

86-428-15409

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

15,409

ASSESSMENT REPORT

ON THE

SYLVAN CLAIM

LILLOOET MINING DIVISION



N.T.S. 92J/7E

Lat. 50° 29' Long. 122° 42'

for

Owner: Mr. N.E. FERGUSON

9128 Armitage Street  
Chilliwack, B.C.

Operator: G.H. MUELLER

Vancouver, B.C.  
June, 1986

G. (Hein) Mueller  
Metallurgist

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## LOCATION AND ACCESS

The claims are located some 12 miles north of Pemberton on the Birkenhead River. Access to the property is by the Pemberton-Lillooet Road as far as Gransoms and thence 4.1 miles by a good all weather logging road. Gransoms is a flag stop on the British Columbia Railroad. Year round access is maintained.

The geographical location is  $50^{\circ} - 30'$  north latitude and  $122^{\circ} - 45'$  west longitude.

The claims are in the valley of the Birkenhead River and claim elevations range from 3,000 feet to 4,000 feet.

5 Feb. 1987

The Sylvan Claim- ----- Record No. 2944

FreeMiners Certificate No 265212

50' 30'' Latitude 122' 45'' Longitude

The claim consisting of nearly 9 units is located approx. 12 miles North of Pemberton. From the main road at the Gramson turn off there is a good forest road 4 miles towards Birkinhead Lake then double back 1½ miles on a slightly higher road. The Initial post is located on the shore of the Birkinhead river Thence N. 3 units 3 E. - 3 S. 3 W. to place of beginning. The center unit is where the open pit is. There is a 21½ M face that was sampled every 7 M. It seems to be 2 bodies of ore. On the one side is high in Gold and no Pl. On the other side is Pl. and no gold. The 2 bodies of ore comes together and looks the same. The body of ore, drilled by Malibu Metals about 20 years ago. It was found that it goes down to a depth of at least 33M! The body of ore runs up hill for 120 K. We checked it many times with a metal detector. On G. Mueller's report he explains the rock and what it consists of on Pages 3-4-5. It was enough values that so far they have spent over 120,000.00 on research

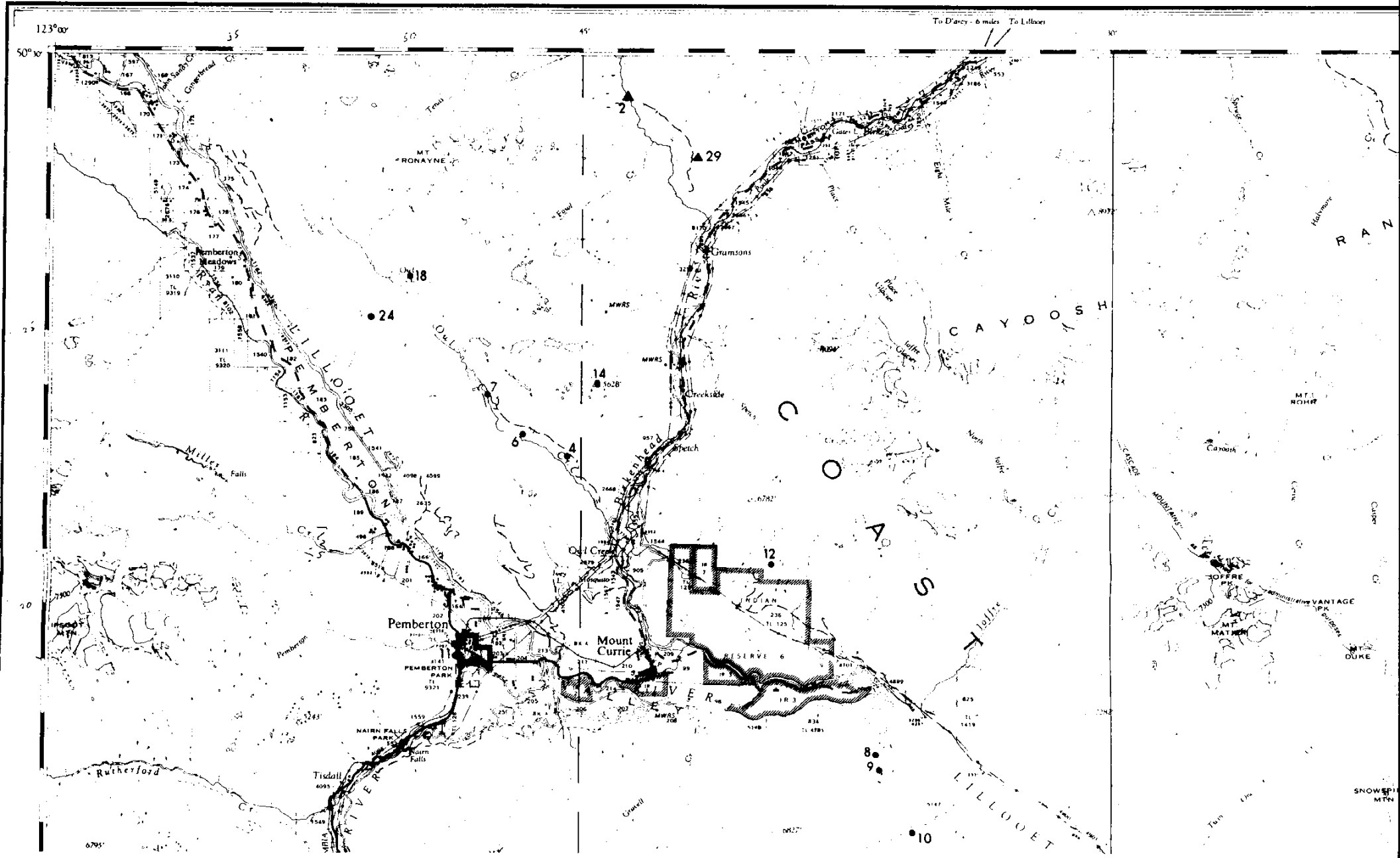
*I hope this is satisfactory - Please reply*

LOG NO. 209	RD. 9
ACTION:	
FILE NO:	

*J. E. Ferguson*

# REVISED MINERAL INVENTORY MAP

92J/SE (M1)



M92J/7E

SECOND HORSE'S ASS

BANK 2 870 (B)	BANK 4 872 (B)
BANK 5 698	BANK 3 871 (A)

1538 (5)  
(48,481)  
OLE 04-1888(1) 8448

BIRK 134  
1554 (9) C  
(38,334)

SYLVAN

ALSO SYLVAN  
136 (12)  
TAG NO. 04008  
CONSISTING  
OF

WARPOOLE  
1813 (7)  
(44,424)

HEAD 1  
1930001

1320 (A)  
(34,321)

1 UNIT  
NORTH  
1 UNIT  
EAST

BIRK 136  
1556 (9)  
FOWL CT.

HEAD 5  
1934001

HEAD 6  
1935 (10)

LIZARD 2  
1632 (12)  
(68,681)

HEAD 7  
1936 (10)

HEAD 8  
1937 (10)

HEAD 9  
1938 (10)

HEAD 10  
1939 (10)

HEAD 11  
1940 (10)

HEAD 12  
1941 (10)

LIZARD  
579 (11)

KELLY LAKE DRENTE TL (PROPOSED)

Framsons

MINERAL PLACER RESERVE  
OIC 268, 83-02-21  
SUBJECT TO CONDITIONS

OWL MOUNTAIN  
1945 (11)  
(38,441)



92J/17E

Province of British Columbia  
Ministry of Energy, Mines and Petroleum Resources

ZONE N  
EAST  
2528 (3)  
81481582

ZONE  
A  
2527  
(3)  
81447  
(38,441)

Miles 1 5 0 1 2 Miles

Metres 1000 500 0 1000 2000 3000 Metres

Kilometres 1 .5 0 1 2 3 Kilometres

92 J/7 W

ZEB 3

IR. 4

ORSE'S ASS

BANK 2 870 (8)	BANK 4 872 (8)
BANK 1 8693	BANK 3 871 (8)

BIRKEN 2  
2912 (7)  
(43 x 5E) 04250

38 (5)  
(5 x 4E)

SYLVAN

SAMPLES A, B, C  
FROM OPEN PIT

ALSO, SYLVAN ALSO  
2817 (4) BANK 8  
(IN 14) 97453  
2976 (9) 2977 (9)  
2944 (8)  
(3N x 3E)  
06183

BIRKEN 3  
2913 (7)  
(33 x 6W)

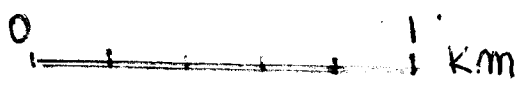
BIRKEN 5 2974 (9)  
BIRKEN 6 2975 (9)

LIZARD 2  
1632 (12)  
(6H x 3E)

OWN

36795

SAMPLE LOCATION MAP



1:18,500 scale  
M 925/7 E

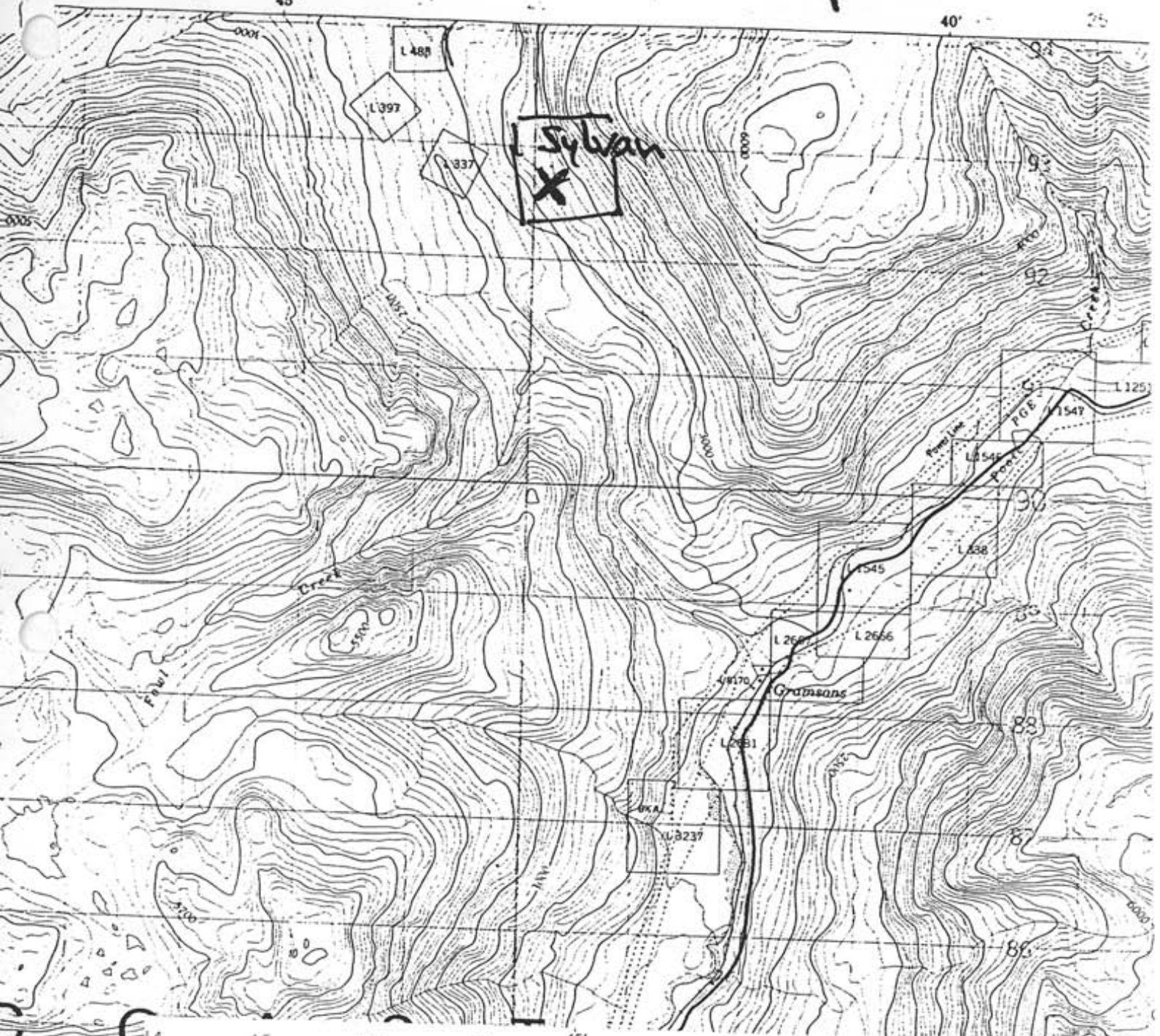


PROPOSED

ramson

CANADA

Joins 92 J/10  
45'

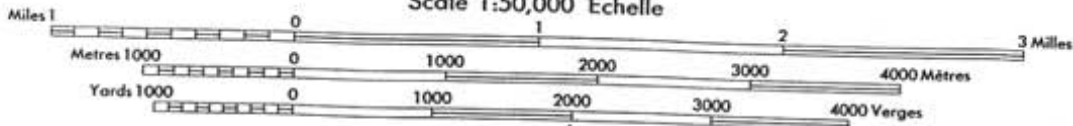


PEMBERTON

LILLOOET DISTRICT

BRITISH COLUMBIA

Scale 1:50,000 Échelle



92 J/17E.



## EVALUATION AND TESTING REPORT

From November, 1984 through June, 1985 I have intensively investigated sixteen soil samples and eight chip samples.

The soil samples were collected in the vicinity of an ore outcropping and subjected to mineral dressing procedures, and various concentrating efforts were undertaken.

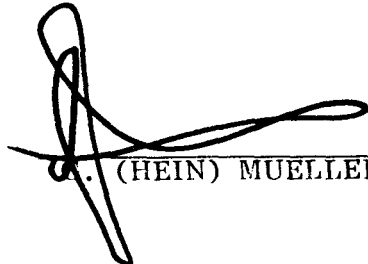
In our own laboratory I have produced four metal buttons which were assayed by Chemex Labs in Vancouver, B.C.

The pulped chip samples were subjected to an extraction concept without alteration or concentration attempts. The results per assay reports warranted further work and most efforts were directed toward bio-leaching applications. The inferred Pt group elements content which were reported by Mr. R.E. Renshaw from the vicinity of the Sylvan Claims were indirectly substantiated.

In July, 1985 I conducted eight days of soil sampling with the emphasis on the detection of the refractory fraction of the pyrite and pyrrhotite.

Of great importance to me was the observation of the weathering of rocks due to the bio-leaching principles.

A proposal has been submitted and is under consideration to establish a processing plant in Pemberton employing bio-leaching technology. Mr. David P. Taylor, Suite 480, 625 Howe Street, Vancouver, B.C. has inspected the property AND comprehensively sampled it. His opinion is attached to this report. He is a graduate of the Royal School of Mines, University of London, England, 1971. He is a member of the Association of Professional Engineers of B.C. A production oriented evaluation of the samples will be produced by B.C. Research. My request and their recommendations are attached to this report.

  
H. (HEIN) MUELLER

Guenther (Hein) Mueller  
1585 - 555 Burrard Street  
Vancouver, British Columbia  
V7H 1H8

Telephone (604) 688-0061

March 30, 1983

To whom it may concern:

CONCENTRATION - TECHNOLOGIES  
METAL - EXTRACTION - TECHNOLOGY  
Reasearched and developed by  
G. Mueller and considered his intellectual property

Target Resources:

auriferous polymetallic compounds and alloys  
argentiferous polymetallic compounds and alloys  
tellurium compounds  
tellurium Te8 anomalies  
platinoids

These resources were extensively analysed, tested and processed over the past two-years.

I developed a complex processing-concept spanning from concentration to extraction of precious metals involving the above mentioned minerals and other complex ores.

Since electronic principles are a large part of the processes output, and cost-factors are easily predictable, and pollution is negligible.

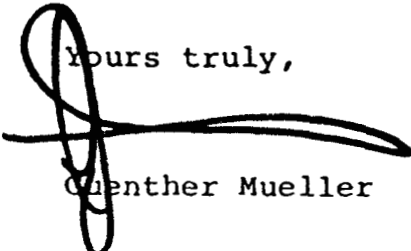
I'm aware that similar methods are employed in the industry with some success. However, the omission of intermediate steps and by not applying the final extraction-method, greatly reduces the feasibility of conventional processing-methods.

The detailed description and the abstracts of my concept is registered and available to a party with substantial resources to establish industrial-scale facilities.

Well identified and located mineral-deposits are available in large quantites and would guarantee exellent prospects.

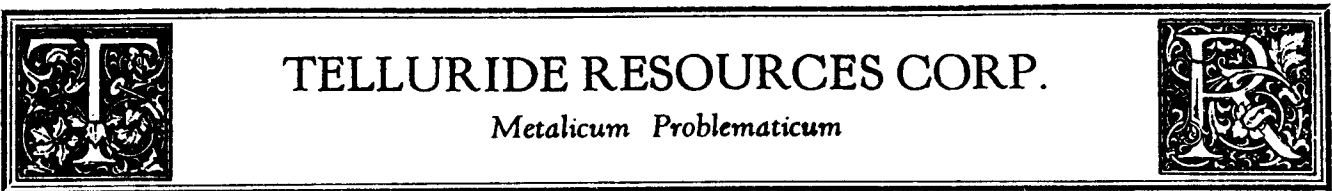
If any further assistance is needed please feel free to contact the writer.

Yours truly,



Guenther Mueller

GM:jep



TELLURIDE RESOURCES CORP.

*Metalicum Problematicum*

STATEMENT OF COST for period of July, 1985 to June, 1986

June 18, 1986

Mr. Norman Ferguson  
9128 Armitage Street  
Chilliwack, B.C.  
V2P 6R7

Re: Assessment work performed on your behalf:  
Sylvan Claims,  
Lillooet Mining District, B.C.

---

50 soil samples collected and evaluated for heavy minerals content and pyritic residue, April, 1986, 8 days, 2 persons \$1,200.00

May, 1986, property inspection by Mr. D.P. Taylor, 3 days, report and expenses \$1,650.00

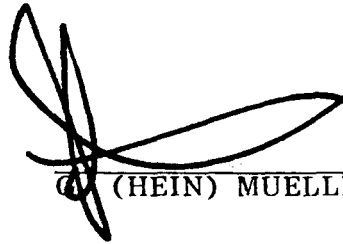
Word processing and administration costs pro rata paid by Telluride Resources \$1,600.00

TOTAL: \$4,450.00

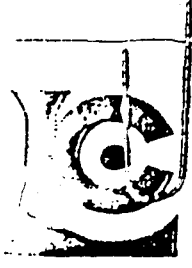
STATEMENT OF QUALIFICATIONS

The undersigned has worked in the field of electronics and applied physics for approximately fifteen years.

I have a certificate of Certified Master Technician issued in Cologne, West Germany, 1964 by the Board of Guilds of Wireless Technologies. I was part of an extensive R and D effort regarding extractive technologies and new metallurgical applications involving electronic principles. The general description of this work is attached to this Statement of Qualifications.



(HEIN) MUELLER



# Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave  
North Vancouver, B.C.  
Canada V7J 2C1  
Telephone: (604) 984-0221  
Telex: 043-52597

## CERTIFICATE OF ASSAY

TO : MUELLER, G. AND ASSOC  
THREE BENTALL CENTER  
P.O. BOX 49059  
VANCOUVER, B.C.  
V7X 1C4

≠≠ CERT. # : A8415423-001-  
INVOICE # : 18415423  
DATE : 11-SEP-84  
P.O. # : NONE  
ELDEN 1587

Sample description	Prep code	Acid % insol	Ag con oz/T	Au con oz/T	Weight g	recalculated ↓
A	225	0.056	--	0.090	75.85	-- <del>0.202 t</del>
B	225	0.115	--	0.510	59.62	-- <del>1.302 t</del>
C	225	0.169	--	1.360	54.08	-- --
P	225	0.123	--	0.740	23.66	-- --
Z	209	--	0.70	--	--	-- --

Canadian pyrite, no pre-treatment, 50g samples A+B  
5gm C-sample alluvial, PGE's contained  
in insolubles, Lignite deposit,

DISSOLVED IN NITRIC ACID

FILTERED + WEIGHED

EG. A.

$$0.056\% \times 5\text{gm} = 0.0028\text{ gm} = 2.8\text{ mg}$$

0.090 oz/T

FOR 1 2000 LB TON

THERE IS 0.090 TROY OUNCES OF GOLD

29.166 gm HAVE 0.090 mg Au

75.85 gm HAVE 0.234 mg Au

Registered Assayer, Province of British Columbia



## Sample Description

<u>Sample</u>	<u>Description</u>
A.	Rock sample from Sylvan open-pit. Skarn rock containing 15 - 18% Pyrite & Pyrrhotite. Rock sample is altered limestone.
B.	Rock sample from Sylvan open-pit. Skarn rock containing 40 - 50% Pyrrhotite and minor Pyrite. Limestone - intermediate volcanic skarn.
C.	Rock sample from Sylvan open-pit. Skarn rock containing 70% Pyrrhotite and trace pyrite. Rock is basically a limestone skarn.
P.	Composite of 50 soil samples collected from rusty zones on main Birkenhead River Road. Composite was compiled from panned material.
Z.	Slag sample check. Slag from five assay tests was checked for remnant Ag content.



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Telex: 043-52597

## CERTIFICATE OF ASSAY

TO : MUELLER, G. AND ASSOC  
THREE BENTALL CENTER  
P.O. BOX 49059  
VANCOUVER, B.C.  
V7X 1C4

\*\* CERT. # : A8516253-001-A  
INVOICE # : I8516253  
DATE : 19-SEP-85  
P.O. # : NONE  
ELDEN 1883

Sample description	Prep code	Au FA oz/T	Weight grams	Acid Insol. grams			
A	225	0.379	123	0.190	--	--	--
R	225	0.435	60	--	--	--	--

NOTE: ACID INSOLUBLE GRAMS RESIDUE AFTER NITRIC ACID LEACH ON A 5.0 GRAM SAMPLE

.....  
Registered Assayer, Province of British Columbia



Sample Description

<u>Sample</u>	<u>Description</u>
A.	Assay of Button Sample of metal derived from metallurgical testing of pyrrhotite pulp from Sylvan open-pit.
R.	Assay of Button Sample of metal derived from metallurgical testing of pyrite pulp from Sylvan open-pit.



D.P. Taylor, P.Eng.  
254 E. 27th Street  
North Vancouver, B.C.  
V7N 1B6

12 June, 1986

Mr. G. Mueller  
Suite 1103  
1644 West 12th Avenue  
Vancouver, B.C.  
V6J 2E4

Dear Sir:

In mid-May of 1986 over a period of four days, an inspection was made by the writer of the Pemberton-Birkenhead River area.

The inspection was made in the company of Mr. J. Wilson, staker of several claim groups in the area, and findings were reported to yourself who covered the expenses of the inspection.

One of the prime objects of this inspection was a prominent iron sulphide showing on the Sylvan claim on the northeast slope of the Birkenhead River. This showing is known to contain significant quantities of gold but to date has never been, to current knowledge, geologically mapped.

During the visit a regional assessment was made, somewhat interfered with by a late spring snowfall that covered all of the higher country, a visual and on-ground orientation was conducted in the Birkenhead River and the Lilloet Valley, and detailed inspections were made on the Sylvan and Bank claims.

Rocks in the area consist of Bendor Series volcanos, sediments and metasediments. These bedded rocks have been intruded by at least three phases of West Coast Complex Intrusives of generally dioritic to granitic composition.

Extensive areas of rust at high elevations in the area are believed to be the result of the oxidation of biogenetic pyrite disseminations in argillites and metasediments in the sedimentary pile. There is a possibility the rusty sequences are lower Ferguson Series.

In the area of the Sylvan and Bank claims limestone and highly carbonaceous rocks were noted directly adjacent to massive iron (pyrite and pyrrhotite) mineralization. In both cases intrusive rocks were also found in the immediate area. The sulphide mineral emplacement is the direct result of contact metamorphic type mineralization typical of intrusive effect on impure limestones in the coastal geological environment. Typically this type of deposit is emplaced as relatively small lenses which occur in series along carbonate-intrusive contact

areas. Though each lens may consist of a few thousand tons collectively they can represent very significant deposits. Once an area is mapped these lenses are also very easy to locate using simple geophysical techniques.

It would be expected that several more occurrences of mineralization can be located using such geophysical methods in the Sylvan-Bank claim area beneath the extensive over burden in the lower valley.

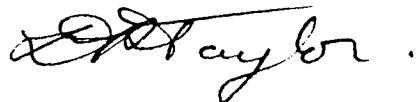
Both the Sylvan and the Bank claims are known by record to contain "sub-economic" gold and the Bank is recorded (Renshaw 1981) as having produced a memorably high platinum assay from a concentrate. Assays from the Sylvan property are reported to be in the 0.22-1.3 oz/ton range in gold, there are no reports of the Sylvan ever having been assayed for platinum through conventional methods. The writer was not involved with this assay report and can neither confirm nor discredit the results in the report.

During the field inspection five representative samples were collected from the Sylvan showing and two from the Bank.

Both deposits inspected, and further deposits that may be found in the area should be similar, contain large quantities of pyrite and pyrrhotite which, subject to the suggested bio-leach process, should produce copious quantities of excess sulphuric acid.

Bio-leaching techniques are expected to be cost effective in recovering the precious and exotic metal content of these ores subject to further exploration, testing, and capital emplacement.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "D.P. Taylor".

D.P. Taylor, P.Eng.

April 17th, 1986  
Our File: 5-40-001

# BC RESEARCH

3650 Wesbrook Mall,  
Vancouver, B.C.,  
Canada V6S 2L2  
Phone (604) 224-4331  
Cable RESEARCHBC  
Telex 04-507748

Mr. G. Mueller  
Telluride Resources Corporation  
#1103 - 1644 West 12th Avenue  
Vancouver, B.C.  
V6J 2E4

Dear Mr. Mueller:

Further to our meeting of April 16, 1986, we would be pleased to conduct the required research program. From our discussion, my understanding of the required work is as follows:

## Objective

To determine rate and extent of pyrite oxidation using optimized biological leaching on three pyritic concentrates and a composite thereof.

## Test Material

Three concentrates are to be supplied. We will require at least 6 kg of each test material to run tank tests and prepare a composite for concurrent testing.

## Proposed Program

Samples will be crushed (if required), riffle split and a composite prepared with specified proportion of each material.

Portions of each sample will be wet ball milled to 90% passing 400 mesh (38 $\mu$ ), filtered and air dried. Assay samples of each will be split out for determination of iron, sulphur, copper, arsenic and semiquantitative multi-element spectrographic analysis.

Initial leaching tests on all samples will be done in shake-flasks (ie. small scale) using optimized conditions and a pyrite acclimatized culture of Thiobacillus ferrooxidans. After 2-3 serial transfers or when good leach rates are observed by regular monitoring of dissolved iron, copper, Eh and pH, the shake flask pulps will be used to inoculate 4l batch tanks. Two or three cycles of tank leaching may be required to determine maximum rate and conversion values.

For tank leach tests, rate measurements will include determination of dilute hydrochloric acid soluble iron (ie. jarosite formed in the leach vessel) as well as soluble iron and the parameters noted above. Batch tank testing is proposed as the most cost-effective initial test procedure. We have demonstrated equivalent performance in (more expensive) continuous tests on a wide variety of concentrates.

*Technical Operation of the  
BRITISH COLUMBIA  
RESEARCH COUNCIL,  
a Non-profit Industrial  
Research Society*

Depending on results obtained, it may be desirable to investigate external iron precipitation as part of the tank leach program. There are at least two approaches to this which should be assessed when initial test data are available.

Final tank leach pulps will be filtered and dried to determine residue weight. After removal of analytical samples, all or part of the material (on your instructions) can be leached using dilute hydrochloric acid and/or sulphur dioxide solution to remove soluble iron leaving, an insoluble residue enriched in whatever precious metals are present in the samples. Please note that any silver present as sulphide, etc. will be largely converted to silver jarosite; silver present as electrum (Au-Ag alloy) is not usually converted to jarosite form.

Leach solution analyses will include iron, copper, pH, free and total sulphuric acid and multi-element semiquantitative analyses.

Residues and/or remaining concentrate samples will be returned or disposed of according to your instructions. Please note that froth flotation techniques can usually be adapted to separation of unleached sulphides from "oxide" (jarosite, silicate etc.) components of residue. Methods tend to be ore-specific, and flotation testing is not included in this proposal.

#### Schedule and Reporting

The anticipated project schedule is as follows, starting with project authorization or receipt of sample (whichever is later).

#### Time (weeks)

0-3 Sample preparation and shake flask leaching

4-9 Tank leaching

10-11 Final analyses and report preparation

This schedule is based on the expectation of rapid adaptation of bacteria to the pyrite and good leach rates as indicated by your field observations. A meeting or telephone conference should be held after 3-4 weeks to review progress and confirm plans for the tank leaching phase.

The final report will include a description of methods, results, conclusions and appropriate recommendations including preliminary evaluation of demonstration scale - ie. tonnes/day - leaching.

If you decide to proceed with demonstration scale work, our expertise should be supplemented by that of an engineering firm. Wright Engineers Ltd. was a co-sponsor of a recent major program on biological leaching, so they have staff familiar with design requirements. We have worked with other companies, however, and I would not wish to limit your options in this regard.

Cost and Method of Payment

Estimated cost of the proposed program is \$17,500 including labour, materials and reporting. B.C. Research policy requires an advance payment of 50%, with the balance due on submission of the report.

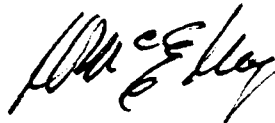
I would expect that the project and your company will be eligible for Technology Assistance Program funding as described in the brochure I gave you. I must advise you that a significant fraction of funds for this fiscal year of the program have already been allocated, so your prospects of support will be reduced if the project is delayed.

I trust that this proposal meets your requirements; if you have any questions or require further information, please contact me.

I appreciate the opportunity to be of service to your company and look forward to your reply.

Yours very truly,

B.C. RESEARCH



R.O. McElroy  
Head  
Division of Extractive Metallurgy

ROM/dlt