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REPORT ON MINING OPERATIONS CONDUCTED
on the
SJ 3, 4, 5, 6, 35, 45 & 109 Fr. MINERAL CLAIMS
HIGHLAND VALLEY AREA
KAMLOOPS MINING DIVISION
Latitude 50° 29.7' Longitude 120° 59'
N.T.S. No. 92 I/7W
BETHLEHEM COPPER CORPORATION
#2100-1055 W. Hastings Street, Vancouver, B.C.
January 7, 1977 R.E. Anderson, P. Eng.

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BETHLEHEM COPPER CORPORATION
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JANUARY 7, 1977
R.E. ANDERSON, P. ENG.

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HIGHLAND VALLEY
LOCATION PLAN

SECTION A - SUMMARY OF WORK

Introduction

During the month of October, 1976, mining operations carried out on the Highland Valley property of Bethlehem Copper Corporation accounted for the excavation of 2,062,486 tonnes of ore and waste material from the Huestis and Iona Pits and a small ore stockpile. This work was carried out on a three shift per day, seven day per week basis with the mining operations involving a total of twenty-four (24) staff and one hundred and eighty-five (185) hourly paid employees.

Location and Access

The mining operation is located on the north side of the Highland Valley at geographic co-ordinates $50^{\circ} 29.7'$ latitude and $120^{\circ} 59'$ longitude. It is situated approximately 32 km. southeast of Ashcroft and 48 km. southwest of Kamloops. Access into the area is via paved highways from Ashcroft, Kamloops and Merritt.

Topography and Physical Environment

The Highland Valley area is characterized by generally moderate topography. The valley is a flat-bottomed topographic feature varying in width from .5 to 1 kilometre and trending NW-SE. The walls of the valley rise from a base elevation of 1205 metres A.S.L. (Quiltanton Lake) to 1675 metres on the southwest flank and 1900 metres on the northeastern side. The elevation at the Bethlehem plant site is 1480 metres A.S.L.

The valley floor is dotted with a number of small lakes and marshes and contains as its main drainage facility Witches Brook which flows to the east and empties into Guichon Creek.

Most of the area contains a forest cover of Lodgepole Pine and Douglas Fir along with small stands of Spruce. The area is characterized by a general lack of undergrowth except in the areas near the lakes and marshes.

History

Mining operations commenced during 1962 with initial work being concentrated in the East Jersey Pit. In succession, the Jersey, Huestis and Iona Pits were developed to supply the concentrator whose throughput, has increased from, 3000 tonnes per day in 1962 to 18500 tonnes per day in 1976.

Mining Operations

The mining program carried out during October, 1976 was centred primarily in Huestis and Iona Pits. Operations were conducted on a continuous shift basis and utilized a total of 209 employees, who were distributed into the following departments:-

Table I - MINING DEPARTMENT EMPLOYEES

	<u>Staff</u>	<u>Hourly</u>	<u>Total</u>
Mine Operating	12	126	138
Mine Mechanical	5	59	64
Mine Engineering	<u>7</u>	<u>-</u>	<u>7</u>
TOTAL	24	185	209

The operations in the Huestis Pit were in the final stages of its development and work was carried out on the 4200, 4167 and 4133 benches. Total material moved was 385,590 tonnes, the distribution of which is set out in Table II. Major mining equipment utilized in this phase of the operation include the Bucyrus-Erie 45-R rotary drill, Michigan Model 475 and Dart Model D-600 rubber-tired loaders and Unit Rig Model M-100 haulage units.

The Iona Pit accounted for the largest proportion of the material excavated, a total of 1,620,295 tonnes. Work in this area was on the 4867, 4833 and 4800 benches and in addition to those pieces of equipment utilized in the Huestis Pit, the Bucyrus-Erie Model 195-B electric shovel was employed.

Section C contains a list of all the major pieces of equipment that were in operation during the report period.

Table II - SUMMARY OF MINING PRODUCTION
- October, 1976

<u>Pit and Bench</u>	<u>Ore Tonnes</u>	<u>Waste Tonnes</u>	<u>Total</u>
Huestis - 4200	3,673	-	3,673
4167	220,754	23,953	244,707
4133	<u>133,120</u>	<u>4,090</u>	<u>137,210</u>
Sub-total	357,547	28,043	385,590
Iona - 4867	9,348	221,488	230,836
4833	46,822	466,630	513,452
4800	<u>202,894</u>	<u>673,113</u>	<u>876,007</u>
Sub-total	259,064	1,361,231	1,620,295
Stockpile	<u>76,961</u>	<u>-</u>	<u>76,961</u>
TOTAL	693,353	1,389,274	2,062,846

The tonnage listed under the stockpile category represents the supply to the concentrator of material stored for supplementary purposes.

The areas from which the materials were excavated are illustrated on drawing no. HV-77-5 which is appended in Section D.

Summary of Costs

Expenditures incurred by the Mining Department during October, 1976 totalled \$1,161,479.92 and represent a unit cost of \$.5562 per tonne moved. The distribution of these expenditures by sub-departments, cost centres and mining areas is set out in Section B of this report, but Table III summarizes the cost distribution per mineral claim exclusive of the charges attributed to the ore stockpile.

Table III - DISTRIBUTION OF COSTS PER MINERAL CLAIM

<u>Mineral Claim</u>	<u>Lot No.</u>	<u>Expenditure</u>
SJ 3	5539	\$ 299,428.62
SJ 4	5532	375,159.50

Table III (cont.)

<u>Mineral Claim</u>	<u>Lot No.</u>	<u>Expenditure</u>
SJ 5	5540	\$ 5,955.49
SJ 6	5531	222,998.99
SJ 35	5510	10,082.86
SJ 45	5501	128,662.37
SJ 109 Fr.	5502	<u>76,275.49</u>
TOTAL		\$ 1,118,563.32

The figures used in the preparation of this report were derived from the monthly financial statement of the Highland Valley operations.

Respectfully submitted,

R. E. Anderson
R. E. Anderson, P. Eng.

SECTION B - STATEMENT OF EXPENDITURES

1. Listed below is a summary of the expenditures incurred by the Mining Department during the period October 1 to 31, 1976. The costs are distributed by the following two methods:-

(a) SUB-DEPARTMENTS

(b) COST CENTRES

(a) SUB-DEPARTMENTS

<u>No.</u>	<u>Description</u>	<u>Expenditure</u>
1	Mine Operating	\$ 538,971.75
2	Mine Mechanical	597,749.77
3	Electrical	11,502.46
4	Mine Engineering	<u>13,255.94</u>
	TOTAL	\$1,161,479.92

(b) COST CENTRES

<u>Cost Centre No.</u>	<u>Description</u>	<u>Expenditure</u>
2	Drilling and Blasting	\$ 147,871.02
3	Loading	237,844.21
4	Hauling	503,255.65
5	Pit and Road Maintenance	141,853.38
6	General Transport	21,734.61
7	General Expense	95,665.11
8	Engineering and Geology	<u>13,255.94</u>
	TOTAL	\$1,161,479.92

2. DISTRIBUTION OF COSTS

Total tonnes moved	-	2,082,846
Total expenditure	-	\$1,161,479.92
Unit cost/tonne	-	\$,5576

Huestis Pit

Total tonnes	-	385,590
Unit cost	-	\$.5576
Total expenditure	-	\$215,020.72

Iona Pit

Total tonnes	-	1,620,295
Unit cost	-	\$.5576
Total expenditure	-	\$903,542.61

Stockpile

Total tonnes	-	76,961
Unit cost	-	\$.5576
Total expenditure	-	\$ 42,916.59

3. DISTRIBUTION OF COSTS PER BENCH (excluding stockpile)

<u>Pit and Bench</u>	<u>Tonnes</u>	<u>Unit Cost</u>	<u>Expenditure</u>
Huestis-4200	3,673	\$.5576	\$ 2,048.21
4167	244,707	.5576	136,458.61
4133	137,210	.5576	76,513.90
Sub-total	385,590	.5576	\$ 215,020.72
Iona - 4867	230,836	.5576	\$ 128,723.57
4833	513,452	.5576	286,321.79
4800	876,007	.5576	488,497.25
Sub-total	1,620,295	.5576	\$ 903,542.61
TOTAL	2,005,885	.5576	\$1,118,563.33

4. DISTRIBUTION OF COSTS PER MINERAL CLAIMHuestis Pit

<u>Claim</u>	<u>Bench</u>	<u>Expenditure</u>	<u>% of Bench on Claim</u>	<u>Expenditure on Claim</u>
SJ 35	4167	\$136,458.61	5.69	\$ 7,764.49
	4133	76,513.90	3.03	2,318.37
				\$10,082.86

Huestis Pit

<u>Claim</u>	<u>Bench</u>	<u>Expenditure</u>	<u>% of Bench on Claim</u>	<u>Expenditure on Claim</u>
SJ 45	4200	\$ 2,048.21	100.00	\$ 2,048.21
	4167	136,458.61	60.50	82,557.46
	4133	76,513.90	57.58	44,056.70
				<u>\$128,662.37</u>
SJ 109 Fr.	4167	\$136,458.61	33.81	\$ 46,136.66
	4133	76,513.90	39.39	30,138.83
				<u>\$ 76,275.49</u>

Iona Pit

<u>Claim</u>	<u>Bench</u>	<u>Expenditure</u>	<u>% of Bench on Claim</u>	<u>Expenditure on Claim</u>
SJ 3	4867	\$128,723.57	100.00	\$128,723.57
	4833	286,321.79	59.62	170,705.05
				<u>\$299,428.62</u>
SJ 4	4833	\$286,321.79	38.30	\$109,661.25
	4800	488,497.25	54.35	265,498.25
				<u>\$375,159.50</u>
SJ 5	4833	\$286,321.79	2.08	\$ 5,955.49
SJ 6	4800	\$488,497.25	45.65	\$222,998.99

SECTION C - SCHEDULE OF MINING EQUIPMENT

Listed below are the major pieces of mining equipment that were used during the production period of October 1 to 31, 1976.

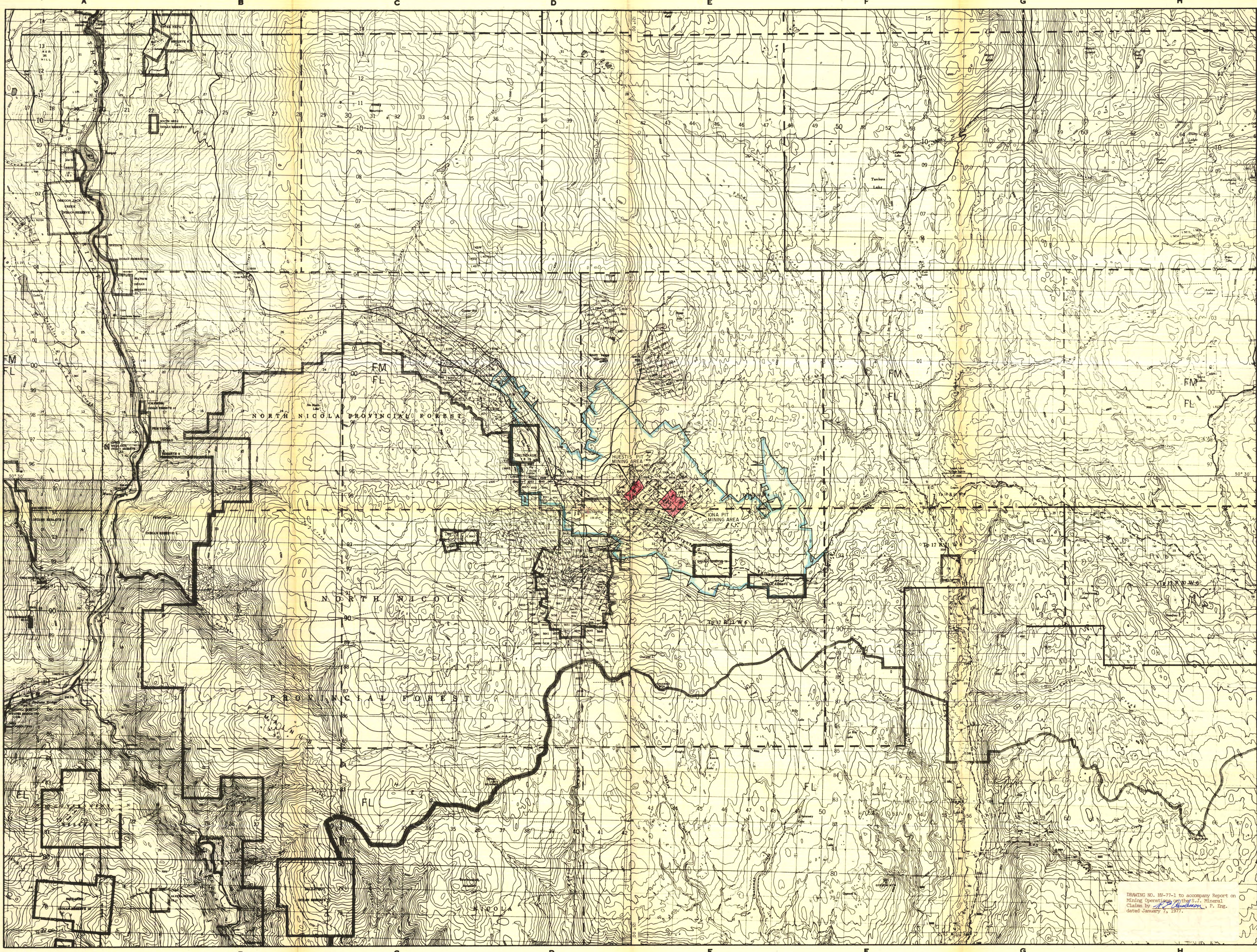
<u>Unit No.</u>	<u>Machine Description</u>
201	Bucyrus-Erie Model 45-R Rotary Drill
202	Bucyrus-Erie Model 45-R Rotary Drill
211	Gardner Denver Airtrac and Compressor
304	Bucyrus-Erie Model 88-B Diesel Shovel
305	Bucyrus-Erie Model 88-B Diesel Shovel
310	Bucyrus-Erie Model 195-B Electric Shovel
311	Bucyrus-Erie Model 195-B Electric Shovel
325	Michigan Model 475 Rubber-tired Loader
326	Michigan Model 475 Rubber-tired Loader
331	Dart Model D-600 Rubber-tired Loader
332	Dart Model D-600 Rubber-tired Loader
451	Unit Rig Model M-100 Truck
452	Unit Rig Model M-100 Truck
453	Unit Rig Model M-100 Truck
454	Unit Rig Model M-100 Truck
455	Unit Rig Model M-100 Truck
456	Unit Rig Model M-100 Truck
457	Unit Rig Model M-100 Truck
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464	Unit Rig Model M-100 Truck
465	Unit Rig Model M-100 Truck
466	Unit Rig Model M-100 Truck
467	Unit Rig Model M-100 Truck
468	Unit Rig Model M-100 Truck
469	Unit Rig Model M-100 Truck
501	Caterpillar Model D8H Bulldozer
503	Caterpillar Model D8K Bulldozer
507	Caterpillar Model D8H Bulldozer
512	Caterpillar Model 16E Grader
515	Caterpillar Model 14E Grader
516	Caterpillar Model 824 Rubber-tired Bulldozer
517	Caterpillar Model 824 Rubber-tired Bulldozer
532	Wabco Model 50 Water Truck
616	P & H Model 35T Mobile Crane

SECTION D

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ILLUSTRATIONS

<u>Drawing No.</u>	<u>Title</u>	<u>Scale</u>
HV-77-1	Location Plan	1:50,000
HV-77-2	Aerial Photo Mosaic	1:12,000
HV-77-3	Mineral Claim Plan	1: 2,400
HV-77-4	Topographic Plan	1: 2,400
HV-77-5	Mining Plan	1: 2,400



DRAWING NO. HV-77-1 to accompany Report on Mining Operations on the S.J. Mineral Claims by *[Signature]*, P. Eng. dated January 7, 1977.

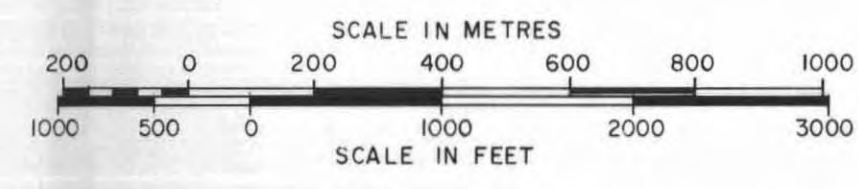
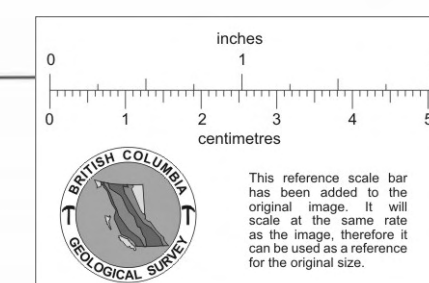
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	DESIGNED - E.A.	DRIVEN BY -	FILE NUMBER -		
	APPROVED -	DATE - JAN. 1977	DRAWING NUMBER -		
	SCALE - 1:50,000				



DRAWING NO. HV-77-2 to accompany Report on
Mining Operations on the S.J. Mineral
Claims by W. J. Macdonald, P. Eng.
dated January 7, 1977.

NOTE:
PROPERTY BOUNDARIES ARE PLOTTED FROM SURVEY CO-ORDINATES
AND ANY INACCURACIES BETWEEN THESE BOUNDARIES AND THE LAKES, ROADS ETC. ARE DUE TO PHOTOGRAPHIC DISTORTION.

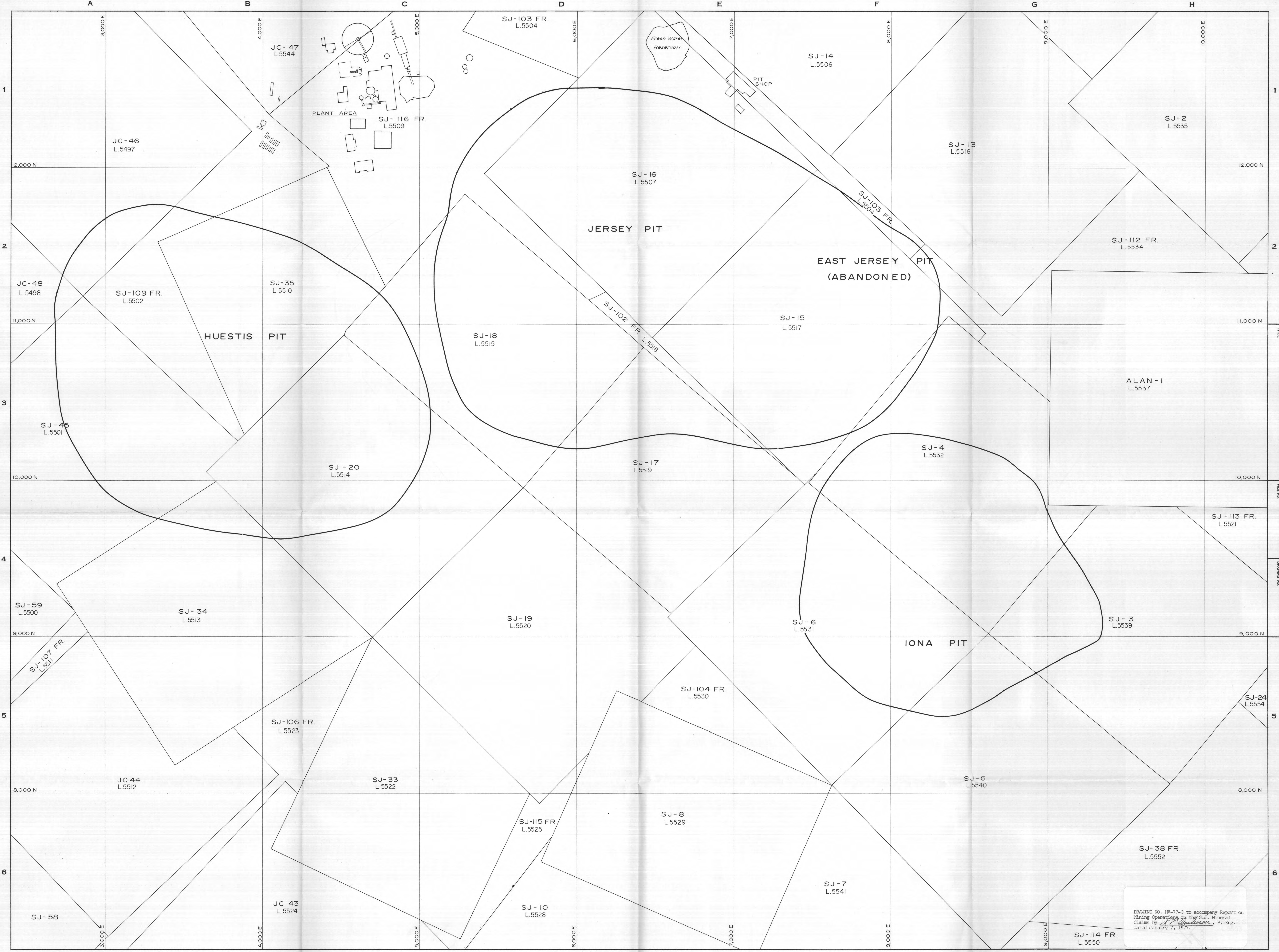
PACIFIC SURVEY CORPORATION
DATE OF PHOTOGRAPHY, 18 JUNE, 1976



DATE	REVISED	BY	DEPT. - EXPLORATION
			DRAWN BY -
			CHECKED -
			APPROVED -
			DATE - DEC. 1976
			SCALE - 1 inch equals 1000 feet



TITLE - HIGHLAND VALLEY OCTOBER 1976 MINING OPERATION AERIAL PHOTO MOSAIC	
FILE NUMBER -	DRAWING NUMBER -
DATE OF PHOTOGRAPHY JUNE 18, 1976	HV-77-2



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DATE REVISED

BY

DEPT. - EXPLORATION

DRAWN BY - Altair/m.k.

CHECKED - E.A.

APPROVED -

DATE - DEC. 1973

SCALE - 1" = 200'

**Bethlehem
Copper**

VANCOUVER BRITISH COLUMBIA

TITLE -

HIGHLAND VALLEY

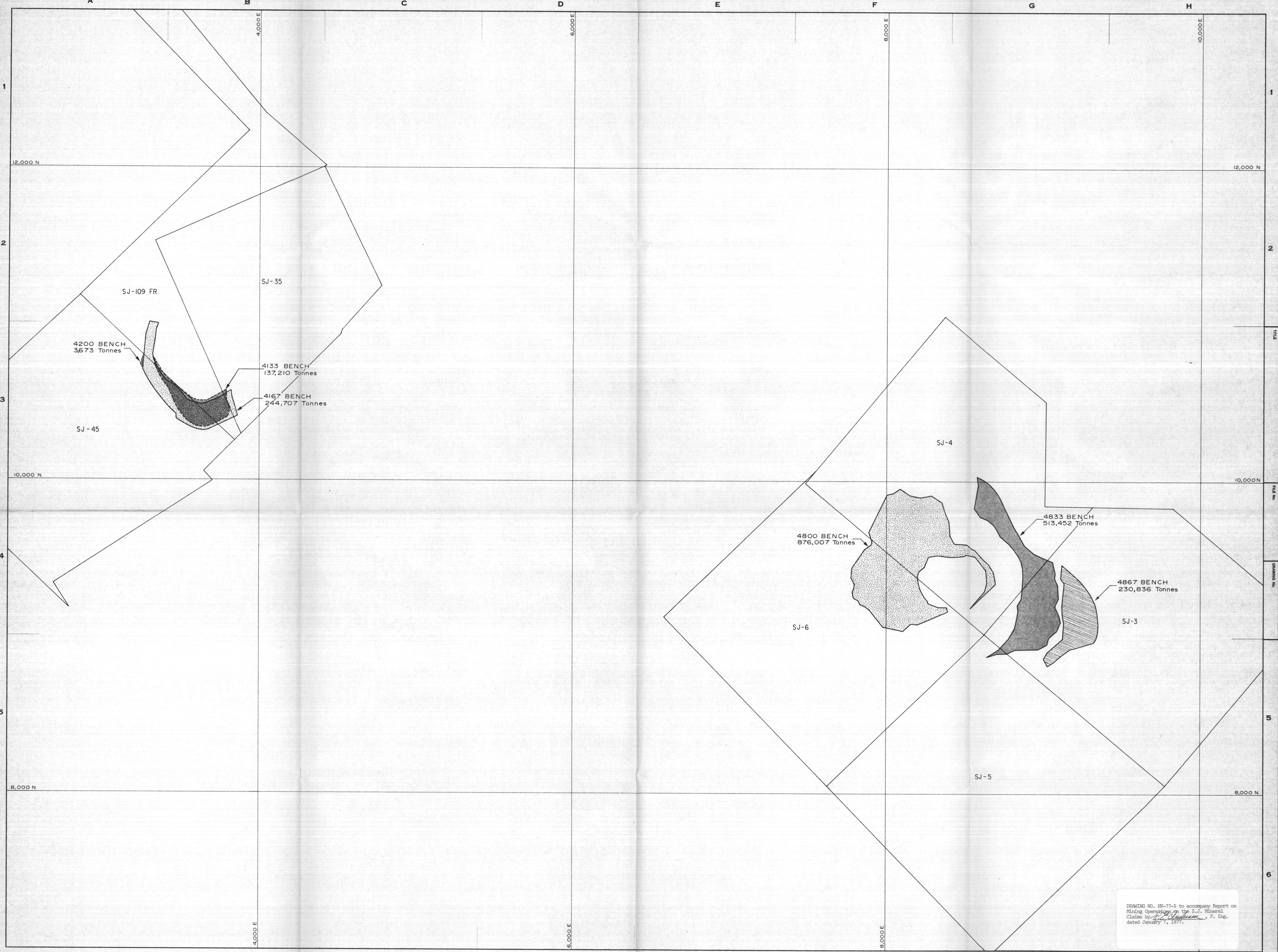
OCTOBER 1976 MINING OPERATION

MINERAL CLAIM PLAN

FILE NUMBER -

DRAWING NUMBER -

HV-77-3



DRAWING NO. HV-77-5 to accompany Report on Mining Operations on the S.J. Mineral Claims by *M. J. Sullivan*, P. Eng. dated January 7, 1977.