ASSESSMENT REPORT

ROCK AND STREAM SEDIMENT GEOCHEMISTRY

REGIONAL PROGRAM

ON THE

SCOTIA NO 1 AND 2, BIG, SCOTIA SOUTH AND ECSTALL NORTH CLAIM GROUPS, SCOTIA RIVER AREA SKEENA MINING DIVISION, BRITISH COLUMBIA

NTS: 103I/4E, 103H/14E
LAT: 53°55'N LONG: 129°30' W

REORT FOR OWNER

BISHOP RESOURCES INC.

REPORT BY

Arne Birkeland, P. Eng., ARNEX RESOURCES LTD.

REPORT DATED

January 24, 2000

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ROCK AND STREAM SEDIMENTGEOCHEMISTRY RECONNAISSANCE PROGRAM SOUTH SCOTIA RIVER AREA

1. SUMMARY

In the fall of 1997, Arnex Resources Ltd. conducted a diamond drill program with encouraging results for Bishop Resources Inc. on the Albere Zone on the Scotia 1 and 2 claims, which are under option from Falconbridge Limited. A regional grassroots reconnaissance program was then carried out by Arnex for Bishop recognizing that a potential Volcanogenic Massive Sulphide ("VMS") belt was hosted in the Scotia – Quall Metamorphic Complex between the Scotia property in the north and the Ecstall VMS belt in the south. Extensive claims were staked based on positive results.

In November 1998, a regional stream sediment and rock chip geochemical program was conducted on the southern claim blocks (Assessment Report, Birkeland, January 18, 1999). The objective of the 1998 program was to conduct assessment work on the newly staked South Scotia claim blocks while at the same time, acquire additional valuable data for Bishop by following up targets indicated by the 1997 program. Anomalies were identified and were found to be associated with a pyritic felsic meta-volcanic unit.

A follow up regional program was conducted during August and September, 1999, which is the subject of this report. A helicopter supported two-person crew in conducted prospecting and geochemical stream silt and rock chip sampling approximately over a 12 km by 30 km area at a cost of $50,943.16.

Several areas returned anomalous stream sediment results for one or more of the elements: zinc, copper, lead, silver, gold and barium, which are indicative of VMS-type deposits. Significant results were also obtained from rock chip samples of base metal sulfide float and from outcrop sampling.

Semi-massive to massive sulphides were discovered in a road outcrop at the F-13 Showing on the Big 2 Claim. A series of showings appears to be present where rusty outcrops trend northerly up the mountainside, and which return down-slope anomalous soil and stream sediment values.

Anomalous values for Cu and Zn were also encountered on the IYF Soil Line in the Ecstall North area and at the North Ridge Showing in the Scotia North area.

The results of the 1999 stream sediment sampling and geological reconnaissance program indicate excellent potential for the discovery of additional VMS-type deposits on claims held by Bishop Resources Inc.

2. INTRODUCTION

A diamond drill exploration program was carried out on the Scotia Deposit by Arnex Resources Ltd. for Bishop Resources Inc. in the summer and fall of 1997. Based on encouraging results, and recognizing from newly released GSC geological mapping that a massive sulphide belt was present that contains both the Ecstall and Scotia districts, a reconnaissance geochemical survey was carried out during November, 1997 to test for the potential for additional VMS deposits in the Scotia-Quaal metamorphic complex between the Skeena and Ecstall Rivers. This program was carried out in the Scotia River area from October 29 to November 11, 1997 by a four-person field crew under the direction of Arnex Resources Ltd. on behalf of Bishop Resources Inc.

The 1997 program discovered anomalies and showings, and extensive staking was done to the north and to the south of the Scotia Prospect. A follow-up prospecting, stream sediment and rock chip sampling reconnaissance program was conducted on the southern claim blocks in 1998. Two high priority target areas were identified on the Big 2 and IYF 1 claim blocks.

A regional prospecting and geochemical program was carried out on the entire claim belt between August 5 and September 16, 1999. The program was carried out by Arne Birkeland, P.Eng. and Stan Seney, an experienced geotechnical assistant under contract to Arnex Resources Ltd. A Reported Summary of Activities is presented in Table 4. A total of 43 days or part days (due to weather) are reported, however only 30 days are reported in appendix B, Statement of Expenditures, the difference being due to part days due to weather.

The program was supported by fly-camp and truck access, and by helicopter access based from Prince Rupert. Prospecting and geochemical sampling were conducted in approximately 43 creek drainages over a 12 km by 30 km area, and a total of 79 stream sediment, 15 rock chip and 54 soil samples were taken during the 1999 program.

Total expenditures for the 1999 program were $50,942. Analytical costs for the 148 samples taken total $2,411.39. As shown by the chart in Appendix B, Statement of Expenditures, analytical costs equal 5.25% of total Expenditures.

The number of samples taken was considerably less than the number anticipated due to the following logistical difficulties:

1. Very bad storm conditions were present on the North Coast during August and September, 1999. Helicopter access was hampered severely by low ceilings and poor visibility, and often part days could only be worked because of weather.

2. The project area is very rugged. Numerous traverses were very slow, and it often could take one man-day's time to get only 2 or 3 samples.

Table 4

1999 Scotia Regional Program
Reported Summary of Activities
Conducted by Arnex Resources Ltd.

Date 1999	Field Day Worked A Birkeland	Description	Field Day Worked S Seney	Description
05-Aug	1	Travel	1	Travel
06-Aug	1	Travel	1	Travel
07-Aug				
08-Aug				
09-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
10-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
11-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
12-Aug	1	Geochem sampling, prospecting,mapping	1	Geochem sampling, prospecting
13-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
14-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
15-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
16-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
17-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
18-Aug	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
19-Aug				
20-Aug				
21-Aug				
22-Aug				
23-Aug				
24-Aug				
25-Aug				
26-Aug				
27-Aug				
28-Aug				
29-Aug				
30-Aug	1	Geochem sampling, prospecting,mapping	1	Geochem sampling, prospecting
31-Aug	1	Geochem sampling, prospecting,mapping	1	Geochem sampling, prospecting
01-Sep				
02-Sep				
03-Sep				
04-Sep				
05-Sep				
06-Sep	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
07-Sep	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
08-Sep				
09-Sep				
10-Sep	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
11-Sep	1	Geochem sampling, prospecting	1	Geochem sampling, prospecting
12-Sep	1	Reclamation	1	Reclamation
13-Sep	1	Reclamation	1	Travel
14-Sep	1	Reclamation	1	Travel
15-Sep	1	Travel		
16-Sep	1	Travel		
Total	23		21	

3. In previous years, numerous creeks were sampled where easy access was possible. The 1999 program followed up previously defined specific target areas where foot access was often slow and tedious and sample production was extremely limited.

4. There was a record snow pack left from the winter of 1999 that did not melt in many drainages in the alpine areas. This restricted the number of stream sediment sampling sites that were available in the alpine and thus reduced the number of stream sediment samples taken.

Recognizing the potential for VMS deposits in the Scotia – Quall complex, a two year economic geology, mineral potential and geologic mapping project was initiated in 1999 by the BC Department of Mines (Figures 5-2, 5-3). Geologic Fieldwork Paper 2000-1, Geology and Mineral Potential of the Ecstall VMS Belt, Aldrick and Gallagher, is appended as Appendix E. A one week fly camp was shared by Arnex personnel and Dani Alldrick and Chris Gallagher in the Big Falls Creek area. Both parties benefited from shared logistics, and the sharing of general geologic data.

3. PROPERTY INFORMATION

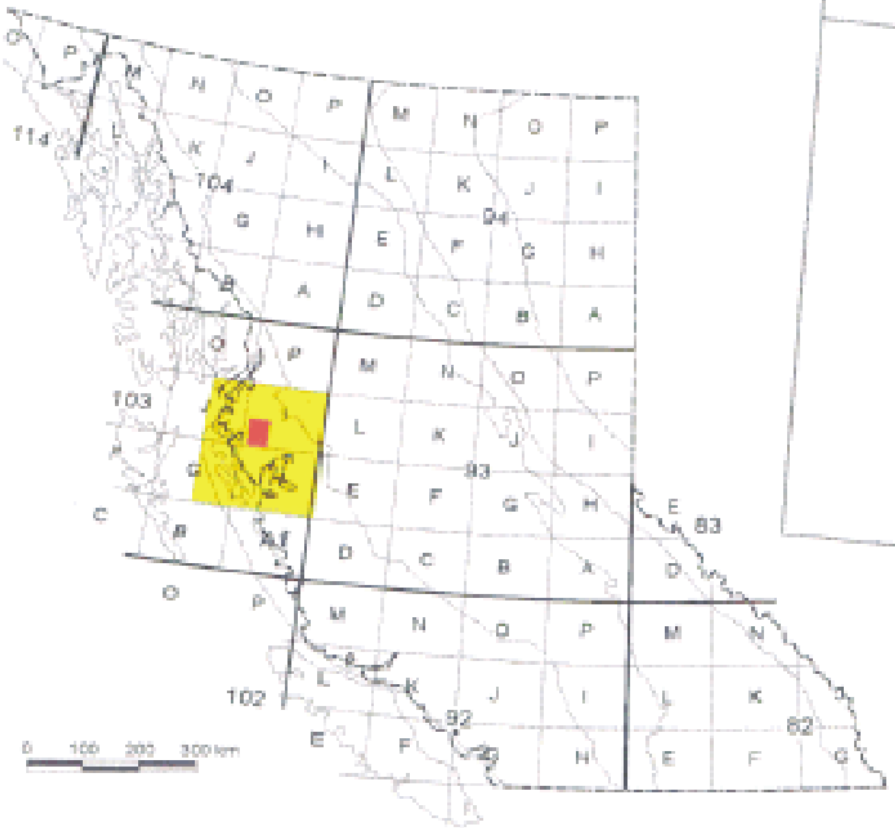
3.1. Location and Access

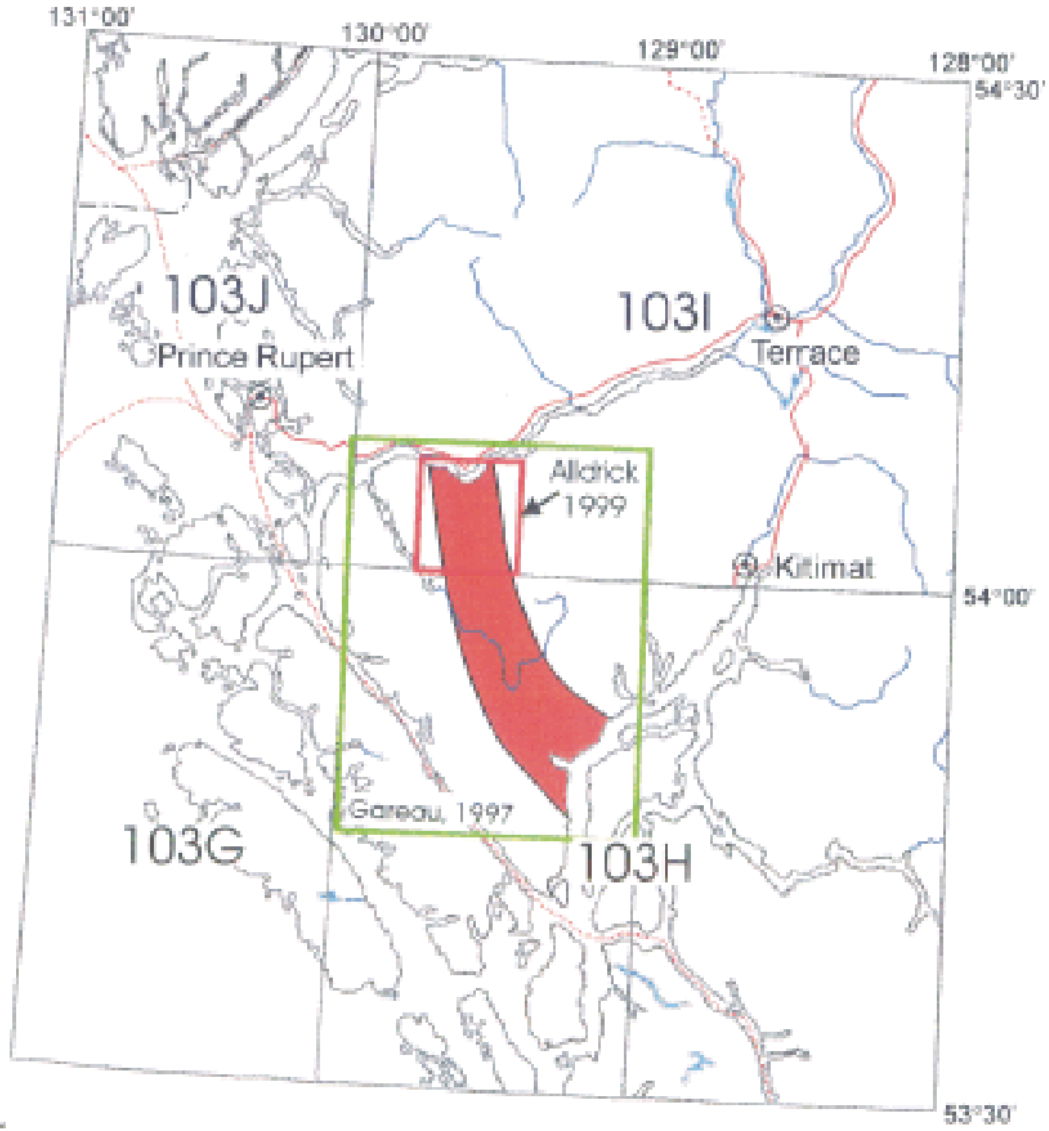
The Scotia River area is located approximately 40 km southeast of Prince Rupert in west central British Columbia (Figure 3-1). The area of interest lies within a belt of metavolcanic and metasedimentary rock trending approximately north-south between the Skeena River to the north and the Ecstall River to the south (Figure 3-2). Access is by helicopter from Prince Rupert or by barge from Kwinitsa on the north shore of the Skeena River to the Scotia River logging camp on the south shore of the Skeena River, owned by Interfor (International Forest Products) and operated by Bear Creek Contracting of Terrace, BC (Figure 3-2). Extensive logging roads provide 4X4 truck access to many tributaries of both the Scotia and Ecstall Rivers. A Jet Ranger 206-B helicopter was chartered from Vancouver Island Helicopters for access to areas not covered by logging roads. A fly camp was established at Big Falls Creek as a base for doing detailed work in the F-13 area.

3.2. Property Description and Ownership

The 1999 program was conducted on the Scotia No 1 and No 2, Big, Scotia South and Ecstall North Claim Groups. The Scotia No 1 Claim Group consists of three claims totaling 58 units (Event # 3121255), while the Scotia No 2 Claim Group consists of 2 claims totaling 38 units (Event # 3121256). The Big Claim Group (Event # 3127120) consists of 8 claims totaling 95 units. The Scotia South Claim Group (Event # 3127125) contains 85 units in 5 claims. The Ecstall North Claim Group (Event # 3127128)

Figure 5-2: 1999-2000 Geological Survey Branch Mapping and Economic Geology Survey





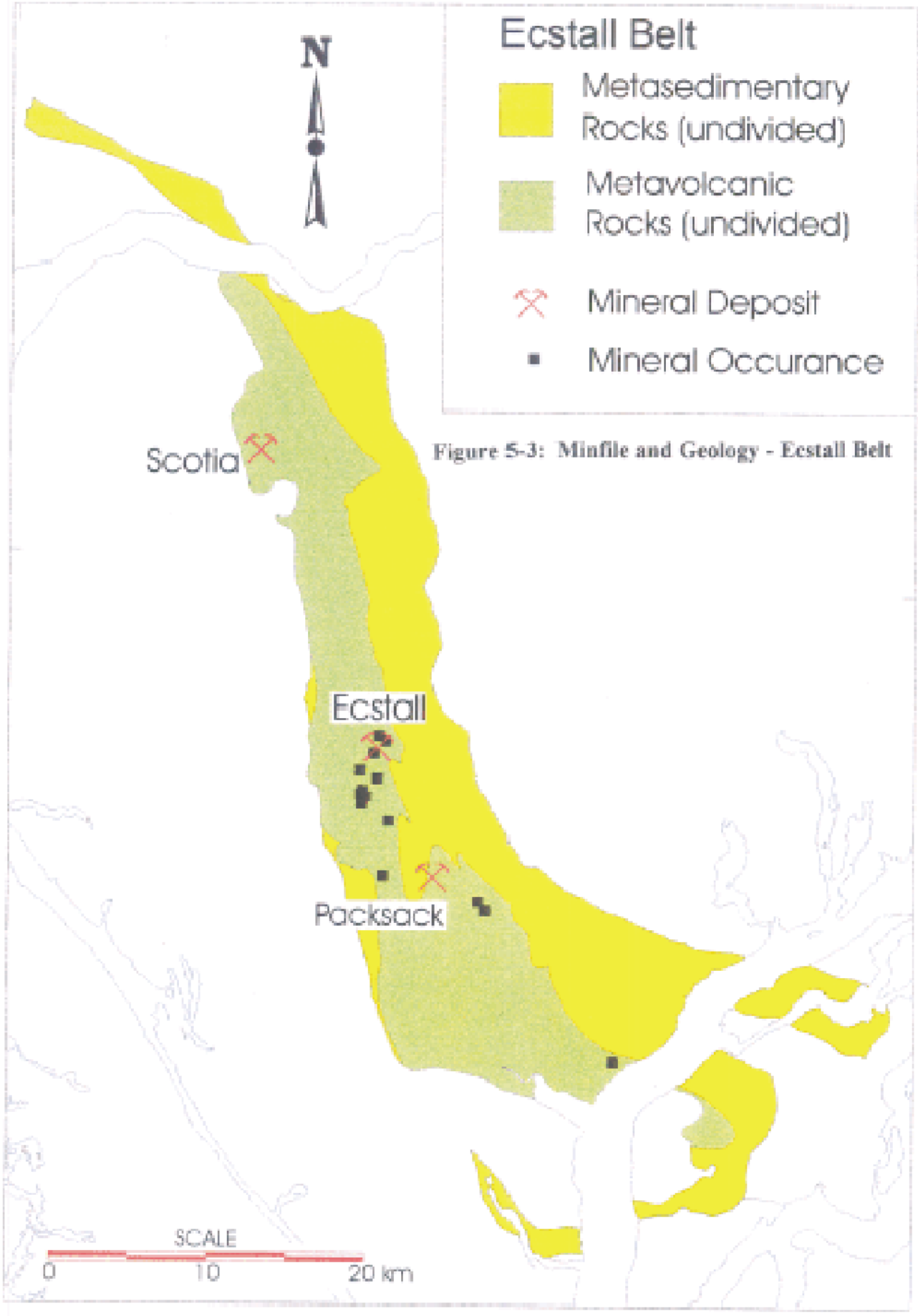


Figure 5-3: Minfile and Geology - Ecstall Belt

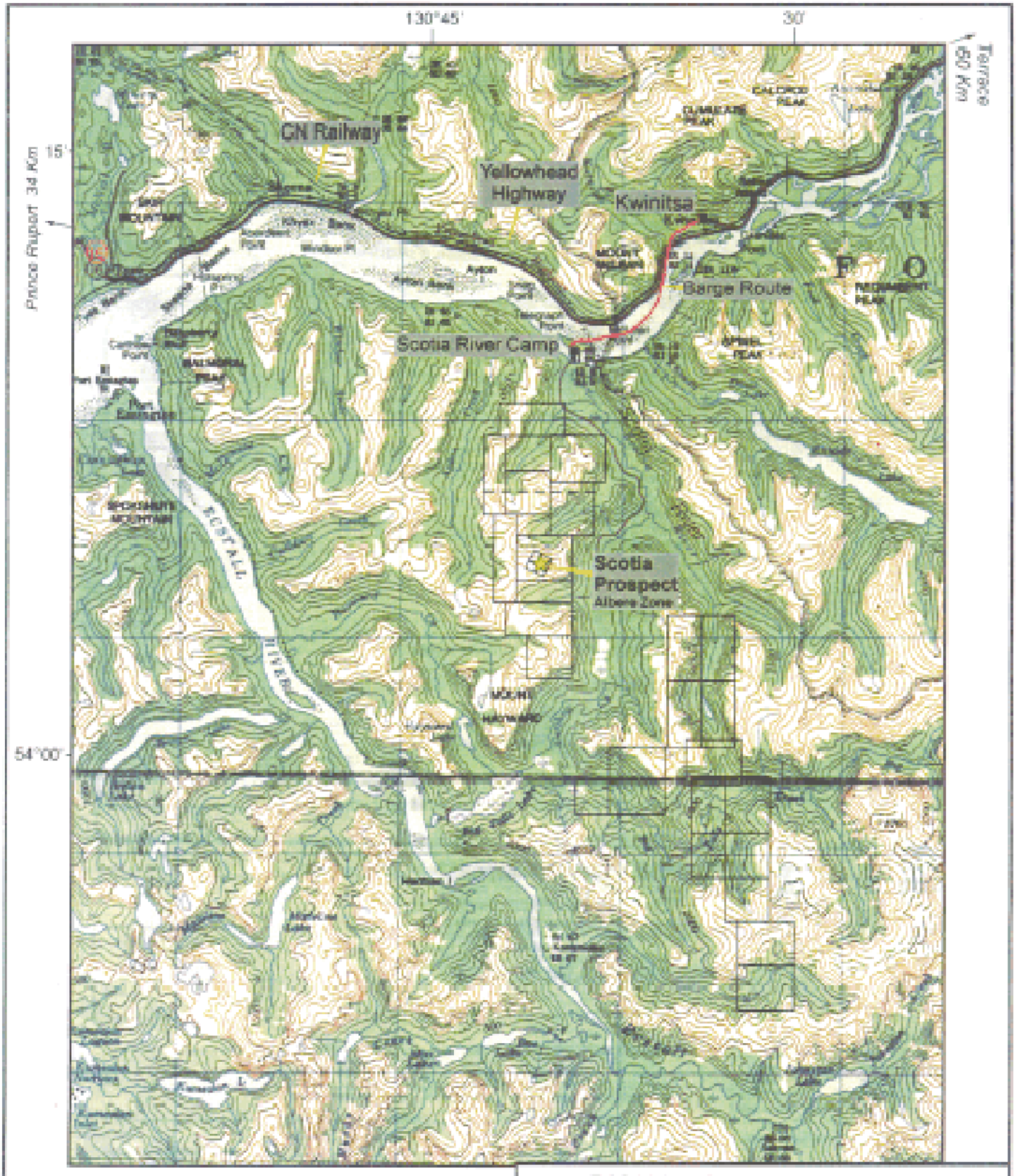
BISHOP RESOURCES INC.

Scotia Project

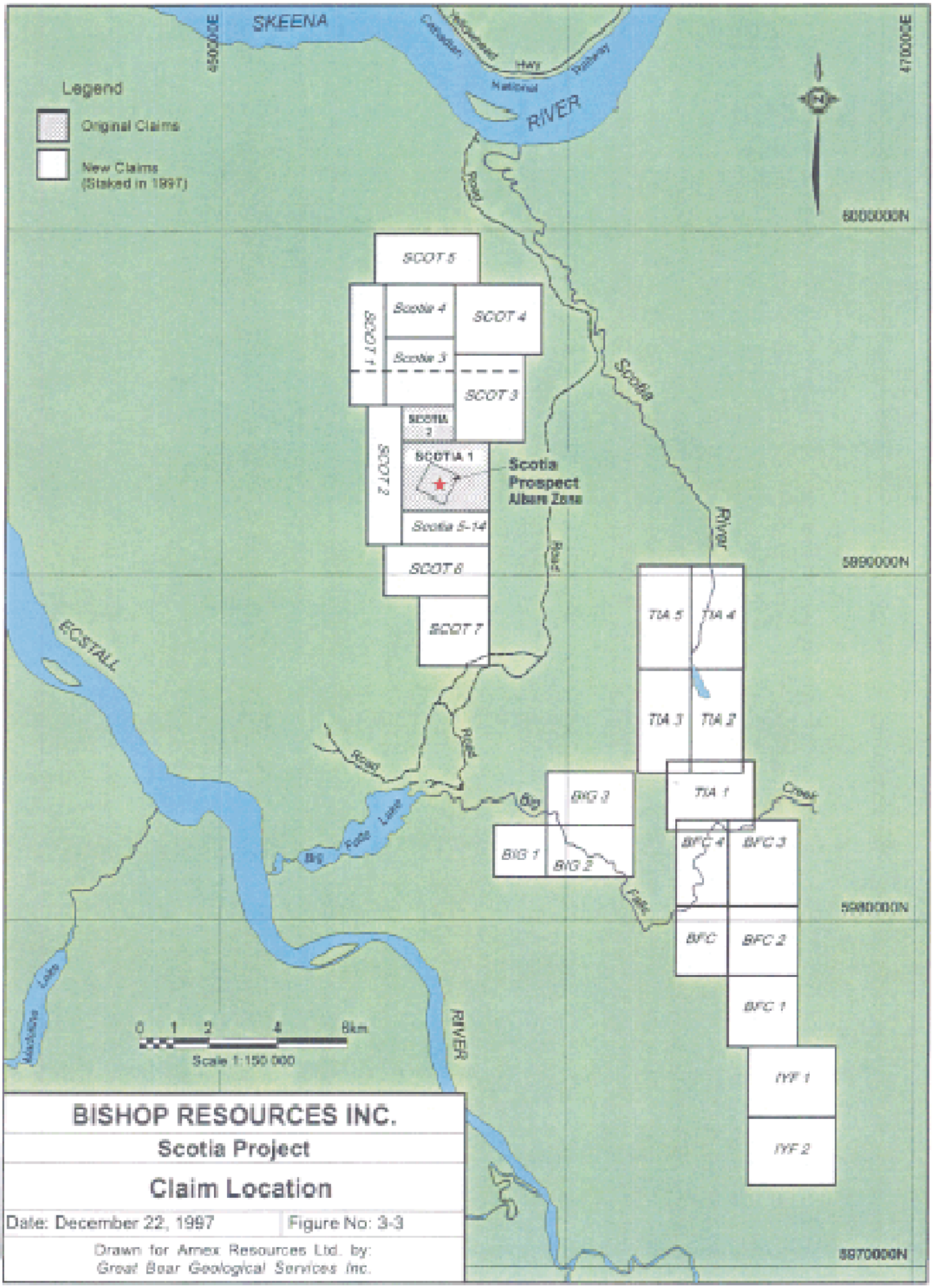
Property Location Map - British Columbia

Date: December 22, 1997 | Figure No: 3-1

Drawn for Arnex Resources Ltd. by: *Great Bear Geological Services Inc.*



BISHOP RESOURCES INC.	
Scotia Project	
Property Location Map - Skeena River Area British Columbia	
Date: December 22, 1997	Figure No: 3-2
Drawn for Arnex Resources Ltd. by: Great Bear Geological Services Inc.	



BISHOP RESOURCES INC.

Scotia Project

Claim Location

Date: December 22, 1997 | Figure No: 3-3

Drawn for Amex Resources Ltd. by:
Great Bear Geological Services Inc.

contains 4 claims totaling 72 units. One years assessment work was filed on all claims on November 9, 1999 as Statements of Work, Event #'s 3141848, 3141847, 3141849, 3141845,and 3141846 respectively.

All claims are all owned by Bishop Resources Inc.

The claims are plotted in Figures No. 3-3 to 3-8, Claim Group Location Maps and are listed in Appendix A, Claim Tenure.

3.3. Physiography

Most of the area covers the Kitimat Ranges of the Coast Mountains at elevations from 25 m at the Skeena River to peaks up to 1,580 meters. Terrain is mostly mountainous with smooth, steep, bare rock faces to moderate brush and tree covered slopes and intervening, U-shaped swampy river valleys of the Scotia River, Big Falls Creek and Carthew Creek drainage systems (Figure 3-2). Lower elevations of the larger valleys have been extensively logged.

3.4. Climate and Vegetation

The Prince Rupert area has a coastal climate characterized by high precipitation and moderate temperatures. Winters are mild and wet with precipitation occurring mostly as rain with snowfall generally restricted to higher elevations. Temperatures reach lows of about -10°C. Summer weather is variable, typically with mixed rain and cloud, and temperatures from 10°C to 25°C. Lakes are generally ice-free by early April. Freeze-up typically occurs in mid-November. Heavy forest cover is restricted to parts of main valley floors, with sparse coniferous growth on hillsides up to about 1,000 meters. Fir, hemlock and willows dominate with lesser poplar, birch and alder. Short brush and lichen exists above 1,000 meters.

3.5. Infrastructure

All of the main valleys in the area are accessible by logging roads maintained by Bear Creek Contracting. The area is currently being logged, and most valleys have been logged from recently to over 30 years ago. More recent, deactivated logging roads are still accessible by four wheel drive vehicles.

A Canadian National rail line is located along the north bank of the Skeena River, which links Prince Rupert with interior British Columbia. Electric power is available on the south bank of the Skeena River near the Scotia River camp (Figure 3-2). Water is plentiful year round.

Figure 3.4: Claim Location Map, Scotia South Claim Group (1:50,000)

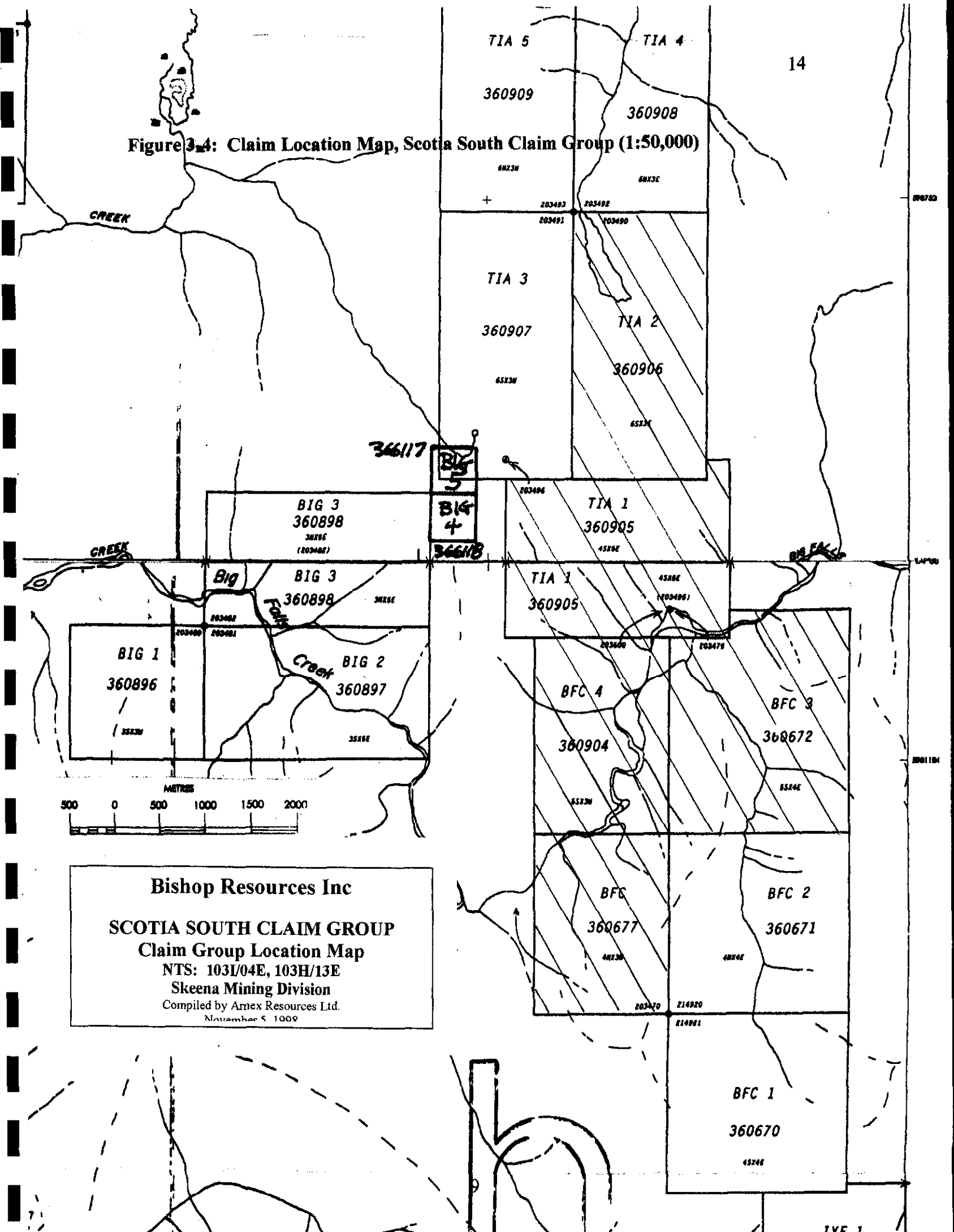


Figure 3-5: Claim Location Map, Ecstall North Claim Group (1:50,000)

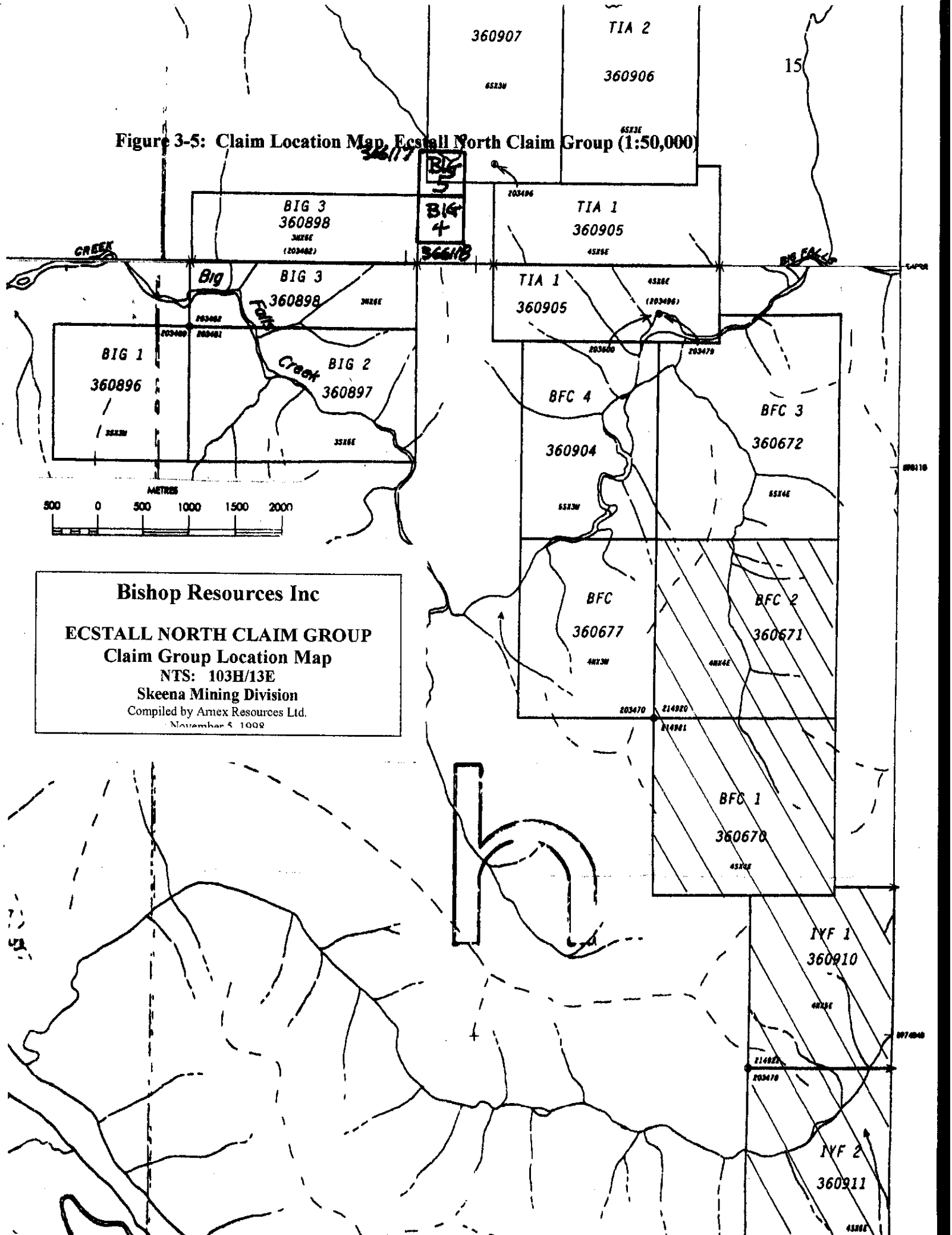
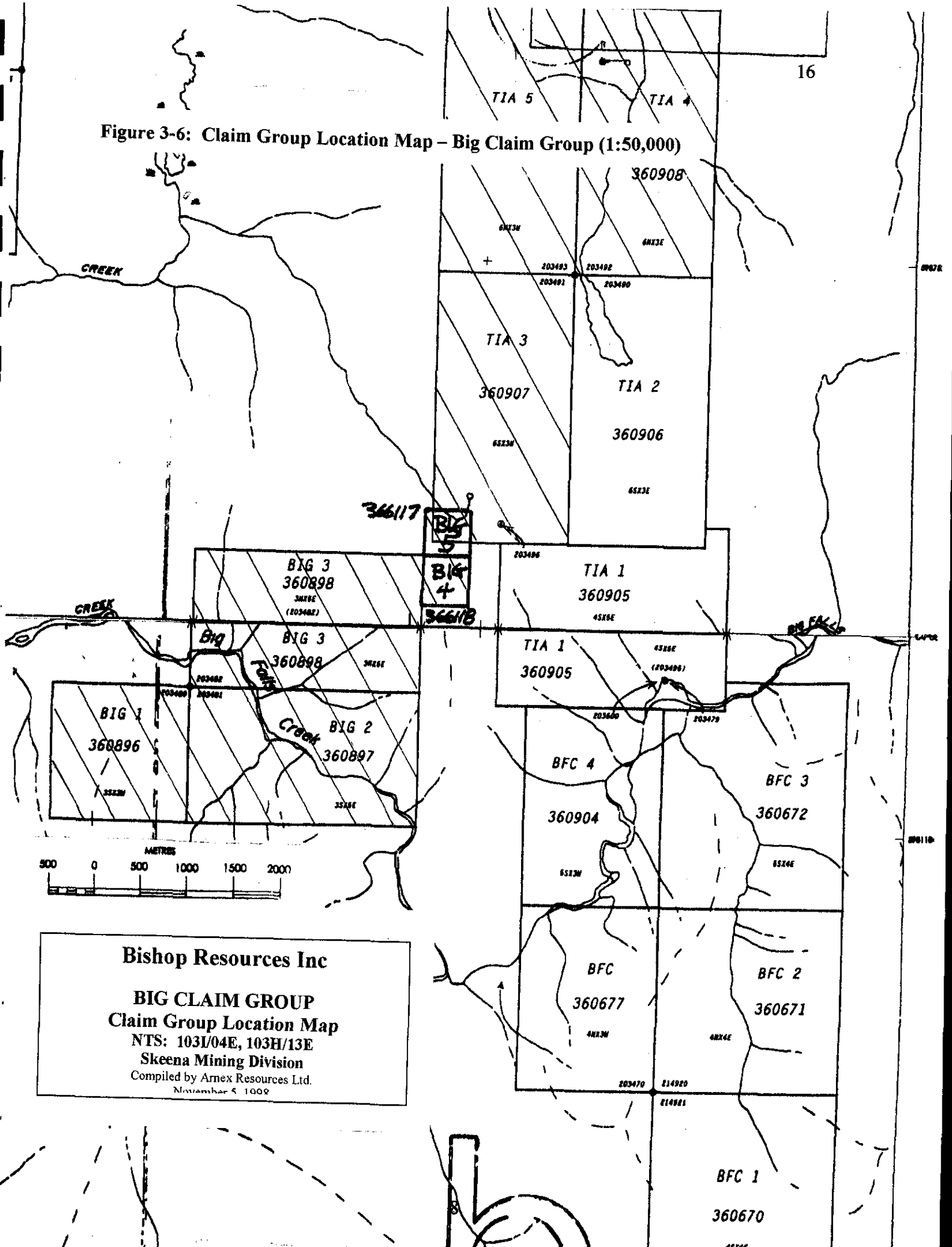


Figure 3-6: Claim Group Location Map – Big Claim Group (1:50,000)



Bishop Resources Inc

BIG CLAIM GROUP
Claim Group Location Map
NTS: 103I/04E, 103H/13E
Skeena Mining Division
Compiled by Arnex Resources Ltd.
November 5, 1999

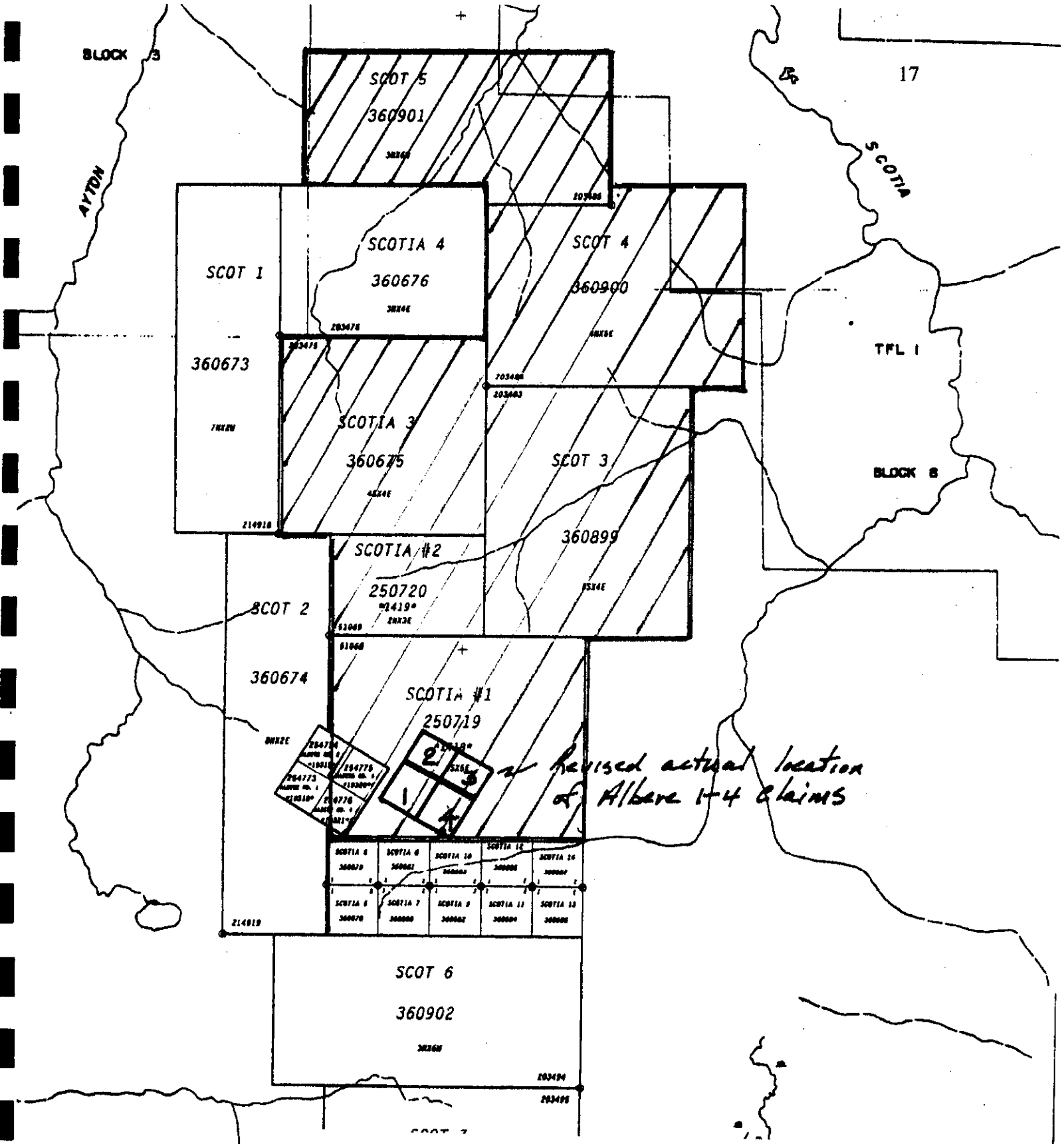


Figure 3-7: Claim Group Location Map – Scotia No. 1 Claim Group (1:50,000)

Bishop Resources Inc

SCOTIA GROUP NO. 1
Claim Group Location Map
NTS: 103I/04E
Original Produced at 1:31,680
Compiled by Arnex Resources Ltd.
July 7 1998

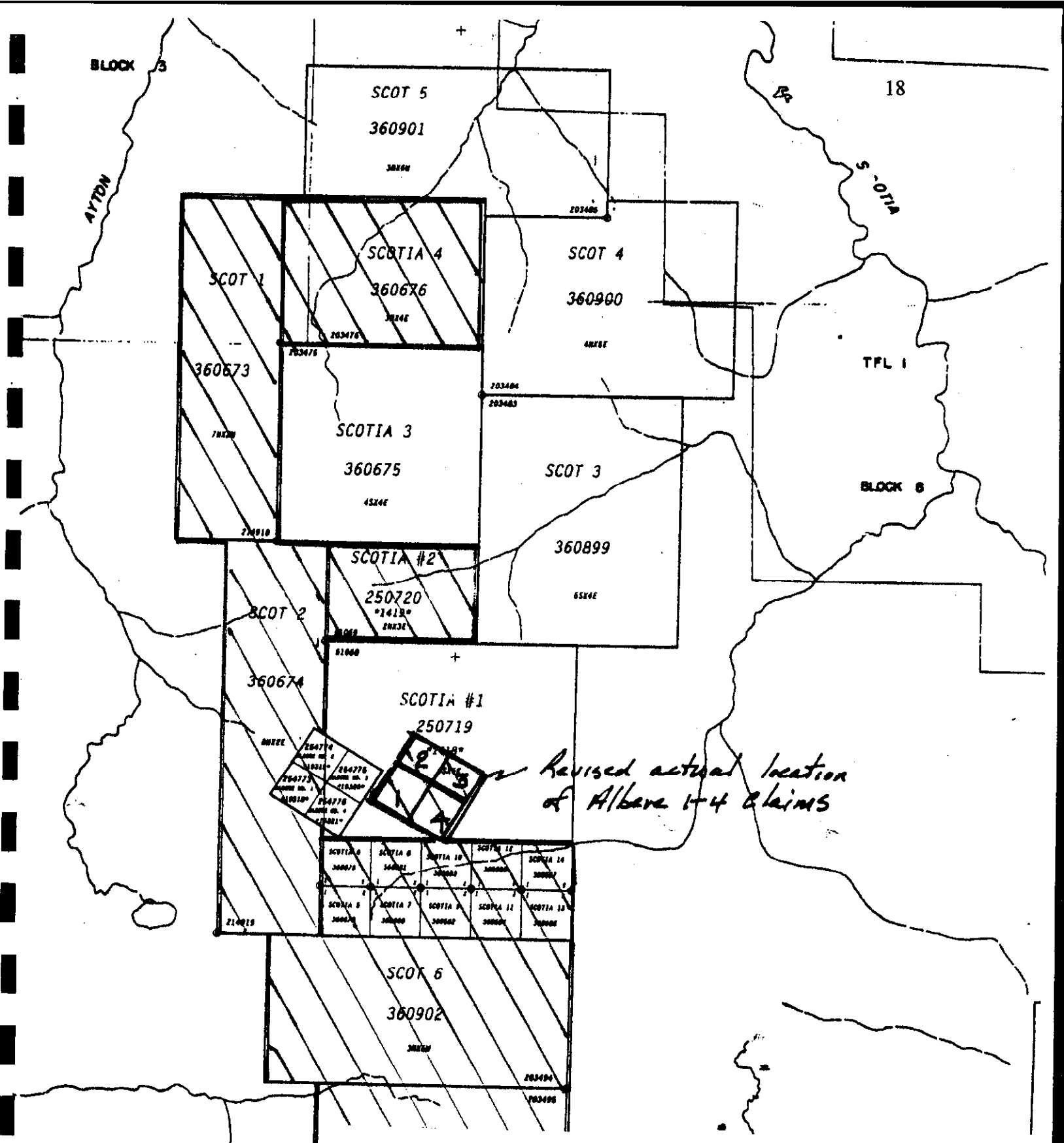


Figure 3-8: Claim Group Location Map – Scotia No 2 Claim Group (1:50,000)

Bishop Resources Inc

SCOTIA GROUP NO. 2
Claim Group Location Map
NTS: 103I/04E
Original Produced at 1:31,680
Compiled by Arnex Resources Ltd.
July 7, 1999

4. GEOLOGY AND MINERALIZATION

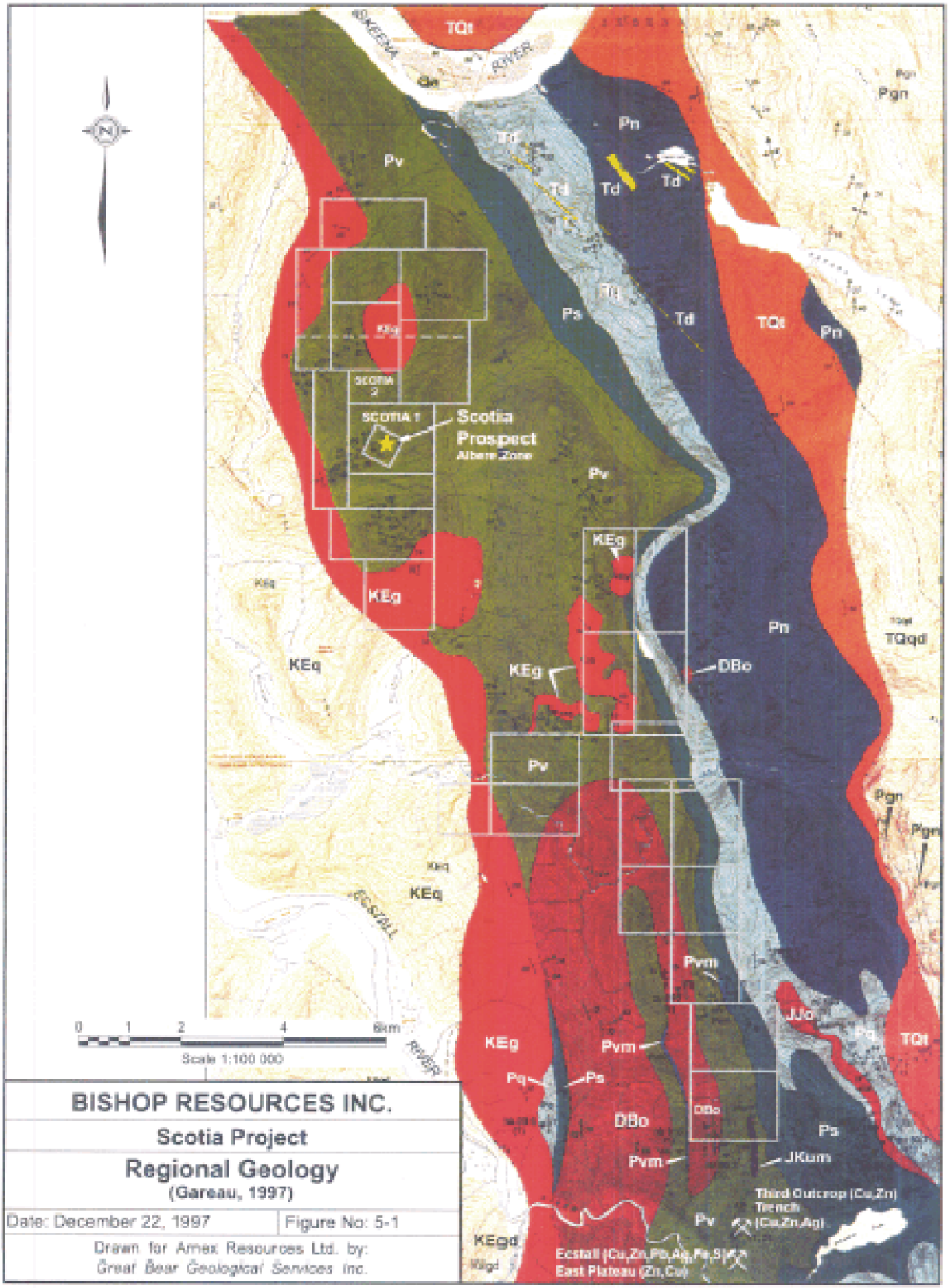
4.1. Regional Geology

Most of the Prince Rupert - Skeena area is underlain by plutonic and metamorphic rocks of the Coast Plutonic Complex (Hutchinson, 1982). Plutonic rocks consist of major plutons and smaller irregular bodies, mostly of quartz diorite and granodiorite composition. Diorite and quartz monzonite are less common, and gabbro and granite are rare. Most of the plutonic rocks are probably Mesozoic in age. A north-northwest-trending belt of metavolcanic and metasedimentary rocks known as the Scotia - Quaal metamorphic belt runs through the area between the Skeena River and Douglas Channel (Figure 5-1, Gareau, 1997). Both metavolcanic and metasedimentary rocks are present. The principal metamorphic assemblage in the Scotia River area is amphibolite, biotite +/- muscovite +/- garnet schists (Hutchinson, 1982). Map units represent lithological-metamorphic packages, which probably contain strata of variable ages. Because of the strong metamorphic overprint and lack of fossils, the age of these strata is uncertain; however, radiometric dating places them at Pre-Early Jurassic age.

With the exception of a small wedge of metasedimentary rocks at the western margin of the belt, the units from west to east, as defined by Gareau (1997) are: the Big Falls orthogneiss (D_{BO}), in the southern part only; a metavolcanic unit (Pv), a metasedimentary clastic unit (Ps), a quartzite unit (Pq) and a layered gneiss unit (Pn). The units of interest are the metavolcanic unit (Pv), which hosts the Scotia Deposit and several other VMS-type deposits north and south of the Ecstall River, and the clastic metasedimentary unit (Ps), particularly near its contact with Pv. The meta-volcanic stratigraphy (Pv) consists of foliated mafic rocks (amphibolite), interbedded amphibolite and gneiss, and felsic meta-volcanic rocks (felsic gneiss, schist), which are overlain by a meta-sedimentary unit (Ps). Two sulphide rich felsic units have been traced northerly from the Scotia deposit (Firure 9-1). Stream sediment and soil anomalies indicate these units are mineralized on a regional basis. At least one similar unit has also been mapped on a regional basis at the F-13 Showing, and at the southernmost area on the claim groups at the IYF claims which may cover the strike extension of the Ecstall rhyolite to the south (Figure 9-2).

The major structural trend in the area is northwest. The region has undergone three phases of structural deformation, which has resulted in broad northwest trending anticlinoriums and synclinoriums with isoclinally folded limbs. Metamorphism is variable, from low to high grade and generally increasing in grade from west to east.

The Ecstall Pluton, which borders the metavolcanic and metasedimentary Scotia - Quaal metamorphic belt to the west, is Cretaceous in age while the Quottoon Pluton to the east is Late Paleocene to Early Eocene in age (Gareau, 1997). The Ecstall pluton appears to have been generated and mobilized from east to west during an intense period of



BISHOP RESOURCES INC.

Scotia Project

Regional Geology
(Gareau, 1997)

Date: December 22, 1997	Figure No: 5-1

Drawn for Amex Resources Ltd. by:
Great Bear Geological Services Inc.

LEGEND

QUATERNARY

PLEISTOCENE AND RECENT

Qa — Gravel, sand, silt, and clay

TERTIARY

EOCENE

Td — Garnet-biotite quartz diorite dykes; unfoliated and crosscutting

LATE PALEOCENE - (?) EARLY EOCENE

TQt — Quottoon pluton: hornblende +/- biotite tonalite and quartz diorite (locally, in the northern part, includes felsic biotite +/- garnet-bearing tonalite); medium to coarse grained; strongly foliated and locally lineated

CRETACEOUS

ALBIAN - CENOMANIAN

Keg — Ecstall pluton: epidote-hornblende-biotite quartz diorite to granodiorite (locally, in the southern part, includes foliated, fine grained, epidote-free, leucocratic garnet-biotite quartz diorite); unfoliated except within 1 km (generally less than 300 m) of its margin

JURASSIC - EARLY CRETACEOUS (?)

JKum — Mafic and ultramafic plutonic rocks: coarse grained, locally weakly lineated hornblende diorite, gabbro and rusty weathering coarse hornblendite

JURASSIC

EARLY JURASSIC

JJo — Johnston Lake orthogneiss: epidote-biotite-hornblende tonalite augen gneiss; medium grained; strongly lineated and weakly to strongly foliated

DEVONIAN

MIDDLE DEVONIAN

DBo — Big Falls orthogneiss: muscovite-biotite-hornblende tonalite augen gneiss; locally garnet- and epidote-bearing; medium grained; well foliated

PALEOZOIC (?)

PRE-EARLY JURASSIC

Pv — Metavolcanic unit: Pv, mafic and intermediate metavolcanic rock with minor metasedimentary and

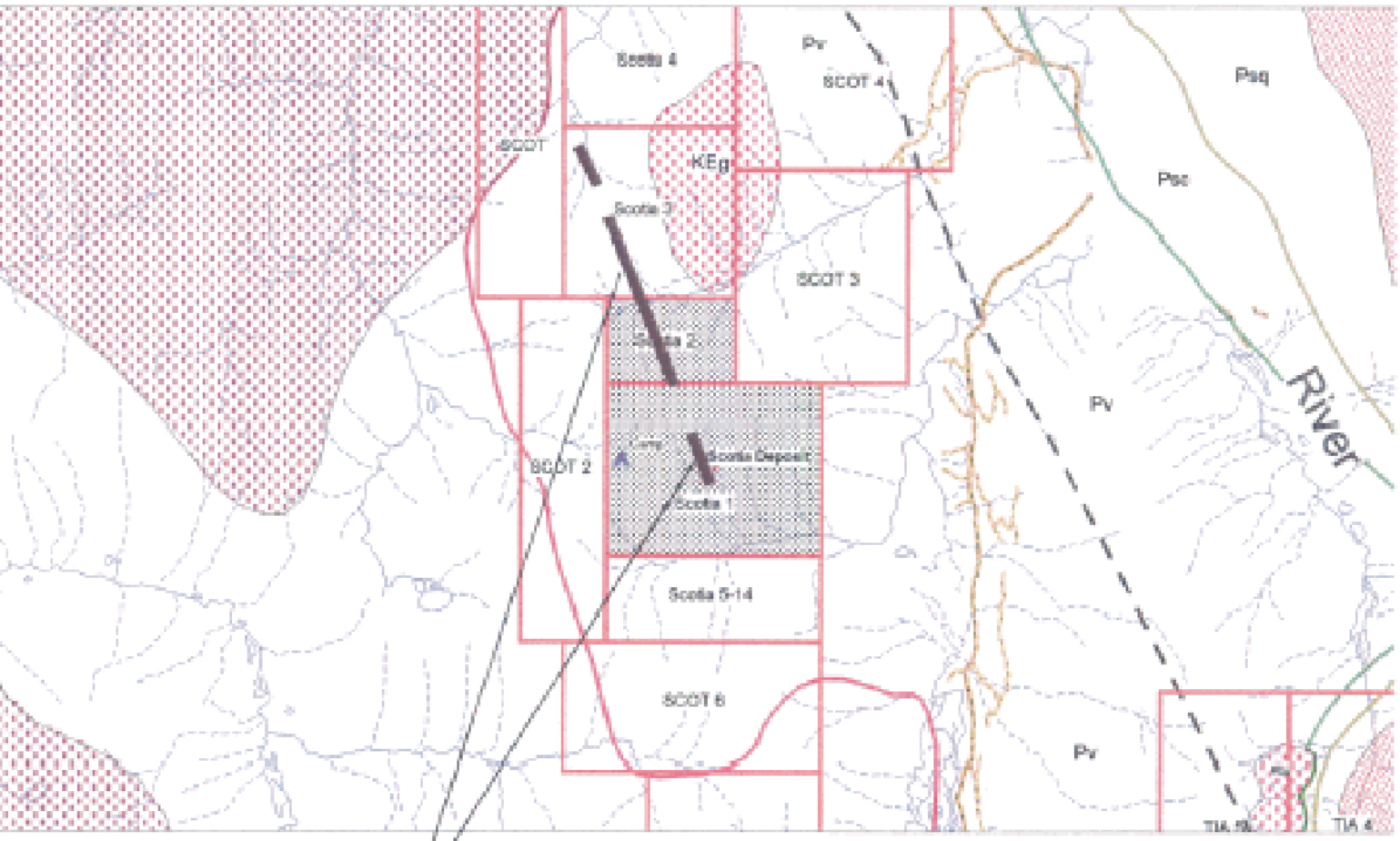
Pvm — felsic metavolcanic interlayers (locally Pvm, marble); locally pyritiferous; strongly foliated and lineated; mafic component is fine grained amphibole +/- chlorite schist locally with relict clastic texture; intermediate component is biotite quartzofeldspathic semi-schist; minor quartzite, semi-pelitic to pelitic schist, and quartz-rich semi-schist of probable volcanic protolith

Ps — Metasedimentary clastic unit: epidote-rich, hornblende-biotite gneiss; fine to medium grained; locally contains epidote-rich and granitoid clasts; well developed foliation and lineation

Pq — Quartzite unit: Pq, white to grey, locally pyritiferous quartzite interlayered with lesser amounts of biotite-hornblende gneiss, fissile mica schist, black phyllite to meta-argillite, semi-pelitic to pelitic schist; well foliated

Pn — Layered gneiss unit: epidote-hornblende-biotite quartz diorite and granodiorite gneiss and garnet amphibolite; some epidote + garnet pods; medium grained; well defined compositional layering on a scale of tens of centimeters; strongly foliated and locally lineated

BISHOP RESOURCES INC.	
Scotia Project	
Regional Geology - Legend (Gareau, 1997)	
Date: December 22, 1997	Figure No: 5-1a
Drawn for Amex Resources Ltd. by: Great Bear Geological Services Inc.	



Trace of favourable Rusty Pyritic Felsic Meta-volcanic Unit

1999 Scotia Regional Program

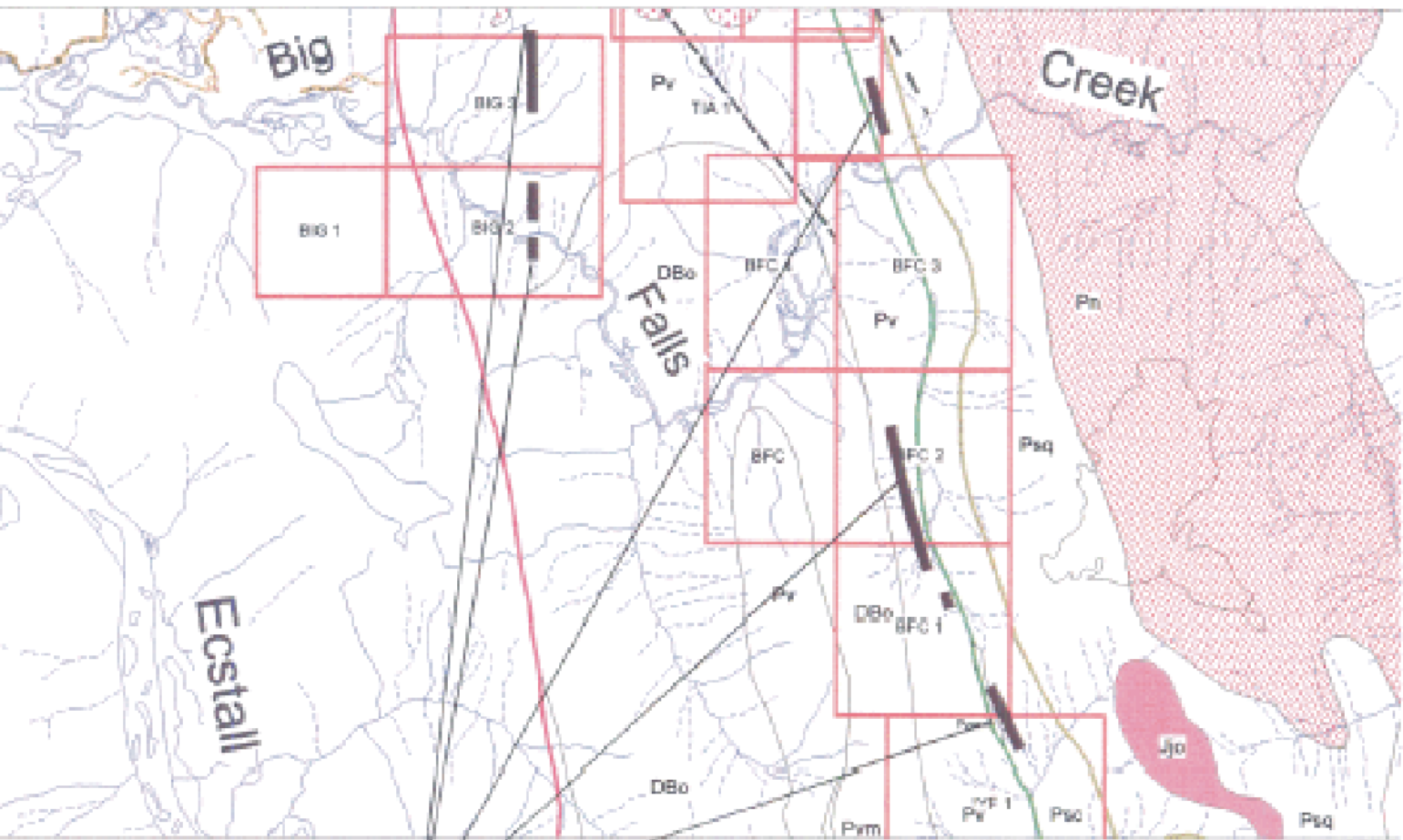
Regional Geology

Scotia North Belt

Scale: 1:100,000 **NTS:** 103I/4

Compiled by Amex Resources Ltd January 2000

Figure 9-1



Trace of favourable Rusty Pyritic Felsic Meta-volcanic Unit

1999 Scotia Regional Program

Regional Geology

Scotia South, Ecstall North Belt

Scale: 1:100,000 NTS: 103H/14

Compiled by Amex Resources Ltd January 2000

Figure 9-2

metamorphism of Late Cretaceous age (Hutchinson, 1982). The Ecstall pluton intrudes into, and replaces the favourable Pv unit in the Scotia North area.

4.2. Local Surficial Geology

The area has been heavily glaciated by alpine and valley glaciers and by at least one ice sheet, although glacial deposits are rare (Hutchinson, 1982). Discontinuous deposits of colluvium till and talus are present on mountain slopes locally, and thick Pleistocene and Recent fluvial deposits occupy river valleys. At higher elevations, outcrop is abundant, and is partly covered by a thin mantle of unconsolidated skree. The area is geologically favorable for development of transportation and utility routes, and many roads have already been constructed in the valleys to facilitate logging.

4.3. Mineralization

There are 18 mineral occurrences in the Ecstall belt (Appendix E, Alldrick, 2000) of which three, Ecstall, Packsack and Scotia are classified as deposits with reserves.

The Ecstall massive sulphide deposit was explored for its sulphur content by Texas Gulf Sulphur in the late 1950's and early 1960's. Reserves of approximately six million tons were delineated by extensive diamond drilling and underground development. As cheap sources of sulphur were then developed as a by-product of the petroleum industry, the Ecstall deposit was never mined.

The massive sulphide mineralization consists of two lenses of 90% to 100% pyrite hosted in altered felsic meta-volcanic rocks. The pyrite is coarse grained, and contains minor amounts of chalcopyrite and sphalerite. The lenses dip vertically, with silicification prevalent along the western contact (Chert from hangingwall?), and Cu mineralization to the east in Thirteen Creek interpreted as footwall stringer zone mineralization.

The Packsack occurrence hosts two massive sulphide lenses contained within a 600 m long pyritic quartz sericite schist (altered meta-rhyolite?). The sulphides occur as stratiform bands of pyrite and sphalerite. An exhalite chert-mariposite horizon lies structurally above and lateral to the mineralized zone.

The Albere massive sulphide occurrence (the Scotia Prospect) is a zinc rich massive sulphide deposit which is located approximately 12 km south of the Skeena River (Figure 5-1). Stratiform layered semi-massive and massive sulphides (to 18 m thickness) are present at the base of a thick felsic meta-volcanic unit. The banded zinc rich sulphides are underlain by stringer copper zinc mineralization. Exhalitive chert is present but of uncertain relationship to the massive sulphides. A high-grade resource of approximately 230,000 tonnes grading 12% Zn, and a lower grade resource of 1.3 million tonnes of 4%

Zn have been outlined by drilling to 1997. The mineralized zone is open along strike to the north and down dip to the west.

5. 1999 RECONNAISSANCE EXPLORATION PROGRAM

5.1. Introduction

The objective of the 1999 reconnaissance program was twofold; namely to complete a field program to satisfy assessment work requirements for the subject claim blocks and to provide valuable exploration data to the to the property owner on it's substantial claim holdings.

The 1999 stream sediment and rock geochemical program was regional in nature and designed to test both geological and geochemical targets identified during previous programs while doing adequate work to satisfy assessment work requirements on each claim group.

Sample locations and significant results are plotted on Figures 6-1 to 6-17, 7-1 to 7-3, and 8-2, 8-3. Selected results for stream sediment, rock chip and soil geochemistry are tabulated as Tables 1 to 3 respectively and a complete record of Analytical Procedures and Certificates is included as Appendix C. Field observations are recorded as Appendix D, Geochemical Data Sheets.

5.2. Sampling Program

Moss mat stream sediment samples were collected on a regional basis and prospecting and rock chip sampling of the creek float was conducted at the same time. In areas thought to be mineralized, soil sampling was conducted either on a grid basis or as soil lines located down slope below sulphide rich units. Detailed geologic mapping and channel sampling were carried out at the F-13 Showing.

Threshold values for stream sediments (and soils) for various elements are listed in Table 5. These values have been statistically defined by BC RGS 42, for the Central Gneiss Complex rocks (PTCb). This geochemical environment is considered to approximate the Pv unit for which there is no data.

Table 1
Scotia Reconnaissance Program
Selected Stream Sediment Values

c:\myfiles\scotia99\sx9902.xls

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
99501	<5	<0.2	<2	240	167	3.13	<1	1	25	<2	170
99502	<5	<0.2	<2	170	72	2.5	<1	1	12	2	106
99503	<5	<0.2	<2	120	29	3.16	1	1	32	<2	74
99504	<5	<0.2	<2	90	25	2.98	<1	<1	26	<2	82
99505	<5	<0.2	<2	140	21	2.67	<1	3	16	4	406
99506	<5	<0.2	<2	70	23	3.54	<1	3	31	<2	102
99507	<5	<0.2	<2	110	32	3.48	<1	3	25	<2	118
99508	<5	<0.2	<2	190	45	3.92	<1	3	62	2	182
99509	<5	<0.2	<2	200	27	3.27	<1	<1	37	<2	74
99510	<5	<0.2	<2	120	27	3.63	1	1	39	4	120
99511	<5	<0.2	<2	70	25	2.11	<1	<1	21	14	102
99512	<5	<0.2	<2	160	39	2.69	<1	1	26	2	82
99513	<5	<0.2	<2	120	19	1.85	<1	<1	17	<2	40
99514	<5	<0.2	<2	90	36	2.02	<1	<1	25	2	46
99515	<5	<0.2	<2	30	81	0.91	<1	<1	27	<2	14
99516	<5	<0.2	<2	100	60	1.7	<1	<1	24	<2	40
99517	<5	<0.2	<2	60	14	2	<1	1	11	2	36
99518	<5	<0.2	<2	40	14	1.56	1	<1	8	<2	34
99519	<10	<0.2	<2	140	46	2.69	<1	3	13	28	96
99520	<5	<0.2	<2	80	29	1.98	<1	2	8	12	44
99521	<5	<0.2	<2	80	60	3.48	<1	3	12	<2	96
99522	<5	<0.2	<2	100	24	2.96	<1	4	10	<2	64
99523	<5	<0.2	<2	130	41	3.71	<1	4	11	<2	50
99524	<5	<0.2	<2	50	25	2.08	<1	1	9	<2	26
99525	<5	<0.2	<2	40	24	1.89	<1	2	7	<2	24
99526	5	<0.2	2	70	13	2.12	<1	1	6	2	40
99527	<5	<0.2	2	60	20	2.3	<1	2	7	<2	34
99528	10	0.2	<2	80	54	1.58	<1	1	49	14	34
99529	<5	0.2	<2	120	111	3.04	<1	2	16	14	278
99530	<5	0.4	<2	80	205	3.67	<1	3	27	78	598
99531	<5	<0.2	<2	130	39	2.13	<1	2	13	<2	62
99532	<5	<0.2	<2	220	22	2.32	<1	3	10	4	62
99533	<5	0.2	<2	250	47	3.27	<1	3	14	2	80
99534	<5	<0.2	<2	170	20	2.9	<1	2	7	<2	64
99535	<5	<0.2	<2	190	14	4.02	<1	3	6	<2	100
99536	20	<0.2	<2	150	14	4.73	<1	3	3	<2	116
99537	15	<0.2	<2	230	6	3.56	<1	3	3	<2	94
99538	<5	1	<2	180	50	2.56	1	1	15	<2	58
99539	<5	0.2	<2	210	37	3.65	<1	2	37	2	70

Table 1
Scotia Reconnaissance Program
Selected Stream Sediment Values

c:\myfiles\scotia99\sx9902.xls

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
99701	<5	<0.2	<2	160	18	3.01	<1	1	13	<2	46
99702	<5	<0.2	<2	110	14	2.5	<1	<1	12	4	48
99703	<5	<0.2	<2	120	16	2.4	<1	1	11	2	44
99704	45	<0.2	<2	40	20	2.5	<1	1	8	<2	30
99705	<5	<0.2	<2	190	35	3.02	<1	<1	12	2	96
99706	<5	<0.2	<2	260	130	2.71	<1	1	17	2	154
99707	<5	<0.2	<2	190	152	2.74	1	2	20	2	142
99708	<5	<0.2	<2	220	41	2.66	<1	<1	21	8	82
99709	<5	<0.2	<2	180	51	2.71	<1	3	26	<2	72
99710	<5	<0.2	2	130	101	3.7	<1	4	26	16	316
99711	<5	<0.2	<2	90	13	1.27	<1	1	9	<2	28
99712	<5	<0.2	<2	110	11	1.31	<1	<1	5	<2	22
99713	35	<0.2	<2	90	61	2.03	<1	3	15	<2	56
99714	<5	<0.2	<2	60	77	1.52	<1	<1	12	<2	46
99715	5	<0.2	<2	70	27	1.33	<1	<1	7	<2	20
99716	<5	<0.2	<2	80	43	1.71	<1	<1	12	<2	32
99717	<5	<0.2	<2	110	23	2.79	<1	1	12	12	50
99718	<5	<0.2	<2	70	21	1.68	<1	<1	15	2	32
99719	115	<0.2	<2	130	15	2.26	<1	<1	10	2	58
99720	<5	<0.2	<2	90	23	1.85	<1	<1	15	<2	26
99721	<5	<0.2	<2	70	19	2.44	<1	1	9	<2	38
99722	<5	<0.2	<2	120	22	3.23	<1	1	9	<2	34
99723A	<5	<0.2	<2	90	18	1.79	<1	1	6	<2	34
99723B	<5	<0.2	<2	250	65	2.61	<1	3	17	2	64
99725	<5	<0.2	<2	170	25	2.21	<1	3	7	2	68
99726	<5	<0.2	<2	300	42	2.63	1	4	8	4	84
99727	<5	<0.2	<2	210	96	2.52	<1	1	12	8	218
99728	<5	<0.2	<2	140	33	1.74	<1	1	8	4	64
99729	<5	<0.2	<2	110	27	2.13	<1	<1	15	<2	96
99730	<5	<0.2	<2	210	82	3.03	1	<1	29	2	62
99731	<5	<0.2	<2	50	14	1.91	<1	<1	6	<2	28
99732	<5	<0.2	<2	50	13	1.94	<1	1	6	<2	26
99733	<5	<0.2	<2	40	15	4.3	<1	1	11	8	72
99734	<5	<0.2	<2	30	16	7.05	<1	1	7	<2	86
99735	<5	<0.2	<2	40	21	4.7	<1	<1	9	2	86
99736	<5	<0.2	<2	40	21	5.55	<1	3	10	8	86
99737	<5	<0.2	<2	190	25	1.47	<1	1	5	2	74
99738	<5	<0.2	<2	80	17	3.06	<1	1	5	<2	54
99739	<5	<0.2	<2	40	5	1.28	<1	<1	3	6	16
99740	<5	<0.2	<2	50	9	1.78	<1	<1	4	<2	22

Table 2
Scotia Reconnaissance Program
Selected Rock Chip Geochemical Values

A9926814 - CERTIFIED
CLIENT : "ARNEX RESOURCES LIMITED "
# of SAMPLES : 11
DATE RECEIVED : 23-AUG-1999
PROJECT : "SCOTIA "
CERTIFICATE COMMENTS : "ATTN: ARNE BIRKELAND"

c:\myfiles\scotia99\nx9901.xls

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mn ppm	Mo ppm	Na %	Ni ppm	Pb ppm	Zn ppm
301901	<5	6.2	<2	40	190	3.55	<1	160	81	0.24	107	24	244
301902	45	2	<2	70	3810	8.01	<1	820	4	0.01	5	4	110
301903	10	0.6	32	10	612	>15.00	<1	790	6	0.01	6	10	238
301904A	10	0.2	2	40	311	7.61	<1	620	6	0.04	17	8	298
301904B	10	0.4	18	10	518	12.8	<1	555	14	0.02	8	4	292
301905A	<5	<0.2	8	60	197	3.37	<1	60	1	0.01	1	<2	16
301905B	<5	0.2	22	40	309	5.55	<1	115	5	0.01	2	8	36
301906	<5	1.8	60	40	212	6.34	<1	190	46	0.26	97	24	824
301907	<5	0.2	<2	50	809	1.6	<1	60	2	0.03	7	<2	10
301908	<5	0.2	<2	70	397	2.05	<1	120	2	0.04	3	<2	16
301910	<5	<0.2	<2	60	30	4.48	3	530	3	0.21	10	<2	46

A9928307 - CERTIFIED
CLIENT : "ARNEX RESOURCES LIMITED "
# of SAMPLES : 4
DATE RECEIVED : 08-SEP-1999
PROJECT : "SCOTIA NORTH "
CERTIFICATE COMMENTS : "ATTN: ARNE BIRKELAND"

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mn ppm	Mo ppm	Na %	Ni ppm	Pb ppm	Zn ppm
301911	<5	1	<10	600	90	5.9	<10	590	<5	0.07	<5	30	205
301912	<5	1	<10	460	65	6.04	<10	480	<5	0.09	<5	20	210
301913	<5	<1	<10	740	170	4.98	<10	820	10	0.09	<5	<5	240
301914	50	1	200	180	25	2.77	<10	30	<5	<0.01	80	205	60

Table 3
Scotia Reconnaissance Program
Selected Soil Geochemical Values

c:\myfiles\scotia99\soil9901.xls

A9926815 - CERTIFIED
CLIENT : "ARNEX RESOURCES LIMITED "
# of SAMPLES : 32
DATE RECEIVED : 23-AUG-1999
PROJECT : "SCOTIA "
CERTIFICATE COMMENTS : "ATTN: ARNE BIRKELAND"

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
190301	<5	<0.2	4	170	36	2.65	<1	<1	10	2	104
190302	<5	<0.2	6	160	2	2.86	<1	<1	4	<2	40
190303	<5	0.2	6	20	30	3.65	1	3	4	16	30
190304	<5	<0.2	<2	190	156	3.33	<1	<1	21	10	142
190305	<5	<0.2	<2	100	48	2.32	<1	2	7	6	72
190306	<10	<0.2	<2	10	5	0.08	<1	<1	<1	<2	18
190307	<5	<0.2	8	70	18	2.13	<1	3	4	<2	28
190308	<10	0.2	<2	10	5	0.06	<1	<1	1	<2	14
190309	<5	<0.2	2	170	46	3.22	<1	1	12	4	74
190310	<5	<0.2	<2	190	66	2.94	<1	<1	13	26	112
190311	<5	0.2	<2	120	32	3.97	<1	<1	10	2	64
190312	<5	0.2	<2	90	27	5.07	<1	<1	19	12	78
190313	<5	<0.2	6	100	16	3.58	<1	<1	17	6	54
190314	<5	<0.2	<2	190	51	4.19	<1	1	13	6	46
190315	<5	<0.2	<2	170	138	2.96	<1	<1	17	2	84
190316	<5	0.2	<2	140	455	6.35	<1	1	32	2	60
190317	<5	<0.2	8	100	201	4.48	<1	1	31	4	68
190318	<5	<0.2	2	80	166	3.83	<1	2	23	2	110
190319	<10	<0.2	<2	40	8	0.06	<1	<1	2	2	20
190320	<5	<0.2	<2	90	52	4	<1	1	20	26	520
190321	<5	0.2	<2	70	26	4.19	<1	<1	21	14	234
190322	<5	<0.2	2	70	19	4.01	1	<1	10	6	104
190323	<5	<0.2	2	110	19	3.56	<1	1	21	8	120
190324	<10	0.6	2	120	55	2.9	1	<1	34	8	306
190325	<5	<0.2	6	250	32	2.67	<1	2	31	2	92
190326	<5	<0.2	12	200	50	3.08	<1	3	26	2	58
190327	<5	<0.2	<2	100	30	3.23	<1	1	11	8	48
190328	<5	0.2	<2	40	20	3.91	<1	<1	15	26	186
190329	<5	<0.2	8	160	49	4.1	1	1	27	<2	80
190330	<5	0.2	10	150	41	4.46	<1	<1	27	2	80
190331	<5	0.2	6	150	67	3.91	<1	<1	18	<2	64
190332	<5	0.2	<2	110	49	3.96	<1	<1	17	4	66

Table 3
Scotia Reconnaissance Program
Selected Soil Geochemical Values

c:\myfiles\scotia99\soil9901.xls

A9928266 - CERTIFIED
CLIENT : "ARNEX RESOURCES LIMITED "
# of SAMPLES : 22
DATE RECEIVED : 08-SEP-1999
PROJECT : "SCOTIA "
CERTIFICATE COMMENTS : "ATTN: ARNE BIRKELAND"

SAMPLE DESCRIPTION	Au ppb	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
190333	<5	<0.2	2	120	31	6.8	<1	4	<1	8	88
190334	<5	<0.2	<2	110	41	7.64	<1	1	<1	2	104
190335	<5	<0.2	2	10	33	8.14	<1	5	9	6	70
190336	<5	0.6	<2	120	102	6.44	<1	5	7	4	78
190337	<5	0.6	<2	350	69	7.82	<1	15	1	<2	280
190338	<5	0.2	<2	150	14	7.63	<1	2	5	2	156
190339	<5	0.2	<2	<10	3	4.27	<1	<1	6	2	20
190340	<5	0.2	<2	50	12	5.92	<1	1	3	2	76
190341	<5	0.2	<2	30	26	6.6	<1	1	<1	2	76
190342	<5	0.2	<2	30	42	7.33	<1	4	6	6	50
190343	<5	0.6	<2	90	30	5.6	<1	5	4	4	66
190344	10	0.6	<2	230	51	11.15	1	38	<1	2	88
190345	<5	0.2	<2	70	30	7.41	<1	8	1	2	148
190346	<5	0.2	<2	160	42	7.15	<1	9	5	4	178
190347	<5	0.6	<2	100	23	6.24	<1	38	2	10	138
190348	<5	0.2	<2	80	29	6.91	<1	4	1	2	126
190349	<5	0.2	<2	50	9	5.78	<1	3	5	2	74
190350	<5	0.4	<2	120	100	7.07	<1	14	1	2	60
190351	<5	0.6	<2	120	102	6.9	<1	6	1	8	172
190352	<5	0.4	<2	200	21	7.58	<1	5	1	4	226
190353	<5	0.2	<2	150	34	7.22	<1	3	3	<2	202
190354	15	<0.2	<2	10	8	2.25	<1	5	<1	20	12

Table 5

Scotia Reconnaissance Program

Threshold Stream Sediment Geochemical Values

Element	95th Percentile	99th Percentile
Cu (ppm)	58	72
Zn (ppm)	94	198
Pb (ppm)	5	12
Au (ppb)	16	61
Ag (ppm)	0.2	0.2

5.3. Results – Rock, Stream Sediment and Soil Geochemistry

Project results are described on a north to south basis and encompass the Scotia North, Scotia South and Ecstall North areas.

5.3.1. Scotia North Area

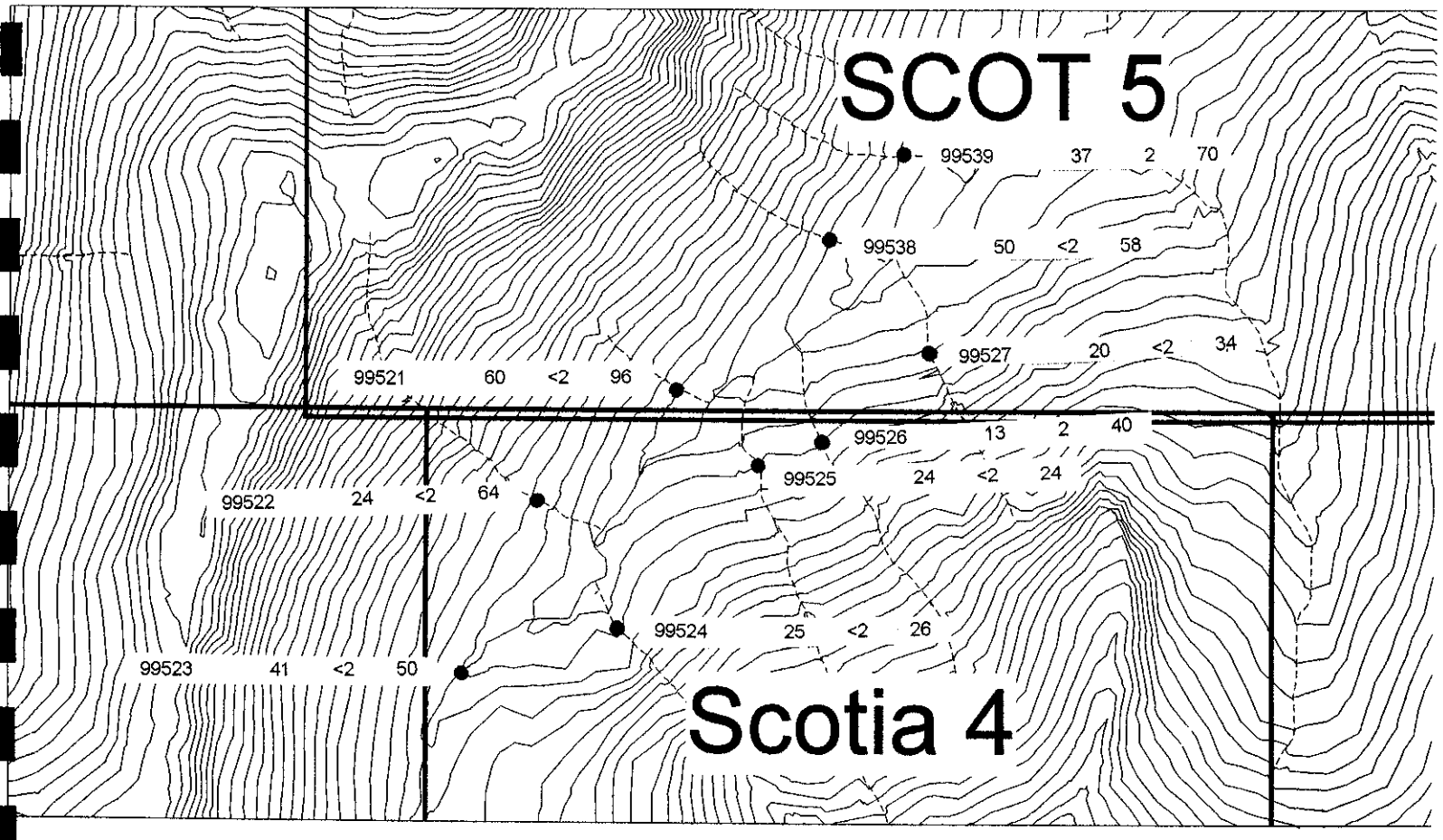
Stream sediment sampling was conducted in 9 secondary drainages on the SCOT 5 and Scotia 4 claims (Figure 6-1). Only one moderately anomalous Cu value of 60 ppm was encountered.

The favourable pyritic felsic meta-volcanic unit has been traced northwesterly from the Albere Zone to the North Ridge Showing on the Scotia 3 claim (Figure 9-1). Stream sediment sampling in the catchment basin northwest of the North Ridge area encountered moderately anomalous Zn +/- Au, Ag values of up to 116 ppm Zn. Rock chip sampling of mariposite exhalite unit from a float slab returned 205 ppm Pb and 50 ppb Au.

Channel sampling of the North Ridge Showing area returned values of 205 – 240 ppm Zn, and up to 170 ppm Cu and 30 ppm Pb (Figures 6-2, 7-1). A 3-line soil grid was completed over the downslope extension of the zone over a soil gossan. Moderately anomalous values of up to 280 ppm Zn, 102 ppm Cu and 20 ppm Pb were encountered.

Legend

	Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
●	Stream Sediment	99701			18	<2	46
X	Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

Scotia 4, SCOT 5 Claim

Scale: 1:20,000 **NTS: 103I/4**

Compiled by Arnex Resources Ltd January 2000

Figure 6-1

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
● Stream Sediment	99701			18	<2	46
X Rock Chip	301901	<5	6.2	190	24	244

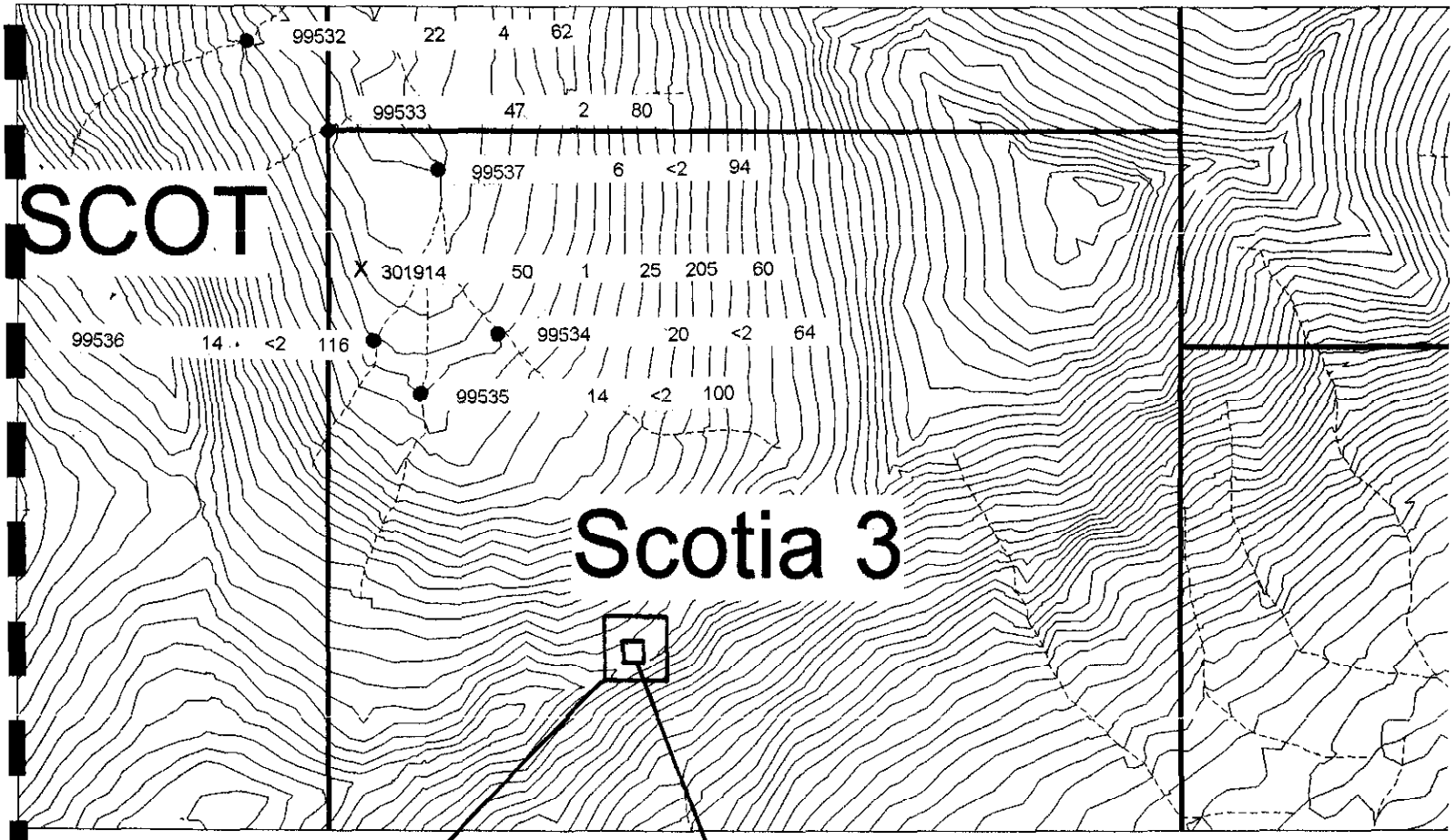


Figure 7-1
Soil Geochemistry Grid
North Ridge Area

Figure 8-1
Rock Chip Geochemistry
North Ridge Showing

1999 Scotia Regional Program

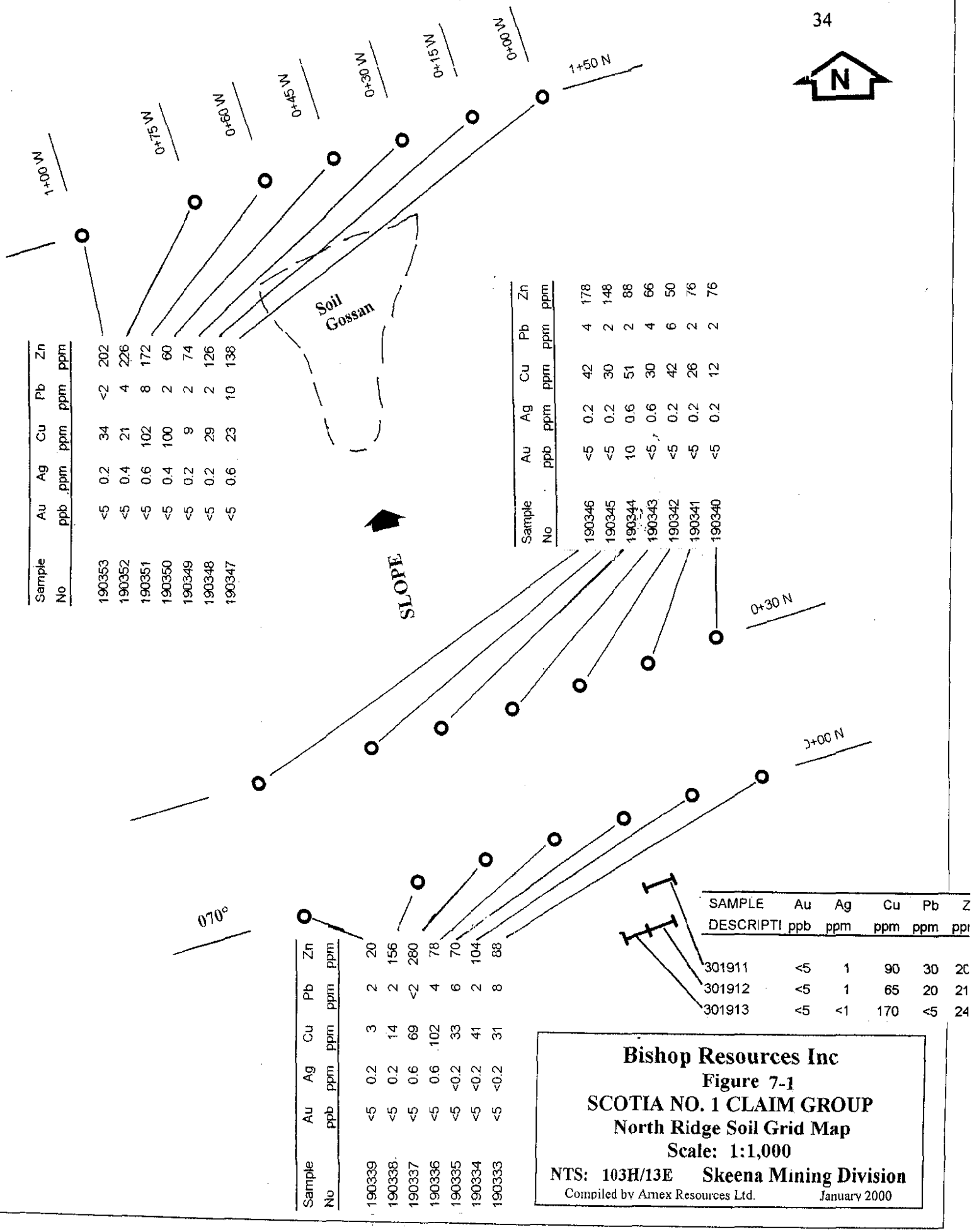
Geochemistry

Scotia 3 Claim

Scale: 1:20,000 **NTS: 103I/4**

Compiled by Arnex Resources Ltd January 2000

Figure 6-2



Sample No	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
190353	<5	0.2	34	<2	202
190352	<5	0.4	21	4	226
190351	<5	0.6	102	8	172
190350	<5	0.4	100	2	60
190349	<5	0.2	9	2	74
190348	<5	0.2	29	2	126
190347	<5	0.6	23	10	138

Sample No	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
190346	<5	0.2	42	4	178
190345	<5	0.2	30	2	148
190344	10	0.6	51	2	88
190343	<5	0.6	30	4	66
190342	<5	0.2	42	6	50
190341	<5	0.2	26	2	76
190340	<5	0.2	12	2	76

Sample No	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
190339	<5	0.2	3	2	20
190338	<5	0.2	14	2	156
190337	<5	0.6	69	<2	280
190336	<5	0.6	102	4	78
190335	<5	<0.2	33	6	70
190334	<5	<0.2	41	2	104
190333	<5	<0.2	31	8	88

SAMPLE DESCRIPTI	Au ppb	Ag ppm	Cu ppm	Pb ppm	Z ppi
301911	<5	1	90	30	20
301912	<5	1	65	20	21
301913	<5	<1	170	<5	24

Bishop Resources Inc

Figure 7-1

SCOTIA NO. 1 CLAIM GROUP

North Ridge Soil Grid Map

Scale: 1:1,000

NTS: 103H/13E Skeena Mining Division

Compiled by Arnex Resources Ltd. January 2000

Five drainages were sampled on the SCOT 3 claims to test for a fold repeated eastern VMS belt (Figure 6-3). Strongly anomalous Cu values of up to 167 ppm Cu and Zinc values to 170 ppm are present. A grab sample from a 2.5m rock slab of pyritic felsic gneiss returned values of 190 ppm Cu and 244 ppm Zn indicating that the favourable pyritic felsic meta-volcanic unit is present.

Sampling was conducted in seven drainages on the Scot 7 claim to test for the southern projection of the Albere zone (Figure 6-4). Only elevated Pb values were encountered, although some sediments were quite pyritic returning up to 7 % Fe.

5.3.2. Scotia South Area

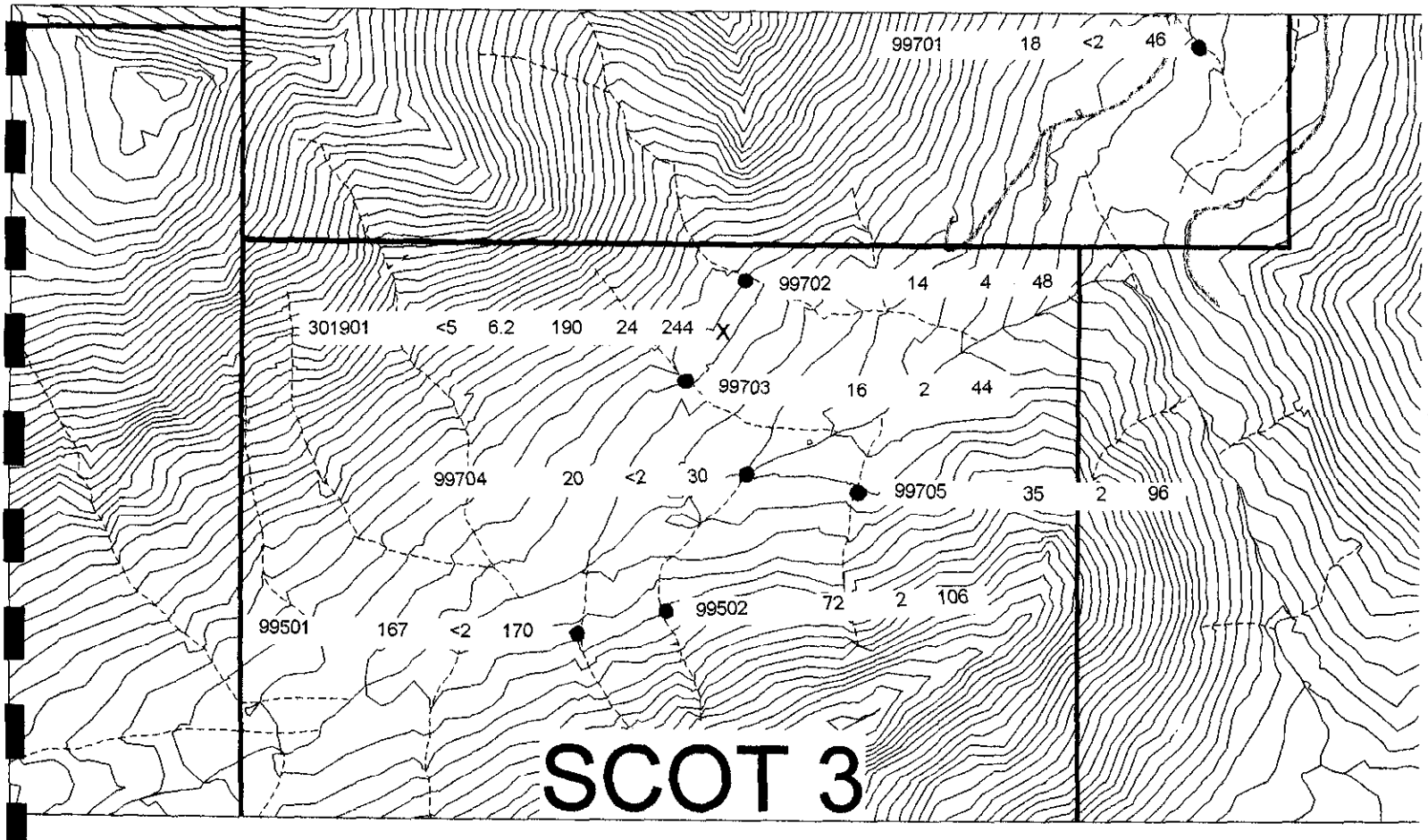
The F-13 Showing was found on Friday the 13th of August, 1999 during an extensive sampling and prospecting program that was conducted on the Big claims following up results of previous regional programs (Figure 6-5). A 60 m thick rusty pyritic felsic meta-volcanic unit outcrops in a logging road-cut, flanked by mafic gneiss. At least four semi-massive to massive pyrite bands were mapped and sampled (Figure 8-2, 8-3). The best channel sample was at site 301902 which ran approximately 0.4 % Cu over 0.5 m. Anomalous Cu and Zn values are present in semi-massive and massive bands between 0.4 to 2.0 m thick. A soil line was run below the extension of the zone below gossanous outcrops in the hillside (Figure 7-2). Soils at the F-13 showing showed strongly anomalous Cu values but low Zn responses. Along strike to the west, Cu values tail off and Zn becomes anomalous (up to 520 ppm). It is interpreted that acidic gossanous soil at the F-13 Showing has proximal Cu values but Zn is leached due to the low pH, while along strike to the west, more distal Zn responses indicate that the mineralized zone continues along strike up the hillside.

Eight drainages were sampled on the north side of Big Falls Creek in the vicinity of the F-13 Showing on the Big 2 claim (Figure 6-5). Several drainages are anomalous in base metals indicating widespread mineralization in this area. Values at site 99530 of 205 ppm Cu, 598 ppm Zn and 78 ppm Pb from a drainage to east of the F-13 Showing indicates mineralization is present to the east of the road-cut showing. Sampling of 5 drainages to the south of Big Falls Creek failed to encounter anomalous results with the exception of site 99719 which returned an erratic gold value of 115 ppb.

The rusty unit hosting the F-13 Showing was observed to trend northerly and outcrop in creeks and the ridge top on the Big 3 claim (Figure 6-6). Strongly anomalous values are present, with the drainage at site 99505 returning 406 ppm Zn (distal dispersion), and the adjacent drainage to the west returning 397 ppm Cu (more proximal dispersion) from higher up the drainage closer to the gossanous outcrops at the upper elevations. The creek at site 99508 ran 182 ppm Zn and indicates that a +2 km strike extension to the F-13 is present to the northwest.

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
● Stream Sediment	99701			18	<2	46
X Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

SCOT 3 Claim

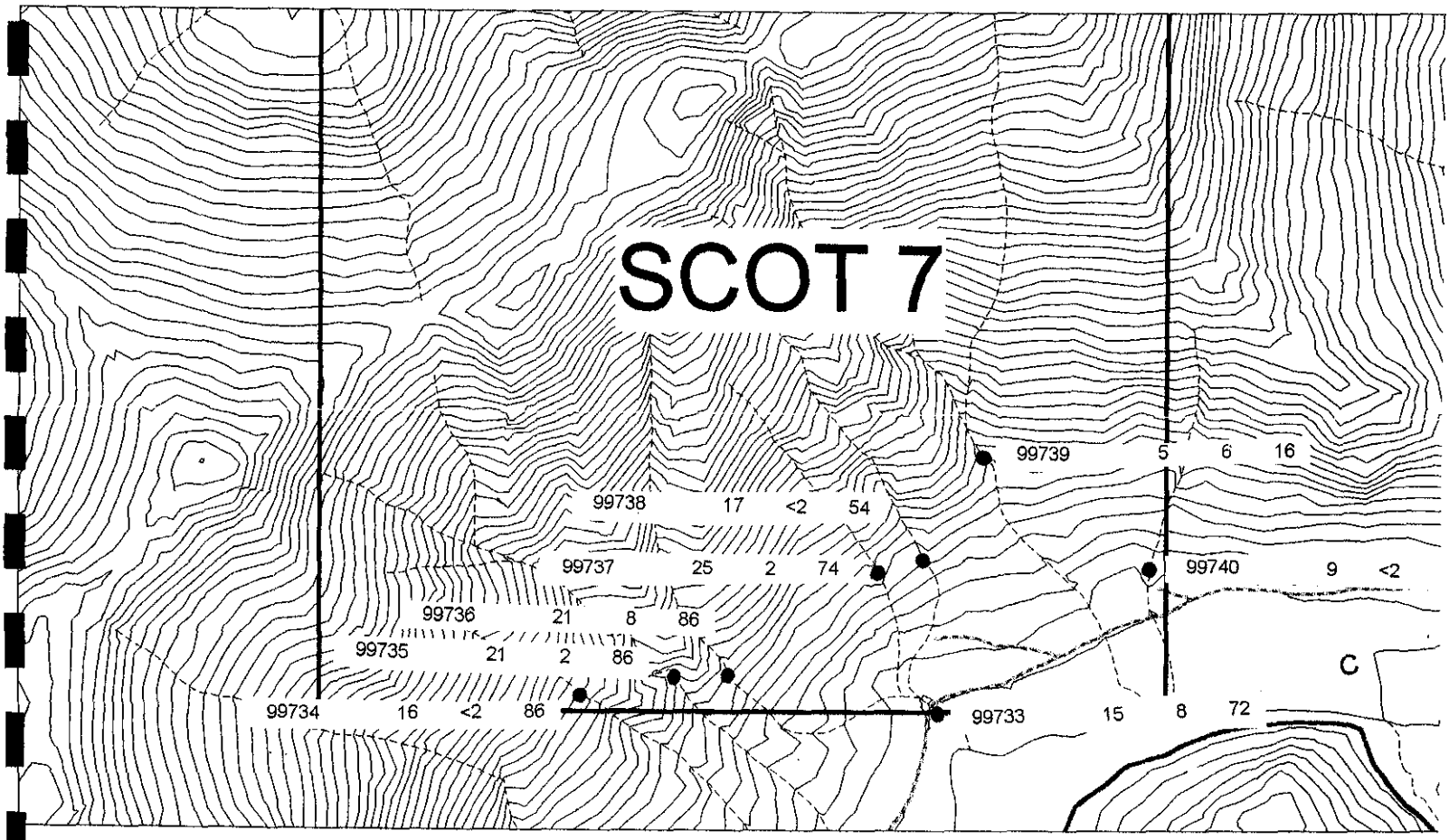
Scale: 1:20,000 **NTS: 103I/4**

Compiled by Arnex Resources Ltd January 2000

Figure 6-3

Legend

	Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
●	Stream Sediment	99701			18	<2	46
X	Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

SCOT 7 Claim

Scale: 1:20,000 **NTS: 103I/4**

Compiled by Arnex Resources Ltd January 2000

Figure 6-4

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
● Stream Sediment	99701			18	<2	46
X Rock Chip	301901	<5	6.2	190	24	244

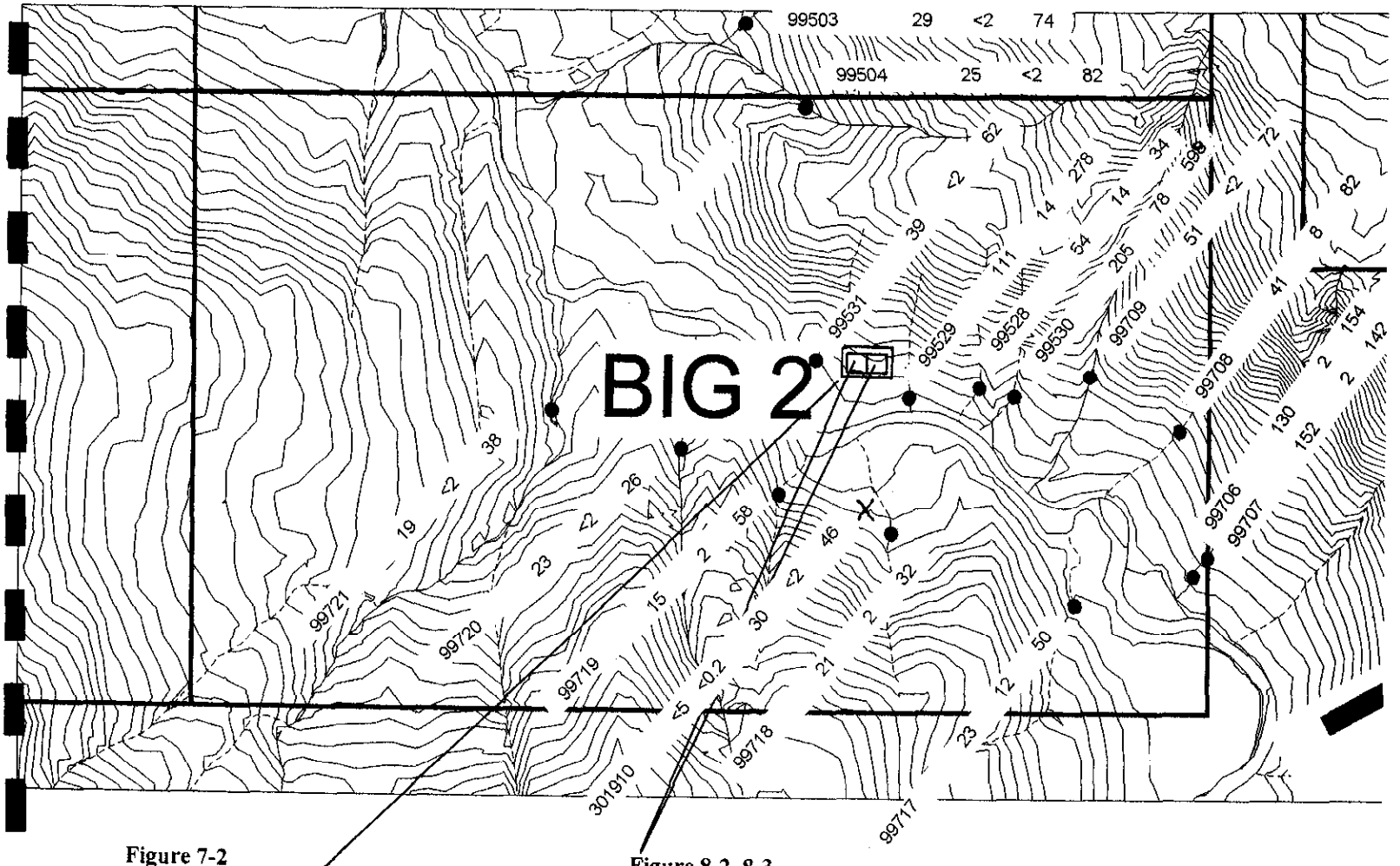


Figure 7-2
F -13Soil Line Map

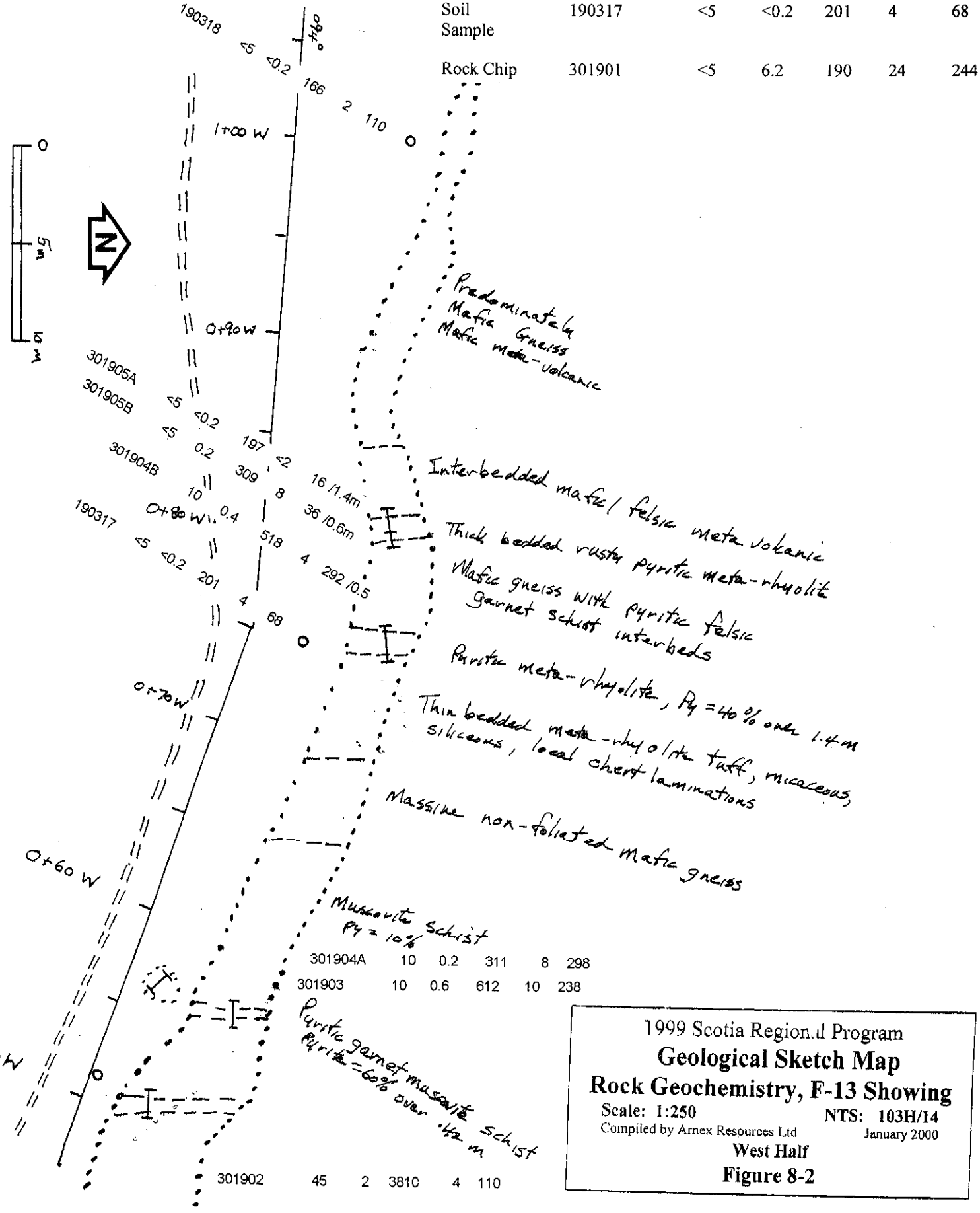
Figure 8-2, 8-3
Geological Sketch Map
Rock Chip Geochemistry
F-13 Showing Area

1999 Scotia Regional Program
Geochemistry
Big 2 Claim
Scale: 1:20,000 **NTS: 103H/13**
Compiled by Arnex Resources Ltd January 2000

Figure 6-5

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
Soil Sample	190317	<5	<0.2	201	4	68
Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geological Sketch Map

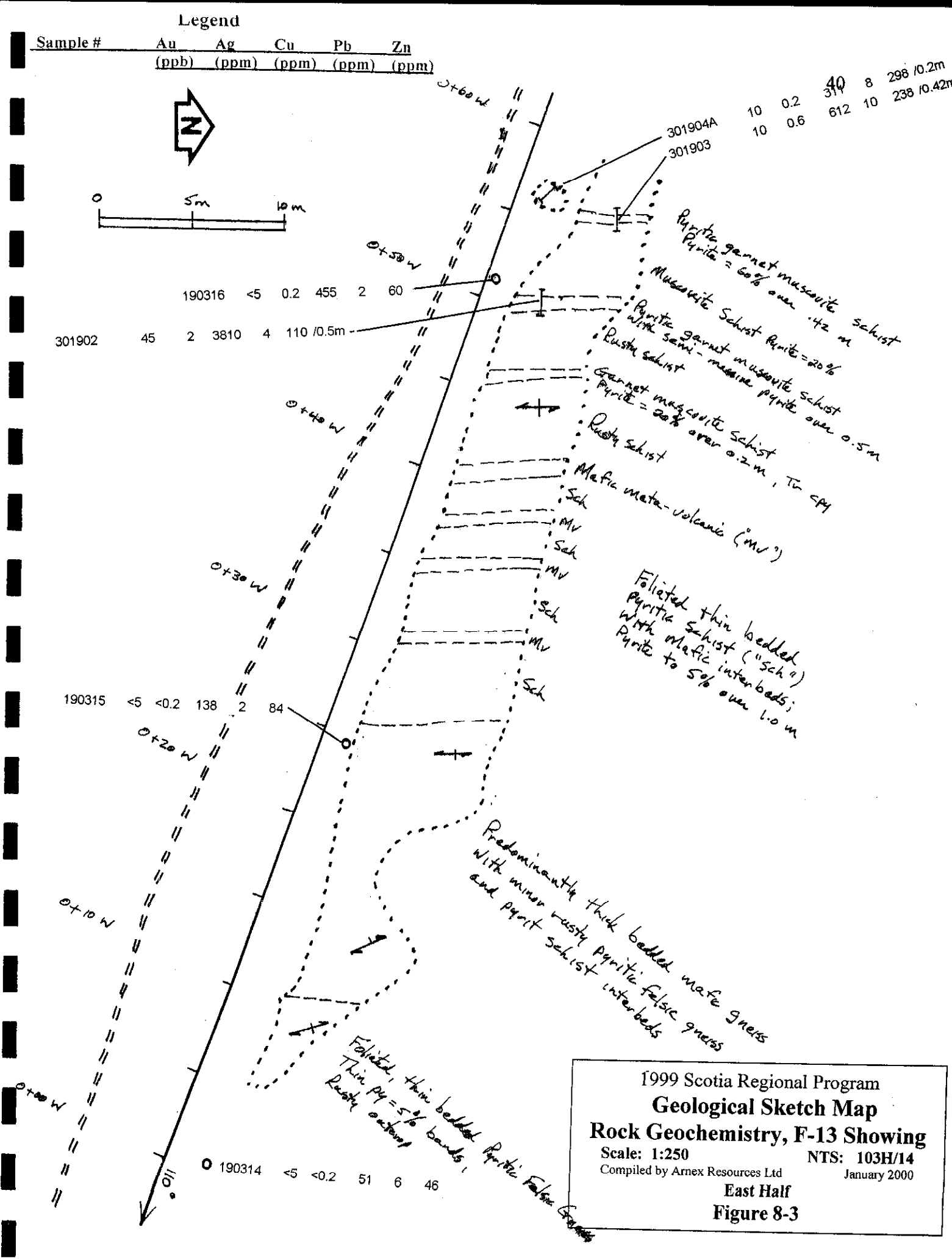
Rock Geochemistry, F-13 Showing

Scale: 1:250 NTS: 103H/14

Compiled by Arnex Resources Ltd January 2000

West Half

Figure 8-2



1999 Scotia Regional Program

Geological Sketch Map

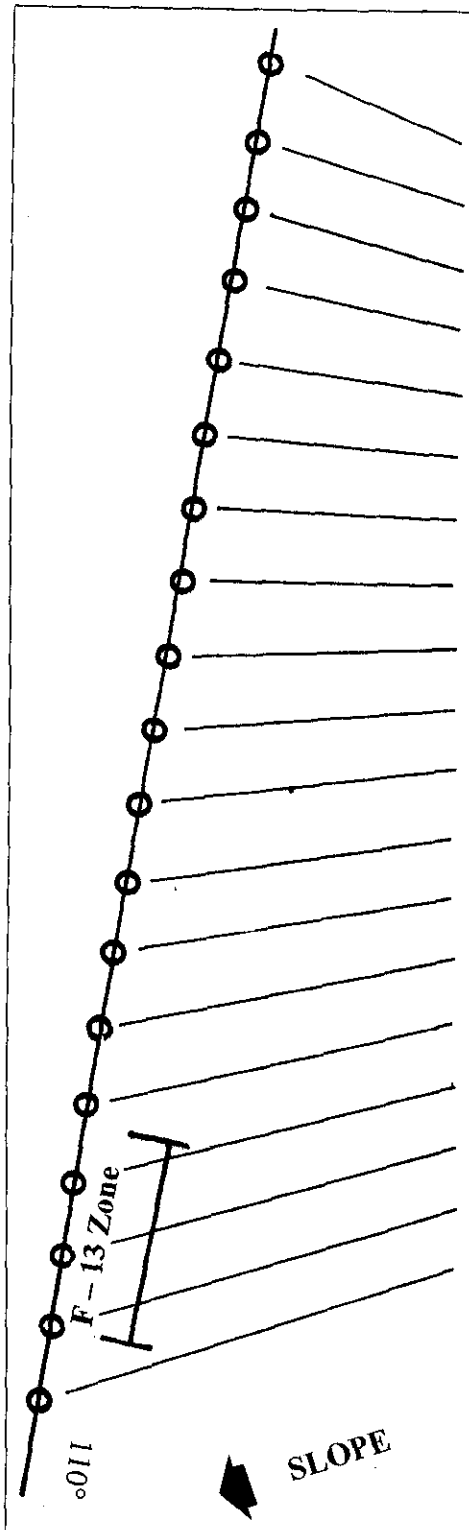
Rock Geochemistry, F-13 Showing

Scale: 1:250 **NTS: 103H/14**

Compiled by Arnex Resources Ltd January 2000

East Half

Figure 8-3



Sample No	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
190332	<5	0.2	49	4	66
190331	<5	0.2	67	<2	64
190330	<5	0.2	41	2	80
190329	<5	<0.2	49	<2	80
190328	<5	0.2	20	26	186
190327	<5	<0.2	30	8	48
190326	<5	<0.2	50	2	58
190325	<5	<0.2	32	2	92
190324	<10	0.6	55	8	306
190323	<5	<0.2	19	8	120
190322	<5	<0.2	19	6	104
190321	<5	0.2	26	14	234
190320	<5	<0.2	52	26	520
190319	<10	<0.2	8	2	20
190318	<5	<0.2	166	2	110
190317	<5	<0.2	201	4	68
190316	<5	0.2	455	2	60
190315	<5	<0.2	138	2	84
190314	<5	<0.2	51	6	46

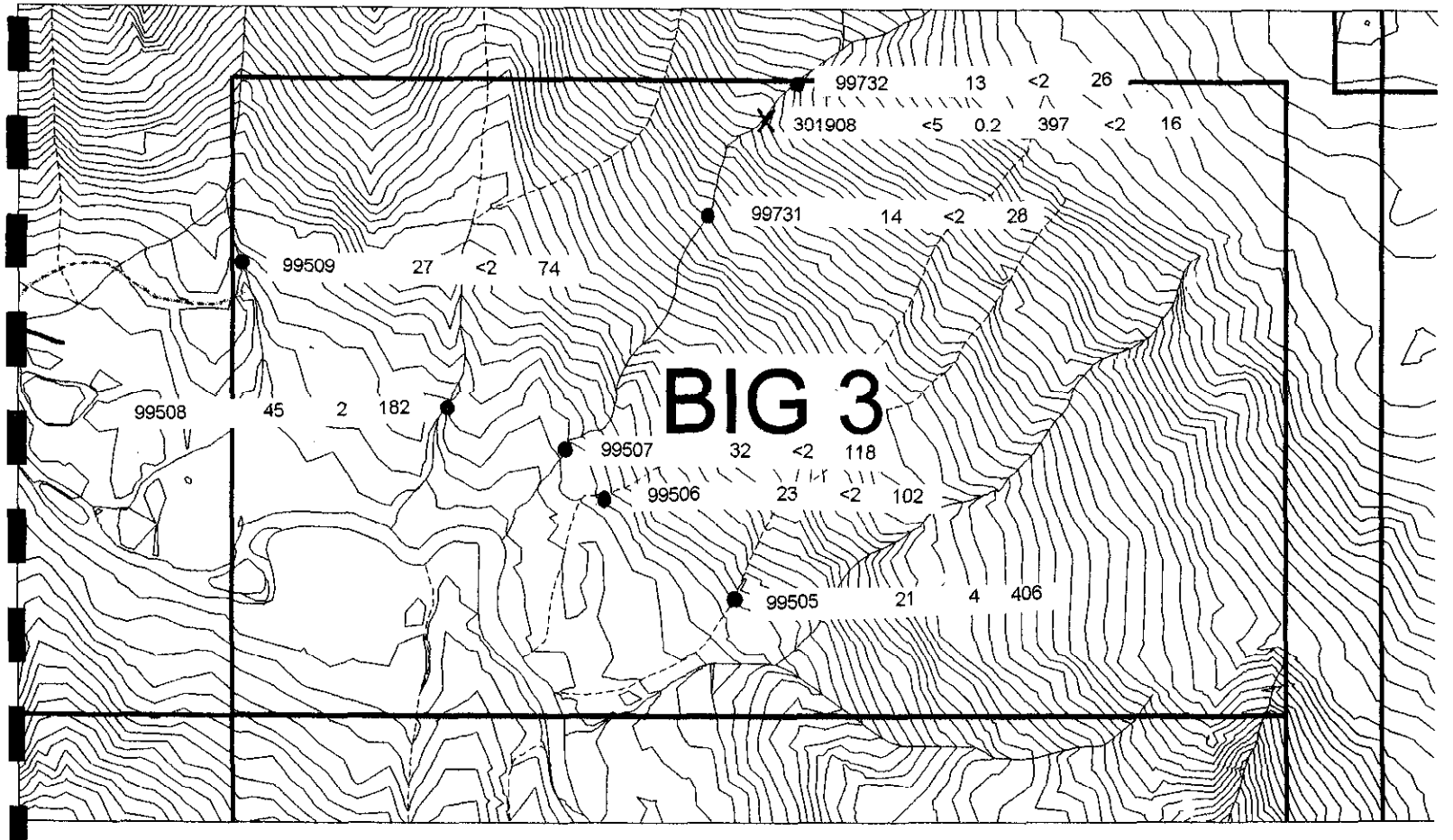
Bishop Resources Inc

BIG CLAIM GROUP
F-13 Soil Line Map
Scale: 1:5,000
NTS: 103H/13E Skeena Mining Division
Compiled by Arnex Resources Ltd. January 2000

Figure 7-2

Legend

	Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
●	Stream Sediment	99701			18	<2	46
X	Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

Big 3 Claim

Scale: 1:20,000 **NTS: 103H/13**

Compiled by Arnex Resources Ltd January 2000

Figure 6-6

5.3.3. Ecstall North Area

Six drainages were sampled on the BFC and BFC 4 claims testing for the northerly projection of the favourable Rusty Pyritic Felsic Meta-volcanic Unit in the Ecstall North Area (Figure 9-2). Site 99727 ran 218 ppm Zn and site 99710 ran 316 ppm Zn (Figure 6-7). A grab sample of a narrow mineralized quartz vein at 301907 returned a value of 809 ppm Cu.

Sampling of six drainages on the BFC claim failed to return any anomalous results (Figure 6-8). An anomalous value of 28 ppm Pb was encountered at site 99519 on the BFC 2 claim.

Seven drainages were sampled on the IYF 2 claim at the south end of the Ecstall North Area (Figure 6-9). The drainages are to the west of anomalous areas associated with the favourable felsic unit found by previous programs. Only one drainage returned an elevated Cu value of 77 ppm indicating only the northern and eastern portion of the claim group is of interest.

A soil line was run in the headwaters of an anomalous creek on the IYF 1 claim (Figures 6-10, 7-3). Coincident anomalous values of 156 ppm Cu, 142 ppm Zn and 10 ppm Pb occur at site 190304. This location is downslope from rock chip grab sample 301906 which returned values of 824 ppm Zn, 212 ppm cu and 1.8 ppm Ag from a pyritic meta-argillite (Ps unit) interpreted to be from a Sedex environment distal to the east of the felsic arc environment in this area. A soil sample from a ridge crest on the western boundary of the IYF 1 claim was moderately anomalous in Pb (20 ppm).

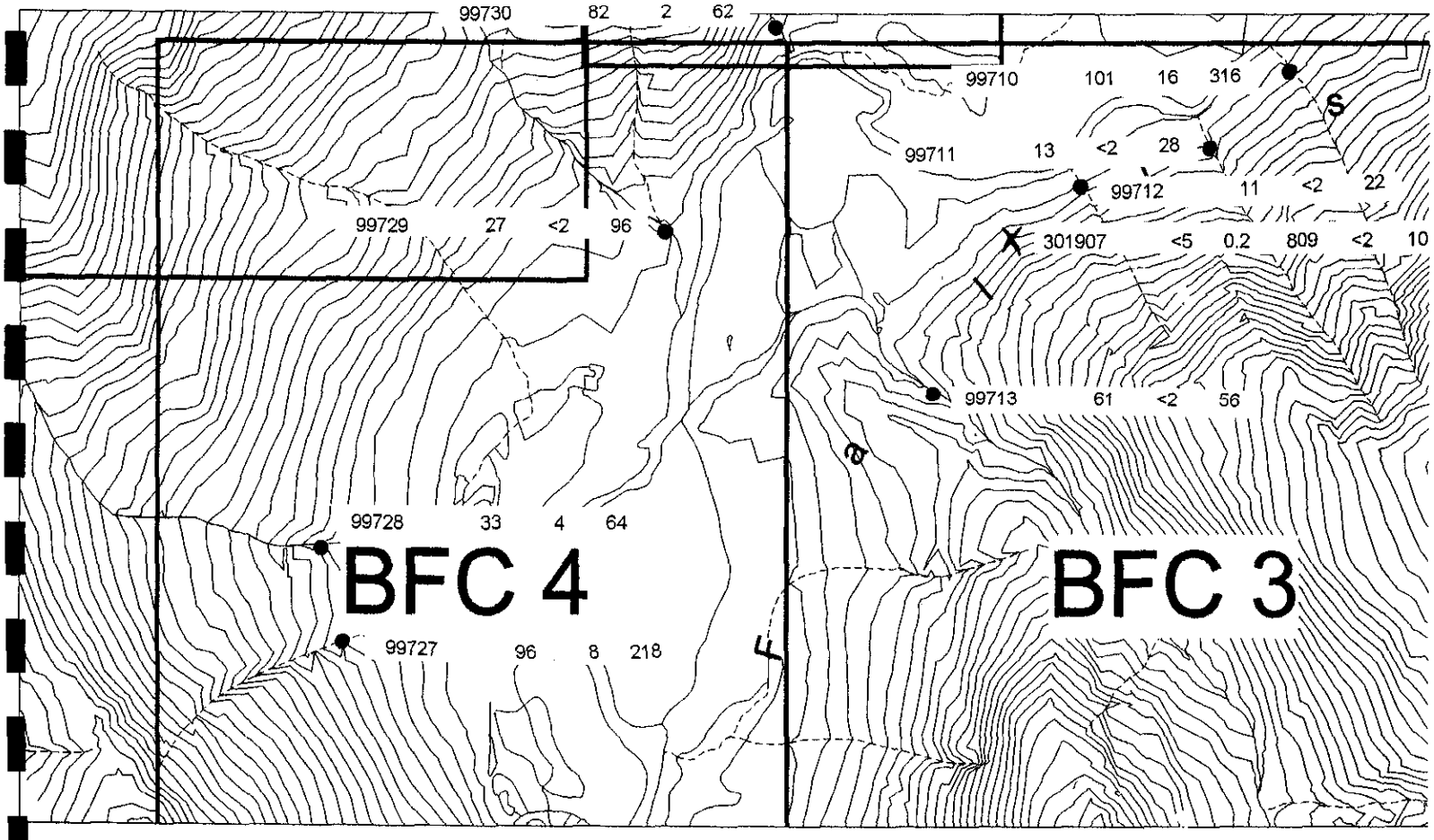
6. CONCLUSIONS

6.1. Scotia North Area

The felsic meta-volcanic unit hosting the Scotia deposit extends along strike to the basin beyond the North Ridge Showing and indicates that a favourable geologic environment is present for hosting Scotia style VMS mineralization. The unit hosts anomalous base metal mineralization indicated by rock chip and stream sediment sampling. Only a very limited amount of time was spent evaluating this area. The discovery of this Albere like mineralized felsic unit in this locality demonstrates that there is potential for base metal VMS occurrences associated with, or related to, this unit. The unit should be traced along strike and prospected and sampled in more detail, especially at the lower and upper contact of the thick two thick felsic meta-volcanic bands.

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
● Stream Sediment	99701			18	<2	46
X Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

BFC 3, BFC 4 Claims

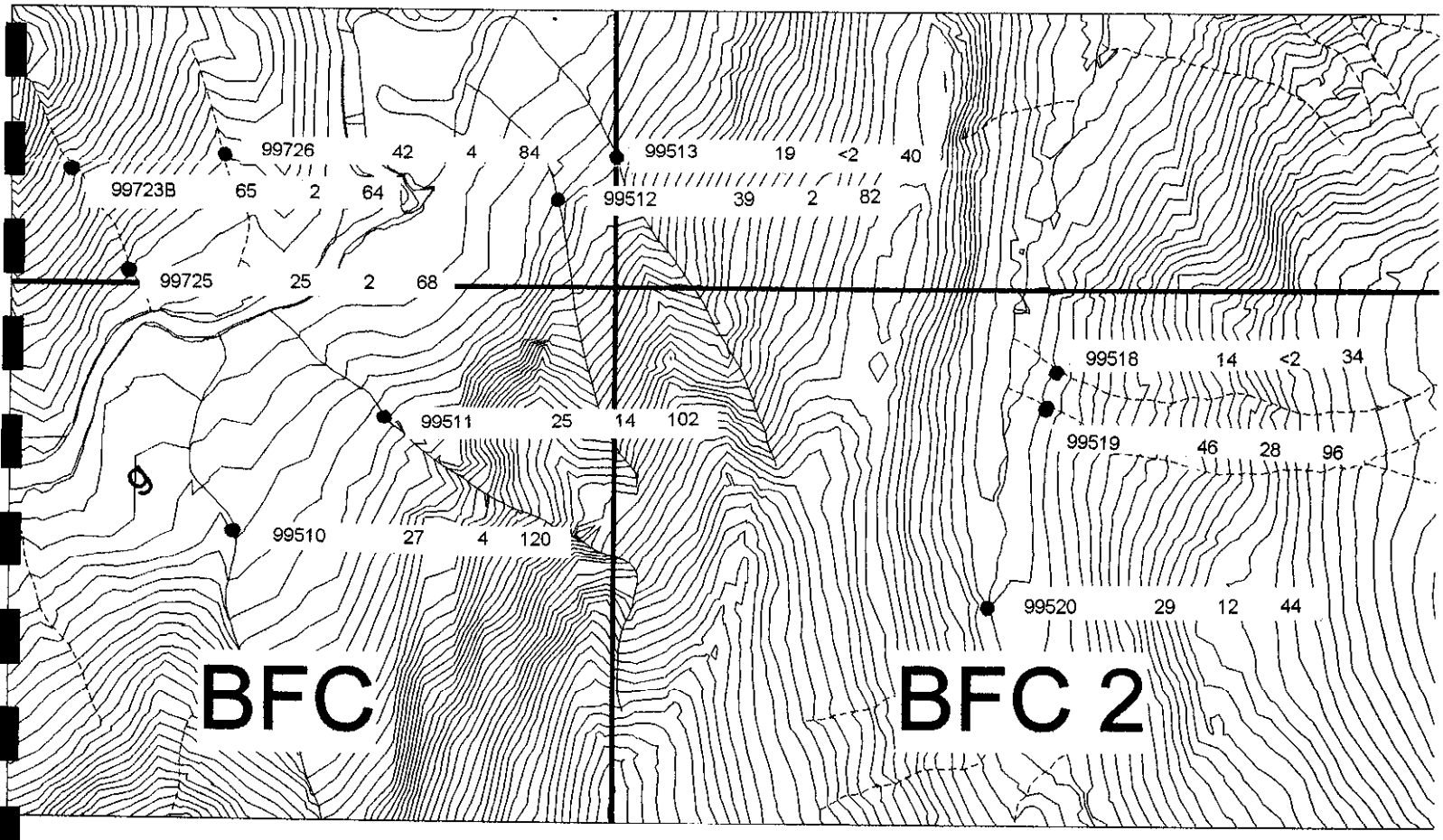
Scale: 1:20,000 **NTS: 103H/13**

Compiled by Arnex Resources Ltd January 2000

Figure 6-7

Legend

Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
● Stream Sediment	99701			18	<2	46
X Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

BFC, BFC 2 Claims

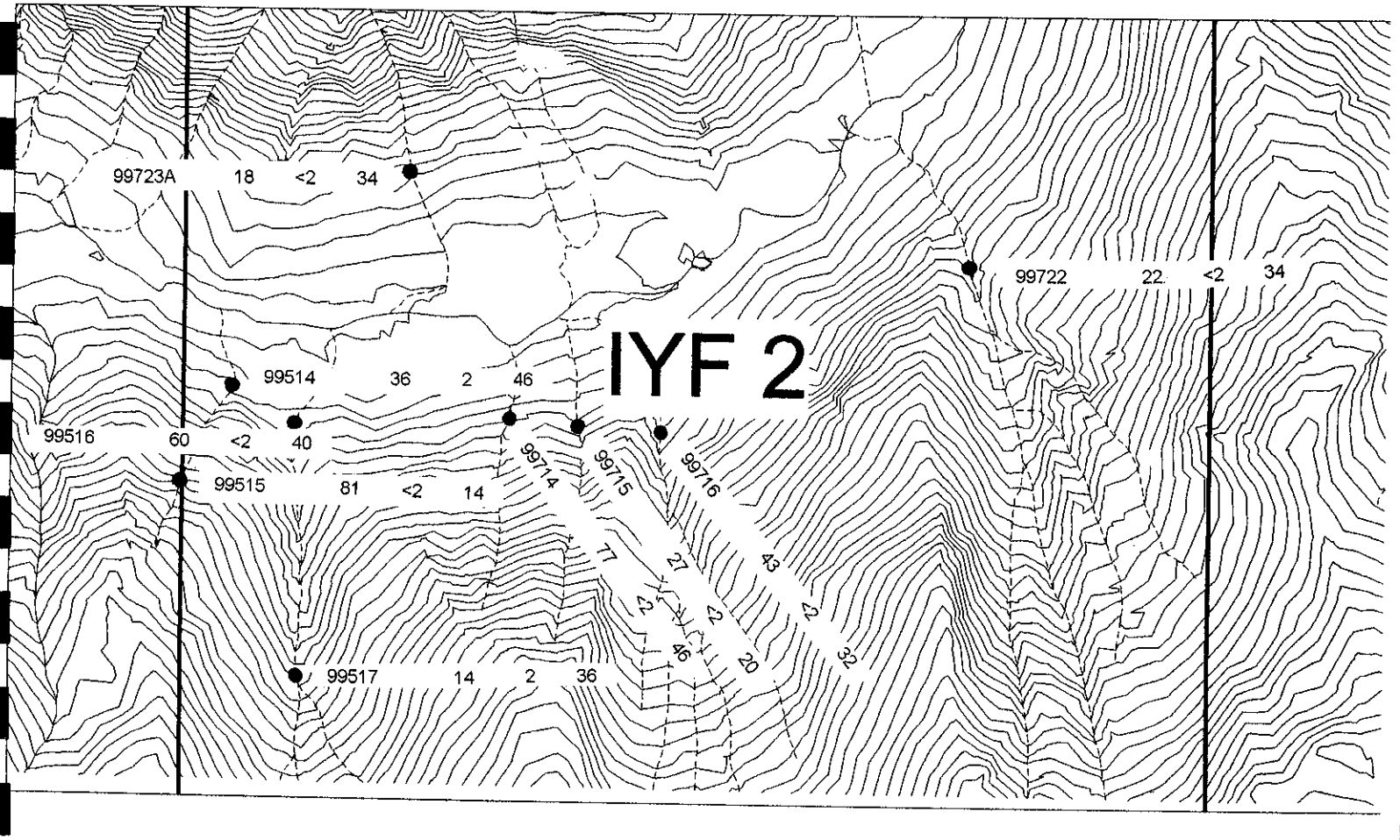
Scale: 1:20,000 **NTS: 103H/13**

Compiled by Arnex Resources Ltd January 2000

Figure 6-8

Legend

	Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
●	Stream Sediment	99701			18	<2	46
X	Rock Chip	301901	<5	6.2	190	24	244



1999 Scotia Regional Program

Geochemistry

IYF 2 Claim

Scale: 1:20,000 **NTS: 103H/13**

Compiled by Arnex Resources Ltd January 2000

Figure 6-9

Legend

	Type	Sample #	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
o	Soil Sample	190354	15	<0.2	8	20	12
X	Rock Chip	301906	<5	1.8	212	24	824

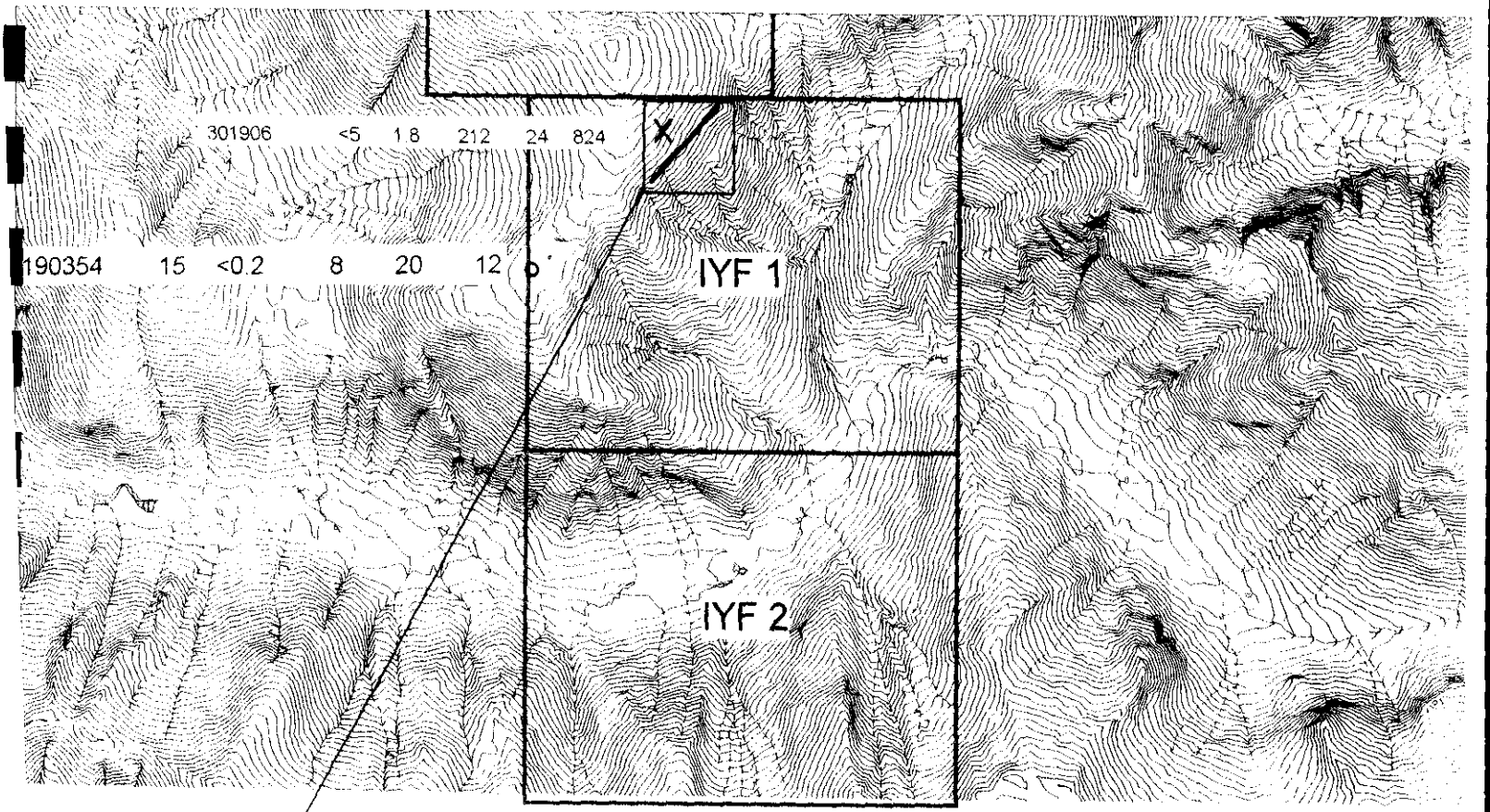


Figure 7-3
IYF Soil Line Map

1999 Scotia Regional Program
Geochemistry
IYF 1, IYF 2 Claims
Scale: 1:50,000 **NTS: 103H/13**
Compiled by Arnex Resources Ltd January 2000

Figure 6-10

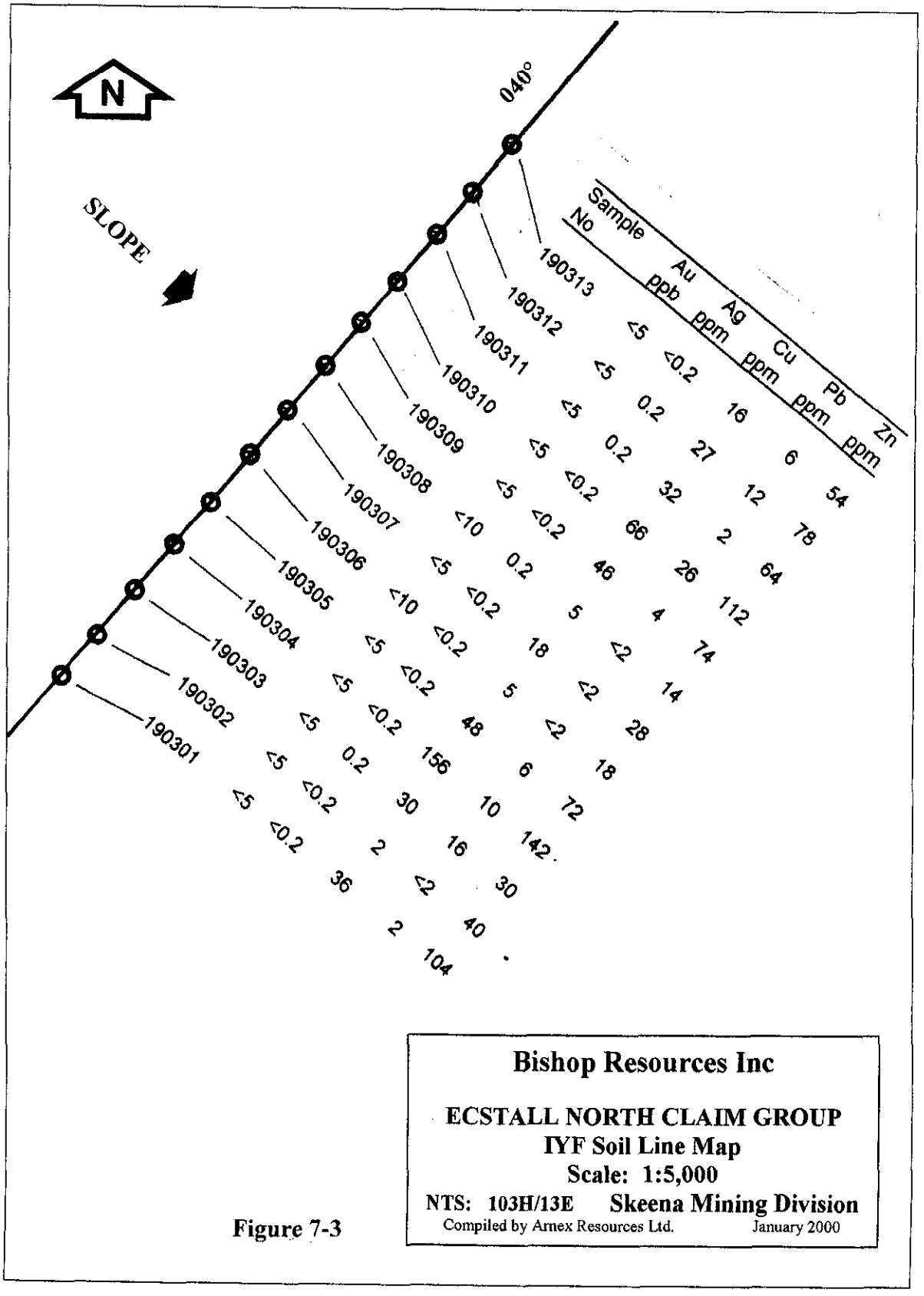

N
040°
SLOPE
Sample No
Au ppb
Ag ppm
Cu ppm
Pb ppm
Zn ppm
190313 <5 <0.2 16 6 54
190312 <5 0.2 27 12 78
190311 <5 <0.2 32 2 64
190310 <5 <0.2 66 26 112
190309 <10 0.2 46 4 74
190308 <5 <0.2 5 <2 14
190307 <10 <0.2 18 <2 28
190306 <5 <0.2 5 <2 18
190305 <5 <0.2 48 6 72
190304 <5 0.2 156 10 142
190303 <5 <0.2 30 16 30
190302 <5 <0.2 2 <2 40
190301 36 2 104
Bishop Resources Inc
ECSTALL NORTH CLAIM GROUP
IYF Soil Line Map
Scale: 1:5,000
NTS: 103H/13E Skeena Mining Division
Compiled by Arnex Resources Ltd. January 2000

Figure 7-3

6.2. Scotia South Area

The combination of a widespread geochemical stream sediment responses coupled with the discovery of massive sulphide style mineralization at the F-13 Showing area indicates the presence of a favourable geologic environment for finding a cluster of VMS deposits.

Gossanous outcrops were observed on the hillside and ridge top to the northwest of the F-13 zone. Soil sampling is also anomalous to the west of the showing, and base metal responses are present from creeks up to +2 km along the northwestern extension of the zone.

Due to budget and time constraints, very limited time was spent exploring this area even though results were excellent. Detailed mapping and prospecting accompanied by soil geochemistry and geophysics are warranted to discover additional showings and develop diamond drill targets.

6.3. Ecstall North Area

The favourable geology and anomalous drainages ate restricted to the northeast portion of the IYF 1 claim and extends northward. Anomalous base metal values were present from soil and rock chip sampling from the IYF Soil Line area. Mapping, prospecting and detailed stream sediment and soil sampling are required to further evaluate this northern extension of the Ecstall Belt.

7. REFERENCES

Alldrick, D. J., Gallagher, C., 1999. Geology and Mineral Potential of the Ecstall VMS Belt, Paper 2000-1.

Birkeland, A. O., 1999. Rock and Stream Sediment Geochemistry Program, Big, Scotia south and Ecstall North claim Groups.

Birkeland, A. O., Lindinger, L., 1998. Diamond Drilling report on the Albere Zone, Scotia Property.

Gareau, S.A., 1997. Geology, Scotia-Quaal metamorphic belt, Coast Plutonic Complex, British Columbia, Geological Survey of Canada Map 1868A, scale 1: 100 000 (compilation).

Hutchinson, W.W., 1982. Geology of the Prince Rupert - Skeena Map Area, British Columbia, Geological Survey of Canada Memoir 394, 116 p.

Matysek, P., Jackaman, W., 1995. British Columbia regional Geochemical Survey, NTS 103I/J – Prince Rupert/Terrace, BC RGS 42.

Sinnott, N., 1997. Geochemical and Prospecting Reconnaissance Program – Scotia river Area.

8. CERTIFICATE OF QUALIFICATION AND CONSENT

I, Arne O. Birkeland, do hereby certify that:

1. I am a Geological Engineer in the employ of Arnex Resources Ltd. with offices at 2069 Westview Drive, North Vancouver, British Columbia.

2. I am a 1972 graduate of the Colorado School of Mines with a Bachelor of Science Degree in Geological Engineering.

3. I have been a registered Professional Engineer with the Association of Professional Engineers Association of British Columbia since 1975, Registration Number 9870.

4. My primary employment since 1966 has been in the field of mineral exploration and development, namely as a Geological Engineer.

5. My experience has encompassed a wide range of geological environments including extensive experience in classification of deposit types as well as considerable familiarization with geochemical and geophysical survey techniques and diamond drilling procedures.

6. I have conducted and supervised the field exploration work as reported on the subject properties. I have authored this report that is based on observations and sample results obtained during the 1999 exploration program.

7. The author owns equity shares in Bishop Resources Inc. as a result of an interest in an option agreement between Bishop Resources Inc., Falconbridge Limited, Arnex Resources Ltd. and Arne o. Birkeland on the core Scotia property. The author holds no interest in claims in the Scotia South and Ecstall North Areas.

8. I consent for Bishop Resources Inc. to use this technical report to file as an assessment report and also for use as required by regulatory authorities.

Dated at North Vancouver, British Columbia,

This 24th **day of** January **, 2000**

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. O. BIRKELAND

A. O. Birkeland

Arne O. Birkeland, P. Eng. President, Arnex Resources Ltd.

APPENDIX A
1999 Claim Tenure - List of Claims
Scotia Project

myfiles/scotia/scotiaten991031.wb3

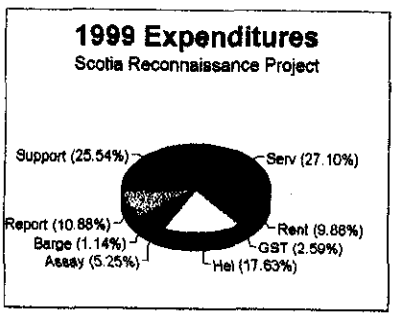
Claim Name	Units	Tenure #	Record Date	New Expiry Date
Albere No. 1	1	254773		July 11, 2001
Albere No. 2	1	254774		July 11, 2001
Albere No. 3	1	254775		July 11, 2001
Albere No. 4	1	254776		July 11, 2001
Scotia 1	20	250719	June 17, 1979	July 11, 2001
Scotia 2	6	250720	June 17, 1979	July 11, 2001
Scotia 3	20	360675	November 10, 1997	November 10, 2000
Scotia 4	12	360676	November 10, 1997	November 10, 2000
Scotia 5	1	360678	November 10, 1997	November 10, 2000
Scotia 6	1	360679	November 10, 1997	November 10, 2000
Scotia 7	1	360680	November 10, 1997	November 10, 2000
Scotia 8	1	360681	November 10, 1997	November 10, 2000
Scotia 9	1	360682	November 10, 1997	November 10, 2000
Scotia 10	1	360683	November 10, 1997	November 10, 2000
Scotia 11	1	360684	November 10, 1997	November 10, 2000
Scotia 12	1	360685	November 10, 1997	November 10, 2000
Scotia 13	1	360686	November 10, 1997	November 10, 2000
Scotia 14	1	360687	November 10, 1997	November 10, 2000
SCOT 1	14	360673	November 23, 1997	November 23, 2000
SCOT 2	16	360674	November 22, 1997	November 22, 2000
SCOT 3	20	360899	November 29, 1997	November 29, 2000
SCOT 4	20	360900	November 29, 1997	November 29, 2000
SCOT 5	18	360901	November 28, 1997	November 28, 2000
SCOT 6	18	360902	November 29, 1997	November 29, 2000
SCOT 7	20	360903	November 29, 1997	November 29, 2000
BIG 1	9	360896	November 27, 1997	November 27, 2000
BIG 2	15	360897	November 27, 1997	November 27, 2000
BIG 3	15	360898	November 27, 1997	November 27, 2000
BIG 4	1	366118	October 11, 1998	October 11, 2001
BIG 5	1	366117	October 11, 1998	October 11, 2001
BFC	12	360677	November 09, 1997	November 09, 2000
BFC 1	16	360670	November 22, 1997	November 22, 2000
BFC 2	16	360671	November 22, 1997	November 22, 2000
BFC 3	20	360672	November 23, 1997	November 23, 2000
BFC 4	15	360904	November 28, 1997	November 28, 2000
TIA 1	20	360905	December 03, 1997	December 03, 2000
TIA 2	18	360906	November 29, 1997	November 29, 2000
TIA 3	18	360907	November 29, 1997	November 29, 2000
TIA 4	18	360908	November 29, 1997	November 29, 2000
TIA 5	18	360909	November 29, 1997	November 29, 2000
IYF 1	20	360910	November 22, 1997	November 22, 2000
IYF 2	20	360911	November 22, 1997	November 22, 2000
TOTAL:	**450**			

APPENDIX B
Statement of Expenditures
1999 Reconnaissance Program
Scotia No. 1 and No. 2, Big, Scotia South, and Ecstall North Claim Blocks

myfiles/scotia/scot99s

Prepared By: Arnex Resources Ltd.
Date: Oct 27, 1999

Description		Cost /unit	number units	Amount
Services	P. Eng.	$500.00 /day	15.000 day	$7,500.00
	Geo assistant - fd	$330.00 /day	15.000 day	$4,950.00
	Subtotal Services		30.00	$12,450.00
Rentals	F250 4X4	$80.25 /day	15.000 day	$1,203.75
	Toyota 4Runner	$65.00 /day	15.000 day	$975.00
	Camper	$32.10 /day	15.000 day	$481.50
	Chain Saws (1)	$123.40 /mo	0.500 mo	$61.70
	Mountain Bikes (2)	$40.00 /day	11.000 day	$440.00
	ICH 18 Radios (3)	$267.50 /mo	1.500 mo	$401.25
	Fly Camp	$53.50 /day	8.000 day	$428.00
	Field Equipment	$16.05 /day	34.000 day	$545.70
	Subtotal Rentals			$4,536.90
GST - Services, Rentals				$1,189.08
Expenses	Helicopter charter			$8,098.52
	Analytical, Assay			$2,411.39
	Bear Creek - Barge Rental			$525.00
	Report			$5,000.00
	Room, Board, Sup, Equip as per AOB Expenses EA990907			$5,928.34
	AOB Expenses EA991022			$4,780.73
	SS Expenses EA990909			$371.12
	SS Expenses EA990929			$652.08
	Subtotal Expenses			$27,767.18
PROJECT SUBTOTAL				**$45,943.16**
	Reclamation Program			$5,000.00
TOTAL EXPENDITURES				**$50,943.16**



APPENDIX C

Analytical Procedures and Certificates

Chemex Labs

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

A9926848

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9926848

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 31-AUG-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	67	Dry, sieve to -80 mesh
202	67	save reject
229	67	ICP - AQ Digestion charge
* NOTE	1:	

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	67	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
2118	67	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	67	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	67	As ppm: 32 element, soil & rock	ICP-AES	2	10000
557	67	B ppm: 32 element, rock & soil	ICP-AES	10	10000
2121	67	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	67	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	67	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	67	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	67	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	67	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	67	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	67	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	67	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	67	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	67	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	67	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
2151	67	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	67	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	67	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	67	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	67	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
2138	67	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	67	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	67	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
551	67	S %: 32 element, rock & soil	ICP-AES	0.01	5.00
2141	67	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	67	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	67	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	67	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
2145	67	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	67	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	67	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	67	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	67	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
Comments: ATTN: ARNE BIRKELAND

Page Number :1-A
Total Pages :2
Certificate Date: 31-AUG-1999
Invoice No. :I9926848
P.O. Number :
Account :AN

CERTIFICATE OF ANALYSIS A9926848

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
99501	201 202	< 5	< 0.2	2.55	< 2	< 10	240	< 0.5	< 2	0.69	< 0.5	26	40	167	3.13	10	< 1	0.62	< 10	1.72
99502	201 202	< 5	< 0.2	2.06	< 2	< 10	170	< 0.5	< 2	0.95	0.5	13	18	72	2.50	< 10	< 1	0.33	< 10	1.07
99503	201 202	< 5	< 0.2	2.10	< 2	< 10	120	< 0.5	< 2	0.76	< 0.5	15	67	29	3.16	10	1	0.64	< 10	1.66
99504	201 202	< 5	< 0.2	2.04	< 2	< 10	90	< 0.5	< 2	0.47	< 0.5	14	53	25	2.98	10	< 1	0.48	< 10	1.28
99505	201 202	< 5	< 0.2	2.01	< 2	< 10	140	< 0.5	< 2	0.83	1.0	15	27	21	2.67	< 10	< 1	0.28	10	0.84
99506	201 202	< 5	< 0.2	2.39	< 2	< 10	70	< 0.5	< 2	0.90	< 0.5	17	61	23	3.54	10	< 1	0.36	< 10	1.64
99507	201 202	< 5	< 0.2	2.21	< 2	< 10	110	< 0.5	< 2	1.04	< 0.5	16	44	32	3.48	10	< 1	0.53	< 10	1.44
99508	201 202	< 5	< 0.2	2.68	< 2	< 10	190	< 0.5	< 2	1.12	0.5	19	139	45	3.92	10	< 1	0.70	< 10	2.11
99509	201 202	< 5	< 0.2	2.37	< 2	< 10	200	< 0.5	< 2	0.95	< 0.5	17	81	27	3.27	10	< 1	0.60	< 10	1.91
99510	201 202	< 5	< 0.2	2.35	< 2	< 10	120	< 0.5	< 2	0.98	< 0.5	17	70	27	3.63	10	1	0.56	< 10	1.63
99511	201 202	< 5	< 0.2	1.36	< 2	< 10	70	< 0.5	< 2	0.70	< 0.5	10	47	25	2.11	< 10	< 1	0.25	< 10	0.90
99512	201 202	< 5	< 0.2	1.73	< 2	< 10	160	< 0.5	< 2	0.95	< 0.5	15	44	39	2.69	10	< 1	0.38	< 10	1.13
99513	201 202	< 5	< 0.2	1.25	< 2	< 10	120	< 0.5	< 2	0.76	< 0.5	10	39	19	1.85	< 10	< 1	0.22	< 10	0.91
99514	201 202	< 5	< 0.2	1.32	< 2	< 10	90	< 0.5	< 2	0.62	< 0.5	13	45	36	2.02	< 10	< 1	0.21	< 10	1.04
99515	201 202	< 5	< 0.2	0.49	< 2	< 10	30	< 0.5	< 2	0.62	< 0.5	10	22	81	0.91	< 10	< 1	0.05	< 10	0.40
99516	201 202	< 5	< 0.2	0.98	< 2	< 10	100	< 0.5	< 2	0.77	< 0.5	9	36	60	1.70	< 10	< 1	0.29	< 10	0.73
99517	201 202	< 5	< 0.2	0.89	< 2	< 10	60	< 0.5	< 2	0.50	< 0.5	7	21	14	2.00	< 10	< 1	0.18	< 10	0.49
99518	201 202	< 5	< 0.2	0.66	< 2	< 10	40	< 0.5	< 2	0.53	< 0.5	5	15	14	1.56	< 10	1	0.13	< 10	0.38
99519	201 202	< 10	< 0.2	1.57	< 2	< 10	140	< 0.5	< 2	0.51	< 0.5	17	21	46	2.69	< 10	< 1	0.35	< 10	0.91
99520	201 202	< 5	< 0.2	0.98	< 2	< 10	80	< 0.5	< 2	0.34	< 0.5	8	14	29	1.98	< 10	< 1	0.15	< 10	0.49
99521	201 202	< 5	< 0.2	1.78	< 2	< 10	80	< 0.5	< 2	1.26	< 0.5	13	19	60	3.48	< 10	< 1	0.16	< 10	0.72
99522	201 202	< 5	< 0.2	1.02	< 2	< 10	100	< 0.5	< 2	0.81	< 0.5	11	16	24	2.96	< 10	< 1	0.23	< 10	0.78
99523	201 202	< 5	< 0.2	1.28	< 2	< 10	130	< 0.5	< 2	0.59	< 0.5	11	22	41	3.71	10	< 1	0.41	10	0.95
99524	201 202	< 5	< 0.2	0.76	< 2	< 10	50	< 0.5	< 2	0.72	< 0.5	8	15	25	2.08	< 10	< 1	0.16	< 10	0.51
99525	201 202	< 5	< 0.2	0.70	< 2	< 10	40	< 0.5	< 2	0.92	< 0.5	8	15	24	1.89	< 10	< 1	0.16	< 10	0.48
99526	201 202	5	< 0.2	0.80	2	< 10	70	< 0.5	< 2	0.69	< 0.5	7	12	13	2.12	< 10	< 1	0.13	< 10	0.42
99527	201 202	< 5	< 0.2	0.77	2	< 10	60	< 0.5	< 2	0.81	< 0.5	8	14	20	2.30	< 10	< 1	0.17	< 10	0.52
99701	201 202	< 5	< 0.2	1.16	< 2	< 10	160	< 0.5	< 2	0.64	< 0.5	10	40	18	3.01	< 10	< 1	0.24	< 10	0.79
99702	201 202	< 5	< 0.2	1.17	< 2	< 10	110	< 0.5	< 2	0.61	< 0.5	8	33	14	2.50	< 10	< 1	0.20	< 10	0.78
99703	201 202	< 5	< 0.2	1.00	< 2	< 10	120	< 0.5	< 2	0.76	< 0.5	9	21	16	2.40	< 10	< 1	0.18	10	0.63
99704	201 202	45	< 0.2	0.78	< 2	< 10	40	< 0.5	< 2	0.93	< 0.5	7	15	20	2.50	< 10	< 1	0.13	10	0.51
99705	201 202	< 5	< 0.2	1.93	< 2	< 10	190	< 0.5	< 2	0.25	< 0.5	12	23	35	3.02	10	< 1	0.47	< 10	1.09
99706	201 202	< 5	< 0.2	1.91	< 2	< 10	260	< 0.5	< 2	1.68	1.0	28	25	130	2.71	< 10	< 1	0.36	< 10	0.99
99707	201 202	< 5	< 0.2	2.29	< 2	< 10	190	< 0.5	< 2	0.54	< 0.5	21	31	152	2.74	< 10	1	0.44	< 10	1.25
99708	201 202	< 5	< 0.2	1.70	< 2	< 10	220	< 0.5	< 2	0.60	< 0.5	14	35	41	2.66	< 10	< 1	0.73	< 10	1.29
99709	201 202	< 5	< 0.2	1.70	< 2	< 10	180	< 0.5	< 2	0.80	< 0.5	16	45	51	2.71	< 10	< 1	0.38	< 10	1.24
99710	201 202	< 5	< 0.2	2.02	2	< 10	130	< 0.5	< 2	0.40	0.5	17	41	101	3.70	10	< 1	0.33	10	1.00
99711	201 202	< 5	< 0.2	0.72	< 2	< 10	90	< 0.5	< 2	0.59	< 0.5	5	13	13	1.27	< 10	< 1	0.27	< 10	0.46
99712	201 202	< 5	< 0.2	0.58	< 2	< 10	110	< 0.5	< 2	0.65	< 0.5	4	11	11	1.31	< 10	< 1	0.18	< 10	0.34
99713	201 202	35	< 0.2	1.15	< 2	< 10	90	< 0.5	< 2	0.81	< 0.5	8	26	61	2.03	< 10	< 1	0.19	< 10	0.62

CERTIFICATION:

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To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
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V7M 3B1

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Comments: ATTN: ARNE BIRKELAND

Page Number : 1-B
Total Pages : 2
Certificate Date: 31-AUG-1999
Invoice No. : I9926848
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Account : AN

CERTIFICATE OF ANALYSIS A9926848

SAMPLE	PREP CODE		Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
99501	201	202	630	1	0.01	25	720	< 2	0.03	< 2	4	20	0.23	< 10	< 10	73	< 10	170
99502	201	202	760	1	0.01	12	470	2	0.05	< 2	3	21	0.15	< 10	< 10	54	< 10	106
99503	201	202	535	1	0.02	32	1290	< 2	0.01	< 2	6	15	0.22	< 10	< 10	76	< 10	74
99504	201	202	415	< 1	0.02	26	610	< 2	0.01	< 2	5	11	0.22	< 10	< 10	69	< 10	82
99505	201	202	1540	3	0.01	16	970	4	0.08	< 2	3	24	0.14	< 10	< 10	50	< 10	406
99506	201	202	785	3	0.02	31	900	< 2	0.04	< 2	5	19	0.24	< 10	< 10	86	< 10	102
99507	201	202	715	3	0.03	25	2080	< 2	0.04	< 2	5	23	0.21	< 10	< 10	77	< 10	118
99508	201	202	1325	3	0.01	62	840	2	0.07	< 2	8	16	0.25	< 10	< 10	86	< 10	182
99509	201	202	645	< 1	0.03	37	1560	< 2	0.01	< 2	5	14	0.23	< 10	< 10	77	< 10	74
99510	201	202	1075	1	0.01	39	1160	4	0.05	< 2	5	20	0.24	< 10	< 10	79	< 10	120
99511	201	202	410	< 1	0.02	21	980	14	0.03	< 2	3	9	0.14	< 10	< 10	51	< 10	102
99512	201	202	810	1	0.02	26	1180	2	0.06	< 2	4	19	0.18	< 10	< 10	59	< 10	82
99513	201	202	380	< 1	0.03	17	1460	< 2	0.03	< 2	3	12	0.12	< 10	< 10	48	< 10	40
99514	201	202	330	< 1	0.03	25	900	2	0.04	< 2	3	9	0.13	< 10	< 10	51	< 10	46
99515	201	202	115	< 1	0.04	27	1040	< 2	0.05	< 2	1	6	0.06	< 10	< 10	20	< 10	14
99516	201	202	160	< 1	0.03	24	1390	< 2	0.03	< 2	2	9	0.11	< 10	< 10	25	< 10	40
99517	201	202	435	1	0.02	11	1040	2	0.04	< 2	3	12	0.11	< 10	< 10	33	< 10	36
99518	201	202	240	< 1	0.02	8	1140	< 2	0.03	< 2	2	14	0.09	< 10	< 10	26	< 10	34
99519	201	202	920	3	0.03	13	840	28	0.08	< 2	3	15	0.14	< 10	< 10	58	< 10	96
99520	201	202	380	2	0.02	8	620	12	0.05	< 2	2	13	0.09	< 10	< 10	41	< 10	44
99521	201	202	355	3	0.04	12	2210	< 2	0.10	< 2	3	108	0.10	< 10	< 10	56	< 10	96
99522	201	202	540	4	0.03	10	1490	< 2	0.11	< 2	3	17	0.14	< 10	< 10	67	< 10	64
99523	201	202	420	4	0.03	11	1710	< 2	0.08	< 2	3	16	0.15	< 10	< 10	65	< 10	50
99524	201	202	290	1	0.03	9	1910	< 2	0.06	< 2	2	13	0.09	< 10	< 10	37	< 10	26
99525	201	202	280	2	0.03	7	2410	< 2	0.06	< 2	2	14	0.07	< 10	< 10	36	< 10	24
99526	201	202	390	1	0.04	6	1630	2	0.04	< 2	2	19	0.09	< 10	< 10	40	< 10	40
99527	201	202	320	2	0.04	7	1960	< 2	0.07	< 2	3	16	0.10	< 10	< 10	43	< 10	34
99701	201	202	265	1	0.05	13	1300	< 2	0.05	< 2	3	48	0.17	< 10	< 10	79	< 10	46
99702	201	202	275	< 1	0.07	12	720	4	0.03	< 2	4	47	0.16	< 10	< 10	61	< 10	48
99703	201	202	230	1	0.04	11	1550	2	0.07	< 2	2	59	0.14	< 10	< 10	62	< 10	44
99704	201	202	295	1	0.05	8	2060	< 2	0.03	< 2	3	23	0.09	< 10	< 10	45	< 10	30
99705	201	202	810	< 1	0.01	12	620	2	0.03	< 2	3	12	0.16	< 10	< 10	61	< 10	96
99706	201	202	2730	1	0.01	17	750	2	0.14	< 2	2	30	0.13	< 10	< 10	56	< 10	154
99707	201	202	480	2	0.01	20	620	2	0.01	< 2	3	15	0.18	< 10	< 10	63	< 10	142
99708	201	202	435	< 1	0.02	21	1150	8	0.01	< 2	4	14	0.17	< 10	< 10	65	< 10	82
99709	201	202	455	3	0.04	26	1160	< 2	0.04	< 2	3	34	0.16	< 10	< 10	61	< 10	72
99710	201	202	835	4	0.01	26	830	16	0.06	< 2	3	10	0.17	< 10	< 10	56	< 10	316
99711	201	202	230	1	0.01	9	1470	< 2	< 0.01	< 2	1	17	0.06	< 10	< 10	23	< 10	28
99712	201	202	120	< 1	0.02	5	1860	< 2	0.02	< 2	1	18	0.05	< 10	< 10	37	< 10	22
99713	201	202	280	3	0.03	15	1920	< 2	0.12	< 2	4	24	0.07	< 10	< 10	60	< 10	56

CERTIFICATION:

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CERTIFICATE OF ANALYSIS A9926848

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
99714	201	202	< 5	< 0.2	0.91	< 2	< 10	60	< 0.5	< 2	0.39	< 0.5	9	23	77	1.52	< 10	< 1	0.17	< 10	0.64
99715	201	202	5	< 0.2	0.86	< 2	< 10	70	< 0.5	< 2	0.19	< 0.5	8	16	27	1.33	< 10	< 1	0.12	< 10	0.45
99716	201	202	< 5	< 0.2	0.97	< 2	< 10	80	< 0.5	< 2	0.50	< 0.5	10	21	43	1.71	< 10	< 1	0.20	< 10	0.64
99717	201	202	< 5	< 0.2	1.84	< 2	< 10	110	< 0.5	< 2	0.49	< 0.5	9	30	23	2.79	10	< 1	0.20	< 10	0.63
99718	201	202	< 5	< 0.2	1.01	< 2	< 10	70	< 0.5	< 2	0.52	< 0.5	11	27	21	1.68	< 10	< 1	0.12	< 10	0.62
99719	201	202	115	< 0.2	1.34	< 2	< 10	130	< 0.5	< 2	0.40	< 0.5	15	20	15	2.26	< 10	< 1	0.16	< 10	0.63
99720	201	202	< 5	< 0.2	1.18	< 2	< 10	90	< 0.5	< 2	0.51	< 0.5	11	33	23	1.85	< 10	< 1	0.17	< 10	0.95
99721	201	202	< 5	< 0.2	1.05	< 2	< 10	70	< 0.5	< 2	0.61	< 0.5	9	21	19	2.44	< 10	< 1	0.18	< 10	0.65
99722	201	202	< 5	< 0.2	0.87	< 2	< 10	120	< 0.5	< 2	0.83	< 0.5	7	27	22	3.23	< 10	< 1	0.21	< 10	0.51
99723A	201	202	< 5	< 0.2	1.31	< 2	< 10	90	< 0.5	< 2	0.50	< 0.5	7	11	18	1.79	< 10	< 1	0.21	< 10	0.64
99723B	201	202	< 5	< 0.2	1.37	< 2	< 10	250	< 0.5	< 2	0.73	< 0.5	11	28	65	2.61	< 10	< 1	0.31	< 10	0.84
99724	--	--	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd
99725	201	202	< 5	< 0.2	1.82	< 2	< 10	170	< 0.5	< 2	0.70	< 0.5	12	12	25	2.21	< 10	< 1	0.26	< 10	0.68
99726	201	202	< 5	< 0.2	1.87	< 2	< 10	300	< 0.5	< 2	1.13	0.5	30	11	42	2.63	< 10	1	0.57	< 10	0.85
99727	201	202	< 5	< 0.2	2.03	< 2	< 10	210	0.5	< 2	0.66	1.0	20	15	96	2.52	10	< 1	0.65	< 10	1.13
99728	201	202	< 5	< 0.2	1.28	< 2	< 10	140	< 0.5	< 2	0.62	< 0.5	9	12	33	1.74	< 10	< 1	0.22	< 10	0.52
99729	201	202	< 5	< 0.2	1.34	< 2	< 10	110	< 0.5	< 2	0.66	< 0.5	9	32	27	2.13	< 10	< 1	0.38	< 10	0.79
99730	201	202	< 5	< 0.2	1.97	< 2	< 10	210	< 0.5	< 2	0.60	< 0.5	17	51	82	3.03	10	1	0.89	< 10	1.45
99731	201	202	< 5	< 0.2	0.96	< 2	< 10	50	< 0.5	< 2	0.35	< 0.5	8	11	14	1.91	< 10	< 1	0.17	< 10	0.52
99732	201	202	< 5	< 0.2	0.90	< 2	< 10	50	< 0.5	< 2	0.35	< 0.5	6	10	13	1.94	< 10	< 1	0.16	< 10	0.45
99733	201	202	< 5	< 0.2	0.86	< 2	< 10	40	< 0.5	< 2	0.62	< 0.5	8	50	15	4.30	< 10	< 1	0.11	< 10	0.48
99734	201	202	< 5	< 0.2	0.66	< 2	< 10	30	< 0.5	< 2	0.55	< 0.5	6	35	16	7.05	10	< 1	0.16	10	0.46
99735	201	202	< 5	< 0.2	0.85	< 2	< 10	40	< 0.5	< 2	0.56	< 0.5	7	36	21	4.70	< 10	< 1	0.17	< 10	0.55
99736	201	202	< 5	< 0.2	0.89	< 2	< 10	40	< 0.5	< 2	0.61	< 0.5	9	42	21	5.55	< 10	< 1	0.14	< 10	0.51
99737	201	202	< 5	< 0.2	0.96	< 2	< 10	190	< 0.5	< 2	0.55	< 0.5	5	7	25	1.47	< 10	< 1	0.18	< 10	0.47
99738	201	202	< 5	< 0.2	1.52	< 2	< 10	80	< 0.5	< 2	0.24	< 0.5	4	10	17	3.06	10	< 1	0.23	< 10	0.59
99739	201	202	< 5	< 0.2	0.60	< 2	< 10	40	< 0.5	< 2	0.32	< 0.5	3	6	5	1.28	< 10	< 1	0.10	< 10	0.27
99740	201	202	< 5	< 0.2	0.75	< 2	< 10	50	< 0.5	< 2	0.49	< 0.5	4	9	9	1.78	< 10	< 1	0.13	< 10	0.37

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2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
Comments: ATTN: ARNE BIRKELAND

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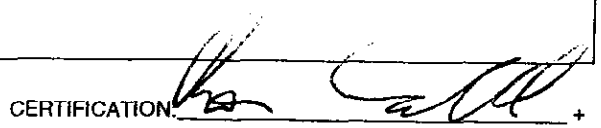
Invoice No. :I9926848
P.O. Number :
Account :AN

CERTIFICATE OF ANALYSIS A9926848

SAMPLE	PREP CODE		Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
99714	201	202	175	< 1	0.02	12	510	< 2	0.04	< 2	3	5	0.08	< 10	< 10	35	< 10	46
99715	201	202	240	< 1	0.01	7	280	< 2	0.02	< 2	1	5	0.08	< 10	< 10	32	< 10	20
99716	201	202	275	< 1	0.02	12	1020	< 2	0.07	< 2	2	11	0.09	< 10	< 10	35	< 10	32
99717	201	202	465	1	0.01	12	380	12	0.03	< 2	3	13	0.22	< 10	< 10	66	< 10	50
99718	201	202	670	< 1	0.02	15	900	2	0.03	< 2	2	12	0.10	< 10	< 10	38	< 10	32
99719	201	202	1675	< 1	0.01	10	560	2	0.05	< 2	2	14	0.11	< 10	< 10	47	< 10	58
99720	201	202	315	< 1	0.02	15	970	< 2	0.01	< 2	3	9	0.11	< 10	< 10	52	< 10	26
99721	201	202	345	1	0.03	9	1170	< 2	0.04	< 2	3	21	0.11	< 10	< 10	52	< 10	38
99722	201	202	225	1	0.03	9	1980	< 2	0.03	< 2	3	22	0.07	< 10	< 10	94	< 10	34
99723A	201	202	300	1	0.01	6	650	< 2	0.03	< 2	2	21	0.11	< 10	< 10	40	< 10	34
99723B	201	202	295	3	0.04	17	1380	2	0.08	< 2	4	28	0.12	< 10	< 10	75	< 10	64
99724	--	--	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd	NotRcd
99725	201	202	1635	3	0.03	7	610	2	0.05	< 2	2	34	0.12	< 10	< 10	44	< 10	68
99726	201	202	4510	4	0.03	8	1270	4	0.19	< 2	3	41	0.11	< 10	< 10	51	< 10	84
99727	201	202	585	1	0.02	12	790	8	0.07	< 2	4	25	0.16	< 10	< 10	55	< 10	218
99728	201	202	600	1	0.01	8	710	4	0.06	< 2	2	25	0.09	< 10	< 10	37	< 10	64
99729	201	202	390	< 1	0.03	15	1190	< 2	0.03	< 2	4	26	0.13	< 10	< 10	44	< 10	96
99730	201	202	435	< 1	0.03	29	1480	2	0.01	< 2	4	16	0.23	< 10	< 10	70	< 10	62
99731	201	202	395	< 1	0.02	6	600	< 2	0.03	< 2	2	16	0.11	< 10	< 10	40	< 10	28
99732	201	202	355	1	0.01	6	650	< 2	0.03	< 2	1	15	0.10	< 10	< 10	38	< 10	26
99733	201	202	590	1	0.06	11	990	8	0.05	< 2	3	32	0.15	< 10	< 10	59	< 10	72
99734	201	202	580	1	0.04	7	1040	< 2	0.03	< 2	3	15	0.12	< 10	< 10	72	< 10	86
99735	201	202	570	< 1	0.05	9	880	2	0.04	< 2	3	24	0.14	< 10	< 10	59	< 10	86
99736	201	202	665	3	0.05	10	1110	8	0.05	< 2	3	25	0.14	< 10	< 10	65	< 10	86
99737	201	202	275	1	0.01	5	480	2	0.11	< 2	1	40	0.14	< 10	< 10	34	< 10	74
99738	201	202	280	1	0.02	5	560	< 2	0.05	< 2	3	11	0.18	< 10	< 10	49	< 10	54
99739	201	202	150	< 1	0.03	3	520	6	0.02	< 2	1	11	0.11	< 10	< 10	33	< 10	16
99740	201	202	215	< 1	0.03	4	960	< 2	0.01	< 2	2	13	0.10	< 10	< 10	39	< 10	22

CERTIFICATION: 

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

A9928261

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9928261

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 16-SEP-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	12	Dry, sieve to -80 mesh
202	12	save reject
229	12	ICP - AQ Digestion charge

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	12	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
2118	12	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	12	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	12	As ppm: 32 element, soil & rock	ICP-AES	2	10000
557	12	B ppm: 32 element, rock & soil	ICP-AES	10	10000
2121	12	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	12	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	12	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	12	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	12	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	12	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	12	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	12	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	12	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	12	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	12	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	12	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
2151	12	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	12	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	12	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	12	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	12	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
2138	12	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	12	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	12	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
551	12	S %: 32 element, rock & soil	ICP-AES	0.01	5.00
2141	12	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	12	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	12	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	12	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
2145	12	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	12	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	12	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	12	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	12	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED *

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
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CERTIFICATE OF ANALYSIS A9928261

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
99528	201	202	10	0.2	0.89	< 2	< 10	80	< 0.5	< 2	0.26	< 0.5	9	73	54	1.58	< 10	< 1	0.12	< 10	0.54
99529	201	202	< 5	0.2	1.46	< 2	< 10	120	< 0.5	< 2	0.75	1.5	17	30	111	3.04	< 10	< 1	0.27	< 10	0.87
99530	201	202	< 5	0.4	1.93	< 2	< 10	80	< 0.5	< 2	1.15	2.5	18	62	205	3.67	< 10	< 1	0.30	< 10	1.05
99531	201	202	< 5	< 0.2	1.14	< 2	< 10	130	< 0.5	< 2	0.79	< 0.5	11	22	39	2.13	< 10	< 1	0.16	< 10	0.68
99532	201	202	< 5	< 0.2	1.06	< 2	< 10	220	< 0.5	< 2	0.81	0.5	8	11	22	2.32	< 10	< 1	0.25	< 10	0.50
99533	201	202	< 5	0.2	1.59	< 2	< 10	250	< 0.5	< 2	0.98	< 0.5	16	17	47	3.27	< 10	< 1	0.24	10	0.89
99534	201	202	< 5	< 0.2	1.03	< 2	< 10	170	< 0.5	< 2	0.69	< 0.5	9	9	20	2.90	< 10	< 1	0.20	10	0.52
99535	201	202	< 5	< 0.2	1.10	< 2	< 10	190	< 0.5	< 2	0.55	< 0.5	7	13	14	4.02	< 10	< 1	0.31	30	0.62
99536	201	202	20	< 0.2	1.15	< 2	< 10	150	< 0.5	< 2	0.35	< 0.5	6	9	14	4.73	< 10	< 1	0.29	30	0.49
99537	201	202	15	< 0.2	1.26	< 2	< 10	230	< 0.5	< 2	0.98	< 0.5	7	7	6	3.56	< 10	< 1	0.32	10	0.62
99538	201	202	< 5	1.0	2.20	< 2	< 10	180	< 0.5	< 2	0.38	< 0.5	17	37	50	2.56	< 10	1	0.36	10	0.89
99539	201	202	< 5	0.2	2.35	< 2	< 10	210	< 0.5	< 2	0.45	< 0.5	23	92	37	3.65	< 10	< 1	0.55	< 10	1.44

CERTIFICATION: _____

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

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British Columbia, Canada V7J 2C1
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To: ARNEX RESOURCES LIMITED *

2069 WESTVIEW DR.
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V7M 3B1

Project : SCOTIA
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SAMPLE	PREP CODE		Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
99528	201	202	210	1	0.03	49	820	14	0.11	< 2	1	17	0.11	< 10	< 10	39	< 10	34
99529	201	202	945	2	0.07	16	1300	14	0.07	< 2	4	14	0.17	< 10	< 10	73	< 10	278
99530	201	202	1100	3	0.07	27	1810	78	0.08	< 2	4	20	0.20	< 10	< 10	81	< 10	598
99531	201	202	335	2	0.04	13	1640	< 2	0.05	< 2	2	10	0.17	< 10	< 10	50	< 10	62
99532	201	202	490	3	0.04	10	1880	4	0.08	< 2	2	12	0.16	< 10	< 10	32	< 10	62
99533	201	202	605	3	0.05	14	2480	2	0.07	< 2	3	14	0.21	< 10	< 10	58	< 10	80
99534	201	202	470	2	0.04	7	1770	< 2	0.04	< 2	2	7	0.17	< 10	< 10	38	< 10	64
99535	201	202	690	3	0.03	6	1390	< 2	0.04	< 2	3	9	0.20	< 10	< 10	46	< 10	100
99536	201	202	755	3	0.03	3	1190	< 2	0.02	< 2	4	7	0.21	< 10	< 10	49	< 10	116
99537	201	202	785	3	0.03	3	3020	< 2	0.05	< 2	2	17	0.21	< 10	< 10	39	< 10	94
99538	201	202	615	1	0.03	15	1330	< 2	0.08	< 2	3	17	0.16	< 10	< 10	63	< 10	58
99539	201	202	690	2	0.04	37	1000	2	0.08	< 2	5	17	0.25	< 10	< 10	104	< 10	70

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2069 WESTVIEW DR.
NORTH VANCOUVER, BC
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A9926814

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9926814

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 31-AUG-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	11	Geochem ring to approx 150 mesh
226	11	0-3 Kg crush and split
3202	11	Rock - save entire reject
229	11	ICP - AQ Digestion charge

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	11	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
2118	11	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	11	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	11	As ppm: 32 element, soil & rock	ICP-AES	2	10000
557	11	B ppm: 32 element, rock & soil	ICP-AES	10	10000
2121	11	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	11	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	11	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	11	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	11	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	11	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	11	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	11	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	11	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	11	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	11	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	11	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
2151	11	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	11	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	11	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	11	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	11	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
2138	11	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	11	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	11	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
551	11	S %: 32 element, rock & soil	ICP-AES	0.01	5.00
2141	11	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	11	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	11	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	11	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
2145	11	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	11	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	11	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	11	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	11	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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CERTIFICATE OF ANALYSIS A9926814

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
301901	205	226	< 5	6.2	3.11	< 2	< 10	40	< 0.5	6	1.42	4.0	13	146	190	3.55	< 10	< 1	0.24	< 10	0.61
301902	205	226	45	2.0	3.05	< 2	< 10	70	< 0.5	46	0.03	0.5	8	111	3810	8.01	10	< 1	0.91	< 10	1.82
301903	205	226	10	0.6	2.59	32	< 10	10	< 0.5	76	0.09	1.0	24	103	612	>15.00	< 10	< 1	0.84	< 10	1.52
301904A	205	226	10	0.2	2.79	2	< 10	40	< 0.5	10	0.19	0.5	13	96	311	7.61	< 10	< 1	1.11	< 10	1.70
301904B	205	226	10	0.4	2.28	18	10	10	< 0.5	26	0.06	1.5	19	48	518	12.80	< 10	< 1	0.68	< 10	1.32
301905A	205	226	< 5	< 0.2	0.63	8	< 10	60	< 0.5	2	0.01	< 0.5	4	57	197	3.37	< 10	< 1	0.37	< 10	0.22
301905B	205	226	< 5	0.2	0.81	22	< 10	40	< 0.5	12	0.08	< 0.5	13	59	309	5.55	< 10	< 1	0.47	< 10	0.33
301906	205	226	< 5	1.8	3.43	60	< 10	40	< 0.5	6	1.88	11.5	15	201	212	6.34	10	< 1	0.74	< 10	1.15
301907	205	226	< 5	0.2	0.32	< 2	< 10	50	< 0.5	6	0.16	< 0.5	57	179	809	1.60	< 10	< 1	0.05	< 10	0.14
301908	205	226	< 5	0.2	0.52	< 2	< 10	70	< 0.5	2	0.04	< 0.5	24	153	397	2.05	< 10	< 1	0.31	10	0.18
301910	205	226	< 5	< 0.2	1.32	< 2	< 10	60	< 0.5	6	2.97	< 0.5	21	28	30	4.48	< 10	3	0.23	< 10	1.14

CERTIFICATION:

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

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British Columbia, Canada V7J 2C1
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SAMPLE	PREP CODE		Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
301901	205	226	160	81	0.24	107	1010	24	3.54	6	3	108	0.12	< 10	< 10	125	< 10	244
301902	205	226	820	4	0.01	5	< 10	4	2.84	< 2	< 1	4	0.07	< 10	< 10	4	< 10	110
301903	205	226	790	6	0.01	6	90	10	>5.00	< 2	< 1	2	0.07	< 10	< 10	31	< 10	238
301904A	205	226	620	6	0.04	17	500	8	3.70	2	1	5	0.12	< 10	< 10	37	< 10	298
301904B	205	226	555	14	0.02	8	40	4	>5.00	< 2	< 1	2	0.07	< 10	< 10	23	< 10	292
301905A	205	226	60	1	0.01	1	30	< 2	2.69	< 2	< 1	1	0.01	< 10	< 10	2	< 10	16
301905B	205	226	115	5	0.01	2	310	8	4.52	< 2	< 1	1	0.02	< 10	< 10	11	< 10	36
301906	205	226	190	46	0.26	97	1490	24	>5.00	< 2	8	116	0.12	< 10	< 10	246	< 10	824
301907	205	226	60	2	0.03	7	330	< 2	0.90	< 2	< 1	8	0.01	< 10	< 10	9	< 10	10
301908	205	226	120	2	0.04	3	150	< 2	0.40	< 2	1	6	0.06	< 10	< 10	12	< 10	16
301910	205	226	530	3	0.21	10	2970	< 2	1.56	< 2	6	19	0.12	< 10	< 10	52	< 10	46

CERTIFICATION:

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212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

A9928307

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9928307

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA NORTH
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 15-SEP-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	4	Geochem ring to approx 150 mesh
226	4	0-3 Kg crush and split
3202	4	Rock - save entire reject
233	4	Assay AQ ICP digestion charge
* NOTE	1:	

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	4	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
4001	4	Ag ppm : A30 ICP package	ICP-AES	1	200
4002	4	Al %: A30 ICP package	ICP-AES	0.01	15.00
4003	4	As ppm: A30 ICP package	ICP-AES	10	50000
4004	4	Ba ppm: A30 ICP package	ICP-AES	20	20000
4005	4	Be ppm: A30 ICP package	ICP-AES	5	100
4006	4	Bi ppm: A30 ICP package	ICP-AES	10	50000
4007	4	Ca %: A30 ICP package	ICP-AES	0.01	30.0
4008	4	Cd ppm: A30 ICP package	ICP-AES	5	1000
4009	4	Co ppm: A30 ICP package	ICP-AES	5	50000
4010	4	Cr ppm: A30 ICP package	ICP-AES	10	20000
4011	4	Cu ppm: A30 ICP package	ICP-AES	5	50000
4012	4	Fe %: A30 ICP package	ICP-AES	0.01	30.0
4013	4	Hg ppm: A30 ICP package	ICP-AES	10	10000
4014	4	K %: A30 ICP package	ICP-AES	0.01	10.00
4015	4	Mg %: A30 ICP package	ICP-AES	0.01	30.0
4016	4	Mn ppm: A30 ICP package	ICP-AES	10	50000
4017	4	Mo ppm: A30 ICP package	ICP-AES	5	50000
4018	4	Na %: A30 ICP package	ICP-AES	0.01	20.0
4019	4	Ni ppm: A30 ICP package	ICP-AES	5	50000
4020	4	P ppm: A30 ICP package	ICP-AES	100	10000
4021	4	Pb ppm: A30 ICP package	ICP-AES	5	50000
4022	4	Sb ppm: A30 ICP package	ICP-AES	10	10000
4023	4	Sc ppm: A30 ICP package	ICP-AES	5	10000
4024	4	Sr ppm: A30 ICP package	ICP-AES	5	10000
4025	4	Ti %: A30 ICP package	ICP-AES	0.01	10.00
4026	4	Tl ppm: A30 ICP package	ICP-AES	20	10000
4027	4	U ppm: A30 ICP package	ICP-AES	20	10000
4028	4	V ppm: A30 ICP package	ICP-AES	20	50000
4029	4	W ppm: A30 ICP package	ICP-AES	20	10000
4030	4	Zn ppm: A30 ICP package	ICP-AES	5	50000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED *

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA NORTH
Comments: ATTN: ARNE BIRKELAND

Certificate Date: 15-SEP-1999
Invoice No. : I9928307
P.O. Number :
Account : AN

CERTIFICATE OF ANALYSIS A9928307

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Hg ppm	K %	Mg %	Mn ppm	Mo ppm	Na %
301911	205 226	< 5	1	2.17	< 10	600	< 5	< 10	0.03	< 5	< 5	140	90	5.90	< 10	0.96	1.72	590	< 5	0.07
301912	205 226	< 5	1	2.05	< 10	460	< 5	< 10	0.03	< 5	< 5	120	65	6.04	< 10	1.15	1.87	480	< 5	0.09
301913	205 226	< 5	< 1	2.73	< 10	740	< 5	< 10	0.03	< 5	< 5	130	170	4.98	< 10	1.42	2.17	820	10	0.09
301914	205 226	50	1	0.22	200	180	< 5	< 10	0.03	< 5	20	330	25	2.77	< 10	0.13	0.09	30	< 5	< 0.01

CERTIFICATION:

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2069 WESTVIEW DR.
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Project : SCOTIA NORTH
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Page Number :1-B
Total Pages :1
Certificate Date: 15-SEP-1999
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CERTIFICATE OF ANALYSIS A9928307

SAMPLE	PREP CODE		Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
301911	205	226	< 5	< 100	30	< 10	< 5	< 5	0.13	< 20	< 20	< 20	< 20	205
301912	205	226	< 5	< 100	20	< 10	< 5	< 5	0.14	< 20	< 20	< 20	< 20	210
301913	205	226	< 5	< 100	< 5	< 10	< 5	< 5	0.18	< 20	< 20	< 20	< 20	240
301914	205	226	80	< 100	205	< 10	< 5	< 5	0.01	< 20	< 20	< 20	< 20	60

CERTIFICATION:

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To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

A9926815

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9926815

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 01-SEP-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	32	Dry, sieve to -80 mesh
202	32	save reject
229	32	ICP - AQ Digestion charge

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	32	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
2118	32	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	32	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	32	As ppm: 32 element, soil & rock	ICP-AES	2	10000
557	32	B ppm: 32 element, rock & soil	ICP-AES	10	10000
2121	32	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	32	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	32	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	32	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	32	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	32	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	32	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	32	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	32	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	32	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	32	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	32	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
2151	32	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	32	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	32	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	32	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	32	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
2138	32	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	32	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	32	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
551	32	S %: 32 element, rock & soil	ICP-AES	0.01	5.00
2141	32	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	32	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	32	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	32	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
2145	32	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	32	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	32	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	32	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	32	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
Comments: ATTN: ARNE BIRKELAND

Page Number :1-A
Total Pages :1
Certificate Date: 01-SEP-1999
Invoice No. :I9926815
P.O. Number :
Account :AN

CERTIFICATE OF ANALYSIS A9926815

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
190301	201	202	< 5	< 0.2	1.85	4	< 10	170	< 0.5	2	0.22	< 0.5	9	26	36	2.65	< 10	< 1	0.36	< 10	1.02
190302	201	202	< 5	< 0.2	1.49	6	< 10	160	< 0.5	2	0.08	< 0.5	5	7	2	2.86	< 10	< 1	0.46	< 10	0.78
190303	201	202	< 5	0.2	1.19	6	< 10	20	< 0.5	10	0.07	< 0.5	4	11	30	3.65	< 10	1	0.07	< 10	0.29
190304	201	202	< 5	< 0.2	2.52	< 2	< 10	190	< 0.5	< 2	0.34	< 0.5	27	40	156	3.33	< 10	< 1	0.40	< 10	1.28
190305	201	202	< 5	< 0.2	1.79	< 2	< 10	100	< 0.5	< 2	0.20	< 0.5	16	14	48	2.32	< 10	< 1	0.18	< 10	0.75
190306	201	202	< 10	< 0.2	0.10	< 2	< 10	10	< 0.5	< 2	0.35	< 0.5	< 1	< 1	5	0.08	< 10	< 1	0.01	< 10	0.04
190307	201	202	< 5	< 0.2	1.10	8	< 10	70	< 0.5	2	0.09	< 0.5	3	7	18	2.13	< 10	< 1	0.21	< 10	0.59
190308	201	202	< 10	0.2	0.06	< 2	< 10	10	< 0.5	< 2	0.21	< 0.5	< 1	< 1	5	0.06	< 10	< 1	0.01	< 10	0.05
190309	201	202	< 5	< 0.2	2.05	2	< 10	170	< 0.5	2	0.25	< 0.5	14	22	46	3.22	< 10	< 1	0.48	< 10	1.25
190310	201	202	< 5	< 0.2	2.17	< 2	< 10	190	< 0.5	< 2	0.17	< 0.5	12	22	66	2.94	< 10	< 1	0.86	< 10	1.59
190311	201	202	< 5	0.2	2.48	< 2	< 10	120	< 0.5	6	0.10	< 0.5	13	25	32	3.97	< 10	< 1	0.38	< 10	1.11
190312	201	202	< 5	0.2	2.70	< 2	< 10	90	< 0.5	2	0.09	0.5	14	51	27	5.07	< 10	< 1	0.24	< 10	1.10
190313	201	202	< 5	< 0.2	1.77	6	< 10	100	< 0.5	2	0.14	< 0.5	12	42	16	3.58	< 10	< 1	0.31	< 10	0.93
190314	201	202	< 5	< 0.2	2.00	< 2	< 10	190	< 0.5	4	0.24	< 0.5	12	36	51	4.19	< 10	< 1	0.31	10	0.79
190315	201	202	< 5	< 0.2	1.73	< 2	< 10	170	< 0.5	2	0.34	< 0.5	12	23	138	2.96	< 10	< 1	0.26	10	0.79
190316	201	202	< 5	0.2	1.82	< 2	< 10	140	< 0.5	6	0.17	< 0.5	19	25	455	6.35	< 10	< 1	0.30	10	0.85
190317	201	202	< 5	< 0.2	1.42	8	< 10	100	< 0.5	6	0.18	< 0.5	20	27	201	4.48	< 10	< 1	0.27	10	0.64
190318	201	202	< 5	< 0.2	1.70	2	< 10	80	< 0.5	6	0.17	< 0.5	23	39	166	3.83	< 10	< 1	0.24	< 10	0.65
190319	201	202	< 10	< 0.2	0.04	< 2	< 10	40	< 0.5	< 2	0.32	< 0.5	< 1	1	8	0.06	< 10	< 1	0.01	< 10	0.05
190320	201	202	< 5	< 0.2	2.11	< 2	< 10	90	< 0.5	6	0.37	0.5	12	39	52	4.00	< 10	< 1	0.25	10	1.09
190321	201	202	< 5	0.2	2.60	< 2	< 10	70	< 0.5	2	0.17	< 0.5	16	65	26	4.19	< 10	< 1	0.31	< 10	1.30
190322	201	202	< 5	< 0.2	1.62	2	< 10	70	< 0.5	2	0.20	< 0.5	10	28	19	4.01	< 10	1	0.20	< 10	0.71
190323	201	202	< 5	< 0.2	1.94	2	< 10	110	< 0.5	< 2	0.89	< 0.5	16	43	19	3.56	< 10	< 1	0.30	< 10	0.86
190324	201	202	< 10	0.6	2.00	2	< 10	120	< 0.5	< 2	0.84	2.5	11	35	55	2.90	< 10	1	0.37	20	0.94
190325	201	202	< 5	< 0.2	1.63	6	< 10	250	< 0.5	< 2	1.16	< 0.5	18	56	32	2.67	< 10	< 1	0.26	< 10	1.12
190326	201	202	< 5	< 0.2	1.70	12	< 10	200	< 0.5	< 2	0.36	< 0.5	10	60	50	3.08	< 10	< 1	0.34	< 10	1.00
190327	201	202	< 5	< 0.2	2.58	< 2	< 10	100	< 0.5	< 2	0.17	< 0.5	8	28	30	3.23	< 10	< 1	0.18	< 10	0.53
190328	201	202	< 5	0.2	2.31	< 2	< 10	40	< 0.5	6	0.14	0.5	11	40	20	3.91	< 10	< 1	0.13	< 10	0.61
190329	201	202	< 5	< 0.2	2.60	8	< 10	160	< 0.5	4	0.23	< 0.5	21	58	49	4.10	< 10	1	0.43	10	1.18
190330	201	202	< 5	0.2	3.17	10	< 10	150	< 0.5	4	0.16	< 0.5	22	61	41	4.46	< 10	< 1	0.48	< 10	1.27
190331	201	202	< 5	0.2	2.60	6	< 10	150	< 0.5	8	0.20	< 0.5	22	39	67	3.91	< 10	< 1	0.48	< 10	1.18
190332	201	202	< 5	0.2	2.81	< 2	< 10	110	< 0.5	< 2	0.21	< 0.5	18	43	49	3.96	< 10	< 1	0.38	< 10	1.19

CERTIFICATION: _____

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
Comments: ATTN: ARNE BIRKELAND

Certificate Date: 01-SEP-1999
Invoice No. : I9926815
P.O. Number :
Account : AN

CERTIFICATE OF ANALYSIS A9926815

SAMPLE	PREP CODE	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
190301	201 202	535	< 1	0.01	10	460	2	0.03	< 2	2	10	0.15	< 10	< 10	58	< 10	104
190302	201 202	420	< 1	< 0.01	4	270	< 2	0.02	< 2	3	4	0.24	< 10	< 10	72	< 10	40
190303	201 202	140	3	< 0.01	4	510	16	0.03	< 2	1	5	0.23	< 10	< 10	76	< 10	30
190304	201 202	685	< 1	0.01	21	490	10	0.02	< 2	3	11	0.23	< 10	< 10	79	10	142
190305	201 202	660	2	< 0.01	7	480	6	0.03	< 2	1	8	0.14	< 10	< 10	53	< 10	72
190306	201 202	390	< 1	0.01	< 1	290	< 2	0.09	< 2	< 1	4	< 0.01	< 10	< 10	1	< 10	18
190307	201 202	125	3	< 0.01	4	240	< 2	0.03	< 2	1	7	0.14	< 10	< 10	59	< 10	28
190308	201 202	130	< 1	0.01	1	200	< 2	0.05	< 2	< 1	4	< 0.01	< 10	< 10	1	< 10	14
190309	201 202	850	1	0.01	12	780	4	0.03	2	2	8	0.15	< 10	< 10	66	< 10	74
190310	201 202	595	< 1	0.01	13	610	26	0.01	< 2	2	7	0.17	< 10	< 10	68	< 10	112
190311	201 202	460	< 1	< 0.01	10	440	2	0.02	< 2	2	5	0.20	< 10	< 10	83	< 10	64
190312	201 202	375	< 1	< 0.01	19	370	12	0.01	< 2	3	4	0.29	< 10	< 10	107	< 10	78
190313	201 202	550	< 1	0.01	17	900	6	0.01	< 2	1	5	0.27	< 10	< 10	113	< 10	54
190314	201 202	715	1	< 0.01	13	1030	6	0.04	< 2	3	5	0.16	< 10	< 10	77	< 10	46
190315	201 202	730	< 1	0.01	17	810	2	0.05	< 2	2	8	0.13	< 10	< 10	48	< 10	84
190316	201 202	1185	1	0.01	32	470	2	0.08	< 2	1	5	0.11	< 10	< 10	32	< 10	60
190317	201 202	580	1	0.01	31	540	4	0.06	< 2	1	6	0.10	< 10	< 10	39	< 10	68
190318	201 202	625	2	0.01	23	450	2	0.03	< 2	1	4	0.18	< 10	< 10	62	< 10	110
190319	201 202	50	< 1	0.01	2	190	2	0.05	< 2	< 1	8	< 0.01	< 10	< 10	< 1	< 10	20
190320	201 202	560	1	0.01	20	670	26	0.01	2	2	7	0.20	< 10	< 10	61	< 10	520
190321	201 202	675	< 1	< 0.01	21	510	14	0.02	< 2	2	4	0.26	< 10	< 10	78	< 10	234
190322	201 202	450	< 1	< 0.01	10	650	6	0.04	< 2	3	4	0.24	< 10	< 10	81	< 10	104
190323	201 202	995	1	0.01	21	840	8	0.07	< 2	3	17	0.18	< 10	< 10	70	< 10	120
190324	201 202	565	< 1	0.01	34	1120	8	0.09	< 2	4	13	0.11	< 10	< 10	58	< 10	306
190325	201 202	880	2	0.01	31	1290	2	0.06	< 2	4	16	0.13	< 10	< 10	69	< 10	92
190326	201 202	250	3	0.01	26	730	2	0.03	< 2	4	8	0.13	< 10	< 10	75	< 10	58
190327	201 202	235	1	0.01	11	590	8	0.05	< 2	3	6	0.16	< 10	< 10	58	< 10	48
190328	201 202	790	< 1	< 0.01	15	470	26	0.04	< 2	3	3	0.23	< 10	< 10	74	< 10	186
190329	201 202	945	1	0.01	27	520	< 2	0.03	< 2	6	7	0.22	< 10	< 10	91	< 10	80
190330	201 202	1035	< 1	0.01	27	460	2	0.02	< 2	7	7	0.26	< 10	< 10	100	< 10	80
190331	201 202	700	< 1	0.01	18	490	< 2	0.01	2	4	6	0.25	< 10	< 10	96	< 10	64
190332	201 202	800	< 1	0.01	17	700	4	0.03	< 2	4	8	0.24	< 10	< 10	89	< 10	66

CERTIFICATION:

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To: ARNEX RESOURCES LIMITED

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

A9928266

Comments: ATTN: ARNE BIRKELAND

CERTIFICATE A9928266

(AN) - ARNEX RESOURCES LIMITED

Project: SCOTIA
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 16-SEP-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	22	Dry, sieve to -80 mesh
202	22	save reject
229	22	ICP - AQ Digestion charge

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	22	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
2118	22	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	22	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	22	As ppm: 32 element, soil & rock	ICP-AES	2	10000
557	22	B ppm: 32 element, rock & soil	ICP-AES	10	10000
2121	22	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	22	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	22	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	22	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	22	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	22	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	22	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	22	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	22	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	22	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	22	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	22	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
2151	22	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	22	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	22	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	22	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	22	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
2138	22	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	22	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	22	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
551	22	S %: 32 element, rock & soil	ICP-AES	0.01	5.00
2141	22	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	22	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	22	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	22	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.00
2145	22	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	22	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	22	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	22	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	22	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ARNEX RESOURCES LIMITED *

2069 WESTVIEW DR.
NORTH VANCOUVER, BC
V7M 3B1

Project : SCOTIA
Comments: ATTN: ARNE BIRKELAND

Page Number : 1-A
Total Pages : 1
Certificate Date: 16-SEP-1999
Invoice No. : I9928266
P.O. Number :
Account : AN

CERTIFICATE OF ANALYSIS A9928266

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
190333	201	202	< 5	< 0.2	2.40	2	< 10	120	< 0.5	< 2	0.06	< 0.5	3	4	31	6.80	20	< 1	0.39	10	1.00
190334	201	202	< 5	< 0.2	2.85	< 2	< 10	110	< 0.5	< 2	0.04	< 0.5	4	6	41	7.64	30	< 1	0.33	10	1.17
190335	201	202	< 5	< 0.2	2.92	2	< 10	10	< 0.5	< 2	0.03	< 0.5	6	48	33	8.14	30	< 1	0.03	< 10	1.78
190336	201	202	< 5	0.6	3.53	< 2	< 10	120	< 0.5	< 2	0.03	< 0.5	8	23	102	6.44	20	< 1	0.38	< 10	1.68
190337	201	202	< 5	0.6	5.06	< 2	< 10	350	< 0.5	< 2	< 0.01	< 0.5	4	3	69	7.82	40	< 1	1.06	< 10	3.04
190338	201	202	< 5	0.2	3.53	< 2	< 10	150	< 0.5	< 2	< 0.01	< 0.5	8	4	14	7.63	30	< 1	0.83	< 10	1.95
190339	201	202	< 5	0.2	1.33	< 2	< 10	< 10	< 0.5	< 2	0.06	< 0.5	6	40	3	4.27	10	< 1	0.03	< 10	0.57
190340	201	202	< 5	0.2	2.30	< 2	< 10	50	< 0.5	< 2	0.17	< 0.5	7	13	12	5.92	20	< 1	0.10	< 10	0.82
190341	201	202	< 5	0.2	2.04	< 2	< 10	30	< 0.5	< 2	0.05	< 0.5	3	5	26	6.60	30	< 1	0.06	10	0.67
190342	201	202	< 5	0.2	2.44	< 2	< 10	30	< 0.5	< 2	0.06	< 0.5	5	34	42	7.33	30	< 1	0.09	< 10	0.92
190343	201	202	< 5	0.6	2.98	< 2	< 10	90	< 0.5	< 2	0.06	< 0.5	5	17	30	5.60	20	< 1	0.18	10	0.87
190344	201	202	10	0.6	2.97	< 2	< 10	230	< 0.5	< 2	< 0.01	< 0.5	2	< 1	51	11.15	30	1	0.44	< 10	0.96
190345	201	202	< 5	0.2	3.58	< 2	< 10	70	< 0.5	< 2	0.02	< 0.5	3	7	30	7.41	30	< 1	0.29	< 10	1.65
190346	201	202	< 5	0.2	3.84	< 2	< 10	160	< 0.5	< 2	0.07	< 0.5	9	27	42	7.15	20	< 1	0.59	< 10	1.75
190347	201	202	< 5	0.6	2.99	< 2	< 10	100	< 0.5	< 2	0.07	< 0.5	5	7	23	6.24	30	< 1	0.35	< 10	1.28
190348	201	202	< 5	0.2	3.09	< 2	< 10	80	< 0.5	< 2	0.05	< 0.5	6	9	29	6.91	30	< 1	0.20	< 10	1.31
190349	201	202	< 5	0.2	2.98	< 2	< 10	50	< 0.5	< 2	0.05	< 0.5	8	16	9	5.78	20	< 1	0.10	10	1.67
190350	201	202	< 5	0.4	2.85	< 2	< 10	120	< 0.5	< 2	0.03	< 0.5	5	8	100	7.07	10	< 1	0.40	< 10	1.50
190351	201	202	< 5	0.6	3.03	< 2	< 10	120	< 0.5	< 2	0.02	< 0.5	2	3	102	6.90	10	< 1	0.25	< 10	1.01
190352	201	202	< 5	0.4	2.86	< 2	< 10	200	< 0.5	< 2	0.04	< 0.5	4	5	21	7.58	20	< 1	0.46	< 10	1.37
190353	201	202	< 5	0.2	3.72	< 2	< 10	150	0.5	< 2	0.03	< 0.5	10	13	34	7.22	30	< 1	0.44	< 10	1.79
190354	201	202	15	< 0.2	0.49	< 2	< 10	10	< 0.5	< 2	< 0.01	< 0.5	< 1	1	8	2.25	< 10	< 1	0.05	< 10	0.05

CERTIFICATION:

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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SAMPLE	PREP CODE		Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
190333	201	202	280	4	0.04	< 1	270	8	0.04	< 2	1	6	0.29	< 10	< 10	63	< 10	88
190334	201	202	595	1	0.03	< 1	390	2	0.04	< 2	2	6	0.27	< 10	< 10	54	< 10	104
190335	201	202	580	5	0.02	9	790	6	0.03	< 2	5	3	0.18	< 10	< 10	114	< 10	70
190336	201	202	330	5	0.03	7	710	4	0.11	< 2	6	1	0.21	< 10	< 10	100	< 10	78
190337	201	202	985	15	0.06	1	260	< 2	0.05	< 2	7	1	0.31	< 10	< 10	117	< 10	280
190338	201	202	535	2	0.04	5	250	2	0.04	< 2	5	< 1	0.31	< 10	< 10	76	< 10	156
190339	201	202	245	< 1	0.03	6	240	2	0.04	< 2	1	< 1	0.38	< 10	< 10	90	< 10	20
190340	201	202	325	1	0.04	3	200	2	0.04	< 2	4	27	0.31	< 10	< 10	88	< 10	76
190341	201	202	400	1	0.03	< 1	470	2	0.06	< 2	2	7	0.26	< 10	< 10	70	< 10	76
190342	201	202	310	4	0.03	6	360	6	0.04	< 2	3	7	0.28	< 10	< 10	111	< 10	50
190343	201	202	280	5	0.05	4	290	4	0.03	< 2	3	10	0.23	< 10	< 10	80	< 10	66
190344	201	202	265	38	0.04	< 1	280	2	0.05	< 2	1	1	0.56	< 10	< 10	85	< 10	88
190345	201	202	405	8	0.03	1	240	2	0.04	< 2	3	3	0.30	< 10	< 10	67	< 10	148
190346	201	202	805	9	0.04	5	430	4	0.04	< 2	5	7	0.28	< 10	< 10	74	< 10	178
190347	201	202	605	38	0.03	2	430	10	0.06	< 2	3	12	0.24	< 10	< 10	66	< 10	138
190348	201	202	595	4	0.03	1	430	2	0.06	< 2	3	11	0.23	< 10	< 10	72	< 10	126
190349	201	202	530	3	0.03	5	340	2	0.05	< 2	5	10	0.21	< 10	< 10	86	< 10	74
190350	201	202	290	14	0.02	1	410	2	0.09	< 2	5	3	0.14	< 10	< 10	93	< 10	60
190351	201	202	375	6	0.03	1	510	8	0.14	< 2	2	3	0.16	< 10	< 10	27	< 10	172
190352	201	202	690	5	0.03	1	250	4	0.04	< 2	1	5	0.28	< 10	< 10	31	< 10	226
190353	201	202	1060	3	0.04	3	450	< 2	0.08	< 2	3	2	0.30	< 10	< 10	53	< 10	202
190354	201	202	30	5	0.01	< 1	240	20	0.06	< 2	< 1	1	0.08	< 10	< 10	26	< 10	12

CERTIFICATION:

APPENDIX D

GEOCHEMICAL DATA SHEET - ROCK CHIP GEOCHEMISTRY

PROJECT: Scotia Regional Program **NTS: 103I/04E, 103 H/14E**

Sample Number	Claim/ Location	Rock Type	Sample Type	App/True Width	Alteration	Weathering Leaching	Mineralization	Observations/ Remarks
301901	SCOT 3	Pv	Grab Creek float	2.5 m	Sil, ser	Mod	Py >20%, lams, +/- wk des Sph	Py fel gn, sch; relect py frags; slab from rusty cliffs above
301902	F-13 0+50W	Pv	Chip Channel	.5 m TW	Sil, mus, ser, amp	Mod	Py, cpy, sph; mass 60% py over 80 mm	Garnet mus ser py schist; interbedded w/ mafic meta-vol tuffs; py layers concordant to foliation @ 163/-8°SW
301903	F-13	Pv	Chip Channel	.42 m TW	Intense mus, sil	V leached Boxworks	Mass sul; py>60% over .42 m; minor cpy, sph	Mus py schist, semi to massive sulphide band as at 301902
301904A	F-13	Pv	Chip	.2 AW slab from face	Mus,sil,amp	Leached Boxworks	Semi to mass sulphide bands	Py mus ser sch; meta-rhy?
301904B	F-13	Pv	Chip Channel	.5 m TW	Sil	Weathered	Mass py lams, dess py, cpy,sph	Py meta-rhy? Py = 40% over 1.4 m
301905A	F-13	Pv	Chip Channel	1.4 m TW	Ser, sil	Mod	Py avg 10%, cpy <1%	Thick bedded py meta-rhy
301905B	F-13	Pv	Chip Channel	.4 m TW	Sil, mus	Mod	Py lams to mm's, dess py, cpy<1%	Semi-mass sulphide band containing mass sul lams, part of py meta-rhy
301906	IYF 1	Ps	Grab of float	.15 m AW	Py, sil	Weathered	Py = 30% as lams, mass lams to 5 mm des cpy, shp?	Py meta-arg; Sedex geological environment, distal to Py fel meta-rhyolite unit?
301907	BFC 3	Pv	Grab, Talus float	.2 m AW	Mus, intense graphite, wad	Weathered Leached Boxworks	Vein py < 10%, minor vein cpy	Late bull qtz vein in dk gr bl fol ortho-gn, sul along qtz vein margins
301908	Big 3	Pv	Grab of ang fl	.1 m AW	Sil, graphite	Very leached and weathered	Py, marcasite?, cpy<1%	Py fel meta-volc, silt, mass sul bands over 3 cm, relect qtz eyes?
301310	Big 2	Pv, +/- Ps	Chip	.3 m TW	Sil	Very leached and weathered	Py<5%	Py meta-fragments in mafic gn w/ interbedded meta-seds, deformed to augens
301911	North Ridge	Pv	Chip Channel	2 m TW	Sil, mus	Leached and weathered	Py to 10%	Py lams in rusty felsic meta-volc, Ridge crest above soil lines
301912	North Ridge	Pv	Chip Channel	2.7 m TW	Sil, mus	Leached and weathered	Py to 10%	Thinly lam py meta-felsic tuff, isoclinal folding
301913	North Ridge	Pv	Chip Channel	1.3 m TW	Sil, mus, py	Leached and weathered	Py, minor sph, trace cpy, Ba?	Part of 301912 unit; thin bed py qtz mus ser sch; folded; 350/vert
301914	Scotia 3	Pv	Float grab	.3 m AW	Sil, mus, ser, mariposite	Weathered	Py, as des and lams, 5%-10%	Thinly foliated greenish cream qtz, mica, py mariposite sch Meta-exhalite?

APPENDIX D

GEOCHEMICAL DATA SHEET - STREAM SEDIMENT GEOCHEMISTRY

PROJECT: Scotia Regional Program **NTS: 103I/04E, 103 H/14E**

Sample Number	Claim/ Location	Volume (m) Width	Depth	Drainage Gradient	Type of Sample	Colour	Texture	% Organic	Petrography Bedrock/Float	Observations Remarks
99701	Scot 3	3.0	1.0	Mod	MM	Br	Sand - mud	Low	Pv	Rusty py gn
99702	Scot 3	1.0	0.5	Mod-St	MM	Dk br	Silt	Low	Pn	Med grained qtz diorite
99703	Scot 3	2.0	0.5	Mod-Fl	MM	Dk br	Silt	Low	Pv	Foliated gn, amphibolite
99704	Scot 3	5.0	0.5	Fl	MM	Dk gr br	Silt	Low	Pv, Ps	Rusty gossan in ckbed, foliated py
99705	Scot 3	1.0	Dry	Mod-St	ASS-Soil	Gr br	Sandy silt	Mod	Pv	Mafic gn, fel gn float
99706	F-13	1.5	0.5	Mod-St	MM	Gr br	Silt	Mod	Pv	Mafic gn oc, fel gn float
99707	F-13	1.5	0.5	Mod-St	ASS	Gr br	Silt	Mod	Pv	Dup of 99706
99708	F-13	2.0	Dry	Mod	ASS	Gr	Sand	V Low	Pv	Mafic gn oc, fel gn float
99709	F-13	0.5	Dry	Mod	ASS	Gr br	Sandy soil	Low-mod	Pv	Mafic gn oc, fel gn float, poor smpl
99710	BFC 3	2.0	0.5	Mod	MM	Dk br	Silt	Low	Pv	Rusty py fel gn float
99711	BFC 3	2.0	0.5	Fl-Mod	MM	Gr	Sandy silt	Low	Pv	+ 25% rusty fel gn fl
99712	BFC 3	2.0	0.3	Mod	MM	Lt gr	Sand	Low	Till	
99713	BFC 3	4.0	1.0	Mod	MM	Lt gr	Sand	Low		Orthogneiss
99714	IYF	2.0	0.3	Steep	MM	Br	Silt	Low	Pv	Minor py fel gn fl
99715	IYF	1.0	0.3	Steep	MM	Br	Silt	Mod	Pv	Minor py fel gn fl
99716	IYF	2.5	0.7	Steep	MM	Gr br	Sandy silt	Low	Pv	Minor py fel gn fl
99717	Big 2	1.0	0.1	Fl	ASS	Br	Silt soil	Mod	Pv	Qtz mus sch
99718	Big 2	3.0	0.5	Mod	MM	Br	Silt	Low	Ps	Phyllite, slate
99719	Big 2	0.3	0.1	Steep	MM	Br	Silt	Low	Pv	Mafic gn, 2 m fel . nterbeds w/ garnet
99720	Big 2	1.0	0.1	Mod	MM	Br	Silt	Low	Pv	Phyllite, slate
99721	Big 2	4.0	1.0	Mod	MM	Gr br	Sandy silt	Low	Pv	Phyllite, slate, micaceous
99722	IYF 2	3.0	0.5	Fl Mod	MM	Br	Silt	Low	Pv, Ps	Rusty py hfls fl
99723A	IYF 2	5.0	1.0	Fl Mod	MM	Lt gr	Silt	Low	Pv	Py bio qtz gn
99723B	BFC	1.0	0.3	Steep	MM	Gr	Silt	Low	Pv	
99725	BFC	1.5	0.6	Steep	MM	Gr	Silt	Low	Pv	Below 99723A
99726	BFC	0.3	0.1	Steep	MM	Br	Silt	High	Pv	Py mafic gn
99727	BFC 4	1.0	0.3	Mod	ASS	Dk br gr	Silt ooze	High	Pv	Mafic gn
99728	BFC 4	1.0	0.1	Steep	MM	Dk gr br	Silt	Low	Pv	Mafic gn
99729	BFC 4	1.0	0.3	Mod Fl	MM	Dk gr	Silt	Low	Pv	Int gn w/ fel interbeds
99730	BFC 4	0.3	0.1	Steep	MM	Lt gr	Sand	Low	Pv	Mixed gn, py fel meta-tuffs, flows
99731	Big 3	1.5	0.5	Steep	MM	Dk br	Silt	Mod	Pv	Very py fel gn, sch ck fl
99732	Big 3	1.0	0.3	Steep	MM	Gr	Silt	Low	Pv	Py ser sch, Rx 301908
99733	SCOT 7	3.0	1.0	Mod	MM	Dk gr	Silt	Low	Pv	Fol mixed gn
99734	SCOT 7	0.5	0.2	Steep	MM	Gr	Silt	Low	Pv	Fol mixed gn
99735	SCOT 7	4.0	0.5	Mod Fl	MM	Dk gr	Silt	Mod	Pv	Mafic gn, pegmatite dykes, sills
99736	SCOT 7	0.5	0.1	Steep	MM	Gr	Silt	Low	Pv	Mafic fel gn, minor py
99737	SCOT 7	1.0	0.3	Steep	MM	Gr	Silt	Low	Pv	
99738	SCOT 7	Seep		Mod	MM	Gr	Silt	Low	Pv	Py fel gn fl
99739	SCOT 7	1.0	0.3	Steep	MM	Gr	Sand	Low	Pv	Py fel gn fl
99740	SCOT 7	2.0	0.5	Mod Fl	MM	Gr	Sand	Low	Pv	Py fel gn fl

APPENDIX D

GEOCHEMICAL DATA SHEET - STREAM SEDIMENT GEOCHEMISTRY

PROJECT: Scotia Regional Program **NTS: 103I/04E, 103 H/14E**

Sample Number	Claim/ Location	Volume (m) Width	Depth	Drainage Gradient	Type of Sample	Colour	Texture	% Organic	Petrography Bedrock/Float	Observations Remarks
99501	Scot 3	1.0	0.2	Mod	MM	Br	Sand	Low	Pv	
99502	Scot 3	1.0	0.2	Mod-St	MM	Br	Silt	Low	Pv	
99503	Big 2	2.0	0.3	Mod-Fl	ASS	Gr	Silt	Low	Pv	
99504	Big 2	2.0	0.3	Mod	ASS	Gr	Silt	Low	Pv	
99505	Big 3	1.0	0.5	Mod-St	MM	Br	Silt	Low	Pv	
99506	Big 3	1.0	0.5	Steep	ASS	Gr br	Sand	High	Pv	
99507	Big 3	2.0	0.5	Mod-St	MM	Gr br	Silt	Mod	Pv	
99508	Big 3	1.0	0.5	Mod	MM	Gr br	Silt	Low	Pv	
99509	Big 3	1.5	0.5	Mod	MM	Gr br	Silt	Low	Pv	
99510	BFC	2.0	0.5	Mod	MM	Gr br	Silt	Low	Pv	
99511	BFC	1.5	0.3	Mod	MM	Br	Silt	Low	Pv	
99512	BFC	1.0	0.5	Mod	MM	Br	Silt	Low	Pv	
99513	BFC	2.0	0.5	Mod	MM	Gr br	Silt	Low	Pv	
99514	IYF 2	0.5	0.3	Steep	MM	Gr	Silt	Low	Pv	
99515	IYF 2	0.3	0.2	Steep	MM	Gr	Sand	Low	Pv	
99516	IYF 2	2.0	1.5	Steep	MM	Gr br	Sandy silt	Low	Pv	
99517	IYF 2	2.0	1.0	Steep	MM	Br	Silt	Low	Pv	
99518	BFC 2	0.5	0.1	Steep	MM	Gr	Sand	Low	Pv	
99519	BFC 2	0.2	0.1	Steep	MM	Br	Silt	High	Pv	
99520	BFC 2	5.0	1.0	Mod	MM	Br	Silt	Low	Pv	
99521	SCOT 5	1.0	0.1	Mod	MM	Gr br	Silt	Low	Pv	
99522	Scotia 4	0.5	0.5	Mod	MM	Br	Silt	Low	Pv	
99523	Scotia 4	2.0	1.0	Mod Fl	MM	Gr br	Silt	Low	Pv	
99524	Scotia 4	1.0	0.3	Mod	MM	Gr br	Silt	Low	Pv	
99525	Scotia 4	3	0.3	Mod	MM	Gr br	Silt	Low	Pv	
99526	Scotia 4	0.7	0.1	Mod	MM	Gr br	Silt	Low	Pv	
99527	SCOT 5	0.7	0.1	Mod	MM	Gr br	Silt	Low	Pv	
99528	Big 2	1.0	0.1	Mod	MM	Dk br	Silt	Low	Pv	
99529	Big 2	1.0	0.1	Mod Fl	MM	Br	Silt	Low	Pv	
99530	Big 2	1.0	0.1	Mod	MM	Dk gr	Silt	Low	Pv	
99531	Big 2	1.0	0.1	Mod Fl	MM	Gr	Silt	Mod	Pv	
99532	SCOT	1.0	0.1	Steep	MM	Dk br	Silt	Low	Pv	
99533	Scotia 3	1.0	0.1	Steep	MM	Dk gr	Silt	Low	Pv	
99534	Scotia 3	1.0	0.1	Mod	MM	Dk br	Silt	Low	Pv	
99535	Scotia 3	1.0	0.1	Mod	MM	Br	Silt	Mod	Pv	
99536	Scotia 3	0.5	0.1	Steep	MM	Br	Silt	Low	Pv	
99537	Scotia 3	0.3	0.1	Mod Fl	MM	Br	Silt	Low	Pv	
99538	SCOT 5	0.5	0.1	Mod	MM	Br	Silt	Low	Pv	
99539	SCOT 5	0.3	0.1	Steep	MM	Br	Silt	Low	Pv	

APPENDIX D

GEOCHEMICAL DATA SHEET - SOIL GEOCHEMISTRY

PROJECT: Scotia Regional Program NTS: 103I/04E, 103 H/14E

Sample Number	Claim/ Location	Depth cm	Horizon	Colour	Description Part Size	% Org	Slope	Observations/ Remarks	
190301	IYF 1 Soil Line	15	B	Dk br	Silt	Low	20 deg	0+00	
190302	IYF 1 Soil Line	45	B	Med br	Silt	Low	20 deg	0+50N	
190303	IYF 1 Soil Line	45	B	Med br	Silt	Low	20 deg	1+00N	
190304	IYF 1 Soil Line	30	B	Med br	Silt	High	20 deg	1+50N	
190305	IYF 1 Soil Line	45	B	Dk gr br	Silt	Low	20 deg	2+00N	
190306	IYF 1 Soil Line	15	B	Red	Silt	Low	20 deg	2+50N	
190307	IYF 1 Soil Line	45	B	Dk br	Silt	Low	20 deg	3+00N	
190308	IYF 1 Soil Line	15	B	Or	Silt	Low	20 deg	3+50N	
190309	IYF 1 Soil Line	15	B	Med br	Silt	Low	20 deg	4+00N	
190310	IYF 1 Soil Line	30	B	Med br	Silt	Low	20 deg	4+50N	
190311	IYF 1 Soil Line	30	B	Or	Silt	Low	20 deg	5+00N	
190312	IYF 1 Soil Line	30	B	Or	Silt	Low	20 deg	5+50N	
190313	IYF 1 Soil Line	30	B	Med br	Silt	Low	20 deg	6+00N	
190314	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	0+00W	
190315	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	0+25W	
190316	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	0+50W	
190317	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	0+75W	
190318	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	1+00W	
190319	F-13 Soil Line	15	B	Or	Silt	Low	20 deg	1+25W	
190320	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	1+50W	
190321	F-13 Soil Line	15	B	Med br	Silt	Low	35 deg	1+75W	
190322	F-13 Soil Line	30	B	Dk br	Silt	Low	35 deg	2+00W	
190323	F-13 Soil Line	30	B	Dk br	Silt	Low	35 deg	2+25W	
190324	F-13 Soil Line	30	B	Bl	Silt	Low	35 deg	2+50W	
190325	F-13 Soil Line	30	A	Bl	Silt	Low	35 deg	2+75W	
190326	F-13 Soil Line	30	A	Dk br	Silt	Low	40 deg	3+00W	
190327	F-13 Soil Line	30	B	Med br	Silt	Low	35 deg	3+25W	
190328	F-13 Soil Line	15	B	Lt or	Silt	Low	20 deg	3+50W	
190329	F-13 Soil Line	15	B	Lt br	Silt	Low	30 deg	3+75W	
190330	F-13 Soil Line	15	B	Or	Silt	Low	35 deg	4+00W	
190331	F-13 Soil Line	15	B	Med br	Silt	Low	20 deg	4+25W	
190332	F-13 Soil Line	15	B	Med br	Silt	Low	20 deg	4+50W	
190333	North Ridge	30	B	Or	Silt	Low	35 deg	0+00N	0+00W
190334	North Ridge	20	B	Or	Silt	Low	35 deg	0+00N	0+15W
190335	North Ridge	10	B	lt or	Silt	Low	35 deg	0+00N	0+30W
190336	North Ridge	20	B	Br	Silt	Low	35 deg	0+00N	0+45W
190337	North Ridge	3	B	Lt or	Silt	Low	35 deg	0+00N	0+60W
190338	North Ridge	15	B	lt or	Silt, talus f, py	Low	35 deg	0+00N	0+75W
190339	North Ridge	30	B	Dk br	Silt	Low	35 deg	0+00N	1+00W
190340	North Ridge	30	B	Br	Silt	Low	35 deg	0+30N	0+00W
190341	North Ridge	20	B	Lt or	Silt	Low	35 deg	0+30N	0+15W
190342	North Ridge	30	B	Or	Silt	Low	35 deg	0+30N	0+30W
190343	North Ridge	30	B	Lt br	Silt	Low	35 deg	0+30N	0+45W
190344	North Ridge	20	B	Or	Silt	Low	35 deg	0+30N	0+60W
190345	North Ridge	15	B	Lt br	Silt	Low	35 deg	0+30N	0+75W
190346	North Ridge	3	B	Br	Silt	Low	35 deg	0+30N	1+00W
190347	North Ridge	15	B	Br	Silt	Low	35 deg	1+50N	0+00W
190348	North Ridge	5	B	Br	Silt	Low	35 deg	1+50N	0+15W
190349	North Ridge	20	B	Br	Silt	Low	35 deg	1+50N	0+30W
190350	North Ridge	30	B	Lt or	Silt, talus f, py	Low	35 deg	1+50N	0+45W
190351	North Ridge	30	B	Br	Silt	Low	35 deg	1+50N	0+60W
190352	North Ridge	10	B	Or	Silt	Low	35 deg	1+50N	0+75W
190353	North Ridge	15	B	Or	Silt	Low	35 deg	1+50N	1+00W
190354	IYF 1	15	B	Or	Silt	Low	15 deg	Above IYF Soil Line	

APPENDIX E

Geology and Mineral Potential of the Ecstall VMS Belt

Alldrick, Gallagher, 2000

Geology and Mineral Potential of the Ecstall VMS Belt (NTS 103H, 103I)

By D.J. Alldrick and C.S. Gallagher

KEYWORDS: *Economic geology, mineral potential, geologic mapping, Central Gneiss Complex, Coast Belt, VMS, sulphide, metavolcanic, greenstone, Devonian, Scotia, Ecstall, Packsack, Prince Rupert.*

INTRODUCTION

The mid-coast region of British Columbia, extending between Prince Rupert and Bella Coola, hosts 31 volcanogenic massive sulphide (VMS) deposits (BC MINFILE; Massey, 1999). A multi-year project will investigate the geologic setting of many of these prospects, starting in the Ecstall VMS belt near Prince Rupert (Figure 1). The Ecstall belt is part of the Central Gneiss Complex, an anastomosing network of high-grade metamorphic rocks enclosed by younger granitoid rocks of the Coast Plutonic Complex (Figure 2).

The Ecstall belt extends 80 kilometres from the estuary of the Skeena River to the Douglas Channel fiord (Figures 2 and 3); width of the belt varies from 3 to 20 kilometres. The belt is equidistant from the northern communities of Prince Rupert, Terrace and Kitimat (Table 1). In addition to its proximity to tidewater and to these communities, the Ecstall belt is close to the Yellowhead Highway, the Skeena Railway line of VIA Rail and the na-

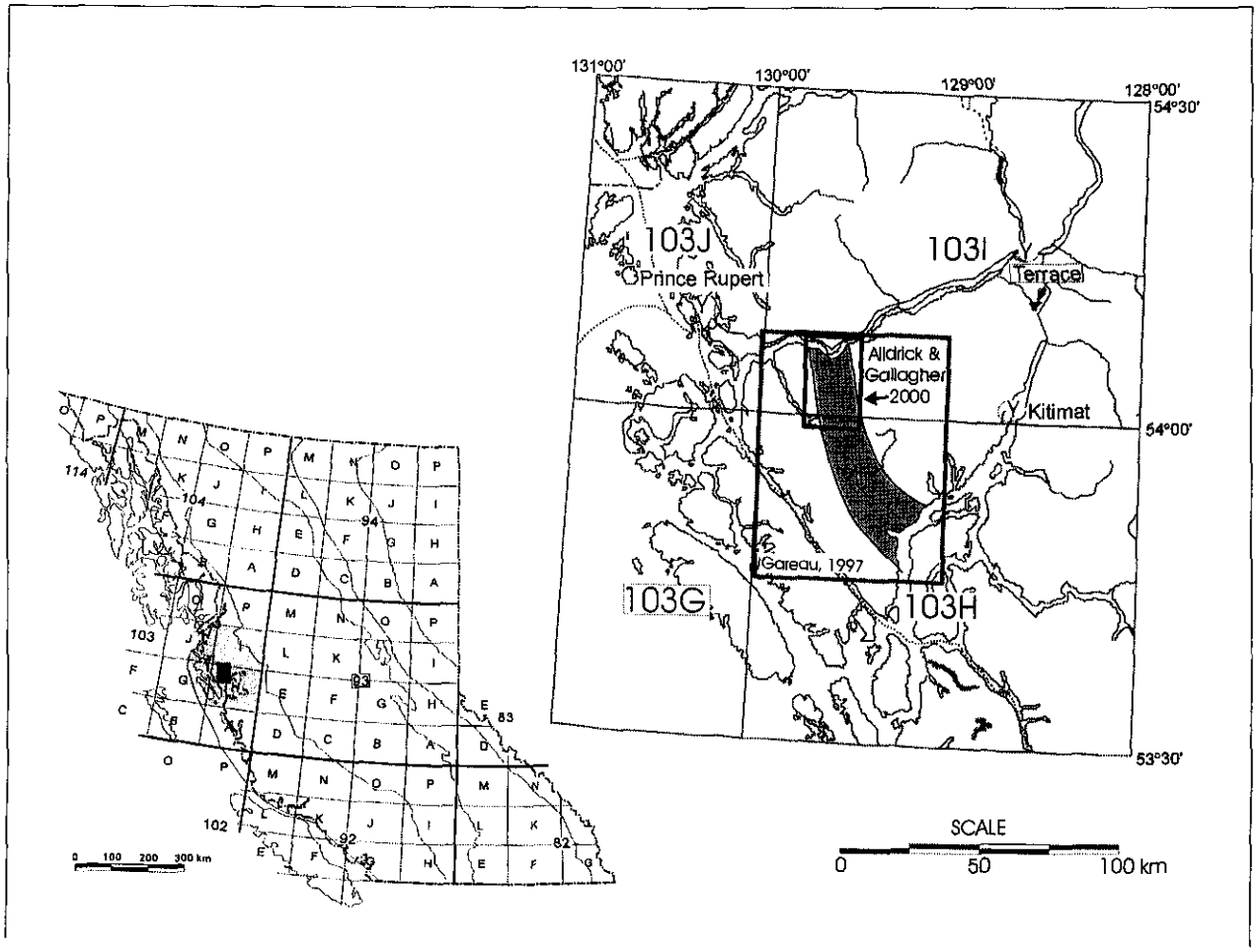


Figure 1. Location of the Ecstall belt in British Columbia.

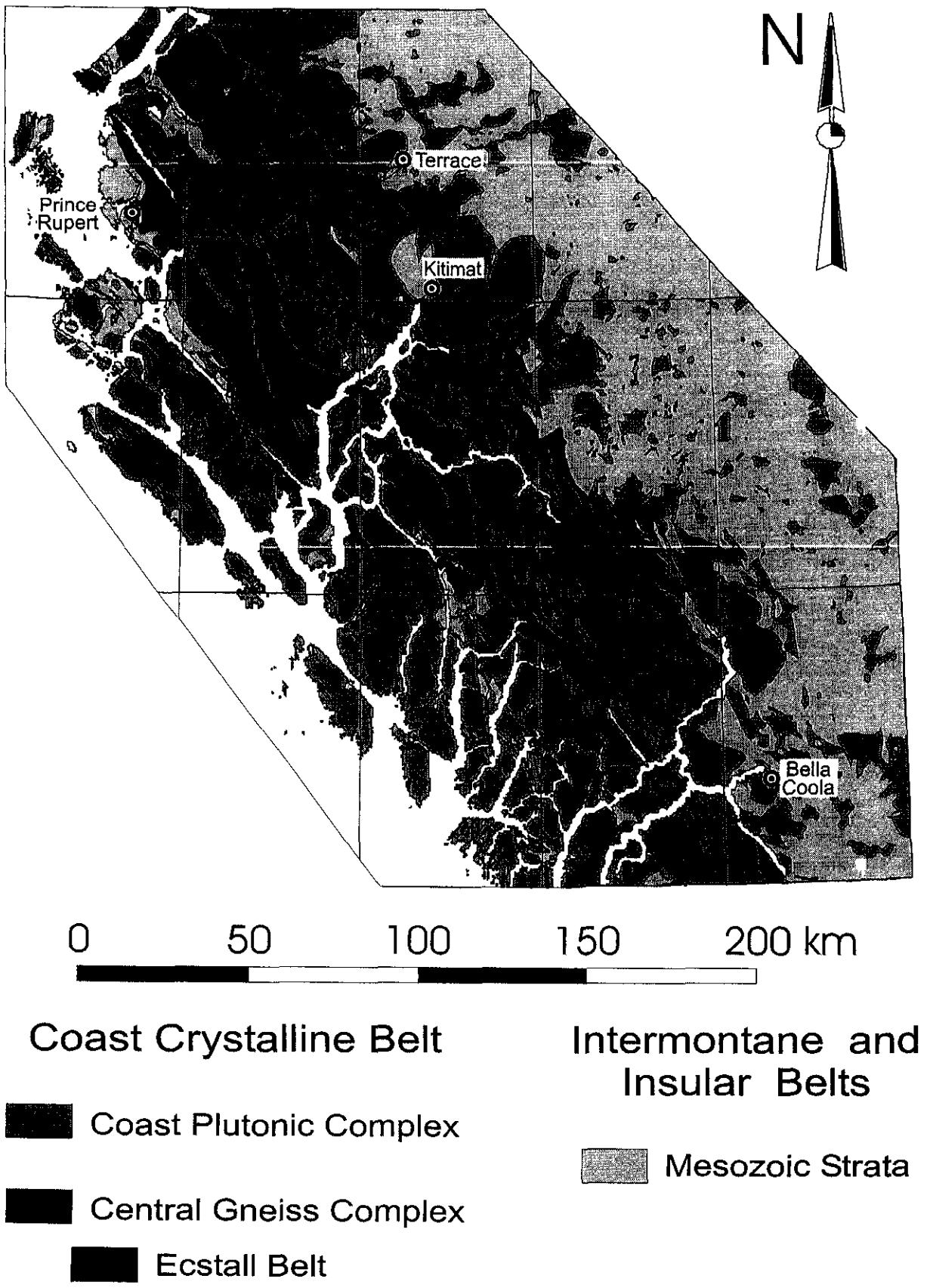


Figure 2. Geology of the mid-coast region of British Columbia, highlighting the location of the Ecstall metavolcanic belt within the Central Gneiss Complex and the Coast Plutonic Complex.

TABLE 1
KEY DISTANCES FOR DEPOSITS IN THE ECSTALL BELT

Deposit:	Scotia	Ecstall	Packsack
Elevation	758 m	182 m	242 m
Distance to:			
Ocean	27	24	18
Estuary / Tidewater	15	6	15
Hydro Powerline	10	19	29
Highway	15	39	49
Railway	15	39	49
Prince Rupert	49	72	82
Kitimat	67	60	59
Terrace	84	93	98

tional power grid. The northern and southern ends of the belt have established networks of logging roads.

Elevation ranges from sea level to 1760 metres. Smooth undulating ridgecrests are flanked by steep slopes characteristic of glaciated valleys. Despite this precipitous terrain, it is possible to traverse the entire belt from north to south without exceeding 125 metres elevation by traveling up the Scotia River valley and through the pass at Big Falls Lake, then up the Ecstall River valley and through the pass at Ecstall Lake and finally down the Quaal River valley.

Rainfall is heavy; average annual precipitation at Prince Rupert is 244 centimetres (96 inches). The combination of low elevation and proximity to the coast leaves the valley bottoms free of snow through most of the year. Dense coastal rainforest covers all but the steepest slopes where bedrock is exposed in cliffs or along avalanche shoots. Ridgecrests above 1100 metres elevation are free of trees and shrubs.

In the late 1890s local Indians lead prospectors to the exposed sulphide lenses of the Ecstall deposit in Red Gulch Creek. This deposit was investigated intermittently from 1900 to 1952 by a variety of companies. A regional exploration program conducted by Texasgulf Inc. in 1958 discovered the Scotia and Packsack deposits and the Horsefly showing. For the last 20 years there has been continuous exploration work on the properties in this belt, carried out by a series of companies. Discovery of the 14 other sulphide occurrences in the Ecstall belt are the result of these recent exploration efforts.

Regional scale mapping in this area was conducted by the Geological Survey of Canada from 1962 to 1966 (Roddick 1970a, 1970b; Hutchinson 1970, 1979, 1982) and from 1987 to 1989 (Gareau, 1991a,b,c, 1997). Woodsworth, Crawford and Hollister (1983) produced a geological field trip guidebook for the Terrace - Prince Rupert corridor.

University research projects within, adjacent to and along strike from the Ecstall belt have investigated a wide variety of geological features. These studies are reported in theses by Padgham (1959), Money (1959), Eldridge (1983), Krage (1984), van der Heyden (1989), Heah (1991) and Gareau (1991a) as well as in published reports by Hutchinson (1970), Brew and Ford (1978), Crawford and Hollister (1982), Sutter and Crawford (1985), Rubin *et al.* (1990), Heah (1990), Crawford and Crawford (1991), McClelland *et al.* (1991a), McClelland *et al.* (1991b), Gehrels *et al.* (1991a), Gehrels *et al.* (1991b), Gehrels *et al.* (1991c), Samson *et al.* (1991), Gareau (1991c), Drinkwater *et al.* (1993), Dusel-Bacon *et al.* (1996), Gehrels and Kapp (1998), Gehrels and Boghossian (in press) and Boghossian and Gehrels (in press).

Regional scale studies of VMS deposits have recently been completed by Newberry *et al.* (1997) and Massey (1999). Property scale maps and reports prepared by industry geologists between 1912 and 1999 are listed with the individual property descriptions in the BC MINFILE database.

Objectives of the current mapping program include: establish a more detailed lithological breakdown within the four stratigraphic packages documented by Gareau (1997), study the relationships between this detailed lithostratigraphy and the many mineral occurrences of the belt, trace out prospective felsic volcanic strata, and investigate a possible coeval relationship between the Big Falls orthogneiss and the metavolcanic package. In the 1999 field season, three weeks mapping was completed by a team of two. Work concentrated on mapping rock-cuts along the extensive logging road network at the north end of the Ecstall belt and along the Yellowhead Highway and Skeena Railway.

REGIONAL GEOLOGIC SETTING

The geologic setting of the Ecstall belt is shown in Figures 2, 3, 4 and 5. The Ecstall metamorphic belt is part of the Central Gneiss Complex, an anastomosing network of high-grade metamorphic rocks enclosed by younger granitoid rocks of the Coast Plutonic Complex (CPC; Figure 2). Together, these two complexes comprise the Coast Belt. The following summary is adapted from Greenwood *et al.* (1992) and Woodsworth *et al.* (1992).

Plutonic rocks make up more than 80% of the Coast Belt; the remainder is granitoid gneiss, metasediments and metavolcanics. Plutonic rocks of the CPC range in age from Late Silurian to Eocene. In general the oldest plutons are exposed along the western edge of the CPC and the ages of plutons young progressively to the east. Rocks range in composition from granite to gabbro, but 70% of all plutonic rocks lie within the compositional range of tonalite-quartz diorite-diorite. Among the circum-Pacific plutonic terranes, the CPC is the largest, the most mafic, and the most deficient in K-feldspar.

In the Prince Rupert - Terrace region, intrusions of different ages have extensive flat-lying 'sills' developed along their eastern margins (Figure 4). In the Ecstall belt north of Big Falls Creek and on Hawkesbury Island, these sill-like apophyses are preserved as erosional remnants

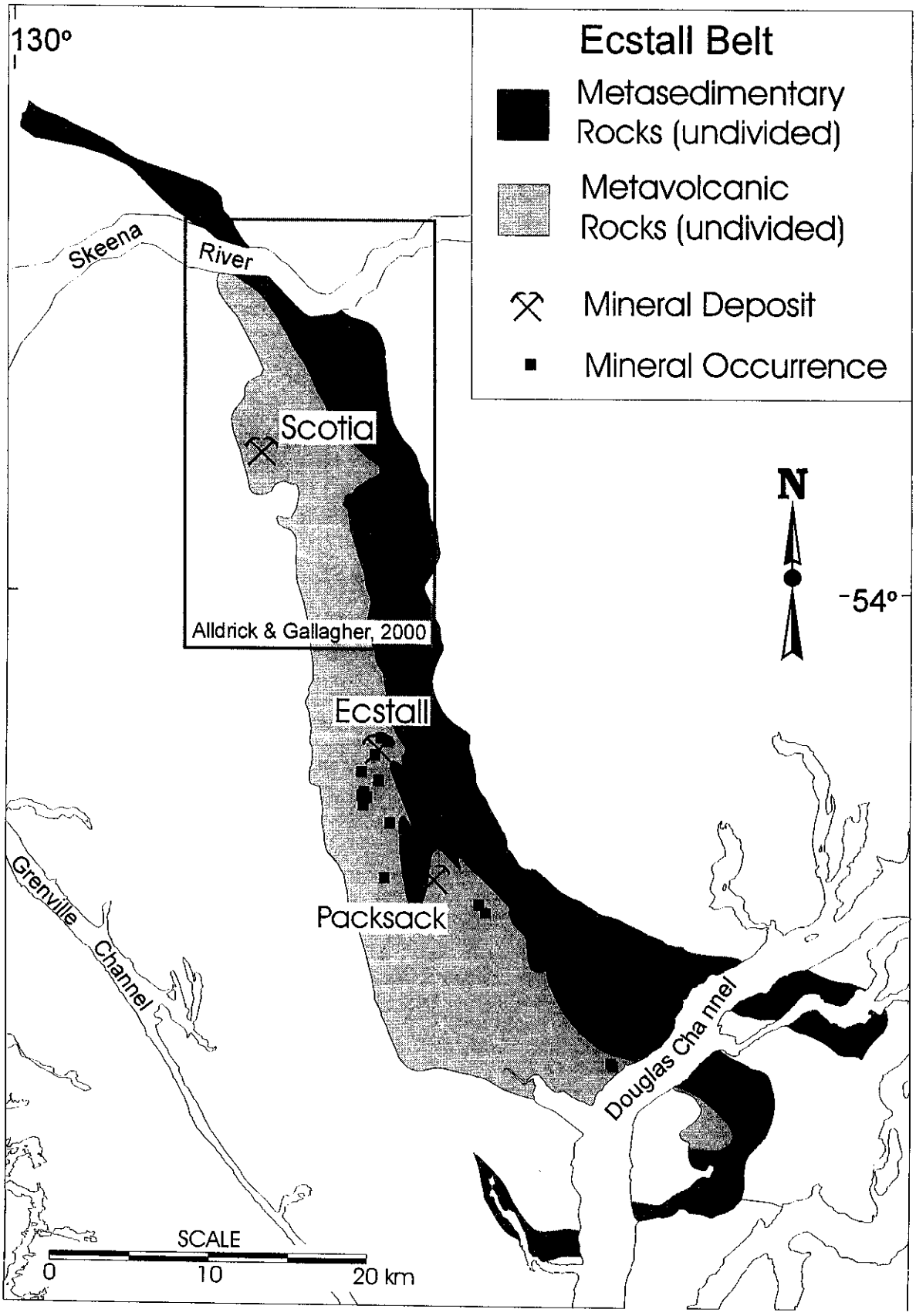


Figure 3. Geology and volcanic-associated massive sulphide occurrences of the Ecstall belt (simplified from Gareau, 1997).

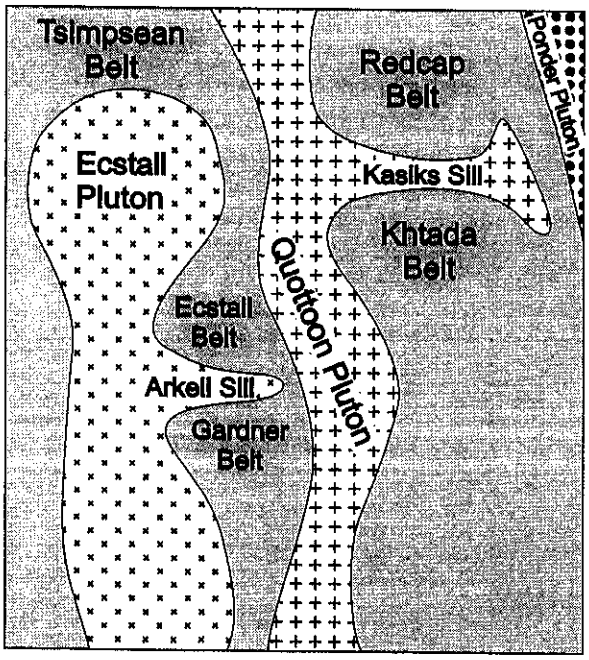


Figure 4. Schematic section showing the relationships between intrusive rocks of the Coast Plutonic Complex and metamorphic rocks of the Central Gneiss Complex in the Ecstall area.

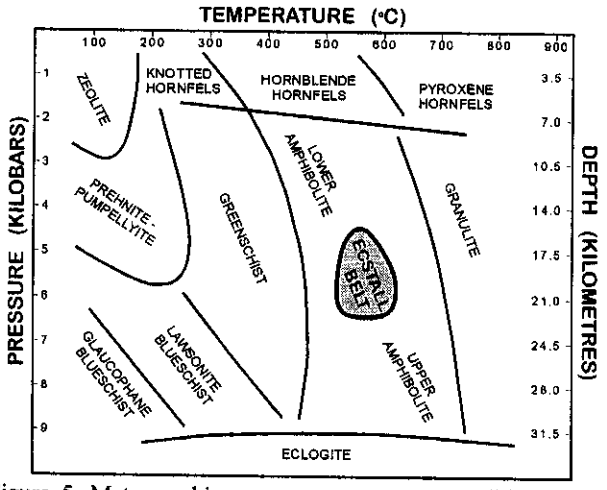


Figure 5. Metamorphic pressure-temperature conditions in the Ecstall belt (modified from Greenwood *et al.*, 1992 and Gareau, 1991c).

on hilltops and ridgecrests (Gareau, 1997), where they overlie and obscure prospective metavolcanic strata.

Metamorphic rocks of the Coast Belt typically occur as screens or pendants surrounded or intruded by the plutonic rocks (Figure 2). The Central Gneiss Complex is composed of rocks ranging and age from Proterozoic through Paleozoic. Remnants of Paleozoic metamorphism are preserved locally, while most regional metamorphic overprints are Mesozoic and early Tertiary in age. Intense Cretaceous and early Tertiary metamorphism, deformation and plutonism have obscured evidence of earlier events in many places. Most metamorphic effects can be attributed to regional metamorphism, but contact metamorphism from the adjacent plutons can also create a late metamorphic overprint.

The Prince Rupert - Terrace corridor is the most extensively studied and best understood area of the Coast Belt. This is the most deeply exhumed part of the Coast Plutonic Complex, and metamorphic grades range up to kyanite-amphibolite, sillimanite-amphibolite and granulite facies in different parts of this area. Within the Ecstall metavolcanic belt, Gareau (1991a,c) has documented a southwest to northeast progression from lower amphibolite facies to granulite facies, with most rocks falling within the kyanite amphibolite (upper amphibolite) facies (Figure 5).

The Devonian volcanic arc that evolved into the Ecstall metamorphic belt likely developed in a similar pericratonic tectonic setting as the extensive volcanosedimentary rocks of the Yukon-Tanana terrane (Gareau, 1991a,c). The regional geologic history of the Ecstall belt is summarized in Figure 6; Devonian volcanism and sedimentation and comagmatic intrusions, are followed by three poorly-constrained phases of deformation and four well-dated plutonic episodes. The Jurassic to Eocene plutonic and metamorphic history of the CPC is consistent with a model of east-dipping subduction beneath a single, allocthonous Alexander-Wrangellia-Stikinia superterrane, emplaced against North America in Middle Jurassic time (van der Heyden, 1989).

GEOLOGY OF THE NORTHERN ECSTALL BELT

Mapping in the 1999 field season covered road networks within the area outlined on Figure 3. Figure 7 shows the simplified geological map and legend.

Stratified Rocks

Unit 1 - Metavolcanics

Metavolcanic rocks of the Ecstall belt host all the known mineral occurrences (Figure 3). This sequence is the largest unit defined by Gareau (1991a), and extends the entire length of the belt, averaging four kilometres in thickness. Metavolcanic rocks are in gradational contact with the Big Falls orthogneiss (Unit C) and with metasedimentary rocks; contact relationships with other units were not determined. The metavolcanic unit is heterogeneous. Biotite schist, hornblende-biotite schist and semi-schist comprise 70% of the unit. Interlayered with these lithologies are 100-metre-thick heterogeneous lenses of pyrite-quartz-sericite schist, amphibolite, quartzite and calcareous muscovite-biotite schist. The continuity of these smaller lenses has not been confirmed, but they may extend along strike for several kilometres.

Unit 1a - Mafic Metavolcanics

The hornblende-biotite schist is a black to greenish black recessive rock that is fissile and commonly highly

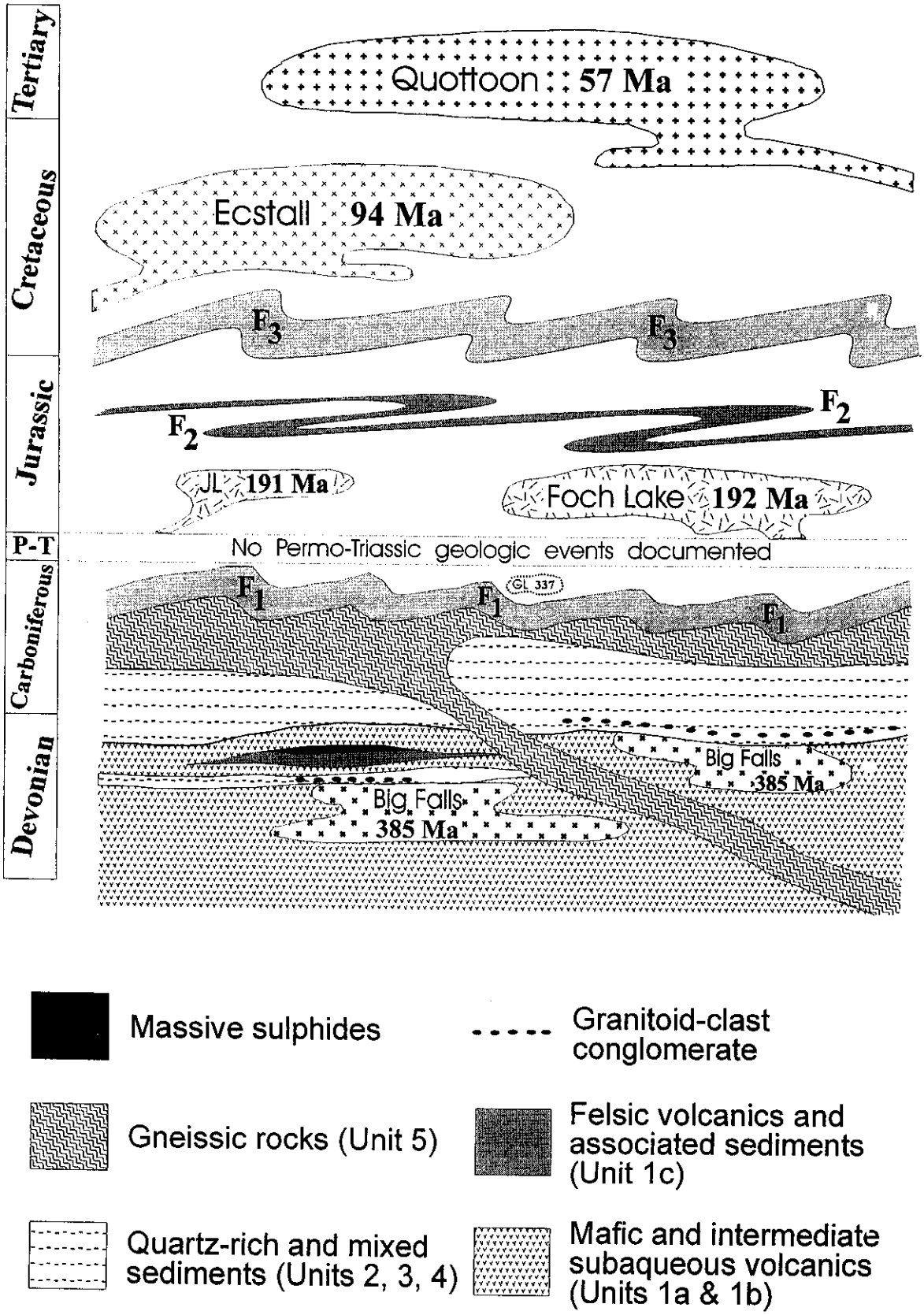


Figure 6. Geologic history of the Ecstall belt. F-1, F-2 and F-3 are successive episodes of folding. JL is the Johnson Lake stock; GL is the Gareau Lake stock (adapted from Gareau, 1991a,b,c and 1997).

weathered. It is the thickest of the metavolcanic units, averaging several hundred meters thickness, and displays gradational boundaries with surrounding metavolcanic and metasedimentary lithologies. Also present within the mafic metavolcanics are lenses of resistant, homogeneous, black to rusty-coloured, garnet-hornblende amphibolite interlayered on a 5 to 20 metre scale.

Compositional layering is typically non-existent, or is very weak and defined by discontinuous millimetre-thick laminae. The rock contains more than 50% medium-grained biotite and 10% to 20% hornblende. Granular, fine to medium grained plagioclase comprises up to 20% of the rock and is typically polygonal. Disseminated pyrite locally constitutes up to 5% of the rock and accessory skeletal garnet porphyroclasts are preserved. Euhedral titanite, that makes up to 10% of some thin sections, is a common mineral associated with sulphide grains. Titanite occurs as well defined layers, as radial masses cored by pyrite, or as interstitial clusters or individual grains. Epidote-hornblende knots or pods are common within this unit; when present these knots make up 5% to 15% of the rock. The schist locally displays discontinuous, orange, medium-grained, calcareous lenses that are highly recessive.

The abundance of hornblende and biotite and the lack of quartz is consistent with a mafic volcanic protolith. The lithologic heterogeneity observed in the unit suggests a highly dynamic depositional environment. Discontinuous carbonate lenses appear to be primary and are indicative of a subaqueous environment.

Unit 1b - Intermediate Metavolcanics

Hornblende-diopside-biotite-quartz-plagioclase semi-schist is common along the east side of the Scotia Main logging road (Unit 1b in Figure 7). The unit has a minimum structural thickness of 200 metres and unknown contact relationships with surrounding lithologies. Gareau (1991a) concluded that this is the dominant lithology in the northern part of the Ecstall belt. Semi-schist is fine to medium grained, granular, well indurated and weathers dark grey to black.

This quartz-plagioclase rock has medium-grained biotite partings spaced 1 to 5 centimetres apart. Plagioclase and diopside microlithons have 5% to 10% interstitial biotite. Titanite occurs as euhedral interstitial grains making up less than 2% of the rock. Fine to medium grained prismatic hornblende, ranging from 5% to 10% by volume, is concentrated along biotite parting surfaces.

The presence of biotite semi-schist members within the mafic metavolcanic schists marks a decrease in mafic minerals, and an increase in quartz from near zero to 10% to 20%. This mineral assemblage suggests that the protolith was a metamorphosed intermediate volcanic rock, or a volcaniclastic sedimentary rock.

Unit 1c - Felsic Metavolcanics

This heterogeneous unit is composed of pyritic quartz-muscovite schist interlayered with 10 to 20 metre thick bands of muscovite-bearing quartzite and hornblende-biotite schist. The unit is shown in Figure 7 as two discontinuous lenses a few hundred metres in thickness that have gradational boundaries with the surrounding metavolcanic unit. These two lenses are roughly on strike with one another and may be a continuous layer. Contacts with adjacent lithologies are typically sharp but may be gradational over half a metre to a metre. Both bands of felsic metavolcanics lie well east of the Scotia VMS deposit; however, the southern lens of this unit is host to the Friday the 13th showing.

Quartz-muscovite schist is a medium to coarse-grained rock with significant sulphides, containing on average 10% to 15% pyrite. These rocks also locally display relict clastic or fragmental volcanic textures. Primary compositional layering, on a 1 to 10 centimetre scale, is defined by alternating quartz and phyllosilicate layers. Pyrite seams or layers, up to 4 millimetres thick, are concordant with compositional layering and characterize the lithology. Subhedral garnet, with an average diameter of 5 millimetres, is commonly associated with the sulphides, as is biotite. Chlorite can be seen in handsample surrounding the garnet porphyroblasts. Quartz-rich metasediments associated with the felsic metavolcanic rocks are similar in composition and relationships as those described in Unit 2.

Pyritic quartz-sericite schists are interpreted as metamorphosed felsic volcanic flows, tuffs and fragmental rocks associated with subaqueous extrusion. Local thin units (1 to 5 metres) of thinly laminated (1 to 2 centimetres) quartz-rich rock that grades into the sericite schist likely share a volcanic origin and are likely metamorphosed chert.

Unit 2 - Quartzite and Quartz Schist

Metasedimentary rocks mapped in this study consist dominantly of muscovite-bearing quartzite. This unit may be correlative with the quartzite of Gareau (1991a,b,c; 1997), shown as Unit 3 in Figure 7. The unit rarely exceeds 200 metres thickness, but attains a maximum structural thickness of one kilometre in one location. Quartzite is in gradational contact with the surrounding metavolcanic unit.

Quartzite contains greater than 95% quartz and is very well indurated, resistant, homogeneous, light to medium grey, and fine to very fine grained. The rock typically weathers light grey, but is rusty red when pyrite is present. The unit locally contains lenses of matrix-supported conglomerate composed of stretched metatonalite and other granitoid cobbles with an aspect ratio of 10:2:1 or more. Finely laminated compositional layering is defined by light grey quartz-rich layers alternating with dark grey to black layers of quartz, biotite and graphite(?). Pyrite commonly occurs along partings as dissemi-

LEGEND

STRATIFIED ROCKS

PALEOZOIC (Devonian?)

GNEISS

Mafic to intermediate gneiss. Biotite epidote hornblende mafic gneiss. Resistant, black to greenish black rock. Commonly migmatitic in northern areas. Medium grained, granular. Locally contains pyrite-, garnet- and diopside-rich boudins and lenses. Medium grained, granular, light grey weathering biotite q-f gneiss is present in southern portions of unit.

METASEDIMENTARY ROCKS

Mixed metasedimentary rocks of the Khtada Lake area. Not mapped in this study. See Hollister (1977, 1982) for description.

Quartzite Unit of Gareau (1997). Not mapped in this study. May be correlative with unit 2.

Quartzite and Quartz Schist: Quartzite is a light grey, resistant rock, >95% quartz. Fine grained to very fined grained. Laminations of muscovite with trace to minor pyrite. Interlayered with garnet-biotite-quartz schist in the southern map area

METAVOLCANIC ROCKS

Felsic Volcanic Rocks: Pyritic quartz-muscovite schist to semi-schist; ± biotite, ± garnet. Fissile and recessive. Forms prominent gossans which can be traced across terrain. Commonly associated with quartz-rich metasedimentary members within the metavolcanic unit: garnet-biotite-quartz schist to phyllite, and muscovite quartzite interlayered on the 5-to-10 metre scale with mafic and felsic metavolcanic rocks.

Intermediate Volcanic Rocks: Hornblende biotite quartz feldspar semi-schist ± epidote. Dark grey to black medium grained rock. Resistant. Hornblende biotite rich partings on cm-

Mafic Volcanic Rocks: Hornblende biotite plagioclase schist ± pyrite ± garnet; dark black to rusty red recessive and commonly fissile, rare discontinuous carbonate lenses, homogeneous on outcrop scale, locally displays relict volcaniclastic tecture.

INTRUSIVE ROCKS

TERTIARY - 56.8 +6/-0.1 Ma (Late Paleocene)

Quottoon Pluton: hornblende ± biotite tonalite to quartz diorite with abundant screens of gneiss and common rafts of metasedimentary rock. Medium to coarse grained. Strongly foliated throughout and locally lineated along western margin.

CRETACEOUS - 93.5 ± 1 Ma (early Late Cretaceous)

Ecstall Pluton: Epidote hornblende biotite metadiorite (**Bd**) to metaquartzdiorite (**Bqd**) and granodiorite, with minor biotite hornblende quartz diorite. Medium to coarse grained. Moderately foliated. Up to 5% fine to medium grained epidote is a characteristic feature.

DEVONIAN - 385 ± 4 Ma (Middle Devonian)

Big Falls Orthogneiss. Biotite hornblende meta-tonalite/trondhjemite ± garnet ± epidote. Light grey, fine to medium grained. Texture varies from plagioclase augen gneiss to fine grained plagioclase porphyritic gneiss to mylonite. Probably co-magmatic with the volcanic

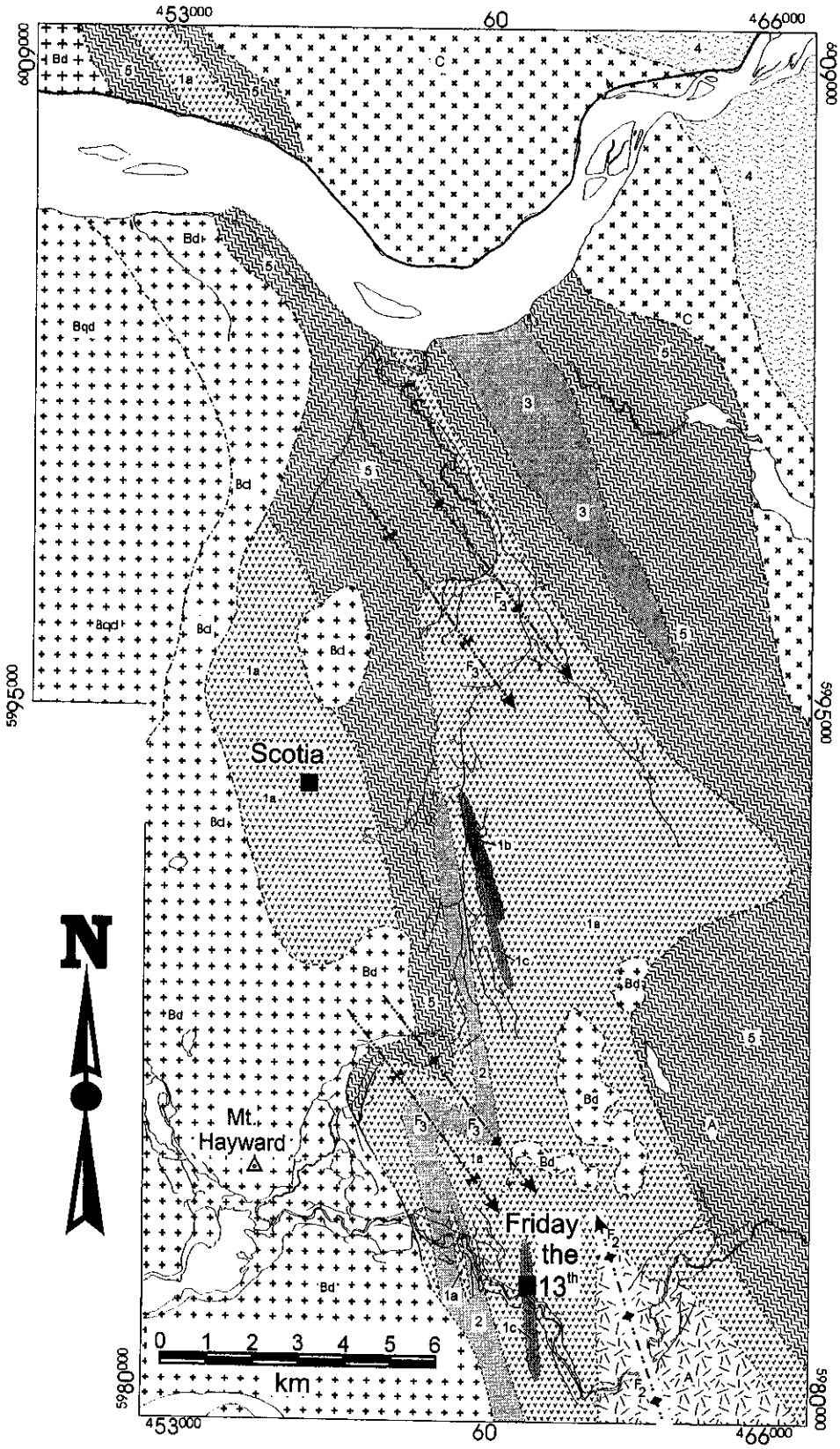


Figure 7. Geology of the northern Ecstall belt.

nations or semi-continuous laminae, not exceeding 5% of the rock.

South of Big Falls Creek, quartzite is interlayered with lenses of fine to very fine grained garnet-biotite-quartz schist. The gradational contact between the quartzite and schist is marked by quartz-rich rock with partings of medium-grained biotite and rare subhedral garnets ranging from 0.3 to 1.0 centimetres in diameter..

Unit 3 - Quartzite unit (from Gareau, 1991a)

This unit crops out northeast of the 1999 map area (Figure 7). The quartzite is a large lens, up to two kilometres thick, hosted entirely within the gneissic unit (Unit 5). Quartzite is in sharp contact with the surrounding gneissic rocks. The map unit is described as a "white to grey, locally pyritic quartzite, interlayered with lesser amounts of biotite-hornblende gneiss, fissile mica schist, black phyllite to meta-argillite, semi-pelite to pelite and marble" (Gareau, 1991a, p.14). The quartzite is a granoblastic rock; biotite is present in thin layers or partings less than 1 millimetre thick, or as minor interstitial grains. Accessory minerals are plagioclase, zoisite, cummingtonite, muscovite and carbonate. Gareau (1991a, p.14) concluded that these potassium and calcium-rich accessory minerals are consistent with a protolith of quartz arenite rather than chert.

Unit 4 - Metasedimentary rocks

Intensely deformed (Crawford *et al.*, 1987) high-grade metasedimentary rocks of the Khtada Lake area have been metamorphosed to granulite facies (Kenah and Hollister, 1983). These are the highest grade metamorphic rocks of the Central Gneiss Complex (Greenwood *et al.*, 1992). No stratigraphic correlation has been proposed for these rocks.

Unit 5 - Gneiss

A substantial belt of gneissic and locally migmatitic rocks are exposed along the western margin of the Ecstall metamorphic belt. Composition varies from buff weathering, grey, quartz gneisses in the south to migmatitic biotite-hornblende mafic gneisses in the north. Transition between the two lithologies is gradational over 300 metres.

Intermediate Gneiss

These light grey, well indurated and resistant gneisses are most common in the central western portion of the mapped area, northeast of Mt. Hayward. They occur as a north-northwest-trending belt with a maximum structural thickness of one kilometre.

Gneissic layering is defined by alternating medium grey and light grey layers averaging 10 centimetres thickness. Medium grey layers consist of medium grained, granular quartz-plagioclase matrix with substantial biotite and chlorite that make up 40% of the rock by volume. Light grey layers consist of approximately 60% quartz and minor plagioclase with up to 30% interstitial biotite. Sparse pyritic laminae are associated with the light grey layers.

Mafic Gneiss

Homogeneous, black to greenish black biotite hornblende plagioclase gneiss occurs as a northwest-trending belt with an average thickness of two kilometres. Along the southern bank of the Skeena River an extensive exposure of mafic gneiss is intruded by a swarm of discordant pegmatite dikes and sills (Woodsworth *et al.*, 1983, p.27-29).

Gneissic layering is well defined and typically 10 to 15 centimetres thick, with sharp boundaries. Compositional layering alternates between mafic biotite-diopside-hornblende to felsic biotite- quartz-plagioclase layers. Mafic layers consist of medium grained hornblende rock (60% amphibole) with interstitial plagioclase and minor biotite and garnet porphyroblasts. Light grey layers consist of 20% quartz, 60% plagioclase with interstitial biotite and hornblende. Minor bands and pods of hornblendite and epidote-garnet-pyrite-diopside and bands of migmatite were also noted. Hornblende amphibolite (hornblendite) layers, averaging 30 centimetres thick, consist entirely of medium to coarse grained, black, subhedral hornblende. Locally present are discontinuous pods of pyrite, garnet, epidote and diopside, typically 10 to 15 centimetres thick. Light grey to white migmatitic layers, several centimetres thick, occur as wavy discontinuous bands within the gneiss and consist of coarse to very coarse grained plagioclase and quartz.

The gneissic rocks lack relict igneous textures, such as flow banding and porphyroclasts, that would indicate an igneous protolith. The mineral assemblage of plagioclase, biotite, hornblende and minor quartz is consistent with a protolith of intermediate to mafic volcanic rock or immature volcanic sediment.

Intrusive Rocks

Ponder Pluton

The Ponder Pluton crops out to the northeast beyond the study area, but it is shown schematically in Figure 4. This is a mid-Eocene (47 Ma) hornblende-biotite granite to granodiorite, that may have been emplaced at a relatively high level (Hutchison, 1982; Sisson, 1985).

Unit A - Quottoon Pluton

This major pluton was mapped north of the Skeena River along the Yellowhead Highway. It is a long narrow body that extends north through southeastern Alaska, where it is called the "foliated tonalite sill" (Brew and Ford, 1978; Gehrels *et al.*, 1991a). The Quottoon Pluton is a medium to coarse grained hornblende quartz diorite to tonalite and is intensely foliated close to its contact with the gneissic rocks of the Ecstall belt. Age determinations from this extensive pluton span Late Cretaceous (80 Ma) to mid-Eocene (43 Ma) time (van der Heyden, 1989,

p.158-160), with Gareau's (1991a, p.184-185) age of 56.8 Ma collected from a site closest to the present study area.

Unit B - Ecstall Pluton

The Ecstall pluton is the largest of a series of magmatic-epidote-bearing plutons (Zen and Hammarstrom, 1984; Zen, 1985) in the western Cordillera called the Ecstall Suite (Woodsworth *et al.*, 1992, p.518-519). Along the western margin of the map area (Figure 7), the early Late Cretaceous Ecstall pluton is a large homogeneous biotite-hornblende diorite to quartz diorite. Age determinations span 98 Ma to 64 Ma (Gareau, 1991a, Figure 3-1) with the six most recent analyses averaging 93.5 Ma (unpublished data from van der Heyden, 1991, cited in Gareau, 1991a, p.161-164). The rock is weakly foliated, medium to coarse grained and weathers to a black and white, granular-textured surface. Foliation is defined by preferentially oriented biotite and hornblende. The rock is commonly equigranular, but locally displays plagioclase porphyroclasts. Prominent crystals and aggregates of magmatic epidote comprise 5% of the rock and are associated with knots of biotite. Dark grey to black mafic schlieren are common and parallel the foliation within the rock. Medium grained, euhedral, transparent titanite is also present. Contacts are sharp and discordant to the foliation. The eastern contact of the pluton is also discordant to the regional trend of map units. No chilled margin or contact metamorphic aureole was noted.

Unit C - Big Falls Orthogneiss

The Big Falls Orthogneiss is a Middle Devonian (385 Ma; Gareau, 1991a) medium to coarse grained epidote-biotite-hornblende metatonalite exposed in the southeastern corner of the mapped area. It crops out as homogeneous and resistant light grey rock with a maximum structural thickness of 3.5 kilometres. The unit is in gradational contact with the surrounding metavolcanic unit. This contact zone is several hundred metres wide and characterized by decreasing grain size and increasing biotite content outward from the orthogneiss.

Textural variations range from gneissic to porphyroclastic to mylonitic. Gneissic zones are tens of metres thick with 5 to 10 centimetre bands of alternating quartz-plagioclase and biotite-hornblende layers. Porphyroclastic orthogneiss consists of 0.5 to 1 centimetre diameter plagioclase porphyroclasts in a medium grey fine to medium grained matrix consisting of biotite, hornblende, quartz and plagioclase. Minor epidote pods and layers are common. Up to 2% garnet is locally present. A 20-metre-thick mylonite zone crops out south of Big Falls Creek. Within this zone, millimetre-scale plagioclase porphyroclasts are set in a very fine grained matrix.

The composition, homogeneity, and presence of clear, colourless, euhedral zircons led Gareau (1991a) to conclude that this tonalite orthogneiss is an intrusion. The gradational contacts, showing a variation from medium to fine grainsize, and incorporating an exposure of fragmental volcanic rock at one location, are consistent with a large coeval subvolcanic pluton which fed the surrounding and overlying volcanic pile.

Structure

Rocks of the Ecstall belt are highly deformed and characterized by a northwest-striking, steeply dipping to vertical, transposition foliation that is defined by near-parallel compositional layering and cleavage. Coaxial, map-scale, upright, F_1 and F_2 isoclinal folds and upright to inclined F_3 open folds are identified in the belt. Hornblende mineral lineations and stretching lineations are steeply northwest to southeast plunging and have been rotated through the vertical. Stereographic projections of structural data collected during the 1999 field season are plotted in Figure 9. The relative timing of thermal and dynamic metamorphic events deduced from analysis of textures and mineralogy are shown in Table 2.

Foliation

The oldest foliation preserved is S_0, defined by sub-centimetre to centimetre scale compositional layering that is interpreted to be primary. Within metasedimentary and metavolcanic units, S_0 is characterized by quartz-plagioclase layers alternating with phyllosilicate layers. Within intrusive bodies, S_0 is locally preserved as alternating centimetre-scale mafic and felsic layering (interpreted as primary flow-banding), mafic schlieren and rafts or sheets of country rock.

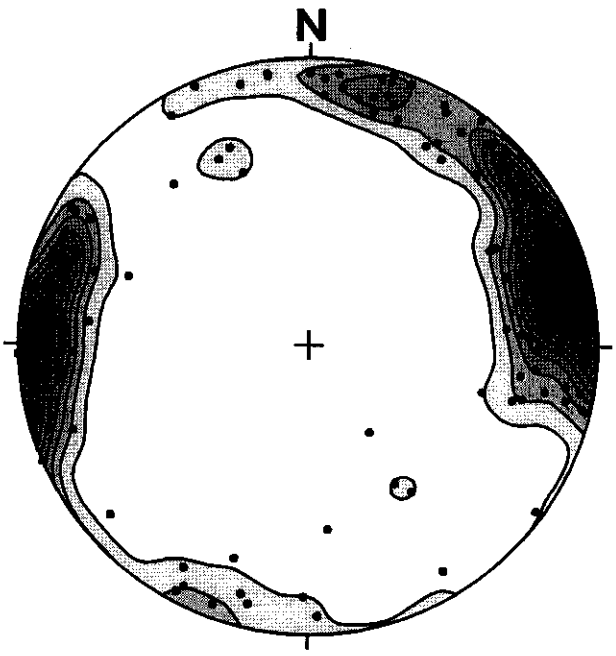
S_1 foliation is a penetrative cleavage defined by preferentially oriented biotite, muscovite and possibly chlorite within metasedimentary and metavolcanic rocks and by preferentially oriented biotite within intrusive rocks. S_1 cleavage is axial planar to F_1 isoclinal folds and therefore is parallel to S_0 compositional layering in F_1 limbs, but S_1 cleavage remains at a high angle to S_0 within F_1 hinge areas (Figure 8).

Together these two foliations define a composite transposition foliation known as S_t (Figure 8). This transposition foliation is defined by near-parallel S_0 and S_1 foliations, and by centimetre-scale intrafolial isoclinal F_1 folds. Transposed metatonalite dikes, epidote-diopside seams and pods, and sulphide seams also define S_t. S_t is the northwest-trending regional foliation observed in the belt, characterized by near-vertical to steeply southeast or steeply northwest dips (Figure 9a). Along the Skeena River, this regional foliation swings to a west-northwest trend.

An S_2 crenulation cleavage, defined by biotite and minor chlorite, is observed in thin section in the hinges of F_2 minor folds. This cleavage is not visible in handsample (or is not distinguishable from S_t in handsample) and is not considered to be regionally significant.

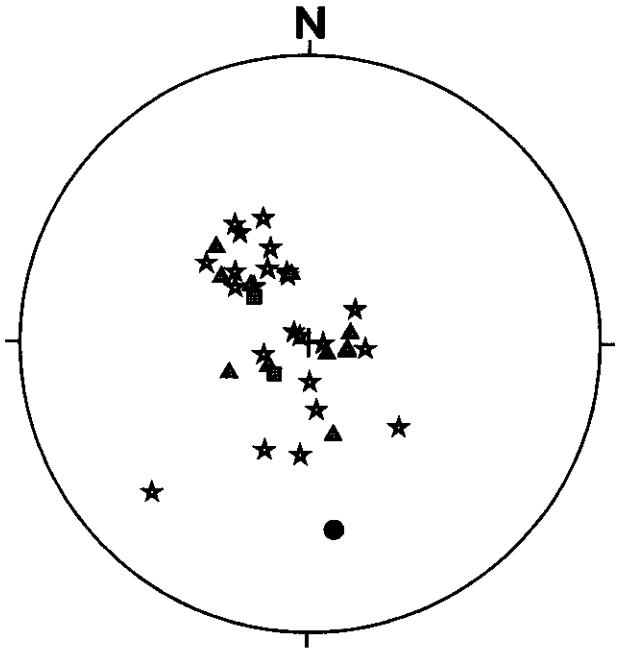
The youngest foliation identified in the map area, S_3, is a local, medium grained, crenulation cleavage axial

A. Poles to regional foliation (S_t) for the study area



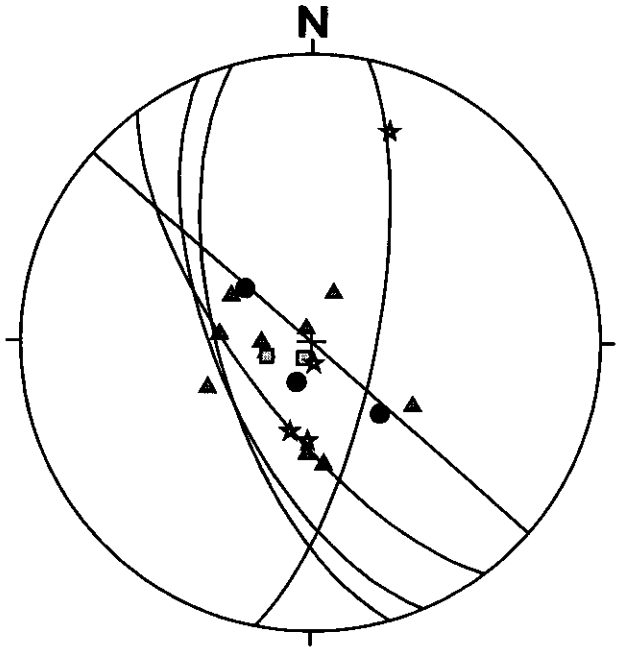
● St - transposition foliation, N = 238

B. Plot of linear data collected throughout the field area



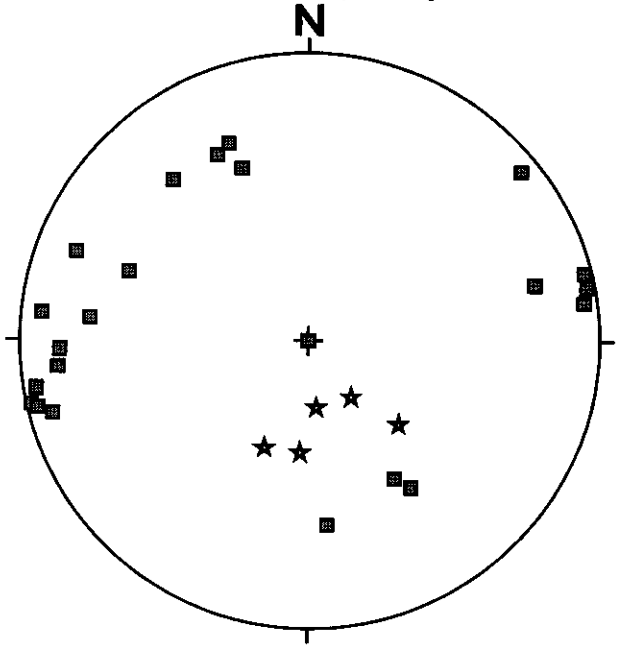
☆ Intersection lineation, N=25 ▩ Stretching lineation, N=2
▲ Mineral lineation, N=11 ● Boudin Axis, N=1

C. Plot of fold axis and axial plane data for the study area.



● F_1 Hinge, N=3 ◡ F_2 Axial Plane, N=5
▲ F_2 Hinge, N=10 ▩ F_3 Hinge, N=2
☆ F_3 Crenulation Lineation

D. Plot of regional foliations and intersection lineations from a map scale F_3 fold hinge.



▩ Pole to S_t transposition foliation, N=25
☆ 0-1 Intersection Lineation, N=6

Figure 9. Stereonet plots for the northern Ecstall belt

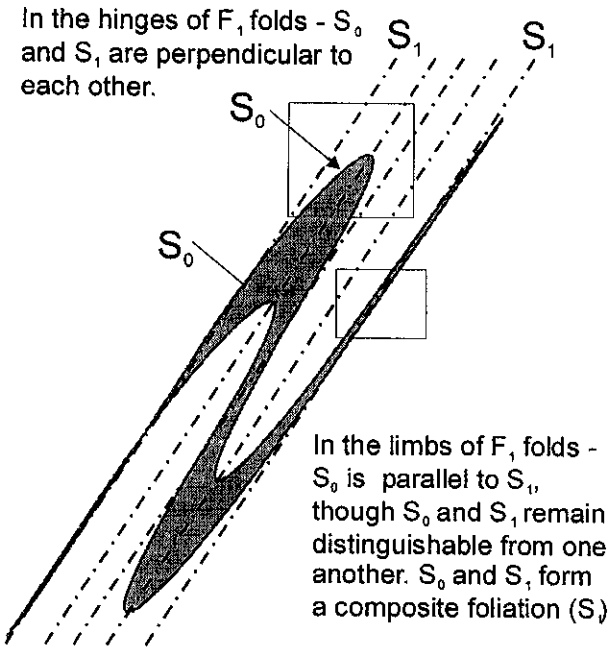


Figure 8. Geometric relationships between S_0, S_1, and S_t in an F_1 isoclinal fold.

TABLE 2
RELATIVE TIMING OF METAMORPHIC EVENTS

Geologic Time	Folding	Metamorphism	Foliation Development	Transposition Foliation
	F_3	M_2	S_3	
	F_2		S_2	
	F_1	M_1	S_1	S_t
			S_0	

planar to F_3 crenulations. This foliation was only identified in outcrops of quartz muscovite schist (felsic metavolcanics) near the Friday the 13th showing in the southern portion of the map area (Figure 7). S_3 is defined by preferentially oriented muscovite and minor biotite with an average spacing of 1 to 2 centimetres.

Folds

Minor Folds

F_1 minor folds are preserved as rare, rootless, intrafolial, isoclinal hooks and sheared hinges that fold S_0 compositional layering. They are near-vertical upright folds with steeply northwest-plunging hinge lines and near-vertical northwest-striking axial planes (Figure 9c). These folds are subtle and are most readily observed on highly weathered surfaces, or on folded veins or dikes. S_1 cleavage is axial planar to these folds.

F_2 minor folds are the most common folds recorded and are preserved as near-vertical, upright, tight to isoclinal folds with a one centimetre to half-metre wavelength. They fold S_t (both S_0 compositional layering and S_1 cleavage) and have steep northwest-plunging hinge lines and steep west-dipping to vertical axial planes (Figure 9c). F_2 folds differ from F_1 folds by the lack of axial planar cleavage in the F_2 hinge zones at outcrop or handsample scales.

F_3 minor folds occur as open to tight, asymmetric, parallel folds that fold S_t and the axial planes of F_2 folds. The scale of these folds ranges from 15 centimetres to several metres. Hinge lines of the F_3 folds are vertically plunging (Figure 9c) with near-vertical axial planes that are oblique to the regional foliation trend.

Major Folds

Vergence reversals of both F_1 and F_2 minor folds are consistent with major folds. Two upright, steeply north-plunging kilometre-scale F_2 closures have been outlined in the southern part of the map area near Big Falls Creek (Figure 7). Half-kilometre scale F_3 folds are well documented throughout the study area. These folds define a fold belt of northeast-vergent tight to open folds with an average wavelength of 500 metres. They are upright to inclined folds with moderately southeast-plunging hinge lines and moderately northeast-dipping axial planes. Hinge zones of these folds are characterized by moderately southeast-dipping S_t foliations and common F_3 m-folds (Figure 9d). These folds are responsible for the shifts in the northwest-striking regional foliation.

Lineations

Intersection lineations within the belt are preserved as S_0-S_1 bedding-cleavage lineations that are interpreted to be parallel to F_1 hinge lines. They are typically steeply northwest plunging, but do shallow up and plunge moderately to the north-northwest in the northern section of the map area (Figure 9b). Intersection lineations appear to be folded by F_3 map-scale folds in hinge areas.

Mineral lineations are the second most common lineation. These are best displayed in the metavolcanic unit where hornblende is abundant. These lineations are defined by fine to medium grained elongate to prismatic hornblende present on biotite partings and on S_t surfaces. The orientation of these lineations tends to mimic that of the intersection lineations (Figure 9b).

Stretching lineations are recorded from elongate clasts in the metasedimentary and metavolcanic units near Big Falls Creek. The near-vertical clasts have a minimum aspect ratio of 10:2:1. Stretched clasts illustrate the high degree of strain that these rocks have undergone. It is unlikely that stretching lineations defined by individual minerals could have survived the annealing that these rocks have undergone.

Faults

Northwest-striking faults with relative sinistral offset have been identified in a few outcrops. These exposures lie along northwest-trending linear topographic depressions that are readily evident on airphotos and which divert sections of stream drainages. There are many more northwest-trending topographic lineaments that have no confirmed association with faults, but these lineaments are suspected to be localized along similar northwest-striking sinistral faults.

Metamorphism

Evidence for two metamorphic episodes has been documented (Table 2). The peak M_1 mineral assemblage within mafic rocks consists of garnet, biotite, hornblende and titanite. Plagioclase compositions range from An_{40} to An_{45}. Siliceous and metasedimentary rocks have an M_1 mineral assemblage of muscovite, biotite and garnet. Kyanite and cordierite were identified in one pelitic layer within the metavolcanic unit. These assemblages are consistent with peak metamorphic conditions of upper amphibolite facies (Figure 5).

A regional retrograde metamorphic event (M_2), is interpreted from microscopic textures. Biotite is typically surrounded by wispy, fine grained, randomly oriented chlorite; remnant skeletal garnet porphyroblasts commonly display rims of matted chlorite.

Matrix grains of quartz and plagioclase lack any sub-grains and undulatory extinction within quartz is rare. Plagioclase feldspar noticeably lacks polysynthetic strain twins in thin section. Triple-point boundaries are common in quartz and plagioclase grains. Hornblende also displays polygonal grain boundaries in one section. The presence of polygonal matrix grains and the absence of microstructures indicating ductile deformation is consistent with a strong annealing event. This metamorphic event is most likely Cretaceous to Eocene in age, synchronous with intrusion of the Ecstall pluton or Quottoon pluton.

Relative timing of metamorphic and deformation events are constrained by an array of textural features. In the hinges of F_1 folds, M_1 biotite and muscovite grains are undeformed and are preferentially oriented parallel to F_1 axial planes. In F_2 hinges, the same mineral assemblage is kinked and has been rotated parallel to F_2 axial planes. Relative timing of garnet growth with respect to S_1 cleavage development remains ambiguous; garnets are observed truncating S_1 foliation, although S_1 foliation most commonly wraps around garnet porphyroblasts. Skeletal garnets also commonly display sinusoidal inclusion trails consisting of titanite and quartz grains.

Retrograde chlorite is randomly oriented. Chlorite is also common on brittle fault surfaces suggesting that late faulting occurred at greenschist facies conditions. The exact relationship between retrograde chlorite growth and D_2 and D_3 deformation could not be determined.

MINERAL DEPOSITS

Six styles of sulphide mineralisation were noted during this initial field season:

- volcanogenic massive sulphide deposits: VMS lenses, footwall stockworks and distal exhalite horizons have been described in the Ecstall belt
- felsic metavolcanics: pyritic quartz-muscovite schist
- pyritic cert
- quartzite: greater than 95% granoblastic quartz, with minor pynated along muscovite partings
- intrusive contacts: disseminated pyrite is distributed for a few to hundreds of metres into country rock
- faults: minor pyrite is commonly disseminated for 1 to 3 metres into the wallrock trace to minor disseminated pyrite is typical of most lithologies. In gneissic rocks, sulphides are concentrated in bands or boudins

In addition to these types of sulphide occurrences, some potential may exist for intrusion-related gold veins (Au-lithophile element deposits; Pogo - Fort Knox type deposits) associated with the mid-Cretaceous plutons and plugs that intrude the Ecstall belt at several locations (Gareau, 1997).

There are 18 mineral occurrences identified within Ecstall belt rocks; three of these are deposits with reserves. Seventeen of these are described in MINFILE, the remaining showing was discovered by Bishop Resources Ltd. during the 1999 field season. Industry geologists have classified all these occurrences as volcanogenic massive sulphides or related deposits such as footwall stockwork zones or distal exhalite horizons. These occurrences are spread over a 42 kilometre strike length, but all lie within the metavolcanic rock sequence of the Ecstall belt (Figure 3, and Unit 1 of Figure 7).

The following descriptions of the three largest deposits are summarized from MINFILE; reserves for these deposits are summarized in Table 3.

TABLE 3
RESERVES FOR ECSTALL BELT DEPOSITS

PROPERTY	SIZE (mT)	Cu %	Pb %	Zn %	Ag g/T	Au g/T
Scotia	1,240,000	0.1	0.4	3.8	13.0	0.25
Ecstall	6,349,700	0.6		2.5	20.0	0.5
Packsack	2,700,000	0.5	0.01	0.2	34.0	0.3
TOTAL RESOURCE	10,289,700	0.5	0.05	2.1	22.8	0.4

Scotia (103I 007)

The Scotia property is underlain by felsic gneiss, mafic gneiss and amphibolite. Deformed Zn-Ag-Pb-Au volcanogenic massive sulphide mineralization occurs in three stacked lenses extending over a 230-metre strike length, mainly within felsic gneiss. These three lenses may lie within parallel limbs of an overturned isoclinal fold. Massive sulphide widths range up to 11 metres. The sulphide zones strike 160 degrees, dip 40 degrees southwest and plunge 9 degrees south. Exposed in a south-facing cliff, the deposit is open along strike to the northwest and down dip to the southwest. Sulphide minerals include sphalerite, galena, pyrite, pyrrhotite, bornite and chalcopyrite.

Ecstall (103H 011)

The Zn-Cu-Ag-Au Ecstall deposit occurs in hydrothermally altered metavolcanic rocks. Two tabular, concordant, en echelon bodies, the North Lens and South Lens, consist of pyrite with minor chalcopyrite and sphalerite and lesser pyrrhotite, marcasite and galena. The two lenticular bodies of massive pyrite strike north, dip steeply east and plunge steeply south. The North Lens measures 300 x 150 x 30 metres. The South Lens measures 400 x 360 x 7 metres. A smaller deposit occurs 760 metres north of the North Lens, where a 30 x 2.4 metre lens of massive pyrite is exposed.

Property-scale exploration by Falconbridge in 1986 indicated significant stockwork copper mineralization in felsic rocks south of the Ecstall River in the Thirteen Creek area. This stockwork mineralization was interpreted as a possible feeder zone to a volcanogenic massive sulphide deposit.

Packsack (103H 013)

Two massive sulphide bodies, 170 metres apart along strike, occur within quartz-sericite schist associated with a 30-metre-wide shear zone. Disseminated pyrite is common throughout the quartz-sericite schist which has been traced continuously for 600 metres along strike. The deposits average 4 metres in thickness. The southern lens, up to 6 metres thick and traced for 365 metres, consists of massive pyrite with minor chalcopyrite, chalcocite and sphalerite. The northern lens is up to 0.6 metres thick

EXPLORATION AND MINERAL POTENTIAL

All eighteen VMS prospects of the Ecstall belt crop out. These showings have been located despite the fact that rock exposure throughout this belt is limited, thus the potential for discovery of additional deposits in the overburden-covered areas of this highly prospective belt are excellent. All discoveries have been achieved without the aid of regional-scale geological maps, geophysical surveys or geochemical surveys - standard exploration tools which have been particularly successful in the search for blind (subcropping or deeply buried) VMS deposits elsewhere.

Most showings have been discovered over the last 15 years from follow-up of property-scale stream sediment geochemical surveys. These geochemical surveys have not yet covered the whole of the prospective metavolcanic rocks of the belt. Moss-mat geochemical surveys conducted for the past three years have returned superior results compared to duplicate samples collected from stream sediments (A. Birkeland, Arnex Resources Ltd, personal communication).

Geological reconnaissance work and prospecting programs by companies have been intermittent and cover only portions of the belt. This point is exemplified by the Friday the 13th Zn-Cu showing, discovered this season during follow-up of stream sediment and moss-mat survey anomalies. The prospect was located in an eight-year-old logging road-cut where it is exposed as a 50-metre-long highly gossanous band, now heavily overgrown by roadside brush. For most of the last decade the three major deposits and adjacent ground have been held by three separate, competing companies and no comparison or synthesis of the detailed geological information collected around each deposit has been attempted. A company program designed to trace prospective pyritic quartz-sericite units through the central and northern parts of the belt commenced this season, but has limited funding.

No reference to chert has been found in geologic reports reviewed to date, yet two exposures were identified during the short 1999 field season - both exposures were strongly (> 5%) pyritic and part of the felsic metavolcanic package. These units record periods of prolonged exhalative activity in quiescent conditions and deserve careful follow-up.

Recent global research into the geologic setting of VMS deposits have stressed the importance of subvolcanic plutons of tonalite/trondhjemite as the heat source which concentrates VMS deposits at the overlying paleosurface (Galley, 1996; Large, 1996). An exploration program could be designed to investigate Gareau's (1991a,c) conclusion that the major Middle Devonian tonalite/trondhjemite pluton within the Ecstall belt, the Big Falls orthogneiss, is the coeval subvolcanic magma chamber that fed the volcanic pile.

Ground electromagnetic (EM) surveys carried out over known deposits generate clear anomalies that have been used to guide drilling on the prospects. This confirms that regional airborne geophysical surveys can also be effective in this belt, in contrast to many of the VMS districts of the Cordillera where highly conductive carbonaceous sedimentary rock masks the expected responses from sulphide accumulations.

Deposits discovered to date have significant tonnage but overall low base metal grades (Table 3). However, the higher grade section of the Scotia deposit has reserves of 224,000 tonnes grading 12.2% Zn, 1.2% Pb, 0.2% Cu, 23 g/t Ag and 0.55 g/t Au, indicating good potential in this belt for VMS deposits of economic size and grade.

CONCLUSIONS

The Ecstall metavolcanic belt is a classic VMS-rich greenstone belt. This Devonian age volcano-sedimentary complex is clearly underexplored with excellent potential for discovery of additional prospects and good potential for discovery of economic Zn-Cu-Ag-Au VMS deposits. With regional exploration work still at a relatively early stage, exploration success can be expected from programs ranging from prospecting, to regional stream geochemistry, to airborne geophysics, to regional-scale and property-scale geologic mapping. Despite its location in the heart of the rugged Coast Mountains the district has admirable access and proximity to infrastructure.

ACKNOWLEDGMENTS

Thanks to Arne Birkeland of Arnex Resources Limited and the management of Bishop Resources Limited for sharing their data and ideas developed over many years of work in the district. We appreciate the good care and cooperation from the staff and management of Bear Creek Contracting Limited who provided accommodation and logistical support during the 1999 field season.

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CONCLUSIONS

The Ecstall metavolcanic belt is a classic VMS-rich greenstone belt. This Devonian age volcano-sedimentary complex is clearly underexplored with excellent potential for discovery of additional prospects and good potential for discovery of economic Zn-Cu-Ag-Au VMS deposits. With regional exploration work still at a relatively early stage, exploration success can be expected from programs ranging from prospecting, to regional stream geochemistry, to airborne geophysics, to regional-scale and property-scale geologic mapping. Despite its location in the heart of the rugged Coast Mountains the district has admirable access and proximity to infrastructure.

ACKNOWLEDGMENTS

Thanks to Arne Birkeland of Arnex Resources Limited and the management of Bishop Resources Limited for sharing their data and ideas developed over many years of work in the district. We appreciate the good care and cooperation from the staff and management of Bear Creek Contracting Limited who provided accommodation and logistical support during the 1999 field season.

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