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1102 Federal Building,
Toronto, Ontario.

Twp 49

SUMMARY AND CONCLUSIONS:

The Algoma Summit Gold Mines are located in a district which has received much favourable notice in the last couple of years.

The property is fortunately situated regarding power and transportation, two of the main problems in the initial stages of a mining enterprise, and the geology is favourable to ore deposition.

The mine has only been opened to the one hundred foot level and there is relatively little ore available above this horizon.

It is anticipated that the incline shaft will reach the two hundred and twenty five foot level by the middle of January and it is the hope of the management that the mill can be continued in operation after that date at approximately one hundred and fifty tons per day from drifts on the Grey Vein at the lower horizon, together with the ore that will be produced from these drifts on the one hundred foot level.

The writer is very doubtful if this can be done and believes that the broader interest of the mine would be served if the mill were closed now, and all efforts concentrated on developing ore well ahead of the requirements of the mill.

The company would be in a far better position today had this policy been adopted last summer when it was apparent that the open cut could not supply a mill feed that could be treated at a profit.

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Owing, however, to the financial position of the Company and the imperative necessity of raising additional funds to carry out the necessary development, it is possible that it may be found advisable to continue to operate the mill, even though it is almost uncertain that this will entail a loss to the company.

This is a matter of policy which must be decided by the Directors and is not a question of engineering.

It would be most unfortunate if it were found necessary to suspend operations at the property just at this time. The real problems have been finally realized and it is expected that sufficient new money can be obtained to bring the mine into profitable production.

The present incline shaft is not suitable for mining this class of deposit and should be replaced by a three compartment vertical opening.

Excellent intersections have been obtained from recent diamond drilling of the three principal veins to a depth of over four hundred feet, and in addition, there are a number of minor intersections which are obtained by the present drilling, as well as by drilling done at an earlier date, which indicate the probable existence of other veins.

It is not possible from the few intersections obtained, to make an estimate as to either the grade of ore or the widths that may be obtained at lower horizons. The results do, however, show that the veins contain gold at depth and it is, therefore, reasonable to expect that ore

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shoots of a commercial grade will be developed.

The property is equipped with a well built mill which should eventually make a recovery of about ninety percent. The capacity of the mill is far in excess of the present requirements of the mine.

It cannot be too strongly emphasized that the idea of large scale mining must be abandoned. The future success of the property lies in the development of lower horizons of the known veins which have been mined on the one hundred foot level, as well as in the locating of other veins which are indicated by diamond drilling, but about which, very little information is available.

If this point is appreciated and the sum of \$100,000 can be made available after the sinking of the incline to the two hundred and twenty five foot level is completed, the writer believes that operations at the Algoma Summit can be placed on a profitable basis by the Fall of 1930.

INTRODUCTION

The property of the Algoma Summit Gold Mines is located in Township 49, Sault Ste. Marie Mining Division, between Goudreau on the Algoma Central Railway and Lochalsh on the Canadian Pacific Railway. The mine is five miles from the former and twelve miles from the latter place, an excellent motor road connecting the two.

The Company owns seven claims, Nos. 204b - 2053 and 2055, being approximately three hundred and twenty acres. The title was not examined.

The Great Lakes Power Company Limited supplies an excellent service at a cost of \$35.00 per M.P.H. year.

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Water for the mill and domestic purposes is obtained from Webb Lake, which is partly on the property.

Supplies are obtained from Sault Ste. Marie.

The property was formerly known as the McCarthy-Webb, the present Company being formed in 1932 to take over the assets of that Company.

GEOLOGY

The geology is not at all complicated. Keewatin lavas have been intruded by an acid rock which has been variously described as quartz porphyry, quartz diorite and granite porphyry. Locally, this rock is known as "granodiorite" and will be so described in this report. The north contact of this intrusive with the lavas can be seen on surface, but the southern margin is drift covered. The contact zone here has, however, been located in the south crosscut. The general strike of the intrusive is slightly north of east and it dips north at an angle of about sixty degrees.

All the veins found to date on the property lie within this granodiorite and appear to conform generally in strike and dip to that intrusive.

The extent of the granodiorite is approximately 1500 by 600 feet. On the geological map of the district which accompanies Dr. Moore's report, the western part of No. 2050 and the eastern part of No. 2651 are shown as being underlain by lavas, though there is another, and smaller, outcrop of the same granodiorite about the centre of claim No. ²⁰⁵¹ 2651. Whether or not the two outcrops are part of the same mass is not yet known, but it is more than likely that they are related. Some exploration of this western outcrop is indicated and should be done when convenient.

The geology of the District is described by Dr. Moore in Vol. XL, Part IV, 1931, of the Ontario Department of Mines and a later shorter report by Dr. Burwash in 1935.

VEINS

The most important vein so far located on the property, known as the Grey Vein, occurs on Claims No. 2049 and No. 2050, and has been traced for a length of seven hundred feet. Sampling on surface by Consolidated Smelters some years ago gave an average of \$21.75 across 4.29 feet for a length of two hundred and ninety feet. At both ends the vein passed into low ground and could not be examined any further on surface, but at the 100 foot level, it has been opened for a length of five hundred feet, and what appears to be the same vein was recently located in 4B drift, two hundred and fifty feet further west.

The average width and value at the one hundred foot level is not possible to arrive at as the stopes have been carried considerably wider than the limits of commercial ore, causing heavy dilution, and until quite recently the sampling records were very incomplete.

The vein matter is principally quartz with banks of silicious rock adjoining the quartz, both portions carrying gold values. It will probably be found possible to stope this vein to a width of five feet, but in starting new stopes at lower levels, it is essential that the stopes be kept narrow and widened only on assay results. It is imperative that dilution be kept down to the lowest possible point. The vein varies in strike from about N 60 W to S 60 W, the trace of the vein being an arc with a large radius. It is important that the

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65 degrees, being approximately parallel to the dip of the granodiorite intrusive.

The gold occurs in the free state and according to tests that have been made, is not associated with the pyrite.

This vein has been opened at the one hundred foot level by a series of drifts called 4A and 4B, as well as by a sub-level. Part of what is certainly ore is too near the incline shaft to be available at the present time. Close to where the circular crosscut intersects the vein on the north side of the shaft, there is some splitting and 3A and 3B, as well as the newly opened 5B, are certainly part of the Grey Vein. There is a reasonable probability, therefore, that it will be possible to carry one fairly wide stope, including these three veins, at lower horizons.

Going west, values continued in 4B to a point thirty feet west of the main south crosscut, but beyond this point the drift is in waste. Recently, a flat diamond drill hole extended south from a point one hundred and ninety feet west of where the ore was lost, returned an intersection of \$3.50 across 2.5 feet, about twenty feet south of the drift. A study of the maps showed two interesting diamond drill intersections close to the wall of the drift, so at the writer's suggestion a crosscut was started south from the face while this examination was in progress. The crosscut broke into a vein carrying free gold which has all the characteristics of the Grey Vein.

The section between the present face and the point from where values were lost in the drift, should be explored as soon as possible by crosscuts, if work is continued on this

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level, as there is certainly some ore in this wall. From surface indications, there will probably be a blank for part of the way. West from the present face is virgin ground and there is a possibility that a greater width may exist in this direction.

Last summer, a crosscut was extended south from the Grey Vein to the granodiorite-greenstone contact in the hope that the contact zone would contain a vein of commercial ore. This hope was not realized, but six interesting intersections were obtained, and one of these, which was developed by drifts OA and OB, one hundred and twenty feet south of the Grey Vein, gave a length of sixty feet of ore much above the average obtained elsewhere in the mine. Musk samples from this stope in the month of October, gave \$12.09 for four hundred tons, and though this figure is probably above the true average, the grade is undoubtedly good. This shoot has been mined to within a few feet of the surface and only a small tonnage of broken rock remains in the stope.

Drifting west on this vein, a split occurred which caused some uncertainty as to which to follow. The southern part was followed, a rather promising looking stringer being left on the north wall. During the past week, a round was taken on this stringer and the new face shows a foot of quartz with considerable free gold. A sample taken by the writer here gave \$126.70 across thirty inches. There was a considerable amount of free gold in this sample, and, of course, it does not repre-

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sent the true value of the vein. The result is merely given to show that there is considerable promise in this vein going west. Work had to be discontinued here for a few days as the diamond drill was set up, drilling a flat hole to the southwest. The machine will be put back here as soon as the diamond drill has finished.

None of the other veins cut in the crosscut gave any sections of commercial grade, but scattered values were obtained from all of them and further exploration should be made of them at a lower horizon when there is better provision for handling waste. It is reasonable to anticipate that an ore shoot may be found in one or more of these veins at a lower horizon.

A vein developed by drift 2B lies sixty feet north of the Grey Vein. The vein matter here is silicious granodiorite with many stringers of quartz. This has been opened for a length of two hundred feet and the stope carried to a height of nearly seventy feet above the level. Some good sections of ore occurred here but as was the case in stoping the Grey Vein, dilution has kept the grade down. Car samples from nine hundred and fifty tons during the month of October, averaged \$3.50.

Drifts 20A and B are 40 feet north of 2B. While some good ore occurred here, recent results have been disappointing and work has been discontinued. A very good diamond drill intersection was obtained in this vein at a depth of two hundred and sixty feet below the level.

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MILL

In the summer of 1936, a contract was made with the Canadian Comstock Company to design and erect a mill with an initial capacity of five hundred tons per day. The ore is certainly amenable to cyanide but the flotation process was adopted on a question of capital cost. A cyanide plant with the desired capacity would have cost half a million dollars, whereas this plant was erected for about half that sum. It is doubtful if the plant will handle quite the estimated tonnage, but it is capable of treating a larger tonnage than is likely to be available for mining for several years.

The mill building is well put up, the equipment new, and of good quality and the plant functions well. A flow sheet showing the detailed treatment is attached.

A recovery of about seventy percent is made from jig and flotation concentrates and at the present time, the residue from the amalgamation barrels is being shipped to the Noranda Smelter. It is hoped that in a short time, the revenue from this source will bring the total recovery to eighty five percent.

It is proposed, when possible, to add a small cyanide plant to treat these residues, which should bring the total recovery to ninety percent. Discussion of this point, can, however, be left for the time being.

The mill went into operation on April 1st, 1937, and the production figures to date are as follows:

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<u>Month</u>	<u>Tonnage</u>	<u>Daily Tonnage</u>	<u>Heads</u>	<u>Percent Recovery</u>	<u>Bullion</u>
April	4,178	148	\$ 0.85	28	\$ 1,023
May	5,678	180	1.07	42	2,598
June	7,813	260	1.00	33	2,587
July	4,997	160	2.43	46	5,562
August	4,126	135	2.41	75	7,492 (7,583)
September	4,054	135	3.50	68	9,589
October	4,469	144	3.80	72	12,276
November	3,348	112	4.50	70	<u>10,558</u>
					<u>51,685 (51,776)</u>

The returns from the mint up to November 30th amount to \$49,032, the difference being mainly caused by too high an estimate having been made of the amalgam for two months during the summer.

DEVELOPMENT

Previous to the installation of the present mill, a shaft inclined at an angle of thirty-five degrees to the horizontal, was started on the outcrop of the Grey Vein and sunk a slope distance of two hundred and ninety seven feet, a level being established at one hundred and seventy one feet down the sash, a vertical distance of one hundred feet.

The shaft was planned to go down in the plane to the vein so that it would be in ore all the way. Owing to a slight irregularity in strike and dip, the vein passed out of the shaft just below the one hundred foot level. Recently in deepening the shaft to the objective of two hundred and twenty five feet vertical depth, part of the

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on the north side and free gold was seen in it.

Incline shafts are relatively rare in Eastern Canada today, and generally speaking, are not as satisfactory as vertical openings, except in cases where it is desirable to keep the vein in sight to a relatively shallow depth for purposes of sampling. The only other reason for an incline shaft is the comparatively rare case of very flat veins such as occur at the Lamaque and Sullivan properties in Quebec. In such cases, the shaft is sunk in the footwall at the same dip and at a convenient distance behind the vein, thus avoiding lengthening cross-cuts at each succeeding level.

The shaft has a length of one hundred and seventy one feet for every one hundred feet of vertical depth, and unless it could have been kept on the vein all the way, entailed handling an extra twelve hundred tons of waste for each level opened. Even if the vein had remained in the shaft, the excavation is so much greater than the width of the vein that very serious dilution must have resulted.

When the policy of milling a large tonnage was decided upon, it was, of course, necessary to develop a system of cheap mining to supply the mill, and accordingly, a raise was extended from the one hundred foot level to surface, and a glory hole started. An ore pass was brought through, ^{from} the shaft and a grizzly placed under the chute. From the ore pass the ore was fed into a three ton self-dumping skip which hoisted the ore to the mine bin. This arrangement worked quite satisfactorily. It was appreciated that the open cut would be low grade and to bring this to a commercial grade it was planned to add a certain amount of better grade ore from the Grey vein as sweetener!

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Unfortunately, no provision was made in the surface lay-out for handling waste and so a large tonnage from cross-cuts had to be put through the mill. The result was that the mill feed was so diluted that a very serious loss was made on the operation of the mill during the time that the open cut was in operation. (See mill production page 10).

In the mining of low grade ore bodies on a large scale, which is necessary in order to make a profit, it is essential that a very thorough investigation of the ore body should be made before the mill is built. As an instance of this, reference is made to the enormous amount of sampling and testing done by the Hollinger at the Young Davidson property in Matachewan, before a decision was made to build a mill. The Beattie did many thousand feet of diamond drilling before sinking even a test shaft in the ore body and the mill was not authorized until the diamond drilling results had been corroborated by a certain amount of underground work.

In the case of the Algoma Summit, it is a regrettable fact that no systematic sampling was done of what afterwards became the open cut, prior to the installation of a mill to handle a large tonnage.

In July of this year, it was decided to abandon the open cut and endeavour to mine the known veins by methods usually employed in handling moderate tonnages. A diamond drilling campaign was proposed at this time but was postponed on the question of finance. The drilling has just ~~not~~ completed with most gratifying results which are discussed elsewhere in this report.

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After work ceased in the open cut, the heads showed considerably improved, but owing again to the considerable amount of waste that had to be sent to the mill from the development work, as there was no other means of disposing of it, there was still considerable dilution. At the present time, sufficient gold is being won to meet the greater part of the payroll but operations are being conducted at a loss without the shaft work which is charged to capital.

Development work is proceeding in Drifts 5B and 4B, and work will be resumed in 6B as soon as the diamond drill is finished there. Stoping is proceeding in the sub-level on the Grey Vein and 4B. In addition to this, a crew of men is engaged in deepening the shaft to a vertical depth of two hundred and twenty five feet. This work was started on December 6th and is expected to be completed about January 15th. On December 15th a slope distance of three hundred and thirty two feet had been attained, leaving seventy five feet to go to reach the objective.

AVAILABLE ORE

On December 15th, the available ore was as follows:

4A and B	-----	1500 tons in place
2B	-----	1500 tons in place (1,000) tons broken)
6A	-----	200-300 tons broken

It is possible that when this is actually mined, the total tonnage might come up to about 5,000 tons, but it is very doubtful if more than this could be obtained. It must be remembered that a certain amount of the Grey Vein is not available owing to its proximity to the incline shaft. In addition to the above, there are drifts 5B, 6B and 4B, the faces of all of

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which were in ore on the 15th of the month. 5B shows ore for a length of seventy feet. The other two are just started. It is obvious, therefore, that on a monthly tonnage of around 5,000 tons, it will be impossible to feed the mill very much longer from the one hundred foot level.

FUTURE POLICY

The present program is to continue the incline shaft to a slope length of four hundred and nine feet which will give a vertical depth of two hundred and twenty five feet from surface, and to open up at this horizon, the veins that have already been located on the one hundred foot level. It is probable that the Grey Vein will be practically in the station at the two hundred and twenty five foot level and a crosscut of some eighty feet will be necessary to reach the downward extension of the 2B vein, and something over one hundred feet to reach 6B.

The shaft is being advanced at the rate of about four feet a day, so it will be approximately the 15th of January before this work is completed, a small station cut and the additional footage necessary for a sump and skip pocket.

The stopes above the one hundred foot level are rapidly approaching depletion and when this point is reached the only ore available for the mill will be from the three drifts 4B, 5B and 6B, which were all in ore on December 15th. By the middle of January some ore should be available from the Grey Vein at the two hundred and twenty five foot level, and the management hopes to be able to feed ~~removed from~~ these sources. As crosscuts totaling ~~the~~ ~~of~~ ~~the~~ ~~and~~ ~~eighty~~ feet will be required to reach the ~~downward~~ extensions of

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2B and 8A at the lower level, no ore will be available from these veins for at least a couple of weeks after the incline shaft has reached its objective.

It is, therefore, doubtful if there will be sufficient ore available to keep the mill going much longer on the basis of one hundred and fifty tons per day. If the mill has to be kept in operation beyond that time, it would be advisable to move the grate back inside the ball mill. This would reduce the load and make it possible to handle a smaller tonnage without excessive steel consumption.

It is doubtful if the operating cost in the mill would be reduced to any appreciable extent by doing this, and with a smaller tonnage, the bullion produced would be less unless it were found possible, by more careful mining, to raise the grade of ore entering the mill.

On December 10th, there were ninety eight men on the payroll exclusive of sixteen who were employed in shaft sinking, which is charged to capital account. This number represents a monthly payroll of about \$15,000.00. The management hopes that after certain necessary work on surface is completed, it will be possible to eliminate sufficient men to reduce this sum to about \$12,000.

On this basis the monthly costs would be as follows:

Payroll	\$12,000
Power	1,500 (minimum)
Explosives	3,000
Sundry Supplies	1,000
Head Office	1,500

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The largest amount of bullion produced by the mill in any one month has only been slightly over \$12,000. and while there will be some revenue from the residues shipped to Noranda, it is not likely that this figure can be exceeded with any regularity in the immediate future.

It is obvious therefore, that operations are being conducted at a substantial loss and there is no prospect of any lasting improvement under existing conditions.

In order to get the property on to a self-supporting basis, leading to the making of a profit, it is essential that sufficient ore be developed to avoid the necessity of sending very low grade material to the mill in order to keep it in operation.

The most satisfactory plan to adopt would be to close the mill immediately and commence a program of intensive development to open up two, or better still, three new levels. Production should not be attempted until sufficient ore is developed to insure a steady feed to the mill.

It has, however, been brought to the writer's notice that, on account of outstanding debts such a policy might force a complete suspension of operations. This would be most unfortunate as from all indications the mine can be placed on a paying basis, provided certain fundamentals regarding the nature of the ore occurrences are recognized.

While the closing of the mill at this time is advisable from an engineering standpoint, this may not be the wisest policy to adopt. The decision as to which path to follow rests with the directors. Whether or not the mill is continued in operation, it is essential that the development at lower horizons be commenced immediately and the first step in this

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to establish a three compartment vertical shaft to replace the present incline.

A tentative site for this shaft is shown on the attached plan some fifty feet west of the open cut and a little less than five hundred feet west of the ore bin.

This shaft would be completed most quickly by raising from the two hundred and twenty five foot level to the one hundred and fifty foot horizon in about two and one half months from the start of operations, and to the next level about five weeks later.

COST OF NEW SHAFT

Raising from the 225 foot level	\$ 9,000
Sinking from 225 feet to 475 ft.	20,000
Crosscutting at the 100 ft. and 225 ft.	3,000
Headframe	2,000
Double Drum Hoist	5,700
Motor to operate hoist	2,500
Building and Installation	3,000
Lateral development	<u>30,000</u>
	\$75,000

(The above figures for the hoist and the necessary motor to run same were supplied by Ingersoll Rand)

While this indicates that \$75,200 will be required for the development, it is desirable that not less than \$100,000 be provided to guard against any unexpected delays.

These figures are based on the assumption that the mill will not be in operation. As it is almost certain that a loss must be sustained if it is continued, further provision must be made on the basis of about \$1,000 per month for less than four months to provide for such losses.

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DIAMOND DRILLING

In October a contract for 3,000 feet of drilling was let to Aurie Limited, and to date, twelve holes have been drilled. Three of these were from surface, the balance from the one hundred foot level.

Four good intersections of the Grey Vein were obtained at depths down to three hundred and fifty feet below the one hundred foot level, one intersection of the No. 8 vein, one of the 20 vein and one of 28. The detailed results of the drilling are as follows:

<u>Vein</u>	<u>Hole</u>	<u>True Width</u>	<u>Value</u>	<u>Remarks</u>
Grey	(102	1.4'	\$ 7.00	
	(103	2.4'	32.14	
	(104	4.7'	19.97	
	(14	0.4'	2.10	
	(15	0.7'	19.50	
20B	102	4.0	50.00	(arbitrary value Arith. Av. \$33.50
8A	104	2.5'	9.80	
2B	102	2.3'	17.64	

This makes a very attractive picture for the possibility of developing a mine of moderate tonnage below the one hundred foot level.

This diamond drilling was nearly completed before the writer reached the property. The drilling was under the direction of Mr. D. J. Mateer, who split the cores and sent them out for assay. The remaining half cores which represented the unusually high assays were examined and free gold was seen in them. Though the writer cannot take any responsibility for these figures, he believes them to be correct.

While this examination was in progress, an article appeared in the press stating that the writer indicated by the

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diamond drilling were very much greater than they really were. On investigation it appeared that the sludge assays had been used. When there is free gold in the vein matter, the sludge contains small particles of gold which really belong higher up in the hole. The result of this is to indicate a better grade and a much greater width than really exists. In this case, complete core recovery was made and so the true width of the ore is known.

The core intersections indicate a good grade of mineable width, but it must be very definitely recognized that there is most emphatically not an ore zone which could be mined on a large tonnage basis. There are, however, several parallel veins which appear to be of commercial width and grade.

MINOR RECOMMENDATIONS

The assay office should be moved nearer the mill. This can be left until next summer, and at the same time, a small, better equipped refinery should be built. There is no need for the two offices at present in use. The one under the same roof as the staff house could be eliminated and by making some small changes in the main office, ample room could be provided for the necessary staff.

PLANT

A detailed list of the plant showing the electrical hook-up is attached. With the exceptions of a new hoist, which is discussed elsewhere, a pump for the new shaft, some half dozen one ton ore cars, and possibly one or two new machines before the program outlined is completed, it is not likely that any appreciable amount of money will be required for the plant, other than ordinary maintenance.

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SAMPLING:

There did not seem to be any object in spending money sampling the backs of stopes which were rapidly approaching completion. The back of 5B drift was sampled at five foot intervals and gave an average of \$5.37 for 5.03 feet, which compares reasonable closely with the figure of \$6.00 across six feet, obtained by the company's samples from face samples. In addition to this section the face of the 3A drift was sampled, returning an unexpectedly high value - \$26.60 being obtained across three and a half feet.

One sample in 4B gave \$12.95 across two feet and the face of 8A gave \$126.70 across thirty inches, but, as mentioned elsewhere, free was seen in this sample and such a figure, of course, cannot be taken seriously. A list of the samples together with the assay is attached herewith.

ACKNOWLEDGEMENTS:

In conclusion, the writer wishes to express his very great thanks and appreciation to Major Day, General Manager, Mr. Biggar, Resident Manager, and the other members of the staff, for their courtesy and invaluable assistance during the progress of this examination.

Respectfully submitted,

M. C. H. Little

Mining Engineer.

MCHL:

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December 29th

1937

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Mine Ore Bin (200 tons capacity)

to

Primary Jaw Crusher (15" x 30" Dominion-500 tons mine run to 3" per 8 hrs.)

to

Primary Conveyor

to

King's Electro-Magnet

to

Link Belt Vibrating Screen (3/4" x 1 1/2 screen size)

oversize to

Symons Cone Crusher 4' Standard

500 tons per 8 hrs. 3" to 1/2". In closed circuit with primary conveyor

undersize to Main Conveyor

to

Mill Ore Bin 450 tons capacity to

Belt Feeder ← Soda Ash 0.5 lb. per ton

March ball Mill (8' x 10' 525 tons-24 hrs. 1/2"-50%-200)

to

Denver Jig (16" x 24") → Hutch product

Jig Overflow to

to

Elevator

Wilfley Pump (1")

to

to

60" Akins High Weir Classifier, in closed circuit with March Ball Mill overflow to

Jig Hopper Charged to amalgam bbl. 1500 lb/bbl

8' x 8' Denver Conditioner 2/3 Pine Oil & Xanthate added

to

10 cell Denver (Fahrenwald) Sun-A Flotation Unit

1/3 Pine Oil & Xanthate added

Concentrat to Concentrate Box

Tails to

Tailing Launder

Amalgam bbl. Residue to Wilfley Table

to

Wilfley Pump (1")

to

14' x 10' thickener - Lime Added

Overflow to

Underflow to

Waste

March Regrind Mill 42" x 60"

to

Regrind Agitator

to

Wilfley Pump (1")

to

Middlings

Table Concentrate

Wilfley Table

to

Table Middlings to 1 1/2" sand pump in closed circuit with 14' x 10' Thickener

Tailings to

Concentrate Box Charged to Amalgam bbl. (1500 lb. per bbl.)

Table tails Thickener 5'x5'

to

4' x 3' Feinc Filter

to be

Bagged and Shipped to Smelter

Amalgam bbl. Residue to Wilfley Tbl

It is proposed to cyanide the barrel residues instead of shipping them to this smelter. The estimated cost of this addition is \$15,000.

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ERIE CANADIAN MINES LIMITED
(No Personal Liability)

Algoma Summit Mines Limited - Goudreau Area

Location

The Algoma Summit Mines own seven claims near the southeast corner of Township 49, Goudreau Area. The claims are numbered as follows: 2048, 2049, 2050, 2051, 2052, 2053, 2102. A gravel road connecting Goudreau to Lochalsh passes through the property.

Geology

The Algoma Summit vein system occurs within a large boss of granodiorite having approximate dimensions of 600 feet by 1500 feet. The longer axis trends in a northeasterly direction. Only the south contact of the diorite against greenstone has been exposed. At this point, the greenstone has been altered to chlorite schist and pyritized over a width of a few feet. Only small gold values have been found in this material.

The gold bearing veins are confined to the granodiorite and occur in narrow, east-west striking shear zones. The dip varies locally, but on the average would approximate 70° north. For the greater part, values are confined to free gold in quartz with only minor values in the weakly pyritized granodiorite. Tourmaline accompanied the gold deposition and is found to be a reliable marker in the tracing of economic shears underground. The vein walls are assay walls as the mineralized sheared diorite is found to carry low values before merging into the massive rock. Up to the present, development work has been carried out on two levels, an attempt being made to follow the individual shears. Due to the inconsistency of these and the tendency towards minor faulting, considerable trouble is experienced keeping on the right lead.

It has been proposed to mine the whole mass as a low grade proposition, but it is extremely doubtful if this could be carried out at a profit. If any success is obtained following the individual shears, the mine could develop into a small profitable producer. With intelligent pursuit of development this could easily occur.

D. K. Burke.

Kirkland Lake, Ontario,
September, 1930.

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SAULT STE. MARIE, ONT.

July 4, 1939.

Mr. J. H. Colville,
Room 612,
67 Yonge Street,
TORONTO, Ontario.

Dear Mr. Colville:

This will acknowledge your letter of June 29th with enclosed information on the Algoma Summit property.

Certainly Mr. Little's reports do not sound very encouraging, but as I mentioned to you, I am still of the opinion that a thorough bulk sampling job might very well show parts of the granodiorite stock to be mineable over considerable width.

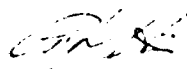
The financial set-up as outlined in your letter is also rather discouraging, but it might be that something can be worked out here. I am sending the reports and a copy of your letter to Mr. Moot and am asking him to get in touch with you should he be willing to consider a possible deal. When I spoke to him two weeks ago about this property, he was not very enthusiastic, but it is just possible that he would be willing to consider the bulk sampling.

Congratulations on the way your A vein is showing up at Argosy on the second level, and thank you for sending along the Algoma Summit material.

Best personal regards.

Yours very truly,

SYLVANITE GOLD MINES, LIMITED,
(No Personal Liability)
EXPLORATION DEPARTMENT.



Superintendent.

GLH:MO

July 6, 1939.

Mr. W. V. Moot, Managing Director,
Sylvanite Gold Mines, Limited,
319 Erie County Bank Building,
BUFFALO, New York.

Re: Algoma Summit

Dear Mr. Moot:

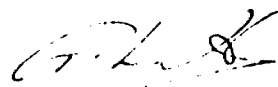
I am enclosing a copy of a letter from Mr. Colville and also copies of the reports which he sent here.

The reports do not sound very favourable, although I still have a feeling that a thorough bulk sampling job would have a chance of showing up a fair width of low to medium grade ore. I am afraid, however, that the financial set-up as outlined in Mr. Colville's letter is a little too bad to be worthwhile straightening out on the strength of what they have now developed. It is quite possible that after another month or so they would be quite willing to make a much better deal than they will just now, although from the way Mr. Colville writes they are apparently rather desperate even now. If you would be at all interested in this, I can go to Toronto when I return from Colorado and see what can be done with this property.

When you are through with the reports, will you please return them to Mr. Colville.

Yours very truly,

SYLVANITE GOLD MINES, LIMITED,
(No Personal Liability)
EXPLORATION DEPARTMENT,



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SAULT STE. MARIE, ONT:

GLH:MO
Encls.
C.C. - Mr. Gray

ROOM 612
67 YONGE STREET
TORONTO

June 29th, 1939.

G. L. Holbrooke, Esq.,
Erie Canadian Mines Ltd.,
Kirkland Lake, Ont.

Dear Mr. Holbrooke,

I regret the delay in sending the information about the Algoma Summit. It is due to the fact that Mr. A. W. Burt has been out of the City for the past week, and since he has the option on the property it was necessary to await his return. He has given me the following information.

The Company is badly in debt with something less than \$170,000 Liabilities. Out of this amount, \$40,000 must be looked after in the near future, while the balance can be postponed indefinitely. This indebtedness is secured by a Debenture issue of Bonds which apparently cannot be foreclosed. Mr. Burt has an option for the formation of a new Company of 3,000,000 shares. The Vendors ask 1,150,000 shares, and they wish the incoming Company to take down 1,350,000 shares at an average price of 20¢. The initial price of the stock will be approved by the Securities Commission. The final 500,000 shares they will give to the optionee at 5¢ after the property has been financed. They will permit all money needed after the stock has been sold, to be made in the form of a loan to be returned from the profits. I presume that these terms can be altered substantially, but I did not think it worth while to argue with them at such an initial stage. They are prepared to offer a 30-day Option for examination of the property.

I am enclosing a report by Mark Little, which may not be of much use to you since it does

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not pay sufficient attention to the low grade question, and I have never been impressed with the small high grade tonnage proposition. They inform me that all records are kept at the Mine, and will be available if you wish to examine them when at the property. If this set-up is of interest to you, please advise the office and we will put you in touch immediately with Mr. Burt, who has been lining up the deal. You have probably met him.

I am leaving for St. Louis to-night and will be back probably on the 4th of July. If you want to communicate with Mr. Burt before then, please get in touch with Col. E. M. Thomson of this office, who will arrange matters for you immediately.

If it is of interest to you the only assay that we have received so far from Jason on the No. 1 Vein, cut on the Second Level, is \$162.50 - which is not bad.

With best personal wishes,

Yours very truly,



J. H. Colville.

JHC/DMG

Enclosure.

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SAULT STE. MARIE, ONT.

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Sylvanite Gold Mines, Limited

(NO PERSONAL LIABILITY)

319 ERIE CO. BANK BUILDING

BUFFALO, N. Y.

July 20, 1939

Mr. G. L. Holbrooke,
Superintendent of Exploration,
Sylvanite Gold Mines, Ltd.,
P. O. Box 670,
Kirkland Lake, Ontario

Dear Mr. Holbrooke: Re: Algoma Summit

Mr. Moot has requested us to reply to your letter of July 6th in this matter. He has now left on his vacation and will return about the 15th of August. He states that since there is no hurry about this matter, that he thinks it best to wait and defer the matter for the present. You might call this matter to his attention after his return.

Very truly yours,

SYLVANITE GOLD MINES, LTD.

BE-t

By *A. W. Tomlinson*

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INTRODUCTION:

In December, 1937, after an examination of the Algoma Summit Gold Mines, the writer made certain recommendation which it was not found possible to carry out at that time.

The purpose of this later report is to discuss the operations at the property during the past year and to suggest what can be done to bring the mine into profitable production.

It is assumed that this report will be read in conjunction with the previous one.

CRITICISM OF ORIGINAL PLAN AND OPERATIONS TO DATE:

When it was announced a few years ago that the Algoma Summit was planning to build the first five hundred ton unit of a mill designed for a thousand tons, and mine it through a Glory Hole, much interest was aroused.

According to statements made at the time operations were to be conducted at a much lower cost than had ever before been attained in Ontario. The standard of mining in Canada is being raised every year, but the improvement is gradual, and while it was hoped that this enterprise would be successful, it was felt that those behind it were being rather optimistic.

The fact that flotation was to be used instead of cyanide, to which the ore was very well adapted, indicated that there would be a considerable expense entailed in handling the concentrates which would have to be shipped to a smelter. Operators wondered if such a low grade proposition could stand this expense.

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Later it transpired that no intensive diamond drilling had been done to test the block of ground that was to be mined through the open cut. The mine was opened through a very flat incline shaft sited in the plane of the best vein. This would, obviously, tie up considerable ore and make it necessary to sink an extra seventy feet for every hundred feet of vertical depth. Lastly, and most serious objection, no capable operator with large scale experience in Canada was in charge.

By the time the plant was ready to go into operation, therefore, reasonable doubt of the scheme had changed to frank skepticism.

What happened is well know, after working the open cut for a few months it became clear that the plan was hopeless and it was abandoned.

As the Glory Hole was to have been the chief source of mill feed, though the Grey Vein at the hundred foot level was to be a 'sweetener', very little development work had been done in the mine and that only at the comparatively shallow horizon of a hundred feet.

Three or four other veins were know to exist fairly close to the Grey Vein so it did not seem unreasonable to rely on these to supply the mill, and the announcement was made that in future the practice of 'selective' mining would be followed.

It is at this point that there is the greatest ground for criticism. If facts had been faced, the mill closed for a time until the drifts could be opened, the stopes prepared, and selective mining really carried out, the story of Algoma Summit might have been different.

The original plan was unsound from an engineering standpoint but, at least, it was an attempt to do something on a grand scale that, had it been successful, would have brought great prosperity to the district.

In the light of the experience gained during the time the mill had been in operation it was quite clear that no profits could be made from low grade material with the type of flow sheet that had been adopted.

However, the same advice was accepted that had been instrumental in the ill-fated Glory Hole idea and the Directors were persuaded to continue operations with the mill feed coming from what stopes remained on the first level, which were all low grade, as well as from drifts and even crosscuts at the second level.

In the original plan everything hoisted was to be milled, so no provision had been made for handling waste. A waste bin was installed when the shaft was being deepened, but its use was discontinued as soon as lateral work was started at the second level. The result was that the average grade that entered the mill during 1938 was reduced to 3.45.

The practice of milling everything that is hoisted makes for an apparent low cost per ton of operation. It should be noted that the cost of producing each ounce of fine gold paid for was no less than \$50.05.

WORK DONE DURING 1938 AND RESULTS OBTAINED:

Sinking of the incline shaft was completed during January, and a second level established at a vertical depth of 110 feet below the first level, or 210 feet from surface.

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During the year two thousand feet of lateral work were done on each level.

The most important development during the year, and in fact the only source of ore of commercial grade, was the Grey Vein on the Second level.

The vein was followed east for 430 feet, the face now being only a short distance west of the diabase dyke. As was the case at the upper level, the Grey Vein and 5-B are close together and the drifting was carried partly on the one and partly on the other. This was unfortunate, as while the Grey Vein in this section is generally ore, 5-B is low grade, and while it may be possible to mine it at lower horizons if there is a sufficient amount of higher grade ore to carry it, by itself it is not ore and was one of the numerous causes of the low grade of the mill feed during the year.

Going east from the shaft, the first 170 feet is on the Grey Vein which shows an average width of about five feet. This section has been stoped out to the limit of safety of the incline shaft with a width of ten feet. The sampling records of this part of the drift are not sufficiently complete to compute an average value, and there are no stope sections. Car samples from June to December averaged \$0.35 and as there must have been at least fifty per cent dilution due to the width of mining in order to provide tonnage to feed the mill, it is reasonable to assume a value of nearly \$10.00 across five feet for this section of the vein.

The next one hundred and thirty feet of the drift is on 5-B and is low grade. Box holes have been driven in this

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section but no stoping has been done. It is probable that the Grey Vein lies in the footwall here a few feet in and could be drawn through these chutes. However, as nothing is known of the width or value of the vein here no tonnage can be estimated.

Immediately east of these box holes, a stope, known as 201-A, has been started and is certainly on the Grey Vein. This stope has a height of twenty-seven feet, a length of 113 feet, and is about ten feet wide. Sampling by the writer showed the vein material to have a value of \$17.00 uncut and \$13.50 cut across a width of five feet for a length of 60 feet east from the west end of the stope. From this point 40 feet east to the manway the vein is very narrow and was not sampled. This section is definitely not ore at this horizon, but may improve above. There was one good section in the east end of the stope.

Approximately 2,000 tons are in place in this stope up to the first level, though this amount will be increased should the east end improve higher up.

West of the shaft station, the Grey Vein has not been located. The last place it is seen is in the station at the two hundred foot level, where it is very small. There is no sign of it in the south crosscut just west of the station. Some diamond drilling is advisable a short distance west to try to locate this most important vein.

A considerable amount of work was done west of the shaft in Drifts 201-" and 202-", and a crosscut was extended fifty feet south from 201-".

In 201-W there was an occasional good assay, but no section approaching ore grade was encountered.

At the west end of 202-W some encouraging assays were obtained and box holes have been raised preparatory to stoping this block. Five samples taken on the pillars between the box holes gave an average of \$21.00 across three feet for a length of ninety feet. This vein is the downward extension of 2-B.

In drift 202-C which comes back north east from near the face of 202-W there is a vein which is probably the downward extension of 20-B. Four samples were taken here; one, due to the presence of free gold, was high, - the rest were low ore grade. There is a very promising diamond drill intersection some forty-five feet ahead of this face and apparently in line with it.

The south crosscut from 201-B was only extended fifty feet and did not reach the downward extension of 2-B. Later a diamond drill hole from the face of the crosscut returned a high sludge assay at a depth of sixteen feet. The core was lost so it is not certain whether this really is 2-B or not but it is well worth further investigation.

On the first level considerable work was done in 10-B. An occasional fair assay encouraged the continuation of this work, but no section of commercial grade was encountered.

During the summer a vein was uncovered on the surface which showed considerable gold. The face of 10-B is about opposite this showing and a hundred feet north of it. The dip of the surface exposure is not known but a crosscut south from 10-B should reach it in thirty or forty feet.

Generally speaking, the work on the second level was done very badly planed, though the detailed timbering is well done.

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On the first level, the Grey Vein and a lower grade branch of it, known as 5-B, are quite close together for a hundred feet. In opening up the second level this knowledge was not applied. There is a section between stopes 201-E and 201-A which is obviously on 5-B. No attempt was made to locate the Grey Vein by short crosscuts and box holes were actually placed in this drift, though it is low grade and could not possibly be worth mining by itself.

Stopes everywhere were broken much too wide. This was really not the fault of the underground crew but was done because of the insistent need for material to feed the mill. Only 50% of the total gold produced is in the form of bullion on which shipping rates are very low. The balance of the production consists of concentrates which were sent to the Noranda smelter for treatment. While there was over \$4,000 gross gold in the concentrates, smelter, freight, and trucking charges amounted to over \$32,000 so that less than \$52,000 was actually received from this source. A cyanide plant to treat the concentrates on the property could have been built for less than this sum.

Owing to this heavy cost the actual gold paid for in 1930 was only \$2.61 per ton milled, or 75.7% of the gold entering the mill, and there was an operating loss for the year of \$30,000.

DIAMOND DRILLING

In the Fall of 1930, 530 feet of flat diamond drilling was done with an X-ray machine at the second level, and 244 feet on the first level. This machine only had a capacity of 150 feet, but several very interesting intersections were obtained with it. Unfortunately after the drilling had been done finances did not permit of any crosscutting being done to explore these intersections

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The following are the most important holes.

Hole 201 was driven south from the face of the south crosscut. At 16 feet a sludge assay of \$16 was obtained but the core for this section was lost. This is almost certainly the downward extension of 8-B which provided excellent mill feed on the upper level.

Hole 205 - driven south east from Drift 202-W cut three feet assaying \$15.05 at a depth of five feet. This is probably a footwall split of the vein in the drift.

Hole 206 - driven north from the same setting as 205 - cut two feet of \$15.40 at a depth of 41 feet, and three feet of \$16.10 at 68 feet. Drift 202-C is only forty feet from the second of these two intersections.

In addition, there are several other intersections below grade ore which should be investigated when possible.

Mining of 201-E stope substantiated the good core intersection in Hole 103 which was drilled from the first level in December 1937. It is reasonable, therefore, to anticipate that the other good intersections of the Grey Vein obtained at greater depths in other holes indicate the existence of a vein that can be extracted at a profit if care is taken to break only the vein proper.

AVAILABLE ORE:

Approximately 1,000 tons of broken ore in 201-E stope constitute the entire broken reserve of ore.

It might not be inappropriate here to give a definition of 'ore' from The Engineering and Mining Journal:

'An ore may be defined as any mineral or aggregation of minerals from which a metal or metals can be extracted at a profit.'

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It seems advisable to underline the concluding words of the definition, as a very large proportion of the 'aggregation of minerals' that was sent to the mill in 1938 did not contain sufficient metal (gold) which could be extracted at a profit.

There is a small tonnage of broken rock in some of the other stopes but car samples over a period of several months have been so low that it is very doubtful if any profit could be made from this material even though the mining is paid for. In all cases, the stopes have been broken so wide that there is a large amount of waste rock included in the stopes.

No further ground can be broken in 201-E as long as the incline shaft is kept in operation.

In 201-A there are some 2,000 tons in place to the first level. The back of this stope is drilled off. The stope is being carried nearly ten feet wide though the sampling only shows values to extend across five feet. The grade for a length of 60 feet is good (\$13.50 across five feet), but unless the stope is carried up by assay walls dilution will ruin the grade again.

There is a section of 90 feet at the end of Drift 202-W in which samples taken on the pillars at irregular intervals gave \$21.00 across three feet. The back of the stope could not be reached to sample, but it is probable that there is a short, narrow section of good grade ore here. 2,000 tons are all that can be expected here up to the first level.

The only ore that can be definitely said to be in sight now is, therefore, about 4,000 tons divided between stopes 201-A and 202-W at the west end, and the 1,000 tons of broken ore in 201-E stope.

POSSIBILITIES OF FUTURE ORE:

From the results of the diamond drilling done a year ago, it is certain that the Grey Vein will be found at the third and fourth levels, and in the light of the results at the second level should grade ten dollars across a width of five feet for a length of 250 - 300 feet.

No. 8-A has not yet been developed at the second level though a diamond drill intersection indicates that it exists at this horizon. It is reasonable to expect it to continue down to both the proposed new levels.

No. 2-B is opened by a short, narrow shoot at the west end of 202-W. This vein was cut in a diamond drill hole considerably deeper last year so ore may be expected at lower horizons in this vein.

In addition, there are possibilities in No. 10 and no. 18 in which scattered good assays have occurred.

These possibilities are all of known veins which have been cut by diamond drill holes at lower horizons. Nothing is known yet of what may exist east of the diabase dyke, or in the greenstone. The first area offers great possibilities for additional ore shoots.

RECOMMENDATIONS:

In general the programme outlined in the writer's previous report should be carried out though the work done at the second level suggests certain modifications.

The mill is now closed and should not be re-opened until such time as there is at least a year's ore ahead of it. Before it is put into operation again a cyanide plant for handling

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the concentrates should be included in the flow sheet. It is estimated that this will cost in the neighborhood of \$30,000. which is rather less than the sum expended on shipping, freight and smelter charges on the concentrates sent to Noranda during 1938.

In this connection it should be pointed out that the Summit ore is quite amenable to cyanide. If the results of the proposed development indicate the existence of more ore than can be visualized at the present time, serious consideration should be given to the idea of discarding the flotation part of the mill entirely and installing a complete cyanide plant. At the present time the cost of this makes it unjustified but it is a possibility that may have to be considered later on.

The grey vein has a length of 430 feet on the second level. Assuming the same length on the third level and fourth levels, and that 70% of the length is mineable, 15,000 tons should be put in sight at each level. This would make 30,000 tons in the Grey Vein alone, and as the mill should be cut down to not over 140 tons a day, or 50,000 tons a year, there would only need to be 20,000 tons developed in the other veins to run the mill for a year, so the proposed development of the two new levels plus the possibilities that still exist on the second level, should provide sufficient ore for a year and justify opening the mill at this stage.

The incline shaft should not be sunk any deeper. Exploration to lower levels should be done through a three compartment vertical winze so sited that it can be raised through to surface as a shaft if developments at the lower levels warrant this expenditure.

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GEORGE W. BROWN, CHIEF OF MINES

The exploration already done at the second level has so far failed to locate any ore west of the station except the short shoot in 202/", so it is possible that the winze should be sited further east than was thought advisable a year ago.

Now work has been done east of the diabase dyke but, as this dyke is later than the ore, there is no reason why there should not be similar conditions on the other side of it. This should be investigated before the site of the winze is definitely settled. This work can be done either by continuing Drift 201-E through the dyke (it is only a few feet from it now), and crosscutting or diamond drilling on the east side of the dyke, or by diamond drilling from surface. The latter method would be quicker and cheaper but is not as positive in its results.

Other exploration advisable before siting the winze is to continue the south crosscut at the second level to cut the downward extension of No. 8 Vein, which produced some excellent mill feed at the first level. Drift 202-C should be continued to investigate the diamond drill intersection of 16.10 which is only forty-five feet ahead of the face of the drift. The surface find made last summer should also be treated from Drift 10-B on the first level.

It will probably take a month or six weeks to carry out this work during which time the mine survey should be carefully checked and the surface thoroughly examined after the snow is gone (both examinations by the writer have been made during the winter months) to determine the most suitable site for the winze, as far as surface conditions may effect it. If the winze eventually becomes a shaft it is necessary that it should be in a suitable place on surface.

No exploration has ever been done in the greenstone. While no veins are known to exist in that formation, it is only reasonable to suppose that such might be the case and some investigation is certainly warranted.

This could be done best with a diamond drill. Never having seen the surface clear of snow, the writer is not prepared to say now whether this could be done to better advantage from surface or from underground. It is strongly recommended, however, that some investigation of the greenstone be made.

As soon as the site of the winze is decided on, this should be sunk 275 feet below the second level and stations cut at intervals of one hundred and twenty-five feet. The two new levels, therefore, could be at vertical depths from surface of 335 and 460 feet respectively. Lateral exploration would then be carried out on these two levels.

Any ore removed during the development of the drifts can be trammed over to the old Glory Hole and stored there. It can be hoisted from there at a later date quite cheaply through the inclined shaft.

The expenditure to the time of completing the lateral work on the first two levels would be about as follows:

Preliminary exploration before deciding on site of winze (4 to 6 weeks).....	\$10,000.00
Sinking winze (10 weeks).....	20,000.00
1000 ft. of lateral work on each new level (12 weeks).....	35,000.00
Contingency for emergencies.....	<u>10,000.00</u>
About seven months.....	\$75,000.00

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If the results on the 335 and 460 ft. levels are as good as are expected milling could be resumed as soon as these levels were prepared for stoping.

If, however, the results warranted it and sufficient funds could be made available it would be found better in the long run not to start the mill at this stage but to open two more levels and make the winze into a shaft by raising through to surface.

If this were done it would probably be found advisable to change the mill over to straight cyanide and eliminate the concentration by flotation altogether.

Such a plan would entail an additional \$150,000 distributed as follows:

Sinking two more levels.....	\$20,000.
Lateral work.....	30,000.
Raise, head frame, new hoist, etc.	25,000.
Cyanide plant.....	<u>75,000.</u>
	\$150,000.

As to whether this plan would be justified depends entirely on how much new ore can be developed at the first two levels. If ore can be found east of the diabase or in the greenstone such a programme would be certainly warranted. No decision can be made until the results of the first two levels are known.

It is practically certain, in any case, that sufficient ore will be developed at the two new levels plus what may still be found on the second level, to make it possible to recover at least the greater part of the \$150,000

estimated for the first stage. The initial risk, therefore, is very slight.

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ONTARIO

As was pointed out in a letter accompanying the previous report by the writer, it is highly advisable that claims 2062, 2063 and 6161 be acquired by the Company to protect the vein on the dip.

These claims lie to the north and with the north dip of the veins they will all pass off the property before a depth of 1500 feet is reached.

Owing chiefly to the shortage of funds during the past year the plant has been allowed to deteriorate and should be gone over very carefully by a first class mechanic before operations are resumed.

There repairs are not a very large item at present but if they are not attended to will be the cause of numerous breakdowns and delays in the future which might run into considerable expense.

The pump at the two hundred foot level is very inefficient. It will not lift the water to surface without an air jet in the discharge line so that it is necessary to operate the compressor to run an electric pump which is quite unnecessary.

SUMMARY AND CONCLUSIONS:

As the beginning of 1930 there was very little ore remaining at the first level with which to keep the mill in operation. However, development at the second level was started early in the year and a moderate tonnage of good grade ore was soon available from the Grey Vein at that horizon. The operation of the mill at a reduced tonnage would have been possible.

Unfortunately, this idea of reduced tonnage was not satisfactory to those in charge. The glamour of large scale operations still persisted and a daily tonnage of nearly two hundred tons was insisted upon. In order to obtain this amount stopes had to be broken well beyond the limit of the veins and tons of barren diorite were sent to the mill.

The disposal of waste was discontinued and all development rock sent to the mill, irrespective of whether it contained any gold or not.

On top of this there was little or no plan in the general scheme of development. To give only one instance, the crosscut to reach the downward extension of vein 8-A, which had been a source of excellent mill feed at the first level, was stopped within a few feet of its objective.

The net result was an operating loss for the year of about \$100,000.

That is the dark side of the picture. Fortunately there is another and brighter side.

The Grey Vein in Stope 201-E on the second level must have had a grade of about \$10 across five feet. There is probably ore in the footwall in the unstoped section between stopes 201-E and 201-A. There is a short shoot of good grade ore in 201-A and another at the west end of Drift 202-W.

Diamond drilling a year ago showed that the veins all persisted to greater depths and contained gold at the lower horizons.

No exploration has ever been done east of the diabase dyke or in the greenstone. Both these areas offer considerable promise and should be investigated.

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The serious loss on the year's operations at the property must be forgotten. It was not the fault of the mine.

The writer still believes that if a reasonable sum is provided for systematic and intelligent development the property can be placed on a profitable basis.

As detailed elsewhere in this report, the sum of \$75,000 should be provided for development over a period of about seven months. During this time, the mill must remain closed.

When this work is completed a decision can be arrived at as to whether to put the mill into operation then or to carry on further and more extensive development and defer starting the mill until this additional programme is completed.

This decision will depend to a great extent on what success is met with in finding ore either east of the diabase or in the greenstone. If no ore is found in either of these areas the mine can be worked through the vertical winze, the mill re-opened, and a cyanide plant to treat the concentrates installed.

If, as is expected, ore is found east of the dyke the whole picture will be broadened. A raise should then be put through to surface over the winze to form a shaft and the development to an additional depth of two hundred and fifty feet would be justified.

Serious consideration would have to be given then to the question of changing the flow sheet in the mill over to straight cyanide. The additional development and mill changes would entail a further expenditure of \$150,000 and should not be started unless results were quite definite.

If the mill is re-opened after the first stage of development is done it is practically certain that there would

be sufficient profit from milling the ore that will be developed at the two levels to cover the cost of the \$75,000 estimated for that work.

It has been suggested that if funds were made available to pay off the most pressing liabilities and a small sum provided for working capital, the mill could be started again immediately and operations resumed on a profitable basis.

It is difficult to follow this line of reasoning. Conditions would be exactly the same as they have been for the past year and while naturally some improvement might be expected in the methods employed at the mine, the unfortunate fact still remains that there is only a very small amount of ore ahead of the mill and in a very short time the management would be again faced with the decision as to whether to close the mill or treat low grade material on which no profit can be realized.

Respectfully submitted,

(Sgd) M. C. H. Little

Mining Engineer.

Attached:

Assay Certificate
List of Samples
Plan of Workings (100' scale)
Section of 201-A stope showing samples
Section of 201-E stope
Summary of Year's Operations.

SUMMARY OF YEAR'S OPERATIONS

PRODUCTION AND RECOVERY DURING 1938

Bullion to mint	\$119,980.49		
Concentrates to Noranda	84,087.30		
Tailings	<u>26,236.00</u>		<u>\$230,303.79</u>
Tons milled 68,670 - Average grade of ore entering mill			3.45
Bullion	119,980.49		
Concentrates	<u>84,087.30</u>		
		\$204,067.79	3.06 per ton
Recovery on gold shipped			88.5%
Freight and smelter charges	28,731.68		
Mint charges	<u>1,401.21</u>		
		30,152.89*	

* - Trucking charges to Lochalsh, Ont.
\$3,663.72, are not included.

TOTAL RETURN FROM GOLD

		<u>\$173,914.90</u>
Tonnage milled	66,670	
Recovery on gold paid for	\$2.61, or 75.7%.	
Payroll at Mine	\$165,917.48	
Invoices at mine	<u>89,604.58</u>	
Total indebtedness at mine	\$253,602.06	
Gold paid for	<u>173,914.90</u>	
LOSS AT MINE		<u>\$79,687.16</u>
Cost at the mine per ton milled	\$ 3.00	
Cost at the mine per oz. paid for	50.05	
Cost at the mine per oz. produced	5.60	

This does not include Workmen's Comp. Insurance or Depreciation. b. Head Office Charges,

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LIST OF ASSAYS

Gold at \$35.00 per oz.

<u>No.</u>	<u>Width in feet</u>	<u>Value Oz.</u>	<u>Per ton \$</u>	<u>Location</u>	<u>Description</u>
1	1.3	Trace only		West end stope 201A 99' from manway. This point is 112' east of station 219. South section.	Diorite with a few stringers of quartz.
2	1.5	0.15	5.25	Adjoining #1 on north. Centre section.	75% quartz with some mineral. Balance silicified diorite.
3	3.8	1.12	39.20	Adjoining #2 on north. North section	Mineralized diorite with quartz stringers.
4	3.0	0.36	12.60	89' from manway. South section	Silicified diorite and quartz stringers
5	2.5	0.03	1.05	Adjoining #4 on north	Silicified diorite and quartz stringers.
6	2.1	1.05	36.75	79' west of man- way	Mostly quartz with some tourmaline
7	3.0	0.35	12.25	Adjoining #6 on north	Silicified diorite with quartz stringers.
8	2.0	0.01	0.35	69' west of manway	Silicified diorite with a little quartz.
9	4.0	0.34	11.90	Adjoining #8 on north	75% quartz. Balance silicified diorite.
10	2.5	0.01	0.35	Adjoining #7 on north. Hanging well section.	Silicified diorite with a little quartz.
11	4.2	0.76	26.60	59' from manway footwall section	Quartz with some mineral
12	2.2	0.04	1.40	Adjoining #11 on north	Silicified diorite with quartz stringers.
13	Omitted.				

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CAULSTON, STE. MARIE, ONT.

No.	Width in feet	Value Oz.	Per ton	Location	Description
14	1.8	Trace only		49' from manway	Mostly quartz. A little silicious diorite
15	4.0	0.02	0.70	Adjoining #14 on north	Silicified diorite between two veins
16	4.2	0.69	24.15	Adjoining #15 on north	Silicified diorite with stringers of quartz.
17	1.2	0.10	3.50	39' from manway	50% quartz; balance silicified diorite.
18	3.0	0.01	0.35	At ladder way South section.	Silicious diorite with a little quartz.
19	1.0	0.10	3.50	Adjoining #18 on north	Quartz.
20	3.2	0.04	1.40	1-' east of manway. End of stope	One-third quartz, balance silicified diorite.
21	2.3	0.04	1.40	Adjoining #20 on north	50% quartz. Silicious diorite and some mineral.
22	3.0	1.32	46.20	Adjoining #21 on north	Mostly quartz.
23	4.5	0.03	1.05	Adjoining # on South	Mostly silicified diorite with stringers of quartz
24	2.6	0.03	1.05	Adjoining #11 on south	North side silicious diorite. Six inches streaky vein material on south
25	5.0	0.07	2.45	Adjoining #17 on south	Rather massive diorite silicified.
26	2.5	0.11	3.05	In face of Drift 201A. NO FURTHER BEING FOUND IN MANWAY	Sheared silicious diorite with quartz stringers.
27	2.2	0.73	25.55	31.5' east station 219. ON STIFFER IN DRIFT 201A. THE ORE IS SEEN NEAR SAMPLE.	Quartz well mineralized. Gold seen near sample.

No.	Width in ft.	Value Oz.	Per ton \$	Location	Description
28	0.9	0.05	1.75	Adjoining #27 on north	Whitish quartz no mineral.
29	3.4	0.47	16.45	27' E. station 219	Silicified diorite with quartz stringers
30	2.6	0.12	4.20	On pillar in drift 201E. 26' west of manway	Silicified diorite with quartz stringers

(There is a gap of 2.5' between #28 and #29 which could not be sampled as ground was unsafe. This is vein matter.)

31	2.0	0.05	1.75	In pump station second level	Silicified diorite
32	2.0	0.34	11.90	Drift 202W. 68' East Station 212-A	Mostly quartz with a little diorite.
33	3.2	1.01	35.35	48 East station 212-A	Mostly quartz well mineralized.
34	3.3	0.53	18.55	30' East station 212-A	1/3 quartz, rest silicified diorite.
35	4.0	3.80	133.00	19 west station 212-A	Similar to 34
36	2.5	0.46	16.10	2' east station 212-A	Mostly quartz.
37	2.6	3.11	108.85	35' west of face of drift 202-C. In box hole.	Silicious diorite with stringers of grey quartz. Gold seen near sample.
38	3.1	0.09	3.15	Face of drift 202-C. South section.	Silicious diorite with a few stringers of quartz.
39	3.8	0.01	0.35	Adjoining #38 on north	Diorite, not very silicious. A few stringers of quartz.
40	2.0	0.23	8.05	Face of drift 202-W. South side	Mostly quartz. Lying flat.
41	1.5	0.05	1.75	Face of 202-WE removed from wall. Sample taken down width not correct	Mostly quartz.

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<u>No.</u>	<u>Width in ft.</u>	<u>Value Oz.</u>	<u>Per ton \$</u>	<u>Location</u>	<u>Description</u>
42	4.0	0.05	1.75	50' west of face in 202-C	75% quartz. Some mineral in the sheared diorite.
43	2.6	0.05	1.75	14' west of face 202-C.	Quartz, tourmaline and silicified diorite.
44	1.8	0.06	2.10	In pump station Adjoining #31 on north	Silicified diorite with mineralized quartz stringers.
45	3.0	0.11	38.85	15' east of face in stub drift close to sample	1/3 quartz. A little mineral in the stringers.
47	1.5	0.13	4.35	In last box hole of 201-A stope 114.5' west of manway	Mostly quartz A little mineral.

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SAULT STE. MARIE, ONT.



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REPORT ON THE POSSIBLE RECOVERY
OF GOLD FROM THE TAILINGS AT THE
FORMER ALGOMA SUMMIT MINES,
GOUDREAU, ONTARIO.

By: T. E. Archer, Metallurgist,
P. O. Box 602,
Timmins, Ontario.

June 16, 1975.

June 16, 1975.

Mr. Court Simpson,
43 Sunnylea Ave. E.,
Toronto, Ontario.
M8A 2K4

Report on Recovery of Gold from Tailings

As you requested, we visited the former Algoma Summit Mine in #49 Township about four miles from Goudreau. The purpose was to investigate the feasibility of retreating the former mill tailings in Goudreau Lake.

We arrived at the property on June 6, 1975, to sample the mill floor, the tailings around the mill and those discarding in Lake Goudreau.

The tailings around the mill are shown on the Hollinger assay report #1 to 13 inclusive averaging .477 ozs. of Gold per ton. The sample #14 was a grab sample of the mill floor and a box containing some ground rock, this sample assayed 1.13 ozs. per ton although there was only a small amount. The sampling was done on a grid system by the mill, each sample about 25 feet apart, except three piles #11, 12 and 13 which contain approximately twenty tons each. (See sketch for location.)

Mr. Court Simpson,

June 16, 1975.

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The Goudreau Lake tails were sampled the same as around the mill only at 40 feet intervals as indicated on the attached sketch. The assay values from the Hollinger report are from #15 to 26 inclusive. The average assay would be .026 ozs. per ton or \$4.16 at \$160.00 gold. I believe an acceptable tails would be .005 with a cyanide circuit which would leave \$3.20 as a possible recovery. With today's cost of labour and a dragline at \$25.00 per hour I would doubt if a profit could be realized from Goudreau Lake tails.

The Mill Building

I believe the concrete of the old mill building could be used for the new one, since it has been built on bedrock, also a great deal of timber could be reclaimed from the buildings that have fallen.

Tailing Disposal

The Ontario Water Resources Commission requires the following:

- 1) Any facilities constructed to transmit or treat the waste must be approved by the commission before construction commences.
- 2) The waste treatment facilities (specifically the tailings area) must be available when milling commences. Tailings must not be discharged to a natural watercourse.

Since their approval procedure takes approximately one month to

Mr. Court Simpson.

June 16, 1975.

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complete, it is necessary to submit the date required far enough in advance.

The ore appears to be free milling and should be no trouble with fouling solution. In this case the cyanide solution could be recycled, thus reducing the quantity of cyanide sent to the tails.

I believe a dam could be built fairly close to the mill across the valley and again about halfway to the lake. This would serve as a tailings dam and a second dam close to the lake to allow the cyanide to decompose before flowing to the lake. With low cyanide content as a beginning this should be sufficient.

Milling

I operated a gold mill for a number of years with gravity concentrate cones on the discharge of the ball mill. The concentrates were cleaned on a Wilfly table and then melted in the bullion furnace. We recovered 60% at this point. The pulp was then treated in the cyanide circuit for a tailings loss of .005 ozs. per ton.

Recovery

The recovery from the mill appears to have been good according

Mr. Court Simpson.
June 16, 1975.

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to the tailings assay. But I would doubt if their security was the best.

The tails around the mill would suggest that the grade was over .4 ozs. per ton. With this in mind it would be better to be sure.

MINING

I would like to suggest that the mine be pumped and a thorough sampling procedure carried out. In the thirties, they were very ready to make a good report.

Summary

The tailings behind the former mill average assay of .477 ozs. per ton or \$76.32 per ton with approximately 700 tons at a value of \$53,424.00. This could be retreated in a cyanide mill.

The tailings in Goudreau Lake are very low grade. I doubt if a profit could be realized from re-running them even at today's price of gold.

Tailings could be impounded between the former mill and Goudreau Lake.

Mr. Court Simpson.
June 16, 1975.
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A systematic sampling would be required underground to prove
an ore body that would feed a 200 ton mill.

Yours very truly,

THOMAS E. ARCHER.

HOLLINGER MINES LTD.

Lab Report

No. 52992

From Tom Archer
 Date June 13/75
 Analyst B. K.

Extraction $HNO_3 - HCl$
 Method Atomic Absorption
 Fraction Used -80 Mesh

SAMPLE NO.	Au oz/ton					REMARKS
1	.39F					
2	.06					
3	.67					
4	.90					
5	.68					
6	.06					
7	.56					
8	.65					
9	.75					
10	.02					
11	.06					
12	.86					
13	.74					
14	1.13					
15	.04					
16	.04					
17	.02					
18	.02					
19	.02					
20	.02					

all other samples were taken from the lake tailings.

HOLLINGER MINES LTD.

Lab Report

No. 53012

From Tom Archer

Extraction $HNO_3 - HCl$

Date June 13/75

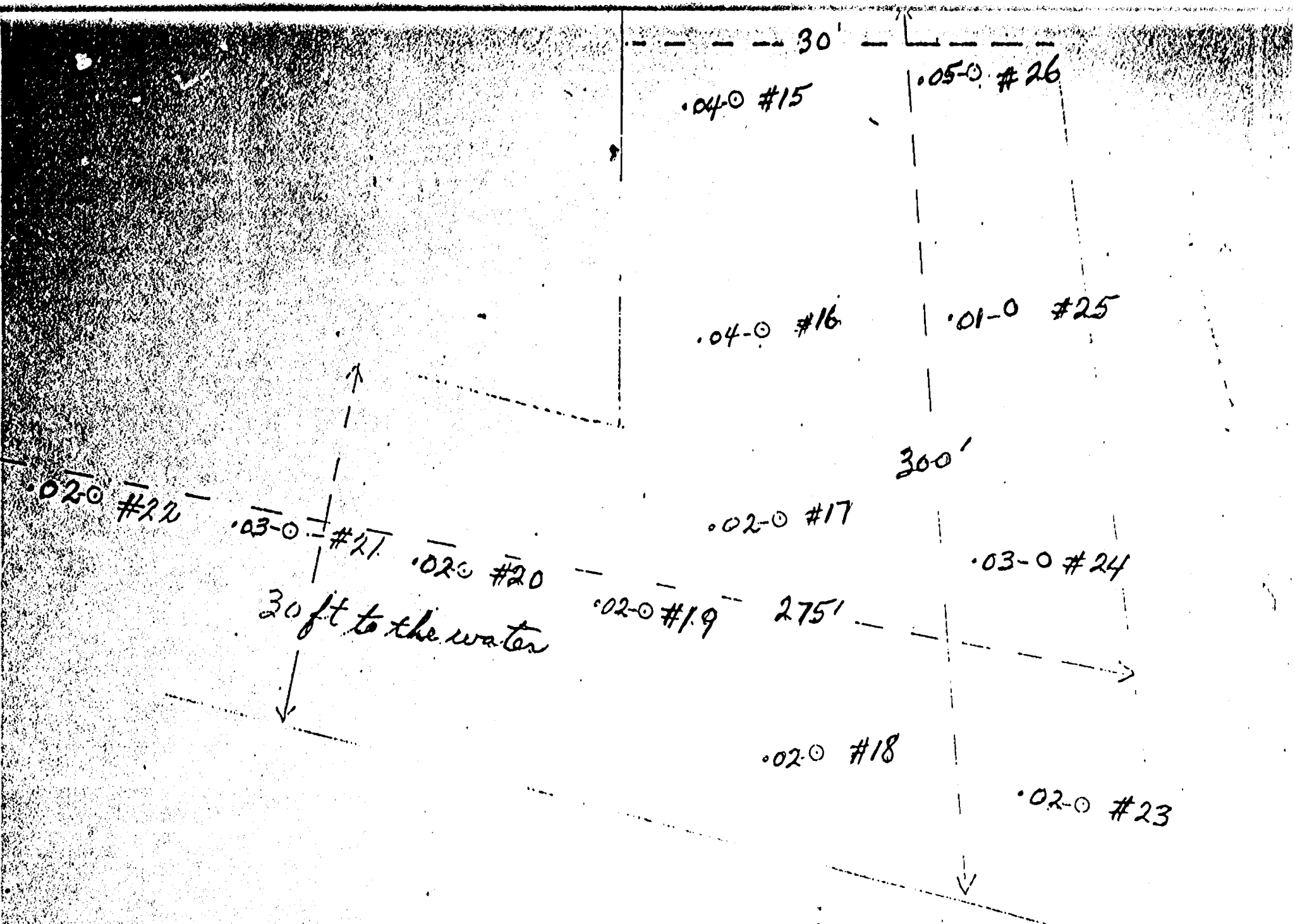
Method Atomic Absorption

Analyst B.R.

Fraction Used - 80 mesh

SAMPLE NO.	Au oz/ton					REMARKS
21	.03					
22	.02					
23	.02					
24	.03					
25	.01					
26	.05					

[Handwritten signature]



Yondreau Lake Tailings

MILL FLOOR

#14

39-0 #1

67-0 #3

68-0 #5

56-0 #7

75-0 #9

30'

06-0 #2

90-0 #4

06-0 #6

65-0 #8

02-0 #10

150'

#12
86

#13
74

#11
06

Samples back of old mill
foundation