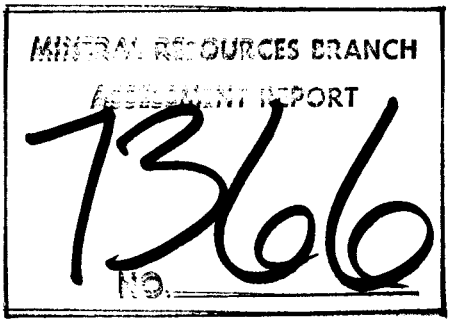
'79-#298-# 7366

Assessment Report
Geological and Geochemical Surveys
Betsy 1, 2 Claims
Kamloops M.D.
N.T.S. 92-I-8
Lat. 50°27' Long. 120°24'
British Columbia



B. J. Cooke
Shell Canada Resources Ltd.
July, 1979

Summary

The Betsy 1 and 2 claims were staked in August, 1978 near Rossmoore Lake, some 25 km south of Kamloops, British Columbia. Detail geology, stream and soil sampling were performed as follow-up to a uranium anomaly located during a regional stream sampling program.

Miocene-Pliocene basalts and sediments are the youngest strata in the area and are favourable host rocks for basal channel uranium mineralization. The late Cretaceous Central Nicola Intrusive appears to be a good uranium source rock, but the Upper Triassic Nicola Group is too compact, siliceous and lacks reductants to be a suitable host for supergene or hydrothermal uranium mineralization.

Stream silts confirm the anomalous area, but waters are generally below threshold limits. Soils produced 2 point anomalies over the intrusive.

Further prospecting, geochemical stream sampling and possibly a radon-based survey are recommended.

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List of Maps

1. Introduction

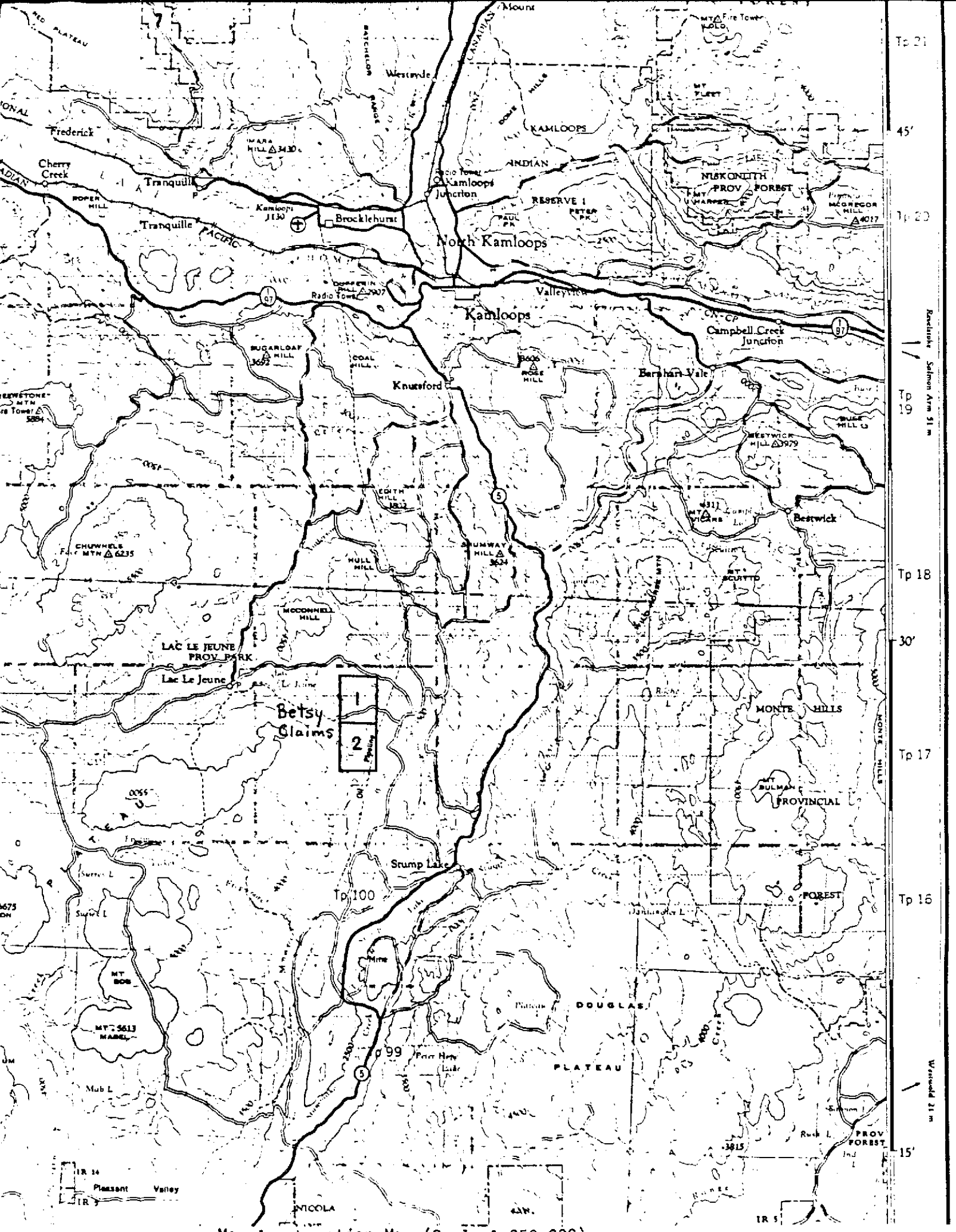
On August 3, 1978, Shell Canada Resources Ltd. recorded two contiguous claims, Betsy 1 and 2, consisting of 20 units each, in the Kamloops Mining Division, British Columbia. The claims were staked on the basis of stream geochemical anomalies located during a regional sampling program for uranium.

The Betsy 1 and 2 claims are located 25 km south of Kamloops on the east side of Rossmoore Lake (see Map 1). Excellent road access is available via the paved road south to Lac Le Jeune and old logging roads southeast to Rossmoore Lake.

The area is gently rolling as it is a part of the Thompson Plateau. Vegetation is predominantly coniferous forest, but previous logging activity has removed much of the tree cover on the claims.

Work done on the claims includes:

1) detail geological survey on the 1:20,000 scale,
2) stream silt and water sampling totalling 3 samples of each,
3) soil sampling totalling 159 samples.



Map 1 - Location Map (Scale 1:250,000)

2. Geology

Geological traverses were performed using pace and compass methods at 200 m line spacings. Radiometric measurements were taken with a Scintrex BGS 1SL scintillometer, recorded in counts per second (cps). Outcrop exposure is approximately 5% allowing reasonable interpretation of the geology.

The oldest rocks in the area belong to the Upper Triassic Nicola Group, intruded by the Middle-Upper Cretaceous Central Nicola Intrusive and overlain by Miocene-Pliocene strata (see Maps 2 and 5). From youngest to oldest, the rocks may be described as follows:

Miocene-Pliocene — Olivine Basalt

i) dark green to black subalkaline basalt
ii) very fine to medium grain; equigranular; or porphyritic with olivine; or amygdular with calcite, quartz, clay or zeolite; or vesicular
iii) massive; or columnar and horizontal jointing minor breccia
iv) background radioactivity 50 cps

Miocene-Pliocene — Fluvial Sediments

i) not found in outcrop

---------- Unconformity ----------

M-U Cretaceous — Central Nicola Intrusive

i) light coloured biotite quartz monzonite
ii) medium to coarse grain; equigranular; or porphyritic with K-feldspar; minor pegmatites
iii) massive; or slightly foliated biotite, quartz grains
iv) background radioactivity 120 cps

---------- Intrusive Contact ----------

U Triassic — Nicola Group

i) light green-grey epidote-chlorite-quartz-feldspar schist
ii) aphanitic to fine grain; equigranular
iii) schistose and/or banded
iv) background radioactivity 50 cps

Several strong air photo lineaments trend north-easterly through the area and may be interpreted as high angle faults of post-Miocene-Pliocene age.

3. Geochemistry

Streams draining the Betsy 1 and 2 claims were sampled at 500 m intervals where possible. Water samples were collected in 4 oz sterilized polyethylene bottles and centre-stream sediments were collected in Kraft paper bags. The sediments were dried and then all samples shipped to Chemex Labs in Calgary for fluorimetric analysis for uranium (see Appendix 2). Only the silt size fraction (-80 mesh) of the sediments were analyzed.

Background and threshold levels were determined from Shell's regional sampling program. The geochemical stream data are shown below (see Maps 3 and 4):

	Silts (ppm)	Waters (ppb)
Background	< 0.4	< 0.25
Threshold	3.5	1.00
Anomalies	9.0	1.12
	8.0	
	6.5	

Soil samples were taken over the claims at 200 m intervals along lines spaced 200 m apart. Samples were taken from the light brown B_1 horizon, 20 cm to 30 cm in depth, placed in Kraft paper bags and sent to Chemex Labs in Calgary for analysis as for the sediments.

The geochemical soil data are shown below (see Map 3):

	Soils (ppm)
Background	< 0.4
Threshold	2.0
Anomalies	16.5
	3.0

4. Conclusions

1) The Miocene-Pliocene sediments are a favourable host for basal channel-type uranium mineralization due to their apparent similarity to sediments in the Beaverdell area of British Columbia.

2) The Nicola Group schists are not a favourable host for supergene or hydrothermal styles of uranium mineralization because they are siliceous, compact and lack reductants.

3) The Central Nicola Intrusive is a favourable uranium source rock because of its high background radioactivity.

4) Three stream silts are anomalous, all located in the same area, near the contact of olivine basalt and biotite quartz monzonite (see Map 3). It is possible that they drain uranium mineralization in the sediments beneath the basalts, or simply the high background biotite quartz monzonite.

5) One spring water is slightly anomalous, possibly due to high dissolved CO_3^{2-} or uranium mineralization (see Map 4).

6) Two soils are anomalous, but both occur as point anomalies overlying the biotite quartz monzonite (see Map 3).

5. Recommendations

1) Prospecting outside the claim boundaries is recommended to locate Miocene-Pliocene sediments in outcrop and further determine their favourability as potential ore hosts.

2) The anomalous stream should be resampled at 100 m intervals to determine the actual source of the anomalies.

3) The anomalous soils should not be followed-up due to their sporadic nature and location over the Central Nicola Intrusive.

4) The possible northeast trending faults should be examined in more detail, possibly using radon methods.

APPENDIX 1

Author's Qualifications

I, Bradford J. Cooke, state that:

1) I am a geologist, employed by the Minerals Department of Shell Canada Resources Limited in Calgary, Alberta since June, 1977.

2) I obtained a B.Sc. (Honours-Geology) degree from Queen's University in Kingston, Ontario in 1976.

3) I was directly involved in the performance of all work submitted in this report.

Brad Cooke

B. J. Cooke
Geologist
Minerals Exploration
Shell Canada Resources Ltd.

A. S. Saydam, P. Geoph.
Geophysicist
Minerals Exploration
Shell Canada Resources Ltd.

Analytical Methods

URANIUM

Analytical methods for uranium presently in use at Chemex have been modified from procedures developed by the USGS and GSC. For uranium at PPB and PPM level, fluorometric methods of analyses are highly acceptable in terms of accuracy, cost and turn around time.

The following methods are used extensively to determine uranium potential in a variety of material.

(a) Water Samples - By Fluorescence Analysis

Clean 100 or 200 ml plastic bottles are provided for field use. If a portion of the water is to be stored we require a 200 ml sample.

A 75 ml aliquot is transferred to a clean 100 ml pyrex beaker. 3 ml of concentrated HNO_3 is added and the solution is evaporated to dryness at low uniform temperature. The dry residue after ashing is dissolved in 3 ml of warm 4M HNO_3. An aliquot of the dissolved residue is transferred to a small platinum dish, dried, and fused with an 0.50g tablet of carbonate-fluoride flux at 650° C. The fused disc is removed from the platinum dish and uranium fluorescence is determined using a G. K.Turner III Fluorometer or Jarrell-Ash 26-000 Fluorometer. Detection limit is 0.20 PPB U. Analytical capability approx. 200 samples per day including check samples and quality control standards.

(b). Soil, Silt, Lake Bottom Sediments & Rocks - By Fluorescence Analysis

These materials normally arrive unprepared. Preparation requires drying @ 60° C and screening to obtain the -80 mesh fraction. Coarse material is retained if the screened fraction is small. A 0.25 gm sample of -80 mesh material is weighed into a 100 ml pyrex beaker. The sample is ashed at 550° C to remove organics. The ashed residue is digested in 5 mls 4M HNO_3 and taken to dryness twice. The residue is leached in 50 mls 1% HNO_3. The solution is swirled and allowed to settle. A few microlitres of

the clear solution is transferred by micropipette to a platinum dish. The sample is evaporated to dryness and an 0.50 gm tablet of carbonate - fluoride flux is added to the sample dish. Fusion and fluorometric determination of uranium is as described for water samples. Detection limit is 0.50 PPM U. Analytical volume approx. 400 samples per day including duplicates and quality control standards. Upper limit of analytical method - 400 PPM U.

(c). Assay Materials (% U_3O_8) By Colorimetric Methods

1 gram of homogenized sample pulp is weighed into a Teflon dish and digested with 10 mls 52% HF, 5 mls 70% $HClO_4$ and 5 mls conc. HNO_3 to dryness. The residue is dissolved in 25 mls 9M HCl. The uranium is separated from interfering elements by anion exchange procedures. The adsorbed uranium is eluted form the resin and a suitable portion of the uranium bearing solution is reduced, filtered and then complexed using Arsenazo III reagent. Absorbance is measured using "Spectronic 700" Spectrophotometer. The U_3O_8 concentration is evaluated by correlation with a standard reference curve. Analytical volume - 40 samples/day. Concentration range 0.001% U_3O_8 to 10.0% U_3O_8.

APPENDIX 3

Expenditures

Note: For labour, expenditures are calculated as salaries (30 days) divided by time spent on claims (6 days).

For supervisory charges, materials, transportation, and communication, expenditures are calculated as summer totals (90 days) divided by time spent on the claims (6 days).

For lab services, equipment rental, travel and sundry, and report preparation, expenditures are calculated from the rates shown.

Materials includes costs of camp equipment and supplies, office supplies, air photos, maps and reports.

Transportation includes costs of 2 truck rentals, maintenance and gas from Wheelaway Truck Rentals in Calgary.

Communications includes costs of 2 radio-telephone rentals and toll charges from Alberta Government Telephones in Calgary, postal, bus and air express charges.

	Subtotal	Ratio	Total
Labour			
Brad Cooke (Geologist)	$1,640.00/mo	20%	$328.00
Mike Koziol (Senior Assistant)	$1,766.27/mo	20%	$353.25
Dave Miller (Junior Assistant)	$1,491.37/mo	20%	$298.27
Frank Halderman (Junior Assistant)	$1,154.61/mo	20%	$230.92
Supervision			
Robert de Chazal (Senior Geologist)	$1,051.60	6.67%	$ 70.14
Materials	$9,351.75	6.67%	$623.76

	Subtotal	Ratio	Total
Transportation	$8,754.40	6.67%	$583.92
Communications	$ 734.06	6.67%	$ 48.96

Lab Services - Chemex Labs (Alberta) Ltd. - Calgary

159 soils	Prepared @ $0.35 each	$ 55.65
	U Analysis @ $2.50 each	$397.50
3 silts	Prepared @ $0.35 each	$ 1.05
	U Analysis @ $2.50 each	$ 7.50
	LOI Analysis @ $1.50 each	$ 4.50
3 waters	U Analysis @ $2.50 each	$ 7.50
	CO_3 Analysis @ $7.50 each	$ 22.50
		$496.20

Equipment Rental - Scintrex Ltd. - Toronto

6 scintillometers (BGS 1SL) @ $5/unit/day X 6 units X 6 days $180.00

Travel and Sundry

groceries $169.17

Report Preparation

Brad Cooke - base map drafting	$1,400.00	25%	$350.00
Simon Camping - base map preparation	8 hrs @ $15/hr		$120.00
Dept. Reproduction - map reproduction	8 hrs @ $15/hr		$120.00
Map materials - mylar	75 sq. ft. @ $4.50/sq. ft.		$337.50
			$927.50
	Total Cost		$4,310.09
	Total Units		40
	Cost per Unit		$107.75

LEGEND – B.C. URANIUM SECTION

1) INTRUSIVES

GRANITIC (GRANITE, QUARTZ MONZONITE, GRANODIORITE, QUARTZ DIORITE, PEGMATITE, APLITE)

- 1a HIGH BACKGROUND >100 cps
- 1b LOW BACKGROUND <100 cps

SYENITIC

- 1c SYENITE, MONZONITE

BASIC

- 1d GABBRO

2) EXTRUSIVES

ACIDIC (PYROCLASTICS)

- 2a HIGH BACKGROUND >150 cps
- 2b LOW BACKGROUND <150 cps

ACIDIC (FLOWS, IGNIMBRITES, TRACHYTES)

- 2c HIGH BACKGROUND >150 cps
- 2d LOW BACKGROUND <150 cps

INTERMEDIATE TO BASIC (FLOWS)

- 2e FLAT LYING
- 2f DEFORMED

3) SEDIMENTS

- 3a CONGLOMERATE
- 3b BRECCIA
- 3c QUARTZ ARENITE
- 3d ARKOSIC ARENITE, LITHIC ARENITE, SUBARKOSE SUBLITHARENITE
- 3e QUARTZ WACKE
- 3f ARKOSIC GREYWACKE, LITHIC GREYWACKE, FELDSPATHIC WACKE
- 3g SILTSTONE
- 3h MUDSTONE
- 3i COAL, LIGNITE

4) METAMORPHICS

- 4a GNEISS
- 4b SCHIST
- 4c DOLOMITE
- 4d QUARTZITE
- 4e AMPHIBOLITE

SYMBOLS

- CONTACT (OBSERVED)
- CONTACT (APPROXIMATE)
- OUTCROP
- BEDDING (25)
- FLOW BANDING
- FOLIATION (35)
- JOINTS

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7366
NO.

SCALE 1:20 000

0 500 1000 m

0 2000 4000 ft.

SHELL CANADA RESOURCES LIMITED
EXPLORATION – MINERALS

ROSSMOORE LAKE

GEOLOGY

AUTHOR: B. Cooke | SCALE: 1:20,000 | DRAWING No.: VIC 42
DATE: NOVEMBER '78 | REVISED: | ENCLOSURE No.: 2
To Accompany

Tp 18 R 18 W 6

Tp 17 R 19 W 6

Tp 17 R 18 W 6

LAC LE JEUNE PROV PARK

Lac Le Jeune

Campsite

Bute Lakes

Dam

Betsy 1

Betsy 2

Betsy 3

Betsy 4

Betsy 5

Betsy 6

Fred L

Ross Moore Lake

Ridge Lakes

Gravel Pit

Dam

Dam

Dam

Pipeline (underground)

Dripping Water Creek

Ditch Creek

Hollis Creek

Anderson

L 5744

L 5745

L 5746

L 5747

L 5748

L 5335

L 4478

L 5739

L 5968

4500

5000

5200

4000

3800

3700

3900

3500

U CONCENTRATION IN STREAM SILTS (PPM)

< 0.4	LIGHT BLUE
0.4 - 2.0	DARK BLUE
2.1 - 4.0	GREEN
4.1 - 6.0	YELLOW
6.1 - 8.0	ORANGE
> 8.0	RED

SCALE 1:20 000

0 500 1000 m

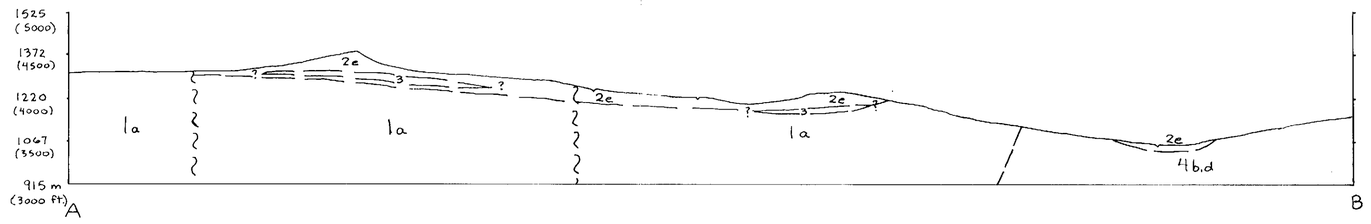
0 2000 4000 ft.

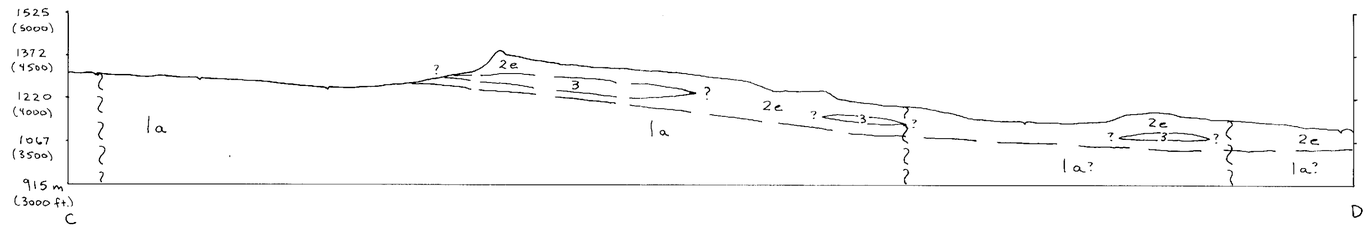
SHELL CANADA RESOURCES LIMITED
EXPLORATION – MINERALS

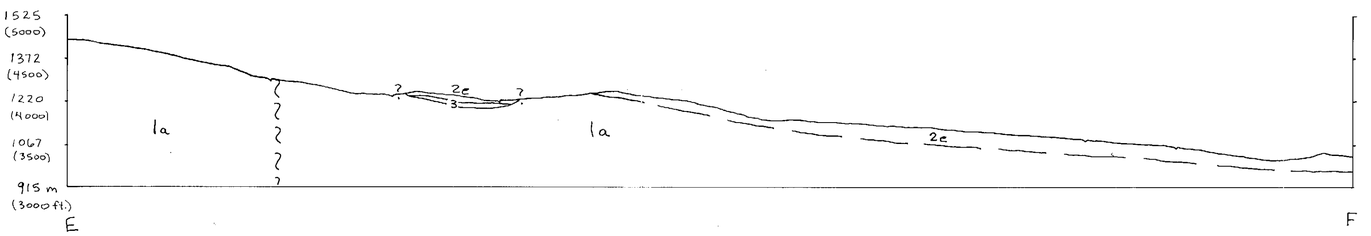
ROSSMOORE LAKE

SILTS AND SOILS

AUTHOR: B. COOKE	SCALE: 1:20,000	DRAWING No. VK 42-A
DATE: NOVEMBER 78	REVISED:	ENCLOSURE No.: 3
To Accompany		







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- 4d QUARTZITE
- 4e AMPHIBOLITE

SCALE

Horizontal 1:20,000
Vertical 1:12,000
(1.67 x Vertical Exaggeration)

SHELL CANADA RESOURCES LIMITED
EXPLORATION – MINERALS

ROSSMOORE LAKE

CROSS-SECTIONS

AUTHOR: B. COOKE | SCALE: | DRAWING No.: NK 42-D
DATE: NOVEMBER '78 | REVISED: | ENCLOSURE No.: 5
To Accompany

Tp 18 R 18 W 6

Tp 17 R 19 W 6

Tp 17 R 18 W 6

LAC LE JEUNE PROV PARK

Campsite

Lac Le Jeune

Lac Le Jeune

Bute Lakes

Dam

Fred L

Ross Moore Lake

Ridge Lakes

Gravel Pit

Dam

Dropping water Creek

Pipeline (underground)

Dam

Holtis Creek

Anderson Creek

Birch Creek

L 5745 L 5746 L 5747 L 5748 L 5744 L 5335 L 4478 L 5739 L 5968

Betsy 3 Betsy 4 Betsy 2 Betsy 5 Betsy 1 Betsy 6

4500 4200 4400 4500 5000 5200 4000 3500 3800 3700 3900

U CONCENTRATION IN STREAM WATERS (PPB)

< 0.25	LIGHT BLUE
0.25 - 0.50	DARK BLUE
0.51 - 1.00	GREEN
1.01 - 3.00	YELLOW
3.01 - 5.00	ORANGE
> 5.00	RED

SCALE 1:20 000

0 500 1000 m

0 2000 4000 ft.

SHELL CANADA RESOURCES LIMITED
EXPLORATION – MINERALS

ROSSMOORE LAKE

WATERS

AUTHOR: B. Cooke	SCALE: 1:20,000	DRAWING No.: NK 42-B
DATE: November '79	REVISED:	ENCLOSURE No.: 4
To Accompany		