

GOLD DEPOSITS

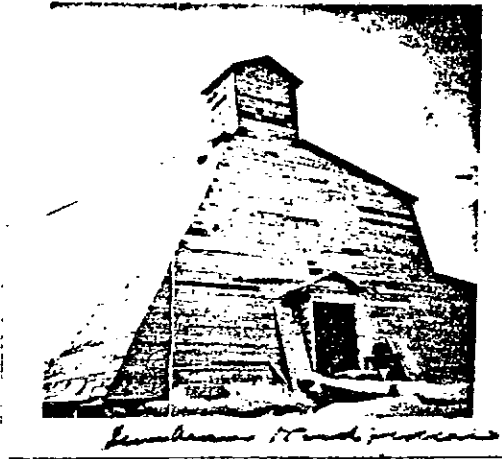
GOLDBEAM MINES LIMITED

-By J.F. Wright
Mining Geologist

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1101 Northern Ontario Bldg.,
330 Bay Street,
Toronto, Ontario.

March 5th, 1943.



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PROPERTY, ACCESS AND POWER

The property includes 22 surveyed and leased mineral claims totalling some 850 acres and is reached from the Trans-Canada paved highway, by two miles of good gravel motor road from a point 114 miles east of Winnipeg or 40 miles West of Kenora, Ontario. The Winnipeg Electric Company high voltage power line passes five miles north of the deposit and abundant electric power will be available from here when required and at a reasonable cost.

DEVELOPMENT

The property was optioned and preliminary exploration commenced late in 1936, and in 1937 extensive surface stripping and 17 diamond drill holes totalling 4400 feet were completed on the Sunbeam deposit (No. 1 of plan 1). The surface stripping outlined a body approximately 60 feet long and 20 feet wide, 69 channel samples from which averaged .46 oz. gold uncut and cut and allowing for dilution in mining the average grade of the outcrop was estimated at .27 oz. gold per ton. The diamond drilling proved the extension of the deposit to 450 feet in depth with intersections of from 10 to 25 feet averaging from .17 oz. to .52 oz. gold per ton.

In 1938 camps were built and a development plant installed. A shaft, inclined at 61 degrees was sunk in the footwall of the body to 437 feet in depth with levels at 100, 200, 300 and 425 feet down the dip. Crosscuts, drifts, raises and diamond drilling were completed on the four levels and the results of this exploration proved the extension of the body with an increase in size at depth as compared to the outcrop with about the same average grade. No lateral exploration was undertaken to prove the possibility of other orebodies being present nearby. Some 4500 tons of the ore were stoped from above the 200 and 425 foot levels, and hauled to a nearby mill for a bulk sample test. In the past two years some detailed surface prospecting has been completed around the margins of the swampy areas surrounding the deposit, and three new gold-bearing showings of promise have been uncovered, indicating the possibilities to locate new ore. No development has been done since the outbreak of the war in 1939.

J.F.W.

As Consulting Geologist the property was visited at frequent intervals during the progress of the development when all assay sheets were inspected, many sections of the deposit re-sampled and all calculations checked. This report summarizes all the known information regarding the geology, grade of ore, and information bearing on the future possibilities of the property.

GEOLOGY

The gold deposits explored are at the northeast margin of a circular mass of quartz monzonite some 4000 feet across. This intrusive has been described in detail by Dr. G.M. Brownell (Trans. Can. Instit. Min. Met., Vol. 44, 1941, pp. 236-250). The quartz monzonite is considered a late phase of a diorite-gabbro intrusive which cuts Keewatin greenstone extending from one to two miles north and south respectively of the monzonite and west and east for many miles.

The quartz monzonite is a grey to slightly pinkish, massive, fresh rock in places porphyritic with crystals of feldspar 1/4 to 1/2 inch long. Inclusions of black rock are present at a few points. A strong fault zone extends northeast and dips southeast 35 to 40 degrees from the quartz monzonite, and this crosses and displaces the Sunbeam deposit at 325 feet down the dip. The fault and related branch shears carry gold-bearing quartz and sulphides. The quartz monzonite is interpreted as a late phase of the gabbro-diorite intrusive and between the outer basic phase and the inner acid core syenodiorite and granodiorite are developed in a zone up to 1000 feet wide. The body has the general character of the roof phase of a Late Precambrian intrusive.

DESCRIPTION OF DEPOSITS

The Sunbeam (1) ore is in a roughly circular body 120 feet across of sheared, jointed and altered grey to black monzonite and diorite cut by numerous stringers of vein quartz and carrying visible gold, pyrite, sphalerite, galena and a little chalcopyrite. The long direction of the body trends northeast and the dip is 55 degrees northwest. The altered and mineralized core is bordered by a layered phase of monzonite up to 12 feet thick and the strike of the banding curves to surround the ore zone giving the impression of a pipe or chimney-like body, and the deposit is described as the "Sunbeam pipe or Chimney".

J.F.D.

The Sunbeam Extension (2) is a shear or fault zone up to 4 feet wide trending northeast and dipping 50 degrees southeast. It is about parallel in strike and dip to the main fault zone in the Muskeg to the Northwest. This zone crosses from the monzonite into diorite. The rock along the zone is in part altered to schist and this is well mineralized with quartz, visible gold and sulphides. Three samples taken along a length of 125 feet across an average width of 3.3 feet gave an average of .36 oz. gold. 12⁶²

The Moonbeam (3) deposit outcrops on north edge of a swamp 840 feet northwest of the Sunbeam. Here diorite and monzonite, similar in character to that of the Sunbeam, is altered and mineralized across a width of 15 to 25 feet. The deposit is exposed in one main trench and across a width of 21 feet averages .106 oz. in gold. No exploration of this deposit has been completed.

The Waverly (5) and Sundog (6) shear zones are in diorite and granodiorite adjacent to the monzonite. These zones are from one foot to 3 feet wide and carry stringers and veins of quartz and sulphides. Three holes for assessment purposes were completed on the Waverly vein and these at depths of 70 to 90 feet cut the zone from 2 to 4 feet wide carrying from .20 oz. to .47 oz. gold indicating conditions similar to those at the surface. No attempt was made in this work to outline systematically an ore shoot. The Sundog (6) vein is exposed at one point at the edge of a narrow muskeg and here across a width of 1.2 feet gave .54 oz. gold a ton. This vein has not been traced along its strike under overburden.

GRADE AND TONNAGE OF SUNBEAM DEPOSIT

The Sunbeam ore is a replacement body of altered and silicified monzonite and diorite cut by numerous veins of quartz trending in several directions along shear and fracture planes. Many of the veins carry coarse gold, pyrite, pyrrhotite, sphalerite, galena, tennantite, arsenopyrite and chalcopyrite. The degree of alteration of the monzonite is not uniform throughout the mass and some blocks are of massive and unmineralized rock. These are a foot across up to 5 to 7 feet and they have sharp outlines against ore controlled by fracture and shear planes. The unaltered rock can be recognized easily from the ore and the greater part of this waste thus removed on a pickling belt. At spots in the body the gold is exceedingly coarse in veinlets the thickness of a dime and 3 to 5 inches long. Such coarse gold is present both in the quartz stringers and the silicified diorite. In some of the silicified rock fine specks of gold are distributed uniformly. Yellow sphalerite is the best indicator of rich ore although well silicified ²²rock carrying sulphides also assays high. The average gold content of ore of the Sunbeam

G. F. W.

type with coarse visible gold, intermixed blocks of mineralized and unmineralized rock, and varying proportion of gold-bearing quartz veins from point to point is difficult to estimate accurately by channel sampling. For this reason many samples were taken, in all some 2200 channel, diamond drill core, and muck samples and in addition the following bulk samples were taken:

- (1) First level low grade ore east drift, channel samples average .09 oz. gold, one ton bulk sample sent to Temiskaming Sampling Laboratory gave .16 oz. per ton.
- (2) First level low grade east and west drifts one ton muck sample from 5 rounds average of channel samples .12 oz., Temiskaming Sampling Laboratory .13 oz.
- (3) First level, high grade, 300 lbs. to Denver Equipment Laboratory for amalgamation test channel samples cut .54 oz. bulk sample return .65 oz.

Weighting the 3 bulk samples in proportion to tonnage of body represented the calculated grade is .225 oz. gold per ton.

- (4) Third level 300 lbs. muck sample to Canadian Industries Ltd. for metallurgical test, channel samples cut average 31 oz. bulk sample .27 oz.
- (5) Reject of samples of diamond drill cores of each alternate hole on first 3 levels from assay laboratory sent to Canadian Industries Ltd. for metallurgical test, cut average of assays .26 oz. and average bulk sample .432 oz.
- (6) Mill sample 4693 tons stoped above 200 and 425 foot levels average .196 oz. gold a ton.

The ore for the mill test (6) was taken by shrinkage stoping and the whole body was broken, the stop above the 200 level on the basis of 250 to 275 tons per foot in depth and that above the 425 foot level on the basis of 200 to 225 tons per foot in depth. No adequate sorting facilities were available and the stoping was done in a rush to maintain tonnage with the small development plant at the property. No assay office was present at the property and ore was broken by inspection and no assay returns were received until one to three days after the ore was milled. With adequate assay control in stoping and thorough sorting of waste, the results of the mill test indicate that the mill heads should be held at between .25 and .29 ounces gold per ton without difficulty. The silver content of the ore is .04 oz. per ton.

The assay plans accompanying this report give the

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results of the sampling of the deposit during development. Many areas were resampled and some checked three times. Although assays of individual samples vary, the average of a series of five or more samples across a width of 20 to 30 feet check closely. It is believed the results of the large number of channel and diamond drill core samples together with the bulk and mill test give a conservative estimate of the proven and probable ore as follows allowing for dilution:

Surface to 150 feet depth	32,000 tons at	.30 oz. ton
150 to 250 feet	" 26,000 tons at	.223 oz. ton
250 to 350 "	" 24,000 tons at	.26 oz. ton
350 to 475 "	" 28,000 tons at	.236 oz. ton

Total 110,000 tons average .256 oz. gold ton. $\frac{96}{100}$

The waste from unaltered blocks and from dilution is easy to sort from ore on a picking belt, and with 15 per cent of this waste removed from the feed by sorting some 95,000 tons is developed for stoping calculated to average .27 to .29 ozs. gold per ton.

MINING, MILLING AND COSTS

The Sunbeam orebody can be stoped cheaply by cut and fill methods, the stope being from 20 to 30 feet wide and 65 to 85 feet long. A large deposit of gravel for cheap fill is present on the property 1/4 mile from the shaft. The faces should be sampled before drilling and the gold content marked along the channel groove as a guide in stoping, the sections assaying over a choosen minimum would be broken as ore and that under the minimum left in the stope as fill ~~or~~ where possible not drilled and blasted.

The cost of breaking and hoisting the ore with diesel-steam prospecting plant by shrinkage stoping was \$3.50 per ton. With adequate power and a stabilized operation using cut and fill, it is estimated the ore of Sunbeam deposit should be put on the surface at \$2.75 per ton mining cost, at a rate of 200 tons per day.

In milling no metallurgical or any other difficulty was experienced. The recovery was 97 to 98 per cent and the consumption of cyanide and lime was average. The ore is a little hard to crush, but it grinds fast and with low ball consumption per ton. The coarse gold should be collected in a jig in the grinding circuit, the remainder of the mill following standard cyanide practice. On a basis of 200 to 300 tons per day milling costs should not exceed \$1.15 to \$1.30 per ton. The total cost of overhead, exploration, mining and milling is estimated at \$23.00 per ounce of gold on a basis of 250 tons per day operation. *g.f.*

RECOMMENDATIONS

The orebody as developed at present is not large enough to warrant considering production on a 200 to 300 tons per day basis as will be required with ore of the grade at present known to give earnings to repay the investment already made and required in the future. A relatively small amount of further exploration and development, however, from the present workings and from the surface may disclose much additional ore to warrant a 300 ton or larger operation. Indications in this regard are most favourable. For instance, there is some evidence the body developed on the 425 foot level and below the fault zone is not the downward extension of the deposit above the 300 level or above the fault. This should be tested and if two deposits are represented in the present workings, the tonnage of ore would be nearly double that of the estimate as given. So far as can be determined, the displacement along the fault is not great and the possibility of two deposits could be proved by lateral drilling from the 200 and 425 foot levels.

In addition, diamond drilling should be done (a) in the large muskeg area north and west of the Sunbeam, (b) along the Sunbeam Extension vein, (c) along the Moonbeam northeast from the present outcrop, (d) along the Moonbeam Extension west from the present outcrop, and (e) the Sundog vein.

With reasonable success from this exploration, the present shaft should be deepened 200 to 300 feet or if it should prove to be in the wrong place for economical operation, or too small for the tonnage as indicated, a new shaft should be opened and after some development a mill should be financed to bring the deposit into production as warranted by the indications from the drilling after confirmation by some additional development.

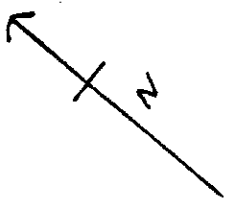
The origin of the pipe-like Sunbeam body is not definitely known, but it can be concluded safely that it is not a shallow residual deposit, but on the contrary all the evidence indicates that the solutions carrying the gold came from depth and the reasonable expectation is that conditions favourable for the deposition of the gold will persist downward a considerable distance below the present workings. The type and shape of the deposit may change gradually in depth to a wide shear and fracture zone, and here, it is highly probable there will be fewer unaltered blocks and more uniform alteration and gold mineralization giving a most attractive type of deposit.

J. F. Lee

General Geology

Gold Deposits

- 1 Sunbeam
- 2 Sunbeam Ex.
- 3 Moonbeam
- 4 Moonbeam Ex.
- 5 Waverly
- 6 Sun dog



Scale
1" = 1000'

Highway
1/4 mile

Star
L.



Monzonite



Gabbro diorite



Lavas and
Sediments

Mines Ltd

Property

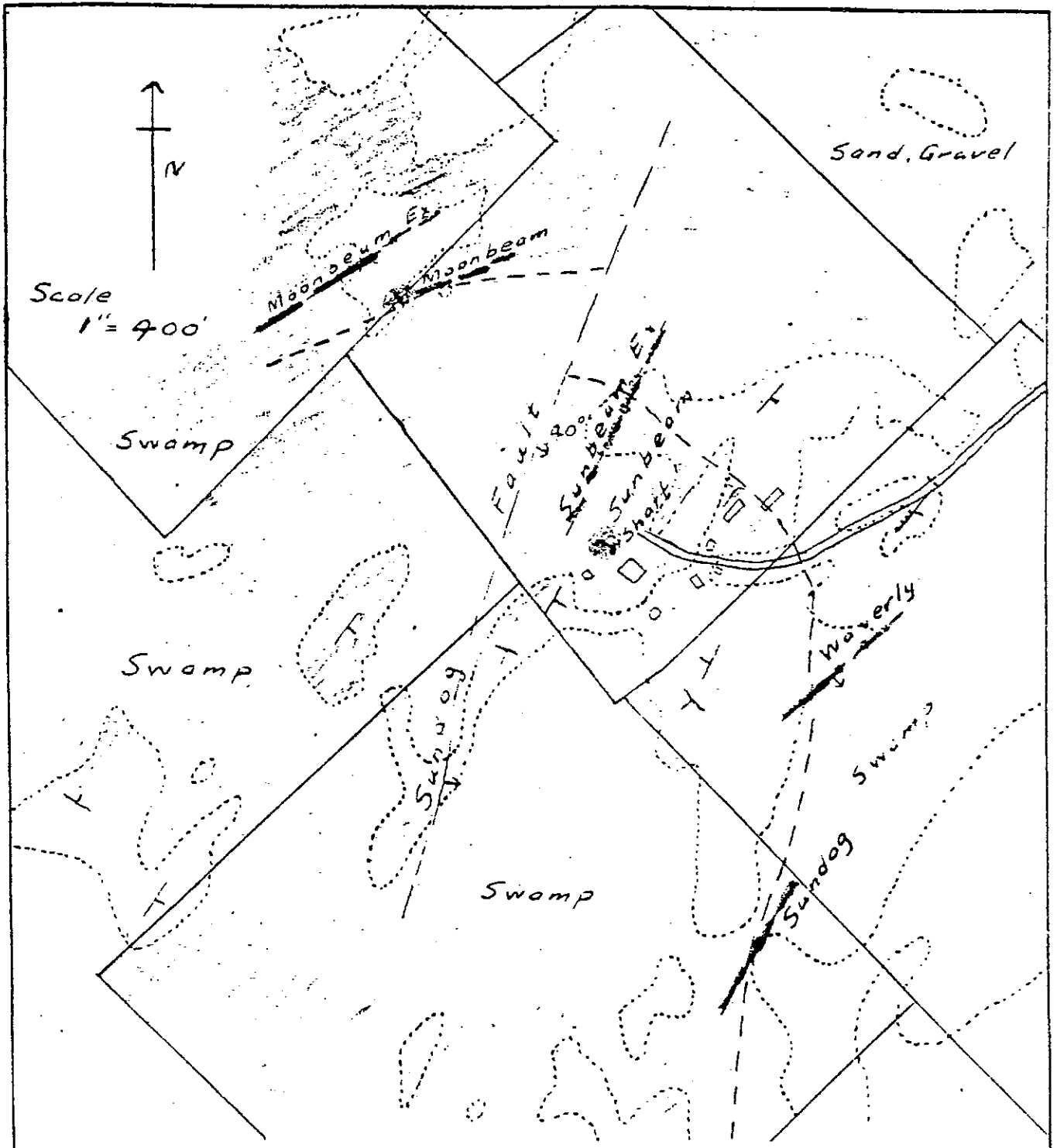
Motor Road
Goldbeam

4
E
90°

2
1
Shatt

6

J.F.W.



Geology

Goldbeam Mines Ltd



Swamp

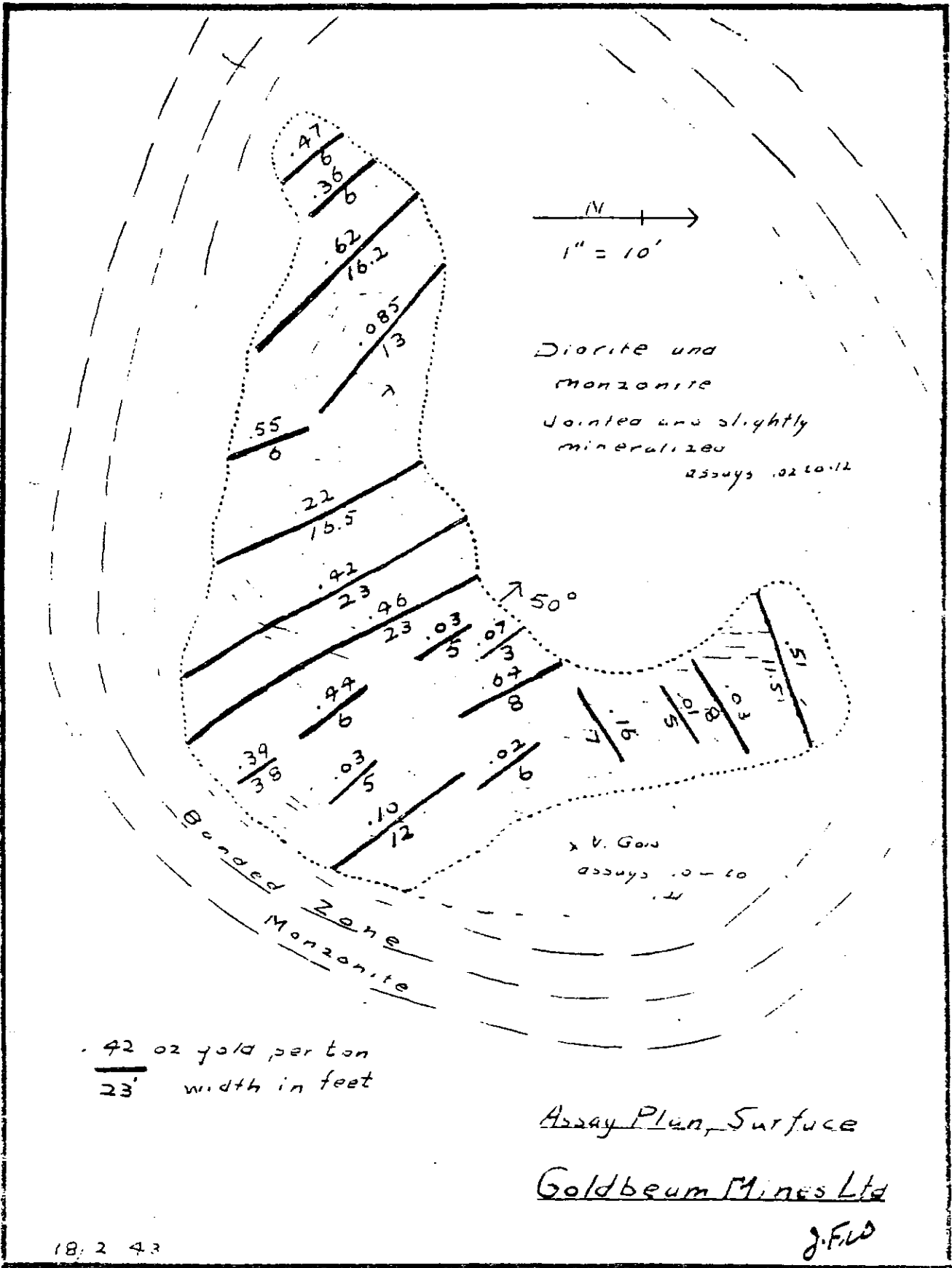
Gold Deposit

Monzonite

Diorite and syenodiorite

J.F.W.

m/



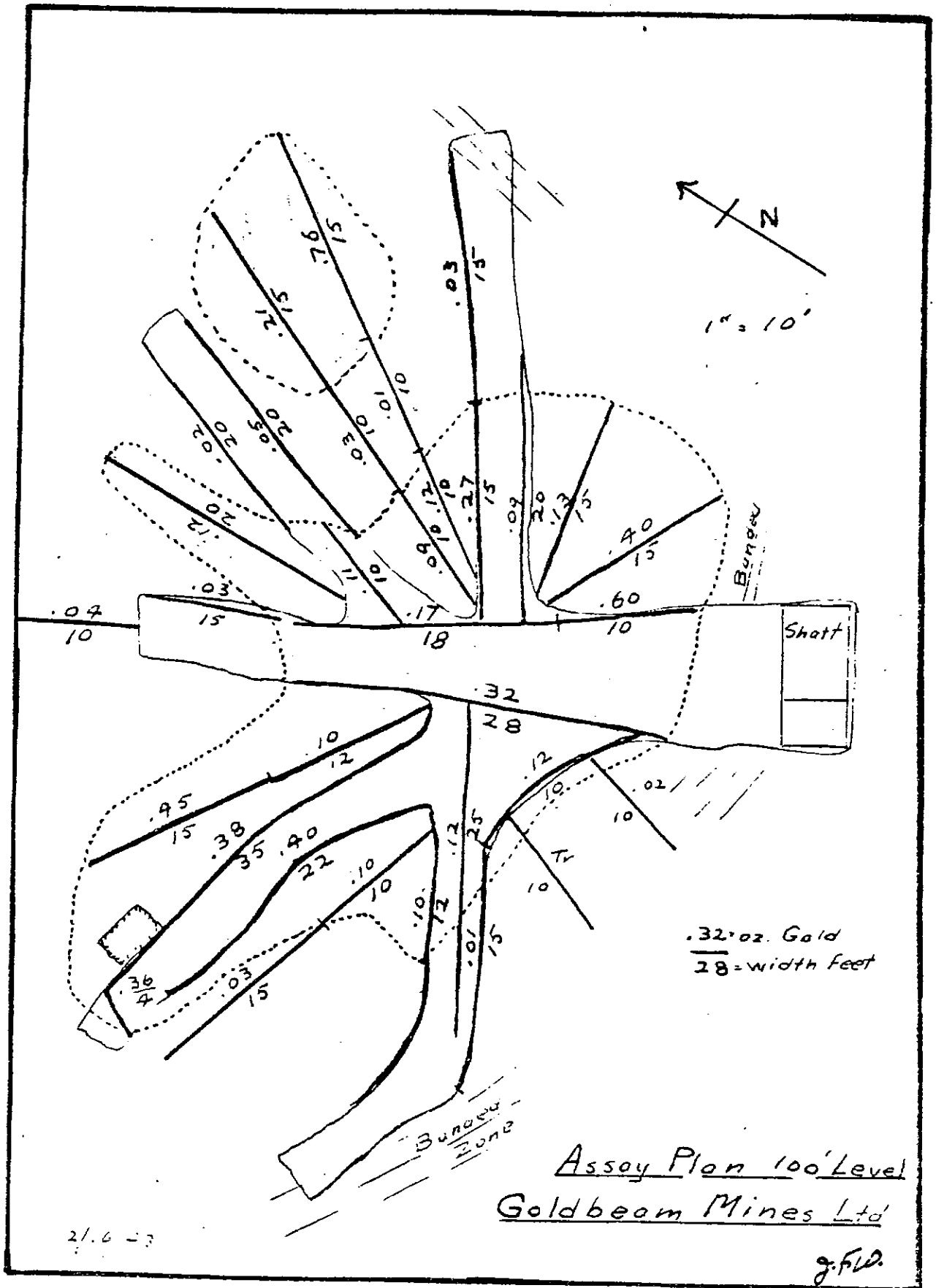
$\frac{.42 \text{ oz gold per ton}}{23' \text{ width in feet}}$

Assay Plan, Surface

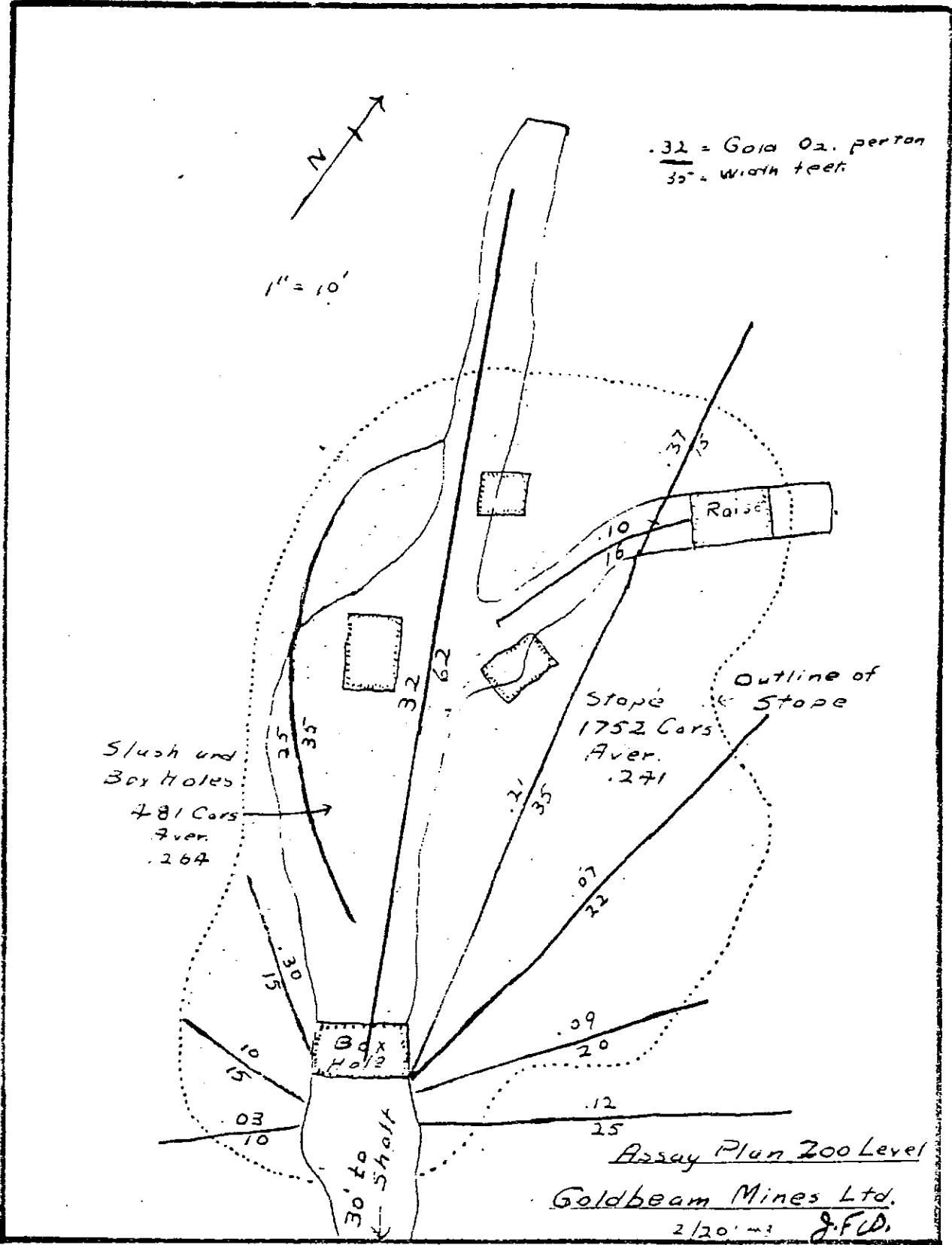
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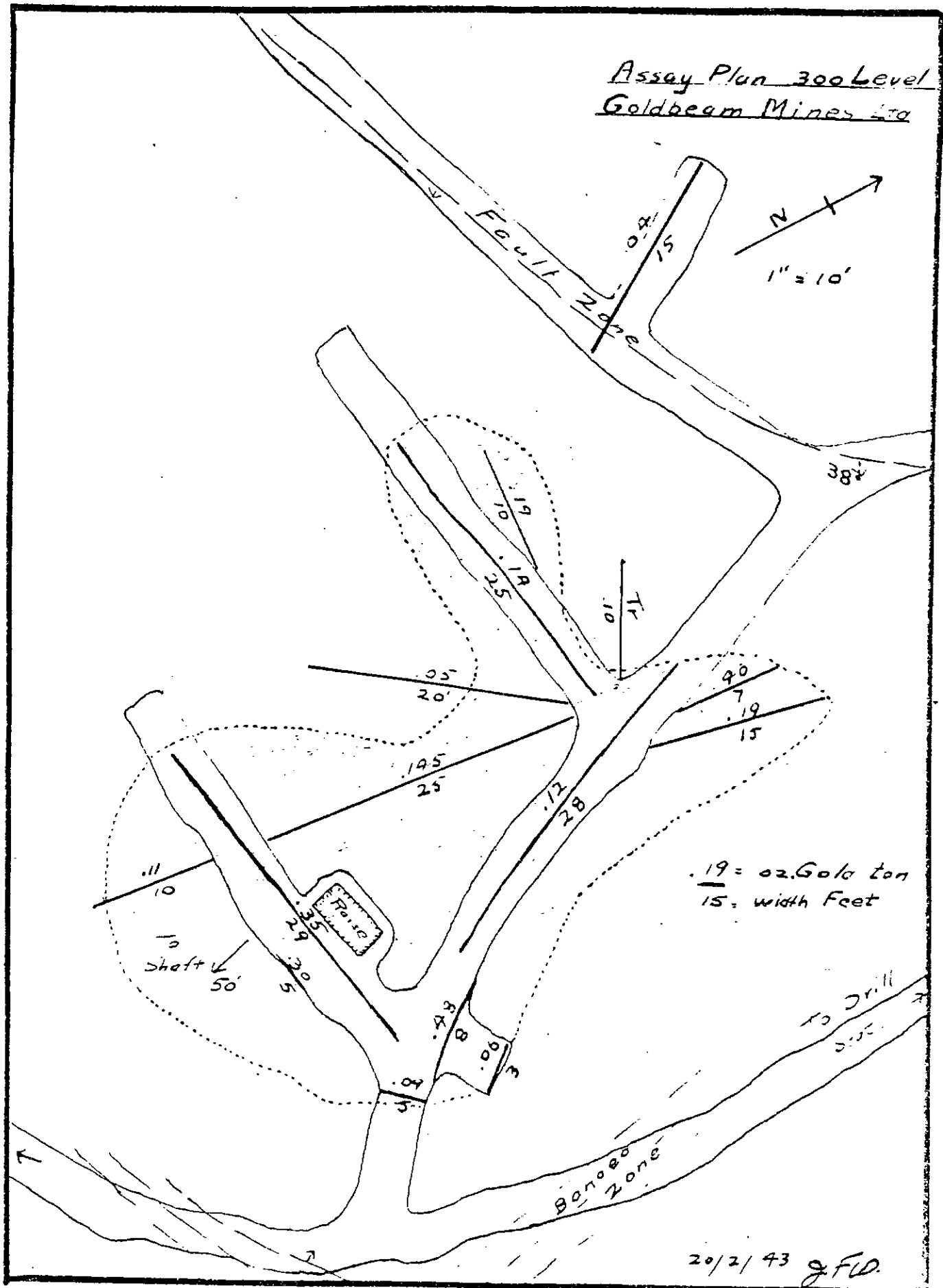


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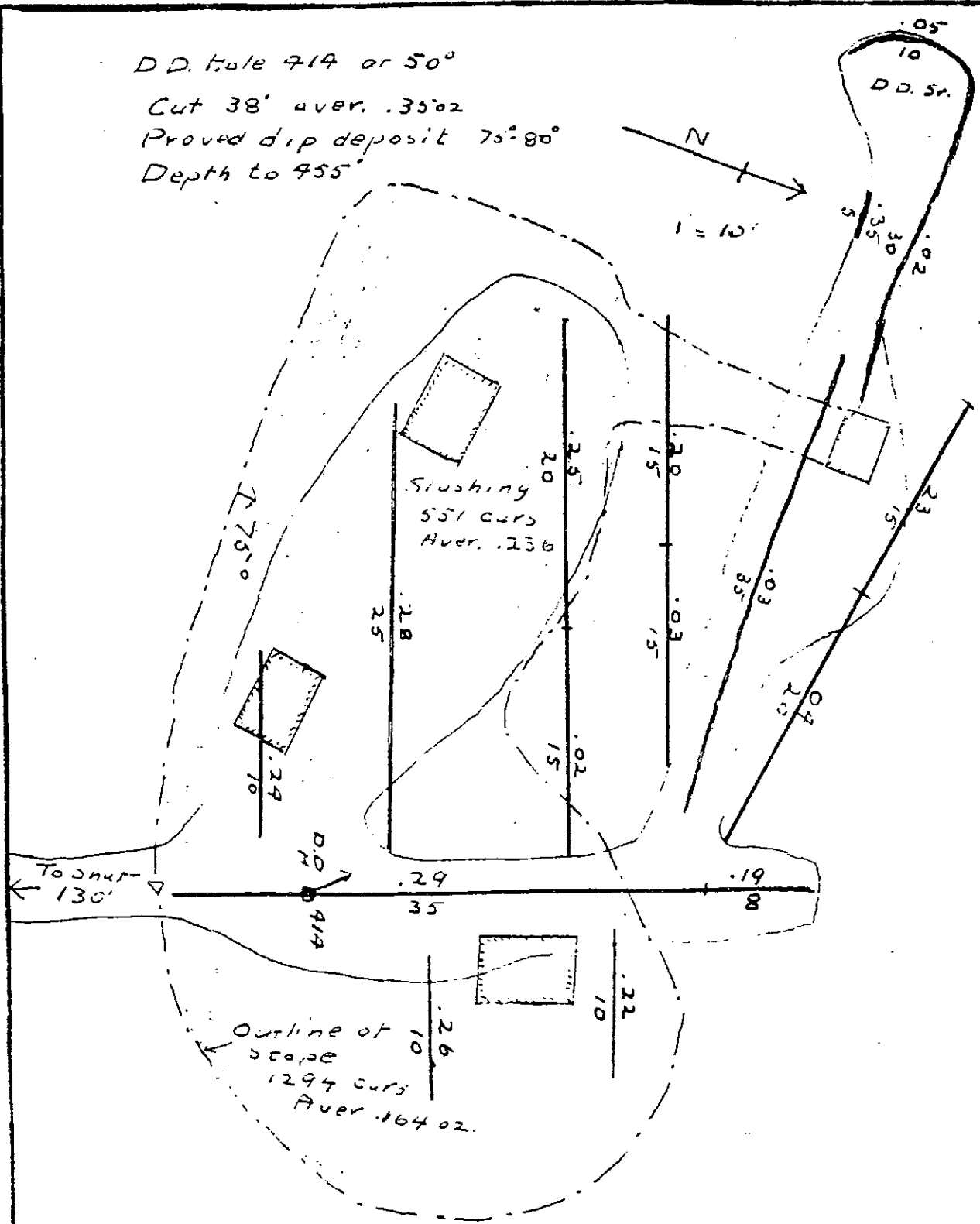
Assay Plan 300 Level
Goldbeam Mines Ltd



.19 = 0.2 Gold ton
15 = width Feet

20/2/43 J.F.D.

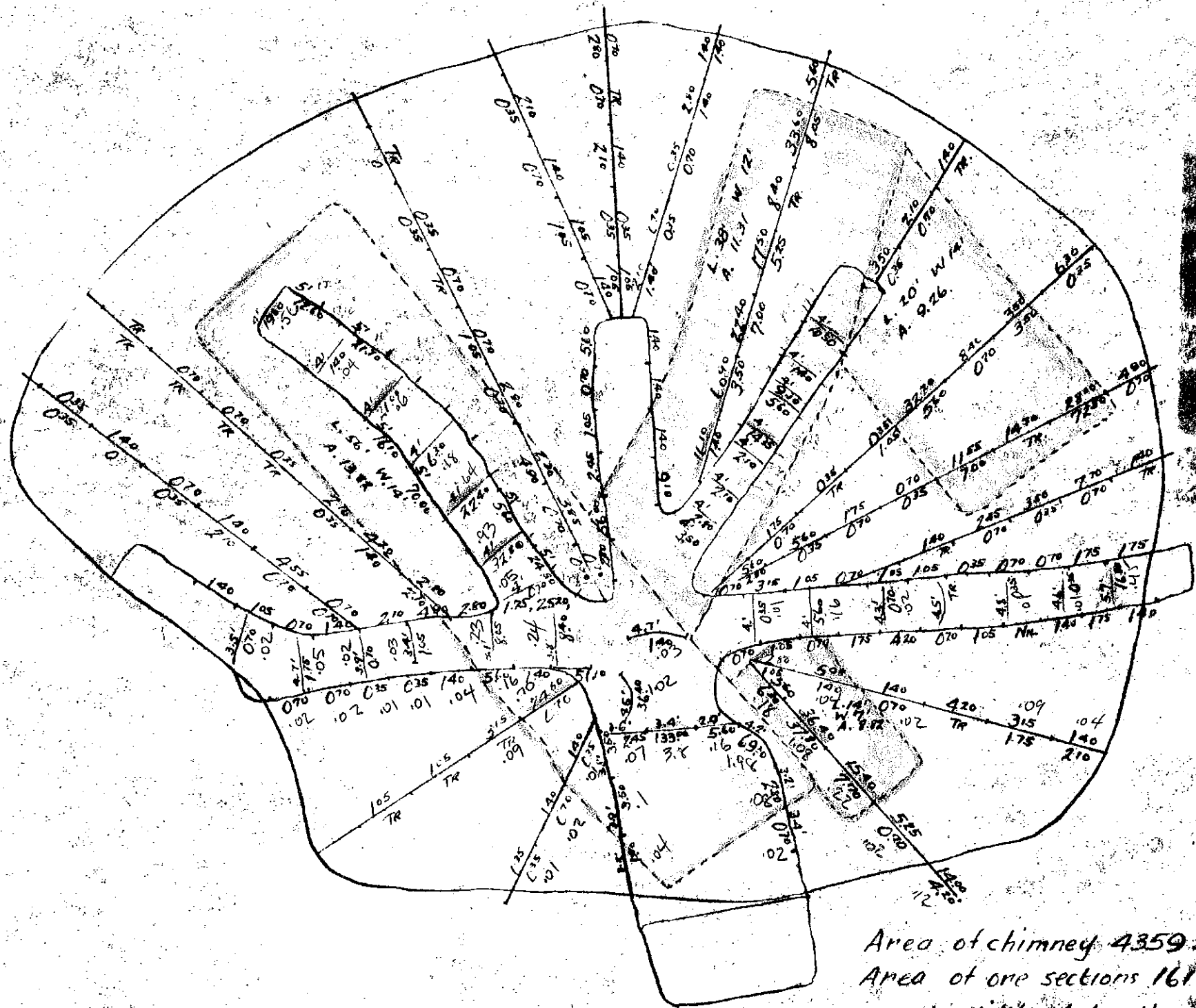
D.D. Hole 414 or 50°
 Cut 38' aver. .3502
 Proved dip deposit 75°-80°
 Depth to 455'



.29 = oz. Gold Ton
 15 = Width Feet

Assay Plan 425 Level
 Goldbeam Mines Ltd

20 2 23 J.F.W.



Area of chimney 4359 sq ft
 Area of one sections 1618 sq ft
 W = width L = Length
 A = Average Grade

FACE SAMPLES AND
CORE AND SLUDGE DATA
FOR COMPARISON
Nov. 19, 1938. Scale: 1"=10'
Drawn by
D.S.G. Bergal

CROSS CUT
2ND. LEVEL

SUNBEAM KIRKLAND
GOLD MINES LTD.
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