COMINCO LTD.

EXPLORATION
NTS: 82F/10W

WESTERN DISTRICT

GEOLOGICAL MAPPING AND SOIL GEOCHEMICAL SURVEY

ON THE GREY MINERAL CLAIMS

CRAWFORD BAY AREA

NELSON MINING DIVISION, B.C.

49°36'N; 116°46'W

PERIOD OF WORK:

MAY 28 TO JULY 16, 1980

AUGUST 5, 1980

R.L. WRIGHT

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ATTACHMENTS

COMINCO LTD.

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5 AUGUST 1980

GEOLOGICAL MAPPING AND SOIL GEOCHEMICAL SURVEY

ON THE GREY MINERAL CLAIMS

CRAWFORD BAY AREA

NELSON MINING DIVISION, B.C.

SUMMARY

A geological mapping and soil sampling program was carried out on the Grey claims which are located 8 kilometres south of Crawford Bay, B.C. The work consisted of detailed geological mapping and prospecting of the property, and soil sampling on a cut grid. Sampling consisted of 337 soil samples and 4 stream silts. All samples were analysed for Cu, Pb, Zn, Mn, Mo and W.

Results show anomalous molybdenum values in soils overlying a quartz monzonite plug containing molybdenite occurrences. Anomalous tungsten values occur in an area where skarn has developed adjacent to the intrusive contact. This skarn was found to contain traces of scheelite.

Further work is recommended to follow-up these interesting geochemical anomalies.

LOCATION

Latitude : 49°36'N
Longitude: 116°46'W
NTS : 82F/10W
Nelson Mining Division, B.C.

The GREY claims are located on McFarlane and Birkbeck Creeks which drain westward into Crawford Bay (Kootenay Lake), and are accessible by paved highway from Creston or Crawford Bay, to the mouth of McFarlane Creek, then by lumber road a short distance up to the central part of the property. Elevation ranges from 550 to 1585 metres.

HISTORY

This molybdenum prospect was formerly known as the Ben Derby property. Previous work included two old adits totalling about 100 metres in length and four or five diamond drill holes. These showings are covered by the MOLY claims, owned by D. Wiklund of Boswell, B.C. The GREY claims were staked to cover extensions of soil anomalies onto open ground to the south and west of the showings.

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OWNERSHIP

Three claims comprising 24 units owned 100% by Cominco Ltd.

Claim	No. of Units	Recorded	Record No.	Due Date
Grey 1	4	July 18/79	1114	July 18/80
Grey 2	12	July 18/79	1115	July 18/80
Grey 3	8	July 18/79	1116	July 18/80

SOIL GEOCHEMISTRY AND ANALYTICAL PROCEDURE

The field work was conducted by R.L. Wright, MSc 1974, assisted by R. Cadel, BSc, L. Goldberg, L. Chow, G. Dobek and K. MacDonald.

Soil samples were collected from a grid at 50-metre spacing along north-south lines which are 200 or 400 metres apart, depending on location. Control of sample locations was provided by cut lines, the sample spacing being determined by chaining, without slope correction. Several stream silts were also collected to provide additional coverage of areas outside the grid.

Soil and silt samples were collected in numbered kraft sample bags, air dried, then shipped to Cominco's Vancouver Research Laboratory. Samples were then dried and sieved, and the -80 mesh fraction was analysed for Cu, Pb, Zn, Mn, Mo and W. The Cu, Pb, Zn and Mn were determined by atomic absorption following extraction by hot 20% nitric acid. Molybdenum was determined by nitric-perchloric acid digestion and HCl extraction followed by Zn dithiol colourimetry. All values are reported in parts per million (ppm).

GEOLOGY AND MINERALIZATION

General Geology

The Grey Creek property is underlain by metavolcanics and metasediments of the Horsethief Group and Hamill Formation of Upper Proterozoic age. The country rock has been invaded by two biotite-quartz monzonite stocks and a thin diorite dyke of possible Cretaceous age. The metavolcanics include fine to medium-grained amphibolites, chloritic schists, meta-andesites, and skarn. The original sediments have been regionally metamorphosed to quartz-muscovite-plagioclase schists, muscovite-plagioclase schists, and phyllites, and near the contacts with the intrusives have formed andalusite and cordierite schists. Smaller units of light-grey quartzite, grey marble, and interbedded meta-arkose and quartz-feldspar pebble conglomerate form three minor, but distinct, mappable units within this area.

Detailed Geology

The most widespread unit is schist which consists of varying amounts of muscovite biotite, plagioclase, quartz, cordierite and andalusite. An average composition is muscovite 50%, plagioclase 35%, quartz 12% and

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biotite 3%, with cordierite or andalusite constituting up to 30% of the rock in some samples. These rocks normally have a light silvery-grey colour, weathering light grey-brown. Toward the contact with the quartz monzonite intrusions, the quartz-muscovite plagioclase schist becomes coarser-grained.

A thin, 400 metre-long lens of quartzite trends NS within the schists in the southeastern portion of the property. It is a medium to coarse-grained, light grey quartzite weathering light pinkish-grey.

Within the schists is a unit of meta-andesite. This rock is very fine-grained, light to medium greenish-grey, weathering dark grey. Near the intrusive contact this unit is altered to skarn, which consists of bands of dark grey-green meta-andesite alternating with bands of idocrase and garnet. These bands are spaced at 20-25 cm intervals. There are also narrower 3-5 cm bands of diopside and quartz at less regular intervals. The meta-andesite grades into chlorite-muscovite plagioclase schist toward the west, this unit having an average composition of 45% plagioclase, 35% muscovite and 20% chlorite.

A 30-metre wide band of quartz-feldspar pebble conglomerate trends NS within the schists in the southwestern part of the property. This unit is light reddish-brown, weathering light brown to grey with small rusty patches of disseminated pyrite. Quartz and feldspar clasts average 4 mm in size. Muscovite-plagioclase schist layers are interbedded with the conglomerate every 1-2 metres.

To the west of the quartz feldspar pebble conglomerate are several 15-20 m wide lenses of marble which extend 200-300 m along strike. These are medium to coarse-grained, with alternating 1 cm light and dark grey bands.

A NS trending 300-600 m wide amphibolite unit occurs in the southwestern portion of the property. The unit is typically fine to medium-grained, dark greenish-black, and weathers a medium dark grey. In places it takes on a streaky appearance with thin bands of white plagioclase alternating with black amphibole. The composition is quite variable, with 60-90% amphibole (hornblende?), 10-40% plagioclase, 1-3% biotite in places and occasionally up to 1% pyrite.

A 10-15 m wide diorite dike intrudes the muscovite-plagioclase schists in the southwestern part of the property. The diorite is medium-grained, a dark grey colour, weathering medium grey, and is composed of 50-60% plagioclase, 30-40% biotite and 5-10% hornblende. Manganese staining and epidote alteration are common along fracture surfaces.

There are two quartz monzonite intrusions. Part of the major intrusive covers the northwestern portion of the map area, while the smaller, elliptical stock intrude the meta-andesites in the east. The rocks within the two intrusions are very similar in appearance. The quartz monzonite is typically medium to coarse-grained, white to pinkish-grey, weathering light pinkish-grey. An average sample consists of 30-38% K-feldspar, 30-35% plagioclase, 25-30% quartz, and 5% biotite. K-feldspar phenocrysts may range from ½-2 cm in size. Small rusty patches of disseminated pyrite make up less than 1% of the rock in many outcrops. Towards the eastern edge of the smaller quartz monzonite stock, the rock

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becomes more leucocratic with less than 1% mafic minerals. These rocks have been shown as adamellite on the map.

MINERALIZATION

Most of the mineralization of economic importance is found within the quartz monzonite intrusions and the skarn within the meta-andesite unit. In the major intrusive, only a few tiny specks of MoS_2 were located in quartz monzonite float along the road (700E/1+50N). In the northern part of the smaller stock (between 20+25E and 21+30E) a 10 cm thick quartz vein striking 120/90 contains small disseminated flakes of MoS_2.

Within the skarn, a few grains of scheelite (WO_3) were located. The skarn is at 23+75E, 50S.

RESULTS AND INTERPRETATION

The results for Cu, Pb, Zn and Mn show weakly anomalous results which cannot be related to any known mineralization.

The Mo results show anomalous values in soils overlying the smaller quartz monzonite stock where molybdenite mineralization is known to occur.

The W results show anomalous values in soils overlying the skarn occurrence, which is known to contain traces of scheelite.

Additional work is required to determine the full significance of these anomalies and the associated mineralization.

CONCLUSIONS

A program of detailed geological mapping and soil geochemistry on the Grey group has indicated anomalous zones for molybdenum and tungsten which can be related to mineralization. Additional work is required to determine the extent and significance of these occurrences.

Report by: R.L. Wright.
R.L. Wright, Geologist

Endorsed by: W. J. McCuaig for DLC.
D.L. Cooke
Senior Geologist

Approved for Release by:
G. Harden, Manager
Western District
Exploration

RLW/gmk

Distribution: Mining Recorder (2), Administration (1), Western District (1)
RLW/DLC (2)

APPENDIX I

STATEMENT OF EXPENDITURES

Cost of geological mapping and soil geochemistry surveys on the Grey mineral claims-Crawford Bay area, Nelso Mining Division, B.C. from 28 May to 16 July 1980.

SALARIES

R.L. Wright	20 days @ $146.26	28 May-16 July 1980	$ 2,925.20
R. Cadel	19 days @ $106.83	28 May-16 July 1980	2,029.77
L. Goldberg	21 days @ $ 87.12	28 May-16 July 1980	1,829.52
L. Chow	6 days @ $ 84.66	28 May- 3 June 1980	507.96
G. Dobek	23 days @ $ 77.88	28 May-16 July 1980	1,791.24
K. MacDonald	13 days @ $ 77.88	7 June- 1 July 1980	1,012.44
S. Ahrend	2 days @ $ 73.26	11 July-12 July 1980	146.52

TRANSPORTATION

Truck leases, 2 vehicles, 1 month including tax, insurance	$ 1,552.00
Gas, oil, repairs	$ 416.00

FIELD COSTS

Food and Accommodation 104 man days @ $32.11	$ 3,339.70
Equipment	$ 316.41

GEOCHEMISTRY

Linecutting Contract	$ 6,743.62
341 Soil and Silt Samples @ $8.40	$ 2,864.40
	$25,474.78

R.L. Wright.

R.L. Wright, Geologist.

RLW:hmr
6 August 1980.

APPENDIX II

IN THE MATTER OF THE B.C. MINERAL ACT AND
IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL
PROGRAM CARRIED OUT ON THE
GREY MINERAL CLAIMS
LOCATED IN THE NELSON MINING DIVISION
OF THE PROVINCE OF BRITISH COLUMBIA
MORE PARTICULARLY NTS: 82F/10W

A F F I D A V I T

I, Robert L. Wright, of the City of Vancouver in the Province of British Columbia, make oath and say:-

1. THAT I am employed as a geologist by Cominco Ltd., and as such have a personal knowledge of the facts to which I hereinafter depose;

2. THAT annexed hereto and marked as Appendix I to this my affidavit is a true copy of expenditures on a geological and geochemical program carried out on the Grey mineral claims;

3. THAT the said expenditures were incurred between the 28th day of May, 1980 and the 16th day of July, 1980 for the purpose of mineral exploration on the above noted claims.

R.L. Wright.

R.L. Wright, Geologist

RLW:hmr
6 August 1980.

APPENDIX III

STATEMENT OF QUALIFICATIONS

I, Robert L. Wright, of the City of Vancouver, in the Province of British Columbia, hereby certify:-

1. THAT I am a geologist residing at 1859 Napier Street, Vancouver, British Columbia with a business address at 409 Granville Street, Vancouver, British Columbia;

2. THAT I graduated with a B.Sc. in geology from McMaster University, Hamilton, Ontario in 1971 with a M.Sc. in geology from the University of British Columbia in 1974;

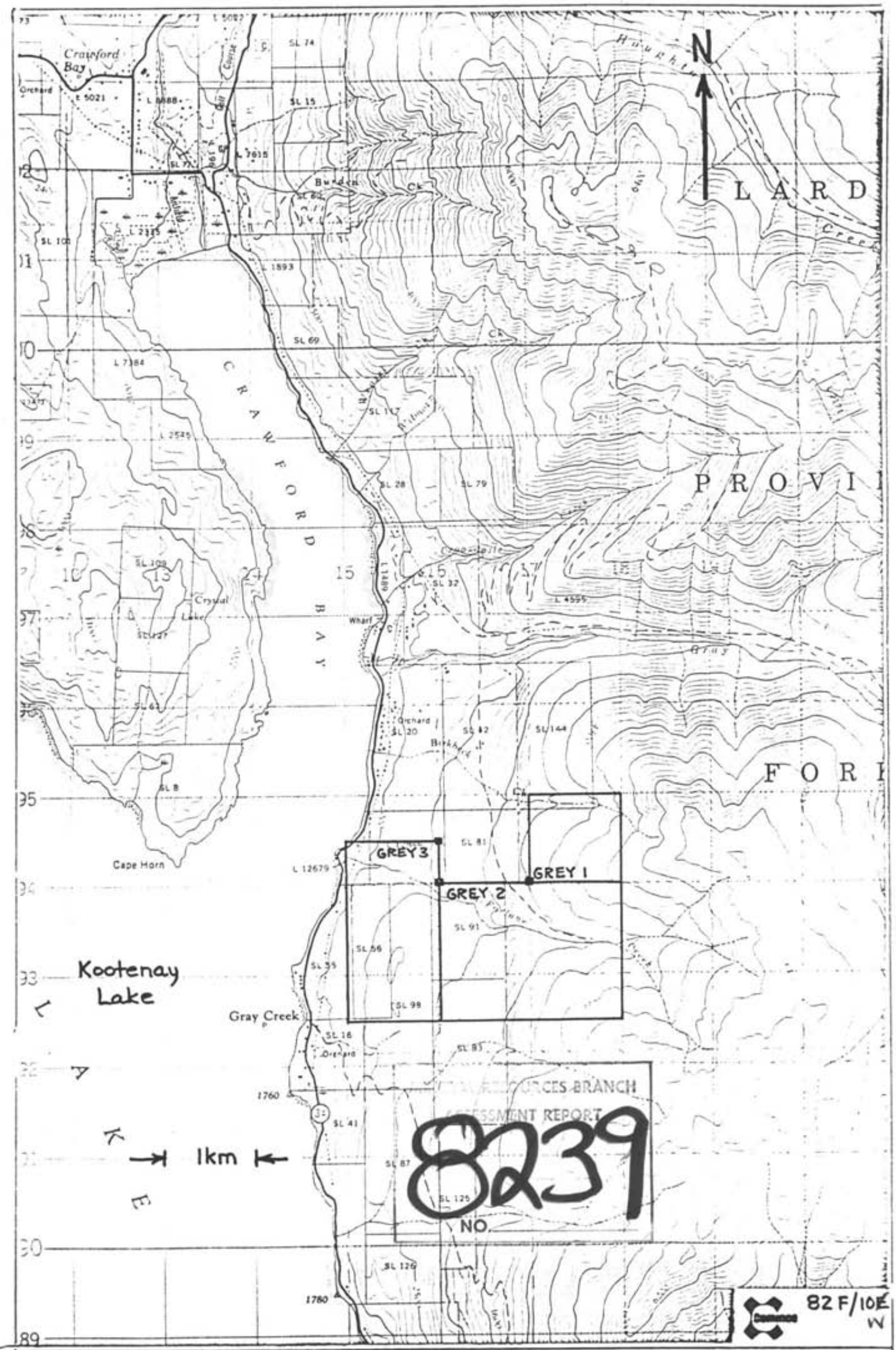
3. THAT I have practised geology with Cominco Ltd. from 1975 to 1980.

DATED THIS 6 DAY OF August ,1980,
AT VANCOUVER, BRITISH COLUMBIA.

R.L. Wright.

R.L. Wright, M.Sc.

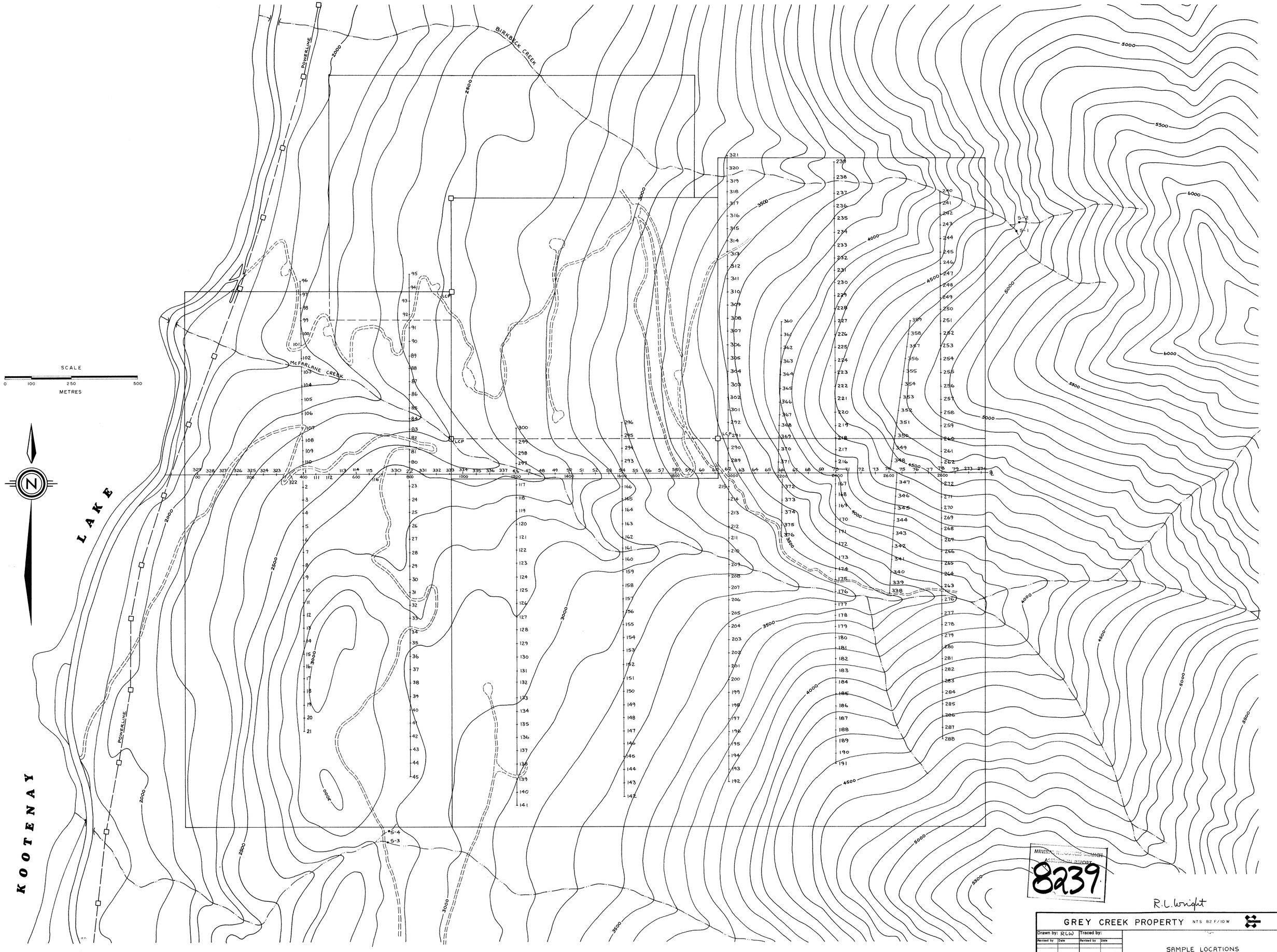
RLW:hmr
6 August 1980.



Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

GREY CREEK PROPERTY
Location Map

Scale: 1: 50,000 Date Aug 6/80 Plate 1



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
8239

R.L. Wright

GREY CREEK PROPERTY NTS 82 F/10W

Drawn by: R.L.W.	Traced by:		
Revised by	Date	Revised by	Date

SAMPLE LOCATIONS

Scale: 1:5,000 | Date: OCT. 1979 | Plate: 2

NGI - 119 - G.L.

FORM 210 0680

LEGEND

Cu/Mn Cu/Mn Soil Grid: Cu, Mn values in ppm

Cu/Mn Stream Silt Location

Contour intervals in ppm Cu or Mn, as indicated

NOTE: elevations are in feet

SCALE

0 100 250 500

METRES

N

KOOTENAY LAKE

POWERLINE

BIRKBECK CREEK

McFARLANE CREEK

LCP

18/1950

18/505

23/502

58/1500

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8239

R. L. Wright

GREY CREEK PROPERTY NTS 82 F/10 W

Drawn by: RLW | Traced by:

Revised by	Date	Revised by	Date

GEOCHEMISTRY
Cu, Mn ppm.

Scale: 1:5,000 | Date: OCT. 1979 | Plate: 3

NGI - 119 - G.L.

FORM 210 0680

LEGEND

Pb/Zn Pb/Zn Soil Grid : Pb, Zn values in ppm.

Pb/Zn Stream Silt Location

Contour intervals in ppm Pb or Zn, as indicated

NOTE: elevations are in feet

SCALE

0 100 250 500

METRES

N

LAKE

KOOTENAY

BIRKBECK CREEK

McFARLANE CREEK

POWERLINE

LCP

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8239

R.L. Wright

GREY CREEK PROPERTY NTS 82 F/10 W

Drawn by: RLW | Traced by:

Revised by	Date	Revised by	Date

GEOCHEMISTRY

Pb, Zn ppm.

Scale: 1:5,000 | Date: OCT. 1979 | Plate: 4

FORM 210 0680

NCI - 119 - G.L.

LEGEND

Mo/W — Soil Grid: Mo, W values in ppm.

Mo/W — Stream Silt Location

Contour intervals in ppm Mo or W, as indicated

NOTE: elevations are in feet

SCALE

0 100 250 500

METRES

N

LAKE

KOOTENAY

BIRKBECK CREEK

McFARLANE CREEK

POWERLINE

GREY 1

GREY 2

LCP

10 Mo

15W

9/3

2/6

10/4

2/2

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 8239

R.L. Wright

GREY CREEK PROPERTY

NTS 82 F/10W

Cominco

Drawn by: RLW	Traced by:		
Revised by	Date	Revised by	Date

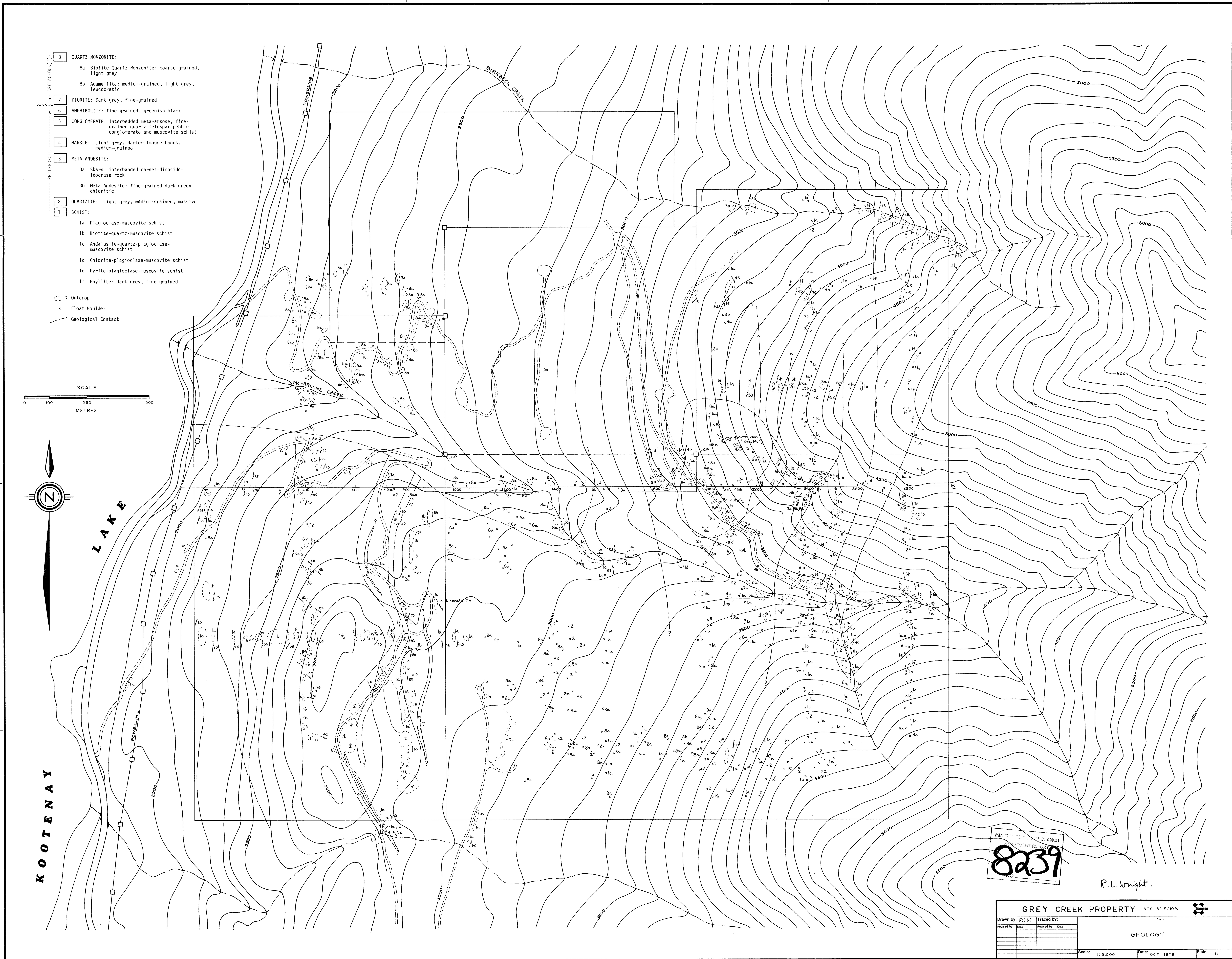
GEOCHEMISTRY

Mo, W ppm

Scale: 1:5,000 | Date: OCT. 1979 | Plate: 5

FORM 210 0660

MCI - 119 - G.L.


CRETACEOUS (?)
8 QUARTZ MONZONITE:
8a Biotite Quartz Monzonite: coarse-grained, light grey
8b Adamellite: medium-grained, light grey, leucocratic
7 DIORITE: Dark grey, fine-grained
6 AMPHIBOLITE: fine-grained, greenish black
PROTEROZOIC
5 CONGLOMERATE: Interbedded meta-arkose, fine-grained quartz feldspar pebble conglomerate and muscovite schist
4 MARBLE: Light grey, darker impure bands, medium-grained
3 META-ANDESITE:
3a Skarn: interbanded garnet-diopside-idocrase rock
3b Meta Andesite: fine-grained dark green, chloritic
2 QUARTZITE: Light grey, medium-grained, massive
1 SCHIST:
1a Plagioclase-muscovite schist
1b Biotite-quartz-muscovite schist
1c Andalusite-quartz-plagioclase-muscovite schist
1d Chlorite-plagioclase-muscovite schist
1e Pyrite-plagioclase-muscovite schist
1f Phyllite: dark grey, fine-grained
Outcrop
Float Boulder
Geological Contact
SCALE
0 100 250 500
METRES
KOOTENAY LAKE
POWERLINE
BIRKBECK CREEK
McFARLANE CREEK
LCP
cordierite
quartz vein
8239
R.L. Wright.
GREY CREEK PROPERTY NTS 82 F/10W
Drawn by: RLW
Traced by:
GEOLOGY
Scale: 1:5,000
Date: OCT. 1979
Plate: 6