State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

Report on the operations of the: REPORT BY: E.A. Youngberg

SULLIVAN LIME COMPANY, OREGON Ltd. DATE: December 23, 1944

JACKSON COUNTY
GOLD HILL DIST

Location:

The Sullivan Lime Company plant is located approximately one block east of the highway bridge across the Rogue River in the city of Rogue River on a siding of the Southern Pacific Railway.

The quarry from which the limestone is mined is known as the Bristol Quarry and is located in the N.W.¼ of the N.W.¼ of Section 6, Township 37 S., and Range 3 W., in Jackson County, which is approximately six miles by highway and graveled road from the plant at Rogue River. The quarry may be reached by taking highway U.S. 99 east to Foots Creek and taking the Foots Creek Road up the left fork turning left at a sign marked Cerveny's Ranch and following it about one mile to the quarry.

Area:

The limestone deposit is covered by seven unpatented placer claims, named numbers one to seven inclusive. The location of the claims are shown on an attached claim map. The quarry is located in the southwestern corner of Claim Number 2.

Ownership and Management:

1/3 Interest T. T. Leonard Silverton

The Sullivan Lime Company is owned by W. B. Sullivan of Rogue River and Mr. Jorgeson of Silverton. The operation of the lime plant and quarry is under the management of Mr. W. B. Sullivan. The limestone deposit on Foots Creek was located in

1937 by F. I. Bristol, Grants Pass, ~~Kenneth Hamblen, Portland,~~ OUT, and W. B. Sullivan, Rogue River.

Description and Uses of Product:

The limestone is ground to -10 mesh and is used ~~largely for agricultural purposes as a soil sweetener.~~ The ground limestone contains about 90 per cent calcium carbonate, which is somewhat below the analysis of limestone at the quarry because of dilution of the ore by shale in mining. This will be largely overcome when the main limestone body is developed for mining and a product containing 95-97 per cent calcium carbonate should be obtained.

Other possible uses of this limestone is for chicken grit and in prepared livestock feeds. Some of the limestone is also of apparently sufficient purity for paper rock.

Description of the Deposit:

The limestone occurs as lenticular lenses in tightly folded meta-sedimentary rocks, which are assigned to Triassic age by Wells and Hotz (1941) after a re-investigation of paleontological evidence. These rocks were earlier classed as greenstones of Devonian age by Diller (1914).

Three bodies of limestone are shown on the accompanying claim map and are labled for convenience A, B, and C. There are other smaller exposures of limestone lenses on claims 1, 4, 6, and 7. The main body consists of two parallel outcrops joining at their southernmost exposures. They have a strike of ap-

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proximately 21° N.E. The limestone outcrop on the east, dips 85 to 90° to the west, and the west outcrop dips a like amount to the east. The quarry has exposed these two outcrops in section at their southernmost extension and shows them to be limbs of the same bed in a synclinal fold. The eastern limb was mapped for a distance further at a somwehat narrower width. The maximum width in the area mapped was about 80 feet, decreasing to about 35 feet in places. Limestone body "A" is shown in some detail on accompanying contour and geological map.

Lense "B" surface exposures are about 110' x 200'. It outcrops, however, intermittently for some distance north, but does not appear to be continuous.

Lense "C" is a long narrow band (25' x 200') which dips at about 80°.

No development work has been done on the limestone bodies "B", or "C", except some minor trenching and sampling.

Reserves:

The limestone bodies have not been explored in depth, except at the point on lense "A" where it is exposed by the quarry. This makes an estimate of reserves very difficult. The owners of the property who have observed the characteristics of the deposits in this area estimate the limestone lenses to contain in excess of a million tons, which appears reasonable. However, the mineable reserves are probably somewhat less, and will be determined by the amount of stripping which will be economi-

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cally feasible.

Mining:

The limestone is being mined by quarrying methods. The present face is about 25 feet high and 40 feet wide. The ore is broken by drilling vertical holes with a jackhammer a- head of the quarry face about 10 to 12 feet deep spaced eight to twelve feet apart along the face of the quarry. A series of flat inclined holes are drilled along the toe of the face to maintain a floor level. The holes are chambered and loaded with 40 per cent "Gelex" Du Pont dynamite and detonated by a cap and fuse. The limestone at the present face breaks very easily as it is badly faulted and is inclosed by layers of shales. Powder consumption apparently is quite low, but undoubtedly will increase materially when the main limestone lenses is encountered.

Air for mining is supplied by a 100 cu. ft. portable Sullivan compressor. The broken rock is loaded into trucks by a ½ cu. yd. Austin Western shovel, powered by an International Harvester tractor power unit.

Haulage:

When in full operation, the limestone is hauled to the plant at Rogue River by three trucks of five tons capacity. A round trip from the plant to the quarry can be made in approximately 60 minutes, including loading and unloading time. With three trucks, 100 to 120 tons of limestone can be hauled daily.

Sullivan lime plant destroyed by fire

June 28, 1947

Crushing and Grinding Plant:

The plant has a capacity of 10-12 tons per hour of a minus ten mesh product.

The limestone is ground in two stages. A 15" x 36" Universal jaw crusher crushes the quarry run rock to -3 inches and a No. 70 day hammer mill reduces the -3 inch material to -10 mesh.

A 100 h.p. General Electric motor is required to drive the jaw crusher and a 75 h.p. G.E. motor powers the hammer mill. The bucket elevator from the jaw crusher to the -3 inch storage bin is driven by a 7 h.p. motor and the chain elevator from the hammer mill ot the fine storage bin is powered by a 5 h.p. motor.

Attached is a flow sheet of the plant at Rogue River as currently operated.

Marketing:

The major part of the output is shipped and marketed in bulk, a small amount is sacked in paper bags.

The limestone is purchased by the distributor or consumer f.o.b. Rogue River. Sales are made through grain dealers, Farmers' Co-operatives and similar organizations.

Economics:

No cost data is available for the operation. However, an estimate of labor costs and supplies gives a direct operating charge of $0.85 per ton on an output of 100 tons per day. To this should be added amortization on plant and equipment, repairs, roy-

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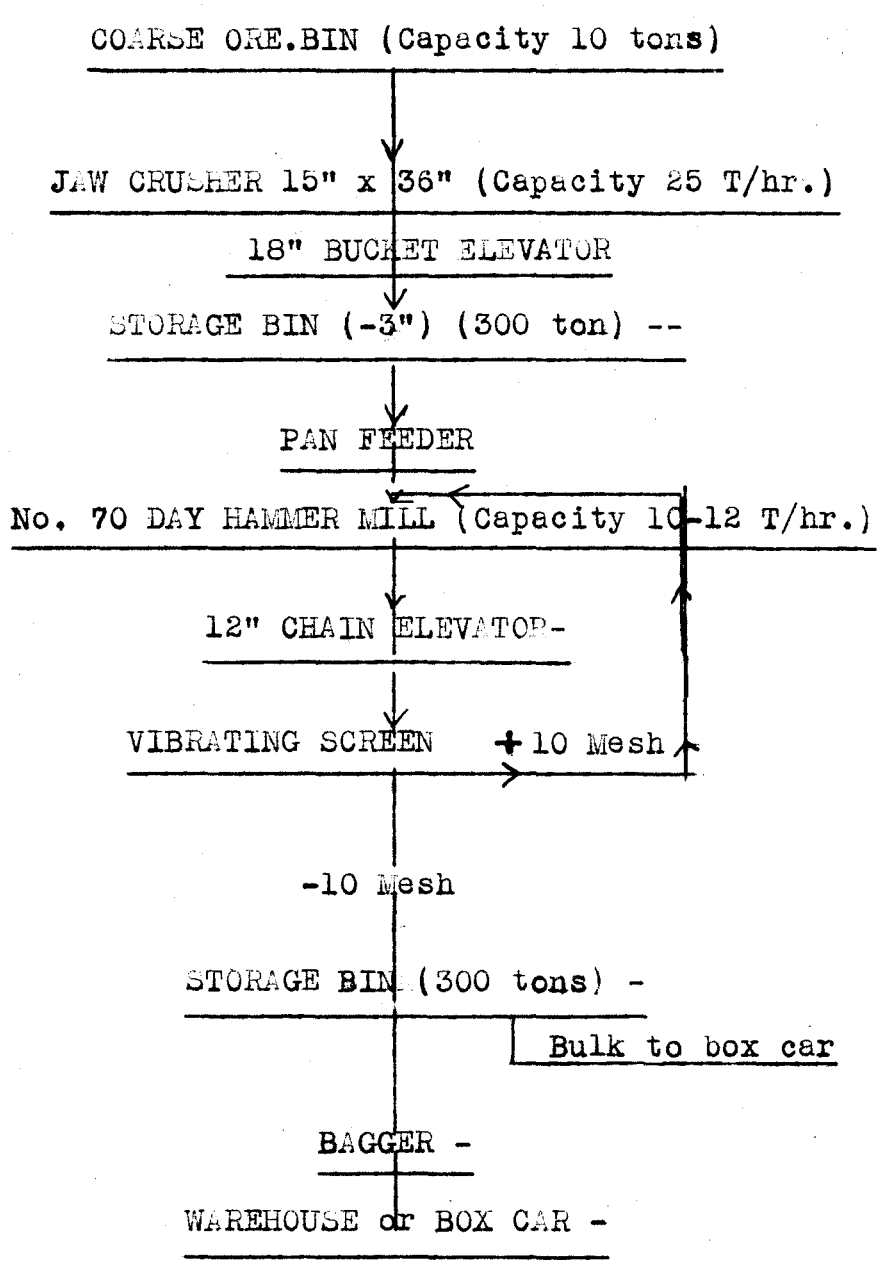
alty on limestone from quarry, office and management expenses, social security and compensation, and state and federal taxes. These items might well account for an additional $0.40 per ton, making a total cost of $1.25 per ton. It is doubtful if this cost can be obtained on the present intermittent scale of operation.

The finished product is sold f.o.b. Rogue River at $2.75 per ton and freight charges to Willamette Valley points are about $2.48 1/ per ton which makes a delivered price to the distributor of $5.23.

Competetive producers are located in Eastern Washington and Idaho over which the Sullivan Lime Company has an advantage in freight rates to the Willamette Valley. Some agricultural lime has been produced at Dallas, Oregon, but is of ~~very much inferior quality~~ lower grade.

1/ Rogue River to Salem in carload lots.

FLOW SHEET SULLIVAN LIME CO.PLANT AT ROGUE RIVER--



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Report on the Operations of the: REPORT BY: E. A. Youngberg

SULLIVAN LIME COMPANY, OREGON Ltd. DATE: December, 1944

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Area:

The limestone deposit is covered by seven unpatented placer claims, named numbers one to seven inclusive. The location of the claims are shown on an attached claim map.× The quarry is located in the southwestern corner of Claim Number 2.

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The Sullivan Lime Company is owned by W. B. Sullivan of Rogue River and Mr. Jorgeson of Silverton. The operation of the lime plant and quarry is under the management of Mr. W. B. Sullivan. The limestone deposit on Foots Creek was located in 1937 by F. I. Bristol, Grants Pass, Kenneth Hamblen, Portland, and W. B.

× Map [illegible]

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Sullivan, Rogue River.

Description and Uses of Product:

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Other possible uses of this limestone is for chicken grit and in prepared livestock feeds. Some of the limestone is also of apparently sufficient purity for paper rock.

Description of the Deposit:

The limestone occurs as lenticular lenses in tightly folded meta-sedimentary rocks, which were assigned to Triassic age by Wells and Hotz (1941) after a reinvestigation of paleontological evidence. These rocks were earlier classed as greenstones of Devonian age by Diller (1914).

Three bodies of limestone are shown on the accompanying claim map and are labled for convenience A, B, and C. There are other smaller exposures of limestone lenses on claims 1, 4, 6, and 7. The main body consists of two parallel outcrops joining at their southernmost exposures. They have a strike of approxi-

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mately 21° N.E. The limestone outcrop on the east, dips 85 to 90° to the west, and the west outcrop dips a like amount to the east. The quarry has exposed these two outcrops in section at their southernmost extension and shows them to be limbs of the same bed in a synclinal fold. The eastern limb was mapped for a distance of 480 feet on its strike and is known to continue for some distance further at a somewhat narrower width. The maximum width in the area mapped was about 80 feet, decreasing to about 35 feet in places. Limestone body "A" is shown in some detail on accompanying contour and geological map.

Lense "B" surface exposures are about 110' x 200'. It outcrops, however, intermittently for some distance north, but does not appear to be continuous.

Lense "C" is a long narrow band (25' x 200') which dips at about 80°.

No development work has been done on the limestone bodies "B" or "C", except some minor trenching and sampling.

Reserves:

The limestone bodies have not been explored in depth except at the point on lense "A" where it is exposed by the quarry. For the purpose of making estimates of reserves, only limestone which is believed recoverable by open pit mining methods with a reasonable amount of stripping has been taken into account. On this basis, limestone body "A" is believed to contain about 270,000 tons, "B", about 150,000 tons, and "C" about 14,000 tons, a total of 434,000 tons.

Other exposures may yield enough limestone to bring the total up to 500,000 tons. To recover this amount of limestone, probably will require the stripping of some waste, possibly as much as 150,000 tons. The amount of stripping which will be economically feasible will largely determine the amount of limestone which can be recovered from the deposit.

Mining:

The limestone is being mined by quarrying methods. The present face is about 25 feet high and 40 feet wide. The ore is broken by drilling vertical holes with a jackhammer ahead of the quarry face about 10 to 12 feet deep spaced eight to twelve feet apart along the face of the quarry. A series of flat inclined holes are drilled along the toe of the face to maintain a floor level. The holes are chambered and loaded with 40 per cent "Gelex" Du Pont dynamite and detonated by a cap and fuse. The limestone at the present face breaks very easily as it is badly faulted and is enclosed by layers of shales. Powder consumption apparently is quite low, but undoubtedly will increase materially when the main limestone lenses is encountered.

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The limestone is purchased by the distributor or consumer f.o.b. Rogue River. Sales are made through grain dealers, Farmers' Co-operatives and similar organizations.

Economics:

No cost data is available for the operation. However, an estimate of labor costs and supplies gives a direct operating charge of $0.85 per ton on an output of 100 tons per day. To

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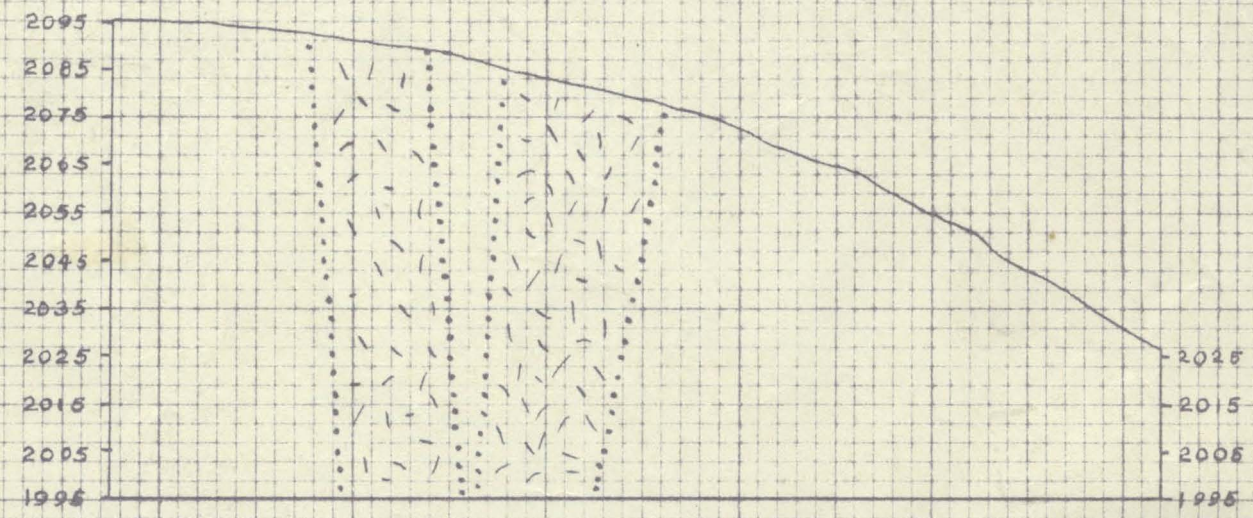
this should be added amortization on plant and equipment, repairs, royalty on limestone from quarry, office and management expenses, social security and compensation, and state and federal taxes. These items might well account for an additional $0.40 per ton, making a total cost of $1.25 per ton. It is doubtful if this cost can be obtained on the present intermittent scale of operation.

In a recent conversation with Mr. Sullivan, he stated that seven men with two trucks could mine and process 80 tons per day which would give him a daily operating profit of $100 or $1.25 per ton. He sells the limestone for $2.75 per ton f.o.b. cars at Rogue River which would give him an income on 80 tons of $220. This amount less an operating profit of $100 leaves $120 for operating expenses which is equivalent to $1.50 per ton, and is 25 cents higher than my estimate on a daily output of 100 tons.

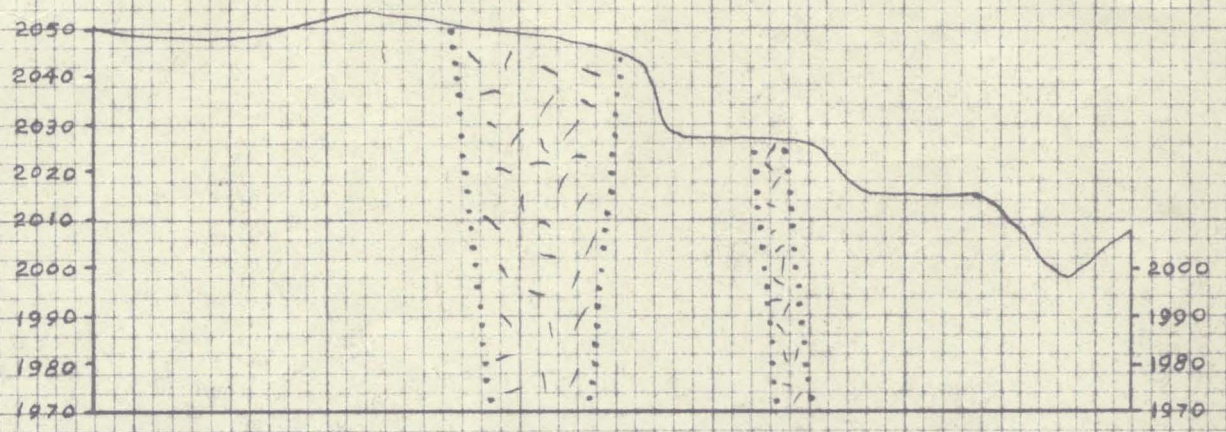
The finished product is sold f.o.b. Rogue River at $2.75 per ton and freight charges to Willamette Valley points are about $2.40 1/ per ton which makes a delivered price to the distributor of $5.23.

Competetive producers are located in Eastern ~~Washington~~ Oregon and Idaho over which the Sullivan Lime Company has an advantage in freight rates to the Willamette Valley. Some agricultural lime has been produced at Dallas, Oregon, but is of very much inferior quality.

1/ Rogue River to Salem in carload lots.



SECTION-AA'



SECTION-BB'

SULLIVAN LIME CO. OF OREGON LTD.

CROSS SECTIONS ON LINES A-A & B-B

SCALE 1"=40'

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Party:
Topographer Rodman Recorder

From	To	Rod	H. C.	Corr. Dist.	Beaman Arc	Product	Rod Corr.	Diff. in Elevation	H. I.	Elev.	Description of △ or ⊙
A									1002.9	1000	Ple - front
	A_1	32 x 90 = 29			-30 30	-5.7	-8.2	-16.9		986	Edge pt
	A_2	39 x = 29			-48 42	- .6	-9.14	- 4.7		98	" "
	A_3	47 x 0 = 47			-54 +04	+ 1.9	-1.23	+ .7		1003.6	" "
	A_4	78 x 99 = 77			+61 +11	+8.6	-3.39	5.2		1008.1	" "
	A_5	142 x 98 = 139			+65 +15	+21.3	-8.71	+13.6		1021.7	other side house
	A_6	120 x 95 = 114			+72 +22	+25.4	-7.6	+18.8		1021.7	
	A_7	95 x 96 = 90			+78 +28	+21.8	-4.49	+17.3		1020.2	
	A_8	65 x 94 = 61			+73 +23	+14.9	-1.33	+11.6		1014.6	
	A_9	33 x 89 = 29			+81 +31	+10.2	-1.16	+9.0		1011.0	
	A_{10}	65 x 87 = 57			+81 +34	+22.1	-2.32	+19.8		1022.7	
	A_{11}	74 x 85 = 65			+82 +32	+23.8	-1.37	+22.4		1025.3	
	A_{12}	104 x 92 = 107			+77 +27	+33.5	-8.60	+24.9		1027.8	
	A_{13}	93 x 85 = 79			+85 +35	+32.5	-1.46	+31.0		1033.9	TP

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SURVEY Date 194 Page No.

Party:
Topographer Rodman Recorder

From	To	Rod	H. C.	Corr. Dist.	Beaman Arc	Product	Rod Corr.	Diff. in Elevation	H. I.	Elev.	Description of △ or ⊙
A1										1033.9	
								2.8	1036.7		
A19	B1	22 x 100 = 22			-49 -01	-0.22	-2.11	-2.3		1034.3	
	B2	47 x 92 = 43			+77 +07	+12.69	-2.23	+10.5		1047.2	
	B3	40 x 87 = 35			+84 +34	+13.60	-2.20	+11.40		1048.1	
	B4	65 x 86 = 56			+84 +34	+22.1	-8.32	+13.8		1050.5	
	B5	105 x 92 = 97			+77 +37	+28.4	-9.52	+18.9		1056.6	
	B6	96 x 100 = 96			+32 +32	+0.5	-3.13	-2.6		1054.1	
	B7	73 x 100 = 73			+52 +02	+1.5	-2.37	-0.8		1035.9	
	B8	45 x 95 = 41			+72 +22	+9.5	-4.22	+5.3		1042.0	
	B9	80 x 94 = 75			+78 +23	+17.46	-10.40	+8.0		1044.0	
	B16	111 x 86 = 95			+83 +33	+38.5	-7.55	+31.0		1067.2	TP

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From	To	Rod	H. C.	Corr. Dist.	Beaman Arc	Product	Rod Corr.	Diff. in Elevation	H. I.	Elev.	Description of △ or ⊙
B10	B10									1062.7	A TP
									1043.3		
	C1	82 x 100 = 82			-.43 -.07	-5.74	-9.41	-15.2		1055.1	
	C2	41 x 100 = 41			+.51 +.01	+.4	-6.20	-5.8		1064.2	
	C3	18 x 100 = 18			-.47 -.03	-.5	-8.09	-8.6		1061.2	
	C4	21 x 95 = 21			-.52 -.08	-1.76	-10.13	-11.86		1058.2	
	C5	33 x 100 = 33			+.85 +.28	+4.24	-9.26	-5.00		1065.2	
	C6	26 x 96 = 25			+.70 +.20	+3.20	-4.13	+1.10		1071.4	
	C7	21 x 85 = 17			+.88 +.33	+8.00	-4.10	+3.90		1074.2	
	C8	37 x 91 = 34			+.79 +.34	+10.73	-8.18	+2.5		1072.8	
	C9	65 x 95 = 62			+.71 +.21	+13.65	-10.32	+3.3		1073.6	
	C10	96 x 89 = 67			+.81 +.31	+23.56	-10.38	+13.1		1083.4	
	C11	43 x 84 = 36			+.87 +.37	+15.91	-5.21	+10.7		1081.8	
	C12	60 x 92 = 55			+.96 +.46	+16.6	-6.30	+9.3		1079.6	
		115 x 97 = 112			+.46	+19.5	-8.57	+11.0		1081.0	

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From	To	Rod	H. C.	Corr. Dist.	Beaman Arc	Product	Rod Corr.	Diff. in Elevation	H. I.	Elev.	Description of △ or ⊙
A										1000	
	D_1	43 x 89 = 39			-.31	-13.3	-7.21	-30.5		960.5	T-P
D_1	E	33 x 100 = 33			+.31	+1.3	-5.01	-7.9	985.0	977.1	
	E_2	67 x 100 = 67			+.31	+.7	10.35	-9.65		975.4	
	E_3	13 x 100 = 15			-.48	-.3	-10.07	-10.37		964.6	
	E_4	50 x 100 = 50			+.53	+1.75	-3.25	-0.5		964.5	
	E_5	58 x 100 = 58			+.53	+1.74	-2.99	-1.25		963.5	
	E_6	120 x 100 = 120			+.53	+4.20	-4.60	-0.20		963.3	
	E_7	101 x 100 = 130			+.53	+4.35	-4.6	-0.35		962.9	
	E_8	162 x 100 = 162			+.53	+4.67	-4.8	-0.10		962.8	
	E_9	170 x 100 = 170			+.53	+3.99	-4.75	-1.1		961.7	
	E_{10}	175 x 99 = 173			+.61	+19.25	-4.87	+14.41		976.1	
	E_{11}	150 x 100 = 150			+.53	+7.95	-4.90	+4.50		980.5	
	E_{12}	112 x 100 = 112			+.46	-6.72	-8.55	-15.3		965.2	

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									985.3		
D	E12	100 x 100 = 100			-43 07	-7.00	-10.50	-17.50		967.8	
	E14	91 x 100 = 91			-43 07	-10.43	-6.37	-16.80		968.5	
	E16	55 x 96 = 53			-31 19	-10.07	-10.27	-20.34		965.0	
	E17	40 x 93 = 37			-34 26	-10.40	-10.50	-20.90		964.1	
	E17	47 x 91 = 43			-23 38	-13.12	-10.24	-23.4		964.6	
	E15	63 x 90 = 57			-38 34	-15.21	-10.31	-25.52		959.4	
	E19	72 x 105 = 68			-39 31	-15.12	-10.33	-25.45		959.5	
	E20	105 x 93 = 98			-39 35	-36.33	-7.62	-33.7		963.3	
	E21	100 x 94 = 94			-25 25	-24.50	-9.25	-34.3		950.5	
	E22	130 x 99 = 129			-39 11	-14.30	9.65	-23.95		961.0	
	E23	127 x 95 = 126			-39 12	-15.24	-7.62	-22.86		962.4	
	E24	85 x 94 = 80			-23 23	+19.55	-8.42	+11.13		990.1	

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Survey						Data				1062.7	A
HI B12									10 70.3		
	F1	125x97=121			+17	+21.25	-6.62	+14.6		1084.9	
									1087.1		
AF	G1	99x90=26			+80 -30	+8.70	-1.3	+7.4		1084.5	
	G2	42x93=39			+70 -25	+10.4	-7.21	+3.3		1090.4	
	G3	57x87=49			+87 +34	+19.4	-7.26	+12.1		1090.2	
	G4	61x98=60			+104 +19	+9.5	-8.30	+3.2		1090.4	
	G5	103x94=97			+123 +33	+33.7	-9.21	+21.5		1086.2	
G5										1108.6	A
									1111.1		
	H1	92x96=88			+107 +19	+17.48	-1.45	+16.0		1127.1	A
	H2	53x96=50			+170 +30	+10.4	-7.26	+3.1		1119.2	A

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Hwy						Date			+	1137.1	△
									1139.7		
	I_1	107 x 97 = 104			+6 4	+18.2	-9.3	+8.7		1138.4	
	I_2	34 x 98 = 33			+6 2 +2 3	+4.1	-1.7	+2.4		1130	
I_1									HI 3.2	1138.4	△
I_1	J_1	62 x 98 = 61			-3 8 -1 2	-7.44	-0.3	-12.7	1141.6	1123.9	
	J_2	60 x 101 = 60			-5 0 -0 6	+3.6	-4.3	-0.7		1140	

Oregon Department of Geology & Mineral Industries
702 Woodlark Bldg. - Portland, Oregon

SURVEY Date 194 Page No.

Party:
Topographer Rodman Recorder

From	To	Rod	H. C.	Corr. Dist.	Beaman Arc	Product	Rod Corr.	Diff. in Elevation	H. I.	Elev.	Description of △ or ⊙

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Oregon Department of Geology & Mineral Industries
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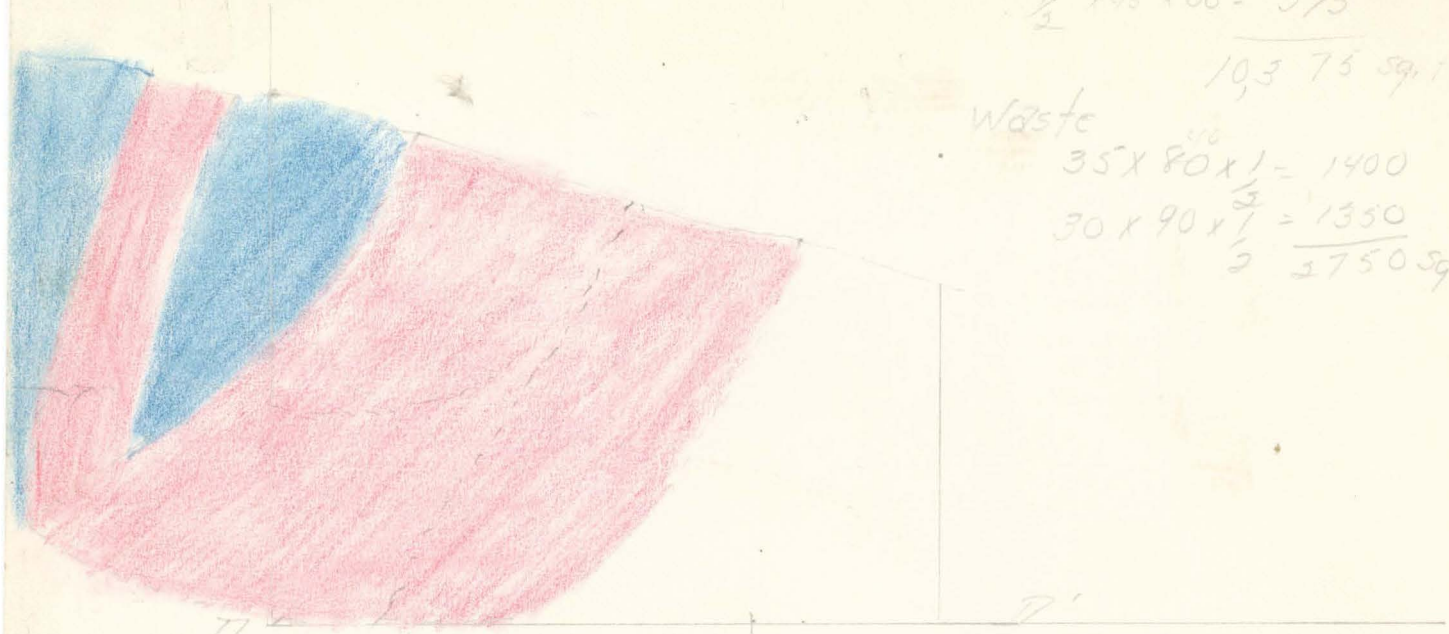
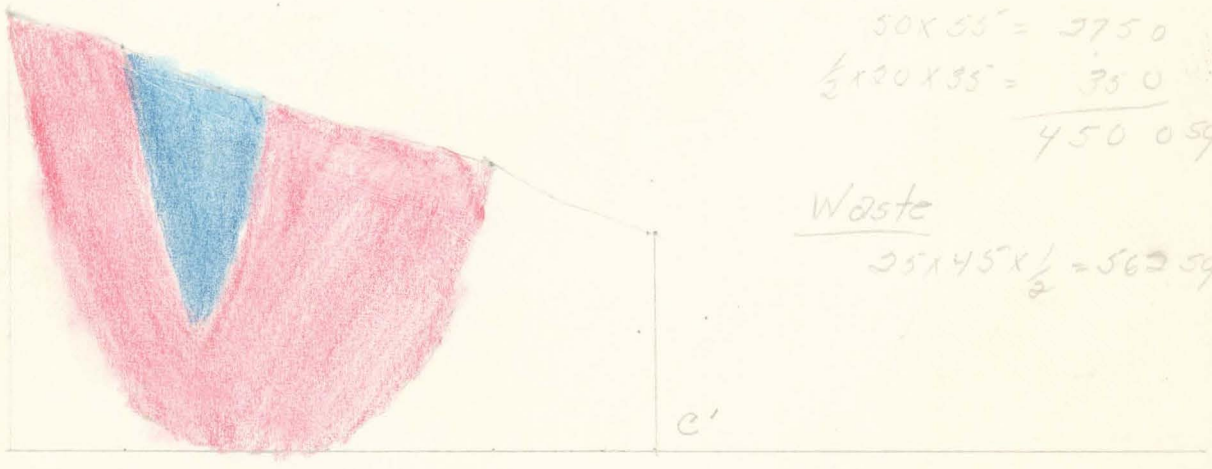


Ore
110 x 80 = 8800
15 x 80 = 1200
½ x 45 x 30 = 375
10,375 sq. ft.

Waste
35 x 80 x 1 = 1400
30 x 90 x ½ = 1350
2750 sq ft.



Ore
70 x 20 = 1400
50 x 55 = 2750
½ x 20 x 55 = 550
4500 sq. ft

Waste
25 x 45 x ½ = 562 sq. ft.

Ore
Block AA'-CC'
½ x (4500 + 2565) x 64/11 = 20,550 tons

Waste
½ (225 + 562) x 64/11 = 9,280 tons

Ore
Block CC,-II'.
½ (4500 + 10,375) x 100/11 = 67,609

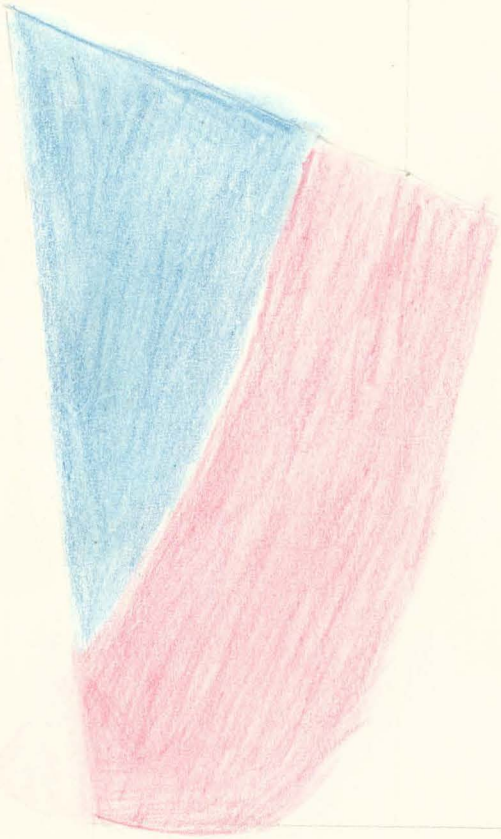
Waste
½ (562 + 2750) x 100/11 = 15,054 tons

Ore

45' x 145' = 6520

Waste

$\frac{1}{2}$ x 60 x 140 = 420 0 59. ft.



E'

E

Block - Ore

III' - E E'

$\frac{1}{2}(6,520 + 10,375) \times \frac{150}{11}$ = 138,236 Tons

Waste

$\frac{1}{2}(4200 + 3750) \frac{150}{11}$ = 56,863 ton

Total Tonnage:

	Ore	Waste
III' - EE' =	138,236	56,863
III' - CC' =	67,609	15,054
CC' - AA' =	20,550	2,286
AA' - BB' =	11,199	875
	237,594	75,078
15' additional depth	35,200	
	272,794	

Ratio of Ore to Waste 3.15 : 1

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

May 28, 1945

Sample submitted by E. A. Youngberg

Sample received on May 18, 1945

Analysis requested Calcium, Magnesium, Silica assay

Analysis by:

L. L. Hoagland

Assayer

Lab. No.	Sample Marked	Results of Analysis		Remarks
P-3626	FG-32 #2	Calcium oxide (CaO)	53.19%	- - - - - - - - - - - - - - - -
		Magnesium oxide (MgO)	1.08%	
		Silica (SiO_2)	1.96%	
P-3627	FG-31 #1	Calcium oxide (CaO)	54.13%	- - - - - - - - - - - - - - - -
		Magnesium oxide (MgO)	0.57%	
		Silica (SiO_2)	1.08%	
* * *	* * * *	* * * * * * * * * * * * * * * *		* * * * * * * * * * * * * * * *

The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.

E. A. Y.

Samples forwarded to Portland May 16, 1945

1# Upper band, ~~East~~ West side of upper quarry

3# Lower band, west side of upper quarry.

Mr. F. I. Bristol,
Bristol Silica Co.,
Rogue River, Oregon.

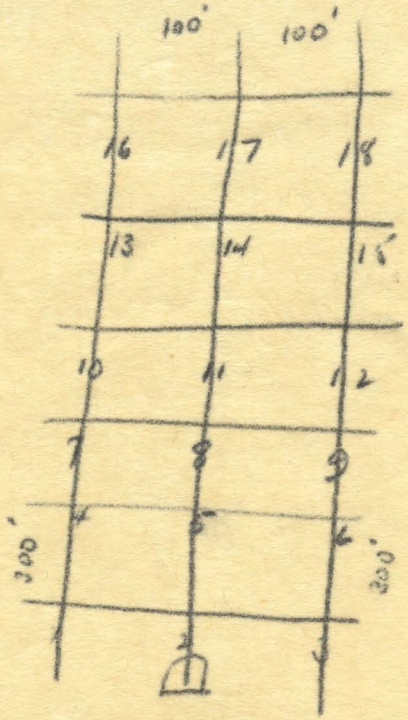
Electro-Metallurgical Sales Corporation,
Analysis Received May 15, 1939.

SiO_2.....99.54%
Fe_2O_3..... 0.15
Al_2O_3..... 0.06
CaO plus MgO..... 0.14
P_2O_5..... 0.11 P equals 0.048

Cannot use rock exceeding 0.05 P_2O_5 or 0.022% Phosphorus.

Electro-Metallurgical Sales Corporation, Feb. 1, 1940

Sample No.	SiO_2	Phos.
1	99.14	0.089
2	99.58	0.029
3	98.48	0.178
4	99.40	0.019
5	99.52	0.034
6	99.56	0.048
7	99.62	0.043
8	99.15	0.041
9	98.78	0.116
10	99.49	0.042
11	99.60	0.035
12	98.92	0.11
13	99.62	0.041
14	99.67	0.033
15	98.91	0.084
16	99.61	0.029
17	99.57	0.030
18	99.26	0.057



With one exception, namely sample No. 4, all the samples are disappointingly high in phosphorus content, and a number of them considerably higher than we would care to tolerate.

However, as I advised in the Dec. 15th letter the problem of elimination of the phosphorus may not be insurmountable, and we suggest, therefore, that you maintain your record of the locations from which these samples were taken intact so that more exhaustive surveys may be undertaken when our project has became sufficiently definite to warrant more intensive and extensive investigation of the deposit.

We wish to thank you very much for your cooperation and to assure you of our intention to continue to consider your property as a potential source of supply.

Very truly yours,

ELECTRO METALLURGICAL SALES CORPORATION
R. E. Brown, District Manager.

Analysis by E. P. W. Harding, Portland, Oreg., Aug. 31, 1937.

Silica	98.52
Loss on Ignition	0.20
Ferric Oxide	0.38
Aluminum Oxide	0.24
CaO	0.74
Magnesium Oxide	0.36

Analyses by E. W. Lazell, Portland, Oreg., Oct. 21, 1938, for Mr. Kenneth Hamblen

Laboratory No. 39431 - Chicken Grit

Silica	98.52	
Ferric Oxide	0.54	or 0.37 Fe
Alumina	0.10	
Calcium Oxide	None	
Magnesia	Trace	0.018
Phosphoric anhydride	0.018	or 0.003 P
Loss on Ignition	0.80	

Laboratory No. 39432 - Average Sample of Deposit

Silica	98.24	
Ferric Oxide	0.54	or 0.37 Fe
Alumina	0.12	
Calcium Oxide	none	
Magnesia	trace	
Phosphoric Anhydride	0.018	or 0.003 P
Loss on Ignition	0.96	

Analysis headed "Nixon Analysis".

Iron	0.48
Phos	0.039
Alumina	0.27
Silica	98.71
Loss on Ignition	0.41
	99.909

Limestone 1 to 8 Inc. Placer.
NW 1/4 Sec 6 T 37 S R 3 W.
K. E. Hamblen, W. B Sullivan & F. I. Bristol. (Beaver Portland County)
Elev. 1500 to 2500 ft. Mag North strike about 200 ft wide. 1200 ft long. back bone of ridge. hard of solo calcite with black stain.

Confidential

W. H. Sullivan Nov. 27/44

7 men and 2 trucks can produce 80 tons per day

Value of lime $2.75 per ton ground F.O.B. Rogue River. Stated operating profit on 80 tons was $100 per day.

BRISTOL LIMESTONE, FOOTS CREEK.

BRISTOL LIMESTONE Gold Hill District Jackson County

Owner & Operator: No operation. Claims held by location, August, 1937, by F. I. Bristol, Rogue River, W. B. Sullivan, and Kenneth E. Hamblen, Portland, Oregon. Salem, Oreg.

Location: NW¼ sec. 6, T. 37 S., R. 3 W.; and SW¼ sec. 31, T. 36 S., R. 3 W., Jackson County, north of the left fork of Foots Creek, at elevations ranging from 1800' to 2200'.

Area: ~~Nine~~ Seven placer claims, named Limestone No. 1 to Limestone No. ~~9~~ 7, unpatented, recorded at Medford, Oregon. ~~Date unknown, unless it is August, 1937.~~

History: ~~Property has no history, other than the cement company has prospected this general area many times for limestone, but never got far back in the hills enough to locate this particular body.~~ Property was located in 1937 by studying maps of limestone outcrops, and then following the trend of these ~~the deposit was located.~~

Development: No development, other than several pits which serve as assessment work. Trails have been brushed out, which facilitated measuring the limestone body and estimating the total tonnage.

~~Equipment: None~~

Transportation: County highway up Foots Cr., and up left fork of Foots Creek. Very poor road up to elev. of about 1700'. A 5% grade over a road 2.1 miles can be constructed from the lower end of the quarry site, to the junction of the left fork, and main fork roads. Construction would be of the bulldozer type and cost would be at a minimum. No data on right-of-way easements for such a road. Tentative r/w easement has been secured.

Mining Facilities: Water appears to be scarce; power is on left fork road, a distance of not over ½ mile from quarry site; there is plenty of timber, mostly fir. Climate is similar to that at Grants Pass. No data on water rights, or length of water season.

Geology:

Topography: is semi-mountainous with very steep hillsides. The deposit is virtually bounded by a hillside on the southwest end which would facilitate quarry operations. Vegetation cover is principally brush of the manzanita-buckthorn-madrone, with widely spaced 12" - 18" fir trees.

Geology: This is the area of the Paleozoic metamorphics, classed as meta-sediments and meta-igneous of Mesozoic ~~(sic)~~ (?) age, as indicated by F. G. Wells (Medford geologic map) This series includes lenticular limestone that in this region trends about N. 19 E., to N. 22 E., or about magnetic north. Dip is almost vertical.

Bristol Limestone

Geology (continued)

Geology (continued)

There is some evidence of an E-W fault that displaces the limestone about 500 feet to the west, halfway up the hillside. The lense seems to average from 200' to ~~400~~ 600' in width (Hamblen and Bristol have surveyed the lense) ~~and mapped its width at frequent intervals).~~ The horizontal extension is ~~over~~ approx. 1000 feet as it continues across two 1/16th sections. Quality is reported to be 97% plus CaCO3. Very little iron. and a conservative estimate of 75' of average depth.

The limestone is dark in color and is twisted and contorted by shearing stresses. White calcite has formed ~~#~~ generally parallel to the shearing lines, and there are occasional knots or "augen" of white calcite.

Economics:

It is planned to start quarrying limestone at the southwest corner of the deposit, and establish a quarry face along the eastern side which will permit at least 300 ~~- 600~~ feet of face. There is a reasonable amount of dumpage space in the creek channel. The bunker is to be constructed below the quarry face and farther to to the southwest. There is undoubtedly a large quantity of limestone available; whether it is in the order of a million tons or not could not be determined with the short time on the property. But certainly it is sufficient to justify opening a quarry for agricultural and paper-mill limestone. Quantity and quality seem to be ~~#~~ satisfactory; quarrying conditions tend to be favorable for low costs, road construction should be low, and in fact, the conditions are almost ideal for such a set-up.

Hand-Specimens:

No. G.P. 30, NW¼ NW¼ sec. 6, T. 37 S., R. 3 W., about 250' east of Twp. line & 850' south of range line, at an elev. of 1925'.

No. G.P. 31, S½ SW¼ SW¼ sec. 31, T. 36 S., R. 3 W., about 250' east of Twp. line and 15' north of range line, elev. of 2150'

No. G.P. 32, W½ SW¼ NW¼ sec. 6, T. 37 S., R. 3 W., from a lense southeast of the lense mentioned above. Elev. of 1900'

No. G.P. 33, E½ SE¼ NE¼ sec. 1, T. 37 S., R. 4 W., from outcrop prospected at one time by cement company. This outcrop is probably part of the no. G.P. 32. Elev. 1700'

Informant F. I. Bristol, and Ray C. Treasher Jan. 23rd, 1940
Report Made by Ray C. Treasher
Date Jan. 23rd, 1940

FOR 76.900

CONFIDENTIAL

Recommendations: and Conclusions

Hamblen's estimate of a million tons, I believe, is not far from incorrect. The analyses were made by Lazell a number of years ago, and Lazell can produce no report, so these analyses may be open to question. Quarrying conditions are excellent, dump room seems to be ample if properly handled. Bristol and Hamblen have had experience with this type of operation, and it has been my experience that they tend to be rather conservative with their estimates.

CONFIDENTIAL

Recommendations & Conclusions:

Hamblen's estimate of a million tons, I believe, is not far from correct. The analyses were made by Lazell, a number of years ago, and Lazell could produce no report, so these analyses may be open to question. Quarrying conditions are excellent, as the quarry operations will take advantage of the natural cleavage of the rock to assist in breaking. (natural cleavage is practically vertical) Dump room seems to be ample if properly handled. Bristol and Hamblen have had experience with this type of material, and it has been my experience that they tend to be rather conservative with their estimates, and understand methods of sampling to prove an ore body, and working conditions necessary for successful operation

Ray C. Treasher.

Ore

25 x 40 = 1000

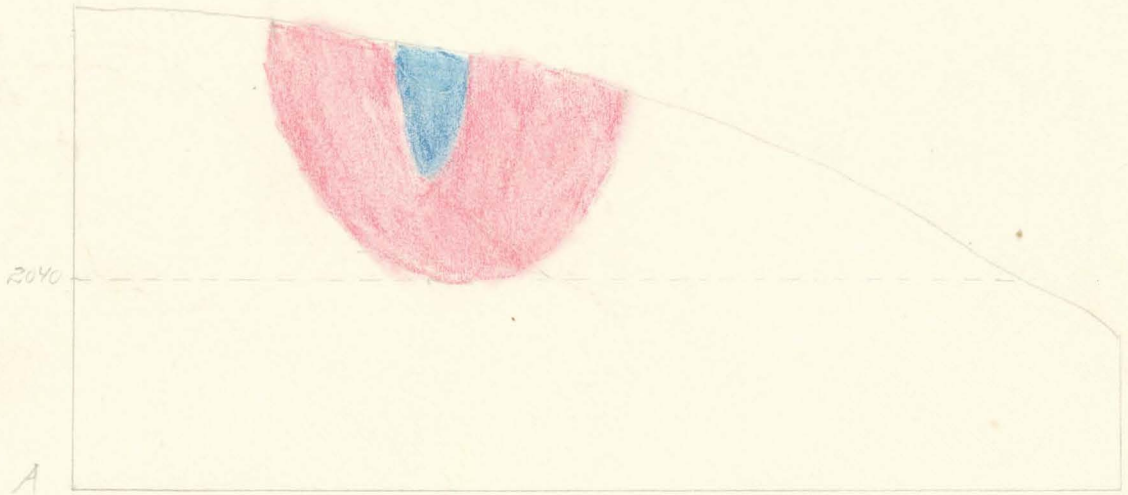
35 x 35 = 1225

½ x 17 x 40 = 340

2565 sq. ft.

Stripping =

½ x 15 x 30 = 225 sq. ft



Ore $\frac{1}{2}(300+2565)\times\frac{86}{11} = 11,199$ tons (block AA'-BB')

11 cu. ft = 1 Ton

Waste

$\frac{1}{2}(0+225)\times\frac{86}{11} = 875$ Tons