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Item 1

4680 0033

Sulphur Mine  
Sulfur, NV



Looking N 20°E from SE corner Mohawk  
Terrace



NEVADA BUREAU OF MINES AND GEOLOGY  
UNIVERSITY OF NEVADA, RENO  
RENO, NEVADA 89507  
RETURN POSTAGE GUARANTEED



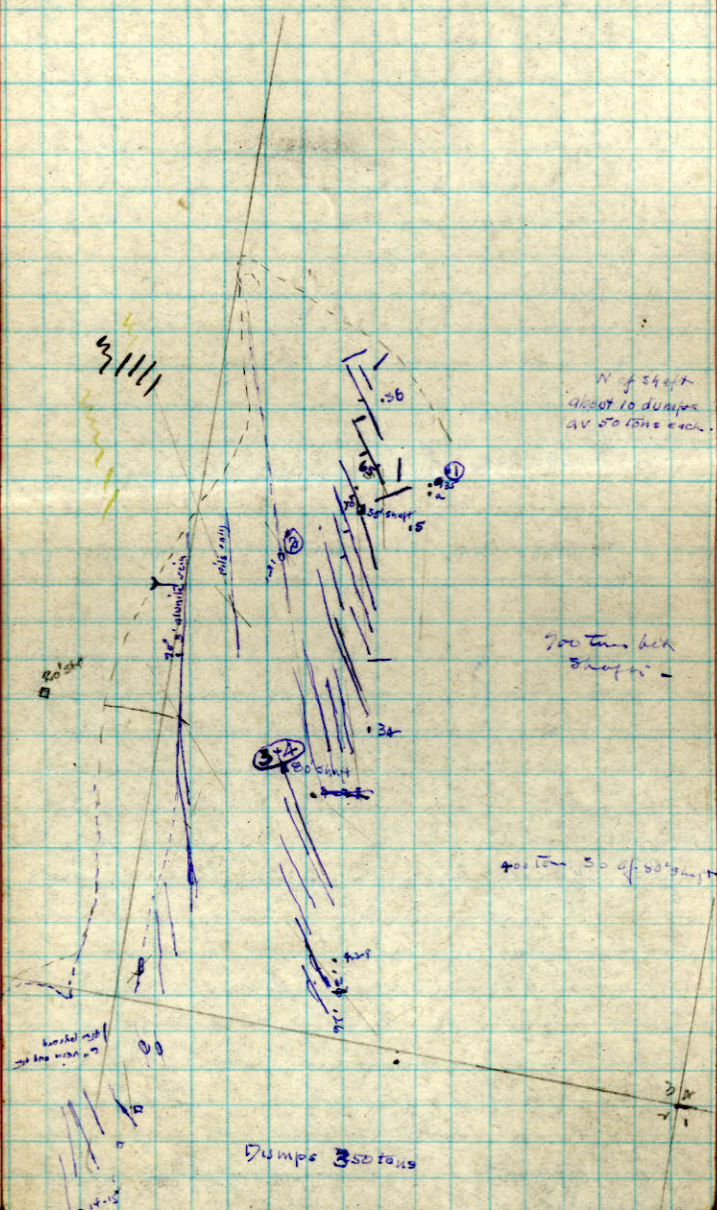
# Silver Camel Mining and Dev. Co Sulfur

- Sample No 1 Six postholes quarried on anas - Dump  
 No 35 Assay fuw ag 73.6 #23.60  
 Sample No 2 across 20' 8' from surface on south face of  
 10' shaft vein 6" blue cong 8" sheeted rusty glauconitic clay  
 6" sheeted blue gray cong. aw. 0.3 ag 15.4 #16.02  
 Sample No 3 40' down 80' shaft south wall across  
 vein above station - 33" cut aw. 0.3 ag 16.2 16.61  
 Sample No 4 face of drift at bottom of 80' shaft  
 28" cut. cur - ag 3.2 #3.20  
 Sample No 5 Dump (4 tons) of fines from ore shipped  
 from open cut above tunnel assay of car fuw ag 71.20  
 Sample No 6 24" cut silicified footwall Tunnel  
 170' in aw. 0.4 ag 1.6 #1.60  
 Sample No 7 12" cut flunite tunnel = 170' 6" w  
 170' in aw. 0.4 ag 0.40  
 Sample No 8 24" cut flunite 45' beyond No 5 & 7  
 in tunnel. #1 #2. cur. 0.3 ag 1.8 #2.21  
 Sample No 9 24" cut face Tunnel #1 #2  
 aw. 0.3 ag 5.2 #5.61  
 Sample No 10. 30" cur outcrop of vein Not tunnel  
 across gulch aw. 0.3 ag 6.0 #6.41

## Prints.

- #1. Mrs W & family [92]  
 #2. Eugene & family in mining car  
 #3. Mrs W & family with mine car  
 #4. Paul W & family.

- 94 grass from dump 50' shaft 13.20  
 99 general sample " 6.20  
 Two pierced samples from shaft 23.00 & 25.00  
 8" cur roof of station 50' level Nend - 22.10  
 Dump -  
 4 15.29 #28 - 11.40  
 5. 33.16 dated new wheel judge work -  
 36 4.50 wheel judge work now  
 10. Jim Bros dump. 11.60  
 14. " " " 9.60  
 15. new dump - 9.60 - ~~35.00~~  
 50' shaft.  
 12 oxidized material 21.80  
 13 " " 23.70  
 76. 6.30  
 77. 16.10  
 Joe Jorg  
 47. 45.0  
 49. end of Joe Jorg's 3.60





$$\begin{array}{r} 28 \overline{) 6121} \\ \underline{306} \phantom{00} \\ 1730 \phantom{00} \\ \underline{1520} \phantom{00} \\ 2100 \end{array}$$
$$\begin{array}{r} 513490.81 \\ \hline 698.16 \end{array}$$

054007 X

8.00 Webster horn down to 20'

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~~26.10~~ - 0.92  
- 55.945

Time	Temp	Wind	Waves	Sea	Clouds	Visibility	Remarks
0800	17.0	180	9	100	0000	100	8% Slight
0900	18.0	180	9	100	0000	100	8% Slight
1000	18.0	180	9	100	0000	100	8% Slight
1100	18.0	180	9	100	0000	100	8% Slight
1200	18.0	180	9	100	0000	100	8% Slight
1300	18.0	180	9	100	0000	100	8% Slight
1400	18.0	180	9	100	0000	100	8% Slight
1500	18.0	180	9	100	0000	100	8% Slight
1600	18.0	180	9	100	0000	100	8% Slight
1700	18.0	180	9	100	0000	100	8% Slight
1800	18.0	180	9	100	0000	100	8% Slight
1900	18.0	180	9	100	0000	100	8% Slight
2000	18.0	180	9	100	0000	100	8% Slight
2100	18.0	180	9	100	0000	100	8% Slight
2200	18.0	180	9	100	0000	100	8% Slight
2300	18.0	180	9	100	0000	100	8% Slight
2400	18.0	180	9	100	0000	100	8% Slight

Tunnel on ALN<sup>o</sup> 4 to Judge's house —

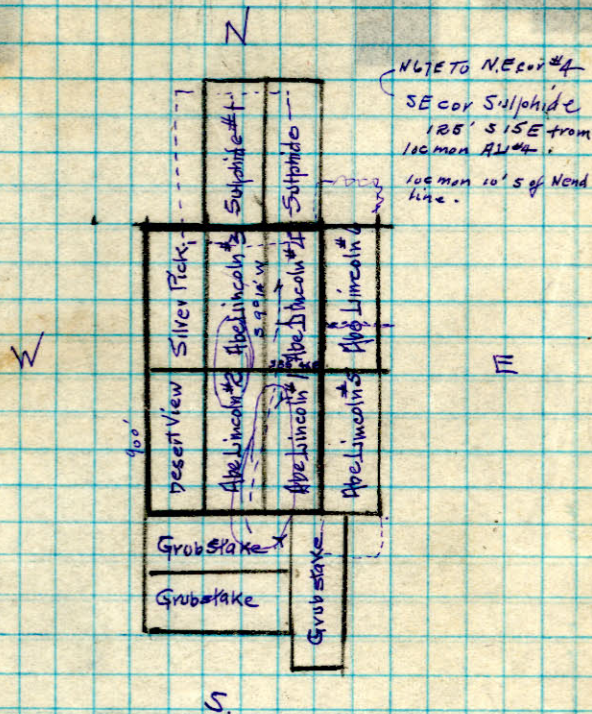
Hill

Drift on valley open

W.R. bluffs blue g/l and chert bedded

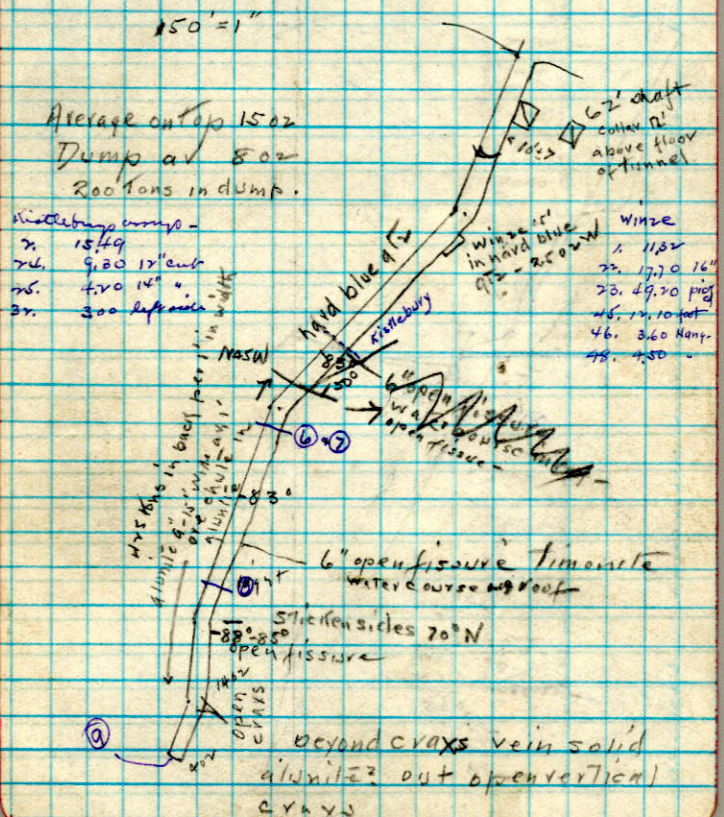


Silver Camel Mining and Development Co.  
June 16, 1921. Sulphur, Nev.

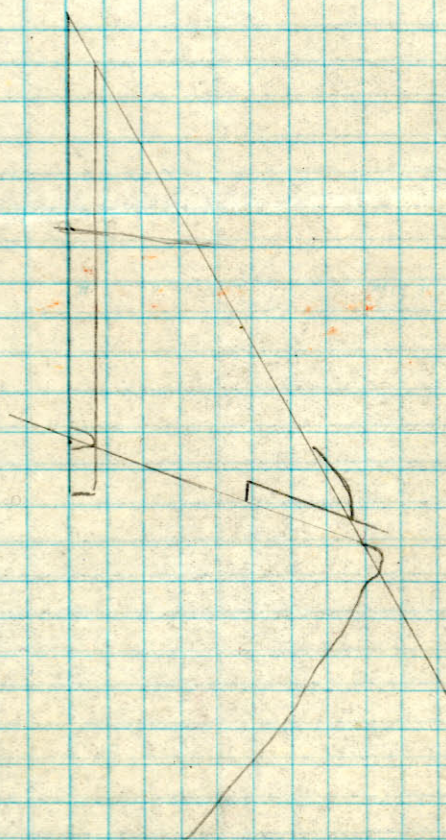
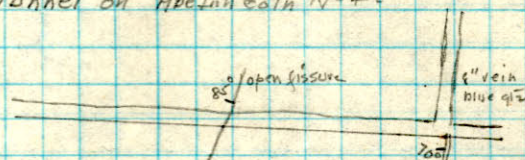


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Item

Tunnel on Big Hill vein  
Slope of hill over Tunnel  $30^\circ$   
from Entrance on dump to Sta 1 44' cover 29'  
S 22 W 15' winze - 4' beyond 15' wide  
Sta 1 - Sta 2 S 43 W 72 1/2'  
2 - 3 S 19 W 60'  
3 - 4 S 5 W 21' end of ore  
4 - face S 20 W 15'  
168 1/4  
45  
212



Tunnel on Abetneco N°4



S.C. M+D Co June 17, 1941

80' shaft on Abbeincoln No 3 -  
20' drift at bottom to north. follows  
vein  $2\frac{1}{2}$ ' wide 3' streak sil alunite, with  
10"-14" hard sil gravel on fastway - 10"-20" shatter  
zone on either side - horn silver in narrow seams  
along alunite - W side face cov. - 900 strike  
N 24 W dip 70° W.

Height of "little hill" AL#3 88' above  
high beach or collar of shaft at w foot of  
hill.

80' shaft about 300' N ROW of discov man of  
HL #3, which is south of N end center.



# 50 foot shaft- 80'±

30.	3.60 gauge	
31.	12.60 gauge	
32.	12.30 gauge	
44.	18.15 39'	
50.	18.70 general sample	
51.	7.80 "	
52.	2.80 well rock	
53.	10.80 41'	40' - R 3.60 53"
54.	10.20 42'	
55.	17.00 44'	
58.	7.75 43'	
59.	7.00 45'	
80.	7.09 46'	
	18.00 50'	
94.	13.20 grad from dump.	
99.	6.20 general sample	
	2 picked samples.	23.00
		25.00
	8" end roof at 50'	22.10
	28" face of drift.	3.20

# Officers Arrays of Kistletown samples

	array	avg	volume
69	.01	0.4	
72	.015	4.6	\$4.77
62	.01	6.8	7.04
63	.02	73.6	74.45
58	.02	7.0	7.25
74	Tr	0.2	
75	.02	14.80	14.52
76	Tr	1.60	1.66
77	Tr	0.20	
78	Tr	0.20	
79	.01	4.30	4.45
80	.01	18.20	18.86
81	Tr	0.40	
85	.01	13.80	14.62 gray
86	Tr	0.2	yellow
87	.01	3.8	4.03
88	Tr	0.3	
89	.01	16.0 - 6"	17.71
90	.01	0.6	
91	Tr	0.3	
92	.01	6.4	7.08
93	.01	4.0	4.43
94	.01	17.0 sample	13.28
95	.01	3.2	3.54
96	Tr	0.2	

50	00.81	
74	60.1	
45	7.00	
48	7.25	general sample 50' shaft
	00.1	
	08.1	empty tank
74	17.00	
74	10.1	
41	10.80	general sample 41'
	0.30	well rock
	7.80	
	18.90	general sample 50' shaft
	0.60	empty tank
	4.50	empty tank
	4.50	empty tank
	3.60	empty tank
	12.10	first wind of mine
	18.15	times general sample at 39'
	7.70	
	0.90	
	7.70	empty tank first of mine
	0.60	
	1.50	
	1.50	empty tank
	4.50	empty tank
	16.10	empty tank
	9.70	empty tank
	12.30	empty tank
	3.00	empty tank
	17.60	empty tank
	3.60	empty tank

# Smelter Returns -

silver 958

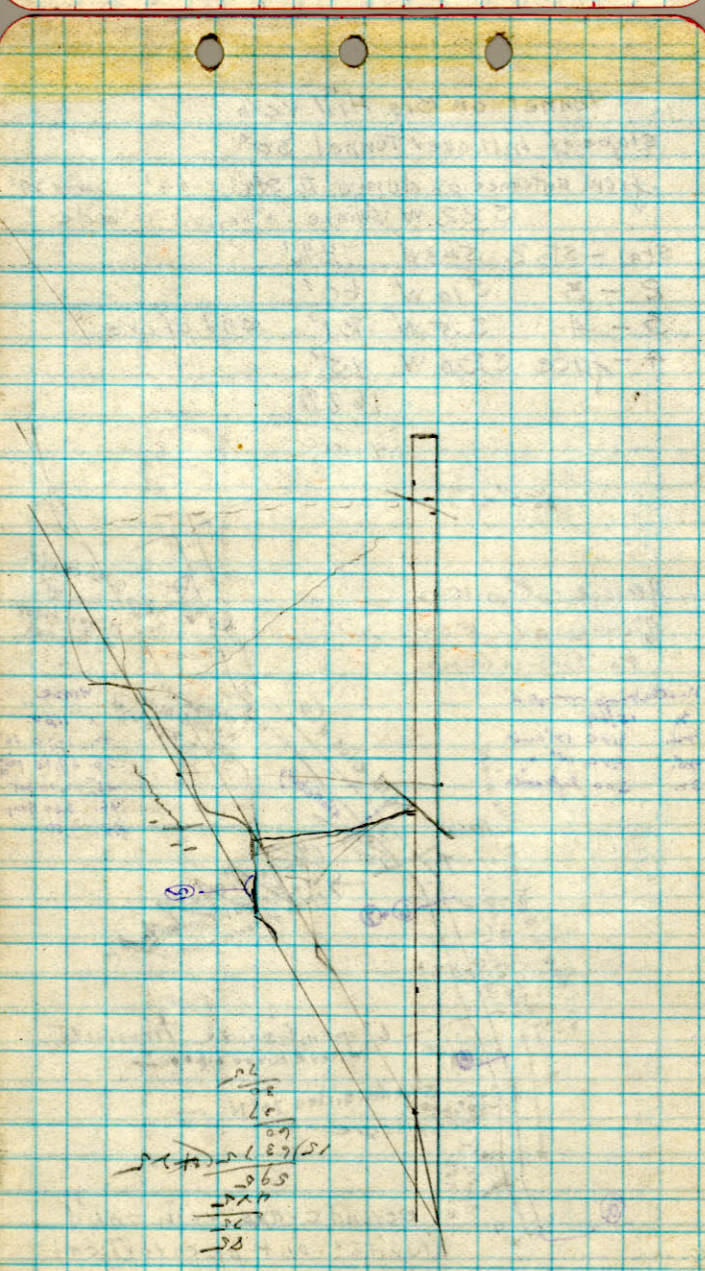
Rogers & Co	Aug 5 1918	348 lbs	.07	610.90	\$560.
Cisco Company	2/23/18	2660 lbs	.072	898.30	\$324.
W.A. Newland	1/24/15	1747	.065	374.00	194.
Webster	5/13/19	23,463 tons	.02	15.25	321.
M.F. Cochran	6/14/21	699 lbs.	.40	1385.10	460.
J. Brown	6/18/19	663 "	.11	1006.80	348
"	10/1/19	703 "	.13	1100.81	404
		gumbake			
Cisco Company	5/25/21	1196 lbs	.361	3439.82	1950.93
Rogers & Whiteaker	4/28/18	3845 "	.24	1325.85	2356.10



50 foot shaft- 80'2

30. 3.60 gauge  
 31. 12.60 gauge  
 32. 17.50 gauge  
 44. 18.50 39'  
 50. 18.70 general sample  
 51. 7.80 "  
 52. 3.30 well rock  
 53. 10.80 41' 40' - 23.60 33"  
 54. 10.20 42'  
 55. 12.00 44'  
 58. 7.25 43'  
 59. 7.00 45'  
 80. 7.09 46'  
 18.00 50'  
 94. 13.20 grad from dump.  
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 2 picked samples. 23.00  
 55.00  
 8" end roof at 50' 22.10  
 28" face of drift. 3.20

30 3.60 gauge 50' drift  
 31 12.60 gauge 50' drift  
 32 17.50 gauge 50' drift  
 44 18.50 39' drift  
 50 18.70 general sample  
 51 7.80 "  
 52 3.30 well rock  
 53 10.80 41' drift  
 54 10.20 42' drift  
 55 12.00 44' drift  
 58 7.25 43' drift  
 59 7.00 45' drift  
 80 7.09 46' drift  
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 55.00  
 8" end roof at 50' 22.10  
 28" face of drift. 3.20





143

item 1

May 15th, 1918.

Mr. F. B. McKevitt, Pres.,  
Nevada Sulphur Co.,  
Benicia, California.

Dear Sir:-

At your request I made a brief examination of the deposit of Alunite exposed on and near the Mayo claim of the Nevada Sulphur Company. The deposit lies along the foot of the western face of the mountain range passing along the eastern border of the Sulphur property. Former hot springs have deposited a thick layer of siliceous sinter containing masses of alunite which in this particular instance appears to be unusually large size. An area approximately 100 feet wide by 250 feet long is covered with the alunite. At the base of the deposit a tunnel has been driven into the alunite and exposes the following section: Three feet of pure alunite, soft and pulverulent, white in color; at the base it grades into harder massive and porcelaneous alunite with occasional thin seams and bunches of siliceous sinter, colored pink to red by traces of iron. The face of the tunnel is still in the solid alunite.

Owing to the steepness of the slope on which the spring deposits including the alunite were formed the bed dips about thirty degrees to the west. Judging from the width of the outcrop the alunite mass is probably at least fifty feet in thickness and I would advise the continuance of the tunnel to determine the extent and quality of the deposit. A similar tunnel driven about two hundred feet to the north will effect-



May 15th, 1903.

Mr. F. B. McKevitt, Pres.,  
Nevada Sulphur Co.,  
Benicia, California.

Dear Sir:-

At your request I made a brief examination of the deposit of alunite exposed on the Mayo claim of your property and the following is a preliminary report of my observations. The claim is located along the western slope of the main mountain range passing along the eastern border of the Sulphur claims. Former hot springs have deposited a thick layer of siliceous sinter over the face of the mountain slope and in and beneath the sinter a large deposit of alunite has formed. As exposed on the surface the alunite apparently covers an area approximately 160 feet wide and can be traced for at least 200 or 300 feet along the foot of the range. A tunnel has been run into the deposit near its base for a distance of twelve feet exposing the following section; three feet of pure white, soft, pulverulent alunite grading at the base into eight feet of harder massive and porcelaneous alunite, pink to red with traces of iron and occasional stringers of sinter. No samples were taken but the alunite in this area runs approximately nine per cent potash. The tunnel face is in solid alunite and I would advise driving the tunnel further to cross out the deposit. Owing to the steep slope on which the deposit was formed it apparently dips about thirty degrees to the west and if the surface exposure

1 May

12/3



ively sample the mass and determine its extent. Should the development work bear out the surface indications there will be at least ten thousand tons of the alunite available above the tunnel level. The depth to which the alunite can be followed can not be stated at present but at least the same tonnage can be safely assumed in addition.

In my opinion the deposit is exceedingly promising and the development work proposed should be done as soon as possible in order to prove the value and extent of the alunite. It is very probable that other masses of alunite occur on the adjoining claims but in the limited time at my disposal I was unable to determine this point.

Sincerely yours,



February 12th, 1920.

Dear Mr. Campbell:-

Your telegram caught me in the midst of preparing a brief summary of the later data I secured on my recent trip to Sulphur for your use in the coming conference as Mr. Crowley had already wired me concerning the meeting. I regret the time is so short that I can give you but a brief summary of my evidence but possibly it will serve your purpose for the present.

#### Location Work.

The only lode claims on which the location work has disclosed any deposits of alunite of possible commercial value are the Holy Smoke, Alunite, and Sulphate. On all of the other claims the location holes are either in the spring sinter with occasional kidneys of sulphur, or are in loose gravels with no possible interpretation as bonafide discoveries.

#### Amount and quality of alunite developed.

A liberal estimate of the probable production of the "veins" of alunite developed is between five and seven thousand tons. Eight samples were taken of the more favorable deposits which are being analysed at present by Mr. Binsmore. He will complete his work this coming Sunday but states to me that the samples taken from the Sulphate claim will run between nine and ten percent total potash. The samples from the eastern deposits of the Alunite claim are about four per cent material while the western deposits are similar to the Sulphate material. He is also running a test of the percentage possible to recover by present methods which will probably check the reported recovery at Marysville, Utah of seventy-five percent. It is difficult to estimate at present what the future of the potash market will be. Potassium sulphate is now quoted at a nominal price of \$225.00 per ton. This would give a gross value to the alunite of about \$30.00 per ton. The freight rates east are about eleven dollars a ton if the new rate proposed for potassium salts goes into effect this year. I have no figures as to the cost of treatment and mining but in Mineral Resources for 1916, published by the U. S. Geological Survey the statement of the chief chemist of the Principle Alunite Company now operating is quoted stating that under normal trade conditions potash can not be produced from alunite profitably unless some method is devised to utilize the alumina obtained as a byproduct.

At present most of the potash plants are shut down owing to the unsettled market as foreign potash is beginning to come in. While Frederick W. Brown, Executive Secretary of the U. S. Potash Producers Association believes that the American producers can hold their own eventually, yet it must be remembered that potash can be produced much more cheaply by the Nebraska and Searles Lake plants as well as by the cement plants than from alunite.



Validity of Lode Claims.

As I have already stated there are only three claims on which bonifide discovery of lodes can be possibly established. You are already familiar with my views on the matter. The supposed veins are surface deposits formed by hot springs percolating through the loose gravels washed from the mountain mass to the east and all of the claims are located on the alluvial fan. I have made the necessary slides to demonstrate the mountain mass to be composed of rhyolite and sharply distinguished from the gravels of the fan. Further I have demonstrated beyond question that the supposed walls of the veins are siliceous sinter and cemented gravels, both being products of the former hot springs. I have some presumptive evidence that these are underlain by unconsolidated layers of the gravels at the base. The gravels cannot by any stretch of the imagination be considered as rock in place. Whether the spring deposits which are formed at and near the surface can be so considered has never been decided to my knowledge, but I am personally of the opinion that they should be properly located as placers.

My former report covers the other phases of the question. As there is some possibility that the Alunite claimants might claim mineralization by silver bearing minerals I selected two samples from the most likely looking stringers associated with the alunite and had them assayed by Mr. Higgins, the State Assayer. The sample taken from the discovery cut on the Holy Smoke ran a fraction over an ounce of silver with a trace of gold, while the sample from the Alunite Claim ran 0.16 of an ounce. Neither of these are of commercial value although the highest grade material I could find. I might add that a sample taken from the face of Webster's tunnel ran 3.7 oz.

While in a good many ways we have a difficult case to establish yet I think that the odds are in our favor and should the conference fail to compromise the dispute I believe we can win out in the end. I will appreciate it if you will let me know as soon as possible the outcome of the meeting as there is no use going to further expense in getting my testimony ready if the case is not to come to trial. I will forward the bills already incurred here as soon as I get the returns from Dinmore.

With best wishes, I am,

yours sincerely,



CAMPBELL, ROBINS & SALTER  
ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA,

29 December 19.

Professor J. C. Jones,  
c/o Nevada Sulphur Company,  
Sulphur, Nevada.

Dear Professor Jones:--

While my recent visit at the mine is fresh in mind I write to speak of matters that I may have spoken of in conversation with you, which pertain to proofs necessary to be offered in the pending case.

Our theory is that the material in which the alunite is found is superficial and entirely epigenetic. To sustain that theory we should show that the material in which the so called veins occur is entirely different from the body of the mountain. It was with that in view that I suggested that you examine the rocks easterly from the deposits of sinter, southerly therefrom in the higher mountains, and westerly therefrom. Specimens of the sinter will of course be present at the trial and in order to show the difference, pieces also of the rock taken from outside the sinter deposits should be taken by you and preserved for the trial. As I suggested in conversation, I think it well that wherever you take the same you estimate its distance from some known point and take the bearing, making notes thereof at the time. Small samples will accomplish the purpose. It would also be well at the time of making such notes to estimate the elevation relative to the sinter deposits if aneroid readings are not used.

As I remember, you mentioned something of algae occurring in the so called alunite veins or the sinter. As I understand it, the presence of algae would indicate that vegetable life was present during the time the sinter was deposited. That fact would support our theory that the deposit is entirely superficial and not a part of the body of the mountain. I mention this to suggest that if specimens containing evidence of algae can not be obtained that you take them and identify the spot as above suggested where the same were taken and have them present at the trial.

I think it might also be well to make abundant notes on the deposit of sulphur now being worked by the company which have no walls but are irregular, separated and disconnected bodies. The importance of proving the manner of occurrence of sulphur is that as I understand it alunite is a sulphate of aluminum and potash and is therefore always formed in the presence of sulphureous fumes



CAMPBELL, ROBINS & SALTER  
ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA,

#2.

or as the books would put it, alunite is always paragenetic with sulphur.

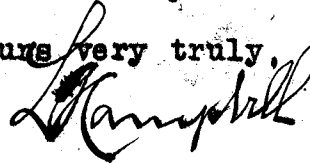
I do not hope to find a case reported in the books identical with this case. As I have thought it over since my visit, it appears to me that so far as the geology is concerned our only hope is that the material in which the veins (and we must admit the vein appearance) occur consists wholly of detrital rock and therefore the veins are not in rock "in place". To show that the material is not of the body of the mountain and is therefore not in place, we should produce in court specimens of the sinter in which the veins are found, which specimens of course will be identified as to point from which taken as above suggested.

I desire very much to go with you to Steamboat Springs before the time of trial in order to be able to show the similarity to which you referred to in conversation and to that end I will call you up the first time I am in Reno.

Aside from the questions that are strictly geological in nature, we have the question of relative value of the ground as lode or placer. In that you can be of inestimable assistance in obtaining all data possible on the uses and value of alunite and the possibility of working deposits of the value found in the claims in question at a profit. It may be contended by the Alunite Company that while the deposits as disclosed by present workings are not commercially profitable yet greater values may be expected with added depth. If you come upon anything pertaining to experience in alunite mining along the line of values increasing with depth, I will be glad if you will carefully note anything that may be useful to us on that subject.

Doubtless I will be here when you are ready to return to Reno and will be very glad to see you and go over matters pertaining to the case.

Yours very truly,



LGC.EL.

*Late* I now plan to leave here New Years Day  
to be gone 5 days



## CAMPBELL, ROBINS &amp; SALTER

ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA, Feb. 15th, 1920.

Prof. J. C. Jones,  
State University,  
Reno, Nevada.

Dear Prof. Jones;

I acknowledge receipt of your letter of the  
13th instant;

Mr. Hanson

Several gentlemen representing the Sulphur Co.  
and a Mr Hanson of Salt Lake representing the Alunite Company  
met yesterday and discussed terms of compromise. Mr Hanson sub-  
mitted by wire our proposition but up to arrival of No. 19 last  
night, on which train he left for San Francisco, he had no reply.  
I expect to hear tomorrow or next day whether or not our propo-  
sition is accepted by them. I will let you know as soon as  
i have definite word in the matter.

Yours truly,





January 20th, 1920.

Dear Mr. Campbell:-

I delayed answering your letter of the tenth as I expected to see you when you were in Reno and was disappointed when you did not appear. I have Dinsmore busy on the analyses of samples of the alunite that I took while at Sulphur and he will be ready to report in a few days. I took three samples from the more likely looking walls of the alunite to satisfy my curiosity as to the silver contents and found that traces of silver up to \$1770 a ton can be found if the specimen is picked. The one having the maximum value was from a thin streak of no commercial importance and the usual run is about thirty cents. If I hadn't happened to be a rather skilful high grader the higher value would have been overlooked.

As to Adams report which seemed to trouble you I will quote a bit, underlining a little and let you form your own conclusions. The opposition are welcome to use it if they wish, I trust they will.

p 498 "The northern group (referring to the mountains at Sulphur) --- consist of a mass of rhyolite, forming the main mountains. Along their western borders, on the lower slopes, there is an irregular area of water-laid deposits of Tertiary age. These Tertiary rocks, in which the sulphur deposits occur, consist of fragments of volcanics and beds of tuffs which in places have been largely altered since their deposition." While both Adams and the Fortieth Parallel Survey classify these beds as Truckee Miocene yet I am sure they have included a lot of the recent alluvial deposits in them. The Truckee beds outcrop under the alluvial fans near Squaw Head and probably about two miles south of the Mine and are buried to a depth of five hundred feet beneath the gravels in the area in controversy. In the hurried work of the earlier geologists they frequently did not distinguish between the alluvial fans and the underlying beds. On page 500 Adams mentions the occurrence of the alunite with the sulphur but nowhere mentions veins. He agrees with me that both sulphur and alunite were deposited by hot springs or solfataric action to use the synonymous term.

I will start grinding my slides Saturday and hope to have them examined during the next ten days. If you are in Reno at anytime call me up as I do not expect to be out of town until after the trial is over.

With best wishes, I am,

yours sincerely



UNIVERSITY OF NEVADA  
RENO, NEVADA

STATE MINING LABORATORY

Reno, January 14, 1920.

Mr. J. C. Jones,  
Reno, Nevada.

Dear Sir: I have this day assayed your samples, (three in number), submitted to me on January 10, 1920, and certify their contents to be as follows in gold and silver:

Number	Ounces Gold per ton	Value of Gold	Ounces Silver per ton	Value of Silver	Total value
A1	.005	\$0.10	1.19	\$1.60	\$1.70
A2	.006	.12	.16	.21	.33
No mark	.013	.26	5.70	7.69	7.95

Gold valued at \$20 per ounce.

Silver valued at \$1.35 per ounce.

Respectfully yours,

*H. E. Higgins*  
Assayer.



CAMPBELL, ROBINS & SALTER  
ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA,

10 January 20

Professor J. C. Jones,  
State University,  
Reno, Nevada.

Dear Professor Jones:--

I have recently read Adam's article on Rabbit Hole Sulphur Mines in Bulletin U. S. Geology #225, page 500, published in 1894. I observe that in that article the writer refers to alunite as being in the eruptives. I am assuming that our adversaries will attempt to use that article to its fullest extent and am speaking to you on it to suggest that you use your ingenuity in devising an answer to them if they attempt to use it and I am sure that I can rely upon you to completely answer them. I also read U. S. Geology Bulletin #511, page 61 - 3- 1912 covering alunite at Marysvale, Utah mentioned by you, as I remember. I am a little disappointed that none of these bulletins refer to sulphur and alunite as being in placer formation.

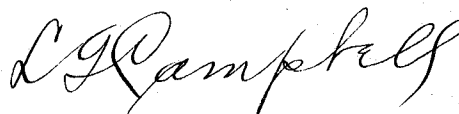
I expect to be in Reno next week and will try to see you.

With pleasantest recollection of our recent meeting,

I am,

Yours very truly,

LGC.El.





143  
Item 1

Reno, Nevada,  
November 25th, 1917.

Mr. L. G. Campbell,  
Winnemucca, Nevada.

Dear Sir:-

At your request I have made an examination of the property of The Nevada Sulphur Company located near Sulphur, Nevada, with especial reference to the validity of the lode claims recently located on the premises of the above company. The following is a condensed statement of my conclusions after a careful examination of the facts as disclosed by my observation and study.

The lode claims overlap portions of the Shoel #1, Shoel #2, Shoel #3, Shoel #4, Shoel #5, and Shoel #8 placer claims of the Nevada Sulphur Co. They cover a strip 3000 to 4500 feet wide running nearly east and west across the central portion of the property, then southern boundary passing a short distance north of the retorts. The area includes a considerable amount of proven sulphur ground including the Bank Mine.

The lode claims are located on a series of fissures running North 20° East and parallel with the major fault appearing at the foot of the mountain range to the east. The successive movements whose sum is responsible for the present elevation of the range above the valley have been along this fault and the fissures passing through the property are in part probably secondary cracks opened in the loose material at the time of the resultant earthquakes. As far as could be observed no differential movement had taken place along the fissures.

The alunite is at present being developed on two rather closely spaced groups of fissures about one thousand feet apart and located across the common border of the Shoel #1 and Shoel #2 claims at the



center and near the eastern border of the claims. The individual fissures are from three inches to six feet in width and in places are completely filled with massive alunite, chalky white in color and breaking with a characteristic transverse fracture. Numerous rocks and boulders that had fallen into the open fissures before the deposition of the alunite are frequently embedded in it, and occasionally a layer of chalcedony a variety of quartz, lines the walls beneath the alunite. A few nodules of the chalcedonic quartz were noted in the largest vein from which the present shipment is being taken.

The particular fissures which contain a sufficient quantity of the alunite to warrant their exploration are in a very hard siliceous breccia or cemented gravel with angular pebbles. It must be admitted that these deposits are vein-like in form, that they have a little chalcedonic quartz in them, and that they have walls. These points will be emphasized by the parties in possession of the lode claims and without a fuller understanding of the origin of the deposits they would seem to prove their case. After a careful study of the situation, however, I do not believe that the alunite should legally be separately located as lodes but should belong with the other minerals admittedly included in the placer locations.

My reasons for this belief are as follows: First, the claims are not located in rock in place as an integral part of the mountain. They are located on the alluvial slope extending from the foot of the mountain distant a half to one mile from the claims. The clays, sands, and gravels resulting from the disintegration of the rocks at the surface of the mountain have been carried by the wash of the rains, etc. out into the valley forming a long gentle alluvial slope as maybe found about any mountain range in the vicinity. The ground covered by the placer claims of the Nevada Sulphur Company are entirely located on this alluvial apron. A series of hot springs formerly rose along the lines of the fissures beginning their activity when the alluvial slope was



but partly formed and the building up of the remainder of the alluvial apron was the joint work of the spring deposits and the wash from the mountain to the east. Wherever the springs were somewhat distant from the range as to the north the spring deposits accumulated faster than the material was brought from the mountain range and a low terrace that in part dammed back the flow of debris was formed of nearly pure siliceous sinter or chacedonic quartz. In the area of the alunite deposits however, the flow of the alluvium was more rapid than the deposits from the springs, and as the boulders and sands were washed on to and over the springs the silica depositing from the rapidly cooling hot water cemented the fragments of rock together forming the breccias noted.

These areas of cementation are quite local and are chiefly distributed along two parallel zones running a little east of north through the western claims of the Sulphur Company. Elsewhere the hot waters percolated through the gravels and sands of the alluvium, leaching and bleaching the rock fragments and depositing sulphur, cinnabar, gypsum, calcite, and alunite. About the borders of the property where the hot springs were absent the alluvium is still in its original condition of unconsolidated and illassorted clays, sands, and gravels. All of these different phases are part of the same alluvial deposit and have been formed simultaneously by similar processes.

The contemporaneous spring and alluvial action is indicated by the occasional remnants of old spring craters composed of practically pure siliceous sinter interbedded with the gravels and similar craters can be still observed on the present surface especially on the ridge just west of the retorts, On the Shoel #5, Shoel #7, and to the north. The warm, sulphurous water obtained from shallow wells on the valley flat adjacent to the western boundary of the property suggests that the hot waters are still flowing feebly.



As the breccia is a surface deposit formed by the cementation of the alluvium washed on to the spring terraces it is difficult to see why it should be considered as "rock in place".

Second, the fissures in which the alunite mined is found are the open channels or conduits which the hot waters maintained through the deposits formed previously at the surface. They are in no way different from the openings maintained through the surface deposits of hot springs flowing at present.

In studying the processes of deposition at Steamboat Springs during the past years I have learned that the silica carried in solution by the hot water does not begin to deposit until it has partially cooled. As a result there is no deposit of silica formed by the boiling springs in the conduits and it is only after the water has cooled in flowing over the surface that the silica is separated. At Sulphur as at Steamboat Springs, the conduits are for the most part clean and free from siliceous deposits indicating that the water formerly flowing was approximately boiling. It is only in the conduits that furnished the final flow of the water that are partially lined with silica indicating the gradually falling temperature as the springs began to die. As the alunite is deposited on this silica it was formed during the closing stages of the spring activity. The open character of the fissures and the late deposition of the alunite found in them is further indicated by the abundant loose boulders and rocks that had fallen in from the surface, and around which the alunite was deposited.

The alunite does not fill the fissures uniformly but is more in the form of irregular masses. In the development work that has been done the face of the tunnels are at times in a mass of broken rock or have ended in an open fissure. It is difficult to find any outcrop of the alunite at the surface. In the western group the alunite apparently ends 20 feet below the surface craters marking the outflow of the waters that deposited the alunite. At the eastern group the craters have been



eroded and the alunite can be followed to within a few feet of the surface. While the alunite is somewhat soluble and has probably been leached to a large extent from the outcrops yet it is probably that the relations found in the western group are a true indication that the alunite ceased to deposit as it reached the top of the fissures.

The alunite mined, then, was deposited by the hot waters rising through the conduits maintained through the previous deposits formed and separated in large irregular masses from the cooler waters of the final stage of the period of spring activity.

Third, The alunite is not confined to the conduits but is also widely disseminated throughout the alluvium that has been in contact with the hot waters. In other words its occurrence is entirely similar to the sulphur. Both the alunite and sulphur were simultaneously deposited by the heated waters and the same rule that applies to the method of location of the one should apply to the other. Stringers and veinlets of sulphur can be found throughout the deposits as local phases of the disseminated bodies and the only difference between them and the veinlike deposits of alunite is one of magnitude. Unless every stringer occurring in a placer deposit should be separately located as a vein, it is difficult to foresee where the line should be drawn.

As far as our present knowledge goes deposits of alunite formed by hot waters may take one of two forms. Either the deposit is formed by the action of hot waters containing sulphuric acid on rocks composed of potassium-aluminum silicates, the alunite separating out as a disseminated deposit, in which small veins of nearly pure alunite may be included, in the altered rocks; or the alunite may travel for some distance in solution and be deposited in foreign rocks as veins. In the Marysvale deposits which are the only ones of the latter type so far described in this country much of the alunite is crystallized, a feature entirely lacking at Sulphur.



The deposit at Sulphur is rather of the disseminated type and the veins are but a special phase of the general deposit. They are part and parcel of the combined spring and alluvial deposits and the interesting question as to whether such local masses can be located as veins, even though veinlike in form, in the midst of a valid placer location remains to be determined. Personally I incline to the opinion that they should be included under the placer location but I must leave the final decision to your wider knowledge and the courts.

The alunite "veins" do not pass beyond the confines of the placer claims, although the general zone of hot spring action extends to the north beyond the end lines. This factor is <sup>up</sup> known to the lode locators as they did not locate their claims far enough to the north to claim discovery outside the property. Consequently they have lost their opportunity to claim discovery outside the boundary lines of the placer claims and their locations made in the absence of consent by the Sulphur Company are invalid on account of trespass.

I have purposely refrained from mentioning the detailed information I have based this report upon, judging that you wished a concise statement of the facts in the case upon which to base your action. I will be glad however to give you fuller details at any time you wish them.

Respectfully submitted

Geologist.



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA, Mar. 6, 1920

Prof. J.C. Jones,  
University of Nevada,  
Reno, Nev.

Dear Prof Jones:

Following are the results of analyses of the eight samples of Alunite you submitted to me recently. Complete analysis made on samples Nos. 2, 5 and 6, practically complete analyses on remaining samples with results as indicated below.

### Sample No. 1

Silica-----	.80%
Alumina-----	40.72"
Sulphur Trioxide-----	34.96"
Potash-----	8.42"
Soda-----	1.91"
Water at 110° C. -----	.19"
Combined water-----	13.85"
Chlorides-----	trace
Nitrates-----	"
Borates-----	none
Total-----	100.85

### Roasting and Leaching

Potash-----	8.32%
Soda-----	1.56"

### Sample No. 3

Silica-----	2.35%
Alumina-----	37.92"
Sulphur Trioxide-----	35.38"
Potash-----	9.51"
Soda-----	1.21"
Water at 110° C. -----	.11"
Combined water-----	14.56"
Chlorides-----	trace
Nitrates-----	"
Borates-----	"
Total-----	101.04

### Sample No. 2

Silica-----	3.93%
Alumina-----	35.88"
Sulphur Trioxide-----	37.78"
Potash-----	6.80"
Soda-----	2.54"
Water at 110° C. -----	.13"
Combined water-----	12.38"
Chlorides-----	trace
Nitrates-----	none
Borates-----	"
Magnesium Oxide-----	.13"
Calcium Oxide-----	.32"
Phosphoric Acid-----	.05"
Total-----	99.94"

### Roasting and Leaching

Potash-----	6.65%
Soda-----	2.14"

### Sample No. 4

Silica-----	2.51%
Alumina-----	38.72"
Sulphur Trioxide-----	34.66"
Potash-----	8.67"
Soda-----	1.98"
Water at 110° C. -----	.14"
Combined water-----	14.01"
Chlorides-----	trace
Nitrates-----	"
Borates-----	none
Total-----	100.69



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA,

Prof. Jones, No. 2-

Sample No. 3

Roasting and Leaching

Potash----- 9.44%  
Soda----- 1.21"

Sample No. 5

Silica----- 3.51%  
Alumina----- 35.84"  
Sulphur Trioxide--- 34.70"  
Potash----- 8.74"  
Soda----- 2.34"  
Water at 110° C.--- .27"  
Combined water----- 13.86"  
Chlorides----- trace  
Nitrates----- none  
Borates----- "  
Magnesium Oxide----- .078"  
Calcium Oxide----- .41%  
Phosphoric Acid----- .047"  
Total----- 99.795"

Roasting and Leaching

Potash----- 8.50%  
Soda----- 1.44"

Sample No. 7

Silica----- 2.38%  
Alumina----- 40.98"  
Sulphur Trioxide--- 35.70"  
Potash----- 3.49"  
Soda----- 5.38"  
Water at 110° C.--- .48"  
Combined water----- 12.97"  
Chlorides----- none  
Nitrates----- trace  
Borates----- none  
Total----- 100.38

Roasting and Leaching

Potash----- 1.97%  
Soda----- 5.22"

Sample No. 4

Roasting and Leaching

Potash----- 8.52%  
Soda----- 1.51"

Sample No. 6

Silica----- 36.81%  
Alumina----- 23.40%  
Sulphur Trioxide--- 24.04"  
Potash----- 2.35"  
Soda----- 3.47"  
Water at 110° C.--- .79"  
Combined water----- 9.35"  
Chlorides----- trace  
Nitrates----- none  
Borates----- "  
Phosphoric acid--- "  
Magnesium Oxide--- .07"  
Calcium Oxide----- .38"  
Phosphoric Acid--- .09"  
Total----- 100.75

Roasting and Leaching

Potash----- 1.89%  
Soda----- 3.52"

Sample No. 8

Silica----- 2.25%  
Alumina----- 39.14"  
Sulphur Trioxide--- 36.70"  
Potash----- 9.14"  
Soda----- 1.14"  
Water at 110° C.--- .29"  
Combined water----- 11.38"  
Chlorides----- none  
Nitrates----- trace  
Borates----- none  
Total----- 100.04

Roasting and Leaching

Potash----- 8.74%  
Soda----- 1.02"



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA.

Prof. Jones. No. 3-

The samples were thoroughly mixed and finely pulverized portion for analysis obtained by quartering and bottled. A one gram portion was fused with  $\text{Na}_2\text{CO}_3$  in a platinum crucible, the fused mass disintegrated with  $\text{HCl}$  evaporated to dryness in evaporating dish, residue treated with concentrated  $\text{HCl}$  again evaporated to dryness to render Silica soluble, taken up with  $\text{HCl}$  and hot water, and filtered. Filtrate made up to 200 c.c. and aliquot portions taken for  $\text{Al}_2\text{O}_3$  and  $\text{SO}_3$  determinations.

Another portion of the thoroughly mixed sample was taken for  $\text{K}_2\text{O}$  and  $\text{Na}_2\text{O}$  determinations, the well known J. Lawrence Smith method used, the only modification being that to each sample before subjecting to fusion a  $1/2$  gram portion of pure silica was added. After fusion the standard method using  $\text{P}_2\text{O}_5$  as the precipitant was carried out in detail.

WATER FREE AND COMBINED. The amount of free water found to be present was very small, average of all samples about .2% when heated for five hours at a temperature of  $110^\circ \text{F}$ , and there was no change in weight by a further heating of the samples for five hours at a temperature of  $180^\circ \text{F}$ . The combined water was determined by noting the loss in weight of a carefully weighed sample after subjecting to roasting in a platinum dish at a red heat for twenty minutes. This drives off all of the water and three-fourths of the sulphur. Calculating the amount of sulphur as  $\text{SO}_3$  that would thus be eliminated, from the amount of sulphur as  $\text{SO}_3$  obtained by direct determination, and subtracting from the total loss in weight gives the amount of COMBINED WATER which figure is approximately correct. This was the only method at hand as I did not have combustion tubes for making combined water determinations.

### EXAMPLE OF METHOD EMPLOYED.

#### Sample No. 1

Amount of $\text{SO}_3$ found	.3496	(34.96%)	
Three-fourths of .3496	=	.2622	
Loss on ignition	.4026		
.4026 - .2622	=	.1404	water
		.1404%	Total
14.04 1.19	=	13.85	combined water

A one gram portion of the sample was roasted in an open platinum dish at red heat for 15-20 minutes, leached with hot water until about 200c.c. had passed through the filter. The filtrate was made up to the mark and an aliquot portion taken for  $\text{K}_2\text{O}$  and  $\text{Na}_2\text{O}$  determinations, to





# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA,

Prof. J.C. Jones No. 4-

determine what amount of  $K_2O$  originally present in the ore is obtainable by the roasting and leaching process. Found approximately 98% of the total potash present was recovered.

By roasting all or nearly all of the potash is combined with the sulphur to form potassium sulphate which is readily soluble in water, the aluminum after roasting is in the form of aluminum oxide. By leaching the potassium sulphate is dissolved, leaving the insoluble aluminum oxide behind. The percentage of  $K_2O$  obtained after roasting and leaching is probably higher than would be obtained when applied on a commercial scale.

Very truly yours,



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA, Mar. 5, 1920

Prof. J.C. Jones,  
University of Nevada,  
Reno, Nevada.

Dear Prof Jones:

Following are the results of analyses of the eight samples of Alunite you submitted to me recently. Complete analysis made on samples Nos. 2, 5 and 6, practically complete analyses on remaining samples with results as indicated below.

### Sample No. 1

Silica-----80%  
Alumina-----40.72"  
Sulphur Trioxide-----34.96%  
Potash-----8.42"  
Soda-----1.91"  
Water-----at 110°C.-.19"  
Combined water-----13.85"  
Chlorides-----trace  
Nitrates-----"  
Borates-----"

### Roasting and Leaching

Potash-----8.32%  
Soda-----1.56%

### Sample No. 2

Silica-----3.93%  
Alumina-----35.88%  
Sulphur Trioxide-----37.78%  
Potash-----6.80%  
Soda-----2.54%  
Water at 110°C-----.13"  
Combined water-----12.38"  
Chlorides-----trace  
Nitrates-----none  
Borates-----"  
Magnesium Oxide-----.13"  
Calcium Oxide-----.32"  
Phosphoric Acid-----.05%

### Roasting and Leaching

Potash-----6.65%  
Soda-----2.14"

### Sample No. 3

Silica-----2.35%  
Alumina-----37.92%  
Sulphur Trioxide-----35.38%  
Potash-----9.51"  
Soda-----1.21"  
Water at 110°C-----.11"  
Combined water-----14.56"  
Chlorides-----trace  
Nitrates-----"  
Borates-----"

### Roasting and Leaching

Potash-----9.44  
Soda-----1.21

### Sample No. 4

Silica-----2.51%  
Alumina-----36.72"  
Sulphur Trioxide-----34.66"  
Potash-----8.67"  
Soda-----1.98%  
Water--at 110°C-----.14%  
Combined water-----14.01"  
Chlorides-----trace  
Nitrates-----"  
Borates-----none

### Roasting and Leaching

Potash-----8.52%  
Soda-----1.51"



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA,

Prof. J.C. Jones, No. 2-

### Sample No. 5

Silica-----3.51%  
Alumina-----35.84%  
Sulphur Trioxide-34.70"  
Potash-----8.74"  
Soda-----2.34"  
Water at 110°C.-.27"  
Combined water--13.86"  
Chlorides-----trace  
Nitrates-----none  
Borates-----"  
Magnesium Oxide-.078%  
Calcium Oxide---.41%  
Phosphoric Acid .047"

Roasting and Leaching <sup>99.195</sup>

Potash-----8.50%  
Soda-----1.44%

### Sample 7

Silica-----2.38%  
Alumina-----40.98"  
Sulphur Trioxide35.70"  
Potash-----2.49%  
Soda-----5.38"  
Water--at 110°C. .48"  
Combined water--12.97"  
Chlorides-----none  
Nitrates-----trace  
Borates-----none

Roasting and Leaching <sup>100.56</sup>

Potash-----1.97%  
Soda-----5.22"

### Sample No. 6

Silica-----36.81%  
Alumina-----23.40%  
Sulphur Trioxide---24.04%  
Potash-----2.35"  
Soda-----3.47%  
Water at 110°C.-----.79"  
Combined water-----9.35"  
Chlorides-----trace  
Nitrates-----none  
Phosphoric acid-----"  
Magnesium Oxide-----.07"  
Calcium Oxide-----.38"  
Phosphoric Acid-----.09"

Roasting and Leaching <sup>100.75</sup>

Potash-----1.89%  
Soda-----3.52"

### Sample No. 8

Silica-----2.25%  
Alumina-----39.14"  
Sulphur Trioxide---36.70"  
Potash-----9.14"  
Soda-----1.14"  
Water at 110°C.-----.29"  
Combined water-----11.38"  
Chlorides-----none  
Nitrates-----trace  
Borates-----none

Roasting and Leaching <sup>100.04</sup>

Potash-----8.74%  
Soda-----1.02"

The samples were thoroughly mixed and finely pulverized, portion for analysis obtained by quartering and bottled. A one gram portion was fused with  $\text{Na}_2\text{CO}_3$  in a platinum crucible, the fused mass disintergrated with HCl evaporated to dryness in evaporating dish, residue



# UNIVERSITY OF NEVADA

## PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA,

Prof. J.C. Jones, #3

treated with concentrated HCl again evaporated to dryness to render SILICA insoluble, taken up with HCl and hot water, and filtered. Filtrate made up to 200 c.c. and aliquot portions taken for  $Al_2O_3$  and  $SO_3$  determinations.

Another portion of the thoroughly mixed sample was taken for  $K_2O$  and  $Na_2O$  determinations, the well known J. Lawrence Smith method used, the only modification being that to each sample before subjecting to fusion a  $\frac{1}{2}$  gram portion of pure silica was added. After fusion the standard method using  $P_2Cl_6$  as the precipitant was carried out in detail.

**WATER FREE AND COMBINED.** The amount of free water found to be present was very small, average of all samples about .2% when heated for five hours at a temperature of  $110^{\circ}F$ , and there was no change in weight by a further heating of the samples for five hours at a temperature of  $180^{\circ}F$ . The combined water was determined by noting the loss in weight of a carefully weighed sample after subjecting to roasting in a platinum dish at a red heat for twenty minutes. This drives off all of the water and three-fourths of the sulphur. Calculating the amount of sulphur as  $SO_3$  that would thus be eliminated, from the amount of sulphur as  $SO_3$  obtained by direct determination, and subtracting from the total loss in weight gives the amount of COMBINED WATER which figure is approximately correct. This was the only method at hand as I did not have combustion tubes for making combined water determinations.

**EXAMPLE OF METHOD EMPLOYED.**

Sample No. 1

Amount of $SO_3$ found	.3496	(34.96%)
Three-fourths of .3496	= .2622	
Loss on ignition	.4026	
.4026 - .2622	= .1404	
	= .1404%	total water
14.04 1 .19	=	13.85 combined water

A one gram portion of the sample was roasted in an open platinum dish at red heat for 15-20 minutes, leached with hot water until about 200 c.c. had passed through the filter. The filtrate was made up to the mark and an aliquot portion taken for  $K_2O$  and  $Na_2O$  determinations, to determine what amount of  $K_2O$  originally present in the ore is obtainable by the roasting and leaching process. Found approximately 98% of the total potash present was recovered.

By roasting all or nearly all of the potash as combined with the sulphur to form potassium sulphate which is readily soluble in water, the aluminum after ~~roasting~~ *leaching* is in the form of aluminum oxide, leaving the insoluble aluminum oxide behind. The percentage of  $K_2O$  obtained after roasting and leaching is probably higher than would be obtained when



SANFORD C. DINSMORE  
STATE FOOD & DRUG COMMISSIONER  
STATE COMMISSIONER OF WEIGHTS & MEASURES



MILES B. KENNEDY, CHEMIST  
WAYNE B. ADAMS, CHEMIST

# UNIVERSITY OF NEVADA

PUBLIC SERVICE DEPARTMENT

DIVISION OF FOOD AND DRUGS CONTROL  
WEIGHTS AND MEASURES INSPECTION

RENO, NEVADA,

Prof. J.C. Jones #4

applied on a commercial scale.

Very truly yours,

A handwritten signature in cursive script, reading "S. C. Dinsmore".



# STANDARD OIL COMPANY

INCORPORATED IN CALIFORNIA

## PIPE LINE DEPARTMENT

GEO. M. BROWN  
SUPT. KERN DISTRICT

BAKERSFIELD, CAL., Aug. 6, 1921.

Professor J. Claude Jones,  
Reno, Nevada.

Dear Mr. Jones:-

Beg to acknowledge receipt of your letter of July 2nd; also your letter of August 2nd containing report on the property of the Silver Camel Mining & Development Company.

I am forwarding your bill to Mrs. Lange who is temporarily at Palo Alto and she will send you a check immediately.

I expect to be in Reno sometime this month, at which time I hope to meet you and further discuss the property. While at Sulphur did you form an idea as to the probable cost per ton of taking out the pay ores above the 50 foot level and running through the mill?

My son Eugene enters the University of California August 15th. He thoroughly enjoyed his visit at Sulphur and came back with the thought that he might like to spend some time at the University of Nevada if you were to remain connected with the School of Mines.

Hoping to see you very soon.

Sincerely yours,

BB

*Geo. M. Brown*



September 24th, 1919.

Mr. L. G. Campbell,  
Winnemucca, Nevada.

Dear Mr. Campbell:-

I recieved your letter containing the news that Mr. Crowley had been under the weather and that our long postponed trip would have to wait a little longer. I have been head over heels in work trying to recover from my long absence from the city and have at last got down to my correspondence. I will be glad if you can let know as far ahead of time as possible when we can go as this is the busiest fall I have ever put in and would like to plan ahead as far as possible.

As to getting another witness or two I am afraid it is out of the question to get a Government Geologist as they are forbidden to do any expert work for anyone but the Government while in its employe. It might be a good plan to try Professor Louderback of the University of California, or possibly you can get Fred Searls. Either of them are very good men. You had better get a geologist rather than a mining man as the case is one that rests on the recognition of the alluvial character of the walls of the alunite. If there are any suggestions I can make I will be glad to do so.

With best wishes, I am,

yours sincerely,



# NEVADA LABORATORIES, INC.

ASSAYERS AND CHEMISTS

228 SIERRA STREET

RENO, NEVADA,

To **J.C. Jones**

**6/23/21**

The following is my report on samples submitted:

YOUR MARKS	GOLD		SILVER		COPPER		LEAD		TOTAL VALUE PER TON
	OUNCES	VALUES	OUNCES	VALUES	%	VALUE	%	VALUE	
385 #1 Dump 35' 20" 8' down	Trace	-----	23.6	\$ 23.60					\$23.60
386 #2 10' shaft	.03	\$ .62	15.4	15.40					16.02
387 #3 40' down 8' shaft	.02	.41	16.2	16.20					16.61
388 #4 50' shaft	None	-----	3.2	3.20					3.20
389 #5 Dump from tunnel above cut 24' cut 31' 170' in	Trace	-----	21.2	21.20					21.20
390 #6 24' cut 31' 170' in	Trace	-----	1.6	1.60					1.60
391 #7 12' cut above 120' in	Trace	-----	.4	.40					.40
392 #8 24' cut above 165' in tunnel	.02	.41	1.8	1.80					2.21
393 #9 24' cut above 165' in tunnel	.02	.41	5.2	5.20					5.61
394 LD #10 67 PER OZ. 20' cut above 165' in across tunnel	.02	.41	6.0	6.00					6.41
CHARGES \$ SILVER AT <u>1.00</u> PER OZ. COPPER AT _____ PER LB. LEAD AT _____ PER LB.									

\$10.00

*V.M. Henderson*

ASSAYER

*Ed Hunt*



SALES AND AUDITING DEPARTMENT  
BENICIA, CALIF.

# NEVADA SULPHUR CO.

~~XX BENICIA, CALIF. XX~~

Sulphur, Nevada.  
March 15- '1920.

Professor J. C. Jones,  
University of Nevada,  
Reno, Nevada.

Dear Professor Jones:-

Enclosed find copy of telegram I sent you today, and I hope the report is already in the mail, and on its way to me.

I have an appointment in San Francisco, this week, with some people, whom I have interested in the financing of my proposition, and your report will undoubtedly assist me greatly, in interesting them.

There seems to be no doubt that I shall be able to get the money I require and so be in a position to go ahead with my new plant.

With very kindest regards from Mrs. Crowley and myself, I am,

Yours sincerely,

AJC/LC.

Arthur J. Crowley



CLASS OF SERVICE DESIRED	
Telegram	<input checked="" type="checkbox"/>
Day Letter	<input type="checkbox"/>
Night Message	<input type="checkbox"/>
Night Letter	<input type="checkbox"/>

Patrons should mark an X opposite the class of service desired; OTHERWISE THE MESSAGE WILL BE TRANSMITTED AS A FULL-RATE TELEGRAM

# WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT

GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

Receiver's No.
Check
Time Filed

Send the following message, subject to the terms  
on back hereof, which are hereby agreed to

To A. J. Crowley Feb 11 191

Street and No. Shepherd

Place New

Will send copy of report and statement

of case to Campbell Friday.

J. C. Jones

SENDER'S ADDRESS  
FOR ANSWER

SENDER'S TELE-  
PHONE NUMBER

CAMPBELL, ROBINS & SALTER  
ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA,

14 November 19.

Prof. J. C. Jones,  
State University,  
Reno, Nevada.

Dear Professor Jones:--

Acknowledging receipt of yours of the 5th inst. ,  
which would have been acknowledged further (in addition to my tele-  
gram ) but for the fact that I have been engaged in court almost  
continuously for sometime past.

I have appointments that make it impossible for  
me to get away on the 15th or 16th, hence my telegram.

The case is not now set for trial and in all  
probability will not be reached for trial until February or March.

I will let you know what Saturday I would be  
at liberty to go just as soon as I know that fact.

Yours very truly,



LGC.EL.



CAMPBELL, ROBINS & SALTER  
ATTORNEYS-AT-LAW

WINNEMUCCA, NEVADA.

15 September 19.

Professor J. C. Jones,  
Reno, Nevada.

Dear Professor Jones:--

I have just returned from California. I will be occupied on Saturday the 20th and Saturday the 27th of September. So far as I know, any Saturday after those two will suit me as a date <sup>on</sup> which you and I shall visit the Sulphur mine. An unfortunate condition is that Mr. Crowley who should be there to go with us when we visit the mine did, on the 6th of this month, undergo quite a critical operation at the St. Francis Hospital in San Francisco and will be confined there until perhaps early October. I will let you know as soon as possible when Mr. Crowley will return that we may plan our trip after his return if possible.

I would like to have your testimony supported by others as is usual in such cases. It has occurred to us that since the case is to be tried before a jury it would be well to have a Government Geologist if possible to obtain him. Do you think that we could employ some Government Geologist to give testimony in the case? If so, I will welcome suggestions from you as to whom to approach on the subject.

Yours very truly,



LGC.EL.

SALES AND AUDITING DEPARTMENT  
BENICIA, CALIF.

## NEVADA SULPHUR CO.

Sulphur, Nevada. Feby. 11-1920  
~~XXXX BENICIA, CALIF.~~Prof. J. C. Jones,  
University of Nevada.  
Reno, Nevada.

My dear Prof. Jones:-

I wired you as follows:

"Meeting has been arranged between Alunites and Sulphur Company Saturday February fourteenth Winnemucca. Your report in Campbell's hands by this date will greatly facilitate matters. Advise me by wire if you can get it to him this date".

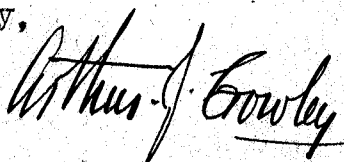
We trust you will be able to give us an outline of your findings in a report that will assist us, should it be necessary to prove to the representatives of the Alunite Company, the extreme difficulty they would have in convincing a jury of the validity of their claim.

You will see that an outline is all that is necessary, at this time, and we are leaving it to your judgment to make it as comprehensive and explicit as possible.

It seems possible that an amicable settlement may be arrived at, and I am sure that you will be highly gratified if your report is conducive to bringing about a settlement out of Court.

Very kindest regards.

Yours very truly,



AJC/LC

I sincerely regret that it has been impossible to give you ~~more~~ longer notice, but the negotiations leading up to this meeting were conducted on the spur of the moment, and have been brought to the present stage with considerable snap, which was deemed advisable, and which we hope to maintain to the finish.

A. J. C.



CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

# WESTERN UNION TELEGRAM



CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

NEWCOMB CARLTON, PRESIDENT

GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

RECEIVED AT

A21 5SF 38 BLUE

SULPHUR NEV 120P 11

PROF J C JONES

131

UNIVERSITY OF NEVADA RENO NEV

Telephoned	1920 FEB 25
By	
Time	
Disposition	

MEETING HAS BEEN ARRANGED BETWEEN ALUMNITES AND SULPHUR COMPANY  
SATURDAY FEBY FOURTEENTH WINNEMUCCA YOUR REPORT IN CAMPBELL'S HANDS  
BY THIS DATE WILL GREATLY FACILITATE MATTERS ADVISE ME BY WIRE IF  
YOU CAN GET IT TO HIM THIS DATE

A J CROWLEY.

San Francisco Aug. 28 - 1919  
Dear Prof Jones -

Your recent letter has been forwarded to me. I am in San Francisco and cannot return until about Sept. 9th. I wish very much to be with you when you make your contemplated visit to Saeppur. It will suit me if it can be deferred until latter part of September. I will write you concerning date as soon as I have returned home and cleared matters requiring immediate attention. Some Saturday and Sunday will be convenient for me.

Yours very truly  
L Campbell

845 Sutter St  
S.F.



November 5th, 1917.

Mr. L. G. Campbell,  
Winnemucca, Nevada.

Dear Mr. Campbell:-

I recieved your letter enclosing a check for fifty dollars requesting me to make an examination of the property near Sulphur. I have promised to examine a mine near Battle Mountain this week and will be able to be in Winnemucca not later than Monday Morning, November 12th, when I will get in touch with you in order to discuss the work in hand. It is possible that I may be able to finish my work at Battle Mountain sooner, as I leave Reno Wednesday Night, in which case I will wire you the time of my arrival in Winnemucca.

Trusting that this will be satisfactory to you and your clients,  
I am,

yours sincerely



L. G. CAMPBELL  
ATTORNEY AT LAW  
WINNEMUCCA, NEVADA

Nov. 3rd, 1917.

Prof. J.C. Jones,  
Care of State University,  
Reno, Nevada.

Dear Sir:

I have your letter of recent date in which you state that you can accept employment in examination and that your charge will be \$50.00 per day and expenses.

The examination that I desire made is of a property two miles from the Station of Sulphur on the Western Pacific Ry, about 50 miles west of Winnemucca. The easiest way to reach the station is via Winnemucca.

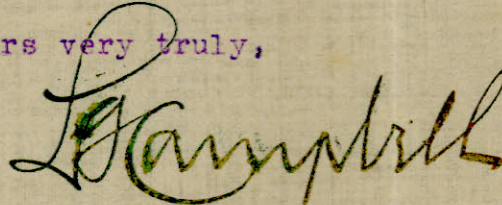
It is possible that the ground in question will be involved in litigation, the question being as to whether or not the ground is lode or placer, as the courts have drawn the distinction between those two methods of location of mineral lands. It is with a view to calling you as a witness in such litigation that I desire the examination, if your conclusions after examination are in accord with the things we desire to establish in the suit. I may say that my clients are the placer claimants.

I think it might be well for you and I to talk the situation over in detail before you visit the ground. That can be done as you stop here between trains on the Southern Pacific on which you will arrive and the Western Pacific on which you depart.

I enclose my check for \$50.00 to cover the immediate items of expense.

Yours very truly,

LGC.LAB





SALES AND AUDITING DEPARTMENT  
BENICIA, CALIF.

# NEVADA SULPHUR CO.

SULPHUR, NEVADA, Nov. 20-1917

Prof. J. C. Jones,  
University Of Nevada,  
Reno, Nev.

My dear Professor:-

Your Camera was picked up on the road and brought into our office after you left the house, Friday, and as I mailed it to you yesterday, hope you have it by this time, and found it in good condition and films, intact.

Your remarks about the Squaw Rock are very interesting, and I shall try to get around and look it over, as it may help me when the time comes.

Things are running along nicely, and I am very busy planning new buildings, looking after the building of my own house, and doing a lot of assessment work.

Mrs. Crowley joins in thanking you for your kind invitation to stop off at Reno, and if the rest of the 'Jens Family' comes up to the sample, we already know, we feel we shall have gained something, and this is a pleasure we are anticipating.

With kindest regards from both of us, I am,

Yours truly,

*Arthur J. Crowley*



November 23rd, 1917.

Mr. Arthur J. Crowley, Supt.,  
Nevada Sulphur Company,  
Sulphur, Nevada.

Dear Mr. Crowley:-

Your note and the camera came to hand safely and I was delighted to have them. I have had the films developed and was fortunate in having all of the pictures good ones. I gave Mr. Campbell a brief statement as to my conclusions and he seems to feel we have a pretty good case. In working with my samples I found that the alunite occurs generally with the sulphur which helps us all the more. The efflorescence that I thought might be nitre turned out to be sodium sulphate or Mirabilite. The red stains were cinnabar and I was unable to find any meta-stibnite which I had suspected of staining the sinter we got on the Mayo.

I am enclosing a description of alunite I promised you taken from Dana's System of Mineralogy, and if you can get Bulletin #511 from the Geological Survey you will have a fairly complete resume of our present knowledge.

With best wishes for you and Mrs. Crowley, and thanking you for your kindness further shown in finding my camera for me, I am,

yours sincerely



November 25th, 1917.

Mr. L. G. Campbell,  
Winnemucca, Nevada.

Dear Mr. Campbell:-

I am enclosing a brief statement of the main facts in connection with the case at Sulphur in confirmation of my recent conversation with you. I have limited it to the main features on which the case will be based. If you wish a more detailed report and synopsis of the geology of the region I will be glad to get it together for you in the future. In the statement of our account to the present I have not itemised the expenses but can give you the items if you wish them.

I am leaving for Battle Mountain Wednesday night and will return Monday after which I hope to have a little more time. If you wish to see me enroute write me care of F. Sommer Schmidt, Battle Mountain, and I will let you know which train I will be on, or can possibly arrange to stop off between trains.

Since getting back to my laboratory I found that the white powdery mineral occurring with the sulphur is alunite giving me the basis for the conclusions in the report.

With best wishes, I am,

yours sincerely



At your request I have <sup>recently</sup> made an examination  
of the property of the Nevada Sulphur Co.  
located near Sulphur Nevada with especial  
reference to the advisability of contesting the  
claims of an Alumina Company who have  
acquired certain lode claims ~~recently~~ located  
<sup>a few months ago</sup> on the premises of the Nevada Sulphur Co.

I find that the placer claims of the Sulphur  
Company ~~as located~~ cover an area of approximately  
1100 acres located <sup>about</sup> ~~for~~ a mile west of the foot  
of a spur of the Antelope Range of mountains.  
A broad alluvial apron formed by the wash  
of the debris from this range slopes from  
the foot of the range westward to an area  
of the Black Rock Desert ~~and~~ the property  
of the Sulphur Company with the single exception  
of the Mayo Lode Claim on the extreme east  
is located entirely on this alluvial apron  
and is properly located as placer grounds.

As is common in many portions of  
Nevada, ~~the western foot of the mountain~~  
~~is marked by a fault dipping~~ The mountain  
range ~~has reached~~ its present altitude  
by movement along a fault at its western  
foot, the beds of sandstone, tuffs, & other



which from the mass showing by their rather steep  
eastward dip that the block of the earth crust  
forming the mountain has been tilted to the  
west. The ~~movement~~ total movement along  
the fault is several thousand feet, but did  
~~not~~ ~~cause~~ ~~at~~ ~~to~~ This differential elevation of  
the mountain & possible depression of the  
western border of the valley did not occur  
as a single movement but rather as the sum  
of a multitude of small displacements covering  
a long period of time.

An indication of the dip ~~and strike~~ of  
this fault ~~along which the~~ may be seen  
in a short tunnel on the southern end of the  
Mayo claim where a short tunnel has been  
driven into the mountain side near the foot exposing  
~~many~~ a fractured zone for 16' with the parallel  
fractures dipping  $50^{\circ}$  to the west. Whenever a  
movement takes place along a major fault  
in Nevada there are ~~usually~~ secondary fissures  
or cracks opened in the alluvial ~~cover~~  
slopes under which the faults pass. There are  
usually vertical joints passing direct from the  
fault to the surface and are caused by the  
tendency of the loose surface materials to  
~~hang~~ ~~to~~ cling to the rising mountain block  
rather than slide as a whole with the descending  
block above. Many such fissures parallel  
to the major fault may be <sup>still</sup> observed in



the alluvial apron ~~from the foot of~~  
~~the mountain range to a~~ over a mile long  
to two miles broad.

Hot water have followed the  
fault and secondary fissures emerging  
at the surface as hot springs. On reaching  
the surface the rather sudden cooling of  
the water has caused it to deposit silica  
in the form of opal and chalcedony forming  
~~typical~~ typical spring deposits or  
siliceous sinters. Wherever the springs were  
free enough to the west of the mountain to  
deposit the silica more rapidly than the sand  
~~and~~ gravels and other rock debris was washed  
over them they built typical spring mounds or  
terraces; but where the wash from the mountain  
was abundant the rock fragments were  
incorporated in the spring deposits forming  
a finely cemented mass of ~~rock~~ sinter  
and alluvium that is now a siliceous  
breccia.

While the springs covered the ~~greater~~  
part of the area included in the property of  
the Nevada Sulphur Co., they were particularly  
active in depositing silica along two zones  
trending N 20° E, and about ~~500~~ 1000' apart  
passing through the center of the property.



4.  
Along these two zones the sinter and  
cemented grooves formed a sort of dam ~~raising~~  
that hindered the progress of the ~~water~~ road  
debris ~~from its passage~~ from the ~~mountain~~ down  
the alluvial slope, ~~and causing~~ two  
~~terraces~~. As a result the normal gentle slope  
of the alluvial apron is modified and ~~reduced~~  
~~two rather precipitous faces~~ the valley in two  
~~terraces~~ with rather ~~precipitous~~ <sup>much steeper</sup> slopes  
flanking the valley. Between the two zones  
the normal slope of the alluvial apron is restored  
~~and forming a terrace~~. At the foot of the  
westerly zone ~~formation~~ is a second terrace  
formed by the waters of ancient Lake Sabatan  
which formerly washed the cliffs.

As the combined alluvial and spring  
deposits accumulated the rising <sup>but</sup> waters  
maintained channels or open fissures in the  
denser sinter which may still be seen  
especially well in the cliffs along which  
the road leads to the refinery. In the  
more open uncemented grooves the water  
maintained a few channels still visible  
in the Sulphur mine, but for the most  
part percolated through the ~~open spaces~~ <sup>open spaces</sup> of the  
slightly cemented alluvium.



May 4th, 1918.

Mr. S. H. Batem,  
Nevada Sulphur Co.,  
Bernicia, California.

Dear Sir:-

I have your letter of April 30th which had been sent to Carson City. I will be free between the tenth and fifteenth of May and will be very glad to meet with you at Sulphur on any day that you set during that period. My charges are fifty dollars a day and expenses and as it will take a full day travelling to reach Sulphur and return the time you have estimated as necessary will be two days.

Trusting this will be satisfactory, I am,

yours sincerely

Professor of Geology



May 15th, 1918.

Mr. S. H. Beeten,  
Nevada Sulphur Co.,  
Benicia, California.

Dear Mr. Beeten:-

I am enclosing a brief report on the alunite deposit on the Mayo claim as requested by Mr. McKevitt together with my bill for the time spent in the trip we recently took to Sulphur.

With very pleasant memories of our excursion, I am,

yours sincerely,



December, 19th, 1917.

Mr. L. G. Campbell,  
Winnemucca,  
Nevada.

Dear MR. Campbell:-

I mailed you a brief report on the Sulphur situation about a month ago and suppose that you received it. With the approach of the Christmas vacation I would be glad to know if you are going ahead with the case so that if there is any prospect of my being called within the next month or so, I can utilize my free time in preparation.

As yet I have not heard anything about the statement I sent in with the report but assume that it will turn up in due time.

Wishing you a pleasant time during the holidays, I am,

yours sincerely,



March 26th, 1924.

Mr. A. J. Crowley,  
143 E. 39th Street,  
New York City. N. Y.

Dear Crowley:-

Enclosed is a verbatim copy of my report of four years ago  
as requested by your telegram of this morning. I was a little surprised  
to hear you were in New York but I hope you have as successful a visit  
as I had a year ago.

With best wishes, I am,

Yours sincerely,



SALES AND AUDITING DEPARTMENT  
BENICIA, CALIF.

# NEVADA SULPHUR CO.

BENICIA, CALIF., April 30, 1918

Professor J. C. Jones,  
Carson City, Nevada.

Dear Sirs

In connection with the matter of lode claims which were located over our placer claims at Sulphur, Nevada we have been approached by the parties now owning those lode claims wanting us to enter some sort of an amicable agreement whereby they can acquire some rights for the convenient operation of their several claims and it may be that we will arrange to meet these parties at Sulphur, Nevada and go over the property with them.

The president of our company has instructed me to write you and ask if you could make it convenient to meet us on the property sometime between the 10th and 15th of May and also advise as to what your charge would be for making this trip and assisting us in arriving at such conclusions as we figure would be necessary and at the same time would not sacrifice any of our rights.

It would probably be a matter of being at the mine for a period of one day only.

We will appreciate an early reply.

Yours very truly,

NEVADA SULPHUR CO.

Per *J. H. Burton*

SHB/EF

August 2nd, 1921.

Mr. George M. Brown,  
Box 64, R. F. D. #5,  
Bakersfield, California.

Dear Mr. Brown:-

Enclosed is my report on the property of the Silver Camel Mining and Development Company. I regret exceedingly the long delay that has occurred between my examination and the forwarding of the report. I was delayed in getting my samples through the mail so that the assays were not available before I had to leave on what I thought was a ten day examination, but circumstances over which I had no control kept me away from my office until this morning and I was unable to get the report typewritten before. Incidentally I found a couple of new ore bodies for the company I was working for so that the time was not entirely lost.

Of the two plans of development of your property that I have suggested the first is the most logical. I believe you can develop a sufficient tonnage of mill grade of ore in the little hill above the fifty foot level to justify a twenty ton cyanide mill, but prudence demands that the ore be first developed. The work that Webster has done was necessary to show the value of the ore at depth in the Big vein but I believe the future work can be best done as I have suggested in the Little Hill.

If after developing sufficient ore and putting up your mill you wish to take the long chance of drilling I will be very glad to see it done for the information gained and the opening up of further possibilities in other spring deposits that are at present neglected because no one has had the nerve to try them out.

I thoroughly enjoyed the few days I had with your son and believe you are going to be mighty proud of him as time goes on.

With best wishes, I am,  
yours sincerely



Mr. L. G. Campbell to J C. Jones Dr.

To professional services in connection with Nevada Sulphur Co. Nov. 12th to Nov. 17th, 1917 inclusive	\$300.00
Expenses	<u>22882</u>
Total	\$322.82
Credit advance	<u>50.00</u>
Amount still due	\$272.82



Traced from  
Chas. S. Haley Map June 27, 1917.