

OPEN FILE

CHUTE CREEK

GEOLOGICAL REPORT

*all but
6502-6503
dropped.*

COAL LICENCES 6494-6504, 6506, 6507, 6513, 6514

COMOX LAND DISTRICT

NTS 92F/14W

Latitude 49°52'

Longitude 125°25'

OWNER: SULPETRO MINERALS LIMITED

OPERATOR: SULPETRO MINERALS LIMITED

AUTHORS: D.C. MILLER, J.D. BLANCHFLOWER

FOR WORK COMPLETED BETWEEN SEPTEMBER, 1981

AND JUNE, 1982

SUBMITTED JUNE 30, 1982

CONFIDENTIAL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 044

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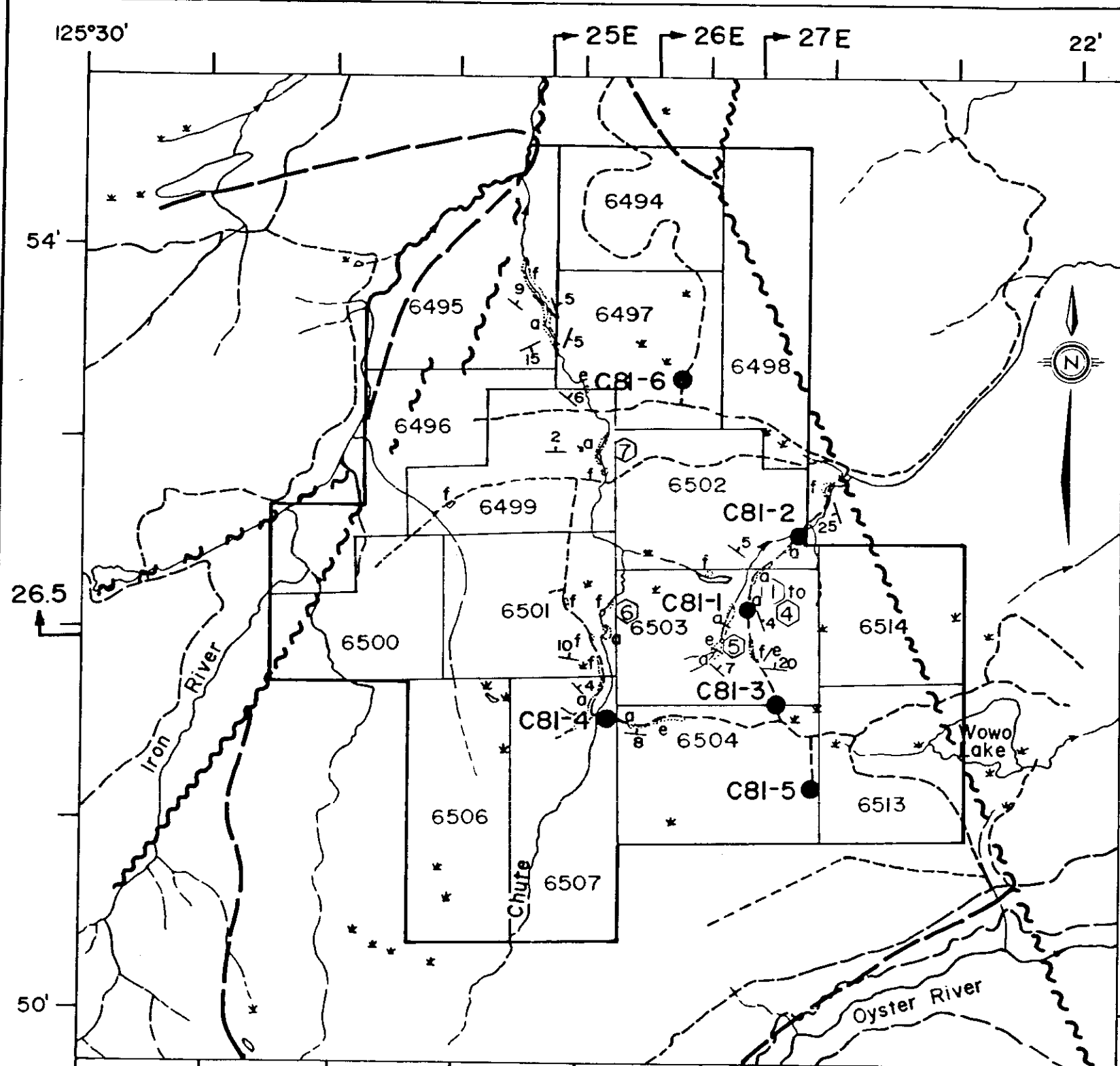
INTRODUCTIONLOCATION AND ACCESS:

The coal licences are located about 20 km southwest of Campbell River, B.C. Access is gained by a network of logging roads leading from Campbell River and Oyster Bay, B.C. The licences lie on a gentle north sloping hillside with elevations ranging from 366 to 853 m.

PROPERTY DEFINITION AND HISTORY:

The property comprises the following coal licences owned by Sulpetro Minerals Limited:

<u>Licence #</u>	<u>Hectares</u>	<u>Anniversary Date</u>
6494	195	August 1
6495	263	"
6496	259	"
6497	230	"
6498	205	"
6499	227	"
6500	201	"
6501	227	"
6502	265	"
6503	247	"
6504	247	"
6506	264	"
6507	237	"
6513	199	"
6514	199	"
TOTAL	<u>3465</u>	

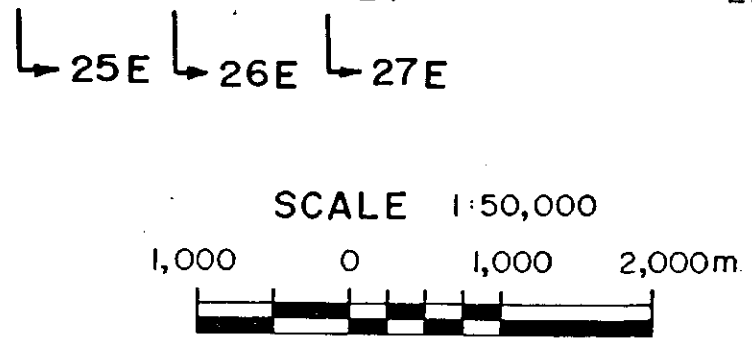


- LEGEND -

- UPPER CRETACEOUS**
- 7 COMOX FORMATION
 - a Coal with shale and sandstone
 - e Shale with sandstone
 - f Sandstone with conglomerate lenses

- SYMBOLS -

- Geological Contact
- Fault
- Outcrop
- 1981 Rotary Drill Hole site
- Bedding
- 1981 Coal Sample Location
- Road
- Drainage
- U.T.M. Cross-section



SULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK PROPERTY
GEOLOGIC AND DRILL HOLE PLAN**

Drawn by: J.D.B.	Project No.: 5365
Geology by: J.D.B. & DCM	N.T.S.: 92F/14W
Date: JUNE, 1982	Figure No.: 2

125°30'

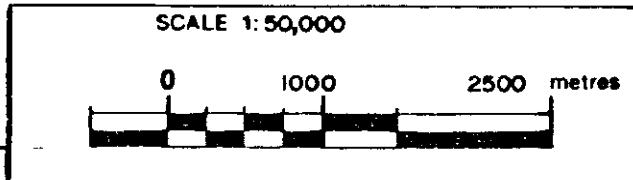
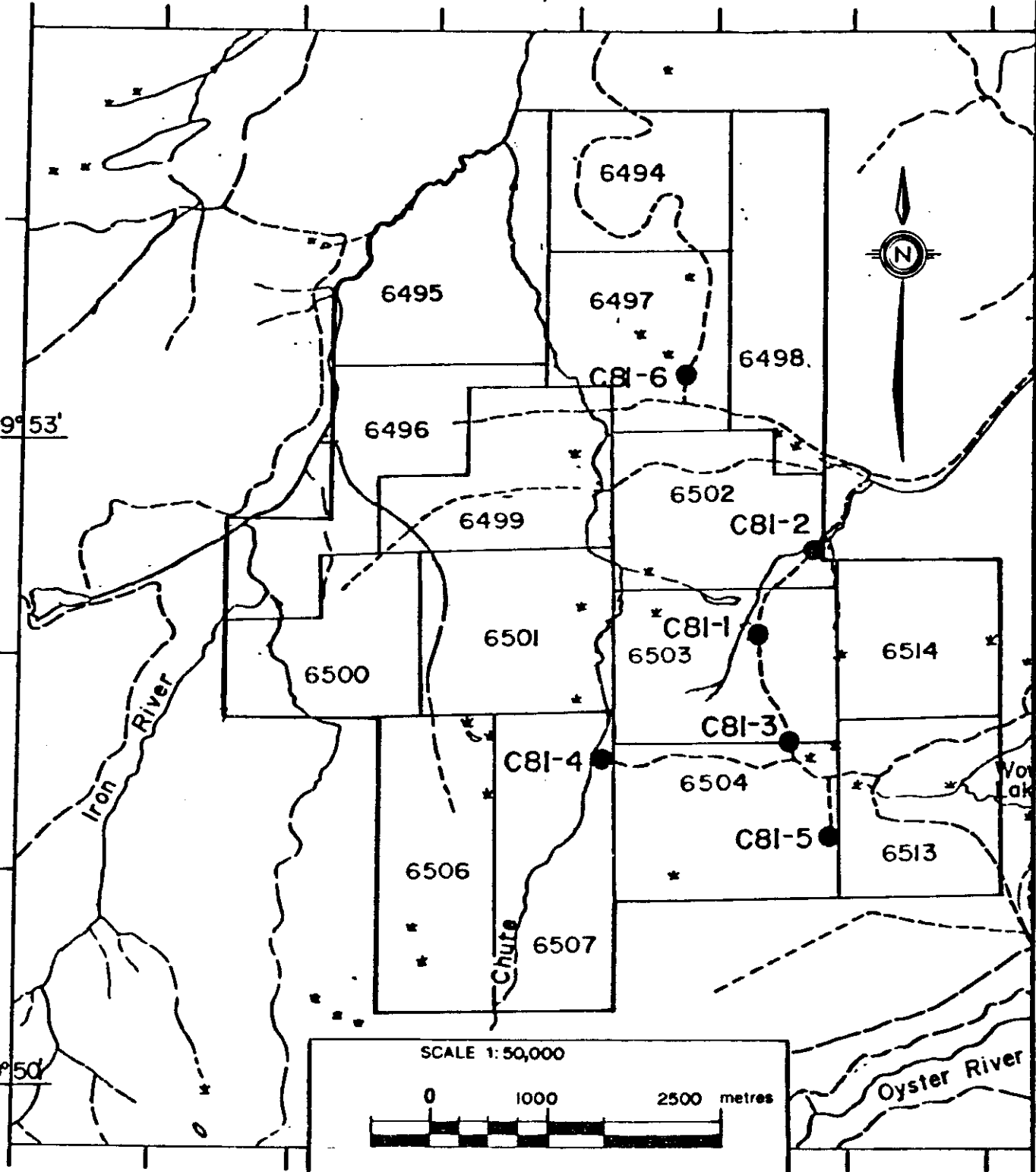
49°53'

49°50'

125°30'

28'

24'



SULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

CHUTE CREEK COAL LICENCES
INDEX MAP

Drawn by: D.M.	N.T.S.: 92F/14W
Date: JUNE 1982	Figure No.: 1

The coal licences were taken out in 1980 by CanDel Oil Ltd. and no records of exploration prior to 1981 were available to the writers. In May, 1981, Sulpetro Oil purchased controlling interest in Can Del Oil and later purchased all Can Del shares.

In June, 1981, six rotary holes totaling 610.4 m were completed by CanDel Oil Ltd. This work was supervised and reported on by M. Cholach, Consultant. All holes were geophysically logged, however, no analyses of drilling cuttings were done. Locations of these rotary holes are shown on accompanying plans (Figures 2 and 3). The rotary drilling indicated a number of coal seams which ranged from less than 1m to 2.3 m in thickness including up to 33% shale partings.

SUMMARY OF CURRENT WORK:

During September and October, 1981, a geological reconnaissance survey was conducted along streams and logging roads. Some 2000 hectares were covered at a scale of 1:50,000 and seven coal samples from various coal seams cropping out on the property were collected and analyzed. The samples were analyzed by General Testing Laboratories, Vancouver, B.C. These samples and outcrop locations are identified as Van 1 to Van 7 on accompanying plans and sections.

During December and March, 1982, surface coal outcrops were correlated with drill hole data and a plan and four sections (Figures 2, 9, 10, 11, and 12) were drawn showing interpreted correlations. Also, during this period a search was made for previous exploration work in the area but no records of previous work were found.

During June, 1982, surface coal outcrops were mapped in detail at a scale of 1:100 (covering approximately 0.5 hectares) and stratigraphic sections (scale 1:100) were also drawn for five coal outcrop locations (Figure 4-8). Four additional coal samples were collected at coal outcrops Van 7 and Van 8 but have not been submitted for analysis. A geologic and drill hole plan was drawn at a scale of 1:10,000 to show outcrops, structural data and drill hole locations. The base for this plan was developed by photographic enlargement of a 1:50,000 scale federal government topographic map. Approximate elevations at various coal outcrops were obtained from altimeter readings correlated with the topographic map.

GEOLOGY AND INTERPRETATION OF DATA

GEOLOGICAL SETTING:

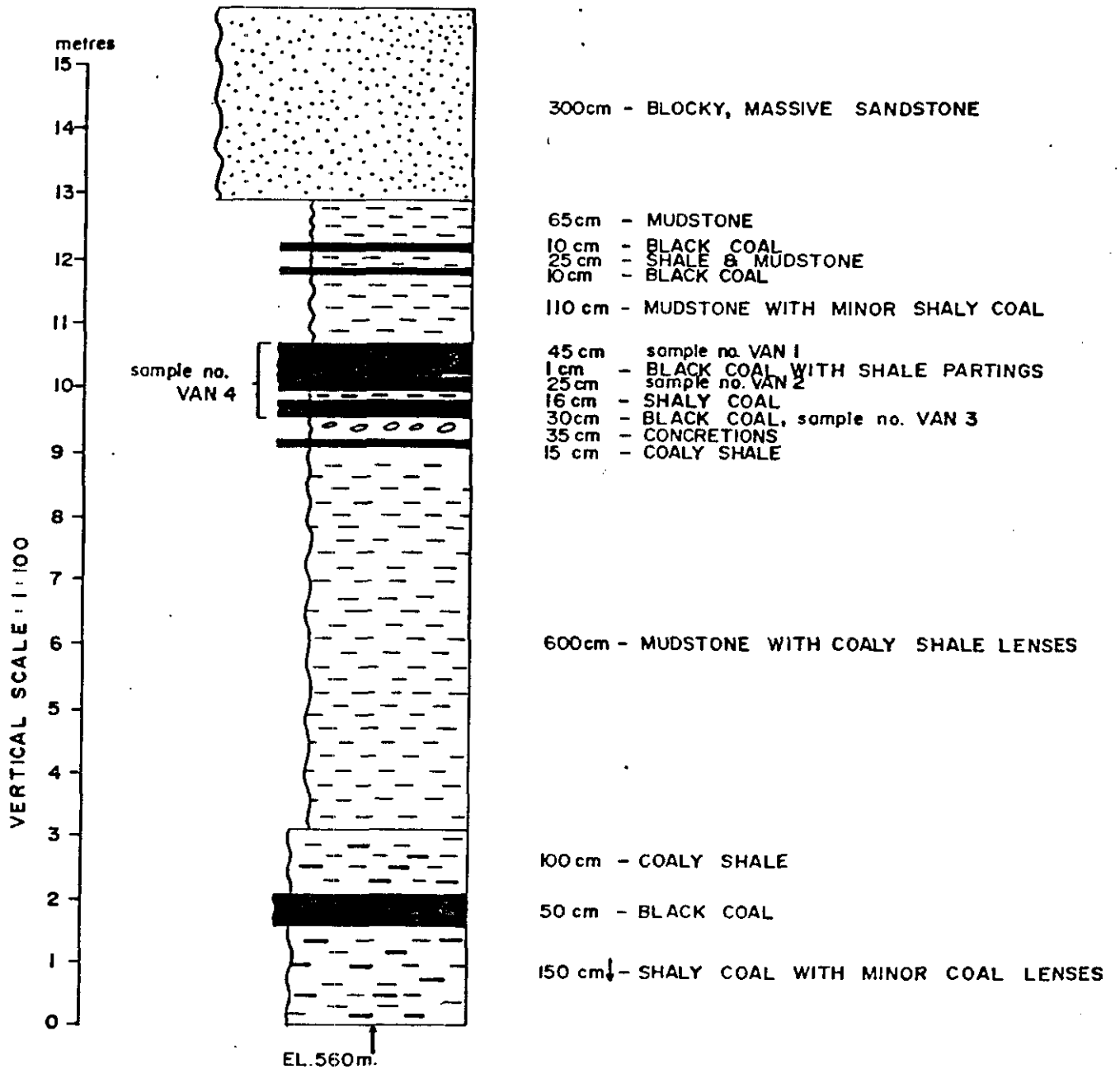
The coal licences are mainly underlain by the Upper Cretaceous Comox Formation composed of conglomerate, sandstone, shale and coal (G.S.C. Map 17-1968). This formation continues to the northwest and hosts the Quinsam coal deposit presently being developed by Brinco Ltd. To the east, the Comox Formation is in fault contact with Upper Triassic Karmutsen Formation volcanic rocks. To the south, it unconformably overlies the Karmutsen. To the west, it unconformably overlies or is in fault contact with Lower Jurassic Bonanza subgroup volcanic and sedimentary rocks. A small Jurassic age granitic intrusion is located just north of the property boundary.

The Comox Formation rocks strike northwest to nearly due west and dip at shallow angles to the northeast or southwest.

COAL OUTCROP GEOLOGY:

Coal Outcrop Van 1-4 (Approximate Elevation 560 m)

The thickest coal seam exposed on surface is designated outcrop Van 1-4 on accompanying plans (Figures 2 and 3) and stratigraphic section (Figure 4). This seam is 1.17 m thick including 17 cm of shaly partings. Samples 1-4 were chipped from this seam as shown on Figure 4. Van 4, a composite sample of the coal and shaly partings contained 8167 Btu, 16.86% ash, 0.57% sulphur and 12.83% residual moisture on an air dry basis. The coal is black, bright to soft and sooty and well fractured.



HORIZONTAL SCALE:
NOT TO SCALE



SULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK COAL
OUTCROP SECTION
VAN 1 THRU 4**

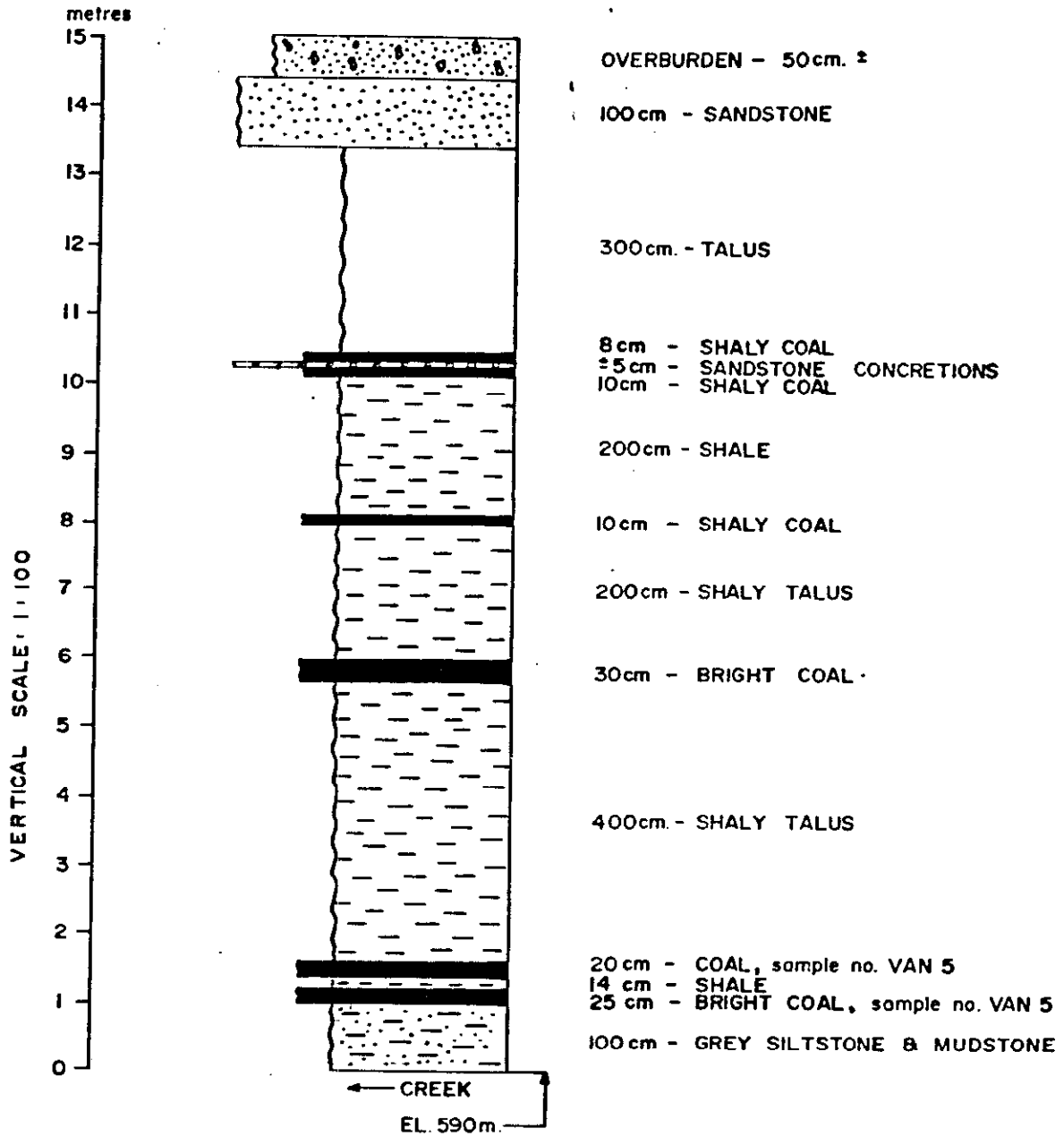
Project No: 5365

Drawn by: D.M.W

N.T.S.: 92 F/14 W

Date: JUNE 30, 1982

Figure No.: 4



HORIZONTAL SCALE:
NOT TO SCALE



BULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK COAL
OUTCROP SECTION
VAN 5**

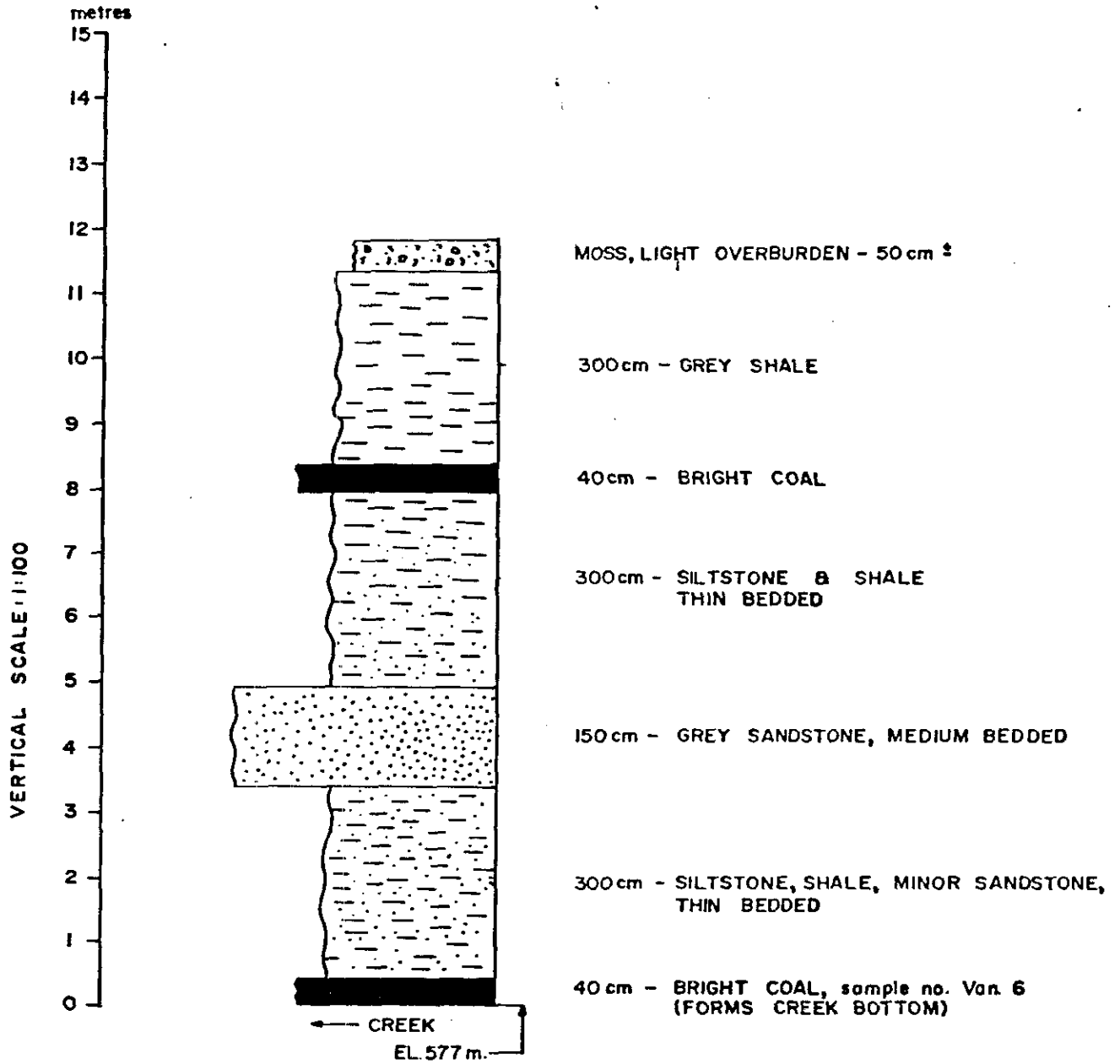
Project no. 5365

Drawn by: D.M.W.

N.T.S.: 92F/14W

Date: JUNE 30, 1982

Figure No.: 5



HORIZONTAL SCALE:
NOT TO SCALE



BULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK COAL
OUTCROP SECTION
VAN 6**

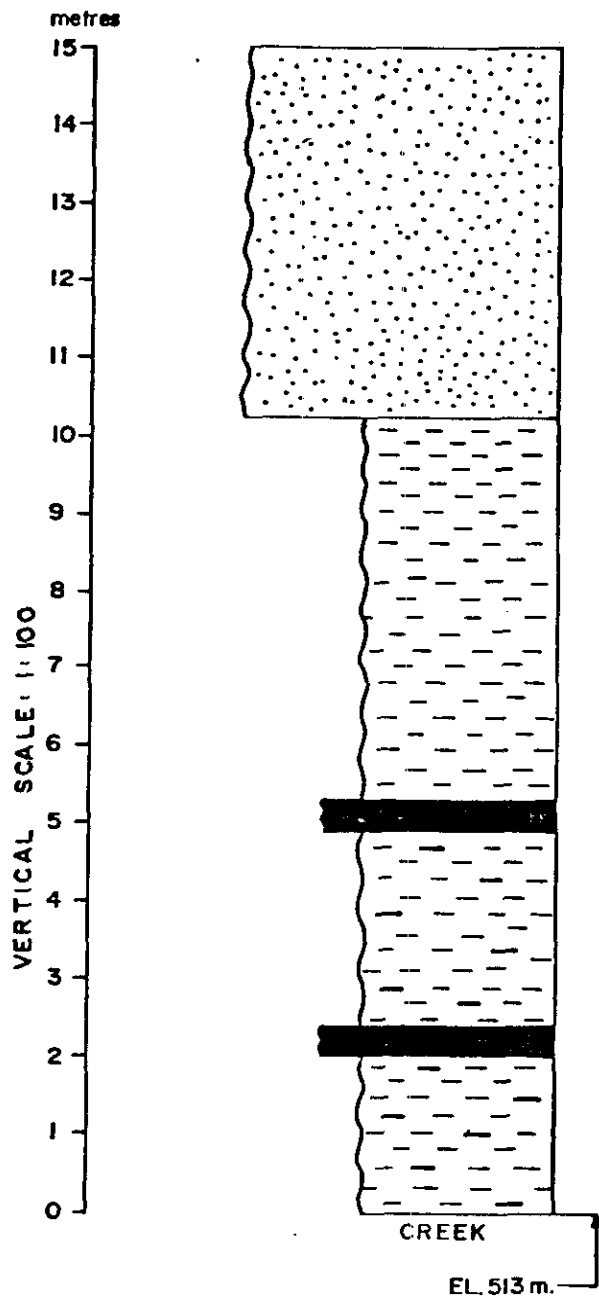
Project no. 5365

Drawn by: D.M.W.

N.T.S.: 92F/14 W

Date: JUNE 30, 1982

Figure No.: 6



+2000cm - A THICK SEQUENCE OF MASSIVE SANDSTONE WITH MINOR INTERCALATED MUDSTONE AND SILTSTONE

+500cm - INTERCALATED SHALE, MUDSTONE AND SILTSTONE; MINOR COAL FRAGMENTS

40 cm - BLACK COAL, sample no. B-1

250cm - SHALE WITH MINOR COALY SHALE LENSES

40 cm - BLACK COAL, sample no. B-1, VAN 7

200cm - SHALE WITH MINOR COALY SHALE LENSES

HORIZONTAL SCALE:
NOT TO SCALE



BULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK COAL
OUTCROP SECTION
VAN 7**

Project no. 5365

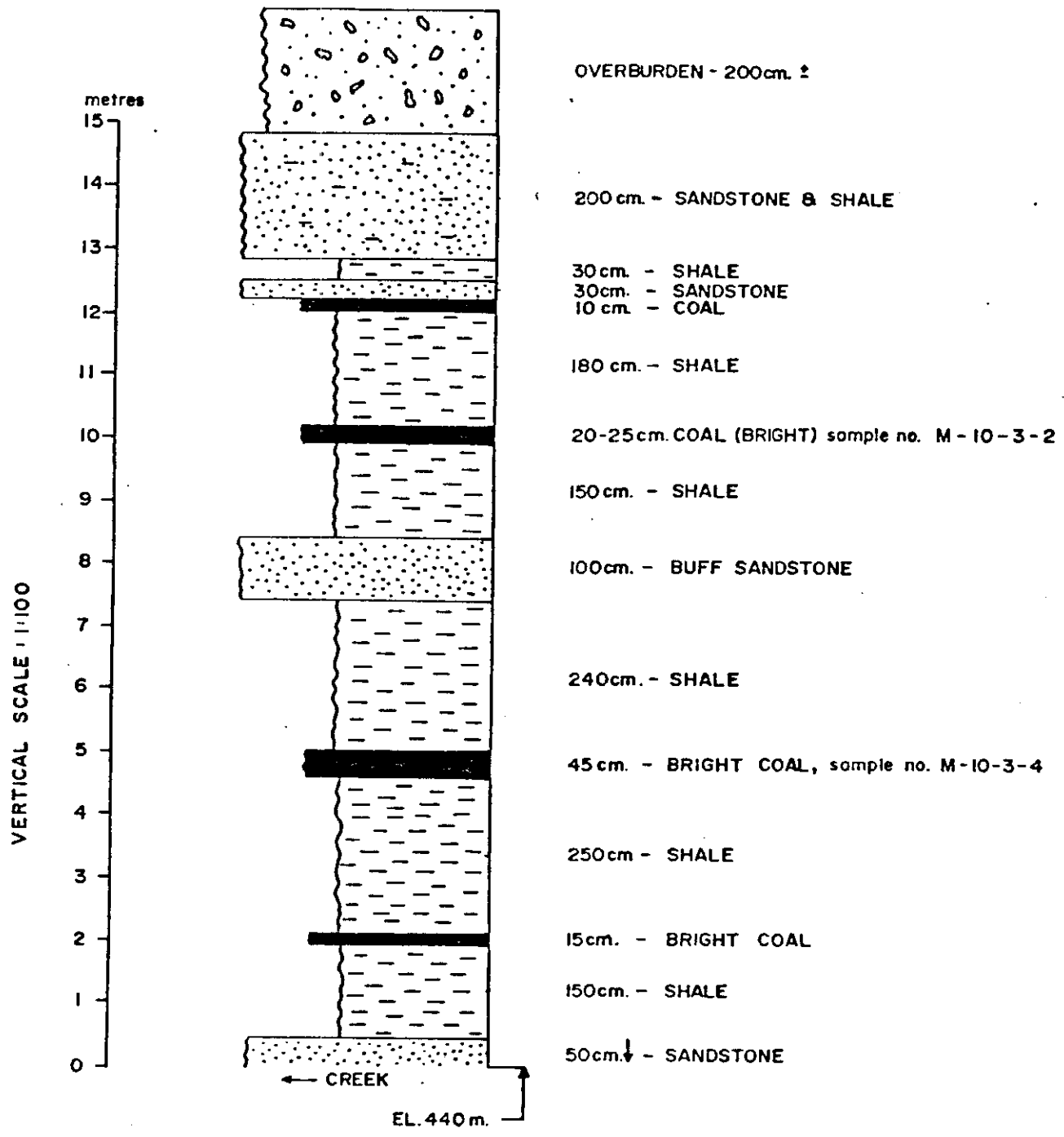
Drawn by: D.M.W.

N.T.S.: 92 F/14 W

Date: JUNE 30, 1982

Figure No.: 7

... 4E



HORIZONTAL SCALE:
NOT TO SCALE



BULPETRO MINERALS LIMITED
KAMLOOPS, BRITISH COLUMBIA

**CHUTE CREEK COAL
OUTCROP SECTION
VAN 8**

Project no. 5365

Drawn by: D.M.W.

N.T.S.: 92 F/14 W

Date: JUNE 30, 1982

Figure No.: 8

A second coal seam 50 cm thick occurs 7 m below the main seam separated by mudstone and coaly shale. Two 10 cm coal seams occur 1.1 and 1.25 m above the main seam separated by mudstone and minor shaly coal. These thin upper seams are overlain by 65 cm of mudstone and 1-3 m of massive sandstone. Details are shown on Figure 4.

Although variable attitudes were noted, the average attitude of beds near outcrop Van 4 is $300^{\circ}/5-14^{\circ}$ NE.

Coal Outcrop Van 5 (Approximate Elevation 590 m)

Outcrop Van 5 consists of a basal coal seam 53 cm thick (including a 14 cm shale parting) overlain by 4 m of shale talus, overlain by a 30 cm coal seam. Both coal seams are bright and hard. The upper coal seam is overlain by a further 7 m of shale, three 10 cm shaly coal seams and capped by 1 m of sandstone and gravel. Details are shown on Figure 5. Bedding attitudes at Van 5 average $300^{\circ}/4-10^{\circ}$ NE.

Coal sample Van 5 was chipped from the lower seam and contained 12304 Btu, 12.18% ash, 2.26% sulphur and 2.90% moisture on an air dry basis.

Coal Outcrop Van 6 (Approximate Elevation 577 m)

Outcrop Van 6 consists of two 40 cm thick bright, black coal seams separated by 7.5 m of shale, siltstone and sandstone. These seams are overlain by a further 3 m of shale and gravel. Details are shown on Figure 6. Bedding attitudes average $290^{\circ}/4-15^{\circ}$ NE.

Coal sample Van 6 was chipped from the lower coal seam and contained 12,588 Btu with 10.44% ash, 2.55% sulphur and 2.92% moisture on an

air dry basis.

Coal Outcrop Van 7 (Approximate Elevation 513 m)

Van 7 consists of two 40 cm bright, black coal seams separated by 2.5 m of shale with minor coaly shale lenses. The upper coal seam is overlain by 25 m of mudstone, shale, siltstone and sandstone. Details are shown on Figure 7. The average attitude of beds at Van 7 is $270^{\circ}/2^{\circ}$ N.

A chip sample, Van 7, from the lower coal seam contained 11,951 Btu, 3.20% sulphur, 12.84% ash and 3.39% moisture on an air dry basis. Two additional chip samples were taken from these two coal seams and are being held for possible analysis.

Coal Outcrop Van 8 (Approximate Elevation 440 m)

Outcrop Van 8 contains 4 bright, black coal seams ranging from 10-45 cm thick. The section upwards from the lowest seam is: 15 cm bright coal; 2.5 m shale; 45 cm bright coal; 5.5 m shale and sandstone; 25 cm bright coal; 1.8 m shale; 10 cm bright coal; 70 cm shale and sandstone; 2 m sandstone. Details are shown on Figure 8. Two chip samples were taken from the 45 cm and 25 cm coal beds and are being held for possible analysis.

Bedding attitudes at Van 8 are variable. To the north they average $330^{\circ}/5-40^{\circ}$ NE. To the south they average $42^{\circ}/5-15^{\circ}$ SE.

CORRELATION OF COAL OUTCROPS:

Coal seams at outcrops Van 5, 6, 7 and 8 appear to be at the same

stratigraphic level and be about 30-60 m stratigraphically below the main seam in outcrop Van 1-4. This correlation is based on widely separated outcrops and could easily be modified by additional data.

On accompanying sections (Figures 9-12) coal seams at outcrops Van 5-8 are designated Zone B-1 and coal seams at outcrop Van 1-4 are designated Zone A.

INTERPRETATION AND SUMMARY OF ROTARY DRILL HOLE INTERSECTIONS:

Geophysical logs for rotary holes C 81-1 to C 81-6 were correlated and data was plotted on cross-sections (Figures 9-12). Data was obtained from an assessment report by M. Cholach entitled "Chute Creek Coal Licences 6494-6515" which was submitted in July, 1981. Coal seams intersected by the drill holes are summarized as follows:

Hole C81-1

- (1) Coal Zone A: 0.6 m - 0.9 m
- (2) Coal Zone B: 30.5 - 31.1 m
- (3) Coal Zone B-1: 40.6 - 41.2 m, 41.7 - 42.2 m, 42.6 - 42.9 m and 53.5 - 53.8 m.
- (4) Coal Zone C: 69.8 - 70.2 m, 73.7 - 74.2 m, 82.5 - 82.9 m, 84.2 - 84.4 m and 84.7 - 85.5 m.

Hole C81-2

- (1) Coal Zone B-1: 24.5 - 24.9 m
- (2) Coal Zone C: 40.4 - 40.7 m, 43.2 - 43.4 m, 43.9 - 44.2 m, 44.5 - 45.0 m, 49.9 - 50.0 m, 55.9 - 56.3 m and 57.0 - 57.6 m.

Hole C81-3

- (1) Coal Zone B: 8.7 - 9.5 m
- (2) Coal Zone B-1: 29.7 - 30.0 m
- (3) Coal Zone C: 55.4 - 55.8 m, 58.9 - 59.8 m and 60.6 - 61.3 m.

Holes C81-4 and C81-5: no coal intersections.

Hole C81-6 Coal Zone B: 30.3-39.8 m; Coal Zone C: 44.5-49.7 m

STRATIGRAPHY:

Based on drilling and outcrop mapping the following generalized stratigraphic column is suggested:

- (1) Top - 3 m ± sandstone
- (2) Zone A - 10.3 m ± shale and mudstone with 2 main coal seams 1.17 and 0.5 m thick.
- (3) 30 m ± shale and sandstone
- (4) Zone B - 0.7 m ± coal
- (5) 9.5 m ± shale and sandstone
- (6) Zone B-1 - 13 m + shale and sandstone with 1 to 4 coal seams 0.3 - 0.6 m thick.
- (7) 16 m ± shale and sandstone
- (8) Zone C - 17 m ± shale and sandstone with 3 to 7 coal seams 0.1 to 2.3 m thick (including thin clay partings).
- (9) Base - 60 m + sandstone.

STRUCTURE:

On average, beds strike 300° and dip northeast at shallow angles. Dips average about 7° northeast at outcrops Van 1-6, and 2° north at Van 7. At outcrop Van 8, bedding is more variable with strikes averaging about 340° and dips of $5-40^{\circ}$ eastward. Northeast of outcrop Van 1-4, sandstone beds dip southwest at 25° suggesting a northwest trending synclinal structure at this location.

CONCLUSIONS:

In 1980 CanDel Oil Ltd. acquired the Chute Creek Coal Licences with a view to developing surface mineable thermal coal. The property was attractive with respect to location, access and relatively little previous exploration work.

Drilling and geological mapping indicates 4 main coal zones or seams. Of these, only one zone, (Zone A) contains sufficient near surface coal for potential mining.

It is concluded that licences 6502 and 6503 covering the best coal should be retained and other licences be surrendered.

Respectfully submitted,

D.C. Miller

D.C. Miller

J.D. Blanchflower

J.D. Blanchflower

June 30, 1982

DCM:JDB:dw



COST STATEMENT

(1) Wages and Salaries	
56 man days @ \$137.29/day	\$7,688
(2) Consultants Fee	
One hour consultation, David E. Pearson	50
(3) Food and Accomodation	1,120
(4) Transportation: 1981 G.M.C. Fourwheel Drive	800
(5) Coal Analyses, General Testing Laboratories, Vancouver, B.C.	387
(6) Airphotos and Topo Maps	262
(7) Typing, Printing and Report Preparation	350
 Total	 <u>\$10,657</u>

STATEMENT OF QUALIFICATIONS

I, David C. Miller, of 1278 Dalhousie Drive, Kamloops, B.C., do hereby certify that:

- (1) I am a graduate of the University of British Columbia and obtained a B.A. Sc. degree in Geological Engineering in 1959.
- (2) I have had twenty-three years experience in mining geology and mineral exploration.
- (3) I am a Registered Professional Engineer in the province of British Columbia.
- (4) I supervised the work described in this report.

D.C. Miller

D.C. Miller, P. Eng.

June 30, 1982



STATEMENT OF QUALIFICATIONS

I, J. Douglas Blanchflower, of 1278 Dalhousive Drive, Kamloops, B.C., do hereby certify that:

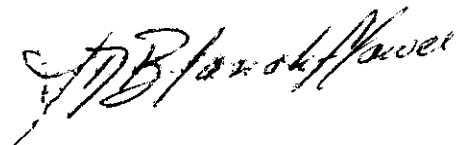
- (1) I am a graduate of the University of British Columbia, B. Sc. (Honours Geology), 1971.
- (2) I have continuously practised my profession in economic geology for 11 years.
- (3) I am a Fellow in the Geological Association of Canada.
- (4) I carried out a portion of the geological mapping and sampling discussed in this report.
- (5) I have been employed as a geologist for Sulpetro Minerals Limited since May, 1980.



J.D. Blanchflower, B.Sc.

Geologist

June 30, 1982



General Testing Laboratories

A Division of SGS Supervision Services Inc

1001 East Pender Street
Vancouver, B.C. Canada V6A 1V

Telephone: (604) 254-1647 Telex: 04-507514 Cable: Supervi



TO:
SULPETRO MINERALS LTD.,
1278 Dalhousie Drive
Kamloops, B.C.
V2C 6G3

CERTIFICATE OF ANALYSIS

No.	DATE:
FILE: 8110-2655 C	Nov. 19, 1981

Attention: Mr. David C. Miller, P. Eng.

WE HEREBY CERTIFY TO HAVE ANALYZED THE SUBMITTED SAMPLES AS FOLLOWS :

SAMPLE NO	BASIS	R.M. %	ASH %	V.M. %	F.C. %	C.V. BTU/LB	SULPHUR %
VAN #1	AIR DRY	11.69	7.20	32.55	48.55	10028	---
	DRY	-	8.15	36.87	54.98	11355	---
VAN #2	AIR DRY	13.24	15.34	30.33	41.09	8298	---
	DRY	-	17.68	34.96	47.36	9564	---
VAN #3	AIR DRY	12.95	7.76	32.59	46.70	9562	---
	DRY	-	8.91	37.44	53.65	10984	---
VAN #4	AIR DRY	12.83	16.86	30.07	40.24	8167	0.57
	DRY	-	19.35	34.49	46.16	9369	0.65
VAN #5	AIR DRY	2.90	12.18	32.66	52.26	12304	2.26
	DRY	-	13.64	33.63	53.83	12671	2.33
VAN #6	AIR DRY	2.82	10.44	34.20	52.44	12588	2.55
	DRY	-	10.76	35.23	54.01	12366	2.63
VAN #7	AIR DRY	3.33	12.84	33.10	50.67	11951	3.20
	DRY	-	13.29	34.26	52.45	12370	3.31

L. Lakosil
L. Lakosil - Chief Coal Chemist

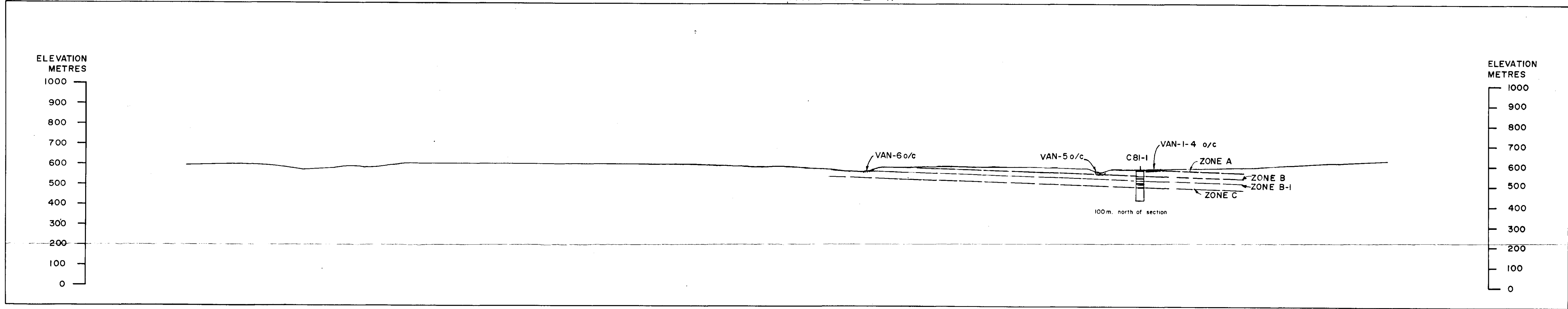
SIGNATURE AND TITLE

THIS COMPANY ACCEPTS NO RESPONSIBILITY EXCEPT FOR THE DUE PERFORMANCE OF INSPECTION AND/OR ANALYSIS IN GOOD FAITH AND ACCORDING TO THE RULES OF THE TRADE AND OF SCIENCE

← W

SECTION No. 4 E - W

E →



— LEGEND —

UPPER CRETACEOUS

- 7 COMOX FORMATION
 - a Coal
 - b Shaly Coal
 - c Shale with minor coal lenses
 - d Carbonaceous Shale
 - f Sandstone
 - e Shale
 - g Conglomerate

6 BENSON MEMBER: mainly coarse conglomerate

JURASSIC

MIDDLE TO UPPER JURASSIC

- 5 ISLAND INTRUSIONS: biotite - hornblende granodiorite, quartz diorite

TRIASSIC AND JURASSIC

LOWER JURASSIC

- VANCOUVER GROUP
- BONANZA SUBGROUP
- 4 VOLCANIC DIVISION: andesitic to latitic breccia, tuff, lava; minor sediments

UPPER TRIASSIC AND LOWER JURASSIC

- 3 SEDIMENTARY DIVISION: limestone and argillite

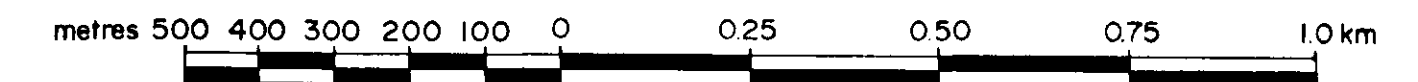
UPPER TRIASSIC

- 2 QUATSINO FORMATION: limestone

UPPER TRIASSIC AND OLDER

- 1 KARMUTSEN FORMATION: pillow-basalt and breccia, basalt flows; minor tuff, volcanic breccia

— SYMBOLS —



CX - Chute Creek 82(2)A 711

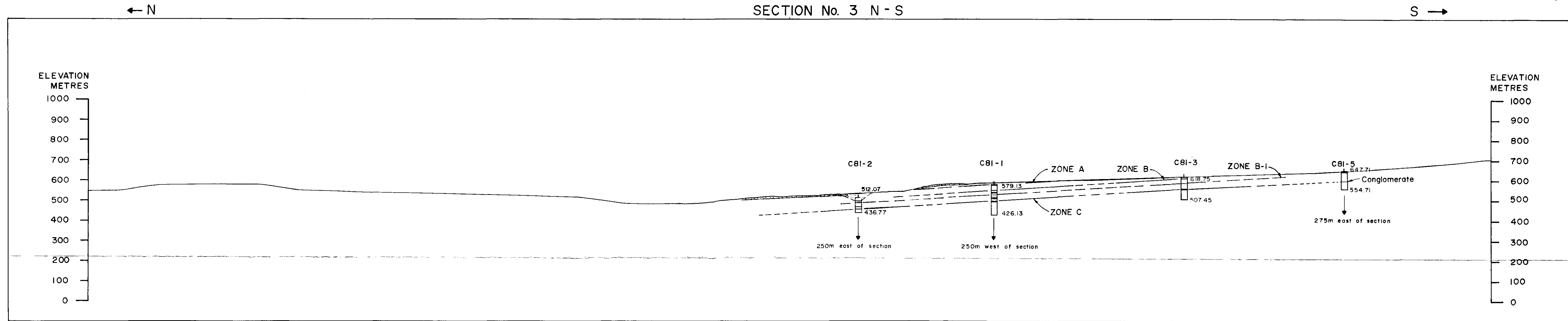
SULPETRO MINERALS LIMITED KAMLOOPS B.C.	
CHUTE CREEK COAL PROPERTY CROSS - SECTION; U.T.M. No 26.5 N.	
SCALE: 1:10,000	
GEOLOGY BY: M. Cholach	PROJECT No. 5365
DRAWN BY:	NTS. 92 F/14W
DATE: November 1981	FIGURE No. 12

To accompany report by D.C. Miller and J.D. Blanchflower, dated, June 1982.

(M1)

44

SECTION No. 3 N - S



— LEGEND —

— SYMBOLS —

UPPER CRETACEOUS

- 7 COMOX FORMATION
 - a Coal
 - b Shaly Coal
 - c Shale with minor coal lenses
 - d Carbonaceous Shale
 - f Sandstone
 - e Shale
 - g Conglomerate

6 BENSON MEMBER: mainly coarse conglomerate

JURASSIC

MIDDLE TO UPPER JURASSIC

5 ISLAND INTRUSIONS: biotite - hornblende granodiorite
quartz diorite

TRIASSIC AND JURASSIC

LOWER JURASSIC

VANCOUVER GROUP
BONANZA SUBGROUP

4 VOLCANIC DIVISION: andesitic to latitic breccia,
tuff, lava; minor sediments

UPPER TRIASSIC AND LOWER JURASSIC

3 SEDIMENTARY DIVISION: limestone and argillite

UPPER TRIASSIC

2 QUATSINO FORMATION: limestone

UPPER TRIASSIC AND OLDER

1 KARMUTSEN FORMATION: pillow-basalt and breccia,
basalt flows; minor tuff
volcanic breccia

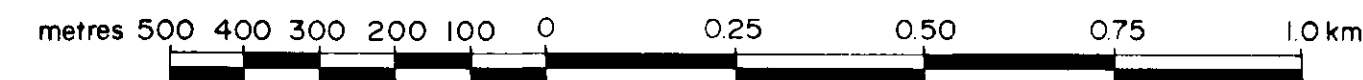
Chute Creek 82/21A (1)

SULPETRO MINERALS LIMITED
KAMLOOPS B.C.

CHUTE CREEK COAL PROPERTY
CROSS - SECTION; U.T.M. No 27 E.

SCALE: 1:10,000

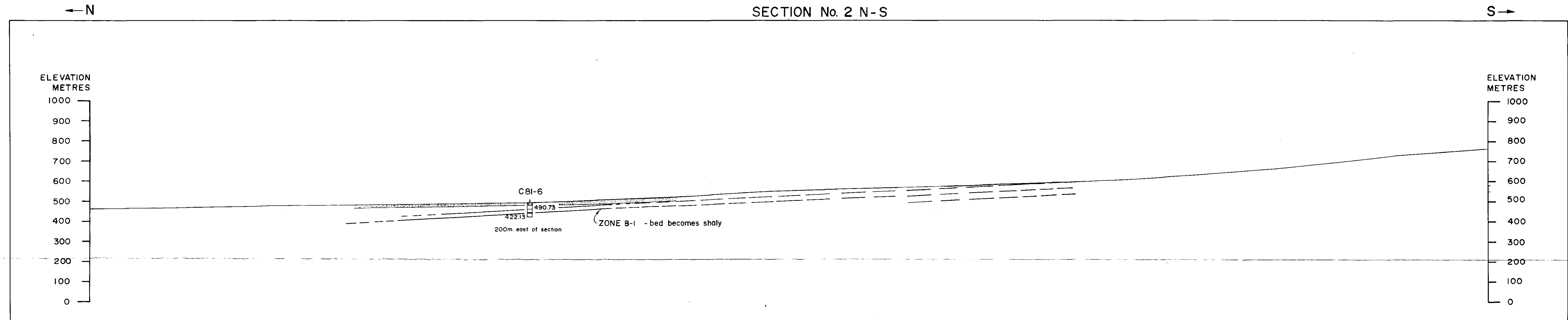
GEOLOGY BY: M. Cholach	PROJECT No. 5365
DRAWN BY:	NTS. 92 F/14W
DATE: November 1981	FIGURE No. 11



To accompany report by D.C. Miller and J.D. Blanchflower, dated, June 1982.

MZ

44



— LEGEND —

UPPER CRETACEOUS

- 7 COMOX FORMATION
 - a Coal
 - b Shaly Coal
 - c Shale with minor coal lenses
 - d Carbonaceous Shale
 - f Sandstone
 - e Shale
 - g Conglomerate

6 BENSON MEMBER: mainly coarse conglomerate

JURASSIC

MIDDLE TO UPPER JURASSIC

5 ISLAND INTRUSIONS: biotite - hornblende granodiorite
quartz diorite

TRIASSIC AND JURASSIC

LOWER JURASSIC

VANCOUVER GROUP
BONANZA SUBGROUP

4 VOLCANIC DIVISION: andesitic to latitic breccia,
tuff, lava; minor sediments

UPPER TRIASSIC AND LOWER JURASSIC

3 SEDIMENTARY DIVISION: limestone and argillite

UPPER TRIASSIC

2 QUATSINO FORMATION: limestone

UPPER TRIASSIC AND OLDER

1 KARMUTSEN FORMATION: pillow-basalt and breccia,
basalt flows; minor tuff
volcanic breccia

— SYMBOLS —

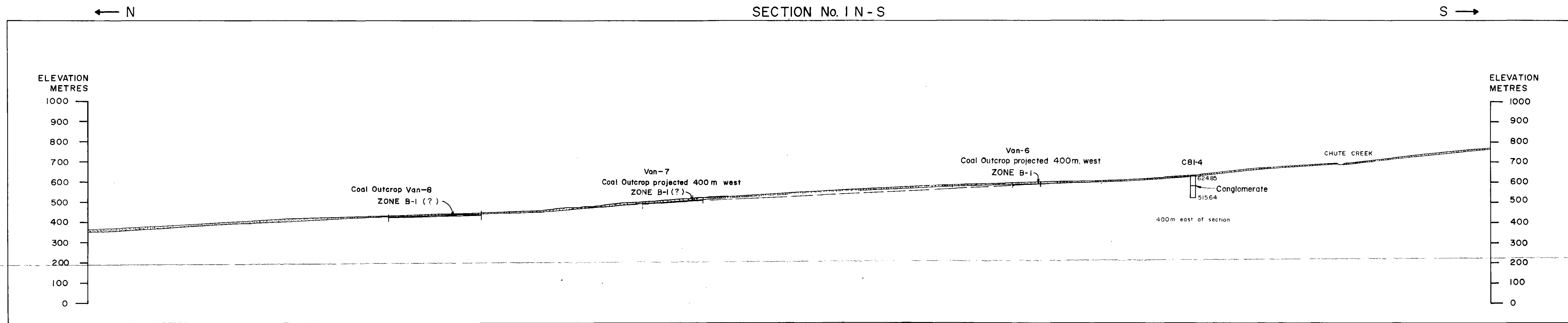


*Ck. Chute Creek 87/24A * (1)*

SULPETRO MINERALS LIMITED KAMLOOPS B.C.	
CHUTE CREEK COAL PROPERTY CROSS - SECTION; U.T.M. No 26E.	
SCALE: 1:10,000	
GEOLOGY BY: M. Cholach	PROJECT No. 5365
DRAWN BY:	NTS. 92 F/14W
DATE: November 1981	FIGURE No. 10

To accompany report by D.C. Miller and J.D. Blanchflower, dated, June 1982.

M3 44

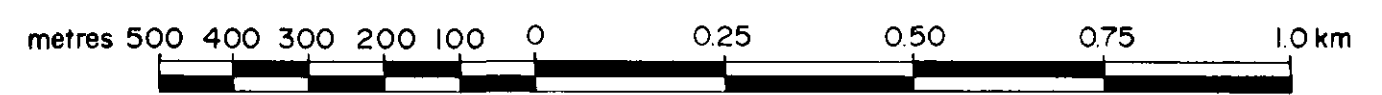


— LEGEND —

- UPPER CRETACEOUS**
- 7 COMOX FORMATION
 - a Coal
 - b Shaly Coal
 - c Shale with minor coal lenses
 - d Carbonaceous Shale
 - f Sandstone
 - 6 BENSON MEMBER: mainly coarse conglomerate
- JURASSIC**
- MIDDLE TO UPPER JURASSIC**
- 5 ISLAND INTRUSIONS: biotite - hornblende granodiorite quartz diorite

- TRIASSIC AND JURASSIC**
- LOWER JURASSIC**
- VANCOUVER GROUP
BONANZA SUBGROUP
- 4 VOLCANIC DIVISION: andesitic to latitic breccia, tuff, lava; minor sediments
- UPPER TRIASSIC AND LOWER JURASSIC**
- 3 SEDIMENTARY DIVISION: limestone and argillite
- UPPER TRIASSIC**
- 2 QUATSINO FORMATION: limestone
- UPPER TRIASSIC AND OLDER**
- 1 KARMUTSEN FORMATION: pillow-basalt and breccia, basalt flows; minor tuff volcanic breccia

— SYMBOLS —

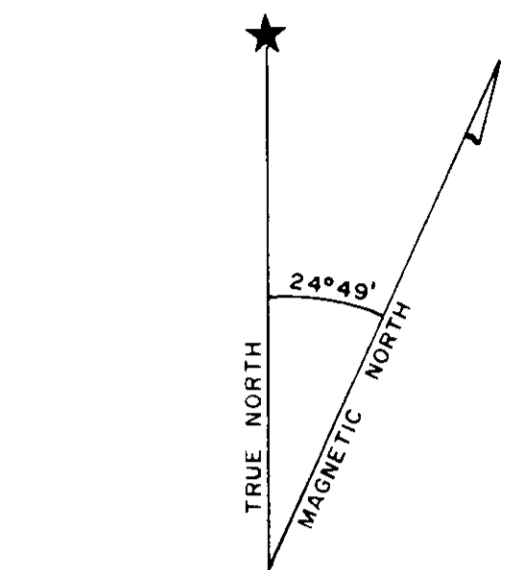
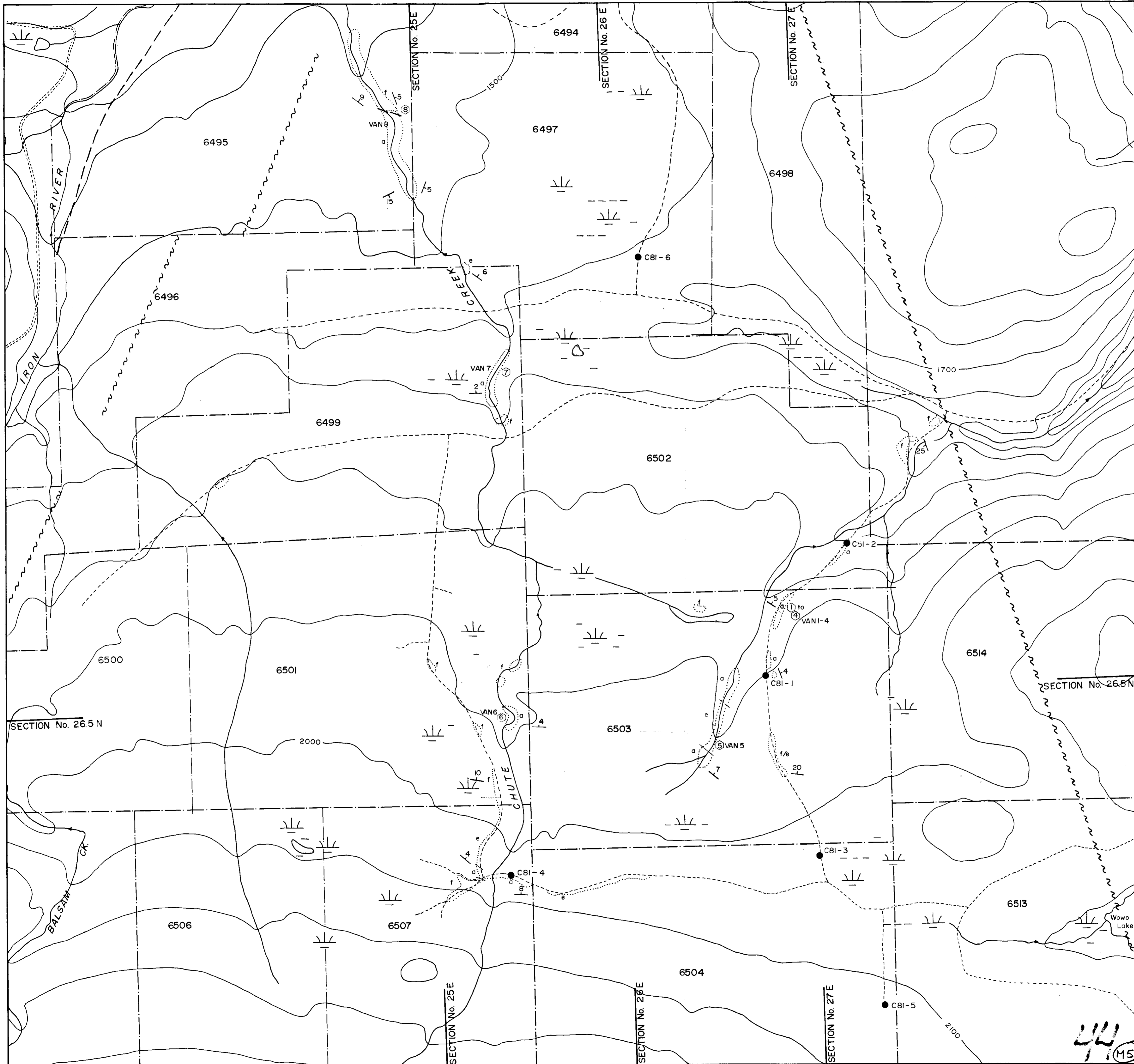


*Cx-Chute Creek 82/212 * (1)*

SULPETRO MINERALS LIMITED KAMLOOPS B.C.	
CHUTE CREEK COAL PROPERTY CROSS - SECTION; U.T.M. No. 25 E.	
SCALE: 1:10,000	
GEOLOGY BY: M. Cholach	PROJECT No. 5365
DRAWN BY:	NTS. 92 F/14W
DATE: November 1981	FIGURE No. 9

To accompany report by D.C. Miller and J.D. Blanchflower, dated, June 1982.

(M4) 44

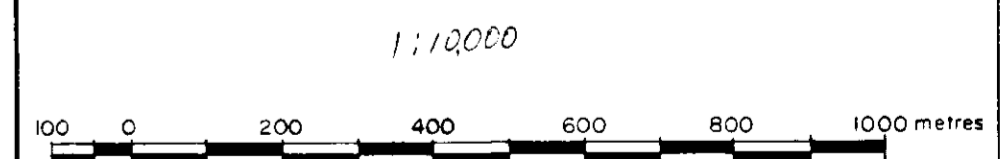


- LEGEND -

- UPPER CRETACEOUS**
- 7 COMOX FORMATION
 - a Coal with shale, siltstone and sandstone
 - e Shale, siltstone and sandstone
 - f Sandstone with conglomerate lenses

- SYMBOLS -

- Geological Contact
 - Fault
 - Outcrop
 - 1981 Rotary Drill Hole site
 - 1981 Coal Sample Location
 - Road
 - Drainage
- CONTOUR INTERVAL 100 FEET



Chute Creek 89/219 (1)

SULPETRO MINERALS LIMITED
KAMLOOPS B.C.

**CHUTE CREEK PROPERTY
GEOLOGY, SAMPLE LOCATION
AND DRILL HOLE PLAN**

SCALE: 1:10,000	PROJECT NO. 5365	SHEET NO.
APPROX. LAT. & LONG. OF LOWER RT. COR. OF DWG.	FIGURE NO. 3	OF
49° 51' 00" LATITUDE	NTS. 92F/4W	
125° 23' 00" LONGITUDE		

To accompany report by D.C. Miller and J.D. Blanchflower, dated June 1982.

44 MS