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MOHAWK VEIN RESERVE REPORT

MOHAWK CLAIM GROUP -- ESMERALDA COUNTY, NEVADA

May 27, 1983

Stephen R. Bruff

MOHAWK VEIN RESERVE REPORT

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I. Introduction and Summary

The Mohawk vein is one of several known veins within the 24 claim "Mohawk Claim Group" located in the western portion of the Red Mountain mining district in Esmeralda County, Nevada. The Mohawk vein is estimated to have produced 106,448 tons of ore grading 18.7 ounces of silver per ton or 1,990,580 ounces mined. Most of this production was from the period 1954-1961. The vein is entirely in Tertiary latite rock and is a northeasterly branch off the Callaghan fault which is a more regional structure with an attitude similar to the regional fault and producing vein pattern of the Red Mountain district. The Mohawk vein has been explored for 1,000 feet in strike length and about 500 feet along the dip of the vein which averages 55° to the west, in total, and locally 45° to 70° within the ore shoots. A comprehensive report on the geology, production and mining method history, previous ore reserve calculation for the Mohawk vein, and exploration potential of all targets within the Mohawk claim group are contained in the report: Property Report and Exploration Potential -- Mohawk Claim Group -- Esmeralda County, Nevada by S. R. Bruff and W. D. Baker, June 8, 1982.

From the June, 1982 work, a geologic reserve with dilution and a mining reserve with dilution and losses from mining was calculated. Converting the geologic reserve with dilution back to a straight geologic reserve for comparison with the reserve calculation of this report places the 1982 geologic reserve at 42,399 tons of probable and possible reserves grading 15.5 ounces silver per ton. This reserve was calculated in a very conservative manner and included the parameters of 4.0 foot minimum mining width and a 10.0 ounce per ton silver cutoff. The mining reserve calculated from this geologic reserve -- which took into

account the actual expected tonnage losses from the extraction of the reserves and added 25% mining dilution at 4.5 ounces per ton silver -- totalled 40,071 tons grading 13.3 ounces per ton silver.

For this study, a second reserve calculation was undertaken using 8.0 ounces silver per ton as the cutoff. The minimum 4.0 foot mining width was retained. Some minor reinterpretations of the localized ore shoot geology -- review after a year's thought -- were incorporated in some of the block calculations. In total, this reserve analysis remained conservative in approach and calculation, and resulted in a total geologic ore reserve of 95,221 tons of probable and possible reserves grading 13.2 ounces silver per ton from six ore shoots.

A potential ore category was added to this reserve and includes potential ore as extensions of known ore but not exploration potential of new, undiscovered finds in the claim group or outside of the main Mohawk vein workings included in this reserve analysis. This potential reserve totalled an additional 30,833 tons grading 12.0 ounces silver per ton. The grand total geologic reserve is 126,054 tons of probable, possible and potential reserves grading 12.9 ounces silver per ton.

The mining reserve calculated from this geologic reserve is 84,240 tons of probable and possible reserves grading 11.5 ounces silver per ton, and with the potential ore category added the total is 115,947 tons grading 11.3 ounces silver per ton. This mining reserve was calculated based on subraction of tonnage losses through mining and incorporated 20% dilution at 3.3 ounces silver per ton. The geologic and mining reserve totals are shown in Table I.

TABLE I

MARCH, 1983 RESERVE

GEOLOGIC AND MINING RESERVES COMPARISON

Reserve	Probable Tons oz.Ag	Possible Tons oz.Ag	Probable + Possible Tons oz.Ag	Potential Tons oz.Ag	Prob. + Poss. + Potential Tons oz.Ag
GEOLOGIC RESERVE (8.0 oz. cutoff)	64,805 13.3 (862,000 oz.)	30,416 12.9 (392,000 oz.)	95,221 13.2 (1,257,000 oz.)	30,833 12.0 (370,000 oz.)	126,054 12.9 (1,626,000 oz.)
MINING RESERVE (diluted w/ 20% @ 3.3 oz. -- plus mining losses)	52,224 11.6 (606,000 oz.)	32,016 11.4 (365,000 oz.)	84,240 11.5 (969,000 oz.)	31,707 10.5 (333,000 oz.)	115,947 11.3 (1,310,000 oz.)

II. Tablulated March, 1983 reserves

(see Plates I and II for ore shoot locations within the Mohawk vein)

TABLE II

MARCH, 1983 RESERVE

MOHAWK VEIN GEOLOGIC RESERVE TOTALS

Shoot	Probable		Possible		Probable + Possible		Potential		Prob. + Poss. + Potential	
	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag
Evelyn	4,320	12.2	3,235	11.6	7,555	11.9	4,781	11.4	12,336	11.7
Brundage	17,866	16.1	4,283	15.9	22,149	16.1	4,215	13.1	26,364	15.6
Ellaree	10,916	11.0	6,910	11.6	17,826	11.2	10,894	11.3	28,720	11.2
Luft So.	5,291	10.4	1,735	9.9	7,026	10.3	1,113	8.2	8,139	10.0
Luft	26,412	13.0	12,851	13.6	39,263	13.2	7,026	13.9	46,289	13.3
Karen			1,402	10.8	1,402	10.8	2,804	10.8	4,206	10.8
Totals	64,805	13.3	30,416	12.9	95,221	13.2	30,833	12.0	126,054	12.9

TABLE III

MARCH, 1983 RESERVE

MOHAWK VEIN MINING RESERVE TOTALS

(20% dilution at 3.3 ounce Ag plus losses from mining)

Shoot	Probable		Possible		Probable + Possible		Potential		Prob. + Poss. + Potential	
	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag	Tons	oz.Ag
Evelyn	3,866	10.7	3,126	11.2	6,992	10.9	5,251	10.0	12,243	10.5
Brundage	12,215	14.1	3,971	13.7	16,186	14.0	3,524	11.3	19,710	13.5
Ellaree	9,710	9.8	7,092	10.2	16,802	10.0	10,621	10.0	27,423	10.0
Luft So.	4,816	9.2	1,830	8.8	6,646	9.1	1,202	7.4	7,848	8.8
Luft	21,617	11.8	14,773	11.9	36,390	11.8	8,081	12.1	44,471	11.9
Karen			1,224	9.6	1,224	9.6	3,028	9.6	4,252	9.6
Totals	52,224	11.6	32,016	11.4	84,240	11.5	31,707	10.5	115,947	11.3

MARCH 11, 1983 RESERVE

GEOLOGIC RESERVES - NO DILUTION

EVELYN SHOOT TOTALS

PROVEN : NONE

TABLE IV-A

PROBABLE :

BLOCK	TONS	GRADE
EV-200-1	652	12.9
EV-300-1	2,141	11.9
EV-400-1	1,527	12.2
	4,320	12.2 (averaged)

POSSIBLE :

EV-200-2	705	12.9
EV-300-2	1,003	9.7
EV-400-2	1,527	12.2
	3,235	11.6 (averaged)

PROBABLE + POSSIBLE : 7,555 @ 11.9

POTENTIAL :

EV-200-3	1,440	10.4
EV-300-3	287	8.5
EV-500-1	3,054	12.2
	4,781	11.4 (averaged)

PROBABLE, POSSIBLE, POTENTIAL : 12,336 @ 11.7

MARCH 11, 1983 RESERVE

BRUNDAGE SHOOT TOTALS ; GEOLOGIC RESERVE - NO DILUTION

PROVEN : NONE

TABLE IV-B

PROBABLE :

BLOCK	TONS	GRADE
B-400-1	706	17.1
B-400-2	1,942	14.9
B-500-1	1,736	14.9
B-500-3	1,365	15.0
B-500-4	291	15.0
B-500-5	2,150	17.0
B-500-6	1,138	17.0
B-500-7	348	14.2
B-500-8	967	16.7
B-500-9	1,878	15.5
B-600-1	5,345	16.8
	17,866	16.1

POSSIBLE :

B-500-10	455	8.6
B-600-2	3,828	16.8
	4,283	15.9
PROBABLE + POSSIBLE	22,149	16.1

POTENTIAL :

B-600-3	2,311	16.8
B-600-4	1,904	8.6
	4,215	13.1
PROBABLE, POSSIBLE, POTENTIAL	26,364	15.6

MARCH 11, 1983 RESERVE -- GEOLOGIC RESERVE
NO DILUTION

ELLAREE SHOOT TOTALS

PROVEN : NONE

TABLE IV-C

PROBABLE :

BLOCK	TONS	GRADE
E-200-1	734	12.5
E-300-1	2,773	9.7
E-500-1	2,648	12.4
E-500-3	2,088	8.8
E-600-1	2,673	12.4
	10,916	11.0

POSSIBLE :

E-200-2	734	12.5
E-500-2	3,503	10.8
E-600-2	2,673	12.4
	6,910	11.6

PROBABLE + POSSIBLE	17,826	11.2

POTENTIAL :

E-200-3	1,193	12.5
E-500-4	2,424	10.7
E-600-3	2,673	12.4
E-600-4	4,604	10.7
	10,894	11.3

PROB., POSS., POTENTIAL	28,720	11.2

MARCH 11, 1983 RESERVE -- GEOLOGIC RESERVE NO DILUTION

LUFT SOUTH SHOOT TOTALS

PROVEN : NONE

TABLE IV-D

PROBABLE :

BLOCK	TONS	GRADE
LS-200-1	557	8.2
LS-300-1	1,638	8.9
LS-400-1	371	10.0
LS-400-3	807	11.0
LS-500-1	1,918	12.2
	5,291	10.4

POSSIBLE :

LS-200-2	557	8.2
LS-400-2	371	10.0
LS-400-4	807	11.0
	1,735	9.9

PROBABLE + POSSIBLE	7,026	10.3

POTENTIAL :

LS-200-3	1,113	8.2

PROBABLE, POSS., POTENTIAL	8,139	10.0

MARCH 11, 1983 RESERVE -- GEOLOGIC RESERVE
NO DILUTION

LUFT SHOOT TOTALS

PROVEN : NONE

TABLE IV-E

PROBABLE :

BLOCK	TONS	GRADE
L-400-1	8,065	10.9
L-400-3	3,310	17.6
L-500-1	6,897	12.2
L-600-1	8,140	13.9
	26,412	13.0

POSSIBLE :

L-400-2	5,277	13.1
L-600-2	7,574	13.9
	12,851	13.6

TOTAL PROBABLE + POSSIBLE	39,263	13.2

POTENTIAL :

L-600-3	7,026	13.9

TOTAL PROB., POSS., POTENTIAL	46,289	13.3

MARCH 11, 1983 RESERVE -- GEOLOGIC RESERVE NO DILUTION

KAREN SHOOT TOTALS

TABLE IV-F

PROVEN : NONE

PROBABLE : NONE

POSSIBLE :

BLOCK	TONS	GRADE
K-200-1	701	10.8
K-300-1	701	10.8
	1402	10.8

POTENTIAL :

K-200-2	1,402	10.8
K-300-2	1,402	10.8
	2,804	10.8

TOTAL POSSIBLE + POTENTIAL	4,206	10.8

MARCH 11, 1983 RESERVE

MINING RESERVES

EVELYN SHOOT TOTALS

TABLE IV-G

PROVEN: NONE

PROBABLE:

BLOCK	TONS	GRADE
EV-200-1	782	11.3
EV-300-1	1,934	10.5
EV-400-1	1,150	10.7
	3,866	10.7

POSSIBLE:

EV-200-2	846	11.3
EV-300-2	660	8.6
EV-400-2	1,620	12.2
	3,126	11.2

PROBABLE + POSSIBLE:	6,992	10.9

POTENTIAL:

EV-200-3	1,728	9.2
EV-300-3	283	7.6
EV-400-3	3,240	10.7
	5,251	10.0

PROB., POSS., POTENTIAL:	12,243	10.5

MARCH 11, 1983 RESERVE

MINING RESERVE

BRUNDAGE SHOOT

TABLE IV-H

PROBABLE :

BLOCK	TONS	GRADE
B-400-1	424	14.8
B-400-2	1,165	13.0
B-500-1	1,036	13.0
B-500-3	1,328	13.1
B-500-4	291	15.0
B-500-5	1,487	14.8
B-500-7	348	14.2
B-500-8	836	14.5
B-500-9	1,210	13.5
B-600-1	4,090	14.6
	12,215	14.1

POSSIBLE :

B-500-10	546	7.7
B-600-2	3,425	14.6
	3,971	13.7
PROBABLE + POSSIBLE	16,186	14.0

POTENTIAL :

B-600-3	1,849	14.6
B-600-4	1,675	7.7
	3,524	11.3
PROB., POSS., POTENTIAL	19,710	13.5

MARCH 11, 1983 RESERVE

MINING RESERVE

ELLAREE SHOOT

TABLE IV-I

PROBABLE:

BLOCK	TONS	GRADE
E-200-1	482	11.0
E-300-1	2,304	8.6
E-500-1	2,860	10.9
E-500-3	1,771	7.9
E-600-1	2,293	10.9
	9,710	9.8

POSSIBLE:

E-200-2	421	11.0
E-500-2	3,784	9.6
E-600-2	2,887	10.9
	7,092	10.2
PROBABLE + POSSIBLE	16,802	10.0

POTENTIAL:

E-200-3	484	11.0
E-500-4	2,618	9.5
E-600-3	2,887	10.9
E-600-4	4,632	9.5
	10,621	10.0
PROB., POSS., POTENTIAL:	27,423	10.0

MARCH 11, 1983 RESERVE

MINING RESERVE

LUFT SOUTH SHOOT

TABLE IV-J

PROBABLE:

BLOCK	TONS	GRADE
LS-200-1	601	7.4
LS-300-1	1,513	8.0
LS-400-1	198	8.9
LS-400-3	828	9.7
LS-500-1	1,676	10.7
	4,816	9.2

POSSIBLE:

LS-200-2	601	7.4
LS-400-2	401	8.9
LS-400-4	828	9.7
	1,830	8.8

PROBABLE + POSIBLE:	6,646	9.1

POTENTIAL

LS-200-3	1,202	7.4

PROB., POSS., POTENTIAL	7,848	8.8

MARCH 11, 1983 RESERVE

MINING RESERVE

LOFT SHOOT

TABLE IV-K

PROBABLE :

BLOCK	TONS	GRADE
L-400-1	5,474	10.9
L-400-3	2,689	15.2
L-500-1	5,664	10.7
L-600-1	7,790	12.1
	21,617	11.8

POSSIBLE :

L-400-2	6,035	11.5
L-600-2	8,738	12.1
	14,773	11.9

PROBABLE + POSSIBLE :	36,390	11.8

POTENTIAL :

L-600-3	8,081	12.1

PROB., POSS., POTENTIAL	44,471	11.9

MARCH 11, 1983 RESERVE

MINING RESERVE

KAREN SHOOT

TABLE IV-L

PROVEN : NONE

PROBABLE : NONE

POSSIBLE :

BLOCK	TONS	GRADE
K-200-1	757	9.6
K-300-1	467	9.6
	1,224	9.6

PROBABLE + POSSIBLE	1,224	9.6

POTENTIAL :

K-200-2	1,514	9.6
K-300-2	1,514	9.6
	3,028	9.6

PROB., POSS, POTENTIAL	4,252	9.6

III. Reserve Calculation Parameters

A. General Discussion

This ore reserve calculation follows generally accepted methods for calculation of reserves in narrow vein ore occurring in higher grade shoots. Generally, the Mohawk vein ore occurs along a single vein structure, although locally a few possible splits in the vein have been geologically inferred although not fully documented from the mapped evidence. This reserve is based on a ~~10.0~~ 8.0 ounce silver per ton cutoff, a 4.0 foot minimum mining width and mining dilution at 20% at 3.3 ounces silver per ton.

Cutoff as used for this reserve is the lowest average grade of any length of the vein -- when averaged by the weighted average method for width and grade -- that may be used to calculate reserves. Using 8.0 ounces per ton silver as the cutoff means that any stretch of vein samples -- when averaged for width and grade -- that does not average as a whole 8.0 ounces or greater can not be included in the reserve calculations. Individual assays of vein material may be lower than the cutoff grade, as long as the overall average of the vein segment exceeds the 8.0 ounce limit. All samples must be 4.0 feet in width or greater in order to meet the minimum mining width requirement. Any sample or vein point which is less than the minimum width is brought up to the minimum width by adding appropriate material with an appropriate grade which may be chosen from the most logical grade based on nearby assays. Few sample points in the data set for the Mohawk vein were less than this minimum width.

Dilution was calculated for this reserve by considering two questions: the mining methods that may be employed in extracting the ore, and the most likely grade of the diluting material. The Mohawk vein exhibits a variety of dips of the ore shoots -- from as shallow as 45° to as steep as 75°. Past

mining methods have been open stoping with pillar and stull support in the stopes of 4-8 feet in width to inclined set, and more commonly, squareset in the shoots exhibiting higher grade vein widths of greater than 8 feet. More recently in the 1981 stoping, shrinkage stoping was introduced successfully in the Brundage shoot and cut and fill development was started in the lower Luft shoot. Ground conditions vary from shoot to shoot and within each shoot. It is anticipated from a review of the various conditions in the shoots that a variety of methods would be used for mining of this reserve.

If mining of this reserve is to be completed with the conventional tracked equipment and shaft hoisting, the methods will most likely remain shrinkage, open stoping with pillar and stull support, and slusher cut and fill. An examination into the feasibility of introducing trackless equipment into the mine will open up the possibility of mining some of the reserve blocks by modified blasthole stoping and blasthole trackless retreat mining. For this reserve calculation continuation of the tracked access and shaft hoisting is assumed.

The assessment of the amount and grade of dilution from this type of mining resulted in a determination that, overall, about 20% dilution may occur. In some cases this will probably be determined to be excessive (such as in the mining of zones of greater than 12 feet in width) since with proper grade control practices it should be possible to keep the production drilling well within the ore zone boundaries. In other cases, such as the narrow Ellaree shoot, dilution may be greater than the 20% as minor undulations in the vein, coupled with the difficulties in mining at widths as narrow as 5 feet, may plague efforts to maintain maximum grade extraction. Without the benefit of more detailed mining

analyses, the overall dilution at 20% was selected as a reasonable figure for the ore shoots in total.

Grade of the diluting material was calculated by arithmetically averaging 88 assays of sample points in the hanging wall and footwall of the ore shoots. This was the total number of points available of assays of samples not used in the reserve block calculation but which are adjacent to the reserve blocks. From an analysis of the assay plats it is apparent that the dilution grade will vary somewhat from shoot to shoot, but some shoots did not have enough data points for a reasonable estimate of the grade. Therefore, all available points (the 88 points) were averaged to calculate the grade of diluting material on a mine wide basis. This grade calculated to 3.3 ounces of silver per ton.

Dilution tonnage was calculated by adding a factor of 20% of the reserve tonnage available (after mining losses) to the available reserve tonnages. A weighted average calculation of the reserve tonnage after mining losses plus the dilution tonnage grading 3.3 ounces silver per ton resulted in the mining reserve figures.

The effect on the reserve grade from adding mining dilution was to reduce the geological reserve grade by about 12-13%. The effect on tonnage of reserves as a result of subtracting mining losses such as necessary pillars, tonnage that cannot be mined due to hazardous or obviously impossibly high costs of extraction is more difficult to equate to the geologic reserves since the mining reserve tonnage is affected by both the addition of dilution tons and the case by case deletion of varying amounts of tonnage as a result of the mining losses. On a gross basis, using probable and possible reserves, the difference in the geologic reserve and the mining reserve is a 12% reduction in available tonnage and a 13% reduction in silver grade.

About 600 chip-channel samples were cut during 1981-1982 in the mine for ore reserve estimation and for guiding exploration. Long hole samples are not used for reserve estimation except in one case in the 500 level Luft shoot and one case on the 500 level Brundage shoot. These long hole samples were arbitrarily reduced in grade by 40% to compensate for possible salting. The chip-channel samples were cut by geology pick with the chips falling into a hand held plastic container. Care was taken, particularly in the brecciated, alternating soft and hard ground, to ensure that the sample channel was uniform throughout the cut. Samples averaged about 4 pounds each. A limit of 7.0 feet (maximum) of channel length was imposed on the program. Almost all samples, however, were cut across shorter lengths. An occasional exception was made to this rule in special circumstances. The samples were taken by geologists and engineers and a few were cut by non-technical people under the supervision of geologists and engineers.

Where possible, sampling cuts were taken in conformance with the geology as mapped in an attempt to cleanly separate the units of the vein. However, with the somewhat high variability of silver values from point to point along the vein, and the somewhat erratic distribution of the silver values across the various vein units, further coupled with the difficulty in visually estimating grade, a number of samples were taken in widths of 4-6 feet at the 'best estimate' location of values. Extra sampling was completed in the ribs and crosscuts of openings to ensure that spotty, higher grade areas were not missed.

Where possible, samples were taken as true width cuts of the vein. In order to sample completely some portions of the vein in stopes and drifts, continuation samples down the ribs were taken. For the reserve calculations, all samples

were converted to true widths.

The samples were assayed during 1981 and 1982 by the Veta Grande Cos., Inc. laboratory near Gardnerville, Nevada using AA methods. The lab made a practice of sending occasional duplicates to independent laboratories for fire assay comparison. The results of the comparisons were quite good in the range of silver values of greater than 1.0 ounce per ton.

This reserve calculation was completed using four catagories of reserves: proven, probable, possible and potential. Proven reserves are those tons that are thoroughly exposed and sampled on four sides, or on fewer sides if other evidence convincingly demonstrates that the contained ounces will be mined. A few, small, isolated blocks of tonnage that could be placed in the proven category were found but were lumped with the probable ore due to the limited tonnage.

Probable reserves are those tons that have sample data on at least two sides of the block, and geologic projection suggests a high probability of the silver grade continuing throughout the block. The probable reserve category was used for blocks of ore above drift development -- with samples available for one side only -- when the block was in the main boundaries of known ore shoots. The Mohawk vein shoots exhibit good continuity of silver mineralization both laterally and vertically within the individual shoots. In no case was any probable block extended up-dip or down-dip further than one-half the strike length of the ore zone, unless previous mining activity or assay data confirmed the continuation of the silver mineralization.

Possible reserves are those tons which are extensions of probable reserves and which are based mostly on geologic interpretation of possible continuity within the ore shoots.

The strength of the known continuity of silver mineralization up- and down-dip within the confines of the ore shoots supports the use of the possible tonnage calculations for the Mohawk vein. The possible blocks were not extended further up- or down-dip than the corresponding probable blocks.

Potential reserves are those tons that are extensions of possible blocks where the silver mineralization -- again, within the confines of the ore shoots -- can be interpreted to continue up- or down-dip. The potential category was used, in addition, for two blocks in the Ellaree shoot and two in the Evelyn shoot where geologic evidence suggests that the continuation of grade may be present along strike from the main shoots, but, sampling data was not sufficient to classify the tonnage higher than potential. The potential ore blocks were extended up- and down-dip a full strike length distance in several of the shoots as a result of the strength of the continuity of the Mohawk shoot mineralization.

The potential tonnage as calculated for this reserve accounts for some of the 'main mine' potential for finding additional reserves, but should not be considered part of the potential ore finds that may be found to the north of the main Mohawk vein workings, and to greater depths along the vein. Those potential finds are exploration targets not considered in this report but which are described in the June 8, 1982 report. Also, with the 8.0 ounce cutoff as used for this reserve, there is an estimated 5-10,000 tons of additional ore that may be found for reserves that remain in areas of the mine workings that have not seen sufficient development and in-mine exploration.

This reserve calculation is moderately conservative. The possible and potential reserves are not carried further than is reasonable for the demonstrated silver occurrences in the ore shoots. Sample/assay results provide reasonably

good coverage in the mine. Geologic problems as related to reserves such as the possible split in the vein in the mid-Luft shoot are handled by severely limiting the classification of reserves to a lower category of reserves where necessary.

A focus on the individual ore shoot reserve calculations is given in the following sections. Refer to Plates I and II for location of the ore reserve blocks.

B. Evelyn Shoot

The structural control of the Evelyn shoot is interpreted to be either a continuation of the Brundage shoot cymoid loop or a separate loop controlled feature. The vein material is reasonably persistant in strike on the 200 and 300 levels, and in the raise between these levels. The footwall lateral driven south on 500 level from the Brundage shoot was in part designed as a longhole platform for drilling the down-dip extension of the Evelyn, but unfortunately the drilling was not completed. Should future drilling show ore grade at the 500 level, additional tonnage will be added to the reserve.

The potential blocks calculated for the 200 and 300 levels are based on the strength of nearby reserve block calculations, the proximity of the block to the high grade Brundage shoot, and the backstoping completed by miners in the 1950's. The backstoping, completed just above the 200 level, would not have been attempted without at least some indication of fair grade -- fair grade in those years being (probably) in excess of 10 ounces. Staging and sampling may upgrade these blocks to probable and possible.

C. Brundage Shoot

The Brundage shoot in the upper levels carried high

grade ore throughout wide stopes. Reserves calculated for the remaining ore are the highest grade reserves in the mine. The vein is steeper in the below-400 area which has allowed successful shrinkage stoping. There is some evidence that the strike length of the higher grade portion of the vein is decreasing with depth and this evidence is reflected in the narrowing of the reserve blocks with depth. In the June, 1982 report, some discussion concerning the completion of diamond drill holes below the 500 level in the Brundage and Luft shoots suggests a discouraging picture for the maintenance of grade at some depth. There is no additional evidence to suggest that the apparent drilling precludes the reasonable extension of probable, possible and potential blocks so these blocks were placed in the reserve at the standard half-the-strike length allowance used in conventional reserve calculations. An additional potential reserve block was justified on the south side of the main reserve blocks below the 500 level based on the strength of the vein on 500 level although a lack of sufficient samples prevented upgrading of this ore to possible reserves.

D. Ellaree Shoot

The Ellaree shoot carries widths of from 4.7 to 5.5 feet and relatively shallow dips of 45° to 55°. Silver assays are relatively persistant along the vein. Constant attention to grade control will be required in mining this narrower shoot, but the shoot may be mined by open stoping with pillar and stull support -- a relatively low cost method. The Ellaree is virtually unmined. Two blocks of potential reserves are calculated above and below the 500 level and to the north of the shoot based on the strong geologic possibility of ore occurring along the vein in a portion of the level where the drift was off of the main portion of the

vein. Some longholing, and perhaps drifting, would confirm this geological possibility.

E. Luft South Shoot

The Luft South shoot is a remnant of vein mineralization bypassed by previous miners of the Luft shoot due to the grade of this portion of the vein. Grade is persistant as demonstrated by the assays on the 200 and 300 levels and the ground is amenable to open stoping which is the same method as was used to mine the main Luft shoot. Between the 300 and 400 levels, the wide divergence in dip is explained by a probable split in the vein. Without confirmation of this split, no additional reserves beyond possible were calculated for this shoot. Another interpretation of the dip divergence would be the flattening of the vein between the 300 and 400 levels. In this case, the reserves calculated would be about the same tonnage as the reserves included in this study. Below the 500 level, the Luft South shoot is obviously the same vein structure as the main Luft shoot and is included in the Luft calculations.

F. Luft Shoot

The Luft shoot above the 300 level was mined within a relatively narrow but good grade vein. On the 400 level, a rather wide zone of moderate silver mineralization is documented. The possible split of the vein or flattening of dip of the vein in the area between the 300 and 400 levels was considered in this calculation. The conclusion that there in insufficient evidence to confirm either possibility led to the calculation of reserves based on a straightforward connection of the vein between the levels. Between the 400 and 500 levels sufficient sampling is available to justify probable reserve calculations, but the

configuration of the old stoping between the levels is not exactly known. This problem -- from an extraction standpoint -- was handled by limiting the amount of minable reserves calculated for the block. Below 500 level reserves were treated as standard reserve calculations; one-half the strike length of the level shoot for each of the down-dip blocks.

G. Karen Shoot

The Karen shoot was calculated from assays of samples taken by others (Sunshine Mining Co.) from drifting by that company on the 200 level. The 200 level drift beyond the center of the Luft shoot and into the Karen shoot area is not presently accessible. The shoot is interpreted to be in the hanging wall of a potentially larger shoot which is listed as a significant exploration target in the June, 1982 report. On a best-data-available basis, the assays of Sunshine's work were used, and the reserve classifications limited to possible and potential only. The potential blocks were extended to equal a full strike length of the zone based on the strong historical configuration of vertical depth to the Mohawk shoots.

Detailed calculations of each block in the ore shoots including the reasoning for selection of block classifications and mining method are included in Sections IV and V on geologic and mining reserve calculations.

H. Comparison of March, 1983 and June, 1982 Reserves

Comparing the 10.0 ounce silver cutoff of the June, 1982 reserve and the 8.0 ounce silver cutoff of the March,

1983 reserve shows the marked increase in tonnage and ounces of contained silver in the reserves. See Table V. In the probable plus possible totals, geologic reserve tonnage increased by 125% from 42,399 tons to 95,221 tons; contained ounces of silver increased by 91% from 657,000 to 1,257,000 ounces; and grade of reserves decreased 15% from 15.5 to 13.2 ounces silver per ton of reserve.

The bulk of the increase in probable and possible reserves is attributable to the lowering of the cutoff grade to 8.0 ounces silver per ton. The Luft South and Karen shoots were entirely new additions to the reserve. The Evelyn which was classified with the Brundage shoot in the June, 1982 reserve, was separated and several thousand tons added. The Brundage shoot produced a moderate increase in tonnage, and the Luft a substantial increase in tonnage based on the very wide ore zone on the 400 level with the reduced cutoff grade and the addition of tonnage below the 500 level as a result of half-the-strike-length calculations for the reserve blocks below the level. The Ellaree reserve more than doubled as a result of the extensive vein exposures in the 300 and 400 levels which became ore under the 8.0 ounce cutoff.

Grade of the geologic reserve was weakened from 15.5 to 13.2 ounces silver per ton as a result of including the substantial tonnages of somewhat lower grade vein material in the shoots. The Brundage and Luft shoots retain the distinction of being the highest grade shoots in the mine (in the 13-16 ounce range) and the remaining shoots contain silver values in the range of 10-11 ounces per ton.

Sample location/assay plats are included in the June, 1982 report.

TABLE V

COMPARISON -- MOHAWK VEIN RESERVES

GEOLOGIC RESERVES -- NO DILUTION

Reserve	Probable Tons oz.Ag	Possible Tons oz.Ag	Probable + Possible Tons oz.Ag	Potential Tons oz.Ag	Prob. + Poss. + Poten. Tons oz.Ag
June,1982 10.0 oz. cutoff very conservative	29,280 15.7 (460,000 oz.)	13,119 15.3 (201,000 oz.)	42,399 15.5 (657,000 oz.)		
March,1983 8.0 oz. cutoff mod. conservative	64,805 13.3 (862,000 oz.)	30,416 12.9 (392,000 oz.)	95,221 13.2 (1,257,000 oz.)	30,833 12.0 (370,000 oz.)	126,054 12.9 (1,626,000 oz.)

TABLE VI

MOHAWK VEIN GEOLOGIC RESERVE TOTALS

(JUNE 8, 1982 RES.)

SHOOT	PROBABLE		POSSIBLE		TOTAL: PROBABLE + POSSIBLE	
BRUNDAGE	12,825	17.0	3,845	17.3	16,670	17.1
ELLAREE	3,637	14.6	3,451	14.6	7,088	14.6
LUFT	12,818	14.6	5,823	14.4	18,641	14.5
	29,280	15.7	13,119	15.3	42,399	15.5

MOHAWK MINE

TABLE VI-A

JUNE 8, 1982 RESERVE

GEOLOGIC RESERVE -- NO DILUTION

BRUNDAGE SHOOT:

BLOCK	TONS	GRADE
PROBABLE:		
B-200-1	211	32.6
B-300-1	1,054	19.5
B-400-1	503	15.2
B-400-3	920	16.0
B-500-1	371	14.3
B-500-3	1,547	16.9
B-500-4	267	14.4
B-500-5	1,283	16.0
B-500-6	687	17.3
B-500-7	196	17.5
B-500-8	535	16.7
B-500-9	2,491	16.7
B-600-1	2,760	16.9
	12,825	17.0
POSSIBLE:		
B-200-2	211	32.6
B-400-2	503	15.2
B-500-2	371	14.3
B-600-2	2,760	16.9
	3,845	17.3
TOTAL PROB. + POSSIBLE:	16,670	17.1

MOHAWK MINE

TABLE II-B

JUNE 8, 1982 RESERVE

GEOLOGIC RESERVE -- NO DILUTION

ELLAREE SHOOT:

BLOCK	TONS	GRADE
PROBABLE:		
E-200-1	564	12.8
E-300-1	252	13.1
E-300-3	196	13.6
E-400-1	206	13.6
E-500-2	1,174	15.3
E-600-1	1,245	15.3
	3,637	14.6
POSSIBLE:		
E-200-2	564	12.8
E-300-2	378	13.3
E-400-2	232	13.6
E-500-1	1,032	15.3
E-600-2	1,245	15.3
	3,451	14.6
TOTAL PROBABLE + POSSIBLE	7,088	14.6

MOHAWK MINE

TABLE VI-C

JUNE 8, 1982 RESERVE

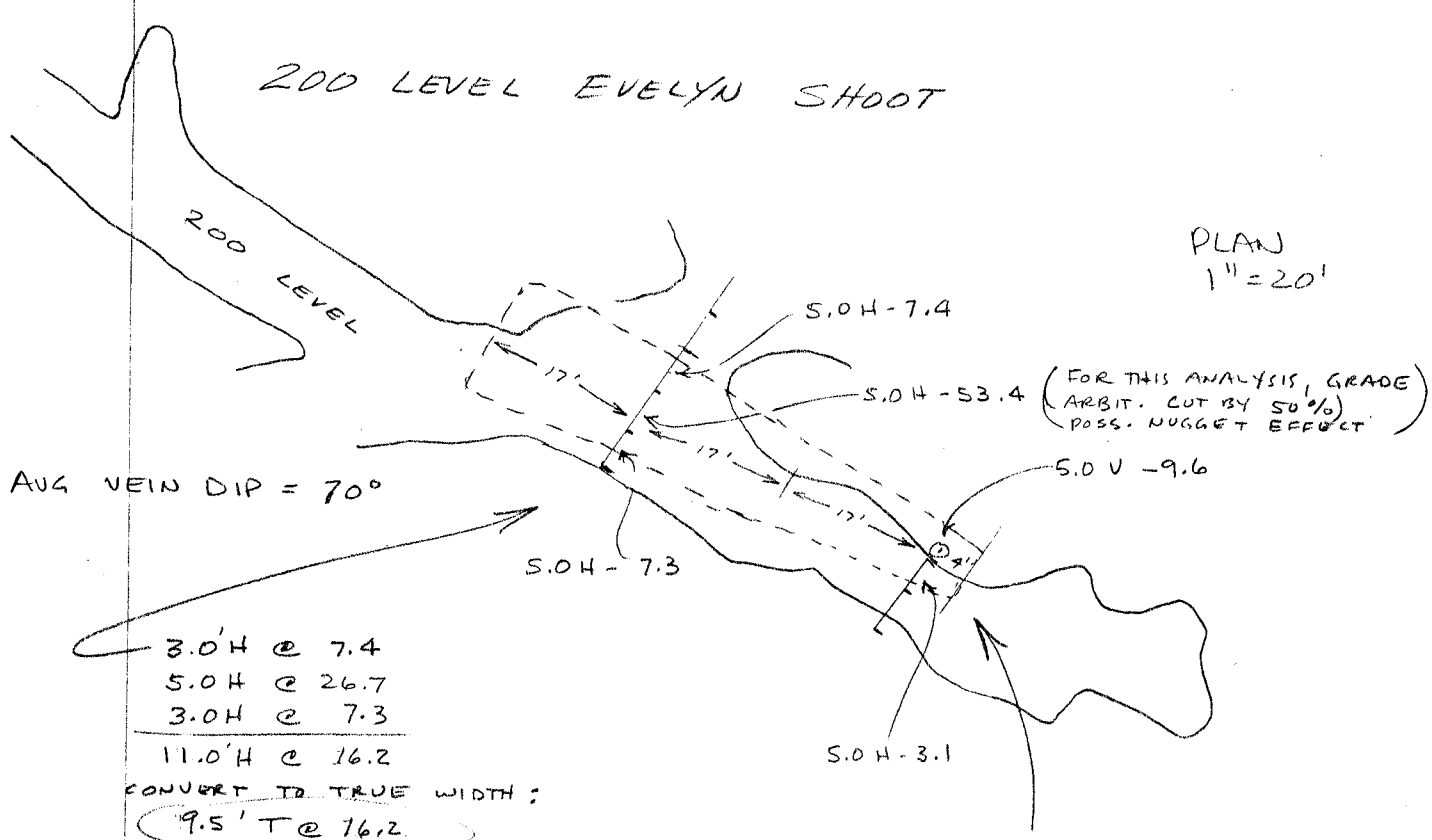
GEOLOGIC RESERVE -- NO DILUTION

LUFT SHOOT :

BLOCK	TONS	GRADE
PROBABLE:		
L-400-1	2,888	15.3
L-400-3	2,121	15.3
L-500-1	2,837	14.4
L-500-2	1,648	14.8
L-600-1	2,031	13.0
L-600-3	1,293	14.8
	12,818	14.6
POSSIBLE:		
L-400-2	2,499	15.3
L-600-2	2,031	13.0
L-600-4	1,293	14.8
	5,823	14.4
TOTAL PROBABLE + POSSIBLE:	18,641	14.5

IV. Geologic Reserve Calculation Worksheets and Maps

200 LEVEL EVELYN SHOOT



AVG VEIN DIP = 70°

3.0'H @ 7.4
5.0 H @ 26.7
3.0H @ 7.3
11.0'H @ 16.2
CONVERT TO TRUE WIDTH:
9.5' T @ 16.2

5.0 V ⇒ 1.5 T @ 9.6
5.0 H ⇒ 4.8 T @ 3.1
6.3 T @ 4.7

ALTHOUGH COMBINED GRADE IS BELOW 8.0 OZ. CUTOFF, WILL USE FOR CALCULATION BECAUSE ① STRENGTH OF GRADE IN RAISE BELOW 200 LEVEL AS WELL AS NORTHERN SAMPLES AND ② 9.6 OZ SAMPLE DID NOT COVER FULL WIDTH OF VEIN SINCE ALL OF VEIN NOT EXPOSED IN OPENING -- IT IS THEREFORE LIKELY THAT ADDITIONAL GOOD GRADE WILL BE MINED IN RIB. SEE GEOLOGY MAP.

COMBINED ZONE :

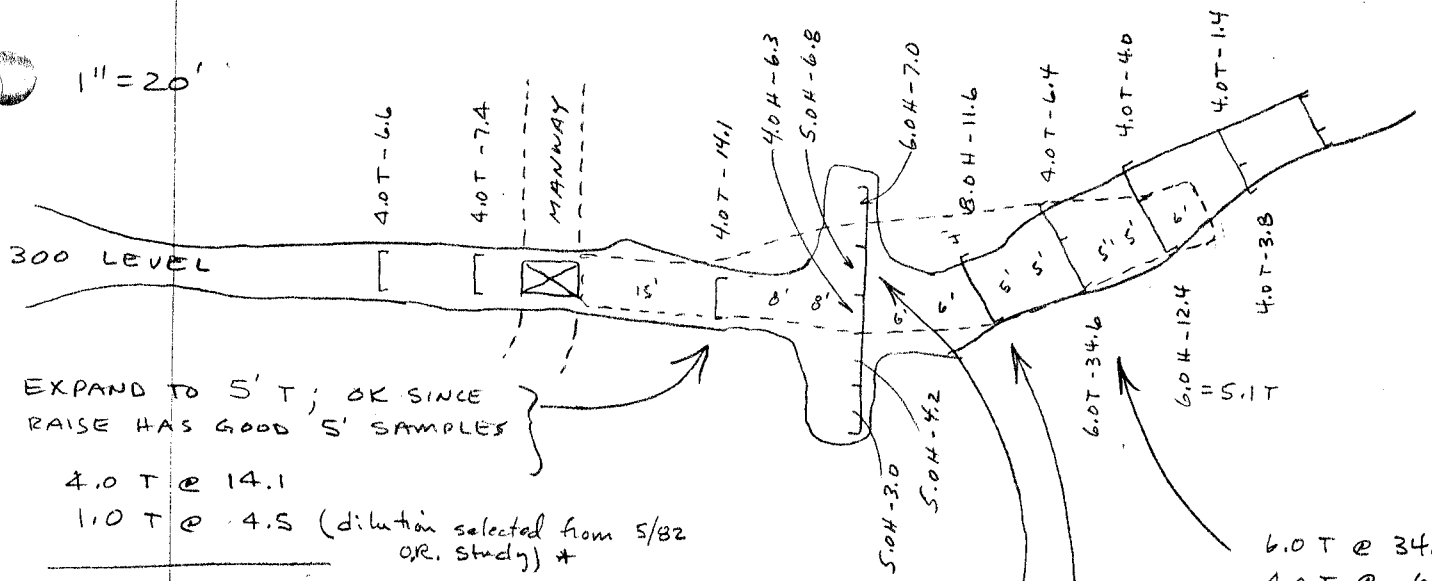
INTERVAL (I)	WIDTH (W)	INTERVAL x WIDTH (I x W)	ASSAY (A)	(I x W x A)
34.0'	9.5	323.0	16.2	5,233
21.0'	6.3	132.3	4.7	622
55.0'		455.3		5,855

$\frac{I \times W}{I} = 8.3'$ $\frac{I \times W \times A}{I \times W} = 12.9$ oz

COMBINED : 55' LENGTH // 8.3' WIDTH @ 12.9 oz Ag

300 LEVEL EVELYN

1" = 20'



EXPAND TO 5' T; OK SINCE RAISE HAS GOOD 5' SAMPLES

4.0 T @ 14.1
1.0 T @ 4.5 (dilution selected from 5/82 O.R. study) *

5.0 T @ 12.2

4.0 H @ 6.3
5.0 H @ 6.8
3.0 H @ 7.0

12.0 H @ 6.7
⇒ 10.3 T @ 6.7

8.0 H @ 11.6
4.0 H @ 4.5 *

12.0 H @ 9.2
⇒ 10.3 T @ 9.2

6.0 T @ 34.6
4.0 T @ 6.4

10.0 T @ 23.3

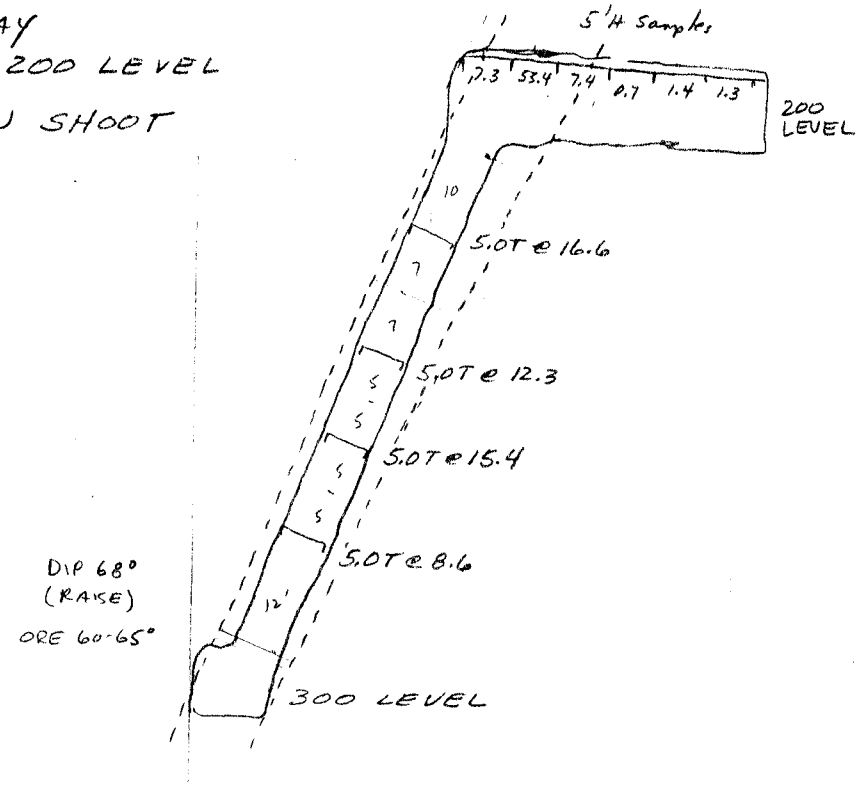
PLAN
1" = 20'

300 LEVEL EVELYN

(I)	(W)	(I × W)	(A)	(I × W × A)
23'	5.0	115.0	12.2	1,403
14	10.3	144.2	6.7	966
11	10.3	113.3	9.2	1,042
10	10.0	100.0	23.3	2,330
11	5.1	56.1	12.4	696
69		528.6		6,437

69' // 7.7' @ 12.2

MANWAY
300 → 200 LEVEL
EVELYN SHOOT



SECTION
1" = 20'

(I)	(W)	(I × W)	(A)	(I × W × A)
17.0	5.0	85.0	8.6	731
10.0	5.0	50.0	15.4	770
12.0	5.0	60.0	12.3	738
17.0	5.0	85.0	16.6	1,411
56'		280.0		3,650

56' LENGTH // 5.0' WIDTH @ 13.0 (RAISE SAMPLES)

PROJECTING ZONE OF VEIN: AT 200 LEVEL HI-GRADE BOUNDED BY 7.3 OZ MATERIAL; AT 300 LEVEL CALCULATION IS 7.7' WIDTH. USING 7.7' WIDTH AT BOTTOM AND 10'T AT TOP OF RAISE*, AND GRADE OF 7.3 OZ, CALCULATION OF TONNAGE IS: (NEXT PAGE)

* SAMPLE INTERVALS AT 200 LEVEL IN HW & FW OF HIGHER GRADE HELD TO 3' EACH, RATHER THAN 5', TO ALLOW FOR HIGHER GRADE DILUTION.

EVELYN SHOOT

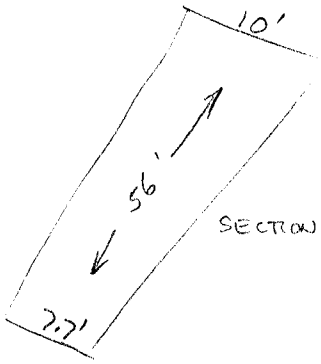
300 → 200 MANWAY

EXPANDED TONNAGE CALCULATION (SEE PREVIOUS PAGE)

AREA OF RAISE (ONLY) CALC. = 5' x 56' = 280 ♯

AREA OF TOTAL VEIN ZONE = 8.9' x 56' = 498 ♯

10
7.7
17.7 ÷ 2 = 8.9' AVG.



SECTION SKETCH

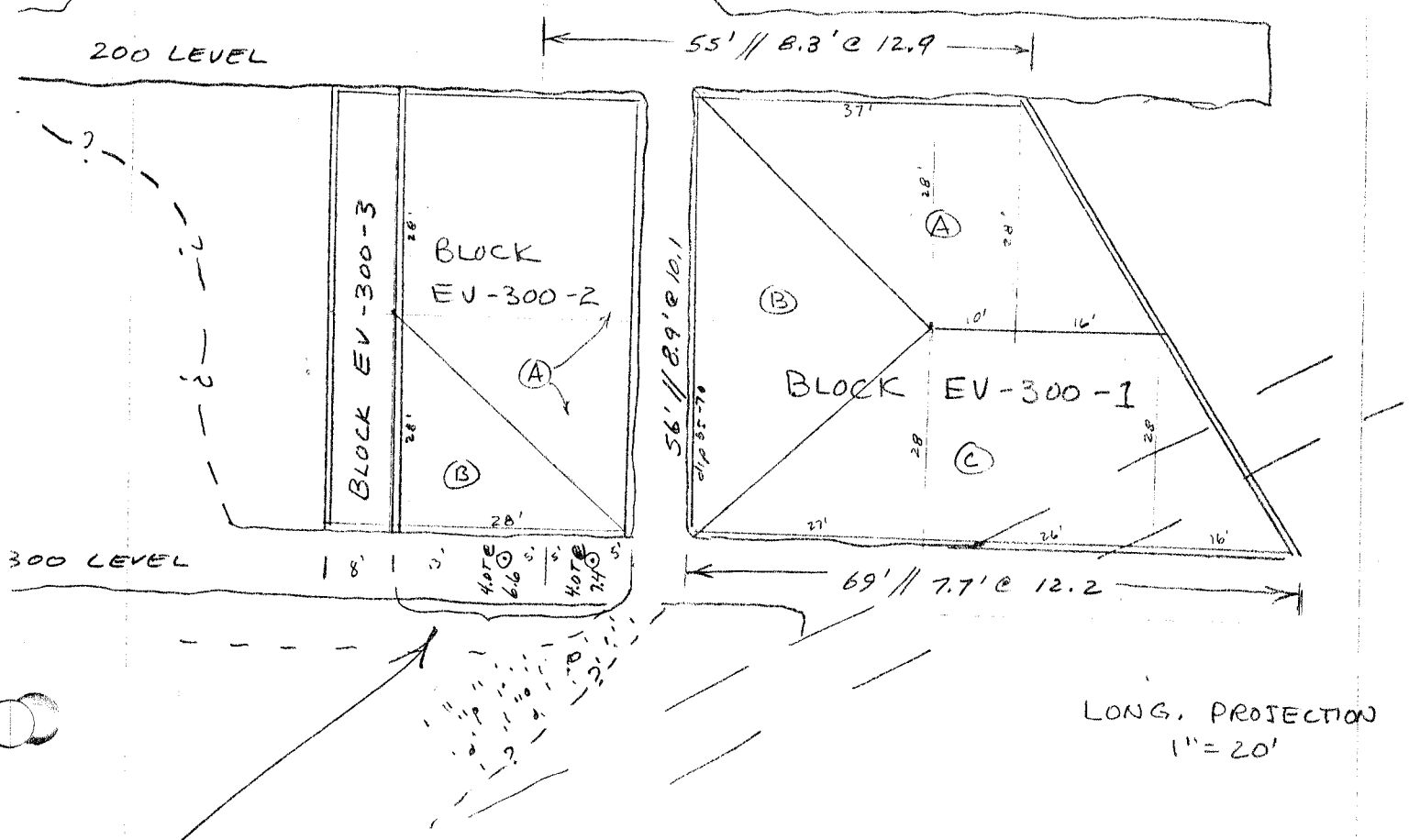
498 ♯
− 280 ♯
218 ♯

280 ♯ @ 12.2 oz
218 ♯ @ 7.3 oz
498 ♯ @ 10.1 oz

56' LENGTH // 8.9' WIDTH @ 10.1 oz

EVELYN SHOOT

GR - 6



300 LEVEL DRIFT

I	W	I x W	A	I x W x A
18'	4.0 T	72	6.6	475
10'	4.0 T	40	7.4	296
28'		112		771

28' // 4.0' @ 6.9 oz

EVELYN SHOOT 300 LEVEL RESERVES

BLOCK EV-300-1

(A) $\frac{1}{2}(16)(28) = 224$ ◻

$+ (10)(28) = 280$ ◻

$+ \frac{1}{2}(37)(28) = 518$ ◻

1,022 ◻

1,022 ◻ (8.3' THICK) = 8,483 ft^3 ÷ 12 ft^3/TON = 707 TONS @ 12.9 oz

(B) $\frac{1}{2}(56)(28) = 784$ ◻

784 ◻ (8.9' THICK) = 6,978 ft^3 ÷ 12 = 581 TONS @ 10.1 oz

(C) $\frac{1}{2}(16)(28) = 224$ ◻

$+ (28)(26) = 728$ ◻

$+ \frac{1}{2}(28)(27) = 378$ ◻

1,330 ◻

1,330 ◻ (7.7' THICK) = 10,241 ft^3 ÷ 12 = 853 TONS @ 12.2 oz

				width
TOTALS:	707 T	@	12.9 oz	8.3'
	581 T	@	10.1 oz	8.9'
	853 T	@	12.2 oz	7.7'
	2,141 T	@	11.9 oz	8.2'

BLOCK EV-300-1
2,141 T. @ 11.9 oz
PROBABLE

8.2' AVG WIDTH

DIP AVG. 67°

EVELYN SHOOT 300 LEVEL RESERVES

BLOCK EV-300-2

(A) (1/2)(28)(28) = 392 ⧫
+ (28)(28) = 784 ⧫
1,176 ⧫

(1,176 ⧫) (8.9' THICK) (RSE) = 10,466 ft³ ÷ 12 = 872 Tons @ 10.1 oz

(B) (1/2)(28)(28) = 392 ⧫
(392 ⧫) (4.0' THICK) = 1,568 ft³ ÷ 12 131 Tons @ 6.9 oz

COMBINED:

				WIDTH (AVG)
872	T	@	10.1	25% @ 4'
131	T	@	6.9	75% @ 8.9
1,003	T	@	9.7	100% @ 7.7'

BLOCK EV-300-2
1,003 TONS @ 9.7 oz.
POSSIBLE

7.7' AVG. WIDTH

— POSSIBLE, NOT PROBABLE BECAUSE EXTENSION OF GRADE FROM RAISE IS NOT ALONG DIP, BUT ALONG STRIKE (LESS RELIABLE)

BLOCK EV-300-3

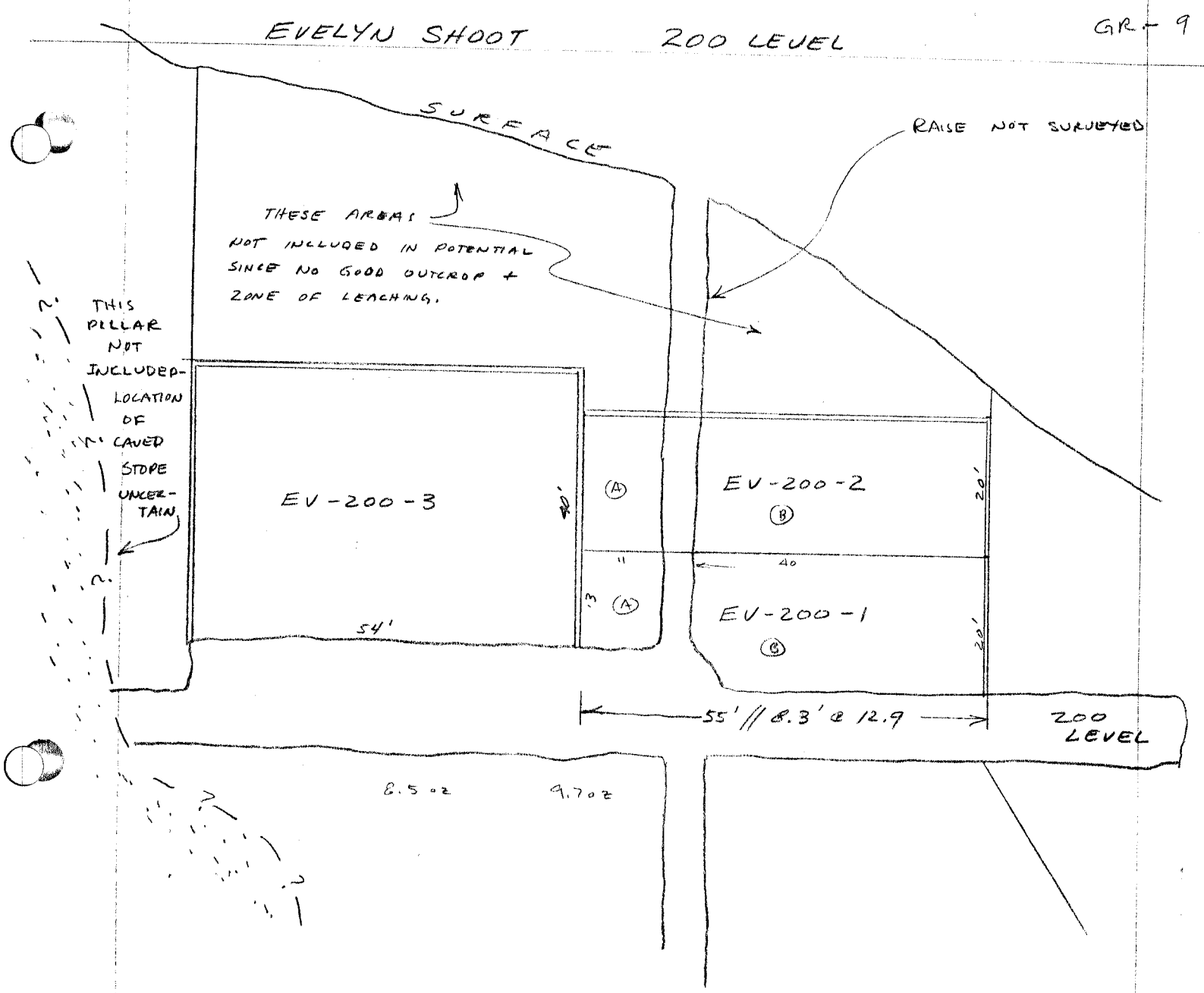
(8' WIDE (x) 56' LONG (x) 7.7' THICK) ÷ 12 = 287 Tons

GRADE FROM 50% RSE (10.1) ; 50% LEVEL (6.9) = 8.5 oz

BLOCK EV-300-3
287 TONS @ 8.5 oz
POTENTIAL

7.7' AVG. WIDTH

EVELYN SHOOT 200 LEVEL



LONGITUDINAL PROJECTION
1" = 20'

EVELYN SHOOT 200 LEVEL

EV-200-1

PROBABLE AND POSSIBLE BLOCKS ABOVE LEVEL: EACH LESS THAN 1/2 STRIKE LENGTH OF DRIFT SAMPLE INTERVAL SINCE APPROACHES ZONE OF LEACHING NEAR SURFACE.

(A) (11 x 13 x 8.3) ÷ 12 = 99 TONS
(B) (20 x 40 x 8.3) ÷ 12 = 553 TONS
652 TONS

GRADE FROM LEVEL = 12.9 oz

BLOCK EV-200-1
652 TONS @ 12.9
PROBABLE

8.3' AVG. WIDTH

EV-200-2

(B) (20 x 40 x 8.3) ÷ 12 = 553 TONS
(A) (11 x 20 x 8.3) ÷ 12 = 152 TONS
705 TONS

GRADE FROM LEVEL = 12.9 oz

BLOCK EV-200-2
705 TONS @ 12.9
POSSIBLE

8.3' AVG WIDTH

EVELYN SHOOT 200 LEVEL

EV-200-3

WITHOUT DRIFT ASSAYS, THIS AREA IS ENTIRELY POTENTIAL. BACKSTOPING WAS COMPLETED BY OPERATORS PRIOR TO 1980. EVIDENCE OF REASONABLE GRADE IS SEEN IN THE RESERVE BLOCKS DOWN DIP AND TO SOUTH. TO NORTH, THE HIGH GRADE PORTION OF THE BRUNDAGE SHOOT IS NEAR, BUT NOW CAVED.

WIDTH AND GRADE ARE ESTIMATED AS FOLLOWS:

WIDTH -- FROM OTHER BLOCKS, EST. AT 8.0'

GRADE -- BLOCKS TO SOUTH = 12.9 oz

BLOCKS DOWNDIP { 9.7, 8.5 }

10.4 ARITH. AVERAGE

TONNAGE POTENTIAL IS LIMITED TO 40' UPDIP FROM LEVEL --- BASED ON KNOWLEDGE OF OXIDIZED/LEACHER ZONE NEAR SURFACE, AND SIMILAR UNITS USED FOR EV-200-1 & EV-200-2 BLOCKS.

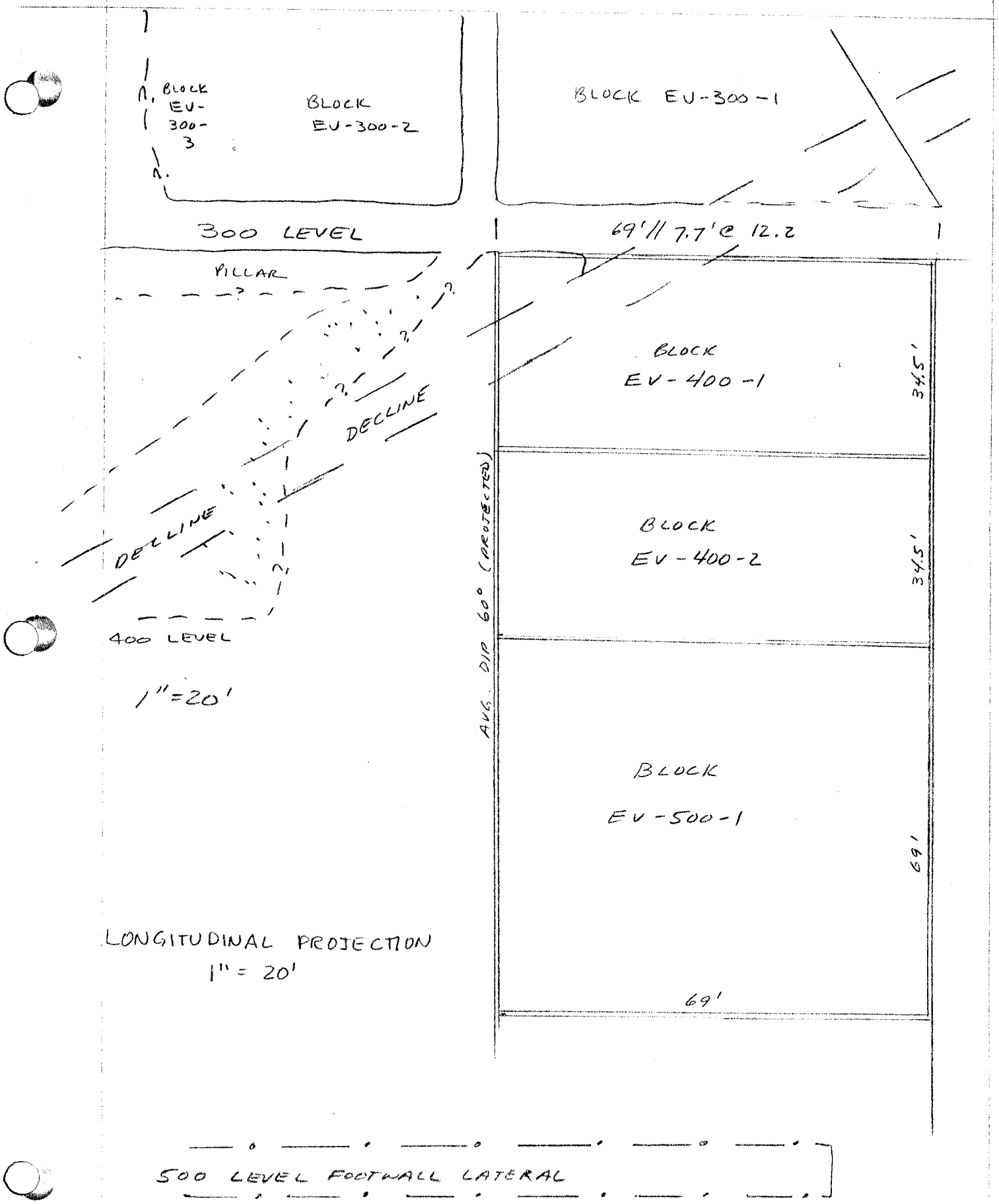
TONNAGE : (54' x 40' x 8.0') ÷ 12 = 1,440 TONS

BLOCK EV-200-3
1,440 TONS @ 10.4 oz.
POTENTIAL

8.0' AVG. WIDTH

EVELYN SHOOT 400, 500 LEVELS

GR-12



EVELYN SHOOT 400 LEVEL

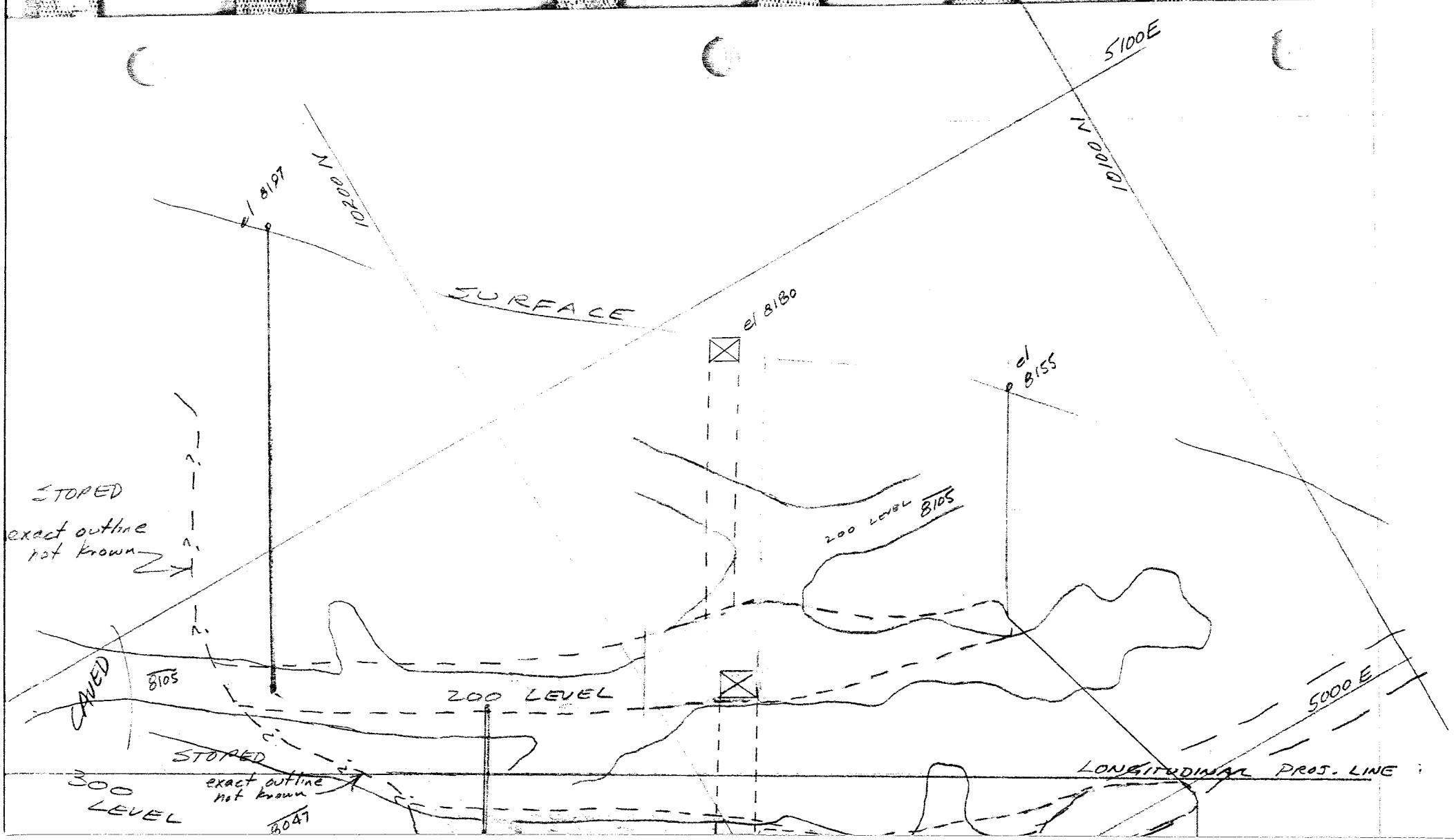
BLOCK EV-400-1, EV-400-2, EV-500-1

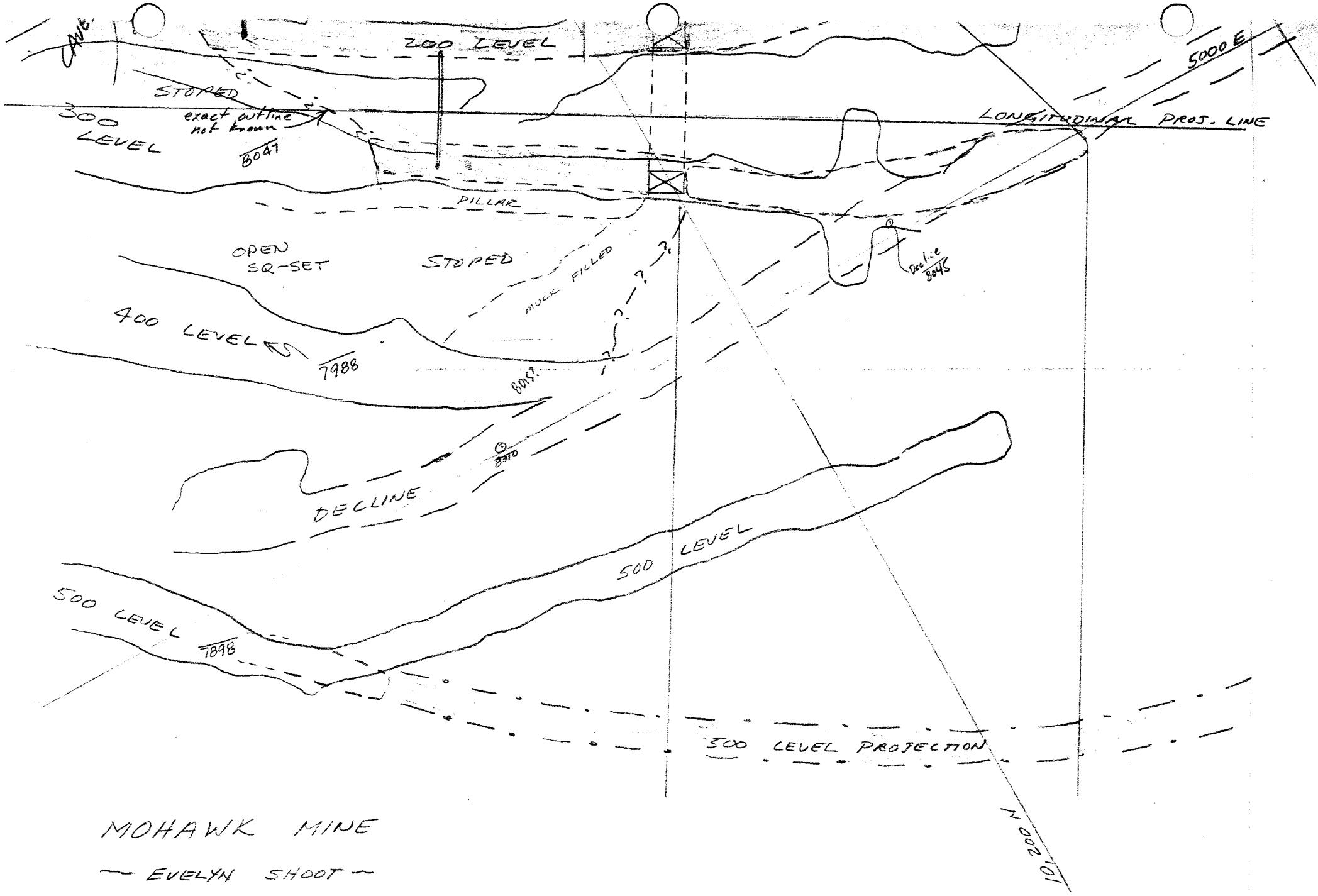
DEVIATING FROM RESERVE CALCULATION OF 5/B2, AND TAKING A SLIGHTLY MORE LIBERAL VIEW OF ORE CONTINUITY IN THE EVELYN SHOOT, 1/2 STRIKE LENGTH IS USED FOR PROBABLE, POSSIBLE BLOCKS. A POTENTIAL BLOCK IS ADDED AT 2 (x) THE PROB./POSS. DOWNDIP EXTENSION.

300 LEVEL : 69' STRIKE LENGTH // 7.7' WIDTH @ 12.2 oz.

TONNAGE : ((34.5' DIP LENGTH)(69' STR. LENGTH)(7.7' WIDTH)) ÷ 12 = 1,527 TONS

BLOCK EV-400-1 1,527 TONS @ 12.2 oz PROBABLE	7.7' AVG. WIDTH
BLOCK EV-400-2 1,527 TONS @ 12.2 oz POSSIBLE	7.7' AVG. WIDTH
BLOCK EV-500-1 3,054 TONS @ 12.2 oz POTENTIAL	7.7' AVG. WIDTH

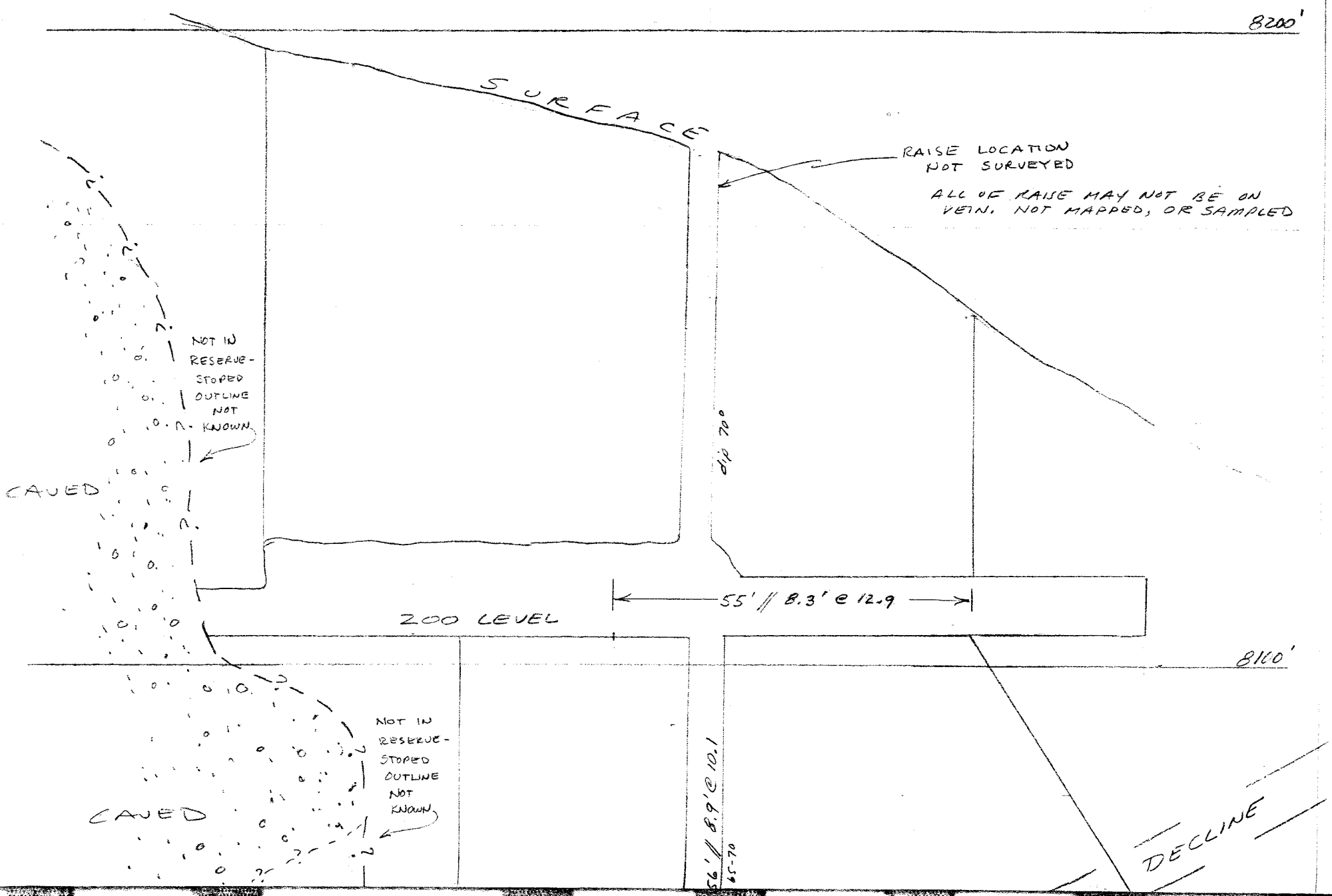

5100E
101000 N
102000 N
el 8197
SURFACE
el 8180
el 8155
200 LEVEL
8105
STOPED
exact outline not known
CAVED
8105
200 LEVEL
5000 E
STOPED
exact outline not known
300 LEVEL
8047
LONGITUDINAL PROJ. LINE

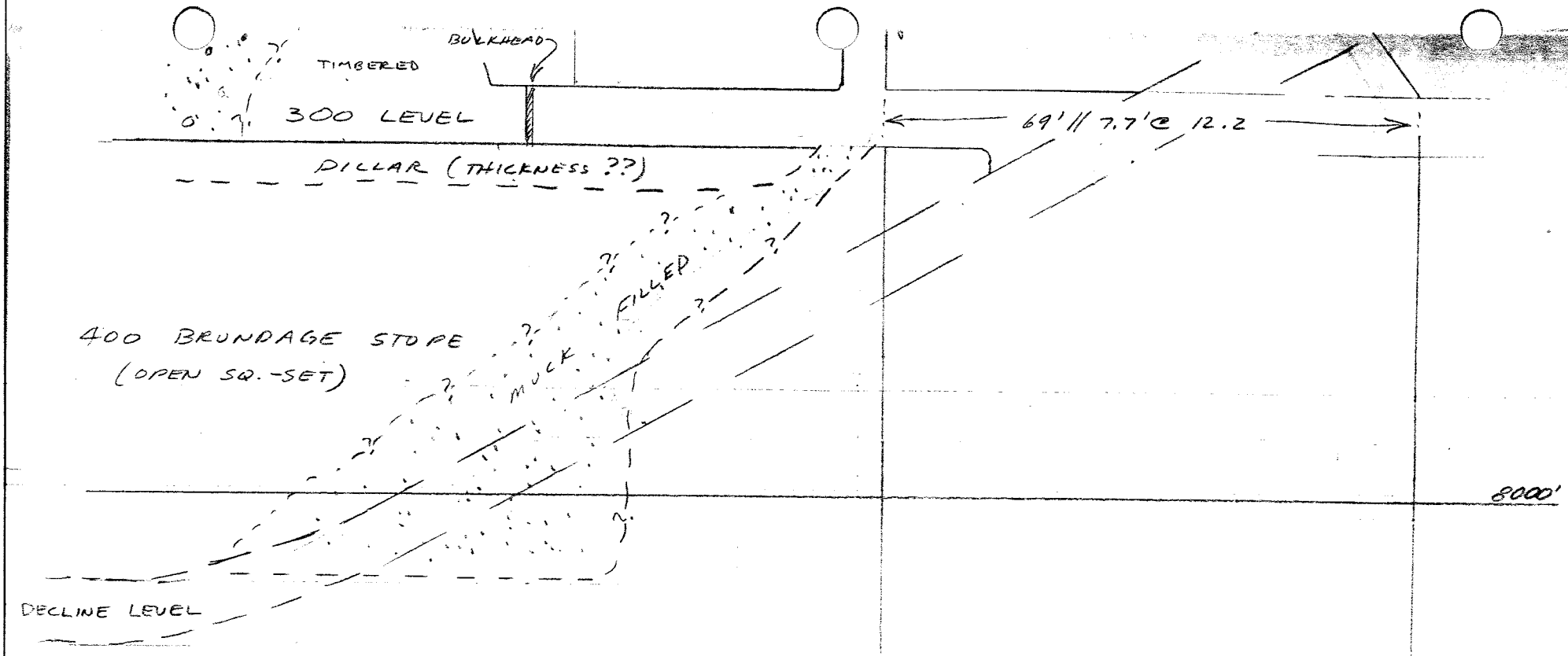


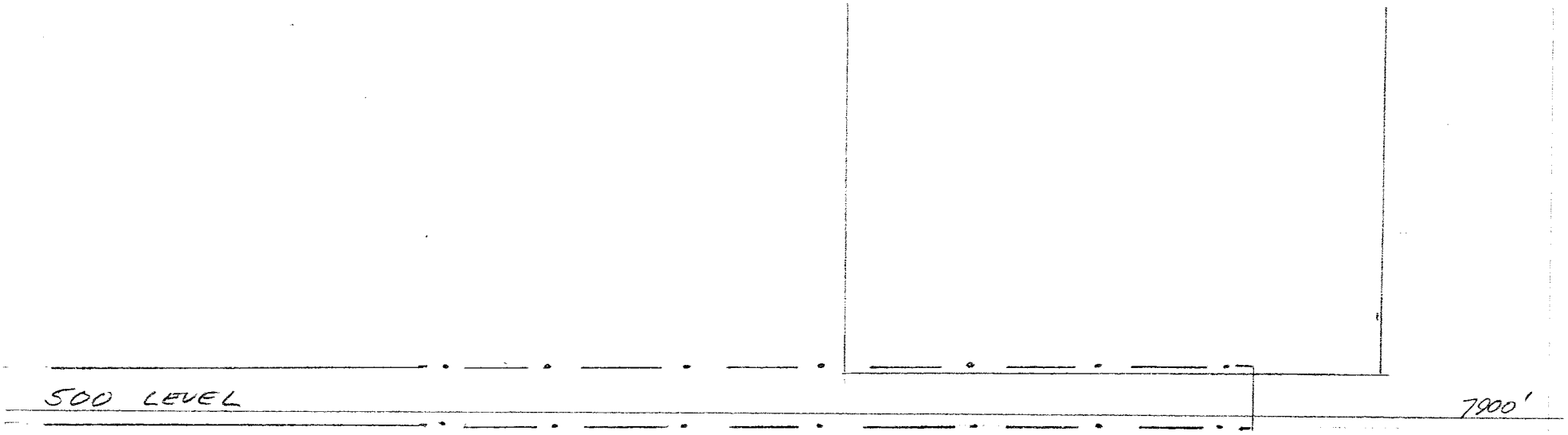
MOHAWK MINE

— EVELYN SHOOT —
RESERVE COMPOSITE

1" = 20' 2-25-83 SRB


8200'
SURFACE
RAISE LOCATION
NOT SURVEYED
ALL OF RAISE MAY NOT BE ON
VEIN. NOT MAPPED, OR SAMPLED
NOT IN
RESERVE-
STOPED
OUTLINE
NOT
KNOWN
CAVED
dip 70°
55' // 8.3' @ 12.9
200 LEVEL
8100'
NOT IN
RESERVE-
STOPED
OUTLINE
NOT
KNOWN
CAVED
56' // 8.9' @ 10.1
DECLINE


BULKHEAD
TIMBERED
300 LEVEL
69' // 7.7' @ 12.2
PILLAR (THICKNESS ??)
MUCK FILLED
400 BRUNDAGE STOPE
(OPEN SQ.-SET)
8000'
DECLINE LEVEL



MOHAWK MINE

~ EVELYN SHOOT ~

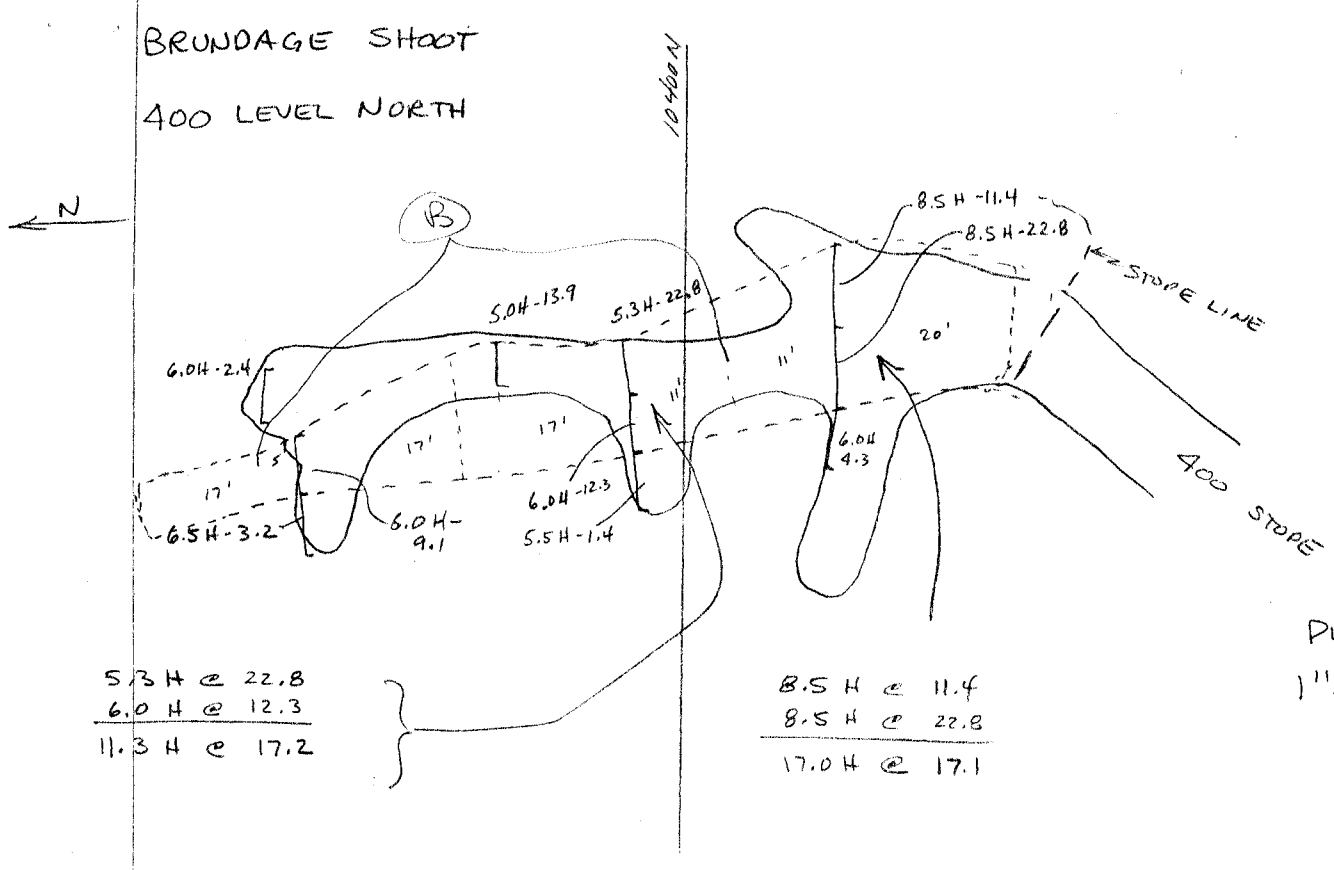
RESERVE VERT. LONG. PROJECTION

1" = 20' 2-25-83 SRB

GR-14

BRUNDAGE SHOOT

400 LEVEL NORTH



PLAN

1" = 20'

5.3 H @ 22.8
6.0 H @ 12.3
11.3 H @ 17.2

8.5 H @ 11.4
8.5 H @ 22.8
17.0 H @ 17.1

(I)	(W)	(I x W)	(A)	(I x W x A)
34.0'	6.0 H	204.0	9.1	1,856
28.0	11.3 H	316.4	17.2	5,442.
31.0	17.0 H	527.0	17.1	9,012
93.0	11.3 H	1,047.4		16,310

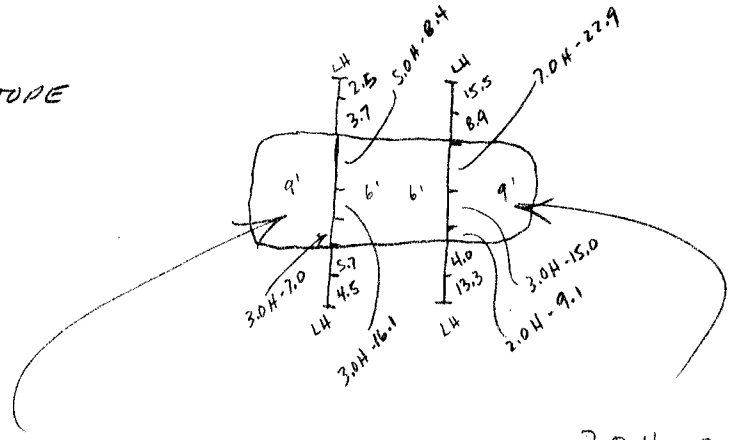
93' // 10.1' WIDTH @ 15.6 oz

B	22.0'	6.0 H	132.0	9.1	1,201.2
	28.0'	11.3 H	316.4	17.2	5442.1
	50.0'	8.9 H = 8.0 T	448.4		6643.3

50' // 8.0' @ 14.8

BRUNDAGE SHOOT

510 STOPE



PLAN
1" = 20'

5.0H @ 8.4
3.0H @ 16.1
3.0H @ 7.0
11.0H @ 10.1

7.0H @ 22.9
3.0H @ 15.0
2.0H @ 9.1
12.0H @ 18.6

INTERVALS EQUAL

11.0H @ 10.1
12.0H @ 18.6
11.5H @ 14.5

NOTE: SOME GOOD ASSAYS IN LONGHOLES. CONTINUE LONGHOLING TO DETERMINE IF HIGHER ASSAYS REPRESENT LARGE ENOUGH TONNAGE TO ATTEMPT SHRINK STOPING @ 20+' WIDE.

30' LENGTH // 10.4' WIDTH @ 14.5 oz

B-500-3 BLOCK

AVERAGE WIDTHS AND GRADES OF 400 LEVEL ABOVE, AND STOPE.

10.1' WIDTH @ 15.6
10.4' WIDTH @ 14.5
10.3' WIDTH @ 15.0

TONNAGE:
((53' VEIN)(10.3' WIDTH)(30' LENGTH)) ÷ 12
= 1,365 T @ 15.0 oz

BLOCK B-500-3
1,365 T @ 15.0 oz
PROBABLE

THE PROBABLE CATEGORY IS USED BECAUSE OF GOOD SAMPLES IN STOPE, PLUS ADEQUATE SAMPLES ON 400 LEVEL. ALSO, STOPED 400 LEVEL IS EVIDENCE OF MINABLE ORE AT SILL ELEVATION - 400 LEVEL.

10.4' AVG. WIDTH

BRUNDAGE SHOOT

B-500-4 BLOCK (STOPE MUCK)

THE '510' STOPE WAS DEVELOPED AND PARTIALLY MINED JUST PRIOR TO MINE CLOSURE 2/82. THE METHOD IS SHRINK STOPING WITH SOME ROCKBOLTS PLACED AS NEEDED IN THE HANGING WALL.

RECORDS OF MUCK SAMPLES OF SWELL ORE FROM THE STOPE, IF KEPT, ARE NOT NOW AVAILABLE. ONE DRIFT SAMPLE ON 500 LEVEL (BELOW THE STOPE) IS AVAILABLE (8.5'H - 12.0 oz) WHICH IS LOWER IN GRADE THAN THE STOPE FACE SAMPLES. DRIFT SAMPLES SOUTH OF THE STOPE, HOWEVER, ARE IN THE 20-25 oz RANGE.

THE ASSUMPTION THAT THE CURRENT OUTLINE OF THE STOPE, AT THE FACE, IS THE ACTUAL MINING CONFIGURATION AND THEREFORE THE ASSAYS COMBINED OVER THE AREA OF THE FACE ARE REPRESENTATIVE OF MINED GRADE WITH DILUTION, CAN BE MADE AND IS VALID FOR RESERVE GRADE FOR THE B-500-3 BLOCK (WITHOUT FURTHER DILUTION).

GRADE OF THE BROKEN ORE IN THE STOPE, WOULD REASONABLY BE EXPECTED TO EQUAL THE RESERVE GRADE OF THE BLOCK ABOVE (B-500-3); 15 oz.

VOLUME: BACK OF 500 LEVEL TO TOP OF BROKEN ORE = 27'

SUBTRACT TIMBER FOR CHUTES −7'

20' DIP

STOPE WIDTH = 10.3'

STOPE LENGTH = 30 − 6' (MANWAY) = 24'

CALC.: ((20')(10.3')(24')) ÷ 17 ft³/Tm (SWELL @ 40%)

= 291 Tons

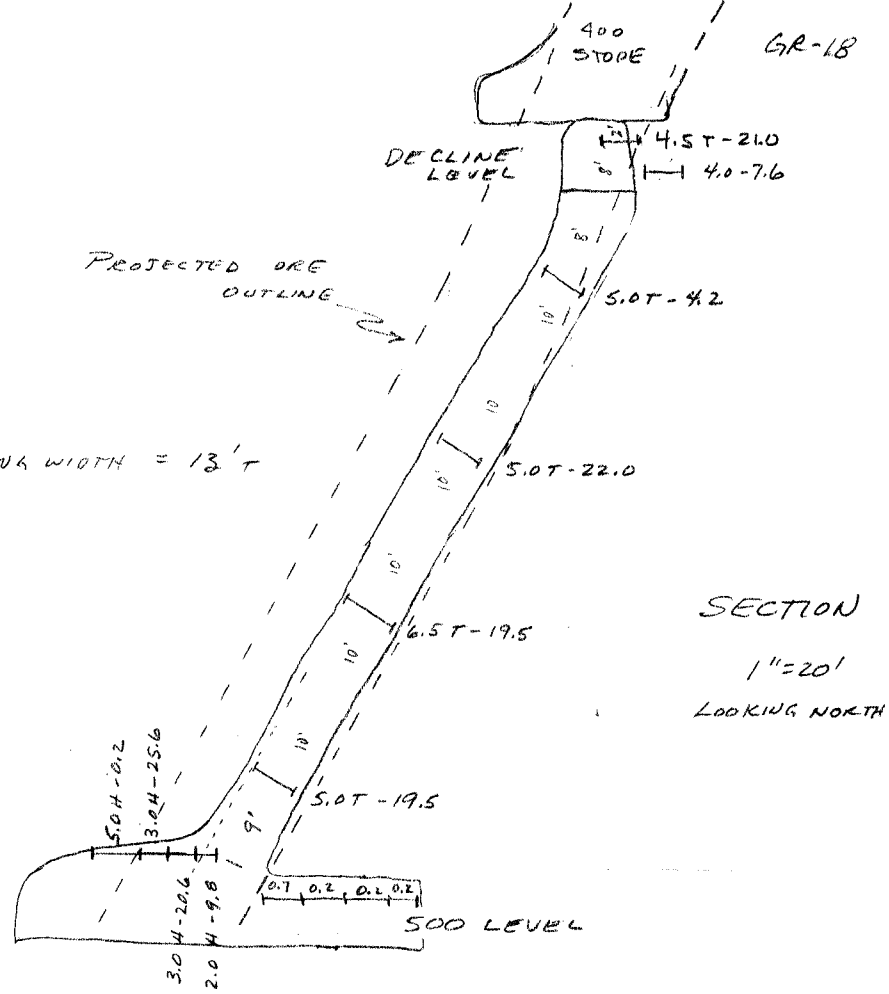
BLOCK B-500-4
291 Tons @ 15.0 oz
PROBABLE

GR-18

BRUNDAGE SHOOT

BLOCK B-500-5

MANWAY SAMPLES



TRUE WIDTH OF HIGHER GRADE PORTION OF VEIN IS 13' AT 500 LEVEL AS EVIDENCED BY LEVEL SAMPLES AND THINE IN RAISE. 400 STOPE WAS MINED AT TRUE WIDTH OF 13-14' (2 SETS WIDE - 5 x 5 SETS). HIGHER GRADE OF HANGING WALL 500 LEVEL SAMPLES IS NOT KNOWN TO CARRY THROUGHOUT HANGING WALL TO 400 LEVEL; HOWEVER, STOPE ON 400 LEVEL WOULD NOT HAVE BEEN MINED AT LESS THAN 15 OZ. THEREFORE, USE WIDTH OF 13' TRUE, AND ALLOW AVERAGED ASSAY GRADE OF RAISE SAMPLES TO REPRESENT FULL WIDTH OF THE PROJECTED VEIN.

BRUNDAGE SHOOT

RAISE SAMPLES (MANWAY)

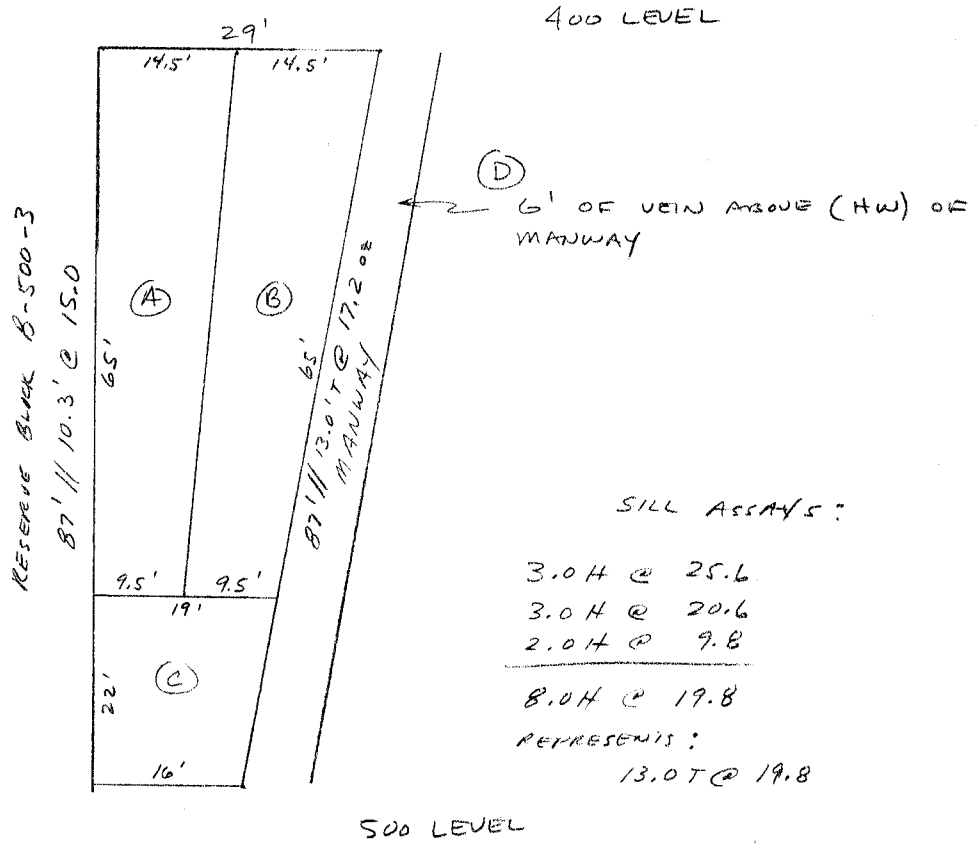
(I)	(W)	(I x W)	(A)	(I x W x A)
19.0	5.0 T	95.0	19.5	1,853
20.0	6.5 T	130.0	19.5	2,535
20.0	5.0 T	100.0	22.0	2,200
18.0	5.0 T	90.0	4.2	378
10.0	4.5 T	45.0	21.0	945
87.0'		460.0		7,911

87' // 5.3' @ 17.2 oz

ALLOW TO REPRESENT FULL TRUE WIDTH = 87' // 13.0' T @ 17.2 oz.

BLOCK B-500-5 :

LONGITUDINAL PROJECTION



SILL ASSAYS :

3.0 H @ 25.6
3.0 H @ 20.6
2.0 H @ 9.8

8.0 H @ 19.8

REPRESENTS :
13.0 T @ 19.8

BRUNDAGE SHOOT

(A) $\frac{9.5' + 14.5'}{2} = 12'$ LENGTH

$\frac{(12' \text{ LENGTH})(65' \text{ SLOPE})(10.3' \text{ WIDTH})}{12} = 670 \text{ T @ } 15.0$

(B) $\frac{14.5 + 9.5}{2} = 12'$ LENGTH

$\frac{(12' \text{ LENGTH})(65' \text{ SLOPE})(13.0' \text{ WIDTH})}{12} = 845 \text{ T @ } 17.2 \text{ oz}$

(C) $\frac{16' + 19'}{2} = 17.5'$ LENGTH

$\frac{(17.5' \text{ L})(22' \text{ SLOPE})(13.0' \text{ WIDTH})}{12} = 417 \text{ T @ } 19.8 \text{ oz}$

(D) BACK OF (HW OF) RAISE

$\frac{(5' \text{ L})(87' \text{ SLOPE})(6' \text{ WIDTH})}{12} = 218 \text{ T @ } 17.2 \text{ oz}$

COMBINED

					WIDTH
670	T	@	15.0	oz	10.3'
845	T	@	17.2	oz	13.0'
417	T	@	19.8	oz	13.0'
218	T	@	17.2	oz	6.0'
2,150	T	@	17.0	oz	11.5'

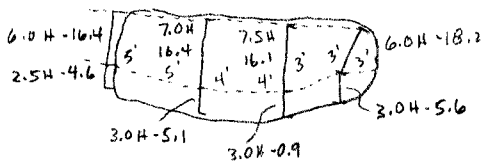
BLOCK B-500-5
2,150 T @ 17.0 oz
PROBABLE

11.5' AVG. WIDTH

B-500-8

512 STOPE ASSAYS:

ABOVE
512 STOPE



PLAN @ 1" = 20'

IT IS APPARENT THAT THE STOPE NEEDS TO BE LEANED OVER TOWARD THE FOOTWALL, WITH LESS HANGING WALL MATERIAL BEING BROKEN. LONGHOLING WOULD HELP IN DETERMINING DEPTH OF VEIN INTO FOOTWALL.

THE 400 LEVEL STOPE, ABOVE (UP-DIP) FROM THE STOPE, IS SHOWN AS 16-19' IN HORIZ. WIDTH (AVG 16.5' TRUE WIDTH). THESE ARE OLDER MAPS. MEMORY, WHILE LOOKING IN THE STOPE, SUGGESTS SLIGHTLY OVER 2 - 5' SETS IN WIDTH, OR ABOUT 12-13' IN WIDTH. 12' IS USED FOR WIDTH AT TOP OF BLOCK.

STOPE SAMPLES ARE WEIGHTED AVERAGED WITH NO CREDIT BEING GIVEN FOR PRESUMED GREATER WIDTH SINCE NO HARD EVIDENCE AVAILABLE.

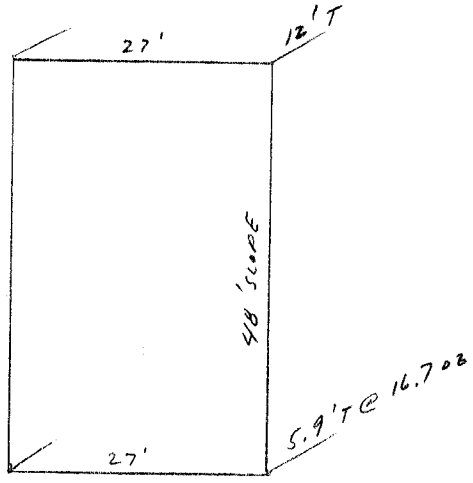
STOPE SAMPLES:

(I)	(W)	(I x W)	(A)	(I x W x A)
5.0'	6.0 H	30.0	16.4	492
9.0	7.0 H	63.0	16.4	1,033
7.0	7.5 H	52.5	16.1	845
6.0	6.0 H	36.0	18.2	655
27.0'		181.5		3,025

27' // 6.7' H @ 16.7 oz

CONVERT 27' // 5.9' T @ 16.7 oz

BLOCK



$$\left((27' \text{ LENGTH})(48' \text{ SLOPE})\left(\frac{12' + 5.9'}{2} \text{ WIDTH}\right)\right) \div 12 = 967 \text{ T @ } 16.7 \text{ oz}$$

= 8.95

BLOCK B-500-8
967 T @ 16.7 oz
PROBABLE

9.0' AVG. WIDTH

BRUNDAGE SHOOT

B-500-7 (S12 STOPE MUCK)

THE 'S12' STOPE WAS DEVELOPED AND PARTIALLY MINED JUST PRIOR TO MINE CLOSURE 2/82. THE METHOD IS SHRINK STOPING WITH SOME ROCKBOLTS PLACED AS NEEDED IN THE HANGING WALL.

RECORDS OF MUCK SAMPLES OF SWELL ORE FROM THE STOPE, IF KEPT, ARE NOT NOW AVAILABLE. 500 LEVEL DRIFT SAMPLES ARE AVAILABLE AND ARE USED FOR THE BOTTOM GRADE OF THE BLOCK. STOPE SAMPLES WITH USAGE OF HANGING WALL SAMPLES MUST REPRESENT THE MINING GRADE AT THE TOP OF THE BLOCK, DESPITE THE FACT THAT THE STOPE SHOULD BE LEANED OVER TO THE FOOTWALL TO AVOID HANGING WALL WASTE.

GRADE OF STOPE USING ALL SAMPLES:
(SEE STOPE SKETCH FOR B-500-8 BLOCK)

6.0 H @ 16.4	7.0 H @ 16.4	7.5 H @ 16.1
2.5 H @ 4.6	3.0 H @ 5.1	3.0 H @ 0.9
8.5 H @ 12.9	10.0 H @ 13.0	10.5 H @ 11.8

6.0 H @ 18.2
3.0 H @ 5.6
9.0 H @ 14.0

BRUNDAGE SHOOT

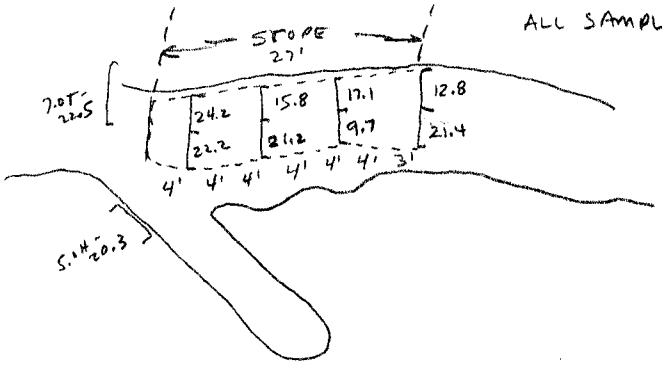
COMBINED

(I)	(W)	(I x W)	(A)	(I x W x A)
5.0'	8.5 H	42.5	12.9	548
9.0'	10.0 H	90.0	13.0	1,170
7.0'	10.5 H	73.5	11.8	867
6.0'	9.0 H	54.0	14.0	756
27.0'		260.0		3,341

27' // 9.6' H @ 12.9 oz

= 8.7 T

GRADE AT 500 LEVEL DRIFT:



PLAN
1" = 20'

(I)	(W)	(I x W)	(A)	(I x W x A)
8.0'	8.0'	64.0	23.2	1,485
8.0'	8.0	64.0	18.5	1,184
8.0	8.0	64.0	13.4	858
3.0	8.0	24.0	17.1	410
27.0		216		3,937

27' // 8' T @ 18.2

DILUTE 25% @ 4.5 oz

2' T @ 4.5

10' T @ 15.5 oz

BRUNDAGE SHOOT

COMBINING TOP OF STOPE AND 500 DRIFT ASSAYS:

12.9 oz
15.5 oz
28.4 ÷ 2 = 14.2 oz STOPE MUCK GRADE.

VOLUME:

BACK OF 500 LEVEL TO TOP OF BROKEN ORE = 37'
SUBTRACT TIMBER FOR CHUTES − 7'
30'

27' − 6' manway = 21

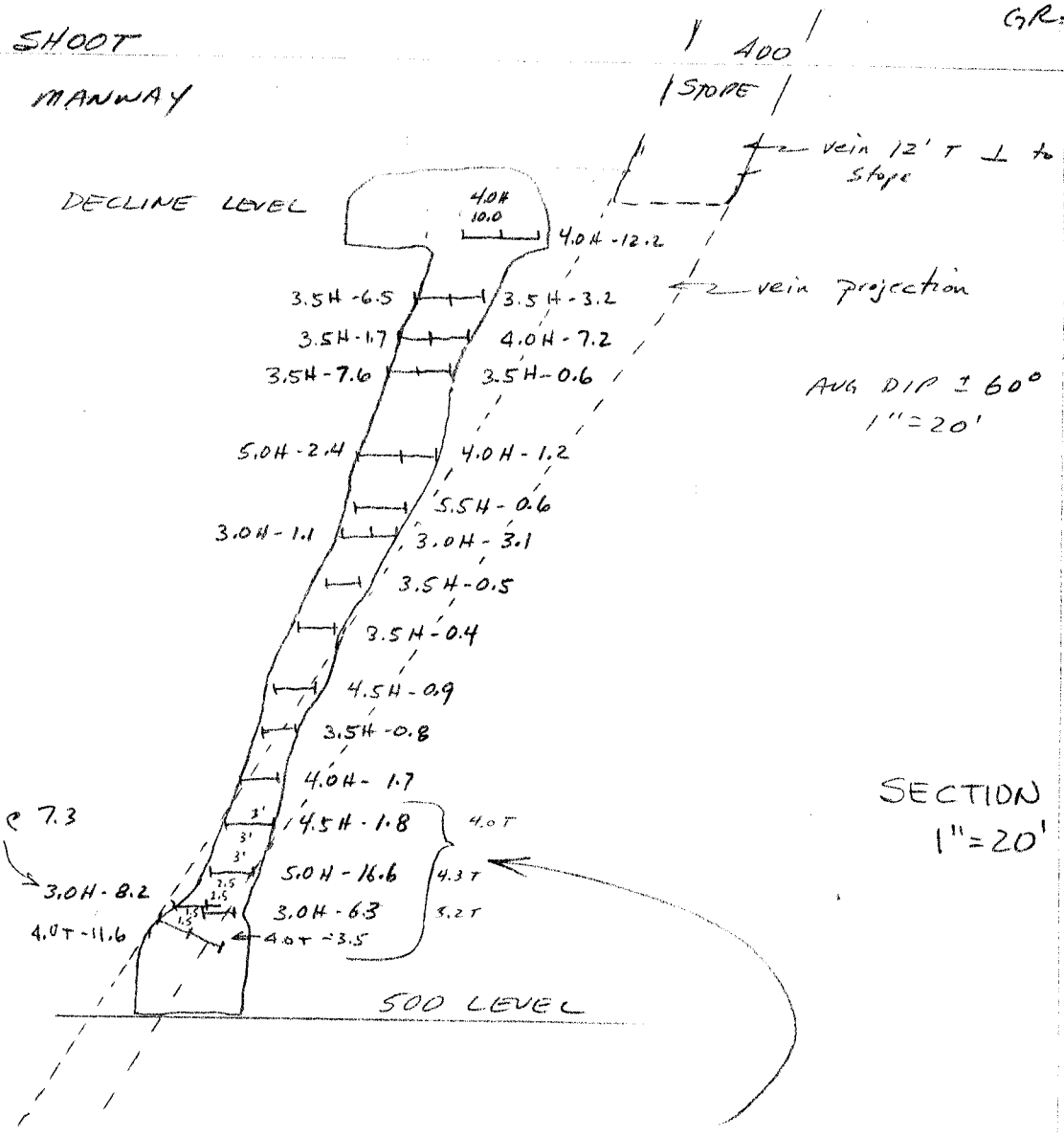
8.7 T + 10.0 T ÷ 2 = 9.4 T

((21' LENGTH)(30' SLOPE)(9.4 'WIDTH)) ÷ 17 ft³/ton = 348 T

BLOCK B-500-7
348 T @ 14.2 oz
PROBABLE

BRUNDAGE SHOOT

B-500-9 MANWAY

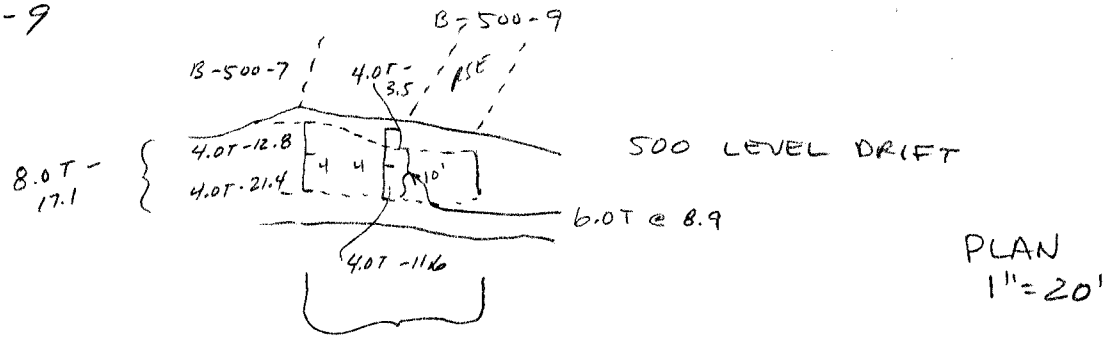


(I)	(W)	(I x W)	(A)	(I x W x A)
1.5'	6.0	9.0	8.9	80
4.0'	5.2	20.8	7.3	152
5.5'	4.3	23.7	16.6	393
6.0'	4.0	24.0	1.8	43
17.0'		77.5		668

17' // 4.6' @ 8.6

BRUNDAGE SHOOT

B-500-9



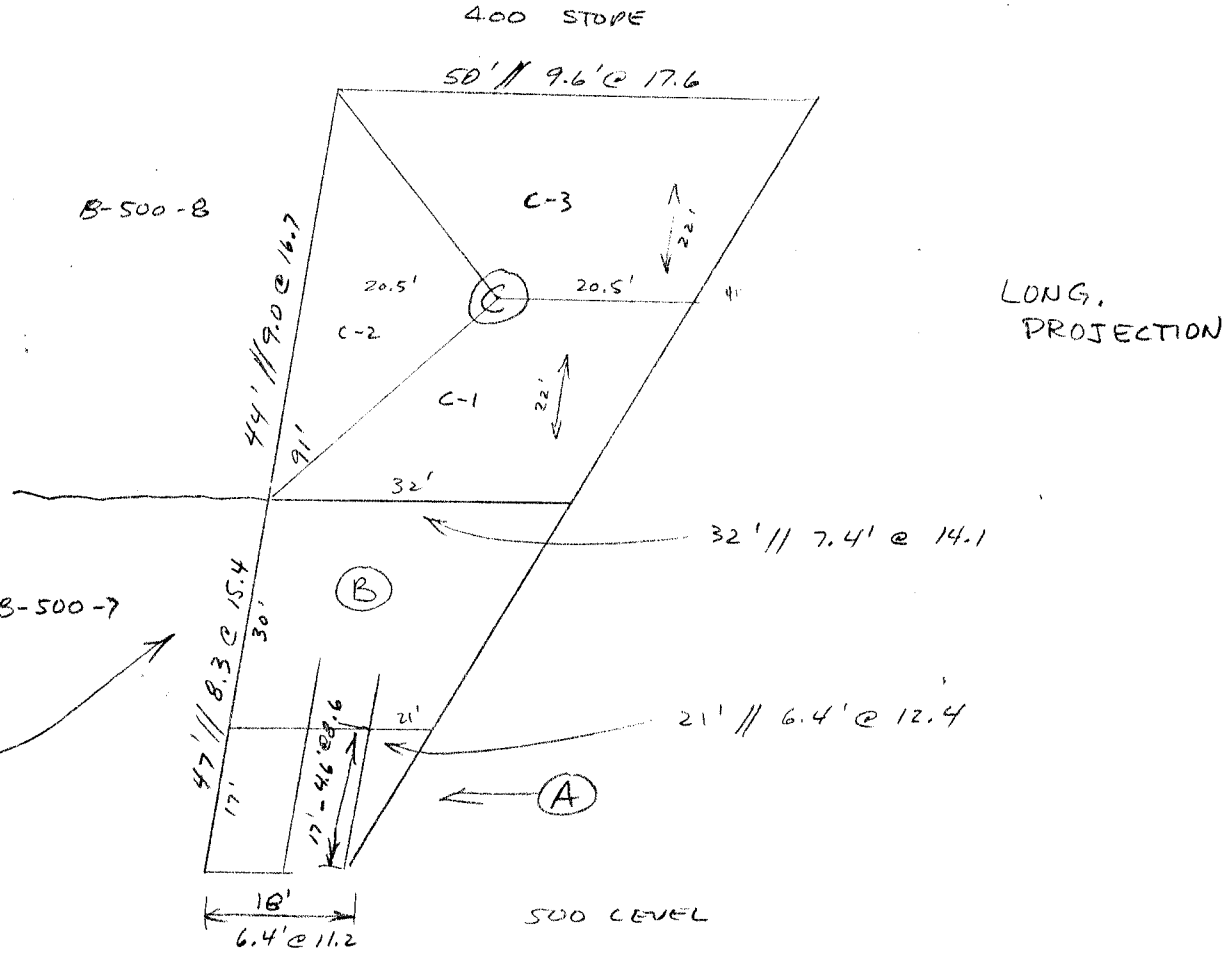
(I)	(W)	(I x W)	(A)	(I x W x A)
4.0	8.0	32.0	17.1	547
14.0	6.0	84.0	8.9	748
18.0		116.0		1,295

18' // 6.4' @ 11.2

IT IS APPARENT FROM THE SECTION THAT THE RAISE WAS DRIVEN MOSTLY IN THE HANGING WALL OF THE VEIN. WEIGHTED ASSAYS AT THE LEVEL AND FOR THE PORTION OF THE VEIN IN THE RAISE ARE MODERATE. THE GRADE OF THE 400 LEVEL STOPE, ALTHOUGH NOT KNOWN, CAN BE ESTIMATED BY (1) THE GRADE AT THE NORTHERN END, IN AN UNMINED AREA, IS 15.6 OZ OVER A 10.1' WIDTH. THE STOPING GRADE WAS HIGHER THAN 15.6 OZ, OR THIS BLOCK (ABOVE B-500-3) WOULD HAVE BEEN MINED) AND (2) AT LEAST 15 OZ MUST HAVE BEEN THE CUTOFF (AFTER DILUTION) FOR THE OLDER MINING DUE TO PRICE OF SILVER, LOW MILL RECOVERY, AND TRANSPORTATION REQUIREMENTS IN THE 1950's & 1960's. 15 OZ, PRIOR TO DILUTION AT 25% AT 4.5 OZ, WOULD BE 9.6' @ 17.6 OZ.

BRUNDAGE SHOOT

B-500-9



		(I)	(W)	(I x W)	(A)	(I x W x A)
(A)	3 sides	17	4.6	78.2	8.6	673
		18	6.4	115.2	11.2	1,290
		17	8.3	141.1	15.4	2,173
		52 ÷ 3 = 17.3		334.5		4,136

17.3' // 6.4' @ 12.4 oz

TONNAGE : AVG LENGTH 19.5', WIDTH 6.4', SLOPE 17'

((19.5)(6.4)(17.0)) ÷ 12 = 177 T

less pillar ((6)(6)(17)) ÷ 12 = 51 T

126T @ 12.4 oz

BRUNDAGE SHOOT

2 SIDES

(B) 8.3' @ 15.4

6.4' @ 12.4

14.7

÷2 = 7.4' @ 14.1 WIDTH & GRADE

TONNAGE : AVG. LENGTH 26.5'

((26.5' LEN)(7.4' WIDTH)(30' SLOPE)) ÷12 = 490 T @ 14.1

(C)

C-1 :	(26.25)(22)(7.4)	÷12 =	356 @ 14.1	AVG WIDTH = 8.8
C-2 :	(1/2)(44)(20.5)(9.0)	÷12 =	338 @ 16.7	
C-3 :	(32.25)(22)(9.6)	÷12 =	568 @ 17.6	
			1,262 @ 16.4	

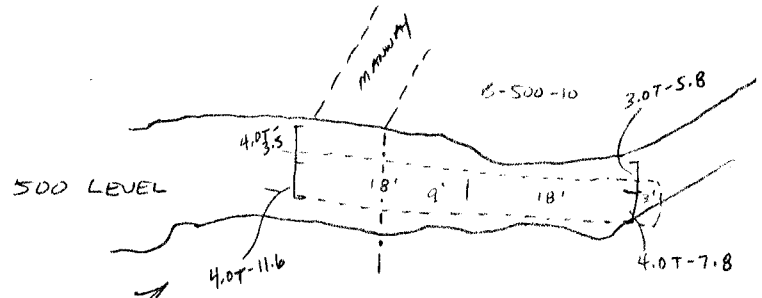
BLOCK B-500-9 COMBINED

		WIDTH
(A)	126 T @ 12.4	6.4'
(B)	490 T @ 14.1	7.4'
(C)	1,262 T @ 16.4	8.8'
	1,878 T @ 15.5	8.3'

BLOCK B-500-9
1,878 T @ 15.5
PROBABLE

8.3' AVG. WIDTH

BRUNDAGE SHOOT
B-500-10



PLAN
1" = 20'

4.0 T @ 11.6
2.0 T @ 3.5
6.0 T @ 8.9

4.0 T @ 7.8
2.0 T @ 5.8
6.0 T @ 7.1

AT 6' MINING WIDTH

(I)	(W)	(I x W)	(A)	(I x W x A)
9.0'	6.0	54.0	8.9	481
21.0'	6.0	126.0	7.1	895
30.0'		180.0		1,376

30' // 6.0' @ 7.6 oz

$\Rightarrow ((1/2)(30)(91)(6)) \div 12 = 683$ T.

AT 4' MINING WIDTH

9.0	4.0	36.0	11.6	418
21.0	4.0	84.0	7.8	655
30.0		120.0		1,037

30' // 4.0' @ 8.6 oz

THE DRIFT ASSAYS ARE MARGINAL, VEIN IS CONTINUOUS ON LEVEL, AND FILL-IN SAMPLING REQUIRED. CONTINUATION OF LOWER GRADE MATERIAL SOUTH AND ALONG STRIKE OF THE BRUNDAGE SHOOT IS KNOWN ON THE UPPER LEVELS. POSSIBLE BLOCK JUSTIFIED.

TONNAGE $((1/2)(30)(91)(4)) \div 12 = 455$ T @ 8.6 oz

BLOCK B-500-10
455 T @ 8.6 oz
POSSIBLE

4.0' AVG. WIDTH

BRUNDAGE SHOOT

B-500-6 -- PILLARS

NORTH PILLAR

VOLUME / TONS : ((7' SILL LENGTH)(87' SLOPE)(13.0' T)) ÷ 12 = 660T @ 17.2 oz

(GRADE OF MANWAY SIDE OF B-500-5)

ADD ((10' SLOPE)(12' LONG)(10.0 VEIN CROWN) PILLAR OVER SIL STOPE)) ÷ 12 = 100 T @ 17.2 oz

NORTH PILLAR : 760 T @ 17.2 oz

SOUTH PILLAR

VOLUME / TONS : ((7' SILL LENGTH)(91' SLOPE)(9.0' T)) ÷ 12 = 478 T

GRADE OF B-500-8 reserve → @ 16.7 oz

COMBINED

660 T @ 17.2 oz

478 T @ 16.7 oz

1,138 T @ 17.0 oz

BLOCK B-500-6

1,138 T @ 17.0 oz

PROBABLE

BRUNDAGE SHOOT

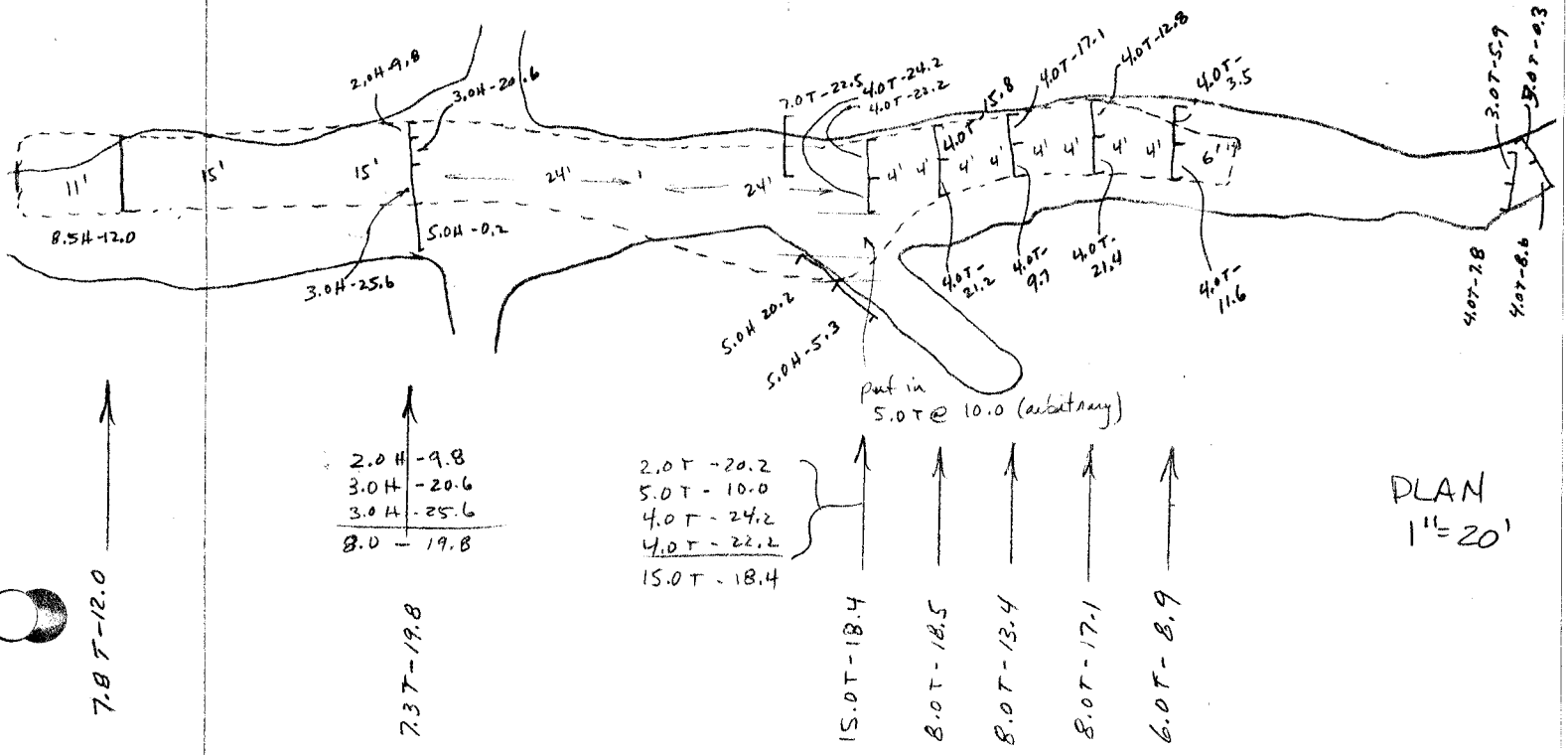
BELOW 500 LEVEL

IN RESPONSE TO EVIDENCE ON MINE VERTICAL LONGITUDINAL PROJECTION THAT SOME SHRINKAGE OF STRIKE LENGTH OF HIGHER GRADE VEIN BELOW 400 LEVEL IS OCCURRING, THE PROJECTION IS CLOSED AT 15° EACH SIDE OF END PROJECTION LINES. THERE IS NO HARD EVIDENCE THAT THE VEIN IS BOTTOMING OUT. ON SECTION, THE CYMOID LOOPS MAY BE INTERPRETED TO BE CLOSING WITHIN 100' DEPTH BELOW 500 LEVEL, OR MAY BE INTERPRETED AS BEING MORE CONTINUOUS AT DEPTH AS WIDTHS APPROXIMATING THOSE OF THE 500-400 BRUNDAGE BLOCK. ADOPTING THE LATTER VIEW ALLOWS INSERTION OF PROBABLE AND POSSIBLE BLOCKS EACH AT DEPTHS EQUAL TO 1/2 THE 500 LEVEL STRIKE LENGTH.

ALTHOUGH THE MID-CONTINENT DRILLING, KNOWN TO HAVE BEEN COMPLETED BELOW 500 LEVEL (BUT RESULTS NOT KNOWN) IS ASSUMED TO HAVE BEEN SOMEWHAT DISCOURAGING, THE PARAMETERS OF REQUIRED GRADE UNDER WHICH THOSE WORKERS COMPLETED THE WORK ARE NOT KNOWN. IT APPEARS UNREALISTIC TO HAVE EXPECTED, FOR INSTANCE, THE VERY HIGH GRADES OF THE UPPER BRUNDAGE SHOOT. HIGH GRADES WOULD HAVE BEEN REQUIRED IN ORDER TO MINE THE MOHAWK PROFITABLY AT ± $1.00 SILVER, DESPITE THE LOWER COSTS OF THOSE YEARS (1960's). AT A RESERVE GRADE CUTOFF OF 8.0 oz, ONE CAN REALISTICALLY EXPECT THAT THE VEIN, WITH GRADES SIMILAR TO THE 500 LEVEL, WOULD CARRY 1/2 THE STRIKE LENGTH, IN DEPTH, FOR A PROBABLE BLOCK, AND SIMILARLY BLOCKS FOR POSSIBLE AND POTENTIAL

BRUNDAGE SHOOT
BELOW 500 LEVEL

RESERVES. THESE ARE MODIFIED BY THE 15° BLOCK RESTRICTION LINES IN RESPONSE TO THE EVIDENCE OF DECREASING STRIKE LENGTH WITH DEPTH.



PLAN
1" = 20'

(I)	(W)	(I x W)	(A)	(I x W x A)
26.0	7.8	202.8	12.0	2,434
39.0	7.3	284.7	19.8	5,637
28.0	15.0	420.0	18.4	7,728
8.0	8.0	64.0	18.5	1,184
8.0	8.0	64.0	13.4	858
8.0	8.0	64.0	17.1	1,094
10.0	6.0	60.0	8.9	534
127.0'		1160		19,469

127' // 9.1' @ 16.8

BRUNDAGE SHOOT

BELOW 500 LEVEL

B-600-1 BLOCK

$$\left(\left(\frac{127+95}{2}\right)(63.5 \text{ SLOPE})(9.1' \text{ WIDTH})\right) \div 12 = \underline{5{,}345 \text{ T @ } 16.8}$$

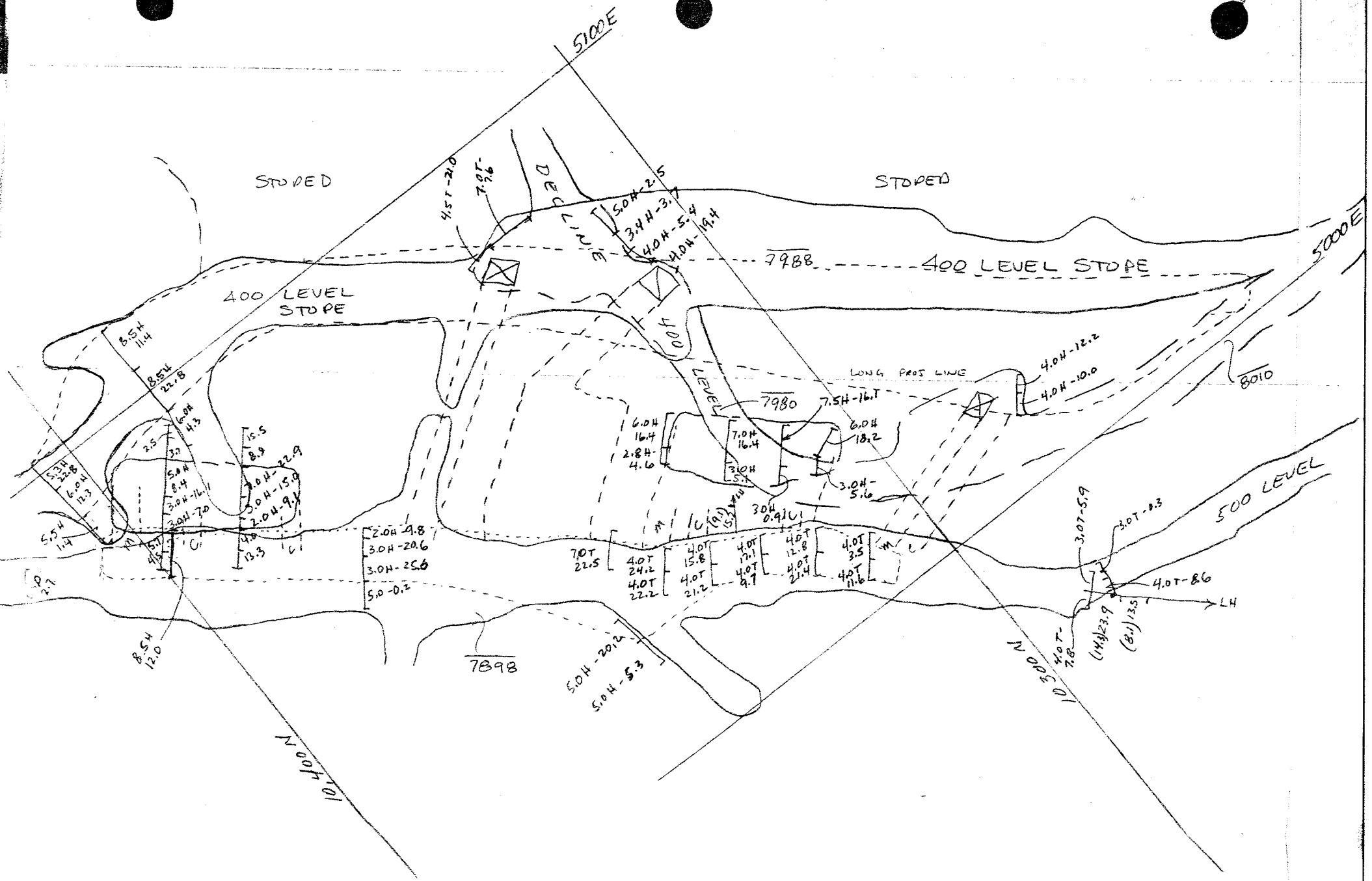
B-600-2 BLOCK

$$\left(\left(\frac{95+64}{2}\right)(63.5 \text{ SLOPE})(9.1' \text{ WIDTH})\right) \div 12 = \underline{3{,}828 \text{ T @ } 16.8}$$

B-600-3 BLOCK

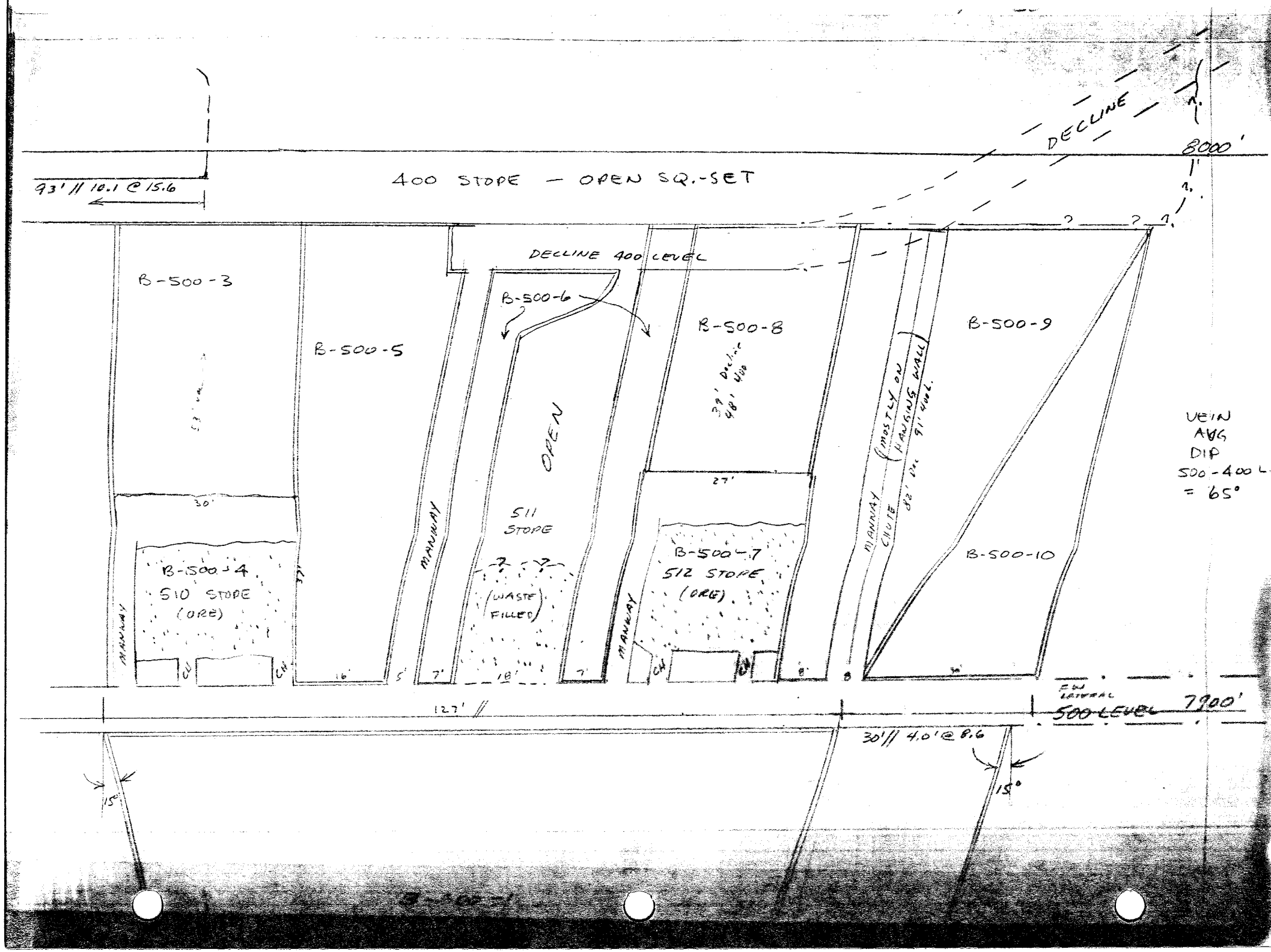
$$\left(\left(\frac{64+32}{2}\right)(63.5 \text{ SLOPE})(9.1 \text{ WIDTH})\right) \div 12 = \underline{2{,}311 \text{ T @ } 16.8}$$

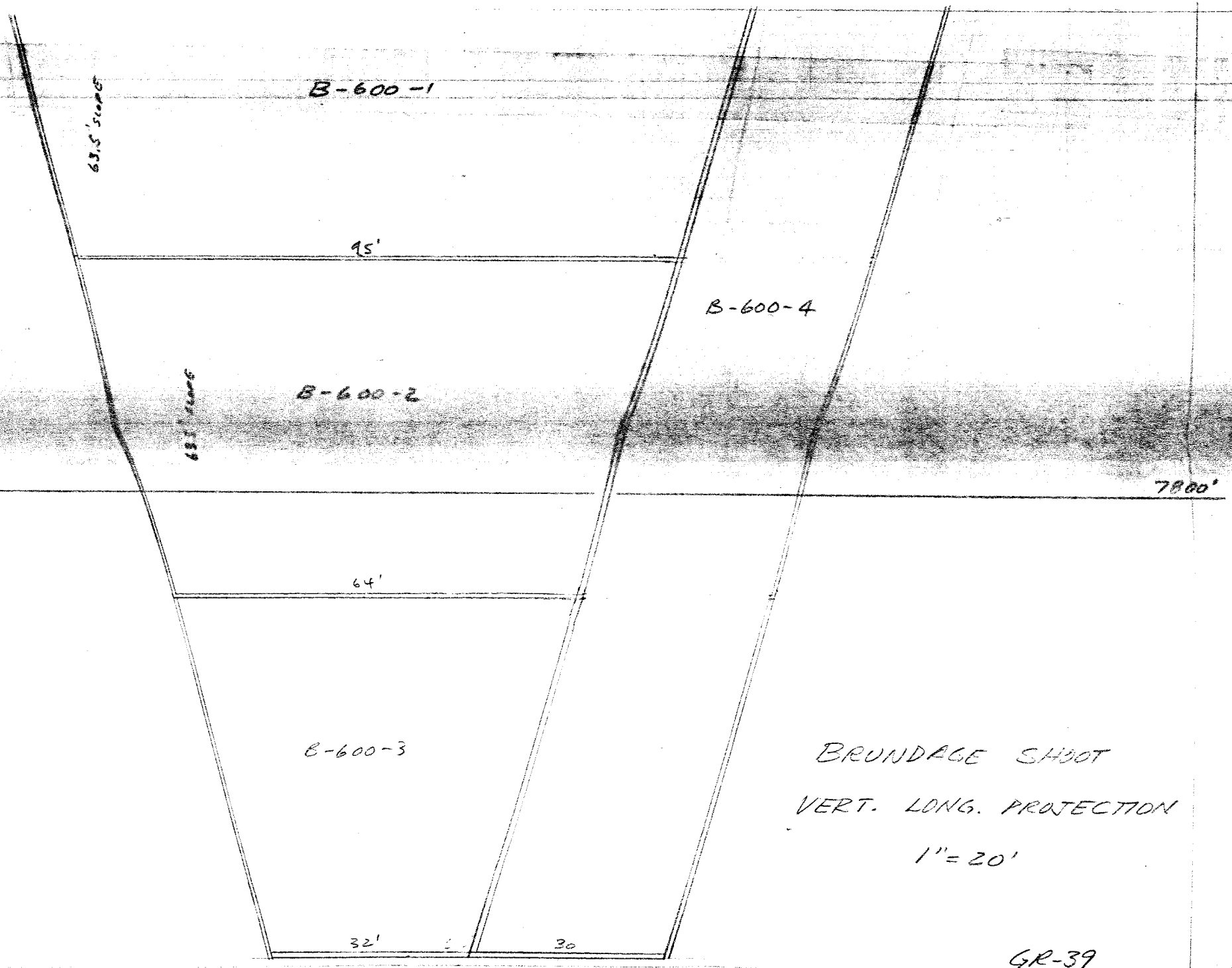
BLOCK B-600-1 5,345 T @ 16.8 PROBABLE	9.1' AVG. WIDTH
BLOCK B-600-2 3,828 T @ 16.8 POSSIBLE	9.1' AVG. WIDTH
BLOCK B-600-3 2,311 T @ 16.8 POTENTIAL	9.1' AVG. WIDTH



BRUNDAGE SHOOT

400 + 500 LEVEL COMPOSITE


93' // 10.1 @ 15.6
400 STOPE — OPEN SQ.-SET
DECLINE
8000'
DECLINE 400 LEVEL
B-500-3
B-500-5
B-500-6
B-500-8
B-500-9
OPEN
511 STOPE
(WASTE FILLED)
B-500-4
510 STOPE
(ORE)
B-500-7
512 STOPE
(ORE)
B-500-10
MANWAY
MANWAY CHUTE
(MOSTLY ON HANGING WALL)
30'
27'
16'
5'
7'
18'
127' //
500 LEVEL
7900'
30' // 4.0' @ 8.6
15°
VEIN AVG DIP 500-400 L. = 65°

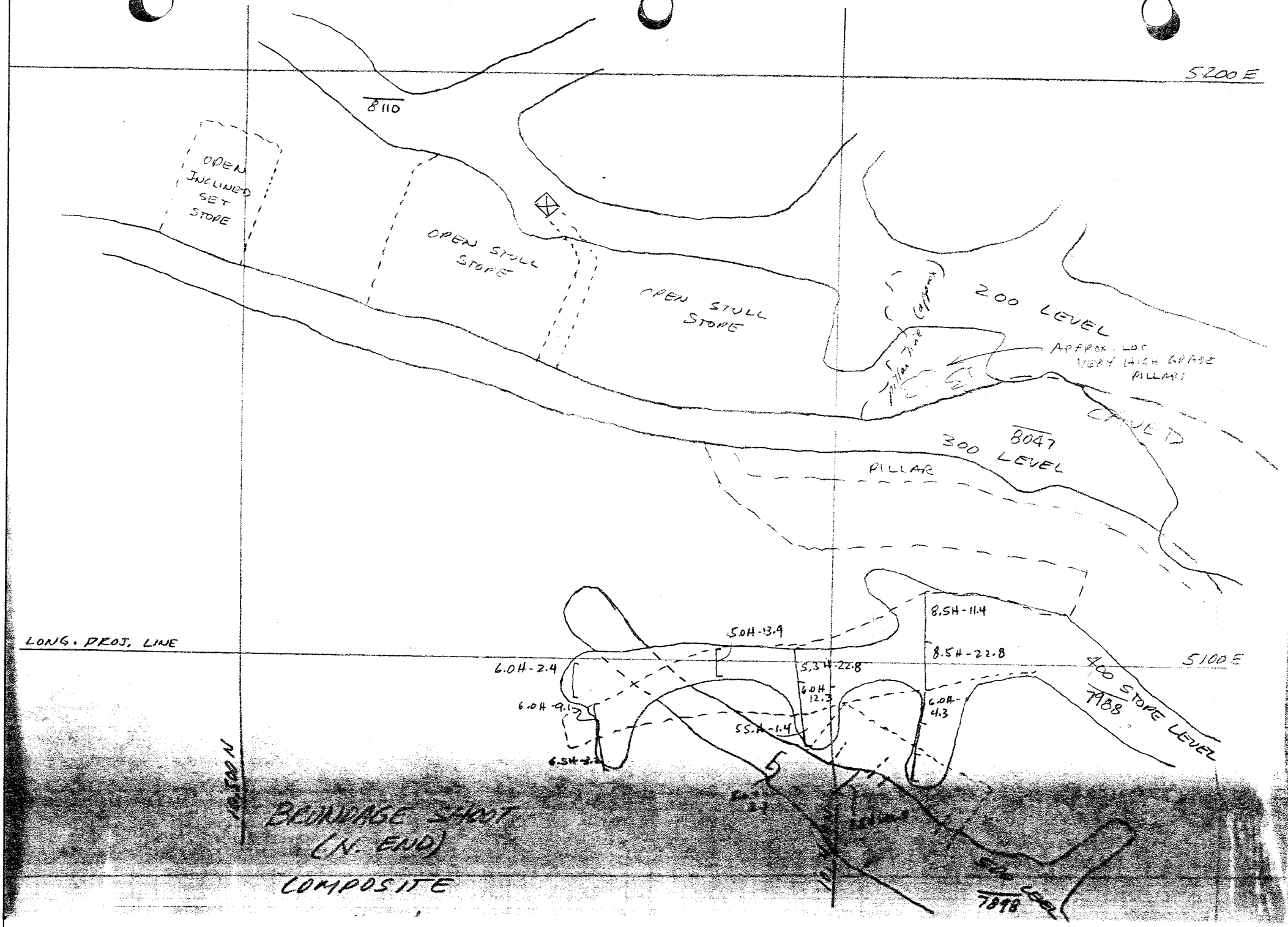


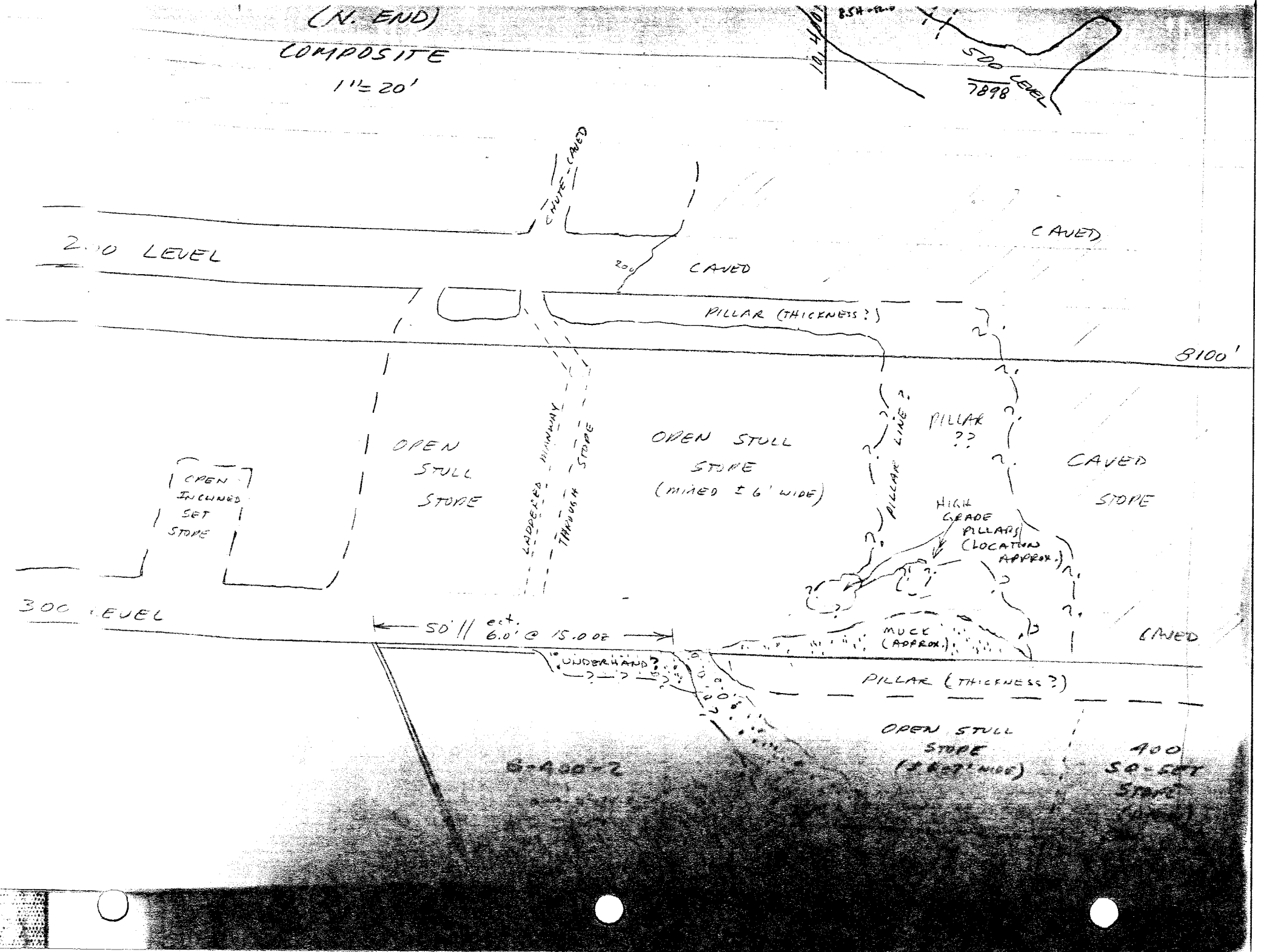
BRUNDAGE SHOOT

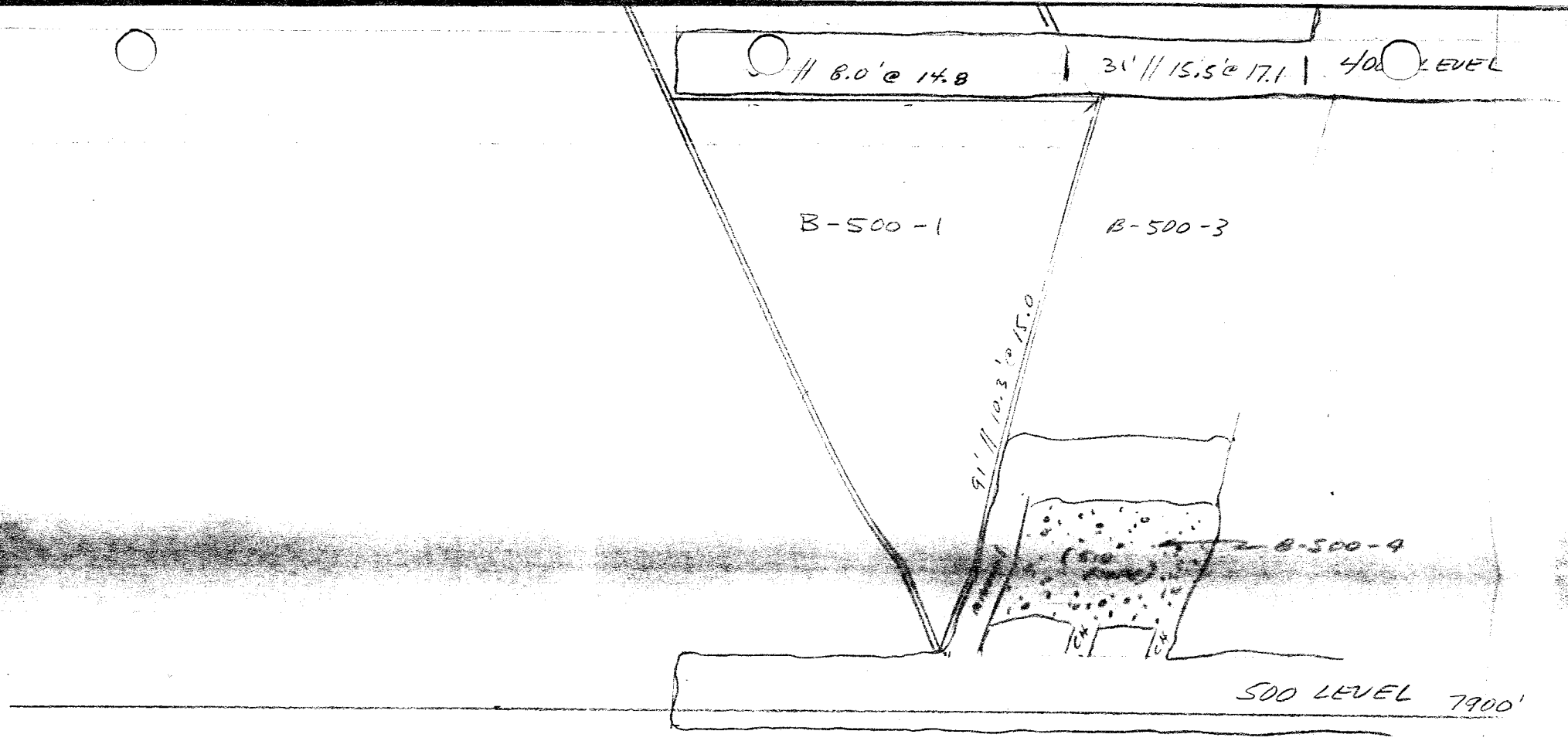
VERT. LONG. PROJECTION

1" = 20'

GR-39

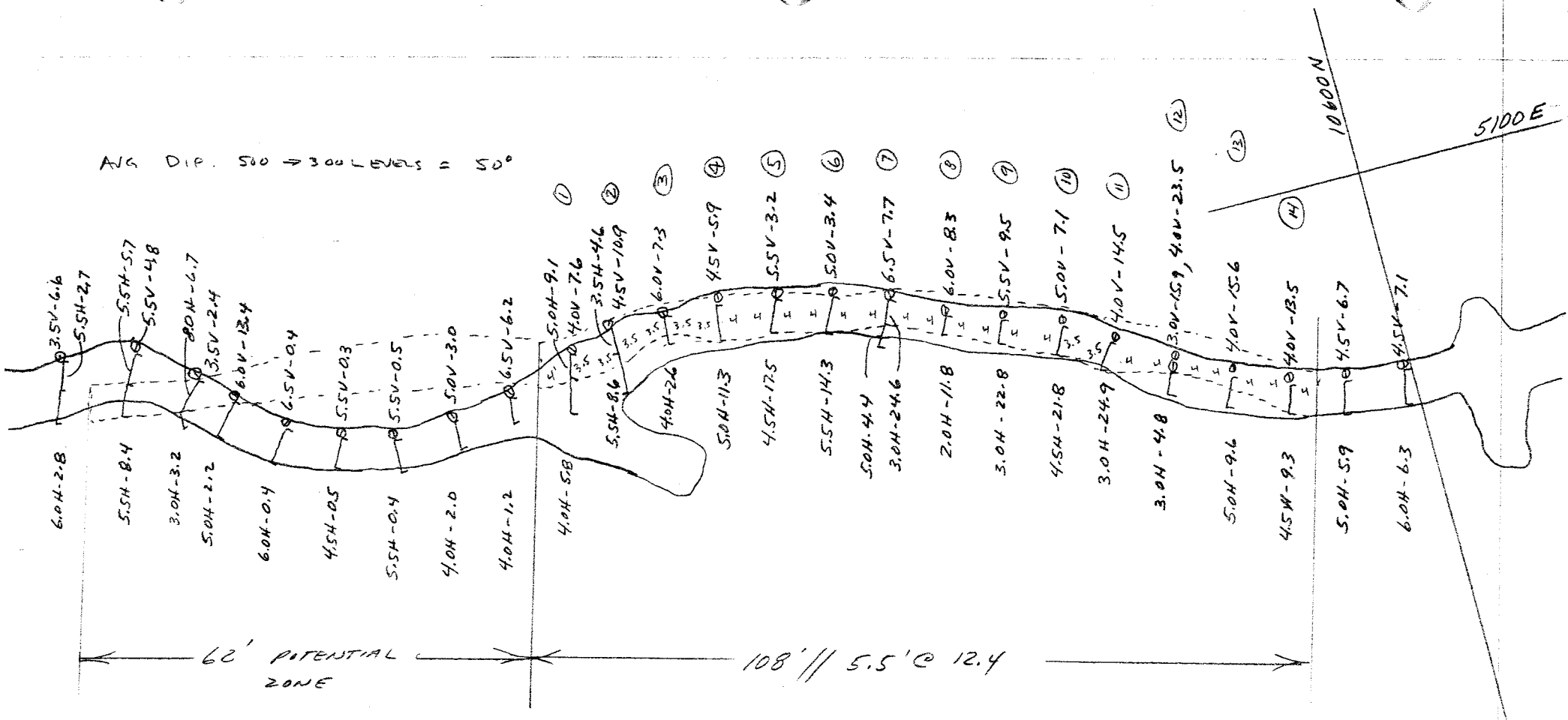

5200 E
8110
OPEN INCLINED SET STOPE
OPEN STULL STOPE
OPEN STULL STOPE
200 LEVEL
APPROX. LOC VERY HIGH GRADE PILLARS
8047
300 LEVEL
PILLAR
LONG. PROJ. LINE
5.0H-13.9
8.5H-11.4
8.5H-22.8
5100 E
6.0H-2.4
5.3H-22.8
6.0H 12.3
400 STOPE LEVEL
7988
6.0H-9.1
6.0H-4.3
5.5H-1.4
6.5H-2.2
BLANDAGE SHOT (N. END)
COMPOSITE
7898


(N. END)
COMPOSITE
1" = 20'
500 LEVEL
7898
CHUTE - CAVED
200 LEVEL
CAVED
CAVED
PILLAR (THICKNESS ?)
8100'
OPEN STULL STOPE
LADDERWAY
MINIWAY
THROUGH STOPE
OPEN STULL STOPE (MINED ± 6' WIDE)
PILLAR LINE ?
PILLAR ??
CAVED STOPE
OPEN INCLINED SET STOPE
HIGH GRADE PILLARS (LOCATION APPROX.)
300 LEVEL
50' // est. 6.0' @ 15.0 OZ
MUCK (APPROX.)
CAVED
UNDERHAND ?
PILLAR (THICKNESS ?)
OPEN STULL STOPE (8 FEET WIDE)
400 SQ-SET STOPE



BRUNDAGE SHOOT
(N. END)
VERT. LONG. PROJECTION
1" = 20'

GR-3B



500 LEVEL PLAN

500 LEVEL

ELLAREE SHOOT

1" = 20'

GR-40

ELLAREE SHOOT

500 LEVEL ASSAYS

SAMPLE WIDTHS CONVERTED:

(1)
3.8' @ 9.1
2.7' @ 7.6
6.5' @ 8.5

(2)
1.4 @ 8.6
2.9 @ 4.6
2.9 @ 10.9
7.2 @ 7.9

(3)
1.5 @ 2.6
4.0 @ 7.3
5.5 @ 6.0

(4)
3.8 @ 11.3
2.8 @ 5.9
6.6 @ 9.0

(5)
3.4 @ 17.5
0.6 @ 3.2
4.0 @ 15.4

(6)
4.1 @ 14.3
4.1 @ 14.3

(7)
2.1 @ 24.6
2.9 @ 7.7
5.0 @ 14.8

(8)
1.5 @ 11.8
4.0 @ 8.3
5.5 @ 9.3

(9)
2.3 @ 22.8
3.6 @ 9.5
5.9 @ 14.7

(10)
3.6 @ 21.8
2.0 @ 7.1
5.6 @ 16.6

(11)
2.3 @ 24.9
2.6 @ 14.5
4.9 @ 19.4

(12)
2.0 @ 15.9
2.5 @ 23.5
4.5 @ 20.1

(13)
4.0 @ 9.6
2.6 @ 15.6
6.6 @ 12.0

(14)
3.4 @ 9.3
2.6 @ 13.5
6.0 @ 11.1

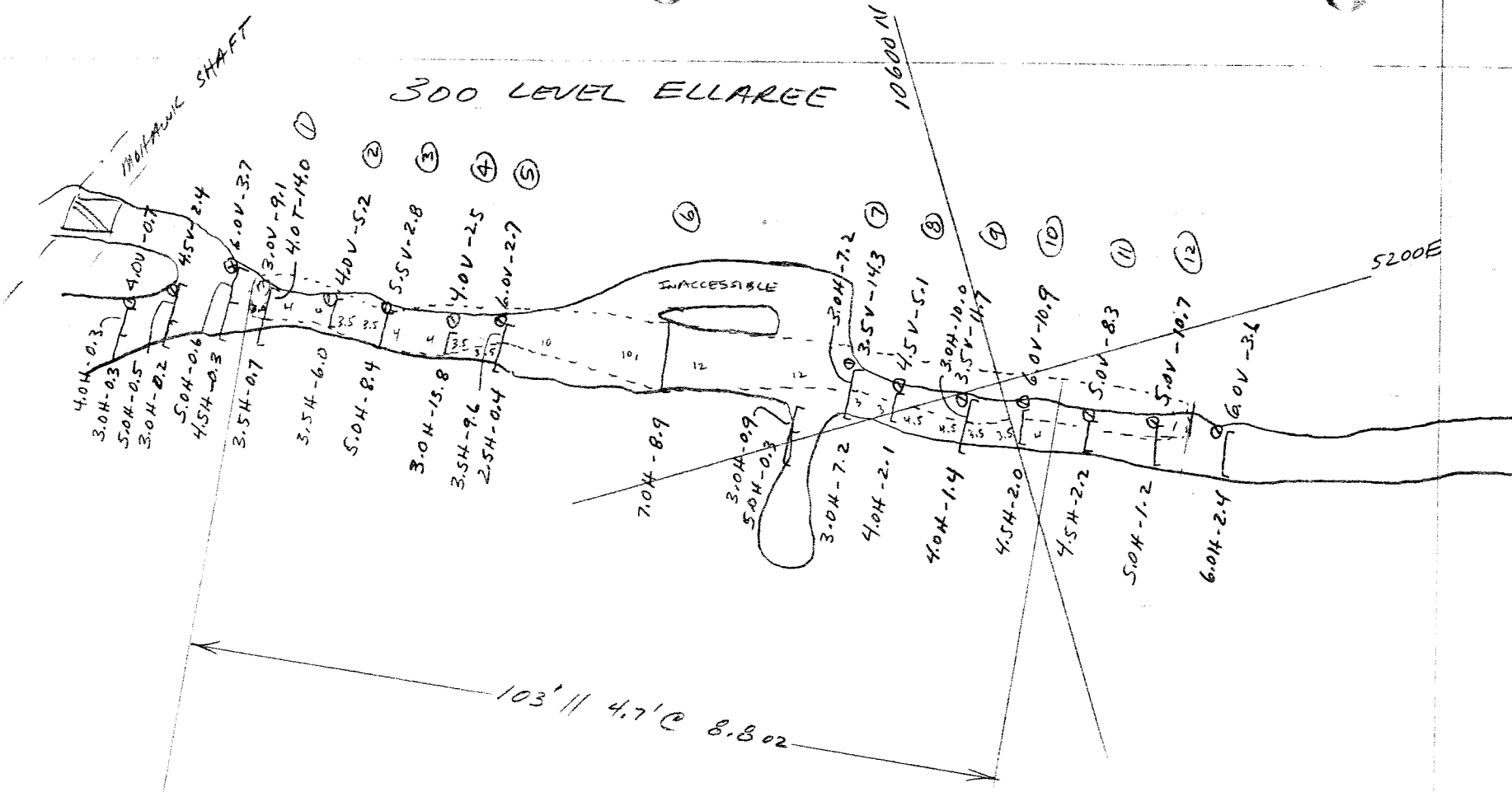
ELLAREE SHOOT

500 LEVEL SAMPLES

	(I)	(W)	(I x W)	(A)	(I x W x A)
1	7.5'	6.5	48.8	8.5	414.4
2	7.0	7.2	50.4	7.9	398.2
3	7.0	5.5	38.5	6.0	231.0
4	7.5	6.6	49.5	9.0	445.5
5	8.0	4.0	32.0	15.4	492.8
6	8.0	4.1	32.8	14.3	469.0
7	8.0	5.0	40.0	14.8	592.0
8	8.0	5.5	44.0	9.3	409.2
9	8.0	5.9	47.2	14.7	693.8
10	7.5	5.6	42.0	16.6	697.2
11	7.5	4.9	36.8	19.4	713.0
12	8.0	4.5	36.0	20.1	723.6
13	8.0	6.6	52.8	12.0	633.6
14	8.0	6.0	48.0	11.1	532.8
	108'		598.8		7,446.1

108' // 5.5' @ 12.4

500 LEVEL ELLAREE



ELLAREE SHOOT

300 LEVEL PLAN

1" = 20'

ELLAREE SHOOT

300 LEVEL ASSAYS

SAMPLE WIDTHS CONVERTED: (AVG DIP 300 → 200 L = 65°)

(1)
4.0 T @ 14.0
1.7 T @ 9.1
5.7 @ 12.5

(2)
3.1 @ 6.0
1.8 @ 5.2
4.9 @ 5.7

(3)
4.4 @ 8.4
4.4 @ 8.4

(4)
2.8 @ 13.8
1.0 @ 2.5
3.8 @ 10.8

(5)
3.0 @ 9.6
0.8 @ 2.7
3.8 @ 8.2

(6)
6.3 @ 8.9
6.3 @ 8.9

(7)
2.7 @ 7.2
1.5 @ 14.3
4.2 @ 9.7

(8)
1.9 @ 5.1
1.9 @ 2.1
3.8 @ 3.6

(9)
2.8 @ 10.0
1.5 @ 11.7
4.3 @ 10.6

(10)
2.6 @ 10.9
1.2 @ 2.0
3.8 @ 8.1

MINIMUM WIDTH USED = 3.8' T. WITH DILUTION, MINING WILL BE OVER 4' MINIMUM.

ELLAREE SHOOT

300 LEVEL ASSAYS

COMBINED:

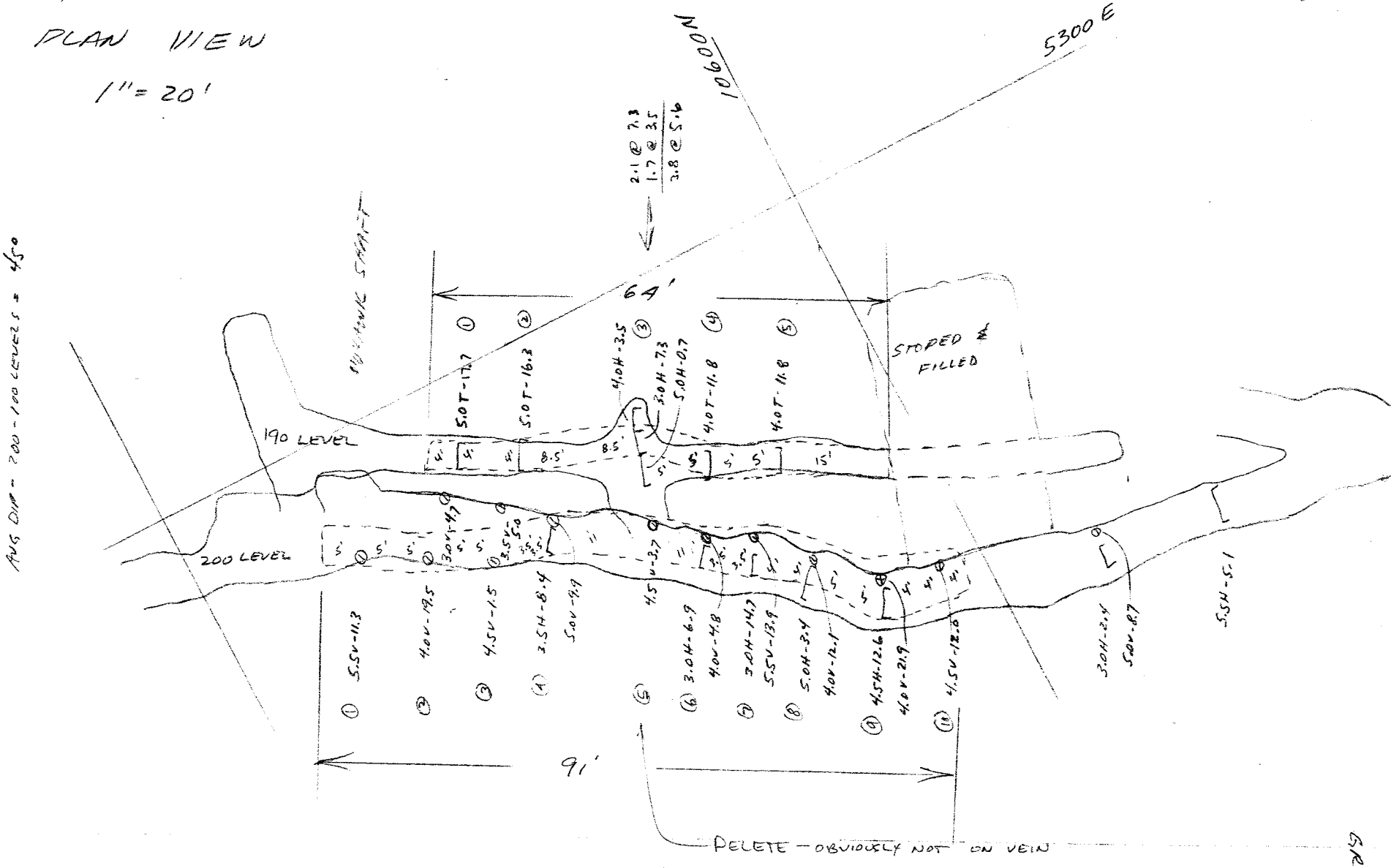
	(I)	(W)	(I x W)	(A)	(I x W x A)
1	7.0	5.7	39.9	12.5	499
2	7.5	4.9	36.8	5.7	209
3	7.5	4.4	33.0	8.4	277
4	7.5	3.8	28.5	10.8	308
5	13.5	3.8	51.3	8.2	421
6	22.0	6.3	138.6	8.9	1,234
7	15.0	4.2	63.0	9.7	611
8	7.5	3.8	28.5	3.6	103
9	8.0	4.3	34.4	10.6	365
10	7.5	3.8	28.5	8.1	231
	103'		482.5		4,258

103' // 4.7' @ 8.8 oz

200 & 190 LEVEL ELLAREE

PLAN VIEW

1" = 20'



ELLAREE SHOOT

200 LEVEL ASSAYS

SAMPLE WIDTHS CONVERTED (AVG DIP = 45°)

(1) 4.0 @ 11.3

(2) 3.1 @ 19.5
0.7 @ 4.5 (added)
3.8 @ 16.7

(3) 2.6 @ 5.0
1.2 @ 4.5 (added)
3.8 @ 4.8

(4) 2.5 @ 8.4
3.4 @ 9.9
5.9 @ 9.3

(5) DELETE – NOT VEIN SAMPLE

(6) 2.2 @ 6.9
2.8 @ 4.8
5.0 @ 5.7

(7) 2.2 @ 14.7
3.8 @ 13.9
6.0 @ 14.2

(8) 1.0 @ 3.4
2.8 @ 12.1
3.8 @ 9.8

(9) 3.2 @ 12.6
2.7 @ 21.9
5.9 @ 16.7

(10) 3.3 @ 12.0

ELLAREE SHOOT

200 LEVEL ASSAYS

	(I)	(w)	(I x w)	(A)	(I x W x A)
(1)	10.0	4.0	40.0	11.3	452
(2)	10.0	3.8	38.0	16.7	635
(3)	8.5	3.8	32.3	4.8	155
(4)	14.5	5.9	85.6	9.3	796
(6)	14.5	5.0	72.5	5.7	413
(7)	7.5	6.0	45.0	14.2	639
(8)	9.0	3.8	34.2	9.8	335
(9)	9.0	5.9	53.1	16.7	887
(10)	8.0	3.3	26.4	12.0	317
	91.0'		427.1		4629

91' // 4.7' @ 10.8 oz

190 LEVEL ASSAYS

	(I)	(w)	(I x w)	(A)	(I x W x A)
(1)	8.0	5.0	40.0	17.7	708
(2)	12.5	5.0	62.5	16.3	1,019
(3)	13.5	3.8	51.3	5.6	287
(4)	10.0	4.0	40.0	11.8	472
(5)	20.0	4.0	80.0	11.8	944
	64'		273.8		3,430

64' // 4.3' @ 12.5

ELLAREE SHOOT

RESERVE BLOCK CALCULATIONS

E-200-1 BLOCK

1/2 STRIKE LENGTH (190 LEVEL)

((64' STRIKE LENGTH)(32' SLOPE)(4.3' WIDTH)) ÷ 12 = 734 T @ 12.5 oz

BLOCK E-200-1
734 T @ 12.5 oz
PROBABLE

4.3' AVG. WIDTH

E-200-2 BLOCK

SAME CALCULATION AS E-200-1

BLOCK E-200-2
734 T @ 12.5 oz
POSSIBLE

4.3' AVG. WIDTH

E-200-3 BLOCK

((64' LENGTH)(52' SLOPE)(4.3' WIDTH)) ÷ 12 = 1,193 T @ 12.5 oz

POTENTIAL CARRIED TO 100 LEVEL WHERE PORTION STOPED PRIOR TO 1980.

BLOCK E-200-3
1,193 T @ 12.5 oz
POTENTIAL

4.3' AVG. WIDTH

ELLAREE SHOOT

BLOCK CALCULATIONS

E-300-1 BLOCK

AVERAGE 300 & 200 LEVEL INTERVALS

(I)	(W)	(I x W)	(A)	(I x W x A)
91'	4.7	427.7	10.8	4619
103'	4.7	484.1	8.8	4260
194' ÷ 2 = 97'		911.8		8879

97' // 4.7' @ 9.7 oz

((97' LENGTH)(73' SLOPE)(4.7' WIDTH)) ÷ 12 = 2,773 T @ 9.7 oz

BLOCK E-300-1
2,773 T @ 9.7 oz
PROBABLE

4.7' AVG. WIDTH

E-500-1 BLOCK

AVERAGE LENGTH (108 + 106) ÷ 2 = 107'

((107' LENGTH)(54' SLOPE) ← 1/2 500 LEVEL LENGTH (5.5' WIDTH)) ÷ 12 = 2,648 T @ 12.4 oz

BLOCK E-500-1
2,648 T @ 12.4 oz
PROBABLE

5.5' AVG. WIDTH

ELLAREE SHOOT

BLOCK CALCULATIONS

E-500-2 BLOCK

COMBINE 500 L. & 300 L. BLOCK LENGTHS / WIDTHS / ASSAYS:

(I)	(W)	(I x W)	(A)	(I x W x A)
104'	4.7'	488.8	8.8	4301
106'	5.5	583.0	12.4	7229
210 ÷ 2 = 105'		1071.8		11,530

105' // 5.1' @ 10.8 oz

((105' LENGTH)(78.5' SLOPE)(5.1' WIDTH)) ÷ 12 = 3,503 T @ 10.8 oz

BLOCK E-500-2
3,503 T @ 10.8 oz
POSSIBLE

5.1' AVG. WIDTH

E-500-3 BLOCK

1/2 300 LEVEL LENGTH

((103.5' LENGTH)(51.5' SLOPE)(4.7' WIDTH)) ÷ 12 = 2,088 T @ 8.8 oz

BLOCK E-500-3
2,088 T @ 8.8 oz
PROBABLE

4.7' AVG. WIDTH

ELLAREE SHOOT

BLOCK CALCULATIONS

E-500-4 BLOCK

IT IS APPARENT THAT THE 500 DRIFT, NORTH OF E-500-1 BLOCK, WAS DRIVEN OFF THE HIGHER GRADE PORTION OF THE VEIN. GOOD POTENTIAL EXISTS FOR FINDING ADDITIONAL RESERVES IN THIS STRETCH. GRADE IS CALCULATED AS THE AVERAGE OF THE B-500-1, 2, 3 BLOCKS.

500-1	54' SLOPE	@ 12.4 oz
	78.5	@ 10.8
	51.5	@ 8.8
	184'	@ 10.7 oz

$$((1/2)(62)(184')(5.1' \text{ WIDTH AVG})) \div 12 = 2{,}424 \text{ T}$$

BLOCK E-500-4
2,424 T @ 10.7 oz
POTENTIAL

5.1' AVG. WIDTH

E-600-4 BLOCK

EXTENSION OF E-500-4 POTENTIAL

GRADE FROM E-500-4

← FROM E-500-1 Block

$$((62' \text{ LENGTH})(162' \text{ SLOPE})(5.5' \text{ WIDTH})) \div 12 = 4{,}604 \text{ T @ } 10.7 \text{ oz}$$

BLOCK E-600-4
4,604 T @ 10.7 oz
POTENTIAL

5.5' AVG. WIDTH

ELLAREE SHOOT

BLOCK CALCULATIONS

E - 600 - 1 BLOCK

1/2 STRIKE LENGTH FOR PROBABLE, POSSIBLE, POTENTIAL

((108' LENGTH)(54' SLOPE)(5.5' WIDTH)) ÷ 12 = 2,673 T @ 12.4

BLOCK E -600-1 2,673 T @ 12.4 oz PROBABLE	5.5' AVG. WIDTH

BLOCK E -600-2 2,673 T @ 12.4 oz POSSIBLE	5.5' AVG. WIDTH

BLOCK E -600-3 2,673 T @ 12.4 oz POTENTIAL	5.5' AVG. WIDTH

BRUNDAGE SHOOT

BELOW 500 LEVEL

POTENTIAL BLOCK SOUTH OF B-600-1, 2, 3. CONTINUATION OF B-500-10, BASED ON VEIN SHOWING ON 500 LEVEL AND SOME ASSAYS ON SOUTH END OF 500 LEVEL DRIFT. NARROW MINING WIDTH.

((30' LENGTH) (4.0' WIDTH) (190.5' SLOPE)) ÷ 12 = 1,905 T @ 8.6 oz

BLOCK B-600-4
1,904 T @ 8.6 oz
POTENTIAL

4.0' AVG. WIDTH

BRUNDAGE SHOOT

NORTH END

B-500-1 BLOCK

$(1/2)(25)(91) = 1{,}138$ ft

$+ (1/2)(25)(91) = 1{,}138$ ft

$((1{,}138 \text{ ft})(8.0)) \div 12 = 759$ T @ 14.8

$+ ((1{,}138 \text{ ft})(10.3)) \div 12 = 977$ T @ 15.0

759 T @ 14.8 — WIDTH 8.0

+ 977 T @ 15.0 — 10.3

1,736 T @ 14.9 — 9.3

BLOCK B-500-1
1,736 T @ 14.9 oz
PROBABLE

9.3' AVG WIDTH

B-400-1 BLOCK:

$\left(\left(\frac{46+31}{2}\right)(20' \text{ SLOPE})\left(\frac{6.5' + 15.5'}{2}\right)\right) \div 12 = 706$ T @ 17.1 oz

38.5 — WIDTH — 11.0

BLOCK B-400-1
706 T @ 17.1 oz
PROBABLE

11.0' AVG WIDTH

BRUNDAGE SHOOT

NORTH END

B-400-2 BLOCK

$$((50' \text{ LENGTH})(70' \text{ SLOPE})(\underbrace{\frac{8.0+6.0}{2}}_{7.0'}\text{ WIDTH})) \div 12 = \underline{2,042 \text{ T}}$$

GRADE: STOPE ABOVE 300 LEVEL IS ESTIMATED TO HAVE CONTAINED 15.0 oz SINCE MINED PRIOR (1950's-60's). SEE COMMENTS FOR B-500-9 SHOOT.

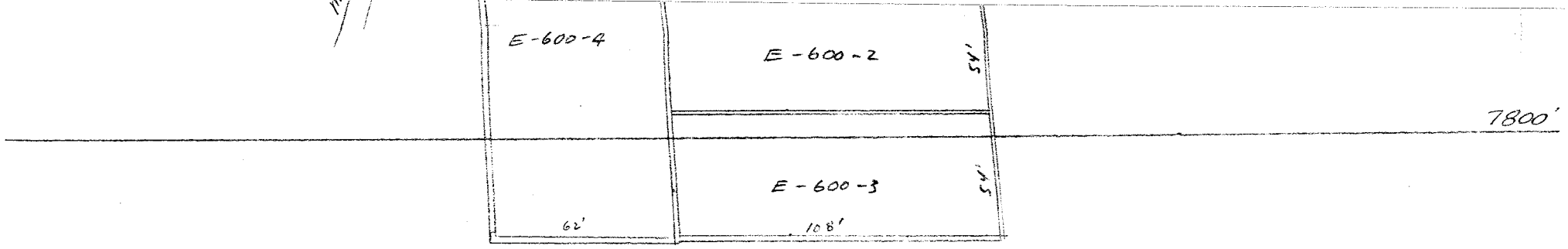
GRADE AVERAGE OF 14.8 & 15.0 oz = 14.9 oz

TONS -- SUBTRACT 100 TONS PASS. UNDERHAND STOPING:

$$\begin{array}{r} 2,042 \\ -\ 100 \\ \hline 1,942 \text{ T} \end{array}$$

BLOCK B-400-2
1,942 T @ 14.9 oz
PROBABLE

7.0' AVG. WIDTH

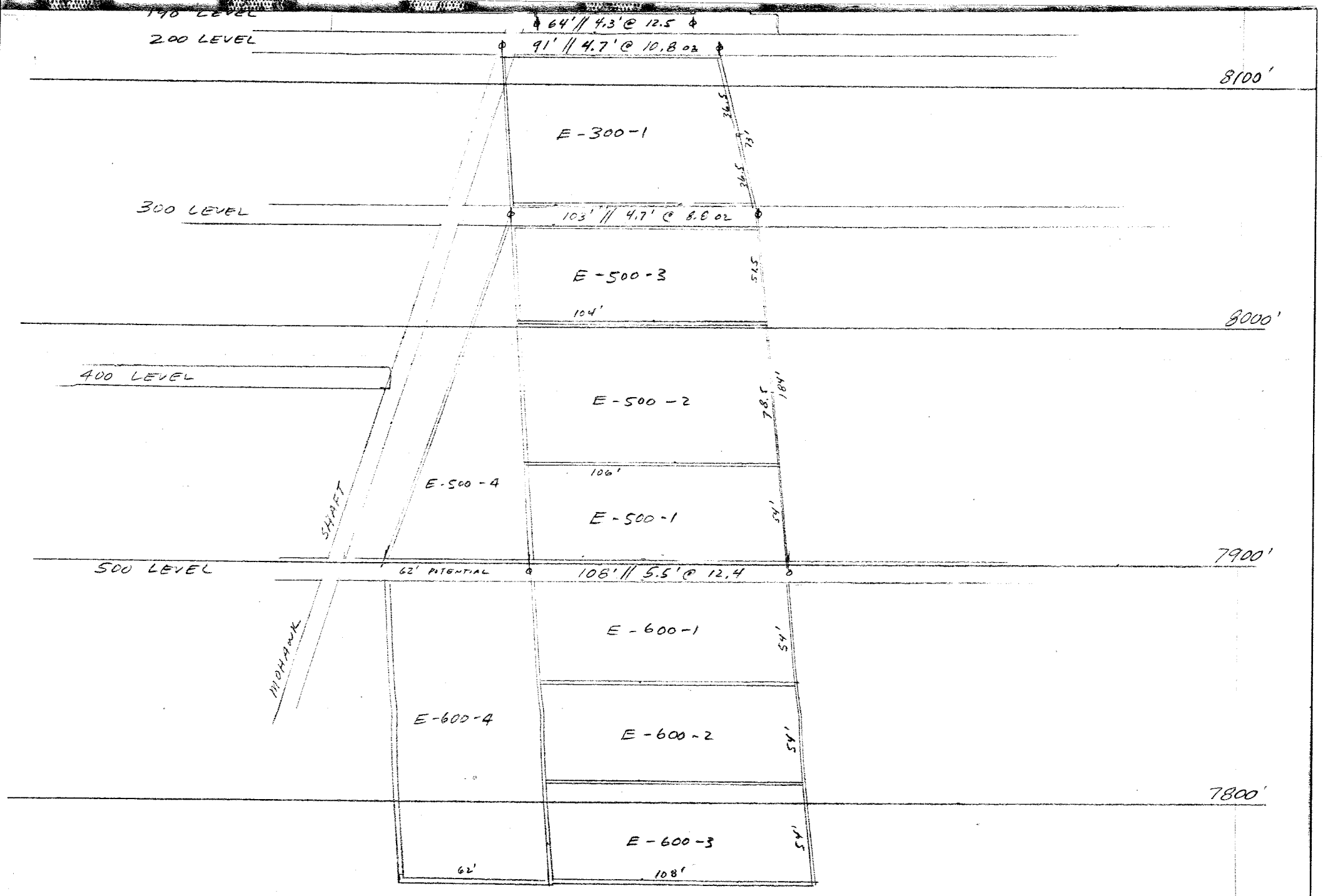


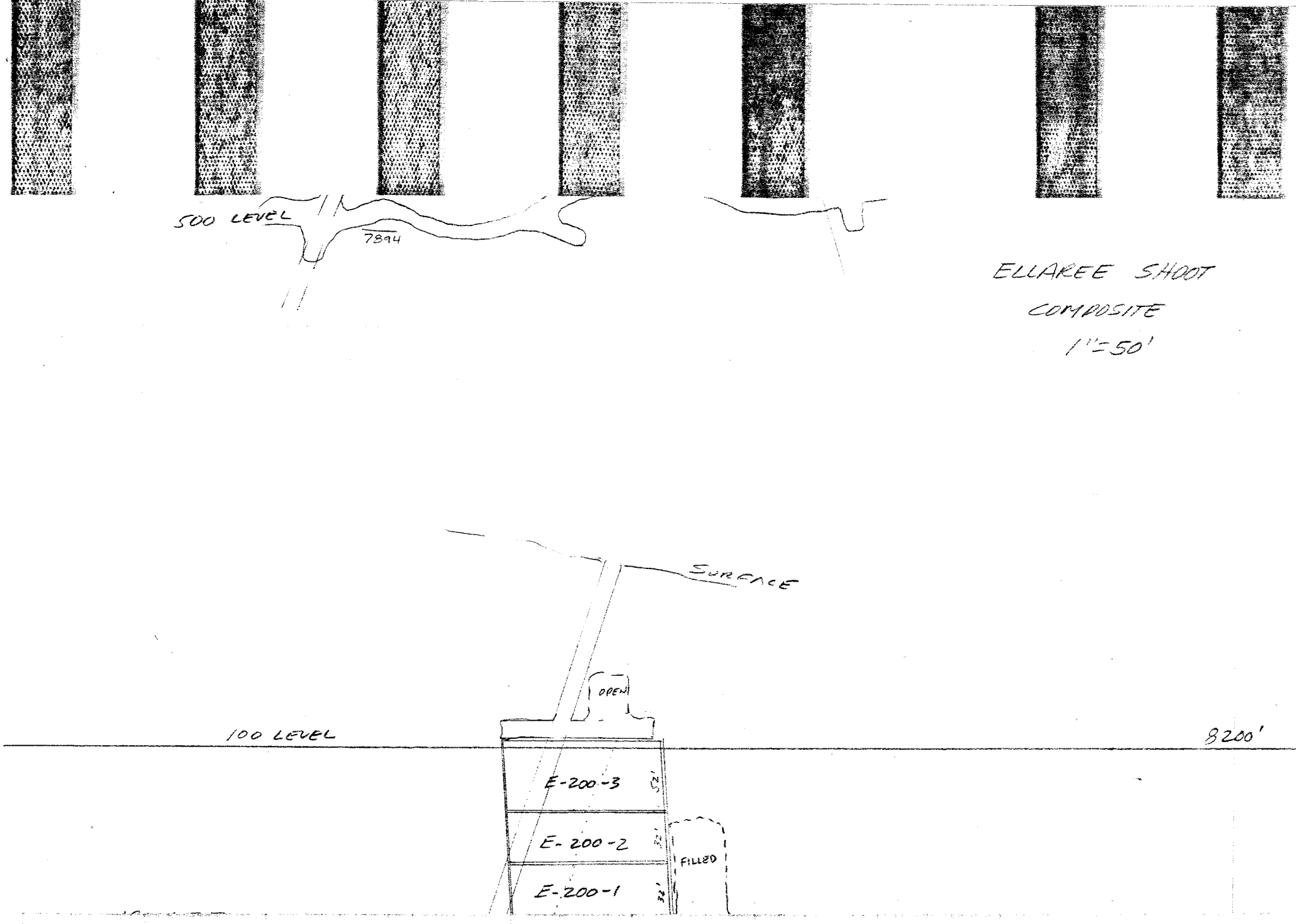
ELLAREE SHOOT

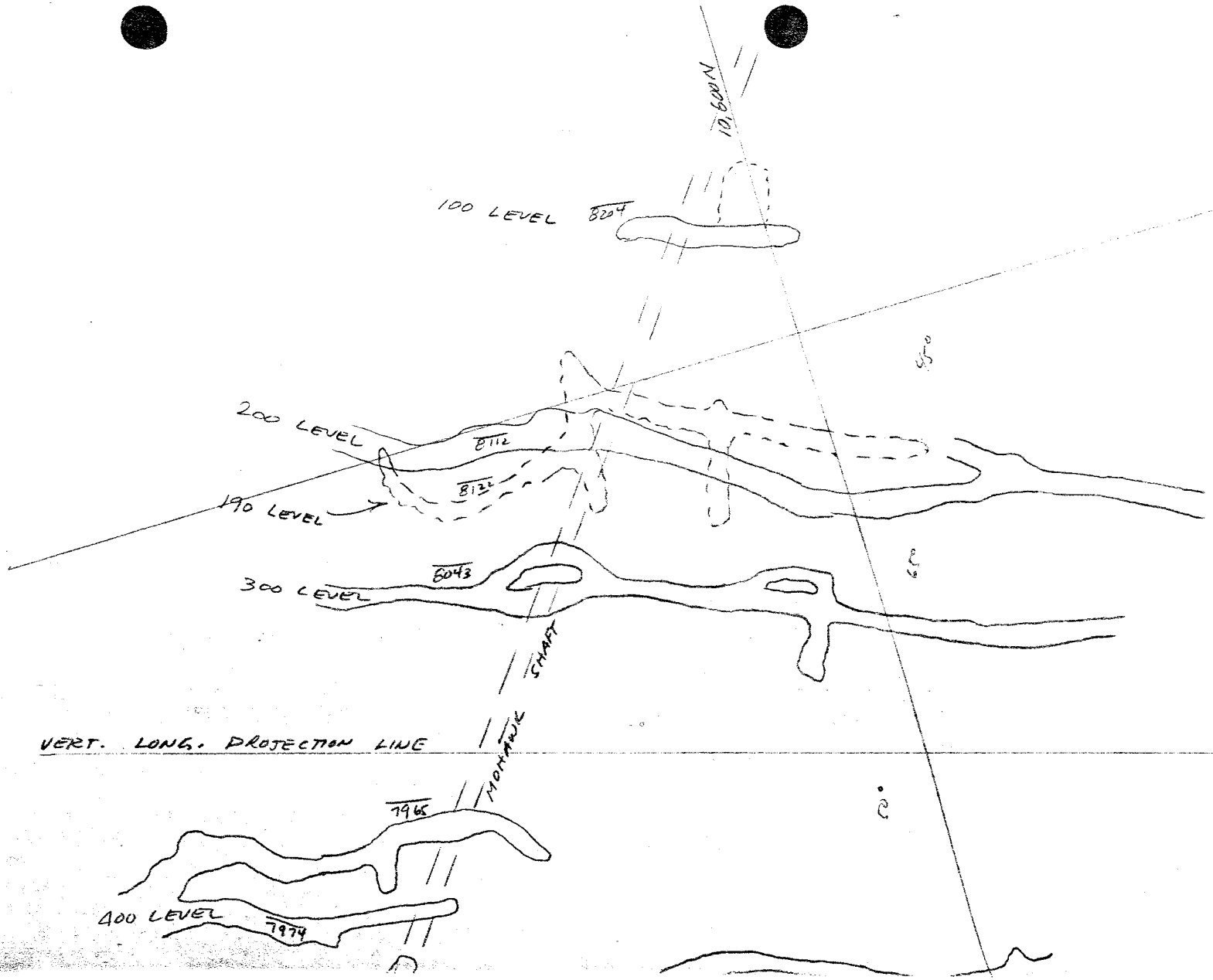
VERT. LONG. PROJECTION

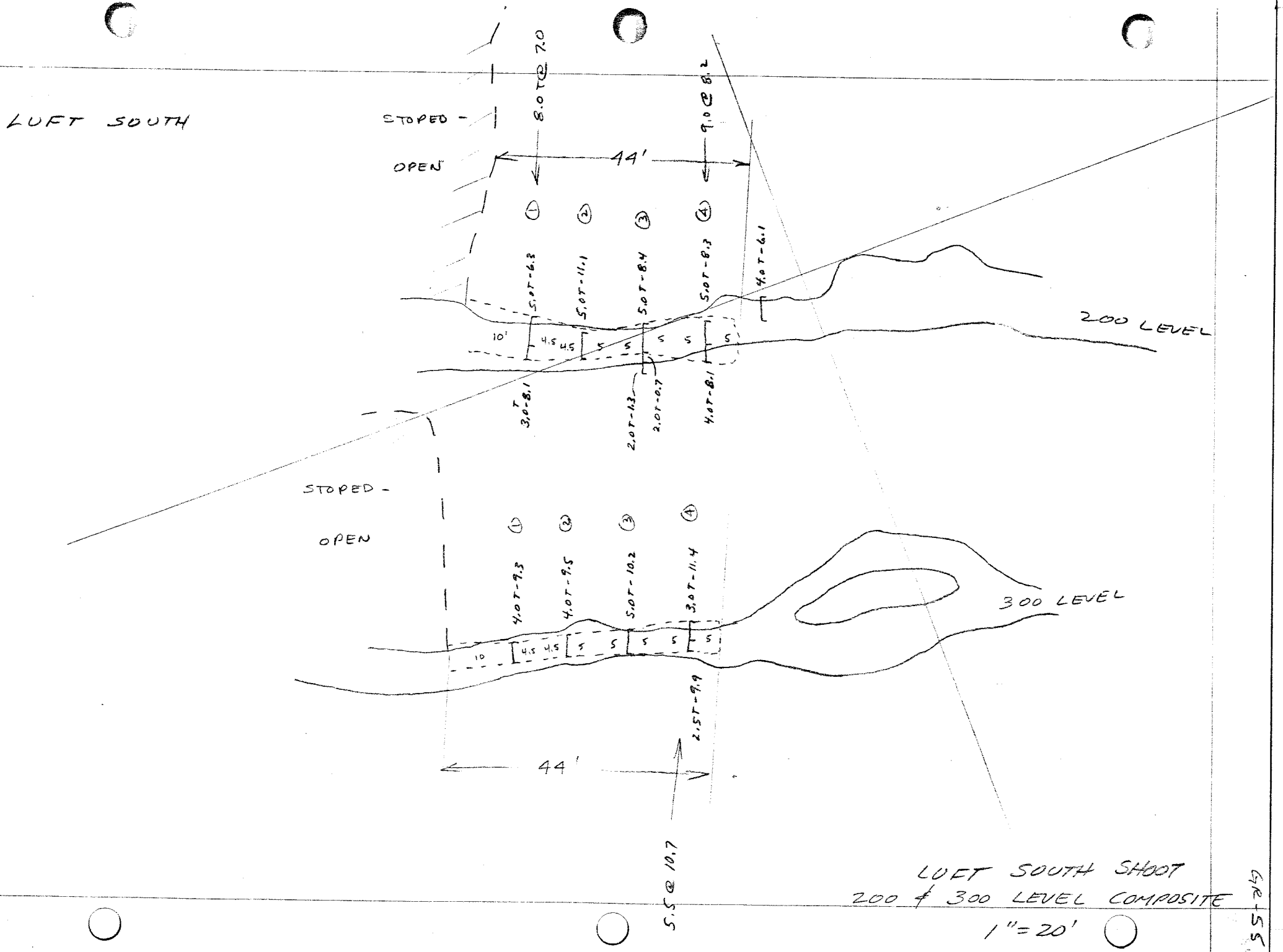
1" = 50'

GR-54


200 LEVEL
64' // 4.3' @ 12.5
91' // 4.7' @ 10.8 oz
8100'
E-300-1
36.5
36.5
300 LEVEL
103' // 4.7' @ 8.8 oz
E-500-3
54.5
104'
8000'
400 LEVEL
E-500-2
78.5
184'
106'
E-500-4
E-500-1
54'
SHAFT
500 LEVEL
62' POTENTIAL
108' // 5.5' @ 12.4
7900'
E-600-1
54'
MOHAWK
E-600-4
E-600-2
54'
7800'
E-600-3
54'
62'
108'


500 LEVEL
7894
ELLAREE SHOOT
COMPOSITE
1"=50'
SURFACE
OPEN
100 LEVEL
8200'
E-200-3
E-200-2
E-200-1
FILLED


10,600 N
5300 E
100 LEVEL
8204
45°
200 LEVEL
8112
8122
190 LEVEL
300 LEVEL
6043
SHAFT
VERT. LONG. PROJECTION LINE
MOHAWK
7965
400 LEVEL
7974


LUFT SOUTH
STOPED -
OPEN
8.0 TO 7.0
9.0 @ 8.2
44'
1
2
3
4
5.0T-6.3
5.0T-11.1
5.0T-8.4
5.0T-8.3
4.0T-6.1
10'
4.5 4.5
5 5 5 5 5
3.0T-8.1
2.0T-1.3
2.0T-0.7
4.0T-8.1
200 LEVEL
STOPED -
OPEN
4.0T-9.3
4.0T-9.5
5.0T-10.2
3.0T-11.4
300 LEVEL
10
4.5 4.5
5 5 5 5 5
2.5T-9.9
44'
5.5 @ 10.7
LUFT SOUTH SHOOT
200 & 300 LEVEL COMPOSITE
1" = 20'

LUFT SOUTH SHOOT

200 LEVEL SAMPLES

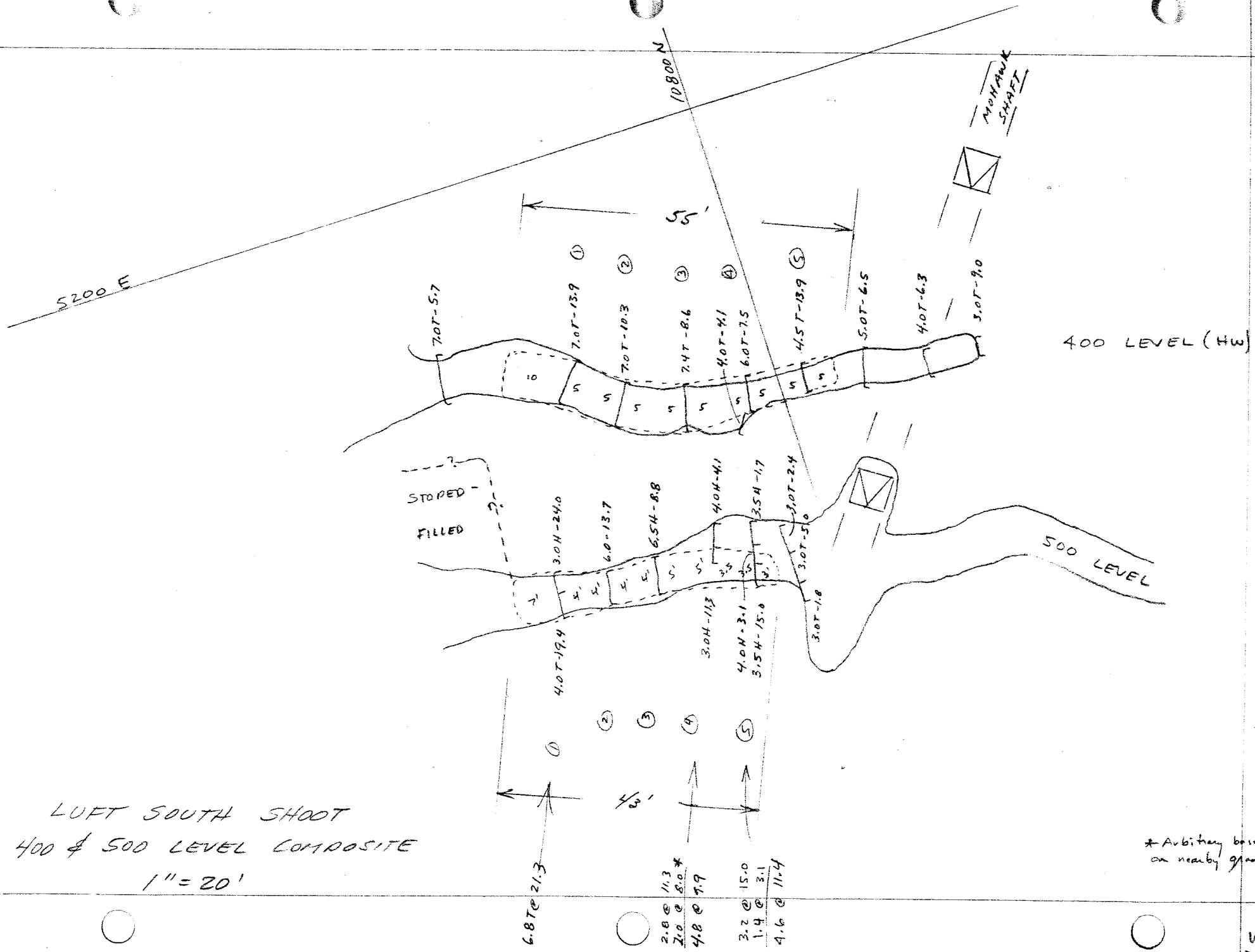
(I)	(W)	(I x W)	(A)	(I x W x A)
14.5	8.0	116.0	7.0	812
9.5	5.0	47.5	11.1	527
10.0	5.0	50.0	8.4	420
10.0	9.0	90.0	8.2	738
44.0'		303.5		2,497

44' // 6.9' @ 8.2 oz

300 LEVEL SAMPLES

14.5	4.0	58.0	9.3	539
9.5	4.0	38.0	9.5	361
10.0	5.0	50.0	10.2	510
10.0	5.5	55.0	10.7	589
44.0'		201.0		1,999

44' // 4.6' @ 10.0



LUFT SOUTH SHOOT
400 & 500 LEVEL COMPOSITE
1" = 20'

* Arbitrary based on nearby grades

GR-57

LUFT SOUTH SHOOT

400 LEVEL ASSAYS

(I)	(W)	(I x W)	(A)	(I x W x A)
15.0	7.0	105.0	13.9	1460
10.0	7.0	70.0	10.3	721
10.0	7.4	74.0	8.6	636
10.0	6.0	60.0	7.5	450
10.0	4.5	45.0	13.9	626
55.0'		354.0		3,893

55' // 6.4' @ 11.0 oz

500 LEVEL ASSAYS

11.0	6.8	74.8	21.3	1,593
8.0	6.0	48.0	13.7	658
9.0	6.1	54.9	8.8	483
8.5	4.8	40.8	9.9	404
6.5	4.6	29.9	11.4	341
43.0'		248.4		3,479

43' // 5.8 @ 14.0

LUFT SOUTH SHOOT

BLOCK CALCULATIONS

BLOCKS LS-200-1, 200-2, 200-3

1/2 STRIKE LENGTH FOR PROBABLE, POSSIBLE, FULL STRIKE LENGTH FOR POTENTIAL SINCE OTHER STOPING AND RESERVES TO ABOUT 8250' EL.+

((44' LENGTH)(22' SLOPE)(6.9' WIDTH)) ÷ 12 = 557 T @ 8.2 oz

BLOCK LS-200-1 557 T @ 8.2 oz PROBABLE	6.9' AVG. WIDTH

BLOCK LS-200-2 557 T @ 8.2 oz POSSIBLE	6.9' AVG. WIDTH

BLOCK LS-200-3 1,113 T @ 8.2 oz POTENTIAL	6.9' AVG. WIDTH

LUFT SOUTH SHOOT

BLOCK CALCULATIONS

LS-300-1 BLOCK

AVERAGE 300 L. & 200 L WIDTHS & ASSAYS:

6.9' @ 8.2
4.6' @ 10.0
11.5 ÷ 2 = @ 8.9
5.8' @ 8.9

((44' LENGTH)(77' SLOPE)(5.8' WIDTH)) ÷ 12 = 1,638 T @ 8.9

BLOCK LS-300-1 1,638 T @ 8.9 oz PROBABLE

5.8' AVG. WIDTH

LS-400-1 BLOCK, LS-400-2 BLOCK

((44' LENGTH)(22' SLOPE)(4.6' WIDTH)) ÷ 12 = 371 T @ 10.0

BLOCK LS-400-1 371 T @ 10.0 oz PROBABLE

4.6' AVG. WIDTH

BLOCK LS-400-2 371 T @ 10.0 oz POSSIBLE

4.6' AVG. WIDTH

LUFT SOUTH SHOOT

BLOCK CALCULATIONS

LS-400-3, LS-400-4 (HW)

IT APPEARS, FROM THE GEOLOGIC VERTICAL SECTIONS, THAT THE VEIN BETWEEN THE 400 & 300 LEVELS IN THE LUFT SOUTH SHOOT AREA MUST BE SPLIT TO HANGING WALL AND FOOTWALL SPLITS. IF SO, THE CYMOID LOOP CONFIGURATION WILL BE QUITE COMPLEX IN THIS AREA. NO POTENTIAL IS USED FOR THIS AREA SINCE THERE IS NO INFORMATION AS TO THE CONTINUITY OF THE POSSIBLE SPLITS. WITHOUT INVOKING A SPLIT HYPOTHESIS, THE VEIN WOULD LAY OVER TO 25-30° IN ORDER TO CONNECT WITH BOTH LEVELS.

((55' LENGTH)(27.5' SLOPE)(6.4' WIDTH)) ÷ 12 = 807 T @ 11.0

BLOCK LS-400-3
807 T @ 11.0 oz
PROBABLE

6.4' AVG. WIDTH

BLOCK LS-400-4
807 T @ 11.0 oz
POSSIBLE

6.4' AVG. WIDTH

LUFT SOUTH SHOOT

BLOCK CALCULATIONS

LS-500-1 BLOCK

AVERAGE 500 L. & 400 L ASSAYS:

(I)	(W)	(I x W)	(A)	(I x W x A)
55.0'	6.4'	352.0	11.0	3,872
43.0'	5.8'	249.4	14.0	3,492
98.0		601.4		7,364

÷2 = 49' avg.

49' // 6.1' @ 12.2

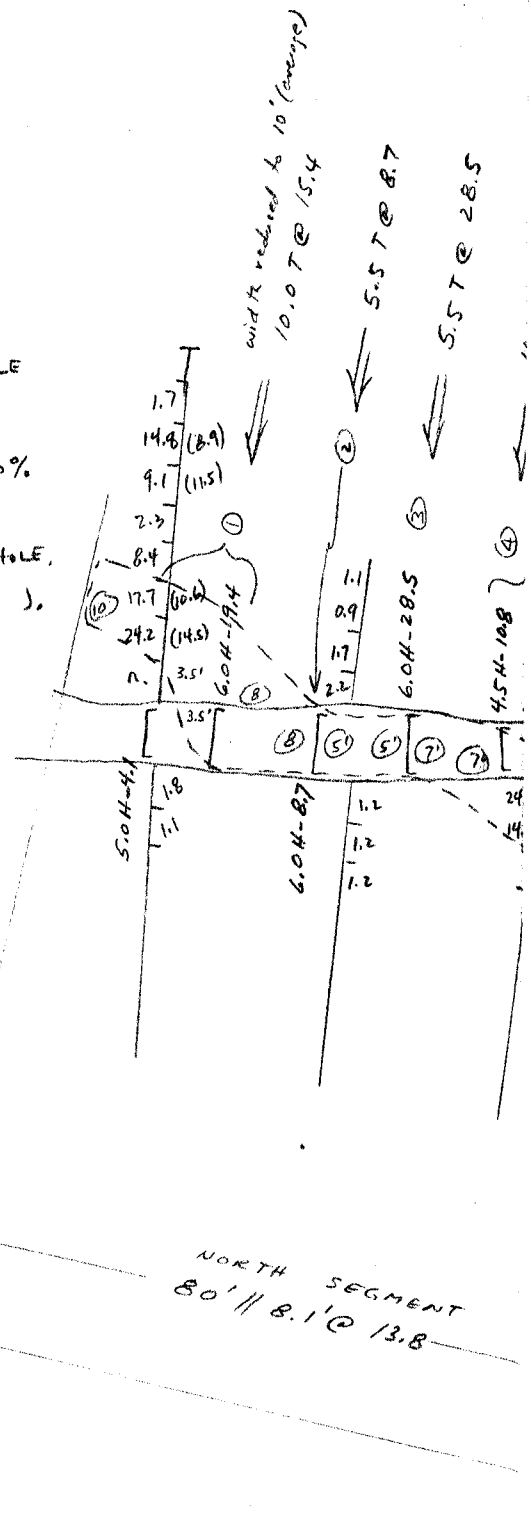
((49' LENGTH)(77' SLOPE)(6.1' WIDTH)) ÷ 12 = 1,918 T @ 12.2 oz

BLOCK LS-500-1
1,918 T @ 12.2 oz
PROBABLE

6.1' WIDTH

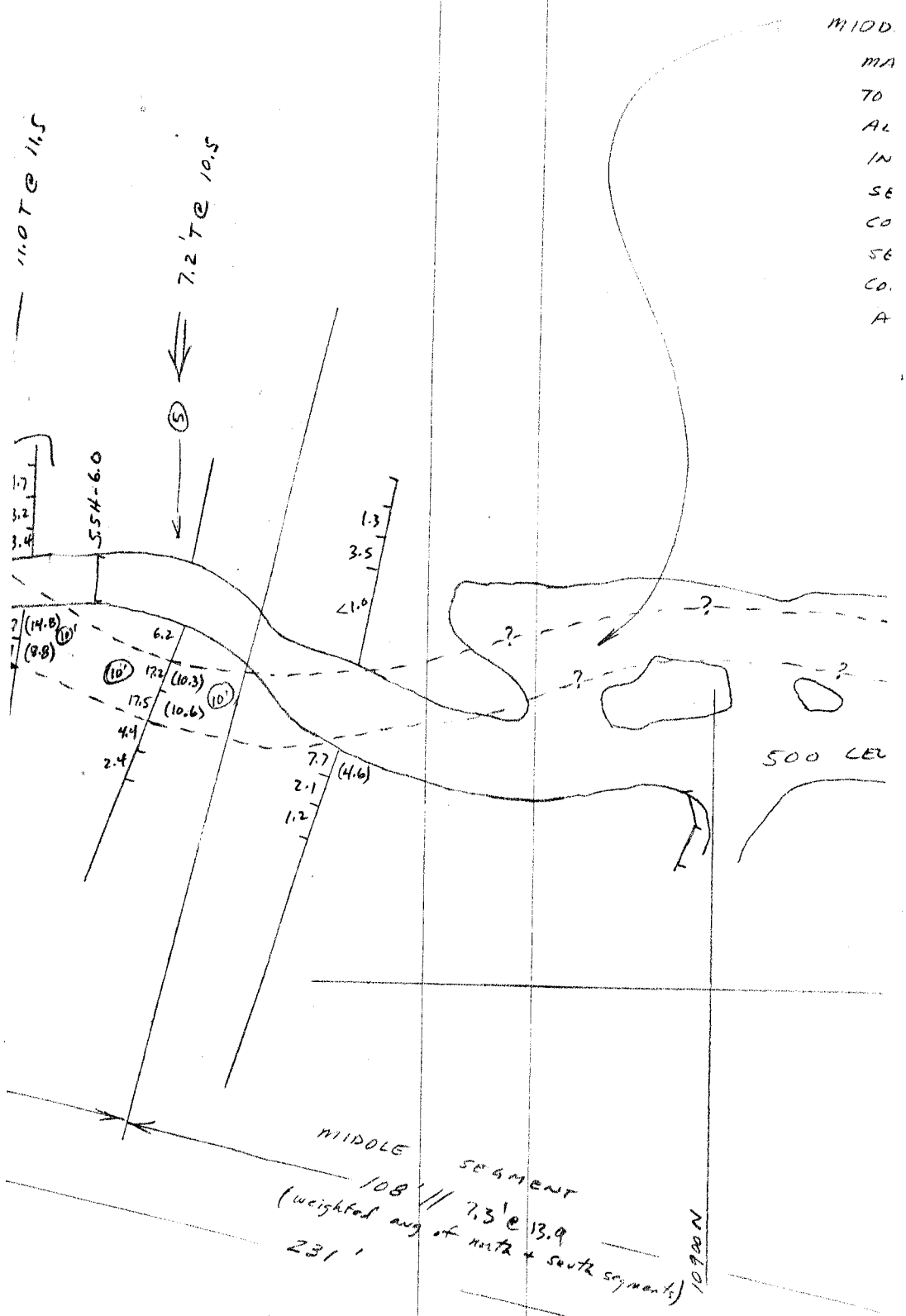
LE J ME
PPING
1980
THOUGH
TO H
GMEN
MINE
GMEN
NSEN
ND

ALL LONGHOLE SAMPLE INTERVALS ARE 4' H. REDUCED ASSAY BY 40% TO COMPENSATE FOR POSSIBLE SALTING IN HOLE. REDUCED ASSAYS IN ( ).

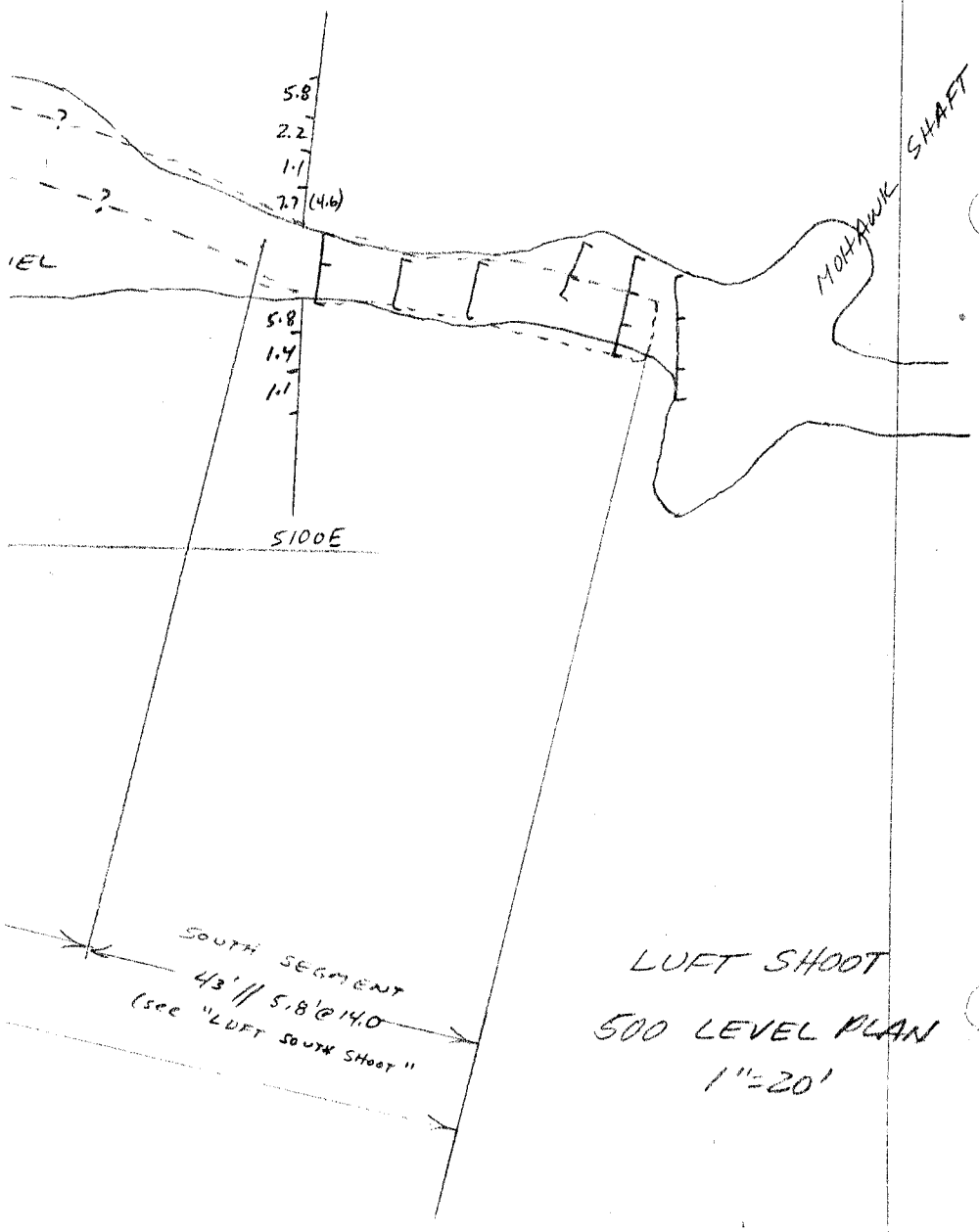


IEL

'see


11.0 T @ 11.5
7.2 T @ 10.5
5
5.54-6.0
1.7
3.2
3.4
(14.8)
(9.8)
10'
6.2
17.2
(10.3)
17.5
(10.6)
4.4
2.4
7.7
(4.6)
2.1
1.2
1.3
3.5
<1.0
?
500 CEL
MIDDLE SEGMENT
108' // 7.3' @ 13.9
(weighted avg of north + south segments)
231'
10700 N

LE SEGMENT : VEIN IS KNOWN FROM GEOLOGIC
PPING, AND IN FACT IS QUITE WIDE. STOPING PRIOR
1980 INDICATES GRADE WAS UNDOUBTEDLY > 15 OZ.
THOUGH, STOPING CARRIED UP STEEPLY, GENERALLY GOING
TO HW. ASSUMPTION IS MADE THAT VEIN IN THIS
GMENT WILL HAVE GRADE AT LEAST EQUAL TO
MBINED WEIGHTED AVERAGE OF NORTH AND SOUTH
GMENTS. THIS APPROACH CONSIDERED RELATIVELY
NSERVATIVE, CONSIDERING MAPPED WIDTH OF VEIN
ND PREVIOUS STOPING.



LUFT SHOOT

500 LEVEL ASSAYS

NORTH SEGMENT

	(I)	(W)	(I x W)	(A)	(I x W x A)
1	18.0	10.0	180.0	15.4	2,772
2	13.0	5.5	71.5	8.7	622
3	12.0	5.5	66.0	28.5	1,881
4	17.0	11.0	187.0	11.5	2,151
5	20.0	7.2	144.0	10.5	1,512
	80.0		648.5		8,938

80' // 8.1' @ 13.8 oz

COMBINED SEGMENTS ; 500 LEVEL (NORTH + SOUTH)

NORTH	80.0	8.1	648.0	13.8	8,942
SOUTH	43.0	5.8	249.4	14.0	3,492
	123.0		897.4		12,434

123' // 7.3' @ 13.9 oz

TOTAL 500 LEVEL:

231' // 7.3' @ 13.9 oz

LUFT SHOOT

BLOCK CALCULATIONS

400 – 300 LEVEL

FROM THE CROSS-SECTIONS OF THE LUFT SHOOT, THERE MUST BE A SPLIT IN THE VEIN BETWEEN THE LEVELS (HW & FW SPLIT) OR THE VEIN ROLLS OVER TO A VERY SHALLOW DIP IN ORDER TO CONNECT THE TWO SHOOTS. THE OPTION IS TO CALCULATE AS TWO SEPARATE BLOCKS, OR AS A CONTINUOUS BLOCK WITH THE ROLLOVER. A CALCULATION USING TWO SEPARATE BLOCKS WOULD RESULT IN MORE TONNAGE, BUT MAY NOT BE THE CORRECT INTERPRETATION. FOR THIS ANALYSIS, THE CALCULATION IS MADE AS IF ONE CONTINUOUS VEIN CONNECTS THE LEVELS. THE CENTER BLOCK IS CONSIDERED POSSIBLE SINCE THE EFFECT ON GRADE, FROM THE ROLLOVER, IS NOT KNOWN.

L-400-1 BLOCK

$$\left(\left(\frac{164+210}{2}\right)(36.7' \text{ SLOPE})(14.1' \text{ WIDTH})\right) \div 12 = 8{,}065 \text{ T @ } 10.9$$

L-400-3 BLOCK

$$\left(\left(\frac{262+280}{2}\right)(36.7' \text{ SLOPE})(4.4' \text{ WIDTH})\right) \div 12 = 3{,}310 \text{ T @ } 17.6$$

L-400-2 BLOCK

GRADE & LENGTH & WIDTH AVERAGED FROM 400 L & 300 L

I	W	I x W	A	I x W x A
262	4.4	1,152.8	17.6	20,289
164	14.1	2,312.4	10.9	25,205
426		3,465.2		45,494
÷2 = 213' avg				

213' // 8.1' @ 13.1 oz

$$\left((213' \text{ LENGTH})(36.7' \text{ SLOPE})(8.1' \text{ WIDTH})\right) \div 12 = 5{,}277 \text{ T @ } 13.1$$

LUFT SHOOT

BLOCK CALCULATIONS

BLOCK L-400-1 8,065 T @ 10.9 PROBABLE	14.1' AVG. WIDTH
BLOCK L-400-2 5,277 T @ 13.1 POSSIBLE	8.1' AVG. WIDTH
BLOCK L-400-3 3,310 T @ 17.6 PROBABLE	4.4' AVG. WIDTH

BLOCK L-500-1

THE AREA OF THIS BLOCK ENCOMPASSES THE BULK OF THE UNMINED PORTIONS OF VEIN BETWEEN THE 500 LEVEL & 400 LEVEL OF THE LUFT SHOOT. GRADE AND WIDTH IS THE AVERAGE OF THE TWO LEVELS.

(I)	(W)	(I x W)	(A)	(I x W x A)
164'	14.1	2312.4	10.9	25,205
231'	7.3	1,686.3	13.9	23,440
395'		3,998.7		48,645

10.1' WIDTH @ 12.2 oz

LUFT SHOOT

BLOCK CALCULATIONS

L-500-1 BLOCK

	80 x 75	=	6,000
+	22 x 12	=	264
+	30 x 20	=	600
+	35 x 38	=	1,330
			8,194 ft

((8,194 ft²)(10.1' WIDTH)) ÷ 12 = 6,897 T @ 12.2 oz

BLOCK L-500-1
6,897 T @ 12.2 oz
PROBABLE

10.1' AVG. WIDTH

L-600 BLOCKS

THESE BLOCKS ARE CARRIED AT 60' SLOPE DISTANCE BELOW THE LEVEL. 1/2 STRIKE DISTANCE (115') IS NOT USED SINCE THE GEOLOGY IS NOT THOROUGHLY UNDERSTOOD BELOW 500 LEVEL. THE PRESUMPTION, USED IN THE 7/1982 RESERVE CALCULATION, THAT THE MID-CONTINENT DRILLING WAS DISCOURAGING AND THEREFORE THE DOWN-DIP EXTENSION OF THE VEIN IS SEVERELY LIMITED, IS NOT AS GREAT A FACTOR WITH THIS RESERVE CUTOFF SET AT THE LOWER (8 oz) GRADE.

LUFT SHOOT

BLOCK CALCULATIONS

L-600-1 BLOCK

((223' average LENGTH)(60' SLOPE)(7.3' WIDTH)) ÷ 12 = 8,140 T @ 13.9

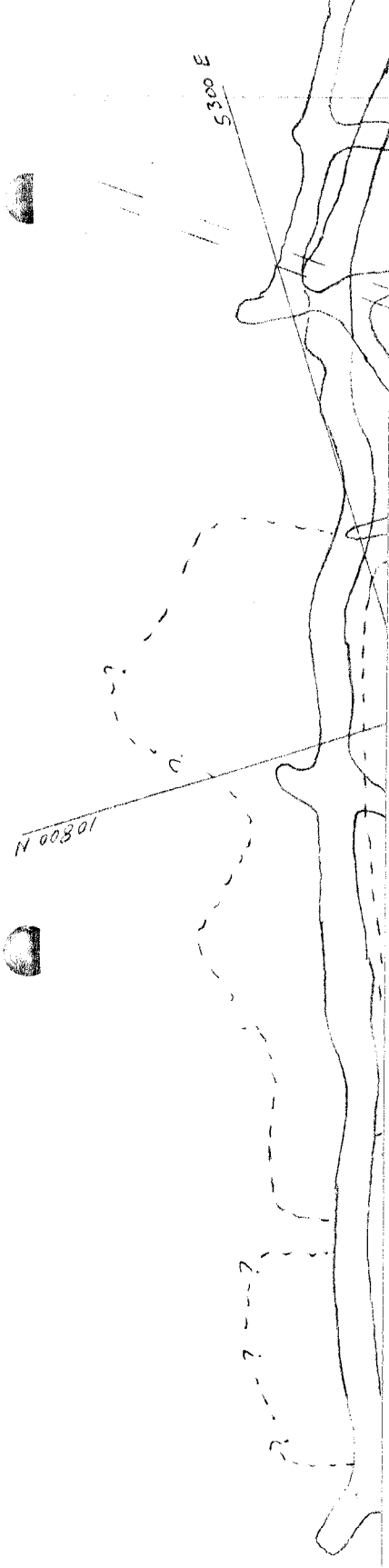
L-600-2 BLOCK

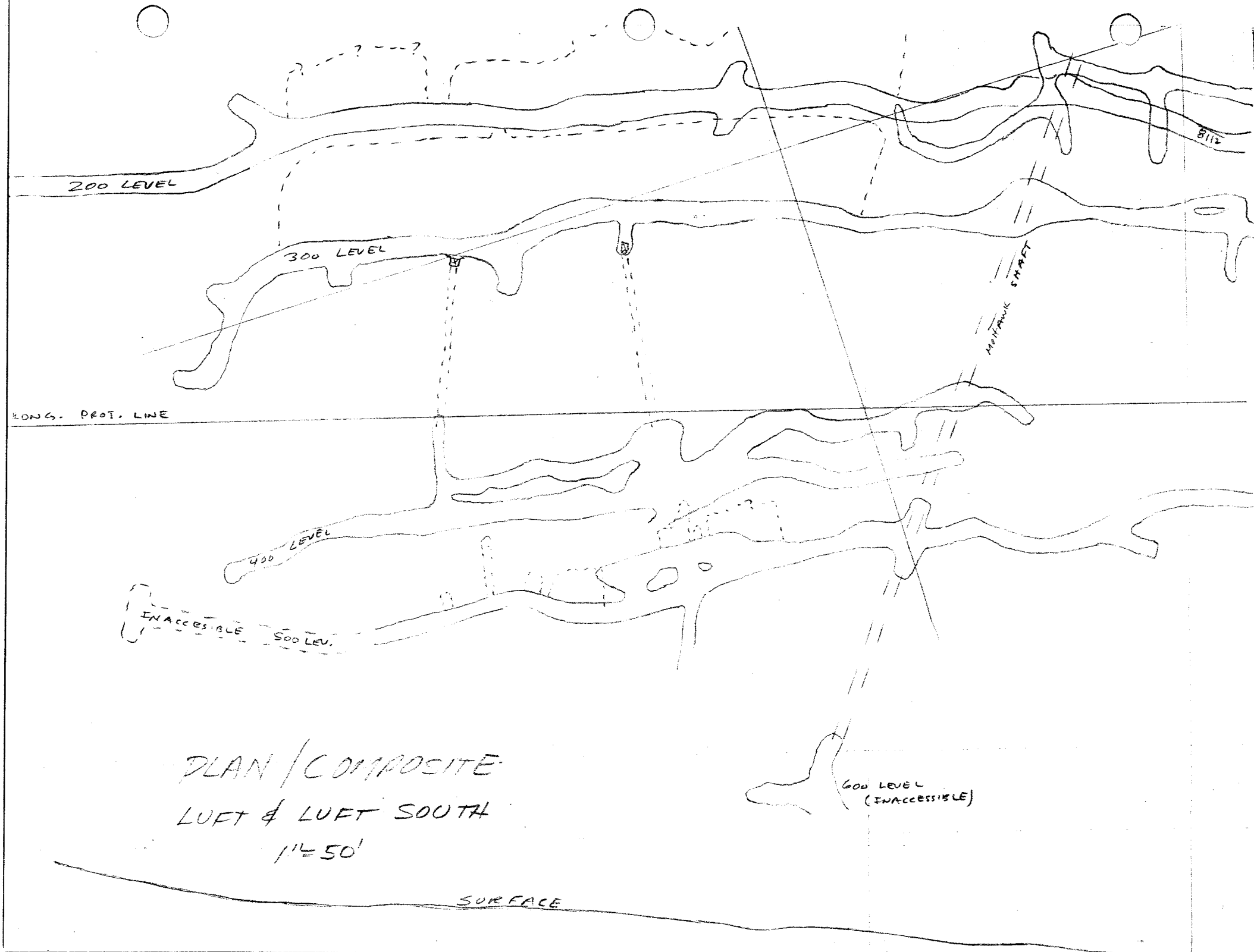
((207.5 avg WIDTH)(60' SLOPE)(7.3' WIDTH)) ÷ 12 = 7,574 T @ 13.9

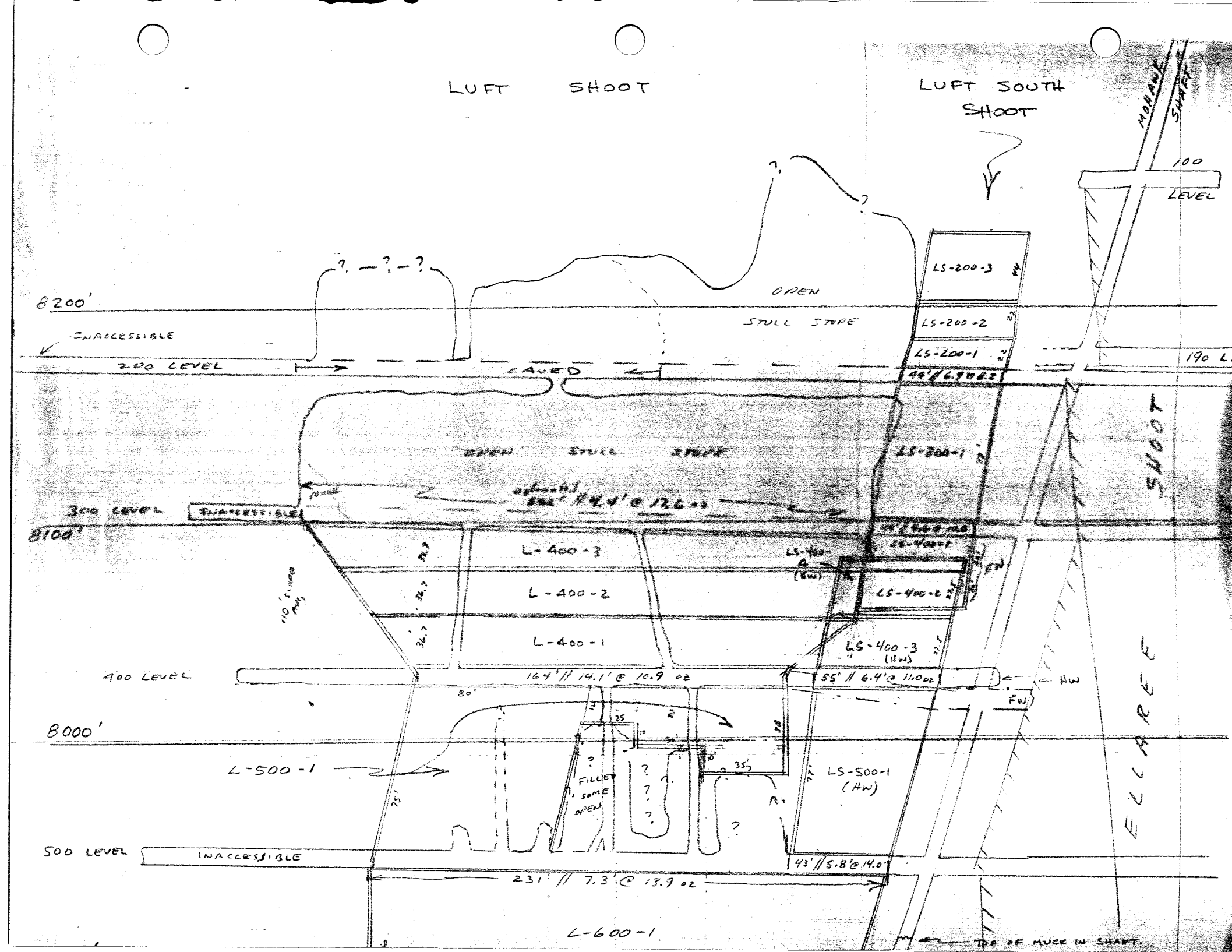
L-600-3 BLOCK

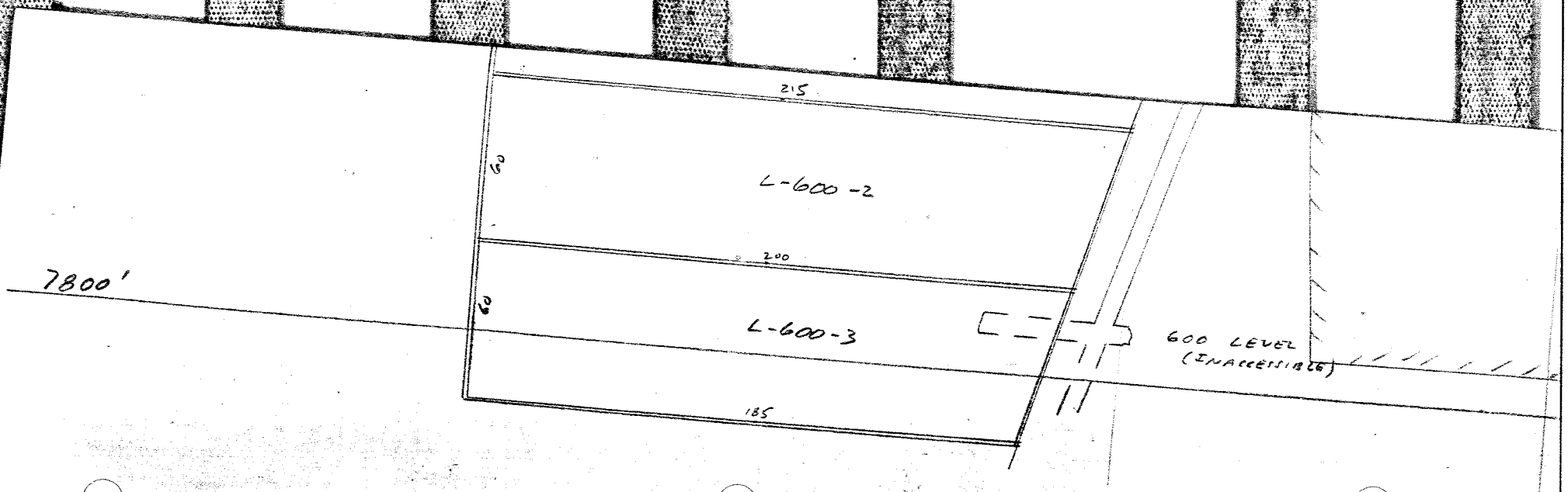
((192.5' avg WIDTH)(60' SLOPE)(7.3' WIDTH) ÷ 12 = 7,026 T @ 13.9

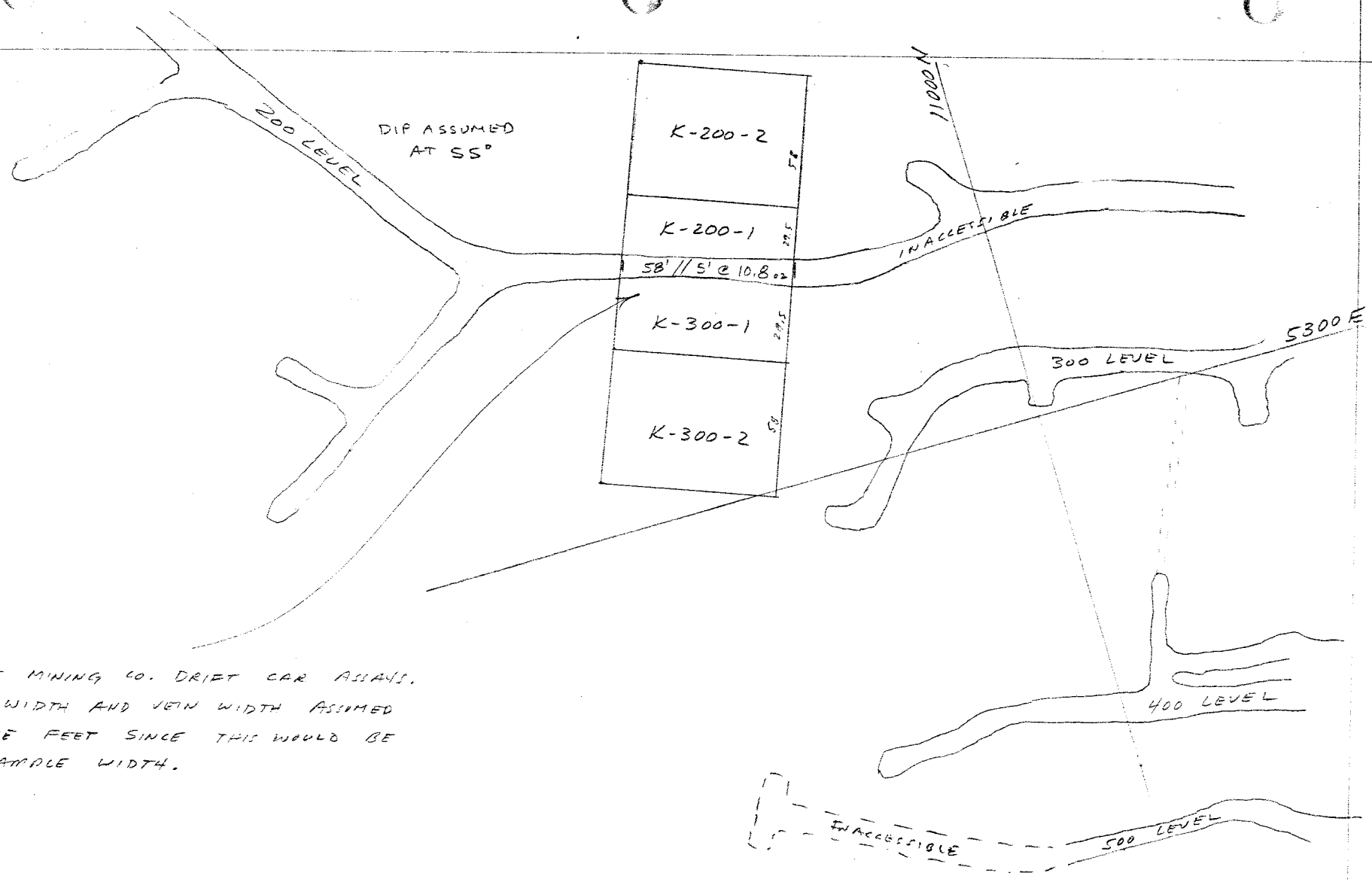
BLOCK L-600-1 8,140 T @ 13.9 oz PROBABLE	7.3' AVG. WIDTH
BLOCK L-600-2 7,574 T @ 13.9 oz POSSIBLE	7.3' AVG. WIDTH
BLOCK L-600-3 7,026 T @ 13.9 oz POTENTIAL	7.3' AVG. WIDTH


5300 E
N 00801


200 LEVEL
300 LEVEL
MOTAWIL SHAFT
LONG. PROT. LINE
400 LEVEL
INACCESSIBLE 500 LEV.
600 LEVEL
(INACCESSIBLE)
SURFACE
PLAN / COMPOSITE
LUFT & LUFT SOUTH
1" = 50'


LUFT SHOOT
LUFT SOUTH SHOOT
MORANE SHAFT
100 LEVEL
190 L
8200'
INACCESSIBLE
200 LEVEL
CAVED
OPEN STULL STOPE
LS-200-3
LS-200-2
LS-200-1
44' // 6.7 @ 8.3
OPEN STULL STOPE
LS-300-1
300 LEVEL
INACCESSIBLE
8100'
L-400-3
L-400-2
L-400-1
LS-400-4 (HW)
LS-400-2
LS-400-3 (HW)
400 LEVEL
164' // 14.1' @ 10.9 oz
55' // 6.4' @ 11.0 oz
HW
FW
8000'
L-500-1
FILLED, SOME OPEN
LS-500-1 (HW)
500 LEVEL
INACCESSIBLE
43' // 5.8' @ 14.0
231' // 7.3 @ 13.9 oz
L-600-1
TOP OF MUCK IN SHAFT.
SHOOT
ELLAREE


215
60
L-600-2
200
7800'
60
L-600-3
185
600 LEVEL
(INACCESSIBLE)



SUNSHINE MINING CO. DRIFT CAR ASSAYS. DRIFT WIDTH AND VEIN WIDTH ASSUMED AT FIVE FEET SINCE THIS WOULD BE CAR SAMPLE WIDTH.

KAREN SHOOT

COMPOSITE

1" = 50'

KAREN SHOOT

GR-72

KAREN SHOOT

BLOCK CALCULATIONS

THIS SHOOT APPEARS TO BE THE HANGING WALL OF A CYMOID LOOP. DRIFTING BY SUNSHINE MINING CO. DURING THE 1960's IS INTERPRETED TO BE ON THE HANGING WALL OF A POTENTIALLY GOOD SHOOT. NEVERTHELESS, SINCE THE CAR ASSAYS ARE PROBABLY RELIABLE, SOME RESERVE BLOCKS IN THE POSSIBLE AND POTENTIAL CATEGORIES CAN BE POSTED. POSSIBLE IS CARRIED AT 1/2 STRIKE LENGTH, POTENTIAL AT FULL STRIKE LENGTH BECAUSE OF THE HISTORY OF THE DEPTH EXTENSIONS OF THE OTHER SHOOTS IN THE MINE.

K-200-1, K-300-1

((58' LENGTH)(5.0' WIDTH)(29' SLOPE)) ÷ 12 = 701 T @ 10.8

K-200-2, K-300-2

((58' LENGTH)(5.0' WIDTH)(58' SLOPE) ÷ 12 = 1,402 T @ 10.8

BLOCK K-200-1 701 T @ 10.8 oz POSSIBLE	BLOCK K-300-1 701 T @ 10.8 oz POSSIBLE
BLOCK K-200-2 1,402 T @ 10.8 oz POTENTIAL	BLOCK K-300-2 1,402 T @ 10.8 oz POTENTIAL

ALL 5.0' AVG. WIDTH

V. Mining Reserve Notes and Calculation Worksheets

For the June, 1982 reserve, an overall 25% dilution from mining was used on all of the shoots. The grade for this dilution was derived from arithmetically averaging all of the sample grades adjacent to the reserve grade -- on both the hanging wall and footwall -- to arrive at a mine 'average' grade for dilution. Dilution is assumed to be equal from both the hanging wall and footwall sides of the shoots.

From preliminary work on the mining of the various shoots, it appears as though some modification will be proposed for the mining methods in each shoot. However, design of these methods is not complete to date.

Generally, the effect of decreasing the cutoff grade for the March, 1983 reserve calculation has expanded the widths of the ore shoots in many cases. This has had the effect of including some of the grades of footwall and hanging wall samples that before were used for the dilution grade calculation. Therefore, a similar calculation for determination of the dilution grade results in a lowered dilution grade for the March, 1983 reserve.

This effect is somewhat offset by the widths of the shoots as now calculated. By holding in the extraction -- that is, shooting less width in a shoot and keeping the blasting more within the limits of the shoot -- dilution will be offset somewhat. This is particularly true in the Luft, Brundage and Evelyn shoots, and less so in the Luft South, Ellaree and Karen shoots. It appears reasonable to allow this effect, with the assumption of good grade control practices on site, to lower the overall dilution to 20% rather than 25% as used in the June, 1982 reserve. The grade for this dilution is calculated in the same way, using the grades of samples on the footwall and hanging wall.

A more definitive dilution factor can be calculated when the final mining methods are designed for the shoots. For this

report, the mining methods are figured to be mostly the same as for the June, 1982 reserve. It is likely that modifications (some minor and some more extensive) will be proposed for the mining methods of the orebodies with the mining method study to follow. Without that study, the dilution is calculated on the information available to date. This will give a reasonable dilution factor and grade: with the understanding that the figures will change somewhat with the calculation and determination of mining for the shoots.

In most cases, the final determination of the mining methods should not change the mining grade by more than a few percent. An exception would be the inaugeration of a method such as blasthole stoping which will have a more significant effect on the mining grade. The lowered costs of such a method, if successfull, would perhaps offset the drop in grade and may be more profitable (overall) as a method.

For this study, then, the incorporation of a 20% overall mining dilution at a grade calculated on the following pages appears reasonable for the reserve. Individual mining extraction ratios are covered in the following calculation worksheets which are calculated ore shoot by ore shoot. The Evelyn, Luft South and Karen shoots were not covered in the June, 1982 report, and therefore the mining methods used for these shoots for this study are shrinkage stoping and inclined sets for the Evelyn; shrinkage and open stoping for the Luft South; and open stoping for the Karen shoot.

MARCH, 1983 RESERVE

DILUTION GRADE CALCULATION

SAMPLE POINTS -- MINE-WIDE -- IN HANGING WALL AND FOOTWALL OF SHOOTS. ARITHMETICALLY AVERAGED:

1.	3.0	3.1	5.9	0.7
2.	7.3	0.5	3.2	4.1
3	7.4	0.4	3.4	1.7
4	4.0	0.9	4.4	2.5
5	4.2	3.5	4.8	4.6
6	2.4	3.5	5.9	3.8
7	3.2	5.3	0.7	1.0
8	1.4	0.2	2.8	3.8
9	4.3	6.4	2.5	4.1
10	3.7	0.7	0.4	2.2
11	5.7	3.8	2.7	1.2
12	4.0	4.6	0.9	3.4
13	8.9	5.7	7.2	6.2
14	4.6	3.2	2.1	4.4
15	5.1	2.2	1.4	0.5
16	0.9	0.4	2.0	2.2
17	5.6	0.3	2.2	1.4
18	12.2	0.5	1.2	3.4
19	3.2	3.0	3.5	1.9
20	7.2	1.2	0.7	
21	0.6	5.8	4.7	
22	1.2	8.6	5.0	
23	0.6	2.6	3.4	

$$\frac{291.2}{88 \text{ POINTS}} = \underline{\underline{3.3 \text{ oz}}}$$

EVELYN SHOOT

EV-200-1 ; EV-200-2 ; EV-200-3

MINE W/ INCLINED SETS, TOTAL EXTRACTION FROM SILL. CALCULATE DILUTION ONLY: (20% @ 3.3 oz)

EV-200-1 ;

652 T @ 12.9 oz
+ 130 T @ 3.3
782 T @ 11.3 PROB.

EV-200-2

705 T @ 12.9
+ 141 T @ 3.3
846 T @ 11.3 POSS

EV-200-3

1,440 T @ 10.4
+ 288 T @ 3.3
1,728 T @ 9.2 POT.

EVELYN SHOOT

EV-300-1 ; EV-300-2 ; EV-300-3

MINE SHRINKAGE. STOPES TO ENCOMPASS FROM N. EDGE OF EV-300-3 TO S. EDGE EV-300-1. CALLS FOR (2) PILLARS OF 8' WIDTH EACH ; PLUS CROWN PILLAR OF 10'. PILLARS TO BE DELETED FROM EV-300-1 AND EV-300-2 (STOPE PILLARS)

EV-300-1 :

	2,141 T	@	11.9
(−)	273 T		
(−)	256 T		
	1,612 T	@	11.9
(+)	322 T	@	3.3
	1,934 T	@	10.5

STOPE PILLAR

$\frac{(46')(8.9')(8')}{12} = 273T$

$\frac{(37')(8.3')(10')}{12} = 256T$

CROWN PILLAR

EV-300-2 :

	1,003 T	@	9.7
(−)	273 T		
(−)	180 T		
	550 T	@	9.7
+	110 T	@	3.3
	660 T	@	8.6

STOPE PILLAR

$\frac{(46')(8.9')(8')}{12} = 273T$

CROWN PILLAR

$\frac{(28')(7.7')(10')}{12} = 180T$

EV-300-3 :

	287 T	@	8.5
(−)	51 T		
	236 T	@	8.5
+	47 T	@	3.3
	283 T	@	7.6

CROWN PILLAR

$\frac{(8')(10')(7.7')}{12} = 51T$

EV-400-1 ; EV-400-2 ; EV-500-1

MINE SHRINKAGE. LEAVE ONE STOPE PILLAR BETWEEN TWO STOPES. CROWN PILLAR AT TOP OF EV-400-1.

EV-400-1:

	1,527 T	@	12.2
(-)	126 T		
(-)	443 T		
	958 T	@	12.2
+	192 T	@	3.3
	1,150 T	@	10.7

STOPE PILLAR $\frac{(24.5')(8')(7.7')}{12} = 126\ T$

CROWN PILLAR $\frac{(69')(7.7')(10')}{12} = 443\ T$

EV-400-2:

	1,527 T	@	12.2
(-)	177 T		
	1,350 T	@	12.2
+	270 T	@	3.3
	1,620 T	@	10.7

STOPE PILLAR $\frac{(34.5')(8')(7.7')}{12} = 177\ T$

EV-500-1:

	3,054 T	@	12.2
(-)	354 T		
	2,700 T	@	12.2
+	540 T	@	3.3
	3,240	@	10.7

STOPE PILLAR $\frac{(69')(8')(7.7')}{12} = 354\ T$

BRUNDAGE SHOOT

B-400-1 ; B-400-2

B-400-2 MAY BE MINED BY CONTINUING A SHRINK STOPE UPWARDS FROM B-500-1 (LEAVING PORTIONS OF THE B-500-1 CROWN PILLAR FOR SUPPORT). THE WIDTH OF ORE AT THE SILL OF B-400-2 IS 7'. THE SHRINK WOULD BE MODERATELY EFFECTIVE AS THE DIP IS LESS THAN 60°. LEAVE A CROWN PILLAR OF 10'. THE GROUND IN THIS AREA IS GOOD. SHOOT THE ORE IN B-400-1 INTO THE SHRINK STOPE, AND, DOWN THROUGH B-500-1 AS A FINAL BLAST. LEAVE A 4' CROWN PILLAR IN B-400-1 : ALTHOUGH CAVING AFTER FINAL BLAST WOULD NOT BE HAZARDOUS OR CAUSE EXCESSIVE DILUTION. THE POSSIBILITY OF CAVING IN THE OLD 400 BRUNDAGE STOPE MAY LIMIT THE EXTRACTION OF THESE BLOCKS. FIGURE 50% OVERALL EXTRACTION FOR THESE TWO BLOCKS: ALL FACTORS CONSIDERED.

B-400-1 :

706 T × .50 = 353 T

	353 T	@	17.1
+	71 T	@	3.3
	424 T	@	14.8

B-400-2 :

1,942 T × .50 = 971 T

	971 T	@	14.9
+	194 T	@	3.3
	1,165 T	@	13.0

B-500-1 ; B-500-3

SHRINK STOPE FROM 500 LEVEL. LEAVE 8' WIDE STOPE PILLAR ON SOUTH SIDE BETWEEN THIS STOPE AND B-500-4 — B-500-3. STOPE WIDTH UP TO 60' AT TOP: LEAVE SMALL STOPE PILLAR NEAR CENTER OF STOPE 8' WIDE (X) 20' LONG. GROUND IS GOOD. SHOOT 50% OF CROWN PILLAR THROUGH FOR ACCESS TO STOPE MUCK ABOVE.

B-500-1 :

	1,736 T	@	14.9
(−)	552 T		
(−)	121 T		
(−)	200 T		
	863 T	@	14.9
+	173 T	@	3.3
	1,036 T	@	13.0

STOPE PILLAR $\frac{(9.1')(8')(9.1')}{12} = 552$ T

STOPE PILLAR $\frac{(8')(20')(9.1')}{12} = 121$ T

CROWN PILLAR $.5\left(\frac{(60')(10')(8' \text{ wide})}{12}\right) = 200$

B-500-3 : CONTINUE SID STOPE, LEAVE CROWN PILLAR.

	1,365 T	@	15.0
(−)	258 T		
	1,107 T	@	15.0
+	221 T	@	3.3
	1,328 T	@	13.1

CROWN PILLAR $\frac{(10.3')(30')(10')}{12} = 258$ T

BRUNDAGE SHOOT

B-500-4

SHRINK STOPE BROKEN ORE. 100% EXTRACTION BY PULLING MUCK.

B-500-4:

291 T @ 15.0 oz

B-500-5

MINE BY SHRINK STOPING. LEAVE CROWN PILLAR AND STOPE PILLAR ON N. SIDE BETWEEN B-500-4,5 AND B-500-5.

B-500-5:

	2,150 T @ 17.0	
(−)	597 T	STOPE PILLAR $\frac{(8')(10.3')(87')}{12} = 597$ T
(−)	314 T	CROWN PILLAR $\frac{(29')(13')(10')}{12} = 314$ T
	1,239 T @ 17.0	
+	248 T @ 3.3	
	1,487 T @ 14.8	

B-500-6

RESERVE IS IN PILLARS. STOPE IS PARTIALLY BACKFILLED WITH WASTE. THE POSSIBILITY OF ROBBING PORTIONS OF ALL THE SHRINK STOPE PILLARS IS RECOGNIZED, BUT SUCH ROBBING IS NOT USED FOR THIS MINING RESERVE CALCULATION.

BRUNDAGE SHOOT

B-500-7

SHRINK STOPE BROKEN ORE. 100% EXTRACTION BY PULLING MUCK.

B-500-7:

348 T @ 14.2 oz

B-500-8:

CONTINUE 512 STOPE, LEAVE 10' CROWN PILLAR.

B-500-8:

	967 T @ 16.7	
(−)	270 T	CROWN PILLAR $\frac{(27')(12')(10')}{12} = 270\ T$
	697 T @ 16.7	
+	139 T @ 3.3	
	836 T @ 14.5	

B-500-9: MINE BY SHRINKAGE STOPING. LEAVE STOPE PILLAR ON NORTH SIDE.

	1,878 T @ 15.5	
(−)	470 T	STOPE PILLAR $\frac{(8')(8.7')(81)}{12} = 470\ T$
(−)	400 T	CROWN PILLAR $\frac{(10')(50')(9.6')}{12} = 400\ T$
	1,008 T @ 15.5	
+	202 T @ 3.3	
	1,210 T @ 13.5	

BRUNDAGE SHOOT

B-500-10

MINE BY SHRINKAGE STOPING IN CONTUNCTION WITH MINING OF B-500-9.

B-500-10:

	455 T	@	8.6
+	91 T	@	3.3
	546 T	@	7.7

B-600-1, B-600-2, B-600-3, B-600-4

MINE BY SHRINKAGE STOPING. WITH STOPE LENGTHS AT ABOUT 30', AND STOPE PILLARS AT 8', 3 STOPES WOULD BE REQUIRED FOR THE #1, #2 BLOCKS; 2 STOPES FOR THE #3 BLOCK; AND 1 STOPE FOR THE #4 BLOCK. STOPES MINED FROM BOTTOM TO 500 LEVEL. CROWN PILLAR AT LEVEL.

B-600-1:

	5,345 T	@	16.8
(−)	974 T		
(−)	963 T		
	3,408 T	@	16.8
+	682 T	@	3.3
	4,090 T	@	14.6

STOPE PILLARS (2)

$$3\left(\frac{(53.5)(8)(9.1)}{12}\right) = 974$$

CROWN PILLAR

$$\frac{(127)(9.1)(10)}{12} = 963$$

BRUNDAGE SHOOT

B-600-2:

	3,828 T	@	16.8
(−)	974 T		
	2,854 T	@	16.8
+	571 T	@	3.3
	3,425 T	@	14.6

STOPE PILLARS SAME AS B-600-1 ← 974 T

B-600-3:

	2,311 T	@	16.8
(−)	770 T		
	1,541 T	@	16.8
+	308 T	@	3.3
	1,849 T	@	14.6

STOPE PILLARS ← $2\left(\frac{(8')(63.5)(9.1)}{12}\right) = 77$

B-600-4:

	1,904 T	@	8.6
(−)	508 T		
	1,396 T	@	8.6
+	279 T	@	3.3
	1,675 T	@	7.7

STOPE PILLAR ← $\frac{(8')(190.5)(4')}{12} = 508$

ELLAREE SHOOT

E-200-1 ; E-200-2 ; E-200-3

THE ELLAREE SHOOT AVERAGES ABOUT 55° IN DIP OVERALL BETWEEN THE 100 AND 500 LEVELS. LOCALLY, THE 100-200 LEVEL STRETCH DIPS AT 50° -- PREVIOUSLY CONSIDERED TO BE SHRINK STOPE BUT NOW ESTIMATED TO BE MINED BY OPEN STULL. THE 200-300 STRETCH, AT 60°, SHOULD BE SHRINK STOPE. THE 300-500 (AND TO 600 LEVEL BY EXTENSION) LAYS AT 50° AND IS CALCULATED AT OPEN STULL STOPING.

E-200-1, 2, 3 : OPEN STULL STOPING. 90% EXTRACTION (10% LEFT IN PILLARS). LEAVE 20' SHAFT PILLAR ON SOUTH SIDE.

E-200-1 :

	734 T @ 12.5	
(-)	287 T	SHAFT PILLAR $\left\{\frac{(25')(32)(4.3)}{12} = 287\right.$
	447 T @ 12.5	
(-)	45 T	10% in pillars
	402 T @ 12.5	
+	80 T @ 3.3	
	482 T @ 11.0	

ELLAREE SHOOT

E-200-2 :

734 T. @ 12.5

(-) 344 T ← SHAFT PILLAR $\left\{ \frac{(30')(32)(4.3)}{12} = 344 \right.$

390 T @ 12.5

(-) 39 T 10% PILLARS

351 T. @ 12.5

+ 70 T @ 3.3

421 T. @ 11.0

E-200-3 :

1,193 T @ 12.5

(-) 745 T ← SHAFT PILLAR $\left\{ \frac{(40')(52)(4.3)}{12} = 745 \right.$

448 T @ 12.5

(-) 45 T 10% PILLARS

403 T @ 12.5

+ 81 T @ 3.3

484 @ 11.0

ELLAREE SHOOT

E-300-1

DIP STEEP ENOUGH FOR SHRINK STOPING. THREE STOPES: TWO STOPE PILLARS + CROWN PILLAR. SHAFT PILLAR ON NORTH EDGE OF STOPE.

E-300-1:

	2,773 T.	@	9.7
(−)	395 T.		
(−)	380 T.		
(−)	78 T		
	1,920 T	@	9.7
+	384 T	@	3.3
	2,304 T	@	8.6

STOPE PILLARS (2)

$$2\left(\frac{(63')(4.7)(8')}{12}\right) = 395$$

CROWN PILLAR

$$\frac{(10')(97')(4.7')}{12} =$$

SHAFT PILLAR

$$\frac{(1/2)(20)(4.7)(40)}{12} =$$

ELLAREE SHOOT

E-500-1, E-500-2, E-500-3, E-500-4

OPEN STULL & PILLAR STOPING. 90% EXTRACTION W/ ESTIMATED 10% REMAINING IN PILLARS. MINE FROM 500 LEVEL TO 300 LEVEL WITH CROWN PILLAR AT 300 LEVEL.

E-500-1:

	2,648 T.	@	12.4
(−)	265 T		← 10% PILLARS
	2,383 T	@	12.4
+	477 T	@	3.3
	2,860 T	@	10.9

E-500-2:

	3,503 T	@	10.8
(−)	350 T		← 10% PILLARS
	3,153 T	@	10.8
+	631 T	@	3.3
	3,784 T	@	9.6

E-500-3:

	2,088 T	@	8.8
(−)	209 T		← 10% PILLARS
	1,879 T	@	8.8
(−)	403 T		← CROWN PILLAR $\frac{(103')(4.7')(10')}{12} = 403$
	1,476 T	@	8.8
+	295 T	@	3.3
	1,771 T	@	7.9

ELLAREE SHOOT

E-500-4:

	2,424 T	@	10.7
−	242 T		← 10% PILLARS
	2,182 T	@	10.7
+	436 T	@	3.3
	2,618 T	@	9.5

E-600-1, E-600-2, E-600-3, E-600-4

MINE OPEN STOPE w/ PILLAR AND STULL SUPPORT. 90% EXTRACTION. 10' CROWN PILLAR AT 500 LEVEL.

E-600-1:

	2,673 T.	@	12.4
(−)	267 T		← 10% PILLARS
	2,406 T	@	12.4
(−)	495 T		← CROWN PILLAR $\frac{(108')(5.5')(10)}{12} = 49$
	1,911 T	@	12.4
+	382 T	@	3.3
	2,293 T	@	10.9

ELLAREE SHOOT

E-600-2:

2,673 T. @ 12.4
(−) 267 T ← 10% PILLARS
2,406 T @ 12.4
+ 481 T @ 3.3
2,887 T @ 10.9

E-600-3:

2,673 T. @ 12.4 SEE ABOVE

TOTAL 2,887 T. @ 10.9

E-600-4:

4,604 T. @ 10.7
(−) 460 T. ← 10% PILLARS
4,144 T @ 10.7
(−) 284 T ← CROWN PILLAR $\frac{(62')(5.5)(10)}{12} = 284$
3,860 T @ 10.7
+ 772 T @ 3.3
4,632 T @ 9.5

LUFT SOUTH SHOOT

LS-200-1, LS-200-2, LS-200-3

DIP FOR THESE BLOCKS, ALONG WITH BLOCKS DOWN THROUGH LS-400-2, AVERAGES 55°. GROUND IS GOOD. STILL, BORDERLINE FOR SHRINKAGE, BUT MAY WORK SUCCESSFULLY. THIS RESERVE CALCULATED AT OPEN STULL & PILLAR, HOWEVER, WHICH WORKED SUCCESSFULLY IN OLDER WORKINGS.

LS-200-1:

557 T @ 8.2
− 56 T ← 10% PILLARS
501 T. @ 8.2
+ 100 T @ 3.3
601 T @ 7.4

LS-200-2

557 T @ 8.2 SEE ABOVE

LS-200-3

1,113 T. @ 8.2 SEE ABOVE, (X)2
= 1,202 T. @ 7.4

LUFT SOUTH SHOOT

LS-300-1

1,638 T. @ 8.9
(−) 164 T ← 10% PILLARS
1,474 T @ 8.9
(−) 213 T ← CROWN PILLAR $\frac{(44)(5.8)(10)}{12} = 213$
1,261 T. @ 8.9
+ 252 T. @ 3.3
1,513 T @ 8.0

LS-400-1

371 T. @ 10.0
(−) 37 T ← 10% PILLARS
334 T. @ 10.0
(−) 169 T ← CROWN PILLAR $\frac{(44)(4.6)(10)}{12} = 16$
165 T. @ 10.0
+ 33 T. @ 3.3
198 T. @ 8.9

LS-400-2

371 T. @ 10.0
(−) 37 T ← 10% PILLARS
334 T. @ 10.0
+ 67 T. @ 3.3
401 T. @ 8.9

LUFT SOUTH SHOOT

LS-500-1, LS-400-3, LS-400-4

DIP AT 65-70°. SHRINK STOPE. POSSIBLY COULD SHRINK W/ ONE STOPE (LENGTH) BUT THESE CALCULATIONS BASED ON 2 STOPES.

LS-500-1:

	1,918 T.	@	12.2
(−)	272 T		
(−)	249 T		
	1,397 T	@	12.2
+	279 T	@	3.3
	1,676 T	@	10.7

STOPE PILLAR $\frac{(67)(6.1)(8.0)}{12} = 272$

CROWN PILLAR $\frac{(49)(10)(6.1)}{12} = 249$

LS-400-3:

	807 T.	@	11.0
(−)	117 T.		
	690 T.	@	11.0
+	138 T	@	3.3
	828 T.	@	9.7

STOPE PILLAR $\frac{(27.5)(6.4)(8.0)}{12} = 117\ T$

LS-400-4:

807 T @ 11.0 SEE ABOVE

LUFT SHOOT

L-400-1, L-400-2, L-400-3

MINE BY SLUSHER CUT AND FILL DUE TO WEAK HANGING WALL SEEN ON 400 & 500 LEVELS. ALSO, DIP SHALLOWS BETWEEN LEVELS 400 AND 300. UPPER PORTION OF 400 LEVEL CAN BE MINED BY OPEN STULL, AS WAS THE 300 LEVEL STOPE ABOVE, BUT PROBABLY CUT AND FILL WOULD BE CARRIED THROUGHOUT.

WITH THE 8.0 OUNCE CUTOFF, THE WIDTH OF ORE ON THE 400 LEVEL IS UP TO 30'. ON THE 300 LEVEL, OLD MINING WAS AT ABOUT 5.5'. THE SLUSHER CUT AND FILL FROM 400 LEVEL COULD BE MINED TO 10' IN WIDTH. THE 400 LEVEL IS AT PRESENT WELL CHOPPED UP -- ANOTHER METHOD TO MINE ALL OF THE ORE AT THIS LEVEL WOULD REQUIRE EXTENSIVE PREPARATION ON THIS LEVEL. THEREFORE, THE LOGICAL MINING APPROACH IN THE END MAY BE TO MINE FROM 400 LEVEL UP AT 10' IN WIDTH, AND THEN DECREASE WIDTH IN THE L-400-3 BLOCK TO THE LOWER NUMBER.

FOR THESE CALCULATIONS THEN, THE L-400-1 BLOCK IS CALCULATED AT 10' WIDE (NO DILUTION SINCE ORE GRADE BOTH SIDES); THE L-400-2 BLOCK AT 8.1' WIDTH WITH DILUTION; AND THE L-400-3 BLOCK AT TONNAGE PLUS DILUTION.

BREAK LENGTH INTO TWO STOPES APPROX. 100' IN LENGTH (EACH). RIB PILLAR BETWEEN STOPES OF 8'.

LUFT SHOOT

L-500-1

MINE BY SLUSHER CUT AND FILL. TWO STOPES REQUIRED: ONE IN THE MAIN NORTH BODY OF ORE AND THE OTHER FOR THE REMAINING ORE ABOVE OLD STOPING. LOSSES WILL COME FROM SILL PILLAR IN MAIN NORTH STOPE, CROWN PILLAR, AND MISC. LOSSES ABOVE OLD STOPES.

L-500-1:

	6,897 T.	@	12.2
(−)	505 T		
(−)	1,927 T		
	4,970 T.	@	12.2
(−)	250 T.		
	4,720 T.	@	12.2
+	944 T	@	3.3
	5,664 T	@	10.7

SILL PILLAR $\frac{(60')(10')(10.1)}{12} = 505$

CROWN PILLAR $\frac{(164)(14.1)(10)}{12} = 1,927$

MISC. LOSSES @ 5% OF REMAINING RESERVE

LUFT SHOOT

L-600-1 ; L-600-2 ; L-600-3

MINE SLUSHER CUT & FILL. OTHER METHODS MAY BE APPLICABLE, BUT GROUND CONDITIONS UNKNOWN. TWO STOPES WITH 8' RIB PILLAR BETWEEN. CROWN PILLAR ASSUMED.

L-600-1 :

	8,140 T.	@	13.9
(−)	243 T.		
(−)	1,405 T		
	6,492 T.	@	13.9
(+)	1,298 T.	@	3.3
	7,790 T	@	12.1

RIB PILLAR

$$\frac{(50)(8)(7.3)}{12} = 243$$

CROWN PILLAR

$$\frac{(231)(10)(7.3)}{12} = 1,405$$

L-600-2 :

	7,574 T.	@	13.9
(−)	292 T		
	7,282 T.	@	13.9
+	1,456 T	@	3.3
	8,738 T	@	12.1

RIB PILLAR

$$\frac{(60)(8)(7.3)}{12} = 292$$

L-600-3 :

	7,026 T.	@	13.9
(−)	292 T		
	6,734 T.	@	13.9
+	1,347 T.	@	3.3
	8,081 T	@	12.1

KAREN SHOOT

K-200-1 ; K-200-2 ; K-300-1 ; K-300-2

WITH THE FAIRLY NARROW WIDTH INDICATED BY ONLY AVAILABLE SAMPLES ; PLUS HISTORY IN THE UPPER LOFT SHOOT OF SUCCESSFUL OPEN STOPING : OPEN STOPING IS SELECTED FOR THIS SHOOT. 90% EXTRACTION -- 10% LEFT IN PILLARS.

K-200-1 :

	701	T.	@	10.8
(-)	70	T.		← 10% PILLARS
	631	T.	@	10.8
+	126	T.	@	3.3
	757	T.	@	9.6

K-200-2 :

	1,402	T.	@	10.8
(-)	140	T.		← 10% PILLARS
	1,262	T.	@	10.8
+	252	T.	@	3.3
	1,514	T.	@	9.6

KAREN SHOOT

K-300-1 :

701 T @ 10.8

(−) 70 T. ← 10% PILLARS

(−) 242 T ← CROWN PILLAR $\frac{(58)(5')(10')}{12} = 242$

389 T. @ 10.8

+ 78 T. @ 3.3

467 T @ 9.6

K-300-2

1402 T. @ 10.8

(−) 140 T. ← 10% PILLARS

1,262 T. @ 10.8

+ 252 T. @ 3.3

1,514 T. @ 9.6