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ITEM 33

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GOLDEN, COLO. 80401

7 January, 1974

Mr. Goudy
American Fuels Corp.
1906 Prudential Center
Denver, Colorado

Dear Mr. Goudy

Enclosed are six (6) copies of the report "Reconnaissance of the Mary Ann Gulch and adjoining areas, Osceola Mining District, White Pine County, Nevada"

The property is only a part of the total, 1,200 acres for this preliminary report of a verbally indicated 5,400 acres total. The property was visited to prove a basis for further work and the conditions to be found. Gold was found as "PLACER GOLD" i.e. amenable to washing from the alluvial deposits without further treatment or milling. The delineation of values in the large ~~wordage~~ available, 35 million as a preliminary minimum, DO NOT must await a definitive exploration program. The initial indications are that the values contained will be sufficient to support a medium to large operation--7,500 cubic yards to 15,000 cubic yards per day with an operating season of about 300 days per year. Smaller operations are not to be considered until specifics on small areas and grade is determined.

The contained values in the samples taken are indicative that gold is found in concentrations of economic interest. The vertical continuity and average values for the "bank run" from surface to bedrock or bottom of the auriferous alluvial material can not be determined at this time. An additional point of interest is that the past operations are not within the area of major potential, being up-hill and of a relatively small percentage of the total. The entire project rests upon the amount of water and the cost of the same for "placer mining." Until this is determined, no feasibility is advanced.

The deposits, both in the Mary Ann Gulch area and many parts of the surrounding district, have the necessary indications that the expenditures of funds for exploration and subsequent exploitation, as justified, is warranted at this time. A budget for a six (6) months program is enclosed.

Further discussions will be most welcome and I trust that I may be of service by partaking in these discussions.

Respectfully yours,

Paul M. Hopkins

PMH:ph

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RECONNAISSANCE OF
THE MARY ANN GULCH
AND ADJOINING AREAS
OSCEOLA MINING DISTRICT,
WHITE PINE COUNTY,
NEVADA

INTRODUCTION: The objectives of the reconnaissance of the Placer Gold prospects in the Osceola Mining District, White Pine County, Nevada are as follows: (1) Prove that the claimed values of placer gold are to be found in the district; (2) Establish a proximate limit of the deposits as related to the known property area; (3) Relate the past production to recent developments and total potential of this district; (4) Relate this potential to the better indicated methods of exploration to determined the contained values in these alluvial deposits; (5) Define any possible immediate potential suitable for exploitation; and (6) Determine such special conditions or limitations as may have a major influence upon future operations.

GEOGRAPHY:
CLIMATE : The Osceola Mining District is located approximately 38 miles southeasterly from Ely, White Pine County, Nevada.

The district is adjacent to and immediately to the south and east of U.S. Highway 6 and 50. The elevation varies from 5,800 to about 13,000 feet on the north and west side of the Snake Range of mountains. The temperature varies from about minus 15°F. to 100°F. plus with an annual precipitation of less than 12 inches. The highway should be open at all times with only limited periods of non-accessiblility to the lower areas of the mountain range due to snow. Large scale operations should be feasible about 10 months per year.

The property is described as being in excess of 5,000 acres. Delineation of the area, on the ground and by maps to date(31 December, 1973), has confirmed the location of about 1,200 acres of this total. The acreage is primarily along Mary Ann Gulch and its downslope detrital fan on the west side of the Snake Range. The area is in the northerly one-quarter section of Section 27, all of Section 22, the north half and some adjoining portions of the south half of Section 23 and some portions in the westerly part of Section 24 and a small area of Section 25. These sections are all located in Township 14 North, Range 67 East, Mount Diablo Meridian.

A small area of about 400 acres is located along Dry Gulch beginning at the approximate intersection of the gulch with the west side line of Section 7, thence southeasterly along Dry Gulch for about one and one-half miles in Sections 7 and 18, Township 14 North, Range 68 East, Mount Diablo Meridian.

The several claim locations, their location on the ground and details of the total area for consideration must await a tendering of the complete listing of property and descriptions. It will further be necessary to clarify the location by survey at a later date.

The area for consideration at this time varies from 5,800 feet to about 6,500 feet elevation from west to east. This area may be traversed with a minimal difficulty when using a four-wheel drive vehicle. Field work and drilling set-up locations will be expedited by using a dozer-tractor to clear trails and prepare drill sites.

An electrical power line, apparently 110 KV, traverses the valley along the west side of the property.

Water is reported as being found at shallow depths in the valley with good potential for high volume production.

BIBLIOGRAPHY: The published information about the district is summarized in the following publications: Koschmann and Bergendahl, "Principal Gold-Producing Districts of the United States", U.S.G.S. Prof. Paper 610, 1968, p.200; Johnson: "Placer Gold Deposits of Nevada", U.S.G.S. Bull. 1356, 1973, pp. 93-95 and 101; Vanderburg, "Placer Mining in Nevada", Nevada Bur. Mines Bull. 30, 1936, pp. 167-173. Details of past operations are given in the many references quoted in these publications. At a later date, the correlation of conditions with operating experience in themany placer deposits at various times, both in Nevada and in other areas, will aid in developing the manner for exploiting the deposits as feasible.

MINING HISTORY: Gold was discovered in lode deposits near Osceola townsite in 1872. Placer mining started in 1877 with the discovery of values in the alluvial material at the junction of Dry and Grub Gulches, a few hundred yards southwest of the townsite.

This discovery lead to operations on the placer deposits that have continued to date with the major efforts from the discovery date to about 1900. Intermittent mining continued to about 1940 when the district was essentially abandoned with the exception of small operation by individuals working high grade locations along channels in the alluvial fans, particularly in the Mary Ann Gulch area.

Dry and Grub Gulches have been mined by various methods, drift mining along bedrock, drag-line feed to stationary washing plants, hand operations on shallow bars and benches and hydraulicking. The later operation began in the 1880's when water from Lehman and Baker Creeks on the east side of the Snake Range was brought to the area by ditch. Additional water was brought in from the south along the west side of this same mountain range. A maximum of 2,000 miner's inches was available during the peak run-off period with very much reduced flow at other periods of the year. About 1900, reduced water supply due to leakage from the ditches, light snowfall, stealing of water from the ditch and other unknown influences, the hydraulicking operation in Dry Gulch ceased. This marked the end of major placer mining operations in the district.

Other gulches have been explored and mined by varying methods, usually small scale. These include but may not be limited to Mary Ann and Weaver Gulches and the Summit area.

The Mary Ann Gulch area is a location of interest for major potential based upon the information available. The operations in this area began with the discovery of placer gold, apparently in 1879.

The mining in this gulch area followed a consistent pattern of sinking shafts to a "false bedrock" varying in depth from 25 to 60 feet, thence drift mining along the channels, taking vertical interval of about 3 to 5 feet. The width of these mine "stopes" are generally less than 15 feet. The gravel is then hoisted to the surface, and washed, using either water or dry washing methods. The area of this work in the upper part of the alluvial fan near the mouth of the canyon draining west side of the Snake Range. The location of these operations are marked by the numerous shafts, most of which are caved or in very poor repair, and their adjoining dumps. The material in th dumps is a combination of the material from the surface to the pay zone and the waste material from the washing operations. Sampling of these dumps will be indicative but not conclusive as to the potential values for the alluvial material in the area.

A recent effort on the Mary Ann Gulch fan is the operations of Cal Lake Dredge Company. These efforts have been of two types. The uppermost in elevation and near the mouth of the canyon is the large scraper-dozer cut feeding a grizzley, whence the undersize material was transported to the valley for washing. The second operation and one that was active in December is the operation of a "Suction Dredge" using high velocity water in a venturi tube to create a suction whereby the gravel would be lifted from the bottom of the dredge pond for washing thru a conventional wash plant on a floating dredge. This later operation is located in the southwest quarter of Section 23. The crew was not present when the reconnaissance was made over that part of the district, hence the results are unknown--only that gold is being producted.

Lode mining in the district has not been active for several years. The veins contain little if any values other than gold. These mines indicate the source of the values found in the alluvial material.

The total production from these several areas comprising the Osceola Mining District is estimated as 131,700 ounces to 1959. 91,555 ounces is credited to placer production while 40,145 ounces is given as the lode production. An estimated 3,500 ounces has been produced from 1959 to 1963. No figures are readily avilable for the production during the last 5 years.

How much from Mary Ann?

GEOLOGY: The Snake Range is composed of a core of pre-Cambrian metamorphics and igneous rocks. On both flanks, and in some cases, covering lower crest line of the range, Paleozoic sedimentary rocks are found. Thes rock types include quartzites, limestone, shales, and their interrelated rock types. All have been well compacted and subjected to mild metamorphism due to depth of burial since deposition. Later, a granite porphyry of post-Carboniferous age invaded the sedimentary section. The vein deposits are found primarily in the quartzites of Cambrian age as sheeted zones, and as a secondary feature, shattered areas adjacent to these vein sheeted zones.

The present topographic and structural form is closely related to the Basin and Range type of development, common to most of the state of Nevada. The development of this province began after the Sierra Nevadan orogeny, continued thru the Laramide and may, in fact, have continued until after the recent glacial periods of the Pleistocene. Recent movements have been very minor along the faulting zones but some recent earthquakes and their accompanying movements have been recorded since the state was settled.

The topography of the Basin and Range geologic province is marked by the parallel mountain ranges separated by valleys, generally showing "fans" of detrital material from the nearby mountain ranges. Evidence of heavier precipitation and stream flow is shown by the variation in sizes of the valleys or creek drainages, now definitely "undersize" as to water-flow when compared to the alluvial material grain size. It is not reasonable that the present water flow pattern is capable of moving the larger cobbles and boulders in these fan deposits. The "fan" structure can be visualized as a section of a low cone with the apex on the mountain front and the base as an arcuate trace on the valley floor.

These cones contain the eroded material, including metal, in this project area--gold, contained in the rock from the mountain areas. Irregularity of deposition is to be expected as well as only partial "freeing" of the metals from the country rock. There has not been erosion and attrition of the rock material to grind it sufficiently to free all the metal contained. Further, sorting of the material for values should be nominal, yet marked by some increase as one finds "bedrock" or "false bedrocks: of clay, caliche or similiar resistant beds upon which the metal can be held with little or no further vertical migration downward. A correlation of the present topography of the mountain range at the beginning of the erosion cycle, the outcrop and loci of deposition of the gold-bearing veins and the erosion cycles is not feasible from the present limited study of the district. It is postulated that the initial erosion material with its contained gold was deposited at the base of the mountain front, thence as erosion continued, deposition of the gold-bearing alluvial materials were haphazard in general with a systematic pattern of agradation following a braided pattern from the mouth of Mary Ann Gulch, as well as the several other areas where gold deposition occurred conjointly with the deposition of the detrital material from this mountain area.

In the various references given, it is commented that gold is to be found in varying amounts in all the gravels, local concentrations are found, and all follow the pattern of "braided" deposition.

The source area for the gold in the Mary Ann gulch fan are a number of veins and shatter zones to be found near to and along Mary Ann Gulch and its tributrarites. The host rock for these vein deposits is the Cambrian Quartzites. These source areas are generally in Sections 7,8, 17, 18, 29, 30, 31 and 32 of Township 14 North, Range 68 East, Mt. Diablo Meridian.

Tungsten mineralization is identifiable in most of the placer material, occurring as scheelite, a calcium tungstate ($CaWO_4$). The results of the initial sampling program indicates that the values are recognizeable but only to be of minor interest as a by-product of the gold production. Local exceptions are to be expected. During the major period of exploitation in the district, i.e., prior to 1900, tungsten was not of major economic interest, hence little or no attention was taken of its occurrence and possible economic values.

FIELD WORK: The field work was from 12 to 17 December, 1973. After meeting the Messrs. Spendlove in Provo, Utah, we traveled to the property on the afternoon of 12 December. Familiarization with the area and initial identification of the local features identified the property area of immediate interest. This initial delineation of the immediate area and the relationship to the entire district was greatly expedited by the Spendloves as they guided the writer around the area.

The area of apparent immediate potential is the group of properties along and downhill from the mouth of Mary Ann Gulch into Spring Valley. This area is generally within Sections 23 and 24, Township 14 North, Range 67 East, Mt. Diablo Meridian. (This is the Shires Claims)

The next step was the operation of the test equipment as assembled and operated by the Spandloves in their previous work. An initial test run of approximately 3.5 cubic yards of alluvial material from a dump along side of a shaft approximately 40 feet deep was made. Time did not permit the total dump to be run but the material was of sufficient size that a reasonable indication of values to be obtained for a sample program in the shaft from surface to the bottom would be more than a few cents per yard. In addition, the operation of the equipment and manner of washing samples therein could be checked with reasonable ease. The equipment as put together is not in "balance" for best economy of operation as related to the capacity of the several parts. However, the fundamental concept is most acceptable. The early application of the same concepts occurred in the 1930's with the development of the Nine and Smelter Company's "G B Machine" model 34B. An updating of the basic concepts is the Denver Equipment Company "Gold Saver" machine that is presently on the market. The writer has used one of these machine on various projects for the past seven years with consistent reliable results. The acceptance of concentrates as containing essentially all recoverable gold is reasonable. The washing plant will be discussed in detail, particularly as related to a broad sample program.

The next phase was the taking of samples from the Mary Ann shaft No. 2 at a depth of about 60 feet below the surface in past working areas.

631 ¢

The workings and the sample locations are as sketched (figure 643-2). The small sample of about 1.5 cubic feet was sacked and returned to Colorado for washing there. During this work, additional material was "panned" underground using a minimum of water to find gold and correlate its location with the stratigraphy and lithic character of the small beds exposed in the workings, representative of the multiple phases of deposition of the "fan" of Mary Ann Gulch. The results of the panning and the sample run is tabulated below.

A reconnaissance of the entire area of past operations--from 1872 to date--took one day. This was particularly informative as it filled in several of the missing parts of the information the writer had obtained during the period 1953 to 1955 when he was an employee of Kennecott Copper Co. at Ruth, Nevada. Sampling of an open cut, the site of past placer operations in Dry Gulch and one of the open cuts near the head of the Mary Ann Gulch fan where Cal Lake Dredging Corp. had done some work was included in this reconnaissance. This gave a good basis for correlation of the entire area, both of immediate interest and as the background upon which to judge other parts of the district that may be included in the total property area for consideration.

? 15.2¢

A series of three sample cuts were made in the lowest open cut on Mary Ann Gulch on the particular property as delineated to date. All these samples and a selected small sample from the same area as the 1.75 cubic yards mined by the Spendloves in the Mary Ann No. 2 shaft were bagged and transported to Golden, Colorado for recovery of the values contained. See figures 643-1 and 3 for locations.

? 5¢ 5.3¢
1.5¢
4¢

The last effort was the mining of about 1.75 cubic yards of material in the Mary Ann No. 2 shaft to establish the basis that quoted values of $10.00 per cubic yard @ $100.00 ounce gold price has a basis for acceptance. The sample did not quite make the $10.00 prediction but was indicative that values of this order are to be found on or near the false bedrock at the bottom of the shaft. Initial correlation with other workings, both up the gulch and down the gulch indicates that the past efforts were along this horizon. Further, values were found wherever samples were panned or taken for later determination of values.

The results of the cut samples from the side of the open cut only shows that there is a basis for the statement that gold is to be found in the alluvial material. The contained values may be small but will contribute their part for the total gold to be obtained when mining the total section from surface to the bottom of economic operational limits.

The samples, bagged in canvas bags containing approximately 0.35 cubic feet each, were hauled to Golden, Colorado. In Golden, Colorado the several samples were washed using a Denver Equipment Company "Gold Saver" unit, concentrates panned for the contained gold values and separated from the accompanying heavy minerals with mercury to form a gold-mercury amalgam. This amalgam was then treated in the usual manner to obtain the free gold of the sample as recovered. After washing, drying and annealing, the gold was weighed and bottled for further study. The concentrates from the washing operations were saved, dried and then mineral studies were made for other values that may be found. The principle value is the scheelite, a tungsten mineral, which will contribute only a minor value to the gravels, apparently less than one-quarter pound per cubic yard.

The sample descriptions, contained gold recovered by "placer methods," volumes and value per cubic yard is given in the following tabulation. Gold is calculated for value in these tabulations which is the minimum fineness quoted as 840 fine and at a value of $100.00 per troy ounce.

Number	Description	Gms. Gold	Volume	Value ¢/c.y.
1	Dump sample, bulk, from shaft approx. 40 ft. deep, Mary Ann claim	0.5344	3.5 c.y.	41.2
2	Pannings from west end Mary Ann shaft No. 2. various small grabs close to false bedrock	0.1298	1.5 c.f.	631.0
3	Pannings from tunnel driven in side of open cut, Squeegee Claim No. 5	0.0731	1.5 c.f.	355.4
4	Panning from Mary Ann Shaft No. 2. Selected sample	0.0329	1/400 c.y.	3,554.1
5	Same as No. 4 above.	0.0359	1/400 c.y.	3,878.2
6	Bulk sample, Mary Ann Shaft No. 2, Composite of loose material on sill and above false bedrock as convenient	6.0438	1.75 c.y.	932.7
7	Cut sample, Mary Ann Shaft No. 2. See Fig. 643-2	0.4210	1.15 c.f.	2,669.4
8	Cut sample Mary Ann Shaft No. 2. See Fig. 643-2	0.3373	1.45 c.f.	1,696.2
9	Cut sample, tunnel in side of open cut, Squeegee No. 5 claim. See Fig. 643-3	0.2159	1.25 c.f.	1.259.4

Number	Description	Gms. Gold	Volume	Value ¢/c.y.
10	Bank cut sample, old placer diggings, on north side of Dry Gulch, near West side line of Section 7, South of Osceola. See Fig. 643-4	0.0024	1.15 c.f.	15.2
11	Grab sample from bottom of open cut, Cal Lake Dredging Co. operation near mouth of Mary Ann Gulch. See Fig. 643-5	0.0021	0.95 c.f.	16.1
12	Selected small sample from Mary Ann Shaft No. 2. Indicative of possible values in small volumes on "false bed rock"	0.4029	0.15 c.f.	19,585.9
13	Not used			
14	Open cut, south side, beginning 4.0 ft below ground level to 7.5 ft. See Fig. 643-3	0.0787	1.05 c.f.	546.3
15	Open cut, same as above, 7.5 ft to 11.0 ft. below ground level. See Fig. 643-3.	0.0003	1.45 c.f.	1.5
16	Open cut, same as above, 11.0 to 15.0 ft below ground level. See Fig. 643-3	0.0111	1.65 c.f.	49.0

SAMPLE PLANT INSTALLATION: The sample washing plant used by the Spandloves on the property is shown on the enclosed flow sheet (See Fig. 643-6). The characteristics of the various components are shown for guidance. A comparison with the fundamental operating of the Denver Equipment Company "Gold Saver" unit is easy and shows the application of the concept of water-flow direction at right angles to the shaking action of a "sluice". The sluice box is oversize in relation to the trommel and available water flow.

The gold saving riffles in the sluice box are hungarian riffles with about 3 inches clear space between, a rather broad spacing for this type. Clean-up of the sluice requires the entire shut-down of the unit, thence the time for clearing the box of all material. The quantity of concentrates is rather large, particularly for small sample work. The application of the equipment is the running of several yards as a sample. Small samples such as would be obtained by pit sunk by hand, drill hole sludge from "Keystoning", channel samples from the sides of old workings or similiar quantities--from less than 0.25 cubic feet to one cubic yard are not ameniable to running by this sample plant as operationnal now on the property. The rate of sample feed to the unit is about 1 to 1.5 cubic yards per hour of minus 3/8 inch material. The amount of this smaller material is the determining factor as it is the amount that can be "washed in the trommel". The amount of oversize material in the gravel is an additional volume that will contribute to the total feed to the unit.

A sample plant set-up that is very useful for small samples and particularly when washing samples of less than 0.25 cubic yards (total volume) is shown by the drawings enclosed. (Drawings 504-1 to 504-5 in pocket) This set-up has proven particularly useful in the washing of drill sludges making it possible to obtain the concentrates from a set of samples representing a full days' drilling--10 to 15 samples--in about 1½ hours as compared to the older practice of a "panner" on the drill working all day for the same results. This fundamental set-up is the manner of "washing" the samples in Golden, Colorado.

WATER: Water in the West in of prime importance for any mining operation, particularly placer projects. A minimal flow of water will occur in the spring in the gulches in the area.

The flow is inadequate for any type of continued operation and has been the limiting factor in the past efforts. Drift mining for higher grade gravels, thence the washing when water was available. When this water was not available, the miners went to "dry-washing". Capacities were thus limited to small yardages, hence the reason for the very limited exploitation in the area.

Water is reported to be available for the operators of this property by drilling of wells at or near the westerly boundary of the property. The permits for these wells are represented as being a matter of record awaiting only the "drilling" to make this water available. The amount and continuity of this supply of water is the limiting factor on how large an operation can be implemented with reasonable cost--yardage treated relationship.

POTENTIAL YARDAGE : The potential yardage that is on the group of claims as outlined is unknown and can not be given as any definite quantity at this time.

Gold is found in the shallow parts of the gravels over a rather broad area, hence even though pits and or other test openings for samples are not available, the inference is that the Mary Ann Gulch fan has gold in a major part of the gravels. For convenience, the area is discussed in two parts.

The smaller area is that part of the property above the 6,640 foot contour line. This area is close to the mouth of Mary Ann Gulch and is the location of past operations. The minimal yardage in the area is 300,000 cubic yard with a possible maximum of not more than 1,000,000 cubic yards. How much has been mined, small in yardage but having the higher values close to bedrock is unknown.

MIKE PRICE GEOLOGIST

This limited area with the small yardage potential is not amenable to large scale operations. The yardage potential is probably not sufficient to warrant the equipment and development costs. This area can only be a very small part of larger operation.

The second and larger area is that part of the Mary Ann Gulch fan below the 6,640 contour line west to the west side lines of Sections 22 and 27. This area has had no exploration within the property. Cal Lake Dredging Company is operating in the northwest part of the southwest quarter of Section 26. The reported depth of their work is about 40 feet. Gold is being produced. By correlation with the lower-most, elevation wise, openings on Mary Ann Gulch and this dredging operation, there is a basis for an indicated potential of about 40 to 50 feet of auriferous alluvial material on this fan. The width of the gravel containing gold is unknown but should be about half of the total area or approaching three quarters of a square mile--480 acres. The possible potential is thus in the order of 36 million cubic yards. Proving the potential is the requirement. If the values and yardage are not found over this major area, the project has very limited potential, then ameniable only to small scale operation such as less than 5,000 cubic yards per day maximum.

It shall be noted that no speculation is made as to the "values" contained per cubic yard. Gold has been found with an indicated continuity of deposition in the fan which should include sufficient of the Mary Ann fan to have sufficient yardage for consideration. Further speculation is not warranted at this time.

agreed

SUMMARY AND CONCLUSIONS:

Gold is found as "placer values" amenable to washing for recovery on the property with the reasonable projection that past recovered values are indicative of the potential for the district. The property has not been explored in the area of its major potential, i.e., below the 6,640 contour westward to Spring Valley. The past efforts indicates that gold is to be found in major portions of the area but with variations in values both vertically and laterally.

No indications are found that bedrock has been explored for possible concentrations to be found there. The work has been to a false bedrock varying from 30 to 60 feet below ground level. The unknown depth and associated values are the major potential for the property.

The estimates of where yardages are indicated on the enclosed map (Drawing No. 643-1). These yardages are as summarized in the paragraphs "Potential" as discussed in a preceding part of this report.

The feasibility of the project depends entirely upon the water as the first consideration--without water in proven supply available, the property will not support any major mining effort. The first order of exploration is the determination of this potential supply and its quantity on a consistent basis for about 10 months per year.

After the determination of the water availability, the property can then be explored an developed as values and yardages are found. The exploration of the property will be by a combination of several techniques. Drilling using a "Keystone" type drill, i.e., drive pipe drilling with a cable tool rig, is the indicated technique to determine values contained and depths to the various "false bedrocks" and or bedrock.

The drilling requires close supervision and correlation of results. As an aid in making sure that bedrock is drilled, and further, the determination of the yardage , a geophysical program using seismic methods will "profile" the subsurface and reduce the total drilling requirement during the preliminary phases.

At this time, the total area and the location of about 4,000 acres that are part of the total are unknown. When this information is received, these additional areas can be included as a part of the program

The potential along Dry Gulch has not been discussed in this report. The yardages are confused as past efforts in mining have worked major parts of the area. Until one can check thru in detail the work, depth as related to bedrock or bottom of pay, width of valley fill material that is auriferous and delineate a major yardage, the immediate summation is that the area is one of marginal interest for large yardage operation. A proximate extimate is that the potential is probably less than 1.5 million cubic yards.

RECOMMENDATIONS: The property has a demonstrated occurrence of "placer gold" in more than minimal grade and apparent potential yardages to support a "placer mining" operation for a period of not less than 10 years at a daily rate of 10,000 cubic yards per-day. Accordingly, the following recommendations are made for the exploration, delineation of potential and study of feasibility for this property and such adjoining properties as may be now or at a future time available to the company for consideration. These recommendations are given in the following paragraphs.

1. The first requirement is the determination of the reasonable limit that may be expected as to the quantity of water available and its cost. In determination of this item, the drilling of one or more of the permitted wells shall be implemented. The well or wells shall be tested as to rate of production and costs for such production.

2. The second requirement is the determination of values contained in the alluvial material. The better indicated method for exploration--development is known as "Keystone" drilling. This method using the appropriate equipment and personel is recommended. The initial drilling will be approximately along a north-south line on the common line of Sections 22 and 23. The distance between holes should not exceed 200 feet. The starting point is the place where the present flow line of Mary Ann Gulch intersects this north-south line. As no one has definite information as to depth to bedrock, provision shall be made that the unit has the capability of drilling at least 200 feet and preferably 250 feet. The samples obtained shall be washed for contained gold and other values in the usual placer examination manner.

3. As soon as any experience in the district can be obtained for guidance, a geophysical program using seismic methods should be implemented to profile the "bedrock" and relate this to the surface profile.

4. The examination of the many dumps, shafts and pits in Mary Ann Gulch above the 6,640 contour should be continued to delineate the limited yet apparently higher value per cubic yard potential of this part of the property.

5. The completion of the examination of total properties for consideration should be held in abeyance until all the titles, delineation on the ground and information on hand by the vender is on hand for examination.

The several steps and correlation of timing of the several recommendations given above is flexible in some details.

The time required for the assembling of the "Keystone" equipment is estimated as about 90 days under favorable conditions. Negotiations for the geophysical work will proximate the same time. The other equipment is either on hand at Golden, Colorado or available in the Denver, Colorado area.

As soon as a decision is made as to the furthering of the project, the several parts of the field work can be planned in detail, negotiations and purchasing started, and finally assembling of personel and the equipment and supplies on site begun.

The attached budget is offered for consideration.

Respectfully submitted

Paul M. Hopkins

PMH:ph