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REPORTS ON

BUCKEYE PLACER MINES

PINE NUT RANGE, DOUGLAS COUNTY, NEVADA.

By:

Mr. Henry Mathey, Mining Engineer and Metallurgist

Mr. Russell L. Dunn, Mining Engineer

Mr. Lindsay, Mining Engineer

Mr. C. J. Munro, Mining Engineer

Mr. H. J. Humphreys

Mr. W. S. Graham, Hydraulic Engineer, on Water

Mr. Richard Cook, Civil Engineer, on Water

BUCKEYE GRAVEL MINES

REPORT BY

Henry Mathey --- Mining Engineer and Metullargist, 1899.

The Buckeye gravel mines are located about thirty miles southeast of Carson City, the capital of the State of Nevada, which is on the Virginia & Truckee Railway. Carson City is the nearest railroad station to these mines, and from there they can be reached by a five hour drive over a good road.

They are at a short distance from Mt. Siegel, the summit of which stands 11,000 feet above sea level.

Gold was discovered here some eight years ago, and the mines have always been worked on a very small scale, during the early spring of the year, or as long as water from the melting snow would last. Unfortunately for the owners, the fall of the snow and rain is very small in that section of the state of Nevada, and the water does not last over a few weeks. Notwithstanding the shortness of the mining season, and the small amount of water, the yield to date has been about $61,000.

Starting from the Mayeraft farm and following a southwesterly direction you enter the "Gold Bug" claim, where a bank of good gravel from ten to twelve feet thick is exposed for a distance of several hundred feet.

Then on both sides of a low depression running south, numerous prospect shafts have been sunk on the "Fly", "Spider", "Mogul" and "Iron Silas" locations. Their depths vary from eight to thirty feet, and the gravel encountered shows considerable gold in panning.

The "Pinto" claim is on a level piece of ground, between two small ravines, where much prospect work has been done, and at the "Horn Spoon" considerable gold has been taken out, if one judges by the extent of the working, which has exposed the gravel for a long way.

At the "Yorner" a tunnel has been driven for quite a distance and the gravel extracted shows the same uniform prospect.

At the "Jeff Davis" another tunnel one hundred feet long has also been run, and all the gravel contains considerable gold. At the face, the depth of the gravel above the tunnel is from sixty to sixty-five feet.

The bulk of the gold produced has been taken out from a narrow cut from eight to ten feet deep, which can be followed for nearly three quarters of a mile. All along excellent gravel is exposed, and, according to the facts and tests made, it must have yielded no less than one dollar ($1.00) per cubic yard.

Besides the deep shaft on the "Black Horse" claim, there are a great number of others sunk through the gravel at different places on the property. Their depths, as already stated, vary from eight to thirty five feet. Two tunnels -- one hundred and one hundred and fifty feet long respectively, and also two shorter ones, have been driven in the gravel deposit. The material excavated was well prospected, and all these openings have proven beyond a possible doubt the regular distribution of gold in paying quantities on this large territory.

It has to be stated here that, although the most important workings have been made along a depression of the surace, which has the appearance of a small flat ravine, it is not deep enough to warrant Mr. Russell Dunn's statement as to second concentration. The work has been done there simply because it was on the course of the drainage, and near the water. Since his examination some prospect work has been done at from fifty to one hundred feet on both sides of this depression, where the same amount of gold has been found in the gravel.

This gold is 880 fine, and its value is $18.18 per ounce.

----------ESTIMATE OF AMOUNT OF GOLD IN GRAVEL----------

Mr. Dunn. Mr. Lindsay, who reported separately on this property, are known as competent and conservative engineers, and they have devoted much time in prospecting the gravel. There is no doubt that their numerous tests have proven to their satisfaction the exceptional richness of the deposit. Mr. Dunn's average gold contained per cubic yard is $3.21, and Mr. Lindsay's $3.25.

But they have prospected only a part of the property and it is possible that in the unprospected portion, where the deposit will be found thicker, the average will be lower. However, it is certain that the average will be hugh enough to permit the payment of large dividends for a long period of years.

Assuming that the general average of the gold contained in all the gravel will be only 25 cts. per cubic yard, the following results can be expected:

By what is known of the Buckeye gravel, and also by what experience has been acquired in other mines similar to this, one miners inch of water, equal to about one and one half cubic feet per minute, will wash five cubic yards in twenty-four hours. Consequently if 1500 inches are brought on the property, seventy-five hundred cubic yards will be mined daily, and the gross yield will be $1875.00.

Figuring on 270 working days per year, the number of cubic yards mined will be 2,025,000 cubic yards, and the gross yield at 25 cts. per yd. will be.....$506,250

EXPENSES

Water, 20 cts. per miners inch....		
1500 inches at 20 cts.....	$30 .00	
Water at same rate for 270 days...	81,000.00	
Hydraulicking, 2,025,000 cubic yds.		
at 5 cents per cubic yard.....	101,250.00	182,250.00
NET PROFIT.....		324,000.00

The work of hydraulicking will have to be started on the "Jeff Davis" location, because after a few days working the bank of gravel will be deep in front of your giant, and also it is the natural opening for the "Black Horse", "Horn Spoon", "80 acre claim", "Northern Lights" "Harmony", and all the large tract of auriferous gravel situated south of these claims.

It is also the right place to buil a flume to carry away debris whose grade will probably be 4½ per cent. It will follow a natural ridge for about two miles, and will deverse the mining debris and water on a large flat below the "Gold Bug" property, where there is ample room to store all the debris.

The Mining locations have all been taken, and as there is no way to work any part of the deposit without starting the work at the lowest

possible points, which have all been covered by the location of the 1640 acres, the owners of these claims will have the absolute control of the entire deposit.

EXTRACT FROM REPORT OF J. H. HUMPHREYS.

LOCATION:
Silver Lake Mining District, Douglas County, State of Nevada, a few hours staging from Carson City the nearest railroad point.

AREA AND TITLE:
Ten one quarter claims, or 1640 acres of ground. A clear abstract of title will be furnished by the owners to a prospective purchaser before first payment is made.

OPERATING, PROSPECTING, ETC.

Operations have been carried on for several short seasons, on a small scale, with snow water, and something like $60,000 has been the result of such workings.

Gold, both fine and coarse, as well as nuggets, is disseminated throughout the whole mass of this large deposit.

LIST OF NUGGETS TO SHOW THE COARSENESS OF GOLD

117	pieces	average	value,	$ 20.00
56	"	"	"	30.00
11	"	"	"	50.00
1	"	"	"	83.00
1	"	"	"	168.00

Six men in six hourse cleaned up $613.00 in gold.

Of 276 prospects made, the lowest was 28 cts., pan washing, while the highest was $11.00 per cubic yard.

600 yds. of gravel produced $1,32 .80, besides nuggets to the value of $70.00. In all a total of $1,392.80, equal to $2.32 per cubic yard.

WATER SUPPLY:
Water supply can be had from the headwaters of the Carson River. Few difficulties will be encountered in bringing it to the placer grounds.

AVERAGE VALUE PER CUBIC YARD:
Average value could not be placed at a lower figure than $2.00 per cubic yard.

The condition of the climate will permit operations being carried on eight months, or 240 working days, a year; washing 4,000 cubic yards of earth every 24 hours, or 960,000 cubic yards for the season, which, computed at say $1.00 per cubic yard, would give a total of $960,000 yield, at a cost of less than five cents per cubic yard.

ESTIMATED VALUE OF THE BUCKEYE PLACER MINE,

$47,665,000

(Signed) H. J. HUMPHREYS.

EXTRACTS FROM RUSSEL L. HINN'S REPORT
(Mining Engineer)

The mine is situated 30 miles East of Carson City. The portion of the range comprising the mine is an immense mass of loose, unassorted

rock, gravel, sand and earth, occupying a depression in the granite mass. The evidence is conclusive to me that it is a Glacial Moraine. The exceptional and striking features are its exceptional large gold contents.

My own tests of the ground have satisfied me beyond any question of doubt that the Moraine not only contains sufficient gold to justify exploration as a commercial mining proposition, but contains so much more than sufficient that its exploration will certainly yield enormous profits for so many years that the "element of risk" incident to the conduct of mining enterprises may here be considered eliminated.

Assuming that a water supply of 1500 miners inches can be made available for the season, with a duth of five cubic yards to the inch, 7500 cubic yards could be washed daily, or 1,300,000 for the six months season. I naturally hesitate to compute the gold output from this on the basis of the average of my tests of the ground, $3.21 per cubic yd. However, the most liberal allowance for costs will not exceed an aggregate of over five cents per cubic yard.

(Signed)RUSSELL L. [illegible], Mining Engineer.

EXTRACTS FROM THE REPORT OF W. E. LINDSAY

The ground is broken up into gentle hills and ridges of gravel.

There is no timber or brush to speak of on the property, therefore no clearing required, and there is virtually no soil on top of the gravel, the whole deposit appears to be underlaid by a layer of pipe-clay.

I prospected the gravel from all openings already made on the property, and from the average of my washings got some marvelous results. 600 pans of gravel yielded an average of $3.25 per cubic yard. The gold is quite coarse: one piece I took out weighed 50 grains, equal to $3.40. I prospected at different points over 600 acres, and found from $1.50 to $3.00 per cubic yard.

The ditch and pipe line to conduct the 1500 inches of water to the mine will be about 30 miles, with few difficulties in the way, and the cost of delivering the water to the property will be about $30,000.

As before stated, the yield of the gravel that I panned was almost beyond belief for a hydraulic mine, averaging as it did, $3.25 per cubic yard.

(Signed) W. LINDSAY, E.M.

EXTRACT FROM THE REPORT OF W. S. GRAHAM

I made an examination of the proposed water supply for the Buckeye Hydraulic Placers. You can safely count on having the entire dry season six, seven or eight months as it may be, an available water supply for the mine, assuming that only 1500 inches are required.

I noticed the topographical character of the country over which the ditch line is projected. It is a country of easy slopes and not particularly hard digging. The soil is rather light, and gravelly. Much of the construction can be done with plow and scrapers. In other words, the conditions are favorable for economical ditch construction.

The flume construction timber is available on the line of the ditch for $10.00 per M.

The snowfall in the region is not particularly heavy, being about

six feet in depth.

Finally, from my examination, I can state that the sources of supply I have examined will give a full head of water of 1500 inches at the mine, after taking out the losses of seepage and evaporation, without storage, and for the entire season that it is possible to do anything.

(Signed) W. S. GRAHAM, (Hydraulic Engineer) Calif.

FROM CHARLES D. LANE

From what I myself saw, I believe the gravel on the Buckeye Mine to be very rich in gold, and, properly worked by experienced men in hydraulic mining, immense amounts of gold can be taken out.

(Signed) C. D. LANE

FROM E. DOOLITTLE

I personally prospected this deposit in a number of places by panning process, and found that the gravel averaged well in gold over a large area of ground, going from $1.98 to $2.86 per cubic yard.

The only drawback is the lack of water, and with a properly equipped hydraulic plant, I have no doubt that it will be a large paying proposition.

(Signed) E. DOOLITTLE.

Respectfully submitted,

Henry Mathey,
Mining Engineer & Metallurgist,
20 Broad St., New York, N.Y.

San Francisco, Cal.,
July 14, 1896.

To whom it may concern:

I am asked why I gave up prospecting the Buckeye Mine in Douglas Co., Nevada. It was simply a set of circumstances. In my opinion there is no question as to the richness of the ground, but while my Supp. was on the mine there was unfortunately no water there, and without water it was almost impossible to arrive at any definite conclusion. I offered to take back the mine and bring on this summer all the water from the near-by creeks and watersheds I could get, but later in consultation with his brothers, they would not consent to any further delay. Therefore I dropped the proposition.

From what I myself saw, I believe the gravel on the Buckeye mine to be very rich in gold, and properly worked by experienced hydraulic men, immense amounts of gold can be taken out of it. Had they given me time, and allowed me to provide water, the Buckeye placer mines would today most probably be mine.

(Signed) C. D. LANE
532 Market St., S.F.

Having been requested to make a statement as to my opinion in regard to the placer deposits in the Buckeye Mining Districts, in the State of Nevada, will say that during the spring of 1893 I visited these mines several times, and was surprised at the great results obtained from the small amount of gravel being washed.

This placer deposit covers a large area, and indications point to a channel deposit. I personally prospected this deposit in a number of places by the panning process, and found that the gravel averaged well in gold over a large area of ground, going from $1.98 to $2.66 per cubic yard. The bulk of the gold was coarse in character, resembling the gold found in the ancient gravel channels of California.

The only drawback in this district was the lack of water. By bringing in a ditch with a plentiful water supply, and with properly equipped hydraulic plant on this ground, I have no doubt that it would be a largely paying proposition.

I have followed placer mining in California for 25 years and from experience in gravel mining, and my knowledge of the results obtained in this state, from gravel going not over 20 cts. per yard, it takes but a small calculation to ascertain the results from gravel as rich as the Buckeye.

(Signed) W. H. LITTLE,
P. O. Alta, Calif.

Signature duly acknowledged by
Henry H. Halsey, Notary Public.
Aug. 10th, 1896.

REPORT ON BUCKEYE GRAVEL MINES BY E.J.HUMPHREYS

LOCATION

The Buckeye Placer mining property is located in the Pine Nut Mts. a supr of the Sierra Nevada Range, in Silver Lake Mining District, Douglas County, State of Nevada, U.S.A., and thirty miles south of Carson City, the Capital of the State, on the line of the Virginia and Truckee Railroad, 275 miles from San Francisco, and 22 miles from Virginia City the location of the famous Comstock Lode.

The mine may be reached by a few hours staging from Carson City, the nearest railway point.

The elevation of Carson City is 4,400 ft., and that of the Buckeye placer ground 6,500 ft. above sea level.

DISCOVERY AND FORMATION:

This great auriferous deposit was discovered in 1891. It may be classed as a "deep" placer, or gravel deposit, or what might be properly termed a "hydraulic proposition". As to formation, opinion seems to be divided among engineers of mining who have visited the district, but a majority are of the opinion that it is an alluvial channel deposit, of red and grey gravel. The ground slopes to the northeast, and with a sufficient grade to insure perfect drainage to a depth of at least 100 ft.

AREA AND TITLE:

The entire property consists of ten and one quarter claims, or 1640 acres. The title is possessory. A clear abstract of title will be furnished by the owners to a prospective purchaser before first payment is made.

OPERATIONS, PROSPECTING ETC.

Operations have been carried on for several short seasons on a small scale, by means of sluicing, rocking and panning, with snow water, and something like $60,000 has been the result of such workings.

The soil varies in depth, as well as in values. The greatest depth yet attained was 123 feet. In this instance a shaft was sunk to a depth of 123 feet. At 70 feet a strata of pipe-clay was encountered, showing colors of gold the entire length of the shaft; thence continued soil, also showing colors to a depth of 104 feet, where a portion of a petrified tree was encountered. Again resuming sinking to a depth of 170 feet, gravel was found, containing fine gold. This was the deepest shaft sunk, and bed-rock was not found, nothing but a strata of pipe-clay and hard pan.

Gold, both coarse and fine, as well as nuggets, is disseminated throughout the whole of this immense deposit. It shows fine gold in places from the surface down to a depth of 8 feet, again at a depth of 30 feet coarse gold and nuggets are uncovered. The latter are often found at a depth of but four feet from the surface. Following is a list of nuggets taken from the Buckeye Mine, which have been accounted for, and which is merely presented in order to show the coarseness to which the gold attains:

117	pieces,	average	value	each,	$ 20.00
56	"	"	"	"	30.00
11	"	"	"	"	50.00
1	"	"	"	"	83.00
1	"	"	"	"	165.10

As an illustration of a test of sluicing on this property, six men were employed for a period of six hours in shovelling gravel into a six-inch sluice box, and the clean-up yielded $613.00 in gold. From 276 prospects made, the lowest result was 28 cts., pan washing, while the highest went up as high as $11.10 per cubic yard.

The owners of the property being naturally encouraged at the results of their operations, in a small way, but lacking the means to make necessary water developments, concluded to enlist the aid of capital, and to that end disposed of a half interest to a Mr. Neil, of California, who expended quite a sum of money in bringing water to the mine from a small lake near by, which is now used as a reservoir, and is 500 feet above the mine. The capacity of this reservoir is estimated at 10,000,000 cubic feet of water. This was accomplished by running a tunnel 700 feet in length and tapping the lake, or reservoir, then laying a 22 inch pipe inside the tunnel, with a gate at the inner end of same for shutting off the supply of water at will. This 22 inch pipe carries the water from the pipe, with 190 ft. pressure, which then delivers the water to the hydraulic giant.

During the latter part of June, 1896, when this reservoir was not more than one-fourth full of snow water, the owners tapped it for sluicing purposes, and figured on having a run of 47 days, as it had been represented to them that the supply of water should hold out that length of time, but it lasted only six days, during which period they were able to move something like 4000 cubic yards of gravel, from which they cleaned up 60 ozs. when compelled to suspend operations on account of the water supply being entirely exhausted. However, from the 600 yards of gravel washed they realised 75.14 ozs. gold which was deposited at the U.S.Mint at Carson City, for which tyey received in payment $1,322.80. (See Mint Memorandum and Certifications herewith)

Aside from this they took from the clean-up, nuggets to the value of about $70.00, which were not deposited at the Mint. This amount, added to the deposit, would give an average of about $2.00 per cubic yard of gravel cleaned up.

As a result of this undertaking, the owners, realizing they had not sufficient water available for successful operations, decided on bringing the water from Bryant Creek, or the Carson River, but found it would cost from $150,000 to $300,000 to do so, and not being in a position

financially to carry out the project, decided on disposing of the property to a Company or Syndicate, who would be able to make necessary improvements to insure operating the mines in a proper and successful manner. Later Mr. Neil died, and nothing in the way of operations have been carried on, excepting assessment work, since.

WATER SUPPLY:

In view of the fact that it has been clearly demonstrated that it is absolutely impossible to procure a sufficient supply of water for successful operations in this district, there remains but one alternative, which is to obtain the necessary supply from the headwaters of the Carson River, where an ample supply is procurable. There are two different routes by which water may be brought to the Buckeye from the Carson River, one a distance of 17 miles, and the other 39 miles. By the short route, only enough water to operate on a small scale could be procured, while the longer route, of 39 miles, presents advantages which will more than offset the difference in the cost of the flume, etc., in electing the latter route a volume of water may be secured that will, besides furnishing a plentiful supply for operations on a large scale, permit of reclaiming several thousand acres of arid land below the placers, which would be included in the sale of the mines.

Another advantage would be in the fact that at the head of the proposed 39 miles route is a tract of timber land, which is now in the hands of the owners of the Buckeye, and may be purchased for $10,0 0. This would include the water rights, reservoir site etc. There is an immense natural reservoir site below this point, and directly on the line of the proposed route. By building a dam across the mouth of the canyon, which at one point is not over 200 feet in width, an area of some 1500 acres could be flooded to a depth of from 30 to 50 fe t. There is also another natural reservoir of considerably proportions along the route, and about two miles from the mines.

There is considerable water taken from the Carson River by the Ranchers along the stream during the months of June, July and August of each year for irrigating purposes, but during the months of arch, April and May, and sometimes a part of June, the river almost overflows its banks, on account of melting snow in the surrounding high mountains. During these months last named these natural reservoirs coul be filled and reserved for consumption during the very dry season -- July and August, when the river is comparatively low, thus insuring no objections from the farmers, and in perfect compliance with the State water laws. The farmers, in fact, would be pleased to have a large volume of the river water taken out during the spring months, for the reason that much of their ground is inundated at this period, to the detriment of their crops.

There will be very few difficulites encountered in bringing water, from the river to the placer grounds, with the exception of one point, where a depresion of about 1000 feet occurs, and which is three and three quarter miles in width: necessitating the laying of very heavy pipe. This would be the most expensive item in the construxtion of the flume and ditches. Would recommend boxed or covered flume, in preference to open flume, or aqueduct, for the reason that it prevents evaporation in mid-summer, and also precludes the possibility of its being filled with snow and ice during the winter months, thereby necessitating much labor and expense in cleaning it out in the spring, preparatory to resumption of operations.

AVERAGE VALUE PER CUBIC YARD:

It is rather difficult to make an estimate of average values per cubic yard contained in this deposit, there being coarse gold and nuggets encountered to such an extent: one yard yielding 50 cts. in fine gold, while another at no great distance will perhaps run as high as $5. 0. Miners working on this property have been known to make a high as $78.00 in ten hours, by means of washing gravel with a rocker which will handle about four cubic yards of gravel in a working day of ten hours, with two men operating same.

Of course this is exceptional, and was the result of working a very rich spot. In making a general estimate of tests I would certainly not include any marvelously rich findings of this character. Taking as a basis the result of the operations that have been carried on in a small way by means of sluicing, rocking and panning, the average values could not be placed at a lower figure than $2.00 per cubic yard, but I am inclined to believe a fair and conservative figure on the whole would be $1.00 per cubic yard.

Ordinarily the conditions of the climate of Nevada, especially the water portion, will permit of placer or hydraulic operations being carried on ten months of the year, but we will say for instance that operations are carried on but eight months, or 240 days, of the year, under a head of 2000 miners inches of water, which should wash 4000 cubic yards of earth every 24 hours, or 960,000 yards for the season, which, computed at say $1.00 per cubic yard, would give a total yield of $960,000 at a cost of less than 5 cts. per cubic yard. The above estimate of the amount of work which can be performed by hydraulic mining in this district is very low, for the reason that the ground is not cemented, as in a great many placer deposits, and therefore easily moved. It is also quite free from large boulders.

As an illustration of the amount of work which can be performed in a given time by Hydraulic mining -- in the North Bloomfield Placer Mine, California, there was four and seventeen hundredths (4.17) cubic yards to one inch of water in twenty-four hours. In the Eureka claim, near San Juan, Cal., where the bed of "pay dirt" is 135 feet in depth, the upper portion of the seventy feet not containing a large amount of gold, but easily washed, whilst the lower, having a thickness of 65 feet is much richer, but cemented together, and the work therefor carried on under conditions of considerable difficulty, there are four jets, discharging about 208 gallons per second of 12,500 gallons per minute, under a pressure of 140 feet, and the whole operations being handled by four men, at expiration of ten working days a clean-up is made, during which period about 35,000 cubic yards of gravel are washed.

J. Arthur Phillips, the noted English Mining Engineer, in his reference to gold washing in California, says:

> "As evidence of the enormous advantages possessed by the hydraulic process over every other system of placer mining, it may be stated that, taking a miner's wages at $4.00 per diem, the cost of handling a cubic yard of gravel will be nearly as follows:
>
> | | |
> |---|---|
> | With Pan | $20.00 |
> | Rocker | 5.00 |
> | Long Tom | 1.00 |
> | Hydraulic Process | .05 |

Water is the great agent by the aid of which placer mining is carried on, and with a large supply, the operations of the miner can be cheaply and rapidly conducted. But without water (which is the case of the Buckeye at present) or with only a limited supply, a deposit that would otherwise have been highly productive, may either become valueless or only capable of affording very irregular returns.

COST OF LUMBER AND TRANSPORTION OF SUPPLIES ETC.

Ordinary lumber, suitable for building fumes, etc., may be laid down on the Buckeye grounds for about $18.00 per M. Would recommend, however, that purchasers erect a saw-mill, or use a portable one, at the proposed fountain-head, where timber is plentiful, and produce their own lumber.

Cost of hauling supplies of all kinds from Carson City to Buckeye will be about $8.00 per ton, ordinarily, and much less on contract.

Cost of labor in this section, union miners $4.00, non-union $3.00.

Common laborers $1.50 per diem and board. Hay, grain, beef, flour, mutton, pork, potatoes, butter, eggs, fruit, vegetables, etc., are produced in large quantities in Carson Valley, within 15 miles of Buckeye, and may be purchased at reasonable market prices.

ESTIMATED VALUE OF THE BUCKEYE GRAVEL MINES:

Taking as a basis the fact that the area of the deposit is 1640(2400) (now) acres, which, from thorough prospecting, shows the same to attain to a depth of from 8 to 120 feet, and the result of past operations and prospecting heretofore mentioned, assuming the average depth to be 18 feet, would give a total of 47,665,600 cubic yards, which, computed at say 50 cts. per cubic yard, which is certainly a low estimate, gives a total value contained in the entire deposit of $23,832,800. There is no question as to the richness of this deposit, which without doubt is the most valuable ever discovered on the coast, but we are here confronted with unfavorable water facilities, which will perhaps require an expenditure of from $300,000 to $500,000 to overcome. However, the property would not be for sale only for this state of affairs.

The values contained in these placers, and which fact has been established beyond a reasonable doubt, will fully warrant an outlay of a large amount of money, if necessary, in placing the property on a paying basis.

If the property is taken in hand this winter by purchasers, and all arrangements perfected for an early start in the spring on the construction of the ditches, flumes, reservoirs, etc., by employing a large force of men, they should be able to complete all necessary work during the year 1900, and active mining operations could be commenced in March, 1901.

Respectfully submitted,
H. J. HUMPHREYS.

Carson City, Nevada,
June 15, 1899.

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REPORT ON BUCKEYE PLACER MINES BY RUSSELL L. FUNN
Mining Engineer,
712 Metropolis Bank Bldg., San Francisco, Cal.

I have made a preliminary examination of the Buckeye Hydraulic Placer Mines, as requested by you, and am pleased to report the conclusions of that examination as follows:

The mine is situated about thirty miles southeast of Carson City, in the State of Nevada. Carson City is reached by eighteen hours railroad travel from San Francisco, and the mine from Carson City by six hours of easy wagon road travel.

The mine consists of a portion of the Pine Nut Range of Mts. comprising the summit of the range at the head of Buckeye Creek, and lying just north of Mount Siegel. The latter, and range generally, is granitic rock in place. The portion of the ground comprising the mine is an immence mass of loose, unassorted rock, gravel, sand and earth, occupying a depression in the granitic mass. The direction of this depression appear to me to be East and West, crosswise of the direction of the range. To me the evidence is conclusive that the unconsolidated mass filling this depression for about two miles in width, north and south, for four or five miles in length, east and west, and for a depth originally of not far from 1000 feet, but now by reason of natural erosion, cutting into rounded hills and water-way slopes, reduced to an average depth that certainly is not less than 600 feet. The evidence on the ground is conclusive to me that it is a glacial moraine: a fragment of the tremendous disintegrating activity of the Glacial Epoch.

Part of the old surface of the Moranine still remains in the northern edge of Mt. Seigel, in the form of small glacial lakes, depressions in the unconsolidated mass that have no outlet, but form natural reservoirs excellently situated for the business of "Hydraulicking" the mass. The exceptionally and striking feature of the Moraine is its large content. Moraines in auriferous regions are frequently gold bearing, but rarely contain gold in sufficient quantities to justify exploitation mining propositions. The evidence submitted to me, and my own tests of the ground, given in detail further on in this, have satisfied me beyond any questionable doubt that this moraine not only contains sufficient gold to justify exploitation as a commercial mining proposition, but contains so much more than sufficient that its exploitation will certainly yield enormous profits for so many years to come that the element of risk incident to the conduct of mining enterprise may here be considered eliminated.

As I understand, the property was represented to you by the owners it was considered by them to be a river channel deposit, of ten to twenty feet in depth, and about 1000 feet wide flowing north from Mt. Siegel into the head of Buckeye Creek. They had mined to the noted depth at many points, everywhere taking out gold, largely in coarse nuggets, and the result of the mining indicated a value of $2.50 or thereabouts, per cubic yard for the mass to the noted depth and over the claimed width.

My examination confirmed the claims of value made to you, except as their ming was confirmed to the ravines and adjacent slopes, where there has naturally been secondary concentration of gold, a return of $2.50 a cubic yard cannot be expected for the entire surface ground of their claimed channel. My examination, however, by its determination of the true origin of the deposit, has indicated that the gold locus is not limited to the surface strips as represented to you, but includes the entire mass of the deposit. Also I find that the gold alone in this mass, hardly taken in account by the owners, is sufficient in amount to make the mass good hydraulic ground.

Considering the mine with reference to its availibility for exploitation by hydraulicking, I fin that the mass is loose and free washing, and consists of broken and gravelly rock, sands and earth, in small feagments, that will wash to an extent of 85 to 90 per cent of the total with 10 to 15 per cent of rock fragments that will require power of derrick handling.

There is no timber or vegation on the surface. There is ample fall available to give sluice grades to the boxes and ample fall and area for tailings dump. For the atter the lands provided by the owners in the Valley of Buckeye Creek are available for the washing of the surface of the mine to an average depth of 100 feet but not more.

There is no water supply now on the mine for hydraulic work; the mining heretofore done has been done by water from melting snow and from a springs. This has been stored in the reservoir above referred to and used through a system of small ditches and pipe lines. The output of this work is claimed to have been about $40,000 for most of this the owners claim to have Mint receipts.

The excavations made in the surface of the mine are insignificant. To secure a water supply for the mine it is necessary to go to Alpine County, Calif., and to conduct the water by ditch system, projected by the Engineers of the owners. I am compelled to defer making an examination of this projected water supply system until I could make a second visit to the property.

The climate conditions are such that the annual working season will be from six to seven months.

Assuming that a water supply of 1500 miners inches can be made available for the season, with a duth of five cubic yards to the inch, 7500 cubic yards can be washed daily, or 1,350,000 for the six months

season. I naturally hesitate to compute the gold output from this on the basis of the average of my tests on the ground -- $3.21 per cubic yard. However, the most liberal allowance for costs will not exceed an aggregate charge of over five cents per cubic yard.

In conclusion I have no hesitancy in advising that you may present this property for the consideration of capital as one that will justify investigation. What I have here stated you can say is absolutely verifyable.

Cordially yours,
RUSSEL L. LINN.

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REPORT ON BUCKEYE PLACER MINES BY MR. LINDSAY,
Mining Engineer.

Location on Buckeye Creek, in Pine Nut Range of Mts., Douglas Co., Nevada, thirty miles from Carson City by good wagon road. Carson City, the capital of the state, is the nearest railroad point. It is fifteen hours, or 275 miles, from San Francisco, Calif. Virginia City, the center of the far famed Comstock Lode lies about 20 miles north of these placers.

The mine consists of about 1000 acres of gravel deposit lying in a valley sloping to the northeast, at an altitude of 6600 feet above sea level.

Title to the property is possessory, but sufficient work has been done to permit of abstaining U.S.Patents, if so desired. This ground was first located five years ago by the present owners. There being but little water at the time, the first work was done with pans and rockers.

What water was there only lasted for a few weeks each year, as the supply was obtained from the snow on the mountains, which melted and flowed own natural courses in the gravel, where it was caught in small dams and was used over and over. The results of this working was so good that other people came in and located the remainder of the ground of the valley -- perhaps 2000 acres -- without any i ea of where they were going to obtain water to work it. Indeed, I am told, there never were more than six rockers working at one time the supply of water being so small.

For two or three years this was the only means employed; but even in this manner considerable quantities of gold were taken out each season. The continued richness of the gravel, and the facts that the gold appeared to be distributed through the entire deposit, induced the first owners to look for further water supply, to enable them to work the mine by hydraulicking.

The only source from which a quantity of water could be obtained was the head-waters of the Carson River, and its tributaries, some thirty miles away. So the necessary water rights were located, covering 2000 miners inches. The cost of bringing this water through a ditch and pipe-line to the mine, proved too great to permit the owners undertaking it. They therefore accepted a proposition made to them by Mr. Lane of Calif. which was that he would bond the property, prospect it, and bring in the supply of water. Mr. Lane first had a survey made of the ditch line, which was found to present but few difficulties. Being satisfied with the prposed water supply, he erected some additional buil ings upon the ground and com enced to prospect the gravel in a systematic manner, by sinking shafts.

The ground in the valley is broken up into gentle hills and ridges of gravel, forming little water courses and ravines between. There is no timber or brush to speak of on the property, therefore no clearing required, and there is virtually no soil on top of the gravel. The whole

deposit appears to be underlaid by a layer of pipe-clay.

In one shaft, sunk 170 feet, this pipe-clay is 75 feet thick, and below this pipe-clay another layer of gravel was encountered. This lower gravel yielded but small returns, and as it was impossible to hydraulic it, owing to the want of grade, work was stopped in the shaft. A number of other shafts were sunk in different portions of the ground, from ten to forty feet in depth, down to pipe-clay, and all thoroughly prospected.

Four tunnels were run into the banks of gravel, which were much higher than the average, and a number of open cuts were made. Mr. Lane informed me that the results of this prospecting work was most satisfactory, and gave a very large average of gold per cubic yard. Owing to the scarcity of water, and the large area to be prospected he was unable to finish the work as thoroughly as he wished, within the time limited by his bond. The owners claiming that this work had proven beyond a doubt the richness of the deposit, refused to extend the bond, and Mr. Lane was compelled to give it up. He afterwards made another offer to them, to resume work and finish prospecting the remainder of the ground, but this they refused to accept.

A short time afterwards a Mr. Neil purchased a half interest in the water right, and a portion of the property, and spent considerable money in bringing to the mine a small supply of water from springs and little creeks in the neighborhood. He also ran a tunnel to tap a small lake at the upper end of the mine, and about three hundred feet above. From these springs and creeks a sufficient amount of water was obtained to supply a small giant for a few days. The results obtained from this smal amount of piping or hydraulicking were astonishing, yielding over $3.00 per cubic yard of gravel. The owners up to this time had steadily refused to give another bond upon the property, although utterly unable themselves to bring in the necessary water for the purpose of properly opening the mine.

I visited the property last summer, and made an examination of all the work already done. I made no survey of the ditch line or of the ground, as Mr. Lane has kindly given me the information of these points, derived from his Engineers surveys, and with but a limited time at my disposal, I wished to determine as far as possible the actual value of the ground itself.

From the shafts, tunnels, open-cuts and banks, I estimated the first, or top, layer of gravel to be from 5 to 40 feet deep; in some places it is perhaps over one hundred feet; but I considered that 20 feet would be a fair average depth all over. On the 1000 acres there would be above the pipe-clay about 15,000,000 cubic yards of gravel which can be hydraulicked. I prospected the gravel from all openings already made on the property and from the average of my washings got some marvelous results. 600 pans of gravel yielded an average of $3.25 per cubic yard, (a pan is equal to from 20 to 25 lbs. of gravel). I considered one hundred and fity pans equal to one cubic yard of gravel.

The gold is quite coarse. One piece I took out weighed 50 grains equal to $2.40 cents at $18.00 per ounce which is about the value of the gold. I prospected at different points over about six hundred acres. In some places I would get only a few colors, perhaps 1/4 of a cent to the pan; in others one or two cents, ($1.50 to $3.0) and in others five to fifty cents a pan, which of course would be extremely rich. In general the gold was so coarse that it was difficult to decide as to the actual value of the ground. For instance, in one place I panned 30 pans without getting more than five cents in all, and the next pan from the same place gave me over $1.50. I found this to be the case in most of the openings made in the gravel, and decided that to thoroughly prospect the ground it was necessary to test a larger quantity of gravel from each point than I was able to do with the pan or in the time and with the assistance at my disposal. A person may pan 50 or 100 pans and not find much gold and yet the next few pans might yield several dollars in gold.

I am reliably informed by a number of persons who have been on

this ground that much better results than mine were frequently obtained and in three instances that I know of, nuggets were taken out of the value of $167.00, $43.00 and $37.00. Men with rockers made from $20.00 to $60.00 per day. A rocker will handle or wash about four cubic yards per day, with two men working.

The ground washed off this year by the giant did not exceed 700 cubic yards, and it appears that the water gave out before all this was washed through the sluices. The Mint receipt from the U.S.Mint at Carson City, for the gold obtained from this work shows over 75 ounces, valued at $1,350.00. Taking into consideration that probably not more than 400 cubic yards were actually washed or run through the sluices, this would mean a yield of $3.37 per cubic yard. The sluices used were only 200 feet long.

This small amount of piping, or hydraulicing, was confined to a narrow cut, or pit, about the center of the property, where the gravel is not more than ten feet deep; but I found just as good prospects in other parts of the ground as were obtained from this opening.

In regard to the water-rights and proposed ditch line which belongs to the property, I am informed by Mr. Lane that it will furnish at least 1500 miners inches to the mine. He also informed me that the ditch and pipe line to conduct this water to the mine will be about 30 miles in length, with few difficulties in the way and that the cost of delivering the water to the property will be about $250,000. This heavy expense is accounted for by having to put in a pipe line 3 3/4 miles long, across a depression, 1350 feet deep, where the hydrostatic pressure on the bottom or lowest part of the line will be about 600 lbs. per square inch; requiring an extremely heavy pipe to stand the strain.

At the end of the ditch line, on the south, or upper end of the line there is a natural reservoir, from 200 to 300 feet higher than the ground to be piped. This reservoir has a capacity of about 6,000,000 cubic feet of water, or sufficient alone to supply the mine with 1500 inches ofwater for 50 hours. The pressure from this reservoir will be ample for sufficient work with the giant. There is a tunnel 700 feet long run in to tap the bottom of this reservoir, and a 22 inch steel pipe laid through it, with a gate at the inner end, for shutting off the water. This pipe conducts the water to a small ditch wherein it is conveyed to within 1700 feet of the present work. From the end of this ditch a 15 inch pipe with a 150 ft. fall, delivers the water to the giant. There is about 150 ft. fall lost between the end of the 22" pipe and the commencement of the 15" pipe , as the owners did not want to spend more money in making a longer pipe line, which would be required to utilize the full pressure.

As the natural fall of the ground does not exceed 300 feet to the mile, the grade of the sluice boxes will be rather a light one, not over 3-3/4 or 5-1/4 inches to every box of 12 feet. With this grade it will be possible to hydraulic and carry off from two to four cubic yards of the gravel for each inch of the water every 24 hours; perhaps more than this as the gravel is free from large boulders and should wash easily.

I have been informed by the Engineer who surveyed this grade that there is much more grade than I have stated, but I had to depend upon my aneroids at the time, not having a level with me so I make my statement on my own readings. Mr. Lane also tells me that there is ample grade for hydraulicking all of this gravel, although he could not give me the exact figures, having mislaid his report. He has thorough surveys made of all the ground during the time of his bond. The tailings will flow over and settle upon a tract of land below the mine, which has lately been secured for this purpose.

As I stated before, the yield of the gravel that I panned was almost beyond belief, for a hydraulic mine, averaging as it did $3.25 per cubic yard. I would not state that this was a fair average of all the gravel, for there are some high ridges which have not been prospected, and some flats, or level tracts, but with little work done on them. If these ridges and flats should prove of much lower value, it would consider-

ably reduce the average of the gravel. It may be found upon further prospecting that some of the portions of the gravel deposit will not pay to hydraulic, and that the results which I obtained came from rich streaks or spots, scattered through the ground. It would be rather singular, however, if all the work already done should have been done on the richer portions.

I would therefore advise that the sinking of at least 30 more small shafts through the gravel to the pipe-clay, and from each of these shafts not less than two cubic yards of gravel should be taken and washed (in rocker). I would also advise driving a few tunnels, one hundred to two hundred feet long, each, into and under the highest banks and ridges, and thoroughly testing the gravel from each tunnel. This would determine beyond any reasonable doubt that the value of the gravel. As these shafts and tunnels would be entirely in gravel and require no timbering the cost would be small, not over $2.00 per foot, and the shafts would not average over 25 feet in depth.

There is now plenty of water obtainable from the springs opened up last summer to enable prospecting to be thoroughly done.

A complete survey of the ground must be made to determine exactly the capacity of the dumping ground for the tailings, so as to allow sufficient room for depositing all gravel to be removed. As above stated, there are probably 15,000,000 cubic yards of gravel above the pipe-clay.

With a season of eight months, allowing four months in winter, when it would be too cold, and to much snow to permit of advantageous work, using 1600 miners inches of water, and allowing the duty of one 24 inch (equal to a flow of 2230 cubic feet) to be only two cubic yards of gravel, the amount of gravel washed per year, of say 220 working days, would be 660,000 cubic yards; at this rate it would take about 22 years to wash the gravel off this 1000 acres.

One important feature in the value of this property is its capacity for expansion. Owning the only available water supply, it controls all the gravel in the vicinity, and there are extensive deposits lying to the west of the property. These deposits, I understand, have never been prospected to any extent, but whether of value or not, they are entirely at the disposal of the owners of these water rights, and may be taken or purchased in the future, if desirable.

There are two small houses on the property capable of accommodating about twenty men; two stables, with room for eight horses; 1700 feet of 15 inch pipe; one small giant and a number of tools.

Fire wood costs $4.50 per cord delivered. Lumber $20.00 per M. delivered, and freight from Carson City $7.50 per ton. Estimated cost of bringing to xxx the property 1500 inches of water, branch ditches, openings for mining, pipe, giant, tools, etc., about $300,000.

It would require about one year to put the mine in condition for working, including the completion of the ditch and bringing in of water.

Respectfully submitted,

MR. JAMES LINDLEY,
San Francisco, Cal.

Dec. 10, 1896.

A P P E N D I X

The following figures show cost of some of the ditches of the larger hydraulic mines of California:

	LENGTH	CAPACITY	COST
North Bloomfield Mine.....65	miles	3800 in.	$442,000
Milton Mining Company 80	"	3000 "	460,000
Gold Run Ditch Co. 26	"	2500 "	150,000
Blue Tent 31	"	2100 "	200,000

REPORT ON AVAILABLE WATER SUPPLY
FOR THE BUCKEYE GRAVEL MINES

by
W. [illegible]. GRAHAM, HYDRAULIC ENGINEER.

San Francisco, Oct. 20, 1897.

Mr. R. L. Dunn,
San Francisco, Calif.

Dear Sir:

During the past week I made a reconnaissance examination of the proposed water supply for the Buckeye Hydraulic Placers, situated in Douglas County, Nevada, in the Pine Nut Range of mountains.

The scope of the examination of the ground was limited to the portion of the canal line south of the Mountain House, and lying for the most part in Alpine County, Calif. As I am advised, all the sources of water supply for the Buckeye Mine are situated in this section, and all of these sources consist of th following tributaries of the east and west forks of the Carson River. In the project, as outlined by you to me, and in the papers relative to the affair, submitted by Col. Alberger, the sources of supply seem to be limited to the tributaries of the east fork of the Carson River. My personal investigation on the ground, has however, satisfied me that the west fork of the Carson River would be the principal source of supply, and should be considered in this connection.

Considering the several streams separately, I found Mountaineer Creek to be at this season of the year, in the middle of October, flowing 60 inches of water as late as the middle of June of each year. From my personal observa ion the water shed is sufficiently considerable, and the evidence of the snow remaining late in the season such that I am satisfied that the statement made to me is substantially true, and that from 500 to 600 inches of water can be depended upon from this source as late as the middle of June.

Leviathan Creek I found flowing 8 inches of water. This stream shows evidence of late remaining snows, similar to that observed in the water sheds of Mountaineer Creek. It can safely be depended upon for from 250 to 300 inches up to the middle of June. Both of these streams flow considerable more in the early part of the season. That is, April, May, and can, in my opinion, up to the end of May supply a full head to a 1500 inch ditch.

The third source of supply is the East fork of the Carson River, sometimes known as Silver King Creek. I found about 800 inches of water flowing in this stream. This stream will safely afford up to Aug. 1st a full head for a 1500 inch ditch. In addition to the flow of the water shed of this stream, for the direct supply, there is a reservoir site, which with a dam 40 feet high and 250 fe t long will store 20,000 inches of water.

The west fork of the Carson was examined by me just about the junction of the two forks, ten miles below where the ditch line would head into it. At the point examined I could 2000 inches of water flowing, and at the point at which the ditch would head, the quantity would not likely be much less than 1000 inches.

To make the last mentioned supply available, would require about ten miles of ditch and flume construction, which in the aggregate would cost less than the construction of the dam for the reservoir site in Silver King Creek water shed. This ditch would have to be only 1000 inch capacity. The supply it would make available would be considerable in excess of the proposed reservoir, making the latter entirely unnecessary.

As my conclusion in the matter, I am of the opinion that Mountaineer

creek, together with Leviathan Creek, would give a full supply of 1600 up to say the latter part of May, while the other sources were still locked in unmelted snow; that Silver King or east fork of the Carson, would give a full supply from the end of May until Aug. the 1st and from Aug. 1st until the season is closed by the coming winter, the west fork of the Carson and the east fork of the same would together give a full 150 inch head. You can safely count on having the entire dry season, six, seven or eight months, as it may be an available water supply for the mine, assuming that only 1600 inches are required.

I generally noted the topographical character of the country over which the ditch is projected. It is a contry of easy slopes and not particularly hard digging; the soil is rather light, sandy and gravelly; parti much of the construction can be done with plow and scraper. A wide and shallow ditch could be made rather than a deep and narrow one. In other words, the con itions are favorable for economical ditch construction.

For flume construction, timber is available on the line of the ditch between the east and west fork of the Carson River, and this timber taking advantage of the season should admit of cutting and deliver-ing at the point of using for $10.00 per M. In making this statement I base my knowledge on Nevada timber as being light and floatable, so the ditch could be used very largely to transport it to the place where it is wanted. This refers to the portion of the itch line above the Mountaineers House, and above the pipe line.

I would suggest the expediency of considering possible changes for the better in the line. I noted that a tunnel some 1000 feet long would cut off some ten miles of rather difficult ditch and flume construction. Aside from the direct advantage that the tunnel construction will be in very much lessening the cost, it would be possible to take the fall which would be used up in this ten miles and added to the elevation of the inlet and of the proposed pipe line. At the grade of four feet proposed the difference would be 32 feet and it might be safe to say 50 feet additional could be given to the pipe line. By so doing the diameter of and thickness of iron of the pipe required would be diminished and its coast of construction lessened.

The snow fall in the region is not particularly heavy, being about six feet in depth. This information is derived from a number of reliable sources.

Finally, from my examination, I can state that the sources of supply I have examined will give a full head of 1500 inches of water at the mine, after taking out the losses of seepage and evaporation, without storage, and for the entire season that it is possible to do any mining.

Yours truly,

W. P. GRAHAM.

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REPORT ON PROPOSED DITCH AND FLUME LINE TO
THE BUCKEYE GRAVEL MINES
By:
Richard Cook, Civil Engineer.

Notes of Survey of Proposed Buckeye Placer Mining Ditch Line.

Silver King Creek.

Dear Sir:

Beginning at a point on Silver King Creek, known as point 1, in the original survey and marked by a stone monument, and diverting the

water of Silver King Creek, we find the elevation as shown by barometer readings to be 8700 feet. NOTE--(by running S.E. from this point a distance of two miles, 1000 feet vertical raise may be attained, and an area of 300 acres may be easily converted into a reservoir). Thence from the initial point in a northerly direction to point B, or inlet of syphon, we find elevation 7000 feet a distance of about 19 miles. (Nov. 15th).

Thence in a N.E. direction about 3-3/4 miles to point C, or discharge of syphon, elevation 7600 feet. Thence northerly a distance of about 16 miles to the divide at Buckeye Mine marked D. Barometer 7250 feet.

Total grade in 39 miles is 1450 feet.
Total length of proposed ditch and syphon about 39 miles.
Total grade attainable in 41 miles of ditch and syphon 2450 feet.
NOTE: From point A to point B we encounter many streams, as Lassoo Creek, a stream flowing from Haypress Flat, Leviathan, Mowell, and other creeks.

Between Points C and D we encounter Ded Horse Creek and Mill Creek Dutch Conon and Lane Pine Creek, all streams of some importance intersecting the ditch line, which would more than offset any loss from seepage and evaporation. There are also several smaller possibilities along the line for reservoirs.

Respectfully submitted,

RICHARD COCK, C.E.

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BUCKEYE PLACERS.

Dear Sir:

I have made a preliminary examination of the Buckeye Placers and have the following report to make:

LOCATION:
The Buckeye Placers were discovered in 1891, situated thirty miles southeast of Carson City in Douglas County, Nevada. They are in the Pine Nut Range of mountains and lie on the northeastern slope of Mt. Siegel (11,000 feet in heighth) at an elevation of 6500 feet. They are composed of claims from one-half to three-quarters of a mile wide and three miles long, aggregating about 1640 acres.

NAMES OF CLAIMS:
The group consists of the following claims: Gold Bug, Fly, Spider, Bee, Mogul, Iron Sides, Denis, Pinto, Jeff Davis, Blackhorse, Horn Spoon, Northern Light, and Harmony. There has been prospecting done on all of these claims in a small way, but the most extensive work has been done on the Pinto, Jeff Davis and Black Horse, each of which comprise 160 acres.

TITLE:
The title is possessory; all the claims have been held by doing the required assessment work from year to year.

GENERAL INFORMATION:
The nearest point on railroad is Carson City (the railroad now runs to Minden, 10 miles from placer, inserted by C.W.Slater). which is reached by a thirty mile wagon road; eighteen miles of this road is good while the remainder is through sand. Takes about six hours to make the trip from Carson to the mines with a light rig. Fire wood $4.50 per cord and lumber $20.00 M. delivered. Freight $8.00 per ton from Carson. Labor, Union $4.00 Non-union $3.00, common laborers $1.50 per day and board.

Climatic conditions are favorable for seven months work in a year, remainder of year country is covered with snow and ground frozen. The local

water supply is drawn from the melting snow and only lasts a few weeks in the spring. Vegetation consists of sage brush and a very limited amount of Pine-nut. Good houses and a barn at the mine but no water for seven months; nearest water supply for camp purposes at Raycraft farm four miles northwest of mine.

GEOLOGY:

For a thorough understanding of the proposition it will be necessary to discuss the geological formations and agencies that brought about the present conditions. The Pine Nut range is an immense granite formation rising to a maximum heighth of 11,000 feet in Mt. Siegel. In this granitic mass are found intrusive or dyke rocks and some auriferous stringers of quartz. There are evidences of an ancient water system rising on the eastern slope of the Pine Nut range and flowing nearly due north which was afterwards filled up and covered with a flow of rhyolite or what is commonly called in placer claims "pipe clay" On the road from Carson you first notice this deposit off to the left of the road about ten miles from the mines. It looks like hills of limestone or sandstone. You follow this formation until within three miles of the mines when it disappears, and an immense mass of loose unassorted fragmentary rocks with partially washed gravel and sand and earth forming a series of rounded hills and depressions overlies the rhyolite. This deposit is the auriferous gravel of the Buckeye placers.

ORIGIN:

Glacial action with other agencies has here partially cut away the rhyolite, forming a basin or terminal moraine of a glacier, which, as the glacier gradually receded up the eastern slope of Mt. Siegel, was filled with detritus. This deposit was originally from six hundred to eight hundred feet thick but has been cut down to five hundred feet in places and now forms a series of hills and depressions. The present drainage system of Buckeye Canon follows the ancient system for three miles then turns to the west and follows along the western edge of the rhyolitic flow and then west to the Carson Valley. This deposit is very fragmentary and does not show evidence of being carried there by the action of running water but must have been deposited by glacial action. On Mt. Siegel at the southern end of the deposit the terminal moraines of smaller glaciers have left depressions which catch the water from the melted snows. One of these depressions 1000 feet long, 300 feet wide and about 12 feet deep was tapped by a 700 foot tunnel and the water used for hydraulic purposes.

ECONOMIC GEOLOGY:

The origin of this auriferous deposit has no direct bearing on its exploration and exploitation but it no doubt is glacial detritus from the Pine Nut Range. Considering the genesis of this deposit from the ending of the glacial period, or from the beginning of the present period up to the present time, it has been subjected to a period of erosion, forming the present water system which has cut down in the deposit five or six hundred feet leaving it a series of elevations and depressions. This erosion has caused a concentration over the entire deposit and a secondary concentration in the depressions formed by the present water courses. Although the present water ways have not cut down to the bottom of this deposit which is in all probability several hundred feet deep, still they have about reached their base plane and the economic value of this deposit as an hydraulic proposition lies in the exploitation of the gravel deposit above this base plane, using the grades of the present water ways to dispose of the debris.

The Rhyolitic formation which is in ideal bedrock for both hydraulicking and dredging comes near the surface in the southern end and can be used as a basis of operation for hydraulicking in the working of this part of the mine; but as it pitches down stream at a greater grade than the water ways or the hydraulic grade line its use for a basis of hydraulicking is soon lost. The dredging possibilities of the property lie in the exploitation of the deposit below the hydraulic grade line. The possibilities of the proposition in relation to both hydraulicing and dredging I will

discuss later.

PRESENT STATE OF DEVELOPMENT OF MINES:

The development of the property has to a large extent been limited to the Jeff Davis, Pinto, and Black Horse claims, the work on the other consisting of running of short tunnels and open cuts and sinking shafts. Of the three above mentioned, the Black Horse has been the most extensively worked. ~~Xhere~~ The work here is in Black Horse Canon where there is a secondary concentration. It consists of rocking, sluicing and a small amount of hydraulicking. Cross-cuts have been run into the hill from the bed of this canon and expose good deposits of gravel.

The owners claim to have taken out about $60,000 in several short seasons by panning, rocking, sluicing and hudrulicking. Six men in six hours with a sluice cleaned up $613.00. From 276 pan prospects, the lowest was twenty-eight cents per cubic yard and the highest $11.00. A small reservoir site tapped by a 700 foot tunnel gave water enough to wash 600 yards which gave seventy-five ounces valued at $1322 besides $70.00 in nuggets. Average value about $2.00 per yard.

PROSPECT INFORMATION FROM OTHER SOURCES:

Mr. W. A. Doolittle, in the spring of 1893, prospected by panning and secured an average of $1.98 to $2.86 per cubic yard.

The average of Russell L. Dunn's tests was $3.21 per cubic yard.

Mr. Lindsy, M.E., says: "I prospected from gravel from all openings on the property, taking 600 pans which yielded an average of $3.25 per cubic yard, allowing 150 pans to the cubic yard. The gold is quite coarse one piece weighed $2.40. I prospected different points over about 600 acres getting from one-quarter to one or two cents per pan in others from five to fifty cents per pan. As the gold is coarse it is hard to decide the actual value of the ground, at one place I panned thirty pans not getting more than five cents in all and the next pan from the same place gave me more than $1.50. From reliable information men made with rockers from $20.00 to $60.00 per day, a rocker handling four yards, two men working. Four hundred yards run through a sluice yielded $2.37 per cubic yard. The small amount of piping confined to narrow cut about center of property, ground ten feet deep, just as good prospects obtained from other parts of ground.

Mr. C. F. Lane informs me that it will take thirty miles of ditch and pipe line to conduct 1500 inches of water to mine at a cost of $250,000 or $300,000, including a line three and three-fourths miles long across a depression 1350 feet deep.

Mr. Lindsay gives the natural fall of the ground at 200 feet to the mile of a grade of from three and three-fourths inches to five and one-half inches to the twelve feet.

PROSPECTING :

I was unable to do much prospecting while at the property as all the samples had to be taken four miles to Rayeraft farm to secure enough water to wash them.

SAMPLE NO. 1: Taken from the southern part of Northern Light in a canon gave prospects of fine gold.
SAMPLE NO. 2: Taken from Black Horse Canon on Black Horse claim. The gravel taken from incline tunnel five feet below present bed of canon. The gravel is of medium size, containing yellow loam which disintegrates very easily in water. One hundred pounds of gravel gave prospect of fine gold.
SAMPLE NO. 3: Taken from bank of hydraulic pit and it is an average sample from surface of ground to the bottom of pit, a distance of fifteen feet. This is the only average sample I secured. The bank here averaged fifty cents per cubic yard. This is the pit where they cleaned up 75 ounces from 600 yards.
SAMPLE NO. 4: Taken from the bottom strata of gravel in a cross cut tunnel in Black Horse Canon. No attempt was made to get an average sample but I tried to secure a sample of the best gravel. I secured two cents to the pan in coarse gold from three pans making the value of this gravel strata $3.00

per cubic yard.
SAMPLE NO. 5. Taken from a three foot cut in side of hill just above Pinto Gulch on Pinto Claim, gave prospect of fine gold.
SAMPLE NO. 6. On Ironsides on southwest part of claim, gravel taken from bottom of 12 foot shaft, gave prospect of fine gold. I am enclosing a small diagram showing location of claims and where samples were taken. I was unable to secure a map of the mine or surrounding country.

WATER SUPPLY:

The future of the mine depends upon the water supply. In the short time I was there I was unable to investigate this matter myself, but have secured the following information bearing on the subject.

Mr. W. S. Graham, now Surveyor General of this State, made the following report on water supply in 1897:

"The examination was limited to the portion south of Mound House and lying for most part in Alpine County, all the source of water supply for Buckeye Mountains from this section consists of the east and west forks of Carson River. The souce of supply seems to be limited to the east fork of Carson River, but a personal investigation satisfied me that West Fork is the principal source of supply. Considering several streams separately I found Mountaineer Creek at this season of the year (Oct. 15) flowing 60 inches of water. As late as June each year, water shed sufficiently considerable and evidence of snow remaining late, shuch, that 500 to 600 inches of water can be depended upon for this supply as late as the middle of June.

Leviathan Creek 8 inches of water October 15th. This stream shows evidence of late snows, will give 250 to 300 inches to the middle of June. This Creek to end of May will give 1500 inches.

The East fork of Carson River or Silver King Creek was flowing 800 inches October 15th, and will afford 1500 inches to Aug. 1st. In addition to flow from water shed to this stream for direct supply there is a reservoir site which with a dam 40 feet high and 250 feet long will store 20,000 inches of water.

The west fork of Carson River examined just above the junction of the two forks and ten miles below where the ditch line would head into it I found 2000 inches of water and at a point where the ditch would head about 1000 inches. To make last mentioned supply available would require ten miles of ditch and flume construction which would cost less than dam site construction for the reservoir site in Silver King Creek water shed. This ditch would have 1000 inches capacity supply available considerably in excess of reservoir, making latter unnecessary.

CONCLUSIONS:

Opinion that Mountaineer Creek with Leviathan Creek will give 1500 inches to latter part of May while other sources still locked in unmelted snow. That Silver King Creek would give full supply from June 1st to August 1st, from August 1st till season is closed by coming winter. West fork of Carson and East fork of same would together give full 1500 inches. You can safely count on having for entire dry season 6,7 or 8 months, an available water supply, assuming only 1500 inches are required.

Topographical character of Country-easy slope, fair digging, soil light, sandy and gravelly; much construction can be done by plowing and scraping, a wide and shallow ditch rather than a deep and narrow one; condition favorable for economic ditch construction.

Timber available on a line of ditch between east and west forks of Carson, cost $10.00 M. This refers to ditch above Mountaineers house and above pipe-line. A tunnel of 1000 feet would cut off 10 miles of ditch. The loss of grade in ten miles added to elevation

at inlet end of pipe-line at grade of four feet (proposed) the difference would be 32 feet and might be safe to say 50 feet additional would be given to pipe-line.

Snow fall of region about six feet, this information drawn from a number of reliable sources.

CONCLUSION: Source of supply examined will give a full head of 1500 inches taking out losses of seepage and evaporation, without storage for entire season that it is possible to any mining.

Ditch line: Richard Co k, C.E., has the following on ditch and pipe-line:

"Beginning at a point on Silver Creek or East fork of Carson River marked by stone monument, find elevation 8700 feet, thence in a northerly direction to point "B" or inlet of sipon, we find elevation 7900 feet a distance of 19 miles, thence in a northeasterly dir ction 3-3/4 miles to "C" or point of discharge of siphon, elevation 7600 feet, thence northerly a istance of about 16 miles to the divide at Buckeye Mines, marked "D", elevation 7250 feet.

Total grade in 39 miles 1450 feet, total length of ditch and siphon about 39 miles. Total grade attainable in 41 miles of ditch and siphon 2400 feet. From the point "A" to "B" or the first 19 miles we encounter many streams flowing from Hay Press Flat, Leviathan, Bo well and other Creeks. Between points "C" and "D" or last 16 miles of ditch encounter Dead Horse Creek, Mill Creek, Dutch Canon and Lone Pine Creek, all streams of some importance intersecting ditch line which would more than offset seepage and evaporation".

The cost of bringing 1500 inches to property would be $250,000.

As an hydraulic proposition:
There is an extensive area varying from 10 to 100 feet in depth which with a good supply of water could be hydraulicked.

Gravel: The gravel is an angular wash of fragmentary rocks compose mostly of granite together with dyke or intrusive rocks and some quartz and magnesite. There is quite a large percentage of black sand. About 80% of the gravel could be handled in the sluices, while 10% would require the use of derricks and powder. There is sufficient dumping room on the lower end of the property to work an extensive area, but what extent could be hydraulicked would depend upon the actual grade you could secure from your sluices.

Gold: The gold very closely resembles the ancient river channel gold of California, although it is not as smooth and water worn. It is a heavy gold that would be easily saved. The ground is covered by very little soil and the loam in the gravel disintegrates very easily in water. The duth of the miner's inch with the grade they have would be about two cubic yards. Cost of operation about five cents per cubic yard. Length of season seven months.

Dredging Possibilities:

At present there are no dredging possibilities. If the surface is hydraulicked down to the limits of the grade for disposing of the tailings then there is a possibility of handling 40 or 50 feet of the gravel deposit below this grade line by dredges.

Recommendations for future prospecting:

The local water is derived from melting snows so the most successful time to prospect is during a few weeks in the months of April and May while the snow is melting, then there is some water in all the ravines and canons.

The most efficient way of prospecting is by sinking shafts at regular intervals. Run a grade line from the tailings or storage basin to the mine and sink all shafts to this grade line and by extending these shafts east and west and north and south define the limits of possible hydraulic ground. From the rich concentrations in the canons and the good surface prospects on the hills one is liable to over-estimate the amount of possible hydraulic ground.

SUMMARY:

It is an hydraulic proposition.

To secure 1500 inches of water will require thirty miles of ditch at cost of $250,000. Length of season seven months.

Necessities maintaining ditch system in high altitude, 7000 to 10,000 feet.

Eighty per cent of gravel handle by sluices, ten per cent by power an derrick. Prospecting must be done by water from melting snows in months of April and May.

Conclusion: The property will justify investigation.

Yours truly,

(Signed) C. H. MUNRO.