

# 721

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED  
TRAIL, B.C.

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GEOCHEMICAL SURVEY REPORT  
ON THE BAN NO. 2 CLAIM GROUP, PINCHI LAKE AREA,  
OMINECA M.D. (54° 124° NE)

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The claims belonging to the Ban No. Group are located 12 air-miles NNW of Fort St. James, B.C. The following is a list of the claims comprising the Ban No. 2 Group and shows the amount of assessment credits to be applied to each:

<u>Claim</u>	<u>Record No.</u>	<u>Requested Assessment Credits</u>	<u>Total</u>
<u>Ban No. 2 Group:</u>			
Ban 9-20	27616-27627	-	-
Ban 21-27	27628-27634	1 year each claim	7 yrs.
Ban 28-29	27635-27636	-	
Ban 30-33	27637-27640	1 year each claim	4 yrs.
Ban 34-35	27641-27642	-	
		TOTAL:	<u>11 yrs.</u>

Work was carried out on the above claims during the period from August 20 - August 28, 1965.

REPORT BY

D.W. HEDDLE

PROFESSIONAL ENGINEER

DWH:gmc  
January 24, 1966

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED  
TRAIL, B.C.

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SUMMARY

Total expenditure of the geochemical survey carried out on the Ban No. 2 claim group amounted to \$1,155. It is requested that \$1,100 of this amount be applied as assessment work credit to the Ban No. 2 claim group. An application for Certificate of Work form has been filed with the Mining Recorder at Smithers, B.C.

The following is a list of the claim in the Ban No. 2 claim group and shows the amount of assessment work to be credited to each claim:

<u>Claim</u>	<u>Record No.</u>	<u>Assessment Credits</u>	<u>Total</u>
<u>Ban No. 2 Group:</u>			
Ban 9-20	27616-27627	-	-
Ban 21-27	27628-27634	1 year each claim	7 yrs.
Ban 28-29	27635-27636	-	-
Ban 30-33	27637-27640	1 year each claim	4 yrs.
Ban 34-35	27641-27642	-	-
		TOTAL:	<u>11 yrs.</u>

INTRODUCTION

General

During July and August 1965 a geochemical (mercury detector) survey was carried out in the general Pinchi Lake area. Emphasis was placed on the coverage of claims overlying the Pinchi fault zone. Part of the survey included claims of the Ban Group No. 2 from which samples were collected and analyzed for mercury content. The immediate area along the Pinchi fault zone is known to be favorable for the occurrence of mercury mineralization. At least 15 cinnabar deposits have been found along the Pinchi fault and of these two have been economically mined in the past. A large detriment to prospecting for additional deposits in this area is the thick mantle of overburden which covers a large part of the area. Therefore in order to assess the area in terms of its mercury potential, methods other than standard prospecting methods must be employed. This geochemical survey was made on the basis that the mercury content of soils would indicate areas in which to localize more intensive geochemical or geophysical work or even targets which would warrant drilling or trenching.

Our work with the Lemaire mercury detector was to some extent experimental. Little or no information was available with respect to depth or soil horizon from which samples should be taken to obtain consistent and valuable results. We had no idea of what contamination might have resulted from the former reduction plant operation at the Pinchi Lake Mine or how widespread such contamin-

ation might be. The Lemaire detector in its present form does not distinguish between metallic mercury in the soil (halo effect) or possible cinnabar particles in the soil which may have been transported over considerable distances. We are currently conducting laboratory studies in an attempt to clarify some of the unknown factors which might aid in interpreting survey results. These studies will include experiments pertaining to the mode of occurrence of metallic mercury in soils and the nature of soil fractions which might provide the best and consistent conditions for concentration. Post doctorate research work along the general lines described above is now being done under Cominco sponsorship by Dr. L.M. Azzaria at McGill University.

The survey was done during the period from August 20, 1965 to August 28, 1965, under the supervision of D.W. Heddle (U.B.C. 1949), Cominco Senior Exploration Geologist and registered B.C. Professional Engineer. Field supervision and analysis were carried out by Dr. L.M. Azzaria (Ph.D. Geological Sciences, Toronto). Dr. Azzaria did post doctorate work at the University of California, Berkley, California under the direction of H.E. Hawkes, one of the foremost authorities in the development of mercury detector work. E.W. Batchelor and G.E. Paulus third year Geology students assisted in the field work.

#### Location and Access

Claims of the Ban Group No. 2 are located 12 airmiles NNW of the town of Fort St. James, B.C. They are accessible by road, a distance of some 17 miles. The last few miles of the road is only open in the summer and is an old logging road in poor condition.

#### GENERAL GEOLOGY

The Ban No. 2 claim group lies on the northeast shore of Pinchi Lake overlying the inferred position of the Pinchi fault zone. In general the northeastern margin of the Pinchi fault zone represents the contact between closely folded stratified Permian rocks on the southwest and Mesozoic formations and Jura-Cretaceous Omineca granitic intrusions on the northeast. It seems probable that the fault zone marks the site of major thrust-faulting from the southwest and that Permian rocks have moved up with respect to the Mesozoic formations. Intense faulting occurs in the Permian rocks within the fault zone. There the more important faults trend north and northwest and dip steeply west and southwest. The orebodies along the Pinchi fault zone, including the Pinchi Mine deposit occur in sheared and brecciated Permian limestones or in carbonatized serpentine.

Most of the outcrop on the Ban No. 2 claim group is exposed along the shore of Pinchi Lake. The large majority of the claim area away from the lake is covered with a mantle of overburden. Bedrock geology in covered areas is open to some degree of interpretation. It is believed that the Takla group of rocks underlie the claim group on the footwall side of the fault. These rocks are exposed on the lake shore. Limestones belonging to the Permian Cache Creek group are exposed in places along the lakeshore on the southwest side of the fault and it is believed that overburden covered areas on this side of the fault are also underlain by Cache Creek limestones.

#### EQUIPMENT AND PRINCIPLE OF OPERATION

The high volatility of mercury and the association of small amounts of mercury with many sulphide deposits has suggested that extensive mercury halos may exist around sulphide deposits. The halo developed from mercury deposits should be particularly amenable to detection by soil analyses. Our Lemaire mercury detector technique, with a sensitivity (5 parts per billion), well below the average abundance of mercury in rocks and soils, can be used to detect the small amounts of mercury that may indicate hidden ore deposits.

The Lemaire detector works on a basically simple principle. The mercury contained in the sample is vaporized in a closed chamber by a heat source which may consist of a torch or small furnace. The

mercury vapor is drawn into a light chamber which houses an ultra-violet light. The reading obtained from a microammeter is a measurement of the amount of light absorbed by the mercury vapor which is proportioned to the amount of mercury in the sample.

A modification was made to the standard Lemaire detector by L.M. Azzaria, J.M. Bryan, A.R. Allen and R. Wilson of the Cominco Technical Research Center and the Instrument Shop at Trail, B.C. Commercially available detectors are sensitive to several specific substances as well as to smoke and dust in general. The Cominco modification consisted essentially of the addition of a gold wire filter in the vapor circuit by means of which the mercury was trapped on the gold and contaminating vapors were expelled.

The operation of the modified Lemaire detector essentially consists of two steps. In the first step the sample is heated by a small electric furnace at 800° - 900°C and the mercury is vaporized and collected on the gold filter while interfering vapors are exhausted. In the second step the gold is heated by a second electric furnace to re-vaporize the mercury which is then pulled into the ultra-violet light chamber.

#### PROCEDURES IN SAMPLING AND ANALYSIS

Sampling was done over most of the area on the Ban No. 2 claim group on a grid system, 500' square, controlled by chain and compass survey. Some samples were collected along old logging roads.

The soil development varies considerably from one locality to another within the general Pinchi Lake area. The A and B soil horizons are usually confined to within a foot of the surface and are followed by unmodified glacial material. The initial samples were taken below the A1 horizon generally at a depth of 6" to 12" below the surface. In some cases deeper resampling was done to check high readings indicated in the initial survey.

Analyses were done in a field laboratory in Fort St. James, B.C. Samples were allowed to dry at room temperature as heating to temperatures approaching 100° C might cause the loss of some mercury. The dry samples were sieved to -100 mesh size. A one gram sample of the -100 mesh fraction was then processed in the modified Lemaire mercury detector as described in the preceding section of this report. The detector reading was then referred to a standard curve to obtain the mercury content of the sample expressed in part per billion (ppb). In this survey all samples yielding 70 ppb or less were considered to be normal for the area or within the background range. Samples yielding more than 70 ppb mercury are considered to be anomalous. Readings expressed in parts per billion are plotted on a 1" = 1/4 mi. plan and have been contoured where applicable. In contouring the mercury content of the soils, only the results from the initial sampling (at a depth of one foot or less) were considered. In areas where information is sparse, contouring is open to various interpretations.

#### RESULTS

The results of the geochemical survey of the Ban No. 2 claim group are shown on Plate PL-8. The survey indicated a number of anomalous areas particularly in the southeast part of the claim group. It should be noted here that contouring represents only the values from the initial sampling (at a depth of one foot or less).

Towards the end of the field season, a number of locations where high values were indicated in the initial survey were resampled. Resampling was done at depths ranging from one to two and one-half feet. Most of the analyses from the resampled locations were done in Trail at the end of the season. All locations resampled in this manner showed a markedly low mercury content (in the background range or slightly above).

The reason for the disappearance of anomalous values in depth sampling is not clear. Perhaps the high values obtained in the shallower sampling result from surface contamination by "fallout" from the former

reduction plant operation at the Pinchi Mine although it is difficult to see why contaminating material would not be more uniformly distributed. Perhaps the shallower soil horizon is more amenable to the collection of mercury vapors emanating from sources beneath and the anomalies indicated in our initial survey are meaningful.

While uncertainty remains as to the validity of anomalies, the results cannot be discredited from work to date. It is recommended that the anomalous areas be covered by more detailed sampling (possibly on a 100' grid system) at shallow depths. In addition more deep resampling should be done in the anomalous areas. If anomalies from detailed shallower sampling show a systematic pattern or if anomalies persist with deeper sampling these areas should be tested by stripping or drilling.

ATTACHMENTS:

- (1) Plan - Pinchi Lake Area, General Geology and Claim Location, Scale 1" = 6 mi. Plate PL-12.
- (2) Plan of Geochemical Survey Ban No. 2 Claim Group, Scale 1" = 1/4 mi. Plate PL-8.
- (3) Statement of Expenditures.
- (4) Statutory Declaration Relating to Expenditures.

Report by: D. W. Heddle  
D.W. Heddle  
Professional Engineer

DWH:gmc

Trail Expl'n Office, Western District

January 24, 1966

Distribution: Mining Recorder (Smithers) (2)  
Western Exploration (Trail) (2)

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED  
TRAIL, B.C.

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1965 GEOCHEMICAL SURVEY EXPENDITURES  
BAN NO. 2 CLAIM GROUP - OMINECA M.D.

SALARIES

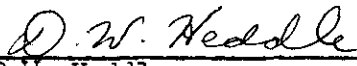
1 Exploration Geologist (L.M. Azzaria) soil analysis and supervision for 9 days (August 20-28, 1965) at \$45/day	\$ 405
2 Field Assistants (E.W. Batchelor and G.E. Paulus) for 9 days (August 20-28, 1965) at \$30/man-day	540

EQUIPMENT

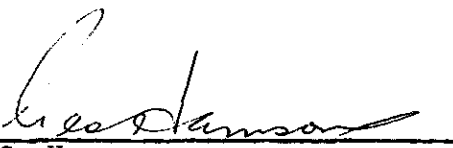
Rental of Lemaire mercury detector for 9 days @\$10/day	\$ 90
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TRANSPORTATION


Truck rental for 9 days at \$400/month	\$ 120
TOTAL:	<u>\$ 1,155</u>

  
D.W. Heddle  
Professional Engineer

Endorsed by:

  
G. Hamson  
Branch Accountant

This is Exhibit "A" to the Statutory Declaration of D.W. Heddle, declared before me the ...31... day of ...January...A.D. 1966.

  
A Commissioner for taking Affidavits  
for British Columbia

CANADA ) STATUTORY DECLARATION RELATING TO EX-  
 ) PENDITURES ON A GEOCHEMICAL SURVEY OF  
PROVINCE OF BRITISH COLUMBIA ) CERTAIN MINERAL CLAIMS THE PROPERTY OF  
 ) THE CONSOLIDATED MINING AND SMELTING  
TO WIT: ) COMPANY OF CANADA LIMITED

I, DUNCAN W. HEDDLE, Professional Engineer, of the  
City of Trail, in the Province of British Columbia, DO SOLEMNLY DECLARE:

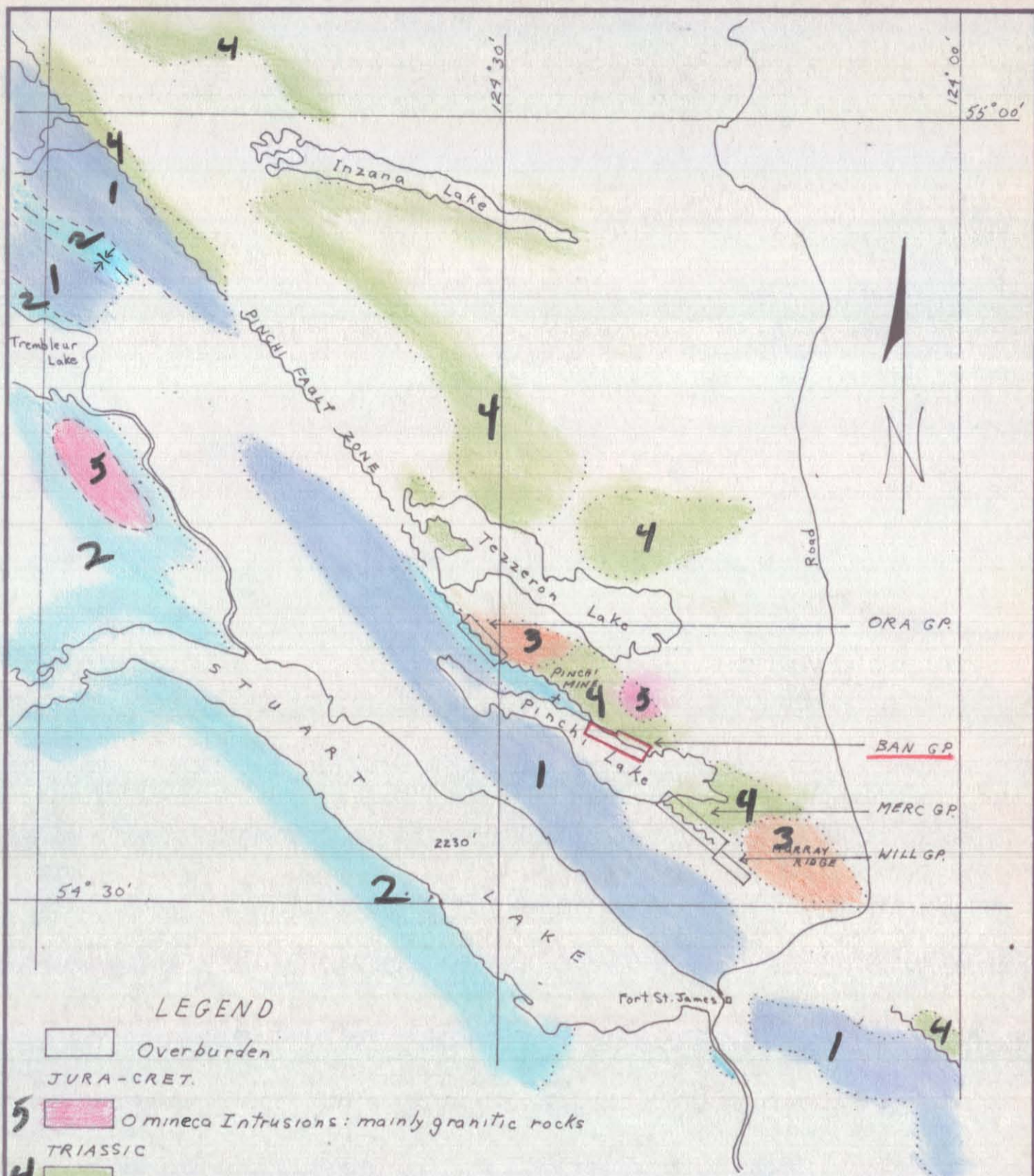
1. That I am the person who prepared a geochemical report as the result of surveys carried out of certain mineral claims, the property of The Consolidated Mining and Smelting Company of Canada Limited, situated in Omineca Mining Division.
2. That copies of the said report are being filed with the Mining Recorder in Smithers.
3. That attached hereto and marked with the letter "A", upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geochemical survey of the said claims showing in addition the dates during which those making the said survey performed their work.

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 )  
Municipality of Tadanac, in )  
the Province of British Columbia )  
this 31 day of )  
*January*, A.D. 1966. )  
*[Signature]* )  
A Commissioner for taking Affidavits for British Columbia

*D. W. Heddle*





**LEGEND**

- Overburden
- JURA-CRET.**
- 5 **Omineca Intrusions: mainly granitic rocks**
- TRIASSIC**
- 4 **Takla Group: Andesitic & basaltic flows  
agglomerates, tuffs & sediments**
- 3 **Trembleur Intrusions: Mainly pyroxenite  
PERMIAN - Cache Creek Gp.**
- 2 **Varied sediments and greenstone**
- 1 **Mainly massive limestone.**

**Department of  
Mines and Petroleum Resources**

**ASSESSMENT REPORT**

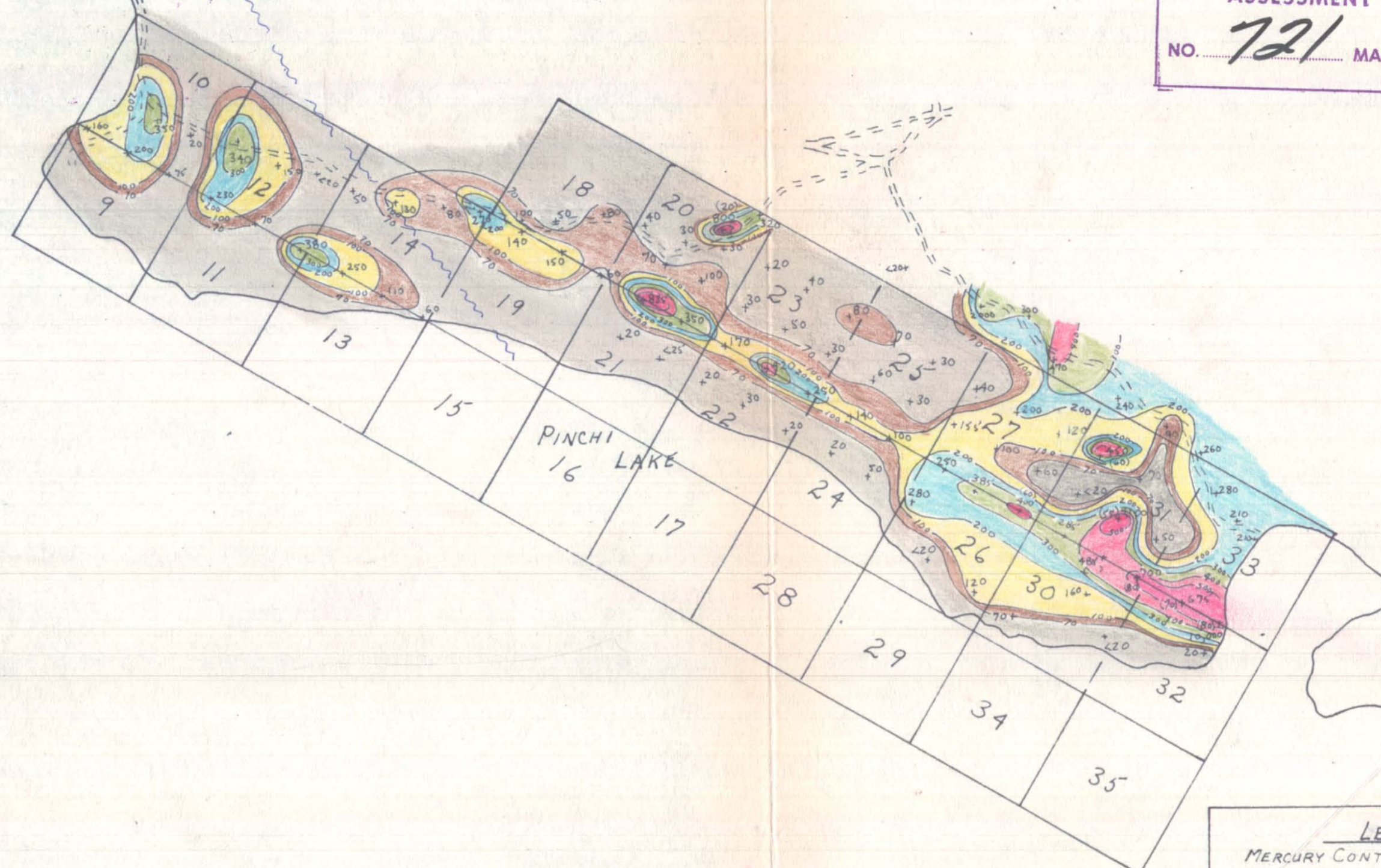
NO. **721** MAP **#1**

**The Consolidated Mining and Smelting Company of Canada Limited**

DRAWN BY:	TRACED BY:	<b>PLAN - PINCHI LAKE AREA - GENERAL GEOLOGY AND CLAIM LOCATION - TO ACCOMPANY GEOCHEMICAL REPORT BY D.W. HEDDLE, P. ENG. ON THE BAN NO. 2 CLAIM GROUP, PINCHI LAKE AREA, OMINECA M.D., DATED JAN. 24, 1966.</b> <i>D. W. Heddle</i>
REVISED BY	DATE	
SCALE: 1" = 6 mi		DATE: Jan 25/66
		PLATE: P.L. 12



MI



**LEGEND**  
MERCURY CONTENT OF SOILS (p.p.b.)

- 0-70 [grey box]
- 70-100 [brown box]
- 100-200 [yellow box]
- 200-300 [light blue box]
- 300-400 [green box]
- 400-500 [pink box]
- 500+ [red box]

--- - Inferred position - Pinchi fault.  
+ Sample location  
80 Mercury content in p.p.b. - taken near surface  
(100) Mercury content in p.p.b. - taken at depth below 1 foot.

721

D. W. Heddle

**The Consolidated Mining and Smelting Company of Canada Limited**

DRAWN BY:		TRACED BY:	
REVISED BY:	DATE:	REVISED BY:	DATE:
GEOCHEMICAL SURVEY - BAN No 2. CLAIM GROUP			
To accompany geochemical report by D. W. Heddle, P. Eng. on the Ban No 2. Claim group, on the northeast shore of Pinchi lake, Omineca M. D., dated Jan 24, 1966			
SCALE: 1" = 1/4 mi.		DATE: Jan 18/66	PLATE: P. 2 B