

AYLWIN PROJECT

Slocan Mining Division

49°53' N 82°14' W 117°22' W
for

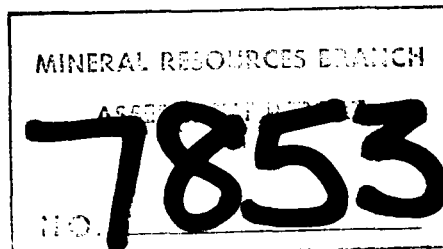
Rio Tinto Canadian Explorations Ltd.

by

J.R. Woodcock and Dennis Gore

J.R. Woodcock Consultants Ltd.
806-602 West Hastings St.
Vancouver, B.C.

January 9, 1980



Mineral Claims: Ent 1 to 3
Ayl 7

Crown Grants:

L7302	3884
7303	3885
7304	5232
7307	5233
1529	5878

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AYLWIN PROJECT

INTRODUCTION

Work in 1979 included mapping, collecting specimens for further studies and petrography and collecting samples for rock geochemistry. For this work, aerial photographs (approximate scales 1:20,000) were used in the field. The base map was made from aerial photograph BC 5853-238, expanded 4-fold. Note the considerable distortion in this photograph and the great differences in scales in various places. For example, the scale at Slocan Lake is 1:7,000 versus the scale at Aylwin Lake of 1:6,000.

LOCATION AND ACCESS

The Aylwin property is 6 km south of New Denver on the steep eastern slope of the Slocan Valley. The topography is extremely rugged and elevations on the property range from 2,900 feet to 7,000 feet. Outcrops are abundant on the property and tree cover consists mainly of pine trees.

For this report, the small lake at the head of Aylwin Creek has been called Aylwin Lake. On the claim map, the mountain peak north of Aylwin Lake is referred to as "Red Mountain".

Access to the property and to a potential drill site is by road. Highway 6 passes along the northwest side of the claim group and an all weather gravel road extends northeasterly from the highway through parts of the claim group to Silverton. An old drill access road leaves this gravel road, 0.6 km northeast of Highway 6, and extends for 1.6 km into the center of the claim group.

HISTORY OF EXPLORATION

The Aylwin property is in the Slocan mining camp, distinct from the more important silver camp of Sandon further to the north. This camp, lying east of Slocan Lake, has two main types of mineral prospects. These include the gold-silver prospects which lie generally within four miles of the lake and are concentrated on Spinner Creek and Memphis Creek and extend northeasterly to Aylwin Creek. The many prospects lying southeast of this lakeside zone are predominately silver-lead-zinc veins.

The majority of properties in this area were discovered in the late 1890's and explored or worked throughout the ensuing years. Metal production from the silver-gold prospects along Slocan Lake was very minimal.

The prospects in the Lower Enterprise Creek - Aylwin Creek area, include the Get There Eli, Golden, L.H., Little Daisy, Kalispell, Highland Light, Rockland, Silver Nugget and Silver Leaf.

Rockland Property

The Rockland prospect, first discovered in 1896, consists of copper-gold mineralization along a narrow fracture zone which strikes N 50° E and dips 70° SE. The rocks in the vicinity of the zone also contain small amounts of pyrite and chalcopyrite.

In 1899, three tunnels totalling 350 ft., were placed into the mineralized zone and a total of 331 tons of ore were shipped to a smelter.

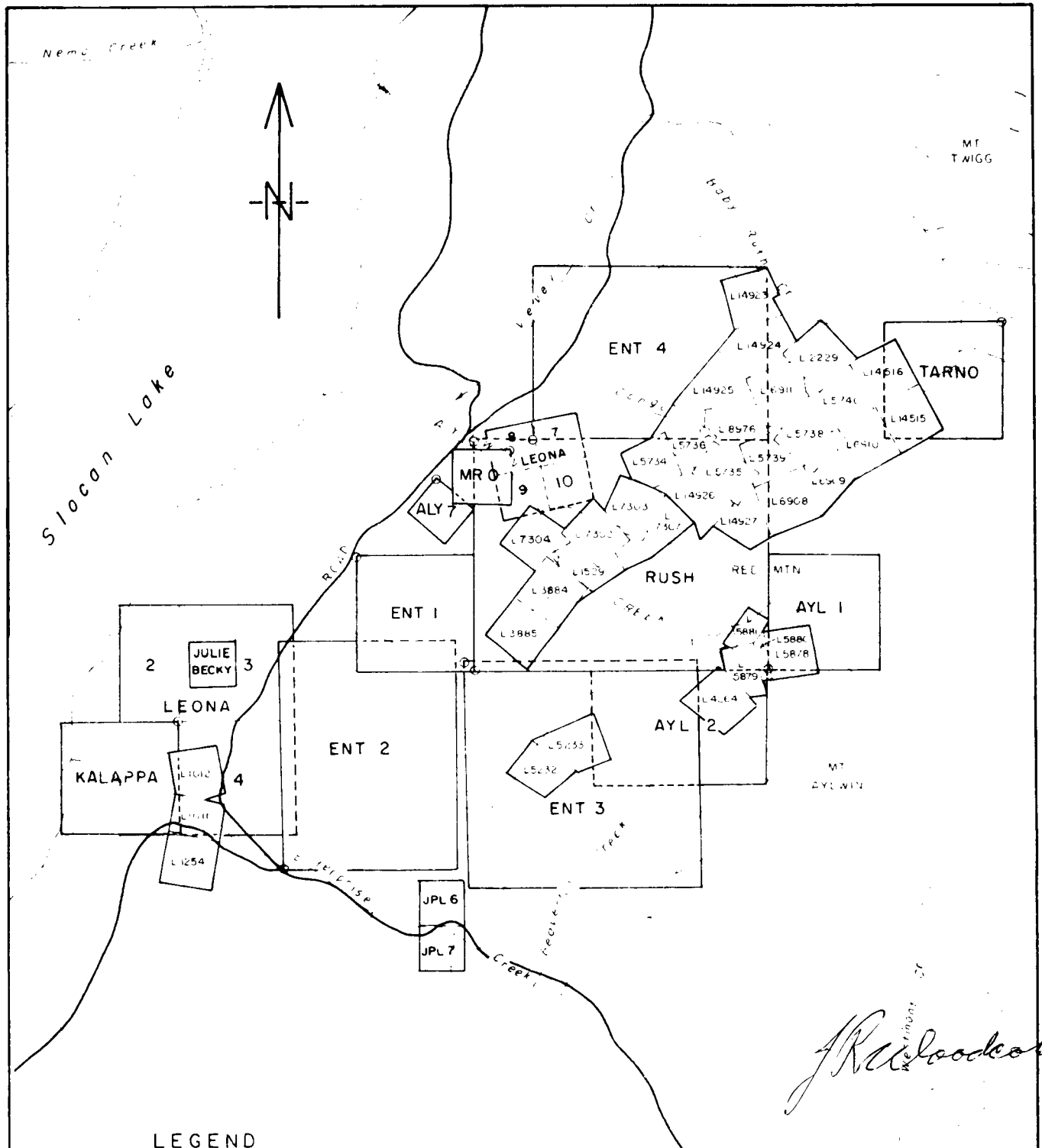
In 1901, Benjamin Hodge visited the property for Granby Consolidated Mining and Smelting Company and, because of the low grades, gave a negative report. Again in 1912, E.E. Campbell visited the property for the same company and again gave a negative report for the same reason.

Between 1904 and 1954, only occasional mild interest was shown by local prospectors in the property.

In 1954, Mr. Lorentzsen visited the property and subsequently participated in acquisition of the property.

In 1964, David H. Hawkins acquired the mineral lease and optioned it to Northlode Exploration Ltd. and this company in turn optioned the property to Cominco Ltd. Cominco, in 1964, did some trenching and, in 1965, did 970 ft. of diamond drilling in four holes in the vicinity of the adit.

Subsequently, Rockland Mining Company acquired the property and in 1967 did some bulldozer trenching and acquired additional ground. At this time Amax Ltd. examined the property and did a minor amount of reconnaissance geochemistry. This soil survey revealed some anomalous copper and molybdenum values. In April 1967, J.F. McIntyre, consultant mining engineer for Rockland Mining, visited the property and recommended further work. He concluded that the property had the potential for a large low grade copper-molybdenum deposit as well as the potential of the more obvious shear controlled copper-gold mineralization. This report was followed, in 1968, with a detailed geochemical survey by Alan



LEGEND

- [] Riocanex
- [] B.F. Minerals
- [] Riocanex Options
- [] Helen Stinson
- [] Other Owners
- Legal Corner Post

J.R. Woodcock

RIOCANEX

**AYLWIN PROPERTY
LOCATION MAP**

Scale 1:50,000

0 1 2
0 1 2
0 1 2

2 MILES
2 KILOMETRES

J.R. WOODCOCK CONSULTANTS LTD.

DATE: OCTOBER 1979 FIGURE 1

Engineering Ltd. This survey showed a copper anomaly with dimensions of 2,000 ft. by 7,000 ft. and with some values > 300 ppm copper and 20 ppm molybdenum.

Of importance in the present study, is the comment by McIntyre to the effect that previous owners in 1967 started a diamond drill hole on a small molybdenite showing which is located in Aylwin Creek on the northeast boundary of the Idler crown grant. This only reached a depth of 30 feet; however, chip samples from the outcrop of silicified quartz porphyry ran up to 0.3% MoS₂.

The major thrust of the work by Rockland Mining Ltd. took place in 1969 when the access road was improved and extended, additional bulldozer trenching was done, drill sites were prepared, the old tunnels were rehabilitated, geological mapping was done, and the diamond drill hole program carried out. Mr. R.W. Phendler of Bacon and Crowhurst Ltd. examined the property and conducted the diamond drill program which consisted of five holes spaced about 200 feet apart along the Willa shear zone. These five holes, totalling 2,188 feet, were designed to cut across the shear zone. All holes encountered trace mineralization and significant values in two places. These included 130 ft. grading .32% copper and 105 ft. grading .42% copper.

In 1970, Western Mining Company became a joint venture partner and, in 1971, helped to finance 4,900 feet of diamond drilling in several holes. This program was again conducted by R.W. Phendler. Drill results were not encouraging, but, did include short sections which graded up to 0.19% Cu and sections which graded up to 0.017% Mo.

The crown granted claims of Rockland Mining Company subsequently reverted to the crown and the staked ground lapsed. Between January 3, 1975 and May 18, 1979, Mr. Peter Leontowicz of Hills, B.C. acquired the nine reverted crown granted claims. In June 1979, J.R. Woodcock visited the property and recommended that Riocanex acquire the property and do some surface mapping and geochemistry. An option agreement was negotiated with Mr. P. Leontowicz and his partner, Mr. William Wingert, and plans were made to stake the surrounding ground. These plans were somewhat thwarted when a third party staked some ground around the claims at approximately the same dates as the crews from J.R. Woodcock Consultants Ltd. started to acquire ground. Subsequently, it was confirmed that these stakers were working for B.P. Minerals Ltd. The option with Peter Leontowicz and William Wingert was finalized and a letter of intent signed on June 28, 1979. Claim data for these claims, additional claims staked for Rio Tinto Canadian Exploration Ltd., and the claims staked for B.P. Minerals Ltd. are included in the following section.

Other Properties

L.H. Property:

This property, consisting of seven crown grants and fractions, covers 323 acres at the head of Vevey Creek. The original owner staked the property in the early 1890's and explored it until 1911. B.C. Copper Company then acquired ownership and worked the property until 1913, the last exploration and development done on the property. The workings are between 5,200 and 5,600 feet elevation and consist of three adits and a total of 1,700 feet of underground development work. Ore reserves in 1913, were estimated at 13,000 tons valued at \$525 per ton: however, this figure is questionable as the ore is very erratic. The deposit occurs in highly metamorphosed roof pendant rocks that are silicified and highly fractured. Sulphides of the ore include pyrrhotite, arsenopyrite, pyrite and lesser chalcopyrite. Quartz is the major gangue mineral. The gold occurs both as free gold and in association with the sulphides, especially in the areas of higher arsenic content.

Little Daisy:

The Little Daisy deposit consists of small amounts of chalcopyrite and pyrrhotite, hosted by fine-grained granite. During 1933 and 1934, ten tons of ore were shipped containing a total of 5 ounces gold.

Kalispell Property:

The Kalispell, Kaiser and Kalmar crown grants are along Enterprise Creek. The two adits (250 feet total) are along a sheared and faulted zone that strikes N 40° E to N 15° E and dip 50° - 60° SE. It is up to 30 feet wide and contains galena, ruby-silver, sphalerite and pyrite. The mine produced 16 tons of ore in 1896 and 1897 containing an average of 240 ounces per ton of silver. The property is now owned by P. Leontowicz.

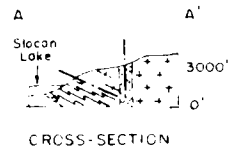
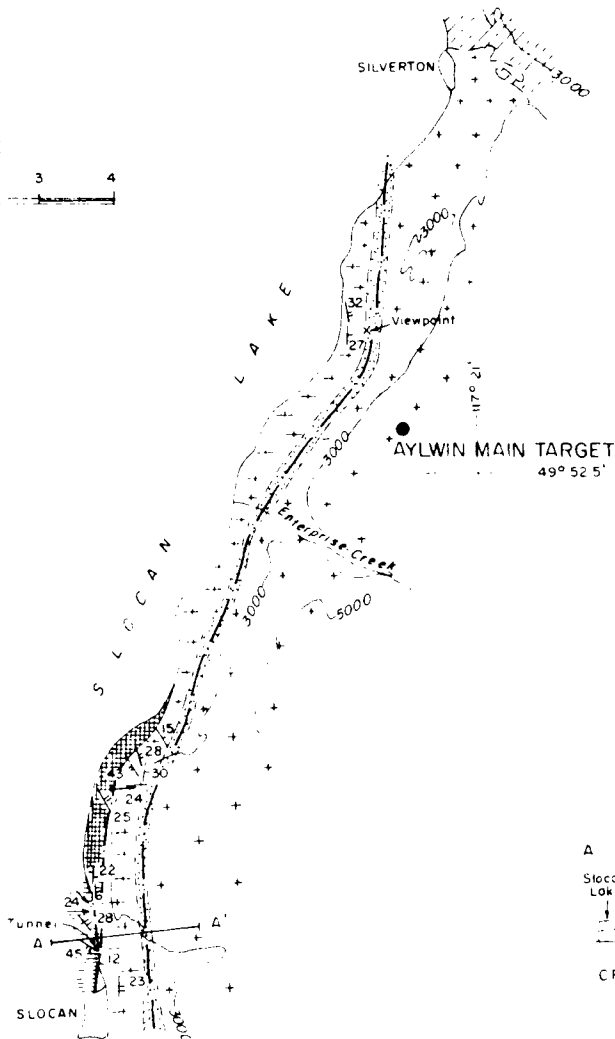
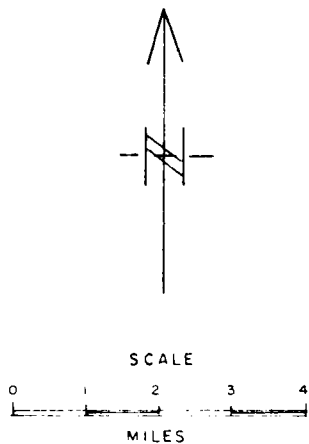
Highland Light and Victor Properties:

These properties are located on the slope north of Enterprise Creek and west of Beaverton Creek. Workings on the Victor claim are at an elevation of 5,300 feet and on the Highland Light are at 5,800 feet. Two adits, 75 feet and 210 feet occur on the Victor claim.

Mineralization on the Victor claim consists of veins, up to 25 feet wide, composed of quartz-galena-sphalerite. Mineralization on the Highland Light consists of quartz-calcite-pyrite veins up to two feet wide in sedimentary rocks.

Silver Nugget Property:

Silver Nugget is located near the head of Aylwin Creek at an elevation of 6,500 feet. The ore consists of pyrite and some silver min-



LEGEND

- Nelson Batholith
- Slocan Group
- Horsethief Creek Group
- Granite Gneiss
- Imbricate Zone of Horsethief Creek Group and Granite Gneiss
- Crush Zone (Brecciated)

- 40 Bedding (F₀)
- 40 Cleavage (F₁ F₂ F₃)
- 20 Lamination (L₁ L₂ L₃)
- Fault, Shear Zone

J. R. Woodcock

AFTER ROSS AND KELLERHALS (1968)

RIOCANEX	
AYLWIN PROPERTY REGIONAL GEOLOGY	
J. R. WOODCOCK CONSULTANTS	
NOVEMBER 1979	FIGURE NO. 3

AYLWIN PROPERTY CLAIM DATA

Date: October 24, 1979

Claims and reverted Crown Grants optioned by RIOCANEX

Name of Claim	Record No.	Record Date	Original Recorded Owner	Tag No.	Due Lapse Date	Area
L1529 Willa	18212A	Jan. 3/75	P. Leontowicz		1980	26.86 acres
L3884 Rockland	18213A	Jan. 3/75	"		1980	49.96
L3885 Rustler	18214A	Jan. 3/75	"		1980	50.63
L5232 Trenton	1260(6)	June 26/79	"			17.18
L5233 Last Chance #11	1261(6)	June 26/79	"			20.66
L5878 Silver Band	1262(6)	June 26/79	"			20.90
L7302 Little Daisy	327(1)	Jan. 4/77	"			43.20
L7303 Golden	1222(5)	May 18/79	"			46.00
L7304 Idler	1223(5)	May 18/79	"			42.33
L7307 Golden Fr.	1224(5)	May 18/79	"			43.85
Leona 7	1321(6)	June 28/79	"	461157M		51.65
Leona 8	1322(6)	June 28/79	"	461158M		51.65
Leona 9	1323(6)	June 28/79	"	461159M		51.65
Leona 10	1324(6)	June 28/79	"	461160M		51.65

Claims owned by RIOCANEX

Name of Claim	Record No.	Record Date	Original Recorded Owner	Tag No.	Date of Commencement	Time	Date of Completion	Time	No. of Units
ENT 1	1294(7)	July 10/79	Dennis Gorc	07152	June 27/79	11:45 a.m.	June 27/79	5:20 p.m.	4
ENT 2	1313(7)	July 11/79	John R. Woodcock	07153	June 27/79	1:30 p.m.	June 28/79	5:30 p.m.	12
ENT 3	1295(7)	July 10/79	Dennis Gorc	07154	June 26/79	11:30 a.m.	June 26/79	8:45 p.m.	16
ENT 4	1296(7)	July 10/79	Dennis Gorc	07155	June 29/79	11:25 a.m.	June 30/79	4:45 p.m.	12
ALY 7	1312(7)	July 11/79	Paul Stanneck	496078M	June 25/79		June 25/79		

Claims owned by B.P. Minerals

Name of Claim	Record No.	Record Date	Original Recorded Owner	Tag No.	Date of Commencement	Time	Date of Completion	Time	No. of Units
Rush	1263(6)	June 26/79	Russ Wong	08914	June 25/79	9:30 a.m.	June 25/79	10:00 p.m.	20
AYL 1	1271(7)	June 29/79	Russ Wong	08922	June 28/79	10:30 a.m.	June 28/79	3:30 p.m.	4
AYL 2	1272(6)	June 29/79	Russ Wong	08915	June 28/79	3:30 p.m.	June 28/79	8:00 p.m.	6

Table I

Table I

Miscellaneous Ownership

Claim Name	Record No.	Record Date	Owner	Due Lapse Date	No. of Units or Area
Kalappa	676(6)	June 26, 1978	O. Leontowicz	Nov. 19/79	4 Units
L1012-Kalmar	293(11)	Nov. 7, 1977	P. Leontowicz	" "	48.38 Acres
L1011-Kalispell	292(11)	" " "	" "	" "	37.20 Acres
L1254-Kaiser	294(11)	" " "	" "	" "	50.00 Acres
Julie Becky	1326(7)	July 18, 1979	Peter B. Harker		1 Unit
J. P. L. 6	1281(7)				
J. P. L. 7	1280(7)				
Leona 2	1502(10)				2 Units
Leona 3	1503(10)				4 Units
Leona 4	1504(10)				4 Units
Mr. O	531(11)	Nov. 1, 1977	Ed. McGibbon	1979	1 Unit
Turno	178(6)	June 30, 1976	Groenhuysen & Tornowski	1980	4 Units
L4264	M313	July 6, 1970	A. J. Kesler		
L5879-Crossfell			C. J. McLean		
L5880-Ethyl Fr.			" "		
L5881-Twyford			" "		
L5734-Congo No. 2			Helen Stinson		
L5735-Bristol			" "		
L5736-Commander			" "		
L5738-LH			" "		
L5739-Camden			" "		
L5740-CB			" "		
L2229-Baby Ruth			" "		
L6908-St. Joe			" "		
L6909-Summit			" "		
L6910-Basin Fr.			" "		
L6911-Harlem			" "		
L8976-Harlem Fr.			" "		
14515-Colfax			" "		
14516-Arko			" "		
14923-Douglas			" "		
14924-Grief Fr.			" "		
14925-Pest Fr.			" "		
14926-Junior Fr.			" "		
14927-Fred Fr.			" "		

-4-

Table I

erals in quartz lenses. The deposit has been explored by two adits, one of which has an 80-foot crosscut. Production consisted of a total of two tons (1907 - 1908) containing an average of 22 ounces of silver per ton.

Silver Leaf Property:

The Silver Leaf is located in the upper basin of Aylwin Creek. Mineralization consists of galena, and sphalerite in a gangue of quartz-siderite containing some silver. The zone is several feet wide and strikes N 65° E.

CLAIMS AND OWNERSHIP

The claim data for all pertinent claims is included in Table I.

The reverted crown-granted claims of the Rockland group and some adjacent claims have been held by Peter Leontowicz. Leontowicz filed two Notices to Group for assessment purposes. On December 29, 1975, he filed the Rockland Group to include the Willa, Rockland, Rustler and Leona and, on December 28, 1977, he amended Rockland Group to include seven claims. This Rockland Group of claims is subject to an oral agreement of joint ownership between Mr. P. Leontowicz and Mr. William C. Wingert.

On June 28, 1979, a letter of intent in favor of Rio Tinto Canadian Exploration Ltd. was signed by Mr. Peter Leontowicz and Mr. W.C. Wingert.

On August 13, 1979, the Willa, Rockland, Rustler, Little Daisy and Golden fraction crown grants and the Leona 7 to 10 mineral claims were transferred from Peter Leontowicz to Rio Tinto Canadian Exploration Ltd. The remaining five claims (Trenton, Last Chancell, Silver Band, Golden and Idler) are still in the name of Peter Leontowicz, but are part of the option agreement.

With regard to acquired crown granted claims that have reverted to the crown, Section B-7 of the Mineral Act states that "no record of a mineral claim acquired pursuant to Section 19 of the Mineral Act shall be assigned, sublet, or in any way transferred before or within one year after the first recording of work."

With regard to the claim map (figure 2) it is important to note that the base map is an expanded aerial photograph with considerable distortion. The claims have been transferred from a topographical map (scale 1:50,000) and re-plotted on this photo base according to topography and not according to actual dimensions of the claim itself. One can note that even some of the corners on square claims are not at 90° angles. This map is drawn merely to allow the reader to correlate the anomalous targets with the claim ownership.

On July 20, 1979 all interest in the ENT 1, 2, 3, 4 and the AYL 7 were transferred from members of J.R. Woodcock Consultants Ltd. to Rio Tinto Canadian Exploration Ltd.

On July 13, 1979 all interests in the Rush, AYL 1, AYL 2, were transferred to B.P. Minerals Ltd. from that company's field men.

REGIONAL GEOLOGY

The Aylwin property lies in the southern parts of the Selkirk Mountains in a region of numerous batholithic and stock-like intrusions. The strata of the region can be divided into three major northwesterly trending units. The central unit includes Mesozoic strata, mostly belonging to the Slocan Group. These Slocan Group rocks are mainly sedimentary, including argillites, phyllites, quartzite, some limestone, some conglomerate and also some andesitic volcanic formations. The second part of this central area is the Kaslo Group which forms the eastern part of the Mesozoic unit and consists of metamorphosed andesitic rocks.

Lying along the northeast side and in fault contact with the Mesozoic unit is a sequence of metamorphic sedimentary rocks which includes the Lardeau and the Millford Groups.

A large region of granite and gneiss underlies the mountain block west of Slocan Lake. These highly metamorphosed Precambrian rocks, including metasediments of the Horsethief Group, are exposed as a narrow strip along the east side of Slocan Lake. This zone of Precambrian gneisses and metasediments is sharply separated from the Mesozoic terrain and from the Nelson Batholith by a persistent narrow crush zone (figure 3). The main target at Aylwin lies 2 km southwest of this strong fault zone.

The metamorphic strata of the eastern unit form the large Kootenay Arc. The Slocan area lies within core of this Kootenay Arc and is dominated by the Nelson Batholith, which underlies the greater part of the region of interest. The age of the Nelson Batholith is post Middle Jurassic. The strata of the Slocan Group which lie to the north of the Nelson Batholith (about 4 km north of the Aylwin property) are characterized by a major synclinorian called the Slocan Syncline.

The Aylwin property is underlain by a large inlier of the Slocan Group (5 km by 1 km) within the Nelson Batholith. This pendant contains predominantly volcanic rocks in contrast to the general sedimentary nature of the Slocan Group. The pendant is also intruded by acid plutons, probably of Tertiary age.

Many of the major molybdenum regions of western United States are in areas of crustal thickening, as indicated by the negative gravity anomalies. The gravity maps also show one major anomalous area lying in the southeast corner of British Columbia. This gravity anomaly appears to

be comprised of three entities. An elongated part lies along the Canoe and Fraser Rivers, east of the Rocky Mountain Trench. This part is largely co-extensive with rocks of the Windermere Group and adjacent Palaeozoic strata. A smaller linear part also lies in the northern Purcell Mountains, partly co-extensive with Windermere and Palaeozoic strata. A southern lobe of the gravity anomaly projects westward to cover the Slocan Batholith and its intruded rocks and also some smaller batholiths that intrude the Windermere and the Palaeozoic strata east of Kootenay Lake.

GEOLOGY AT AYLWIN PROPERTY

The geological map of the Aylwin property is based largely on examination of hand specimens collected at the sites of the rock chip samples. These rock chip samples and their corresponding specimens were collected by Messrs. Paul Stanneck and Dennis Gorc. In addition, J.R. Woodcock made several traverses across the various parts of the property to examine rocks and collect specimens.

Woodcock and Gorc examined all hand specimens and attempted to group them into similar rock types. In addition, Woodcock did some petrography on 33 selected specimens.

This mapping program was intended as a preliminary pass to select exploration targets in a large zone of iron sulfide mineralization and complex igneous history. To make a detailed map and outline the exact distribution of each rock unit will take considerable work because of the extremely rugged topography. This preliminary work has indicated that, because of the igneous and metamorphic history, petrography in conjunction with field mapping, will be needed to accurately delimit the rock units. However, for the purposes of exploration, such refinement is probably unnecessary. The results of the rock geochemistry do point to exploration targets and it is these targets that should receive the additional mapping and petrographic studies.

The preliminary mapping was done on aerial photographs (scale 1:20,000) and re-plotted on a photo expanded four times. More accurate control should be obtained for future work. The mapping, based on identification of hand specimens and revised with the subsequent thin section work, has indicated four main rock groups with variations within each group:

- a) Pre-Nelson Batholith strata, mainly basic metavolcanics (mv), but including some metasediments such as quartzite and chert (shf) and also some gneissic rock near the contact and within the Batholith (gn).
- b) The Nelson Batholith composed of quartz monzonite (Nqm), but also including some porphyry which contains feldspar and amphibole phenocrysts and which may be a contact rock (Nhp). Some Xenoliths within the Batholith have

been converted to a gneissic hornblende rich rock (gn).

- c) The southern intrusive complex which is composed largely of quartz latite porphyry (qlp). In some places, especially near its contact, the rock has been somewhat altered (qlp-c). Smaller bodies of alaskite (al) are scattered throughout this southern intrusive complex.
- d) The northern feldspar porphyry complex which includes a leucocratic plagioclase porphyry (fp), some white altered feldspar porphyries (wfp), some possible rhyolitic rock (rhy) and acidic clastics (cl). Intrusive into the various feldspar porphyries is a hornblende-plagioclase-porphyry (dp). In places, fine-grained hornblende has formed within the feldspar porphyry (hfp) adjacent to dacite porphyry (dp).

Petrography

Thin sections were obtained for thirty-three specimens and most of these sections were briefly examined by J.R. Woodcock. The sections of the various rock types are as follows:

metavolcanics (mv) - G 34, G 52, G 376
siliceous hornfels (shf) - P 602, G 347
gneiss (gn) - G 347
clastic rock (cl) - P 510, P 507 (?), G 103 (?)
Nelson quartz monzonite (Nqm) - G 96, G 99
Nelson hornblende porphyry (Nhp) - P 602
quartz latite porphyry (qlp) - G 35, G 47, G 72, G 331,
P 514, P 600
contact quartz latite porphyry (qlp-c) - G 30, G 31
alaskite (al) - G 77, P 451, P 563
feldspar porphyry (fp) and white feldspar porphyry (wfp)
- G 83, G 85, G 86, G 88, G 102, G 103,
G 610, P 507, P 509
dacite porphyry (dp) - G 612, G 613, G 616
hornblende feldspar porphyry (hfp) - G 105
rhyolite (rhy) - P 508

Metavolcanics (mv)

The metavolcanic rocks are probably originally andesitic to basaltic lava and pyroclastics, altered through tremolite-actinolite plus biotite. These secondary minerals comprise 50% to 75% of the rock and the biotite portion constitutes 20% to 35% of the minerals. Chlorite and sericite are generally absent. The remainder of the rock is largely plagioclase matrix with relic plagioclase phenocrysts in places. The plagioclase of specimen

P 79-510 is An₂₁.

In places however the rock is considerably less altered (G 79-34) and pyroxene phenocrysts are present. In G 79-34 these pyroxene phenocrysts constitute about 40% of the section; plagioclase matrix constitutes about 50% of the section; and the remainder is tremolite-actinolite, concentrated in the small areas that have abundant iron sulfides.

Siliceous Hornfels (shf)

Hornfels or metamorphic rocks, which do not appear basic enough to be included within the basic metavolcanics, have been included as a separate rock unit. They occur mainly near the contact of the batholith and in the northern part of the mapped area. These probably are largely metamorphosed sedimentary rocks.

This section examination shows an aphanitic rock consisting largely of quartz (55%) and biotite flakes (20%) with larger crystals and patches of actinolite (25%). Epidote is concentrated into a few scattered patches. Linear concentrations of biotite or of amphibole impart some foliation to the rock.

Gneiss (gn)

Locally within the Batholith and also in places, at its contact is a rock rich in black mafics and exhibiting some foliation. This is less mafic than the metavolcanics. It has been named gneiss as a field term.

Nelson Quartz Monzonite (Nqm)

In the vicinity of Aylwin Creek, the intrusive rock of the Nelson Batholith is a light to dark grey, medium-grained phaneritic rock with grain size of most minerals ranging from 0.3 to 2 mm. Large (up to 1 cm across) perthitic K-feldspar crystals are generally present. These large crystals are poikilitic containing euhedral crystals of plagioclase, amphibole, etc. Biotite is generally present forming up to 7% of the rock and this may or may not be accompanied by hornblende which also forms up to 7% of the rock. Sphene and apatite are generally scattered throughout as small euhedral crystals. Plagioclase (An₂₈) is erratically sericitized, especially in and near large patches of perthite.

Most biotite crystals are unaltered; but some are partly altered to chlorite and a few are completely altered to muscovite.

Thin section studies of two specimens gave the following compositions:

	<u>G 79-96</u>	<u>G 79-99</u>
plagioclase	43%	40%
K-feldspar	35%	20%
quartz	7%	35%
biotite	7%	5%
hornblende	7%	0%
sphene	1%	a trace

Nelson Hornblende Porphyry (Nhp)

The Nelson hornblende porphyry, from studies of G 79-347, is about 55% matrix consisting mainly of plagioclase and quartz with some hornblende. Hornblende phenocrysts make up about 30% of the rock and these, in places, have associated secondary biotite within them. Plagioclase phenocrysts constitute about 15% of the rock and, in places, these are altered to sericite and clay. Apatite and sphene crystals are scattered throughout.

This rock in hand specimen resembles the dacite porphyry. However, the limited studies indicate some difference in composition, especially in the matrix.

Quartz Latite Porphyry (qlp)

In hand specimen, the quartz latite porphyry appears to be a medium-grained phaneritic rock with occasional large quartz phenocrysts. However, thin section examination shows that the phenocrysts constitute about 50% of the rock and that the matrix occurs in two grain sizes. These include an aphanitic matrix comprising about 37% of the rock with crystal size generally from 0.02 to 0.03 mm, plus pockets of relatively coarse grained aphanitic matrix with grain size in the order 0.1 to 0.3 mm (5 to 15% of the rock).

The fine-grained matrix is largely K-feldspar (1/3 to 2/3) and quartz. Few flakes of mafic minerals and other accessory minerals are generally present.

The coarse matrix is interrupted as late stage crystallization in strain shadows of the phenocrysts. It consists of quartz, microcline, and some albite. The quartz veinlet cutting section P-600 is also considered late stage or deuteric. It changes to or has a fringe of microcline where it passes through plagioclase phenocrysts.

The phenocrysts are largely plagioclase, in crystals 1 to 3 mm. long, with composition An₁₂. Many of the phenocrysts are zoned. Sericite alteration is negligible; however, one thin section does display clay dusting on some of the plagioclase phenocrysts and some sections have minor carbonate and chlorite.

Other phenocrysts include the large (25 mm across) occasional crystals of quartz and also large sphene crystals. K-feldspar phenocrysts are absent; however, in places, there is some alteration of plagioclase to microcline.

The mafic phenocrysts are now pseudomorphs consisting of the coarser matrix material plus varying amounts of biotite, actinolite and chlorite. In a few places muscovite pseudomorphs of biotite phenocrysts can be recognized.

The composition for two specimens of sodic quartz-latite porphyry are as follows:

	<u>P 79-600</u>	<u>G 79-331</u>
Phenocrysts:	(51%)	(48%)
plagioclase	38%	38%
quartz	6%	3%
mafic pseudomorph	7%	5%
sphene	trace	2%
Fine Matrix:	(38%)	(37%)
quartz	25%	17%
K-feldspar	13%	20%
Coarse Matrix:	(6%)	(15%)
quartz	2%	6%
K-feldspar	2%	7%
plagioclase	2%	2%

Quartz Latite Porphyry -- Contact Phase (qlp-c)

In its contact area the quartz latite porphyry can be altered to a white rock which is not easily distinguished in hand specimen from the white feldspar porphyry or from the alaskite. How much of this alteration is late stage deuteric and how much is subsequent hydrothermal alteration is not clear.

Specimen P 79-514 illustrates some of the characteristics. The plagioclase phenocrysts (An_3) all display resorption at their boundaries and the total plagioclase has been reduced. Mafic phenocrysts have completely disappeared and are merely outlined by indefinite concentrations of minerals such as tremolite-actinolite, chlorite, pyrite, epidote, and calcite. Tremolite-actinolite also occurs with calcite in irregular veinlets.

The proportion of the late stage coarser matrix material has increased and exceeds that of the fine-grained aphanitic matrix. It is composed of microcline, quartz and some plagioclase.

This alteration of the contact quartz latite porphyry becomes more intense within the mineralized zone where hydrothermal alteration is superimposed on the possible deuteric alteration (e.g. G 79-30 and G 79-31). In specimen G 79-30 the relics of the plag-

oclase phenocrysts are altered to carbonate, sericite and clay. However, the large quartz phenocrysts are present. In specimen G 79-31 alteration is even more intense and the plagioclase relics are completely replaced by sericite and clay. Quartz veinlets are present and scattered pockets of quartz indicate some pervasive silicification. In this specimen even the large quartz phenocrysts are barely recognizable having been largely resorbed.

In places where the quartz latite porphyry is cut by numerous quartz veinlets to form a stockwork (e. g. G79-35) intense alteration is also evident and this alteration must be largely hydrothermal. The two grain sizes of the aphanitic matrix are still recognizable; however, pockets of secondary quartz have been added to the rock, probably related to the introduction of the quartz veinlets. The mafic phenocrysts have been eliminated and even the replaced minerals such as tremolite-actinolite are absent. The plagioclase phenocrysts have also been largely replaced by the relatively coarse grained matrix material and any relics are highly sericitized.

Alaskite (al)

Alaskite is a white phaneritic rock with grain size generally between 0.3 and 3 mm. The predominant mineral in this rock is microcline, most of which is perthitic. The perthite occurs as exsolution within the microcline, as relatively small irregular replacement patches within the plagioclase and as wormy replacements (myrmekite) of plagioclase. Mafic minerals are scarce and include minor muscovite and a trace of biotite. Alteration of the plagioclase to sericite and some clay is pervasive; however, the plagioclase crystals can be readily recognized.

Three sections (G - 77, P - 451 and P - 563) were examined. A typical composition from one section is as follows:

perthitic microcline	44%
quartz	35%
plagioclase	20%
muscovite	1%
biotite	trace

Feldspar Porphyry (fp) and White Feldspar Porphyry (wfp)

In the field, two apparently distinct rock types were mapped separately. One of these, a white rock, was tentatively named psuedo-alaskite and a similar rock containing feldspar phenocrysts was named feldspar porphyry. In places, differentiation was difficult as there seemed to be gradations between the two rock types even in one outcrop.

Thin section examination shows that these are probably both parts of the same rock unit and that the rock type was original-

ly a feldspar porphyry which has been highly altered, largely to microcline, over most of the area. The rock is characterized by its variability, both in texture and in composition.

In order to describe this rock, a comparison with the quartz-latitude porphyry will be made in a number of aspects. The large scattered quartz phenocrysts appear to be absent. The original plagioclase, where remaining, has composition about An_{30} (An_{25} and An_{32} for P 79-507, An_{34} for G 79-88 and An_{30} for G 79-85). Plagioclase content is quite variable; in G 79-85 plagioclase phenocrysts have been largely replaced by microcline whereas in G 79-88 abundant, relatively fresh plagioclase is present in sizes varying from the small phenocrysts down to matrix size.

In sections where most of the plagioclase phenocrysts have been converted to microcline (e.g. G79-85), any relict plagioclase is largely altered to sericite plus kaolinite (?). In other sections abundant plagioclase is present (e.g. G79-88) and sericite alteration is practically absent.

In some specimens the outlines of mafic phenocrysts can be recognized by concentrations of tremolite-actinolite plus epidote; however, in some specimens the tremolite-actinolite is scattered randomly throughout the section. In some sections (G 79-85), the tremolite-actinolite occurs as indefinite short veinlets.

The matrix itself is quite variable, possibly two distinct crystal sizes were originally present such as found in the quartz-latitude porphyry. However, if this is the case then the alteration or recrystallization has produced a rock in which the grain size is quite variable and the term seriate is appropriate. Composition of the matrix, which is generally quartz plus microcline, ranges from largely quartz in P 79-507 to largely microcline in G 79-85.

Rhyolite (rhy)

In several places (P 79-505, P 79-508, P 79-454) a dense brownish cherty rock occurs. Examination of a thin section (P 79-508) shows that this rock is largely matrix material consisting of about 2/3 K-feldspar and 1/3 quartz. Small euhedral crystals of biotite are scattered throughout the matrix. Somewhat angular pockets of relatively coarse-grained quartz accompanied by microcline occur throughout, giving the rock an appearance somewhat similar to that of the porphyry with the two generations (two grain sizes) of matrix. However, in this case one cannot eliminate the possibility of an altered clastic rock. Large remnants of resorbed quartz crystals and a few partly recrystallized phenocrysts of biotite are present. Some clouded patches of fine-grained material may be pseudomorphs of plagioclase phenocrysts.

Iron sulfides are scattered throughout and in places occur as large patches or crystals. Some of these sulfide crystals include flakes of biotite. A few uncommon minerals are associated with some of the larger sulfide patches including one large crystal of scapolite (?) and one unidentified birefringent mineral.

The origin of this rock is unknown; however, because of the predominance of quartz and K-feldspar and an acidic composition somewhat similar to that of some of the porphyries, this rock is tentatively called a rhyolite. It may be associated with the white feldspar porphyries as a contact phase or it may be a sedimentary or acid volcanic rock altered by intrusion of the feldspar porphyry.

Leucocratic Clastic Rocks (cl)

Another rock unit which needs further studies includes a variety of somewhat siliceous clastic rocks. Some of these are grey and the clastic nature is readily recognized (P 79-509) especially in thin section where the great variations in grain size, texture and composition are evident.

Others are white and can be confused in hand specimen studies with the white feldspar porphyry (P 79-507) and may in fact be an altered feldspar porphyry in which plagioclase phenocrysts have been replaced by a mosaic of quartz grains (G 79-102).

As with the so-called rhyolite, the relationship to the feldspar porphyry complex is confused.

Dacite Porphyry (dp)

The abundance of phenocrysts, much of which is hornblende, and the relatively small amount of fine-grained matrix makes some of the rock appear to be a dark grey medium-grained phaneritic rock. However, thin section studies of G 79-613 shows it to be a dacite porphyry with composition:

Phenocrysts (60%)	
plagioclase	33% (of Rock)
K-feldspar	10%
hornblende	18%
Matrix (40%)	

The matrix, which forms only 40% of the rock, is 1/3 quartz and 2/3 feldspar. Some of the feldspar is microcline; probably all of it is K-feldspar.

The matrix is aphanitic and differs from the other porphyries in that the second coarser generation of quartz K-feldspar in the matrix is not present.

This rock is characterized by the abundants of hornblende which is only slightly altered. Some of the hornblende adjacent to a cross-cutting quartz vein is somewhat bleached and has probably converted to tremolite-actinolite. Minor chlorite alteration also occurs in places in some of the hornblende.

The rock is also characterized by abundant apatite crystals and some sphene crystals. Alteration of the plagioclase, consisting mainly of sericite is common in the central parts of the phenocrysts. Epidote is also present in places; however, this is also most prevalent near the quartz veinlet.

In hand specimen, it is difficult to distinguish this rock from the "Nelson porphyry". In fact thin section studies would be needed to classify some of the sepcimens from the northernmost traverse of the survey.

Hornblende Feldspar Porphyry (hfp)

Adjacent to the dacite porphyry, and probably related to intrusion of this porphyry, are feldspar porphyries which contain small fresh crystals of hornblende. Some of this hornblende occurs in veinlets (G 79-105).

Structure

A large inlier or deep seated roof pendant, herein called the Aylwin Inlier, is engulfed by or surrounded on three sides by the intrusive rock of the Nelson Batholith. This inlier, which at present is only partially outlined at its northern boundary, is about 2.7 kms. long (north-south) and is exposed over a width of 1.8 kms., with undefined limits to the west under the overburden. It is exposed over a vertical interval of about 700 meters.

The strata in the southern part of this inlier are largely metamorphosed andesitic to basaltic volcanics. Remnants of the strata in the northern part appear to be more acidic and could be a sedimentary or clastic rock. The strata are generally included in the Slocan Group; they might be correlated with the basic volcanics that underlie Rugged Peak, south of Summit Lake.

A feldspar porphyry complex is shown in the north part of the geological map and is defined by the petography. However, the mapping in this part of the area is inadequate to permit firm conclusions about the genesis of this complex. Contact of much of the feldspar porphyry with the southern strata of basic volcanics trends northwesterly across the Aylwin Inlier; the feldspar porphyry is generally exposed above the volcanics in the higher parts of the hills. This does give some impression that the basic volcanics underlie the feldspar porphyry. However, this is merely a field impression as the outlines of the areas of metavolcanics and the areas of feldspar need more definition. Also no bedding attitudes

have been obtained in the metavolcanics.

If the metavolcanics do dip under the unit of feldspar porphyry then one would expect the feldspar porphyry to be either a sill or some sort of metamorphosed acidic volcanic. The preference of the present writer is that the feldspar porphyry complex is intrusive into the metavolcanics. This is based on the textural similarity of the feldspar porphyry to the quartz latite porphyry of the southern intrusive complex, the abundance of phenocrysts in some of the rock, and the wide spread metasomatism by microcline.

A smaller intrusive of massive, relatively unaltered dacite porphyry, containing abundant hornblende and plagioclase phenocrysts, intrudes the feldspar porphyry. Some of the feldspar porphyry adjacent to this dacite has indefinite veinlets of fine-grained hornblende; this could form by contact metasomatism related to the intrusion of the dacite porphyry.

In the southern part of the Aylwin Inlier is an intrusive complex with a diameter of about 1.5 kms. This is composed largely of quartz latite porphyry and minor alaskite. Included within this area of quartz latite porphyry are a number of large screens or roof pendants of the metavolcanics. Additional field mapping would be required to fully outline a distribution of these remnants of volcanics within the southern stock.

Alteration and Mineralization

Contact, Deuteric, Hydrothermal Alteration

Much of the alteration described in the petography could be late stage magmatic or deuteric. This includes the small patches of relatively coarse-grained matrix in the strain shadows of phenocrysts in the porphyries and the widespread microcline alteration that is so prevalent in the feldspar porphyry.

The widespread tremolite-actinolite and the associated biotite which constitute much of the metavolcanics can be attributed to contact metamorphism by the Nelson Batholith and/or the porphyry intrusions. However, the tremolite-actinolite which has formed from the mafic phenocrysts of the porphyries could be part of the late stage deuteric alteration.

Although some sericite alteration is evident in the plagioclase of most of the porphyries, it is generally of low intensity and it is seldom accompanied by abundant epidote or calcite. However, locally the sericite alteration of the plagioclase is intense. Such places include the contact of the southern porphyry intrusion, areas of abundant quartz veinlets in the southern stock and where copper mineralization occurs within the intrusive. In these places it is probably hydrothermal.

Quartz and Molybdenite

Abundant quartz veinlets occur in several small exposures along the little creek south of the adit (G 79-35 and G 79-37). Minor fine-grained molybdenite occurs within these veinlets. In addition, pieces of larger quartz veins were found as float below the quartz veinlets and also along the road south of the main adit. This quartz carries molybdenite. A piece of this float found south of G 79-35 assayed 0.13% MoS₂.

Sparse molybdenite also occurs in the quartz latite porphyry along the northeast contact of this stock (P 79-514), and has also been reported near the northern contact of the stock in Aylwin Creek. Traces of fine-grained molybdenite have also been noted in alaskite float (G 79-41).

Abundant quartz veinlets are found in and adjacent to the stock of dacite porphyry in the northern feldspar complex. These occur within the dacite porphyry and within the intruded feldspar porphyry. The rock, especially the dacite porphyry, appears to be quite unaltered and sulfide mineralization (molybdenite and pyrite) is absent.

Note that the specimens in which quartz veinlets are conspicuous have been indicated on the geological map by "Q".

Iron Sulfides

Both pyrite and pyrrhotite are common within the target area; there does seem to be a tendency for the metavolcanics to contain abundant pyrrhotite whereas the porphyry intrusions are characterized more by disseminated pyrite. In an attempt to get some impression of the distribution of iron sulfides in relationship to the geology, estimates were made by J.R. Woodcock, without attempting to differentiate between the two minerals. Most of these estimates were made on hand specimens. This does present some problems which should be taken into consideration when interpreting the map:

- a. In the dark rocks, especially the metavolcanics, the sulfide content can be grossly underestimated.
- b. Hand specimen estimates tend to be lower than field estimates; a few estimates were made during traverses.
- c. In a few places the pyrite has been oxidized completely and so estimates have been tempered by observation of the amount and type of limonite.

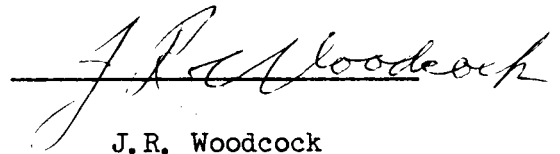
The estimates are made according to relative amounts and noted as nill, trace, low, medium and high. No absolute values have been placed on these relative categories; however, to gain some perspective one might assume that high iron sulfide content is > 8% by volume.

This qualitative map of the iron sulfide content (figure 6) reveals a number of important features:

- a. An area with values generally " \geq medium" is partly co-extensive with the southern stock.
- b. A second area of "> medium" iron sulfide content corresponds to the southeast part of the white feldspar porphyry and its related (?) rhyolite.
- c. Except in a few local spots, the iron sulfide content of the Nelson Batholith is negligible.
- d. The pyrite content of the dacite porphyry stock is also negligible, even where this stock and its adjacent host rocks have abundant quartz veinlets.

Copper

Most of the exploration on this property has been for copper-gold which occurs in a fractured zone that trends north-easterly through the adit areas. Chalcopyrite, accompanied by abundant pyrrhotite and pyrite, occurs mainly in the metavolcanics.


J. R. Woodcock

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Aylwin Costs -- Field Work and Geology Report

Wage Costs

J.R. Woodcock:

June 19, 20	2	days
July 14 - 30	4	days
Aug. 6 - 13	2	days
Oct. 26 - 29	1	day
Nov. 5 - 13	2	days
Nov. 21 - 28	2 $\frac{1}{2}$	days
Dec. 4 - 13	3	days

16 $\frac{1}{2}$ days @ \$330.00 = \$ 5,445.00

Dennis Gore:

June 19, 25	2	days
July 1, 3	2	days
July 17 - 20	4	days
July 27 - 30	2	days
Sept. 12 - 26	2 $\frac{1}{2}$	days
Oct. 3	1	day
Oct. 23 - 29	5	days

13 days @ \$100.80 = 1,314.40

Paul Stanneck:

July 19, 30	2	days
Aug. 7, 11	2	days

4 days @ \$100.80 = 403.20

Dave Miller:

July 19	1	day
Aug. 7	1	day

2 days @ \$64.80 129.60

Daryl James:

June 25	1	day @ \$50.40
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50.40

Loren Poznikoff:

July 3, 5	2	days @ \$50.40
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100.80

K.A. Woodcock:

Aug. 6, 7, 13	2 $\frac{1}{2}$	days @ \$43.20
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108.00

Total Wage Costs 8,051.40

Miscellaneous Costs:

Food, Accommodation, Thin Sections,
Drafting, Reproductions

1,000.00

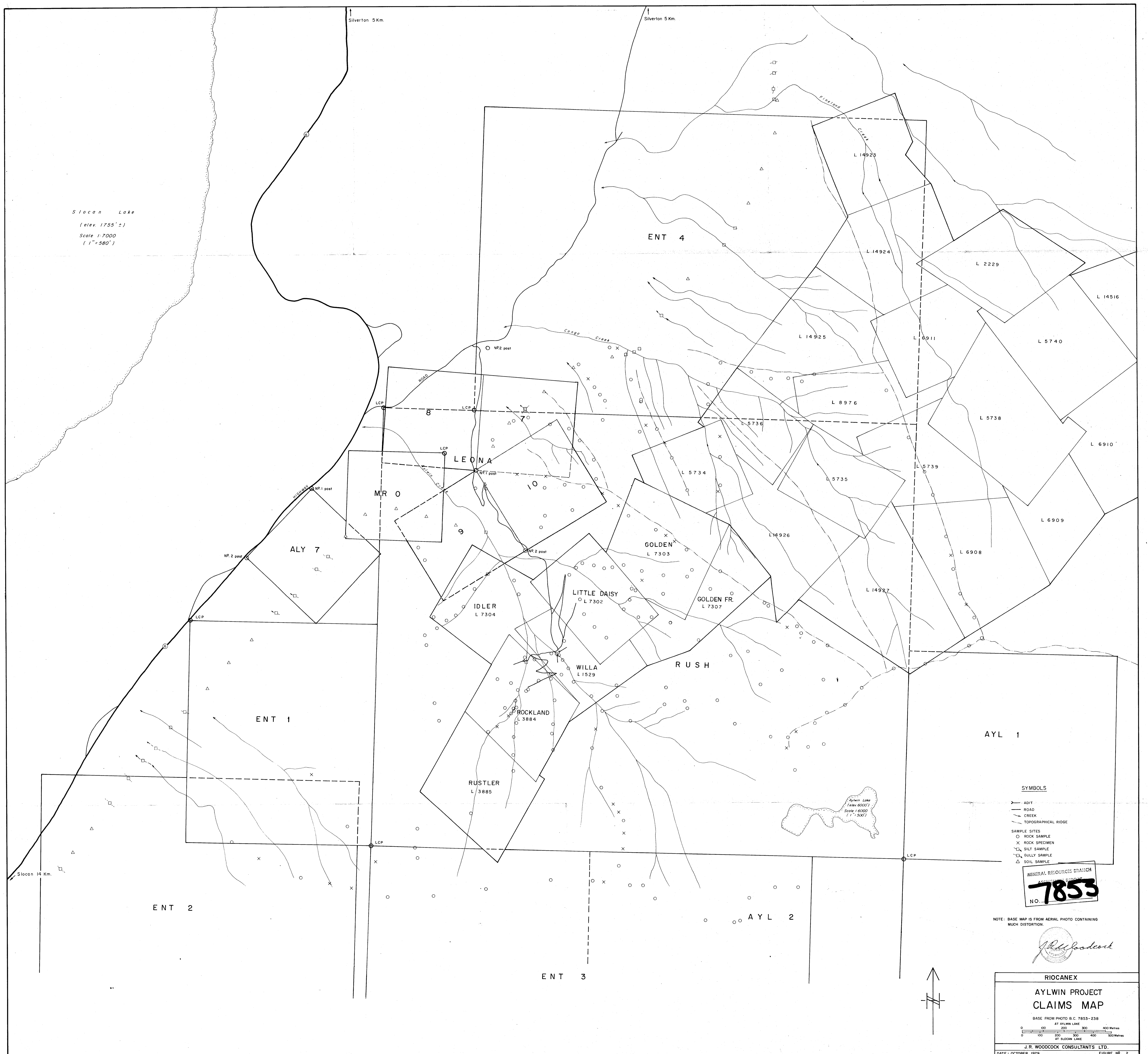
Total Costs \$ 9,051.40

J.R. Woodcock
J.R. Woodcock

Silverton 5 Km.

Silverton 5 Km.

Slocan Lake
(elev. 1755' ±)
Scale 1:7000
(1" = 580')



SYMBOLS

- ADIT
- ROAD
- CREEK
- TOPOGRAPHICAL RIDGE
- SAMPLE SITES
- ROCK SAMPLE
- × ROCK SPECIMEN
- SILT SAMPLE
- △ SOIL SAMPLE

MINERAL RESOURCES BRANCH
7853
NO.

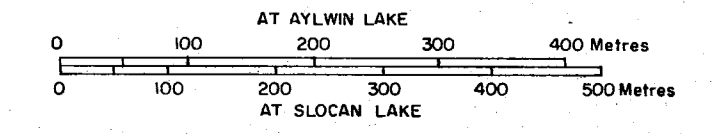
NOTE: BASE MAP IS FROM AERIAL PHOTO CONTAINING MUCH DISTORTION.

J.R. Woodcock

RIOCANEX

**AYLWIN PROJECT
CLAIMS MAP**

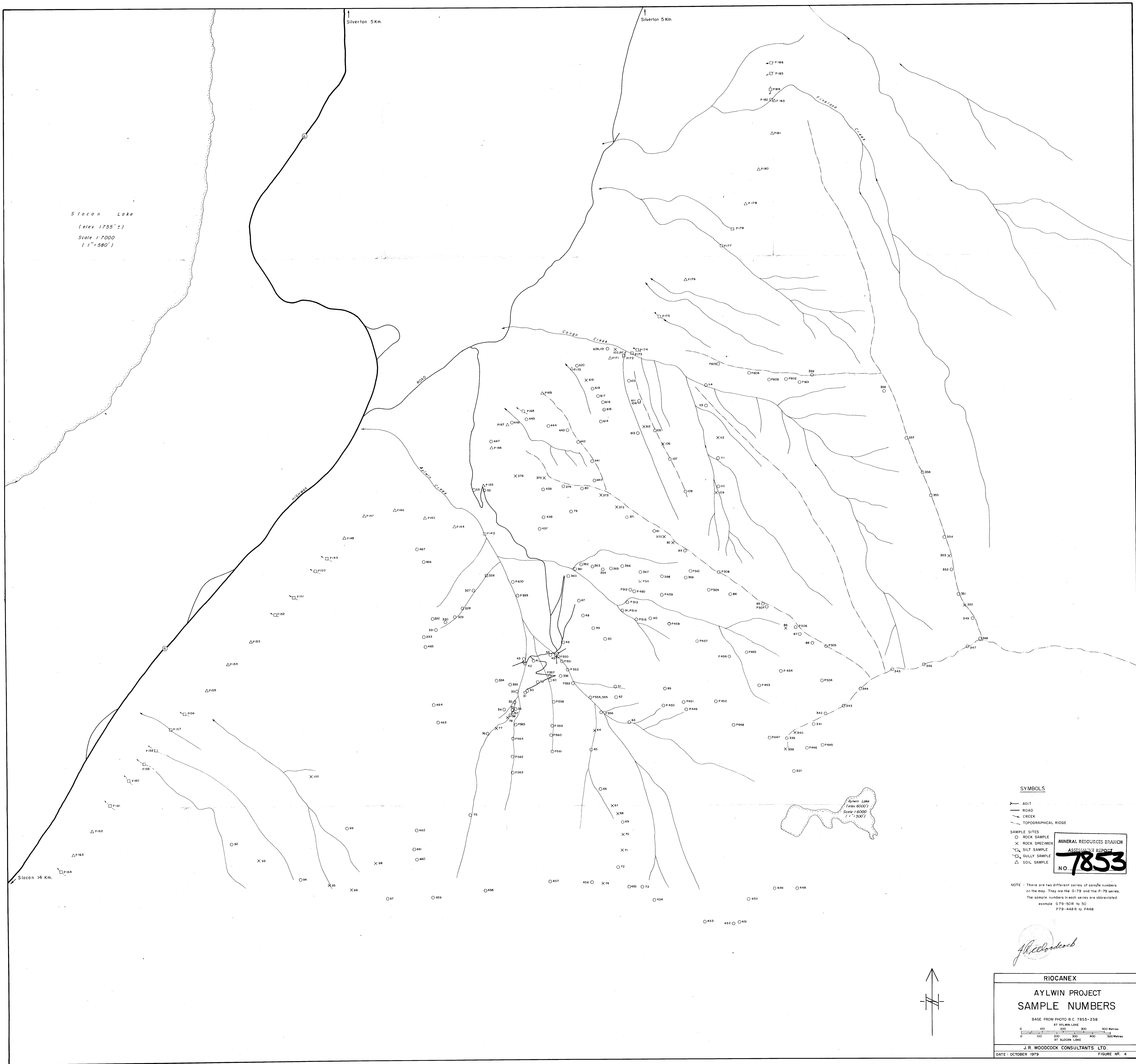
BASE FROM PHOTO B.C. 7853-238



J. R. WOODCOCK CONSULTANTS LTD.

DATE: OCTOBER 1979

FIGURE NO. 2



Slocon Lake
(elev. 1755'±)
Scale 1:7000
(1" = 580')

Silverton 5 Km.

Silverton 5 Km.

Slocon 14 Km.

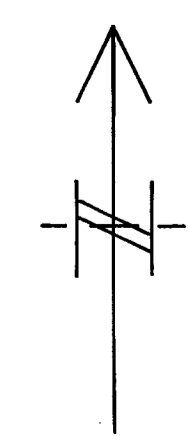
SYMBOLS

- ADIT
 - ROAD
 - CREEK
 - TOPOGRAPHICAL RIDGE
- SAMPLE SITES
- ROCK SAMPLE
 - × ROCK SPECIMEN
 - SILT SAMPLE
 - △ GULLY SAMPLE
 - ▽ SOIL SAMPLE

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. **7853**

NOTE: There are two different series of sample numbers on the map. They are the S-79 and the P-79 series. The sample numbers in each series are abbreviated. example S79-50R to 50 P79-448R to P448

J.R. Woodcock



RIOCANEX

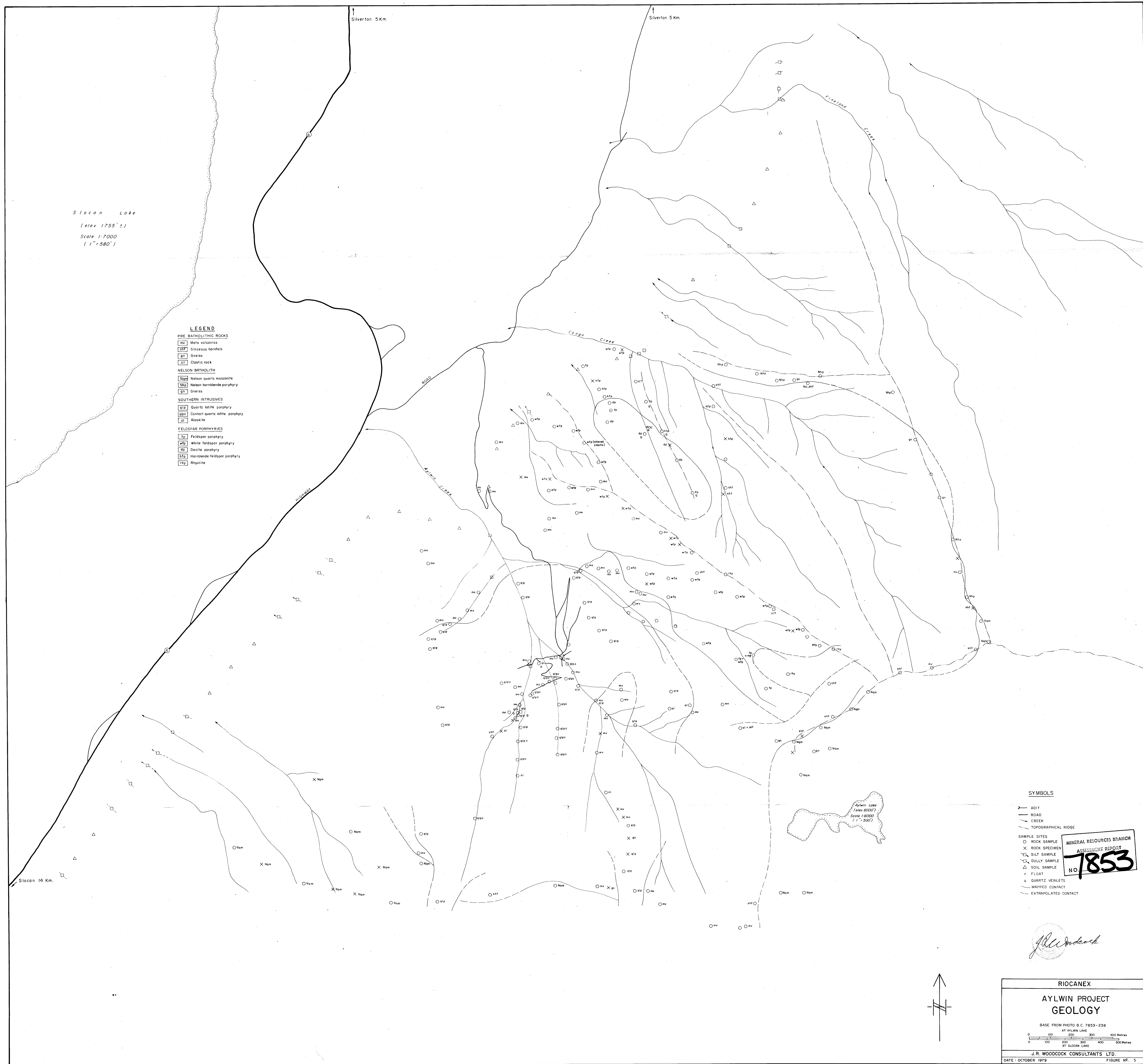
AYLWIN PROJECT
SAMPLE NUMBERS

BASE FROM PHOTO B.C. 7853-238
AT AYLWIN LAKE
0 100 200 300 400 Metres
0 100 200 300 400 500 Metres
AT SLOCON LAKE

J. R. WOODCOCK CONSULTANTS LTD.
DATE: OCTOBER 1979 FIGURE NO. 4

Slocan Lake
(elev. 1755' ±)
Scale 1:7000
(1" = 580')

- LEGEND**
- PRE-BATHOLITHIC ROCKS**
- mv Meta volcanics
 - shf Siliceous hornfels
 - gn Gneiss
 - cr Clastic rock
- NELSON BATHOLITH**
- nm Nelson quartz monzonite
 - np Nelson hornblende porphyry
 - gn Gneiss
- SOUTHERN INTRUSIVES**
- qsp Quartz latite porphyry
 - qcp Contact quartz latite porphyry
 - al Alaskite
- FELDSPAR PORPHYRIES**
- fp Feldspar porphyry
 - wfp White feldspar porphyry
 - dp Dacite porphyry
 - hfp Hornblende feldspar porphyry
 - ry Rhyolite



SYMBOLS

- ADIT
 - ROAD
 - CREEK
 - TOPOGRAPHICAL RIDGE
- SAMPLE SITES**
- ROCK SAMPLE
 - × ROCK SPECIMEN
 - SILT SAMPLE
 - △ GULY SAMPLE
 - △ SOIL SAMPLE
 - F FLOAT
 - QUARTZ VEINLETS
 - MAPPED CONTACT
 - - - EXTRAPOLATED CONTACT

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO 7853

J.R. Woodcock

RIOCANEX

AYLWIN PROJECT
GEOLOGY

BASE FROM PHOTO B.C. 7853-238

AT AYLWIN LAKE
Scale 1:500
0 100 200 300 400 Metres

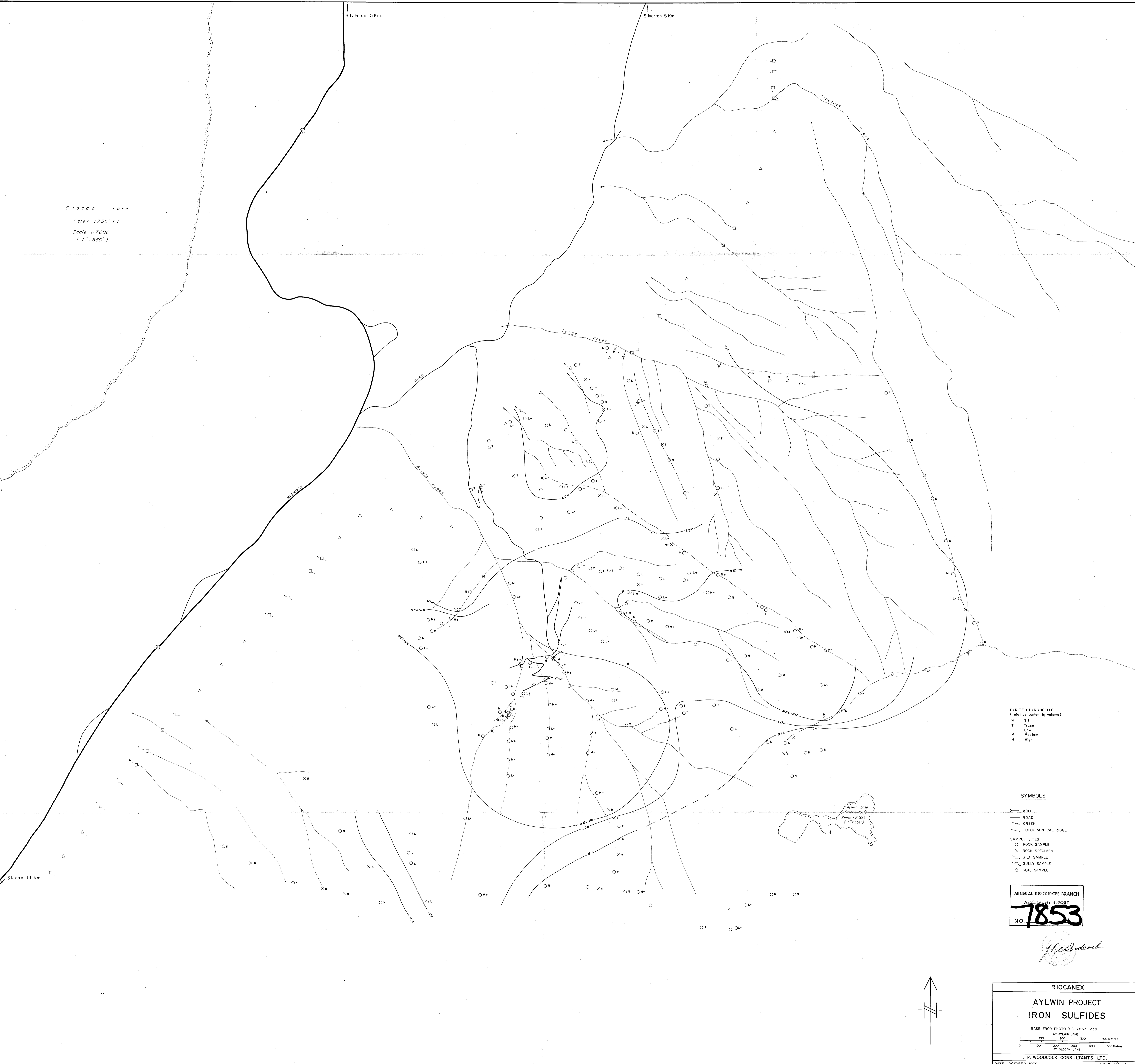
AT SLOCAN LAKE
Scale 1:7000
0 100 200 300 400 500 Metres

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Slocon Lake
 (elev. 1755' ±)
 Scale 1:7000
 (1" = 580')

Silverton 5 Km.

Silverton 5 Km.

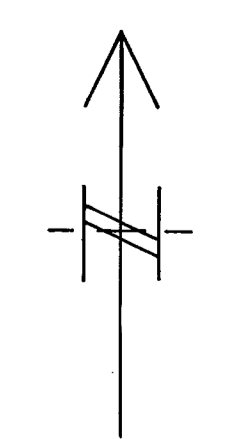


PYRITE & PYRRHOTITE
 (relative content by volume)
 N Nil
 T Trace
 L Low
 M Medium
 H High

SYMBOLS
 — ADIT
 — ROAD
 — CREEK
 — TOPOGRAPHICAL RIDGE
 ○ ROCK SAMPLE
 × ROCK SPECIMEN
 □ SILT SAMPLE
 ◻ BULLY SAMPLE
 △ SOIL SAMPLE

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
 No. 7853

J. Woodcock



RIOCANEX
 AYLWIN PROJECT
 IRON SULFIDES
 BASE FROM PHOTO B.C. 7853-238
 0 100 200 300 400 METRES
 AT AYLWIN SCALE
 0 100 200 300 400 500 METRES
 AT SLOCON SCALE
 J.R. WOODCOCK CONSULTANTS LTD.
 DATE: OCTOBER 1979 FIGURE NO. 6