

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE
CASSEL CLAIM GROUP
NTS 82E/2-3

GREENWOOD MINING DIVISION
LATITUDE 49°00'N
LONGITUDE 119°00'W

for

Grand National Resources Inc.
915 - 470 Granville St.
Vancouver, B.C.

GEOLoGICAL BRANCH
ASSESSMENT REPORT

11,974

February 21, 1984
Box 63
Westbridge, B.C.

Roy Kregosky
BSc. Geology

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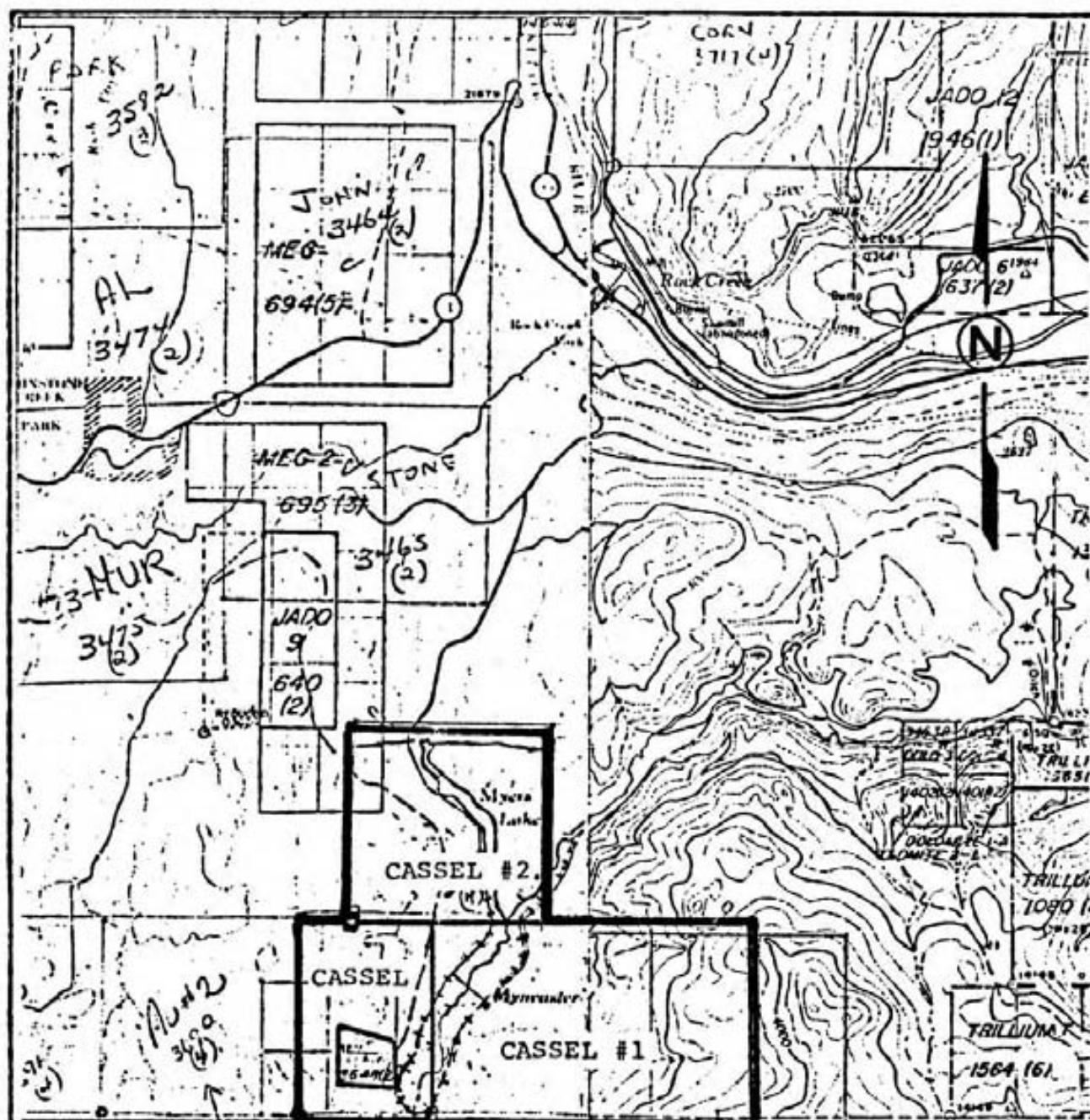
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BRITISH COLUMBIA LOCATION MAP





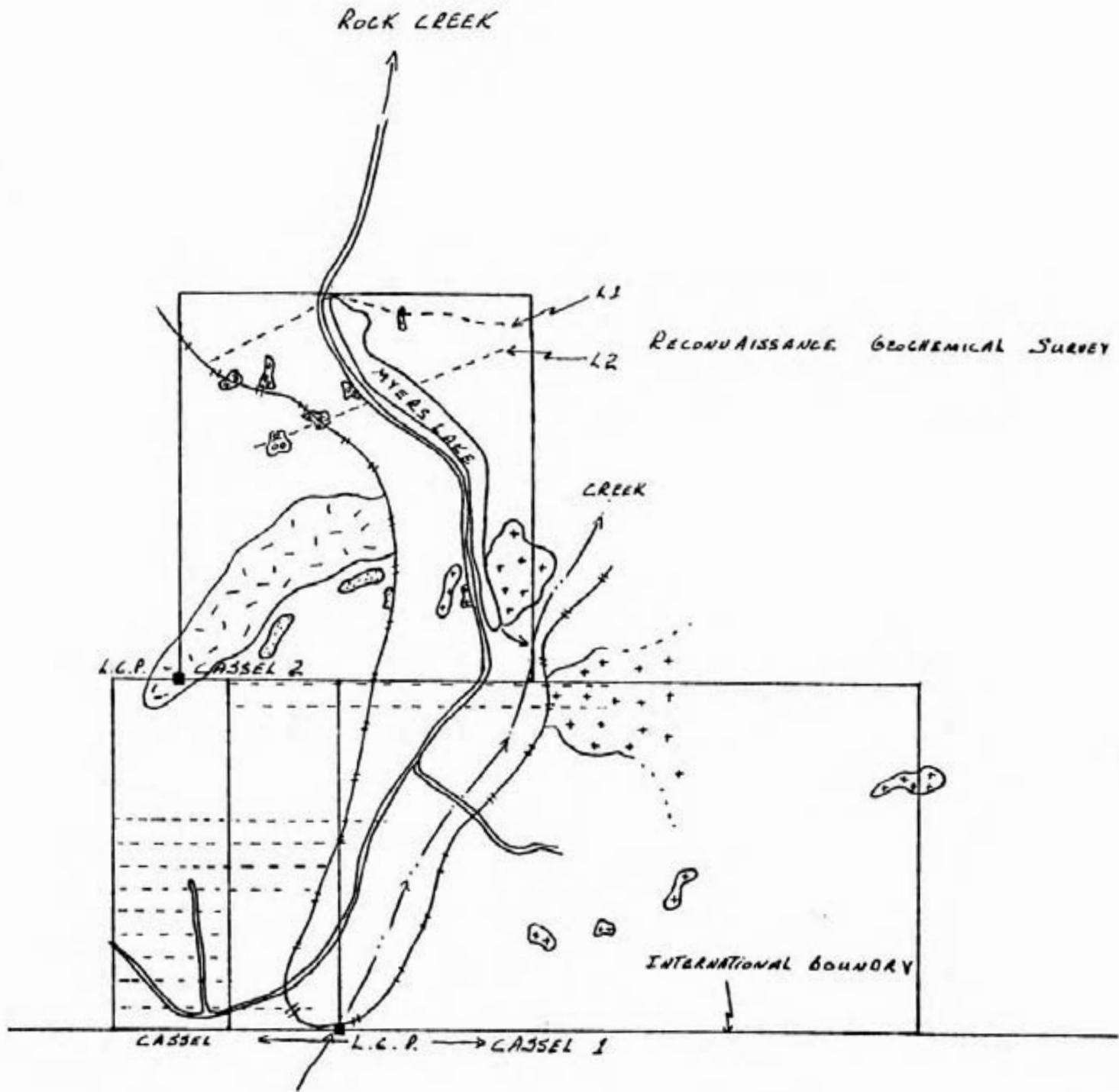
**GRAND NATIONAL RESOURCES INC.
CASSEL PROPERTY**

CLAIM MAP

MONASHEE
GEOLOGICAL
SERVICES

N.T.S. 82 E/2&3
Scale 1:50,000
FEBRUARY 21, 1984

FIG. No.
2



SURVEY LOCATION MAP

CASSEL CLAIM GROUP

[+ +] - GRANODIORITE

[---] - TRACHYTE

[:::] - QUARTZITE, ARGILLITE

[○ ○ ○] - DACITE TUFF

0 500 1 KM.

----- - GEOCHEMICAL LINES

- - - - - - RAILWAY (ABANDONED)

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GEOCHEMICAL ASSAY CERTIFICATE

A .500 GM SAMPLE IS DIGESTED WITH 3 ML OF 3:1:3 HCL TO HNO3 TO H2O AT 90 DEG.C. FOR 1 HOUR.

THE SAMPLE IS DILUTED TO 10 MLS WITH WATER. ELEMENTS ANALYSED BY AA : CU.

SAMPLE TYPE : SOIL - DRIED AT 60 DEG C., -80 MESH.

ASSAYER *D. Toye*, DEAN TOYE, CERTIFIED B.C. ASSAYER

GRAND NATIONAL RESOURCES PROJECT # CASSEL FILE # 83-1589A PAGE# 1

SAMPLE	CU PPM	AU* PPB
1 0	25	5
1 25E	19	5
1 50E	21	5
1 75E	22	5
1 1E	25	5
1 125E	20	5
1 150E	24	5
1 175E	20	5
1 200E	28	5
1 225E	19	5
1 250E	22	5
1 275E	17	5
1 300E	20	5
1 325E	21	5
1 350E	22	5
1 375E	26	5
1 400E	28	5
1 425E	22	5
1 450E	24	5
1 475E	24	5
1 500E	23	5
1 525E	24	5
1 575E	20	5
1 600E	28	5
1 625E	20	5
1 650E	24	5
1 675E	22	5
1 700E	20	5
1 725E	28	50
1 750E	26	5
1 775E	28	5
1 800E	29	5
1 825E	28	5
1 850E	26	5
1 875E	24	5
1 900E	32	5
1 925E	21	5

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1 1125E	16	5
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1 1175E	14	5
1 1200E	16	5
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1 1275E	11	5
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1 1325E	12	5
1 1350E	13	5
1 1375E	15	5
1 1400E	16	5
1 1425E	15	5
1 1450E	12	5
1 1475E	19	5
1 1500E	17	5
1 1525E	19	5
1 1550E	20	5
1 1585E	18	5
2 0	10	5
2 25E	12	5
2 50E	17	5
2 75E	10	5
2 100E	14	5
2 125E	15	5
2 150E	15	5
2 175E	13	10
2 200E	20	15
2 225E	24	5
2 250E	13	5

SAMPLE	CU PPM	AU* PPB
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2 300E	13	5
2 325E	11	5
2 350E	10	5
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2 425E	22	5
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2 475E	24	5
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2 1100E	15	5
2 1125E	17	5
2 1150E	13	5
2 1175E	18	5
2 1200E	16	20
2 1225E	15	5
2 1250E	18	5
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2 1300E	12	5
2 1325E	24	5

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2 1375E	16	5
2 1400E	16	5
2 1425E	18	5
2 1450E	19	5
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9N 325E	37	5
9N 350E	30	5
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9N 400E	39	5
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8N 50E	32	5
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BN 125E	28	5
BN 150E	35	5
BN 175E	30	5
BN 200E	27	5
BN 225E	34	5
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BN 300E	31	5
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BN 350E	28	5
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BN 400E	22	5
BN 425E	34	5
BN 450E	29	5
BN 475E	32	5
BN 500E	30	20
BN 525E	33	5
BN 550E	36	5
BN 575E	35	5
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BN 875E	16	5
BN 900E	12	5
BN 925E	22	5
BN 950E	16	5
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SAMPLE	CU PPM	AU* PPB
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BN 1075E	16	5
BN 1125E	22	5
BN 1150E	8	5
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BN 1200E	14	5
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BN 1375E	15	20
BN 1400E	19	5
BN 1425E	18	5
BN 1450E	20	5
BN 1475E	19	5
BN 1500E	19	5

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THE SAMPLE IS DILUTED TO 10 MLS WITH WATER. ELEMENTS ANALYSED BY AA : CU.

SAMPLE TYPE : SOIL - DRIED AT 60 DEG C., -80 MESH.

AU* - 10 GM, IGNITED, HOT AQUA REGIA LEACH MIBK EXTRACTION, AA ANALYSIS.

ASSAYER *De Toy* DEAN TOYE, CERTIFIED B.C. ASSAYER

GRAND NATIONAL RESOURCES FILE # 83-1493

PAGE# 1

SAMPLE	CU PPM	AU* PPB
3N 6W	38	5
3N 550W	34	5
3N 500W	26	5
3N 450W	30	5
3N 400W	42	10
3N 350W	35	5
3N 300W	34	5
3N 250W	37	5
3N 200W	58	5
3N 150W	30	5
3N 100W	42	5
3N 50W	24	10
3N 0E	23	5
3N 50E	24	5
3N 100E	27	5
3N 150E	42	5
3N 200E	26	5
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2N 500W	28	5
2N 450W	27	5
2N 400W	28	10
2N 350W	32	5
2N 300W	38	5
2N 250W	47	5
2N 200W	42	5
2N 150W	29	25
2N 100W	20	5
2N 50W	32	5

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2N 350E	23	10
2N 400E	25	5
2N 450E	43	5
2N 500E	18	5
2N 550E	18	5
1N 600W	35	15
1N 550W	29	5
1N 500W	30	5
1N 450W	31	5
1N 400W	26	5
1N 350W	33	5
1N 300W	32	5
1N 250W	58	30
1N 200W	37	5
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1N 350E	36	5
1N 400E	28	5
0S 600W	38	5
0S 550W	32	5
0S 500W	33	10
0S 450W	29	5
0S 400W	30	5

SAMPLE	CU PPM	AU* PPB
OS 350W	28	5
OS 300W	32	5
OS 250W	32	5
OS 200W	28	5
OS 150W	32	5
OS 100W	34	5
OS 50W	36	5
OS 0E	100	5
OS 50E	34	5
OS 100E	44	5
OS 150E	60	5
OS 200E	40	5
OS 250E	33	5
OS 300E	44	5
OS 350E	35	5
OS 400E	27	5
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1S 550W	35	5
1S 500W	42	5
1S 450W	29	5
1S 400W	27	5
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2S 400W	44	5
2S 350W	58	5
2S 300W	76	5
2S 250W	38	5
2S 200W	33	5
2S 150W	43	5
2S 100W	43	5

SAMPLE	CU PPM	AU* PPB
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3S 550W	46	125
3S 500W	33	5
3S 450W	40	5
3S 400W	16	5
3S 350W	77	5
3S 300W	38	10
3S 250W	36	5
3S 200W	34	5
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4S 550W	15	5
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4S 450W	50	5
4S 400W	38	5
4S 350W	45	5
4S 300W	28	5
4S 250W	44	5
4S 200W	29	5
4S 150W	50	35
5S 600W	24	5
5S 550W	21	5
5S 500W	24	5
5S 450W	31	5
5S 400W	37	5
5S 350W	41	5
5S 300W	33	5
5S 250W	40	5
5S 200W	32	5
5S 150W	27	5
5S 100W	29	5
5S 50W	36	5
5S 0E	36	5
5S 50E	30	5
5S 100E	32	20
5S 150E	54	5
5S 200E	33	5
5S 250E	21	5
5S 300E	22	5



To: Grand National Res.,
Suite 915 - 470 Granville St.,
Vancouver, B.C.
V6C 1V5

ACME ANALYTICAL LABORATORIES LTD.

Assaying & Trace Analysis

852 E. Hastings St., Vancouver, B.C. V6A 1R6
Telephone: 253-3158

File No. 83-1156

Type of Samples Rock

Disposition _____

ASSAY CERTIFICATE

No.	Sample	Pb%	Ag oz/ton	Au oz/ton				No.
1	65126	.06	.60	.080	75 CM WIDE LEFT SIDE			1
2	65127	.01	1.09	.177	75 CM WIDE RIGHT SIDE			2
3	65128	.18	1.16	.179	75 CM MIDDLE OF VEIN			3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								15
16								16
17								17
18								18
19								19
20								20

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ASSAYER

DEAN TOYE, B.Sc.
CHIEF CHEMIST
CERTIFIED B.C. ASSAYER

PLATE 15

Monashee Geological Services

P.O. Box 63

Westbridge, B.C. V0H 2B0

Telephone 446-2525

16.

INTRODUCTION

The 'Cassel' claim group is located approximately seven kilometers south of Rock Creek, B.C. (Plate 1) near the old Myncaster Railroad station. Access is via B.C. Highway #3 east of Rock Creek for a distance of 1 kilometer to the Rock-Creek-Bridesville secondary road. After an additional two kilometers, a branch road to the left leads past Myers Lake and the Harpur's Ranch and on to the property. Numerous ranch roads plus the abandoned railway grade provide good access to the claims.

Myers Lake and Myers Creek effectively bisect the property and forms the most prominent physiographic feature. In general, the area is of a dry grassland nature broken by occasional rock bluffs with secondary growth coniferous forests in more sheltered areas. There is sufficient timber and water resources for exploration and development purposes.

PROPERTY HISTORY

The Cassel group consists of the following claims:

<u>Claim</u>	<u>No. of Units</u>	<u>Record Number & Month</u>
Cassel	6	3641 30.87/44(3)
Cassel #1	15	3720 (4)
Cassel #2	9	3721 (4)

The property is bordered in the south by the International Boundary. The claims are currently in good standing and registered to Grand National Resources Inc. of #915 - 470 Granville St., Vancouver, B.C. Located on the Cassel claim group are several

old diggings which were driven on quartz veins containing pyrite with minor galena and some marcasite. This development work was most likely undertaken in the early 1900's during active exploration of the placer gold deposits located in the Rock Creek area. Due to the proximity, both geographically and geologically of the 'Cassel' group to an area of known placer deposits plus the occurrence of mineralized quartz veins on the claims, the development potential of the property is considered to be good.

PROPERTY GEOLOGY

The western portions of the 'Cassel' property, according to G.S.C. Map 15, 1961 based on H.W. Littles observations, is underlain by Triassic metasedimentary and metavolcanic rocks of the Anarchist Group. The eastern portions are underlain by the intrusive granitic rocks of the Cretaceous Nelson Batholith. Paleocene sediments and acid volcanics rocks of the Kettle River Formation occur as scattered inliers and outliers on the claims. Eocene intermediate volcanic rocks of the Ihoenic Volcanic Group cap the older rocks in the northern portion of the claims.

Two modes of mineralization were observed on the property. The first type occurs in wide (0.50 to 2.0 meter) quartz veins cutting through the granitic rocks in the eastern area. It consists of quartz, marcasite, pyrite with negligible amounts of gold and silver.

The second mode occurs in narrower (20 to 75 cm.) quartz veins intruding the Anarchist Group rocks in the western part of the property. Mineralization consists of pyrite with minor galena but containing significant amounts of precious metals.

GEOCHEMICAL AND GEOLOGICAL SURVEYS

Last years exploration program was conducted under the supervision of Mr. I. Borovic, P. Eng., with the field work carried out by the author plus one field assistant, Mr. Jon Cromwell of Westbridge, B.C. During the period July 22 to August 7, 1983, a total of 390 soil samples were collected as well as a portion of the claims being mapped geologically. A geochemical grid (Plate 3 and back pocket 1) was established in the south-western portion of the 'Cassel' group which consisted of 50 meter stations based on lines separated by 100 meters for a total of 151 samples. This grid was also used as the reference points for the geological mapping (back pocket 2). The geochemical survey consisted of collecting soil samples from the 'B' soil horizon with rocks and organic material being removed by hand. The 'B' horizon was found to be from 10-50 cm. deep. The samples were placed in numbered kraft paper bags and sent to Acme Analytical Laboratories Ltd. of Vancouver B.C. to be analyzed for copper and gold. The samples were sieved and prepared with final analysis by atomic absorption.

In addition, four reconnaissance geochemical lines were undertaken to test the obscured granitic-metased/volcanic contact the parallels Myers Creek and the Myncaster Valley. A total of 239 samples were collected during this part of the survey. They were collected at 25 meter spacings on lines that were 1.5 kilometers long. Two different sectors of the claims were chosen to test the geochemical response of the overburdened contact.

The geological survey consisted of mapping the outcrops

plus old workings located in the grid area. Three chip samples (plate 15 and back pocket 2) were collected for assay. As well, a number of prospecting traverses (Plate 3) were ran on other portions of the claim group to ascertain the geological settings.

TECHNICAL DATA AND INTERPRETATION

The geochemical and geological surveys on the 'Cassel' group were conducted in an attempt to ascertain the economic potential of the claims. Two separate geochemical surveys were ran; the first, which tested for extensions of the precious metal deposits that occurs in Anarchist Group rocks in the south western portion of the claims, located a number of coincident copper and gold soil anomalies. The more notable of these (back pocket 1) are L3+00N 3+50E, L1+00N 1+00W and 2+50W and L1+00N 2+50E and 3+00E. Significant copper anomalies are at B10+00 and L3+00S 3+50W. Other notable gold soil anomalies are located on L2+00N 1+50W and 2+00E, L1+00N 2+50W, L4+00S 1+50W and L5+00S 1+00E. The large (125 p.p.b.) gold anomalies on L3+00S 5+50W is located at the confluence of two drainage patterns and probably represents a detrital (Placer) gold deposit. The soil anomalies often appear as single element and single station occurrences. When superimposed on the detailed geological map, these geochemical highs appear to coincide with the dioritic/acidic felsite intrusions and metasedimentary/limestone contact. The most significant anomaly located at L1+00N 2+50E and 3+00E is located down slope from a tuffaceous greenstone bluff. This outcrop is heavily altered and intruded with calcite and quartz stringers. Locally it is heavily haemato-limonitic stained and is mineralized with pyrite,

marcasite and what appeared to be minor arsenopyrite. A continuation of this anomaly is noted to the northeast (L2+00N 2+00E to L3+00N 3+50E and 4+00E) which also corresponds to the tuffaceous greenstone bedrock.

The second geochemical survey which tested the granitic-metasedimentary contact, located two coincident CU-AU anomalies; L9+00N 6+25E which is located in an overburdened area next to the railway grade and on L2 5+50E which is located on a granadiorite outcrop. As with the other survey, a number of the anomalies appear to be connected to the granitic intrusive contact. The 50 p.p.b. station on L17+25E is located on the valley bottom in a cultivated field and as such is unaccountable.

The geological survey located a number of old workings situated in the Carmian Anarchist Group consisting of argillaceous and quartzitic metasedimentary rocks. A couple of these trenches L1+00N 2+50W and L2+00N 1+00W were driven on sweated bull quartz pads that were unmineralized. Shaft #1 at L3+00N 1+00W is associated with a sheared/brecciated quartzite-dioritic intrusive contact. A 35 cm. quartz vein strikes 155° and dips 52° to the N.E. but pinches to a 5 cm. seam at the bottom of the shaft. There is minor pyrite associated with the vein which is Fe stained. A second shaft on L1+00S 3+00W is located in a fine grain calcareous quartzite which is locally interbedded with thin beds of foliated argillaceous material. The rock is pyritic and stained but no quartz material was noted even though a small (10cm.) shear strikes N.W./S.E. with moderate (47°) dips to the south west. Three chip samples were obtained from a 75 cm. wide quartz vein which appears to be the westward continuation of the vein exposed at L3+00S 1+00W. The assays

(Plate 15) indicate precious metal mineralization with appreciable gold values.

The geological survey indicates that the grid area is underlain by Anarchist rocks consisting of argillites, quartzites and limestones. These are interbedded with the quartzites and limestones occurring as discontinuous lens-like masses in the argillites. Beds have northwesterly strikes and a moderate northeasterly dip in the southern portion of the grid. The strikes change to northeasterly with steeper dips to the northwest in the northern portion of the grid. The altered greenstone rocks in the eastern portion are also a member of the Anarchist group.

These rocks in turn have been cut by dioritic and acidic intrusive rocks possibly associated with the Nelson plutonic rocks. Hydrothermal fluids associated with these plutonic rocks account for the mineralized shear zones found in the Anarchist rocks. This dike intrusions are also of a laterally discontinuous nature indicating a considerable extent of deformation in the friable and incompetant Anarchist rocks.

The prospecting traverses (Plate 3) indicated that the eastern portions of the claims are underlain by granadiorites and that the contact with other rock types is basically overburdened and for the most part occurring in the valley bottom represented by Myers Creek. Trachytes and dacite tuffs occur in the northern portions with contacts normally obscured. The trachytes exhibit flow structure and locally have epidote and calcite alteration. Frequently there is pyrite and magnetite mineralization.

CONCLUSION

The detailed examination as outlined in the geological and geochemical maps were successful in pinpointing possible gold bearing structures. The geochemical soil survey has indicated numerous gold anomalies in the western portion of the property with values that range from 10 p.p.b. to 125 p.p.b. These values are often coincident with anomalous copper values. The results of the assays from the property also support the values obtained during the soil survey.

The reconnaissance soil samples outline the importance of the granitic metasedimentary contact with values that range from 10 p.p.b. to 290 p.p.b.

The geological mapping and prospecting traverses supported and clarified the other surveys drawing attention to the inter-relationships of the essential components.

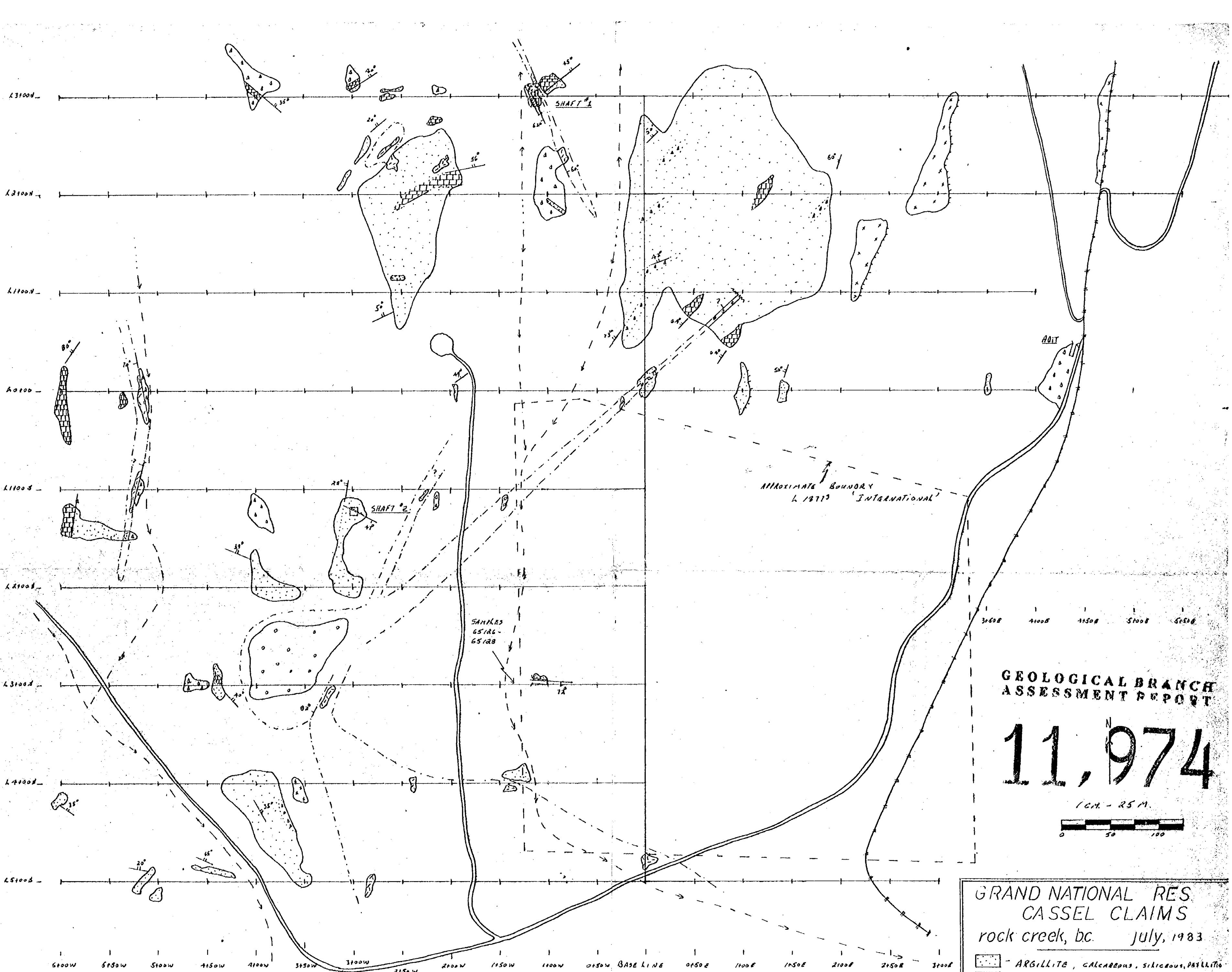
As a result of these findings, it is concluded that the property warrants further exploration. A continuation of the geological mapping plus more detailed soil sampling is recommended to help delineate and trace the various geochemical anomalies.

ITEMIZED COST STATEMENT

1. I. Borovic, I. Eng. 2 days @ \$150.00/day.....	\$ 300.00
Expenses.....	\$ 205.95
Car rental 2 days @ \$30.00/day.....	\$ 60.00
Mileage 600 mi. @ 15¢/mile.....	\$ 90.00
2. R. Kregosky, Geologist, 11 days @ \$150.00/day.....	\$ 1,650.00
3. J. Cromwell, Field Assistant 11 days @ \$75.00/day....	\$ 825.00
4. Food and Accommodation 11 days @ \$75.00/day.....	\$ 880.00
5. Transportation 350 kilo. @ 25¢/km.....	\$ 87.50
6. 390 soil samples Cu @ 1.85.....	\$ 721.50
Au @ 3.75.....	\$ 1,462.50
390 soil samples preparation @ 50¢	\$ 195.00
7. Three assays Au @ 10.00.....	\$ 30.00
" " preparation @ 2.50.....	\$ 7.50
8. Shipping charges, Greyhound.....	\$ 19.20
9. 2 days report preparation @ \$200.00/ day.....	<u>\$ 400.00</u>
	\$7,534.15

AUTHOR'S QUALIFICATIONS

I declare, that I, Roy D. Kregosky am a practicing Geologist having graduated from the University of Calgary in 1971 with a Bachelor of Science degree in Geology.

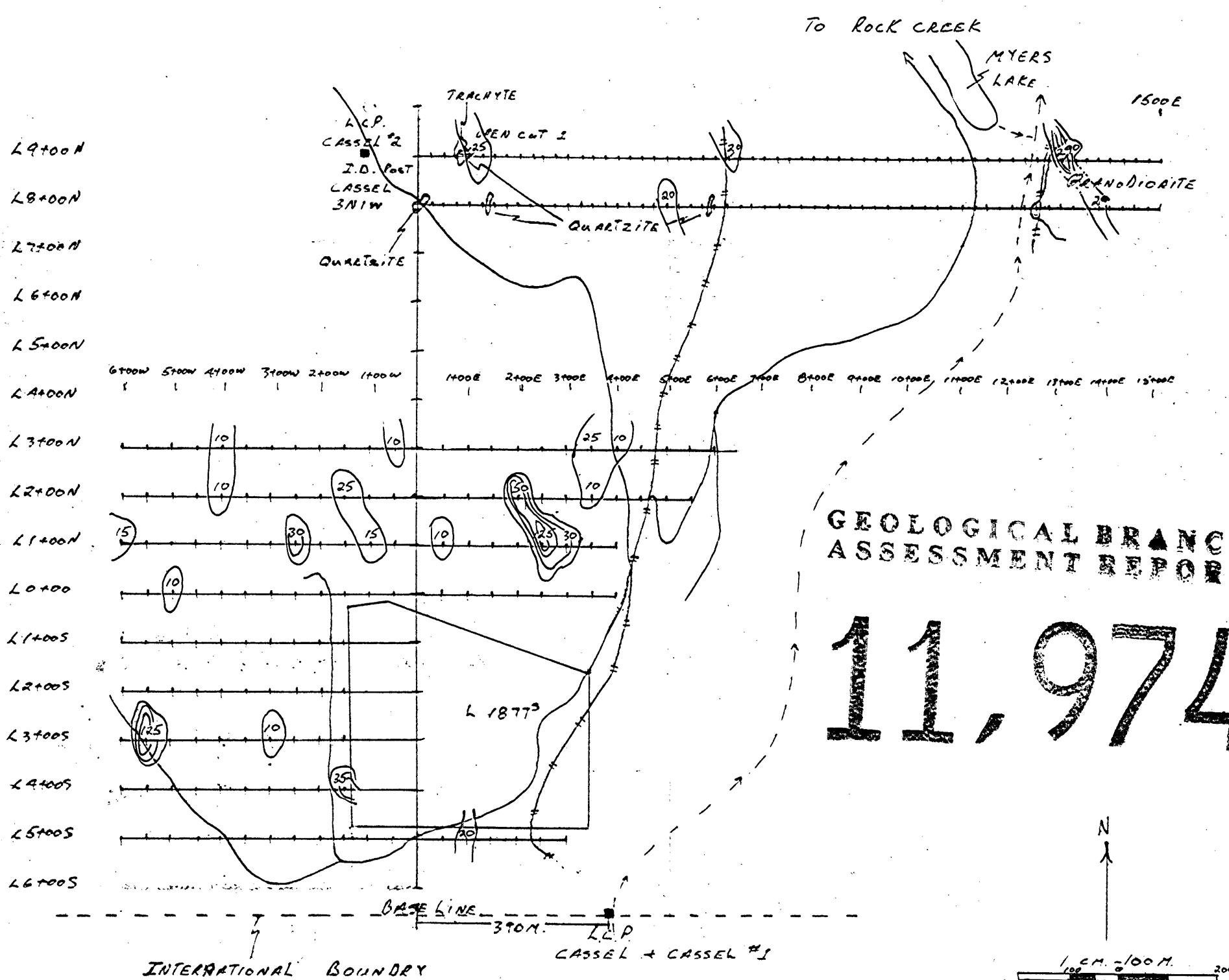
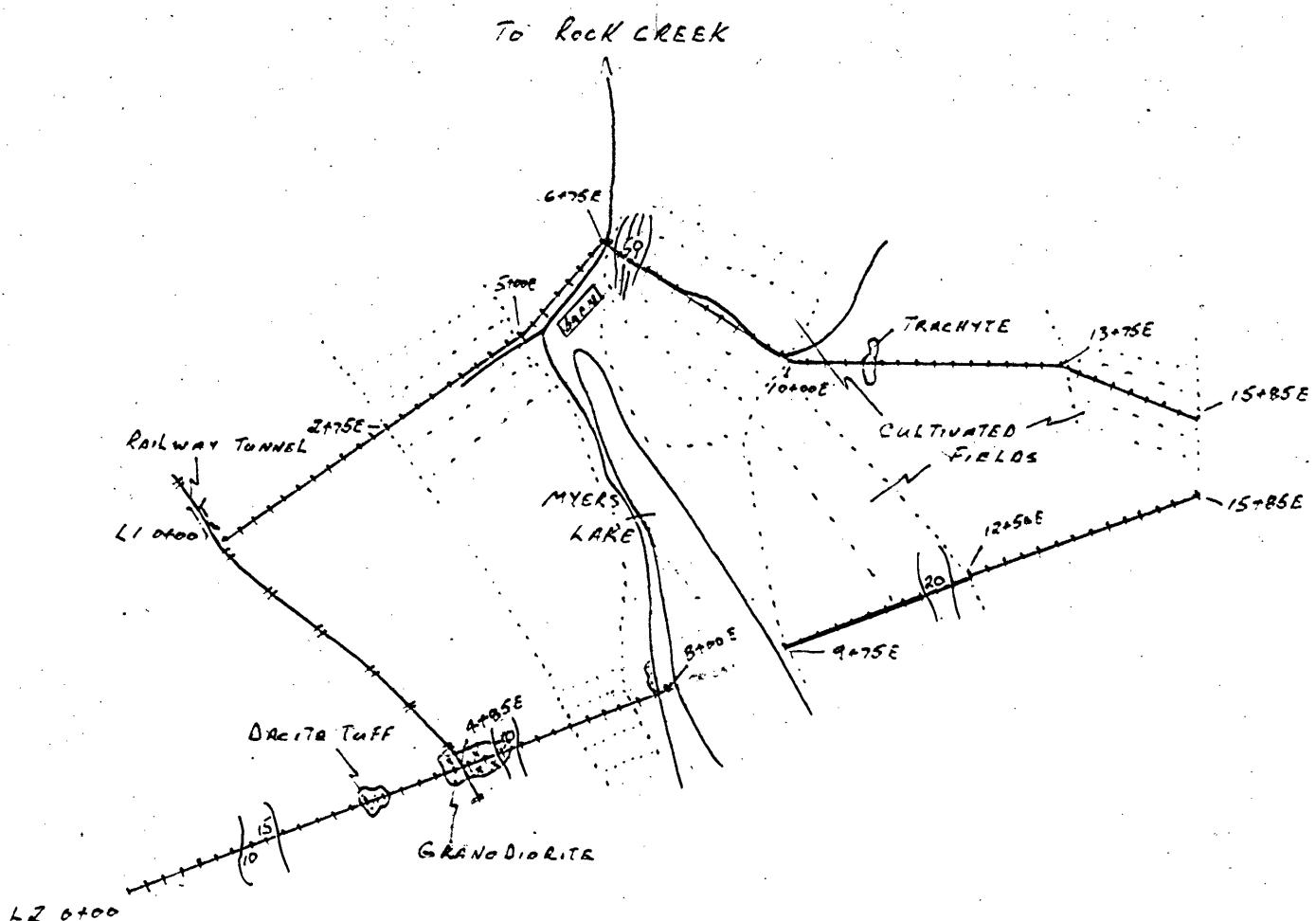


GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,974

GRAND NATIONAL RES.
CASSEL CLAIMS
rock creek, bc. july, 1983

[Symbol: Dotted]	- ARGILLITE, CALCAREOUS, SILICEOUS, PELLITIC
[Symbol: Diagonal lines]	- QUARTZITE, ARGILLACEOUS, CALCAREOUS
[Symbol: Hatched]	- LIMESTONE, ARGILLACEOUS
[Symbol: Crosses]	- GREENSTONE, TUFFACEOUS
[Symbol: Dots]	- FELSITE, ALTERED ACID IC
[Symbol: Vertical lines]	- ANDESITIC INTRUSIVE
[Symbol: Solid line]	- ROAD
[Symbol: Dashed line]	- RAILROAD
[Symbol: Wavy line]	- DRAINAGE
[Symbol: Line with arrows]	- CONTACT, APPROX.
[Symbol: Small square]	- SHAFT
[Symbol: Large square]	- TRENCH
[Symbol: X]	- ADIT
[Symbol: Line with dots]	- CONTACT, APPROX.
[Symbol: Line with diagonal lines]	- SHARP/URBAN
[Symbol: Line with dots and diagonal lines]	- ATTITUDE-CONTACT



GEOLOGICAL BRANCH ASSESSMENT REPORT

11,974

N

1 CM. = 100 M.

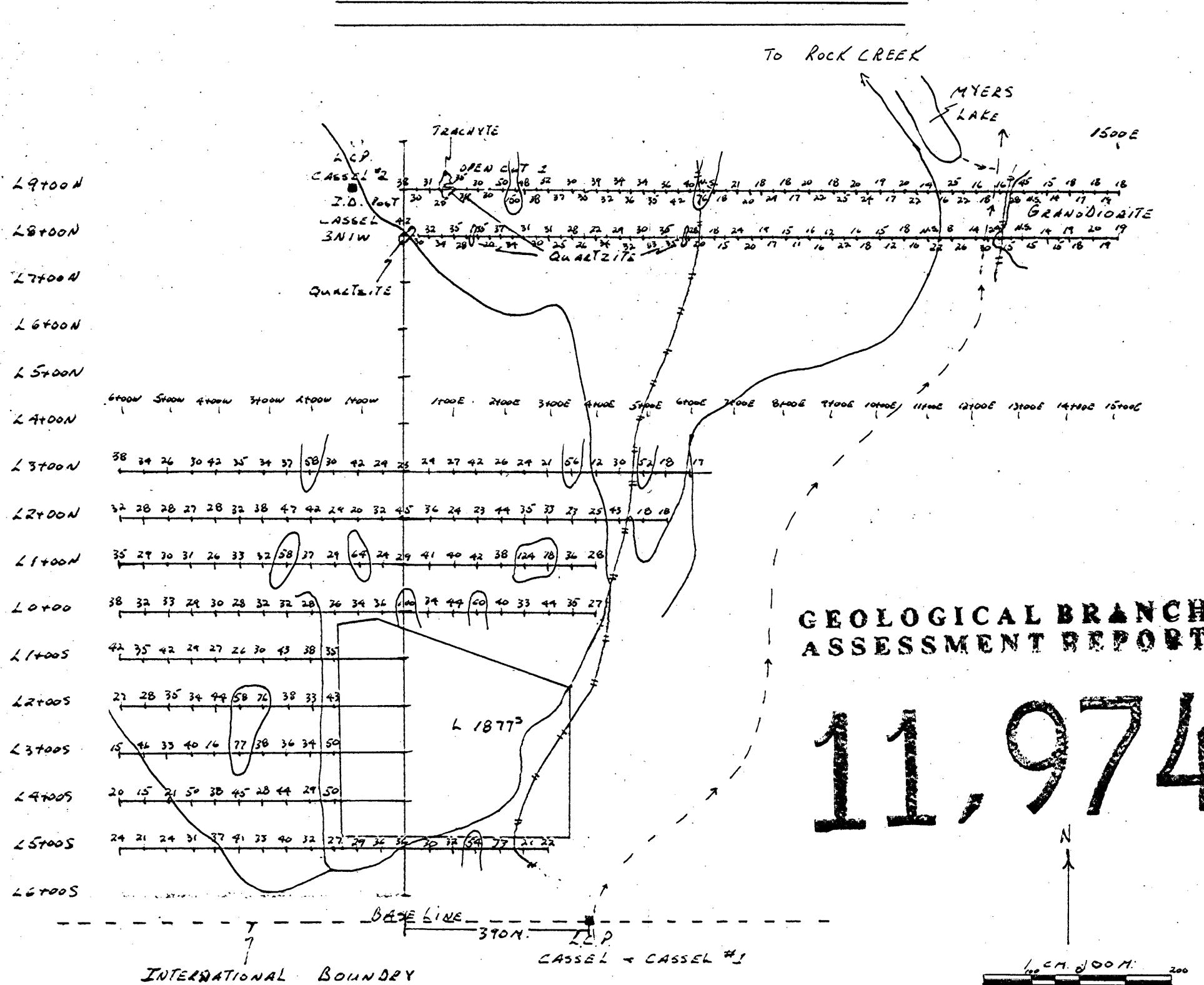
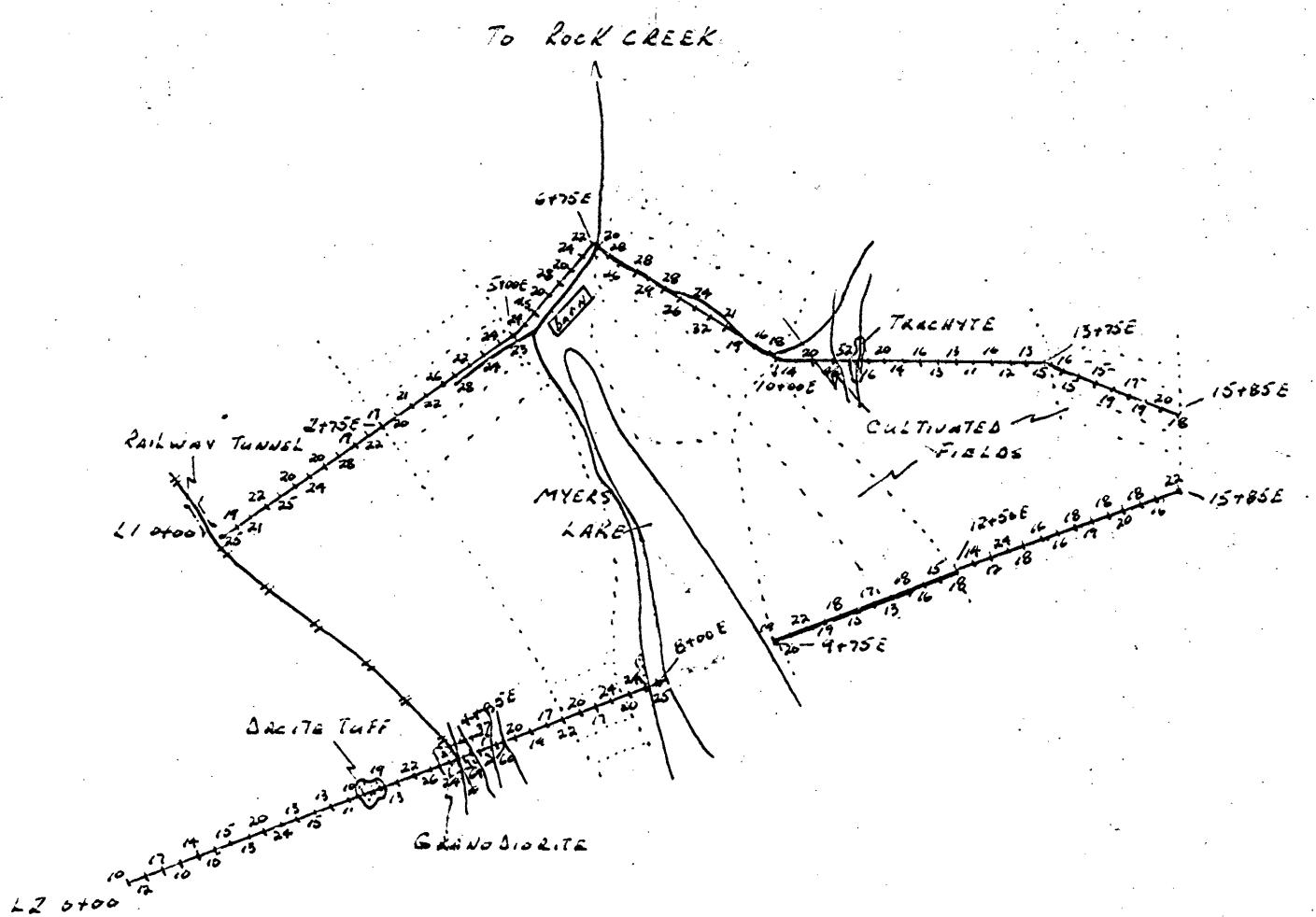
GEOCHEMICAL GRID, LINES,

SAMPLE LOCATIONS

- ANOMOLOUS SAMPLES
- CREEK
- ROAD
- RAILWAY (ABANDONED)

CASSEL CLAIMS

gold - p.p.b.



GEOLOGICAL BRANCH ASSESSMENT REPORT

11,974

INTERNATIONAL BOUNDARY

CASSEL + CASSEL #1

51

- ANOMOLOUS SAMPLES

—→—→—→

- CREEK.

The graph shows a curve starting at the origin (0,0) and increasing monotonically. There are several points plotted on the curve, each marked with a cross (+). The x-axis is labeled 'n' and has tick marks at 1, 2, 3, 4, and 5. The y-axis is unlabeled. The curve passes through approximately (1, 0.5), (2, 1.0), (3, 1.5), (4, 1.8), and (5, 2.0).

- RAILWAY (ABANDONED)

GEOCHEMICAL GRID, LINES,

SAMPLE LOCATIONS

CASSEL CLAIMS

COPPER - P.P.M.