DU PONT OF CANADA EXPLORATION LIMITED

GEOLOGICAL & GEOCHEMICAL REPORT

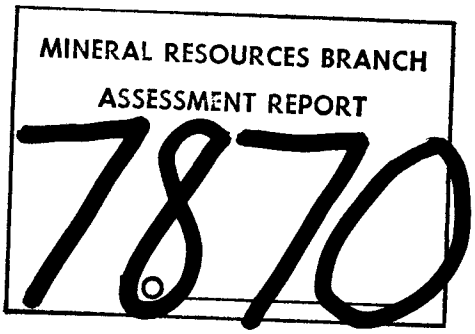
JCS 1 AND 2 CLAIMS

LIARD MINING DIVISION

BRITISH COLUMBIA

104-O-16W

59°58'N 130°24'W



L. K. Eccles
Geologist, B.Sc.

February 1980

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LOCATION AND ACCESS

The JCS property is located in British Columbia, approximately 85 km west-southwest of Watson Lake, Yukon Territory on a tributary of the Tootsie River.

A road leading from the Alaska Highway follows along the west side of the Tootsie River and a cat track leading off that road eventually ends up in the centre of the property. The cat track is, for the most part, impassable at present due to washouts and rock slides. The JCS claims are approximately 35 km by road from the Alaska Highway.

Access can also be gained by helicopters which are available for charter from Watson Lake or Swift River.

PHYSIOGRAPHY AND VEGETATION

The claims are bisected by a deeply incised tributary of the Tootsie River and lie at elevations which range between 1200 m and 1700 m above sea level.

Vegetation varies between alpine mosses, grasses and low shrubs at the higher elevations and Black Spruce and Balsam on the valley floor. Over 50% of the claims lie above timberline.

PROPERTY DEFINITION

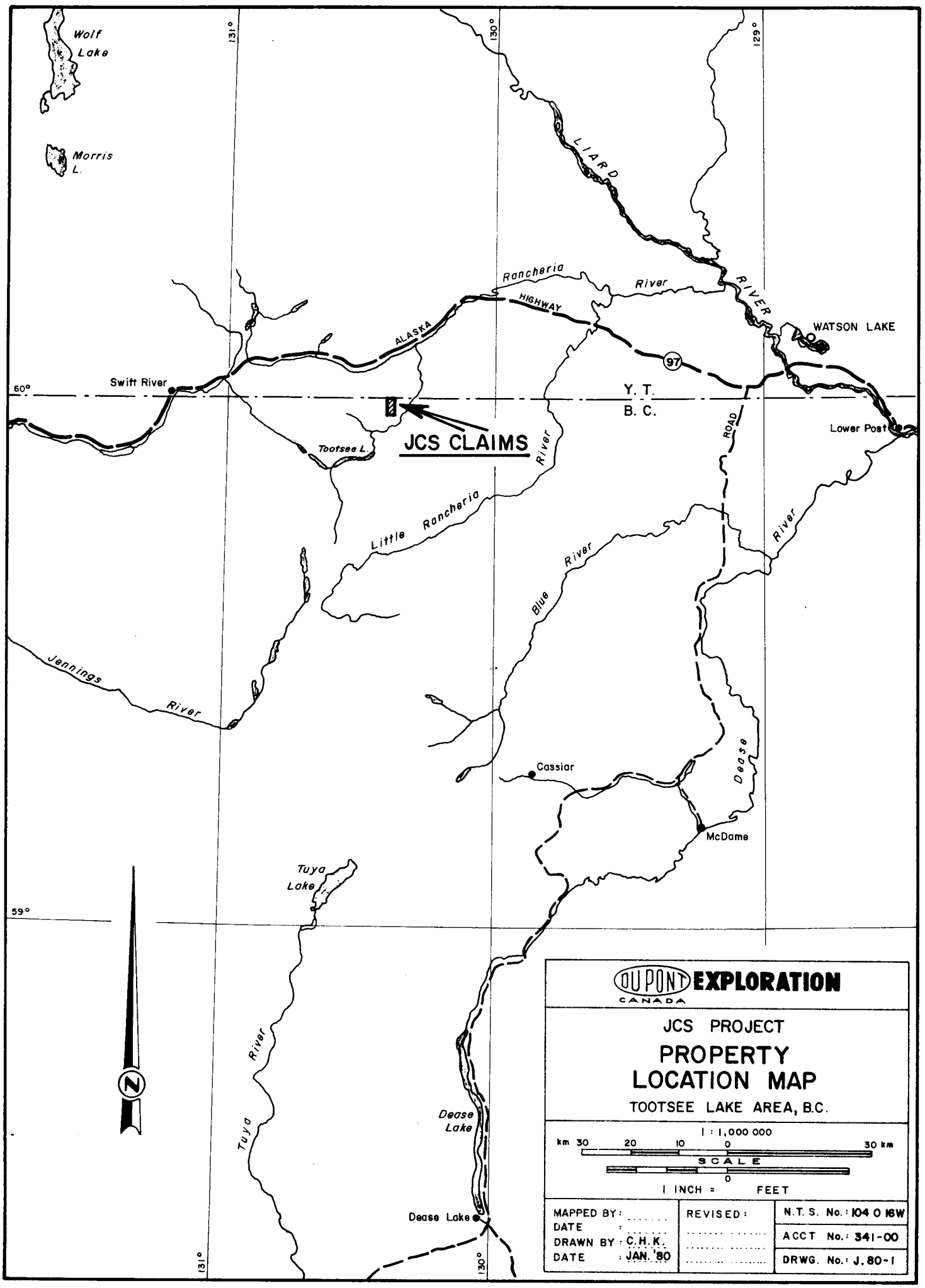
History

In the field season of 1976, J.C. Stephen Explorations found anomalous tungsten values in the silt sediment fraction of the creek which bisects the property.

With the information provided by J.C. Stephen on the anomalies and after the area was revisited and resampled by F.M. Smith and J.C. Stephen in June 1979, Du Pont of Canada Exploration Limited agreed to stake the JCS 1 and JCS 2 claims.

Soil samples were collected over most of the property to define anomalous tungsten zones then detailed soil sampling and mapping was done over the most interesting area.

It is not known whether the ground had been staked in past years.



DUPONT CANADA **EXPLORATION**

JCS PROJECT

PROPERTY LOCATION MAP

TOOTSEE LAKE AREA, B.C.

1 : 1,000 000

km 30 20 10 0 30 km

SCALE

0

1 INCH = FEET

MAPPED BY:	REVISED:	N.T.S. No.: 104 O 16W
DATE :	....	
DRAWN BY : C.H.K.	....	ACCT No.: 341-00
DATE : JAN. 80	....	DRWG. No.: J. 80-1

List of Claims

Claim Name	Record No.	Units	Date of Record
JCS 1	870	20	1979 06 11
JCS 2	871	20	1979 06 11

Owner and Operator

The property is currently owned and operated by Du Pont of Canada Exploration Limited.

Economic Assessment of the Property

An anomalous tungsten zone approximately 60 m wide and over 450 m long follows a contact between limestone and quartzite and lies within the contact metamorphic aureole of the Cassiar Intrusive. High-grade scheelite skarn bands, outcropping within this zone have attitudes conformable to the steeply dipping, meta-sedimentary rocks.

Molybdenite occurs in some of the skarn bands and anomalous molybdenum geochemical values occur in the quartzite close to the intrusive. On an adjacent property (Toot claims), high grade zones of molybdenite occuring along the same contact zone, were drilled by Noranda Exploration Company Limited in 1979.

A breccia zone within the quartzite, known to have dimensions of at least 10 m x 25 m, contains blebs of galena. A grab sample from the zone assayed about 10 oz/ton silver. Possible extentions of this zone have been obscured by overburden.

GEOCHEMICAL SURVEY

Sample Collection and Preparation

Samplers, using claim lines, hip chains and compasses for control, initially undertook to sample the JCS property on a regional scale, using a grid system with 300 m x 300 m sample spacings. It was hoped that this procedure would help define the source of the scheelite which caused anomalous values found in the original stream sediment samples. A total area of about 10.8 sq km was covered by this grid.

Once the regional soil sampling was completed , a detailed grid using a 10 m x 25 m sample spacing and covering 0.19 square kilometres was undertaken over the scheelite bearing skarn zones. In all cases sample stations were flagged and labelled.

A total of 600 soil samples were collected and sent to Min-En Laboratories in North Vancouver to be analyzed for tungsten and molybdenum. Results of the geochemical sampling programme are shown on the maps in the back pockets of this report.

Soil samples were collected from depths of about 20 to 30 cm below surface using a mattock with an 8 cm x 13 cm (3" x 5") blade to dig through the LH and Ao horizon to the B or C detritus or rock grit.

All samples were collected in pre-numbered, wet-strength soil sample envelopes with special information tags stapled to them. At each station, the specific information about that particular sample was recorded on the tag which was then removed before oven drying the samples.

After oven drying, the samples were each ground to approximately -120 mesh, using a 20.5 cm diameter, disc pulverizer. Samples were split using a special aluminum sample splitter so that two representative "pulps" from each sample were obtained. One pulp from each sample was sent to Min-En Laboratories in North Vancouver for analyses. The other has been stored by Du Pont.

Procedures for Geochemical Analysis and Assaying

The oven dried, pulverized and split pulps were analyzed in the following manner by Min-En Laboratories:

a. Molybdenum geochem samples were analyzed by atomic absorption after a six hour digestion of a 1.0 gram sample, using an 85:15 $HClO_4$ - HNO_3 acid mixture.

b. Tungsten geochemical analysis was done by fusion and acid digestion of a 1.0 gram sample followed by colorimetric analysis.

c. Assays of lead and silver were done using the standard wet chemical acid digestion analytical procedure.

Interpretation

a. Tungsten

Anomalous tungsten values were considered to be 47 ppm or higher and so a single contour representing that value was used to define anomalous zones on the tungsten geochemical map (back pocket, Dwg. J-80-4). Values range from 2 ppm up to 1050 ppm.

A north-south trending bleb of high tungsten values predominates on this property within and beyond the confines

of the detailed grid. It is approximately 60 metres wide at its widest part; however, it has not been followed beyond the edges of the detailed grid and the zone appears to extend beyond the southern-most line.

The long narrow shape of the anomalous tungsten zone which closely follows the skarned contact of the limestone with the quartzite, possibly also reflects the downslope movement of scheelite particles.

b. Molybdenum

Molybdenum values are generally in the 1 to 8 ppm range except in the extreme northwest portion of the grid where the argillite/quartzite contact exists in a shallow embayment of the granitic rocks. Here values range up to 43 ppm Mo which possibly reflects the close contact effects of the intrusive. However, no visible molybdenite was seen in this area.

Anomalous values for the detailed geochemical grid were considered to be 8 ppm Mo and over. A few values, up to 60 ppm Mo, occur within the quartzite unit at random locations with no explanation for their presence other than the close proximity of the quartzite to the granite. No anomalous molybdenum values exist over the limestone rocks; however, this is to be expected considering the mobile nature of molybdenum in an alkaline environment.

One small molybdenum anomaly occurs over a skarn which was seen to contain visible molybdenite.

c. Lead and Silver

Only one rock sample was analyzed for lead and silver and it was anomalous in both elements(Pb=13,500 ppm, Ag=365 ppm). The rock, containing visible galena was sampled from a breccia zone within the quartzite.

GEOLOGICAL FIELD WORK

Detailed geological mapping was undertaken on the JCS claims at the same time and covering the same area as the detailed geochemical survey. The scale of mapping was at 1:2 000 and it covered an area of 0.19 sq km.

Regional prospecting was carried out over about 5 sq km in hopes of finding more skarn zones.

A total of two rock samples were taken from the scheelite and the scheelite/molybdenite mineralized skarn areas and one galena-bearing sample was collected from the quartzite breccia zone. All these samples were sent to Min-En Laboratories in North Vancouver for geochemical analysis - the first two samples were analyzed for W and Mo and the last sample was analyzed for W, Mo, Pb, Ag and Au.

A total of two rock samples from the skarn zones were collected and sent to Vancouver Petrographics in Fort Langley for thin section identification of fluorescent minerals. See appendix A for thin section descriptions.

Lithology and Structure

The JCS property is located on the contact of the Cassiar batholith and Lower Paleozoic sediments of the Atan - Good Hope Groups according to Map 18-1968 by Gabrielse. A thick unit of limestone from the McDame - Sandpile groups also exists on the property further to the south.

The rocks of the intrusion are predominantly medium- to coarse-grained, biotite quartz monzonite. They are commonly massive and homogeneous and weather to a rusty, brown-buff colour. The intrusive rocks, the only ones observed on the property, occupy the northern portion of the JCS 1 claim and the contact with the sediments cuts across the claim in an approximate northeast/ southwest direction.

According to Gabrielse (GSC Paper 68-55) the "sedimentary strata of the Good Hope - Atan Groups occur within the contact-metamorphic aureole of the Cassiar batholith ...".

Contact metamorphic effects can be observed in the hornfelsed argillites, quartzites and skarn which occur in the area of detailed mapping.

A thin band of dark brown to black argillite can be seen to lie in direct contact with the intrusive rocks bounded by a band of white quartzite, at least 50 metres wide, to the east. The true thickness of the argillite bed like that of the quartzite on the claims cannot be estimated as it has been mostly engulfed by the intrusive rocks. The only outcrop of argillite occurs in a small embayment of the intrusive complex near L50N/180W on the detailed grid (see Geology Map J-80-2 in the back pocket).
The argillite grades into grey/white banded quartzite moving to the east away from the granite/sedimentary contact. More commonly, the quartzite is white and massive. One small area within the quartzite has breccia-pipe characterisitics. Black weathering (as opposed to the typical grey to white weathering of

the white massive quartzite) and brecciated rocks with frothy textures stained to a greenish-yellow is characteristic of the quartzite breccia zone. The outcropping of this peculiar phase within the quartzite measures about 10 metres x 30 metres. Disseminated blebs of galena are often visible in the rock.

Within the area of the detail mapping, near the contact with the limestone but still within the quartzite layer several narrow skarn bands were observed, which are up to 1 metre thick. The skarned quartzite has visible scheelite and molybdenite. A rock sample taken from this skarn had geochemical values of 305 ppm molybdenum and 550 ppm tungsten.

According to the mapping done by Gabrielse (GSC map 18-1968), both the limestones from the Atan-Good Hope Group and the McDame-Sandpile Groups exist within the limits of the property. A contact between the two units was not observed; however, the most easterly outcrops of limestone within the area of detailed mapping weather in higher relief than those closer to the quartzite contact and the relief change is quite sudden, perhaps indicating a different unit.

Close to the contact with the quartzite the coarsely crystalline limestone commonly contains long radiating crystals of wollastonite. Several narrow bands of scheelite bearing skarn exist close to the contact. The skarns commonly have one or a combination of the following minerals: white quartz, wollastonite, chlorite, talc, scheelite and molybdenite. Often the skarn has a breccia texture with dark green to black rock fragments surrounded by a light, grey-green crystal mush. Outcropping skarn bands are mostly obscured by limestone float.

The limestone is banded in places and commonly weathers to a typical white or blue grey colour.

Reliable attitudes of all sediments within the area generally dip moderately or steeply to the east or south-east.

Mineralization

Interest in the area originated from anomalous tungsten values in stream sediments. Since that time, although tungsten still remains to be the most interesting economic mineral on the property, some molybdenite has been discovered as well as some galena with associated silver values.

Fine to coarse crystals of scheelite (up to 3 mm) occur disseminated in all the narrow skarn bands. Molybdenite occurs as paint on the fracture surfaces within a skarn band in the quartzite.

The width and number of skarn bands is not known as overburden covers much of the anomalous zone.

In the quartzite breccia zone, galena (and interesting silver values) occurs as disseminated blebs. The outcrop is small and no extensions of the zone have been found.

CONCLUSIONS AND RECOMMENDATIONS

The regional geochemical survey helped to pin-point the source of the scheelite found in J.C. Stephen's original anomalous stream sediment sample. Detailed mapping and soil sampling defined the character, shape and approximate extent of the scheelite and molybdenite bearing skarn zone.

An extension of the detailed geochemical grid, in both the north and south directions, is required to trace the total extent of the anomalous scheelite-bearing zone. A trenching programme and drilling, contingent on the results of the trenching, is required to explore the actual dimensions of the skarn zone and to determine the grade and persistence of the tungsten and molybdenum mineralization at depth.

Soil samples taken from around the breccia zone carrying galena with high silver values should be reanalyzed for silver. A trench over the showing is required to determine the grade and extent of the silver mineralization.

COST STATEMENT - 1979

JCS Claims

Geochemical Surveys and Mapping

1. Wages

Name	Per Diem Rate	Specific Dates	No. Days	Total
Caira, N.	41.18	Aug. 13,14,19,20	4	$ 164.72
Carlson D.	42.21	June 3, Aug. 13,14	3	126.63
Dionne, C.	41.18	June 3	1	41.18
Eccles, L.	67.75	Aug. 14,19-22,29	6	406.50
Jones M.	41.18	June 3	1	41.18
Raven, W.	38.08	Aug. 19-21	3	114.24
Shaw, I.	42.21	Aug. 13, 14	2	84.42
Whiticar, D.	41.18	June 3	1	41.18
				$1 020.05

2. Food and Accommodation

Name	Specific Dates	No. Days	Total
Caira, N.	Aug. 13,14,19,20	4	$ 113.75
Carlson, D.	June 3, Aug. 13,14	3	84.50
Dionne, C.	June 3	1	28.50
Eccles, L.	Aug. 14,19-22,29	6	170.65
Jones, M.	June 3	1	28.50
Raven, W.	Aug. 19-21	3	64.60
Shaw, I.	Aug. 13,14	2	56.70
Whiticar, D.	June 3	1	28.50
			$ 575.70

3. Transportation

Date	Company	Invoice No.	Amount
June 3	Terr Air	5662	$ 438.00
Aug. 13	Terr Air	5071	346.25
Aug. 14	"	5073	474.75
Aug. 19	"	5089	292.00
Aug. 20	"	5480	401.50
Aug. 21	"	5986	492.75

3. Transportation (cont.)

Date	Company	Invoice No.	Amount
Aug. 22	Terr Air	5993	$ 803.00
Aug. 29	"	6000	492.75
			$3 741.00

4. Geochemical Assay Costs

551 soil samples analyzed for Mo, W @ $5.25 per sample.

Date Invoice	Invoice No.	Amount
1979 11 01	5782	$2 895.90

5. Petrographic Work

Two Rock Samples: Thin section identification.

Date Invoice	Invoice No.	Amount
1979 07 13	1658	$66.50

Distribution

JCS 1 claim group: 288 samples
JCS 2 claim group: 263 samples

Distribution of Work to Claims

N.B. Costs pro-rated on basis of samples collected.

		Claim Group		
		JCS 1	JCS 2	Total
1.	Wages	$ 532.46	$ 487.59	$1 020.05
2.	Accommodation & Meals	300.51	275.19	575.70
3.	Transportation	1 952.80	1 788.20	3 741.00
4.	Geochemical Assays	1 512.00	1 383.90	2 895.90
5.	Petrographic Work	34.76	31.74	66.50
		$4 332.53	$3 966.62	$8 299.15

L. Eccles
LOUISE ECCLES
(GEOLOGIST)

QUALIFICATIONS

I, Louise K. Eccles, do hereby certify that:

1. I am a geologist residing at 782 W. 22 Avenue, Vancouver, British Columbia and am employed by Du Pont of Canada Exploration Limited.

2. I am a graduate of the University of British Columbia with a B.Sc. (Honors) degree in geology.

3. I have practised my profession in geology continuously for the past three years in British Columbia, Ontario, Yukon and Northwest Territories.

4. Between 1979 August 18 and 24, I directed a field programme on the JCS 1 and JCS 2 claims on behalf of Du Pont of Canada Exploration Limited.

L. K. Eccles
1980 February 20

ATTESTATION

I, F. Marshall Smith, do hereby certify that:

1. I am a geologist residing at 6580 Mayflower Drive, Richmond, British Columbia and am employed by Du Pont of Canada Exploration Limited.

2. I am a graduate of the University of Toronto with a B.Sc. (Honors) degree in geology.

3. I am a registered Professional Engineer in the province of British Columbia.

4. I have practised my profession in geology continuously in Canada for the past 12 years.

5. I have supervised the work and training of Louise K. Eccles (author of the attached report) for the last five consecutive field seasons and can attest to the described work as being carried out in the described manner and to Louise K. Eccles being a competent and responsible geologist.

F. Marshall Smith
1980 February 20

APPENDIX "A"

Thin Section Identification of Fluorescent Minerals in 2 Rock Samples

JCS

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph. D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
VOX 1JO

PHONE (604) 888-1323

Report for: Marshall Smith,
DuPont Canada Exploration,
c/o General Delivery,
SWIFT RIVER, Yukon Y0A 1A0

Invoice 1658

Samples: 2 and 3, Identify the Fluorescent Minerals

Sample 2

The mineral is fluorescent under short-wave-length ultraviolet but not long-wave-length. A thin section was made. The mineral is scheelite; properties are as follows:

equant,anhedral to rectangular grains up to 3 mm across; most occur in one cluster, but smaller grains are scattered in the sample.
very high relief (greater than garnet)
low birefringence (maximum color in crossed nicols is 1st order yellow, suggests birefringence 0.012 to 0.015)
interference figure gives uniaxial positive sign
hardness in hand sample about 5 to 6
mineral cut by coarse fractures, possibly a weakly developed cleavage.
color in plane light is very pale straw, the mineral may be very weakly pleochroic.

Optical properties of scheelite: R.I. 1.918, 1.934; birefringence 0.016, uniaxial positive, distinct cleavage (octahedral),
color: white, yellow, brown, or grey
habit: octahedra or tabular

Sample 3

A very soft, gummy mineral forms scattered grains, mainly on fracture surfaces. It gives a bright bluish-white fluorescence in both short and long ultraviolet light. A small amount was all that could be scraped off; this was mounted in a powder camera and an X-ray photo was made. No thin section was made because of the very soft nature of the mineral(s).

The X-ray pattern shows that calcite is present, a fact confirmed by adding HCl to the sample. Another mineral may be present as well; a few lines were not identified as calcite, but were not sufficient to characterize another mineral. Results of this study are summarized on the following page.

The X-ray pattern is not good, because I did not grind the sample for fear of losing some in the process; thus, many lines are represented by a series of dots produced by individual mineral grains.

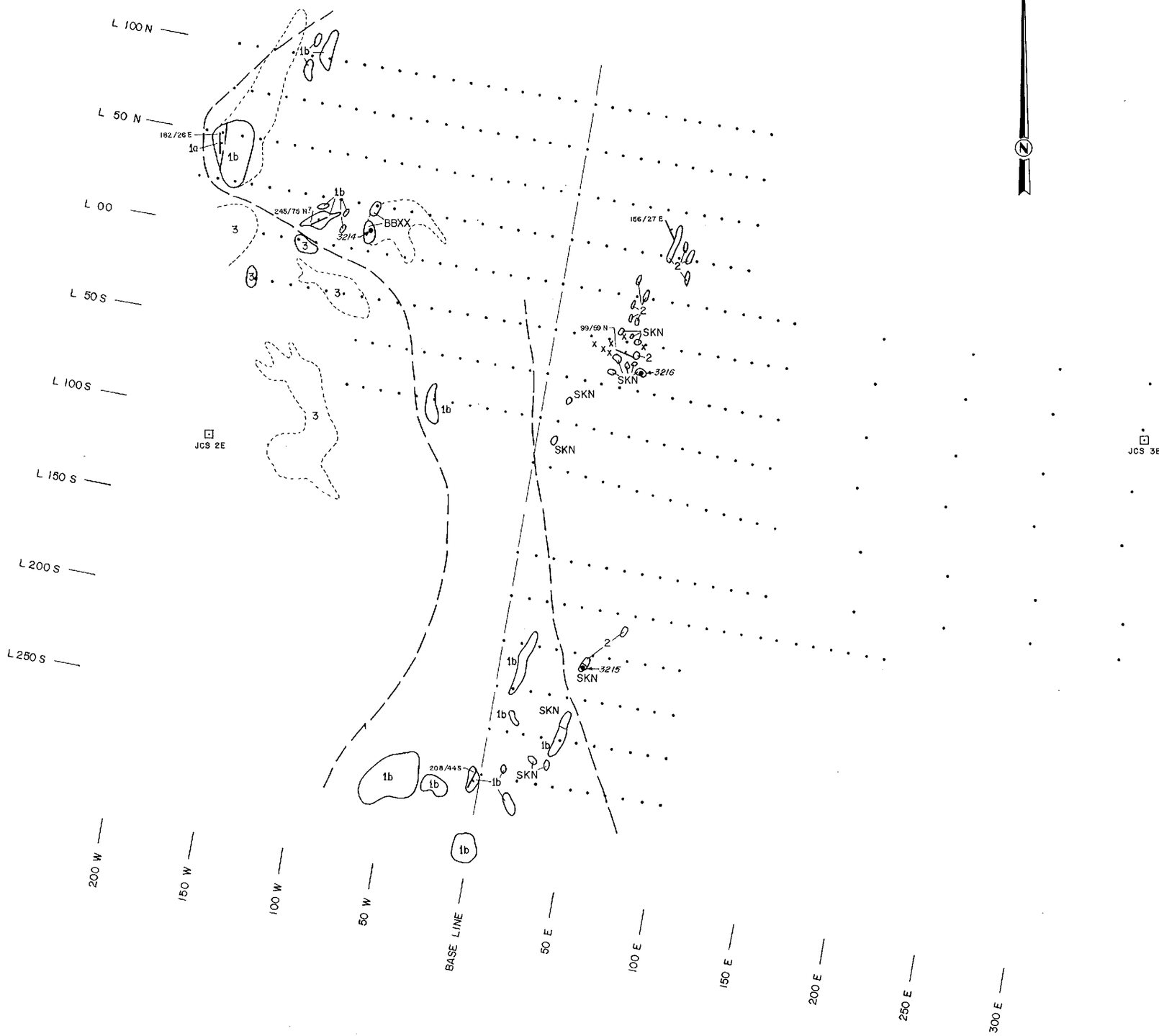
Results of Analysis of x-ray data on sample 3

d-spacing	intensity	calcite
8.84	weak	--
3.37	moderate	--
3.02	strong	yes
2.71	moderate	--
2.56	weak	--
2.51	weak	--
2.28	moderate	yes
2.11	moderate	yes
2.03	weak	--
1.925	weak	yes
1.873	weak	yes
1.636	weak	--
1.517	weak	--

some of the lines described as weak are extrapolated from only a few spots, and may not be important. The only important lines not produced by calcite are those with d-spacings of 3.37 and 2.71.

John Payne

John Payne,
June, 1979



LEGEND

3	BIOTITE QUARTZ MONZONITE and/or GRANITE (CASSIAR INTRUSIVE)
2	LIMESTONE
1b	QUARTZITE
1a	BLACK ARGILLITE

SYMBOLS

SKN	SKARN
x	SKN FLOAT
	OUTCROP
	RUBBLE
	CONTACT
BBXX	BRECCIATE ROCKS
•	ROCK SAMPLE LOC.
⊡	CLAIM POST

ROCK SAMPLE ASSAYS

No.	Mo (PPM)	Pb (PPM)	Ag (PPM)	Au (PPB)	W (PPM)
3214	3	13500	3650	30	<2
3215	304				550
3216					820

DUPONT CANADA **EXPLORATION**

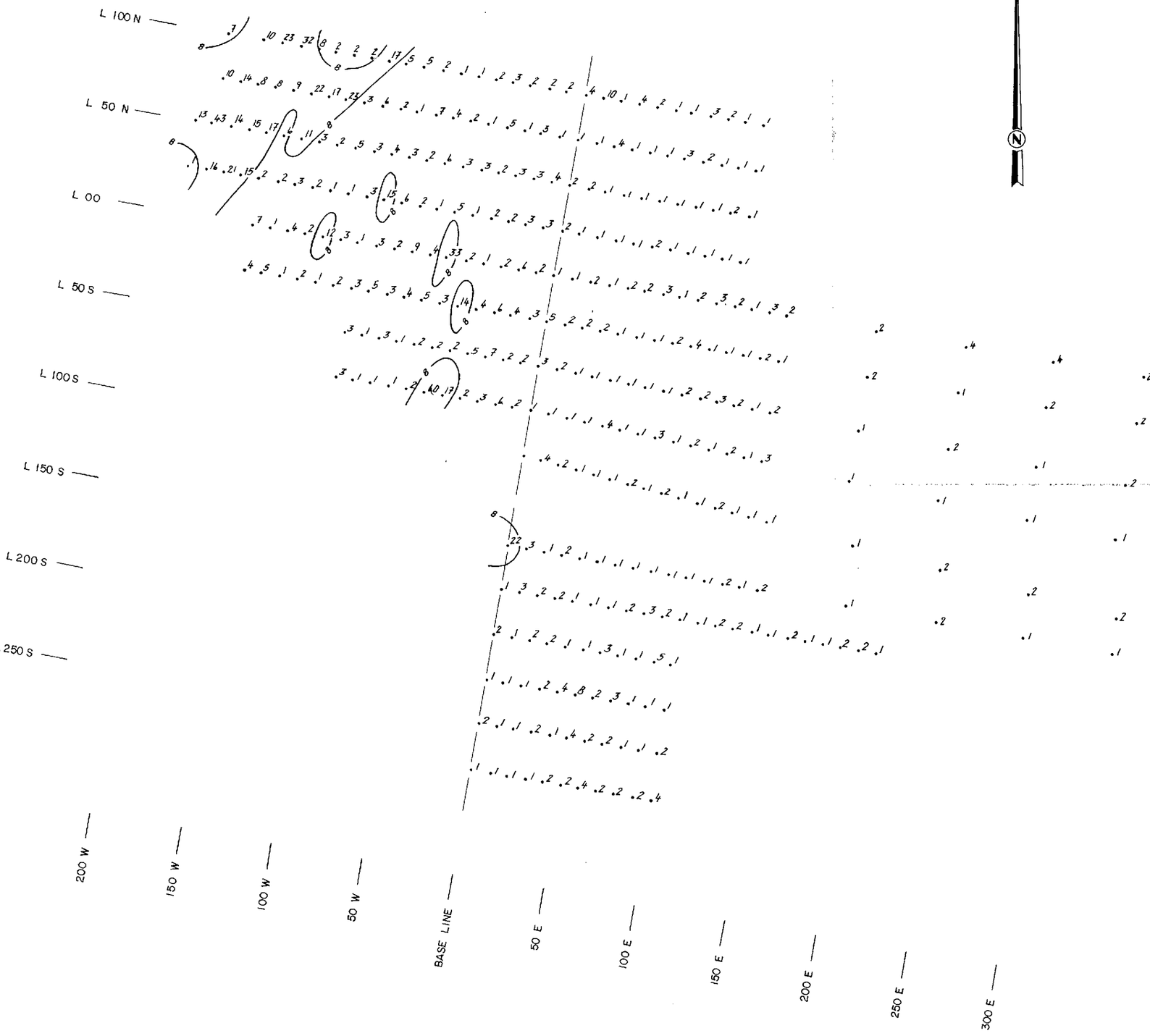
JCS PROJECT

GEOLOGY

TOOTSEE LAKE AREA, B.C.

m 60 40 20 0 1 2 000 60 120 m
SCALE
0 1 INCH = FEET

MAPPED BY : L.K.E.	REVISED :	N.T.S No.: 104 O 16 W
DATE : AUG. 1979		ACCT No: 341-00
DRAWN BY : C.H.K.		DRWG. No: J. 80 - 2
DATE : JAN. 1980		



LEGEND

.5 SOIL SAMPLE STATION WITH VALUE FOR Mo IN PPM.

8 GEOCHEMICAL ANOMALY (8 PPM)

DUPONT CANADA **EXPLORATION**

JCS PROJECT

DETAILED Mo GEOCHEMISTRY

TOOTSEE LAKE AREA, B.C.

m 60 40 20 0 1 2000 60 120 m

SCALE

0 1 INCH = FEET

MAPPED BY : L.K.E.	REVISED :		N.T.S. No. : 104 O 16 W
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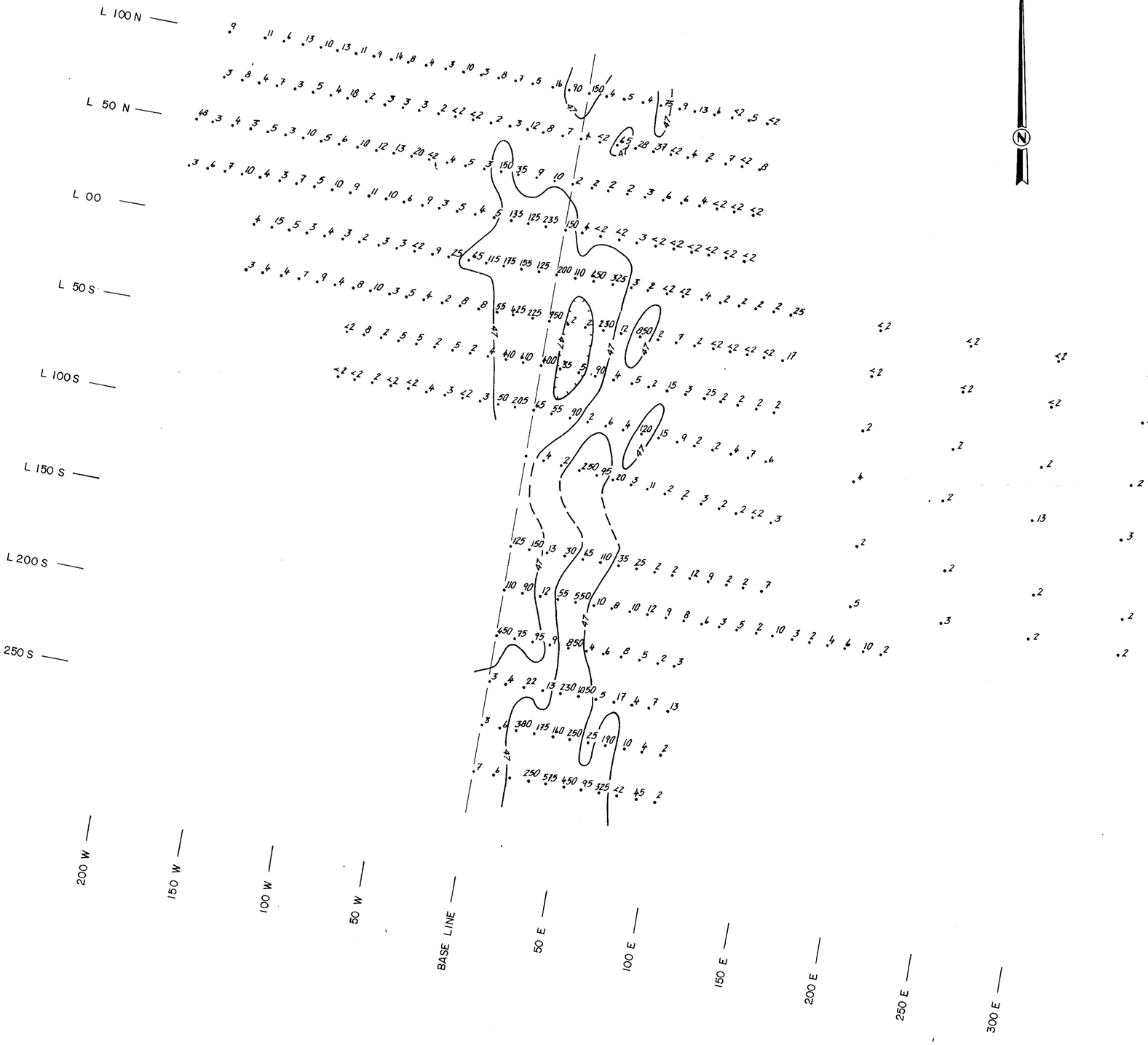

LEGEND

- . 14 SOIL SAMPLE STATION WITH VALUE FOR W IN PPM.
- 47 GEOCHEMICAL ANOMALY (47 PPM)
- GEOCHEMICAL LOW

DUPONT EXPLORATION CANADA

JCS PROJECT

DETAILED W GEOCHEMISTRY

TOOTSEE LAKE AREA, B.C.

SCALE 1 : 2 000

m 60 40 20 0 60 120 m

0 1 INCH = FEET

MAPPED BY : L.K.E.	REVISED :	N.T.S No. : 104 O 16 W
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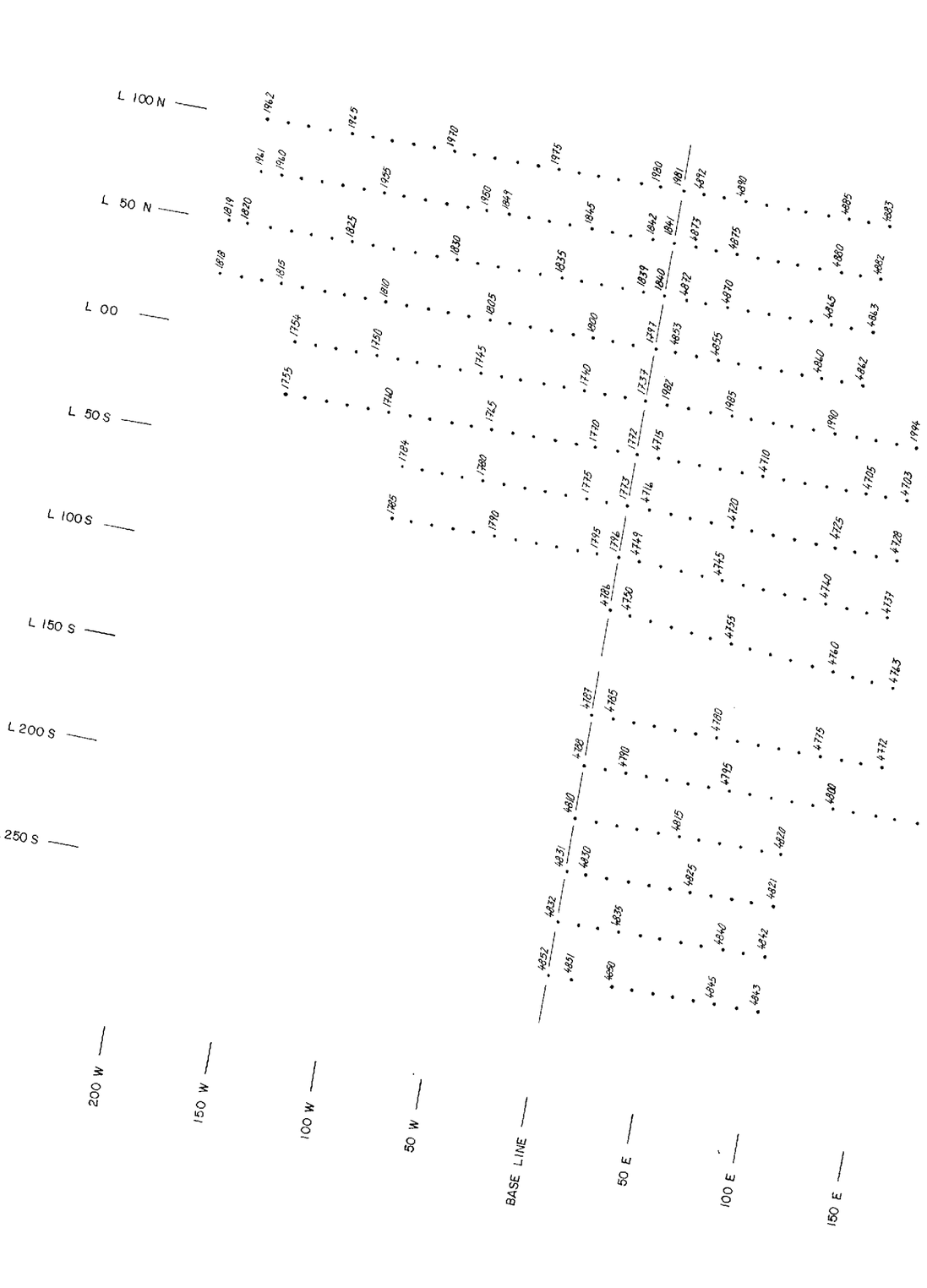

LEGEND

.4883 SOIL SAMPLE STATION WITH SAMPLE NUMBER

NOTE:

ALL SAMPLE NUMBERS ARE SERIES 'B'.

DUPONT EXPLORATION CANADA

JCS PROJECT

DETAILED GRID SAMPLE LOCATION MAP

TOOTSEE LAKE AREA, B.C.

m 60 40 20 0 2 000 60 120 m

SCALE

0 1 INCH = FEET

MAPPED BY : L.K.E.	REVISED :	N.T.S. No. : 104 O 16 W
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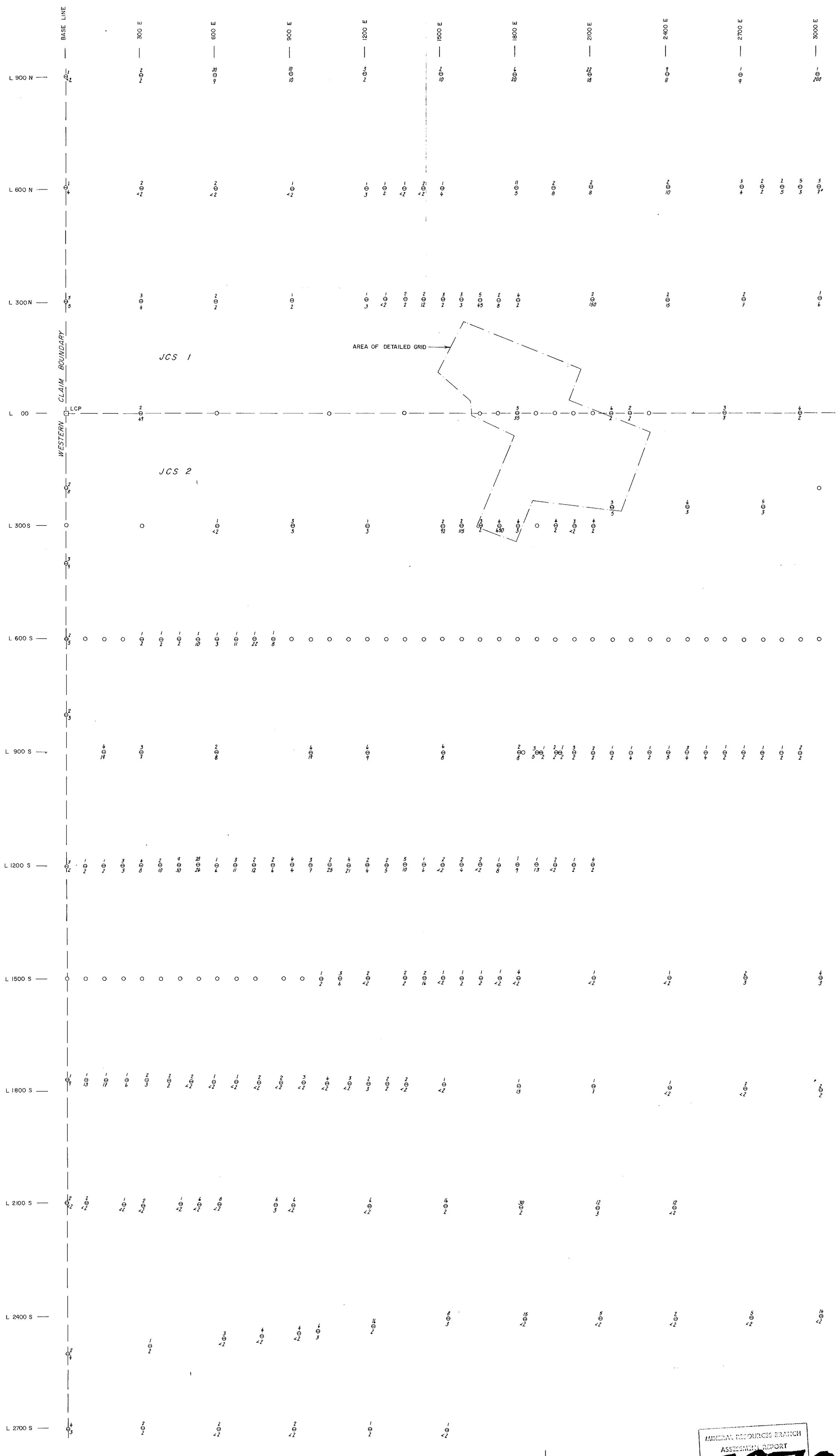
DATE : JAN. 1980		



LEGEND

Mo / W — SOIL SAMPLE STATION WITH VALUES FOR Mo AND W IN PPM.

SOIL SAMPLE STATION

DUPONT EXPLORATION CANADA

JCS PROJECT

Mo/W GEOCHEMISTRY

TOOTSEE LAKE AREA, B.C.

m 150 100 50 0 1:5000 150 300 m

SCALE

0 1 INCH = FEET

MAPPED BY	L.K.E.	REVISED	N.T.S. No. 104 O 16 W
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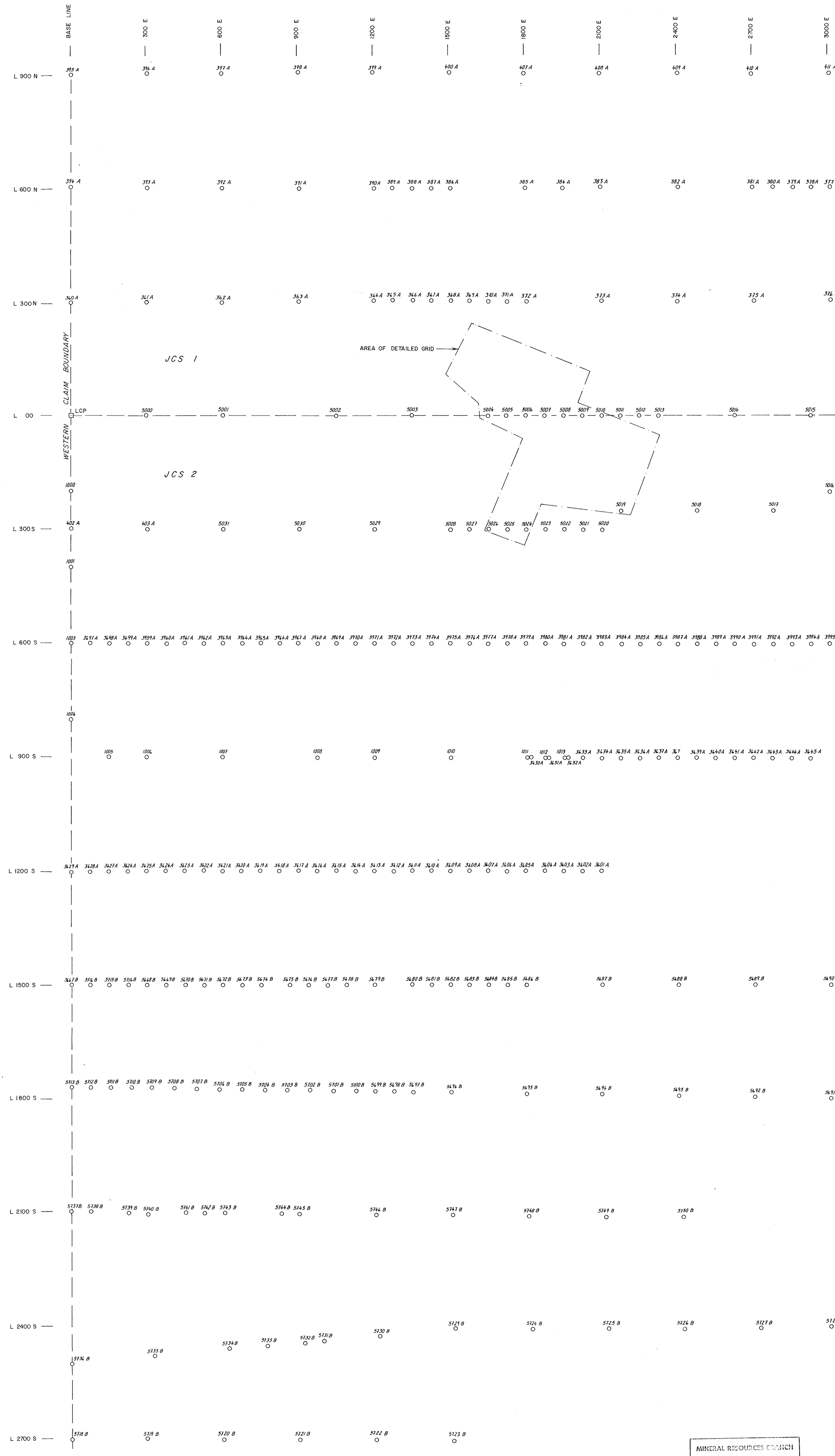

LEGEND

5118 B — SOIL SAMPLE STATION WITH SAMLE NUMBER

DUPONT EXPLORATION CANADA

JCS PROJECT

SAMPLE LOCATION MAP

TOOTSEE LAKE AREA, B.C.

m 150 100 50 0 1 : 5000 150 300 m

SCALE

0 1 INCH = FEET

MAPPED BY : L.K.E.	REVISED :	N.T.S. No. : 104 O 16 W
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DATE : JAN. 1980	.....	