CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the G. M. Colvocoresses Mining Collection

ACCESS STATEMENT

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

CONSTRAINTS STATEMENT

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

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

QUALITY STATEMENT

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

c o p y

GEORGE M. COLVOCORESSES
MINING AND METALLURGICAL ENGINEER
1102 Luhrs Tower
Phoenix, Arizona

July 6, 1943

Keep

PRELIMINARY SUMMARY OF RESULTS OF CONGRESS MINE INVESTIGATION

Mr. E. D. Morton
Eagle-Picher Mining Company
P. O. Box 1268
Tucson, Arizona

Dear Sir:

This work was undertaken at your request in May and has been carried on intermittently since that time.

Believing that you may now wish to have a record of its progress to date I have prepared the following preliminary report giving data which will be amplified and supported later, but meantime may prove of interest in determining your future policy and program.

FINANCIAL AND LEGAL STATUS

The Congress Mine is owned by the Congress Mining Corporation, organized under the laws of Arizona with authorized capital of 500 shares of no par value stock of which Nathaniel Holmes II owns 375 shares. This company still holds title to the Congress Group of 19 patented and 12 unpatented mining claims, (about 450 acres) with all improvements, but the control of same is now in the hands of C. M. Rockwood, Receiver appointed by the Federal District Court who is represented locally by Robert Rae of Phoenix.

A mortgage on the real property and a chattel mortgage on equipment are both held by the Reconstruction Finance Corporation to secure a loan and have been foreclosed by an action in the Federal District Court. A sale of the property to satisfy the judgment may be ordered at any time, but Rockwood and his Attorney are anxious to postpone such a sale in the hope that a settlement can be arranged. Advances on account of this loan were made from July 1937 to May 1938 when the final principal was $140,000 bearing interest at the rate of 6% per annum. Since then $70,000 of this principal has been repaid, but since the accrued interest now amounts to $15,000 the total claim of the R.F.C. is about $85,000 plus some legal expenses which should aggregate less than $1,000. The Receiver has at present some $6,000 in the bank but he is meeting the carrying charges which must amount to over $500.00 per month.

The Congress Mining Corporation owes Holmes about $30,000 secured only by promissory notes and in so far as I can learn it has no other corporate debts.

Should the property be sold thru the foreclosure proceeding, the Corporation will have a period of six months in which to redeem and it is presumed that Holmes is financially able to effect this redemption, but apparently unwilling to do so. He is reported to be a man of very peculiar character and has no knowledge or experience in mining or metallurgical matters and is personally very bitter against Rockwood and the R.F.C.

HISTORY AND GENERAL DESCRIPTION

The Congress Mine was developed by six main shafts the deepest of which (#3) was sunk 4000' on the incline and altogether there are said to be some 20 miles of underground workings, which are now under water from the 1200' level.

There are two principal veins, the Congress and the Niagara, nearly parallel and some 300' apart both striking in an easterly - westerly direction and dipping about 25° to the north or northeast. The width of the Congress vein which lies on the contact with the granite and a diorite dike varied from 3 to 5', and of the Niagara Vein, a fissure in granite, from 4 to 8' the length of the pay shoots along their strike never exceeded 650'. The walls of both veins were well mineralized and since the stopes were usually broken 5 to 12 ft. wide, lower grade material which would have pulled down the average grade of the vein-ore was either backfilled in the stopes or hoisted to the dumps along with the waste that was broken in the barren sections of the vein and in openings in the country rock.

The old Congress Mining Company operated from March 1891 to the end of 1911 during which period they mined and milled or shipped 692,332 tons of ore from which 388,477 oz. of gold and 345,598 oz. of silver were recovered in bullion. The production from the Congress Vein is given as 370,022 tons with average recovered value of 0.70 oz. per ton and the production from the Niagara Vein is given as 293,220 tons with recovered average 0.415 oz. per ton. The balance came from

the Queen of the Hills, or other veins. The average values recovered from the total output figures (a) 0.561 oz.gold and 0.5 oz. silver. Considering the values which were left in the tailings or otherwise lost in treatment it is safe to say that the average content of this ore as mined was 0.64 oz. gold and 1.00 oz. silver equivalent to a value of over $23.00 per ton at present prices of metals.

RECENT OPERATIONS

In 1935 the property with the then existing improvements was sold for $26,000 to Gerald Sherman and Associates who organized the Congress Mining Corporation.

At that time the equipment on the property had a very trivial value. The mill tailings had been carefully surveyed and sampled on several occasions and were conservatively estimated to represent 426,200 tons with an average assay of 0.07 oz. gold and 0.3 oz. of silver (gross value $2.65) per ton.

The mine dumps which were subsequently measured and fairly well sampled on two occasions, - once by the management and once under the direction of Henry G. Carlisle of San Francisco, - represented 400,000 tons (after allowance for sorting some waste) with an average value of $3.00 per ton in gold and silver. The condition of the Mine, including the fills, was practically the same as at present, except that many of the workings which werethen open for inspection are now caved.

Subsequent operations of the mill in treating nearly two thirds of the old tailings and over one quarter of the dump rock (representing from 15 to 60% of each of the five principal dumps) has indicated that both of these estimates of value were conservative and that the

assay value of the remaining tailings can safely be placed at $2.70 per ton with a reasonable assumption that the remaining dumps, after sorting out about 20%, will average at least $3.00 per ton.

The new company proceeded to erect some new buildings, and a 300 ton counter-current syanide mill with power plant and accessory equipment. This Company operated its mill from June 1st, 1938 to June 14, 1942, during which period it treated a total of 385,503 tons of material of which 276,372 came from the tailings pile, 106,629 from the mine dumps, and 2,402 from shipments of ore by leasers working in the Congress Mine or from custom shippers.

The total capital investment made by the Congress Mining Corporation, including the $170,000 borrowed from the R.F.C. and Holmes, and operating profits which were reinvested in equipment, etc. is stated by Rae to have been in excess of $250,000. It is my opinion that a substantial portion of the money was wasted, but it would thus appear that the total profits of the operation must have exceeded $150,000 of which $70,000 was used to reduce the principal of the R.F.C. Loan and over $80,000 reinvested as above.

Apparently Rae does not have any complete record of the gold and silver content or the value of the production, although he has promised to try to calculate this for me at a later date. No segregation of the mill head assays from the tailings and dumps was made on the Congress books, but I have checked over a great many partial records of results mainly during 1940 - 1941 and from a careful study and analyses of these I mention the following

The recovered value of 51576 tons of tailings and 37,913 tons of dump rock treated in 1940 averaged $2.03 in gold and silver. In 1941, 97,927 tons of tailings and dumps were treated (segregation not given) with a recovered value of $2.60 per ton. Taking the average gold recovery as 67% and silver recovery as 50% these returns indicate that the mill heads averaged respectively $3.00 and $3.60 or say better than $3.30 for these two years. These figures check ~~fairly-well~~ with the monthly mill records which were fairly complete for this period, and from which I have also concluded, - from data which is not so ~~means~~ complete, - that the average grade of the tailings and dumps, which varying widely during different months was on the whole fairly uniform with some advantage in favor of the dumps.

This record is particularly interesting when compared with the previous estimates of value which I have quoted above. Since it does not seem possible that the operators could have effected any selection of the better grade material in reclaiming the tailings and the same is true to a lesser extent in respect to the dumps, I believe that one is fully justified in assuming that the mill record is by far the most accurate measure of the average value of this material and in now estimating the remaining one third of the original tailings at $2.70 and the remaining dumps at $3.00.

The incomplete records further indicate that an average recovery of 67% of value was made in the mill and which would represent about $2.30 per ton from the 383,000 tons treated, and an operating profit of $150,000 would average a little less than 40¢ per ton ~~and~~ indicating that the total costs were around $1.90 per ton although I was told

verbally by Rockwood that the costs including interest and all overhead expenses were "between $1.25 and $1.50 per ton", which appears to be a contradiction. The profit for the year 1941 was given as $50,000 and from the definite figures for tonnage and returns for that year it seems that the total cost of treating the 97,927 tons was just a shade over $2.00 per ton. For 1940 it was stated that "a smaller profit was made", but the costs must have been somewhat less, or there would have been no profit at all.

As to the segregation of operating costs Rae has informed me that no proper system of cost accounting was ever practiced and if this is a fact I doubt if much information could now be secured even if we should obtain access to all of the books and records, - which might require an order from the Court, - and get an expert accountant to work over them.

On one occasion Liddell informed me that the cost of reclaiming the tailings and loading them into the bin at the mill was 12¢ per ton, and Rae says that he thinks this item of cost was about the same for the dumps. Apparently all costs of milling were lumped together and it has been impossible for me to so far obtain any separate figure on milling or on general expense which last included interest and New York Office, etc.

In any event I am very certain that the operating profit would have been much greater except for (1) inefficient management with much dissension among officials, (2) interference and delays caused by Government supervision and red tape and (3) use of a lot of worn out equipment purchased second-hand and causing much lost time with heavy

expense for repairs, and reducing the normal capacity of the mill from 9,000 to less than 8,000 tons per month. It is my definite opinion that the operating costs should not have exceeded $1.20 on the tailings, and $1.30 on the dumps with efficient management and first class equipment, and that the recovery of values could also have been improved.

PRESENT ASSETS

The land included in the claims is worthless for anything but mining and most of the structures could not be moved away with advantage, so that the salvage value of the Company assets is limited to the equipment in the power plant and a ~~sale-of-the~~ mill and the accessory equipment including the pumps at Martinez Well with pipe line to the mill, a certain amount of material in the warehouse, and any cash that may remain in the treasury.

An inventory of the equipment and supplies has not yet been given me, but I have noted that the condition of the principal units is good and I believe that its present resale value would be at least $40,000 while Rockwood states that he is quite certain of obtaining $50,000. It appears that much of the equipment and warehouse stock should bepromptly sold in order to reduce carrying charges and prevent deterioration over an indefinite period.

When operations are resumed electric power can best be obtained from the Arizona Power Company whose line at the Alvarado Mine is only four miles distant from the Congress Mill. Since Colorado River power will /then be available the rates are sure to be much lower than any which have been offered in the past.

The value of all of theother assets must be largely dependent upon future conditions particularly the relation of the price of gold to labor and commodities, but on the all important assumption that this relation should return to approximately the 1941 ratio, I will list the Reasonably Evaluated Assets as follows:

(1) Remaining Mill tailings 150,000 tons with average gross value of $2.70 per ton from the treatment of which I estimate that a working profit of $105,000 ($0.70 per ton) should be earned, assuming a 70% recovery of value and a cost of $1.20 per ton.

(2) Remaining dumps with aggregate tonnage of 250,000 (allowing for sorting out 20% of waste) and average grade $3.00 per ton from which a profit of $250,000 should be derived assuming a r ecovery of 85% of value through addition of a flotation plant and working cost of $1.55 per ton.

My estimates of tonnage were derived from very rough Brunton and tape surveys of the dumps whose shape is now extremely irregular and the figure must be considered very approximate, but is believed to be conservative. The estimate of the tonnage in the tailings pile should be very accurate.

PROBABLE ASSETS

Fills or gob in the old workings of the mine, the tonnage of which were estimated by Mr. Staunton who managed the operation at 700,000.

Carlisle partially sampled some of these gobs and obtained an average value on excess of $5.00 in the stopes on the Congress Vein,

and in stopes on the Niagara Vein, andin small stopes in the Queen of the Hills.

Colburn made an investigation of the fills down to the 1400' level and estimated that these should be 500,000 tons which would average better than $7.00.

My sample of gob from the Queen of the Hills gob ran 0.21 oz. ($7.35) which is probably higher than the average.

I believe that the tonnage figure given by Staunton is approximately correct and I have checked this as far as possible by reference to the Mine Maps, which are not complete.

I have assumed that the average value of all of the gobs will be in the order of $5.00 per ton, but this figure is based on very inadequate data and should be checked by further examination.

Ore left in place during the old operations either as pillars or because it was too low grade to mine under the then existing conditions.

In this connection the statement of Staunton (which will be included in my complete report) indicates that there are still excellent possibilities of mining, especially from the Niagara Vein, a lot of developed ore which will average better than 0.25 ox. per ton, and could now be mined and treated with profit, since no ore with lower value than 0.35 oz. was intentionally broken during the old operation.

I personally observed, both on the surface and in portions of the old workings, sections of the vein which I am confident will exceed

this value (my sample from the Congress Vein on the 925' level ran 0.26 oz.) and while no data is available to permit an estimate of the tonnage or value, I am confident that the tonnage of $8.00 ore will exceed 150,000, but here again, much further investigation is required.

POSSIBLE ASSETS NOW INDICATED

New ore to be developed by additional exploration.

Both Staunton and Brooks who will also be quoted at length in my report, express very firm opinions that new ore will be found and indicate locations where it should be sought. Such was also the opinion of Colburn, and my own work has left a similar impression.

If the theory of vein structure advanced by Brooks should prove to be correct some 450,000 tons should remain in the unworked sections of the Congress and Spur Veins.

Staunton, Colburn and others were impressed with the probability of finding ore east of the main fault especially in the Queen of the Hills Section, and my opinion of this area is also very favorable.

No careful study of the geology and ore structure outside of the main workings appears to have been made in the past and the result of such a procedure after the old workings have been made more accessible, might be very important and lead to discovery of new ore some of which might be comparable to the old production in value while I feel that there is every chance that at least 200,000 tons of $10.00 ore would be found in the extensions of the shoots.

As to other mines in this vicinity the Sullivan contains some 50,000 tons of gob and developed ore which should average better than $8.00 per ton and a much larger quantity of similar material is likely to be developed.

The Herskowitz and Findley (McDonell) are both small and pockety, the chances of finding pay ore left in the Alvorado and Yarnell are problematical and all other showings can merely be classed as prospects.

METALLURGY

Except through more efficient practice there is probably but little chance of economically improving the recovery from the remaining tailings and the character of the rock in the dumps is such that not much over 70% of the gold is likely to be recovered by cyanide. Tests by combined flotation and cyanide resulted in a recovery of 88.6% gold from the five principal dumps as compared to 68.8% when the same samples were treated by cyanide. Similar results were obtained on samples of freshly mined ore, as well as from local custom ore shipments. The improved recovery was especially noted in treating ore from the Niagara Vein dumps where in some cases as much as 92% of the gold was extracted by the combined method.

The addition of a flotation plant is a matter which merits careful study, and in my judgment is likely to prove well worth while and to permit an average recovery of 85% of the gold in all of the remaining material except the old mill tailings with only a small addition to the cost of milling.

CAPITAL EXPENDITURE

Aside from the purchase price of the property (which I believe could be made on a royalty basis) additions and replacements to the present plant costing not more than $40,000 would in my opinion serve to permit the resumption of the reclaiming and treatment of the remaining tailings and dumps at a rate of about 300 tons per day. A rearrangement of this plant to operate by the modified Chapman process would obviously involve a considerable outlay, the extent of which I am not at present in a position to estimate.

If a flotation plant is to be installed some $40,000 should be alloted for this purpose.

To obtain an adequate water supply with pumping plant and pipe line from either the Mendotte, Santa Fe or old Congress (Billingsley) Wells will involve an expense of some $25,000 and $15,000 should be provided for miscellaneous equipment, making an investment in the order of $120,000.

If we assume for purposes of calculation that the purchase price would be $100,000, the total investment would be $220,000, and the total estimated profits from treating the dumps and tailings is figured at $355,000 to which the salvage value of the present and new equipment might add $65,000, and treatment of custom material some $50,000 making a gross return of $470,000, or a net return of $250,000 after repayment of capital investment.

Definite advice in respect to the reopening of the mine and recovering the fills and remaining ore can not be given at present,

but this is the only phase of the project which would make it appear really attractive and information so far obtained seems to favor the continuance of an investigation which might justify such a procedure combined with an increase in the capacity of the treatment plant to a capacity of at least 500 tons per day.

To reopen the principal workings of the old mine would involve the cleaning out and some retimbering of the #2, #3, and #5 shafts (which are in surprisingly good condition down to the water level) and the purchase and installation of mining and hoisting equipment. A very rough guess of the capital required to accomplish all these objects would be $300,000, but it might serve to permit the earning of an additional profit of over $1,000,000 from the mine fills and lower grade ore left in place and it would be a necessary preliminary to the exploration, development and treatment of any additional pay ore which might exist on the property.

SCHEDULE OF PROSPECTIVE OPERATING COSTS AND RETURNS

On the vital assumption that the future price of gold in relation to costs of production is believed likely to again approximate the pre-war ratio, I have prepared the attached tentative estimates which, while obviously subject to substantial revision, attempt to cover the more essential aspects of the project as they now appear and in my judgment warrant the continuance of the investigation and negotiation for the acquisition of the property.

With milling conducted on a basis of 500 tons per day these operations involving the assured and probable ore would require about eight years to complete and return the invested capital with interest plus a profit in the order of $1,000,000 less taxes on income.

All working and construction costs are figured much higher than in 1936.

CONCLUSION

To best sum up the future possibilities of the mine I feel that I can quote from a letter which I have recently received from Mr. Staunton who knows far more about the property than anyone else and whose opinion is respected by all who know him.

"My feeling about the Congress mine is something like this, - that it is impossible to determine the existence of any considerable amount of ore of a definite value without the expenditureof money for re-opening to permit examination and sampling, and that the wisdom of such expenditure will depend upon weighing such general evidence as exists in the way of history, study of geological conditions and giving considerable weight to the probability that other large ore lenses will be discovered by systematic further exploration in ground that has proved already so productive. In other words, that it is a very good mining gamble, - much better in fact than many in which we see money being risked."

Aside from this possibility there is assurance of the existence of the bog and pillars in the mine and the probability that their

average value will be in line with my estimates. We have a pretty positive basis for estimating the approximate tonnage and value of the mill tailings and mine dumps on the surface. The main element of uncertainty in respect to all of these assets lies in the course of future economic development, a matter on which one can only form a purely speculative opinion.

Yours very truly,

s/ G. M. Colvocoresses

Mr. E. D. Morto

July 6, 1943

ESTIMATE OF COSTS AND RETURNS

FROM

TAILINGS, DUMPS AND ORES AT CONGRESS MINE..

Class of Material	Tons	Gross Value Per Ton	Recovered Value Per Ton	Total Working Costs Per Ton	Operating Profits
A. Reasonably Assured					
Remaining Mill Tailings	150,000	$2.70	$ 1.90	$ 1.20	$ 105,000
Remaining Mine Dumps	250,000	3.00	2.55	1.55	250,000
Treatment Custom Ore	50,000				50,000
Salvage value present and New Equipment					65,000
B. Probable					
Mine Fills	700,000	5.00	4.25	3.25	700,000
Pillars & low grade ore	150,000	8.00	6.80	4.80	300,000
Additional custom ore	50,000				50,000
Salvage value additional equipment					50,000
Total of above	1,350,000				1,570,000
C. Indicated as Possible					
New Ore in Congress Mine	200,000	$10.00 or better			
to	500,000				
Additional Custom Ore	100,000	To be milled with profit of $1,00 per ton			
to	300,000				

NOTE All estimates of cost and profit dependent upon relative value of gold.

Total capital expenditure required to treat material classed under A and B or under A,B, and C at rate of 500 tons per day is figured at $520,000 assuming the cost of the property to be about $100,000.

G.M.C.

THE CONGRESS MINE

by

G. M. Colvocoresses, M.E.

INDEX

LIST OF EXHIBITS

Exhibit A -- Map of Mining Claims with outcrops of vein.

Exhibit B -- Underground Workings on Congress Vein

Exhibit C -- Underground Workings on Niagara Vein.

Exhibit D -- Survey Map of Mill Tailings.

Exhibit E -- Photographs of Mine Dumps.

Exhibit F -- Assay Map of Sullivan Mine.

Exhibit G -- Map of Niagara Mill Site.

Exhibit H -- Profile Survey Martinez Well Pipe Line.

Exhibit I -- Congress Water Supply.

Exhibit J -- Condensed Inventory.

CONGRESS MINE REPORT

PROPERTY LOCATION AND GENERAL CONDITIONS

The holdings of the Congress Mining Corporation in Yavapai County, Arizona consist of the Patented and Unpatented Lode Mining Claims listed below with all dumps, tailings and improvements thereon. A map of these claims is attached as Exhibit A.

Name	Area in Acres	Recorded in Book of Deeds	Page
Congress ✓	20.02	30	476
Queen of the Hills ✓	17.47	30	480
Niagara ✓	20.66	30	484
Nosouri ✓	5.36	30	488
Why Not ✓	20.66	30	493
Fraction ✓	7.40	30	497
Niagara Mill Site	4.95	33	617
Excelsior	20.66	33	620
Incline ✓	20.64	41	94
Rich Quartz	20.65	41	97
Golden Eagle ✓	19.93	41	100
Snowstorm	20.66	41	104
Ohio	20.66	41	107
Old State ✓	20.24	41	110

57 56 68

Name	Area in Acres	Recorded in Book of Deeds	Page
Golden Thread	20.66	54	104
	260.62		

Unpatented Mining Claims:

Name	Recorded in Books of Mine	Page
Billick	24	291
Remnant	25	314
Boundary	35	161
Sunnyside	45	499
Highland	45	496
Keystone	50	364
East Extension of Golden Thread	51	156
Martinez	66	591
Ophir	86	341

Also included in list furnished by Rae and probably recently acquired by the Congress Company:

Name	Recorded in Books of Mine	Page
Eleanor	144	256
Amarillo	144	277
Colorado	144	278

All claims are in the Martinez Mining District, Yavapai County, Arizona.

The assessed value of the patented claims when idle as at present is $9,454.00.

The assessed value of the improvements was placed at $95,000 in 1942, but it is expected that this figure will be greatly reduced for 1943.

The State and County tax rate varies from year to year but is likely to be in the order of 1.30%.

In 1942 the Congress Mine as an operating property was assessed at $150,505 by the State Tax Commission, but the mine was removed from the list in 1943 when the Yavapai County Assessor will make an assessment of the patented Mining Claims and the personal property as an inactive unit.

The main workings of the mine are located in a low range of hills known as the Date Creek Mountains 3 miles from the Santa Fe Railway Station at Congress Junction, Yavapai County, Arizona. The elevation at the tailings mill is 3460' above sea level and the collars of the various shafts are less than 100' higher.

The surface of the claims is rocky and rugged with ridges rising to heights of some 400 feet above the level of Martinez Creek which drains this area. There is no timber and only scant semi-desert vegetation. The climate, while hot in summer is well suited to operations at all seasons of the year with frequent frosts, but only light snows during the winters.

The local water supply is deficient for any large scale operations and will be discussed separately in this report.

Electric power for the present plant was generated by Diesel Engines located at the tailing mill, but power could also be obtained from the 44000 volt line of the Arizona Power Company which has been connected up to the Alvarado Mine and Mill (now idle) approximately 4 miles distant from Congress Mill to which an extension line could be built for about $8000. A price of about 1.5¢ per kilowatt hour was formerly charged by the Arizona Power Company, but now that the Colorado River Power has been made available in this section of Arizona it can be confidently expected that for operations of any magnitude a rate in the order of 1¢ per kw. hour can be obtained after the close of the war and that ample power will then be available.

In normal times plenty of common labor can be secured from Phoenix (73 miles distant from the mine) and from other cities in the Salt River Valley while miners, millmen and other classes of skilled workmen can be recruited from the various copper camps of the State. The existing living accommodations at and near the mine would serve with some repairs to house a crew of 50 or 60 men and additions would have to be built as needed.

The present buildings will meet requirement for office, laboratory and warehouse facilities.

Supplies for mining and milling come by railroad to Congress

Junction, 3 miles distant from the mine and the Salt River Valley, of which Phoenix is the center, provides nearly all types of food at moderate prices while all other ordinary commodities can be purchased in Phoenix which now has a metropolitan area population of more than 100,000.

GEOLOGY AND ORE OCCURENCE

The country rock forming the Date Creek Range, which lies to the west of the Weaver and Bradshaw Mountains, is mainly granite, probably of pre-Cambrian age and in some areas with pegmatitic structure. Thru this formation in the vicinity of the Congress Mine occur a number of greenstone (diorite) dikes which generally strike in an easterly-westerly direction and dip to the north from 20 to 30 degrees. Another series of more recent dikes are composed of quartz-porphyry and strike north-easterly with nearly vertical dip; these last are believed to be post mineral. The diorite dikes generally carry some iron sulphides with low values in gold and the Congress Vein lies along a contact between the granite and one of these dikes which has a width of from 5 to 15 feet. The Niagara Vein and other smaller veins are formed in fissures in the granite, some distance away from the contacts. Most of the veins strike in an easterly-westerly direction and usually dip 20 - 40 degrees to the north.

There is much evidence of minor faulting and one major fault

cuts off both Congress and Niagara veins at their east end and beyond this fault neither one of them has yet been positively located.

The pay ore in the veins is associated with Quartz, iron sulphide and arsenical iron sulphide, also small quantities of copper and zinc sulphides. In the Niagara and smaller veins there is some galena and a higher content in silver.

Even though most of the Congress system of veins occur in the granite, there is good reason to believe that all of the ore deposition was due to the existence of a deep seated intrusive magma from which ascending solutions worked their way upward through fissures which are remarkably persistent and can be traced for long distances. The gold values are not entirely confined to the main veins but impregnate the wall rock, particularly in the case of the Niagara vein, and follow tiny stringers of quartz or disseminations of iron sulphide so that much low grade ore has been left in place in the vicinity of the old workings and a large tonnage of such material was used for backfilling in the stopes or hoisted to the dumps along with the waste.

Mr. Staunton has made the following comments from which I quote:

> "Some have considered that the dike was in reality the Congress Vein since the ore occurred in all possible relations to the dike between the foot and hanging walls of

granite, but usually it was found near to the footwall and accompanied by a clay selvage.

An analysis of the greenstone dike rock which is usually termed diorite gave the principal constituents as follows:

$Si\ 0_2$	=	52.20%
$Al_2\ 0_3$	=	13.40
Fe 0	=	9.75
Mn 0	=	1.90
Ca 0	=	9.60
Mg 0	=	1.16
		88.01

Minor faulting is in evidence throughout the mine workings and there has been considerable relative movement of the walls of the Congress vein, resulting in local crumpling of the greenstone. The mine workings terminate to the east against a heavy fault, beyond which the vein has not been definitely located. This fault cuts off both the Congress and Niagara Veins.

Although the Congress vein is continuous and well defined for amile or more to the west of the mine workings and shows both the characteristic quartz and sulphides, the pay ore was practically confined to a shoot in the vein pitching to the northwest and coinciding closely with the intersection of one of the fissure veins in the granite. The granite

vein is faulted by the Congress vein so that the intersection is obscure in the mine workings. The portion of the granite vein in the hanging wall of the Congress carried bodies of pay ore.

The Congress pay shoot varied greatly in length on different levels, being longest on the 650' level, where it was stoped continuously for 1,800'. The average thickness of pay ore was less than 3'. Several pinches were met in following the vein down, the most serious being at the 1,700 ft. level, where there was no stoping ground. On the theory that if pay ore existed below that point it would probably be found on the general line of trend of the ore shoot above, a deep prospecting winze was sunk from the 1,700 ft. level, in the vein but with a northwesterly pitch corresponding to the established trend of the pay ore in the upper workings. This winze was sunk 1,000 ft. and bore out fully the theory upon which it was projected, the pay ore coming in again as good as ever after a few hundred feet of lean ground.

The 3,900 ft. level was the deepest point at which any considerable amount of development was done. For several levels above this there had been a gradual pinching of the pay shoot, which became small and irregular, although retaining its mineralogical characteristics and the small amount of sulphides which remained still showing the characteristically high gold conts above 7 oz. per ton. The conditions were similar to those existing at other horizons in the mine where persistent deeper work had been rewarded by expansion of the ore shoot to normal size.

The history of the Congress Mine, its remarkable persistence due probably to its association with an intrusive dike of profoundly deep origin, and the existence of similar parallel veins in both hanging and footwall over a wide belt, suggest a careful study of the whole situation to determine the feasibility of a broadly planned scheme of exploration by means of a vertical shaft so arranged as to cut the Congress Vein at greater depth than has been attained and incidentally to cut and explore the other similar veins, many of which if not cut by the shaft could be reached by crosscuts."

HISTORY

According to W. F. Staunton the original Congress locations were made by Dennis May who sold the claims in 1887 to "Diamond Joe" Reynolds and Frank Murphy. The new owners operated the property with a 20 stamp mill and Frue Vanners for concentration until 1891 up to which date they had received a net return of about $592,000 from shipments of ore and concentrates. They always made a poor recovery of values since the oxidized ores found near the surface would not amalgamate and the gold in the sulphides was principally associated with marcasite which slimed easily so that tailing losses were high.

After an almost complete shut-down of some three years work was resumed in 1894 by the Congress Gold Company. Prior to that date a standard gauge railroad (now a branch line of the Santa Fe)

had been built to connect Congress Junction with Prescott and Phoenix and this was connected with the mine by a spur 3 miles in length, which has now been removed. The mill had been equipped with 40 stamps and additional vanners. At the mine the #2 shaft then had a depth of 1000' but no stoping had been done below the 650' level. Subsequently the cyanide process was introduced to greatly improve the milling practice. In 1901 another 40 stamps were added and during the next ten years a large part of the original mill tailings were re-treated along with newly mined ore. The net returns from the production from 1894 to 1910 was $7,057,422.75.

The total tonnage of ore shipped or milled from March 1889 to the end of 1910 is recorded as 692,332 of which 370,022 was mined from the Congress vein with average recovery of about 0.70 oz. gold per ton, -- 293,215 tons from the Niagara vein with average recovery of about 0.415 oz. gold per ton, 20,125 from the Queen of the Hills, -- average recovery not stated, but apparently a little less than 0.4 oz. A total of 388,477 oz. of gold and 345,598 oz. of silver was recovered and sold.

It would thus appear that the total mine production up to the end of 1911 was 692,332 tons of ore including all material shipped or treated in the mill, from which over $7,650,000 was realized in net payments for ore, concentrates and bullion making the average recovered value $11.81 per ton with gold at $20.67 per oz. and silver at 60¢. The average assay of the ore may be conservatively estimated to have been 0.64 oz. gold and 1.00 oz. silver which at present prices would have had a value of over $23.00 per ton.

This last figure includes the value of the gold and silver left in the six hundred and odd thousand tons of tailings which were run out from the mill, but in addition there were substantial values left in the mine fills and ore dumps which will be described in another part of this report.

Between 1910 and 1937 the operations at Congress were principally confined to the retreatment of small portions of the mill tailings and ore dumps and no attempt was made to reopen the mine except by various lessees who have at intervals tried to recover some small pillars of ore that were left in the upper workings. Large quantities of the tailings were washed or blown away and a few thousand tons had been milled at various intervals while efforts to sort or screen over the dumps had been made on a more extensive scale, and occasionally with a temporary profit. During these 27 yea.s it is probable that upwards of 50,000 tons of dump rock and tailings had been treated by various parties, but no type of operations at the Congress Mine appeared to hold promise of yielding an adequate profit until the price of gold had been advanced from $20.00 to $35.00 per oz.

In 1935 the property with the then existing improvements, -- the value of which did not exceed $5,000.00 -- was sold for $26,000 by the Congress Trust (which had succeeded the Congress Gold Company) to Gerald Sherman and Associates who organized the Congress Mining Corporation.

Prior to that date the mill tailings had been carefully surveyed and sampled on several occasions and were then conservatively estimated to represent 426,200 tons with an average assay of 0.07 oz. gold and 0.4 oz. of silver.

The mine dumps were considered of doubtful value until they were subsequently measured and fairly well sampled on two occasions, -- once by the management and once under the direction of Henry G. Carlisle of San Francisco, both of which procedures indicated that they represented 400,000 tons (after allowance for sorting some waste) with an average value of $3.00 per ton in gold and silver. The condition of the Mine, including the fills, was practically the same as at present, except that many of the workings which were then open for inspection are now caved.

Subsequent operations of the mill in treating nearly two thirds of the old tailings and over one quarter of the dump rock (representing from 40 to 50% of three of the five principal dumps) have proved that both of these estimates of value were conservative and that the assay value of the remaining tailings can safely be placed at $2.70 per ton with a reasonable assumption that the remaining dumps, after sorting out about 20%, will average at least $3.00 per ton.

The Congress Mining Corporation proceeded to erect

some new buildings and a 300 ton counter-current cyanide mill with power plant and accessory equipment. This Company operated its mill from June 1st, 1938 to June 14, 1942, during which period it treated a total of 385,505 tons of material of which 276,372 came from the tailings pile, 106,629 from the mine dumps, and 2,402 represented shipments of ore by leasers working in the Congress Mine or from custom shippers.

The total capital investment made by the Congress Mining Corporation, including the $170,000 borrowed from the R.F.C. and Holmes, and a portion of the operating profits which were reinvested in equipment, etc. is stated by Rae to have been in excess of $250,000. It is my opinion that a substantial portion of the money was wasted, but it would thus appear that the total profits of the operation must have exceeded $150,000 of which $70,000 was used to reduce the principal of the R.F.C. Loan and over $80,000 reinvested as above.

The recovered value of 51,576 tons of tailings and 37,915 tons of dump rock treated in 1940 averaged $2.05 in gold and silver. In 1941, 97,927 tons of tailings and dumps were treated (segregation not given) with a recovered value of $2.50 per ton. Taking the average gold recovery as 67% and silver recovery as 50% these returns indicate that the mill heads averaged respectively $3.00 and $3.60 or say better than $3.30 for these two years. These figures check with the

monthly mill records which were fairly complete for this period, and from which I have also concluded, -- from data which is not so complete, -- that the average grade of the tailings and dumps which varying widely during different months was on the whole fairly uniform with some advantage in favor of the dumps.

EXTENT AND CHARACTER OF MINING OPERATIONS

Pay ore was mined from the Congress Vein to a depth of 4000' on an average incline of 25 degrees and from the Niagara vein to an incline depth of 2000'. The maximum length of the ore shoot in the Congress vein was 1800' on the 650' level but here the width of the pay ore did not exceed 3', while in other portions of the mine the width of the ore was sometimes greater and some of the stopes have widths of from 5 to 15 feet.

On the 1700 foot level the ore pinched out but came in again at a greater depth having pitched to the north-west.

The lowest levels of the mine from 2500 to 4000 had shown a gradually progressive pinching or contraction of the ore shoots in the Congress vein, but the situation was different in the Niagara vein where it can reasonably be expected that more ore should be found if the exploration work should be carried to a greater depth than the 2000' level

which represented the greatest depth to which the vein was developed.

The shafts are as follows:

On Congress Vein #1 depth 1100'

#2 depth 1700'

#3 depth 4000'

On Niagara Vein #4 depth 1000'

#5 depth 2050'

#6 depth 1800'

On the Queen of the Hills vein a shaft was sunk 200' below the tunnel level.

The production of ore hoisted from the shafts is recorded as follows:

Congress Vein	Tons	
Shaft #1	117,899	
#2	122,779	
#3	63,524	
	304,202	304,202 with average recovered value of 0.7 oz. gold.

Niagara Vein	Tons	
Shaft #4	20,470	
#5	191,734	
#6	81,016	
	293,220	293,220 with average recovered value of 0.415 oz. gold.

Queen of The Hills	Tons	
	20,125	Value not stated, but apparently slightly less than 0.4 oz. gold.
Total of above	617,547	Tons

VEIN SYSTEM

(Refer to Map Exhibits A, B, & C)

The footwall vein is the Niagara which for some distance strikes nearly east-west and then going west swings to about north 25 degrees west.

The outcrop of the Congress vein in the hanging wall is nearly parallel and in the eastern portion it is about 400 feet north of the Niagara but it does not bend northward so soon and its western section is only 250 feet to the north-east of the Niagara.

The so called "Dike Vein" underlies the Niagara but its outcrop is not shown on the map unless this is what is known as the "Risto Vein" which outcrops on the Golden Thread and Blackhawk Claims. The "Dike Vein" was cut by the 1975' level from #5 shaft and according to Staunton it had a good width and average value of $25.00 so that it is probable that the ore from this shoot was mined out and I can find no other mention of this vein except that it was apparently developed from the surface by the Katherine Shaft.

In the hanging wall (north) of the Congress Vein there are outcrops including the "Surprise Vein" and the "Incline Vein" and probably the former was termed the "Spur Vein" by Brooks who claims that this was cut by the #3 Shaft at a depth of 2700' when it came into the shaft from the hanging wall.

The "Cross Ledge" which branches off to the north-east from the Congress vein near #1 shaft apparently runs thru the Queen of the Hills and Billick Claims, and the workings are shown on the Congress Mine map, but the tunnel and shaft are not sufficiently open to permit examination.

On Exhibit A the outcrop of the veins is shown and also the location of the shafts and dumps while the underground workings on the Congress and Niagara veins are shown on the two maps Exhibits B and C which are believed to be substantially accurate since they have apparently been revised to show most of the workings up to the date of the shut-down, excepting some of the lower levels in the Niagara.

MINING PRACTICE

For information in this regard I am principally indebted to Mr. Staunton who wrote as follows in 1932.

> "The method of operation was like this; Starting, say at the 1000 ft. level in the No. 2 shaft, the ore was stoped out on both sides of the shaft clear to the shaft, leaving no pillars as they were found to give trouble from uneven subsidence of the hanging wall which unavoidably took place when such large areas were taken out. When this stope, on a sloping line away from the shaft, reached 75 feet up on the vein another level (the 925 in this case) was started, the stope making the level except for a little cutting into the hanging. This new level would advance only as fast as the

stope from below made it. When the stope above the new 925 level reached the 850 point, another level was started there; and so on, each stope practically making the next level above it, so that ultimately each level would be, say, 75 feet shorter than the next one below it. As the vein varied greatly in thickness it was usually necessary to shoot some of the hanging wall and this constituted most of the stope filling together with hanging wall rock broken in the stopes themselves. The high grade ore was usually next the footwall but nearly always there were high grade stringers in all the ground broken. The mineral was very brittle and high grade, clean mineral going about 8 oz. gold, and while attempts were made to keep split lagging brattices between the working face and the filling, a great deal of fine mineral was undoubtedly blasted into the filling and lost. The footwall was frequently rough and while brooms were provided, their use was frequently neglected.

From this you will see that it is highly probable that much fine mineral and some lumps were necessarily shot into the filling besides what probably resulted from careless cleaning of the footwall and that this may easily have been sufficient to give such average value as to make reworking profitable under modern conditions, as for instance, the use of drag scrapers and local separation of the fine and coarse and perhaps some hand sorting, the reject going directly back into the stope and saving hoisting on all but the rough concentrates.

As to the quantity of filling there should be at least as much as the ore taken out and possibly more, say 700,000 tons.

The subsidence of the hanging wall has undoubtedly compressed the filling so that some powder will be necessary to loosen it, but this should be far less than in original mining. A certain amount of timber in the way of stulls to support weak hanging will be necessary, how much only trial can tell."

PRESENT CONDITION OF MINE WORKINGS

(See Exhibits A, B, and C)

The shaft #1 is blocked at the portal and according to all accounts practically all of these workings, the oldest in the mine, are now caved and inaccessible. At intervals during the past few years leasers have tried to open up small sections in which it was reported that good ore had been left and they have been successful in finding and mining small blocks of ground assaying from $10 to $20 per ton, but only a systematic and expensive reopening of this portion of the mine could give much data as to the present conditions and prospective ore reserves. The old records show that this shaft had a depth on the incline of 1100 feet and that 117,899 tons of ore were mined.

Along the outcrop of the Congress vein, going ~~west~~ east from #1 Shaft toward the Queen of the Hills and ~~east~~ West toward #2 shaft some good

ore has been left near the surface between "gopher-holes" and trenches put down by leasers in recent years, but it is presumed that only a shallow sill of such material was left above the old stopes.

No. 2 Shaft was partially reconditioned some time during the 20's and again by the Congress Mining Corporation who used it to pump out the stored water in the mine which they used for milling in conjunction with the Martinez Mill before they obtained water from Date Creek.

The shaft which is an incline of about 25° is now open down to the 1150' level at which point the water stands although at one time in 1939 or 1940 it had been pumped out down to the 1925' level.

The shaft can be entered either from the collar or from the McKinley Tunnel which intersects it at the 200' level.

Most of the timbers in this shaft are still in fair shape and the entire shaft as far down as I could go and, according to Ramsden down to the 1925' level, could be reconditioned at comparatively small expense. There are some rails and a lot of good pipe also a worthless pump.

On the 1075' level caves blocked the west drift at the shaft and the east drift a short distance away from it.

On the 1000' level I was able to walk for several hundred feet both east and west and noted that the old stopes were filled solid to the roof with gob and much of this appeared to contain low grade ore.

On the 925' level I went in some 700' west and at a point some 300' from the shaft, where quite a lengthy section of the vein had not been stoped, I cut a sample over a width of 3' which assayed 0.26 oz. gold ($9.10 per ton).

This level connects with #3 Shaft, but it is caved a short distance before one reaches that point.

From the 925' level up, the drifts are nearly all caved except for the 800 which can be entered for a short distance to the east and here the stopes are large and well filled with gob which is closely packed, but will run freely. This looks like fairly good ore.

From the 300' west drift there is a raise which has been sampled with numbers marked on the wall starting at #31, 30, 29, 2 8, etc., and I have been trying to find a record of these assys. but as yet have not been successful.

The upper drifts are in some cases caved 100' or so from the shaft and the stopes are wide and very neatly packed with gob which is held back by dry walls that would do credit to any mason.

No. 2 Shaft was sunk to a depth of 1700 feet and connected with #3 on the 1150 and 1700 levels and again from a winze on the 2525' level.

The tonnage of ore mined from here was 122, 779.

The vein appears to have been stoped 6 to 8' wide, but probably not more than half the width represented pay ore and the balance of the broken rock was used as gob of which I took a sample along the 200' level about 150' east of the #2 shaft and sent it to Tucson for testing.

Shaft #3 was the last working shaft on the Congress vein and is sunk 8' high and 12' wide inside timbers and broken out much wider. It follows down along a well defined hanging wall on which there is a gouge which seems to merge into the Congress vein at depth.

This shaft is blocked by a cave at 1100', but above that it is in good shape and could be fixed up without great expense and there is a lot of excellent timber, much of which is still in fair condition.

The 1000' level was not driven to the west but going east it was passable for over 500'. Here the vein follows along the dike which is sometimes included in the vein and sometimes lies on the foot or hanging wall. The vein itself shows quartz and sulphide and only a little stoping was done which indicates that much of these workings were probably off the pay shoot.

The 650' level extends only a little way to the west, but east for more than 500' where it is caved. Here the vein is narrow and mixed up with wall rock and my sample #3 from this drift cut 4' wide assayed

only 0.03 oz. Such material was obviously recognized as waste when the mine was operated, and was sampled merely for information.

According to the map and mine records #3 and #2 shafts were connected as mentioned above and #3 sunk to the 4000' level, the deepest in the mine.

Should the mine be reopened for recovery of the low grade ore and fills it would be logical to use #3 as the main haulage shaft for the Congress vein and #2 as an air and manway. Although I believe that no one has been below the 2000' level in this mine for nearly 30 years, it is probable that most of the workings with their walls of hard granite would still be found in fairly good condition, and fortunately no great amount of timbering was originally needed and would now have to be replaced except in the shafts and portions of the drifts where the dike or gouge seam caved along the hanging wall. From #3 Shaft 63,524 tons of ore were mined.

The Shafts along the Niagara vein are all in granite and the inclines are usually somewhat steeper than in the Congress vein shafts.

Shaft #4 is caved solid at the collar, but the workings were connected with those from #3 Shaft on the 1900' level.

On the Niagara vein between Shafts #4 and #6 there is a little shaft which was recently worked on a lease by Herskowitz. Here the vein is a mixture of quartz and rock and shows some sulphide. Width of vein here is about 6', but the remaining ore is apparently low grade since the shoots of better material had been mined out through #4 Shaft concerning which all information is rather vague, except that it was sunk to a depth of 1000' and produced 20,470 tons of ore.

There are three #5 Shafts, captioned "New #5", "Old #5", and "Oldest #5". The New #5 Shaft is opened out around the collar by what appears to have been a small glory hole, the reason for which is not clear. One can get down about 200' on the rather steep incline and there it is blocked by a cave. None of the drifts on either side of this shaft can be entered although the long west drift on the 150 ft. level which was used for haulage to the mill might be opened up without much work as I noticed that a strong current of air passes through it.

The vein is well defined in this shaft and mostly quartz with a little sulphide. To the eye it looks to contain good ore with a width of 3 to 5' and sometimes pretty well frozen in the granite.

It is reported that there is still a lot of stoping ground left near the shaft aside from the pillars, which will probably run 0.3 to 0.4 oz. No great expense would be involved in reconditioning this shaft, or cleaning out the caved ground mentioned although there are likely to be other barriers at greater depths.

Old #5 Shaft was entered from an adit since some work was recently done here by lessees who mined a little $15.00 ore.

In this Shaft I got down to the bottom which is close to the 700' level, but there was no way of getting through to the main #5 as all of the drifts were badly caved. The water level is probably only a little below this point.

Only small sections of the Niagara Vein could be examined but the true width seemed to be from 3 to 6', often fingering out in stringers into the granite wall rock so that the stopes were sometimes as much as 8' wide and practically all filled right up to the back with gob of which I took a large sample for testing.

The oldest #5 Shaft is caved solid at the collar.

The New #5 Shaft has a depth of 2050' on the incline and is only one of these three shafts that would need to be reconditioned (except as an escapeway) in case the mine were reopened. The

tonnage of ore hoisted here was 191, 734 and the remaining tonnage of fills should be proportionately large.

No. 6 Shaft is caved at the collar but on one of the lower levels (the 400', I think) there is a drift into the Macdonald (Golden Key) Mine workings which was open a few years ago when that mine was pumped out. The ore or fills that remain in this west end of the Niagara Vein could probably be best recovered thru a crosscut haulage way which could be driven into the footwall of the Congress Vein from some point in the workings from #3 Shaft.

No. 6 Shaft had a depth of 1800 ft. and the tonnage of ore hoisted was 81, 016, according to Staunton the ore was cut off by a fault at the west end of the stopes.

The main tunnel in Queen of the Hills workings is caved close to the southwest entrance on the side near the mine. It is open for some distance from the other portal, but not to the point where mining was done in the Bellick Claim.

The two upper tunnels are open for some short distances and in the upper one of them I took sample #4 from the gob in a little stope. This carried 0.21 oz. ($7.35) per ton. From a portion of the vein away from the ore shoot I took another sample that assayed only 0.08 oz. ($2.80), over a width of 4'.

The vein is quartz following along a dike and is very probably a faulted eastward extension of the Congress Vein. The shaft and stopes from the lower tunnel are now inaccessible and the small stopes in the upper tunnel which I entered were worked recently by a lessee and are reported to have produced some $20.00 ore.

In this section of the mine according to general belief there is probably a lot of vein matter which could still be worked to advantage aside from reclaiming the gob. The main shaft was only sunk 200' below the tunnel level and produced 20,125 tons of ore.

The McKinley tunnel was run for the purpose of tramming ore from the #5 Shaft on the northwest side of the spur of the hill to the old mill which was then located on the southeast slope. However, it also followed a fissure in the granite and the filling of this fissure was sampled by George Snow in 1940 who found that for a length of 500' it contained values which averaged over $1.00 per ton over a width of 4'. I was able to walk through this tunnel from end to end although the back had caved in a number of places and timbers were in bad shape, but in any event it would probably have no use in future operations and none of the material found there is worth mining.

There are a number of other shafts and adits on the property, all of which are caved to a greater or less extent and which I did not attempt to examine with any care. Some of these are

connected with the old underground workings. I will mention one of the long drifts which at one time was started to connect the workings for the #1 Shaft with those in the Queen of the Hills Claim. The old timers claim that this drift followed some excellent ore (0.5 oz. and better) for a long distance and also crosscut some promising veins that were never mined. It is probable that their recollection of all these values is exaggerated for Staunton was too expert a miner to have passed up any pay ore which was comparatively accessible, but some of these lost veins may very well contain ore that would pay to mine under present conditions and the reopening of this drift should be an attractive piece of exploration.

PRESENT AND PROSECTIVE ASSETS

The mining claims are practically worthless except as a source of ore. The Martinez well and water rights might be sold for a small sum to some of the local ranchers or possible to the Santa Fe Railway who have considered its purchase in times past.

Most of the structures and buildings could not be moved away with any profit, but if the plant were wrecked there shouldbe

some return from the sale of the iron, steel and lumber.

An inventory of the machinery, equipment and warehouse supplies has been in course of preparation for several months, but this work has been done in a most dilatory manner and is not yet completed. I attach to this report as an Exhibit a list of the larger items of equipment. (Exhibit J)

The net sale value of the plant, equipment and supplies is estimated by Rockwood and Holmes at $50,000, and while I am inclined to think this figure too high, it is quite possible that it might be closely approached in view of the high prices now being paid for second-hand machinery, assuming that the plant were promptly offered for sale.

All of the other assets consist of gold bearing materials which are described in detail as follows:

OLD MILL TAILINGS

(See Exhibit D)

According to the records of the Congress Mining Company there were sent to the dump during its period of active operation

(from 1895 to 1911) a total of 617,542 tons of mill tailings. Of these 66,448 tons were run out directly from the tables and vanners which followed the stamps and had an average content of 0.25 oz. gold per ton. The balance, 551, 094 tons, were from ore that had been cyanided, the greater proportion after roasting, and their average content according to the mill assays was 0.063. oz. gold per ton.

It would therefore appear that in 1911 the tailing dump comprised 607,342 tons containing 44,786.122 oz. gold. The silver content of the tailings was not shown on these records but from subsequent samplings it appears to have been about 0.4 oz. per ton on which basis the dump should have contained a total of 247016.8 ounces of silver.

The average content in gold and silver works out as .0722 gold and 0.4 oz. ag. per ton, equivalent to a gross value at present prices of $2.80 per ton.

In late 1915 the Merrill Metallurgical Company of San Francisco made two examinations of the dump, the second being very complete and thorough as per their report of December 31st, 1915 and they then estimated that a total of 505,000 tons could be economically reclaimed with an average content of .0677 gold and about 0.4 oz. silver per ton. During the next twenty years some 40,000 tons were reclaimed and milled by others and there was a continuing

loss of tonnage by wind and rain erosion.

The records of the Strange and Maguire operations in 1931-33 showed that the tailings treated by them contained an average of .066 oz. gold per ton. In 1932 Max W. Bowen sampled and obtained an average of .06 oz. and the following year E. A. Colburn obtained an average of 0.063 oz.

In August, 1933, Hamilton, Bauchamp and Woodworth made another thorough sampling of the dumps with complete metallurgical tests. The average content according to their sampling was 0.0643 oz. gold per ton.

In February, 1935 a very careful survey of the dumps was made under my direction by George J. Harbauer and the result of his work showed that there then remained 426,200 dry tons of recoverable tailings, after excluding the fringes of the dump and other portions which might not be susceptible to relaiming except at relatively high cost.

In 1935-36 further investigation of these tailings was made by Gerald Sherman and his associates and checked by engineers representing the R.F.C. I do not have a complete record of their results, but Sherman and others have informed me that they

estimated the tonnage at 430,000 and the grade at 0.07 oz. and these figures formed the basis for the loan of $140,000 which was made by the R.F.C. for plant and equipment.

According to my investigation and Harbauer's survey, the average volume of one ton of dry tailings in place was 23 cubic feet and the average moisture content was 16.4%. The net weight of the tailings was 103.8# per cu. ft. and the dry weight was 86.8#; the total volume of the tailings pile being 9,802,850 cu. ft.

In February 1935 it was estimated by Beauchamp and others that the net recovery of gold and silver in bullion to be derived from the retreatment of these tailings would be $1.595 per ton (a trifle over 70%) which would represent $679,789 for the entire dump and that the cost of treatment would be $0.80 per ton and the net capital investment including the purchase price of the property (then $26,000) and providing ample water supply would be $120,000. It therefore appeared that the net profit to be derived from the treatment of these tailings after the repayment of the capital investment and salvage of the equipment would be over $200,000.

In March of 1935 I personally made a careful investigation of the tailings and checked all of these last estimates, which appeared to be conservative except in respect to the percentage of recovery which seemed likely not to exceed 68% and the operating cost which, assumed continuous operation of the plant at the rate of

300 tons per day and in my opinion should have been increased to about 90¢ per ton.

At that time we did not make a complete sampling but we took a number of pipe and large shovel samples which checked with the results given above and also indicated that those values were probably somewhat too low because the richest portion of the pile containing the uncyanided tailings was near to the bottom and impossible to properly sample except in a few places.

The engineers of the Congress Corporation which soon after acquired the property, and of the R.F.C. made many changes in the design of the plant while it was in course of construction and rebuilt several sections two or three times over thus greatly increasing the cost.

When their mill was finally completed the settling capacity was much too small for proper treatment of the tailings in which there was a high percentage of slime.

They had also purchased and installed some very much worn-out second-hand equipment which required frequent repairs and caused many complete and partial shut-downs of varying duration.

The tailings were reclaimed with a power shovel and sent to the mill in trucks, tailings alone were treated from June 1938 until September 39 during which period there was almost constant difficulty in settling the slimes and the tonnage fell considerably below expectations. It was mainly to improve this situation that the management, after having sampled and resampled the dumps arranged to mix the dump drock with the tailings for feed to the mill and this practice was followed until the plant was shut down in June of 1942 up to which date a total of 276,472 tons of dry tailings had been treated in the mill.

According to the previous calculations the pile of tailings now remaining should contain just about 150,000 tons dry weight and this figure checks with our original calculations and with my present rough estimate of the volume of the pile whose contours are now extremely irregular as noted on Exhibit D.

Since separate samples of the tailings and dumps were not taken as these were sent to the mill no accurate average of the milled tailings can be given but from all of the records which I have been able to find and from verbal statements of Liddell and Ramsden I have calculated that this was very close to 0.075 oz. gold and 0.4 oz. silver, representing a gross value of $2.90 and I believe that it is very conservative to place the value of the remaining tails at $2.70 since in reclaiming

These dumps no selection was feasible and the operators merely took the material which could be moved with least expense.

In this connection it should be noted that while there was some variation in the grade of tailings taken from various sections of the dump the average value of each section invariably increased in the lower stratum of the pile and the lowest 12' was termed the "subsoil" and showed as noted below a value much higher than the average; in some cases as much as $10 or even $15.00 per ton. By far the greater proportion of this sub-soil is still left since in only a few sections was the digging carried down to bed rock and therefore there is good reason to expect that the average value of the remaining dump may exceed that of the portion which has been removed.

The following assays taken from the Congress Company Records tend to confirm this opinion:

	Gold	Value
(1) Decomposed granite piled up by bulldozer	0z. 0.13	$ 4.55
(2) Soft granite in place	0.02	0.70
(3) Hard rib of granite	Trace	
(4) 3' cut in bank	0.090	3.15
(5) 1st ft. in cut in bank, red tailings	0.06	2.10
(6) 2nd Ft. in cut in bank, decomposed granite	0.15	5.25

(7) 3rd ft. in cut in bank, decomposed granite	0.02	0.70
(8) Average of bulldozed pile	0.205	7.18
(9) Subsoil sample	0.51	17.85
(10) Subsoil sample (check)	0.52	18.20

Also I have found and give below an interesting record of the screen analysis of a composite sample of the tailings which was apparently better than the aver age grade.

	Weight (Grams)	Assay oz. Ore	% of Weight
HEADS	1926	0.12	100
+ 65 mesh	907	0.12	46.2
− 65 + 100	202	0.08	10.3
− 100 + 150	127	0.08	6.4
− 150 + 200	146	0.08	5.7
− 200	580	0.10	28.4

The above figures do not altogether check but they serve to give some idea as to the probable distribution of the values which on the whole would seem to be fairly evenly divided and are not concentrated in the slimes as might be supposed.

As to the cost of reclaiming the tailings, I was told in 1938 that this was 12¢ per ton. The tailings were dug from the dump with a power

shovel which loaded them into trucks and the haul to the mill bin was in no case over 100 yards but the tailings hung up in the bin, especially in wet weather, and the cost of getting them onto the best conveyor to the ball mill was out of line and called for an improved mechanical installation which was never provided.

If a similar method of reclaiming is followed in future the cost must be expected to increase as it will be harder to dig out the lower sections of dumps where the bank of tailings is low and the shovel must be moved more often and sometimes dug along the bed rock but I am impressed with the possibility of arranging to sluice down these tailings with water, as has been successfully done elsewhere, and then feeding them to the ball mill as a slurry by a scraper conveyor or sand pump. This method might effect a substantial economy of operation and should be carefully studied.

THE MINE DUMPS

(Note location of dumps on Exhibit A).

Dumps of low grade ore and waste rock were made by the old Company near the collars of each of the seven principal working shafts.

Some of the best of this material had been sorted or screened and treated by various parties, principally the Wyman Brothers and Jay

Burns between 1915 and 1935, but there is no available record of the tonnage so treated or the value of the product.

In 1938 the management of the Congress Corporation became convinced that dump rock should be mixed with mill tailings in order to improve the recovery and increase the tonnage treated in their mill and since this plan involved a considerable expense for crushing and other equipment a comprehensive sampling of these dumps was made for the first time under the direction of Wm. Liddell, the manager, assisted by Percy Ramsden, the mill superintendent. In carrying out this procedure numerous large pits were dug in the sides of the dumps from which one ton samples were taken and these were carefully crushed and quartered down for assay. In some few cases representative lots of from twenty to fifty tons were sent directly to the mill as check samples.

The detailed results of this work will be noted in connection with the individual dumps, but the general result was to permit an estimate of over 400,000 tons of dump rock available for reclaiming with an average value of $3.84 per ton.

To further check this estimate the Company employed Henry G. Carlisle, Consulting Engineer of San Francisco, who repeated the previous procedure digging smaller pits in other portions of the

dumps and taking much smaller samples which averaged only about 100# in weight.

Carlisle's report has not been obtained but I have found the records of his samples and am reliably informed that he confirmed Liddel's estimate of tonnage, but reduced the average grade to slightly less than $3.00 per ton, which is about the value that was indicated when I recently took a number of small grab samples from which I was careful to exclude all pieces which had the appearance of being ore although such material actually constitutes a substantial percentage of the dumps.

The physical character of the dumps and great variation in the size of the fragments composing them renders it very difficult to hand or pit sample them with any degree of accuracy. Therefore I consider that by far the best and most reliable estimate of their value is obtained from the records of the Congress Mill which treated 106,629 tons of dump rock from 1939 to 1942. While the assays of this rock were not properly segregated from those of the tailings yet a careful study of a great number of records which do show such a segregation have convinced me that the average value of this material was well in excess of $3.00 after sorting out from 10 to 15% of waste rock. As in the case of the tailings the material which was taken from the dumps was selected merely on the basis of its being most

economically reclaimable and thesamples which were taken from portions of the dumps now remaining seem to have averaged quite as high as those from the sections which were milled. Therefore I am convinced that the average value of the remaining dumps, after sorting out large pieces of waste, can be conservatively estimated at $3.00 per ton.

In estimating the remaining tonnage, -- which is very difficult by reason of the irregular contour of the surface, I have slightly reduced the previous figures and allowed for a somewhat larger amount of sorting (up to 20%) on which basis I figure that 250,000 tons remain to be reclaimed at a very moderate cost.

Details of the dumps are as follows:

DUMP #1 (Congress Vein).

Originally this was a very large dump extending east and northeast from #1 Shaft and divided into at least four sections, three of which have been largely reclaimed so that only irregular fragments now remain from which some 4,000 tons of rocks might be taken. These sections were largely worked by the Wymans and by Jay Burns, and they are reputed to have assayed $6.00 or better per ton.

The main section located in a gulch was worked by the Congress Corporation and the upper portion was scrapped off with

with a bulldozer into a trap which is still in fair shape. My calculations indicate that about 12,000 tons should still be reclaimed and this figure is confirmed by Ramsden. Carlisle's sampling was confined to this main section where he took 21 samples averaging $3.00 per ton. Liddell took 20 samples which averaged $3.72 gold and 0.20 0z. silver.

The Congress Corporation appear to have milled approximately 50,000 tons of rock from this dump which is reported to have averaged over $3.00 per ton.

From all the above and considering that the remnants of the smaller sections of the dump are doubtless higher grade than the main section, it would seem safe to estimate that in #1 Dump there are still 18,000 tons that will average after sorting close to $3.50 per ton, plus 10¢ silver.

DUMP #2 (Congress Vein).

This was a very large hillside dump with a maximum height of over 80 feet, portions of which were screened out and treated by the Wymans and by Jay Burns. The total tonnage taken from the original dump has probably been 40,000, but the Congress Corporation milled no rock from here except for a test lot of 50 tons which is reported to have run slightly higher than the average of their

samples. Calculations of the remaining tonnage place this at 90,000 tons of sorted ore. The road to the dump is good and reclaiming should be easy.

The average grade as first determined from 28 samples taken by Liddell was $3.76, but when Carlisle checked this with 22 samples his average was only $2.84, which checked closely with my own grab samples. Adding the value of the silver the gross value of this dump should be very close to $3.00. The haul to the mill is about 600 yards.

DUMP #3 (Congress Vein)

Dump #3 was reclaimed to some extent by Burns, and the Congress Corporation merely treated some of his screenings which had been left near by and which are said to have carried $7.00 per ton. The contour of the dump is excessively irregular and in calculating the tonnage I have been conservative in placing it at 80,000.

Liddell's average of 30 samples was $3.45 and Carlisle apparently did not sample this dump so that we do not have so much data as in the other cases. My own grab sampling of this dump was done twice and the average results were only $2.28 and $2.00, but I carefully noted the pits which had been made by Liddell and his results should have been much more accurate than mine. Moreover it is hardly likely that Jay Burns would have treated so much rock from this dump when all of the dumps were still intact unless he had found

it to be at least equally as rick as the others.

Many of the fragments in my samples were barren granite and diorite, some of which would normally be sorted out on a picking belt, and I think that I am conservative in estimating the average value at $2.50 per ton. Reclaiming this dump will be comparatively inexpensive, but the rock will have to be trucked around the point of a hill to the mill site, a total distance of about 800 yards.

DUMP #4 (Niagara Vein)

The #4 Dump is small and locally is supposed to be rich, but Liddell's 19 samples averaged only $3.50 and my samples assayed somewhat lower. None of this rock was milled by the Congress Corporation.

The length of the dump is 183' with axis N. 15° E, but at the top it is in places only 6' wide and elsewhere the surface rocks project up thru it so that the tonnage is very difficult to figure, but an estimate of 5000 is conservative. Some portions of this dump would be hard to reclaim, unless they could be sluiced down the very steep hill. The haul to the mill is about 800 yards.

DUMP #5 (Niagara Vein)

This dump is originally contained over 100,000 tons and since I am reliably informed that the surface beneath it is a gulch,

I accept the estimate of the remaining tonnage made by Rockwood and Ramsden as 50,000 tons of sorted ore. Like Dump #2, the present contour is most irregular.

The average of 19 samples taken by Liddell was $3.97 while the 19 samples taken by Carlisle averaged $2.80, and my grab samples averaged $2.60. The mill apparently treated slightly over 40,000 tons and rock was being drawn from here as from #1 dump at the time that they closed down.

I have found records which showed that much of the material milled from here assayed $4.20 per ton and Rockwood and Ramsden are both very positive in estimating that the average grade was over $4.00 and that the remaining rock should be equally good. However, these statements do not seem to check with the general mill records and although in all probability it is of somewhat higher grade than #2 and #3, I think it safer to figure the average at $3.50.

The upper part of the dump was mined with a power shovel which loaded the rock directly into trucks while the lower portion on the south side was scraped by a bulldozer to a trap which is now in poor condition. The haul to the mill is about 500 yards.

DUMP #6 (Niagara Vein)

The larger portion of this material was piled on the Rose Quartz and Los Senate Claims which do not belong to the Congress Company. The greater part of the rock that was on the Why Not Claim of the Congress Company was reclaimed with a drag line and treated by the Congress Corporation to the extent of about 4,000 tons. It does not appear that more than 2,000 tons remain to be taken from the Congress ground, although probably 8,000 - 10,000 tons are still left on the adjoining property. The average grade of recent shipment made by Findley to the Hayden Smelter was $7.81 per ton. I was told that the material taken out by the Congress Company was not so good, but averaged over $5.00 per ton which is the value that I place upon the remainder which I did not sample on this occasion although I had done so some years ago. The haul to the mill is about 1000 yards.

QUEEN OF THE HILLS DUMP

Five samples taken by Liddell averaged $2.10, but Carlisle's lot of 11 samples averaged $5.07, which does not check unless they represented two different dumps as they were originally 3 or 4 of them. My samples taken from the largest of the remaining dumps ran $4.20, and I have estimated the grade at $4.00. The small remnants of the other

dumps will not exceed a total of 300 tons, but they look to be of higher grade.

My estimated tonnage in the Queen Dumps is 5,000 which will be rather expensive to reclaim. The Congress Mill appears to have treated about 12,000 tons concerning the grade of which I could obtain no details except that, according to Ramsden, it was richer than the average. The haul to the mill is over 1200 yards.

Concerning all of the dumps it may be said that appearances indicate that the material is largely a mixture of quartz and pegmatite, both of which doubtless carry good values, and of granite and diorite which look to be practically barren except as they are enriched by little veinlets or seams of quartz and sulphides that are scattered thru many of the fragments, but elsewhere are entirely lacking.

The value of the dumps is therefore largely dependent on the relative percentage of waste rock to low grade ore and this varies in each of the dumps and in different portions of the same dump so that sampling is very difficult and it seems to me quite remarkable that the pit samples taken by Carlisle and Liddell should have been so closely checked and generally improved upon by the mill runs which constituted by far the most accurate sampling.

The several waste dumps left by the Wymans, Jay Burns and others, after screening out the fines, might total altogether some 20,000 tons but they appear to be mostly diorite and do not look as if they would pay to reclaim so that I have not included them in my present estimates.

The normal angle of the outer slope of the dump rock is from 35 to 40° but in places where rock has been taken out it often stands much steeper and sometimes nearly vertical. All dumps are located on the hillsides and the slope of the surface under the dumps varies, but usually is from 20 - 30°, occasionally as low as 15° or as high as 40°.

A summary of my estimate of the most essential data concerning the dumps is shown in the following tabulation, also a record of screen tests which is interesting particularly as indicating that apparently the highest values are not found in the fines, but in material sizes between 1" and 2".

The photographs which accompany the report as Exhibit E will give a better idea of the present shape and contours of the dumps than any drawings which could be prepared without first making a careful topographical survey which would involve an expense that does not seem warranted at present. I spent some time in trying to make such drawings showing the location of the still remaining sample pits but found that the work was too sketchy to have any real value.

SUMMARY OF DATA REGARDING CONGRESS DUMPS

Dump	Estimated Gross Tonnage in 1937 (about)	Average Grade of Pit Samples		Record of Rock Milled by Congress Corp.		** My Estimate 1943 Remaining Tonnage	Approxi. Grade of sorted Rock
		Lidell	Carlisle	Approx. Tonnage	Value per ton		
#1	75,000	$3.72	$3.11	50,000	$3.00+	18,000	$ 3.50
#2	105,000	3.76	2.84	None	-	90,000	3.00
#3	100,000	3.45	-	None	-	80,000	2.50
#4	5,000	3.50	-	None	-	5,000	3.00
#5	100,000	3.97	2.80	40,500	3.50+	50,000	3.50
#6	7,000	-	-	4,000	5.00+	2,000	5.00
Queen of the Hills	20,000	2.10	5.07	12,000	4.00+	5,000	4.00
Test runs etc.				129	4.00+		
	412,000	3.84		106,629	$3.00+	250,000	$ 3.00

**Allowance of 20% for material to be sorted out.

SCREEN TESTS ON DUMPS FROM CONGRESS MINE ASSAY BOOK

	-2" %	-2"-1" %	-1"-1/2" %	-1/2" %	General Average Assay
Dump #1	10.	22	22	46	
#2	6.	10	8	76	
#3	12.	20	22	46	
#4	6.	16	24	54	
#5	10.	20	24	46	
Average	8.8	17.6	20.0	53.6	
Aver. Assay Oz. Gold Per Ton	0.067	0.125	0.730	0.900	0.907 = $3.17

Attached is a complete list of the dump samples taken by Liddell and Carlisle with assays. Rough Sketches showing the approximate location of these samples were found but have little value at present since in many cases the material sampled has since been removed and the very irregular contours of the remaining portions of the dumps could only be accurately plotted aver extensive surveys.

PIT SAMPLES

No. 1 DUMP (Liddell)			GOLD oz.	GOLD $	SILVER oz.	SILVER $	Total
Dump #1 Hole #1	Sample #1	4.50	.153	5.45	.25	0.16	5.61
Dump #1 Hole #1	Sample #2		.100	3.50	.21	0.13	3.63
Dump #1 Hole #2	Sample #1	4.23	.119	4.17	.28	0.18	4.35
Dump #1 Hole #2	Sample #2		.133	4.66	.27	0.17	4.83
Dump No1 " #1	Sample #3		.130	4.55	.24	0.15	4.70
Dump #1 Hole #2	Sample #3		.110	3.85	.23	0.15	4.00
Dump #1 Hole #3	Sample #1		.105	.368	.23	0.15	3.83
Dump #1 Hole #4	Sample #1		.105	3.68	.23	0.15	3.83
Dump #1 Hole #5	Sample #1		.125	4.38	.14	0.09	4.47
Dump #1 Hole #6	Sample #1		.180	6.30	.04	0.03	6.33
Dump #1 Hole #7	Sample #1		.080	2.80	.42	0.27	3.07
Dump #1 Hole #8	Sample #1		.100	3.50	.19	0.12	3.62
Dump #1 Hole #9	Sample #1		.120	4.20	.24	0.15	4.35
Dump #1 Hole #10	Sample #1		.050	1.75	.08	0.05	1.80
Dump #1 Hole #11	Sample #1		.150	5.25	.02	0.01	5.27
Dump #1 Hole #12	Sample #1		.150	5.25	.26	0.16	5.41
Dump #1 Hole #13	Sample #1		.090	3.15	.11	0.07	3.22
Dump #1 Hole #14	Sample #1		.080	2.80	Trace		2.80
Dump #1 Hole #15	Sample #1		.060	2.10	Trace		2.10
Dump #1 Hole #16	Sample #1		.090	3.15	.11	0.07	3.22
Dump #1 Hole #17	Sample #1		.110	3.85	.24	0.14	3.99
Dump #1 Hole #18	Sample #1		.100	3.50	Trace		3.50
Dump #1 Hole #19	Sample #1		.070	2.45	Trace		2.45
Dump #1 Hole #20	Sample #1		.110	3.85	Trace		3.85
Average			.106	$3.72			$3.72

No. 1 DUMP (Carlisle) - 6/17/39	GOLD	SILVER
#590	.090	3.15
#591	.060	2.10
#592	.070	2.45
#593	.120	4.18
#594	.120	4.18
#595	.130	4.53
6/18/39		
#602	.140	4.90
#603	.130	4.54
#604	.085	2.96
#605	.055	1.92
#606	.075	2.61
#607	.075	2.61
#608	.070	2.44
#609	.040	1.40
#610	.085	2.97
#611	.110	3.85
#612	.090	3.14
#613	.070	2.45
#614	.060	2.10
#615	.060	2.10
#616	.130	4.54
Average	.089	$3.11

PIT SAMPLES

No. 2 Dump (Liddell)

		Gold	$
Dump #2 Hole #1	Sample #1	.080	2.80
Dump #2 Hole #2	Sample #1	.150	5.25
Dump #2 Hole #3	Sample #1	.090	3.15
Dump #2 Hole #4	Sample #1	.080	2.80
Dump #2 Hole #5	Sample #1	.080	2.80
Dump #2 Hole #6	Sample #1	.075	2.63
Dump #2 Hole #7	Sample #1	.160	5.60
Dump #2 Hole #8	Sample #1	.080	2.80
Dump #2 Hole #9	Sample #1	.120	4.20
Dump #2 Hole #10	Sample #1	.080	2.80
Dump #2 Hole #11	Sample #1	.130	4.55
Dump #2 Hole #12	Sample #1	.090	3.15
Dump #2 Hole #13	Sample #1	.130	4.55
Dump #2 Hole #14	Sample #1	.120	4.20
Dump #2 Hole #15	Sample #1	.110	3.85
Dump #2 Hole #16	Sample #1	.060	2.10
Dump #2 Hole #17	Sample #1	.110	3.85
Dump #2 Hole #18	Sample #1	.080	2.80
Dump #2 Hole #19	Sample #1	.080	2.80
Dump #2 Hole #20	Sample #1	.065	2.27
Dump #2 Hole #21	Sample #1	.105	3.67
Dump #2 Hole #22	Sample #1	.070	2.45
Dump #2 Hole #23	Sample #1	.130	4.55
Dump #2 Hole #24	Sample #1	.110	3.85
Dump #2 Hole #25	Sample #1	.120	4.20
Dump #2 Hole #26	Sample #1	.220	7.70
Dump #2 Hole #27	Sample #1	.190	6.65
Dump #2 Hole #28	Sample #1	.095	3.32
	Average	.1093	$ 3.76

No. 2 Dump (Carlisle)

# 617	.110	3.85
618	.040	1.40
619	.065	2.27
620	.055	1.92
621	.065	2.27
622	.050	5.24
623	.060	2.10
624	.020	4.18
625	.080	2.80
626	.100	3.50
627	.095	3.32
628	.065	2.27
629	.050	1.75
630	.045	1.58
631	.070	2.45
632	.143	5.08
633	.035	1.25
634	.030	1.05

PIT SAMPLES

		oz.	$
No. 2 Dump (Carlisle)	(Continued)		
#635		.030	1.05
#636		.080	2.80
#637		.090	3.15
#638		.100	3.50
	Average	.081	$2.84

No. 3 Dump (Liddell)

Dump No. 3	Sample	#1	.100	3.50
"	"	#2	.060	2.10
"	"	#3	.090	3.15
"	"	#4	.150	5.25
"	"	#5	.050	1.75
"	"	#6	.080	2.80
"	"	#7	.180	6.30
"	"	#8	.060	2.10
"	"	#9	.180	6.30
"	"	#10	.125	4.37
"	"	#11	.090	3.15
"	"	#12	.090	3.15
"	"	#13 (out)		
"	"	#14	.100	3.50
"	"	#15	.070	2.45
"	"	#16	.080	2.80
"	"	#17	.080	2.80
"	"	#18	.080	2.80
"	"	#19	.080	2.80
"	"	#20	.105	3.68
"	"	#21	.120	4.20
"	"	#22 (out)		
"	"	#23	.090	3.15
"	"	#24	.100	3.50
"	"	#25	.090	3.15
"	"	#26	.080	2.80
"	"	#27	.075	2.63
"	"	#28	.150	5.25
"	"	#29	.130	4.55
"	"	#30	.075	2.63
	Average		.0985	$3.45

PIT SAMPLES

No. 4 Dump (Liddell)	Hole		oz.	$
Dump #4	Hole #1 (out)			
"	"	#2	.105	3.68
"	"	#3	.080	2.80
"	"	#4	.070	2.45
"	"	#5	.070	2.45
"	"	#6	.050	1.75
"	"	#7	.050	1.75
"	"	#8	.050	1.75
"	"	#9	.260	9.10
"	"	#10	.100	3.50
"	"	#11	.100	3.50
"	"	#12	.170	5.95
	#	Average	.100	$3.50

No. 5 Dump (Liddell)	Hole			
Dump #5	Hole	#1	.100	3.50
"	"	#2	.200	7.00
"	"	#3	.150	5.25
"	"	#4	.110	3.85
"	"	#5	.040	1.40
"	"	#6	.100	3.50
"	"	#7	.150	5.25
"	"	#8	.180	6.30
"	"	#9 (Out)		
"	"	#10	.120	4.20
"	"	#11	.100	3.50
"	"	#12	.060	2.10
"	"	#13	.070	2.45
"	"	#14	.070	2.45
"	" "	#15	.140	4.90
"	"	#16	.140	4.90
"	"	#17	.095	3.32
"	"	#18	.100	3.50
"	"	#19	.120	4.20
		Average	.114	$ 3.97

No. 5 Dump (Carlisle)				
6/16/39	Dump #5	#564	.030	1.05
	"	#565	.100	3.50
	"	#566	.170	5.94
	"	#567	.120	4.20
	"	#568	.090	3.14
	"	#574	.045	1.57
	"	#575	.155	5.42
	"	#576	.055	1.92
	"	#577	.155	1.92
	"	#579	.055	1.92

PIT SAMPLES

No. 5 Dump (Carlisle) (Continued)			oz.	$
6/17/39	Dump #5	#578	.080	2.80
		#590	.095	3.32
		#581	.045	1.57
		#582	.040	1.40
		#583	.090	3.15
		#584	.090	3.15
		#585	.095	3.32
		#586	.050	1.75
		#587	.063	2.27
		Average	.080	$ 2.80

PIT SAMPLES

Queen of the Hills Dump (Liddell)

Hole	Q #1	.030	1.05
	Q #2	.050	1.75
	Q #3	.060	2.10
	Q #4	.060	2.10
	Q #5	.110	3.50
	Average	.060	$ 2.10

Queen of the Hills Dump (Carlisle)

#1	.095	3.32
#2	.195	6.82
#3	.175	6.12
#4	.195	6.82
#5	.185	6.47
#6	.110	3.85
#7	.170	5.94
#8	.130	4.54
#9	.210	7.33
#10	.040	1.40
#11	.190	6.64
Average	.145	$5.07

MINE FILLS (Gob)

From Staunton's description of the method of mining given on pages 19 and 20 of this report, the reasons for the existence of so large a tonnage of gob and for a logical assumption that it has a nigh value will be evident.

The pay streak in both the Congress and Niagara veins usually had a width of 3' or less but in order to permit economical mining the stopes were intentionally broken out to approximately double that width while the brittle character of the hanging wall often caused the opening to be considerably wider.

In so far as I can learn from the records and from personal examination of the accessible workings of the mine, all of the stopes were back filled and this filling is still in place. It may be that below the water level much of this gob will have been more or less compressed and recemented as Staunton suggests, but such is not the case in any of the stopes which I was able to visit where it runs freely through any opening, -- although the slope of the vein does not cause it to run by gravity, -- and such material could be very easily reclaimed without the use of any powder and in most cases with very little timber.

The maps of the underground workings (Exhibits B and C) give a general idea of the extent of the filled stopes in which my very rough calculations confirm Staunton's estimate of about 700,000

tons and although it is not at present possible to determine whether all of this material could be economically reclaimed such appears to be the probability.

As to the average grade of the gob, we have but little data since it could never have been assumed to be worth reclaiming until after the price of gold had been advanced, and to the best of my knowledge it was never sampled during the old operations.

Since 1934 various engineers, including Colburn and Ramsden have taken a number of samples, more or less at random and these they have told me averaged well over $5.00 per ton.

In 1939, Carlisle took 7 samples from the gob on an unidentified level of the #2 shaft (Congress vein) the poorest of which ran $1.40 while the highest ran $8.56; the average being $4.05. From the 1000' level gob in the #2 shaft he took 6 samples which varied from $2.10 to $10.03 and averaged $6.49.

From gobs in the stopes on the Niagara Vein (location not stated) he took 17 samples which assayed from $1.51 to $9.45, -- average $4.96.

My sample from the Queen of the Hills gob assayed $7.35 and my other gob samples which were sent to Tucson for testing have not yet been assayed.

I think it fair to say that present indications point to an average value in the order of $5.00 particularly when it is

considered that the highest grade material is represented by fines which were left lying on the footwall or subsequently filtered down through the coarser material and only a very small percentage of which is likely to have been included in the samples taken by Carlisle or others.

All of this material can now be classed only as probable ore and any thorough investigation of its tonnage and value obviously cannot be made until the mine is unwatered and many of the obstructions cleaned out from the workings, but I believe that much valueable data could be secured by further examination of the mine that may be undertaken.

The great bulk of the gobs could be cheaply drawn down to the levels by the use of slushers and scrapers and some underground sorting would seem to be advantageous while the final cleaning up of the rough floors of the stopes on which the high grade fines may be expected to lodge might perhaps be accomplished by slucing as in done in hydraulic pits.

With the mine reopened and equipped for operation it seems that $1.90 per ton would be a very liberal estimate of the average cost of reclaiming this material, hoisting it to the surface and transporting it to the mill. Its' character being so similar to that

of the rock on the dumps it would appear that treatment by flotation and cyanide should serve to recover 85% of the values resulting in a substantial operating profit as estimated in the tabulation at the end of this report.

PILLARS, SILLS AND LOW GRADE ORE

Except in the immediate vicinity of the shafts and main levels, it is unlikely that any substantial pillars or sills of high grade ($20.00) ore remain in any part of the old workings and while small portions of these may be recovered when drawing out the gob, it does not appear to me that any account of them should be taken in estimating the probable tonnage of ore left in the mine.

The situation in respect to low grade ore is radically different for in previous operations every effort was made to keep up the average grade of production and, with gold priced at $20.00 per oz. no vein matter containing less than 0.35 oz. gold per ton was intentionally mined.

According to the statements of the operators, particularly Staunton, there was a very large but undetermined quantity of low grade ore partially opened up in many parts of the mine,

especially at the ends of the higher grade shoots but it was never developed and no measurements or comprehensive sampling was made for to quote Staunton in substance "just as soon as the grade of the vein fell to $7.00 we dropped that stope and went elsewhere or, if we had to go through it, we left it in place".

That several remaining sections of the vein did contain such low grade ore in undoubtedly a fact, which Staunton has repeatedly emphasized although he has always refused to make any estimate of average tonnage or grade.

During my recent examination of the accessible workings of the mine, I noted many sections of the vein adjoining the filled stopes where the ore had a similar appearance to that which was left in the pillars although the percentage of sulphide was visibly less and therefore the grade was undoubtedly lower.

Elsewhere the character of the vein was different, being deficient in quartz and in stringers of sulphide and judging by such samples as I took and information from others, it is undoubtedly too low grade to be classed as ore even at present gold prices.

In the upper levels leasers working during the past few years have mined and are still mining in small areas from

which they ship a product assaying from $10 to $20 per ton and in many of these workings it appeared to me that a considerable tonnage could still be taken if it were possible to obtain a profit on $7.00 ore.

Colburn and John Price have told me that they have taken many samples of vein matter which assayed better than $10.00 and Percy Ramsden claims to have cut some 300 samples of ore remaining in the Congress vein between #2 and #3 Shafts from the 1000' to the 1925' levels which averaged better than $8.00 per ton.

The material to which I have referred is sufficiently developed so that it can be classed as positive or at least as highly probable ore but unfortunately it has never been systematically sampled or measured and such a procedure could not be thoroughly carried out until the mine was unwatered and reconditioned.

However, as in the case of the gobs, a morethorough examination and sampling of the accessible ore down to the water level could be conducted for a moderate expense and in my opinion this should be well worth while.

In the meantime, any estimate of tonnage and value can at best be merely a guess but from what I was able to see and to learn from others, who were familiar with the old workings

and from a study of the maps, I think that it is very conservative to figure as a strong probability that there remain 200,000 tons of $8.00 ore to be mined from within the limits of the old workings.

Fortunately any work that might be done to determine the character and value of the gobs and low grade ore left in place would also throw a great deal of light on the possibilities of finding entirely new ore bodies.

NEW ORE POSSIBILITIES

Obviously the management of the Congress Mine did not intentionally overlook any likely prospects during the 20 years that they actively operated nor close down until they were convinced that continuance would no longer be profitable. Almost from the very start the work was well financed and conducted by able men who adopted the most approved methods of mining and milling.

However, it does not appear that at any time they gave a great deal of attention to the economic geology or carried out any comprehensive plan of exploration or that they ever employed any geologist of recognized standing to survey the area and suggest outlines of such a procedure.

Mr. Staunton and his successor, Meade Goodloe were unquestionably among the most skillful and efficient mine managers and operators of their time but their work was guided by experience and intuition rather than scientific theory. In following down the ore shoots in the two main veins their problem was relatively simple but they left unsolved the faults at both ends of those veins and between them they may, as Staunton readily admits, have overlooked a number of blocks of ore dislocated by many minor faults.

As to the numerous offshoot or cross veins (the stopes in which are crosshatched on the maps) and which in the aggregate produced a large tonnage including some of the highest grade ore, it seems that these were usually developed by following only the most promising of the many stringers of quartz which branched off into the hanging wall. Some of these cross veins proved to be barren but Staunton has told me that he now thought that they had made a mistake in not following a larger number and in failing to prove up the downward extension of some that were noted on the surface or had been found in upper levels.

Brooks and Colburn were also much impressed with the possibilities of further exploration in the hanging wall and such is my own opinion although it is obviously very difficult

to draw any conclusions at present when so much of the underground work cannot be examined and the outcrops of the veins are often covered with buildings or dumps.

Staunton has particularly recommended that exploration should be conducted at greater depth below the #1 shaft workings and near to the 1700' and 2500' levels from #2 shaft where he well recollects the body of low grade ore that was left in place and which has since been sampled by Ramsden as mentioned above.

Staunton does not believe that any large new ore body is likely to be found in or near the Congress vein below the 3000' level as this area had been pretty thoroughly explored with disappointing results but he thinks that along the upper section of the greenstone dike other shoots of ore may well be found since it is his theory that the Congress vein was mineralized from a quartz corss-vein from which the solutions followed along the fissure that was formed by the intrusive dike where a chemical condition existed favorable to the deposition of the metals.

In regard to the possibilities of further discoveries in depth on the Niagara Vein, Staunton is more optimistic and regarding the general problem of future exploration he has written as follows:

"Underlying the Niagara vein, which has an easterly-westerly strike and dip of perhaps 40 degrees there is a green-stone dike with slightly different strike and dip of around 25 degrees. This dike is almost identical in character with the Congress dike which carried the ore in that mine. The Niagara vein intersected this dike at about 1975 feet depth in the extreme easterly part of the mine close to the big fault. The dike was heavily mineralized at the intersection and the ore in the dike was of the same character and grade as in the Congress as distinguished from that in the Niagara vein, which belongs to the closs of veins entirely in the granite. This high grade extended easterly to the big fault, where it was cut off. To the west, the work was at first confined to the dike, but as the distance from the intersection increased the high grade gradually failed and crosscuts were run into the hanging wall to the Niagara, and thereafter the work was done on that vein. The line of intersection would run downward to the northwest.

The Niagara shaft is an incline on the vein and its course happens to coincide closely with the course of the intersection of the planes of the two veins. It seems highly probably that a new line of high grade stopes can be opened by sinking the Niagara Shaft (#5) a few hundred feet below its present depth of 2050 feet. The 1900 level is connected to the No. 4 shaft 700 feet

west, so that there is good ventilation. Sinking of this character is comparatively cheap. The little water met with is readily bailed. It amounts to little more than running a drift on an incline.

The relations of conditions east of the big fault to those on the west which carried the pay ore were never satisfactorily worked out.

At the surface, about 200 feet west of No. 1 shaft, one of the veins entirely in the granite and locally known as the "Cross-Vein" intersects the Congress dike vein and the position of the Congress ore shoot corresponds roughly to the line of intersection of the planes of these two veins. The part of this cross vein in the hanging wall of the Congress had considerable stoping ground, and the footwall part to a less extent. The ore pinched out as it approached the fault but in many cases heavy bodies of good grade ore appeared to be cleanly cut off by the fault.

It was thought at one time that we had found a measure of the throw of the fault on the 650 level. The east drift on the cross vein encountered the fault and after going through about 40 feet of fault breccia picked up what we took for the Congress dike vein east of the fult, but no ore was found there.

In the light of what is now known the Niagara workings look kind of funny on the map. But it is the old case of hind-sight wisdom. When we started we knew nothing about the fault and began a shaft, designated on the map as 'Oldest No. 5 Shaft'. That shaft ran into and discovered the fault which, of course, cut off the ore. We then determined to swing around and start a new shaft ('Old No. 5') parallel to the strike of the fault as it appeared to be. Unfortunately, the fault plane proved to have a dip to the west and we found we were going to run into it again. As a third "try" we located the 'No. 5 Shaft' as shown on the map. As the result of this expensive education we see now that it would have been better to have sunk a shaft from a point at about the intersection of the coordinates S-500 and W-500 with a north dip as it would have handled the whole situation at much less expense.

Apparently the Congress is later than the cross vein, as it cuts and faults the latter. There is evidence suggesting that the Congress may have derived its mineralization from the cross vein. Having reached the conclusion that this was probable, I thought I saw a chance to apply the theory to the Niagara vein by following it down to where it would apparently have to intersect a similar dike to the Congress that outcropped 1,500 feet due south of the No. 5 Shaft and had a dip that could

be measured with reasonable accuracy. The conditions would be similar, that is, the intersection at around 2,000 feet depth. Actually it was found at 1975 (probably a coincidence) and the intersection showed a fine body of high grade ore exactly like the Congress, which had been the hope. As it turned out, however, the little stope produced only about $30,000.00 as the strength of the ore made to the east and was cut off by the big fault. This threw us back again onto the lower grade Niagara for our ore supply.

I am inclined to think now that we missed a very good bet by not going deeper in No. 5, as the line of intersection must have dipped to the northwest and was therefore very close below our lowest workings. Finding the Niagara in the hanging wall of the dike on the 2050 and above, to the west, proves this. The conditions below the 2050 are apparently going to duplicate those in the Congress almost exactly -- that is, -- the intersection of the planes of two veins (or rather a vein and a dike) the valley of the intersection dipping to the northwest. That the intersection is very favorable for deposition is well established by the ore found at the shaft.

The existence of the big fault and the fact that in several cases ore was cut off by it naturally suggests

the possibility of finding ore on the other side comparable in size to that on the west side. The work done with that in view was not successful, but on the other hand we were never able to definitely determine the relative displacement of the two sides and therefore just where the ore should be if it exists.

My recollection is that on the 3125 and 3200 levels (and perhaps on the 2750) in No. 3 Shaft we found something east of the fault that looked like the Congress dike, and the appearance of the workings on the blue print seems to bear this out, but the exact position of the fault is not marked on the map. If this is so, it indicated a vastly less throw down there than at the surface."

In 1917 the Congress Mine was examined by Edward W. Brooks, a Geologist of Los Angeles, who concluded that the veins were of what he termed the "pegmatite type" and that the gold was almost entirely associated with the arsenical pyrites. He considered that the mine had probably been worked out of pay ore (at old price of gold) down to the limits of the workings, with one very important exception. Brooks stated that the length of both the Congress and Niagara veins was 3500 feet within the property lines which rpobably represented their extreme limit of the pay ore but he refers to an "upper or spur vein" which has a length of from 1000 to 1500 feet within the limits of the claims. He states that all of the ore shoots pitch to the north in all the veins.

Brooks then went on to recommend that future develpp-ment should be undertaken from the #3 Shaft and concentrated on the exploration of the Congress vein below the 1250 feet level and the Spur vein from the surface down to the 2700 ft. level of #3 incline shaft which he claims left the Congress Vein at 1250 feet level and later picked up the Spur vein at a depth of 2700 feet from which point to the surface he reasoned that the Spur vein was still virgin ground and that a similar condition should maintain below the 2700 feet level in the Congress vein. His recommendations were based on the belief that the vein encountered by the Shaft at 2700' must have been the Spur and not the Congress because it came into the shaft from above and not from below. Brooks calculated that the unworked segments of these two veins should contain some 300,000 tons of ore (allowing an average width of 3 feet) and that this ore should have an average value of about 0.6 oz. gold per ton, based upon the core of a drill hole which cut the vein. He figured the cost of definitely proving or disproving his theory would at that time have been only about $10,000, although this figure should probably be more than doubled at present, when under-ground conditions have deteriorated for the past 25 years.

I have discussed this theory with Staunton and other engineers who were familiar with the old mine and they admit that it is a possibility but for various reasons consider that it is not a probability.

In the event that the mine should be reopened and pumped out to the 2700 foot level in #3 Shaft this matter should be carefully reconsidered and meantime some further study should be made of the surface conditions of the Spur vein and a further search for the record of the drill hole to which Brooks refers in his report, but of which Staunton and others have no knowledge whatever.

In one of Staunton's most recent letters to me he made the following comment which he later conformed during a long verbal discussion of the entire problem.

> "My feeling about the Congress Mine is something like this, -- that it is impossible to determine the existence of any considerable amount of ore of a definite value without the expenditure of money for reopening to permit examination and sampling, and that the wisdom of such expenditure will depend upon weighing such general evidence as exists in the way of history, study of geological conditions and giving considerable weight to the probability that other large ore lenses will be discovered by systematic further exploration in ground that has proved already so productive. In other words, that it is a very good mining gamble, -- much better in fact than many in which we see money being risked."

On pages 6 to 9 of this report I have already quoted Staunton's description of the geology and ore occurrence and his advice that a careful study of the entire structure should be made in order to determine a broad plan of exploration although I think that he meant to say that the new shaft should cut the Niagara and not the Congress vein at greater depth.

The fact that all of Staunton's opinions are very conservative may be gathered from his estimates regarding the mine dumps which he repeatedly represented as being probably too low grade to have any commercial value even under present conditions. His estimate was based on the belief that the percentage of waste rock in these dumps greatly exceeded that of low grade or and while he would never go on record as giving them an average value he told me verbally that he did not think that any large quantity of $1.50 rock could be sorted out from them whereas the recent operators have actually treated over 100,000 tons that averaged better than $3.00 per ton.

While I do not pretend to have attempted to make any thorough geological study of this property, I have noted that there is certainly some attractive and largely unexplored ground between the workings from #1 Shaft and the Queen of the Hills in which several engineers once familiar with the mine believe that new ore might be developed. Since it was not possible to get below the present water level I could form no personal

personal opinion regarding the possiblities for ore at depth in the Niagara Vein, nor concerning the theory of Brooks, although both seem to be worthy of inventigation.

However from making a careful study of the maps and noting the conditions in such portions of the workings as could be visited I am convinced that only a part of the mineralized zone has been prospected and since there is no mechanical or geological reason why the pay ore should have been confined within the limits of the past development, I definitely feel that further exploratory work is amply justified and has an excellent chance of proving successful.

In connection with the exploration of the property I have given careful consideration to the possibility of applying geophysical methods, but up to the present I cannot see that any type of geophysical procedure would be likely to yield results commensurate with the expense. It is very doubtful that geophysical surveys could indicate the course of the veins or locate them beyond the faults and obviously they could not possibly be expected to distinguish between the shoots of pay ore and the barren or low grade sections of the veins, since the percentage of sulphide is at best minute.

On the other hand, I feel that most important information might be obtained from a carefully planned program of

diamond drilling where vertical holes or holes put down at right angle to the dip of the formation and veins would probably yield excellent cores and cut thru the line of both the Congress and Niagara veins.

Considering that the average dip of the Congress vein is only about 25° the deepest workings in the mine, at an inclined depth of 4000', are only 1700 vertically below the surface and there are many points above that level in which ore shoots may well occur in both the Congress and Niagara Veins while large sections of the branch or spur veins are so far wholly unexplored even close to the surface.

Across the Bellick and Queen of the Hills Claim and extending over onto the MacDonald Claims to the west there is a wide mineralized dike which is reported to carry gold value of 0.1 oz. or better along the surface. If these values can be substantiated a very large tonnage of ore susceptible to cheap mining methods might be proved by drills at comparatively small expense and an option on the MacDonald ground could probably be obtained for a small consideration.

Insofar as I can learn no systematic drilling has ever been done on the property and therefore, following and based upon a detailed study of the geology and mapping of the veins on the surface and in the accessible underground workings, such drilling would in my opinion be most valuable and is very definitely recommended in case the property should be acquired.

METALLURGY OF ORE AND RESULTS OF MILLING

The methods by which the old company treated the ore and retreated the mill tailings have been partially described on page 10 of this report. However, it should be emphasized that the gold in the Congress ore is often so finely divided as to be unvisible to the naked eye and it is usually intimately associated with iron sulphide and arsenical iron sulphide so that frequently not more than 50% could be recovered by amalgamation.

The original mill at Congress crushed the ore with stamps thru ten mesh screens and used tables and Frue Vanners to make a concentrate, but the tailings ran 0.25 oz. per ton.

In order to reduce this heavy loss a new procedure was adopted in 1894 involving roasting the table and vanner tailings which were then cyanided and the records of these operations indicate that with the run-of-mine ore averaging about 0.65 oz. gold, the tailings after concentration, roasting and cyaniding ran 0.063 oz. per ton which last figure checks well with the result of subsequent samplings of the tailings dump.

However it appears that the roasting of the tailings was only partial and the iron was mostly left as a magnetic oxide.

The old mill operated from 1894 to 1901 with 40 stamps treating about 100 tons per day and from 1901 to 1911 with 80 stamps

which normally treated about double that tonnage, although this rate was not continuously maintained.

The cyanide mill of the Congress Mining Corporation designed and erected to retreat the tailings pile started operating about June 1, 1938. Operations during the first year gave very poor results and showed a heavy operating loss largely due to the difficulty of settling the slimes for which an insufficient settling area had been provided. To improve this situation, and increase the tonnage, Liddell decided to mix the dump ore with the old tailings and started to do so toward the close of 1939.

This procedure improved both the tonnage and recovery of values, while the grade of the dumps proved to be even better than indicated by the samples and on the average these dumps had a considerably higher value than the tailings.

I was unable to obtain any statement of production for 1938 and 1939, or detailed records of mill operations prior to February, 1940, but those for the next 25 months were found in the assay office (also for one month which could not be identified). These I carefully examined and approximated the results in cases where no total or average figures were given.

From these records it appeared that the grade of the monthly feed varied from $2.15 to over $4.00 gold, but averaged

over $3.00. The daily variations were much greater running from $1.50 to over $6.00 and apparently little or no effort was made to even up the grade. The recovery of gold varied from 57 to 83% but averaged close to 67% or a little less. Therefore, on the average about $2.00 was recovered in gold per ton of feed and some 10¢ in silver, this last being 50% of the silver content. It seems safe to say that the total recovered net value was over $2.00 per ton.

During the 26 months covered by the said records 203,275 tons of tailings and dumps were treated, or nearly 8,000 tons per month.

After the beginning of 1940, when the new program of operations had been well established, the management aimed to mill about an equal tonnage of dump ore and tailings, but conditions often upset this program. During 1940 37,913 tons of dump rock and 51,576 tons of tailings were milled with a total recovery in gold and silver of $181,629.50, equal to $2.03 per ton.

During 1941 the mill treated 47,858 tons of dump rock and 50,066 tons of tailings making a total of 97,924 tons and the recovered value including values recovered from 1854 tons of ore from the leasors was $253,562.93, equal to almost $2.60 per ton. In 1942, during 5.3 months of operations 20,229 tons of tailings and 20,858 tons of dump rock plus 500 tons of ore from leasers were milled with recovery of $103,000 equal to $2.575 per ton.

Many test runs made in the Congress Mill and laboratory as well as tests made by other parties have pretty conclusively shown that since nearly all of the old mill tailings had already been cyanided before 1911 the maximum economic recovery of their remaining values cannot be expected to exceed 70%. This figure was usually attained whenever the mechanical condition of the present mill was good and operations were continuous, but because of inferior equipment and inefficient labor such conditions rarely lasted over a long period.

The regular treatment involved regrinding to nearly 100 mesh. Finer grinding or longer contact with the cyanide solution were found to somewhat improve the recovery but not to a degree commensurate with the extra expense. During the last operations, the average consumption of cyanide seems to have been around 1.6# per ton and of lime 1.9#.

In regard to treating the remaining tailings I believe that it will be best to follow the regular counter-current cyanide practice, or the modified Chapman process if that proves to be superior, but I feel that it would be imprudent to estimate a recovery of better than 70% of the gold and silver values.

The treatment of the dump rock presents a different problem and in this connection it should be mentioned that the dumps from the Congress vein contain much gouge or selvage material as well

as diorite dike-rock whereas those from the Niagara Vein are composed almost entirely of granite, traversed by veins and stringers of quartz.

Repeated tasts by the Congress Mining Corporation and by independent metallurgists have shown that while straight cyaniding will only economically recover about 70% of values from the Congress Vein dumps and somewhat more from the Niagara Vein dumps, the treatment of this material by a combination of flotation and cyaniding the unroasted tailings increases the total recovery by very nearly 20%. One set of individual tests made on the same samples from each of the five principal dumps gave an average gold recovery by cyanide alone of 68.8% while 88.5% was recovered by flotation and cyanide.

Percy Ramsden who was mill superintendent from October 1938 and general superintendent of operations from September 1941 and who was responsible for most of the testing, is of the opinion that the best method of treating the dumps (also the mine fills) will be to grind and float all of this material and then to cyanide the flotation tailings. He also advocates roasting and then cyaniding the flotation concentrates and by this procedure he is confident that an overall recovery of better than 90% of the gold value in the dumps and fills can be obtained and that the extra saving will far more than balance the increase in operating costs over those involved in straight cyaniding.

Ramsden also claims that by reconditioning some of the equipment in the present mill it should be possible to steadily treat 300 tons per day of evenly mixed dumps and trailings and that by increasing only the crushing and grinding capacity of the mill it can be made to treat up to 500 tons of mine dumps and gob after the tailings are exhausted; since the dumps and gob require a lesser tank capacity and settling area than the tailings. This last tonnage estimate I consider exaggerated.

As to the recovery of the small amount of silver contained in the tailings, dumps and fills (averaging not over 0.4 oz. per ton) it has never seemed worth while to make any extensive tests and while it is probable that some improvement could be made by the combination method I am leaving this at 50%, but since there are excellent grounds for believing that an estimated recovery of at least 85% of both gold and silver values can be made from the dumps and gobs, I set this down as a conservative estimate.

As to the treatment of such ore as may be taken from the mine the records of later operations of the old company are confused by the fact that they were retreating the tailings from the former operations as well as newly mined ore and while these seem to show a recovery of over 90% after roasting, it is probable that the returns from the ore alone would not have exceeded 85% or perhaps somewhat less.

All this milling was done at a time when the cyanide process was not nearly so well developed as at present and before modern flotation methods had come into general use anywhere.

While it would be necessary to conduct extensive tests on milling the crude ore before any authoritative estimate can be made, the character of the ore, -- except for its higher value and lesser oxidation, -- is entirely similar to that of the dumps and gobs and I think it will be safe to assume that a recovery of at least 85% of the values could be effected by roasting and cyaniding the roasted material with very good chances that it will prove more economical to first float the crushed ore and then cyanide the tailings without roasting. The flotation concentrates can either be roasted and cyanided or shipped direct to a smelter. By such procedure there is a good reason to expect that when treating newly mined ore an over-all recovery of at least 90% can be obtained.

MINES IN THE VICINITY OF CONGRESS

Since all other gold mines in the vicinity could very probably be acquired thru purchase or operated under lease by any company working at Congress and since, in any event, their ore should logically

be treated in the Congress Mill I have tried to gather as much information concerning them as was readily obtainable without attempting to make any personal examinations which did not seem to be justified at present. The gist of my findings is set forth below:

Sullivan Mine (See Exhibit A and Exhibit F).

This property adjoins the Congress Claims on the West, and is by far the most important property in the district aside from the Congress itself.

The patented claims which are outlined in red on the map are as follows:

Alaska - on which the shaft is located

Jersey

Sunset

Rose Gold

Annex

Philadelphia

Boston

Chicago

Merit

The Sullivan is a dike-vein in granite similar to the Congress Vein to which it is roughly parallel and the width varies from 4' to 8' and should average 5'.

The property was mainly developed and operated by the United Gold Mines Company and a production was made from 1910 to 1912 amounting to 10,206 tons which averaged $15.27 (at old price of gold) of which 80.3% was recovered by amalgamation in a stamp mill. Apparently this company was subsequently dissolved and the mine reverted to the original owner, Sullivan, and is now owned by the estate of his widow who recently died in Phoenix.

E. N. Beach who resides at the Mine has held a bond and lease on the property for many years and has made a number of attempts to interest capital in taking it over. He has in his possession a lengthy report by M. S. MacCarthy, Mining Engineer of Denver who estimates that there are 25,000 tons of mine fills with an average gold content of 0.25 oz. gold, all above the 850' level.

Only a small section of the vein has so far been developed, but partial exploration by drills has shown ore beyond these limits and extending downward to a depth of 1500' along the dip of the vein and MacCarthy estimates that this work has indicated 665,000 tons of additional possible ore to which he assigns an average content of 0.7525 oz. per ton.

I am inclined to believe that all of MacCarthy's estimates of value are exaggerated except in respect to the gob some of which was subsequently sampled by others and reported to average 0.30 oz. per ton.

As to the ore in place the United Verde Copper Company in 1927 appropriated $20,000 to clean out, recondition and sample this mine, and although I have so far not been able to secure a copy of this report I have been informed that they did not believe that the average value would exceed 0.5 oz. A similar average had been figured by an engineer named Bartholemew who sampled portions of the mine before it closed down in 1911, and an average value of 0.4 oz. was given me by Wm. Goeglein who has taken a great many samples above the 600' level at intervals during the past few years.

The assay map attached as Exhibit F was prepared by the Engineers of the Marsden Co. (Phillipine Gold operators) who sampled down to the 600' level in about 1937 and this would also seem to indicate an average value of about 0.5 oz. say $17.50 per ton at present price of gold.

To sum up the available evidence it seems probable that there are 25,000 tons of gob which will average $7.00 or more, probably $8.00 per ton and that 25,000 tons of developed ore will average at least $15.00 while the large tonnage of possible ore may be tentatively assumed to have a similar value.

This property would unquestionably be a valuable adjunct to the Congress property and although Beach has always had an exalted idea of its value I believe that a favorable deal could be made

with the executors of the Sullivan Estate especially now that gold mines are far from being in demand and therefore, if the Congress Mine should be acquired or seem likely to be acquired, I recommend that a deal for this mine should be given prompt attention.

The mine is kept unwatered down to the 600' level and could be partially examined and sampled. Both the mine and mill equipment are mostly obsolete and of little value, but the main shaft is in fairly good condition. The silver content in the Sullivan ore is reported to be higher than in the Congress, but I could obtain very little data on that point and include the silver in my estimates of value given above.

The Herskowitz Mine (See Exhibit A) comprising only the Los Senate patented claim adjoining the Congress Claims Why Not, Incline and Golden Tread is in a very badly faulted section of the formation and the ore shoots while quite rich are small and pockety. The owner (Wm. Herskowitz) has worked this mine on a very small scale and at intervals for many years and could probably be expected to make occasional shipments to the Congress Mill, but it seems to hold no promise of ever becoming a substantial producer.

The Golden Key or MacDonald Mine (See Exhibit A), comprises the following patented and unpatented claims of which the Emma seems to be in conflict with the Highland Claim of the Congress Company.

Los Senate #2

Surprise

Emma

Key

Anna

Valley

Rosa Lee

Amelie

Rose Quartz & Rose Quartz #2 and #3

This property has possibilities since it contains the western extension of the Niagara Vein in which a shaft has been sunk on the Los Senate #3 Claim close to the end line of the Why Not Claim of the Congress Group and this shaft is connected underground with the #6 Shaft of the Congress Mine.

Here a small tonnage of good grade ore has been mined at intervals. The ore seems to pinch out in depth and an engineer who recently examined the mine could not figure the reserves at more than 5,000 tons which would average $12 to $15.00, but additional development work seemed to be justified.

The present lessee of this mine, -- Claude Findley of Wickenburg, has put in a small mining plant and a 25 ton flotation mill which made a good recovery of values. He hopes to resume operations

after the War, if capital can be secured, but these claims should logically be absorbed by any company operating the Congress if this can be done at a reasonable cost.

The Alvarado Mine 4 miles from Congress or 6 miles by road, has been very profitably operated during the past few years, but the better grade ore seems to have been mined out since I am told that the mill heads had gone down to an average of $5.25 per ton before the work was stopped and the equipment and mill are now largely dismantled.

Some ore may still be left which could be taken out by leasers and shipped to Congress for treatment on a custom basis, but otherwise the property does not appear to have any value.

The Yarnell Mine 10 miles by road from Congress is an old property that once produced considerable high grade ore, and it has been reopened and worked during the past four years with a small profit to the operators who have a fair mining and milling plant, and talk of resuming work after the war. My personal examination of portions of this mine and information obtained from others lead me to think that it may still contain a substantial tonnage of low grade ore carrying perhaps 0.2 to 0.3 oz. gold especially in what is known as the "South Shoot", but the present condition of the property does not permit any definite statements and in any event it seems likely that it will continue

to be worked by the present owners or otherwise prove to be too low grade to be of interest to the Congress project.

In the vicinity of the Yarnell is the Klondyke which is a small shoot of ore in a fault gouge suitable only for work by leasers and the Comet which is merely a prospect. Also the Rincon where there is a small dump of fairly good ore from old operations, but little information can be secured concerning the underground conditions.

In connection with the above mentioned mines I had a very interesting talk with Mr. Staunton who is of the opinion that the Congress geological formation and ore bearing zone probably extend east to Yarnell Hill and that the Alvarado Mine (in his day known as the Planet Saturn) really represents this extension since he found that both properties had many similar characteristics and that their outcrops were pretty well in line making due allowance for elevation.

The Yarnell Vein is far in the hanging wall and would seem to have no relation to the Congress formation.

According to this theory the area between the Alvarado and the Congress outcrops, representing a length of some 4 miles, might seem to be favorable territory for exploration, but it must have been extensively prospected and no other mines or even promising prospects have ever been found while the surface according to my

casual inspection shows nothing but very barren looking granite.

WATER SUPPLY

(See Exhibits G, H, and I).

In planning for any future operations at the Congress Mine it is obvious that an adequate water supply must be assured and this should not be less than 200,000 gals. per day, preferably a much larger quantity. Since the mine water is fouled with arsenic and other injurious chemicals and the inflow does not exceed 8,000 gals. per day, the mine should be entirely eliminated from consideration. The flow of water in Martinez Creek, as recorded from 1894 to 1910, averaged over 30,000 gals. per day, but in dry years it sometimes fell off to a minimum of 20,000 and in all future programs it should not be counted on for more than this quantity and thus can only be considred as an auxiliary supply. The main source of water must be sought in Date Creek and its branches which drain the only substantial catchment area in this section.

The old company obtained its original supply by digging a well on the Niagara Patented Millsite along Martinez Creek and connecting this with the mill by afour-inch pipe line 6644' in length and passing over a divide which involved a lift of 453'. The elevation on the divide is 3606' while the water stands 30' below the collar of the well

which has an elevation of 3183'. Attached as Exhibit G is a plat of the millsite and as Exhibit H, a profile survey of the pipe lines both of which I had made in 1935.

The old Company records show that the cost of water from 1894 to 1901 &using only the Martinez Well and the small supply from the mine) averaged 19¢ per ton of ore treated in the mill. This seems very high since it appeared from the records that at that time they only used about 200 gals. of water per ton of ore, but later on a figure of 300 gals. per ton is given.

The Martinez well was again in service during the past few years and an electric driven pump with 15 h.p. motor is in place, the power line being connected with the Diesel Plant that was installed at the mill by the Congress Mining Corporation. The 4" pipe line appears to be in good shape and this equipment is now used at intervals to supply domestic water for the mine camp and to keep filled the tanks in the mill.

In 1901, when the mill was enlarged from 40 to 80 stamps, the supply from this Martinez well proved insufficient and the Congress Company then purchased the O'Neil Ranch on Date Creek (See Exhibit I) and there sank a shallow well from which water was pumped through a 4" spiral rivetted pipe line 8 miles in length to the Martinez well. The Company did not retain its title to the O'Neil Ranch and this pipe line was removed prior to 1930.

Since the O'Neil Ranch had passed into other hands the Congress Mining Corporation obtained in 1938 the use of the so-called Mendotte well (formerly known as the Howard Well) which is located on the north fork of Date Creek and they installed a 4" pipe line some 7 miles in length which first had led to the Santa Fe Railway about 1200' distant and then down along the right of way to the Martinez Well. The Congress Corporation paid Noel Mendotte $30.000 per month rental for each month during any part of which they used his water and $10.00 per month when none of the water was used. The water is of excellent quality and suitable for both milling and domestic purposes.

After the mill closed down in June of 1942 this agreement was allowed to expire and the pipe line was removed and since then Mendotte has sold his ranch to Holmes.

This well is merely a shaft 5' x 5' inside the timbers, its depth is only 18', with water standing less than 2' deep and sand filling in wherever an attempt is made to deepen it. At times the Congress Corporation are said to have pumped a total of 100,000 gals. per day and apparently the water in the Mendotte Well was never drained out during these operations. The well has a good pump house with concrete walls and floor in the basement and frame and corrugated iron structures above, size 20' x 12' and a little pump now works there

to supply water for cattle but the Congress Company pump has been removed. There is an oil tank and a small water tank, also a dwelling cabin for the pump man. The pipe line which formerly ran directly to the railway and then down the right of way for nearly 7 miles to Martinez Well, did not run by gravity although the lift must have been less than 100'.

One mile southwest of the Mondotte Well is located Holmes "Deuce of Diamonds" Ranch (formerly the Olzer Ranch) right beside the Hillside road. On this ranch there is only a small well used for cattle and domestic purposes. Date Creek flows southwest at the Mendotte Well then turns west to Junction with Cottonwood (or Willow)Creek about 2-1/2 miles below the Mendotte Well and continues west to the Santa Maria River some 30 miles below the junction with Cottonwood.

Holmes also owns the old Walker Ranch on Date Creek below the "Deuce of Diamonds" and he joins the O.X. Ranch of Cecil Billingsley about one quarter of a mile above the junction of Date and Cottonwood Creek just 500' below which was located the old Congress Well on what was then known as the O'Neil Ranch.

The Santa Fe R.R. have a pumping plant at a point designated "Mile Post 110", which is really on Cottonwood Wash. Here they have driven a well 450' deep equipped with a pump of over 200 gals. per

minute capacity and they pump into one steel tank 60' high and two smaller wooden tanks thus providing for a storage of over 200,000 gallons. The steel tank is set some distance above the railway track and it appears that water from this tank would run by gravity all the way to the Martinez Well at "Mile Post 119" thus making it unnecessary to connect the well pump directly into the pipe line. Total length of a pipe line between those wells would be about 50,000 feet.

By obtaining water from this well one would avoid the expense of purchasing a site add putting in a new well and pumping plant, but while the Santa Fe will sell their excess water they are not at all anxious to make an agreement of this nature and the quantity of such water is somewhat in doubt and would probably prove insufficient for the needs of the Congress Mill.

The old Congress mill site seems to be by far the most logical place to seek an ample water supply for any large scale operations at the Congress Mine. At this point one would be assured of much more water than at any of the other locations mentioned since here the combined flow of Date and Cottonwood Creeks would be available. In each of these creeks the surface flow appears to be nearly 100 gals. per minute in addition to which there is a much larger underflow through the sand. At the junction Cottonwood Creek runs S 30° E and Date Creek runs S 60° W which is the course that it continues to follow until some two miles

lower down it was formerly joined by a flow of say 150 gals. per min. which comes from a spring and is now directed to form the lake on the Billingsley Ranch that supplies irrigation for quite an acreage.

At the old Congress well site the basalt cliffs on both sides rise up nearly 50' and here a dam could be built to hold a large storage of water. The width of such a dam would not be much over 150' at the top. A pipe line from this well or dam could best follow along the route of the old pipe line route up along Date Crcek to the railway right of way involving a lift of less than 100' and from there the water would run by gravity to the Martinez Well, a total distance of just about 8 miles. (See Exhibit I).

From observation of actual conditions and a study of the topography, I greatly doubt that either the Mendotte Well on Date Creek or the Santa Fe Well on Cottonwood could stand continuous pumping of 200,000 gallons per day whereas it seems reasonably certain that 300,000 or more could positively be secured from the site of the old Congress Well although at a somewhat greater cost for installation.

In this connection it should be noted that for most of the distance between the old Congress Well and the Santa Fe right of way (about 2.5 miles) the pipe line would have to be laid over land

belonging to Holmes who should be willing to grant an easement for this purpose at a reasonable figure and a similar easement would have to be obtained from the Railway Company for the 5.5 mile line along their right of way which would be similar to the arrangement that they had with the old Congress Company and recently with the Congress Mining Corporation and would call for only a nominal payment.

As a result of personal conferences with Cecil Billingsley and his Attorney, J. H. Moeur of Phoenix, it seems quite certain that Billingsley will be agreeable to granting a 20 or 25 year lease on the old Congress Well Site and the water rights which go with it. There is some legal doubt as to whether Billingsley could dispose of all of the water which now flows at the well site, but since it does not appear that any of the ranches located further down the creek are using this water for irrigation the flow that would be required by the other users would be comparatively small.

A rental price of $30.00 per month (based on the Mendotte Agreement) seemed too low to Mr. Moeur who however suggested that the operator of the Congress Mine might acquire the patented ranch land (some 300 acres) now owned by Holes and his State grazing leases over a much larger area in which event

Billingsley would be very glad to trade his water for grazing rights with such extra rental payment as the grazing rights were worth.

Since Holmes on his part appears to be rather anxious to sell his ranch holdings, this plan may provide the best solution of the entire problem, always assuming that Holmes will be reasonable, because one would thus acquire the right to lay the pipe line from the old Congress Well across the Holmes Ranch and would also obtain the use of the Mendotte Well which might prove very useful in the future.

It thus appears reasonably certain that an ample water supply can be obtained at a moderate cost, except for the long pipe line and perhaps the purchase of ranch land. Preferably this water should all be pumped from the old Congress Well but if necessary an additional supply can be drawn from the Santa Fe Well and also from the Mendotte Well from which the pipe line could be connected into the line from the Santa Fe Well as it passed down along the Railway right of way. The amount of water which is available from these last two sources would pretty surely exceed 200,000 gals. per day and it is quite certain that the Santa Fe would turn over their excess supply at a very reasonable figure and highly probable that Holmes would follow a similar procedure, or dispose of his entire ranch holdings with all their water rights on terms which might be found satisfactory.

The water available from all three sources will amount to over 400,000 gallons unless the legal complication above mentioned would cut down the quantity that Billingsley could sell and this last point can be more thoroughly investigated whenever a definite policy is decided on regarding the entire Congress project.

CONCLUSION AND RECOMMENDATION

In the tabulations which immediately follow this section of the report, I have tried to give an approximate estimate of the capital investment which would probably be required to acquire, develop, equip and operate the Congress Mine and the probable costs of operation and returns from the treatment of various classes of gold bearing materials.

All of my estimates are based on the assumption that gold will remain at a value of $35.00 per ounce and that costs of labor and commodities will return to approximately the pre-war levels.

Such an assumption or any similar assumption is of course merely a speculation and to me personally it seems much more probable that prices will continue to be inflated for a number of years but in that event I also believe that the priceof gold will be advanced since there are many good reasons why the leading nations of the world could not afford to have its value debased to a point

where the accumulated stocks of that metal would lose a substantial proportion of their real or trade value and where the future production of gold would become unprofitable.

Therefore, while the actual figures given in my estimates may well prove to be much out of line I believe that costs and returns should maintain a similar ratio and that is the vitally important point of the project.

Looking at the Congress proposition as one would view an ordinary mining project I have classed the tailings and dumps as "positive ore" aggregating 400,000 tons with an average value closely approaching $3.00 per ton.

If it were intended to confine the future operations to the treatment of this material it would doubtless be the best policy to keep the present plant and equipment intact and, when resumption of active operations become possible, to make the necessary repairs and additions including a flotation plant for treating the dumps and to obtain a moderate additional water supply which might come from the Santa Fe Well or from the Mendotte Well now owned by Holmes.

Assuming that the property and equipment could be secured for about $110,000, this program would call for a total cash investment of about $160,000 and operating at the rate of 300

tons per day the tailings and dumps should be treated in about four years yielding an operating profit in the order of $400,000 including the profit which can reasonably be anticipated from treatment of custom ore and ore produced by leasers and the salvage value of the plant and equipment. Such operations might thus be expected to leave a net profit of say $200,000 after deducting the capital investment or more probably less than $180,000 after payment of income tax.

Considering the elements of risk which are involved in any mining enterprise the expected profit from the treatment of the positive ore is insufficient to make the venture attractive, but in this case it serves to eliminate nearly all of the risk excepting that which depends upon the price of gold, --since treatment of these dumps and tailings should insure the return of previous investments even if all further investigation and exploration should prove to be entirely disappointing.

In the category of "probable ore" I place the mine fills and a certain amount of low grade ore left by the former operators. The tonnage and grade of both of these classes of material has been fully discussed in the body of this report as far as these can be ascertained at present and more definite information can only be secured by further investigation.

Should these investigations confirm the existing probabilities the additional quantity of ore which could then be classed as positive or highly probable should amount to from 800,000 to 1,000,000 tons with an average grade approaching $6.00 and since the larger percentage of this material would consist of the already broken gob the mining costs would be relatively low. Because of these probabilities and the possibilities mentioned below I advise the continuance of negotiations for the purchase of the property and necessary water rights.

In order to convert probabilities into certainties I should next recommend a fairly thorough examination of all of the now accessible portions of the workings in which the gob or low grade ore can be measured and sampled and, since this area is comparatively small the expense of this procedure should not exceed $9,000 or $10,000, but at the same time a careful study of the geology and subsequent campaign of diamond drilling might yield most important results and the cost of this latter work may likely run to $35,000.

Should this investigation and exploration definitely prove or indicate pay values in a large tonnage of gob or ore then, or while it is in progress, the present mill and equipment could best be scrapped and plans drawn up for the construction of a new

mill of either 500 or 1000 tons daily capacity. The treatment of the larger tonnage will have the advantage of decreasing the unit costs and period of operation and thus substantially increasing the final returns and profits from the venture.

In the light of information which I have obtained to date, I do not believe that the tonnage of tailings and dumps can deviate to any great extent from the estimate while the grade and percentage of recovery of values seems to have been pretty definitely established by past sampling and tests and especially by the records of recent milling.

The future working costs I have tried to conservatively approximate, except as they will vary in accordance with the relative value of gold.

The weight of existing evidence, while it is by no means conclusive, strongly favors the presumption that the mine fills and much low grade ore can be reclaimed and treated with a fair margin of profit while indications seem to point to an equally strong probability that comprehensive exploration will serve to develop new ore in the Congress Mine and also in the Sullivan and perhaps the MacDonald property.

It is particularly these last considerations which

make the venture attractive for while the future possibilities of the mine are still too nebulous to justify any figures, I think that there are reasons for believing that upwards of half a million tons of additional ore may be developed and even if the average value should be only $11.00 or half as good as the ore that was mined in the past, a net profit of over $3.50 per ton should easily be earned from its exploitation.

If the property is to be acquired at all, it should preferably be done in the near future even though this will involve some risk in respect to the economic position of gold after the close of the war. However, the stake can be somewhat reduced through salvage of the equipment and supplies and large additional expenditures can and probably will have to be deferred until the future outlook can be more clearly forecast.

Attempting to fairly evaluate both favorable and unfavorable factors I have reached a firm conclusion that this presents an exceptionally favorable mining venture, and on that basis I strongly recommend that steps should be taken to acquire the property and to proceed as conditions permit with the program which I have outlined above.

Very truly yours,

(signed) G. M. Colvocoresses

EXHIBIT J

CONDENSED INVENTORY OF PRINCIPAL ITEMS OF CONCRESS STRUCTURED & EQUIPMENT

Ten frame dwellings including 3 tent houses and one small bunk house; also one house of hollow tile and concrete for superintendent. Nearly all houses are equipped with running water and several of them with baths and toilets.

General Office building of brick 70' x 58' with galvanized iron roof, storage attic and vault and nearly complete office equipment.

Mill building about 50' x 25' with second-story equipped with Merrill Crane Filter Press.

Accessory buildings:

2 change houses

2 warehouses

Scale house

Crusher house

Melting room

Filter room

Cyanide room

Lime room

Oil room

Cooling tower

Nearly all these buildings have wooden frames and corrugated iron sides and roof. Some steel pillars and trusses are in the larger buildings.

Ore bins at foot of belt conveyor and at ball mill.

Six belt conveyor structures, total length 420', pulleys, idlers, gears, tighteners, etc. almost complete; but belts have been removed.

Electrical equipment:

Motors, -- all 3 phase, 60 cycle.

1	100 h.p.
2	25 h.p.
3	20 h.p.
3	15 h.p.
3	10 h.p.
2	7.5 h.p.
5	5 h.p.
4	3 h.p.
7	3 h.p.
1	1 h.p.
1	0.75 h.p.
4	0.25 h.p.

Six transformers each 5 K.V.A.

One electric welding equipment

One trigger hoist

Switch Board Panel

Connection for Ball Mill conveyors and other equipment with switches, starters, etc.

Mill Equipment

1 Stearns Rogers Ball Mill 16' x 5' with gear and pinion.

1 Dorr Duplex Classifier 20'8" x 6"

Filter Press, Sperry & Co. Size 30

Shriver & Co. Size 36
with Republic Flow Meter.

Merrill-Crane, Classification and precipitation equipment

Allis-Chalmers Jaw Crusher

Grizzly and Trommel Screen

Bins, hoppers, chain blocks and hoists, water heater, grinder and platform scale.

12 large steel tanks, 4 redwood tanks for solution washing, etc.

5 large redwood leaching tanks with capacity from 20,000 to 50,000 gals.; all equipped with sand and solution pumps.

Telephone Line - Mine to Congress Junction, about 3 miles and Mine to Martinez Well 1-1/2 miles with 69 cedar poles.

Water Line - 4" iron pipe nearly 7000', Martinez well to Mill. Auxiliary water lines around camp.

Power House & Equipment

Building of wood and corrugated iron, about 40 x 40'

1 Caterpillar Diesel engine, 8 cylinder, V type
140 H.P. with 62.5 K.V.A. with exciter and generator.

1 Worthington Diesel engine, 6 cylinder
300 - 350 H.P. with 250 K.V.A. generator with exciter, fuel pump, switchboard, oil and water tanks, compressor unit and cooling tower.

Pumping Plant at Martinez Well

15 H.P. motor with belt drive and 6 x 8 Deane pump and for stand-by
1 Scandia hot head 18 H.P. Engine.

Power line from well to pump, pole transformers, priming tanks, etc.

Trucks

1 International 1927 1.5 ton stake body in poor condition
1 Dodge 1937 pick-up in very poor condition

Also some small equipment now under lease and option to other parties and some old equipment of value only as junk.
Mr. Rae has promised to give me a print of the mill buildings and tanks of which I will later forward copies.

Materials in warehouse including mechanical and electrical fittings, spare parts and operating supplies are not yet inventoried but I have looked over the partially completed lists which are going to be very lengthy. Rae places their sale value at between $5,000 and $10,000. I think that the lower figure is conservative.

SCHEDULE OF ANTICIPATED CAPITAL INVESTMENT

	Approximate amount	
Expenditures to be made promptly if acquisition of property is decided upon:		
Purchase mortgage & equity of R.F.C.	$ 86,000	
Purchase mortgage & equity of Congress Corp.	24,000	
	$ 110,000	
Less cash in Co. Treasury & sale of equipment including power plant not required for future operations	40,000	$70,000
Expenditures prior to resumption of operations:		
Caretaking expenses & carrying charges for period assumed to be 2 years	5,000	
Payment for option on water rights, etc.	1,000	
Sampling & measuring mine fills & low grade ore in accessible workings of mine	9,000	
Geological survey of property & diamond drilling	35,000	$50,000
Expenditures required for resumption of operations On assumption that results of above outlined Investigation & explorations are favorable:		
New Mill equipment, including cyanide crushing and flotation plant designed to treat 500 tons of ore per day.	$ 250,000	
Pumping plant and pipe line	35,000	
Surface equipment for reclaiming tailings and dumps	20,000	
Repairs and additions to camp bldgs. & equip.	12,000	
Power line from Ariz. Power Co. line at Alvarado Mine	8,000	$325,000
Capital Expense after resumption of operations:		
Reconditioning & equipment of #3 and #5 shafts for hoisting and #2 and #6 Shafts for escapeways and dewatering	$ 65,000	
General underground equipment	30,000	
Additional trans. facilities & surface equip. & pur. land for additional tailings dumps	20,000	
Increase mill to 1000 T daily cap. if justfiable	200,000	$315,000

NOTE RE CAPITAL EXPENDITURES

In respect to the proposed water supply I have assumed that this could be secured on a rental basis, with or without a small cash payment. If any ranch property is to be purchased an additional item should be included, but in that event a resale of the ranch should add to the salvage value of the property and equipment when operations are discontinued.

Should the results of the drilling or other exploratory work call for the sinking of new shafts or other extensive developments a considerable additional investment will be required, but it is assumed that this will only be made as dictated by good mining practice and will be returned from operating profits which cannot at present be visualized.

Additional expenditures may also be found desirable for the purchase of the Sullivan, MacDonald or other mining property but again it is assumed that such purchases will only be made in the event that the extra profits appear to justify the expense.

Because of the fact that gold mining activities are suspended for the duration of the war, it would seem reasonable that neither the R.F.C. nor the Congress Corporation should expect the payment of more than a small portion of the purchase price of the property until operations at the mine could be resumed.

ESTIMATE OF OPERATING COSTS & RETURNS ON BASIS OF 1941 VALUE OF DOLLAR

Positive ore Mill tailings	Recov'd. Value Per Ton	Reclaiming or Mining	Milling & Gen. & overhead	Total	Profit Per Ton	Total Profit
150,000 Tons @ $2.70 gross value per ton	1.90	$0.20	$1.00*	$1.20	$0.70	$105,000
Mine Dumps						
250,000 Tons @ $3.00 gross value per ton	2.55	0.20	1.35**	1.55	1.00	250,000
Probable ore						
Mine Fills						
700,000 Tons @ $5.00 gross value per ton	4.25	1.90	1.55	3.25	1.00	700,000
Pillars & Low grade ore						
200,000 Tons @ $8.00 gross value per ton	6.80	3.65	1.35	5.00	1.80	360,000
Possible ore						
200,000 Tons @ $11.00 gross value per ton (assumed from indications)	10.00	5.00	1.35	6.35	3.65	730,000
Profit from treating custom ore including Sullivan Mine						100,000
Salvage value of plant at close of operations						100,000
Total assumed, probable & indicated profit						$2,345,000
Less Capital Investment as per schedule						760,000
Total expected profit including income tax						$1,585,000

Operations on above basis expected to continue over period of at least five to six years on basis of treating 1000 tons per day.
*Grinding & cyaniding only; **Includes sorting, crushing, flotation & cyaniding; ***General & overhead expense estimated at 30¢ per Ton.

G. M. C.

NOTE RE OPERATING COSTS & RETURNS, ETC.

I believe that my estimates of working costs are all very liberal and in practice can be substantially reduced especially if the operations are conducted on a 1000 ton daily basis.

The estimated recovery of values may also be improved in treating the gobs and low grade ore, but of course there is still no assurance that the value of these will be as good as I have assumed.

The grade of the ore as actually mined if and when new ore is developed, will probably be determined as was the case in the former operations largely by the economic conditions which may prevail at that time.

POINTS RE BILLINGSLEY DEAL BROUGHT OUT IN CONFERENCE WITH MR. J. H. MOEUR - April 29, 1944

My skeleton letter to Billingsley of 4/28 sets forth our position and will constitute a starting point for subsequent negotiations.

Billingsley is still most desirous to secure the Holmes Ranch since he wants to build up a very substantial property to be operated by his three sons or at least two of them and he would like to take over the Holmes patented land and Federal and State leases except for the Deuce of Diamonds Ranch Buildings and about 100 acres in their immediate vicinity. He does not want to pay out any large amount of cash and therefore might prefer to either

(a) make the purchase on a contract with 10% of purchase price payable per annum and paying 4% interest on the unpaid balance or

(b) take a 10-year lease with option to purchase during that period and while leasing he would pay all taxes and Federal or State rentals and our use of the Date Creek water up to 40" to which we would be entitled might be considered as his rental payment for the Holmes Ranch.

Billingsley is himself anxious to secure some of the Date Creek water because while he is now irrigating and cultivating about 80 acres he has additional land, perhaps from 100 to 200 acres further down the Creek which he would like to put under irrigation and this would require probably 300 to 600 acre feet per annum from Date Creek. If he gave us the use of 720 acre feet (40") he could only count on the surplus, the amount of which is not known since the flow in Date Creek has never been measured.

Therefore Billingsley would not want to make a cash sale or rental of this water on a 50-year lease except for a very high figure, certainly not less than $25,000 plus the expense of putting in the dam and pipe line to his reservoir which might be another $10,000. On the other hand, if we should buy the Holmes Ranch for $50,000 we might be able to resell the buildings and a plot near them for $10,000 and the balance of the ranch to Billingsley for $25,000 and thus the water rights would cost us $15,000 plus the dam, etc. or a total of about $25,000.

Billingsley would buy the Holmes live-stock at a fair appraised value but not at Holmes or Brooks valuations.

Moeur thinks that Dr. Duke Gaskin may be in the market for the Holmes Ranch.

5/28/40

GOLDEN EAGLE AND CAROL-ANN GROUP

Eight unpatented claims located close to the Alvarado and surrounded by the Comet Group near the foot of Yarnell Hill.

Show quartz veins on surface and in shallow pits, veins 2-4' wide and samples give values in gold.

Gold Eagle Claim is believed to cover the extension of the Alvarado Vein and thus to constitute a promising prospect.

Practically no development except for location and assessment work.

Owned by W. S. Roberts, General Delivery, Congress, Arizona and his associates, C. H. Brown who claims to have had mining experience and once worked for Loring.

Would like to have me examine but have no money.

Note: West of Yarnell Heights Ted Shute (?) of Humboldt has a group of claims on which there were good gold values. Optioned in '38 to some Seattle people who subsequently dropped it.

G. M. C.

LESSEES

C. F. McLendon, Box H 1, Wickenburg wants to have a lease on the old stamp mill site where he thinks that he can make a clean-up (1/26 45)

Herskowitz.

NOTES RE CONGRESS

FROM CONFERENCE WITH W. M. SNOW - ON OCTOBER 19, 1943

The shaft which he sampled and of which I found a map was not on the Congress property but was part of a small mine lying north-west from Yarnell. Therefore this map is of no interest.

RE TAILINGS

Snow says that during the last operations every effort was made to reclaim the higher grade material and that whenever possible they dug right down to the bed rock in the central portion and then in some cases pulled the lower grade stuff back over the hole also they stopped digging whenever the grade seemed to be falling off and therefore altho the average grade of the treated tailings was $2.90 he does not believe that the average of the 150,000 tons which remain will prove to be nearly so good and would expect them to carry less than $1.50 so that he is doubtful if it would pay to reclaim them.

This statement does not agree with Rockwood or Ramsden and I think that Snow is pessimistic but very likely the remaining portion of the dump might yield a recovered value of only about $1.50 per ton in which case the profit in treating them would be only about $0.30 per ton unless they could be reclaimed and treated at a lower cost than the $1.20, which was estimated on page 104 of my report.

RE DUMPS

Snow confirms the statement that the grade of #1 and #5 Dumps had proved to be very good and thinks that the remaining rock will be quite as

good as estimated on page 48 of my report. He also thinks that the small tonnage left in #4, #6 and Queen of the Hills will be good but he does not speak well of #2 or #3 and thinks that in both cases they will run very low unless a large amount of waste is sorted out with corresponding increase in the working costs.

MINE FILLS

He crawled thru as many of the old workings as possible and took some samples but not many and he helped Carlisle to sample and thinks that work was very reliable as far as it went.

From all the data which he obtained it is his opinion that the gob will average at least $5.00 per ton in all of the accessible portions of the mine down to the 1500' level. This confirms my estimate. He has no basis for estimating the total tonnage, but Staunton's figure seemed reasonable. Snow says that he does not believe that Ramsden ever did any sampling in the mine as Ramsden was afraid to go underground except in a few places.

LOW GRADE ORE

Snow has but little information on this point but such samples as he took in the pillars were mostly disappointing except in the vicinity of #2 Shaft and #5 Shaft and in certain parts of the Queen of the Hills where he found ore running $10.00 and better.

He says that the workings in the Queen of the Hills are really much more extensive than shown in the map as there was a placard at the collar of a winze which shows that this penetrated to a depth of 1750' with numerous levels and altho he could only get down about 500' he is sure that a large tonnage of ore must have been mined here and probably the work was not

recorded in the data given by Staunton.

While there was some ore left in sections of the pay shoot and the gob carried good values much of the development work carried out in the Queen of the Hills was in a quartz vein which looked good to the eye but assayed very low and it was evident that the operators were disappointed with the results of much of their development although there still seem to be good possiblities in this section of the property.

METALLURGY OF ORE

Snow carried on many experiments on both dumps and gob material and his final conclusion was that these should be treated by flotation and the flotation concentrates roasted and cyanided. In this way he feels confident that 90% of the gold values will be recovered and he believes that the values left in the flotation tailings will be too low to justify cyaniding them either with or without roasting as was suggested in my report.

This statement does not seem to check with some of the data which I found in the laboratory from which it appeared that no such high recovery could be expected without some retreatment of the flotation tailings.

OUTSIDE MINES

Snow does not believe that the grade of ore in the Sullivan Mine will prove to be as good as represented and thinks that much of it will carry less than $5.00 per ton.

He knows of no other mines in the vicinity of Congress which would justify investigation except the Yarnell where he worked for several months after leaving Congress.

He says that this mine has been worked out down to the main adit level, but below that point he thinks that a very large body of $4.00 ore will be found in the foot wall of the vein, both in the south shoot and in the main shoot. This ore body may prove to have a length of 1500' and a width of 100' which would mean a tonnage of over 10,000 for every foot of depth and it could all be explored by diamond drills. The mining and milling cost should not exceed $2.00 and during the last operation the 50 ton cyanide mill at the mine was treating up to 75 tons per day with a recovery of 94% of the gold values. No work has recently been done near the Human Shaft and Snow knows about that section of the mine only from heresay.

He claims that working costs were very low even during this last small operation when he says that mining cost was $1.10 per ton and milling about the same, but I am inclined to doubt these figures. Practically no development work has been done below the main adit level and the owners are in no position to do this as they are a small group of railway men from Winslow and the Company, --Winslow Gold Mining Co., -

Mitchell, president owes about $20,000 (write to Co. for information and permission to examine and note data in mine file). Snow thinks that a favorable deal could be made and that the prospects fully justify the expense of carrying on the exploration under an option agreement.

GENERAL OPINION

Snow is not encouraging in respect to the values in the remaining mill tailings and dumps and he knows too little about the low grade ore left in the mine to express any worthwhile opinion.

He has obtained considerable data on the gob and his estimates confirm my own in that respect and he thinks that this gob is the most favorable and attractive feature of the proposition and makes it well worth while. He believes that the metallurgy can be fully solved and a 90% extraction of gold values made from the dumps and fills.

His opinion in respect to the Yarnell Mine merits consideration and should be checked by further investigation.

The Yarnell Mine is about 6 miles in air line distance from Congress and at an elevation of 5000' or 1540' higher than the Congress Mill.

A ropeway might be built going down along the slope near the highway and the length would probably be about 7 miles. It should operate by gravity.

Some water for Yarnell operations might be obtained from wells in Peoples Valley.

MEMO RE CONGRESS

October 29th, 1943

Should a general consideration of all of the data relative to the Congress Mine appear to make the acquisition of that property attractive, I suggest that subsequent procedure should be along the following lines.

(1) Negotiate a deal for the property with the R.F.C.

I believe that it might be possible to take over the physical possession of the property under a one or two year option agreement during which period we would pay all of the carrying charges and act as agent in selling off such equipment as could advantageously be disposed of. The proceeds from which would be credited against the purchase price of the property in the event that we decided to exercise the option and purchase the property.

Such cash payment would doubtless be required, but the amount is very indefinite. If the R.F.C. should insist that their equity in the Congress property should be purchased outright for the $85,000 due them then the sale of some of the present mill equipment should serve to substantially reduce the outlay and the present time would be opportune for such a sale in most cases, although the cyanide plant equipment, if sold at all, would probably have to go for use in a foreign country.

(2) Negotiate with Holmes and his associates for the equity of the Congress Mining Corporation in the property.

This equity would have no cash value whatever unless the Corporation is able and willing to redeem the property at a cost of over $85,000 and therefore the stockholders cannot expect to receive any substantial sum of money. However, it is important to secure the water rights which belong to the ranches now owned by Holmes and an easement for a pipe line across his property. Therefore it would seem best to combine the deal for the mining property with an option on the Holmes and Billingsley water rights. This last might involve the obtaining of an option to purchase all or a portion of the Holmes Ranches in that vicinity where his real property can be tentatively estimated to have a value of $25,000 to $35,000 but could almost surely be resold or leased on anvantageous terms.

INVESTMENT

A. Expenditures which will probably have to be made during war period.

The amount of them is very uncertain, but through the cooperation of Eagle-Picher Officials in Washington it is believed that the figure involved in securing options on the mine and water rights might be held down to perhaps $10,000 or $15,000.

In addition there will be the carrying charges, for say the next two years and such expense as may be deemed advisable for further investigation of the mine during that period. These charges might aggregate $15,000 to $20,000 less some revenue which could be derived from shipment of surface ores which are desired as convertor flux by the copper smelters plus a commission which might be allowed on sales of equipment.

The total of A. expenditures may thus be figured at from $25,000 to $35,000, assuming that the indicated options can be secured.

B. Payments required at end of war in order to secure title to mine and permanent water rights, --to be made only if economic cnnditions and outlook are then satisfactory.

Balance of purchase price of mine after crediting sales of equipment cash in Receivers' account and other reserves, say		$ 60,000
Geological investigation and diamond drilling, from	$ 10,000	35,000
Total B.	$ 70,000	$ 95,000

C. Capital expenditure required after close of war and completion of exploration program for reopening of mine and providing complete equipment including water supply and power lines for operations;--to be made only in the event that economic conditions are then satisfactory.

These will vary in accordance with the results of the exploration and development and if it is then deemed advisable to operate on the basis of 1000 tons per day the total expenditures will be in the order of $640,000 as noted on page 102 of my report of August 25th, 1943, but if the scale of operations is on the basis of 500 tons per day this figure will be reduced to about $435,000.

In addition an adequate working capital should be made available.

The totals of A. B. and C may therefore be from a maximum of $780,000 to a minimum of $550,000, plus the working capital.

Since the data in respect to the tonnage and values of the material which will be treated is still very incomplete the following table is submitted as representing the probable earnings.

Operating Profits on Presumption that Pre-war conditions are re-established

	Maximum	Minimum	Most Probable
Tailings, 150,000 tons	$150,000	$50,000	$105,000
Dumps 250,000 tons of which some might have to be left	300,000	100,000	250,000
Mine Fills-(more data required). 700,000 tons	1,000,000	200,000	700,000
Pillars and low grade ore (much more data required) 200,000 tons	500,000	100,000	360,000
Possible Ore (much more data required) 200,000	1,500,000	100,000	730,000
Custom Ore	200,000	30,000	100,000
Salvage Plant	150,000	50,000	100,000
	$3,800,000	$630,000	$2,345,000

In round figures an investment of some $760,000 should permit the treatment of 1,500,000 tons of tailings, dumps, gob and ore plus some custom ore and result in an operating return of $2,345,000 during a 5-year period. This would serve to repay the investment and leave a profit of $1,585,000 or say 200% on the investment from which the income taxes would have to be deducted. There are fair chances that the net profit might be increased to around $3,000,000 which would be over 400% on the investment, again

neglecting the income taxes.

On the other hand there is a chance that the operating profit might fall to a minimum of about$630,000 but in that event the total investment should not have exceeded $550,000 so that a small profit would still be realized.

The one great factor of uncertainty still lies in the relative economic position of gold after the war and if that situation can justifiably be viewed in a favorable light the project seems to be well worth while and to offer a favorable opportunity for a speculative investment.

Following is a brief resume of the history of the Congress Mine:

Mine sold by discoverer, Dennis May in 1887.

Operated with some breaks until end of 1910.

Produced 692,332 tons of ore with average 0.64 oz. gold and 1.00 oz. silver (worth over $23.00 per ton at present prices) and recovered $7,650,000 in bullion making recovered value of $11.81 per ton which would be equivalent to about $19.00 per ton at present prices of gold and silver. Profits are said to have been about $3,000,000.

Some tailings and dumps treated at intervals from 1910 to 1936 at which time tailingspile was estimated to contain 426,000 @ 0.067 oz. gold and 0.4 oz. silver. ($2.60 per ton). Dumps subsequently estimated to contain 400,000 tons with average value $3.84 per ton at

October 29th, 1944

NOTES REGARDING EAGLE-PICHER EXAMINATION OF PROPERTY

Started in October, 1944 by Hernon, Geologist, Kuhn, Geologist, Stone, Geologist and Mahoney, Practical Mine Foreman.

Samples taken from tailings pile with augur to bed-rock also large cut sample for testing purpose (some 15 tons) sent to Sahuarita Mill and general assay of this was 0.078 oz. although grab sample from top of truck only ran 0.045 oz. Other samples not yet assayed.

They have also taken some samples from the mine dumps and from fills and hanging wall diorite in the mine especially the diorite dike on the hanging wall side of the Congress vein between the vein and the gouge which lies under the true hanging wall of granite. The width of this gouge varies from 3 or 4 feet but usually 6 to 8 feet up to a maximum of 25 feet as noted on the 850 feet level from #2 Shaft.

In sections where this dike is thin it is usually broken and porous and there are many seams and stringers of quartz. These sections of the dike will surely break down to the true hanging wall whenever the fills are reclaimed and in many places it is already caved. Therefore it is of the utmost importance to determine the value of this material for if it will average $5.00 or even $4.00 it will pay to mine along with the fills and will thus serve to greatly increase the tonnage of fills and dike that can be mined but if it should prove to be much lower in grade it would dilute the fills to a point where they might become non-commercial.

The granite forming the true hanging wall has stood up well for the past 30 years and could be expected to stand while the fills and dike were being reclaimed with the support of a few pillars and stulls.

In sections where the diorite is very thick it usually shows few stringers of quartz and is hard and solid and probably carries little or no gold values and should be left in place to serve as pillars. The relative percentage of the pay and non-pay dike remains to be determined.

Hernon has rechecked the flow of water in the Date Creek Box Canyon and made several measurements of the surface flow obtaining results of from 300 to 360 gallons per minute and he now feels certain that the total flow is over 400 gallons.

ELEVATIONS

	Ft. above sea level
Old Congress (Billingsley) hill (cap 300,000 g. p. d) plus	3200
Santa Fe (Cottonwood) " (cap. 100,000 g.)	3367
Mendotta (Holmes) " (Cap. 80000 g.)	3280
Martinez " (" 30,000 g.)	3166
Divide at Summit of Martinez pipe lne.	3606
Tank above collar of #1 Shaft	3438
Collar #1 Shaft about	3420 (a)
Collar #2 Shaft "	3450 (a)
Collar #3 Shaft "	3350 (a)
Floor of present Mill	3272

7/15/43

NOTE RE FREIGHT RATES

A new rate from Congress and intermediate points to Hayden has just been established. $1.75 plus 5¢ tax on $10.00 value ore, and a corresponding rate of $2.00 plus 6¢ tax might be obtained from Aguila.

Present rate plus 3% tax from Aguila

	To Hayden	To Clarkdale
$10.00 ore	$1.75	$1.40
$10.00 to $15.00 ore	2.40	
$15.00 to $20.00 ore	2.70	

Congress to Clarkdale, $1.25 on $10.00 ore.

TABLE A

ESTIMATE OF INSTALLED CAPITAL INVESTMENT AT SUNSHINE MINE TO PERMIT MINING THE ORE BY HYDRAULIC METHOD

	Cost Installed at Mine
Plant, etc.:	
2 - Deney #0 hydraulic giants with fittings	$ 500.00
1 - Gardner Denver Power Shovel (cap. 1 ton per min.) (requires 110 cu. ft. of air.) . .	2,500.00
1 - Compressor - 350 Cu.ft. with motor & receiver . . .	2,200.00
1 - Hoist with 1000' cable and motor (cap.6 ton skip) .	4,000.00
1 - Pump with motor (300 gal. per min)	1,500.00
4 - Ore cars (1 ton capacity)	1,400.00
1 - Skip for shaft (6 ton capacity)	1,000.00
Piping in shaft (heavy duty) 1000', 6" dia. . . . . (other piping available at mine)	2,000.00
Track in shaft and on haulage levels 16# rails (9000')	1,800.00
Air pipe for shaft (available at Mine)	200.00
Wiring for shaft (available at Mine)	500.00
Head frame and ore bin at collar of shaft	3,000.00
Building for hoist and compressor, etc.	800.00
Concrete reservoir on top of Martinez Divide, say 300,000 gal.	1,500.00
Small tools and incidentals, say	1,300.00
Total of above	$24,000.00
Preparation of #2 Shaft & Haulage Levels, cleaning out and retimbering, etc.	21,000.00
Total	$45,000.00

It is presumed that the trucking of the ore from the mine to mill as well as trucking ore from the old dumps could be best done by a contractor who would furnish the trucks.

TABLE A

REVISED ESTIMATE OF COST OF MINING CONCRETE ORE BY HYDRAULIC METHOD ON BASIS OF 400 TONS PER DAY.

Item	Men Employed	Labor	Supplies Power Timber,etc	Total	Total per Ton
Mining ore, 2 giants on 1 shift	4	$34.00	$ 2.00	$36.00	$0.144
Washing ore cars, (1 shifts)	4	34.00	8.00	42.00	0.168
Trimming ore to shaft (with mules) 2 shifts	8	16.00	4.00	20.00	0.080
Hoisting on 2 shifts (hoist runs 3 shifts)	5	43.00	7.00	50.00	0.200
Transportation from shaft to mill by trucks	1	8.50	7.50	16.00	0.066
Pumping water from mine (2 shifts)	-	--	20.00	20.00	0.080
Repairs,Timbering,etc. and maintaining pillers to support hanging wall	4	36.00	12.00	48.00	0.192
Supervision & gen. maintenance	3	35.00	5.00	40.00	0.160
Compensation Ins.,Social Sec., Unemployment tax (4% of pay roll)				31.05	0.124
Totals	23	$207.00	65.50	$303.55	$1.214
3% for incidental expense, say				8.95	0.036
Estimate cost at				$312.50	$1.250

It is assumed that during the 1 shift while washing is in progress the only men working will be a foreman and a hoistman. On the other 2 shifts the latter should be able to look after the pump with help if necessary from the foreman. On each of the 2 hoisting shifts it is assumed that a helper at the power shovel will switch the cars and the mule skinner will deliver them to the shaft switch where the skip tender will help to dump them and load the cars. (See detail of trimming, etc.)

Two men would be employed on each of these hoisting shifts cribbing up the pillars that would be left in place to hold the granite hanging wall.

T A B L E "C"

REVISION OF ECONOMIC CALCULATION ON BASIS OF TREATING ONLY 500 TONS OF DUMPS AND FILLS PER DAY (ABOUT ESPERANZA HILLS)

Reasonably assured returns:

Mill tailings		$ Nil
Mine dumps (excl. #3) 170,000 T. @ $2.50		$425,000.00
Mine fills (recoverable) 175,000 T. @ $3.05		533,750.00
Total returns from operation		$958,750.00
Salvage value of equipment, say		35,000.00
Total returns		$993,750.00

Expenses:

*Purchase price of property	$95,000.00	
Recondition mill for 500 T. operation	75,000.00	(a)
" Mine & equip. (as per Table A)	45,000.00	(b)
Water supply & pipe line (Martinez & Santa Fe.)	20,000.00	(c)
Equip. for reclaiming dumps, shovel and bulldozer	10,000.00	
Power line from Alvarado Mine & ground property	10,000.00	
Buildings & surface improvements & misc.	15,000.00	(d)
Total capital investment	$270,000.00	
Operating cost of dumps:-Reclaiming $0.15, Milling $1.15 = $1.30	221,000.00	
Operating cost of gob:-Mining $1.25, Mill $1.15 = $2.40	420,000.00	
Taxes & general supervision, etc.	28,750.00	(e)
Total expense	$936,750.00	
Margin of profit	57,000.00	
	$993,750.00	$993,750.00

* May be reduced by some $8000 thru refund on income taxes paid by Congress Company.

(a) reduced to $50,000 if only dumps are treated
(b) eliminated if only dumps are treated
(c) reduced to $15,000 if only dumps are treated
(d) " " $10,000 " " " " "
(e) " " " $18,000 " " " " "

T A B L E 2

SUMMARY OF ESTIMATED OUTCOME OF VENTURE IF DUMPS AND GOB ARE MINED AND TREATED AT RATE OF 500 TONS PER DAY.

Value metals recovered from dumps		$425,000.00
Value metals recovered from gob		533,750.00
Total value metals recovered from operations		$958,750.00
Working costs of mining & treating dump & gob	$641,000.00	
General expense, overhead, taxes, etc.	25,750.00	
Capital investment (Table C)	270,000.00	
Salvage value plant and equipment, say		35,000.00
	$958,750.00	$958,750.00
Total estimated surplus	57,000.00	
	$958,750.00	$958,750.00

SUMMARY OF ESTIMATED OUTCOME OF VENTURE IF DUMPS ONLY ARE MINED AND TREATED AT RATE OF 250 TONS PER DAY.

Value metals recovered from dumps		$425,000.00
Working costs @ $1.40 per ton	$238,000.00	
General expense, taxes, etc.	12,000.00	
Capital investment (Table C)	190,000.00	
Salvage value plant & equipment, say		25,000.00
	$440,000.00	$450,000.00
Estimated surplus	10,000.00	
	$450,000.00	$450,000.00

RE ELECTRIC POWER AT CONGRESS - 6/30/44

Arizona Power Company has 44,000 volt line to Alvarado Mine, but from there we would have to pay for a line to Congress at cost (4 miles) of about $6000 which would be rebated on power bills.

They now have only about 1000 K.W.A. available but could stretch this to perhaps 1250 electric horsepower.

We would have to buy the transformers and they could sell us the old set which was used at Humboldt and they would stand the transformer losses as the power would be metered on the low-tension side.

The Central Arizona Light & Power Company has power from Parker Dam and a second line may later be constructed.

The U. S. Reclamation Service has a line from Parker Dam to Bagdad Mine and this might later be extended to Wickenburg and Congress and give us much cheaper power.

If power is purchased from the Arizona Power Co. it will cost us from 11 to 13 mills per k.w. hour judging by the actual cost to the Iron King Mine which has a demand of 801 K.W. and assuming that one load factor would be about 85%.

It will obviously be very important to secure the Reclamation Service power if possible and the matter should be taken up with J. C. Lincoln and the Government authorities.

Information re Arizona Power Co. situation from Mr. Bridges, their Chief Engineer in Prescott.

NOTES RE ELECTRIC POWER AT CONGRESS

FROM CONFERENCE WITH DOUTRICK,

CHIEF ENGINEER OF CENTRAL ARIZONA LIGHT & POWER COMPANY

The nearest main transmission line is that of the Arizona Power Company which comes down from Prescott to Wickenburg passing over Yarnell Hill about 10 miles east of Congress. A spur line runs to the Alvarado mine and to Congress Junction only 2 miles from the Mine. The main line mentioned above carries 44,000 volts and could carry an additional load of 1000 k.w. or more, but I could not learn whether this is true of the spur line to Congress Junction.

The Arizona Power Company has not yet directly connected up with any Colorado River power but still depends entirely on their hydro-electric plant at Fossil Creek and their steam plant on the Verde River. Unless and until they obtain Colorado River power it is doubtful if their rates will be attractive as I cannot learn that they have recently quoted rates that would work out at less than 1.4¢ per kilowatt hour except at Jerome.

The nearest Colorado River power is at the Bagdad Copper Mine, --nearly 40 miles northwest of Congress. This is a 66,000 volt line from the Parker Dam and it is operated by the U. S. Reclamation Service, who might or might not consider extending it eastward after the war, at present it serves only the Bagdad Mine.

The main line from Parker Dam carries 161,000 volts as far as Phoenix where it connects with the line of the Central Arizona Light and Power Company. From Phoenix to Tucson it carries 115,000 volts. The Government would not be likely to tap this line for any demand of less than 8 or 10 thousand kilowatts.

The hook-up line between the Central Arizona Light and Power Company and the Arizona Power Company runs up the Black Canyon Road with branches to Crown King and other points, but none nearer than 40 miles to Congress. At present the Central Arizona Light and Power Company are delivering a little juice to the Arizona Power Company for use at Jerome, but Arizona Power Company should have some surplus after the fuel oil situation eases up.

G. M. C.

POWER (ELECTRIC) FROM ARIZONA POWER CO.

From conference with Bridgewater in Prescott, February 1935.

The A. P. Co. 44,000 volt line now runs to the Alvarado Mine, about 5 miles from the Congress and is of sufficient capacity to carry an additional 1000 K. W.

The cost of building this line to Congress would be about $1100 per mile, say $6000 including the installation of transformers which the A. P. Co. would furnish.

If the line were built by way of Martinez pump house, then a 2300 volt line could be carried back to the pump on the same poles.

Congress Co. would have to pay for the preliminary survey at cost of $200 (?) per mile and the cost of constructing the line but this expense would be refunded by the Power Co. at the rate of 15% of the monthly power bill, which according to Beauchamp's estimate will run to about $1600 per month (94200 KWH per month @ 1.7 per K. W. H. ?) and the rebate would be $240 per month, repaying the initial investment of $6000 in 25 months. On the basis of Beauchamp's estimate and the Power Co. schedule it appears to me that the power would actually cost us 1.9¢ per KWH or about $1790 per month, but this figure might be reduced by reaching a better power factor than estimated by Bridgewater.

The Power Co. would deliver and meter the juice on the low (440 volt) side of the transformers.

Think that we should figure as an alternative the purchase and installation of a 300 H. P. Diesel Engine as the difference in cost of power over a 5 year operation would be close to $40,000 and the cost of a new Diesel would not equal this amount.

Cooper figures Diesel power in this district @ 1.25 per KWH which seems a bit high and I have used tentatively 1.2¢ and allowed a saving of .7¢.

Revised cost 1.75¢ per hour.

4/1/35

Reid says that they will probably want to use A. P. Co. power and join with us in the cost of the line, etc. This will increase demand and total power and very slightly reduce the unit cost.

GMC

POWER FROM BOULDER CANYON DAM

Latest U. S. Estimate figures 2/15/37

Initial charge at Transformers (Falling water charge)

2.3 mills per KWH

Extra for lines and line cont., etc. would bring cost in Salt River Valley and vicinity to about 7 mills with chance for some reduction later.

G. M. C.

ELECTRIC POWER AT HUMBOLDT 1934

On basis of Present rate of Arizona Power Co.

Demand	Load factor %	Cost per kw. hour	
50 to 100 H. P.	50%		
	60		
	70		
100 to 150 H. P.	50	2.80 ¢	
	60	2.59 ¢	
	70	2.43 ¢	
151 to 350 H. P.	50	2.47 ¢	
	60	2.28 ¢	
	70	2.15 ¢	1.7
500 H. P.		2.00 ¢	
and 500 H. P.		1.75 ¢	

Initial cost to install transformers, about $5000

COPY

The Arizona Power Co.
Prescott, Arizona
March 15, 1935.

File #312

Mr. George Colvocoresses
1108 Luhrs Tower
Phoenix, Arizona

Dear Sir:

This will acknowledge receipt of your letter of March 11, 1935 in regard to power for the Congress Mine.

Unfortunately we did not keep a copy of the figures furnished you, but as we recall they were based on a 90% load factor.

It would not be possible for you to reach a consumption of 94,200 KWH in a month with a demand of 150 HP.

150 HP x .746 equals 111.9 KW
Total hours in a 30 day month equals 720
111.9 KW x 720 equals 80,568 KWH per month.
Assume 90% Load Factor (which would probably be about the very best you could achieve) your monthly consumption would be

80,568 KWH x .90 equals 72,511KWH

On this basis your monthly bill would be as follows:

Demand Charge

112 KW @ $2.50 for 50 KW and $2.00 excess equals $249.00

Energy Charge

112 x 100 =	11,200 KWH @ 2½¢ ------	$280.00	
112 x 100 =	11,200 " @ 2¢ ------	224.00	
112 x 100 =	11,200 " @ 1¼¢ ------	140.00	
	38,900 " @ 1¢ ------	389.11	
	72,511 KWH		1,033.11
	Total Gross Monthly Bill		$1,282.11
	Less Cash Discount		28.64
	5% on $100 --2% on balance		
	Total Net Monthly Bill ----------/		$1,253.47

Unit Cost per KWH ---$\frac{1,253.47}{72,511}$ = 1.73 ¢

If your demand was 200 HP your demand in KW would be
200 x .746 equals 149.2

With a monthly consumption of 94,200 KWH your load factor would be
94,200 x 100 equals 87.6%

Using these load figures your monthly bill would be computed as follows:

Demand Charge			
149 KW equals			$323.00
Energy Charge			
149 x 100 = 14,900 KWH @	2½¢	$372.50	
149 x 100 = 14,900 " @	2¢	298.00	
149 x 100 = 14,900 " @	1¼¢	186.25	
49,500 "	1¢	495.00	
94,200			1,351.75
Gross Monthly Bill			$1,674.75
Cash discount			36.49
Net Monthly Bill			$1,638.26

Unit Cost per KWH equals 1.739¢

The above costs are based on the assumptions given, and with mill operations only, you can probably achieve this load. factor.

As you are undoubtedly aware, the demands used are 15 minute integrated demands. Generally speaking, an integrated demand is between 65% and 75% of the maximum peaks required. With other forms of motive power, you would have to provide a prime mover of sufficient capacity to handle these peaks. This, of course, will increase the cost of your investment.

I believe that you would find the service from our line to be more reliable than that of a single unit Diesel plant. I hardly think that it is necessary for me to point out the many advantages of purchased power to you.

If we can be of any further assistance or give you any additional information, please call upon us.

Yours very truly,
Francis D. Crable (signed)

Trustee

1,000 HP 746 KW

Load Factor	KWH	Demand Charge	Meter Charge	Total Bill	Bill Less Discount	Res. Rate
0	-	1,400.00	-	1,400.00	1,400.00	-
10	53,712	"	698.26	2,098.26	2,044.55	3.807
20	107,424	"	1,396.51	2,796.51	2,689.09	2.503
30	161,136	"	1,960.49	3,360.49	3,226.21	2.002
40	214,848	"	2,390.18	3,790.18	3,655.90	1.702
50	268,560	"	2,819.88	4,219.88	4,085.60	1.521
60	322,272	"	3,088.44	4,488.44	4,354.16	1.351
70	375,984	"	3,357.00	4,757.00	4,622.72	1.229
80	429,696	"	3,625.56	5,025.56	4,891.28	1.138
90	483,408	"	3,894.12	5,294.12	5,159.84	1.067
100	537,120	"	4,162.68	5,562.68	5,428.40	1.011

750 HP 559.5 KW

Load Factor	KWH	Demand Charge	Meter Charge	Total Bill	Bill Less Discount	Res. Rate
0	-	1,087.50	-	1,087.50	1,200.00	-
10	40,284	"	523.69	1,611.19	1,570.91	3.900
20	80,568	"	1,047.38	2,134.88	2,054.31	2.550
30	120,852	"	1,470.37	2,557.87	2,457.16	2.033
40	161,136	"	1,792.64	2,880.14	2,779.43	1.725
50	201,420	"	2,114.91	3,202.41	3,101.70	1.540
60	241,704	"	2,316.33	3,403.83	3,303.12	1.367
70	281.988	"	2,517.75	3,605.25	3,504.54	1.243
80	322,272	"	2,719.17	3,806.67	3,705.96	1.150
90	362,556	"	2,920.59	4,008.09	3,907.38	1.078
100	402,840	"	3,122.01	4,209.51	4,108.80	1.020

SCHEDULE NO. P-4
LARGE POWER RATE

Availability:
This rate is available to Customers using power for industrial and mining purposes for loads in excess of three hundred (300) horsepower. Lighting loads not in excess of five per cent (5%) of the total connected power load may be included under this rate.

Character of Service:
Alternating Current, sixty (60) cycle, three phase at line voltage. The necessary substation structures and equipment for transforming line voltage to Customer's operating voltage shall be owned, installed, operated, and maintained by the Customer.

Contract Term and Billing:
Standard contracts are for periods as set forth in contract, with monthly payments for service taken.

Rate Table:
The Customer's monthly bill shall be the sum of the demand and energy charges.

Demand Charge:

First	223.8 kilowatts or less of billing demand	$525.00
All Over	223.8 kilowatts of billing demand	@ $1.67 per kilowatt

Energy Charge:

First	180 hours use of billing demand	@ 1.3c per kilowatt hour
Next	180 hours use of billing demand	@ 0.8c per kilowatt hour
All Over	360 hours use of billing demand	@ 0.5c per kilowatt hour

Tax Clause:
The charges specified under rate table shall be increased by the applicable proportionate part of any additional taxes or governmental impositions which are assessed after the effective date of this rate on the basis of the gross revenues of the Company and/or the price or revenue from the electric energy or service sold and/or the volume of energy generated or purchased for sale and/or sold hereunder.

Fuel Adjustment:
When it becomes necessary to operate the Tapco Steam Plant, the energy charges specified in the rate table shall be increased One-Half Cent (½c) per 100 KWH for each One Cent (1c) increase in the cost of fuel oil above One Dollar and Forty Cents ($1.40) per barrel delivered at Tapco.

Determination of Demand:
The demand shall be determined by the Company by means of suitable meters and the billing demand shall be taken as the average of the three (3) highest fifteen (15) minute demands occurring during the month. Starting peaks, unavoidable accidents to equipment, or in operations, or demands occurring within three (3) times the period of interruption immediately after an interruption to service shall be ignored in determining the billing demand.

Power Factor:
If the average power factor as measured at the delivery point is less than Eighty Per Cent (80%) lagging the demand for billing purposes shall be taken as Eighty Per Cent (80%) of the maximum requirement in kilovolt amperes.

Minimum Charge:
The minimum monthly charge shall be Five Dollars and Thirty Five Cents ($5.35) per kilowatt of billing demand, in no event less than Twelve Hundred Dollars ($1200) per month, provided that if during any twelve (12) consecutive months the total of the actual payments by the Customer for service hereunder shall equal or exceed the sum of the minimum monthly charges above specified for each of these months, the total bill for the next succeeding month shall be an amount equal to the sum of the demand charges and the energy charges for the power actually used.

Payment Terms:
Bills are due upon presentation. If payment is made within ten (10) days after date of presentation, a discount of One Mill ($.001) on the first block of energy will be allowed provided Customer is not otherwise delinquent in payment of bills and that the net bill is not less than the minimum specified.

Rules and Regulations:
The general rules and regulations set forth in this tariff shall govern where applicable the supply of service under this rate.

July 14th, 1944

NOTE RE CONGRESS

ROSE GOLD AND RUSSIAN GOLD CLAIMS

These two patented lode mining claims (Survey #1726) lie northwest of the Annex (Gold Dyke) and southwest of the Alaska and Merit Claims.

From my study of the surface showings it seems highly probable that the Sullivan Vein has been faulted on the Merit Claim and thrown approximately 400 feet to the south so that its outcrop or apex continues to the west of that fault for some 300 feet on the Rose Gold and then for 800 feet on the Russian Gold Claim.

The old surface workings and such information as I have been able to obtain do not indicate that any shoot of pay-ore was developed along this 1100 feet of outcrop although I was told that the vein material taken from the surface pits nearly always carried low values in gold and there seems to be a fair chance that further exploration might result in finding better values or another shoot of ore similar to that which was opened up by the Sullivan Shaft. In the event that our option on the Sullivan Claims is to be exercised I feel that these two claims should also be acquired.

Investigation of the County records in Prescott had disclosed the fact that both of these claims were sbld to the State of Arizona many years ago for delinquent taxes and since the period of redemption has long since expired a clear title to same can now be purchased from the Board of Supervisors of Yavapai County who are authorized by law to accept any offer that may appear to them to be satisfactory.

Conference with some of the Yavapai County Officials indicates that the Supervisors would probably be willing to sell these claims for $100 apiece and therefore, -- if and when, - a favorable decision is reached in respect to the purchase of the Congress and Sullivan property, - I recommend that $200.00 should be offered for the Rose Gold and Russian Gold Claims, since I believe them to be well worth that sum in order to round out our holdings in the district.

Herskowitz also says that the new #5 Shaft could be easily reopened to the 150' level where the Niagara Vein has a width of 2' or more and will carry $12.00 to $14.00 per ton, and this represents quite a substantial tonnage. Says that there is also some good ore to be mined from the surface of the Congree Vein near to the #1 Shaft. He says that Frank Stone of Prescott (machinist, etc.) knows of a place along the 600 or 700' level from #2 Shaft where there is an inclined raise 90' high which tops a cross vein (perhaps the Spur Vein) that has a width of 18" to 2' and carries 4 oz. gold. (Sounds very fishy).

As to the gob which might be gotten at and shipped without any large initial investment he says that some of this from the upper levels of Old #5 was taken to the mill a few years ago and carried $8.00 per ton and more of this remains. Also there is some good fill in the upper levels at #2 Shaft.

If these locations were equipped with hoists, etc., I think that this gob could be drawn and hoisted for less than $2.00 per ton and if subsequent costs for haulage, freight and treatment were not more than $4.00 one could break even with $6.50 rock and open up quite a bit of the old mine, as well as sampling those sections of the gob.

December, 1944

NOTE FOR CONGRESS BOOK

OUTSIDE MINES:--

J. Andrew West of Prescott has interest in claims which adjoin the Alvarado and which have been twice examined by H. F. Mills of the Iron King who recommends that they should be developed by drilling.

E. J. Bumsted has an interest with Ted Schultz of Humboldt in a little gold mine 3-1/2 miles from Yarnell and not far from the Monica but difficult of access.

He has sampled quite thoroughly and claims that the average of 48 samples is about $18.00 gold with Quartz vein 3 feet or more in width and some very high assays.

Hopes to get a Government loan to build a road then do more development.

January 27, 1945

NOTES RE CONGRESS EXAMINATION

Samples taken in Congress Vein away from the stopes are almost all low and will not average over $1.00 per ton.

Stone thinks that there is very little 0.45 oz. ore developed in the Sullivan Mine and in many places only the fault gouge between the diorite and granite is mineralized and that is too narrow to be mined with profit.

The conditions making for ore deposition (cross faults, etc.) are weak at the Sullivan, and there are many post mineral faults which cut up the vein into small blocks. In the Sullivan there may be some 15,000 tons of fills and dump rock that will average about $7.00 or slightly more in recoverable value, and with costs of mining and milling of perhaps $4.00 per ton no profit could be anticipated from thepurchase and operation of this property.

CONGRESS NOTES

RE Ownership of neighboring mining claims.

Sullivan Group	-	Under Discussion
New Congress	-	ditto
Los Senate	-	Owned by William Herskowitz of Congress, but at present under option to Robert Rae.
Russian Gold and Rose Gold	-	Owned by State of Arizona. Look up County Records and Patent Survey #1726.
Planet Mier and Omaha	-	Patent Survey 3523
Violet	-	Not owned by Hull. Patent Survey 2488
Dakota	-	Patent Survey 3529 Said to have all been owned by the Hull Copper Co. and Hull Estate of Jerome. Some further information might be obtained from Howard Cornick in Tucson or the County Records.
Rose Quartz #2	-	Said to be owned by Frindley to whom wrote on 3/9/44.
Golden Key Group	-	Including P. A. Homas locations and comprising: Little Fraction (northeast of Golden thread) Los Senate #2 Rose Quartz and Rose Quartz #3 Emma Rosa-Lee Valley Anna Key also Amelie Surprise New Century

In some or all of these William Savage has an interest and some or all of them have been sold or optioned to Claude Findley. None appear to be patented.

Last Chance - Patent Survey 3085

Bull Doz - Patent Survey 3084

Probably no value but can be looked up in County Records if necessary.

Some claims to west of Old State owned by I. M. McKenzie of Phoenix.

Hull Claims of Verity.

George M. Colvocoresses
Mining and Metallurgical Engineer -1102 Luhrs Tower
Phoenix, Arizona

August 30, 1948

Messrs. Colburn, Byron Moyer, Richard Heilmann, and associates

SUPPLEMENTARY REPORT ON CONGRESS MINE

Gentlemen:

Although my examinations of the Congress Mine in 1935, 1942, 1943 and 1944 were made first for the purpose of determining the advisability of treating the tailings and dumps and next with the idea of conducting a large scale operation for the treatment of tailings, dumps, mine fills and low grade ore in place;-the results as embodied in my long report of August 1943, to which I later made some additions, included much information which would be valuable in guiding a small operation treating only the higher grade ore. In this connection the following supplemental notes are submitted and in order to call particular attention to portions of my report which have a bearing on your present problem, I have side lined certain paragraphs in pencil and also made a number of notes on the margin of the copy with which I shall furnish you.

(1) The remaining tailings will probably not pay to work, but it will be advisable to investigate the sub-soil where some samples which we took in 1943 showed material carrying $18.00 per ton, but this may since have been removed.

(2) As to the dumps while these will not average much over $3.00 per ton, there are some portions which might be worth sorting over and perhaps screening since it is of record that on one occasion 147 tons were sorted from a dump and assayed $18.55 per ton. Some of my samples from the dumps ran better than $10.00 per ton but these were averaged with lower grade material.

(3) From all sampling it appears that the mine fills down to the 1500l level will average at least $5.00. Here again there are sections which are much richer than the average, but we purposely cast out high grade samples. Some idea of the probable value of each portion of the fill can generally be obtained by visual inspection after washing, as the presence of quartz and sulphides nearly always indicates gold values except in the Queen of the Hills where there is a lot of nearly barren quartz. Before actually preparing to mine any of this material, I suggest that some grab samples should be taken from the best looking sections as I obtained several samples which ran better than $8.00 per ton particularly from the Congres vein near No. 2 shaft on the 925' level.

(4) The mine was unwatered in No. 2 shaft to the 1950' level in 1941 and Ramsden told me that he found some very good ore on the 1925' level in No. 3 shaft and extending up to 1700'.

HIGH GRADE ORE

The existence of high grade ore remaining in the old Congress workings has been made the subject of persistent rumors many of which I believe to be unfounded or greatly exaggerated. However, as a matter of record, I think it proper to repeat some of these for what they may be worth.

Near to the surface, especially in the vicinity of the #1 Shaft there still remain small sections of pillars and sills of high grade ore some of which has been gouged out by leasers during recent years and shipped to the Hayden Smelter after the Congress Corporation shut down their mill. This ore was divvicult and expensive to mine and probably had an average value in the order of $20.00 per ton but was hand-sorted until the shipping product became much richer. Profits to the miners seem to have been small since the work was intermittent and had been practically discontinued during the latter part of 1944.

The tonnage of such ore now remaining in this section of the mine must be small and cannot be considered in any estimate although it is quite likely that after regular mining and milling operations are resumed, new leasers may furnish a few hundred tons or more per annum.

Frank Stone of Prescott who once did some leasing on the mine claims to have claimed up 90 feet in an inclined raise from the 600 to 700' level east of #2 Shaft and there to have found and sampled a cross-vein with a width of 18" to 2' that carried up to 4.00 oz. of gold. This story was related by Herskowitz who apparently does not know just where this raise is located and in any event it is probably now inaccessible except after some preparatory work.

Regarding the Queen of the Hills workings, Stanton could give little information since most of his work was done after he was no longer manager of the mine, but it is of record that leasers operated here with some profit during the 1930s and that the mine workings are much more extensive than shown on the map and at one point a winze had been sunk to a depth of 1750'. Samples taken in some of the pillars ran better than $10.00 per ton and several reliable men stated that a substantial tonnage of similar grade ore remained in sections of the vein which they had examined prior to 1940.

It is my opinion that a comparatively small amount of cleaning up would permit the examination of much of these workings which are now inaccessible and I suggest that special attention should be paid to the Queen of the Hills which seems to have been much less thoroughly prospected and developed than other portions of the property and which probably contains the faulted extension of the Congress Vein.

LOWER GRADE ORE

As to the lower grade ore remaining in various portions of the workings, I can add nothing to the previous statements and those in my

report except to mention that Snow confirmed the findings of Colburn, Price and Ramsden to the effect that many samples cut in the vein between the old stopes would run from $7.00 to over $10.00 per ton and some of my samples carried over $9.00 although all high grade material was purposely avoided.

Stanton and others who were familiar with the old mine mentioned the fact that there had been left in the upper levels of the Niagara Vein ore which assayed just a shade below the old limit of 0.35 oz. per ton and which could be reached for sampling from the #5 shaft if a little cleaning up was done in the shafts and drifts. While no accurate estimate of this ore was made, the tonnage was represented as being quite substantial and some portions of it should carry better than 0.4 oz. per ton.

METALLURGY

In further reference to the treatment of the higher grade ore to be produced from small scale operations (about 50 tons per day) it seems that this might best be started through the use of flotation with shipment of concentrates to a smelter. These concentrates and even the flotation tailings could later be cyanided (with or without roasting) if the extra recovery would make this worthwhile.

I have a record of gravity concentrates shipped by the Congress Company to the Humboldt Smelter in 1906 which carried 7 oz. to 8 oz. in gold and 13 oz. in silver, and I believe that a high recovery of values could be obtained on most of the ore by modern flotation alone whereas the installation of cyanide equipment would involve much extra expense and the operation of a small cyanide plant is comparatively costly.

CONCLUSION

To sum up the situation I call your attention to the estimate of ore reserves given on page 104 of my long report and especially the possible ore amounting to 200,000 tons with an average gross value of $11.00 per ton. Neither the quantity nor grade of this material can be made the subject of an engineering estimate based upon mathematical data but it is based largely on conversations and correspondence with competent engineers who were familiar with the old workings of the mine and it has been checked to some extent by my own findings and those of other engineers who assisted me or were associated in our investigations.

Of course all cost estimates in the long report must now be substantially revised upward and without attempting to go into detail I have figured that the cost of developing, sorting and mining ore will be in the order of $6.25 per ton in place of $5.00 and milling, etc. will cost about $1.75 making a total operating expense of $8.00 and leaving a profit of $2.00 per ton on this class of material if an average recovery of $10.00 can be obtained.

The total expected profit from the operation, after deducting the repayment of capital which must be invested, may not seem to make the venture particularly attractive, but one must bear in mind the chance (and I think it is a very good one) of finding and mining considerable ore of a much higher grade some of which may well run to a value of $20.00 as produced in the old operations and considering that all mining is at best a speculative venture, I feel that there is a strong probability that the initial investment will be repaid and a reasonable expectation that a very substantial profit may be earned either because of the development of higher grade ore or because of the anticipated increase in the price of gold. Moreover it should

be noted that all of the samples listed in the report were purposely taken without sorting while such sorting, at a comparatively small expense, would have raised the grade of these taken from ore in place and also from portions of the gob from 15% to 30%.

In carrying on a small operation you will doubtless find it advisable to apply both selective mining and sorting and may thus be able to bring the average value of mill heads to perhaps $13.00 per ton which would be most desirable.

FIRST PROCEDURE

The condition of the workings which I visited and sampled some five years ago has doubtless changed somewhat for the worse and before mining and milling is actually started, it will be essential to have made accessible a sufficient number of faces of pay ore to permit the desired daily production.

In order to be reasonably sure of producing 50 tons of pay ore or gob I feel that first of all, and before making any large purchases of equipment, it would be your best policy to employ a competent young engineer with a small crew of miners who could work under the direction of Mr. Colburn, clearing out the drifts or stopes where pay ore is known or believed to exist and re-sampling these ore shoots or sections of the gob with proper sorting followed by preparation for the actual extraction of the pay ore.

By following this program you should be able to avoid the mistake of going to more than a trivial expense in preparing to develop and mine ore shoots which are not sufficiently rich to pay the working costs.

CAPITAL EXPENDITURE

I have refigured the capital expenditure which will probably be involved in this undertaking and assuming that you can purchase the present power plant for $12,500,00 and obtain good second hand machinery for your

principal items of equipment, I think that the $80,000.00 which you propose to provide should be sufficient provided you do not attempt to cyanide either the concentrates or tailings from the flotation plant. Should such cyanide treatment prove to be necessary or advisable, I believe that you should arrange to have available an additional $10,000.00 or preferably $20,000.00 which last figure would raise your total capital investment to $100,000.00 and serve to provide a certain amount of working capital which is often of great importance.

My conclusions are again made on the assumption that there will not be any further advances in the cost of labor or other commodities resulting in serious inflation with a decrease in the value of our currency which would make present estimates entirely worthless as longas the value of gold is fixed at $35.00 per ounce.

Yours very truly,

(signed) G. M. Colvocoresses

GMC:IM

Record from Mining and Metallurgical Society of America, 1937.

Brought up to date, 1942.

COLVOCORESSES, G. M. 1102 Luhrs Tower, Phoenix, Arizona

Consulting, Mining and Metallurgical Engineer

1900, Graduate, Yale University; 1900-01, Day laborer in smelting works and Asst. Chemist and Assayer. Assisted on mine examination, mine sampling and prospecting and exploration trips in Canada and U. S., for Orford Copper Co. and Ontario Smelting Works; 1901, Sent to New Caledonia as Ass't. Supt. of Mines for Nickel Corp., Ltd.; 1902-05, Ass't. Supt. and later Supt. of Mines for Nickel Corp., Ltd. and Societe Miniere Caledonienne; 1905-06, Office work in Paris and London prior to return to U. S. Worked at smelter of Canadian Copper Co. Examination work in Cobalt district and other parts of Ontario; 1906-09, Engineer on staff of International Nickel Co. Office work in New York and examination work in various parts of the U. S., Canada, Australia and New Caledonia, also Cuba and Porto Rico. Consulting Engineer for Massey Copper Mine Co., Ontario. In charge of exploration and development work for Anglo American Iron Co.,; 1908-12. Superintendent of Millerett Silver Mine, Ontario. In charge of exploration and examination work in that district, 1912-1914. Consulting Engineer, New York; 1914-21, General Manager Consolidated Arizona Smelting Co., Humboldt, Arizona, 1921-22, Federal Court Receiver for Cons. Arizona Smelting Co.; 1922-30, General Manager Southwest Metals Co. Humboldt, Arizona; 1916-20, Cons. Engineer Ohio Copper Co. of Utah; 1920-25, General Mgr. Swansea Lease, Inc.; 1919-32, President and Manager Western Metallurgical Co. of Los Angeles, Developing and operating a metallurgical process; 1926-30 Chief Metallurgical Engineer for Carson Investment Co. of San Francisco; 1917-30 Cons. Engineer Nicu Steel Corporation of Toronto, 1928-36, General Manager Meteor Crater Exploration and Mining Co.; 1923-1925, Governor of the Arizona Chapter of the American Mining Congress; 1939-42 Cons. Min. and Metallurgical Engineer, Phoenix, Arizona with employment of various clients and supervision of operations of various mines and plants producing mostly gold, silver and copper.

Similar information may be obtained from "Who's Who in Engineering" for 1931.

NOTE: Mr. Jaquays, I am attaching hereto this page showing some of Mr. Colvocoresses' tremendous background.

Stella Freasier
3/31/60

DATA RE WATER SUPPLY AT CONGRESS

Required for 500 ton mill and accessory equipment say 150,000 gallons of water par day.

For 1000 ton mill say 300,000 gallons of water per day = say 200 g.p.m. or less than 20 miners inches

1 Miners inch = 11.25 gallons (in Arizona) per minute

= 1.50 Cu. Ft. " "

1 cu.ft. water = 7.48 gallons = 62.4#

= 2160 " " per da. = 16,200 gallons

1 gal. = 0.1337 cu.ft. = 8.33#

= 788499 " " " year.

= 18 acre feet per year
(1 acre foot = 43560 cubic feet)

The flow at the Donald Scott measuring gauge which is located on Date Creek on Tp 10 N, Range 8 West about 10 miles below the Box Canyon has given most erratic and probably quite worthless raadings as there appears to be a great loss of water between the Box Canyon and the gauge where Scott says that in one year, 1941, they recorded a flow of 7700 acre feet (equivalent to 428 miners inches) which seems way too high while in 1943 he says that they only recorded a flow of 113 acre feet (equivalent to less than 7 miners inches) which is way too low. There does not appear to be any sizable tributaries flowing into Date Creek between the Box Canyon and the gauge but to get any reasonably accurate measurements it would be necessary to install a new gauge at or near the Box where it is my best estimate that the normal average flow in dry weather is from 20 to 30 miners inches and allowing for floods might amount to 500 to 700 acre feet per annum.

NOTE RE TRIP TO CONGRESS MINE AND RANCHES--NOVEMBER 30, 1943

(See Letter to Morton of December 1st).

Saw Beach at Sullivan Mine, he claims to have an option on this property for $50,000 of which he has paid about $15,000. Until the Government forced gold mines to discontinue operations he says that he was paying $200 per month and the taxes which amount to about $200 per annum and are paid up to date. Beach could assign his option and probably secure a large reduction on the price if cash payments were involved and he would much like to make a deal that would bring in regular monthly payments to him.

The property is owned by the estate of Mrs. Dan Sullivan which is being administered by Mrs. Katherine Hill of Phoenix and the attorneys are Marks and Marks of the Title and Trust Building.

The Sullivan Mine and well make about 3000 gallons of water par day (2 gallons per minute) and water has been kept down to 600 feet level to which point mine could be examined.

The ore is not suitable for convertor flux since it carries too high a percentage of Al_2O_3.

- - - - - -

Herskowitz says that ranch land in that vicinity is worth about $3.00 per acre.

The last terms offered by Hayden to Findley (now living at Remuda Ranch near Wickenburg) for his part of #6 Dump gave him a treatment charge of $1.00 per ton if value of ore was less than $4.80 and $1.50 for higher value and Hayden offered similar terms to Rae and Herskowitz if they would ship the #4 Congress Dump. Findley's last 2 car load shipments have been too low grade to pay even on the above basis since they assayed only $3.50 and $2.80 per ton. The railway freight from Congress Junction to Hayden is $1.75 per ton and cost of reclaiming dump ore, trucking to Junction and loading on cars should be from 0.75¢ to $1.00 per ton.

Some recent samples from #4 Dump gave an average of $3.22 except for one small portion which assayed $7.80 and $9.20, but it would cost quite a bit to build a road to this part of the dump and Rae wanted Herskowitz to pay a royalty to the Receiver of $1.25 per ton which is way too high.

My estimate of the average value of #4 Dump (5000) tons) was only $3.00 and Liddells estimate was $3.50 so it is not likely that any of this material will be moved.

Herskowitz would like to get a long term lease (year or more) at Congress so that he could ship some ore from the mine.

He claims that in the Queen of the Hills workings there is ore on which the last leasers were working and from which they made shipments that averaged $10.00 with individual lots running $7.80 to $11.20 and some sorted ore carrying $38.00 and on the west side of their stopes there are several thousand tons of ore in place that he is sure will average $10.00.

RE SULLIVAN MINE

The Sullivan Mining Company which at one time controlled these holdings is no longer in existence and the New Congress Gold Mines, Inc. no longer holds an option on the Sullivan Property but does hold promissory title to the following unpatented lode claims:

Gold Coin

Gold Bullion

Gold Bar

Gold Pan

Gold Dike, with total area of about 103 acres.

This is an Arizona Corporation which has an authorized capital of 50,000 shares of common stock of which about one half has been issued all owned or controlled by E. N. Beach, according to his statement. The claims held by this company were located to cover the presumed extension of the Sullivan vein which so far has never been developed. In any case the surface rights might be useful for tailings disposal from the Congress Mill.

The Estate of Margaret H. Sullivan owns the following patented lode mining claims.

Sunset Merit

Jersey Alaska

Most of the mining work and all the improvements are located on the Alaska Claim while the faulted outcrop of the Sullivan vein can be traced from this claim onto the Jersey and Merit with strike N 54° West and dip of about 40° to the north east in which the ore shoots rake to the northwest.

development work has been done in the north block on the Alaska Claim and between Shafts #1 and #4.

The next block going east has a length of about 800' to the fault which cuts through close to the Sullivan Camp Buildings and just west of the Beach Shaft and just west of the next fault which throws the vein 210' further to the south the vein was cut at a vertical depth of about 280' by drill hole #3 where the core assayed 1.10 oz. per ton. over 3 feet.

From the Beach Shaft is a crosscut on the level cut the vein in the next block to the east and from there the outcrop is nearly all covered by wash but was believed to have been found on the other side of the flat nearly one mile from the workings, but values were low. The presumed outcrop of the eastern extension of this vein is covered by the following claims:

Albert Gold Bullion

Gold Coin, Gold Bar

Gold Pan.

D. Drill Hole #2 should have cut this vein at a vertical depth of about 350 feet and here the assay was 4.65 g over 3'

D. Drill Hole #1 should have cut it at a vertical depth of about 650 feet and here the assay was 0.45 g over 3'

No other work was done in these sections of the vein.

The mill had a capacity of 20-25 tons per day with the 4 Nissen Stamps.

The tailing pile is shallow but could easily be reclaimed. It is separated into sands and slimes, a little larger quantity of the former which average 0.10 oz. ($3.50) while the slimes run from 0.16 to 0.20, say $6.00 average. Total tonnage of reclaimable tailings is about 6000.

The ore dump is also shallow and probably contains 5000 tons with average grade around 0.3 oz. or safe to estimate @ $8.00, which is also the average value of the mine fills.

The mill building is in good shape and other buildings are fair but tanks are probably worthless.

The practice was to put the ore thru the jaw crusher and then crush to 20 mesh in the Nissen Stamps after which it went over tables where 60% of the values were recovered in concentrates and then an additional 20% of the head values were recovered by cyaniding the tailings, so that total recovery was 80%.

Comparatively recent laboratory tests have shown that a 96% recovery could be made by cyanide after grinding to 60 mesh.

A study of the assay map prepared by the Marsden Co. Engineers is by no means encouraging and seems to indicate that all previous sampling was badly done or that samples were cut across a very narrow width. Aside from a few higher grade pockets this Marsden Assay Map shows low grade ore which does not appear to average as much as .3 oz. over an average width of 3 feet. Four 1000# samples from the fills averaged .255 = $8.92

per ton which checks Beach's estimate of an average of $3.00, but it looks as if the remaining ore in place would be of no better grade and the high grade ore which was mined and milled seems to have come from one high grade shoot which was pretty well mined out before they quit.

An inspection of the equipment as listed below indicated that the 12 H.P. Gas Engine has been partly dismantled, also the Bucket Elevator, Spitzbasten, Pachuca Tanks and Zinc Tanks have been moved or are in useless condition.

None of the equipment except the hoist (which will require some 200 feet of additional 5/8 cable) would be of any value for future operation.

The same value of the equipment and such buildings and structures as could not be utilized would not be likely to exceed $1500 while the value of the equipment and structures which could be utilitized might be estimated at about $3500, making a total of $5000.

The profit to be derived from treating the 5000 tons of reclaimable dump rock would probably exceed $1.00 per ton and about $2.00 per ton for the tailings, of which not more than 6000 tons could be reclaimed.

Value of the property to a purchaser may be recapitulated as follows:

FOR CONGRESS FILE

MEMO RE SULLIVAN MINE, FOR MEETING 1/22/1944.

This is described on page 81 - 84 of my report of August 25th from which it appears that it comprises 9 patented claims (perhaps 180 acres) unpatented claims (acres) which are reported to be in good standing.

Production (1910 to 1912) was 10,206 tons averaging 0.763 oz. gold.

Ore reserves according to MacCarthy's report and assay map made by the Marsden Co. include 25,000 tons of mine fills above 850' level averaging 0.25 oz. gold and 25,000 tons of developed ore in place above the 600' level with average value 0.4 to 0.5 gold. Additional possible ore is indicated down to the 1500' level which may amount to as much as 600,000 tons with average value from 0.5 to 0.7 oz. per ton.

On the dump there are about tons of rock which should average about per ton.

Some 80% of the goldvalues in the ore can be recovered by amalgamation but the ore is not suitable for converter flux since it carries too high a percentage of Al_2O_3.

The mine workings are kept unwatered down to the 600' level and are accessible to that depth. The mine makes about 3,000 gallons of water per day.

The property is owned by the

Company, an Arizona Corporation with an authorized capital of

The Dan Sullivan Estate of which Mrs. Kathryn Hill is administratrix, with Marks and Marks as Attorneys owns shares of this company's stocks and E. N. Beach has a certain interest and held an option which has now expired to purchase the entire property on terms for $50,000.

A mortgage on the real and personal property is held by Charles Rable of Prescott. Present principal is about $4000 and interest at 8% amounts to $320.00 per annum while property taxes are about $200 so that the total fixed charges including corporation taxes, etc. should be less than $600 per annum.

The surface improvements and equipment including the old stamp mill are of little value and probably should be sold.

Suggested terms

We might offer to purchase the mortgage and perhaps pay up any small outstanding debts so that the Sullivan Co. would be in a position to execute an option for say two or three years to sell the entire real property with permanent improvements for a specified sum, say $25,000.

The Sullivan Co. would meantime be in a position to dispose of the machinery and equipment for their own account as those would have practically no value for future operations, and could be released from the mortgage. During option period we would pay all property taxes and waive all interest on the mortgage. No watchman would be required so

that this should represent the limit of the fixed charges (about $200.00 per annum) for no assessment work on the unpatented claims is likely to be required during the duration of the war.

If the option should not be exercised we would forfeit all payments made and interest accrued on the mortgage while holding the option and extend the term of the mortgage for 3 years while reducing the interest rate on same to 5%. If the option should be exercised all payments made up to that time including the principal payment for the mortgage and accrued interest would be credited as part payment of the purchase price.

NOTES RE SULLIVAN MINE & NEW CONGRESS
1-22-44

Conference with Bernard Marks, Mrs. Hill and Beach.

Margaret H. Sullivan estate owns patented and unpatented claims as per list.

PATENTED CLAIMS

Sunset, Jersey, Merit and Alaska lode mining claims, about 80 Acres. United States Patent being of record in Book 119 of Deeds, pages 449 to 454, Records of Yavapai County, Arizona.

UNPATENTED CLAIMS

The following unpatented mining claims situate in the Martinez Mining District, County of Yavapai, State of Arizona:

	Book	Page
Arizona Placer	106	472
Jersey Placer	106	473
Southside Placer	115	419
Northside Placer	121	419
Charlie Lode	128	261
Will "	128	262
Bob "	128	262
Verde "	132	190
Albert "	132	189
Dan "	132	554
Jerry "	182 (132)	555

Clear title to all property could be delivered thru sale by Estate with approval of Court.

The New Congress Mining Company, an Arizona Corporation with authorized capital of 50,000 shares of common stock of which about half have been issued and all owned or controlled by E. N. Beach owns the following unpatented lode claims.

Gold Coin

Gold Bullion

Gold Pan

Gold Dike

Gold Bar (Totalling 103 acres (?)

Rable mortgage now amounts to about $5000 including principal and accrued interest.

Dump at Sullivan about 7000 tons of rick with average value 0.2 oz. or ($7.00)

Tailings about 10,000 tons which might average 0.2 oz. although assay of sands only ran 0.1 ($3.50) oz. and of slimes 0.16 oz.

Beach thinks it essential to retain mining and pumping equipment in order to keep the water out of the workings above the 600' level which otherwise would cave and he wants to stay on the job and be paid about $200 per month. Mill equipment, etc. could be sold.

Try to visit mine on 27th or 28th to check value of equipment and to see Billingsley who might make deal for water.

1/27/55

CONGRESS INVESTIGATION

NOTES RE: SULLIVAN MINE

The Beach Shaft has been allowed to fill with water which rises nearly to the surface.

At the #4 Shaft the water is kept down below the 600' level and rises about 15 to 20 feet (or more in wet weather) in the incline shaft every three weeks until Beach pumps it down.

The #1 or original Dennis May Shaft is sunk in the outcrop of the vein and the diorite dike which is in the hanging wall of the vein between the true walls of granite. The dip is about20° to the north and the strike of the vein is N. 80° West South 80° East. Both dike and vein are well exposed at the collar of the shaft which is small but open and ventilates the mine workings. The width of the vein is 3 to 4 feet and the dike varies but generall is not much wider. The best values in the vein jump around but are generally along the foot wall.

The #4 or Main Shaft is nearly 400' east of the #1 Shaft and is also small and sunk at the same incline but here the outcrop is covered by wash and just east of the shaft the vein is thrown 300 feet to the south by one of the 4or more north-south faults that cut through this formation as shown approximately on my copy of the claim map. The most westerly of these faults is on the Merit Claim about 500' west of the #1 Shaft and although the outcrop of the vein can be traced westward up the hills on the Rose Gold and Russian Gold Claims the ore is very low grade and has not been developed. The next fault cuts the vein close to the #4 Shaft and again throws it 300 feet to the south so that nearly all the underground

BUILDINGS AND EQUIPMENT

Crushing and cyanide plants of about 25 tons daily capacity, installed in 1909-10 and used for the treatment of approximately 10,600 tons of ore.

The equipment now standing on the property consists of the following:

1 - 40 H.P. Fairbanks-Morse Gas Engine (in Mill)

1 - 15 H.P. " " Gasoline Hoist (at #4 Shaft)

1 - 12 H.P. " " Gas Engine (on Crusher)

1 - Blake Jew Crusher

1 - Elevator (incline) Belt between Crusher and Mill

1 - 20-ton Ore bin for storage before crushing

1 - 60-ton Ore Bin in Mill for storage after crushing

4 - 1500 lb. Nissen Stamps

3 - Wilfley Concentrating Tables

1 - Bucket Elevator

1 - Spitzhasten Classifier

2 - Pachuca Agitating Tanks

1 - 6 H.P. Fairbanks-Morse Gasoline Engine and Centrifugal Pump

4 - 20-ton Decanting Tanks

3 - Gold Solution Tanks

3 - Sets of Zinc Gold Precipitation Tanks

4 - 30 Ton Filter Tanks

1500' - 2" and 2-1/2" Air Line in the Mine

850' - Skip Track, also track on all levels in the Sullivan workings.

In addition to the mill and crusher buildings, the following are on the property:

1 - 4-room Office Building

2 - 5-room Dwellings

1 - Assay Office

1 - 3-room Gold-recovery Building

1 - Freight Storage Building

1 - 2-car Garage with 12,500 gallon galvanized iron Fuel Oil Storage Tank

1 - Blacksmith Shop

1 - Hoisthouse

RECAPITULATION OF ESTIMATED VALUE OF THE SULLIVAN MINE

Property of Margaret Sullivan Estate:

Equipment and Structures to be used or sold				$5,000
Profit from treatment of dump ore	(5000)	tons @	$1.00	5,000
" " old tailings	6000	" "	$2.00	12,000
" " mine fills, say	15000	" "	$2.50	30,000
" " developed ore, say	10000	" "	$2.00	20,000
" " prospective ore	?			
Value of land to Congress operation				3,000
Total value of Sullivan Estate Holdings				$70,000

Property of New Congress Mining Co.

Unpatented claims with no developed ore but may contain eastward extension of Sullivan (Alaska) vein, surface rights would be useful for tailings disposal. Total value, say	5,000

Property of New Congress Mining Co. (continued)

The total profit or return from the Sullivan Mine which might eventually be obtained from operations in conjunction with the Congress Mine can be estimated at about $75,000 which would represent a present value of perhaps $30,000 to $40,000. Suggest that a cash offer of $20,000 might be in order or 2-year option @ $35,000 with monthly payment of $200 during option period with payments to apply on the purchase price.

Morton and Potter do not think that the value of the Congress Mill equipment and personal property is over $25,000 (I think that they are too low) and it would have no value to us in future operations (except the buildings) and should be disposed of as rapidly as possible.

The two samples of Congress fills which I took to Tucson were averaged with the idea of making the value between $4.00 and $5.00 (one was higher and one was lower) and the sample which was tested assayed 0.115 = $4.02 (assay calculated from product was 0.126 = $4.41.)

This was ground to 65 mesh and treated by straight cyanide with recovery of 80.6% and in another test it was treated by the Chapman (charcoal) process with recovery of 84% while tests on finer ground material ran as high as 92% and Morton is satisfied that in practice a recovery of 90% could be made by grinding thru 100 mesh.

One pound of cyanide per ton of ore was recovered.

In a 1000 ton mill the cost should be substantially less than the $1.35 which I figured say $1.15 and recovery of 90% of $5.00 would be $4.10 so that profit in fills might be about

NOTE RE CONGRESS

Distances:	Miles
Phoenix to Congress Junction	70.00
Congress Junction to Mine	3.0
Congress Junction to Holmes Ranch	10.00
Congress Junction to Billingsley Ranch	14.5
Holmes Ranch to Congress Mine	13.0

10/20/44

RE DUMPS

Hernon says that they have found records which show that part of the #5 Dump when treated alone ran 0.101 oz. and that part of the #1 Dump ran 1.017 oz. this last run representing some 5000 tons. Tailings ran 0.067 on the average over a considerable period of time.

10/29/44

EAGLE-PICHER REORGANIZATION

Mr. J. M. Bowlby, the President will also be Managing Director and have charge of matters of finance and general policy.

There are three Vice-Presidents:--

D. C. McKallor who will have general supervision of all operations and particularly their work in the Joplin District.

Hamilton A. Gray will continue in charge of purchasing and sales, transportation and public relations.

Elmer Isern will take charge of all details of mining and metallurgy including the work at Congress. He has been Chief Metallurgist for the Company for many years but has no extensive experience with mining or geological problems many of which may be referred to Fowler.

The entire policy of the Eagle-Picher Company in reference to expansion into new fields and acquisition of properties like Congress and Harquahala will probably soon come up for discussion and the new management will then decide whether to follow the liberal and aggressive policy which Potter had initiated, or to pull in their horns and confine their activities to their present operations.

The Congress deal has so far been highly thought of by the higher officials of the Company, but may be dropped if the latter program is adopted.

At the Tucson office Morton is retiring from the position of General Manager and will be replaced by Gordon Duff who seems to be an able and experienced man but I personally greatly regret the change. Morton told me that his health had recently obliged him to take things easy as he is suffering from high blood pressure and that he would continue to be connected with the Company in a consulting capacity but I fear that the true cause of his retirement may be due to that of Potter, although I think that he has always been very highly regarded by McKallor also.

Ed Crabtree has been advanced to the position of General Metallurgist for the Company and may later have to devote much of his time to the Tri-State work and gradually shift his headquarters to Joplin.

The younger Duff is Mine Superintendent at Sahuarita (San Xavier Mine) and will replace Crabtree as their Mill Superintendent.