



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the Kelsey Boltz Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.



OFFICE
851 BURLWAY RD., SUITE 612
BURLINGAME, CALIFORNIA 94010
TEL. (415) 342-7261

SPECIFICATION GRADE MICA
FOR INDUSTRIAL USE

PLANT
228 ARIZONA EASTERN AVENUE
P.O. BOX 416
BUCKEYE, ARIZONA 85326
TEL. (602) 386-4321

April 29, 1970

*project
green*

Mr. Kelsey Boltz
2871 Skyharbor Blvd.
Phoenix, Arizona 85034

Dear Mr. Boltz:

Mr. Guy M. Standifer stopped in my office today and left a sample of G.A.F's #60 roofing mica which they ship to the Herbert Malarkey Roofing Company in Portland, Oregon. He also left a copy of a price list from Harrisons & Crosfield (Pacific) who are mica distributors with offices in the Bay Area, Seattle and Los Angeles. These are enclosed with B/L.

Mr. Standifer advised me that this small roofing company uses about 6 - 50 ton carloads of roofing mica per year.

Under separate cover I am sending you a sample of #60 roofing mica which Mr. Standifer left with me; also a sample of our water ground sericite used for joint cement, which we have just started to produce. The fineness of this product is 5% on a 325 mesh screen and 95% thru a 325 mesh.

We can produce in our dry grind plant the roofing mica per sample.

Our mica distributor in Los Angeles (covers most of the west coast) is John K. Bice Co., Inc., 1319 Boyd St., Los Angeles, California 90033 - 'phone (213) 264-5950. He advised that U. S. Gypsum could use 350 to 400 tons per month of our wet ground sericite mica. He also sells our dry ground mica to the oil well mud drilling companies and also the roofing companies in Los Angeles and the Bay Area.

Mr. Standifer felt this mica marketing information might be helpful to you in considering some kind of joint venture, or

Mr. Kelsey Boltz

April 29, 1970

whatever develops, with my company.

Sincerely yours,

BUCKEYE MICA CO.

Bob Avery

Robert N. Avery
President

RNA:fl

P.S. Also enclosing a letter from Harrisons & Crosfield quoting roofing mica from a small mica producer in Santa Fe, New Mexico.

The price, delivered, is considerably cheaper but their product was not acceptable to Herbert Malarkey Roofing Co.

RNA

HARRISONS & CROSFIELD (PACIFIC) INC.

475 HUNTINGTON DRIVE

SAN MARINO, CALIFORNIA 91108

AREA CODE 213

682-1311 OR 682-3443

ASSOCIATED COMPANIES
NEW YORK, CHICAGO, CANADA, UNITED KINGDOM,
INDIA, CEYLON, SINGAPORE, STATES OF MALAYA,
SARAWAK, BRUNEI, SABAH, HONG KONG, TAIWAN,
JAPAN, AUSTRALIA, NEW ZEALAND, SOUTH AFRICA,
SOUTHERN RHODESIA, EAST AFRICA, BARBADOS

Wharton Jackson
VICE PRESIDENT

January 23, 1968

Herbert Malarkey Roofing Company
3131 North Columbia Blvd.
Portland, Oregon

RECEIVED
JAN 25 1968

Attention: Mr. R. D. Calhoun
Purchasing Agent

MALARKEY PAPER CO

Dear Mr. Calhoun:

Confirming our conversation of January 23, we have mailed you a one gallon sample of SERICITE ROOFING MICA. This is a new roofing mica being produced at Santa Fe, New Mexico. It is being used successfully by several asphalt roofing manufacturers in both the Dallas and Los Angeles areas.

Current Price

SERICITE ROOFING MICA

\$25.50 per ton

f.o.b. cars, Santa Fe, New Mexico
packaging: 50 pound paper bags

CARLOAD FREIGHT RATE

\$23.80 per ton

60 ton minimum cars
Santa Fe to Portland.

Tariff authority: TCFB 1-P
item 5930

Our regular terms of payment are 30 days net from date of shipment.

We are eager to be of service and await with interest your instructions.

Very truly yours,

HARRISONS & CROSFIELD (PACIFIC) INC.

Wharton Jackson
Wharton Jackson

WJ/mb
cc: Seattle

Rem Price
H.C.H.2

Consider buying
check on new roof analysis
1/25/68

HARRISONS & CROSFIELD (PACIFIC) INC.

HEAD OFFICE

618 SECOND AVENUE

SEATTLE, WASHINGTON 98104

AREA CODE 206 · MAIN 2-4552

CABLE ADDRESS "STONECROP SEATTLE"
TELEX 032439
LOS ANGELES (SAN MARINO) CALIFORNIA
SAN FRANCISCO, CALIFORNIA

ASSOCIATED COMPANIES
NEW YORK, CHICAGO, CANADA, UNITED KINGDOM,
INDIA, CEYLON, SINGAPORE, STATES OF MALAYA,
SARAWAK, BRUNEI, SABAH, HONG KONG, TAIWAN,
JAPAN, AUSTRALIA, NEW ZEALAND, SOUTH AFRICA,
SOUTHERN RHODESIA, EAST AFRICA, BARBADOS

December 12, 1969

Herbert Malarkey Roofing Co.
3131 No. Columbia Blvd.
Portland, Oregon 97217

Attn: Mr. H.K. Mundy
Production Mgr.

Dear Mr. Mundy:

ROOFING GRADE MICA

Pursuant to our recent conversation, we quote prices f.o.b. Spruce Pine, N.C. packaged in 50# multiwall paper bags as follows:

#60 Roofing grade Mica \$37.00 per ton

#80 Roofing grade Mica \$40.00 per ton

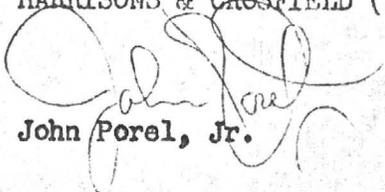
100,000# rail freight rate to Portland \$38.54 per net ton

It is hoped we can be of assistance in the supply of either of the grades until the west coast mica, of which you have a sample, is available on a reliable lead time basis.

Best wishes for the holidays.

Yours very truly,

HARRISONS & CROSFIELD (PACIFIC) INC.


John Porel, Jr.

JP:j
cc-Mr. Wayne Keski,
Technical Director

INVOICE COPY

04192

G A F Corporation Bound Brook New Jersey 08805



No. **BB 52914**

PLEASE REMIT TO
Box 636, Wall Street Station
New York, N. Y. 10005

SOLD TO **HERBERT MALARKEY ROOFING CO.**
P. O. BOX 5685
PORTLAND OREGON 97200

SHIP TO **SAME**
PORTLAND OREGON

NO DISCOUNT ALLOWED ON BAGS OR FREIGHT
TERMS: 1% FOR PAYMENT BY

ROUTING-DEL CARRIER
RR SCL SLSF UP

FOB
SPRUCE PINE

DATE OF ORDER	CUSTOMER ORDER NO.	TO BE SHIPPED	CAR NO.	NET 30 DAYS	INVOICE NO.	
	M-7447		PC 261682	03/27/70	52914	
QUANTITY ORDERED	QUANTITY SHIPPED	UNIT	UNIT PRICE	DESCRIPTION	WEIGHT	AMOUNT

50.	TN	37.00	1450006000	60 MICA	100000	1850.00
					100000T	1850.00T

2000 PAPER BAGS
SHIPMENT MADE 03/17/70

1.%

CASH DISCOUNT OF 16.75
IS ALLOWED IF PAID BY 04/10/70
NET 30TH PROX

B/L ATTACHED

"We certify that these goods were produced in compliance with all applicable requirements of Sections 6, 7 and 12 of the Fair Labor Standards Act as amended and of regulations and orders of the United States Department of Labor issued thereunder."

Union Pacific Railroad Company

FREIGHT BILL



MAKE CHECKS PAYABLE AND REMIT TO
Union Pacific Railroad Company
 P. O. Box 3331
 Portland; Oregon 97208

FOR CHARGES ON ARTICLES TRANSPORTED:
SUBJECT TO DEMURRAGE OR STORAGE CHARGES, OR BOTH, AS PROVIDED IN TARIFFS

TRANSFER TO CAR	KIND	WEIGHT IN TONS			LENGTH OF CAR		MARKED CAPACITY OF CAR	
		GROSS	TARE	NET	Ordered	Furnished	Ordered	Furnished
CAR INITIALS AND NUMBER P.C. 261632	KIND B				DATE OF SHIPMENT 3/17/70		WAYBILL NUMBER 7617	
T. TRAILER INITIAL AND NUMBER		LENGTH	PLAN NUMBER		CONSIGNEE AND ADDRESS AT STOP			
F. TRAILER INITIAL AND NUMBER		LENGTH	PLAN NUMBER					
C.								

STOP AT _____
 THIS CAR AT _____

TO NO.	STATION	STATE OR PROV.	FROM NO.	STATION	STATE OR PROV.
	PORTLAND	OREGON		175 BOONFORD NC	
				B/A 183 SPRUCE PINE N.CAR.	

Route (Show each Junction and Carrier in Route order to destination of waybill.)	Route Code No.	FULL NAME OF SHIPPER, AND, FOR C.O.D. SHIPMENTS, STREET, POST OFFICE ADDRESS, AND INVOICE NUMBER	Code No.
CRR SPARTANBURG SCL SLSF U.P.	S.	GENERAL ANILINE & FILM CORPORATION	

RECONSIGNEED TO	STATION	STATE OR PROV.	ORIGIN AND DATE, ORIGINAL CAR, TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE AND ROUTING WHEN REBILLED.

CONSIGNEE AND ADDRESS	Code No.	AMOUNT	WEIGHED
HERBERT MALARKEY ROOFING COMPANY		C. \$	AT
3131 N. COLUMBIA BLVD.		O. \$	GROSS
FINAL DESTINATION AND ADDITIONAL ROUTING		D. \$	TARE
			ALLOWANCE

INSTRUCTIONS—Protective Service, Milling, Weighing, etc.

Pickup Service YES NO

Delivery Service Requested YES NO

By **REVISED**

WHEN SHIPPER IN THE UNITED STATES EXECUTES THE NO-RECOURSE CLAUSE OF SECTION 7 OF THE BILL OF LADING, INSERT "YES"

Indicate by symbol provided * how weights were obtained for L. C. L. Shipments only.
 R—Railroad Scale, S—Shipper's Tested Weights, E—Estimated—Weight and Correct, T—Tariff Classification or Minimum.

No. Pkgs.	Description of Articles, Special Marks and Exceptions	Commodity Code No.	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
2000	BAGS DRY GROUND MICA SHIPPER'S LOAD AND COUNT YOUR ORDER 7805 WIRE CONSIGNEE FOR CONSENT BEFORE TRANSFERRING CONTENTS.	32 957 10	101 000	37.87	NET TON 1912.44		

DESTINATION AGENT'S FREIGHT BILL NO. 15026 MAR 30 1970

UNION PACIFIC RAILROAD

OUTBOUND JUNCTION AGENT WILL SHOW JUNCTION STAMPS IN SPACE AND ORDER PROVIDED. ADDITIONAL JUNCTION STAMPS AND ALL YARD STAMPS TO BE PLACED ON BACK HEREOF.

Destination Agent Will Stamp Herein. Details—Amount and Date Required.

SECOND JUNCTION THIRD JUNCTION FOURTH JUNCTION

TOTAL CHARGES DUE

EXPLORATION DRILLING
for
BUCKEYE MICA COMPANY

by

Harvey W. Smith, E.M.
Registered Mining Engineer
U. S. Mineral Surveyor



Mining
Consultant

U. S. Mineral
Surveyor

Topographic
Maps

HARVEY W. SMITH, E. M.

REGISTERED MINING ENGINEER

6432 EAST REDWING ROAD 946-0989
SCOTTSDALE, ARIZONA 85251

6016 North Kachina Lane
Scottsdale, Arizona 85253
March 12, 1970



Reproduction of the Original
Revised - 3/12/70

Harvey W. Smith, E.M.

Mr. R. N. Avery
Buckeye Mica Company
851 Burlway Road, Suite 612
Burlingame, California 94010

Dear Mr. Avery:

Enclosed is my report of Exploration Drilling for Buckeye
Mica Company.

If you have any questions, please feel free to contact me
at any time.

Respectfully submitted,

Harvey W. Smith, E.M.

HWS:ebj



EXPLORATION DRILLING REPORT

INDEX

	<u>Page</u>
<u>DRILLING REPORT</u>	
Geology	1
Drilling	2
Samples	5
Extension of Drilled Ore Bodies	5
Tonnage Estimates	
Ore Zone "A"	6
Ore Zone "B"	9
Ore Zone "C"	11
Potential Ore Zones	
North End of the Saint Nick No. 1 Lode	14
North End of the Hillside No. 1 Lode	14
South End of the Enterprize Lode	15
South End of Comet No. 1 Lode Adjacent to Ore Zone "C"	16
Conclusions	16

PHOTOGRAPHS

No. 1: Airrac wagon drill (rear view). Sample collector on right.	3
No. 2: Sample collector with drill in background.	3
No. 3: Holes #1 & 2. Shows opening to old underground workings and cuttings from drill holes in Ore Zone "A."	7
No. 4: Ore Zone "A" area.	7
No. 5: Drill cutting samples from Hole #31.	13
No. 6: Geological contact between pegmatite and biotite- quartz gneiss.	13



APPENDIX A

Sample Analysis Reports
ARC Laboratory

APPENDIX B

Reconnaissance letter report by E. N. Pennobaker.
Interim letter report by Harvey W. Smith.
Letter report on claim patenting program by Harvey W. Smith.

APPENDIX C (separate envelope)

Drill hole logs.

Maps:

No. 1: Claim Map - 1963

No. 2: Drill Hole Map

No. 3: Ore Zone "A"

No. 4: Ore Zone "B"

No. 5: Ore Zone "C"

Cross Sections



EXPLORATION DRILLING
FOR SERICITE MICA

BUCKEYE MICA COMPANY



About November 15, 1969, I was contacted by Mr. Dan McLeod, of Buckeye Mica Company, concerning an exploration program for sericite mica on the company claims south of Buckeye, Arizona. I met with Mr. McLeod and talked with Mr. Robert Avery, of Burlingame, California, about an exploration program. The objective, as outlined by Mr. McLeod and Mr. Avery, was to find as much sericite mica in two months of drilling as possible for the new mill under construction at Buckeye. Consequently, after preliminary examination of the area, I recommended a wagon drilling program which would concentrate on drilling out ore bodies rather than prospecting for new horizons. By concentrating on areas of known mineralization, I felt this could be accomplished.

As a result of this program, I have delineated approximately 24,000 tons of sericite mica of approximately 68% grade, plus a potential of several thousand more tons. The latter is in ore lenses which require additional drilling.

Over 10,000 feet of hole were drilled in 131 holes, 58% of which were in ore, at a cost to Buckeye Mica Company of \$1.87/ft. Raw ore was developed at a cost of \$0.84/ton, which represents \$1.23/ton of 100% sericite or finished product. This represents all costs -- drilling, supervision, engineering and sampling.

The mining claims of Buckeye Mica Company, numbering between 50 and 60, are located about two miles south of Buckeye, Arizona, immediately south of the Salt River in Sections 20, 21, 28, 29, 30, 31 and 32, T. 1 S., R. 3 W., G&SRM, Maricopa County, Arizona. Access to the property is by paved road to the river, then improved dirt road to south of the river. The roads on the claims are unimproved.

The terrain is gently rolling, typical of the low foothills of much of the basin and range province of southwestern Arizona. The vegetation is the usual Arizona growth - cacti, greasewood, palo verde, etc. The climate is hot and dry in the summer, with sporadic thundershowers. Winter temperatures seldom get below freezing. Operations can be conducted year around, though daytime summer temperatures are often around 110° to 112° F.

GEOLOGY:

Geologically, the area is classified on the state geologic map as being an older Proterozoic granite gneiss. However, to me, it lacks the true flow structure of the classic gneiss even though there is much biotite and other forms of mica. The basic

country rock appears to me to be more of a quartzite with some feldspar, magnetite, garnet, biotite and mica (sericite - muscovite?). Within this country rock are strong lenses or dikes of a high biotite quartzite, some containing as much as 25 percent mica (a mixture of biotite and sericite).

The ore zones or lenses, striking generally northeast and raking approximately 30° downward along the strike, almost always occur along the contact between the quartzite and the high biotite quartzite. This fact was noted during the preliminary reconnaissance, which was quite obvious as most of the old workings are along these contacts. Also, most of the lenses are rather narrow and have a very steep dip, which makes underground mining necessary. There is one exception to the steep dip, however.

A further discussion of the geology will be found in E. N. Pennebaker's reconnaissance report included as an appendix.

DRILLING:

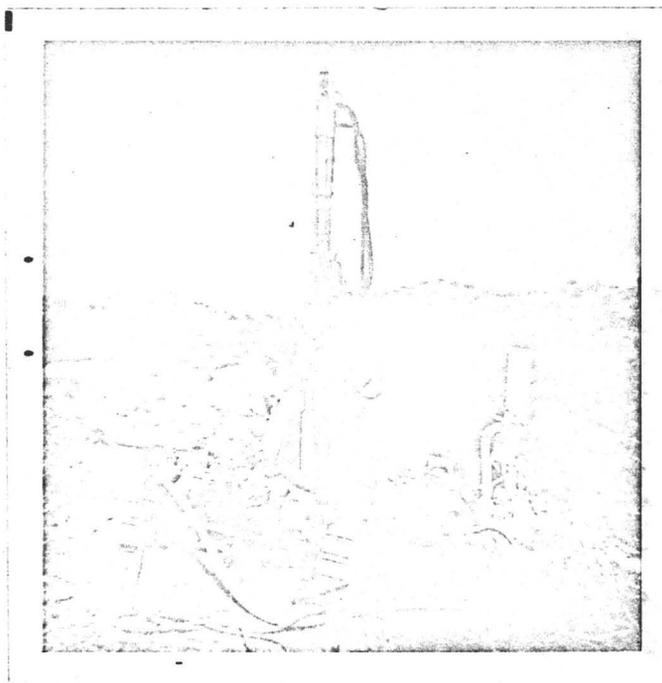
Our objective was to drill out an open pit mine, if possible. In years past, along the common side line of the Saint Nick #s 2 & 3 lodes, considerable sericite mica was mined underground along a dip of about 40°. This contrasts with the dip of most lenses of about 75°. If sufficient ore could be found along this dip, it at least had a chance of being mined by open pit methods. Mr. McLeod stated he found ore in the footwall and at the mouth of the old underground workings. An old miner reported ore at the bottom of the workings when mining ceased.

After reviewing the above statements, and considering this area as having the only shallow dip, I decided to initiate the drilling in the vicinity of the reported ore. On December 1, 1969, I moved a Gardner-Denver "Airtrac" wagon drill onto the property, rented from the D. W. Jacquays Equipment Company of Phoenix, Arizona. The first day was taken up mostly in moving and getting set up, though we did drill a 20 foot hole, No. "0," as a test for the rig.

On Tuesday, December 2, 1969, we really began our drilling with Hole No. 1. A glance at the included drill hole map will show the location of this hole and succeeding holes of the campaign. Very fortunately, we struck ore in this first hole, so it then became a matter of keeping our "nose" to it. From reconnaissance of previously mined areas and considering the geology of the deposits, I deemed it necessary to hold my drill hole spacing, at least initially, to about 25 feet.

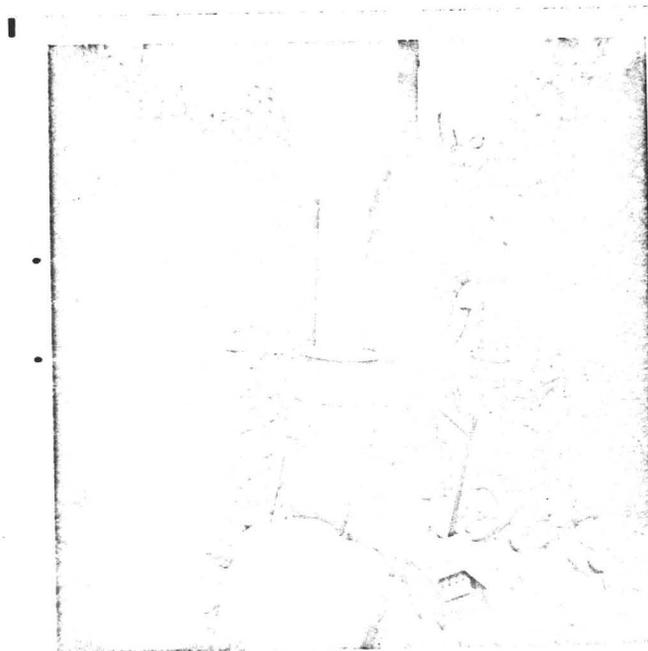
This appeared to be quite a lucky premise, as the first three holes all produced ore.





No. 1

Airtrac wagon drill (rear view). Sample collector on right.



No. 2

Sample collector with drill in background.



With a lense potentially established, drilling continued on a nine-hour day, five days a week. Ore Zone "A" was finally drilled out about the end of December with approximately 40 holes. The best hole, No. 31, contains 30 feet of 71% sericite mica. Eighteen additional holes were drilled to further prospect the area with little success. Approximately 14,700 tons of ore are delineated in this ore body of 66% contained mica. A drill hole and assay map with appropriate cross sections are included with this report.

On January 5, 1970, we moved the rig to the area of Ore Zone "B," and we were fortunate in striking ore with our first hole No. 59. Continuing on this lense, we drilled up through hole No. 92. The best in this lense is hole No. 78 with 9 feet of 72% mica. Tonnage estimated in this lense is approximately 6,500. A drill hole and assay map, along with appropriate cross sections, are included with this report.

From Ore Zone "B," we moved to a third area, on the east edge of the Mica Queen lode. Here we drilled a potential lense, as a shallow shaft had been sunk on a good surface exposure along the contact between the light gneiss or quartzite and the dark biotite gneiss. However, five holes along this contact failed to produce any ore in this immediate vicinity.

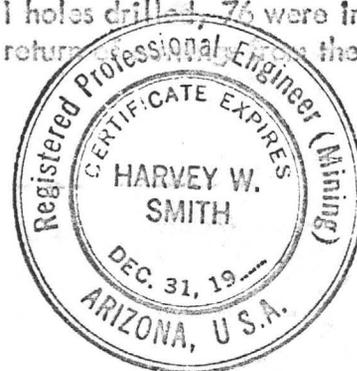
Moving again to near the north end center of the Mica Queen lode and further investigating old workings, we developed Ore Zone "C." Again we were fortunate in having our first drill hole, No. 93, return some excellent cuttings. Here we concentrated on drilling angle holes, as many as three in a fan, and developed some 2,500 tons. This ore body is not completely drilled and further tonnage may be developed with some additional holes on the Comet No. 1 lode. Further drilling was not accomplished on this lense as our time was running out and I felt it necessary to do some prospect drilling.

Consequently, after establishing Ore Zone "C" on the Mica Queen and Comet No. 1 lodes, we moved to the north end of the Saint Nick No. 1 lode. Here we drilled Holes Nos. 115, 116 & 117 and located another potential lense. These are angle holes and serve only to establish the existence of another potential ore body.

From the north end of the Saint Nick No. 1 lode, we moved to the Hillside No. 1 lode for additional prospect drilling. Completing holes numbered 118 to 125, two additional lenses were established. Further drilling will determine if these are ore bodies.

The last afternoon of January 30, 1970, we drilled holes numbered 126 to 128 on the south end of the Enterprize lode. Again the existence of a lense was established, but only further drilling will determine if it is an ore body.

During the drilling period December 1, 1969 to January 30, 1970, a total of 131 holes was drilled with a total footage of 10,702. Of the 131 holes drilled, 76 were in ore, 16 were mineralized, and 3 were wet enough to prevent the return of the



potential ore zone. In two of the wet holes, the moisture is probably from old underground workings adjacent to Ore Zone "A." The third wet hole was in the Ore Zone "B" area and the source of the moisture is unknown.

SAMPLES:

For the collection of samples, we collared the drill holes with a 3 1/2 inch diameter rock bit so that we could set a steel collar with an elbow to allow the cuttings to be blown through a hose direct to our sample collector. The hose was adapted with a Venturi tube to further assist in removing the cuttings from the hole. After setting the steel collar, the holes were drilled with a tungsten-carbide bit, 2 3/4 inches in diameter. During the program, these bits were resharpened several times so, during the latter part of the campaign, some holes were drilled with a diameter of 2 1/2 inches.

The actual sample collector is a converted 55-gallon drum which has been adapted to receive the cuttings from the hose from the drill hole and allows the dust to escape out the "stack", with a pullgate at the bottom to withdraw the cuttings. A photograph of the collector is included with this report.

Initially, we collected samples every two feet to examine the cuttings. These were saved until after the drilling program, when samples of the same character from the same hole were combined into a composite to represent a certain footage in that hole. Ore samples are maintained as we obtained them, however; that is, on a two, three, or four foot basis. For purposes of assaying, composite samples were made up from each of the individual sectional samples.

Representative samples from cuttings in the "country" rock are available for examination as are all ore samples.

The determination of the contained mica in each sample was made by ARC Laboratories, a division of Arizona Research Consultants, Inc. A report on their assaying technique, as well as the results of all their sample analyses, are contained in an appendix to this report.

EXTENSION OF DRILLED ORE BODIES:

The exact depth of all of the drilled lenses is presently unknown. Because of the limitation of our drilling equipment, we never really bottomed out the lenses. Our deepest holes on all three zones were still in ore.



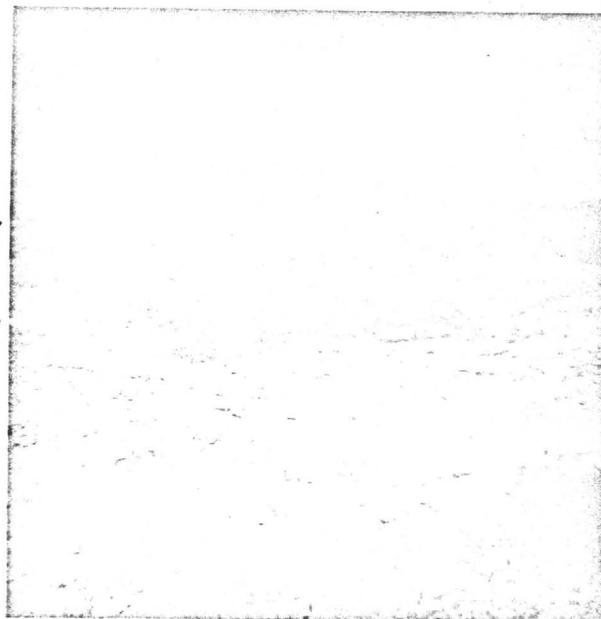


TONNAGE ESTIMATES:

Ore Zone "A"

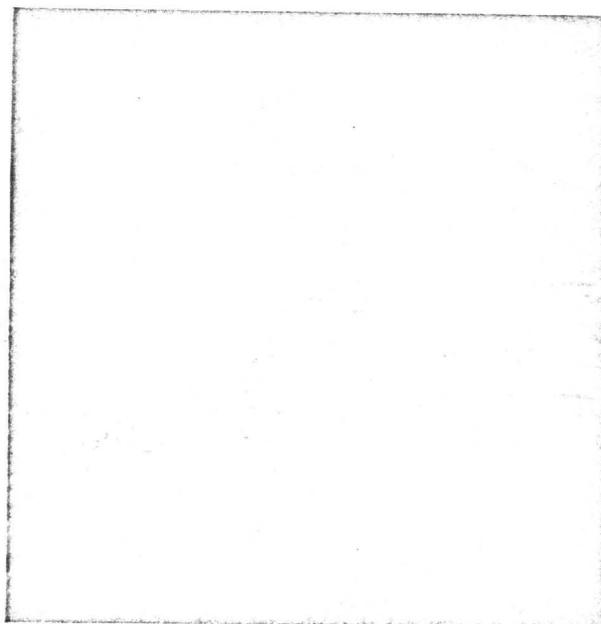
A drill hole and assay map of Ore Zone "A" accompanying this report delineates the proposed ore body containing the following listed drill holes with the thickness and percent contained mica indicated as follows:

<u>Hole No.</u>	<u>Ore Thickness</u>	<u>% Contained Mica</u>
1	4	59
2	7	63
3	6	89
5	11	70
7	19	62.5
9	9	85
10	4	70
	4	69
	6	60
11	6	53
14	6	80
15	10	36
16	2	86
	20	73
17	12	68
	2	90
	4	59
	2	64
18	15	60
	8	64
19	6	74
	10	81
	4	59
20	4	66
21	13	62
23	8	67.5
24	16	60
25	10	77
28	8	85
29	14	45
30	3	71
31	30	71
32	12	83
33	12	69
35	12	65
37	15	49.6



No. 3

Holes #1 & 2 indicated by yellow flags. Opening to old underground workings to right of yellow flag on left. Light colored areas in right background are cuttings from drill holes in Ore Zone "A."



No. 4

Area of Ore Zone "A." Yellow flag in bottom of cut is Hole #9. Compressor for wagon drill in background. Note rolling terrain.



The weighted average grade according to thickness is 66.58% of contained mica.

A review of the cross sections of this ore body, A-A', B-B', C-C', D-D', E-E', F-F' and G-G' indicates that this is not a solid block of ore but, rather, a series of overlapping lenses. This, of course, complicates any tonnage calculation. Therefore, I have used a different approach calculating the average thickness. Because of the close spacing of the drill holes and the variable thickness in each hole, I have determined the average thickness of ore by taking the sum of all the ore thicknesses and dividing this sum by the number of holes.

Using this technique, I have arrived at 12.44 feet as the average thickness in each hole. To convert this figure to a true thickness, I used another averaging technique because of the erratic dip and rake. Examining cross section A-A', I found the top of the ore at an elevation of 985 feet (assumed) in hole No. 3, while, in hole No. 35, the elevation of the top of the ore is 849 feet (assumed) - the difference being 136 feet. The horizontal distance between these holes is 210 feet. The average angle of dip determined from these two components is $32^{\circ} 56'$. Using this average dip, the true average thickness is then established as 10.44 feet and the dip length 250 feet between the two holes. Adding an area of influence radius of 10 feet to each hole establishes the true dip length of 270 feet.

Another examination of the drill hole and assay map of Ore Zone "A" seems to indicate two different average lengths along the strike--a lower section averaging 90 feet and an upper section averaging 50 feet. The lower area is projected from hole No. 17 to hole No. 35, a dip length of approximately 159 feet. Thus, the lower section volume is established as follows:

$$(159' \text{ dip length}) \times (90' \text{ strike length}) \times (10.44' \text{ true average thickness}) = 149,396 \text{ cubic feet}$$

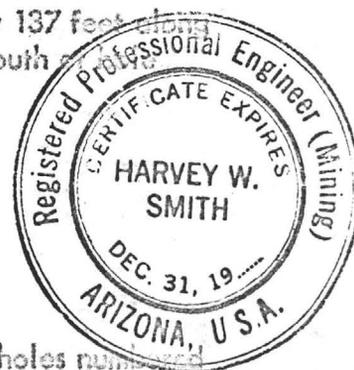
The upper section of this zone has a dip length of approximately 137 feet along the trend of this zone from a point just east of hole No. 17 to 10 feet south of hole No. 11. The volume for this section is established as follows:

$$(137' \text{ dip length}) \times (50' \text{ strike length}) \times (10.44' \text{ average thickness}) = 71,514 \text{ cubic feet}$$

The tonnage factor was established as follows:

Three accurate samples were collected from 2 foot ore zones in holes numbered 64, 65 and 71. The bit was measured each time to insure a diameter of 2.75 inches. The holes were also examined for being oversize and found to be only .01' to .02' over the bit diameter. The volume in cubic inches for this zone is found from the following formula: $R^2 \times 24 = (3.1416) (1.375)^2 \times 24 = 142.56 \text{ cubic inches.}$

$$\frac{142.56}{1728} = 0.0825 \text{ cubic feet}$$



Going back to the three samples collected, they were weighed and found to be as follows:

		<u>Weight</u> pounds	<u>Approximate</u> Percent Mica
Hole No. 64	39' - 41'	14	61
Hole No. 65	64' - 66'	12 1/4	81
Hole No. 71	90' - 92'	13 1/2	78
Average weight:		13.25 pounds	

$$\text{Then: } \frac{13.25}{.0825} = 160.61 \text{ pounds/cubic feet}$$

$$\text{Therefore: } \frac{2000}{160.61} = 12.45 \text{ cubic feet/ton}$$

Even though the tonnage factor is indicated to be 12.45 cubic feet/ton, I have used what I believe to be a conservative figure of 15 cubic feet/ton. This allows for any discrepancies in weights and volumes.

The tonnage of ore zone "A" is computed as follows:

Volume in lower section:	149,396 cubic feet
Volume in upper section:	<u>71,514 cubic feet</u>
Total volume:	220,910 cubic feet
Therefore:	$\frac{220,910}{15} = 14,727 \text{ tons}$



Ore Zone "B"

This zone differs from Zone "A" in that the dip of this ore body is considerably greater than the average dip of 32° 56' of Zone "A." An examination of the cross sections seems to indicate a dip of approximately 70°.

The drill hole and assay map shows an ore body to be delineated by the following listed holes with the true thickness and percent contained mica:

<u>Hole No.</u>	<u>True Thickness</u>	<u>% Contained Mica</u>
59	4.5'	73
60	5.0	75
64	4.5	61
65	4.5	81
66	3.5	68
69	6.0	80
70	4.0	78
71	5.0	78
72	3.0	61.50
73	4.5	94
75	4.0	71
76	10.0	49.7
78	9.0	72
79	5.5	65

The weighted average grade according to thickness is 70.64% of contained mica.

The true thickness of ore in each hole was determined by scaling on the cross sections the distance through the ore zone of each hole perpendicular to the approximate dip. By applying the same technique to this ore body as in Ore Zone "A"; that is, totaling the true thicknesses of each hole and dividing by the number of holes, I arrived at an average thickness of 5.20 feet. This compares with the 5.10 foot thickness I had previously determined by examining the potential ore zones of each cross section.

Further examination of cross sections H-H', J-J', K-K', L-L' and M-M' indicates an ore zone dip length as follows:

		<u>Estimated Average True Thickness</u>
H-H'	120 feet	6.0 feet
J-J'	100 feet	5.0 feet
K-K'	100 feet	5.5 feet
L-L'	120 feet	4.0 feet
M-M'	70 feet	5.0 feet



An arithmetical average of the dip length is slightly over 100 feet.

The weighted average true thickness is 5.10 feet as previously stated.

The drill hole and assay map further indicates a strike length of at least 200 feet for Ore Zone "B".

The contained tonnage of Ore Zone "B" is computed as follows:

$$(200' \text{ strike length}) \times (100' \text{ average dip length}) \\ \times (5.0' \text{ average thickness}) = 100,000 \text{ cubic feet}$$

$$\text{Therefore: } \frac{100,000 \text{ cubic feet}}{15 \text{ (tonnage factor)}} = 6,655 \text{ tons}$$

Ore Zone "C"

A third ore body has been developed at the north end of the Mica Queen lode. While this zone is not completely drilled out, one hole at the south end of the Comet No. 1 lode does show that the lense does project over onto it.

A study of the drill hole and assay map reveals that this ore body is pretty well delineated by the following listed holes:

<u>Drill Hole No.</u>	<u>True Thickness</u>	<u>% Contained Mica</u>
98	3.5	81
99	8.0	88
100	7.0	53
101	12.0	85
102	12.0	69
104	9.0	68
105	3.0	72
	4.0	83
106	4.0	71
107	9.0	82
	3.5	86
108	5.0	83
110	3.5	88
111	4.0	63
	5.0	80
113	15.0	68



The true thickness of these erratically formed lenses is very difficult to ascertain. However, by using two techniques, I believe I have arrived at a reasonable average. Reviewing the holes in cross section and the potential ore zones, I have estimated the true thickness and dip length as follows:

<u>Cross Section</u>	<u>Estimated True Thickness</u>	<u>Estimated Dip Length</u>
Holes No. 101, 102	12.0 feet	30 feet
Holes No. 99, 100	7.5 feet	25 feet
Holes No. 98, 104, 105	6.0 feet	40 feet
Holes No. 106, 107, 108	6.0 feet	70 feet
Holes No. 109, 110, 111	4.0 feet	40 feet
Hole No. 13	8.0 feet	30 feet

A weighted average thickness in proportion to the dip length is 6.8 feet. An arithmetical average of the ore thickness in each hole summed up and divided by the number of holes is 8.27 feet. Probably an average of these two figures, 7.5 feet, is close to the true thickness.

An arithmetical average of the dip length of the ore zone is 39.0 feet and the estimated strike length, based on the drill hole and assay map, is 130 feet.

The contained tonnage of ore zone "C" is computed as follows:

$$(130' \text{ strike length}) \times (39' \text{ average dip length}) \\ \times (7.5' \text{ average thickness}) = 38,025 \text{ cubic feet}$$

$$\text{Therefore: } \frac{38,025}{15 \text{ (tonnage factor)}} = 2,535 \text{ tons}$$

Reviewing the tonnage of each ore zone, the total, with a weighted average grade, is as follows:

		<u>Average Grade</u>	<u>Product</u>
Ore Zone A	14,727 tons	66.58	980,523.66
Ore Zone B	6,655 tons	70.64	470,109.20
Ore Zone C	<u>2,535 tons</u>	75.20	<u>190,632.00</u>
	23,917		1,641,264.86

Weighted Average Grade: 68.62% contained mica

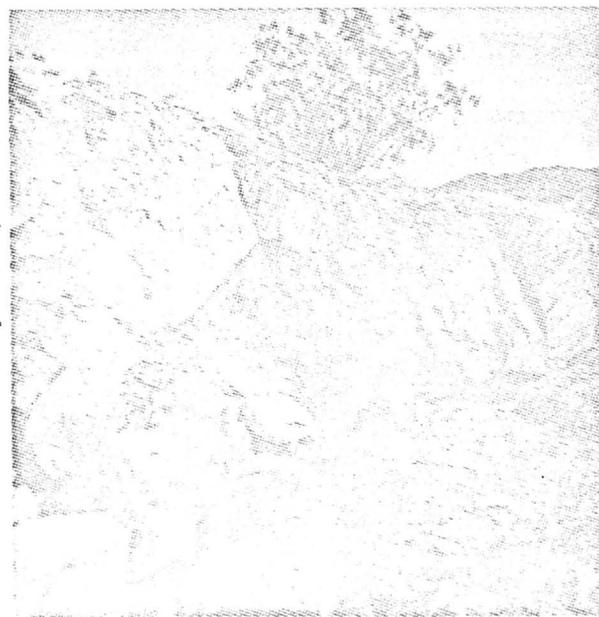
Total tons drilled: 23,917





No. 5

Drill cuttings from Hole #31. Note light color of ore zone samples in center right.



No. 6

Pegmatite on left overlies biotite-quartz gneiss on right. Ore zone is below dark colored zone on right.





POTENTIAL ORE ZONES

As previously mentioned, some prospect drilling was done in the following areas:

1. North End of the Saint Nick No. 1 Lode.

A shallow incline exposes a zone of sericite approximately 3.5 feet wide. The incline is the same width, bearing N.45°E., inclined at 40° to a depth of 20 feet. It is also on the same contact between the biotite gneiss and the quartzite as Ore Zone "B", but approximately 1,100 feet southwest.

Three holes were drilled to intersect the sericite zone. No. 115 is immediately northeast of the bottom of the incline, drilled on a S.47° E. bearing with a vertical angle of 61°. Four feet of 50% contained mica was intersected at 36 feet.

Hole No. 116 was drilled about 20 feet northeast on a S.41° E. bearing with a vertical angle of 62°. Ten feet of 76% contained mica was intersected at 30 feet.

Hole No. 117 was collared about 3 1/2 feet, northwest of No. 116 and drilled on a bearing of S.41° E. with a vertical angle of 73°. Eight feet of 81% contained mica was intersected.

These three holes confirm the existence of a lense of ore. Further drilling will probably delineate an ore body of a few thousand tons.

2. North End of the Hillside No. 1 Lode.

Two potential ore zones have been drilled out in this area. In a small pit, 6' x 6' x 3' deep, sericite mica is exposed as a narrow lense, striking about N.40° E. along a contact of biotite gneiss and quartzite. The dip is indeterminate at this time.

Drill hole No. 119 was collared initially to examine the area immediately north of a cut which is situated just east of the drill hole collar. As nothing was found on the projection of the cut zone and we were still drilling the biotite-gneiss zone, the hole was continued to the contact zone where a 5 foot section of 54% contained mica was intersected at 83 feet.

No further drilling was done on this potential lense because the ground surface rises to the northeast, making it necessary to drill considerably longer holes. Other prospective areas are more accessible.

One additional hole was drilled beneath the cut on which I had initiated the drilling here, but nothing was found.

Moving south about 300 feet to a contact zone, I drilled holes numbered 121-125. A small surface cut had been made indicating that the lense at the surface was too narrow for the earlier miners. Since immediately to the northeast on this contact several prolific lenses had been mined, I thought perhaps the narrow surface exposure might widen out with depth. Our drill holes seem to confirm this.

No. 121, drilled on a S.52° E. bearing with a vertical angle of 47°, intersected 3 feet of 81% contained mica at 22 feet.

No. 122, collared about 3 feet northwest of No. 121 and drilled on the same S.52° E. bearing but with a vertical angle of 59°, intersected 5 feet of 50% contained mica at 30 feet.

Moving about 25 feet northeast, hole no. 123 was drilled on a S.70° E. bearing with a vertical angle of 58°. Only 2 feet of 34% contained mica was intersected at 32 feet.

No. 124 was collared 1.5 feet northwest and drilled on the same S.70° E. bearing with a vertical angle of 67°. Six feet of 66% contained mica was intersected at 34 feet. As this seemed to indicate the ore was raking to the northeast, one additional hole was drilled.

No. 125 was located about 2.5 feet northwest of No. 124, drilled on the same S.70° E. bearing but with a vertical angle of 75°. A narrow lense, 3 feet of 52% contained mica was intersected at 47 feet, but we did not seem to be out of the zone. Drilling continued and at 60 feet, 20 feet of 50% contained mica was intersected.

As I had one more prospective area on which I wanted to drill, no further drilling was done on the Hillside No. 1 Lode.

3. South End of the Enterprize Lode.

A contact zone on the Morning Star lode to the south shows evidence of having produced a considerable amount of ore. As this zone projects northward onto the Enterprize and a narrow lense of mica is exposed in a shallow pit, I considered this area as being quite favorable.

Therefore, after establishing a lense on the Hillside No. 1, we moved the drill rig to the Enterprize area and spent our last afternoon of drilling this zone.

Hole No. 126 was drilled close to the exposed mica, but not so that it would intersect. I was prospecting an adjacent area, but no mineral



Hole No. 127 was drilled to intersect the projection of the exposed zone, and 2 feet of 44% contained mica was intersected at 8 feet. This corresponds with the surface exposure. This hole was drilled on a N.89°W. bearing with a vertical angle of 53°.

The collar of No. 123 was located about 2 feet east of No. 127. The bearing was again N.89°W., but the vertical angle was increased to 67°, 30 feet. As a result, 2 feet of 55% contained mica was intersected at 14 feet.

This potential lense requires a considerable amount of additional drilling, but this particular zone has been very prolific and a substantial ore body could be developed here.

4. South End of Comet No. 1 Lode Adjacent to Ore Zone "C."

To the northeast of Hole No. 113, across the ravine, a small cut has been made in the bank. In this cut, there is a good exposure of mica, which appears to be the top of another lense. Also, it is on the contact between the biotite gneiss and the quartzite. No other work has been done in this area, but the exposure certainly makes this a highly prospective area.

In addition to the above mentioned zones, there are numerous other areas with a good potential. It is my opinion that all of the previous mined areas were surface exposures. And certainly there must be nearly as many ore zones which have not surfaced. Two of the three ore bodies drilled out during this campaign had no surface indications.

A complete mapping of the area to locate the biotite-gneiss-quartzite contacts will yield a true potential of the claims. However, there seems to be no shortage of contact zones to explore.

CONCLUSIONS

An intensified wagon drilling program from December 1, 1969, to January 31, 1970, to find sericite mica on the Buckeye Mica Company claims was successful in delineating approximately 24,000 tons of 68% contained mica. In addition, several potential zones were established with prospect holes. The tonnage developed from these potential zones may nearly equal that which is drilled out in Ore Zones A, B, and C.



A total of 10,700 feet of hole was drilled in 131 holes, of which 76 were in Ore for a 58% success figure. This represents a cost of \$1.87 per foot of hole drilled and approximately \$ 0.84 per ton of raw ore developed to Buckeye Mica Company. All costs are included in this figure--drilling, engineering, supervision and sampling.

No potential ore is included in the \$ 0.84/ton figure quoted above. The \$ 0.84/ton represents about \$ 1.23/ton of 100% sericite or finished product.

Respectfully submitted,

Harvey W. Smith, E.M.



ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.
Box 416
Buckeye Arizona

DATE 12/12/69

LAB No. 10737 & 10738

cc: H. Smith

RESULTS



Sample - Hole 20, 52-54 ft.

A cut from the sample was screened on a 10 mesh and a 100 mesh sieve. Less than 1 % was + 10 mesh and appeared to be approximately equal parts of gangue and mica so it was discarded. The - 10 + 100 and - 100 mesh fractions were separately analyzed for mica by means of heavy media at a density of 2.68 using a centrifuge at a peripheral speed of 3,500 feet per minute to accelerate the settling rate.

Retained on	%	<u>Sink @ 2.68 Float</u>		% mica
		%	%	
10 mesh	6.0	10	90	0.6
- 10 + 100	31.0	62 (A)	38 (B.)	19.2
- 10	63.0	80 (C)	20 (D)	<u>50.4</u> 70.2

Letters in parentheses indicate the samples enclosed
A separation by means of flotation was also made on the same sample.

Product 74.0 % (E)
Tails 26.0 (F)

As can be seen from the enclosed samples the separation is far from perfect since the heavier particles of mica report to the tails, yet the values for mica and gangue are remarkably close to the sink-float figures.

Examination of the flotation product showed quite a bit of black material. A separation by heavy liquid @ 2.90 showed it consisted of 2.1 % of gangue heavier than 2.90 (magnetite, illmenite, garnet and limonite) Sample G. Cleaned mica from above is H.

Respectfully submitted,
ARC LABORATORIES

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.

DATE 12/12/69

LAB No. 10737 & 10739

Page 2

RESULTS



Examination of the tails (F) shows a considerable amount of the heavy black material also. It was not analyzed but is estimated to be 5 %. This black material will be rejected by the cyclone. The flotation test was a single rougher float and since the separation of the dark gangue was in the approximate ratio of 2 (float) to 5 (tails) a 2 or 3 stage floatation should eliminate most of the dark gangue from the product.

Referring back to the - 100 sink-float sample, the float (gangue D) is a tan color while the sink (mica C) is silver-gray. The tan color is due to iron and clay minerals which are usually softer and easier to grind than mica and consequently will under your present system of classification by settling, appear in the very fine mica fraction. Since mica is heavier than this gangue, a possible system of removal could be by classification as in a Dorr classifier or by supplying very mild agitation in your final settling tank should it become desirable to produce a lighter-colored product.

Sample from cyclone 12/11/69

Mica in 1 gallon = 253 grams = 0.56 lbs/gal. = 6.7 % by weight.

Retained on	% retained
100 mesh	4.2
- 100 + 200	41.1
- 200 + 325	15.0
- 325	39.7

Sample dried @ 250 °F

Loss on ignition = 5.99 %

Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.
John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co
Box 416
Buckeye, Arizona

DATE 12/24/69

LAB No. 10752

cc: Harvey Smith

RESULTS

Hole 30, 99-102 ft
Hole 37, 135-40
" " 14-46

71 % Mica
54
63



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.
Box 416
Buckeye, Arizona

DATE 1/5/69

LAB No. 10762

cc: H. Smith

RESULTS

Hole #	Depth	% Mica
1 ⁰	6-10 ft.	59 [✓]
2 [~]	5-12	63 [✓]
	16-20	77 [✓]
	22-26	54 [✓]
	26-29	32 [✓]
	29-34	44 [✓]
7 [~]	20-34	65 [✓]
	34-39	56 [✓]
9 [~]	21-30	85 [✓]
31 [~]	105-110	86
	110-124	71
	124-26	83
	126-30	41
45 [✓]	38-44	46
48 [✓]	64-70	13

63% New Sample Prod



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.
Box 416
Buckeye, Arizona

DATE 1/9/70

LAB No. 10771

cc: H. Smith

RESULTS

Hole #	Depth	Mica
2 ^e new sample	26-29	63 ³
14 ^e	12-18	80 ³
19 ^e	70-74	74
	90-100	81
	110-114	59
28 ^e	42-50	85
33 ^e	98-100/10'	69
62 ^e	38-42	57
64 ^e	39-43	59
65 ^e	66-76	81
69 ^e	96-103	80



Respectfully submitted,
ARC LABORATORIES

John I. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.
Box 416
Buckeye, Arizona

DATE 1/13/79

LAB No. 10761

cc: H. Smith

RESULTS

Hole #	Depth	Mica
72 ✓	90-92 ft	82 %
	92-94	50
	94-96	70
	96-98	44
77 ✓	90-92	30

Net wt. of Hole 91 sample = 15.5 lbs

71



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Buckeye Mica Co.
Box 416
Buckeye, Arizona

DATE 1/21/70
LAB No. 10782

cc: H. Smith

RESULTS

Hole #	Depth	Mica
78 ✓	164-80	86 %
82 ✓	180-95	57
	21-25	85
	25-29	77
	57-60	67
	60-64	66
85 ✓	64-70	46
	44-05-50	74
86 ✓	70-75	55
	72-80	86
87 ✓	94-98	78
	37-40	50



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey W. Smith
6016 N. Kachina Lane
Scottsdale, Arizona

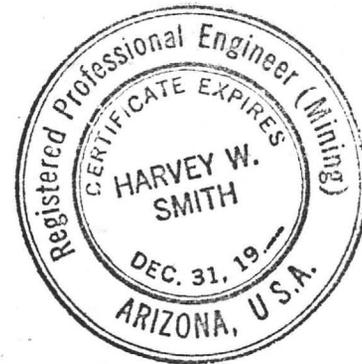
DATE 1/30/70

LAB No. 10802

cc: Buckeye Mica

RESULTS

Hole #	Depth	Mica
113	94-100'	87 %
	100-109	42
	109-119	80
115	36-40	50
116	30-40	76



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.
John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey Smith
6016 N. Kachina Lane
Scottsdale, Arizona

DATE 2/3/70

LAB No. 10803

RESULTS

Hole #	Depth	Mica
114	136-40 ft	60 %
117	50-58	81
119	88-93	54
121	22-25	81
122	30-35	54
123	32-34	35
124	34-40	66
125	47-50	52
	60-70	50
	70-80	50
127	8-10	44
128	14-16	55



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey Smith
6016 N. Kachina Lane
Scottsdale, Arizona

DATE 2/4/70

LAB No. 10804

cc: Buckeye Mica

RESULTS

Hole #	Depth	Mica
15 ✓	5-15 ft	25 %
24 ✓	68-70	24
36 ✓	68-74	58
42 ✓	200-208	23
	6-10	40



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey Smith
6016 N. Kaohina Lane
Scottsdale, Arizona

DATE 2/10/70

LAB No. 10316

cc: Buckeye Mica Co.

RESULTS

Hole #	Depth	Mica
11 ✓	6-12 ft	53 %
23 ✓	62-66	78
	66-70	57
24 ✓	68-84	60
25 ✓	70-80	77
29 ✓	52-66	45
37 ✓	140-44	39
	146-50	48



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey Smith
6016 N. Kachina Lane
Scottsdale, Arizona

DATE 2/13/70

LAB No. 10318

cc: Buckeye Mica.

RESULTS

Hole #	Depth	Mica
15	44- ⁵⁶ 46 ft.	36 %
16	20-22	36
	34-44	65
	44-54	81
17	22-28	86
	28-34	50
	40-42	90
	46-52	59
	56-58	64
18	41-50	63
	50-56	50
	60-68	64
71	86-96	78



Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.

ARC LABORATORIES

Division of Arizona Research Consultants, Inc.

9236 NORTH 10TH AVE.

PHOENIX, ARIZONA 85021

943-3573

FOR: Harvey Smith
6016 N. Kachina Lane
Scottsdale, Arizona

DATE 3/3/70

LAB No. 10831



RESULTS

Hole #	Depth	Mica	Hole#	Depth	Mica
3	10-18 ft.	89 %	83	130-37 ft.	65 %
5	23-36	70		150-160	74
9	36-38	64	84	39-47	70
10	16-20	70	98	35-42	81
	26-30	69	99	25-35	88
	42-48	60	100	31-40	53
20	52-56	66	102	28-50	69
21	35-48	62	104	38-50	68
31	100-105	75	105	47-52	72
32	94-106	83		56-63	83
35	138-50	65	106	35-40	71
59	30-39	73	107	78-85	86
60	68-78	75	108	78-86	83
64	38-48	61	110	65-70	88
66	31-39	68	111	82-87	63
67	78-82	70		92-100	80
68	6-9	54	107	44-50	81
	34-36	70		50-60	83
70	96-102	78		79-85	77
73	82-92	94	76	118-20	77
75	131-140	71		120-24	76
76	118-140	46		124-30	52
79	154-170	65		130-32	74
				132-37	20
				137-40	76
			101	22-40	85

Respectfully submitted,
ARC LABORATORIES

John T. Long, Jr.
John T. Long, Jr.



1809 No. Granite Reef Road

February 25, 1970

Mr. Robert N. Avery
President, Buckeye Mica Company
851 Burlway Road, Suite 612
Burlingame, California 94010

Dear Mr. Avery:

On Monday, February 16, 1970, I made a preliminary inspection of your 57 lode mining claims a few miles south of Buckeye, Maricopa County, Arizona. On the following day I visited the laboratory where the drill samples are "assayed" and also went over Mr. Smith's maps and reserve estimates.

The claims of Buckeye Mica Company are in an area of Precambrian rocks intruded by younger granitic rocks of Laramide age. The Precambrian rocks consist of gneisses and granite, the former occurring as generally steep layers striking north and north-east.

The gneissic group is made up of several types, including biotite-gneiss, granulite (or quartzite), and sericite-schist intruded by quartz-feldspar pegmatite.

The biotite gneiss is an ordinary variety consisting largely of quartz and dark biotite mica. The granulite is a quartzitic rock made up mostly of interlocking small quartz grain plus a sprinkling of tiny brown mica flakes, minute grains of pink garnet, and minute grains of magnetite. The sericite-schist consists of

predominant sericite mica exhibiting a peculiar corrugated structure and containing a variable amount of quartz (and possibly feldspar) in the shape of tiny lenticles. The pegmatite is the usual quartz-feldspar variety, rich in quartz and containing muscovite mica in variable amount as flakes ranging up to an inch or more across.

The area examined is valuable because of its deposits of sericite mica. Sericite is a variety of muscovite mica, sericite being very fine-grained with a pearly or silky luster and an unctuous feel like talc. Muscovite commonly occurs as plates with pronounced cleavage. Sometimes the plates are very large; more commonly they range in size from a small fraction of an inch to about an inch across.

The usual composition of muscovite mica (and sericite) is about:

Silica (SiO_2)	45.2 %
Alumina (Al_2O_3)	38.5 %
Potash (K_2O)	11.8 %
Water (H_2O)	4.5 %
Specific Gravity	2.76 to 3.00



In the area of interest sericite forms deposits of economic value, whereas muscovite occurs as a subordinate constituent of the pegmatite. In a few places, however, muscovite appears to be locally abundant enough to form an ore. Where muscovite-bearing pegmatite borders sericite lenses, it may contribute some muscovite flakes to the finished product.

In Buckeye Mica Company ground, sericite mica deposits of value commonly occur as lenses striking north or northeast. These lenses dip down into the ground (at right angles to their strike) at generally steep angles, and they pitch (or rake) down toward the north or northeast in the direction of their strike at an angle of roughly 30 degrees. One lens has a flat dip, but in general they are quite steep. Some lens zones are made up of several overlapping lenses.

Many, but not all, sericite lenses occur along the contact between dark-colored biotite-gneiss and light-colored granulite (or quartzite), or between biotite gneiss and pegmatite. There are numerous dark-colored zones, and the mapping of these zones will facilitate the search for additional lenses. It is also my impression that sericite lenses are found in areas where pegmatite is more abundant.

The valuable sericite occurs in a considerable number of small lenses, not in one great deposit. Judging from past experience gained from shallow mining and exploration and the more recent drilling, the average sericite-bearing lens ranges from 100 to 200 feet in strike length and goes down dip for 50 to 100 feet. The thickness (from footwall to hanging wall) varies from 5 to 30 feet. The rake length may be up to 250 feet. A lens may contain from 1,000 to 10,000 tons or more; the average might be about 5,000 tons.

The eastern part of the property has been explored during the past two months under the direction of Harvey W. Smith, a registered Mining Engineer in the State of Arizona. An Airtrac wagon drill was used, which gives a dry pulverized sample. Some 130 holes have been drilled with a diameter of 2 3/4 inches. Sample returns were consistent in amount and are believed to be reliable. Hole spacing ranged between 25 and 35 feet. Maximum depths drilled were about 200 feet. The mica content of the samples was determined by A.R.C. laboratory in Phoenix using heavy media separation in a centrifuge.

Most of the drilling was confined to three lenses in the eastern part of the claim group; in addition, a number of scout holes were also drilled in the eastern area.

Although Mr. Smith's ore reserve estimate is not yet completed, I have gone over it with him and believe it is properly and conservatively carried out. The ore found occurs in lenses, and his tentative results are as follows:



Zone A	13,000 tons
Zone B	6,500 tons
Zone C	
Drilling not completed, but to date about	2,000 tons
<hr/>	
TOTAL	21,500 tons



The mica content has not yet been calculated, but is roughly estimated to be 65% or better.

If 10,000 tons of finished product are to be made each year, then about 15,000 tons of crude ore will be required annually. For a 20-year life, some 300,000 tons will be needed. This may require some 60 lenses of sericite with a size of about 5,000 tons each at an average grade of about 65% of sericite. If the lenses turn out to be larger, then fewer will be needed.

The property now has three well-drilled lenses. Scout drilling has indicated four potential lenses that are worth exploration. Five other good prospect areas are indicated from surface digging. This amounts to 12 potential lenses, but we need not less than 48 more. Whether or not an adequate number can be found is problematical, but the potentialities of the claim group have by no means been exhausted.

There are many contacts between dark-colored biotite gneiss and light-colored granulite (or quartzite) that have not been mapped and explored. Along these contacts we can reasonably expect other poorly exposed or buried sericite lenses to occur. Until such contacts are put on the map, the potential of the property is impossible to assess.

Mr. Smith advises me that his work to date has indicated that it costs about \$1.00 to find one ton of sericite-bearing ore. This includes costs of drilling, sampling, assaying and engineering. He believes that this can be reduced in the future by somewhat wider spacing of holes, and with this I agree. If a cost of \$0.75 per ton be realized, then to find an additional 278,500 tons (which is needed



to fill out a 20-year life) will cost about \$210,000

In the case of vein mines, the full potential tonnage is rarely, if ever, outlined before mining begins. (This is true in Arizona where taxes are based on known reserves.) Generally, several years production is in reserve, and during each year enough exploration is undertaken to replace the ore mined out during that year, and thus the life of the enterprise is maintained. It is necessary, however, that the geological potential of the area be such that there are very good chances of achieving a long life.

We do not yet know whether the above is true for the mining claims of Buckeye Mica Company. To find out I propose that Mr. Smith put all of the contact zones on the map and make a very detailed inspection in search of poorly outcropping sericite lenses. Areas where pegmatite is more abundant should also be outlined. In the meantime, I recommend that scout drilling, using three or four holes per locality, be continued to spot as many potential lenses as possible for future detailed drilling. This scout drilling will require about two months' time, at the rate of the recent program.

With all of this information at hand, we can better assess the chances for achieving a 20-year life at the desired annual production of 10,000 tons of finished product.

Another point deserves emphasis: Sericite occurs here in lenses of limited tonnage, and several lenses will need to be mined each year. Consequently, the mining equipment, including hoist, should be designed to be moved from place to place.

One of the sericite lenses as now outlined by drilling can probably be mined by open pit because it is flatter than the others. In general, however, most of the mining will be underground by means of inclined shafts.

Regarding the patenting of these claims, there may be difficulties. In the case of boron-bearing deposits, where the alkali metal, sodium, makes up a part of the boron-bearing mineral, a sodium

lease can only be applied for; where the valuable mineral is the calcium-borate, colemanite, a lode mining claim can be located and patented. Inasmuch as sericite contains about 12% of potash, the Bureau of Land management might insist upon a potash lease. On the other hand, the fact that two of Buckeye Mica Company's lode claims have already been patented may serve as a precedent that might be recognized. This is a legal problem which the writer is not capable of answering.



E. N. Pennebaker



6016 N. Kachina Lane

December 22, 1969



Mr. R. N. Avery
Buckeye Mica Company
851 Burlway Road
Burlingame, California 94010

Dear Mr. Avery:

In response to your request during our telephone conversation on Friday, December 19, 1969, following is a brief summary of the exploration activities that I have conducted on the claims of the Buckeye Mica Company south of Buckeye, Arizona.

During the week of November 24-29, 1969 I made a geological reconnaissance examination of the property trying to establish some pattern of occurrence of the previously mined deposits. This was complicated by the condition of most of the workings and the lack of knowing whether the deposits were mined out or whether a particular deposit was abandoned because it got too deep. I concluded, however, that most of the sericite appears to occur along a contact between a basic and acidic type of rock in the granite gneiss. I have sent some specimens to the State Bureau of Mines for an identification of the rock types.

Upon concluding this examination and conferring with Mr. McLeod I decided that the area along the common side line of the Saint Nick #s 2 and 3 should be our beginning site. If you will refer to the enclosed map, I have outlined the area in red. The enclosed map was made by me from a transit and stadia survey of these claims made by me in 1963.

The selected area is adjacent to a previously mined working which, I understand, was taken to a depth of over 300 feet. Mr. McLeod told me that he had taken some ore from a lower horizon than the one previously mined and he thought there was still some ore where he had been digging. After having looked at the rest of the property and selecting some potential drilling areas, I concluded that this site was best to initiate our drilling.

Mr. R. N. Avery
Page -2-

December 22, 1969

Consequently, on December 1, 1969, we moved the drilling in and commenced operations. The first hole was mostly an experiment and we drilled it only 20 feet. It is no "00" and was barren. However, Hole #1 encountered ore and we took it to a 50 ft. depth. Subsequently during the past three weeks we have drilled a total of 36 holes for a total footage of 3,122. Of the holes drilled only 8 have been barren, one was a wet hole and we did not get any cuttings back, three are well mineralized and the remaining 24 have been in ore.

The depth to ore in these holes ranges from about 6 ft. in holes Nos. 1 & 2 to 138 ft. in Hole No. 35.

A preliminary estimate of the tonnage developed from the 24 ore holes indicates probably over 10,000 tons. This is based on visual observation of the cuttings returned during drilling. I expect that we will have some assays made on the ore which very possibly could increase the tonnage estimate.

Hole No. 34 is apparently very close to the old workings. It was very wet and we did not get any cuttings back from the probable ore zone. I understand that surface water is standing in the old workings.

Presently we are still drilling in ore and do not have the ore body delineated. It appears to me that considerable additional drilling should be done. Besides delineating this ore zone, there are areas immediately adjacent that need to be prospected as well as areas on other claims. It is my recommendation that we continue drilling for at least another month. The establishment of several years reserve of ore will certainly place your operation into better economic perspective.

I hope this letter has brought you up to date on what we have accomplished. However, if you have any questions, please feel free to contact me at any time.

Also enclosed is a drill hole map showing the location of the holes we have drilled--ore holes, mineralized holes and barren holes.

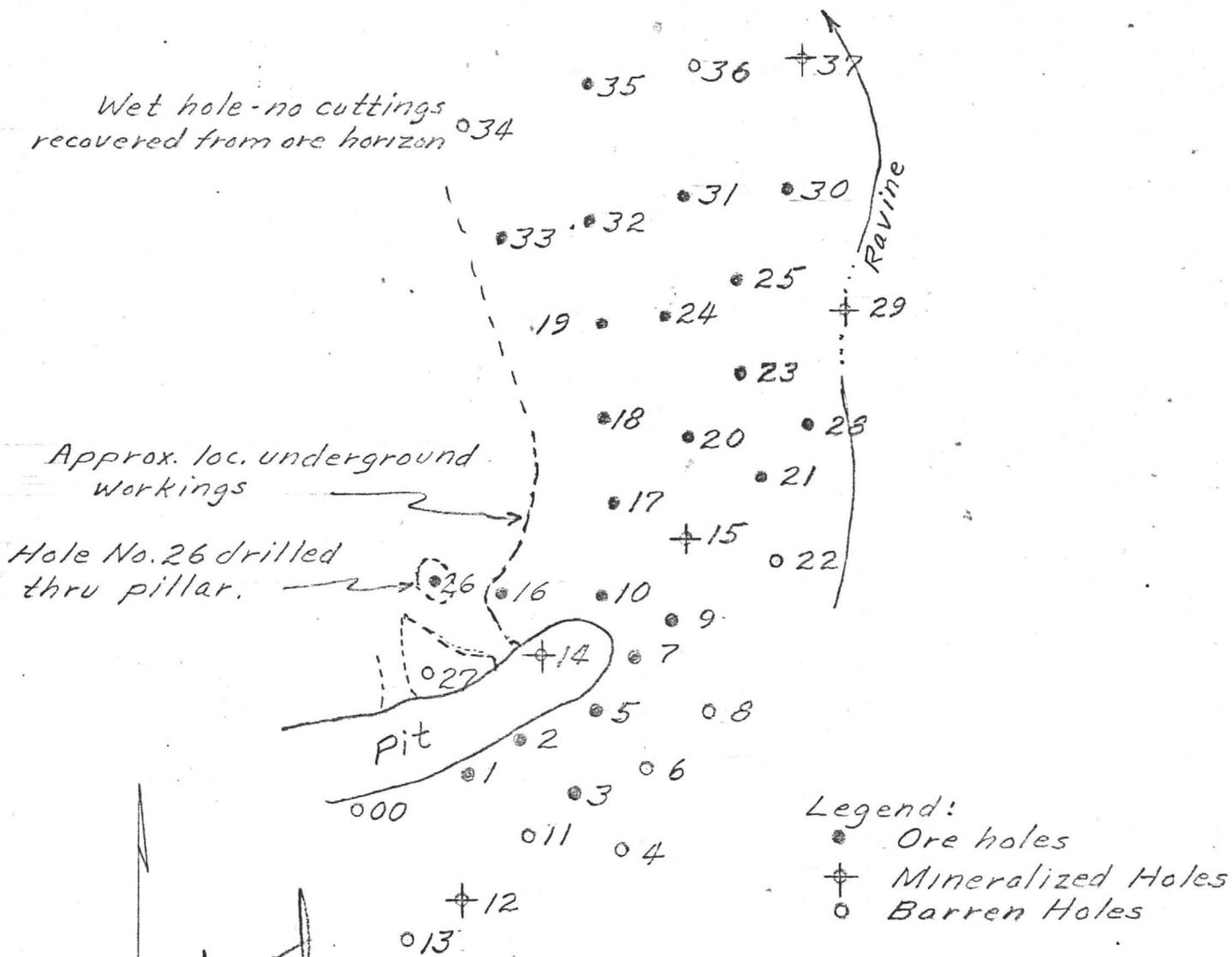
Sincerely yours,

HWS:bp
Enclosure

cc: Mr. Dan McLeod



Harvey W. Smith, E. M.



Drill Hole Map
 Buckeye Mica Company
 Saint Nick # 2 Lode
 Maricopa County Arizona
 Scale 1"=50' Dec. 23, 1969
 Drill Equip.: Airtrac Wagon Drill
 Exploration Supervised By:
 Harvey W. Smith, E.M.
 Registered Mining Engineer
 U.S. Mineral Surveyor

This map to accompany summary interim report.

6016 N. Kachina Lane

January 14, 1970

Mr. R. N. Avery
Buckeye Mica Company
851 Burlway Road
Burlingame, California 94010



Dear Mr. Avery:

Concerning a patenting program for your claims in the Buckeye area, following is a schedule of time and costs involved:

1. Selection of claims to be patented. Those with developed ore and those with drill holes indicating ore zones should be the only ones selected.
2. Application for mineral survey.
The Bureau of Land Management requires a payment made to them at the time the application is submitted as follows:
1st claim -- \$200.00
Each additional claim -- \$50.00

This covers their office work involved in processing the survey notes and plat of the mineral surveyor.
3. Official mineral survey by U. S. Mineral Surveyor.
Actual field survey, monument corners with iron posts and brass caps, prepare plat and prepare official field notes.
Each claim surveyed \$ 400.00
4. Preparation of patent application by Twitty, Sievwright & Mills
Billing on hourly basis -- \$35.00 - \$45.00 per hour.
Assuming no problems connected with application, this should approximate \$300.00 per claim.
5. Title Certificate from Title Company.
Each claim \$ 60.00



January 14, 1970

6.	Filing fee for patent application	\$	25.00
7.	Advertising patent application Estimate		25.00
8.	Purchase price from Bureau of Land Management at five dollars per acre. Each claim		105.00

The above is the itemized list of expenses involved in patenting a mining claim. Taking a group of ten claims the costs would look as follows:

1.	Application for mineral survey -- paid to Bureau of Land Management Time: 1 week	<u>Cost - Firm</u>	650.00
2.	Official mineral survey, paid to mineral surveyor 10 claims @ \$400/claim Time: 45 days	<u>Cost-Firm</u>	4,000.00
3.	Processing by Bureau of Land Management Time: 90 Days		
4.	Preparation of Patent application by Twitty, Wiewwright & Mills Assuming no complications Time: 60 Days	<u>Cost - Est.</u>	3,000.00
5.	Title certificate from Title Company 10 Certificates @ \$60.00 each Time: 2 weeks (This would be accomplished during preparation of patent application.)	<u>Cost-Firm</u>	600.00
6.	Filing fee with submission of patent application to Bureau of Land Management	<u>Cost-Firm</u>	25.00
7.	Processing patent application by Bureau of Land Management Time: 90 Days		

January 14, 1970

- | | | | |
|-----|---|------------------|-----------|
| 8. | Advertising patent application | | |
| | Time: 60 Days | <u>Cost-Est.</u> | \$ 100.00 |
| 9. | Submission of final papers of patent application
by Twitty, Sievwright & Mills to Bureau of
Land Management | | |
| | Time: 30 Days | | |
| | Purchase price @ \$5.00/acre | | |
| | 10 claims - 20.661 acres ea. | | |
| | | <u>Cost-Firm</u> | 1,050.00 |
| 10. | Processing final papers by Bureau of
Land Management | | |
| | Time: 90 Days | | |

Reviewing the above costs, the totals for patenting ten claims are as follows:

Total Firm Costs	\$6,325.00
Total Est. Costs	<u>3,100.00</u>
Total	\$ 9,425.00

I believe the above total figure should be close. Unless the attorneys run into difficulties, there should be no excessive charges.

Total time approximates 16 months.

Concerning the actual mineral survey, if there were 20 claims in the group, I could probably do them for \$375.00 each, thus saving you \$500.00. It would not be necessary to apply for patent for the full 20 claims at this time. However, the official survey remains good and can be used in conjunction with future patent applications.

I hope this letter provides the answers you were looking for. However, if you have any further questions, please feel free to contact me any time.

Sincerely yours,

Harvey W. Smith, E. M.

HWS:bp

cc: Mr. Dan McLeod

