

180-#349-#8100

NORCEN ENERGY RESOURCES LIMITED
ASSESSMENT REPORT
GEOCHEMICAL AND GEOLOGICAL PROGRAM
GROUP XVIII (WC7 - WC12)
GOLDEN MINING DIVISION,
BRITISH COLUMBIA

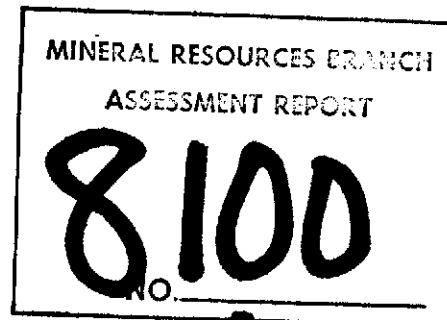
Claims: WC7 (312)
WC12 (317)

Location: 47 km South of Golden, British Columbia

Latitude: 50°52'N

Longitude: 116°50'W

Owner and Operator: Norcen Energy Resources Limited
August 27, 1979



part 182

June 10, 1980

L. Smith, P.Geol.

L. Smith

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| Geochemical Assay Certificates | |
| <u>MAPS</u> | |
| 1. | Land Holdings Map; Crystal Creek Project, British Columbia, (Two Copies). |
| 2. | Regional Geology, Crystal Creek Project, British Columbia. |
| 3. | Regional Soil Geochemical Map, Crystal Creek Project, British Columbia. |

SUMMARY

Regional geological mapping and soil geochemical sampling was performed within the boundaries of Group XVIII (WC7 - WC12) on August 27, 1979. A total of thirteen (13) B horizon soil samples were collected and geochemically analysed in parts per million for copper, lead, zinc and silver. All bedrock outcrops noted during the geochemical sampling were geologically mapped and are presented at the same scale as the soil geochemical data.

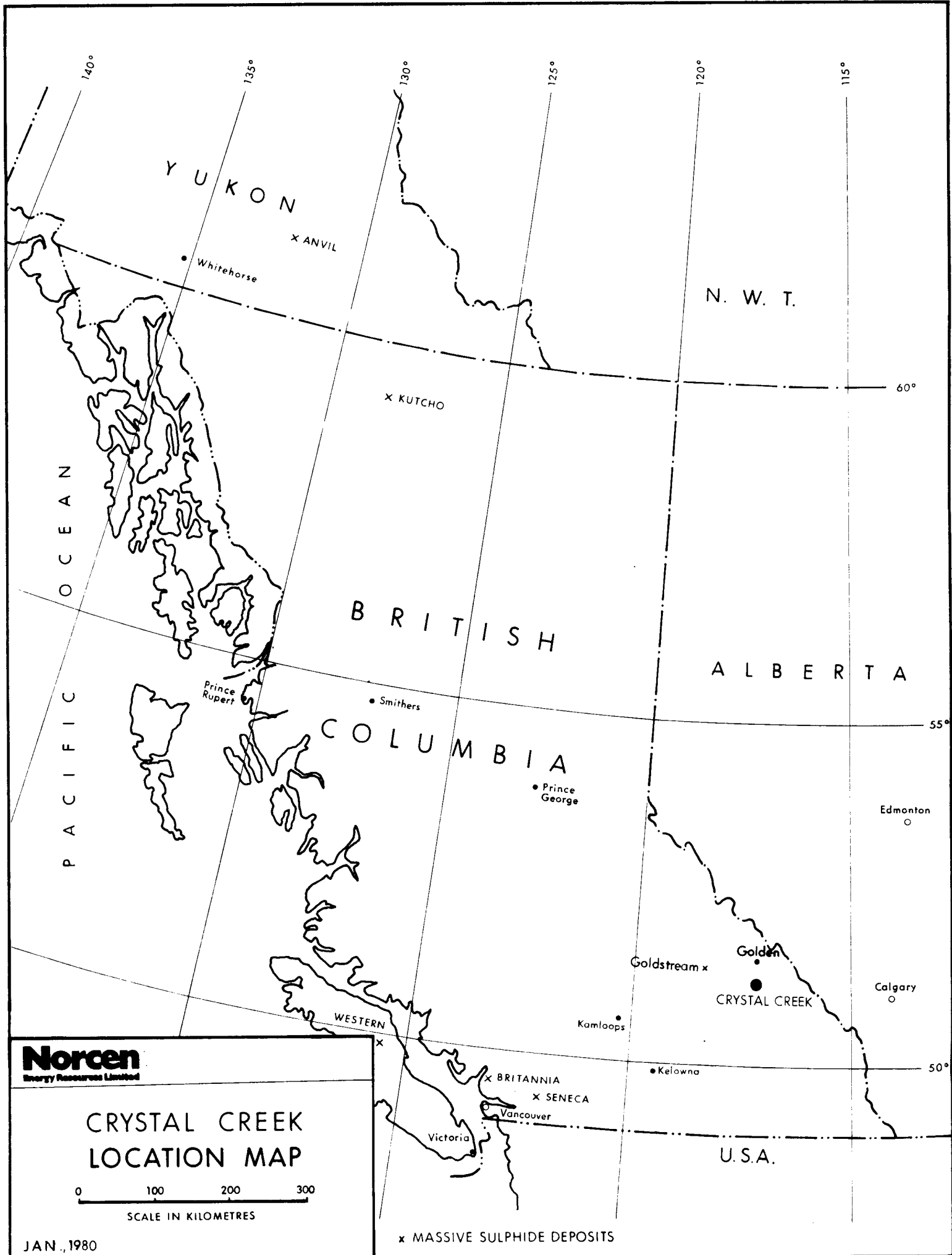
LOCATION AND ACCESS (See Land Holdings Maps, Crystal Creek Project, British Columbia)

The claims are located in the Purcell Mountains approximately 47 kilometres south of Golden, British Columbia. Access is provided by Provincial Highway 95 south from Golden to Parson, followed by 51 kilometres along a gravelled logging road along Vowell Creek.

CLAIM STATUS

The WC7 and WC12 claims form part of the Crystal Creek Property. The WC7 and WC12 claims have been grouped into Group XVIII (WC7 - WC12).

| <u>Claim Name</u> | <u>Record Number</u> | <u>Recorded Date</u> | <u>Unit Dimensions</u> | <u>No. of Units</u> |
|-------------------|----------------------|----------------------|------------------------|---------------------|
| WC7 | 312 | June 18, 1979 | 3N X 6W | 18 |
| WC12 | 317 | June 18, 1979 | 2W X 8N | 16 |



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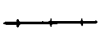

CRYSTAL CREEK LOCATION MAP



JAN., 1980

x MASSIVE SULPHIDE DEPOSITS

L E G E N D

-  PAVED HIGHWAY
-  GRAVEL LOGGING ROAD
-  C. P. RAIL LINE
-  RIVER / CREEK
-  NORCEN LAND HOLDINGS

GOLDEN

Nicholson

Kicking Horse River

1

95

COLUMBIA RIVER

Parson

North Fork

Bobbie Burns Creek

51°00'N 117°00'W

Malachite Cr.

RUTH-VERMONT MINE SITE

Vermont Cr.

Crystal Cr.

Crystalline Cr.

Conrad Cr.

Malloy Cr.

Novell Creek

Bobbie Burns Creek

South Fork

Warren



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Energy Resources Limited

(COCHRANE OIL & GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
LOCATION MAP

0 5 10 Km.

SCALE 1:250,000

NTS 82-K-14E, 82-K-15W, 82-K-15E

Nov. 1979

GEOCHEMICAL SOIL SAMPLING

A total of thirteen (13) B horizon soil samples were collected within the boundaries of claims WC7 - WC12. All samples were sent to Loring Laboratories Limited of 629 Beaverdam Road, N.E., Calgary, Alberta and geochemically analysed in parts per million by atomic absorption.

Previous soil geochemical sampling in the area had shown that anomalous base metal B horizon soil samples reflected close proximity to bedrock base metal mineralization. Based upon the statistical analysis of two hundred and five (205) B horizon soil samples collected in the region over Norcen Energy Resources Limited claim blocks anomalous values are defined by values in excess of: 32 ppm lead, 108 ppm zinc, 0.9 ppm silver, and 38 ppm copper.

One anomalous sample was collected during the 1979 geochemical sampling from the WC7 and WC12 claims. This was:

| <u>Sample No.</u> | <u>ppm Pb</u> | <u>ppm Zn</u> | <u>ppm Ag</u> | <u>ppm Cu</u> |
|-------------------|---------------|---------------|---------------|---------------|
| MA-27-3 | 17 | *116 | 0.6 | 14 |

* anomalous geochemical values

GEOLOGICAL MAPPING

All bedrock exposures encountered during the geochemical soil sampling program were investigated and geologically mapped. The rock types encountered included phyllites, arkoses, and coarser grained grits of the Horse Thief Creek Series of Proterozoic age. No economic base metal mineralization was located during the regional geological mapping.

STATEMENT OF QUALIFICATIONS

I, Laurie James Smith, of the City of Calgary in the Province of Alberta, do hereby state:

1. I am a graduate of the University of Calgary with a BSc degree in Geology.
2. I have been involved in all phases of geological exploration in many areas of Canada (British Columbia, Alberta, Saskatchewan, Northwest Territories, Ontario, Quebec, Nova Scotia, and New Brunswick) since graduation.
3. I personally supervised the geochemical soil sampling and geological mapping on Group XVIII (WC7 - WC12).
4. I am a member of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.
5. I am the holder of valid Free Miners Licence Number 197331.

Laurie J. Smith

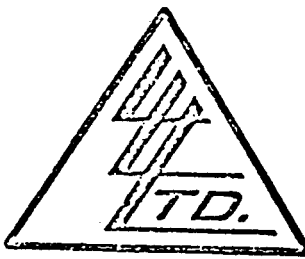
ITEMIZED COST STATEMENT

| | | |
|----|---|--------------|
| A. | Geochemical Sampling and Geological Mapping | |
| | L. Smith, Supervision (August 27, 1979) | |
| | L. Smith, Report Writing (May 27, 1980) | |
| | 1 day @\$125/day | \$ 125.00 |
| | 1 day @\$175/day | 175.00 |
| | M. Anderson - Geologist (August 27, 1979) | |
| | 1 day @\$90/day | 90.00 |
| | D. Desjardins - Geochemical Sampler (August 27, 1979) | |
| | 1 day @\$75/day | 75.00 |
| B. | Transport | |
| | 4 Wheel Drive Vehicle Rental | |
| | \$30.00/day X 1 day | 30.00 |
| | Fuel for Vehicle \$5.00/day X 1 day | 5.00 |
| C. | Accommodation and Meals | |
| | 3 man days X \$25/day | 75.00 |
| D. | Assaying | |
| | 13 Geochemical Assays @\$5/sample | <u>65.00</u> |
| | | \$640.00 |

APPENDIX I

Geochemical Assay Certificates

TO: NRCEN ENERGY RESOURCES LIMITED
 715 - 5th Avenue S.W.
 Calgary, Alberta
 T2P 2X7
 ATTN: L. J. Smith



File No. 17658
 Date Sept. 4, 1979
 Samples Lake Sediment

**Certificate of
 ASSAY of
 LORING LABORATORIES LTD.**

Page 2

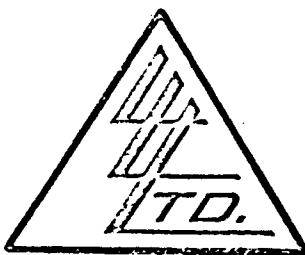
| SAMPLE No. | PPM Cu | PPM Pb | PPM Zn | PPM Ag |
|------------|-----------|-----------|-----------|-----------|
| MA-A-17/24 | 22 | 15 | 55 | 0.7 |
| 17/25 | 19 | 18 | 55 | 0.6 |
| 17/26 | 18 | 20 | 55 | 0.8 |
| 17/27 | 17 | 16 | 50 | 0.6 |
| 17/28 | 14 | 15 | 34 | 0.7 |

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Objects Retained one month.
 ul : Retained one month
 s specific arrangements
 e in advance.

L. M. Isaac
 Licensed Assayer of British Columbia

To: NORGEN ENERGY RESOURCES LIMITED
 715-5th Avenue S.W., 27th Flr.
 Calgary, Alberta T2P 2X7



File No.17716.....
 DateSeptember 17, 1979
 Samples ...Soil

ATTN: L. Smith

Certificate of
ASSAY of
LORING LABORATORIES LTD.

Page # 3

| SAMPLE No. | PPM Cu | PPM Pb | PPM Zn | PPM Ag |
|------------|-----------|-----------|-----------|-----------|
| GW-A-27/1 | 12 | 12 | 40 | 0.5 |

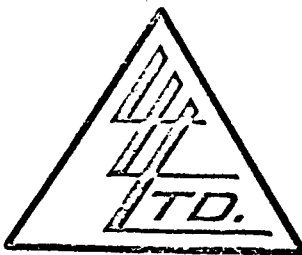
I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Specimens Retained one month.
 Specimens Retained one month
 unless specific arrangements
 made in advance.

L. Smith

Licensed Assayer of British Columbia

To: NORCEN ENERGY RESOURCES LIMITED
 715-5th Avenue S.W., 27th Flr.
 Calgary, Alberta T2P 2X7



File No. 17716
 Date September 17, 1979
 Samples Soil

ATTN: L. Smith

Certificate of
ASSAY of
LORING LABORATORIES LTD.

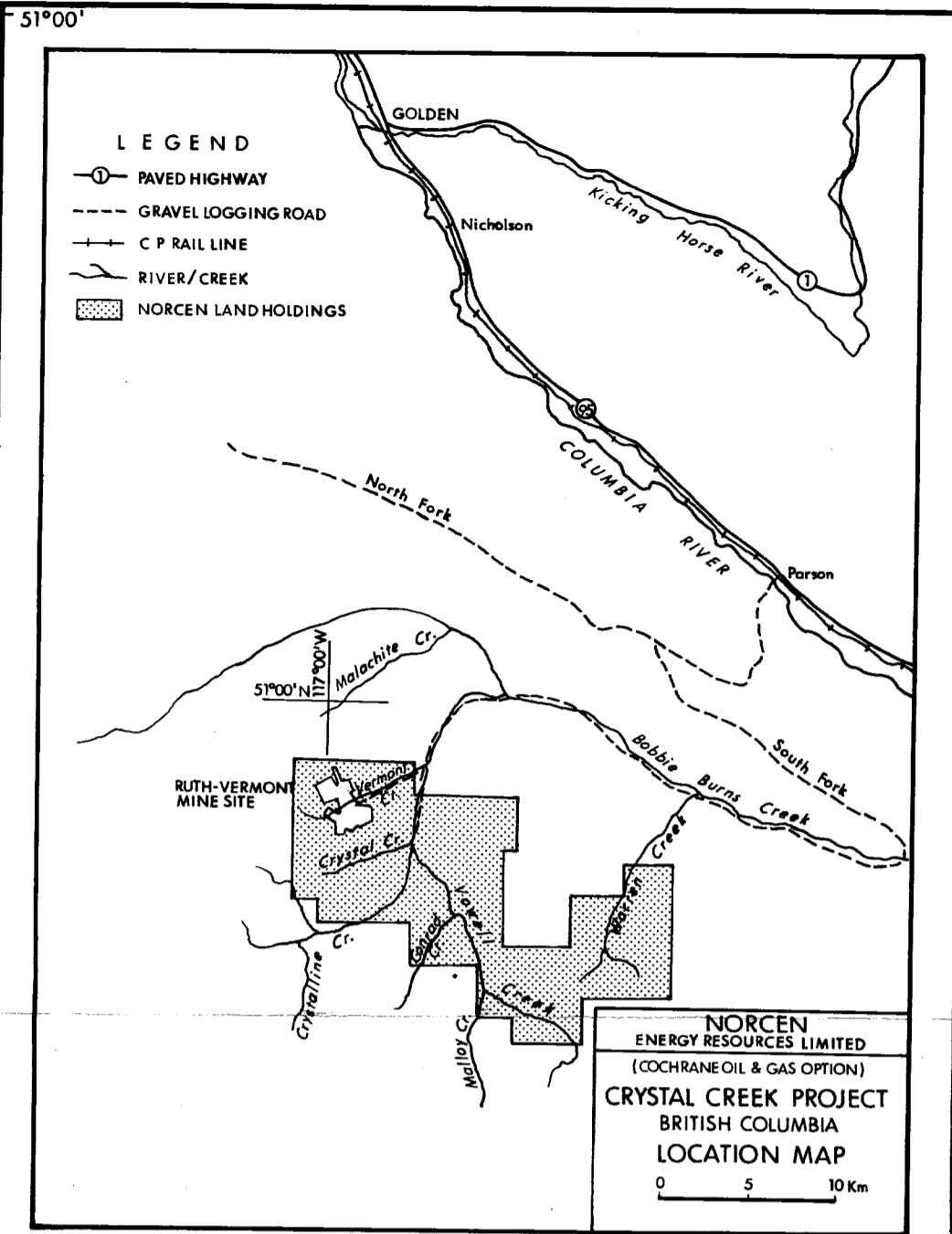
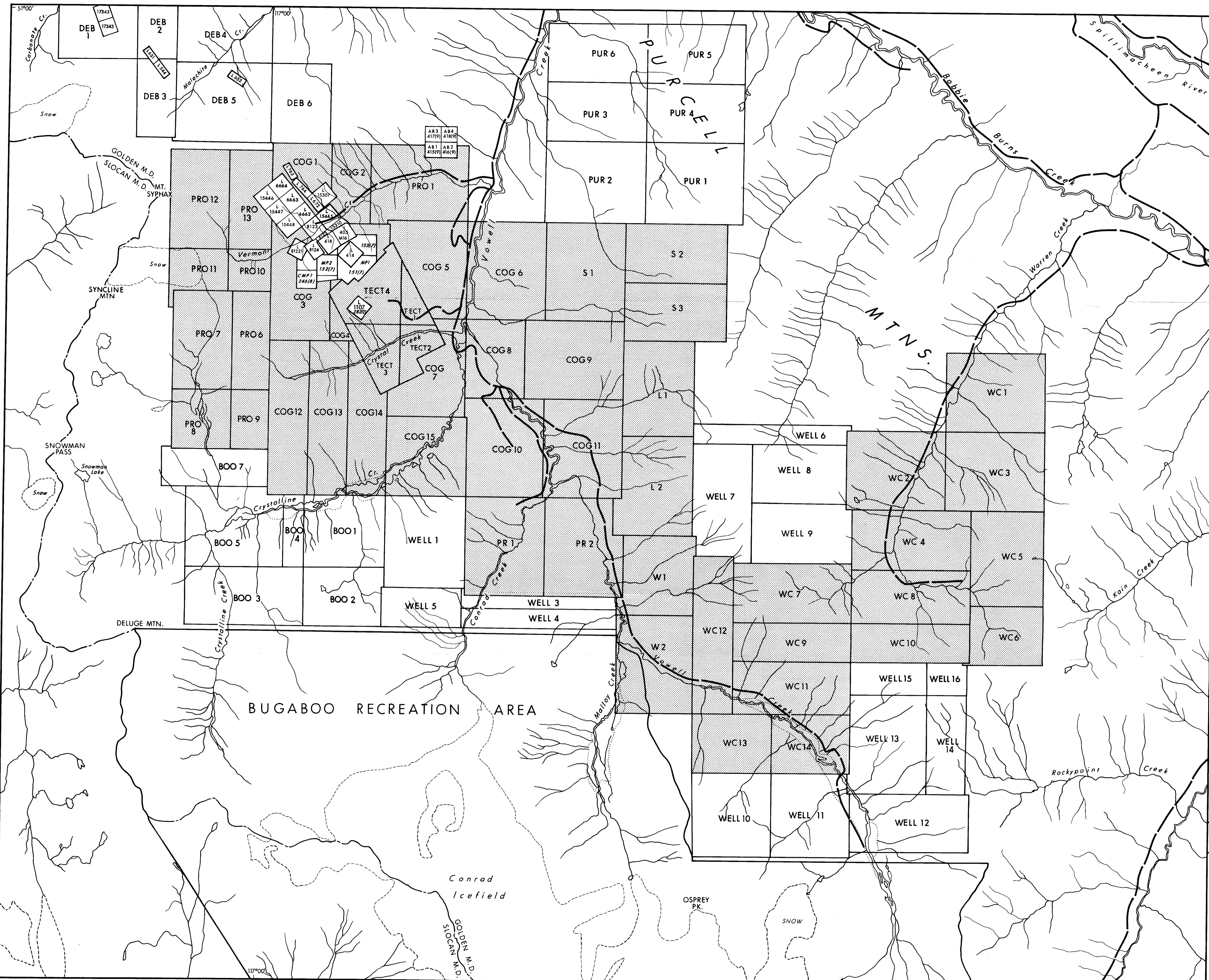
Page # 2

| SAMPLE No. | PPM Cu | PPM Pb | PPM Zn | PPM Ag |
|------------|-----------|-----------|-----------|-----------|
| MA-A-27/1 | 15 | 17 | 23 | 0.6 |
| 27/2 | 5 | 9 | 26 | 0.4 |
| 27/3 | 14 | 17 | 116 | 0.6 |
| 27/4 | 22 | 15 | 100 | 0.8 |
| 27/5 | 32 | 18 | 87 | 0.6 |
| 27/6 | 16 | 13 | 56 | 0.7 |
| 27/7 | 10 | 15 | 56 | 0.8 |

I **Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

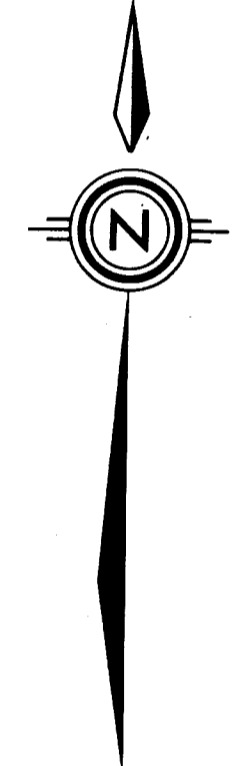
Results Retained one month.
 Results Retained one month
 unless specific arrangements
 are made in advance.

L. Smith



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8100
NO.

part 1 of 2

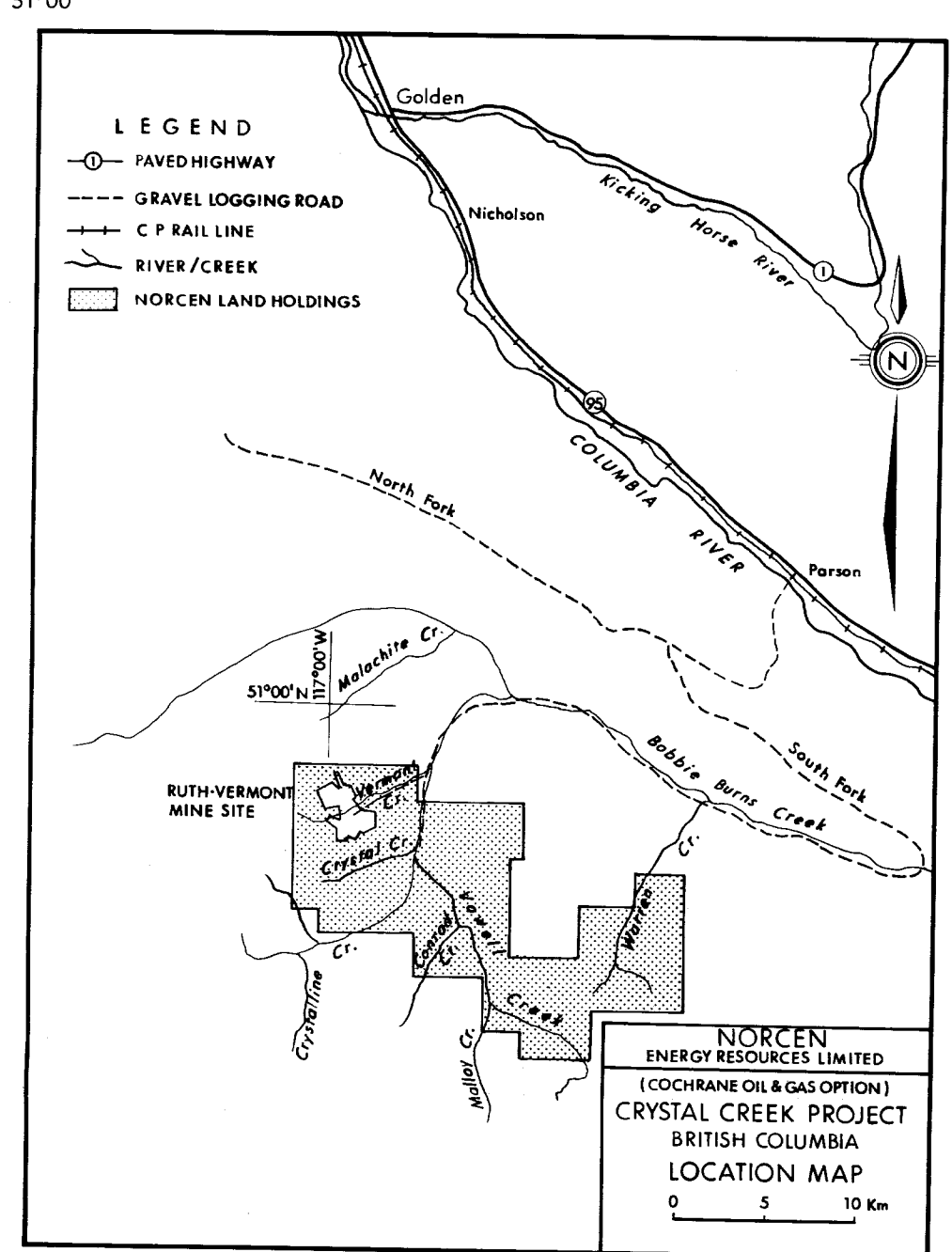
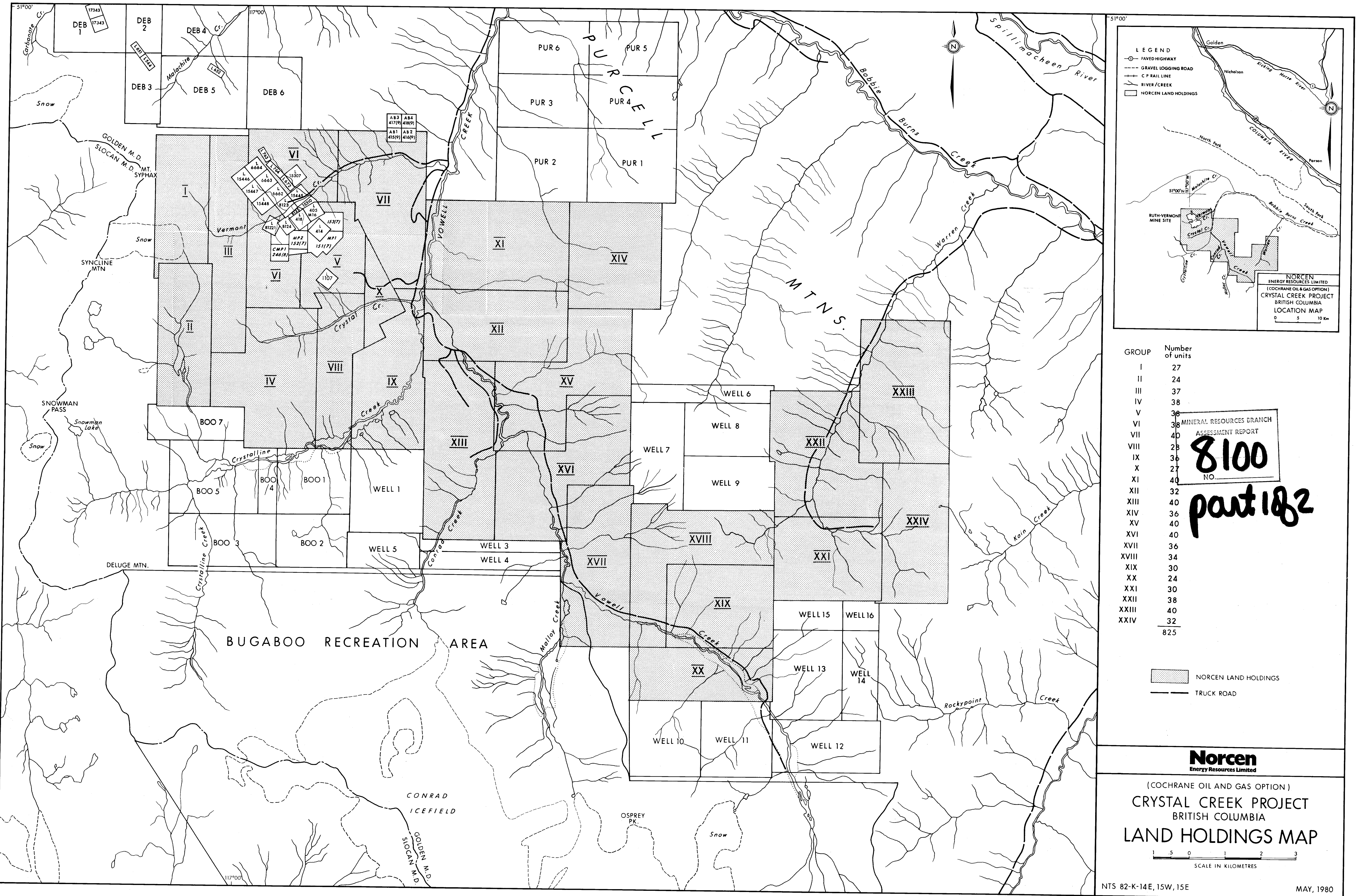


NORCEN LAND HOLDINGS
TRUCK ROAD

Norcen
Energy Resources Limited

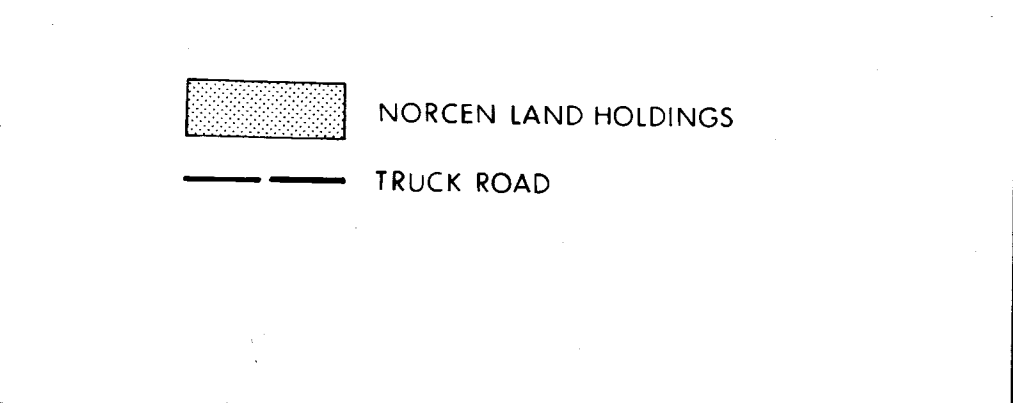
(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
LAND HOLDINGS MAP





| GROUP | Number of units |
|--------------|-----------------|
| I | 27 |
| II | 24 |
| III | 37 |
| IV | 38 |
| V | 38 |
| VI | 38 |
| VII | 40 |
| VIII | 28 |
| IX | 36 |
| X | 27 |
| XI | 40 |
| XII | 32 |
| XIII | 40 |
| XIV | 36 |
| XV | 40 |
| XVI | 40 |
| XVII | 36 |
| XVIII | 34 |
| XIX | 30 |
| XX | 24 |
| XXI | 30 |
| XXII | 38 |
| XXIII | 40 |
| XXIV | 32 |
| TOTAL | 825 |

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
8100
 NO. **part 182**

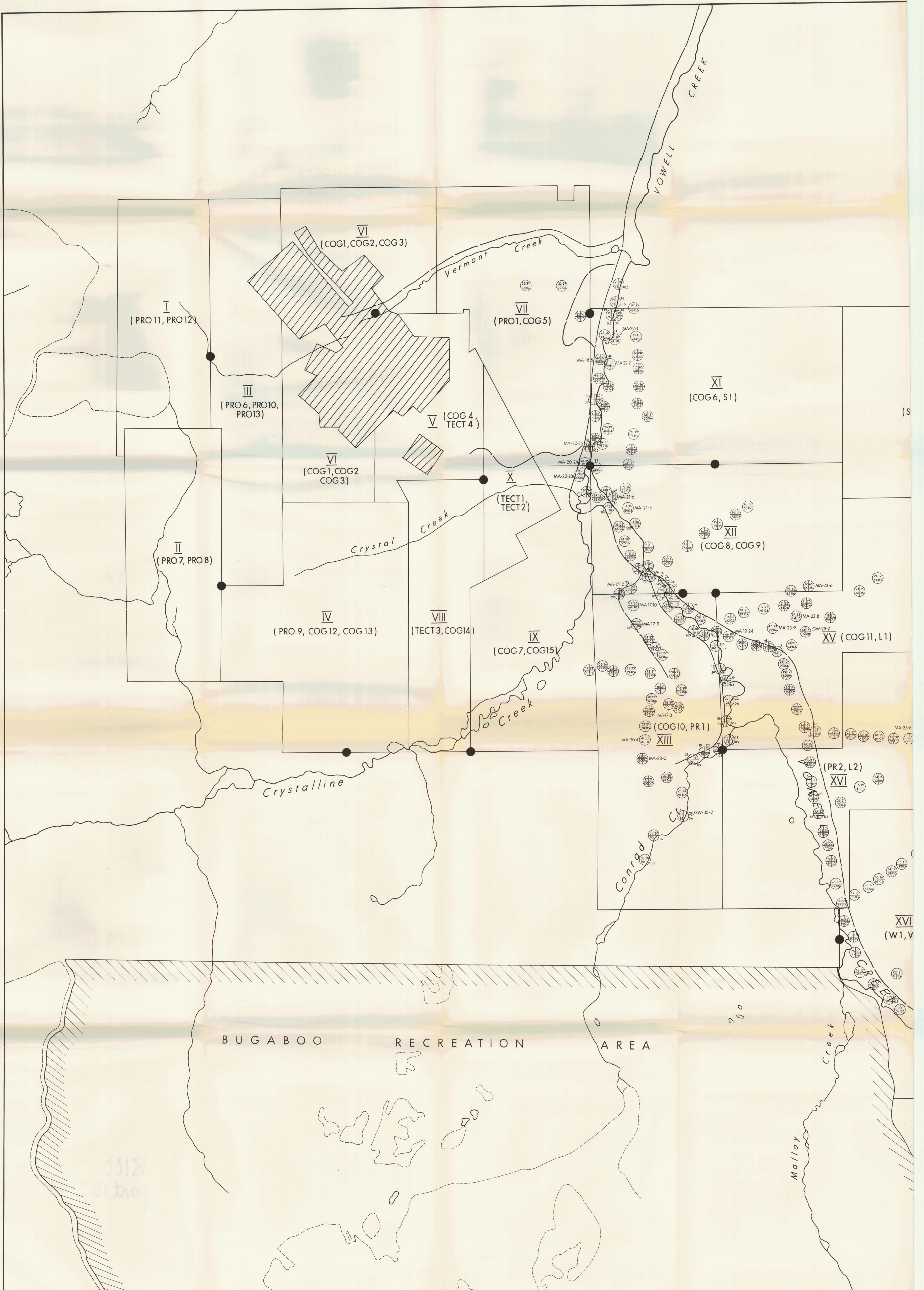


Norcen
 Energy Resources Limited

(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
 BRITISH COLUMBIA
LAND HOLDINGS MAP

0 5 10 20 30
 SCALE IN KILOMETRES

NTS 82-K-14E, 15W, 15E
 MAY, 1980



I
(PRO 11, PRO 12)

III
(PRO 6, PRO 10,
PRO 13)

II
(PRO 7, PRO 8)

IV
(PRO 9, COG 12, COG 13)

VIII
(TECT 3, COG 14)

IX
(COG 7, COG 15)

VI
(COG 1, COG 2, COG 3)

VI
(COG 1, COG 2
COG 3)

V
(COG 4,
TECT 4)

VII
(PRO 1, COG 5)

X
(TECT 1,
TECT 2)

XI
(COG 6, S1)

XII
(COG 8, COG 9)

XV
(COG 11, L1)

XVI
(PR 2, L2)

XVI
(W1, V)

BUGABOO RECREATION AREA

3018
3019



XIV
2, 53)

XXIII
(WC1, WC3)

(WC2, WC4)
XXII

XXIV
(WC5, WC6)

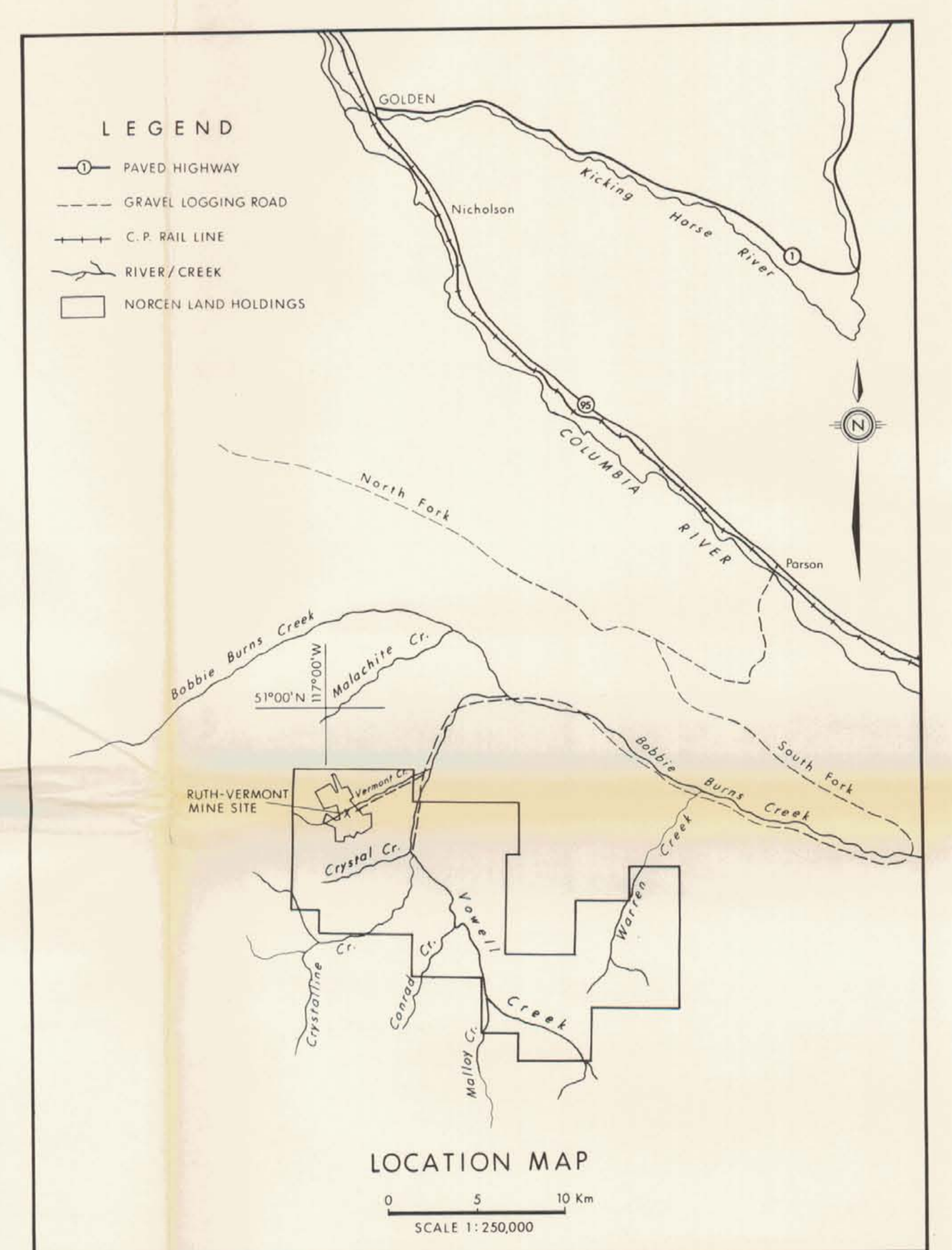
XVIII
(WC7, WC12)

XXI
(WC8, WC10)

XIX
(WC9, WC11)

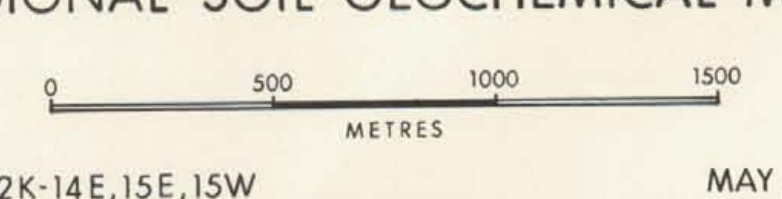
XX
(WC13, WC14)

| | |
|-----|-----|
| ppm | ppm |
| Cu | Pb |
| ppm | ppm |
| Zn | Ag |



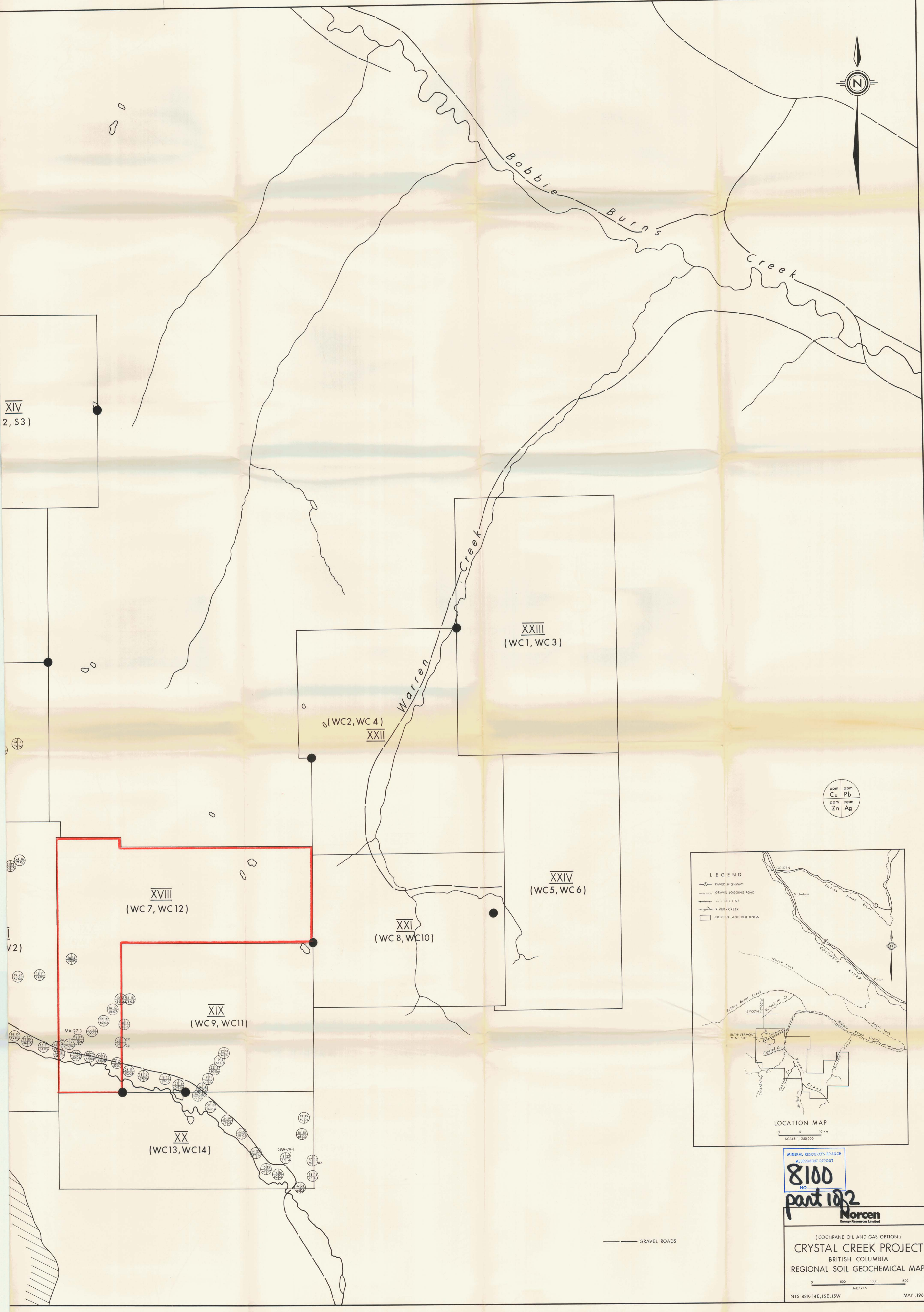
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8100
NO.
part 102
Norcen
Energy Resources Limited

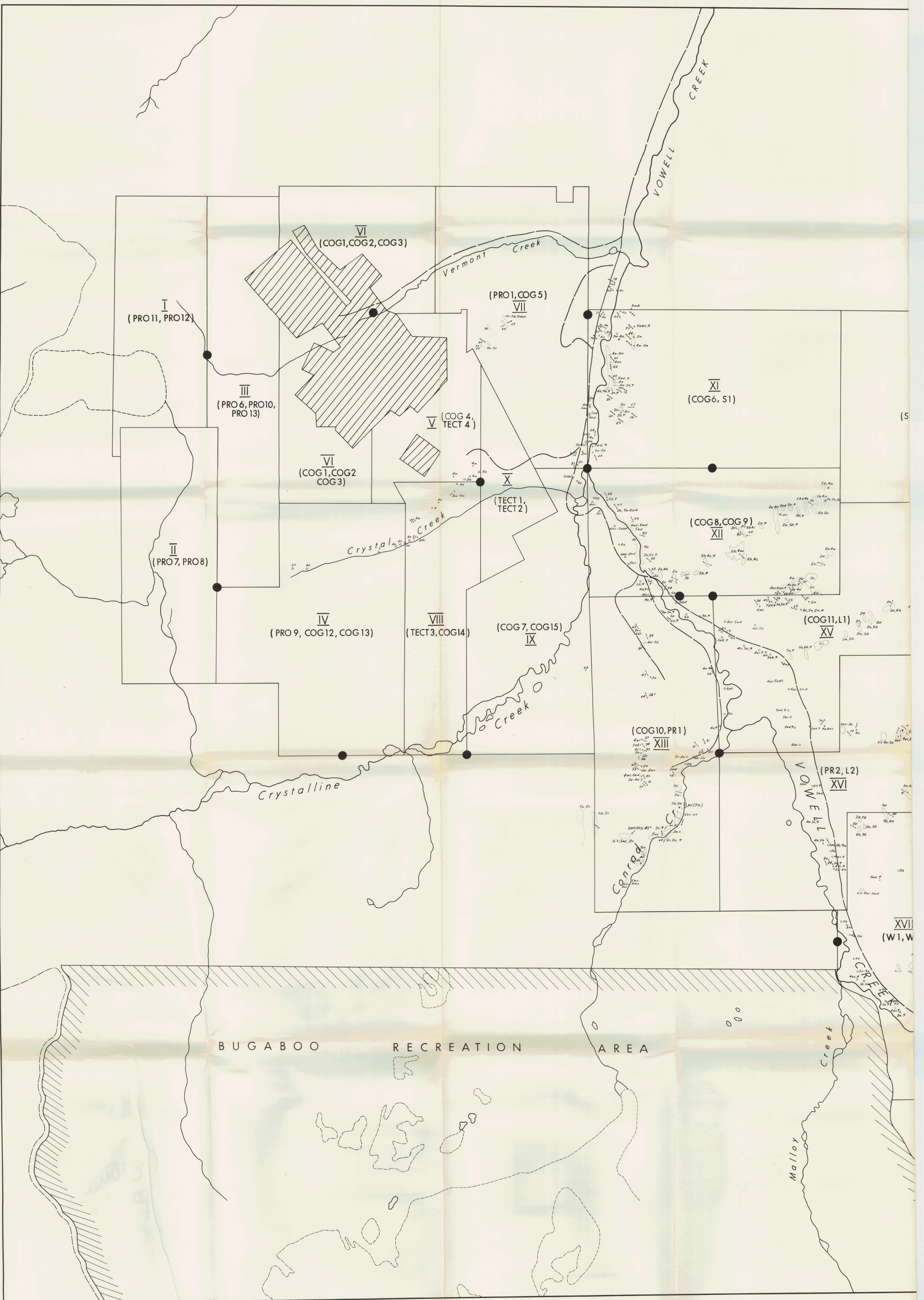
(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
REGIONAL SOIL GEOCHEMICAL MAP



NTS 82K-14E, 15E, 15W
MAY, 1980

GRAVEL ROADS





I
(PRO 11, PRO 12)

III
(PRO 6, PRO 10,
PRO 13)

II
(PRO 7, PRO 8)

IV
(PRO 9, COG 12, COG 13)

VIII
(TECT 3, COG 14)

IX
(COG 7, COG 15)

VI
(COG 1, COG 2, COG 3)

VI
(COG 1, COG 2
COG 3)

V
(COG 4,
TECT 4)

(PRO 1, COG 5)
VII

X
(TECT 1,
TECT 2)

XI
(COG 6, S1)

XII
(COG 8, COG 9)

XV
(COG 11, L1)

(COG 10, PR 1)
XIII

(PR 2, L 2)
XVI

XVII
(W1, W)

BUGABOO RECREATION AREA

VOWELL
CREEK

Vermont
Creek

Crystal
Creek

Crystalline
Creek

Creek

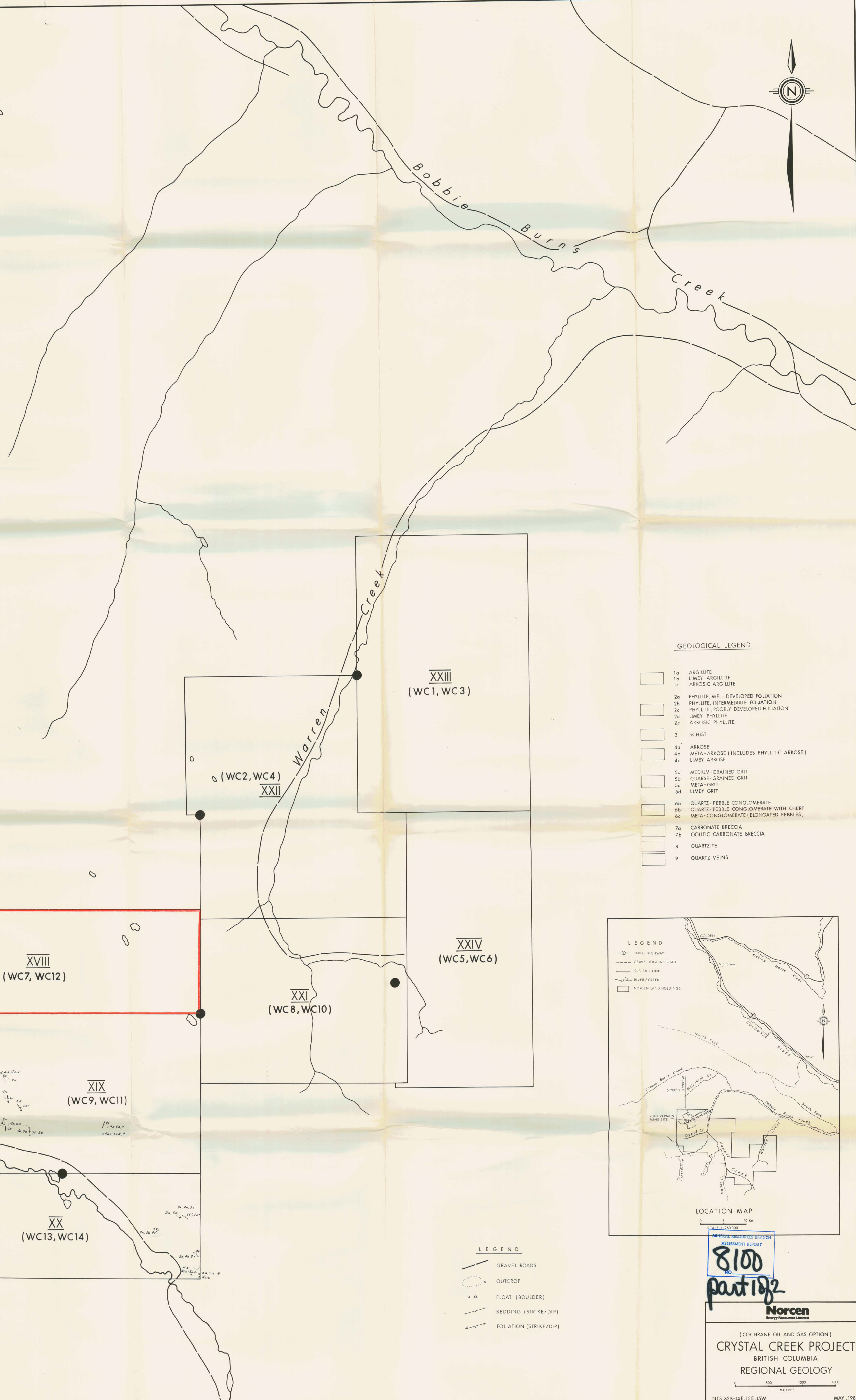
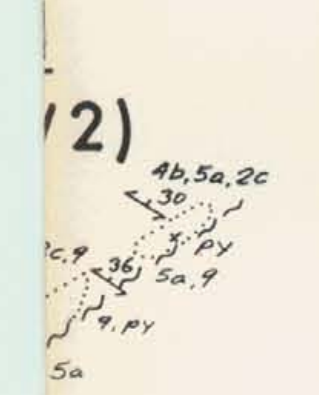
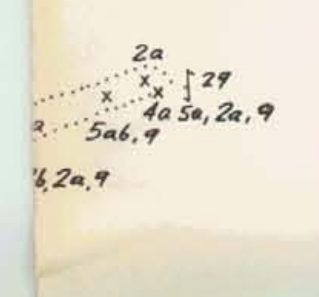
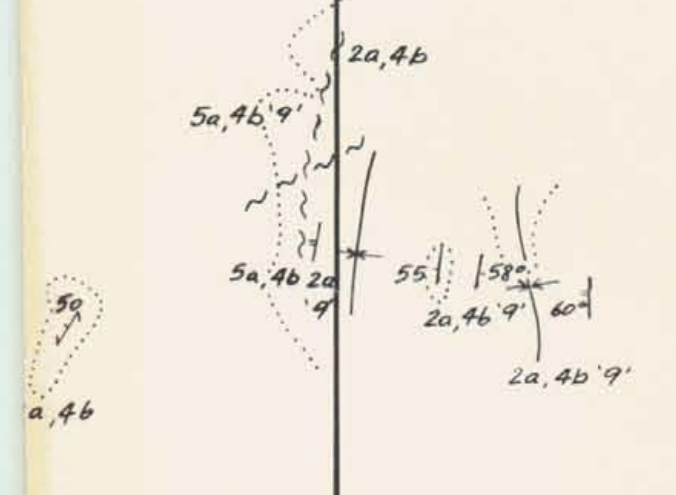
Contra

VOWELL
CREEK

Malloy
Creek

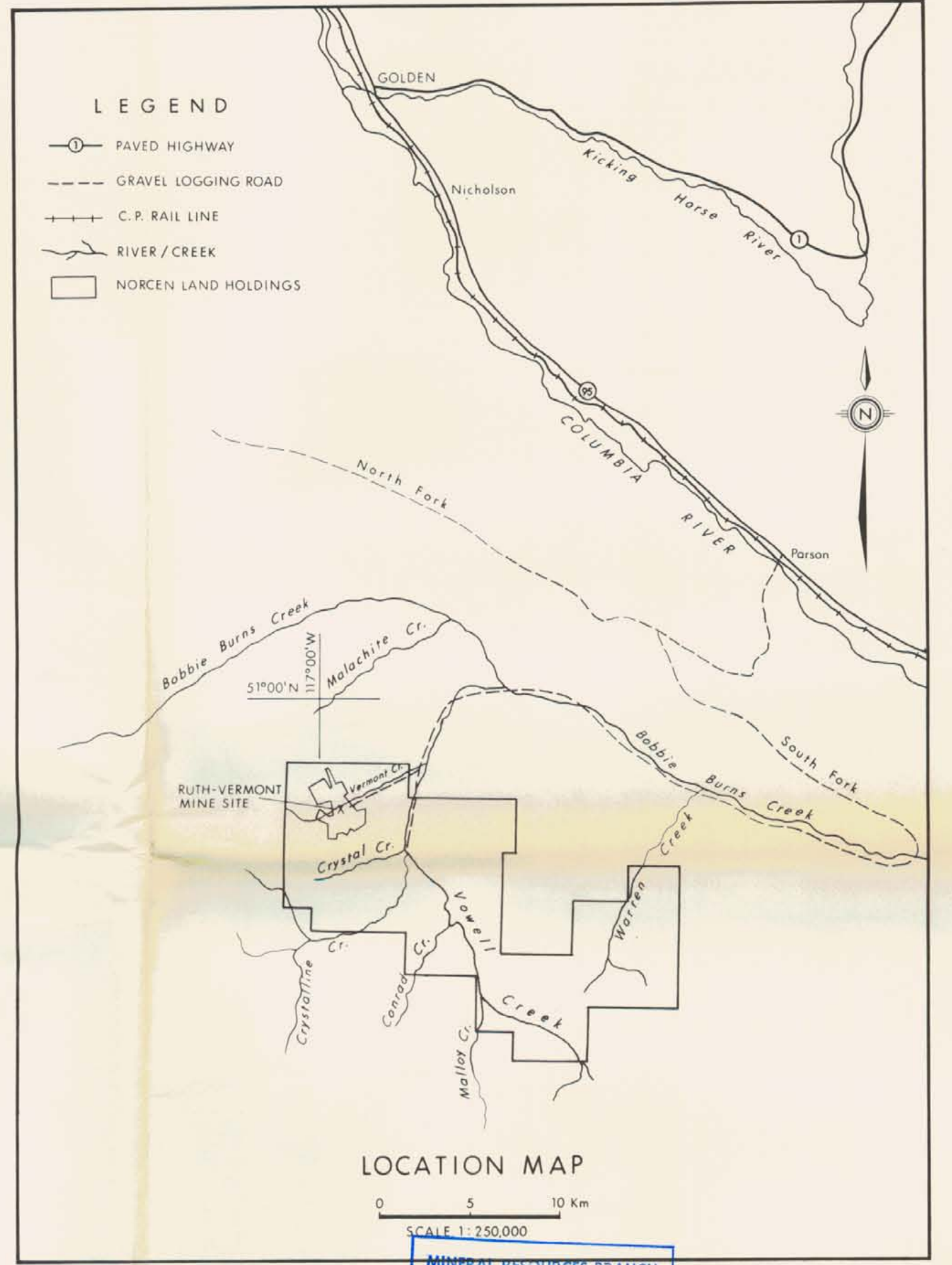


XIV
2, S3)



GEOLOGICAL LEGEND

- 1a ARGILLITE
- 1b LIMY ARGILLITE
- 1c ARKOSIC ARGILLITE
- 2a PHYLITE, WELL DEVELOPED FOLIATION
- 2b PHYLITE, INTERMEDIATE FOLIATION
- 2c PHYLITE, POORLY DEVELOPED FOLIATION
- 2d LIMY PHYLITE
- 2e ARKOSIC PHYLITE
- 3 SCHIST
- 4a ARKOSE
- 4b META-ARKOSE (INCLUDES PHYLITIC ARKOSE)
- 4c LIMY ARKOSE
- 5a MEDIUM-GRAINED GRIT
- 5b COARSE-GRAINED GRIT
- 5c META-GRIT
- 5d LIMY GRIT
- 6a QUARTZ-PEBBLE CONGLOMERATE
- 6b QUARTZ-PEBBLE CONGLOMERATE WITH CHERT
- 6c META-CONGLOMERATE (ELONGATED PEBBLES)
- 7a CARBONATE BRECCIA
- 7b OOLITIC CARBONATE BRECCIA
- 8 QUARTZITE
- 9 QUARTZ VEINS



- LEGEND**
- GRAVEL ROADS
 - x OUTCROP
 - △ FLOAT (BOULDER)
 - BEDDING (STRIKE/DIP)
 - FOLIATION (STRIKE/DIP)

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8100
part 1 of 2

Norcen
Energy Resources Limited

(COCHRANE OIL AND GAS OPTION)
CRYSTAL CREEK PROJECT
BRITISH COLUMBIA
REGIONAL GEOLOGY



NTS 82K-14E, 15E, 15W MAY, 1980