shaft on the Mary Jo, after sinking of the shaft was started, to the present faces is hereinafter set forth. The dates of the assays show that they were taken at intervals as the operations progressed. Neither foot or hanging wall has been exposed, which tends to indicate a good width to the ore zone.

A test run of ore from the No. 3 shaft on the Mary Jo, was made at a nearby mill by gravity concentration, the assays of which are listed. A preliminary flotation test was made, the result of which is also listed. This test was merely to determine if a separation could be made and ~~not~~ attempt was made to secure maximum results, and so no doubt excellent results could be obtained with further experimentation.

In addition to the three shafts mentioned on the Mary Jo., other shafts and tunnel work have been sunk, and open cut work and trench work performed. Shafts on the Brother George have been sunk to depths of approximately 30 feet, 75 feet, and 85 feet, with some drift work in the bottoms of such shafts, and a tunnel to a depth of about 75 feet completed.

Assays of ore encountered at a depth of about ten feet in the No. 1 shaft on the Mary Jo. ran as follows:

<u>Sample</u>	<u>Gold</u>	<u>Silver</u>	<u>Copper</u>	<u>Lead</u>
No. 1	0.38 oz.	49.2 oz.	20.7%	3.1%
No. 2	0.12	7.0	9.8	1.0

On the Brother George claim the discovery shaft was put down to a depth of ten feet. Shaft No. 2 was put down on an incline to a depth of about 75 feet, as stated above. Pockets of galena and lead-silver ore were encountered at different depths. Samples of ore taken at a depth of about 30 feet, ran:

<u>Sample</u>	<u>Gold</u>	<u>Silver</u>	<u>Lead</u>
Composite	0.69 oz.	21.3 oz.	35.1%
Brown without Galena	.67	14.3	11.32

Other work on the Brother George consists of the work indicated at the top of this page, also a ten foot shaft on the hill, at a contract of an iron vein with a quartz vein; an open cut and trench work near the west end, together with the 85 foot shaft with drift in the bottom, and what was indicated above as a 30 foot shaft has connected with it an open cut in which some turquoise and lead stringers appear. Assays on the more recent workings are not available.

Assays from No. 3 shaft and drifts on Mary Jo claim.

<u>Dated</u>	<u>oz. Au.</u>	<u>Oz. Ag.</u>	<u>% Pb.</u>	<u>% Cu.</u>	<u>% Zn.</u>
9/25/33	.01	1.6	16.0		5.9
	.01	2.6	25.2		6.8
10/2/33	.01	1.4	10.1		5.5
	.02	4.0	12.5		1.3
	.01	3.0	9.1		0.8
10/9/33	.01	1.0	8.0		30.8
	.01	1.2	13.6		34.7
10/30/33	.01	1.6	13.8		6.2
	.01	1.0	5.0		4.8
11/13/33	.02	0.6	4.5		8.0
	.01	1.2	3.8		3.0
	.01	1.2	3.6		2.8
12/6/33	.01	1.1	5.0		10.1
	.02	2.6	17.1		5.0
12/18/33	.02	2.2	8.5		5.9
	.01	1.0	3.0		4.5
	.01	1.0	2.3		4.6
12/30/33	.02	9.0	4.2		--
2/19/34	.03	1.8	15.3	1.1	12.1
	.03	1.8	2.8	0.3	10.3
3/6/34 Heads	.03	1.3	6.1		19.4
Concs.	.03	4.0	42.8		0.7
"	.03	4.6	62.4		0.6
Mids.	.02	1.8	22.3		3.1
Concs.	.03	4.8	54.4		1.0

Date		oz. Au.	Oz. Ag.	%Pb.	%Cu.	%Zn.
3/12/34	Heads	.01	0.8	5.5		3.5
	Tail	.01	0.5	2.1		2.0
	Mids	.02	1.8	12.8		5.4
	Lead Concs.	.02	4.4	63.2		0.3
	" "	.02	4.4	70.6		0.5
	" "	.03	5.0	64.8		0.5
	Zinc Products	.02	1.8	15.8		5.8
3/20/34						
	Flotation Heads	.01	0.8	5.5		3.5
	Zinc Concs.	.02	2.0	8.4		31.0
	Lead Concs.	.04	6.0	47.0	3.1	5.8
	Tails	Tr.	0.3	0.3		0.7
12/19/34						
	Face East Drift	.01	0.8	3.8	0.2	8.5
	Face West Drift	.02	3.6	6.5	3.5	13.0

The foregoing report is a copy of an undated and unsigned report furnished to Miles M. Carpenter, Field Engineer, at the Mary Jo. Mine , November 14, 1940 by Lee Hunt, who stated that the same is by Lee O. Woolery, owner, of Bisbee, Arizona.

DEPARTMENT OF MINERAL RESOURCES

News Items

Date

Mine Wooley mine

Location

Owner

Address

Operating Co.

Address

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals

Men Employed

Production Rate

Mill, Type & Capacity

Power, Amt. & Type

Signed

NAME OF MINE: WOOLERY

COUNTY: COCHISE

DISTRICT:

METALS: PB, ZN S

OPERATOR AND ADDRESS:

MINE STATUS

DATE:

DATE:

5/1/44

Homer Bates, Box 347, Tombstone

5/1/44

RFC application
Idle

DEPARTMENT OF MINERAL RESOURCES

News Items

Date Nov. 14, 1940

Mine Mary Jo Group

Location 12 clma. Public Domain

Owner Lee O. Woolery

Address Bisbee, Arizona

Operating Co. D. L. Evans-Lee Hunt

Address Box 1773 Gen. Del.

Bisbee

Pres. No corp

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals Zinc-Lead (Gold-Silver)

Men Employed None

Production Rate

Mill, Type & Capacity None

Power, Amt. & Type None

Signed M. M. C.

(Over)

DEPARTMENT OF MINERAL RESOURCES

News Items

Date

Mine

Location

Owner

Address

Operating Co.

Address

Pres.

Genl. Mgr.

Mine Supt.

Mill Supt.

Principal Metals

Men Employed

Production Rate

Mill, Type & Capacity

Power, Amt. & Type

Signed

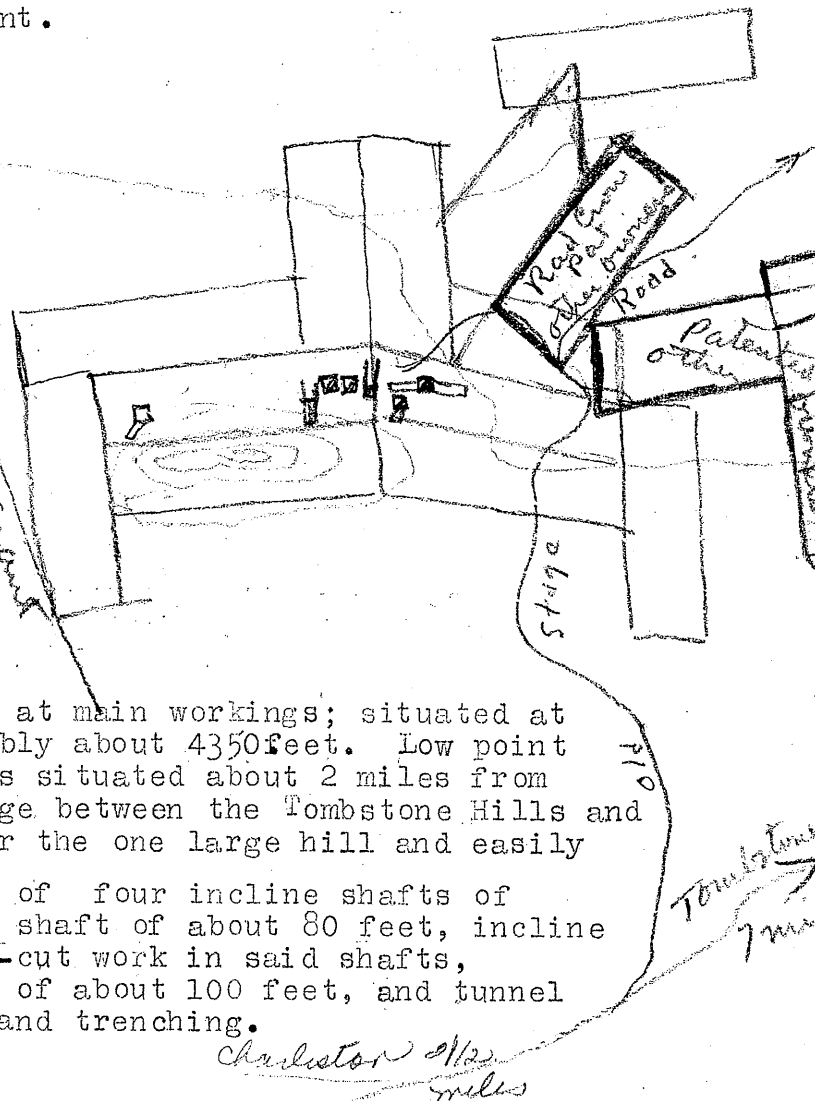
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40

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date May 11, 1940

1. Mine Mary Jo Mine
3. Mining District & County Cochise County,
Tombstone Mining District,
4. Former name --
5. Owner Mr. & Mrs. Lee O. Woolery, and
Mr. Geo. A. Woolery
7. Operator --
9. President, Owing Co. owned by individuals.
10. Gen. Mgr. --
11. Mine Supt. --
12. Mill Supt. --
13. Men Employed none, at present.
18. Operations: Present not operating at present.
19. Operations: Planned
20. Number Claims, Title, etc. 12 unpatented
on unsurveyed public domain,
title originated prior to
Taylor Grazing Act.
21. Description: Topography & Geography
elevation approximately 4000 feet. at main workings; situated at
base of hill top of which is probably about 4350 feet. Low point
probably 3900.00 feet; Property is situated about 2 miles from
the San Pedro River, on the drainage between the Tombstone Hills and
said River, rather level except for the one large hill and easily
accessible.
22. Mine Workings: Amt. & Condition Work consists of four incline shafts of
50, 85, 80, 100 feet, one vertical shaft of about 80 feet, incline
of about 30 feet, drift and cross-cut work in said shafts,
totaling about 200 feet, Open cuts of about 100 feet, and tunnel
about 80 feet; also numerous pits and trenching.
2. Location about 2 miles northeast of
Charleston, about 7 miles southwest
of Tombstone; 1/2 mile north of
Tombstone-Charleston highway
6. Address (Owner) P.O. Box 218, Bisbee, Ariz.
res. G.A.W. 408 Oak Ave.
office. 135 Tombstone Canyon.
8. Address (Operator)
- 9A. President, Operating Co. --
14. Principal Minerals galena-sphalerite
alumina, copper, silver, gold.
15. Production Rate not on production
basis yet.
16. Mill: Type & Cap. none
17. Power: Amt. & Type --



23. **Geology & Mineralization** Mineralization appears in a claylike gangue, which appears to be a metamorphic porphyry, caused by a grinding along a tremendous fault, and appears to consist principally of the sulphides, galena- sphalerite, pyrite, etc.

24. **Ore: Positive & Probable, Ore Dumps, Tailings** Although a large amount of work has been performed upon the mineralized zone, the full extent thereof has not been determined, and further prospecting would probably be necessary to arrive at an estimate of the tonnage present and probable.

24A. **Dimensions and Value of Ore body** The mineralization appears over a very large area. Vein appears to run northeasterly and southwesterly. Shafts placed near the opposite ends of two claims lying endwise to each other have disclosed the same mineralization, and shafts placed about 75 feet crosswise of the vein show same ore, and full width of deposit has not yet been fully determined. It is a tremendous body.

25. **Mine, Mill Equipment & Flow-Sheet**
none available.

26. **Road Conditions, Route** Graded County road from Tombstone to Charleston. $\frac{1}{4}$ - $\frac{1}{2}$ mile of road north from Tombstone-Charleston road passable to modern cars. No extremely sharp grades or turns. Leave Tombstone-Charleston road about 7 miles out of Tombstone, $\frac{1}{2}$ mile before arriving at the "Gallagher Mill". Property lies at base of hill near "Howell Springs" (large cottonwood trees & spring)

27. **Water Supply**

Drinking water obtained from spring on premises.
No water developed for milling, but could probably be developed by drilling of well or wells.

28. **Brief History**

Located in 1928 by the present owners, who have kept the assessment work up, and at times have given prospecting leases to various local prospectors.

Due to lack of funds, the property has never been developed to the production stage.

29. **Special Problems, Reports Filed**

Superintendent of the Shattuck-Denn Mining Company has made rather extensive examination of the premises and states the ore body is of such tremendous size he believes it will be necessary to place large mill and differential flotation upon same to properly handle it. Further stated it would probably require

30. **Remarks** between \$100,000.00 & \$150,000.00 to place the property in production.

31. Owners are willing at present to sell the property outright for \$10,000.00 cash; or give a lease and option on same for \$25,000.00 10% down, balance in three equal yearly installments, royalties of 20% to apply on purchase price.

31. **If property for sale: Price, terms and address to negotiate.**

Parties interested can get in touch with the owners, at their place of business (Pioneer Abstract Corporation, 135 Tombstone Canyon Bisbee, week-days from 9-12 & 1-5, other times, Geo. A. Woolery, at his residence 408 Oak Avenue; Lee O. Woolery and wife, on their ranch on U.S. 80 5 miles west of Bisbee.

32. **Signature**.....

33. **Use additional sheets if necessary.**

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Date Oct 21, 1949

1. Mine: Charleston Lead Mine
2. Location: Sec. 25-36 Twp. 20 S Range. 21 E Nearest Town. Tombstone
Distance 6 miles Direction Southwest Road Condition good - gravel
3. Mining District & County: Tombstone Mining Dist - Cochise County
4. Former Name of Mine: Woolery - Mary Jo Group
5. Owner: Charleston Lead Mine Co - a partnership
Address: Box 347 Tombstone Arizona
6. Operator: Owners - C.L.M. Co. Chas H Suiter Mgr
Address: Box 347 - Tombstone Arizona
7. Principal Minerals: Copper, Lead, Zinc, Gold & Silver
8. Number of Claims: Twelve (12) Lode yes Placer no
Patented no Unpatented yes
9. Type of Surrounding Terrain: Hilly and rolling

10. Geology & Mineralization:

Valuable occur in sericite

11. Dimension & Value of Ore Body:

12. Ore "Blocked Out" or "In Sight":.....

Ore Probable:.....

13. Mine Workings—Amount and Condition:.....

No.	Feet	Condition
Shafts.....		
Raises.....		
Tunnels.....		
Crosscuts.....		
Stopes.....		

14. Water Supply:.....

15. Brief History:.....

16. Signature: *Chas. H. Suter, Manager*

17. If Property for Sale, List Approximate Price and Terms: *\$200,000⁰⁰ - terms \$50,000, Cash - balance over 3 years - 6 months free exploration period.*

MM-90

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
OWNERS MINE REPORT

Date May 11, 1940

1. Mine Mary Jo Mine
2. Mining District & County Tombstone Mining Dist.
Cochise Co.
3. Former name
4. Location About 2 miles northeast of
Charleston, about 7 miles southwest of
Tombstone; $\frac{1}{4}$ mile north of Tombstone-
Charleston highway
5. Owner Mr. and Mrs. Lee O. Woolery, and
Mr. Geo. A. Woolery
6. Address (Owner) P.O. Box 218, Bisbee, Ariz.
res. G. A. W., 408 Oak Ave,
office, 135 Tombstone Canyon.
7. Operator
8. Address (Operator)
9. President Owned by individuals
10. Gen. Mgr.
11. Mine Supt.
12. Mill Supt.
13. Principal Metals Galena-sphalerite alumina,
Copper, Silver, Gold,
14. Men Employed None, at present
15. Production Rate Not on production basis yet.
16. Mill: Type & Cap. None
17. Power: Amt. & Type
18. Operations: Present Not operating at present.
19. Operations Planned
20. Number Claims, Title, etc. 12 unpatented on unsurveyed public domain,
title originated prior to Taylor Grazing Act.
(See map on original report)
21. Description: Topography & Geography Elevation approximately 4000 feet. at main workings;
situated at base of hill top of which is probably about
4350 feet. Low point probably 3900 feet; Property is situated about 2 miles from
the San Pedro River, on the drainage between the Tombstone Hills and said River,
rather level except for the one large hill and easily accessible.
22. Mine Workings: Amt. & Condition Work consists of four incline shafts of 50, 85, 80, 100 ft.
one vertical shaft of about 80 feet, incline of about
30 feet, drift and cross-cut work in said shafts, totaling about 200 feet, open
cuts of about 100 feet, and tunnel about 80 feet; also numerous pits and trenching.

23. Geology & Mineralization Mineralization appears in a clay gangue, which appears to be a metamorphic porphyry, caused by a grinding along a tremendous fault, and appears to consist principally of the sulphides, galena-sphalerite, pyrite, etc.

24. Ore: Positive & Probable, Ore Dumps, Tailings Although a large amount of work has been performed upon the mineralized zone, the full extent thereof has not been determined, and further prospecting would probably be necessary to arrive at an estimate of the tonnage, present and probable. The mineralization appears over a very large area, vein appears to run northeasterly and southwesterly. Shafts placed near the opposite ends of two claims lying endwise to each other have disclosed the same mineralization, and shafts placed about 75 feet cross-wise of the vein show same ore, and full width of deposit has not yet been fully determined. It is a tremendous body.

25. Mine, Mill Equipment & Flow Sheet None available.

26. Road Conditions, Route Graded county road from Tombstone to Charleston. $\frac{1}{4}$ - $\frac{1}{2}$ mile of road north from Tombstone-Charleston road passable to modern cars. No extremely sharp grades or turns. Leave Tombstone-Charleston road about 7 miles out of Tombstone, $\frac{1}{2}$ mile before arriving at the "Gallagher Mill". Property lies at base of hill near "Howell Springs" (large cottonwood trees and spring)

27. Water Supply Drinking water obtained from spring on premises. No water developed for milling, but could probably be developed by drilling of well or wells.

28. Brief History Located in 1928 by the present owners, who have kept the assessment work up, and at times have given prospecting leases to various local prospectors. Due to lack of funds, the property has never been developed to the production stage.

29. Special Problems, Reports Filed Superintendent of the Shattuck-Denn Mining Company has made rather extensive examination of the premises and states the ore body is of such tremendous size he believes it will be necessary to place large mill and differential flotation upon same to properly handle it. Further stated it would probably require between \$100,000.00 and \$150,000.00 to place the property in production.

30. Remarks

31. Owners are willing at present to sell the property outright for \$10,000.00 cash; or give a lease and option on same for \$25,000.00, 10% down, balance in three equal yearly installments, royalties of 20% to apply on purchase price.

31. If property for sale: Price, terms and address to negotiate. Parties interested can get in touch with the owners at their place of business (Pioneer Abstract Corporation) 135 Tombstone Canyon, Bisbee, week-days from 9-12 and 1-5, other times, Geo. A. Woolery, at his residence 408 Oak Avenue, Lee O. Woolery and wife, on their ranch on U.S. 80, 5 miles west of Bisbee.

32. Signed.....Geo. A. Woolery.....

33. Use additional sheets if necessary.

Shattuck Denn Mining Corporation

DENN MILL—BISBEE, ARIZONA

ORE SETTLEMENT

SHIPPER Charleston Lead Mines

SETTLEMENT DATE 10-11-49

ADDRESS

MILL LOT. NO. 239

Car Number	Date Received	Shippers Lot Number	Pounds of Ore			Net Dry Tons
			Wet	% Moist	Dry	
S.P. 11167	9-30-49	18	85200	5.8	80258	40.129
TOTALS						

Gross Assay			Gross Metal Content		Metals Paid For		Payment Rate	Amounts	
Gold	.005	Ozs.	.201	Ozs.	44.92	Ozs.	\$	\$	
Silver	1.70	Ozs.	68.22	Ozs.	44.92	Ozs.	.885	39.75	
Copper	1.05	%	843	Lbs.	52 1/2 %	438	Lbs.	.1074	47.04
Lead	10.40	%	8347	Lbs.	70 1/2 %	5845	Lbs.	.13165	769.42
Zinc	15.20	%	12199	Lbs.	73 1/2 %	8920	Lbs.	.095632	853.04

GROSS PAYMENT VALUES

Less: Concentrates Freight \$ 117.43 Tax \$ 3.53

Concentrates Treatment

Bullion Freight Tax

Milling

NET MILL VALUE

Ore Freight 42.600 Wet Tons @ \$.86 \$ 36.64 Tax \$ 1.10

Royalties

Duties

Umpire Charges

BALANCE DUE SHIPPER

Less hauling 42.6 tons @ 1.50

*from raise and
wings and drift
75 level No 5 Bro Geo*

120.96

431.51
3.18

1709.32

555.65

200.65

953.02

37.74

915.28

6380

Made by

Approved by

C O P Y

SMITH - EMERY COMPANY

Chemical Engineers and Chemists
920 Santee Street
Los Angeles, California

Laboratory

No. 310244

Date June 16 1949

Submitted by Chas. H. Suiter
Charleston Lead Mines Company
P.O.Box 347
Tombstone, Arizona

REPORT OF QUALITATIVE SPECTROGRAPHIC EXAMINATION

<u>ELEMENT</u>	<u>APPROXIMATE QUANTITY</u>
Silicon, Aluminum -----	Main Constituents
Potassium -----	Intermediate Constituent
	<u>Minor Constituents</u>
Magnesium -----	1%
Iron -----	1%
Titanium -----	0.5%
Calcium -----	0.5%
Manganese -----	0.1%
Lead -----	0.1%
Sodium -----	0.05%
Copper -----	0.05%
Chromium -----	0.05%
Barium -----	0.05%
Zirconium -----	0.01%
Vanadium -----	0.01%
Strontium -----	0.01%
Molybdenum -----	0.005%
Gallium -----	0.001%

Respectfully submitted,

*Sample:-
Tailings from
washing plant.*

SMITH-EMERY COMPANY
Chemists and Engineers
* G.L.C

C O P Y

Potassium Aluminum Silicate - Mica (Muscovite)

Shattuck Denn Mining Corporation

DENN BRANCH—BISBEE, ARIZONA

ORE SETTLEMENT

SHIPPER Charleston Lead Mines

SETTLEMENT DATE 2-11-49

NAME OF MINE: Charleston

MILL LOT NO. 18

Car Number	Date Received	Shippers Lot Number	Pounds of Ore			Net Dry Tons
			Wet	% Moist	Dry	
S.P. 11365	1-30-49	12	73960	10.6	66120	33.060
TOTALS						

PAYMENTS:

Gross Assay	Gross Units of Metals	Per Cent Paid For	Units of Metal Paid For	Metal Prices	Amounts
Gold .005 Ozs.	.165 Ozs.	36.97	.061 Ozs.	\$ 34.9125	\$ 2.13
Silver 1.20 Ozs.	39.67 Ozs.	69.78	27.68 Ozs.	.886	24.55
Copper 0.61 %	403 Lbs.	71.22	.287 Lbs.	.1677	48.14
Lead 7.15 %	4728 Lbs.	66.60	3149 Lbs.	.1958	616.57
Zinc 10.00 %	6612 Lbs.	71.37	4719 Lbs.	.170632	805.21

TOTAL PAYMENTS

DEDUCTIONS: Concentrates Freight

Transportation Tax

Concentrates Treatment

Milling

NET MILL VALUE

Processing Fee (% of Net Mill Value

NET SETTLEMENT VALUE

Ore Freight 36.980 Wet Tons @ \$.86

Ore Transportation Tax

Umpire Penalty

BALANCE DUE SHIPPER

*Mary Jo #3, 50' East Duff
plus some washed reject.*

78.68

3.99

288.53

165.30

31.96

.96

1496.60

536.50

960.10

32.92

927.18

Made By.....

Approved By

Shattuck Denn Mining Corporation

DENN BRANCH—BISBEE, ARIZONA

ORE SETTLEMENT

SHIPPER **Charleston Lead Mines Company**

SETTLEMENT DATE **9-13-48**

NAME OF MINE:

MILL LOT NO. **82**

Car Number	Date Received	Shippers Lot Number	Pounds of Ore			Net Dry Tons
			Wet	% Moist	Dry	
S.P. 11193	9-3	6	81180	4.0	77932	38.996
TOTALS						

PAYMENTS:

Gross Assay	Gross Units of Metals	Per Cent Paid For	Units of Metal Paid For	Metal Prices	Amounts
Gold .003 Ozs.	.117 Ozs.	--	Ozs.	\$ --	\$ ---
Silver 1.05 Ozs.	40.91 Ozs.	67.16	27.476 Ozs.	.7290	20.03
Copper 0.60 %	468 Lbs.	65.38	306 Lbs.	.16546	50.63
Lead 8.90 %	6936 Lbs.	62.95	4366 Lbs.	.1763	769.73
Zinc 11.20 %	8728 Lbs.	62.90	5490 Lbs.	.1458	800.44

TOTAL PAYMENTS

DEDUCTIONS: Concentrates Freight

Transportation Tax

Concentrates Treatment

Milling

NET MILL VALUE

Processing Fee (% of Net Mill Value)

NET SETTLEMENT VALUE

Ore Freight 38.966 Wet Tons @ \$.90

Ore Transportation Tax

Umpire Penalty

BALANCE DUE SHIPPER

1640.83

92.50

4.72

253.34

194.83

545.39

1095.44

35.06

1095.44

.05

36.11

1059.33

Made By _____

Approved By _____

Shattuck Denn Mining Corporation

DENN BRANCH—BISBEE, ARIZONA

ORE SETTLEMENT

SHIPPER Charleston Lead Mines

SETTLEMENT DATE 6-1-48

NAME OF MINE:

MILL LOT NO. 34

Car Number	Date Received	Shippers Lot Number	Pounds of Ore			Net Dry Tons
			Wet	% Moist	Dry	
S. P. 11418	5-13-48	1	92820	4.5	88644	
TOTALS						44.322

PAYMENTS:

Gross Assay	Gross Units of Metals	Per Cent Paid For	Units of Metal Paid For	Metal Prices	Amounts
Gold .003 Ozs.	.133 Ozs.		Ozs.	\$	\$
Silver 1.32 Ozs.	58.51 Ozs.	72.11	42.19 Ozs.	.887	37.43
Copper .80 %	709 Lbs. ✓	72.07	511 Lbs.	.1511	77.23
Lead 10.60 %	9396 Lbs. ✓	66.33	6232 Lbs.	.1565	975.31
Zinc 14.40 %	12765 Lbs. ✓	76.52	9768 Lbs.	.1158	1131.13

TOTAL PAYMENTS

DEDUCTIONS: Concentrates Freight

Transportation Tax

Concentrates Treatment

Milling

NET MILL VALUE

Processing Fee (% of Net Mill Value)

NET SETTLEMENT VALUE

Ore Freight 46.410 Wet Tons @ \$.22

Ore Transportation Tax

Umpire Penalty

BALANCE DUE SHIPPER

from east drift on 75 ft level No 3 shaft Mary Jo.

*shipper advanced freight \$31.15
" paid trucker 69.00
100.15*

2221.10
127.06
6.76
406.54
221.61
761.97
1459.13
10.16
1448.97

Made By _____

Approved By _____

31.15

10.16

41.31 per

100.15

1348.82

WINDLE SHEET

Shattuck Denn Mining Corporation

DENN BRANCH—BISBEE, ARIZONA

ORE SETTLEMENT

SHIPPER **Charleston Lead Mines Co.**

SETTLEMENT DATE **6-9-49**

NAME OF MINE: **Mary Jo Group**

MILL LOT NO. **168**

Car Number	Date Received	Shippers Lot Number	Pounds of Ore			Net Dry Tons
			Wet	% Moist	Dry	
S. P. 11371	5-21	16	114360	3.8	110014	58.007
TOTALS						

PAYMENTS:

Gross Assay	Gross Units of Metals	Per Cent Paid For	Units of Metal Paid For	Metal Prices	Amounts
Gold <i>NON-SULP.</i> .005 Ozs.	.275 Ozs.	- -	- - - Ozs.	\$ - -	\$ - -
Silver 3.40 Ozs.	187.02 Ozs.	73.80	138.57 Ozs.	.88771	123.01
Copper .02 1.25 %	1375 Lbs.	58.32	802 Lbs.	.11155	89.46
Lead .35 15.50 %	17052 Lbs.	61.53	10493 Lbs.	.1208	1267.55
Zinc .10 22.30 %	24533 Lbs.	75.73	18564 Lbs.	.115632	2146.59

TOTAL PAYMENTS

DEDUCTIONS: Concentrates Freight

Transportation Tax \$7.04 and bullion tax \$5.82

Concentrates Treatment

Milling at \$5.00 per ton

NET MILL VALUE

Processing Fee (% of Net Mill Value)

NET SETTLEMENT VALUE

Ore Freight **57.18** Wet Tons @ \$.86 Tombstone to Bisbee

Ore Transportation Tax

Umpire Penalty

BALANCE DUE SHIPPER

234.64

12.86

928.05

275.04

49.40

1.48

3626.61

2176.02

2176.02

50.88

2125.14

Made By _____

Approved By _____

MARY JO GROUP
OF
UNPATENTED MINING CLAIMS
IN THE
TOMBSTONE MINING DISTRICT

PCOSHICE COUNTY

ARIZONA

The MARY JO group of mining claims, consists of twelve unpatented claims.

Said group of claims contains approximately 220 acres, two or three of said claims not containing full twenty acres.

These claims were located in 1928, and are on un-surveyed public domain. They are about eight miles south-westerly from Tombstone, and about two miles north-easterly from Charleston.

The main line of the El Paso & Southwestern, or Southern Pacific, railroad runs thru Charleston, and a spur runs from Fairbank to Tombstone.

The claims lie only about a half mile from the County highway running from Tombstone to Charleston, thence to Ft. Huachuca.

The claims lie on the Northerly slope of a lone mountain, part of the claims running to the top of the mountain and others out into the flat.

Most of the work done on the property, other than the location work on each claim, has been done on the Mary Jo claim.

What is designated as No. 1 shaft, on the Mary Jo, was put down on an incline to a depth of fifty feet. From the bottom of this shaft a drift was run south westerly a distance of about 35 feet, and another drift about 15 feet to connect with No. 2 shaft.

What is designated as No. 2 shaft on the Mary Jo was put down on an incline to a depth of 100 feet, and the white clay-like material was encountered at a depth of about 30 feet, and continued down the full depth of the shaft.

Shaft No. 3 on the Mary Jo, now referred to as the main working shaft, is 84 feet on a 55° incline, and dips S. 20°E. A fifty-one foot drift easterly enters ore the distance, and the face is still in ore, and a south cross cut at the end of the drift

is still in ore at eight feet. An 85 foot drift running south-westerly from the bottom of the shaft enters ore the full distance, with the face still in ore. About 12 inches of the face is massive galena and zinc blende.

As no assay map is available, a record of the assays taken from time to time, in the No. 3 shaft on the Mary Jo., after sinking of the shaft was started, to the present faces is hereinafter set forth. the dates of the assays show that they were taken at intervals as the operations progressed. Neither foot or hanging wall has been exposed, which tends to indicate a good width to the ore zone.

A test run of ore from the No. 3 shaft on the Mary Jo., was made at a nearby mill by gravity concentration, the assays of which are listed. A preliminary flotation test was made, the result of which is also listed. This test was merely to determine if a separation could be made and no attempt was made to secure maximum results, and so no doubt excellent results could be obtained with further experimentation.

In addition to the three shafts mentioned on the Mary Jo., another shaft has been sunk to a depth of ten feet; and an open cut run in a distance of about twenty feet.

Assays of ore encountered at a depth of about ten feet in the No. 1 shaft on the Mary Jo ran as follows:

Sample	Gold	Silver	Copper	Lead
No. 1	0.38 oz.	49.2 oz	20.7%	3.1%
No. 2	0.12	7.0	9.8	1.0

On the Brother George Claim, the discovery shaft was put down to a depth of ten feet, Shaft No. 2 was put down on an incline, to a depth of fifty feet. Pockets of galena and lead-silver ore were encountered at different depths. Samples of ore taken at a depth of about 30 feet, ran:

Sample	Gold	Silver	Lead
Composite	0.09 oz	21.3 oz	35.1%
Brown without galena	.07	14.3	11.32

An open cut was run in a distance of about 65 feet on this claim, cutting several lead-veins and some turquoise, No. 5.

Other work on the Brother George consists of a ten foot shaft No. 3, up on the hill, at a contact of an iron vein with a quartz vein and an open cut, No. 4, toward the west end.

Date	Oz. Au.	Oz. Ag.	% Pb.	% Cu.	% Zn
9/25/33	.01	1.6	16.0		5.9
	.01	2.6	25.2		6.8
10/2/33	.01	1.4	10.1		5.5
	.02	4.0	12.5		1.3
	.01	3.0	9.1		0.8
10/9/33	.01	1.0	8.0		30.8
* 10/30/33	.01 *	1.6	13.8		6.2
10/30/33	.01	1.0	5.0		4.8
11/13/33	.02	0.6	4.5		8.0
	.01	1.2	3.8		3.0
	.01	1.2	3.6		2.8
12/6/33	.01	1.1	5.0		10.1
	.02	2.6	17.1		5.0
12/18/33	.02	2.2	8.5		5.9
	.01	1.0	3.0		4.5
	.01	1.0	2.3		4.6
12/30/33	.02	9.0	4.2		
2/19/34	.03	1.8	15.3	1.1	12.1
	.03	1.8	2.8	0.3	10.3
3/6/34 Heads.	.03	1.3	6.1		19.4
Concs.	.03	4.0	42.8		0.7
"	.03	4.6	62.4		0.6
Mids.	.02	1.8	22.3		3.1
Concs.	.03	4.3	54.4		1.0
3/12/34 Heads	.01	0.8	5.5		3.5
Tails	.01	0.5	2.1		2.0
Mids.	.02	1.8	12.8		5.4
Lead Concs.	.02	4.4	63.2		0.3
" "	.02	4.4	70.6		0.5
" "	.03	5.0	64.8		0.5
Zinc "	.02	1.8	15.8		5.8
3/20/34					
Flotation Heads,	.01	0.8	5.5		3.5
Lead Concs	.04	6.0	47.0	3.1	5.8
Zinc Concs.	.02	2.0	8.4		31.0
Tails	Tr	0.3	0.3		0.7
12/19/34					
Face East Drift	.01	0.8	3.8	0.2	8.5
Face West Drift	.02	3.6	6.5	3.5	13.0
* 10/30/33	.01	1.6	13.8		6.2
	.01	1.0	5.0		4.8

LOS ANGELES TESTING LABORATORY
1500-9 South Los Angeles St.,
Los Angeles, California.

April 7, 1931

Mr. Lee O. Woolery
C/o Pioneer Abstract Co.,
Tombstone, Arizona.

Dear Mr. Woolery:

You will find inclosed our Laboratory report on the analysis of the material submitted by you for this purpose.

As you undoubtedly will note the material is not talc, which is a hydrous silicate of magnesia, but is more closely allied to the clays. It is possible that the material may have good oil clarification properties. However, as we were not instructed to determine its value for this purpose we did not conduct such tests as would be necessary to determine its value.

Our charge for the oil filtration evaluation determination is \$15.00 when tested against a petroleum product or \$15.00 when tested for use as a filtration material of vegetable products. Should you desire both these tests on your material we would be pleased to combine them at a charge of \$25.00.

Good oil filtering clays would probably have a market value of approximately \$4.00 to \$7.00 per ton f.o.b. the mine railway spur.

If we can be of any further service to you do not hesitate to call upon us.

CSH
cem

Yours very truly,
LOS ANGELES TESTING LABORATORY
By Charles S. Howe.

REPORT OF CHEMICAL ANALYSIS

Laboratory Number: 35515
Submitted on: March 27, 1931
Submitted by: Mr. Lee O. Woolery
C/o Pioneer Abstract Corp.
Tombstone, Arizona.
Identification: Your letter 3/26/31

ANALYSIS

(Material as received)

Silica, SiO ₂	39.06%
Iron Oxide, Fe ₂ O ₃	8.64%
Aluminum Oxide, Al ₂ O ₃	30.14%
Calcium Oxide, CaO	1.11%
Magnesium Oxide, MgO	2.13%
Loss on Ignition,	8.70%
Total Sulphur, calculated as Sulphur,	9.57%

(Seal)

Respectfully submitted,

LOS ANGELES TESTING LABORATORY
By Charles S. Howe.

THE MARY JO GROUP consists of twelve unpatented mining claims located in the Tombstone Mining District in Cochise County, Arizona, located six miles south-west of Tombstone and 3/4 mile north of the Tombstone-Charleston Road. The 12 claims were located and filed in 1928 and are on (then) unsurveyed public domain. Most of the work done on the property, other than location work on each claim, has been done on the Mary Jo Claim.

SHAFT NO. 1 on the Mary Jo was put down on an incline to a depth of 50 feet. Ore was encountered at a depth of ten feet in this shaft which assayed as follows:

Sample No. 1 Gold 0.38 oz.; Silver 49.2 oz.; Copper 20.7% and Lead 3.1%

Sample No. 2 Gold 0.12 oz.; Silver 7.0 oz.; Copper 9.8% and lead 1.0%

From the bottom of this No. 1 shaft a drift was run south-westerly a distance of about 35 feet, and later a 15 foot drift was run easterly 15 feet to connect with No. 2 shaft.

SHAFT NO. 2 on the Mary Jo was put down an incline to a depth of 100 feet, the white claylike material was encountered at 30 feet and continued all the way down. (There is no further assay record on these two shafts but the old dump shows plenty of evidence of considerable ore. c.h.s.)

SHAFT NO. 3 on the Mary Jo is located about sixty feet north of No. 1 and No. 2 shafts and penetrates the same clay ore body, it is 84 feet deep on a 55 degree incline. At the bottom of this shaft is a 51 foot drift to the east at the end of which is an 8 foot crosscut to the south. Both the drift and crosscut were in ore the full distance. Also there is an 85 foot drift running south-westerly in ore all the way, in the face of this drift is 12 inches of massive galena and zinc blende. Neither footwall or hanging wall was contacted which indicates a good width of the vein. No assay map was made but samples were taken and assays made from time to time from the starting of the shaft and as the two drifts were run, and are recorded by dates as the work progressed, as follows:

DATE	Oz. Gold	Oz. Silver	% Lead	% Zinc
9/25/33	.01	1.6	16.0	5.9
	.01	2.6	26.2	6.8
10/2/33	.01	1.4	10.1	5.5
	.02	4.0	12.5	1.3
	.01	3.0	9.1	0.8
10/9/33	.01	1.0	8.0	30.8
	.01	1.2	13.6	34.7
10/30/33	.01	1.6	13.8	6.2
	.01	1.0	5.0	4.8
11/13/33	.02	0.6	4.5	8.0
	.01	1.2	3.8	3.0
	.01	1.2	3.6	2.8
12/6/33	.01	1.1	5.0	10.1
	.02	2.6	17.1	5.0
12/18/33	.02	2.2	8.5	5.9
	.01	1.0	3.0	4.5
	.01	1.0	2.3	4.6
12/30/33	.02	9.0	4.2	---
2/19/34	.03	1.8	15.3	12.1
	.03	1.8	2.8	10.3
Face, east drift	.01	0.8	3.8	8.5
Face, west drift	.02	3.6	6.5	13.0 Cu 3.5%

On BROTHER GEORGE claim, in addition to discovery shaft No.1. Shaft No. 2 was put down to a depth of 50 feet. Pockets of galena and lead-silver ore were encountered at different depths. Samples of ore taken at a depth of about 30 feet in the Bro. Geo. No. 2 shaft assayed as follows:

Composite sample, Gold 0.09 oz.; Silver 21.3 oz.; Lead 35.1%

Brown without galena, .07 oz.; 14.3 oz.; 11.32%

Other work on the Brother George consists of a ten foot shaft No. 3 up on the hill at a contact of an iron vein with a quartz vein; an open cut No. 4, toward the west end and some trench work, also No. 5 shaft cutting some turquoise and lead stringers.