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### Previous Work:

Initial work was done in this area between 1890 and 1910 by Messrs. Corwin, Rickman, Porter, Fleming, Goddell, and others. As reported by D.D. Cairnes, in Memoir 31, Department of Mines and Technical Surveys, this work consisted of trenching and the driving of adits on the Porter and Becker-Cochrane claims. The next work of note was performed by Andrew H. Moisey. He had a strip Bulldozed on Lum 7 and 8, through Lum 6 and 4, and through and around Lum 2. This work was done before Yukon Antimony acquired the block of claims.

### Recent Work:

During September 1964, Dr. A.P. Fawley, Consultant Geologist and Engineer for Yukon Antimony Corp., visited the property, and under his supervision a sample of approximately 12 tons was obtained. Portions of this sample were then shipped to both the Department of Mines and Technical Surveys, Ottawa, and to Wright Engineers, Ltd., Vancouver, for concentration and mill tests. The results of these tests, being copies of the Department of Mines and Wright Engineering's reports, on which this claim is based, are included in the appendix.

At the same time Dr. Fawley sampled various parts of the exposed mineralized area. The results of his program are also included.

### Sampling Methods:

The bulk sample was obtained by digging, with pick and shovel, two trenches across the exposed mineralized zone. This zone had previously been stripped to a depth of at least 8 feet below the original ground surface. Four men were employed for two days, September 17 and 18, obtaining this sample. The 12 tons was obtained from two trenches, each approximately 23 feet long across the mineralized zone, 18 inches deep, and 10 feet wide.

The broken material was hauled in an "ore-buggy" by tractor to Annie Lake, transferred to 45 gallon drums and pulled on a low-boy to Kamloops.

Dr. Fawley took both chip and channel samples of the mineralized area.

Results of Sampling Program:

Results of the chemical analysis of the head sample by the Department of Mines are on Page 4 of the Appendix; those of Britton Laboratories (for Wright Engineering) on Pages 6 and 7; and the results of Dr. Fawley's sampling follow:

	<u>Sb</u> %	<u>As</u> %
1. Representative sample of the soft rock, mostly gouge, from the shear zone for a length of 70 feet, average thickness 18 feet	2.50	0.85
2. Representative chip sample of the hard rock throughout the entire exposed section of the shear zone	11.23	0.43
3. Chip sample of the hard rocks from the shear zone that have been pushed onto the dump (rejects after hand-sorting). Most appears to be low grade	7.75	0.25
4. Chip samples of high-grade material (hand-sorted) from the shear zone	27.50	0.53
5. Sample of soft, bright red to orange to yellow material that comprises 1 to 2% of the shear zone	11.23	0.29

Cost of Program:

Copies of invoices upon which this claim is based are on Pages 1,2,3,11, and 12 of the Appendix.

Services of Dr. A. P. Fawley	\$ 534.50
Truck transport of bulk sample	189.81
Rail transport of bulk sample	47.52
Test work, Wright Engineers	<u>2003.23</u>
	\$2775.06

Conclusions and Recommendations:

The following has been paraphrased from Dr. Fawley's report to Yukon Antimony Corp., dated September, 1964.

"There is a large number of stibnite and silver-bearing veins on the property held by Yukon Antimony on Carbon Hill. These veins should be thoroughly investigated because of the rise in price of both antimony and silver. The results to date have been encouraging. Stripping has indicated that the main vein on Lum 7 and 8 widens with depth. Preliminary sampling indicates an average grade of 5.13% antimony, sufficiently high to encourage further exploration, both of this mineralized area and others on the property.

Further stripping and a diamond drilling program are recommended."

Personnel:

D.L. Cummings, 550 Columbia St. W., Kamloops, B.C.  
M.C. Williams, 10206 126<sup>th</sup> St, N. Surrey, B.C.  
Dr. A.P. Fawley, 1947 W. King Edward Ave, Vancouver 9, B.C.  
Gordy King, P.O. Box 2053, Whitehorse, Y.T.  
Kerth Lumsden, P.O. Box 2249, Whitehorse, Y.T.  
+ 2 labourers, addresses unknown.

J.J. Hyland

CANADA )  
PROVINCE OF )  
BRITISH COLUMBIA )

IN THE MATTER OF THE YUKON QUARTZ MINING ACT and IN THE MATTER OF THE MINERAL CLAIMS RECORDED IN THE NAME OF YUKON ANTIMONY CORPORATION LTD. (NPL) AND BEING SITUATE ON OR IN THE IMMEDIATE VICINITY OF CARBON HILL, WHEATON DISTRICT, YUKON TERRITORY, and IN THE MATTER OF THE FIRST ENGINEERING REPORT MADE BY ALLAN P. FAWLEY, Ph.D., P. Eng., THE ABOVE COMPANY'S MINING ENGINEER AND GEOLOGIST, FOLLOWING AN EXAMINATION OF THE LUM GROUP OF MINERAL CLAIMS, FORMERLY KNOWN AS THE BECKER-COCHRAN MINERAL CLAIMS and IN THE MATTER OF THE MINING AND REMOVAL FROM THE SAID LUM GROUP OF MINERAL CLAIMS OF A BULK SAMPLE OF 12 TONS OF ORE TO KAMLOOPS, B.C., and IN THE MATTER OF ASSAYS AND SMELTER TESTS MADE FROM BULK SAMPLES OF THE SAID 12 TONS OF ORE BY THE DEPARTMENT OF MINES AND TECHNICAL SURVEYS, OTTAWA, AND BRITTON RESEARCH LABORATORIES LTD., VANCOUVER, B.C. UNDER THE SUPERVISION OF WRIGHT ENGINEERS LTD.

I, JAMES CHISHOLM RALSTON, of 507-475 Howe Street, Vancouver, 1, B.C., do solemnly declare as follows:

1. THAT I am solicitor, director and secretary of Yukon Antimony Corporation Ltd., hereinafter referred to as Yuanco.
2. THAT I am advised and verily believe that Allan P. Fawley, Ph.D., P. Eng., examined the said Lum group of mineral claims, referred to above, on the 17th and 18th days of September, 1964.
3. THAT hereunto annexed and marked #1 to this my Declaration is a photocopy of Dr. Fawley's account dated the first of October, 1964, for the sum of \$609.50.
4. THAT I am advised and verily believe that in the presence of Mahlon C. Williams, Esq., under the direction of the said Dr. Fawley, 12 tons of ore were mined from the said Lum group and transported by low-bed truck to Kamloops as a bulk sample.
5. THAT hereunto annexed and marked #2 is a photocopy of the account of Madison Transport Ltd. for \$189.81.
6. THAT hereunto annexed and marked #3 is a photocopy of an account of the Canadian Pacific Railway for \$47.52, being the cost of transporting a bulk sample of approximately 700 lbs. to Ottawa.
7. THAT hereunto annexed and marked #4 is a photocopy of a preliminary report of December 2nd, from the Department of Mines and Technical Surveys, Ottawa.
8. THAT hereunto annexed and marked #5 is a photocopy of a report dated February 8th, 1965, from the Department of Mines and Technical Surveys, Ottawa.
9. THAT hereunto annexed and marked #6 is a photocopy dated February 16th, 1965, of a report from Wright Engineers Ltd. to the Department of Mines and Technical Surveys, Ottawa.

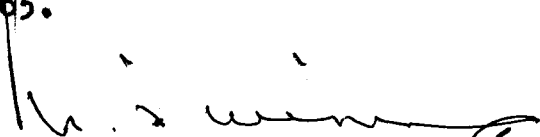
10. THAT hereunto annexed and marked #7 is a photocopy of a preliminary metallurgical report dated 18th January, 1965, made by Wright Engineers Ltd. to Yuanco.

11.. THAT hereunto annexed and marked #8 is a photocopy of an account of Wright Engineers Ltd., receipted paid, to which is annexed a photocopy of the account of Britton Research Laboratories to Wright Engineers Ltd. for the sum of \$2,003.23.

12. THAT the geological investigation made by Dr. Fawley and the assays and concentration tests made by Britton Research Laboratories Ltd. and the evaluation thereof by Wright Engineers Ltd. were essential and necessary to enable Yuanco to ascertain the values recoverable from the stibnite ore found on the said Lum mineral claims and to ascertain that the said ore could be concentrated to a degree of purity acceptable in the antimony market, free of excessive impurities.

AND I MAKE this solemn declaration, conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath, and by virtue of the Canada Evidence Act.

DECLARED before me at the  
City of Vancouver, in the  
Province of British Columbia,  
this 1<sup>st</sup> day of June, A.D.  
1965.



A Commissioner for taking Affidavits  
within British Columbia.

**ALLAN P. FAWLEY, PH.D., P.ENG.**  
**CONSULTING MINING ENGINEER AND GEOLOGIST**

1947 WEST KING EDWARD AVENUE  
VANCOUVER 9, BRITISH COLUMBIA

Oct. 1, 1964

STATEMENT

OCT 1 1964

Yukon Antimony Corporation Ltd.  
c/o J. C. Ralston, Esq.  
507 Stock Exchange Building  
Vancouver 1, B.C.

Professional fees for a geological examination  
of the Becker-Cochran antimony deposit on Carbo.  
Hill, Wheaton District, Yukon during the period  
Sept. 17-20, 1964 \$300.00

For research and study of former maps and reports  
and a long written report (several days work) 150.00

Expenses

in Air ticket, Whitehorse and return	\$150.00	
Capital Hotel, Whitehorse Sept. 17	7.00	
Meals	<u>2.50</u>	
		<u>159.50</u>

Total 509.50

Less

Advance of	\$200.00	
Shared $\frac{1}{2}$ of air ticket cost with another company	<u>75.00</u>	
		<u>275.00</u>

Net \$334.50

*OK*

*114*

# MADISON TRANSPORT LTD.

BOX 678, WILLIAMS LAKE, B.C.  
PHONE 392-5455 OR 392-5732

LOWBED SERVICE — POLES — PILING — STEEL — HEAVY EQUIPMENT

SOLD TO Highland Development  
Kemp

DATE Sept 27 1964

ITEM	WEIGHT	RATE	MILES TRAVELLED	AMOUNT
1 load Antimony Ore 30 barrels	11,863	@ 16.00 a ton		189,811
Taxes # 555-96				
Tare # 31865				
Net 23725				
Unit # 8446				
d/s # 1037				

SHIPPING INSTRUCTIONS -

TO Kemp  
FROM White Horse, B.C.

RECEIVED BY \_\_\_\_\_

4693

#3

M.S.R. 100-4

STATEMENT

Canadian Pacific MERCHANDISE SERVICES

ACCOUNT NUMBER  
899978

DATE RENDERED

TO Highland Development Co. Ltd.,  
550 Columbia W.,  
Kamloops, B. C.

*OK Finance Nov 3/64*

PLEASE MAKE YOUR REMITTANCE PAYABLE TO CANADIAN PACIFIC MERCHANDISE SERVICES.

MAIL TO: TERMINAL MANAGER, MERCHANDISE SERVICES.

3rd and Lorne, Kamloops, B.C.

*changed on Feb 1039*

	CANADIAN PACIFIC RAILWAY	CANADIAN PACIFIC EXPRESS	CANADIAN PACIFIC TRANSPORT	TOTAL
FORWARDED	4752			4752
RECEIVED				
	4752			

*cheque # 597*

TO ENSURE PROPER APPLICATION OF THIS ITEM TO YOUR ACCOUNT PLEASE RETURN DUPLICATE COPY OF STATEMENT AND ATTACH ANY DISPUTED ITEMS WITH REASON FOR NON PAYMENT

TOTAL WEEKLY ACCOUNT



4752

THIS ACCOUNT IS DUE AND PAYABLE WITHIN 7 DAYS OF DATE RENDERED



FILE NO

DEPARTMENT  
OF  
MINES AND TECHNICAL SURVEYS

MINES BRANCH

Mineral Processing  
Division

40 Lydia Street,  
Ottawa 1, Ontario,  
December 2, 1964.

Mr. J. C. Ralston,  
507 Stock Exchange Building,  
Vancouver 1, B.C.

Dear Mr. Ralston:

Re: Yukon Antimony Corporation Ltd.

The investigation on your antimony ore is now underway. Chemical analysis of the head sample gave the following results.

Gold (Au)	-	0.01 oz/ton
Silver (Ag)	-	0.03 "
Antimony (Sb)	-	9.52 %
Arsenic (As)	-	0.12 "
Lead (Pb)	-	0.024 "
Copper (Cu)	-	0.004 %
Nickel (Ni)	-	0.12 "
Iron (Fe)	-	0.28 "
Sulphur (S)	-	5.64 "
Insoluble	-	73.70 "

A few preliminary flotation tests have shown the need for an activating agent to obtain a good recovery of stibnite. Reagents, such as copper sulphate, coal tar creosote and lead acetate, are currently being tested for this purpose.

As soon as the results of these tests are obtained, we will send you a progress report.

Yours truly,

G. I. Mathieu,  
Non-Ferrous Minerals Section.

GIM/Jg

(for) L. E. Djingheuzian,  
Chief of Division.



Department of Mines and Technical Surveys  
Ministère des Mines et des Relevés techniques

Ministère des  
Mines et des Relevés techniques

Division des  
Mines

40 Lydia Street,  
Ottawa 1, Ontario,  
February 8th, 1965.

Mineral Processing Division

Mr. J.C. Ralston,  
507 Stock Exchange Building,  
Vancouver 1, B.C.

Dear Mr. Ralston:-

We are currently producing stibnite concentrate assaying over 60% Sb with a recovery of 90%. The main metallic impurities in these concentrates were as follows:-

Zinc (Zn)	-	1.2%
Lead (Pb)	-	0.2%
Arsenic (As)	-	0.1%

Attempts to depress the zinc minerals are currently under investigation even if the smelter schedules received do not mention any particular specifications about the zinc content. Therefore, any further information you may have on specifications for zinc in a stibnite concentrate would be helpful.

In our test work, we have consistently obtained stibnite concentrate much lower in lead than that obtained by Mr. Britton. On this matter, we would like to point out that their lead analyses for the head sample and the concentrate are not entirely compatible on the basis of the ratio of concentration.

We would be interested to know the zinc, copper and nickel content in the stibnite concentrate produced in the Britton Laboratories and the nickel analysis of their head sample, if these are available.

Yours truly,

C.I. Mathieu,  
Non-Ferrous Minerals Section,  
for L.E. Djingheuzian,  
Chief of Division.

GIM:em

WRIGHT ENGINEERS LIMITED

February 16, 1965

Mr. G.I. Mathieu,  
Non-Ferrous Minerals Section,  
Department of Mines & Technical Surveys,  
Mineral Processing Division,  
40 Lydia Street,  
Ottawa 1, Ontario

FEB 18 RECD

Dear Mr. Mathieu:

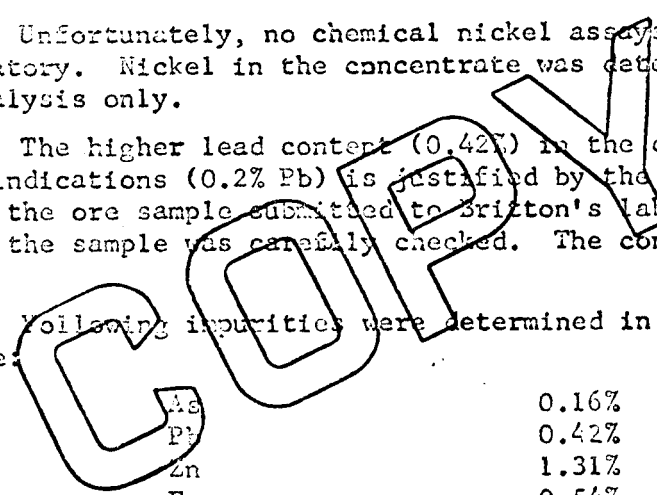
Re: Yukon Antimony Corp. Ltd.  
Our Project No. 442

Mr. J. C. Ralston asked us to send to your Division assays of zinc, copper and nickel of the Stibnite concentrate as produced in Britton's Research Laboratories.

Unfortunately, no chemical nickel assays are available at this laboratory. Nickel in the concentrate was determined by a spectrographic analysis only.

The higher lead content (0.42%) in the concentrate compared with your indications (0.2% Pb) is justified by the higher lead content (0.09%) in the ore sample submitted to Britton's laboratory. This lead content in the sample was carefully checked. The concentration ratio is 6.35:1.

Following impurities were determined in the final Stibnite concentrate:



As	0.16%
Pb	0.42%
Zn	1.31%
Fe	0.54%
Cu	0.007%
Sn	0.001%
Bi	0.001%
Ni	0.002% (Spectro)
Se	not detected

A concentrate of 65% Sb can be made at about 90% recovery.

Yours very truly,

WRIGHT ENGINEERS LIMITED

*[Signature]*  
Henry V. Zaruba

WVE/ml  
cc to Mr. J.C. Ralston



WARRANT ENGINEERS LIMITED

PRELIMINARY METALLURGICAL REPORT

(Report No. 1)

Concentration tests on antimony ore from the Property of Yukon Antimony Corporation Ltd. (NPL), near Robinson, Yukon Territory.

THE ORE SAMPLE

A bulk sample of antimony ore contained in six bags and having a gross weight of 500 pounds was delivered to Britton Research Laboratories for testwork. An additional bag with specimen rocks of about 100 pounds is to be kept for later mineralogical investigations.

A 50 pound ore head sample crushed to minus 10 mesh was prepared by Mr. Britton. Following chemical analysis was determined:

Au	0.008 oz./ton
Ag	0.15 oz./ton
Sb	11.78 %
As	0.06 %
Pb	0.02 %
Cu	0.017 %
Fe	2.45 %
S	5.27 %
Zn	0.43 %

ORE GRINDING AND ROUGHER FLOTATION

The influence of ore fineness on the flotability of the antimony mineral (Stibnite) in roughing was determined.

The ore sample of minus 10 mesh size was ground to 44%, 56% and 70% minus 200 mesh.

The coarse grind to 44% -200 mesh was accomplished in 25 minutes and requires 8 KWH per ton of ore.

The rougher flotation was carried out in four stages using lead nitrate as activating agent, sodium isopropyl Xanthate as collector, Carnea 21 and Dowfroth 250. Sodium carbonate and sodium cyanide were added to the grinding mill.

In the following Table #1 are summarized the antimony recoveries and grades of the total rougher concentrates as well as the first rougher concentrates (first stage of roughing).

TABLE 1

Test	Ore grinding, % minus 200 mesh	1st Rougher Concentrate		Total rougher Concentrate	
		Sb %	Rec. %	Sb %	Rec. %
1	44	55.68	87.3	41.87	97.2
2	56	54.85	87.1	39.97	95.7
3	70	52.30	82.2	40.45	85.1

The first rougher concentrates show that fine one-stage grinding appreciably decreases the flotability of Stibnite. More selective grinding and rougher concentrate regrinding will be an important phase ahead of concentration procedures.

The detailed rougher flotation Test #1 with coarse ore grinding to 44% minus 200 mesh, summarizing the four rougher stages is given in Table #2.

TABLE 2

Product	Weight %	Sb %	Sb Rec. %
a First Rougher Concentrate	17.98	55.68	87.3
b Second Rougher Concentrate	2.40	23.48	4.9
c Third Rougher Concentrate	2.00	12.35	2.2
d Fourth Rougher Concentrate	4.56	6.51	2.6
e Total Rougher Concentrate	26.94	41.27	97.2
f Total Tailings	73.06	0.44	2.8
g Calc. head	100.00	11.44	100.0
a+b Combined	20.38	51.89	92.4
a+b+c Combined	22.38	48.35	94.6

#### COMPLETE PRELIMINARY FLOTATION TEST

Based on above preliminary testwork, a complete flotation test was carried out with ore ground to 44% -200 mesh. Three cleaning stages follow the rougher flotation. Two final concentrates were taken off in the third cleaning stage.

The screen analysis of the head sample and the final concentrate are shown in Table #3, the flotation results in Table #4. Table #5 indicates the total reagent consumption in roughing and cleaning.

TABLE 3  
(Screen Analyses)

Mesh Size	Weight Percent	
	Head Sample	First Concentrate (final, preliminary)
+48	4.2	Nil
65	11.2	1.5
100	17.6	8.2
150	13.1	10.5
200	10.3	10.3
+325	11.9	13.9
-325	31.7	55.6
-200	43.6	69.5



**TABLE 4**  
(Test F4)

Product	Weight %	Assay %					Sb Rec. %
		Sb	As	Pb	Fa	SiO <sub>2</sub>	
a First Concentrate	18.78	57.19	0.14	0.45	0.88	13.40	92.2
b Second Concentrate	0.73	15.11					1.0
c Third Cl. Tailings	0.57	6.03					0.3
d Second Cl. Tailings	1.12	4.90					0.4
e First Cl. Tailings	5.69	3.96					2.0
f Rougher Tailings	73.11	0.66					4.1
g Calc. Head	100.00	11.65					100.0
<b>Calculated Results</b>							
a+b	"	"	19.51	55.62			93.2
a to e	"	"	20.08	54.21			93.5
a to d	"	"	21.20	51.60			93.9
a to e	"	"	26.89	41.52			95.9
etc	"	"	1.30	11.13			1.3

	Flot. Time Minutes	Pulp Temp. °C	pH
Roughing	25	18	7.7
1st Cleaning	10	16	9.4 - 8.1
2nd Cleaning	8	15	9.5 - 7.9
3rd Cleaning	5	14	9.6

The total reagent consumption of the first complete test is summarized in Table #5.

**TABLE 5**  
(Reagent Consumption)

Reagents	Roughing lb./ton	Cleaning lb./ton
Lead nitrate	3.5	0.8
Sodium isopropyl Xanthate	0.18	0.03
Dowfroth 250	0.09	0.01
Carnas 21	0.2	-
Sodium Cyanide	0.2	0.1
Sodium Carbonate	2.0	1.0



CONCLUSIONS

The preliminary flotation tests with various fineness of the ground ore indicate that the flotability of the antimony mineral decrease when the ore is finer ground than 44% minus 200 mesh. The Stibnite slimes a great deal. With finer grinding, the ore size distribution becomes unfavourable for the separation procedure. This is shown in Table 1 on the flotation characteristics with decreasing recoveries for finer grinding.

The use of Lead nitrate as activating agent gives satisfactory results in the primary testwork.

A complete flotation test (Table 2) with the coarse ore grinding (44% -200 mesh) indicates that good grade and recovery will be possible by avoiding overgrinding and using more selective grinding. Stagewise coarse grinding as well as careful rougher concentrate regrinding for middling (Stibnite - silica) -liberation are important. Regrinding probably to 90% -325 mesh of a part of these middlings seems to be necessary.

This preliminary testwork shows that a final concentrate of 62% Sb at about 88% recovery is possible. Tests continue to realize above conditions and by suitable reagent adjustment and distribution to reduce the relatively high Pb content in the concentrate.

WRIGHT ENGINEERS LIMITED



Henry V. Zaruba, P. Eng.

Vancouver, B.C.  
January 18, 1965





# WRIGHT ENGINEERS LIMITED

1101 WEST PENDER STREET  
VANCOUVER 1, B.C., CANADA

TELEPHONE: 683-7595  
CABLE: "METWRIGHT"

**RECEIVED**  
APR 22 1965

INVOICE NO. 1218

April 20, 1965

IN ACCOUNT WITH

Yukon Antimony Corp. Ltd.  
507 - 475 Howe Street  
Vancouver 1, B. C.

**Re: Feasibility Report and Testwork on Robinson, Yukon Territory Property**  
**Our Project No. 442**

**TO: Engineering Services:**

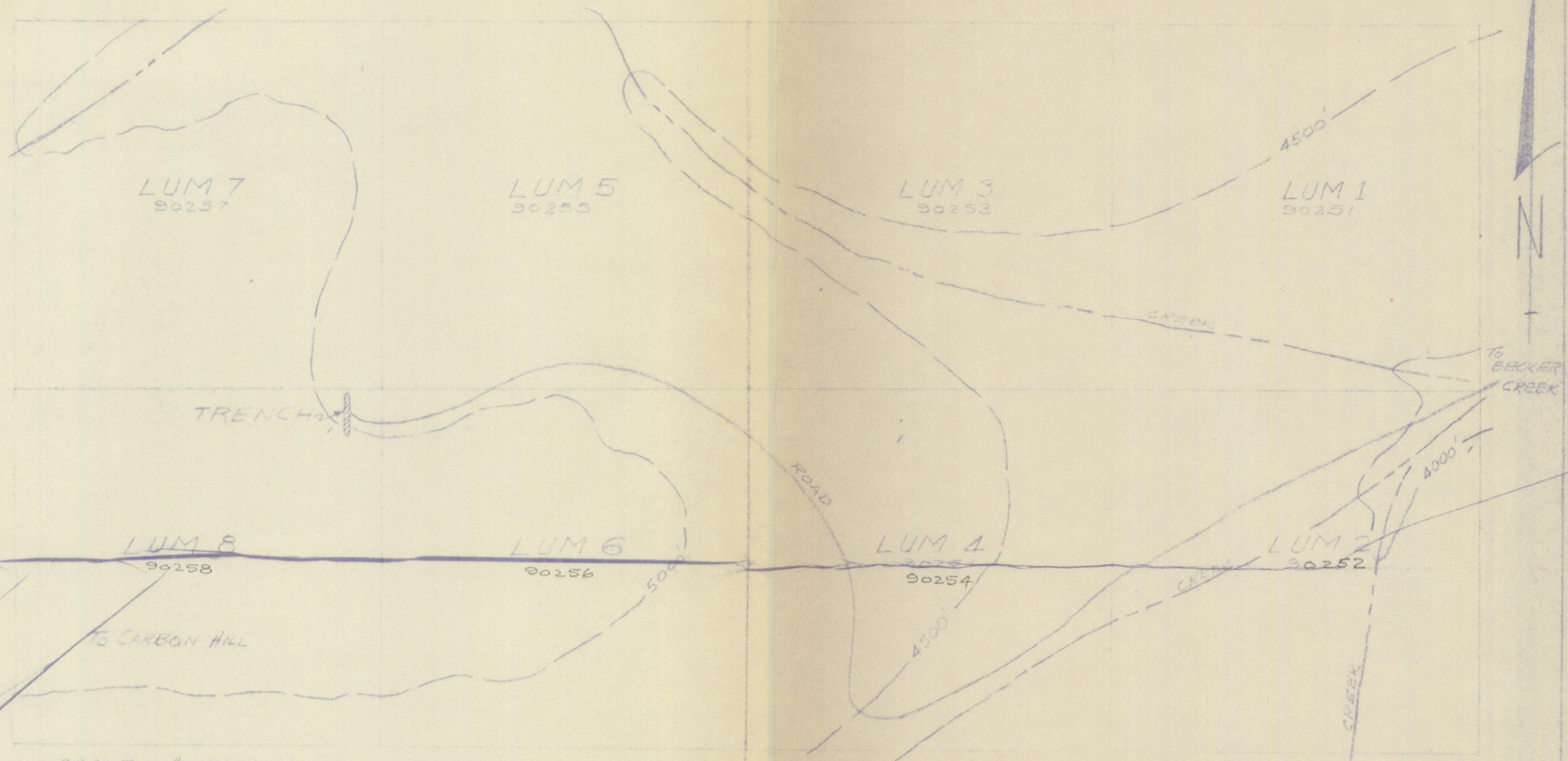
December	\$ 180.00	
January	292.50	
February	267.58	
March	<u>103.15</u>	\$ 843.23 ✓
Misc. Expenses		
Britten Laboratories Invoice		<u>1,160.00</u>
		\$ <u>2,003.23</u> ✓

*OK*  
*J. [Signature]*  
*[Signature]*

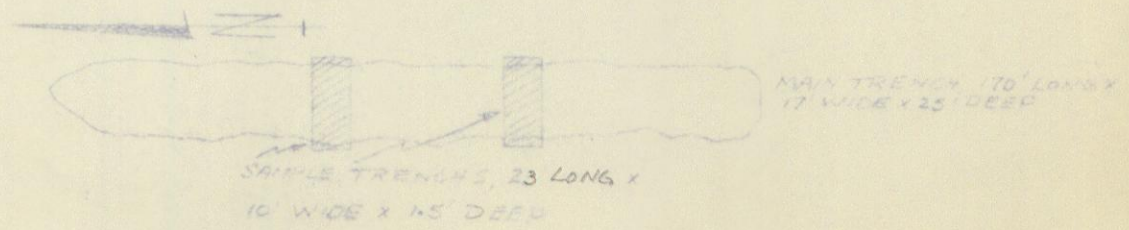
**PAID**  
APR 22 1965

Ck. No. 55 Appd. \_\_\_\_\_





SCALE: 1" = 500'



SCALE: 1" = 50'

YUKON ANTIMONY CORP.

TO ACCOMPANY ASSESSMENT APPLICATION

ASSAY RESULTS:

	(1)	(2)
Antimony	9.52 %	11.78 %
Arsenic	0.12	0.06 "
Copper	0.004	0.017 "
Iron	0.28	2.45 "
Lead	0.024	0.02 "
Nickel	0.12	0.002 "
Sulfur	5.64	5.21 "
Gold	0.01 oz/ton	0.008 oz/ton
Silver	0.03 " "	0.15 " "

(1) DEPT. OF MINES  
(2) BRITTON LABS

NATURE OF FELDSPAR IN TRENCH:  
30% HARD SILICIOUS VOLCANIC ROCK  
70% CLAY-LIKE GOUGE