GEOLOGICAL REPORT & WORK PROPOSAL ON THE SIWASH CREEK PROPERTY

V.M. 1-4, PETERSON &
FISSURE MAIDEN NO. 2 FR CLAIMS

FOR
TOWER HILL MINES LTD.

SIMILKAMEEN MINING DIVISION

N.T.S. 92H/16W

49°47' N 120°20' W

BY

EDWARD W. GROVE, Ph.D., P.Eng.

VICTORIA, B.C. DECEMBER 18, 1989

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SUMMARY

The Siwash Creek mineral property is located on Siwash Creek about 31 kilometers (19 miles) north-northeast of Princeton, in south central British Columbia. The property lies in a forested upland plateau and can be accessed by any of three good logging roads from paved highways. Extensive logging on the property is now providing new road access and outcrop. Lack of good access and a dense timber cover have impeded exploration in the past. The property which is the subject of this assessment report comprises six claims covering an area of about 133 hectares and is owned by Tower Hill Mines Ltd. (formerly Ashnola Mines Ltd.). Work on the property dates to 1917 when high grade silver-lead-zinc fissure veins were explored near the junction of Galena and Siwash Creeks by several adits which are now located on the ED 2 and Crown Granted FISSURE MAIDEN No. 2 FR mineral claims. Little work was done in the area until 1979-1981 when personnel from nearby Brenda Mines Ltd. performed grass-roots exploration followed by scattered diamond core drilling. After acquiring the property in 1988 Ashnola Mines Ltd. (Tower Hill Mines Ltd.) took rock samples for analysis and followed this with a geochemical soil survey in late 1988. One new showing called the Monty West was located from which assays to 0.624 opt Au were returned across 2.4 meters.

Although the limited Brenda Mines exploration program did not locate an economic Cu-Mo deposit it has provided some basic information on rock type, alteration and Ag-Pb-Zn mineralization in the general area. The recent Tower Hill Mines Ltd. work has shown that the known mineralization such as the Monty showing (Au, Ag, Cu, Pb, Zn) is more extensive than previously known.

In 1989 Inel Resources Ltd. optioned these claims from Tower Hill Mines Ltd. and carried out an extensive geological mapping project which also involved relogging and sampling the old Brenda Mines core holes as well as basic preliminary preparation for further evaluation of these claims and adjoining claims also owned by Tower Hill Mines Ltd. Sampling of the many old workings, dumps, and associated structures showed significant values of silver, copper, lead and zinc as well as anomalous gold associated with shear zones. One sample from an extension of the #2 adit, Three Adit Gap workings, gave 3.046

opt Au, 123.54 opt Ag, 0.92 per cent Cu, 42.25 per cent Pb, and 2.38 per cent Zn.

The Inel Resources Ltd. program essentially completed the Stage I portion of the exploration proposed by the writer in March, 1989. It is recommended that Tower Hill Mines Ltd. implement a scaled down Stage II work program on several limited parts of the mineral property which have been defined by the 1989 work as having geological potential for mineralization. Cost of the 1989-1990 program is estimated at $188,000.

INTRODUCTION

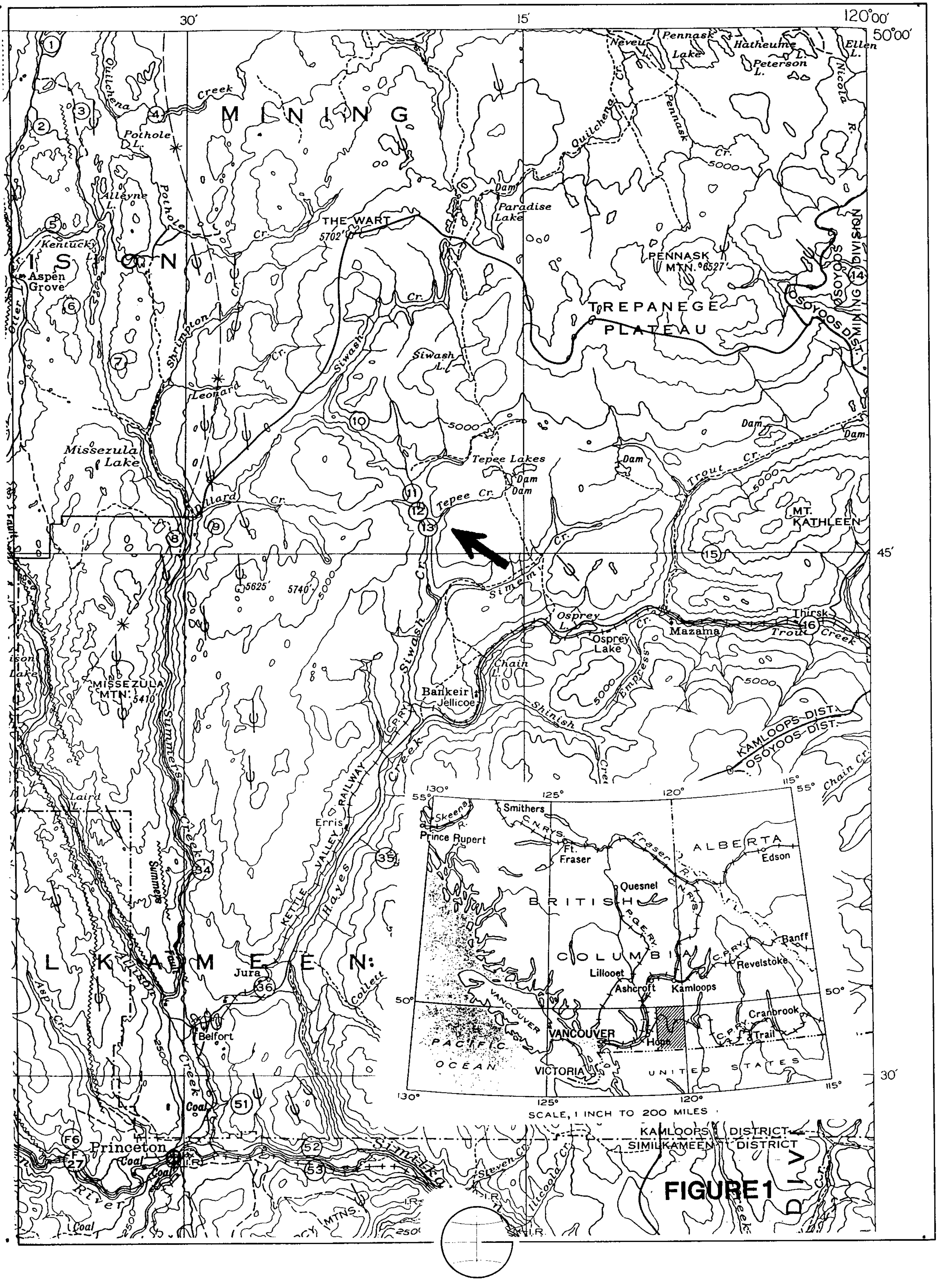
The Siwash Creek mineral claims are currently owned by Tower Hill Mines Ltd. The property extends across the Siwash Creek - Galena Creek junction located in south central British Columbia. The general area is noted for both major underground and open pit porphyry copper and molybdenum production from volcanic and intrusive host rocks. Significant gold and silver has also been recovered from these deposits.

Access to the area is excellent. It can be reached by any of three logging roads from local paved highways.

Gold bearing silver-lead-zinc mineralization has been located on this property on the FISSURE MAIDEN No 2 FR, VM 2 and adjoining ED 2 claims in several adits and trenches. Core drilling has shown the presence of widespread galena-sphalerite and pyrite as stockwork-like veins, some with associated fluorite veining. Epidotization and kaolinization of the mainly granitic to syenitic host rocks are pervasive.

The writer examined some of the core now stored at Penticton and visited the Siwash Creek property in late February, 1989 in the company of Mr. Norm Bonin, V.P., Tower Hill Mines Ltd. The area was covered by snow at the time of this visit and rock exposure in road cuts was rare.

As a result of an option agreement between Tower Hill Mines Ltd. and Inel Resources Ltd. on the Siwash Creek property the latter undertook Stage I of a geological program outlined and partly supervised by the writer. In late April through



120°00′
50°00′
30′
15′
45′
MINING
DIVISION
SIMILKAMEEN
Pennask Lake
Hatheume L.
Peterson L.
Ellen L.
Neveu L.
Quilchena Creek
Pothole L.
Alleyne L.
Kentucky L.
Aspen Grove
Paradise Lake
THE WART
5702′
PENNASK MTN. 6527′
TREPANEGE PLATEAU
OSOYOOS DIST.
Siwash L.
Siwash Cr.
Shrimpton Cr.
Leonard Cr.
Missezula Lake
Tepee Lakes
Tepee Cr.
Dillard Cr.
Trout Cr.
MT. KATHLEEN
Simem Cr.
Osprey L.
Osprey Lake
Mazama
Thirsk
Trout Creek
Chain L.
Bankeir
Jellicoe
Shinish
Empress
KAMLOOPS-DIST.
OSOYOOS-DIST.
MISSEZULA MTN. 5410
Summers Creek
KETTLE VALLEY RAILWAY
C.P.RY.
Hayes Creek
Erris
Laird L.
Jura
Belfort
Collett
Princeton
Coal
River
Similkameen
Steven Cr.
Allison Lake
KAMLOOPS DISTRICT
SIMILKAMEEN DISTRICT
Prince Rupert
Smithers
Skeena R.
Ft. Fraser
Fraser R.
Quesnel
ALBERTA
Edson
BRITISH COLUMBIA
Lillooet
Ashcroft
Kamloops
Revelstoke
Banff
Cranbrook
Trail
VANCOUVER
VICTORIA
Hope
PACIFIC OCEAN
UNITED STATES
SCALE, 1 INCH TO 200 MILES

FIGURE 1

early May Inel contractors relogged and sampled Brenda Mines core stored at Penticton, B.C. Work on the Siwash Creek mineral property followed in May and June 1989. Work on the Siwash Creek mineral property is estimated to have cost about $175,000.00 of which $90,000 has been recorded as assessment work on the V.M. 1-4, PETERSON, and FISSURE MAIDEN No. 2 Fr.

The writer visited the Siwash Creek property four days during the Inel program and has been commissioned by Mr. C. Shynkaryk, President, Tower Hill Mines Ltd. to write this geological assessmemt report and make work recommendations.

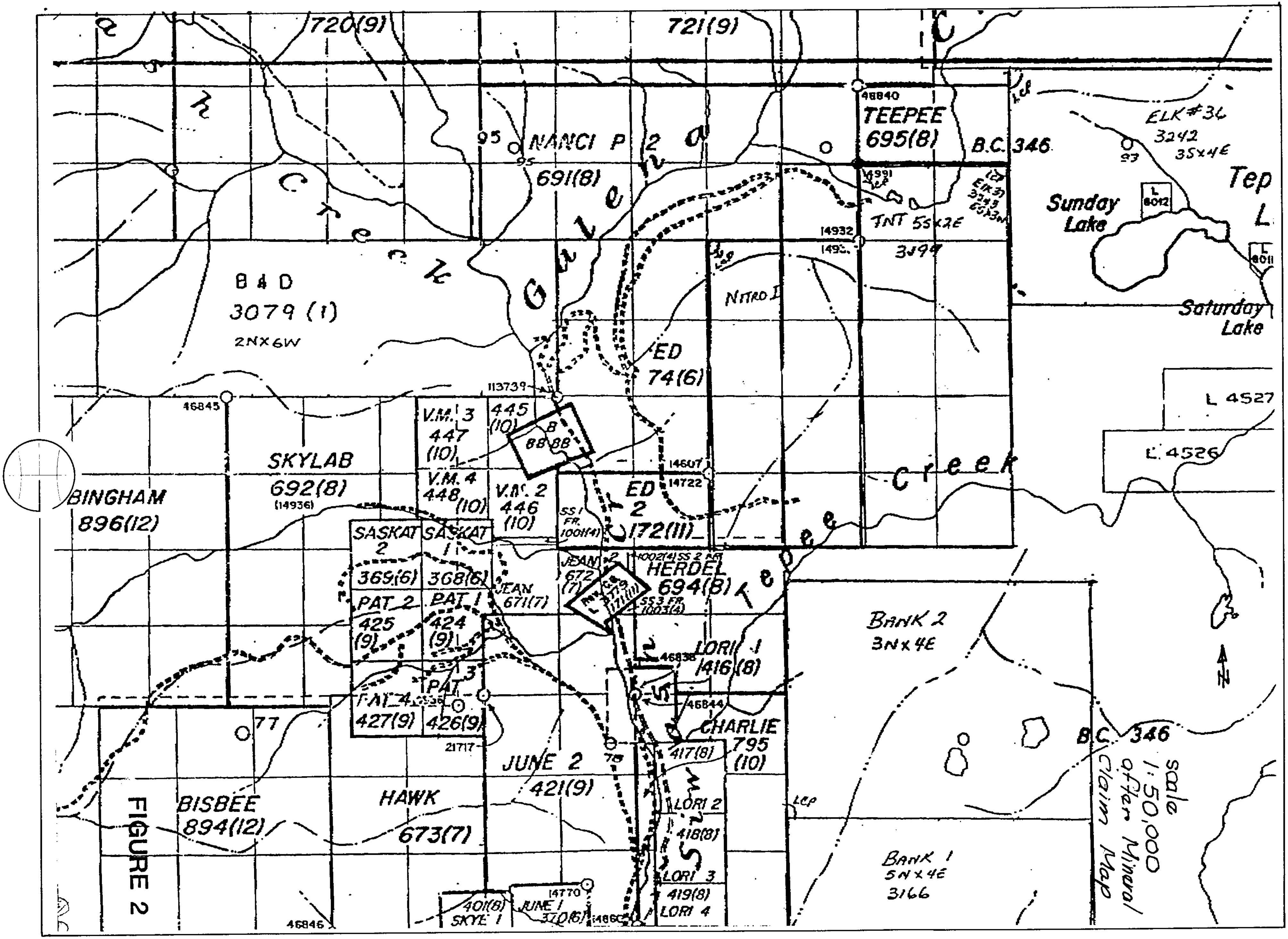
LOCATION, ACCESS AND TOPOGRAPHY

The Siwash Creek mineral property lies across the junction of Galena Creek with Siwash Creek just west of Teepee Lakes in the Thompson Plateau about 31 kilometers north-northeast of Princeton (Figure 1). Because of recent logging the claims can be accessed by three good logging roads from paved highways. The most direct route from the west is via Highway 5, then east on the Dillard Creek logging road to Siwash Creek. Alternate routes are from the Summerland-Princeton road at Osprey Lake, and from Peachland by the Peachland Main Logging road.

The claims lie in a timbered, rolling, upland plateau between elevations 1220 to 1460 meters cut by Siwash Creek and its tributaries. In this area stream flow reaches the maximum during mid-June. The surface exploration field season is generally between mid April and mid November. Winter snow is relatively light, and the main logging roads are well cleared and graded.

SIWASH CREEK CLAIM GROUP

The Siwash Creek claims under discussion currently include 6 mineral claims in the Similkameen Mining Division comprising 6 units with an area of about 133 hectares (Figure 2). The claims are within the PAT GROUP owned by Tower Hill Mines Ltd. and include the following:



720(9)
721(9)
TEEPEE
695(8)
B.C. 346
ELK #36
3242
3S×4E
Tep
L
NANCI P 2
691(8)
Creek
Galena
TNT 5S×2E
3199
Sunday Lake
Saturday Lake
B & D
3079 (1)
2N×6W
Nitro I
ED
74(6)
L 4527
L 4526
SKYLAB
692(8)
(14936)
V.M. 3
447
(10)
445
(10)
88
BINGHAM
896(12)
V.M. 4
448
(10)
V.M. 2
446
(10)
ED
2
172(11)
Teepee Creek
SASKAT 2
SASKAT 1
369(6)
368(6)
JEAN
671(7)
JEAN
672
(7)
HERDEL
694(8)
PAT 2
425
(9)
PAT 1
424
(9)
LORI 1
416(8)
BANK 2
3N×4E
PAT 4
427(9)
PAT 3
426(9)
CHARLIE
795
(10)
417(8)
JUNE 2
421(9)
B.C. 346
BISBEE
894(12)
HAWK
673(7)
LORI 2
418(8)
LORI 3
419(8)
LORI 4
BANK 1
5N×4E
3166
401(8)
SKYE 1
JUNE 1
370(6)
scale 1:50,000
after Mineral Claim Map

FIGURE 2

Name	Units	Record No.	Expiry Date
V.M. No 1	1	445	October 5, 1995
V.M. No 2	1	446	October 5, 1995
V.M. No 3	1	447	October 5, 1995
V.M. No 4	1	448	October 5, 1995
PETERSON	1	8888	February 6, 1996
FISSURE MAIDEN No 2 FR	1	171	Nov. 22, 1995

The other claims in the PAT GROUP are:

B & D	12	3079	January 4, 1993
JEAN 1	1	671	July 26, 1993
JEAN 2	1	672	July 26, 1993
ED	6	074	June 29, 1993
ED 2	2	172	Nov. 23, 1993

Two placer leases and three placer claims recorded in the names of Donald Edmund Agur (P.L. Nos. 18839 and 18844) and Christopher Cowan (RHINO 1, 2, and 3; Record Nos. 89, 90 and 91) respectively, overlie a portion of the subject mineral claims.

HISTORY

Although the public records are poor it appears that the earliest work on Siwash Creek was placer mining in an area about 32 km long by 3.2 km wide between the source of Hayes Creek and the headwaters of Siwash Creek. This mining was chiefly confined to the benches above the creek in early 1900's. Lode mining dates to 1917 when the first claims were recorded on Siwash Creek. Properties on which development work was done along Siwash Creek included the MABEL claim, and Renfrew and Claremont groups. Nearly all of this work entailed drifting, open cuts, trenches and shallow shafts on quartz-sulfide veins. In 1927, 27 tons of ore shipped to Trail from the RENFREW contained 3 oz. gold, 3,379 oz. silver, and 1,578 lbs of lead. The most extensive work appears to have been performed on the CLAREMONT Group (Monty Showing) including some 400 to 500 feet of drifting, as well as surface work. Only one assay on argentiferous galena from the CLAREMONT has been reported. Other nearby properties on which work was done included the BLUE STONE and ARGENTITE claims and the Lucky Strike and El Paso claim groups. With the exception of the El Paso, all of the mineralization explored was found to be hosted by intrusive rocks.

In 1951 and 1952 limited underground work was continued on the relocated Snowstorm Group (Lucky Strike) and one new adit was driven 30 feet on a "nine foot wide" sphalerite vein. About 100 tons of material was stockpiled on the property but no record of shipment is available.

More recently the general area has been examined by various major companies exploring for porphyry-type copper-molybdenum deposits utilizing mainly grass-roots geochemical and geophysical methods. These include Phelps Dodge (1972), Great Plains Development Company of Canada Ltd. (1973), Pan Arctic Explorations Ltd. (1973 - one drill hole), Utah Mines Ltd. (1974), and Brenda Mines Ltd. (1980 & 1981). The Brenda Mines work which is pertinent to the property under discussion included geological and geochemical surveys followed by scattered core drilling. In 1988 Tower Hill Mines Ltd. took control of the Siwash Creek property and performed limited rock sampling and a soil geochemistry survey of the property. This work was the first to investigate the gold, silver potential of the claims since the 1950's.

In 1989 under an option agreement with Tower Hill Mines Ltd, Inel Resources Ltd. undertook a detailed geological study of the Siwash Creek property with the prime objective of outlining the local geology and geological controls for the mineralization, and secondly to provide a base for future exploration and development should the option be continued. At the termination of the Stage I program Inel Resources Ltd. indicated they would not undertake any further work commitment and the property reverted to Tower Hill Mines Ltd.

1989 SPRING WORK PROGRAM

Inel Resources Ltd. completed a Stage I work program on Tower Hill Mines Ltd.'s Siwash Creek property between late April to mid-June, 1989, to evaluate the mineral potential of the Siwash property.

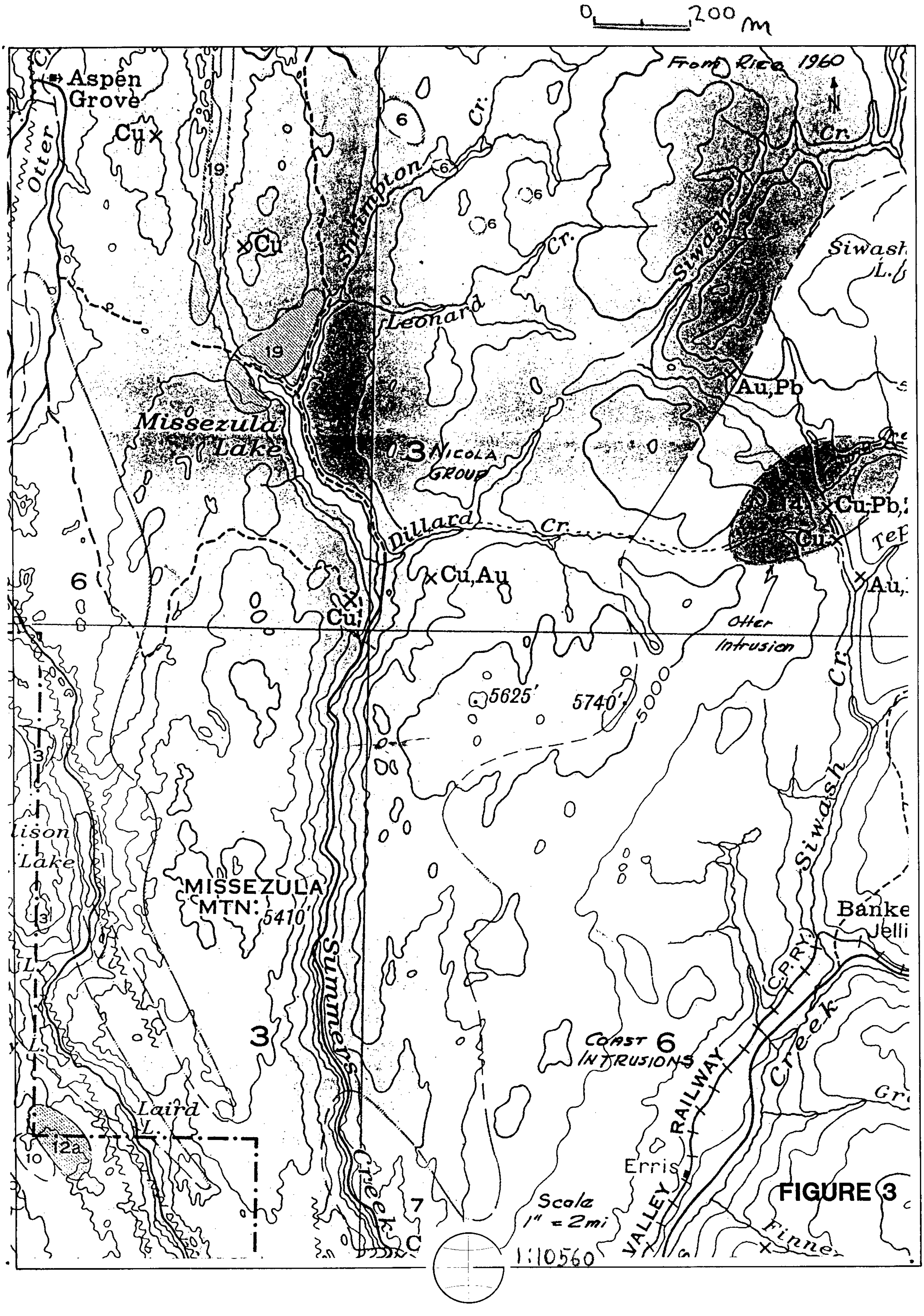
This program included relogging and sampling Brenda Mines' 1979-1981 drill core, locating and sampling old working on the property, prospecting and rock chip sampling, geological mapping, petrographic studies, mapping till coverage, soil orientation test pits, and limited soil sampling. Roads, trenches, pits, adits, surviving claim posts, and the old Brenda base line were surveyed to provide a planimetric base for geological mapping.

Approximately 4040 meters of drill core from the 1979-1981 Brenda Mines exploration program was relogged and sampled. A total of 195 samples of core were collected and assayed for 32 elements, including Au, which was not originally assayed. Brenda samples were also resampled to check original assays. Mineralized core not previously sampled was also split and submitted for analysis.

Field work included locating, mapping and sampling in detail the known showings including Monty West, Claremont and Three-Adit Gap. Prospecting and geological mapping were carried out over much of the property and 88 rock chip samples were collected. Mapping was completed along road cuts and major drainages at 1:5000 scale on an airphoto enlargement mosaic base. To supplement mapping and logging, 21 core and rock chip samples were sent for petrographic analysis and a skeleton selection of Brenda Mines' drill core was assembled for easy rock identification.

In preparation for soil sampling a till coverage map was completed and nine soil test pits were dug. Two of the test pits were located on the V.M. 4 claim. A limited soil sampling program of 76 samples was completed across Galena Creek at a copper anomaly previously identified by Brenda Mines. Sampling by Inel contractors also included analysis of soils for Au which had not been previously tested.

Cost of the overall work program on the Siwash Creek property was about $175,000 of which $90,000 has been recorded as assessment work on the V.M. 1-4, PETERSON, and FISSURE MAIDEN No. 2 Fr.



0 200 m
From Rice 1960
Aspen Grove
Otter Cr.
Cu
19
6
Shrimpton Cr.
Leonard
Cr.
Siwash Cr.
Siwash L.
Au,Pb
Missezula Lake
3 Nicola Group
14
Cu-Pb
Cu
Dillard Cr.
Cu,Au
Cu
Au
Otter Intrusion
5625'
5740'
5000
Cr.
lison Lake
MISSEZULA MTN. 5410'
Summers Creek
Siwash Creek
Banke
Jelli
C.P.RY.
3
Coast 6 Intrusions
Laird L.
12a
10
7
Erris
VALLEY RAILWAY
Scale 1" = 2mi
1:10560
Finne

FIGURE 3

AREAL GEOLOGY

The Siwash Creek property and surrounding area are underlain by a variety of extensive plutonic masses which have intruded Triassic and older volcanic and sedimentary rocks. The intrusive which underlies the property, called the Pennask Lake Body by Rice (1960), extends east to include the Brenda Mines porphyry molybdenum-copper deposit near Peachland. Rice indicated that the Pennask pluton comprised mainly reddish, coarse grained, siliceous granite and granodiorite. Within this body he outlined units which he related to the younger pinkish Otter Lake intrusions. In spite of extensive alteration Rice related the Siwash Creek body to the Otter Lake intrusions to which he associated many of the areal mineral deposits.

This area has now been made very accessible because of the extensive network of logging roads which grid the general area providing access Rice (1960) was denied. Work on the Siwash Creek property and surroundings suggests new areal mapping should be implemented in order to upgrade the overall picture and provide continuity over this mineral belt from Princeton to Peachland.

LOCAL GEOLOGY

Rice's (1960) areal geology map indicated that the entire Siwash Creek mineral property lay within an intrusive unit termed the Otter Intrusion, an ovoid stock-like mass about 5 km long, centered on the Galena Creek-Siwash Creek junction (Figure 3). Later mapping by Brenda Mines, and Tower Hill Mines suggested the claims were largely underlain by a leucocratic porphyritic granite which they termed 'quartz eye porphyry', as well as several other variants of the Otter Intrusion.

More detailed mapping by Inel Resources has shown that only the central portion of the claim group, lying roughly along Siwash Creek, is underlain by two discrete masses of the aptly named quartz eye porphyry. Three other granitic units marked by distinct texture and composition, probably forming part of the so-called Otter Intrusion lie east and west of the central leuco-granite. These comprise a megacrystic syenite, and a coarse grained syenite. A third unit which lies on the east and west sides is represented by a fine to coarse grained hornblende granodiorite. The larger area surrounding the claim group is underlain by the predominantly red, coarse-grained biotite granite forming part of the extensive Pennask Batholith (Figure 4 - pocket).

All of the above major rock units located by field mapping were prominent in the Brenda Mines drill core which was used in part to determine rock extent and contacts (Appendix I). Rock exposures are generally sparse because of the extensive overburden but the combination of rock cuts and drill core has provided a more useful picture, particularly in the central Siwash Creek area.

Although determination of local rock structure was mandated in the recent work, review of the program results has shown overall structural trends and rock alteration, but lack of outcrop still prohibits simple map style projections. Detailed description of the major rock units follow.

TRANSITION ZONE (Unit 3)

Unit 3 is very similar to the Quartz Feldspar Porphyry and, as K-feldspar megacrysts are sometimes present, to the Megacryst K-feldspar Porphyry, but with the distinctive addition of fine to medium grained biotite phenocrysts 1-3 mm (a latite composition). This unit which occurs as dike-like zones between several of the major units has also been observed in drill core as 10-20 meter wide intervals between granite and quartz syenite and on surface also between the granodiorite and granite along the Peachland Road to the east, and between units 6, 7, and 8 along Siwash Creek.

GRANITE (TO GRANODIORITE) (Unit 4)

Granite is medium to coarse grained equigranular, pink to green with pink K-spar, plagioclase and quartz dominating, and hornblende/biotite noted to 20% in drill core. Composition appears to grade toward granodiorite, or this could be a distinct second phase, often brecciated and/or sheared and altered; alteration varies from weak to strong sericite, chlorite +/- kaolinite, ankerite, epidote, hematite; weak to moderately magnetic; andesite dikes cut granite, rare aplite dikes were observed in drill core but not in outcrop. This unit is areally extensive and forms part of the larger Pennask Batholith.

DIORITE/GRANODIORITE (Unit 5)

Unit 5 is medium to coarse grained, grey; alteration is moderate to fresh including kaolinite, sericite, carbonate, chlorite with hematite in places; moderately magnetic, weakly to moderately developed foliation was noted in westerly exposures.

MEGACRYST K-FELDSPAR PORPHYRY (Unit 6)

Unit 6 is a quartz feldspar porphyry of rhyodacite/dacite composition with very distinctive K-feldspar megacrysts to 4 cm long; the abundance of megacrysts varies from very rare to abundant, however, only rocks with megacrysts were included in this category. The overall aspect suggests brecciation during injection of crystalline mush. These rocks have been previously termed diatremes, but they lack the significant features of a diatreme and are more likely a phase of the quartz porphyry (Unit 8) with which they are associated near the Gavin Creek-Siwash Creek junction.

QUARTZ FELDSPAR PORPHYRY/QUARTZ EYE PORPHYRY (Unit 7)

This leucocratic quartz feldspar porphyry of rhyodacite composition is similar in general to the Megacryst unit but lacking the distinctive K-feldspar megacrysts. Smaller feldspar phenocrysts (2-4 mm) may or may not be as common as quartz phenocrysts reflected in the two names. This unit is locally brecciated. The Quartz Eye Porphyry locally exhibits abundant and characteristic hexagonal bipyramidal quartz crystals from 3-5 mm to over 5 cm in size. This unit has some similarities to both Units 6 and 8, but has been generally distinguished by the white color, fine to medium grain size, lack of mafic minerals and the abundant obvious doubly terminated quartz crystals. Even where deeply weathered and crushed, these crystals have survived and identify the parent rock.

QUARTZ SYENITE (Unit 8)

The Quartz Syenite is fine to medium grained, subporphyritic to equigranular, lacking the well developed phenocrysts of the above two units; distinctive "chalky" white (kaolinite altered) weathered appearance with 5-8% finely disseminated pyrite, commonly fragmental, and brecciated locally.

Overall similarities in composition, appearance and spatial relationships suggest that Units 5, 6, 7 and 8, described above, have a petrogenic affinity. The Megacrysts K-feldspar Porphyry is the most extensive of these units and possibly forms the early core of this intrusive complex. More importantly, to date, all of the significant veins and mineralized shears appear to be localized within Unit 7, the quartz eye porphyry. As indicated (Figure 4) this phase appears to be concentrated along the Siwash Creek Axis, where it forms two main bodies which appear to be somewhat younger than the more extensive megacrystic (Unit 6) and quartz syenite (Unit 8) units. The significant gold bearing mineralization developed at Three Adit Gap, Monty and Claremont showings is entirely localized within the southerly Unit 7 body.

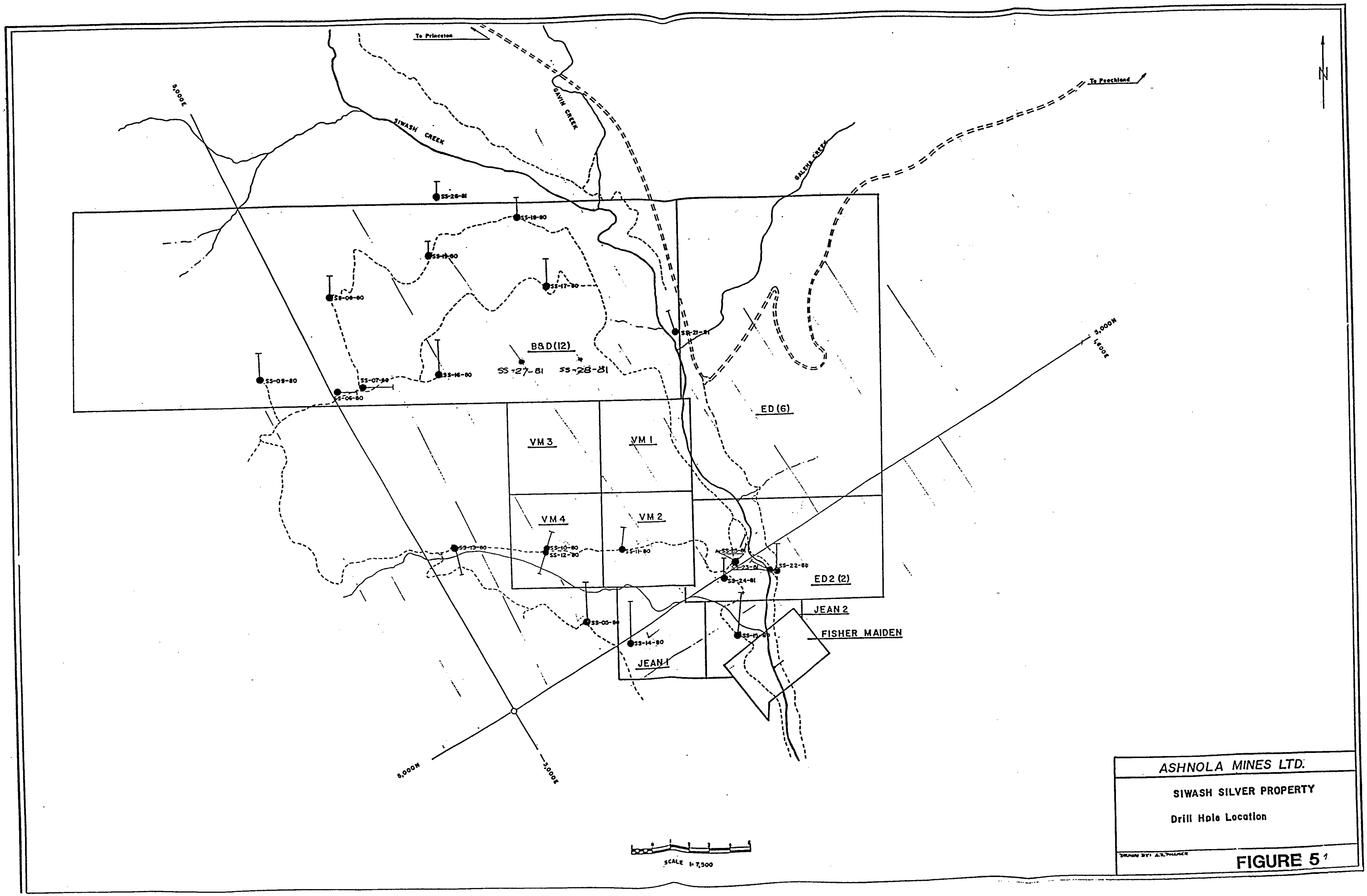
ALTERATION

The Otter Intrusives are generally weakly to moderately altered and locally strongly to intensely altered relating to shears and faults. Major common alteration minerals include kaolinite and sericite with lesser epidote, ankerite and quartz. The quartz feldspar porphyry is commonly limonitic near surface and the quartz syenite is usually moderately kaolinitic. Overall, manganese oxide forms a typical weathering product in shears and breccia zones. In addition to the above alteration the extensive quartz syenite is generally pyritized.

STRUCTURE

Overall features observed by Rice (1960) suggest that the Otter pluton has intruded the older Pennask Batholith and this relationship has not been revised by the recent work. Brecciation is typical of the Otter rock units where zones from tens to hundreds of meters have been observed in drill core and rock exposures of units 6, 7 and 8. The fragments vary in size, texture, and composition suggesting that in addition to simple crushing (angular to rounded fragments) some mixing took place.

Fractures, including joints are abundant in the Otter units; more than in the surrounding more massive batholithic rocks. No statistical study has been made but all of the Otter intrusive units include relatively close spaced, steep,



ASHNOLA MINES LTD.

SIWASH SILVER PROPERTY

Drill Hole Location

FIGURE 5

conjugate, northwest, northeast and east-west fractures. The batholithic rocks have similar but wider spaced fractures and are also marked by low angle (to flat) fractures which together produce slabs.

Faults and shear zones are common in the drill core, but have not been identified with major systems. Faults and shears observed in outcrop appear to have steep, mainly north-northwest and east-northeast orientation. All the known mineral occurrences along this portion of Siwash Creek appear to be localized in the quartz eye porphyry (Unit 7) in an east-northeast shear zone. Mineralization in the Northwest and Western zones is localized along both systems as well as along low angle shears. The northerly to northwesterly faults mapped near and along Siwash Creek display offset contacts and are probably a relatively younger structural feature.

REGIONAL MINERAL DEPOSITS

Numerous mineral showings and deposits have been found in a variety of host rocks in this general area. Economic deposits mined over the years have included such giants as Copper Mountain, Ingerbelle, Mascot Gold, and Brenda, as well as a variety of small producers.

More recently, Fairfield Minerals Ltd. has announced a high grade gold bearing quartz vein discovery with an estimated strike length approaching 800 meters. The Fairfield ELK property surrounds the Tower Hill Mines Ltd. Siwash Creek property.

PROPERTY MINERALIZATION

Placer gold was located along Siwash Creek by the Brenda Mines personnel in 1980 and two valid placer leases and three placer claims currently lie along the stream below Galena Creek.

Most of the known lode mineralization on the property lies along Siwash Creek where the veins are exposed and have been partly developed by adits, cuts, and trenches. So far this mineralization is localized in three areas on the V.M. 2, ED 2, and FISSURE MAIDEN No 2 FR claims (Figure 5) and consists of fissure-type quartz veins in the Osprey phase pluton. The sulfide minerals include pyrite, galena, sphalerite, with tetrahedrite, argentite, and rarely chalcopyrite and arsenopyrite. Fluorite is also a significant vein mineral on the ED 2 claim where a 120 to 150-meter adit was driven along an east-west trending shear carrying high grade argentiferous galena (0.10 opt Au, 269.8 opt Ag reported). This zone currently known as the Monty showing now consists of a 25 meter long cut exposing disseminated Pb-Zn in granite. Tower Hill Mines work suggests this zone is more extensive as indicated by their sampling of the Monty West exposure which reportedly assayed up to 0.624 opt Au over 2.4 meters (8 feet), and up to 1.5% Zn over a length of 18.28 meters (60 feet). Assay results of material from the FISSURE MAIDEN No 2 FR veins have been reported as up to 25.5 per cent Pb across narrow veins with silver values of up to 24 ounces per ton.

Prospecting on this property has been extremely limited and largely confined to the walls of Siwash Creek and nearby road cuts. Recent sampling by Mr. Norm Bonin of Ashnola Mines Ltd. (Pollmer, 1988) has produced the following results:

Description	Interval	% Pb	% Zn	Ag/oz	Au/oz	
FISSURE MAIDEN (country rock)	grab	0.70	1.05	0.30	0.012	
FISSURE MAIDEN (4" vein)	grab	10.84	10.21	3.29	0.280	*
Monty Showing (quartz-eye porphyry)	1.5 m	0.13	4.95	0.46	0.010	
Monty Showing (same as above)	7.6 m	0.30	6.41	0.73	0.014	
Monty West (same as above)	3 m	1.38	0.26	1.04	0.005	
Monty West (same as above)	2.4 m	0.69	0.63	1.35	0.624	*
Three Adit Gap (same as above)	0.6 m	0.06	0.05	0.30	0.008	

Drill Hole	Interval	% Cu	Ag/oz	Au/oz
SS-06-80	124.4 - 136.2	0.05	0.05	0.003
SS-22-81	52.0 - 53.0	0.29	0.98	0.005
SS-24-81	43.0 - 44.0	0.20	0.83	0.008
	45.0 - 46.0	0.09	1.05	0.004

SS-25-81	27.0 - 28.0	0.28	0.20	0.006

The 1989 work on the main mineral showings is described in the following paragraphs.

THREE-ADIT GAP (RENFREW)

The most extensive of these workings is the Three-Adit Gap (historically called the Renfrew Adits) where 120-150 meters of underground development has been undertaken in three separate adits. Government geological reports from the 1920's indicate the presence of mineralized quartz veins varying in thickness from 5-10 centimeters to 1.8 meters in width. A shipment of 27 tons of hand sorted material in 1926 produced 3 ounces of gold, 3,379 ounces of silver, and 1,578 pounds of lead.

The three adits in this vicinity have been designated as follows: #1 Adit located on the east bank of Siwash Creek (9-15 meters), #2 Adit located on the west bank across from #1 Adit (at least 91 meters), and #3 Adit located on the west bank of Siwash Creek - 18 meters downstream from #2 Adit (at least 38 meters). For safety reasons the adits were only partially explored and were not mapped and sampled in detail. In general, the three adits in this area have been driven along several mineralized quartz vein shears. Although Siwash Creek appears to be a major structure through this area, similar veining is found on both sides of the creek and apparently not significantly offset in any manner. Several samples were collected from this area as listed below:

#1 Adit

Sample Number	Ag oz/t	Cu ppm	Pb ppm	Zn ppm	Remarks
37051	2.52	6362	1373	4725	across 28"
37052	1.08	6265	1750	2348	across 30"

#2 and #3 Adits

Sample Number	Au oz/t	Ag oz/t	Cu %	Pb %	Zn %	Remarks
24687	180	6.60	0.94	1.00	1.33	select dump
24688	2780	3.19	0.66	0.15	18.71	" "
24689	260	1.86	0.31	0.53	0.42	" "
24690	730	15.37	0.43	14.20	0.42	" "
24691	490	7.30	1.43	2.29	4.77	" "

Located 9 meters above the #2 Adit portal, sample number 37053 was a select sample of an 18 cm wide massive galena quartz shear with minor pyrite-chalcopyrite-sphalerite. This appears to be the main structure the adit continues on. Assay results are listed below:

Sample Number	Au oz/t	Ag oz/t	Cu %	Pb %	Zn %
37053	3.046	123.54	0.92	42.25	2.38

Brenda Mines drilled holes SS-81-24 and SS-81-25 in the vicinity of the #2 and #3 Adits in a location uphill to the west and south. Both holes intersected several narrow quartz vein stringers hosting pyrite-sphalerite-galena mineralization (Appendix I). Re-samples of remaining drill core assayed in 1989 are listed below. (Less than half of the drill core was often remaining following Brenda Mines' core splitting).

SS-81-24

Sample Number	Interval Meters	Ag ppm	Pb ppm	Zn ppm
24657	24.7-26.2	7.6	5,400	9,926
24658	26.2-27.7	5.6	13,535	12,835
24659	33.5-35.1	8.6	5,485	8,149
24660	35.1-36.6	15.5	3,619	11,249
24661	36.6-38.1	40.2	9,516	17,166
24662	38.1-39.6	8.6	4,350	8,942
24663	39.6-41.2	4.9	5,638	14,967

SS-81-25

Sample Number	Interval Meters	Ag ppm	Zn ppm
24613	20.0-21.0	35.7	>20,000
24614	21.0-22.0	11.8	>20,000
24615	22.0-23.0	5.6	14,568
24619	27.0-28.0	4.1	9,999
24622	46.0-47.0	10.1	14,131
24623	75.5-77.0	5.7	>20,000
24624	79.0-80.5	11.1	13,582
24625	98.0-99.0	6.7	16,128

Based on inspection of mineralized dump material found outside of the #2 and #3 Adits (ie. size of material indicating minimum thickness of quartz veining) and records from historical government reports which suggest veins attaining thicknesses of up to 1.8 meters wide within the workings, it is possible that drill holes SS-81-24 and SS-81-25 did not intersect the strongest structures in this area which may also be auriferous.

MONTY SHOWING

The Monty Showing is located 150 meters downstream from the Three-Adit Gap on the east side of Siwash Creek. The first recorded mention of this occurrence appears to be in 1928 in the Annual Report of the Minister of Mines (p. 264). A short 9 meter adit was driven along a shear hosting abundant pyrite-sphalerite and minor galena mineralization in 1952. During the mid-1980's this area was excavated with a backhoe exposing more of the shear and associated wallrock. During the 1989 field program, channel sampling across the apparent strike of the zone produced the following results:

Sample Number	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn %	Remarks
37164	6	5.3	248	1,144	2.49	1 m chip
37165	47	13.8	757	1,100	5.82	"
37166	32	6.4	165	967	2.21	"
37167	27	9.5	302	1,149	2.49	"
37168	2	7.7	346	935	2.51	"
37169	46	3.8	70	695	2.16	"
37170	22	6.8	102	782	7958. ppm	"

During Brenda Mines 1980 program, drill holes SS-80-22 and SS-80-23 were drilled near the Monty Showing and both intersected zinc-silver mineralization in the form of narrow fracture stringers to narrow quartz vein stringers. Low gold, copper and lead values were reported. Comparison of the drill core to the exposed showing indicates that the Monty Showing itself possibly was not intersected. Results of assays from these holes obtained during re-sampling of drill core in 1989 are tabulated below:

SS-80-22

Sample Number	Interval Meters	Ag ppm	Zn ppm
24571	25.9-27.4	27.5	>20,000
24572	27.4-29.0	10.5	>20,000
24573	29.0-30.5	5.1	15,335
24574	30.5-32.0	2.8	6,698
24575	32.0-33.5	3.4	8,812
24576	33.5-35.1	3.6	5,424
	SS-80-23		
24629	14.0-15.5	3.6	9,754
24630	15.5-17.1	6.5	10,627
24650	143.0-144.5	13.5	17,720

CLAREMONT ADITS

These workings are located on the east side of Siwash Creek approximately 100 meters downstream from the Monty Showing and just down the steep embankment below the road. The adits are now caved but historical government reports indicate approximately 152 meters of underground development was completed consisting of three adits with crosscuts attempting to follow a vein varying from 5-10 centimeters to 30 centimeters. It is reported that a sample across the vein in the upper tunnel assayed 269.8 oz/t silver and 0.1 oz/t gold (Report of Minister of Mines, 1918). It is possible that adits have yet to be located above the main road. A sample consisting of sphalerite-pyrite-galena was obtained above a caved adit directly below the road cut which may or may not be the main structure. The results of this sample are below:

Sample Number	Au oz/t	Ag oz/t	Cu ppm	Pb %	Zn %	Remarks
37085	0.037	3.32	935	5.71	15.88	across 20cm

FISSURE MAIDEN ADITS

The Fissure Maiden adits are located south of the Claremont, Monty and Three-Adit Gap (Renfrew) workings and vary from all of the above in that this occurrence is hosted within Pennask granite rather than the quartz feldspar porphyry. This zone consists of a quartz shear mineralized with fine-grained galena and sphalerite with minor pyrite-chalcopyrite. A 15 meter long adit located on the east side of Siwash Creek exposes the mineralization which is up to 10 cm in width over a strike length of 5 meters before pinching out within the shear. Old diggings on the west bank of Siwash Creek have exposed the probable extension of this zone where the vein is up to 25 cm wide but not as strongly mineralized. Samples from each of these workings are listed below:

Fissure-Maiden - East side of Siwash Creek

Sample Number	Au oz/t	Ag oz/t	Cu %	Pb %	Zn %	Remarks
24677	0.640	4.71	0.59	15.97	10.56	select grab

Fissure Maiden Extension - West side of Siwash Creek

Sample Number	Au oz/t	Ag oz/t	Cu %	Pb %	Zn %	Remarks
37056	0.243	44.11	-	4.94	2.34	select grab
24686	0.056	65.85	-	2.61	1.33	" "

BRENDA MINES COPPER SOIL ANOMALY

Soil geochemistry surveys carried out in 1980 by Brenda Mines identified an area of anomalous copper in soils south of Galena Creek and north of the Peachland Road. Prospecting and mapping in this area in 1989 identified sporadic narrow quartz-carbonate stringers hosting chalcopyrite mineralization within Coast Intrusive (Pennask) diorite. Four test soil survey lines were run across this zone to confirm the copper anomaly as well as to test gold potential. The 1989 survey confirmed the presence of copper but indicated low gold values with the highest being 56 ppb gold.

OTHER AREAS

Reported gold values from the Monty West Showing (located approximately 100 meters north of SS-80-24) could not be verified. Pyrite-galena-sphalerite mineralization occurs within a silicified contact zone.

Narrow vuggy quartz veins up to 10 cm were found along Siwash Creek south of Galena Creek. Low gold values were obtained.

Prospecting in the western area of the B & D claims in the vicinity of Brenda Mines 1980 Pb-Zn soil anomaly did not locate any significant mineralization. The area is locally swampy which may in part explain these anomalies.

WESTERN TRENCHES

Trenching at the southwest corner of the JEAN 1 mineral claim has exposed an area of massive coarse grained red granite (Unit 4) cut by intersecting steep, narrow, northwesterly and northeasterly basaltic dikes. Mineralization comprises mainly magnetite with accessory pyrite, minor chalcopyrite, and secondary copper minerals localized along the contacts between the dikes and country rock, and variably along low angle shears in the granite.

NORTHWEST TRENCHES

Seven main trenches have been cut to expose variably altered, weakly pyritic quartz syenite. No significant mineralization was noted.

Overall, very little copper mineralization has yet been discovered west of Siwash Creek.

GEOCHEMICAL SURVEYS

Most of the Siwash Creek property was covered by an extensive geochemical soil survey by Brenda Mines in 1980. The target was copper and molybdenum, not gold. In 1988 Ashnola Mines Ltd. partially covered the Siwash Creek property with a geochemical soil survey utilizing Cu, Pb, Zn, Ag and Au values.

In 1989 the Inel work program included nine orientation pits in the Siwash Creek area (Figure 4) in order to determine the best soil horizon to sample. Two test pits are located on the V.M. 4 claim (Appendix II). The test pits showed that soils are poorly developed generally and suggest that the "B" horizon was adequate for local use. Overburden in the area is highly variable in thickness ranging from thin to over 50 meters comprising largely glacio-fluvial sediments and till. Glacial features such as moraines and eskers cover the area which has a strong north-northwest to south-southeast striation and sense of movement. Most of the spot gold anomalies lie near Siwash Creek within quartz eye porphyry areas (Unit 7). Several strong spot anomalies also lie west and south of Siwash Creek in batholithic granite terrain (Unit 4).

CONCLUSION

The main purpose of the 1989 field work program was achieved, that is, the Siwash Creek mineral property was mapped in sufficient detail to define the various country rocks and to determine that the quartz eye porphyry (Unit 7) forms two discrete units more or less localized along Siwash Creek. Most of the known mineral showings on this property appear to be confined to the southerly quartz eye porphyry body which has also been pointed out by coincident soil Cu, Pb, Zn, Ag and Au soil anomalies and earlier I.P., Resistivity anomalies. The work also suggests that the contact area roughly along Saskat Creek between units 4, 6, and 7 is anomalous. This area was until recently heavily forested and almost inaccessible. Logging during this year has almost completely stripped the area bare and primed it for easy prospecting. Sampling of the old showings has generally confirmed the presence of gold with the dominantly Ag, Pb, Zn mineralization. One sample from a probable extension of the Three Adit Gap #2 Adit assayed 3.046 opt Au, 123.54 opt Ag, 0.92 per cent Cu, 42.24 per cent Pb, and 2.38 per cent Zn.

Review of the Brenda core, core logs, and detailed ground mapping suggests that few if any of the Brenda drill holes intersected the shear zone targets. If so extensions of the known mineralization remain open.

The 1989 geological mapping also defined the presence of a second body of quartz eye porphyry along Siwash Creek at the northern limits of the property. Although no major mineralized structures have yet been found in this unit it is outlined by a Pb in soil anomaly and by I.P. Resistivity anomalies. The area is covered by thick overburden comprising eskers, wide terrace moraines, swamp and heavy forest cover.

The two quartz eye porphyry bodies comprise favourable exploration targets. In addition it has been shown that the contact zone between units 4, 6 and 7, extending almost east-west has exploration potential which has not been fully tested. In the same vein the complex contact zone outlining the northerly quartz eye porphyry body should be examined as part of a second stage of exploration on the Siwash Creek property.

RECOMMENDATION

Two main target areas have been outlined for detailed surface exploration on the Tower Hill Mines Ltd. Siwash Creek property. The main target lies over the JEAN, VM, ED 2 claims area which has been outlined by detailed mapping, mineral occurrences, and reconnaissance geophysics, and geochemistry. The second lies over the four easterly B & D claims where geology, and reconnaissance soil geophysics and geochemistry suggest a second order target area.

Stage I has been completed. It is recommended that in Stage II both areas be explored by detailed soil sampling, ground geophysics (Max.Min) with trenching and follow-up core drilling. This work program is estimated to cost about $188,025.00

1989-1990 EXPLORATION & DEVELOPMENT BUDGET
TOWER HILL MINES LTD. SIWASH CREEK PROPERTY

Stage I - has been largely completed.

Stage II A

1.	Camp costs ($25/man/day)		$15,000
2.	Geochemical Surveys: (including picket lines, stations, 20 m spacing) 2 men, 30 days @ $125/man/day analyses/assaying	 7,500.00 9,000.00	 16,500
3.	Geophysical Surveys: VLF, EM, Magnetometer, Max-Min		20,000
4.	Trenching (contract)		10,000
5.	Geology 1 geologist		10,000
6.	Transportation (rentals etc.)		4,000
7.	Supplies, sundries		2,000
8.	Supervision		6,000
9.	Reports, collation etc.		5,000
	Contingencies @ 15%		13,275
	Sub-Total Stage II A		$101,775

Stage II B

Core Drilling (assaying, etc.) 1000 meters @ $75/meter	75,000
Contingencies @ 15%	11,250
Sub-Total Stage II B	86,250
TOTAL STAGE II A + STAGE II B	$188,025

Stage IIB is contingent upon the identification of suitable drill targets during Stage IIA. Also, the results of stages IIA and IIB should be reviewed in detail before proceeding with a more comprehensive drilling and development program.

REFERENCES

Annual Reports of the Minister of Mines, B.C.
1917, p. 206
1925, p. 210
1927, p. 247
1928, p. 264
1929, p. 277
1951, p. 130
1952, p. 136

Assessment Report 4077, Geology, Geochemistry and Geophysics of Don Agur: Siwash Claim Group, A.V. Bishoff & M.E. Tim Coates, 1972.

Assessment Report 4347, Geophysical and Geochemical Report, Buck Group, Great Plains Development Company of Canada Ltd., M.D. McInnis, & D.R. Cochrane, March 1973.

Assessment Report 4552, Property Report, Buck Group, Great Plains Development Company of Canada Ltd., M.D. McInnis, August 1973.

Assessment Report 4894, Drilling Contract Re Siwash Creek Property, Pan Arctic Explorations Ltd., K. Hendricks, November 1973.

Assessment Report 5547, Report on the Geology, Geochemistry & Geophysics (I.P.) of Siwash Claim Group, F.R. Gatchalian and K. Witherly, Utah Mines Ltd., 1974.

Assessment Report 7987, Brenda Mines Ltd. Exploration Group, Report on Geological and Geochemical Surveys on the Siwash Creek Copper Property, Copper I and II Claim Group, P.C. Bankes, April 1980.

Assessment Report 10,448, Geological Investigation of the Late #1 Mineral Claim Near Merritt, B.C., Inter-Continental Energy Corp., Arctex Engineering Services, P. Kallock, L.B. Goldsmith, November 1981.

Assessment Report 17,838, Siwash Silver Property, Ashnola Mines Limited, Pollmer Consulting Ltd., January 1988.

Assessment Report 18,211, Siwash Silver Mineral Property, Soil and Rock Geochemical Report, Tower Hill Mines Ltd., Pollmer Consulting Ltd., December 1988.

Grove, E.W., 1989, Exploration and Development Proposal on the Siwash Creek Silver Property, for Tower Hill Mines Ltd. March 22, 1989.

Hastings, James S., 1988, Gold Deposits of Zortman-Landusky, Little Rocky Mountains, Montana, in Bulk Mineable Precious Metal Deposits of the United State, Geol. Soc. of Nevada.

Montgomery, A. & Todoruk, S.L., 1989, Geological Summary on the Siwash Project, for Inel Resources Ltd., June, 1989.

Rice, H.M.A., 1960, Geology and Mineral Deposits of the Princeton Map-Area, British Columbia, G.S.C., Memoir 243.

STATEMENT OF COSTS

Field personnel:		
S. Todoruk, Senior Geologist		
Apr. 17 - Jun 30, 50 days @ $400	$20,000	
A. Montgomery, Field Geologist		
May 1 - Jun 30, 41 days @ $225/300	10,500	
R. Darney, Field Geologist		
Apr 17 - Jun 30, 27 days @ $300	8,100	
L. Scroggins, Technician		
May 1 - June 30, 29 days @ $225	6,525	
B. Girling, Technician		
May 15 - Jun 30, 20 days @ $225	4,500	
E. Debock, Senior Prospector		
May 15 - Jun 30, 15 days @ $275	4,125	
G. Caulfield, Technician,		
May 15 - Jun 30, 12 days @ #225	2,700	
B. McAdam, Technician		
May 15 - Jun 30, 12 days @ $225	2,700	
F. Von Possel, Technician		
Apr 26 - Jun 30, 25 days @ $225	5,625	
P. Nicol, Technician		
May 15 - Jun 30, 12 days @ $225	2,700	
K. Milledge, Technician		
Apr 30 - May 31, 3 days @ $225	675	
		$68,150
Camp personnel		
P. Carter, 32 days @ $200	6,400	
T. Hancock, 32 days @ $125	4,000	
S. Tennant, 2 mos. @ $3,000/mo	6,000	
		16,400
Transportation, Vanc.-field, $ travel expenses		6,380
Vehicle Rentals		
Truck, 45 days @ $75	3,375	
ATV, 1 mo @ $400	400	
		3,775
Radio Rental		390
Aerial photo survey		408
Petrographic studies		1,252
Field Supplies		587
Consultant, E.W. Grove Consultants Ltd.		
10 days @ $500		5,000
Total Cost		$102,342

CERTIFICATE

I, Edward W. Grove, of the Municipality of Saanich, do hereby certify that:

1. I am a consulting geologist with an office at 4581 Boulderwood Drive, Victoria, British Columbia.

2. I am a graduate of the University of British Columbia (1955) with a Master's degree, Honours Geology (M.Sc. Hon. Geol.) and a graduate of McGill University (1973) with a doctorate in Geological Sciences (Ph.D.).

3. I have practised my profession continuously since graduation while being employed by such companies as the Consolidated Mining and Smelting Co. of Canada Ltd., British Yukon Exploration Ltd., the Quebec Dept. of Natural Resources, and the British Columbia Ministry of Energy, Mines and Petroleum Resources. I have been in corporate consulting practice since January 1981.

4. I have no direct, indirect, or contingent interest in Tower Hill Mines Ltd. or any of its properties.

5. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.

December 18, 1989

Victoria, B.C.

Edward W. Grove, Ph.D., P.Eng.

APPENDIX I

BRENDA MINES DRILL LOGS

RELOGGED FOR INEL RESOURCES LTD.

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-5

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 8, 1989

LENGTH: 214.88 m (705')
CORE: NQ

BEARING: North
LOCATION: 3390N/3360E

DIP: -60°
ELEVATION: 1295 m (4,249')

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
0	19.8	overburden										
19.8	30.8	granodiorite - medium grained, moderately magnetic when fresh, non-magnetic when altered, weakly altered to 24.4 24.4 to 27.4 - much more mafic, locally epidote + hemitization										
30.8	34.1	shear zone - strongly broken with clay gouge										
34.1	59.7	granodiorite - as above 56.7 to 59.7 - strongly mafic with moderate to strong chlorite, hematite fractures fillings locally										
59.7	71.3	biotite QFP dyke - plagioclase phenocrysts up to 1 cm, 1 to 2% biotite, pinkish brown colour overall 59.7 to 59.9 and 71.0 to 72.5 - shear zone, weathers with a pitted appearance										
71.3	87.8	granodiorite - as above, strong sericitization with minor epidote throughout, strong narrow fractures of hematite throughout, non-magnetic except local areas not altered where it's moderately magnetic										
87.8	92.1	andesite dyke - dark green, fine to medium grained 90.5 - 1 cm quartz vein + pyrite at 80° to c/a pyrite along fractures										
92.1	96.6	granodiorite - as above, moderate sericite + chlorite alteration										

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-5

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
96.6	97.7	andesite dyke - pyrite along fractures										
97.7	121.0	granodiorite - as above, moderate to strong sericite + chlorite alteration, locally moderately magnetic 100.0 - 1 cm quartz vein + pyrite + galena + sphalerite										
121.0	125.0	andesite dyke										
125.0	125.6	fault gouge - broken										
125.6	151.6	granodiorite - as above, grass green colour, strong sericite + chlorite alteration. Moderate to strong epidotization to 144.8 and moderate sericite 144.8 to 149.1 - silicified + porphyritic (quartz + feldspar + mafics altered to pyrite) with light buff brown coloured matrix 149.1 to 149.2 and 149.5 to 149.7 - quartz and strongly pyritized veins at 80° to c/a	24675	149.1	149.7	0.6	65	--	4.5	55	1,146	1,524
151.6	173.7	biotite QFP dyke - as 59.7 to 71.3 152.7 to 153.6 - slightly sheared + moderately kaolinized 173.4 to 173.7 - strong clay gouge shear zone										
173.7	194.5	granodiorite - as above, moderately magnetic, moderate epidote alteration locally 184.7 to 186.8 - silicified with narrow quartz veining + <1% disseminated pyrite 189.0 to 194.5 - strongly ankeritic + chloritic with some sericite + 3-5% disseminated pyrite										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-5

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
194.5	214.9 EOH	intensely altered quartz-plagioclase + hornblende porphyry - light buff brown colour, 3-5% disseminated pyrite throughout 195.5 to 196.0 - massive pyrite + quartz veins up to 5 cm 195.7 to 214.9 - narrow quartz stringers (silicification) throughout 204.2 - 5 cm pyrite + chalcopyrite + bornite stringer	24676	195.5	196.0	0.5	450	--	1.0	80	1,028	3,395

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-6

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: April 23, 1989

LENGTH: 226.2 m (742')
CORE: NQ

BEARING: N60°E
LOCATION: 4550N/2150E

DIP: -45°
ELEVATION: 1463 m (4,800')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	36.6	overburden										
36.6	132.0	quartz syenite - previously called quartz eye porphyry (by Brenda Mines), quartz crystals up to 4 mm set in moderately to strongly kaolinized matrix (altered plagioclase + k-spar), overall light white-grey to chalky colour, 5-8% disseminated pyrite + narrow fracture stringers throughout; surface oxidation to depth of 50.0	24532	58.7	59.9	1.2	80	--	5.0	672	204	5
		59.0 to 59.3 - massive fine to medium grained pyrite zone parallel to c/a with minor calcite										
		109.1 - ground starts getting quite broken up; strong kaolinization throughout (bleached) with 5-8% disseminated + fracture filling pyrite										
		** 112.2 to 118.0 - redrilled section										
		112.2 to 112.8 - strongly epidotized (grass green overall colour) + strongly kaolinized zone with massive fine to medium grained pyrite/clay gouge from 112.5 to 112.7; at 45° to c/a	24533	112.2	113.1	0.9	25	--	1.2	244	86	13
		113.8 to 114.5 - strongly epidotized + kaolinized zone with massive fine to medium grained pyrite from 114.3 to 114.5	24534	113.7	114.8	1.1	50	--	1.0	218	59	10
		114.5 to 117.0 - moderately epidotized + strongly kaolinized with 5-15% pyrite throughout as disseminations	24535	114.8	115.8	1.1	nd	--	0.1	66	42	5
		+ stringers	24536	115.8	116.9	1.1	nd	--	0.1	66	60	4
		117.0 to 118.9 - moderate to strongly epidotized + kaolinized shear zone with very strong (almost) massive pyrite (well developed slickenslides)	24537	116.9	118.9	2.0	60	--	1.4	123	91	8
			24538	118.9	120.4	1.5	10	--	0.1	50	59	6

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-6

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
		118.9+ - core is often broken, 5-15% pyrite disseminated + as veins between118.9 and 126.3 in strongly kaolinized partially sheared rock	24539	120.4	121.9	1.5	20	--	0.3	116	53	8
			24540	121.9	124.1	2.1	40	--	1.0	114	73	4
		126.3 to 127.6 - strongly kaolinized clay gouge zone with very strong pyrite as veins ? at 0-15° to c/a	24541	124.1	125.3	1.2	20	--	0.1	63	67	4
		128.3 to 132.0 - moderate to strong epidotization with strong kaolinization; not very broken at all here	24542	125.3	126.3	1.1	20	--	0.5	134	133	7
132.0	135.6	main shear zone - strong clayey kaolinized gouge shear zone with 5% disseminated pyrite (no strong massive pyrite zones within)	24543	126.3	127.6	1.2	60	--	2.3	568	104	22
			24544	127.6	129.2	1.7	10	--	0.1	74	48	7
135.6	226.2 EOH	quartz syenite - as above, with 5-8% disseminated + fracture stringers of pyrite often at 0-10° to c/a and 45° to c/a; occasionally still see slickenslides along fracture surfaces (i.e. 159.5). Often can be pitted (weathering). Noticeable 3-5 mm pyrite fracture stringers between 175.0 and 175.4 and 198.7 and 199.8. Last 5 boxes are mixed up - can't tell what goes where. No significant mineralization	24545	129.2	131.1	1.8	10	--	0.6	46	71	8
			24546	131.1	133.4	2.3	20	--	0.3	122	96	5
			24547	133.4	135.0	1.7	nd	--	0.3	105	64	10
			24548	135.0	136.4	1.4	10	--	0.1	42	63	16
			24549	136.4	137.8	1.4	nd	--	0.1	57	97	7
			24550	154.2	155.8	1.5	nd	--	0.1	47	90	58
			24551	175.0	176.8	1.8	nd	--	0.1	42	57	24
			24552	198.7	199.8	1.1	65	--	1.6	385	255	299

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-7

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: April 29, 1989

LENGTH: 254.5 m (835')
CORE: NQ

BEARING: East
LOCATION: 4580N/2320E

DIP: -50°
ELEVATION: 1448 m (4,750')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	9.4	overburden										
9.4	89.3	fragmental quartz syenite - quartz crystals up to 4 mm, plagioclase and k-spar almost always altered to sericite. Overall tan to pale green colour. Sub-hedral fragments up to 2 cm in size throughout - minimal frequency. Surface oxidation to depth of 12.8 9.5 to 12.2 - highly oxidized moderate sericitization overall. Has pitted weathering appearance locally. Minor disseminated magnetite locally										
89.3	167.6	altered fragmental quartz syenite - strongly kaolinized (often gougy) + epidotized to 93.9, <1% disseminated pyrite 93.9 to 111.9 - quartz syenite is now a light white grey to chalky colour, feldspars are totally kaolinized, pyrite content has suddenly increased to 5-8% disseminated with pyrite stringers throughout locally. Has pitted appearance. Pyrite fracture stringers at 20-40° to c/a (up to 15 cm at 94.2) throughout	24553	94.2	96.0	1.8	25	--	0.1	46	64	77
		111.9 to 120.4 - syenite is similar to 89.3 to 93.9 where it's gougy and sheared. Strongly kaolinized +	24554	107.3	108.8	1.5	nd	--	0.4	66	279	87
		epidotized (overall grass green colour)	24555	108.8	110.3	1.6	25	--	0.5	149	199	99
		120.4 to 167.6 - similar light white grey to chalky coloured pitted quartz syenite (strongly kaolinized + moderate epidotization) as 93.9 to 111.9. Back to 5-8% pyrite + locally massive pyrite veins at 40° to c/a at 125.6 (10 cm), at 125.9 (20 cm)	24556	125.6	126.8	1.2	70	--	2.5	121	252	27

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-7

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		126.3 (8 cm), and at 132.9 (51 cm)	24557	132.6	134.0	1.4	50	--	1.7	266	114	106
		134.4 to 135.6 - silicified zone of kaolinized syenite with 5-10% disseminated and fracture stringers of pyrite at 20° to c/a	24558	134.4	135.6	1.2	5	--	1.6	40	123	411
		143.6 to 143.9 - 10-15% pyrite as disseminations + up to 2.5 cm stringers	24559	149.0	151.0	2.0	40	--	1.0	87	273	464
		149.7 - 15 cm massive pyrite + gouge clay with noticeable fracture slip at 10° to c/a	24560	152.4	153.9	1.5	110	--	2.8	440	581	52
		151.3 to 151.5 - strong white clay gouge										
		152.7 to 153.9 - gouge zone with strong fine to medium grained pyrite										
		158.2 to 158.5 - 1.3 cm pyrite vein at 10-15° to c/a										
		all of the above is mainly the white light grey to chalky coloured, moderate to strongly kaolinized, moderately epidotized and pitted quartz syenite (fragmental ?)										
167.6	189.0	biotite QFP dyke - all plagioclase is moderately to strongly kaolinized, brownish-grey overall colour										
		184.7 to 187.8 - grass green colour (moderately sericitized/ epidotized										
189.0	254.5 EOH	moderately to strongly kaolinized quartz syenite - light white-grey to chalky colour, locally pitted appearance, 5-8% disseminated	24561	210.2	211.5	1.4	10	--	0.1	40	136	104
		pyrite + pyrite stringers (up to 1.9 cm) at various orientations to c/a	24562	233.0	234.5	1.5	nd	--	0.1	27	1,375	77
		233.2 - 1.3 cm pyrite vein at 10-15° to c/a with fine grained purplish metallic mineral throughout the pyrite (galena)										

GEOLOGICAL CORE AND ASSAY LOG

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

COMPANY: INEL RESOURCES LTD.

PROPERTY: SIWASH

HOLE: SS-80-8

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 4, 1989

LENGTH: 227.7 m (747')
CORE: NQ

BEARING: N60°E
LOCATION: 5080N/2040E

DIP: -50°
ELEVATION: 1433 m (4,700')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	6.1	overburden										
6.1	164.0	quartz syenite - very similar to SS-80-6 quartz syenite, quartz crystals (anhedral) to 3-4 mm in size, oxidized to a depth of 50.9, overall light white grey to chalky colour, other than discernable quartz crystals, matrix is totally kaolinized throughout (moderate to strong), core is very broken up to 26.5, 5-8% disseminated pyrite throughout (in surface oxidized zone - pyrite has weathered out to give weak boxwork texture), narrow pyrite fracture stringers at 15-30° to c/a) widely spaced all down hole										
		70.7 to 71.3 - stronger pyrite mineralization as fractures and disseminations, several of the pyrite fracture	24606	70.7	72.2	1.5	20	--	1.2	191	45	37
		stringers are nearly parallel to c/a	24607	113.7	115.2	1.5	40	--	0.4	111	30	12
		113.7 to 115.2 - little stronger pyrite										
		155.8 to 157.3 - 10-15% disseminated pyrite	24608	155.8	157.3	1.5	65	--	0.8	34	35	30
164.0	167.6	strongly altered contact zone - dark brown weathered colour, soft, strong ankerite alteration, moderate to strong sericitization (pale grass green colour), some kaolinization (?), sheared, clay gouge + broken throughout										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-8

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
167.6	227.7 EOH	altered megacryst k-spar porphyry - similar to that in SS-80-26, SS-80-27 and SS-80-28. Intensely sericitized (pale green overall colour). Stains strongly k-spar rich groundmass of syenitic composition. Some kaolinite alteration. Weak to moderately magnetic. In this hole, the k-spar phenocrysts are more frequent than in drill holes SS-80-26 to 28, crystals up to 3.8 cm in size, does not appear fragmented to be called a breccia 194.5 to 194.8 and 204.6 to 205.2 - clay gouge shear zones	24609	218.5	220.1	1.5	nd	--	0.6	3	42	38

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-9

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 8, 1989

LENGTH: 66.1 m (217')
CORE: NQ

BEARING: North
LOCATION: 4680N/1800E

DIP: -50°
ELEVATION: 1448 m (4,750')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.5	overburden										
3.5	66.1	quartz syenite to brecciated quartz syenite - light white grey colour, 2-4% disseminated pyrite throughout. Locally multilithic fragments (a tuff ?) 54.3 to 57.3 - light pale green fine grained, bedded (at 40° to c/a), folded locally, sediments ?, pyrite fracture fillings at 44.8 to 45.1										

GEOLOGICAL CORE AND ASSAY LOG | COMPANY: INEL RESOURCES LTD. | HOLE: SS-80-10

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk | LENGTH: 182.27 m (598') | BEARING: North | DIP: -45°
DATE: April 28, 1989 | CORE: NQ | LOCATION: 3780N/3200E | ELEVATION: 1273 m (4,175')

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
0	3.7	overburden										
3.7	15.5	medium grained hornblende granite - pale green colour, massive, pervasive chlorite/epidote alteration, <1% disseminated pyrite										
15.5	30.5	finer grained granite - pale green colour	24507	18.6	19.5	0.9	55	--	3.9	126	1,997	3,709
		15.9 to 16.0 - shear zone with clay gouge + <1% disseminated pyrite, strongly kaolinized	24508	19.5	21.6	2.1	80	--	0.5	44	473	1,282
		17.4 to 17.7 - shear zone strongly kaolinized (bleached) with 2-3% disseminated pyrite. Sphalerite and	24509	21.6	23.5	1.8	390	--	0.5	67	202	790
		pyrite along narrow fractures on footwall side of shear zone. Purple fluorite also along	24510	23.5	25.0	1.5	120	--	0.3	52	330	1,519
		fractures in shear zone; 25.0 to 30.5 - shear zone; shearing appears to be at 80° to	24511	25.0	26.5	1.5	450	--	31.2	683	1,365	6,326
		c/a although lower angle fractures are present. Moderate kaolinite alteration + chlorite/	24512	26.5	28.0	1.5	110	--	9.2	227	1,316	2,733
		sericite (?) pervasively throughout. Generally 3-4% disseminated pyrite throughout. At 25.3	24513	28.0	29.6	1.5	30	--	3.2	111	225	869
		metres get 15 cm silicified vein with 50% pyrite, minor sphalerite and strong epidote.	24514	29.6	30.5	0.9	150	--	18.8	882	10,109	>20,000
		At 26.2 have 2.5-5 cm pyrite + unidentified black metallic mineral (sphalerite ?); 30.2 to 30.5 - massive pyrite with sphalerite + galena										
30.5	42.4	medium grained granite - green colour with 1% disseminated pyrite; pervasive chlorite/epidote alteration	24515	30.48	32.00	1.52	50	--	0.4	89	704	1,824

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-10

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
42.4	58.8	altered fine-medium grained granite - moderate alteration	24516	43.0	44.5	1.5	50	--	1.2	76	463	1,300
		throughout and 1% disseminated pyrite + <1% sphalerite + <1%	24517	44.5	46.0	1.5	30	--	1.1	44	367	776
		galena dissemianted along silicified (quartz) stringers at 35°	24518	46.0	47.6	1.5	20	--	1.8	122	664	1,167
		to c/a. Frequency of stringer is approximately 1 every .6 m.	24519	47.6	49.1	1.5	30	--	1.2	28	226	148
		47.7 - 2.5 cm quartz-pyrite stringer at 45° to c/a	24520	49.1	50.6	1.5	25	--	0.6	45	131	311
		50.5 to 51.0 - massive, coarse grained, sub to euhedral	24521	50.6	51.1	0.5	1,640	--	39.7	36	2,032	993
		pyrite zone with minor sphalerite + galena	24522	51.1	52.1	1.1	120	--	3.3	10	492	149
			24523	52.1	53.7	1.6	180	--	10.3	29	1,054	915
		52.1 to 53.7 - shear zone with massive pyrite (52.1 to 52.9)	24524	53.7	54.9	1.1	60	--	5.6	68	1,873	1,734
		strongly sheared with abundant kaolinite and										
		strong pyrite (52.9 to 53.7). At end of zone										
		are a few chunks of massive, coarse grained										
		pyrite										
		57.6 to 57.8 - strongly kaolinized shear zone with strong pyrite										
58.8	152.7	medium grained hornblende granite - as above										
		70.1 to 70.7 - finer grained tan-green altered (kaol + ser ?)										
		granite										
		74.7 to 76.2 - same altered granite										
		85.7 to 86.3 - as above										
		86.3 + - alteration is variable from weak to moderately										
		kaolinized and locally strong										
		91.7 to 93.9 - very broken and kaolinized with 1-2%										
		disseminated pyrite + occasional silicified										
		stringer. Hematite fairly abundant within the										
		area										
		97.5 to 98.5 - similar kaolinized (bleached) zone with	24525	97.54	98.45	0.91	30	--	1.5	13	147	245
		approximately 5 cm massive coarse grained										
		pyrite vein at 60° to c/a	24526	104.24	105.77	1.52	75	--	5.6	15	335	195

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-10

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
		105.6 to 105.8 - coarse grained, massive pyrite zone at 45° to c/a. Zone above this vein has blebs + disseminations of pyrite + hematite (1-2%). Strong hematite along narrow fracture at 100.3. Epidote alteration associated with clay zone	24527	111.9	113.4	1.5	20	--	0.5	6	51	79
			24528	113.4	114.9	1.5	80	--	6.8	79	4,584	2,607
			24529	119.5	121.0	1.5	160	--	17.2	28	1,979	213
		100.6 - marked increased in pyrite as 5% patchy blebs + disseminations which continue downward to 152.7	24530	138.7	140.2	1.5	20	--	0.1	30	105	162
			24531	148.7	150.3	1.5	190	--	12.3	37	390	432
		113.4 to 113.4 - coarse grained massive pyrite vein. Stronger pyrite at 121.0										
		125.3 to 126.8 - sheared and strongly kaolinized with up to 5% disseminated + stringers of pyrite. Below shear zone is 1-3% hematite + pyrite. Moderately kaolinized with epidote + sericite										
		149.1 to 149.2 and 150.0 to 150.3 - massive k-spar megacryst pyrite veins										
152.7	163.7	megacryst k-spar porphyry - k-spar phenocrysts up to 2 cm, zoned, hornblende ? or k-spar alters to chlorite and biotite or epidote, moderately sericitized										
163.7	182.3 EOH ?	medium grained granite - pale green colour, pyrite stringers up to 1 cm at 181.4. Increase in biotite after hornblende										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-11

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: April 27, 1989

LENGTH: 123.7 m (406')
CORE: NQ

BEARING: North
LOCATION: 3760N/3540E

DIP: -50°
ELEVATION: 1311 m (4,300')

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
0	11.0	overburden										
11.0	38.1	granite - medium to coarse grained, pale mottled appearance due to coarse (3 cm) sub-hedral k-spar crystals. Massive appearance with very weak fracturing. Visual composition: quartz (25-30%), k-spar (25-30%), plagioclase (15-20%), mafics (20%). Alteration: weak pervasive chloritization after hornblende, weak epidote after hornblende locally, weak hematite after hornblende locally. 11.0 to 18.6 - hairline fracture fillings silicified with pyrite and molybdenum, rare specks of disseminated pyrite 22.9 - limonite oxidation along fractures	24501	9.8	11.3	1.5	45	--	0.3	47	34	350
38.1	43.3	altered hornblende-biotite granodiorite (as per Vancouver Petrographics) - strong to moderate sericite, quartz alteration; 0.5% disseminated pyrite shearing										
43.3	76.8	quartz feldspar porphyry - as in SS-81-25 54.6 to 59.4 - finer grained and a green-tan colour (weak to moderate sericitization alteration), <1% disseminated pyrite throughout, weak to moderate ankerite alteration remainder of interval is pervasively chloritized, hematite oxidation locally, <1% disseminated pyrite 71.8 - minor sphalerite 76.5 - molybdenum	24502	71.9	73.4	1.5	20	--	0.5	21	74	1,359

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-11

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
76.8	81.4	bleached zone 79.6 to 79.9 - shear zone which is strongly kaolinized	24503	78.0	79.6	1.5	30	--	1.3	3	71	119
		rest of zone is moderately kaolinized, strong increase in pyrite content (2-3%). Has greenish-tan chalky appearance. Sericite ?	24504	79.6	81.1	1.5	100	--	0.3	9	57	104
81.4	88.4	granite - medium to coarse grained, weak chlorite alteration, minor disseminated pyrite										
88.4	112.2	quartz feldspar porphyry - fine to medium grained green granite with increase in ankerite content replacing feldspars	24505	95.1	96.6	1.5	30	--	1.5	99	205	5,999
		109.1 to 109.7 - shear zone with 1-2% disseminated pyrite 95.4 - unidentified metallic mineral (sphalerite ?) with 1-2% pyrite. Moderately sericitized	24506	108.8	110.3	1.5	60	--	1.3	85	397	2,152
112.2	123.7 EOH	brecciated quartz feldspar porphyry - medium grained with chlorite/biotite altered k-spar phenocrysts up to 3 cm. K-spar locally zoned										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-12

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 8, 1989

LENGTH: 150.6 m (494')
CORE: NQ

BEARING: South
LOCATION: 3780N/3200E

DIP: -50°
ELEVATION: 1273 m (4,175')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	18.3	overburden										
18.3	41.2	fine to medium grained syenite ? - light buff to pink colour, stains heavily in potassium, broken + oxidized to 41.2										
41.2	85.7	granite - coarse grained quartz, k-spar crystals 41.2 to 78.6 - ankeritic and weakly sericitic/epidotized, <1% disseminated pyrite 60.4 to 60.7 - clay (with minor pyrite) gouge 62.2 to 71.0 - strongly sheared, broken and kaolinized 68.9 to 69.1 - 3-4 cm quartz vein + pyrite at 30° to c/a 74.4 to 74.7 - slightly sheared with 5% medium grained pyrite 73.8 to 74.1 - 1 cm quartz vein + pyrite + sphalerite at 5-10° to c/a 76.8 to 77.1 - 1 cm quartz vein + pyrite + sphalerite at 5-10° to c/a 78.6 to 85.7 - not ankeritic but now is moderately chloritized + sericitized with some epidote										
85.7	86.6	felsite zone (?) - light pale grass green, fine to medium grained										
86.6	103.0	granite - as above, weakly altered, some sericite/chlorite/epidote										
103.0	103.9	andesite dyke										
103.9	114.6	granite - as above, start seeing wispy pale grass green zones up to 20 cm of sericite/chlorite										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-12

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
114.6	127.1	breccia - granitic, quartz + k-spar phenocrysts, dark grey fine grained groundmass, fragments are very angular										
127.1	130.2	breccia - distinctly different from above breccia, multilithic, sub-angular fragments, siliceous, pyrite fragments up to 2 cm occasionally, pink brown coloured matrix, has different appearance than diatreme (?) in hole SS-80-18 at 46.3										
130.2	150.6 EOH	breccia - as 114.6 to 127.1, often appears as granite not brecciated but switches back and forth, fairly well developed foliation 140.8 - pyrite fracture stringer 143.0 to 143.3 - quartz + pyrite veining ankerite + sericite alteration is moderate throughout										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-13

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 1, 1989

LENGTH: 99.7 m (327')
CORE: NQ

BEARING: South
LOCATION: 3900N/2700E (Off property to west of VM4 claim)

DIP: -50°
ELEVATION: 1296 m (4,250')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	34.7	overburden										
34.7	41.4	altered medium grained granodiorite - large plagioclase phenocrysts to 5 cm, moderately kaolinized with strong epidotization/chloritization after mafics, overall light pale green-grey colour, <1% disseminated pyrite, non-magnetic										
41.4	46.3	fresher medium grained granodiorite - overall medium green-grey colour, moderate to strongly magnetic, lots of mafics, <1% disseminated pyrite, weak to moderate kaolinization of plagioclase crystals, mafics altered to chlorite/biotite often 44.2 to 44.8 - shear zone with strong kaolinization + epidotization and clay gouge at 44.5										
46.3	46.6	andesite to basalt dyke - fine grained, dark green										
46.6	57.9	fresher granodiorite - as above 49.6 to 50.1 - green fine grained andesite dyke with hornblende (?) phenocrysts to 2 mm, magnetic										
57.9	64.0	andesite dyke										
64.0	66.4	fresher granodiorite - as above, moderate to strong magnetics										
66.4	67.2	andesite dyke										
67.2	68.0	fresher granodiorite - as above										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-13

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
68.0	68.6	altered silicified zone - white colour, <1% disseminated pyrite, strongly kaolinized, possibly potassic flooded (?)	24568	74.4	76.2	1.8	10	--	0.1	5	45	71
68.6	73.2	fresher granodiorite - locally plagioclase feldspars are moderately kaolinized, magnetic										
73.2	79.6	intensely altered granodiorite - light cream brown colour, strongly kaolinized, strongly silicified, weak to moderate epidotization, narrow quartz stringers with minor pyrite stringer activity 78.0 to 78.6 - area of intense shearing and clay gouge										
79.6	82.3	fresher granodiorite - moderate magnetics										
82.3	92.7	altered medium grained granodiorite - 34.7 to 41.4, no large plagioclase phenocrysts, non-magnetic, hornblende gone to epidote/chlorite/biotite										
92.7	96.0	andesite										
96.0	99.7 EOH	fresher granodiorite - moderate to strong magnetics										

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-14

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 2, 1989

LENGTH: 335.3 m (1,100')
CORE: NQ

BEARING: North
LOCATION: 3300N/3620E

DIP: -60°
ELEVATION: 1296 m (4,250')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	13.7	overburden										
13.7	41.1	diorite - medium to coarse grained, moderate to strong magnetics, 5-15% hornblende throughout which often alters partially to biotite, <1% disseminated pyrite (hornblende granite)										
		20.1 to 20.4 - epidotized clay gouge zone										
		23.5 - narrow clay gouge zone										
		35.4 to 36.9 - moderately to strongly epidotized zone with clay gouge from 35.7 to 35.8 and 36.3 to 36.6. It is also strongly sericitized through 35.4 to 36.9. At 35.7 is 1 cm galena + sphalerite + quartz vein.	24584	34.4	36.0	1.5	20	--	0.2	22	112	323
41.1	60.2	mineralized, intensely sericitized/epidotized diorite - overall pale grass green colour, non-magnetic	24585	41.0	42.7	1.7	nd	--	0.1	37	949	1,401
			24586	42.7	44.5	1.8	10	--	0.1	17	751	1,391
		44.8 to 45.1 and 45.4 to 47.2 - strongly broken clay gouge shear zones	24587	44.5	46.9	2.4	25	--	0.1	13	280	881
			24588	46.9	48.5	1.5	10	--	2.5	51	1,154	2,927
		48.0 to 48.8 - strong clay gouge zone	24589	48.5	50.0	1.5	nd	--	0.1	14	399	731
		49.2 to 49.8 - intensely chloritized/epidotized, weak ankerite alteration, moderate to strong narrow to 5 cm quartz-chlorite stringers throughout which often carry pyrite + galena + sphalerite mineralization as at 41.3 (.6 cm with galena), 42.2 (2.5 cm with minor pyrite + galena + sphalerite), 42.4 to 42.7 (narrow stringers with galena), 43.3 + 43.5 (narrow galena stringers), 43.8 (narrow pyrite + galena + sphalerite stringers), 46.9 (1 cm sphalerite + galena stringer), 47.9 (.6 cm galena	24590	50.0	51.5	1.5	nd	--	0.7	83	2,679	3,011
			24591	58.5	60.2	1.7	nd	--	2.1	66	1,222	3,079

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-14

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		+ sphalerite + pyrite stringer), 51.8 (.6 cm pyrite + galena + sphalerite stringer)										
60.2	60.5	massive pyrite + sphalerite + galena vein at 45° to c/a (as are the majority of stringers in above section)	24592	60.2	60.5	0.3	190	--	>50.0	1,796	10,836	>20,000
			24593	60.5	62.5	2.0	30	--	4.1	101	3,890	8,319
60.5	78.3	mineralized, intensely sericitized/epidotized diorite as 41.1 to 60.2, pale green colour	24594	62.5	64.0	1.5	10	--	0.5	37	1,463	2,177
		71.6 to 71.9, 73.2 to 73.5 and 75.1 to 75.4 - mineralized with galena + pyrite; clay gouge shears, narrow to 5 cm quartz-chlorite + pyrite + galena +	24595	64.0	65.5	1.5	10	--	3.1	174	2,607	6,849
		sphalerite stringers as at 61.6 (1.3 cm galena + pyrite + sphalerite stringer at 45° to c/a),	24596	65.5	67.1	1.5	10	--	4.8	232	3,861	5,945
		64.9 (1.9 cm pyrite + galena + sphalerite stringer at 80° to c/a), 69.0 (1 cm sphalerite	24597	67.1	68.6	1.5	10	--	1.5	88	4,166	6,559
		+ galena + pyrite stringer at 30° to c/a), 69.5 (1.3 cm pyrite + galena + sphalerite at 80° to	24598	68.6	70.1	1.5	nd	--	1.5	59	3,063	4,539
		c/a)	24599	70.1	71.6	1.5	10	--	2.1	102	1,815	4,543
		75.2 to 75.4 - shear zone with galena + pyrite + sphalerite at 40° to c/a	24600	74.7	76.2	1.5	840	--	8.6	267	8,860	10,602
		76.5 - narrow pyrite + galena + sphalerite at 70° to c/a										
78.3	83.5	diorite - as 13.7 to 41.1 but a little darker green overall colour, moderately magnetic										
83.5	99.7	variably altered diorite - moderate to strong sericitized/epidotization, overall pale to grass green colour 90.5 to 90.7 and 92.2 to 92.5 - shear zone										
99.7	101.2	diorite dyke (?) - very mafic (black overall colour), hornblende rich, 1% disseminated pyrite, weak to moderately magnetic										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-14

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
101.2	121.3	diorite - weakly altered (sericitized/epidotization), overall medium green colour, magnetic, galena stringers	9301	100.9	102.4	1.5	25	--	1.4	81	460	698
121.3	130.5	altered fine to medium grained diorite - light to grass green overall colour, moderate to strongly epidotized + sericitized, large kaolinized 2.5 cm k-spar phenocrysts										
		124.7 to 125.0 - massive fine to medium grained pyrite shear zone	9302	124.1	125.6	1.5	110	--	8.5	139	2,658	5,082
130.5	131.7	hornblende diorite - dark brown overall colour, 1% disseminated pyrite										
131.7	139.3	altered fine to medium grained diorite - as 121.3 to 130.5										
		132.4 - narrow quartz stringers with fine grained galena/hematite										
139.3	149.0	hornblende diorite - dark brown overall colour as 130.5 to 131.7	9303	141.4	143.0	1.5	90	--	14.6	63	706	1,717
		140.5 - 1.3 cm pyrite + galena vein at 80° to c/a	9304	143.0	144.5	1.5	170	--	>50.0	219	2,287	3,255
		140.8 - .3 cm pyrite + galena stringer	9305	144.5	145.7	1.2	50	--	12.8	63	497	1,417
		141.7 - 2.5 cm pyrite-quartz stringer at 60° to c/a	9306	145.7	147.2	1.5	50	--	4.1	43	268	595
		142.3 - 1.3 cm pyrite-quartz stringer										
		142.8 to 143.3 - veined to massive pyrite										
		144.5 to 145.1 - massive pyrite										
		146.6 - 2.5 cm pyrite quartz vein										
		147.1 - 2.5 cm pyrite quartz vein	9307	157.0	158.5	1.5	40	--	7.3	61	2,402	4,370
149.0	158.2	hornblende diorite - dark green colour										
		149.4 - narrow hematite stringers										
		152.9 - 1 cm quartz-calcite + pyrite + galena stringer at 30° to c/a										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
158.2	182.9	strongly altered diorite - moderate to strong epidotization, moderate sericitization, varies between light grass green to dark green colour (more hornblende)	9308	170.7	172.2	1.5	nd	--	2.5	331	252	656
		171.1 - 1.3 cm pyrite + galena quartz stringer at 30° to c/a	9309	179.5	181.1	1.5	60	--	1.2	67	155	550
		171.4 - narrow hematite/galena fracture stringers	9310	181.1	182.9	1.8	10	--	0.7	90	79	367
		178.9 to 182.6 - strong hematite/galena fracture filling activity throughout										
182.9	184.6	andesite to basalt dyke - fine grained, dark green										
184.6	208.2	hornblende diorite - very similar to 149.0 to 158.2, dark green colour	9311	190.2	191.7	1.5	10	--	2.1	156	199	348
		189.9 to 192.9 - strong, narrow galena/hematite fracture filling activity. At 191.4 (1 cm quartz galena + pyrite stringer at 20°-30° to c/a)	9312	193.5	195.1	1.5	130	--	>50.0	11,268	744	952
			9313	197.2	198.7	1.5	50	--	8.3	937	298	1,003
		193.7 to 194.0 - medium to coarse grained pyrite + galena + covellite staining ? at 15° to c/a, strong disseminated pyrite above and below vein for 15 cm										
		197.8 to 198.1 - 5 cm massive pyrite vein at 15° to c/a, with strong disseminated pyrite between 197.4 and 198.6										
		207.3 to 208.2 - lots of narrow fractures of hematite	9314	207.4	208.9	1.5	20	--	1.9	136	553	782
208.2	219.5	altered diorite - moderately sericitized and epidotized, light pale green colour overall										
219.5	230.7	dark hornblende-rich diorite - dark green to brown colour, pyrite associated with silicified zones at 223.7, 225.2, 226.8, 228.0	9315	223.4	224.9	1.5	25	--	1.1	28	313	498
			9316	224.9	226.6	1.7	50	--	0.6	36	241	756
			9317	226.6	228.2	1.5	45	--	1.7	92	1,180	1,984

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-14

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
230.7	237.1	altered diorite - as 208.2 to 219.5, moderately sericitized and epidotized, light pale green										
237.1	258.2	hornblende diorite - a darker medium green colour 238.7 to 239.1 - 1.3 cm pyrite + galena + sphalerite + covellite staining, parallel to c/a 250.2 to 250.5 - get narrow pyrite + galena + hematite stringers, chlorite/sericite altered (moderate)	9318	238.5	239.3	0.8	80	--	45.7	18,466	286	700
258.2	278.9	altered diorite - variably moderately to strongly sericitized, pale green to green colour 254.5 to 255.1 - 2-5% pyrite as blebs and disseminations 268.8 - 1.3 cm quartz-pyrite + hematite at 20° to c/a	9319	254.5	256.0	1.5	40	--	2.4	364	1,032	4,355
278.9	281.9	light pale grey strongly kaolinized diorite 280.4 to 280.6 - pyritic clay gouge zone, sericite moderate										
281.9	292.3	hornblende diorite - light pale brown to brown colour, hornblende phenocrysts to 1 cm altering to biotite/chlorite 290.8 to 291.1 - pyritic narrow quartz veins with pyrite as blebs 280.4 - clay gouge + hematite + pyrite 281.9 - 5 cm silicified clay gouge + pyrite at 45° to c/a 284.7 - narrow gouge slip 11° to c/a + hematite 290.2 to 290.5 - broken, brecciated gouge zone with some kaolinite										
292.3	335.3 EOH	quartz feldspar porphyry - light tan brown colour, <1% disseminated pyrite, moderate epidote alteration locally 292.3 to 201.8 and 311.8 to 335.3 - moderate to strong pervasive sericitization										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-14

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		301.8 to 311.8 - strong ankeritic alteration 306.3 to 312.7 - shattered broken zone with narrow gouge zones within at 45° to c/a, minor silicification 315.8 - 8 cm clay gouge zone, widely spaced narrow quartz-pyrite + hematite stringer activity throughout 294.7 - feldspar phenocrysts appear to have been ankerite altered giving mafic appearance; can't tell for certain if these are feldspars altered to ankerite/hematite or hornblende altered										

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-15

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: April 30, 1989

LENGTH: 242.9 m (797')
CORE: NQ

BEARING: N30°W
LOCATION: 3300N/4100E

DIP: -60°
ELEVATION: 1175 m (3,850')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		*** core incomplete - missing boxes 2, 7 and 9 ***										
0	4.6	overburden										
4.6	34.7	medium to coarse grained, weakly sericitized and kaolinized granite - <1% disseminated pyrite, rusty orange mottled appearance/colour 19.5 to 19.8 - fault 24.4 to 24.7 - fault gouge										
34.7	35.1	basalt dyke - fine grained, dark green										
35.1	36.0	granite - as above										
36.0	36.4	basalt dyke - as above										
36.4	46.8	granite - as above with moderate epidote/chlorite alteration throughout										
46.8	47.1	basalt dyke - as above										
47.1	61.9	granite - as above 47.9 to 48.8 - dark green strongly chloritized granite with 1% disseminated pyrite 57.9 - narrow gouge zone 59.7 to 60.4 - clay gouge zone										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-15

INTERVAL (m) FROM	INTERVAL (m) TO	CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m) FROM	INTERVAL (m) TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
61.9	64.9	basalt dyke										
64.9	77.1	diorite (?) - massive, medium grey overall colour, pervasive moderate chlorite alteration, <1% disseminated pyrite, increased mafics content as compared to granite, weak to moderate kaolinization of feldspars										
77.1	77.6	basalt dyke										
77.6	106.1	diorite - as above 80.2 to 80.8 - clay fault gouge zone locally moderate to strong magnetics throughout, darker grey-green colour overall 94.5 to 106.1 - moderate to strong epidotization/chloritization 102.1 to 102.7 - clay gouge										
106.1	108.8	basalt dykes										
108.8	135.3	quartz feldspar porphyry - dirty brown colour 117.0 to 123.8 - coarse grained, hornblende phenocrysts up to 2 cm 123.8 to 126.8 - very dark dirty brown coloured diorite, coarse grained 125.9 to 126.8 - fault 129.5 to 135.3 - lighter pale green altered diorite with moderate narrow pink fluorite stringer activity strong kaolinized + chloritized 131.4 to 132.3 - fault gouge zone crystals appear worked										

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-80-15

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
135.3	155.8	quartz feldspar porphyry - coarse grained plagioclase, hornblende, dirty dark brown colour, <1% disseminated pyrite, ankeritic, sericitized (moderate)										
155.8	242.9 EOH	syenodiorite - medium to coarse grained, medium green-grey colour 174.0 to 179.8 - intensely kaolinized zone with clay gouge from 179.7 to 179.8 179.8+ - back into medium green-grey syenodiorite 181.4 to 225.9 - lots of hematite + pyrite + magnetite stringers up to 2.5 cm and at 0-45° to c/a. In areas get 1-3 of these stringers every 1.5 m. More notable veins are at 182.6 (13 cm - massive pyrite + hematite + magnetite), 189.0 (2.5 cm - pyrite + hematite), 207.9 (2.5 cm - hematite + magnetite), 217.9 (pyrite + hematite + magnetite) and 221.0 (2.5 cm - hematite vein). These were only stringers with magnetite. 238.4 to 239.9 - few more pyrite + hematite stringers Box 40 is missing which is approximately 225.6 to 231.0	24563	182.0	183.5	1.5	20		4.0	134	1661	3341
			24564	188.7	190.2	1.5	10		14.6	946	385	953
			24565	192.0	193.5	1.5	20		0.1	115	62	260
			24566	216.4	217.9	1.5	10		0.1	37	55	240
			24567	220.1	221.6	1.5	20		3.6	237	892	3521

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-16

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 8, 1989

LENGTH: 34.14 m (112')
CORE: NQ

BEARING: 150°
LOCATION: 4630N/2630E

DIP: -60°
ELEVATION: 1402 m (4,600')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	11.3	overburden										
11.3	34.1 EOH	megacryst k-spar porphyry - moderately to strongly kaolinized throughout giving it an overall buff brown colour, large k-spar phenocrysts up to 2 cm sometimes altered to hematite or ankerite										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-17

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

PAGE: 1 OF 1

LOGGED BY: Steve Todoruk
DATE: May 7, 1989

LENGTH: 78.33 m (257')
CORE: NQ

BEARING: 150°
LOCATION: 5120N/3170E

DIP: -60°
ELEVATION: 1311 m (4,300')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.7	overburden										
3.7	44.2	biotite-QFP dyke - as SS-80-7 (178.0), plagioclase phenocrysts up to 1 cm, overall buff grey colour										
44.2	45.4	shear zone - strongly kaolinized + ankerite										
45.4	78.3 EOH	quartz syenite - fine to medium grained, quartz phenocrysts to 5 mm, light white to grey to chalky colour, 5-8% disseminated pyrite throughout										
		57.9 to 60.4 - intensely kaolinized shear zone with 5-10% disseminated pyrite	24670	58.4	59.3	0.9	20	--	0.5	10	64	76
		59.4 to 60.4 - is dark grey pyritic clay gouge	24671	59.3	60.5	1.2	35	--	2.5	107	107	57
		61.3 to 65.2 - intensely kaolinized shear zone										
		64.6 to 65.0 - dark grey pyritic clay gouge	24672	60.5	61.4	0.9	10	--	0.3	5	38	24
		72.5 - 5 cm dark grey pyritic clay gouge										
		whole unit is moderately to strongly kaolinized										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-18

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 7, 1989

LENGTH: 50.9 m (167')
CORE: NQ

BEARING:
LOCATION:

DIP:
ELEVATION: unknown

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.4	overburden										
3.4	34.1	breccia - k-spar megacryst porphyry with rounded fragments of siliceous granite (?) throughout. The large k-spar crystals (up to 4 cm) are sub-hedral to euhedral (not brecciated). Moderately ankeritic throughout. Also rounded to angular fragments of dyke rock										
34.1	50.9 EOH	k-spar megacryst porphyry - no fragments. Strongly sheared throughout. Moderately to strongly altered throughout - sericite, chlorite, epidote, kaolinite. Plagioclase laths becoming a little more frequent near bottom of hole										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-19

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 7, 1989

LENGTH: 43.6 m (143')
CORE: NQ

BEARING:
LOCATION:

DIP:
ELEVATION: unknown

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	4.3	overburden										
4.3	43.6 EOH	k-spar megacryst Porphyry - k-spar phenocrysts up to 4 cm. Strongly weathered to 24.7 32.5 to 33.1 - shear zone 39.6 to 43.6 - strongly sheared moderately kaolinized overall										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-20

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 7, 1989

LENGTH: 193.55 m (635')
CORE: BQ

BEARING: 0°
LOCATION: Gavin Trenches

DIP: -60°
ELEVATION: 1371 m (4,500')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.7	overburden										
3.7	37.5	hornblende granite - fine grained, slightly porphyritic, weak to moderate ankerite alteration, weak sericite 3.7 to 4.3 and 30.5 to 30.8 - shear zones 14.0 to 14.6 - quartz veins with massive pyrite up to 15 cm	24673	14.0	14.6	0.6	50	--	41.5	303	3,002	4,280
37.5	41.2	shear zone - strongly kaolinized + ankerite										
41.2	150.0	hornblende granite (?) - similar to 3.7 to 134.0, weakly porphyritic, weakly altered, weak kaolinite + sericite alteration 126.2 to 126.5 and 133.8 to 134.0 - clay gouge shear 51.5 - 5 cm quartz vein + pyrite 55.8 to 56.2 - several 25 cm quartz veins + pyrite 58.2 - 3 cm quartz vein + pyrite 60.4 - 2 cm quartz vein + pyrite 63.7 - 1 cm quartz vein + pyrite 71.9 - 1 cm quartz vein + pyrite + galena 89.3 - 1 cm quartz vein + pyrite 94.5 - 2 cm quartz vein + pyrite 96.3 - .5 cm quartz vein + pyrite 107.3 - 3 cm massive pyrite in quartz vein at 10° to c/a 109.7 - 3 cm quartz vein + galena 126.2 - .5 cm quartz vein + pyrite	24674	55.8	56.2	0.4	40		36.1	637	14,273	19,837
150.0	193.6 EOH	quartz syenite (?) - see Vancouver Petrographics thin-section report (from 191.1), multilithic fragments										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-21

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 1, 1989

LENGTH: 89.9 m (295')
CORE: BQ

BEARING: 310°
LOCATION:

DIP: -45°
ELEVATION: 1341 m (4,400')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	7.6	overburden										
7.6	43.6	quartz feldspar porphyry - syenitic composition, similar to SS-80-22, oxidized to depth of 19.8, moderately sericitized, pale green	24581	18.3	20.1	1.8	10	--	1.5	26	1,326	4,463
		overall colour, disseminated to patchy blebs of pyrite throughout (after hornblende ?)	24582	29.0	30.5	1.5	5	--	0.5	9	372	1,114
		10.1, 13.4, 18.3, 18.4, 21.3, 22.3 and 29.1 - narrow quartz-pyrite stringers										
43.6	61.0	k-spar megacryst porphyry - large k-spar phenocrysts up to 4 cm, in medium grained matrix with 2-5% mafics, k-spar crystals zoned, moderately sericitized, of syenitic composition										
61.0	63.4	quartz feldspar porphyry - as above 62.9 and 63.3 - narrow quartz-pyrite stringers 62.4 to 63.6 - massive pyrite vein	24583	62.2	63.6	1.4	5	--	1.1	16	580	1,693
63.4	68.3	k-spar megacryst porphyry - as above										
68.3	89.9 EOH	quartz feldspar porphyry - as above 82.3 - 2.5 pyrite-clay gouge										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-80-22

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

PAGE: 1 OF 1

LOGGED BY: Steve Todoruk
DATE: May 1, 1989

LENGTH: 89.5 m (293.5')
CORE: BQ

BEARING: 0°
LOCATION: On road E of Monty Showing

DIP: -60°
ELEVATION: unknown

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	12.2	overburden	24569	22.9	24.4	1.5	40	--	1.4	69	4,209	5,677
12.2	89.5 EOH	quartz feldspar porphyry - colour varies from tan green to medium brown colour, k-spar phenocrysts up to 1 cm which often alter to ankerite, <1% disseminated pyrite throughout	24570	24.4	25.9	1.5	10	--	1.4	72	2,088	3,695
		34.4, 35.1, 51.5 - clay fault gouge	24571	25.9	27.4	1.5	140	--	27.5	219	3,111	>20,000
		11.9, 12.2, 28.0, 28.7, 63.1, 63.6, 63.7, 66.1, 67.7, 68.4, 68.6, 69.0, 69.2, and 69.3 - narrow fluorite stringers. This rock appears to be of syenitic composition. It is very similar to the k-spar megacryst porphyry seen in SS-80-8, 10, 21, SS-80-21, 26, 27 and 28 except in this hole, the large k-spar crystals are more or less absent (present locally at 30.5) and quartz phenocrysts are more prominent. The unit is moderately to strongly sericitized	24572	27.4	29.0	1.5	100	--	10.5	203	3,480	>20,000
			24573	29.0	30.5	1.5	110	--	5.1	147	1,335	15,336
			24574	30.5	32.0	1.5	100	--	2.8	102	1,159	6,698
			24575	32.0	33.5	1.5	60	--	3.4	89	830	8,812
			24576	33.5	35.1	1.5	70	--	3.6	50	1,426	5,424
		25.9 to 30.5 - several narrow fracture controlled sphalerite + pyrite stringers	24577	43.9	45.7	1.8	30	--	0.5	53	518	1,896
			24578	50.0	51.8	1.8	40	--	3.2	440	5,539	5,723
			24579	51.8	53.3	1.5	10	--	1.5	52	2,597	3,838
			24580	62.8	64.2	1.4	25	--	2.1	87	921	7,054

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-81-23

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Al Montgomery
DATE: May 6, 1989

LENGTH: 205.7 m (675') BEARING: 310° DIP: -60°
CORE: BQ LOCATION: downhill, W of Monty Showing by Siwash Creek ELEVATION: unknown

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.4	casing										
3.4	205.7	quartz - feldspar porphyry - subround quartz crystals avg 3-4 mm and subhedral off-white k-spar crystals avg 2-3 mm reaching 1 cm	24627	11.0	12.5	1.5	30	--	4.1	49	1,191	3,462
		dia set in a very fine pale green matrix with fine to medium grained euhedral muscovite occurs locally. Disseminated medium-	24628	12.5	14.0	1.5	20	--	3.1	33	1,119	3,470
		fine grained pyrite (<1%) throughout. Weak to moderate pervasive alteration of groundmass to sericite/clay (?). Feldspars variably	24629	14.0	15.5	1.5	70	--	3.6	84	724	9,754
		altered to sericite, clay, weak ankerite, and, locally, k-spar phenos appear to be altred to epidote/sericite in the core of the	24630	15.5	17.1	1.5	100	--	6.5	133	1,474	10,627
		phenocrysts (as displayed as dark green radiating crystal mass ringed by outside edge of k-spar pheno)	24631	17.1	18.6	1.5	60	--	9.3	61	921	2,877
		14.3 to 32.0 - kaolinite alteration moderate-strong with local clay gouge zone and broken core (Pb-Zn-Fe	24632	18.6	20.1	1.5	110	--	6.1	68	3,494	6,595
		mineralization also locallized in this area) 82.3 to 87.5 and 93.0 to 101.5 - similar zones	24633	20.1	21.6	1.5	165	--	6.2	56	2,266	4,507
		8.8 - 1 cm quartz-fluorite veinlet 11.0 to 17.4 - stringers to 1 cm wide and minor disseminations	24634	21.6	23.2	1.5	60	--	3.8	68	948	6,490
		of sphalerite/pyrite with associated quartz + carbonate	24635	23.2	24.7	1.5	5	--	2.7	17	695	1,716
		20.1 - galena-sphalerite-pyrite-ankerite veinlet (1-2 cm at 50° to c/a	24636	24.7	26.2	1.5	nd	--	2.7	18	341	2,279
		31.4 to 32.0 - blebs and stringers of sphalerite-pyrite (<5%) 34.1 to 36.9 - sphalerite-galena-pyrite bleb	24637	26.2	27.7	1.5	10	--	1.4	52	109	4,172
		39.9 - 2 cm wide pyrite + sphalerite galena band at 30° to c/a	24638	27.7	29.3	1.5	10	--	1.7	26	360	2,567
		41.5 - similar band at 10° to c/a	24639	29.3	30.8	1.5	nd	--	0.9	84	39	1,473

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-81-23

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		61.9 - 1 cm wide ankerite-galena-sphalerite-pyrite	24640	30.8	32.3	1.5	nd	--	1.1	92	122	1,137
		veinlet at 85° to c/a										
		83.8 to 86.9 - (core mixed up) several 1-2 cm wide quartz-	24641	32.3	33.8	1.5	70	--	5.2	147	553	2,334
		calcite*-sphalerite-pyrite-chalcopyrite(?)+galena										
		veinlets and stringers (veins make up <10% of	24642	18.6	35.4	1.5	15	--	3.3	158	1,324	1,955
		total core)										
		93.3 - .5 cm wide sphalerite-pyrite stringer at 30° to	24643	35.4	37.2	1.8	150	--	7.3	189	2,995	3,032
		c/a, minor disseminated sphalerite and										
		sphalerite stringers in surrounding core	24644	39.9	41.5	1.5	70	--	13.3	57	5,335	1,960
		95.4 - sphalerite-pyrite bleb										
		97.2 - minor fluorite	24645	83.8	85.3	1.5	5	--	3.3	1,126	419	4,711
		98.8 to 101.5 - minor sphalerite stringers and disseminations.										
		(note: moderate to strong argillic (kaolinite)	24646	85.3	86.9	1.5	nd	--	3.9	283	500	5,969
		alteration associated with mineralization										
		116.7 - 1 cm sphalerite-galena-pyrite veinlet	24647	96.9	98.5	1.5	20	--	3.1	120	296	5,645
		126.2 - disseminated sphalerite-galena-pyritic (<2%)										
		107.3 - minor hematite	24648	98.5	100.0	1.5	20	--	8.1	110	382	9,322
		106.7 - minor sphalerite-pyrite along fractures										
		134.1 to 167.6 - minor fluorite on some fracture surfaces	24649	100.0	101.2	1.4	5	--	9.6	99	920	6,842
		118.0 to 120.4 - chlorite alteration of hornblende (this section										
		of core appears less altered in general than	24650	143.0	144.5	1.5	40	--	13.5	1,091	427	17,720
		above), also staining suggests k-spar alteration										
		of groundmass	24651	144.5	146.0	1.5	nd	--	3.8	192	181	3,439
		155.4 - chlorite alteration stringer										
		157.9 to 158.8 - granodiorite dyke ? with gradational contacts	24652	146.0	147.5	1.5	170	--	2.5	52	292	448
		moderate chlorite-sericite alteration										
		164.3 to 165.2 - intensely clay-sericite altered gouge zone	24653	147.5	149.0	1.5	45	--	3.5	119	281	1,851
		169.2 to EOH - core appears weakly - moderately silicified										
		143.0 to 157.0 - minor disseminated sphalerite + sphalerite-	24654	149.0	150.6	1.5	30	--	3.4	128	288	2,278
		pyrite + chalcopyrite ? stringers										
		144.3 to 144.5 - sphalerite-pyrite in clay gouge	24655	150.6	152.1	1.5	35	--	15.7	314	525	3,597

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-81-23

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		145.7 - 1 cm sphalerite-pyrite-chalcopyrite ? veinlet 45° to c/a 150.3 - 1 cm sphalerite-pyrite veinlet 156.1 - sphalerite-pyrite-ankerite-galena ? stringer 166.7 - sphalerite-pyrite veinlet parallel to c/a 0.5 cm wide 168.2 - 1 cm wide calcite-quartz veinlet with sphalerite-pyrite at 45° to c/a 169.5 to 172.2 - minor pyrite-sphalerite stringers 171.0 - trace galena with ankerite	24656	169.8	171.3	1.5	nd	--	3.8	98	1,171	608

Pamicon Developments Ltd.

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-81-24

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 7, 1989

LENGTH: 104.85 m (344')
CORE: BQ

BEARING: north
LOCATION: S12+00E/75 South

DIP: -45°
ELEVATION: unknown

INTERVAL (m) FROM	TO	CORE DESCRIPTION
0	15.9	overburden
15.9	104.9	quartz feldspar porphyry - quartz crystals are anhedral to sub-hedral and up to 7 mm, k-spar phenocrysts up to 5 mm, commonly altered to ankerite 15.9 to 44.2 - unit is not as porphyritic but is moderately to strongly ankeritic (dirty brown colour + soft), 5-10 cm sub-rounded fragments near top of hole, moderate to locally strong kaolinization, weak to moderate sericite, weak epidote + chlorite sericite alteration increases after 15.9 62.5 to 64.0 - very strong sericite alteration 20.9 to 21.0 - pale green colour, clay gouge shear zone 24.7 to 25.3 and 32.0 to 32.3 - broken 42.7 to 44.2 and 51.8 to 52.7 - core missing 93.6 to 93.7 - clay gouge 20.1 - narrow galena + sphalerite fracture stringer 24.7 to 25.0 - several narrow quartz veinlets with sphalerite + galena + pyrite at 45° and parallel to c/a 27.0 to 27.1 - massive medium grained pyrite vein, narrow sphalerite + galena stringers throughout 33.7 - sphalerite + pyrite + carbonate + quartz veinlet at 10° to c/a 34.4 to 35.1 - narrow quartz veinlet + sphalerite + galena + pyrite 35.2 - 5 cm quartz veinlet + sphalerite + galena + pyrite also at 35.5, 35.8 and 36.1, all at 80° to c/a

SAMPLE NUMBER	INTERVAL (m) FROM	TO	LENGTH (m)	GOLD (ppb)	GOLD (oz/ton)	SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
24657	24.7	26.2	1.5	40	--	7.6	174	5,400	9,926
24658	26.2	27.7	1.5	25	--	5.6	55	13,535	12,835
24659	33.5	35.1	1.5	20	--	8.6	123	5,485	8,149
24660	35.1	36.6	1.5	35	--	15.5	167	3,619	11,249
24661	36.6	38.1	1.5	70	--	40.2	214	9,516	17,166
24662	38.1	39.6	1.5	20	--	8.6	77	4,350	8,942
24663	39.6	41.2	1.5	20	--	4.9	127	5,638	14,967
24664	45.7	47.2	1.5	30	--	3.1	42	798	2,301
24665	58.8	60.4	1.5	nd	--	5.1	181	3,523	5,536
24666	63.7	65.2	1.5	90	--	8.1	193	2,084	7,769
24667	84.7	86.0	1.2	150	--	15.5	41	1,492	2,751

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-81-24

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		37.5 - 5 cm quartz vein with good sphalerite + pyrite + galena 37.8 - narrow quartz + sphalerite + galena + pyrite 39.6 to 39.9 - 5-8 mm quartz + sphalerite + pyrite + galena veinlet (narrow mineralized fractures throughout still) 44.2 to 44.8 - silicified zone with 2-4% medium grained pyrite disseminated throughout 49.7 - 5-8 mm quartz + pyrite + sphalerite vein 56.7 - narrow + pyrite veinlet 57.3, 59.0 and 59.7 - narrow pyrite + sphalerite + galena stringers 67.7 - narrow quartz + pyrite + sphalerite veinlet 63.9 - 1 cm pyrite stringer + quartz at 20° to c/a 64.6 to 65.2 - silicified + sericitized zone with patchy blebs of pyrite and a few sphalerite + galena stringers 84.7 to 85.7 - massive fine to medium grained pyrite shear with lots of silicification 90.8 - patchy blebs of pyrite + narrow quartz + sphalerite + galena stringers										

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-81-25

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 4 & 5, 1989

LENGTH: 111.3 m (365')
CORE: BQ

BEARING: 310°
LOCATION: uphill, SW of 3 Adit #2 & #3 on W side of Siwash Creek

DIP: -45°
ELEVATION: unknown

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
0	3.5	overburden										
3.5	111.3 EOH	quartz feldspar porphyry - anhedral to sub-hedral quartz crystals to 5 mm, k-spar crystals to 4-5 mm (rarely greater than 1 cm), variably weak to moderate ankerite alteration (brown colour, soft) and sericite alteration (moderate) throughout										
		16.2 to 16.8 - very broken core (and poor recovery)										
		79.6 to 80.2 - broken										
		99.4 to 99.5 - strong kaolinized clay gouge										
		107.0 to 107.6 - broken, surface oxidation along fractures to 38.1										
		mineralization:										
		14.8 - 18 cm frothy quartz vein										
		21.2 - 5 cm sphalerite + pyrite vein	24610	14.0	15.0	1.0	25	--	4.7	444	251	2,794
		22.1 - 12.5 cm sphalerite + pyrite vein at 50° to c/a, narrow sphalerite + pyrite stingers around heavier minerlaized veins	24611	15.0	16.0	1.0	70	--	0.9	117	374	979
		22.4 - 2.5 cm sphalerite + pyrite vein	24612	20.0	21.0	1.0	nd	--	1.1	128	593	846
		23.5 - 4 cm sphalerite + pyrite + magnetite vein										
		25.6 - .6 cm pyrite + minor sphalerite vein at 60° to c/a	24613	21.0	22.0	1.0	30	--	35.7	1,713	2,538	>20,000
		27.1 - 5 cm sphalerite + pyrite vein										
		27.7 - .5 cm sphalerite + pyrite stringer	24614	22.0	23.0	1.0	15	--	11.8	621	1,233	>20,000
		34.9 to 35.5 - several frothy dirty grey calcite-quartz veins to 16 cm with very nice pyrite + chalcopyrite + sphalerite	24615	23.0	24.0	1.0	35	--	5.6	392	1,501	14,568
		44.5 - 1 cm pyrite + sphalerite vein at 85° to c/a	24616	24.0	25.0	1.0	20	--	1.5	42	1,888	3,731
		46.5 - 2 cm sphalerite + pyrite + chalcopyrite vein										

GEOLOGICAL CORE AND ASSAY LOG
COMPANY: INEL RESOURCES LTD.
PROPERTY: SIWASH

HOLE: SS-81-25

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		62.5 - bleby pyrite	24617	25.0	26.0	1.0	5	--	2.2	59	337	3,002
		64.0 - 2.5 cm massive pyrite + magnetite veins at 35° to c/a	24618	26.0	27.0	1.0	20	--	1.6	52	254	4,057
		70.7 - narrow pyrite stringer, with minor galena										
		72.5 - 1 cm sphalerite + pyrite stringer parallel to c/a	24619	27.0	28.0	1.0	10	--	4.1	394	324	9,999
		74.1 to 74.4 - zone of increased euhedral pyrite	24620	28.0	29.0	1.0	5	--	1.1	38	385	2,503
		76.2 to 76.4 - massive sphalerite + pyrite vein										
		75.9 - 1 cm quartz stringer with minor pyrite + sphalerite	24621	34.5	35.5	1.0	80	--	20.9	3,591	812	4,225
		76.7 - narrow quartz-carbonate stringers with some pyrite + sphalerite	24622	46.0	47.0	1.0	60	--	10.1	1,352	1,132	14,131
		79.2 - pyrite + sphalerite (1 cm) at 45° to c/a	24623	75.5	77.0	1.5	20	--	5.7	1,546	438	>20,000
		80.2 - 1 cm pyrite + sphalerite stringer at 30° to c/a	24624	79.0	80.5	1.5	20	--	11.1	818	686	13,582
		98.5 - 7 cm sphalerite + pyrite vein										
		note: alteration consists of chlorite/epidote after mafics (hornblende ?) and ankerite + sericite + kaolinite after feldspars	24625	98.0	99.0	1.0	10	--	6.7	1,033	542	16,128
		62.5 to 64.0 - disseminated and fracture fillings of sphalerite + pyrite + galena with 2-3% disseminated pyrite throughout	24626	62.5	64.0	1.5	70	--	5.2	439	473	4,515

GEOLOGICAL CORE AND ASSAY LOG

COMPANY: INEL RESOURCES LTD.

HOLE: SS-81-26

PAMICON DEVELOPMENTS LIMITED
711, 675 West Hastings Street
Vancouver, B.C. V6B 1N4

PROPERTY: SIWASH

DATE: 1989

LOGGED BY: Steve Todoruk
DATE: May 4, 1989

LENGTH: 102.1 m (335')
CORE: BQ

BEARING: 360°
LOCATION: near N B+D claim boundary

DIP: -65°
ELEVATION: 5054.5 m (5,100')

INTERVAL (m)		CORE DESCRIPTION	SAMPLE NUMBER	INTERVAL (m)		LENGTH (m)	GOLD		SILVER (ppm)	COPPER (ppm)	LEAD (ppm)	ZINC (ppm)
FROM	TO			FROM	TO		(ppb)	(oz/ton)				
		*** Box 1 missing ***										
0	28.7	overburden (from Brenda Mines drill logs)										
28.7	102.1 EOH	megacryst k-spar porphyry - identical to SS-81-27, this hole has a more pronounced green colour due to stronger sericite + kaolinite alteration (moderate), perfect terminated k-spar crystals (up to 3 cm) 45.7 to 46.3, 53.3 to 53.6, 73.5 to 75.0, 87.5 to 87.8, 91.1 to 91.4, 95.1 to 96.0, and 97.8 to 102.1 - are all strongly sheared with clay gouge										

APPENDIX II

ASSAY CERTIFICATES

VGC VANGEOCHEM LAB LIMITED

MAIN OFFICE
1988 TRIUMPH ST.
VANCOUVER, B.C. V5L 1K5
• (604) 251-5656
• FAX (604) 254-5717

BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

GEOCHEMICAL ANALYTICAL REPORT

CLIENT: INEL RESOURCES LTD.
ADDRESS: 301 - 675 West Hastings St.
: Vancouver, B.C.
: V6B 1N2

DATE: May 12 1989
REPORT#: 890198 GA
JOB#: 890198

PROJECT#: S. T.
SAMPLES ARRIVED: MAY 9 1989
REPORT COMPLETED: May 12 1989
ANALYSED FOR: Au (FA/AAS) ICP

INVOICE#: 890198 NA
TOTAL SAMPLES: 112
SAMPLE TYPE: 112 CORE
REJECTS: SAVED

SAMPLES FROM: STEVE TODORUK
COPY SENT TO: INEL RESOURCES LTD.

PREPARED FOR: INEL RESOURCES LTD.

ANALYSED BY: VGC Staff

SIGNED: Jaime C. Wong

GENERAL REMARK: Au* = Au first recheck value
Au**= Au second recheck value

VGC VANGEOCHEM LAB LIMITED

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REPORT NUMBER: 890198 GA JOB NUMBER: 890198 INEL RESOURCES LTD.

SAMPLE #	Au ppb	Au* ppb	Au** ppb
24584	20	--	--
24585	nd	--	--
24586	10	--	--
24587	920	35	25
24588	10	--	--
24589	nd	--	--
24590	nd	--	--
24591	nd	--	--
24592	3800	180	190
24593	30	--	--
24594	10	--	--
24595	10	--	--
24596	10	--	--
24597	10	--	--
24598	nd	--	--
24599	10	--	--
24600	610	840	--
9301	25	--	--
9302	140	110	--
9303	80	90	--
9304	140	170	--
9305	50	--	--
9306	50	--	--
9307	40	--	--
9308	nd	--	--
9309	60	--	--
9310	10	--	--
9311	10	--	--
9312	130	100	--
9313	50	--	--
9314	20	--	--
9315	25	--	--
9316	50	--	--
9317	45	--	--
9318	80	--	--
9319	40	--	--
24601	50	--	--
24602	nd	--	--
24603	nd	--	--
DETECTION LIMIT	5		

nd = none detected -- = not analysed is = insufficient sample

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REPORT NUMBER: 890198 GA JOB NUMBER: 890198 INEL RESOURCES LTD.

SAMPLE #	Au ppb	Au* ppb	Au** ppb
24604	25	--	--
24605	40	--	--
24606	110	25	20
24607	40	--	--
24608	65	--	--
24609	nd	--	--
24610	640	25	25
24611	70	--	--
24612	nd	--	--
24613	30	--	--
24614	15	--	--
24615	35	--	--
24616	210	10	20
24617	5	--	--
24618	20	--	--
24619	10	--	--
24620	5	--	--
24621	120	80	--
24622	60	--	--
24623	20	--	--
24624	20	--	--
24625	10	--	--
24626	70	--	--
24627	30	--	--
24628	20	--	--
24629	70	--	--
24630	260	160	100
24631	60	--	--
24632	110	110	--
24633	170	165	--
24634	60	--	--
24635	5	--	--
24636	nd	--	--
24637	10	--	--
24638	10	--	--
24639	nd	--	--
24640	nd	--	--
24641	70	--	--
24642	15	--	--
DETECTION LIMIT	5		

nd = none detected -- = not analysed is = insufficient sample

VGC VANGEOCHEM LAB LIMITED

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REPORT NUMBER: 890198 GA JOB NUMBER: 890198 INEL RESOURCES LTD.

SAMPLE #	Au ppb	Au* ppb	Au** ppb
24643	110	150	--
24644	70	--	--
24645	5	--	--
24646	nd	--	--
24647	20	--	--
24648	20	--	--
24649	5	--	--
24650	40	--	--
24651	nd	--	--
24652	170	--	--
24653	45	--	--
24654	30	--	--
24655	35	--	--
24656	nd	--	--
24657	40	--	--
24658	25	--	--
24659	20	--	--
24660	35	--	--
24661	70	--	--
24662	20	--	--
24663	20	--	--
24664	30	--	--
24665	nd	--	--
24666	90	--	--
24667	120	150	--
24668	50	--	--
24669	130	170	--
24670	20	--	--
24671	35	--	--
24672	10	--	--
24673	50	--	--
24674	40	--	--
24675	65	--	--
24676	430	450	--

DETECTION LIMIT 5

nd = none detected -- = not analysed is = insufficient sample

VANGEOCHEM LAB LIMITED

1988 Triumph Street, Van , B.C. V5L 1K5
Ph:(604)251-5656 Fax:(604)254-5717

ICAP GEOCHEMICAL ANALYSIS

A .5 gram sample is digested with 5 ml of 3:1:2 HCl to HNO_3 to H_2O at 95 °C for 90 minutes and is diluted to 10 ml with water.
This leach is partial for Al, Ba, Ca, Cr, Fe, K, Mg, Mn, Na, P, Pd, Pt, Sn, Sr and W.

ANALYST: [signature]

REPORT #: 890198 PA INEL RESOURCES LTD Proj: S.T. Date In: 89/05/09 Date Out:89/05/12 Att: STEVE TODORUK

Sample Number	Ag ppm	Al %	As ppm	Au ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Pd ppm	Pt ppm	Sb ppm	Sn ppm	Sr ppm	U ppm	W ppm	Zn ppm
24584	0.2	0.75	<3	<3	426	<3	0.87	0.3	6	47	22	1.85	0.19	0.55	1546	4	0.01	4	0.08	112	<3	<5	<2	2	73	<5	<3	323
24585	0.1	0.64	<3	<3	284	<3	1.75	0.7	4	115	37	1.61	0.31	0.43	5072	6	0.01	5	0.08	949	<3	<5	<2	<2	98	<5	<3	1401
24586	0.1	0.33	<3	<3	177	<3	2.13	0.8	3	65	17	1.35	0.35	0.30	5931	1	0.01	1	0.08	751	<3	<5	<2	<2	109	<5	<3	1391
24587	0.1	0.36	<3	<3	551	<3	2.46	0.4	2	91	13	1.10	0.39	0.28	6800	4	0.01	2	0.08	280	<3	<5	<2	<2	105	<5	<3	881
24588	2.5	0.33	<3	<3	56	<3	0.87	1.5	5	79	51	3.10	0.25	0.41	8898	5	0.01	4	0.08	1154	<3	<5	<2	<2	60	<5	<3	2927
24589	0.1	0.99	<3	<3	55	<3	3.56	0.4	7	68	14	2.24	0.58	0.94	8386	2	0.01	15	0.12	399	<3	<5	<2	<2	207	<5	<3	731
24590	0.7	0.59	<3	<3	424	<3	2.05	1.4	4	132	83	1.83	0.36	0.53	7162	7	0.01	4	0.09	2679	<3	<5	<2	<2	100	<5	<3	3011
24591	2.1	0.34	9	<3	89	<3	1.11	1.4	4	116	66	2.16	0.24	0.31	6032	6	0.01	3	0.08	1222	<3	<5	<2	<2	59	<5	<3	3079
24592	>50.0	0.17	44	3	11	4	0.51	56.1	18	115	1796	>10.00	0.47	0.13	8466	15	0.01	5	0.01	10836	<3	<5	<2	5	22	<5	<3	>20000
24593	4.1	0.27	<3	<3	47	<3	1.62	4.1	4	127	101	2.52	0.33	0.26	8349	7	0.01	3	0.07	3890	<3	<5	<2	<2	66	<5	<3	8319
24594	0.5	0.25	<3	<3	44	<3	1.81	1.1	3	73	37	1.93	0.33	0.28	8061	2	0.01	1	0.08	1463	<3	<5	<2	<2	71	<5	<3	2177
24595	3.1	0.36	<3	<3	44	<3	0.99	3.4	4	144	174	3.42	0.28	0.37	8094	8	0.01	3	0.08	2607	<3	<5	<2	<2	55	<5	<3	6849
24596	4.8	0.33	<3	<3	34	<3	0.56	3.1	6	66	232	4.37	0.26	0.43	8839	4	0.01	5	0.08	3861	<3	<5	<2	<2	49	<5	<3	5945
24597	1.5	0.30	<3	<3	49	<3	1.39	3.1	4	60	88	1.48	0.25	0.24	5614	5	0.01	24	0.07	4166	<3	<5	<2	<2	56	<5	<3	6559
24598	1.5	0.54	<3	<3	62	<3	1.86	2.2	5	111	59	2.43	0.35	0.31	4944	6	0.01	4	0.08	3063	<3	<5	<2	<2	90	<5	<3	4539
24599	2.1	0.48	<3	<3	49	<3	2.07	2.2	5	53	102	2.32	0.37	0.42	6102	4	0.01	24	0.08	1815	<3	<5	<2	<2	86	<5	<3	4543
24600	8.6	0.30	<3	<3	58	<3	1.61	5.1	7	49	267	2.54	0.32	0.20	6642	4	0.01	3	0.07	8860	<3	<5	<2	<2	73	<5	<3	10602
9301	1.4	0.79	16	<3	44	<3	0.73	0.5	6	116	81	4.30	0.26	0.54	4478	6	0.01	3	0.08	460	<3	<5	<2	<2	48	<5	<3	698
9302	8.5	0.51	97	<3	17	<3	0.23	3.1	6	55	139	>10.00	0.41	0.36	7843	8	0.01	1	0.05	2658	<3	<5	<2	2	24	<5	<3	5082
9303	14.6	0.25	98	<3	14	<3	0.19	1.5	8	140	63	8.35	0.33	0.14	2132	25	0.01	5	0.09	706	<3	<5	<2	2	16	<5	<3	1717
9304	>50.0	0.21	186	<3	8	<3	0.25	3.3	23	74	219	>10.00	0.78	0.17	2405	21	0.01	19	0.12	2287	<3	<5	<2	2	14	<5	<3	3255
9305	12.8	0.27	35	<3	12	<3	0.16	1.7	11	63	63	>10.00	0.14	0.19	2035	39	0.01	28	0.06	497	<3	<5	<2	2	17	<5	<3	1417
9306	4.1	0.28	17	<3	15	<3	0.16	1.1	9	125	43	8.63	0.33	0.17	2184	14	0.01	6	0.07	268	<3	<5	<2	3	19	<5	<3	595
9307	7.3	0.27	12	<3	67	<3	1.88	2.2	8	52	61	3.37	0.39	0.38	7032	4	0.01	5	0.07	2402	<3	<5	<2	<2	56	<5	<3	4370
9308	2.5	1.08	<3	<3	98	<3	0.91	0.6	4	62	331	3.07	0.24	0.55	2182	3	0.01	2	0.09	252	<3	<5	<2	<2	59	<5	<3	656
9309	1.2	0.81	<3	<3	41	<3	0.29	0.4	6	53	67	3.23	0.16	0.39	2692	3	0.01	22	0.08	155	<3	<5	<2	<2	35	<5	<3	550
9310	0.7	1.40	4	<3	47	<3	0.15	0.5	5	92	90	5.14	0.21	0.50	3998	5	0.01	3	0.07	79	<3	<5	<2	<2	20	<5	<3	367
9311	2.1	0.56	3	<3	43	<3	0.18	0.4	5	82	156	3.88	0.17	0.23	4080	2	0.02	4	0.09	199	<3	<5	<2	<2	25	<5	<3	348
9312	>50.0	1.52	20	<3	20	<3	0.12	1.2	6	56	11268	>10.00	0.39	0.45	4403	7	0.01	28	0.05	744	<3	<5	<2	3	14	<5	<3	952
9313	8.3	1.42	12	<3	25	<3	0.11	1.3	7	74	937	>10.00	0.41	0.44	1619	10	0.01	1	0.05	298	<3	<5	<2	2	13	<5	<3	1003
9314	1.9	1.29	<3	<3	51	<3	0.31	0.7	4	119	136	3.78	0.18	0.61	1807	6	0.01	3	0.07	553	<3	<5	<2	<2	36	<5	<3	782
9315	1.1	0.28	<3	<3	24	<3	0.17	0.5	8	99	28	4.62	0.19	0.15	2662	3	0.03	2	0.07	313	<3	<5	<2	2	18	<5	<3	498
9316	0.6	0.28	<3	<3	30	<3	0.17	0.6	6	54	36	3.90	0.18	0.13	5430	2	0.03	3	0.08	241	<3	<5	<2	<2	24	<5	<3	756
9317	1.7	0.52	<3	<3	27	<3	0.17	1.2	13	137	92	5.86	0.24	0.25	4106	8	0.01	3	0.06	1180	<3	<5	<2	<2	22	<5	<3	1984
9318	45.7	2.82	<3	<3	10	<3	0.10	1.2	13	43	18466	>10.00	0.49	0.85	3100	7	0.01	19	0.04	286	<3	<5	<2	3	11	<5	<3	700
9319	2.4	0.26	7	<3	28	<3	0.14	2.3	9	84	364	5.55	0.23	0.13	4005	4	0.01	4	0.06	1032	<3	<5	<2	2	16	<5	<3	4355
24601	1.7	1.22	<3	<3	91	<3	1.20	1.6	3	81	73	3.96	0.31	0.49	1739	4	0.01	2	0.03	990	<3	<5	<2	<2	84	<5	<3	3079
24602	0.7	0.25	<3	<3	16	<3	0.15	0.5	3	66	9	7.36	0.28	0.02	272	7	0.06	34	0.01	48	<3	<5	<2	<2	19	<5	<3	87
24603	2.2	0.30	6	<3	46	<3	0.08	0.6	1	122	16	1.86	0.07	0.01	379	7	0.08	3	0.03	585	<3	<5	<2	<2	11	<5	<3	1458
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum Detection	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	10.00	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	10000	100	1000	20000

Sample Number	Ag	Al	As	Au	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Pd	Pt	Sb	Sn	Sr	U	W	Zn
	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
24604	3.7	0.28	16	<3	32	<3	0.07	2.7	1	72	244	3.44	0.13	0.01	472	5	0.01	3	0.02	824	<3	<5	<2	<2	14	<5	<3	4698
24605	1.7	0.35	<3	<3	18	<3	0.21	1.9	2	88	54	4.23	0.18	0.02	588	4	0.04	1	0.03	841	<3	<5	<2	2	28	<5	<3	1627
24606	1.2	0.15	<3	<3	7	3	0.01	0.9	11	85	191	9.02	0.32	0.01	24	6	0.01	37	0.01	45	<3	<5	<2	2	8	<5	<3	37
24607	0.4	0.25	<3	<3	7	<3	0.01	0.5	5	123	111	4.84	0.01	0.01	18	8	0.01	6	0.01	30	<3	<5	<2	<2	18	<5	<3	12
24608	0.8	0.17	7	<3	13	<3	0.01	0.7	9	79	34	6.55	0.23	0.01	15	6	0.01	3	0.01	35	<3	<5	<2	<2	19	<5	<3	30
24609	0.6	0.28	<3	<3	36	<3	0.65	0.1	1	92	3	0.75	0.13	0.05	265	3	0.11	2	0.04	42	<3	<5	<2	<2	253	<5	<3	38
24610	4.7	0.26	13	<3	214	<3	0.03	2.4	1	73	444	1.03	0.04	0.01	76	5	0.02	36	0.02	251	<3	<5	<2	<2	10	<5	<3	2794
24611	0.9	0.35	<3	<3	209	<3	0.02	0.7	1	120	117	0.30	0.01	0.01	32	6	0.06	2	0.02	374	<3	<5	<2	<2	8	<5	<3	979
24612	1.1	0.26	<3	<3	334	<3	0.01	0.6	1	63	128	0.48	0.02	0.01	29	2	0.04	1	0.02	593	<3	<5	<2	<2	10	<5	<3	846
24613	35.7	0.19	7	<3	14	4	0.02	79.8	2	108	1713	3.56	0.13	0.01	538	13	0.01	6	0.01	2538	<3	<5	<2	5	4	<5	<3	>20000
24614	11.8	0.27	6	<3	32	3	0.01	18.2	1	73	621	1.83	0.06	0.01	156	10	0.01	34	0.01	1233	<3	<5	<2	2	3	<5	<3	>20000
24615	5.6	0.53	3	<3	74	<3	0.32	10.5	1	105	392	1.43	0.11	0.02	5579	9	0.01	2	0.02	1501	<3	<5	<2	<2	16	<5	<3	14568
24616	1.5	0.29	<3	<3	412	<3	0.15	2.6	1	54	42	0.36	0.03	0.01	1637	3	0.03	2	0.02	1888	<3	<5	<2	<2	16	<5	<3	3731
24617	2.2	0.27	8	<3	223	<3	0.04	2.9	1	56	59	0.52	0.02	0.01	604	4	0.02	31	0.02	337	<3	<5	<2	<2	7	<5	<3	3802
24618	1.6	0.28	9	<3	87	<3	0.05	3.2	1	85	52	0.51	0.02	0.01	1313	4	0.02	1	0.02	254	<3	<5	<2	<2	5	<5	<3	4057
24619	4.1	0.25	29	<3	115	<3	0.04	8.2	1	66	394	0.89	0.04	0.01	1237	5	0.01	1	0.02	324	<3	<5	<2	<2	7	<5	<3	9999
24620	1.1	0.30	<3	<3	241	<3	0.04	1.9	1	111	38	0.50	0.02	0.01	575	6	0.03	2	0.02	385	<3	<5	<2	<2	12	<5	<3	2503
24621	20.9	0.20	20	<3	29	<3	0.02	4.2	2	100	3591	2.58	0.10	0.01	1800	7	0.01	1	0.01	812	<3	<5	<2	<2	3	<5	<3	4225
24622	10.1	0.22	15	<3	42	<3	0.06	10.3	1	69	1352	2.11	0.09	0.01	4139	10	0.01	34	0.01	1132	<3	<5	<2	2	7	<5	<3	14131
24623	5.7	0.22	18	<3	42	4	0.05	26.8	2	75	1546	1.78	0.07	0.01	2284	13	0.01	3	0.01	438	<3	<5	<2	2	7	<5	<3	>20000
24624	11.1	0.29	9	<3	40	3	0.07	9.6	1	100	818	1.64	0.07	0.03	2630	11	0.01	11	0.02	686	<3	<5	<2	<2	7	<5	<3	13582
24625	6.7	0.25	13	<3	32	<3	0.08	12.1	1	61	1033	1.78	0.08	0.02	4409	12	0.01	30	0.02	542	<3	<5	<2	<2	11	<5	<3	16128
24626	5.2	0.23	20	<3	45	3	0.08	3.1	1	83	439	2.63	0.11	0.03	3212	6	0.01	2	0.02	473	<3	<5	<2	<2	9	<5	<3	4515
24627	4.1	0.24	12	<3	163	<3	0.56	2.3	1	55	49	0.83	0.12	0.01	5154	3	0.01	1	0.02	1191	<3	<5	<2	<2	18	<5	<3	3462
24628	3.1	0.25	22	<3	102	<3	0.27	2.3	1	108	33	0.99	0.08	0.02	5030	7	0.01	1	0.02	1119	<3	<5	<2	<2	11	<5	<3	3470
24629	3.6	0.21	31	<3	91	<3	0.15	7.1	1	53	84	1.13	0.07	0.01	3708	8	0.01	18	0.02	724	<3	<5	<2	<2	9	<5	<3	9754
24630	6.5	0.21	36	<3	57	<3	0.13	7.3	1	89	133	1.20	0.07	0.01	3860	7	0.01	1	0.02	1474	<3	<5	<2	<2	10	<5	<3	10627
24631	9.3	0.23	28	<3	23	<3	0.17	1.8	2	53	61	1.09	0.07	0.02	3131	3	0.01	1	0.02	921	<3	<5	<2	<2	10	<5	<3	2877
24632	6.1	0.25	49	<3	24	<3	0.28	4.4	1	140	68	1.53	0.13	0.02	13619	9	0.01	1	0.02	3494	<3	<5	<2	<2	10	<5	<3	6595
24633	6.2	0.22	57	<3	32	<3	0.33	3.2	2	73	56	1.67	0.12	0.02	6439	6	0.01	34	0.02	2266	<3	<5	<2	<2	13	<5	<3	4507
24634	3.8	0.24	20	<3	81	<3	0.08	4.5	2	89	68	1.63	0.07	0.02	2464	5	0.01	2	0.03	948	<3	<5	<2	<2	14	<5	<3	6490
24635	2.7	0.31	5	<3	67	<3	0.12	0.9	3	76	17	1.06	0.01	0.03	1537	3	0.08	3	0.03	695	<3	<5	<2	<2	18	<5	<3	1716
24636	2.7	0.30	<3	<3	173	<3	0.09	1.3	3	60	18	1.30	0.06	0.02	1518	4	0.05	26	0.03	341	<3	<5	<2	<2	22	<5	<3	2279
24637	1.4	0.27	9	<3	48	<3	0.07	2.4	2	111	52	2.09	0.09	0.06	1814	8	0.01	1	0.02	109	<3	<5	<2	2	10	<5	<3	4172
24638	1.7	0.22	9	<3	68	<3	0.06	1.6	2	59	26	2.09	0.08	0.03	1329	4	0.01	2	0.02	360	<3	<5	<2	<2	8	<5	<3	2567
24639	0.9	0.24	11	<3	42	<3	0.09	1.1	2	82	84	2.47	0.11	0.08	2693	4	0.02	1	0.02	39	<3	<5	<2	<2	10	<5	<3	1473
24640	1.1	0.21	23	<3	35	<3	0.07	0.9	3	52	92	2.47	0.10	0.05	2311	6	0.01	27	0.02	122	<3	<5	<2	<2	11	<5	<3	1137
24641	5.2	0.21	57	<3	26	5	0.03	1.8	5	115	147	3.74	0.14	0.01	405	13	0.01	1	0.01	553	<3	<5	<2	3	10	<5	<3	2334
24642	3.3	0.20	21	<3	26	<3	0.05	1.5	2	58	158	2.46	0.10	0.02	1251	4	0.01	2	0.02	1324	<3	<5	<2	<2	8	<5	<3	1955
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum Detection	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	10.00	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	10000	100	1000	20000

< = Less than Minimum is = Insufficient Sample ns = No sample > = Greater than Maximum AuFA = Fire assay/AAS

Sample Number	Ag	Al	As	Au	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Pd	Pt	Sb	Sn	Sr	U	W	Zn
	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
24643	7.3	0.17	<3	<3	30	<3	0.04	3.3	6	87	189	3.50	0.12	0.01	467	7	0.01	1	0.01	2995	<3	<5	<2	<2	8	<5	<3	3032
24644	13.3	0.19	4	<3	20	<3	0.05	2.2	2	55	57	6.24	0.21	0.02	763	5	0.01	23	0.02	5335	<3	<5	<2	<2	9	<5	<3	1960
24645	3.3	0.24	4	<3	49	<3	0.56	4.5	1	127	1126	1.73	0.12	0.01	2419	7	0.01	1	0.02	419	<3	<5	<2	<2	25	<5	<3	4711
24646	3.9	0.19	3	<3	34	<3	0.48	5.7	1	50	283	2.25	0.13	0.01	3542	3	0.01	1	0.01	500	<3	<5	<2	<2	19	<5	<3	5969
24647	3.1	0.21	11	<3	130	<3	0.37	5.2	1	68	120	1.20	0.01	0.03	4047	3	0.01	1	0.02	296	<3	<5	<2	<2	18	<5	<3	5645
24648	8.1	0.16	22	<3	75	<3	0.70	8.7	1	43	110	1.27	0.01	0.03	3196	5	0.01	19	0.02	382	<3	<5	<2	<2	25	<5	<3	9322
24649	9.6	0.22	<3	<3	72	<3	0.42	6.5	1	118	99	1.95	0.01	0.06	3950	8	0.01	3	0.02	920	<3	<5	<2	<2	20	<5	<3	6842
24650	13.5	0.25	7	<3	36	4	0.10	16.3	2	56	1091	1.95	0.05	0.02	1230	7	0.01	2	0.02	427	<3	<5	<2	<2	10	<5	<3	17720
24651	3.8	0.28	6	<3	75	<3	0.11	3.2	1	81	192	2.01	0.05	0.04	1825	4	0.01	1	0.02	181	<3	<5	<2	<2	11	<5	<3	3439
24652	2.5	0.22	5	<3	101	<3	0.10	0.9	1	59	52	2.43	0.06	0.06	2420	4	0.01	30	0.02	292	<3	<5	<2	<2	12	<5	<3	448
24653	3.5	0.21	11	<3	41	<3	0.08	2.2	2	59	119	3.13	0.07	0.05	3052	7	0.01	1	0.02	281	<3	<5	<2	<2	10	<5	<3	1851
24654	3.4	0.24	10	<3	71	<3	0.08	2.4	1	100	128	2.14	0.01	0.04	2499	7	0.01	1	0.02	288	<3	<5	<2	<2	10	<5	<3	2278
24655	15.7	0.22	13	<3	63	<3	0.10	3.4	1	52	314	2.33	0.04	0.05	2427	20	0.01	29	0.02	525	<3	<5	<2	<2	9	<5	<3	3597
24656	3.8	0.19	<3	<3	46	<3	0.04	0.9	1	66	98	1.77	0.03	0.01	506	4	0.03	1	0.02	1171	<3	<5	<2	<2	9	<5	<3	608
24657	7.6	0.28	<3	<3	45	<3	0.18	8.3	3	74	174	1.15	0.03	0.02	5119	4	0.01	4	0.03	5400	<3	<5	<2	<2	5	<5	<3	9926
24658	5.6	0.09	<3	<3	18	<3	0.67	11.1	2	17	55	3.16	0.01	0.02	7850	5	0.01	1	0.03	13535	<3	<5	<2	<2	15	<5	<3	12835
24659	8.6	0.15	<3	<3	54	<3	0.08	6.4	3	69	123	0.92	0.01	0.01	3786	7	0.01	34	0.02	5485	<3	<5	<2	<2	4	<5	<3	8149
24660	15.5	0.16	<3	<3	21	<3	0.08	9.5	3	69	167	1.11	0.01	0.01	3872	7	0.01	3	0.03	3619	<3	<5	<2	<2	3	<5	<3	11249
24661	40.2	0.14	<3	<3	22	<3	0.09	15.3	5	103	214	2.69	0.02	0.01	4979	9	0.01	2	0.02	9516	<3	<5	<2	<2	3	<5	<3	17166
24662	8.6	0.16	<3	<3	58	<3	0.06	7.1	3	71	77	1.04	0.01	0.01	2286	7	0.01	42	0.02	4350	<3	<5	<2	<2	3	<5	<3	8942
24663	4.9	0.21	<3	<3	63	<3	0.09	12.3	3	135	127	1.11	0.01	0.03	3372	11	0.01	14	0.02	5638	<3	<5	<2	<2	5	<5	<3	14967
24664	3.1	0.17	7	<3	27	<3	0.07	2.1	2	63	42	2.97	0.01	0.02	3605	3	0.01	2	0.01	798	<3	<5	<2	<2	3	<5	<3	2301
24665	5.1	0.17	5	<3	26	<3	0.06	5.4	1	77	181	2.91	0.01	0.01	1774	4	0.01	1	0.02	3523	<3	<5	<2	<2	4	<5	<3	5536
24666	8.1	0.15	13	<3	27	<3	0.07	7.1	2	68	193	2.76	0.01	0.02	4440	5	0.01	35	0.01	2084	<3	<5	<2	<2	4	<5	<3	7769
24667	15.5	0.12	108	<3	7	<3	0.04	4.9	1	107	41	>10.00	0.01	0.02	1416	8	0.01	1	0.01	1492	<3	<5	<2	3	3	<5	<3	2751
24668	5.4	0.13	18	<3	15	<3	0.05	4.9	9	81	154	7.05	0.01	0.02	540	8	0.01	2	0.02	669	<3	<5	<2	2	1	<5	<3	4794
24669	18.6	0.15	33	<3	15	<3	0.10	3.7	4	82	333	>10.00	0.01	0.12	1651	10	0.01	50	0.02	459	<3	<5	<2	2	3	<5	<3	2430
24670	0.5	0.16	31	<3	23	<3	0.01	0.5	9	74	10	2.70	0.01	0.01	40	5	0.01	5	0.01	64	<3	<5	<2	<2	11	<5	<3	76
24671	2.5	0.18	14	<3	11	<3	0.01	1.2	15	46	107	6.88	0.01	0.01	15	7	0.01	3	0.01	107	<3	<5	<2	4	8	<5	<3	57
24672	0.3	0.19	12	<3	18	<3	0.01	0.4	4	142	5	1.47	0.01	0.01	17	9	0.01	3	0.01	38	<3	<5	<2	<2	12	<5	<3	24
24673	41.5	0.09	<3	<3	2	<3	0.01	6.3	96	88	303	>10.00	0.01	0.02	24	11	0.01	41	0.01	3002	<3	<5	<2	2	5	<5	<3	4280
24674	36.1	0.11	<3	<3	10	4	0.03	12.2	51	97	637	>10.00	0.01	0.08	10700	18	0.01	6	0.01	14273	<3	<5	<2	4	10	<5	<3	19837
24675	4.5	0.12	3	<3	5	<3	0.07	2.6	12	69	55	9.22	0.01	0.04	638	11	0.01	1	0.02	1146	<3	<5	<2	2	15	<5	<3	1524
24676	1.0	0.13	57	<3	10	<3	0.09	4.9	13	137	80	>10.00	0.01	0.04	454	17	0.01	1	0.01	1028	<3	<5	<2	2	9	<5	<3	3395
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum Detection	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	10.00	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	10000	100	1000	20000

< = Less than Minimum is = Insufficient Sample ns = No sample > = Greater than Maximum AuFA = Fire assay/AAS

VGC VANGEOCHEM LAB LIMITED

MAIN OFFICE
1988 TRIUMPH ST.
VANCOUVER, B.C. V5L 1K5
• (604) 251-5656
• FAX (604) 254-5717

BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

ASSAY ANALYTICAL REPORT

CLIENT: INEL RESOURCES LTD.
ADDRESS: 301 - 675 West Hastings St.
: Vancouver, B.C.
: V6B 1N2

DATE: MAY 8 1989
REPORT#: 890194 AA
JOB#: 890194

PROJECT#: SIWASH
SAMPLES ARRIVED: MAY 4 1989
REPORT COMPLETED: MAY 8 1989
ANALYSED FOR: Pb Zn

INVOICE#: 890194 NA
TOTAL SAMPLES: 1
REJECTS/PULPS: 90 DAYS/1 YR
SAMPLE TYPE: 1 PULP

SAMPLES FROM: INEL RESOURCES LTD.
COPY SENT TO: INEL RESOURCES LTD.

RECEIVED MAY 10 1989

PREPARED FOR: INEL RESOURCES LTD.

ANALYSED BY: VGC Staff

SIGNED: Jaime C. Wong

GENERAL REMARK: SAMPLE FROM 890185

VGC VANGEOCHEM LAB LIMITED

MAIN OFFICE
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VANCOUVER, B.C. V5L 1K5
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BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

REPORT NUMBER: 890194 AA JOB NUMBER: 890194 INEL RESOURCES LTD.

SAMPLE #	Pb %	Zn %
24514	1.00	1.93
DETECTION LIMIT	.01	.01

1 Troy oz/short ton = 34.28 ppm 1 ppm = 0.0001% ppm = parts per million < = less than

signed: Jaime C. Wong

VGC VANGEOCHEM LAB LIMITED

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BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

GEOCHEMICAL ANALYTICAL REPORT

CLIENT: INEL RESOURCES LTD.
ADDRESS: 301 - 675 West Hastings St.
: Vancouver, B.C.
: V6B 1N2

DATE: MAY 5 1989

REPORT#: 890191 GA
JOB#: 890191

PROJECT#: SIWASH
SAMPLES ARRIVED: MAY 3 1989
REPORT COMPLETED: MAY 5 1989
ANALYSED FOR: Au (FA/AAS) ICP

INVOICE#: 890191 NA
TOTAL SAMPLES: 52
SAMPLE TYPE: ROCK/CORE
REJECTS: SAVED

SAMPLES FROM: STEVE TODORUK
COPY SENT TO: PAMICON/INEL RESOURCES LTD.

PREPARED FOR: INEL RESOURCES LTD.

RECEIVED MAY - 8 1989

ANALYSED BY: VGC Staff

SIGNED: ____________

GENERAL REMARK: INVOICE TO INEL RESOURCES LTD.

VGC VANGEOCHEM LAB LIMITED

MAIN OFFICE
1988 TRIUMPH ST.
VANCOUVER, B.C. V5L 1K5
• (604) 251-5656
• FAX (604) 254-5717

BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

REPORT NUMBER: 890191 GA   JOB NUMBER: 890191   INEL RESOURCES LTD.

SAMPLE #	Au ppb
24532	80
24533	25
24534	50
24535	nd
24536	nd
24537	60
24538	10
24539	20
24540	40
24541	20
24542	20
24543	60
24544	10
24545	10
24546	20
24547	nd
24548	10
24549	nd
24550	nd
24551	nd
24552	65
24553	25
24554	nd
24555	25
24556	70
24557	50
24558	5
24559	40
24560	110
24561	10
24562	nd
24563	20
24564	10
24565	20
24566	10
24567	20
24568	10
24569	40
24570	10
DETECTION LIMIT	5

nd = none detected   -- = not analysed   is = insufficient sample

VGC VANGEOCHEM LAB LIMITED

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• FAX (604) 254-5717

BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

REPORT NUMBER: 890191 GA JOB NUMBER: 890191 INEL RESOURCES LTD.

SAMPLE #	Au ppb
24571	140
24572	100
24573	110
24574	100
24575	60
24576	70
24577	30
24578	40
24579	10
24580	25
24581	10
24582	5
24583	5

DETECTION LIMIT 5
nd = none detected -- = not analysed is = insufficient sample

.388 Tr[illegible] Street, [illegible]couver, [illegible] V5L 1K5
Ph:(604)251-5656 Fax:(604)254-5717

ICAP GEOCHEMICAL ANALYSIS

A .5 gram sample is digested with 5 ml of 3:1:2 HCl to HNO_3 to H_2O at 95 °C for 90 minutes and is diluted to 10 ml with water.
This leach is partial for Al, Ba, Ca, Cr, Fe, K, Mg, Mn, Na, P, Pd, Pt, Sn, Sr and W.

ANALYST: [signature]

REPORT #: 890191 PA   PAMICON/INEL RESOURCES   Proj: SIWASH   Date In: 89/05/03   Date Out: 89/05/05   Att:

Sample Number	Ag	Al	As	Au	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Pd	Pt	Sb	Sn	Sr	U	W	Zn
	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
24532	5.0	0.26	<3	<3	8	4	0.01	2.3	3	33	672	>10.00	0.56	0.02	12	4	0.01	19	0.01	204	<3	<5	<2	11	12	<5	<3	5
24533	1.2	0.26	<3	<3	12	<3	0.01	1.3	10	71	244	8.01	0.28	0.01	11	6	0.01	38	0.01	86	<3	<5	<2	2	10	<5	<3	13
24534	1.0	0.25	<3	<3	11	<3	0.01	0.8	31	74	218	5.49	0.19	0.01	15	7	0.01	42	0.01	59	<3	<5	<2	2	6	<5	<3	10
24535	0.1	0.22	<3	<3	16	<3	0.01	0.5	12	45	66	3.72	0.13	0.01	11	3	0.01	8	0.01	42	<3	<5	<2	<2	8	<5	<3	5
24536	0.1	0.25	<3	<3	18	<3	0.01	0.4	10	94	66	2.89	0.10	0.01	17	6	0.01	53	0.01	60	<3	<5	<2	<2	10	<5	<3	4
24537	1.4	0.23	<3	<3	5	<3	0.01	2.5	30	33	123	>10.00	0.60	0.01	8	13	0.01	14	0.01	91	<3	<5	<2	<2	10	<5	<3	8
24538	0.1	0.21	<3	<3	19	<3	0.01	0.7	8	66	50	4.10	0.14	0.01	11	7	0.01	35	0.01	59	<3	<5	<2	<2	8	<5	<3	6
24539	0.3	0.25	<3	<3	11	<3	0.01	1.3	6	60	116	8.05	0.28	0.01	8	6	0.01	36	0.01	53	<3	<5	<2	2	10	<5	<3	8
24540	1.0	0.28	<3	<3	11	<3	0.01	1.5	8	61	114	9.03	0.32	0.01	10	6	0.01	12	0.01	73	<3	<5	<2	3	12	<5	<3	4
24541	0.1	0.25	<3	<3	15	<3	0.01	0.7	8	65	63	4.92	0.17	0.01	9	5	0.01	34	0.01	67	<3	<5	<2	2	9	<5	<3	4
24542	0.5	0.28	<3	<3	16	<3	0.01	0.8	7	55	134	5.94	0.21	0.01	9	3	0.01	8	0.01	133	<3	<5	<2	2	11	<5	<3	7
24543	2.3	0.25	<3	<3	6	4	0.01	2.6	20	47	568	>10.00	0.63	0.01	7	5	0.01	15	0.01	104	<3	<5	<2	6	8	<5	<3	22
24544	0.1	0.23	<3	<3	17	<3	0.01	0.7	16	58	74	4.46	0.16	0.01	10	4	0.01	32	0.01	48	<3	<5	<2	<2	8	<5	<3	7
24545	0.6	0.31	<3	<3	20	<3	0.01	0.5	16	61	46	3.57	0.12	0.01	6	5	0.01	29	0.01	71	<3	<5	<2	<2	6	<5	<3	8
24546	0.3	0.33	<3	<3	9	<3	0.01	0.8	15	52	122	5.07	0.18	0.01	6	5	0.01	8	0.01	96	<3	<5	<2	2	9	<5	<3	5
24547	0.3	0.27	<3	<3	16	<3	0.01	0.8	15	70	105	5.16	0.18	0.01	10	5	0.01	34	0.01	64	<3	<5	<2	<2	9	<5	<3	10
24548	[illegible]	0.23	<3	<3	28	<3	0.01	0.4	11	36	42	2.88	0.10	0.01	6	4	0.01	23	0.01	63	<3	<5	<2	<2	10	<5	<3	16
24549	0.1	0.23	<3	<3	40	<3	0.01	0.4	12	53	57	2.23	0.08	0.01	9	2	0.01	5	0.01	97	<3	<5	<2	<2	10	<5	<3	7
24550	0.1	0.26	<3	<3	27	<3	0.01	0.4	11	57	47	2.87	0.10	0.01	13	9	0.01	35	0.01	90	<3	<5	<2	<2	10	<5	<3	58
24551	0.1	0.18	6	<3	5	<3	0.01	0.8	45	52	42	5.36	0.19	0.01	10	16	0.01	8	0.01	57	<3	<5	<2	<2	6	<5	<3	24
24552	1.6	0.31	9	<3	4	3	0.01	2.9	37	32	385	>10.00	0.56	0.02	14	29	0.01	41	0.01	255	<3	<5	<2	<2	7	<5	<3	299
24553	0.1	0.25	<3	<3	3	<3	0.01	1.1	11	45	46	6.71	0.24	0.01	9	13	0.01	32	0.01	64	<3	<5	<2	<2	10	<5	<3	77
24554	0.4	0.26	<3	<3	3	<3	0.01	0.8	9	63	66	5.07	0.18	0.01	10	7	0.01	7	0.01	279	<3	<5	<2	<2	8	<5	<3	87
24555	0.5	0.22	<3	<3	2	<3	0.01	1.1	18	74	149	7.61	0.27	0.01	13	6	0.01	9	0.01	199	<3	<5	<2	2	8	<5	<3	99
24556	2.5	0.32	<3	<3	3	<3	0.01	1.6	16	50	121	>10.00	0.36	0.01	8	8	0.01	36	0.01	252	<3	<5	<2	2	8	<5	<3	27
24557	1.7	0.25	<3	<3	2	<3	0.01	2.1	26	35	266	>10.00	0.48	0.01	6	9	0.01	13	0.01	114	<3	<5	<2	2	15	<5	<3	106
24558	1.6	0.28	<3	<3	6	<3	0.01	1.3	17	87	40	4.56	0.16	0.01	14	6	0.01	8	0.01	123	<3	<5	<2	2	25	<5	<3	411
24559	1.0	0.45	<3	<3	9	<3	0.01	1.1	16	131	87	6.55	0.23	0.01	14	10	0.01	9	0.01	273	<3	<5	<2	2	12	<5	<3	464
24560	2.8	0.28	<3	<3	2	4	0.01	3.2	10	48	440	>10.00	0.75	0.02	7	7	0.01	15	0.01	581	<3	<5	<2	2	9	<5	<3	52
24561	0.1	0.23	<3	<3	4	<3	0.01	1.1	122	100	40	7.02	0.25	0.01	52	14	0.01	11	0.01	136	<3	<5	<2	<2	8	<5	<3	104
24562	0.1	0.20	<3	<3	13	<3	0.01	0.8	46	121	27	5.51	0.19	0.01	16	31	0.01	8	0.01	1375	<3	<5	<2	<2	7	<5	<3	77
24563	4.0	1.09	<3	<3	40	<3	0.08	6.5	2	62	134	7.82	0.30	0.25	3872	7	0.01	40	0.01	1661	<3	<5	<2	6	12	<5	<3	3341
24564	14.6	1.16	<3	<3	61	<3	0.09	2.1	2	82	946	7.28	0.28	0.29	3796	4	0.02	7	0.01	885	<3	<5	<2	7	13	<5	<3	953
24565	0.1	1.32	<3	<3	44	<3	0.07	0.8	1	79	115	5.59	0.22	0.27	4355	4	0.03	6	0.01	62	<3	<5	<2	4	14	<5	<3	260
24566	0.1	1.01	<3	<3	45	<3	0.05	0.7	1	134	37	4.45	0.17	0.17	1856	7	0.04	6	0.01	55	<3	<5	<2	3	10	<5	<3	240
24567	3.6	0.35	<3	<3	67	<3	0.11	4.5	1	71	237	3.37	0.14	0.05	1707	4	0.01	34	0.02	892	<3	<5	<2	3	12	<5	<3	3521
24568	0.1	0.11	5	<3	22	<3	0.45	0.1	1	69	5	0.50	0.08	0.21	213	2	0.02	1	0.01	45	<3	<5	<2	<2	61	<5	<3	71
24569	1.4	0.45	<3	<3	118	<3	0.30	8.1	3	68	69	1.00	0.08	0.06	1777	5	0.01	4	0.04	4209	<3	<5	<2	<2	15	<5	<3	5677
24570	1.4	0.50	3	<3	63	<3	0.30	4.6	3	135	72	1.56	0.10	0.07	2229	8	0.01	4	0.04	2088	<3	<5	<2	<2	13	<5	<3	3695
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum D[illegible]ion	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	[illegible]	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	1000	[illegible]00	1000	20000

< = Less   Minimum   is = Insufficient Sample   ns = No sample   > = Greater than Maximum   AuFA = Fire [illegible]/AAS

Sample Number	Ag ppm	Al %	As ppm	Au ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Pd ppm	Pt ppm	Sb ppm	Sn ppm	Sr ppm	U ppm	W ppm	Zn ppm
24571	27.5	0.78	40	<3	22	4	0.60	35.5	6	51	219	4.13	0.24	0.06	4035	12	0.01	26	0.03	3111	<3	<5	<2	<2	9	<5	<3	>20000
24572	10.5	0.31	8	<3	23	<3	0.22	32.2	4	129	203	3.86	0.18	0.03	4398	11	0.01	3	0.02	3480	<3	<5	<2	<2	7	<5	<3	>20000
24573	5.1	0.16	49	<3	6	<3	0.14	23.2	6	167	147	7.41	0.32	0.03	11410	15	0.01	3	0.01	1335	<3	<5	<2	<2	5	<5	<3	15336
24574	2.8	0.14	11	<3	23	<3	0.06	9.1	2	82	102	2.45	0.12	0.01	8083	5	0.01	3	0.01	1159	<3	<5	<2	<2	3	<5	<3	6698
24575	3.4	0.15	12	<3	18	<3	0.08	12.3	2	114	89	3.50	0.16	0.01	7331	8	0.01	1	0.01	830	<3	<5	<2	<2	5	<5	<3	8812
24576	3.6	0.17	19	<3	43	<3	0.28	7.1	2	44	50	1.24	0.09	0.01	4532	7	0.01	27	0.03	1426	<3	<5	<2	<2	8	<5	<3	5424
24577	0.5	0.20	5	<3	107	<3	0.07	1.5	1	74	53	0.52	0.03	0.01	1128	3	0.02	3	0.02	518	<3	<5	<2	<2	10	<5	<3	1896
24578	3.2	0.17	<3	<3	104	<3	0.06	7.1	2	91	440	0.55	0.03	0.01	788	4	0.01	3	0.02	5539	<3	<5	<2	<2	10	<5	<3	5723
24579	1.5	0.18	<3	<3	85	<3	0.09	4.5	3	70	52	0.99	0.05	0.01	2459	6	0.01	46	0.02	2597	<3	<5	<2	<2	12	<5	<3	3838
24580	2.1	0.48	3	<3	66	<3	0.20	9.1	1	142	87	0.92	0.06	0.02	568	9	0.01	4	0.02	921	<3	<5	<2	<2	13	<5	<3	7054
24581	1.5	0.22	<3	<3	14	<3	0.04	4.1	43	66	26	6.95	0.28	0.04	6801	4	0.01	5	0.01	1326	<3	<5	<2	<2	9	<5	<3	4463
24582	0.5	0.21	<3	<3	31	<3	0.05	0.5	10	82	9	1.79	0.07	0.02	1325	2	0.03	2	0.02	372	<3	<5	<2	<2	19	<5	<3	1114
24583	1.1	0.19	<3	<3	7	<3	0.04	3.8	75	132	16	7.64	0.28	0.01	169	8	0.01	7	0.01	580	<3	<5	<2	<2	15	<5	<3	1693
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum Detection	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	10.00	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	10000	100	1000	20000

< = Less than Minimum is = Insufficient Sample ns = No sample > = Greater than Maximum AuFA = Fire assay/AAS

ANOMALOUS RESULTS:
FURTHER ANALYSES
BY ALTERNATE
METHODS SUGGESTED

VGC VANGEOCHEM LAB LIMITED

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BRANCH OFFICES
PASADENA, NFLD.
BATHURST, N.B.
MISSISSAUGA, ONT.
RENO, NEVADA, U.S.A.

GEOCHEMICAL ANALYTICAL REPORT

CLIENT: INEL RESOURCES LTD.
ADDRESS: 301 - 675 West Hastings St.
: Vancouver, B.C.
: V6B 1N2

DATE: MAY 4 1989
REPORT#: 890185 GA
JOB#: 890185

PROJECT#: SIWASH
SAMPLES ARRIVED: MAY 1 1989
REPORT COMPLETED: MAY 4 1989
ANALYSED FOR: Au (FA/AAS) ICP

INVOICE#: 890185 NA
TOTAL SAMPLES: 31
SAMPLE TYPE: CORE
REJECTS: SAVED

SAMPLES FROM: STEVE TODORUK
COPY SENT TO: PAMICON & INEL RESOURCES

RECEIVED
MAY - 8 1989

PREPARED FOR: INEL RESOURCES LTD.

ANALYSED BY: VGC Staff

SIGNED: [signature]

GENERAL REMARK: INVOICE SEND TO INEL RESOURCES LTD.

VGC VANGEOCHEM LAB LIMITED

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REPORT NUMBER: 890185 GA JOB NUMBER: 890185 INEL RESOURCES LTD.

SAMPLE #	Au ppb
24501	45
24502	20
24503	30
24504	100
24505	30
24506	60
24507	55
24508	80
24509	390
24510	120
24511	450
24512	110
24513	30
24514	150
24515	50
24516	50
24517	30
24518	20
24519	30
24520	25
24521	1640
24522	120
24523	180
24524	60
24525	30
24526	75
24527	20
24528	80
24529	160
24530	20
24531	190

DETECTION LIMIT 5

nd = none detected -- = not analysed is = insufficient sample

VANGEOCHEM LAB LIMITED

1988 Triumph Street, Vancouver, B.C. V5L 1K5
Ph:(604)251-5656 Fax:(604)254-5717

ICAP GEOCHEMICAL ANALYSIS

A .5 gram sample is digested with 5 ml of 3:1:2 HCl to HNO_3 to H_2O at 95 °C for 90 minutes and is diluted to 10 ml with water.
This leach is partial for Al, Ba, Ca, Cr, Fe, K, Mg, Mn, Na, P, Pd, Pt, Sn, Sr and W.

ANALYST: [signature]

REPORT #: 890185 PA PAMICON/INEL RESOURCES Proj: SIWASH CREEK Date In: 89/05/01 Date Out:89/05/03 Att:

Sample Number	Ag	Al	As	Au	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Pd	Pt	Sb	Sn	Sr	U	W	Zn
	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
24501	0.3	0.49	4	<3	62	<3	0.37	0.1	2	142	47	1.06	0.09	0.14	605	39	0.05	4	0.02	34	<3	<5	<2	<2	23	<5	<3	350
24502	0.5	0.43	4	<3	69	<3	0.24	0.6	3	102	21	1.27	0.08	0.11	545	2	0.02	2	0.02	74	<3	<5	<2	<2	21	<5	<3	1359
24503	1.3	0.31	<3	<3	44	<3	0.04	0.1	2	115	3	3.48	0.13	0.01	188	7	0.02	2	0.02	71	<3	<5	<2	<2	3	<5	<3	119
24504	0.3	0.34	7	<3	50	<3	0.04	0.1	1	81	9	1.89	0.07	0.01	800	2	0.02	2	0.03	57	<3	<5	<2	<2	2	<5	<3	104
24505	.5	0.32	4	<3	123	<3	0.24	5.9	1	81	99	1.27	0.08	0.03	1889	4	0.01	2	0.02	205	<3	<5	<2	<2	16	<5	<3	5999
24506	.3	0.29	3	<3	55	<3	0.05	2.1	1	68	85	2.24	0.08	0.02	427	2	0.03	1	0.02	397	<3	<5	<2	<2	6	<5	<3	2152
24507	.9	0.34	<3	<3	99	<3	0.11	4.4	4	124	126	1.95	0.10	0.04	7128	5	0.01	3	0.05	1997	<3	<5	<2	<2	4	<5	<3	3709
24508	.5	0.35	<3	<3	223	<3	0.52	0.7	4	84	44	1.80	0.14	0.16	3037	1	0.01	2	0.06	473	<3	<5	<2	<2	27	<5	<3	1282
24509	0.5	0.41	<3	<3	339	<3	0.68	0.1	1	107	67	1.59	0.15	0.17	1947	4	0.02	2	0.06	202	<3	<5	<2	<2	42	<5	<3	790
24510	0.3	0.34	<3	<3	408	<3	0.57	1.1	4	87	52	1.59	0.14	0.14	3630	1	0.01	2	0.06	330	<3	<5	<2	<2	36	<5	<3	1519
24511	31.2	0.34	38	<3	13	4	0.12	7.6	3	128	683	6.09	0.24	0.03	1477	8	0.01	3	0.05	1365	<3	<5	<2	3	7	<5	<3	6326
24512	.2	0.30	34	<3	66	<3	0.13	2.4	4	108	227	2.32	0.10	0.07	1950	2	0.01	3	0.06	1316	<3	<5	<2	<2	6	<5	<3	2733
24513	3.2	0.31	32	<3	46	<3	0.11	0.3	3	125	111	2.17	0.09	0.05	1944	4	0.01	2	0.06	255	<3	<5	<2	<2	3	<5	<3	869
24514	18.8	0.24	<3	<3	18	4	0.07	29.2	1	92	882	>10.00	0.44	0.03	1464	7	0.01	1	0.03	10109	<3	<5	<2	<2	5	<5	<3	>20000
24515	0.4	0.41	<3	<3	194	<3	0.20	1.9	3	111	89	2.37	0.12	0.18	3669	4	0.01	3	0.06	704	<3	<5	<2	<2	12	<5	<3	1824
24516	1.2	0.38	<3	<3	270	<3	0.21	0.3	5	91	76	2.32	0.12	0.15	3312	1	0.01	3	0.07	463	<3	<5	<2	<2	14	<5	<3	1300
24517	1.1	0.37	<3	<3	304	<3	0.12	0.6	3	25	44	1.50	0.08	0.09	2735	9	0.02	2	0.06	367	<3	<5	<2	<2	10	<5	44	776
24518	1.8	0.42	11	<3	53	<3	0.12	1.2	5	45	122	2.89	0.12	0.09	2199	4	0.01	17	0.06	664	<3	<5	<2	<2	6	<5	<3	1167
24519	1.2	0.39	6	<3	53	<3	0.10	0.1	11	41	28	3.90	0.15	0.04	1763	4	0.02	3	0.06	226	<3	<5	<2	<2	4	<5	<3	148
24520	0.6	0.33	3	<3	52	<3	0.09	0.1	7	56	45	3.36	0.14	0.04	2467	2	0.01	26	0.06	131	<3	<5	<2	<2	4	<5	<3	311
24521	39.7	0.11	48	<3	5	7	0.01	0.1	65	46	36	>10.00	0.86	0.03	38	1	0.01	2	0.01	2032	<3	<5	<2	<2	3	<5	<3	993
24522	3.3	0.41	8	<3	35	<3	0.08	0.1	12	67	10	4.08	0.15	0.02	53	7	0.01	37	0.06	492	<3	<5	<2	<2	8	<5	<3	149
24523	10.3	0.16	<3	<3	7	7	0.01	0.1	57	69	29	>10.00	0.86	0.03	35	3	0.01	24	0.01	1054	<3	<5	<2	<2	8	<5	<3	915
24524	5.6	0.36	10	<3	14	<3	0.06	2.1	11	51	68	6.96	0.25	0.02	53	2	0.01	3	0.04	1873	<3	<5	<2	2	13	<5	<3	1734
24525	1.5	0.32	<3	<3	7	<3	0.04	0.1	21	55	13	>10.00	0.42	0.03	116	1	0.01	1	0.02	147	<3	<5	<2	<2	2	<5	<3	245
24526	5.6	0.37	<3	<3	8	4	0.09	0.1	66	67	15	>10.00	0.53	0.06	166	4	0.01	36	0.06	335	<3	<5	<2	<2	5	<5	<3	195
24527	0.5	0.31	<3	<3	33	<3	0.06	0.1	12	37	6	3.17	0.12	0.01	60	<1	0.01	3	0.04	51	<3	<5	<2	<2	8	<5	<3	79
24528	6.8	0.27	<3	<3	10	3	0.07	3.5	30	41	79	>10.00	0.40	0.02	278	3	0.01	17	0.04	4584	<3	<5	<2	<2	8	<5	<3	2607
24529	17.2	0.45	<3	<3	6	4	0.06	0.1	60	48	28	>10.00	0.44	0.07	162	2	0.01	1	0.04	1979	<3	<5	<2	<2	9	<5	<3	213
24530	0.1	0.52	<3	<3	234	<3	1.00	0.1	3	61	30	2.11	0.21	0.21	1845	10	0.01	3	0.06	105	<3	<5	<2	<2	58	<5	<3	162
24531	12.3	0.27	<3	<3	6	5	0.09	0.1	85	146	37	>10.00	0.48	0.03	204	12	0.01	2	0.04	390	<3	<5	<2	<2	3	<5	<3	432
Minimum Detection	0.1	0.01	3	3	1	3	0.01	0.1	1	1	1	0.01	0.01	0.01	1	1	0.01	1	0.01	2	3	5	2	2	1	5	3	1
Maximum Detection	50.0	10.00	2000	100	1000	1000	10.00	1000.0	20000	1000	20000	10.00	10.00	10.00	20000	1000	10.00	20000	10.00	20000	100	100	2000	1000	10000	100	1000	20000

< = Less than Minimum is = Insufficient Sample ns = No sample > = Greater than Maximum AuFA = Fire assay/AAS

ANOMALOUS RESULTS:
FURTHER ANALYSES
BY ALTERNATE
METHODS SUGGESTED

APPENDIX III

1989 SIWASH PROJECT REFERENCE ROCK DESCRIPTIONS

SIWASH PROJECT
REFERENCE ROCK DESCRIPTIONS

Reference	Description
29/05-1	K-spar Megacryst Porphyry: Sanidine phenocrysts (?) to 4 cm with quartz phenocrysts and off-white feldspar phenocrysts to 1 cm set in a very fine grained grey/buff/pink groundmass.
29/05-2	Brecciated Quartz-Feldspar Porphyry: Rounded to subround QFP fragments to 5 cm (off-white feldspar and quartz phenocrysts <1 cm set in a fine grained groundmass) in a milled matrix. Maroon weathering.
29/05-3	Brecciated Quartz-Feldspar Porphyry: Rare subangular QFP (?) fragments to 5 cm set in a fine grained clastic appearing matrix. Maroon weathered.
29/05-4	Quartz-Feldspar Porphyry: Quartz phenocrysts subrounded to subhedral 2 to 4 mm and less visible subhedral off-white feldspar phenocrysts of similar size, set in a light, very fine grained groundmass. Distinct limonitic weathering; kaolinite, sericite, epidote (?) alteration.
29/05-5	Biotite Quartz-Feldspar Porphyry: Medium to coarse grained quartz and feldspar phenocrysts, subround to subhedral, and fine grained euhedral biotite set in a pale grey (pinkish when fresh) aphanitic groundmass; kaolinite, sericite alteration, limonitic fractures.
29/05-6	Biotite Quartz-Feldspar Porphyry: As 29/05-5 with coarser phenocrysts to 5 mm with occasional k-spars up to 1.3 cm.

29/05-7	Quartz Feldspar Porphyry: Quartz and feldspar phenocrysts 1 to 3 mm in a very fine grained matrix; sericite, epidote, ankerite altered; limonitic weathered.
29/05-8	Quartz Feldspar Porphyry: Similar to above; epidote alteration.
29/05-9	Brecciated Granite: Subangular to subround heterolithic fragments to 5 cm set in a fine clastic appearing (cataclastic ?) grey matrix.
30/05-5a	Brecciated Quartz Feldspar Porphyry: 1 mm to 10 cm diameter fragments, commonly porphyritic within an aphanitic groundmass; kaolinite, sericite altered, limonitic and bleached chalky white weathered.
30/05-5b	Brecciated Quartz Feldspar Porphyry: Multilithic fragments to 2 cm set in a very fine grained grey-green groundmass; kaolinite, sericite altered; distinct maroon weathering.
30/05-9	Brecciated Quartz Feldspar Porphyry (?): Rounded to subangular multilithic fragments averaging 5 cm in diameter (quartz syenite fragments noted) set in a fine grained chalky white matrix; bleached chalky weathered.
30/05-11	Quartz Feldspar Porphyry: quartz phenocrysts 3 to 6 mm and feldspar phenocrysts 2 to 4 mm set in a very fine grained grey-green groundmass; silicified, sericite, kaolinite, epidote (?) altered.
31/05-2	Brecciated Quartz Feldspar Porphyry: Subround QFP fragments to 15 cm in a tuffaceous grey-green matrix; quartz and feldspar phenocrysts noted; rusty buff-grey weathered.

31/05-3a	Brecciated Quartz Feldspar Porphyry: <1 to 1 mm feldspar phenocrysts and 1 to 3 mm quartz phenocrysts set in a very fine grained pale green-grey groundmass (silicified), brecciated in places with abundant clay gouge; kaolinite, sericite altered.
31/05-3b	Altered Granite: Strong chlorite ± sericite, kaolinite altered; coarse grained equigranular texture that is common in fresher granite to the south is mostly destroyed.
31/05-3c	Altered Granite: Similar in general to 31/05-3b; strongly altered to epidote, sericite (?), chlorite (?); remnant quartz and feldspar crystals visible.
31/05-4	Altered Granite: Similar to 31/05-3b and 31/05-3c; weakly foliated.
31/05-5a	Altered Granite: Similar to 31/05-3b, 31/05-3c and 31/05-4; sericite, chlorite, epidote ± limonite altered.
31/05-5b	Brecciated Granite: Round to subround lithic fragments to 5 cm set in a very fine to fine grained dark green (chlorite altered ?) matrix; distinct maroon weathering.
31/05-6	Altered Granite: Medium to coarse grained similar to above altered granites, quartz magnetite veinlet in this outcrop.
31/05-7	Granite: Coarse grained, equigranular pink k-spar, plagioclase and quartz; weak sericite, kaolinite alteration.
02/06-1	Altered Granite: Granite to brecciated granite; medium to dark green, chlorite, sericite altered ± subangular fragments of granite in fine grained matrix.

02/06-4	Brecciated Granite: Fragmented, kaolinite, chlorite, sericite altered; quartz and feldspar "phenocrysts" visible; limonitic weathering.
02/06-5	Brecciated Granite: Brecciated, chlorite altered.
02/06-6	Altered Granite: Altered with or without brecciation; kaolinite, ankerite, limonite ± sericite altered; remnant quartz and feldspar crystals create a porphyritic appearance.
02/06-8	Brecciated Biotite Quartz Feldspar Porphyry: Fine grained quartz and feldspar phenocrysts, <1% fine biotite set in a very fine grained siliceous groundmass; chlorite, silica epidote altered.
02/06-9	Granite: Coarse grained, equigranular texture.
02/06-10	Brecciated Granite (?): Fine grained dark green (chlorite altered ?) with <1% biotite, siliceous.
02/06-11	Brecciated Granite (?): Medium to dark green, fine grained granular texture with brecciated appearance; quartz crystals to 3 mm, chlorite, sericite alteration.
03/06-1	Biotite Quartz Feldspar Porphyry: Quartz and feldspar phenocrysts to 1 to 2 cm and fine grained euhedral biotite and hornblende (?) set in a very fine grained green-grey groundmass; ankerite, sericite, kaolinite alteration of groundmass; chalky weathered.
03/06-2	Quartz Feldspar Porphyry: Quartz and feldspar phenocrysts, 1 to 2 mm (feldspars to 1 cm) set in a very fine grained pale green groundmass; sericite, ankerite alteration.

03/06-4 <u>K-spar Megacryst Porphyry</u>: Euhedral sanidine megacrysts to 3 cm and smaller quartz and feldspar phenocrysts 2 to 6 mm set in a very fine grained groundmass; <1% fine biotite/hornblende (?); silicified and sericite altered.

03/06-5 <u>K-spar Megacryst Porphyry</u>: Similar to above, strongly altered with sericite, ankerite, kaoline, pyrolusite; intensely fractured.

03/06-7 <u>Quartz Syenite</u>: A few 1 to 3 mm quartz phenocrysts set in a very fine grained groundmass; groundmass bleached white to buff, intensely altered to kaolinite, sericite, ankerite ± quartz; brecciated in places.

03/06-8 <u>Biotite Quartz Feldspar Porphyry</u>: Fine biotite and hornblende (?) and quartz and feldspar phenocrysts <1 cm in a very fine grained groundmass; rare feldspar "megacryst" to 2 cm noted; feldspars kaolinite altered.

n.b.: From field observations it is concluded that "biotite QFP" is closely related genetically and mineralogically to "k-spar megacryst porphyry"; the biotite QFP was distinguished by the presence of fine grained disseminated biotite and hornblende (?) and by its occurrence as dykes.

03/06-9 <u>Quartz Syenite</u>: Fine to medium grained quartz and feldspar phenocrysts set in a very fine to fine grained tuffaceous appearing groundmass; moderate to strong quartz, kaolinite alteration; minor disseminated fine grained pyrite.

03/06-10 K-spar Megacryst Porphyry: Strongly altered adjacent to fault zone; alteration includes kaolinite, sericite, ankerite, limonite, pyrolusite with zones of silicification ± pyrite.

03/06-12 Quartz Eye Porphyry: Prominent quartz phenocrysts 1 to 4 mm set in a very fine grained groundmass; feldspar phenocrysts present but less apparent; chalky buff weathered.

03/06-13 Quartz Eye Porphyry: Similar to 03/06-12; sericite, kaolinite, ankerite altered.

03/06-16 Brecciated Quartz Syenite (?): Subround to subangular chalky weathered quartz syenite fragments 2 to 3 cm, set in a light brown gritty matrix.

05/06-3 Brecciated Quartz Feldspar Porphyry: 1 mm to 30 cm subround-subangular QFP fragments abundant in "milled" medium to coarse grained dull yellow/tan matrix; kaolinite, sericite alteration.

07/06-13 Quartz Syenite: Euhedral feldspar phenocrysts 1 to 3 mm and subhedral quartz phenocrysts 1 to 4 mm set in a very fine grained, light grey groundmass; kaolinite altered.

08/06-6 Quartz Feldspar Porphyry: Strongly silicified zone adjacent to old workings (pyritic quartz vein stockwork zone) west side Siwash Creek.

08/06-7 Biotite Quartz Feldspar Porphyry: Sample from opposite side of showing described in 08/06-6; 1 to 5 mm quartz phenocrysts and 2 to 5 mm feldspar phenocrysts (rare feldspar megacryst) with 1 to 2% fine grained biotite in a very fine grey-green groundmass.

08/06-12 — <u>K-spar Megacryst Porphyry</u>: Euhedral k-spar megacrysts to 3 cm with smaller subrounded to subhedral quartz and feldspar phenocrysts 1 to 4 mm set in a very fine groundmass.

08/06-13 — <u>Quartz Feldspar Porphyry</u>: Feldspar phenocrysts 1 to 3 mm and quartz phenocrysts 1 to 4 mm in a very fine grained groundmass; kaolinite, sericite alteration, limonitic weathered.

Gavin Trench Sample — <u>Cataclastite</u>: Up to 1 cm subangular multilithic fragments set in very "milled" granitic (?) groundmass.

Peachland Road 34 km Sample — <u>Diorite</u>: Coarse grained, moderate mafic content, coarse grained chlorite, moderate to strong finely disseminated hematite, <1% minor patchy blebs of chalcopyrite.

Peachland Road Sample — <u>Quartz Eye Porphyry</u>: With abundant 3 to 5 mm doubly terminated quartz crystals.

Northwest Trenches Sample — <u>Multilithic Breccia</u>: Fine grained dark green rock with angular lithic fragments to 10 cm; matrix andesitic in appearance and weakly to moderately magnetic; fragments of various lithologies (intrusive, extrusive (?), sedimentary (?)); unit appears to occur as narrow (<10 m) dyke.

Spukune Lake Road/ Galena Creek Road Junction Sample — <u>Breccia</u>: see 03/06-16.

APPENDIX IV

VANCOUVER PETROGRAPHICS THIN SECTION ANALYSES

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Invoice 8130
April 1989

Samples: SS-10-124', SS-10-190', SS-10-396', SS-20-627', SS-21-115', Hole 10-168 m

Summary:

1.0 Alteration

Samples show various stages of alteration, with the main alteration minerals being sericite, ankerite/calcite, quartz, chlorite and pyrite. Plagioclase is altered to sericite and much less ankerite. K-feldspar is altered to patches of ankerite and minor kaolinite. Biotite is altered completely to pseudomorphic to irregular muscovite-(Ti-oxide) in some samples and to chlorite-(Ti-oxide) in others. Hornblende is altered completely to aggregates of quartz-ankerite-sericite-Ti-oxide. Only in one sample was original texture largely destroyed.

2.0 Brecciation

A few samples contain seams and veinlike zones of brecciation in which the host rock was granulated and in part silicified. Associated with some of these are lenses of pyrite. In one sample, coarse fragments are set in a fine grained matrix dominated by quartz, amphibole (altered to sericite) and lesser chlorite, calcite, and pyrite.

3.0 Veins

Veins occur in a few samples and are dominated by one or more of the following minerals: pyrite, quartz, ankerite, and sericite.

(continued)

4.0 Rock Types

Samples are grouped into the following types:

4:1 Altered Plutonic Rocks

SS-10-124' leucocratic quartz monzonite; dominated by medium to fine grained microcline and quartz with slightly less plagioclase. Alteration is slight to patches and veinlets of sericite and ankerite, with a trace of kaolinite.

SS-10-190' altered diorite; dominated by plagioclase (altered to sericite-[ankerite]) and quartz, with lesser hornblende (altered to quartz-sericite-ankerite-oxides) and minor biotite (altered to muscovite-ankerite-[Ti-oxide]). Breccia seams have a siliceous groundmass and contain lenses of pyrite.

SS-10-396' strongly altered quartz diorite(?): dominated by quartz and sericite, with minor disseminated pyrite; original texture largely destroyed; abundant veins of pyrite-(quartz); several poorly developed breccia seams. Based on the accessory minerals and texture of the least altered zones, the rock probably was a quartz diorite.

Hole 10 168 m breccia: quartz diorite, granodiorite fragments; borders of fragments commonly are diffuse; sparse, patchy matrix dominated by quartz, altered amphibole(?), and chlorite, with less calcite and pyrite.

4.2 Felsic Crystal-Lithic Tuffs

SS-20-627' rhyodacite crystal-lithic tuff; crowded fragments of crystals of quartz, plagioclase, and K-feldspar, and lithic fragments of porphyritic rhyodacite, latite, and granodiorite set in a groundmass dominated by plagioclase-sericite with minor patches of ankerite; slight to moderate alteration to sericite and ankerite.

SS-21-115' rhyodacite crystal tuff; fragments of quartz, K-feldspar, and plagioclase, and minor ones of muscovite and a few lithic types in a groundmass of plagioclase-sericite, with a few patches of ankerite and of pyrite; slight to moderate alteration to sericite-ankerite.

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Sample SS-10-124' Leucocratic Quartz Monzonite; Sericite-Ankerite-(Kaolinite) Alteration

The sample is dominated by medium to fine grained microcline and quartz with slightly less plagioclase. Alteration is slight to patches and veinlets of sericite and ankerite, with a trace of kaolinite.

microcline	35-40%	opaque/leucoxene	0.5%
quartz	30-35	muscovite	minor
plagioclase	20-25	apatite	trace
sericite *	1- 2		
ankerite *	1	* secondary	
kaolinite *	trace		
veins			
ankerite-sericite-(muscovite)	1- 2		

Microcline forms anhedral grains averaging 0.5-1 mm in size. A few coarser grains (up to 2 mm in size) contain irregular, very fine to fine, exsolution lenses of plagioclase.

Plagioclase forms anhedral grains averaging 0.5-1.2 mm in size. Alteration is variable, and generally slight to sericite and minor ankerite. A few irregular, coarse grains of plagioclase are altered moderately to strongly to patches of sericite and ankerite. A few grains also contain patches up to 0.3 mm in size of equant kaolinite flakes averaging 0.005 mm in grain size. Both feldspars commonly contain dusty opaque (probably hematite) inclusions.

Quartz forms anhedral grains averaging 0.3-1 mm in size, with a few interstitial grains up to 2.5 mm across. Coarse grains commonly have slightly to moderately wavy extinction. In a few patches, quartz forms very fine to medium, irregular, graphic intergrowths with microcline.

Sericite forms scattered patches averaging 0.3-0.7 mm in size of extremely fine grained, unoriented flakes. Some contain extremely fine grained patches up to 0.3 mm in size of opaque, of Ti-oxide, and of limonite.

Opaque oxide forms anhedral, equant grains averaging 0.1-0.2 mm in size, with a few up to 0.4 mm across. A few ragged patches up to 0.2 mm in size are intergrown intimately with sericite. Some opaque patches are altered to leucoxene.

Muscovite forms a few ragged, equant flakes and clusters of flakes up to 0.2 mm long, and a slender flake 0.5 mm long. The latter possibly is after primary biotite.

Apatite forms a very few prismatic grains up to 0.07 mm long.

Ankerite forms an interstitial patch up to 0.6 mm across between subhedral quartz grains in a large patch of quartz. Ankerite is extremely fine grained. Dusty limonite inclusions outline subhedral zones (? = relic grains of unknown composition) up to 0.15 mm in size surrounded by ankerite without limonite inclusions.

A few irregular veins and patches from 0.1-0.3 mm wide are dominated by extremely fine grained sericite and very fine grained ankerite. Locally muscovite forms subradiating flakes averaging 0.1 mm long.

Sample SS-10-396' **Quartz-Sericite-Pyrite Altered Rock (Quartz Diorite?); Pyrite-Quartz Veins**

The rock is strongly altered and dominated by quartz and sericite, with minor disseminated pyrite. It is cut by abundant veins up to a few mm wide of pyrite-(quartz), and by several poorly developed breccia seams. Based on the accessory minerals and texture of the least altered zones, the rock probably was a quartz diorite, possibly similar to Sample SS-10-190'.

quartz	45-50%
sericite	30-35
pyrite	3- 4
apatite	0.5
Ti-oxide/leucoxene	0.3
zircon	minor
hematite	minor
veins and seams	
pyrite	12-15
quartz	2- 3
sericite	0.3
sphalerite	minor

The rock has a very variable texture. Much of it consists of fine to medium grained aggregates of quartz and patches of sericite (after plagioclase). These patches probably are similar in texture to the original rock.

One large patch several mm across is dominated by sericite (after plagioclase). No primary texture is preserved in the patch. It contains minor disseminated patches of Ti-oxide and of hematite, and a few grains of zircon.

Less common are patches are of very fine to extremely fine grained aggregates of quartz and sericite, which represent silicified and recrystallized rock in which the original texture was destroyed completely. Some patches of sericite contain minor to moderately abundant, disseminated, extremely fine grained hematite and Ti-oxide.

Pyrite forms irregular, disseminated grains averaging 0.2-0.8 mm in size.

Apatite forms subhedral prismatic grains up to 0.18 mm long, and a few clusters up to 0.8 mm across of anhedral grains averaging 0.1-0.2 mm in size intergrown with quartz. Locally it forms patches up to 1 mm across intergrown with pyrite; grain size in these averages 0.05-0.1 mm, with a few up to 0.5 mm long.

Ti-oxide/leucoxene forms disseminated patches averaging 0.1-0.3 mm in size.

Zircon forms subhedral, prismatic grains averaging 0.1 mm long and equant, anhedral to subhedral grains averaging 0.05-0.1 mm across. One angular grain 0.2 mm long occurs in the core of the large sericite patch.

Veins are dominated by fine to medium grained pyrite with patches of interstitial quartz. A few quartz grains have euhedral outlines against pyrite. Sphalerite (neutral) forms irregular patches up to 0.3 mm in size intergrown with apatite and minor hematite in a patch bordering pyrite.

A few moderately brecciated seams are up to 1 mm wide. In these quartz is fragmented and recrystallized, and surrounded by sericite. A few wispy seams averaging 0.01-0.03 mm wide are dominated by sericite.

Sample SS-10 190' **Altered Diorite; Minor Breccia Seams with Pyrite Lenses**

The sample is dominated by plagioclase (altered to sericite-[ankerite]) and quartz, with lesser hornblende (altered to quartz-sericite-ankerite-oxides) and minor biotite (altered to muscovite-ankerite-[Ti-oxide]). Accessory minerals include apatite, Ti-oxide/leucoxene, and pyrite. Breccia seams have a siliceous groundmass and contain lenses of pyrite.

plagioclase	60-65%
quartz	25-30
hornblende	5- 7
biotite	2- 3
apatite	0.7
Ti-oxide/leucoxene	0.3
pyrite	0.5
zircon	trace
breccia seams	
breccia	1- 2
pyrite	1- 2

Plagioclase forms anhedral grains averaging 1-2.5 mm in size. Most grains are altered completely to extremely fine to very fine grained sericite. A few are altered only moderately. A few also contain patches up to 0.7 mm across of very fine grained ankerite-(limonite), and a few contain patches of specular hematite. A few sericite patches (after plagioclase grains) grade into patches of very fine grained quartz-sericite-ankerite.

Quartz forms anhedral grains averaging 0.5-1 mm in size.

Biotite forms a few flakes up to 3 mm in size. It is replaced completely by pseudomorphic muscovite books and irregular muscovite aggregates, with minor to moderately abundant disseminated patches of Ti-oxide. The largest grain also contains with abundant lenses of ankerite up to 0.15 mm wide parallel to cleavage. A few irregular patches of very fine grained muscovite and ankerite with minor Ti-oxide also are secondary after biotite flakes.

Hornblende forms equant to prismatic grains averaging 1-2 mm in size. Alteration is complete to aggregates of very fine grained quartz with lesser patches of sericite, ankerite, and opaque (specular hematite ?).

Pyrite forms equant porphyroblastic grains and patches up to 1.2 mm across with very irregular outlines and with abundant inclusions of plagioclase/sericite. It also forms scattered subhedral to euhedral grains averaging 0.2-0.5 mm in size, with a few up to 0.9 mm across.

Ti-oxide/leucoxene forms patches up to 0.9 mm in size of extremely fine grained aggregates intergrown with minor silicates.

Apatite forms clusters up to 0.8 mm in size of anhedral, equant to subhedral prismatic grains up to 0.6 mm in size. It forms a few euhedral, elongate prismatic grains up to 0.08 mm long in quartz.

Zircon forms a few equant, subrounded to subhedral grains averaging 0.05-0.07 mm in size.

The rock is cut by a subparallel set of breccia seams averaging 0.05-0.1 mm wide, and locally up to 1 mm wide. These contain abundant fragments of the host rock in a groundmass of quartz-(sericite) averaging 0.003-0.005 mm in grain size. Some of the seams also contain lenses up to 0.5 mm wide and 3 mm long of pyrite. A few quartz grains in the host rock are fractured moderately and recrystallized slightly along the breccia seams.

Sample SS-2Ø-627'   **Rhyodacite Crystal-Lithic Tuff**

Crowded fragments of crystals of quartz, plagioclase, and K-feldspar, and lithic fragments of porphyritic rhyodacite, latite, and granodiorite are set in a groundmass dominated by plagioclase-sericite with minor patches of ankerite. Alteration is slight to moderate to sericite and ankerite.

fragments	
quartz	25-3Ø%
plagioclase	17-2Ø
K-feldspar	7- 8
rhyodacite/latite	12-15
granodiorite	3- 4
groundmass	
plagioclase-sericite	25-3Ø
ankerite-limonite	1- 2
veinlet	
ankerite-(quartz)	minor

Quartz forms angular crystals and crystal fragments averaging Ø.1-Ø.5 mm in size, with a few up to 1.7 mm across. Subhedral outlines of many grains and uniform extinction indicate that their origin was as volcanic phenocrysts.

Plagioclase forms grains ranging from Ø.1-1.5 mm in size. Alteration is slight to moderate to sericite, and less commonly slight to moderate to patches of ankerite. One plagioclase grain contains a subhedral zircon grain Ø.1 mm long.

A few patches are dominated by much finer fragments of plagioclase and quartz averaging Ø.Ø3-Ø.1 mm in size, set in a sparse groundmass dominated by sericite.

K-feldspar forms grains averaging Ø.1-Ø.5 mm in size, with a few up to 1.5 mm across. Textures suggest that they are phenocrysts from a felsic volcanic rock. Many are altered moderately to irregular patches of ankerite. One is altered moderately in discrete patches to cryptocrystalline kaolinite.

Porphyritic latite forms a few fragments up to several mm across. Phenocrysts of plagioclase averaging Ø.3-Ø.7 mm in length are set in an extremely fine grained groundmass dominated by plagioclase. Plagioclase phenocrysts are altered moderately to sericite. In one large fragment, opaque (pyrite?) forms moderately abundant grains averaging Ø.1-Ø.3 mm in size. Minor minerals in the groundmass are apatite and Ti-oxide.

One fragment over 1 cm long of porphyritic rhyodacite contains abundant phenocrysts up to 1.3 mm in size of K-feldspar, plagioclase, and quartz, and minor ones of biotite in an aphanitic, devitrified groundmass, in which the only mineral recognized is sericite as extremely fine grained, disseminated flakes. K-feldspar is altered to patches of ankerite, plagioclase is altered slightly to sericite, and biotite is altered completely to muscovite-(Ti-oxide).

A few latite fragments contain a subrounded quartz phenocryst averaging Ø.1-Ø.15 mm in size set in a uniform, extremely fine grained groundmass dominated by plagioclase.

One fragment 1.7 mm long contains a few phenocrysts of plagioclase and minor ones of muscovite (after biotite) in a groundmass dominated by a very fine grained ankerite-(limonite).

Several other fragments of latite are free of phenocrysts. Two contain a flake of muscovite Ø.3 mm long.

(continued)

One granodiorite fragment 3 mm across is dominated by medium grained quartz and plagioclase. K-feldspar forms a few grains up to 0.7 mm in size. Biotite (altered to muscovite-[Ti-oxide])) forms a flake 0.7 mm long. Opaque (pyrite?) forms an irregular replacement patch 1 mm across, and pyrite surrounded by ankerite forms an adjacent patch 1 mm across. A second granodiorite fragment 4 mm across contains much more abundant microcline. Minor biotite flakes up to 0.3 mm in length are altered to muscovite-(Ti-oxide). Minor hornblende grains up to 0.6 mm across are altered completely to sericite-(ankerite-Ti-oxide). This fragment also contains a euhedral grain of apatite and of zircon 0.15-0.2 mm in size, and an equant patch of calcite-(hematite) 0.4 mm across.

Ti-oxide and opaque each form a few fragments averaging 0.1-0.4 mm in size.

Muscovite forms a few slender flakes averaging 0.15-0.4 mm long. It contains minor inclusions of Ti-oxide, and probably is secondary after biotite.

The groundmass is dominated by extremely fine grained plagioclase, altered slightly to strongly to sericite. Scattered patches up to 0.3 mm in size consist of ankerite with minor limonite stain.

A wispy veinlet 0.05 mm wide is of ankerite-(quartz).

Sample Hole 10 - 168 m Breccia: Quartz Diorite-Granodiorite with Groundmass of Quartz-Amphibole(?)-Chlorite-(Calcite-Pyrite)

In hand sample, poorly defined fragments up to a few cm across of two main rock types are set in a sparse groundmass dominated by chlorite, with lesser quartz. In thin section, borders of fragments commonly are diffuse, and in many places it is impossible to tell if the material is part of a fragment or part of the groundmass. Fragments are dominated by quartz diorite and less granodiorite in a sparse, patchy matrix dominated by quartz, altered amphibole(?), and chlorite, with less calcite and pyrite.

fragments: quartz diorite, granodiorite		
plagioclase	35-40%	
quartz	25-30	
K-feldspar	4- 5	
chlorite	3- 4	(after biotite)
Ti-oxide/leucoxene	0.5	
apatite	0.3	
groundmass		
quartz	10-12	
amphibole(?)	5- 7	(altered to sericite)
chlorite	4- 5	
pyrite	1- 2	
calcite	1	
muscovite	0.2	

Plagioclase forms anhedral grains averaging 0.5-1.5 mm in size, with a few up to 2.5 mm across. Alteration is slight to moderate to sericite and patches of carbonate and minor chlorite.

Quartz forms patches up to a few mm across of grains averaging 0.3-0.7 mm in size.

K-feldspar forms equant grains averaging 0.5-1.5 mm in size. Alteration is moderate in irregular patches to sericite-calcite-(chlorite).

Chlorite (probably after biotite) is concentrated in patches up to 1.5 mm in size as unoriented flakes averaging 0.05-0.15 mm in size. In some patches it is intergrown with less plagioclase and quartz. Pleochroism of chlorite is from pale yellowish green to light/medium green. Associated with chlorite are ragged patches of Ti-oxide/opaque. Ti-oxide/leucoxene also forms patches up to 0.5 mm in size of extremely fine grained aggregates intergrown with minor chlorite.

Apatite forms anhedral to subhedral prismatic grains averaging 0.05-0.07 mm in size, with a few up to 0.5 mm long. Commonly it is associated with patches of chlorite-Ti-oxide.

Zircon forms subhedral to euhedral, slightly to moderately elongate grains averaging 0.07-0.1 mm long, with on 0.17 mm long.

Two fragments averaging 1.5-2 mm across are dominated by fine grained, slightly interlocking quartz with abundant disseminated patches and seams of extremely fine grained sericite. Quartz commonly shows slightly wavy extinction.

In the groundmass, quartz forms aggregates averaging 0.1-0.3 mm in grain size, in part intergrown with chlorite and amphibole. Commonly it is difficult to distinguish secondary quartz from quartz in the altered host rock.

(continued)

Sample Hole 10 - 168 m (page 2)

A few patches up to 2 mm across are dominated by prismatic amphibole(?) grains up to 1.2 mm long. These are altered completely to pseudomorphic sericite. Some of these aggregates are intergrown with quartz, others contain minor interstitial calcite and muscovite flakes, and a few contain radiating aggregates of chlorite up to 0.2 mm in diameter. Other patches are dominated by radiating aggregates of chlorite, whose pleochroism is from pale to medium green.

In places the groundmass has a brecciated texture, with fragments of quartz from the host rock averaging 0.1-0.3 mm in size enclosed in a groundmass of much finer grained quartz and chlorite.

Pyrite forms a few irregular lenses up to 3 mm long, and skeletal grains and clusters up to 2.5 mm in size, both intergrown intimately with plagioclase and lesser quartz.

Sample SS-21-115'   **Rhyodacite Crystal Tuff; Replacement Pyrite**

The rock contains fragments of quartz, K-feldspar, and plagioclase, and minor ones of muscovite and a few lithic types in a groundmass of plagioclase-sericite, with a few patches of ankerite and of pyrite. Alteration is slight to moderate to sericite-ankerite.

fragments		
quartz	25-30%	
quartz vein	1- 2	
K-feldspar	15-17	
plagioclase	10-12	
muscovite	1- 2	(possibly after biotite)
Ti-oxide	0.2	
opaque	minor	
latite	0.3	
groundmass		
plagioclase-sericite	35-40	
pyrite	2- 3	
ankerite	1	
Ti-oxide	minor	

Quartz forms crystals and crystal fragments averaging 0.5-1.7 mm in size, with a few up to 4 mm across. Textures indicate that most are volcanic phenocrysts. A few fragments consist of aggregates of fine to medium grained quartz, with textures suggestive of fracture-filling quartz veins.

K-feldspar (sanidine) forms crystal fragments averaging 0.3-1.5 mm in size, with a few up to 2 mm across. Alteration is slight to moderate to patches of ankerite. A few large phenocrysts are intergrown with plagioclase grains up to 0.7 mm long.

Plagioclase forms crystal fragments averaging 0.1-0.5 mm in size, with a few up to 1.7 mm across. Alteration is slight to moderate to sericite flakes, and slight to patches of ankerite.

Muscovite (after biotite) forms slender, commonly slightly contorted flakes averaging 0.3-0.7 mm in length.

Ti-oxide/leucoxene forms a few patches up to 0.6 mm across.

Pyrite forms disseminated grains and clusters of grains averaging 0.3-0.6 mm in grain size.

Latite/dacite forms fragment averaging 0.2-0.3 mm in size, consisting of extremely fine grained aggregates dominated by plagioclase. One fragment 1 mm across is of equant plagioclase grains averaging 0.05-0.1 mm in size with much less quartz. Plagioclase is altered slightly to sericite.

The groundmass is dominated by extremely fine grained plagioclase, altered moderately to strongly to sericite and containing minor dusty Ti-oxide. Ankerite forms scattered patches up to 0.5 mm in size of very fine grained aggregates.

Pyrite forms a few irregular replacement grains up to 3 mm across. They are skeletal in outline, and contain inclusions of feldspars and quartz.

Ti-oxide forms scattered subhedral to euhedral grains averaging 0.05 mm in size.

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May 1989

Project: **Siwash**

Samples: 29/05-1, 29/05-4, 31/05-7, 03/06-13, 80-5-199',
Peachland Road

Summary: Samples are divided into the following main types:

1. Hypabyssal Intrusion (or Flow)

porphyritic rocks with phenocrysts of feldspars and quartz and minor ones of mafic and accessory minerals in a groundmass dominated by feldspars. Composition based on phenocrysts indicates that the rocks are rhyodacites, however, the groundmass is very poor in quartz, suggesting that the many of the rocks might be better classed as quartz-bearing latites. For a field classification, the presence of significant quartz phenocrysts commonly is used as an indicator to classify the rocks as rhyodacite/dacite.

Several of the samples contain megacrysts of K-feldspar, which are defined as coarse K-feldspar phenocrysts containing inclusions of phenocrysts of other minerals, mainly plagioclase.

29/05-1 porphyritic rhyodacite: Megacrysts of K-feldspar and smaller phenocrysts of plagioclase and quartz, less hornblende, biotite, and opaque, and minor apatite occur in a groundmass dominated by K-feldspar and plagioclase, with less quartz and biotite.

29/05-4 rhyodacite porphyry: Megacrysts of K-feldspar, and phenocrysts of quartz, less plagioclase, and minor biotite are set in a groundmass dominated by plagioclase and K-feldspar, with minor quartz, opaque, and pyrite. Minor replacement patches are of sericite, quartz, and limonite.

03/06-13 porphyritic rhyodacite: Megacrysts of K-feldspar, and phenocrysts of quartz, plagioclase, K-feldspar, and minor biotite are set in a groundmass dominated by plagioclase and K-feldspar.

(continued)

80-5-199' porphyritic quartz-bearing latite: Phenocrysts of plagioclase, and much less K-feldspar, biotite, and quartz are set in a groundmass of devitrified glass dominated by feldspars, with plagioclase dominant over K-feldspar. Plagioclase phenocrysts are altered completely to kaolinite-calcite. Replacement patches consist of one or both of kaolinite and calcite.

2. Plutonic Rocks

31/05-7 leucocratic (biotite) granite/quartz monzonite: Equal amounts of medium to locally coarse grained plagioclase and K-feldspar, and slightly less quartz are intergrown with much less biotite and minor hornblende(?), opaque, sphene, apatite, and zircon.

Peachland Road Potassic quartz-bearing diorite (Monzodiorite): Medium to coarse grains of plagioclase, hornblende, and biotite are set in a finer grained groundmass of plagioclase, K-feldspar, and quartz. Mafic minerals commonly occur in clusters, with cores of hornblende and/or opaque surrounded by biotite; they are altered strongly and plagioclase is altered moderately.

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Sample Ø3/Ø6-13 Porphyritic Rhyodacite: Megacrysts of K-feldspar; Phenocrysts of Quartz, Plagioclase, K-feldspar, Biotite

Megacrysts of K-feldspar, and phenocrysts of quartz, plagioclase, K-feldspar, and minor biotite are set in a groundmass dominated by plagioclase and K-feldspar.

phenocrysts and megacrysts	
plagioclase	1Ø-12%
K-feldspar	8-1Ø
quartz	7- 8
biotite	1
opaque	Ø.3
apatite	minor
groundmass	
plagioclase	35-4Ø
K-feldspar	25-3Ø
quartz	Ø.5
calcite	Ø.5
zircon	trace

Plagioclase forms subhedral to euhedral, equant to prismatic phenocrysts averaging Ø.7-1.5 mm in length, and a few from 2-4 mm long. Alteration is slight to moderate to flakes and patches of sericite and patches of calcite. A few clusters up to 3 mm across are intergrowths of K-feldspar and plagioclase phenocrysts, with interstitial patches up to Ø.3 mm across of very fine to extremely fine grained sericite, and of very fine grained calcite.

K-feldspar forms megacrysts averaging 1.5-3.5 mm in size. They contain minor to moderately abundant inclusions of euhedral, prismatic plagioclase phenocrysts averaging Ø.3-Ø.7 mm in size, and locally subrounded plagioclase grains averaging Ø.15-Ø.2 mm in size. K-feldspar is altered slightly to strongly in patches to calcite and to hematite.

Quartz forms mainly subrounded phenocrysts averaging Ø.5-2 mm in size, with a few up to 3 mm across. Outlines of several suggest that they were formed by intergrowth of two or three grains in optical continuity. A few smaller phenocrysts are euhedral and some are rounded.

Biotite forms phenocrysts averaging Ø.2-Ø.5 mm long, and a few up to 1 mm long. Alteration is complete to pseudomorphic muscovite-(Ti-oxide). A few also are replaced strongly by patches of opaque/hematite.

Opaque forms anhedral patches averaging Ø.2-Ø.4 mm in size, and a few up to Ø.8 mm across.

Apatite forms subhedral to euhedral prismatic phenocrysts from Ø.15-Ø.35 mm in length. It is colored light to medium brown by dusty inclusions.

The groundmass is dominated by slightly interlocking grains of plagioclase and less K-feldspar averaging Ø.Ø1-Ø.Ø2 mm in size. Plagioclase is altered slightly to moderately to sericite and possibly kaolinite. Dusty hematite is common. Quartz forms interstitial grains averaging Ø.Ø2-Ø.Ø4 mm in size. Zircon forms euhedral, commonly elongate, prismatic grains up to Ø.Ø5 mm long in K-feldspar, plagioclase, and quartz phenocrysts, and a few anhedral grains up to Ø.Ø8 mm in size in the groundmass. Some of the latter are rimmed by opaque. Calcite forms irregular replacement patches up to Ø.6 mm in size.

Sample 29/05-1 **Porphyritic Rhyodacite: K-feldspar Megacrysts**

Megacrysts of K-feldspar and smaller phenocrysts of plagioclase and quartz, less hornblende, biotite, and opaque, and minor apatite occur in a groundmass dominated by K-feldspar and plagioclase, with less quartz and biotite.

	phenocrysts	groundmass
K-feldspar	7- 8%	40-45
plagioclase	8-10	20-25
quartz	5- 7	4- 5
hornblende	1- 2	-
biotite	0.5	1
opaque/Ti-oxide-(zircon)	0.2	0.1
apatite	0.1	minor
calcite	0.1	-

K-feldspar forms euhedral megacrysts up to a few cm across and phenocrysts averaging 1-5 mm in size. Some megacrysts are perthitic, with 50% lenses of plagioclase altered to kaolinite. They contain moderately abundant inclusions of euhedral plagioclase phenocrysts averaging 0.3-0.7 mm in size. Other megacrysts and most K-feldspar phenocrysts are not perthitic and are altered slightly to moderately in irregular patches to calcite. A few contain replacement patches up to 0.3 mm in size of equant kaolinite(?) flakes averaging 0.005 mm in grain size. Most contain altered patches with moderately abundant dusty hematite.

Plagioclase forms subhedral phenocrysts and clusters of phenocrysts averaging 0.5-2 mm in size. Alteration is slight to locally moderate to wispy patches and seams of sericite and/or kaolinite.

Quartz forms subrounded to irregular phenocrysts and clusters of a few phenocrysts averaging 0.3-2 mm in size, with a few up to 3.5 mm across.

Hornblende forms euhedral to subhedral equant to prismatic phenocrysts and clusters of phenocrysts averaging 0.3-0.9 mm in size, and one elongate phenocryst 1.3 mm long. Grains are medium greenish brown in color, with weak to no pleochroism. Many larger ones are altered strongly in their cores to patches to calcite and/or kaolinite.

Biotite forms subhedral, commonly elongate flakes averaging 0.2-0.5 mm in length. Many larger ones are replaced in their cores by patches of calcite and less commonly by aggregates of extremely fine grained kaolinite.

Apatite forms a few prismatic phenocrysts from 0.5-2 mm long. It also occurs with hornblende phenocrysts as anhedral to euhedral grains averaging 0.03-0.07 mm in size, and a few up to 0.4 mm across.

Opaque, with or without Ti-oxide forms anhedral, commonly ragged patches averaging 0.07-0.2 mm in size, with a few up to 0.7 mm across. One patch contains several anhedral grains of zircon averaging 0.05-0.1 mm in size.

In the groundmass, K-feldspar and lesser plagioclase form anhedral, slightly interlocking grains averaging 0.02-0.03 mm in size. Groundmass plagioclase is altered moderately to extremely fine grained sericite/kaolinite. Quartz forms interstitial, equant grains averaging 0.01-0.02 mm in size. Biotite forms flakes averaging 0.05-0.1 mm in length; these grade upwards in size to the biotite phenocrysts. Calcite forms scattered, irregular replacement patches up to 0.3 mm across of equant grains averaging 0.1 mm in size. Opaque forms disseminated patches averaging 0.02-0.05 mm in size. Apatite forms anhedral to euhedral grains averaging 0.03-0.07 mm in size.

Sample 29/Ø5-4 **Rhyodacite Porphyry: Megacrysts of K-feldspar; Phenocrysts of Quartz, K-feldspar, Plagioclase, and Minor Biotite; Sericite, Quartz, Limonite Replacement**

Megacrysts of K-feldspar, and phenocrysts of quartz, less plagioclase, and minor biotite are set in a groundmass dominated by plagioclase and K-feldspar, with minor quartz, opaque, and pyrite. Minor replacement patches are of sericite, quartz, and limonite.

	megacrysts	phenocrysts	groundmass
K-feldspar	4- 5%	5- 7%	35-4Ø%
quartz		7- 8	1- 2
plagioclase		4- 5	35-4Ø
biotite		1	-
Ti-oxide/opaque			Ø.3
pyrite			Ø.2
zircon			trace
replacement patches			
sericite	Ø.2		
quartz	Ø.3		
limonite	Ø.5		

K-feldspar forms euhedral megacrysts up to 5 mm in size. These commonly contain moderately abundant subhedral to euhedral inclusions of plagioclase phenocrysts averaging Ø.3-1.2 mm in length. Some of the plagioclase grains are altered slightly to completely to sericite and carbonate (altered to limonite). K-feldspar forms subhedral phenocrysts averaging Ø.5-1 mm in size.

Quartz forms subrounded to subhedral phenocrysts and clusters of phenocrysts averaging Ø.5-3 mm in size. A few are recrystallized slightly to subgrain mosaics, and are recrystallized slightly to extremely fine grained aggregates along borders of subgrains. One contains an inclusion Ø.Ø6 mm long of a subhedral biotite flake which is pleochroic from light to medium/dark brown. One contains a spherical grain of calcite Ø.15 mm across. Many rounded to subrounded, early formed crystals average Ø.Ø5-Ø.2 mm in size.

Plagioclase forms subhedral to euhedral phenocrysts averaging Ø.7-1.7 mm in size. Composition is uniform and is in the oligoclase range. Alteration is slight to moderate to sericite and limonite.

Biotite forms subhedral to euhedral grains averaging Ø.3-Ø.8 mm in size. Alteration is complete to pseudomorphic muscovite and moderately abundant patches of Ti-oxide.

The groundmass is a strongly interlocking aggregate of plagioclase and K-feldspar averaging Ø.Ø15-Ø.Ø3 mm in grain size. Plagioclase is altered slightly to strongly to extremely fine grained sericite and possibly minor kaolinite. Quartz forms minor interstitial grains averaging Ø.Ø1-Ø.Ø2 mm in size. Dusty, interstitial semiopaque is moderately abundant. A few casts after euhedral pyrite grains average Ø.1-Ø.2 mm in size. Ti-oxide (after sphene) forms scattered patches up to Ø.3 mm in size. Zircon forms a few anhedral grains up to Ø.Ø4 mm in size.

Irregular replacement patches up to 1 mm in size are of very fine grained, feathery sericite/muscovite.

A few replacement patches up to 1 mm wide and a few mm long are dominated by quartz grains averaging Ø.1-Ø.2 mm in size and moderately abundant limonite on grain borders and fractures. A few patches up to 1.5 mm in size are of cryptocrystalline limonite with or without minor disseminated sericite flakes. Limonite also forms wispy veinlets averaging Ø.Ø1-Ø.Ø3 mm in width; these are common in fractures in K-feldspar phenocrysts and megacrysts.

Sample 8Ø-5-199'   **Porphyritic Quartz-bearing Latite; Phenocrysts of Plagioclase, K-feldspar, Biotite, and Quartz; Replacement patches of Kaolinite-Calcite**

Phenocrysts of plagioclase, and much less K-feldspar, biotite, and quartz are set in a groundmass of devitrified glass dominated by feldspars, with plagioclase dominant over K-feldspar. Plagioclase phenocrysts are altered completely to kaolinite-calcite. Replacement patches consist of one or both of kaolinite and calcite.

phenocrysts		groundmass	
plagioclase	12-15%	devitrified glass	
K-feldspar	3- 4	feldspar/kaolinite	75-78%
biotite	3- 4	hematite	1- 2
quartz	2- 3	kaolinite	1
opaque	Ø.5	calcite	Ø.3
sphene	Ø.2	zircon	trace
apatite	minor		
hornblende	minor		
inclusion	minor		

Plagioclase forms euhedral to subhedral, equant to prismatic phenocrysts averaging Ø.3-1.2 mm in size, and a few up to 3.5 mm long. Alteration is complete to cryptocrystalline kaolinite and minor sericite and abundant patches of very fine grained calcite.

K-feldspar forms anhedral to subhedral phenocrysts averaging Ø.5-1.5 mm long, and a few megacrysts from 2-3 mm long. The latter contain a few inclusions of plagioclase phenocrysts, and one contains a euhedral biotite phenocryst. Some others are intergrown with plagioclase phenocrysts. K-feldspar is fresh.

Quartz forms subrounded to very irregular phenocrysts averaging Ø.3-1 mm in size, and a few up to 3 mm across.

Biotite forms subhedral to euhedral phenocrysts averaging Ø.3-1 mm long. Pleochroism is from light to very dark brown.

Hornblende forms a subhedral, prismatic phenocryst 1 mm long. Alteration is complete to carbonate-kaolinite-(sericite), with carbonate concentrated along the margin and in the core.

Apatite forms euhedral, stubby prismatic phenocrysts up to Ø.37 mm long, a few anhedral, angular grains up to Ø.32 mm across, and a few acicular grains up to Ø.12 mm.

Sphene forms a few subhedral to euhedral grains up to Ø.8 mm in size. It is altered completely to Ti-oxide with minor to abundant interstitial patches of extremely fine grained calcite and kaolinite.

Opaque forms anhedral to subhedral grains and clusters of grains averaging Ø.Ø7-Ø.2 mm in size.

A subrounded inclusion of unknown origin Ø.7 mm across contains angular grains of quartz from Ø.Ø2-Ø.2 mm in size enclosed in a groundmass of cryptocrystalline carbonate-sericite-kaolinite.

The groundmass is dominated by equant feldspar grains averaging Ø.ØØ2-Ø.ØØ3 mm. Interstitial to feldspars is abundant dusty hematite. Feldspars may be altered partly to kaolinite.

A few irregular, interstitial patches averaging Ø.1-Ø.2 mm in size and locally up to 1.2 mm across consist of cryptocrystalline kaolinite without dusty hematite. The largest also contains a few irregular calcite grains up to Ø.3 mm in size as described below.

A few irregular replacement patches up to 1 mm in size are of fine to medium grained calcite/dolomite with dusty hematite inclusions. Carbonate has strongly wavy extinction.

Sample 31/05-7 Leucocratic (Biotite) Granite/Quartz Monzonite

The rock consists of about equal amounts of plagioclase and K-feldspar, and slightly less quartz, with much less biotite and minor hornblende(?), opaque, sphene, apatite, and zircon.

plagioclase	35-40%
K-feldspar	30-35
quartz	25-30
biotite	3- 4
opaque	0.4
hornblende(?)	0.1
sphene	0.1
apatite	0.1
zircon	minor

Plagioclase forms anhedral equant to subhedral prismatic grains averaging 0.7-2 mm in size and a few up to 3.5 mm long. Bordering K-feldspar grains commonly are rims averaging 0.01-0.02 mm wide of fresh, much-more-sodic plagioclase. A few patches up to 1.2 mm in size are of equant, submosaic aggregates of plagioclase grains averaging 0.1-0.15 mm in size. Alteration of plagioclase generally is slight to disseminated flakes and wispy veinlets of sericite, and locally is strong in patches to extremely fine grained kaolinite/ sericite.

K-feldspar forms anhedral grains up to a few mm across Some contain minor to moderately abundant, irregular exsolution lenses and patches of albite.

Quartz forms patches up to a few mm across of anhedral, slightly interlocking grains averaging 0.5-2.5 mm in size.

Biotite forms ragged flakes averaging 0.3-0.8 mm in size, with a few up to 2 mm across. Alteration generally is complete to pseudomorphic muscovite with minor to abundant patches and lenses of chlorite with less Ti-oxide and hematite, or to chlorite-(Ti-oxide). A few contain patches of ankerite/siderite. In a few grains and clusters (the latter up to a few mm across), biotite is altered to irregular aggregates of chlorite with minor muscovite/sericite. Associated with the largest cluster are moderately abundant opaque, Ti-oxide, apatite, and zircon. Chlorite ranges in color from light to medium yellowish green. In some altered biotite grains, Ti-oxide forms abundant euhedral grains with square cross-sections averaging 0.01 mm in size. Opaque forms patches up to 0.5 mm in size.

Sphene (altered completely to Ti-oxide) forms one cluster up to 1.3 mm across of anhedral to subhedral grains up to 0.6 mm in size. Ti-oxide forms a ragged, skeletal cluster up to 0.7 mm across of cryptocrystalline grains included in a K-feldspar megacryst.

Hornblende(?) forms a subhedral prismatic grain 1.2 mm long. It is replaced completely by a dense aggregate of extremely fine to very fine grained, unoriented sericite flakes, with minor intimately intergrown flakes and patches of chlorite. A few patches of opaque/hematite are concentrated near the borders.

Opaque occurs in patches up to 0.8 mm in size of equant grains averaging 0.1 mm in size. Patches are fractured moderately to strongly, with sericite along fractures. Associated with opaque in some patches are anhedral to subhedral grains of apatite and zircon up to 0.08 mm in size.

Apatite forms subhedral to euhedral prismatic to equant grains up to 0.2 mm in size, mainly associated with biotite grains.

Zircon forms a euhedral, prismatic grain 0.12 mm long associated with biotite, and more abundant grains up to 0.15 mm in size associated with opaque.

Sample: Peachland Road **Altered Hornblende-Biotite Potassic Quartz-bearing Diorite/Granodiorite; Veinlets of Calcite and of Chlorite-(Quartz-Calcite)**

Medium to coarse grains of plagioclase, hornblende, and biotite are set in a finer grained groundmass of plagioclase, K-feldspar, and quartz. Mafic minerals commonly occur in clusters, with cores of hornblende and/or opaque surrounded by biotite; they are altered strongly and plagioclase is altered moderately. The contents of K-feldspar and quartz are slightly less than required by the strict definition of granodiorite.

plagioclase	55-60%	
hornblende	12-15	
biotite	10-12	
K-feldspar	8-10	
quartz	7- 8	
opaque	1- 2	(slightly magnetic)
apatite	0.4	
zircon(?)	trace	
replacement patch		
quartz-(calcite-tourmaline)	trace	
veinlets		
1) calcite	0.5	
2) chlorite-(calcite-quartz)	0.7	

Plagioclase forms subhedral prismatic grains averaging 0.7-1.5 mm in size, and a few from 2-3.5 mm long. Composition probably is oligoclase/andesine. Many show slight growth zoning towards more sodic rims. Alteration is moderate to irregular patches and wispy veinlets of sericite and calcite.

Hornblende forms anhedral to subhedral prismatic grains averaging 0.7-1.7 mm in length. Alteration is complete to extremely fine to fine grained aggregates of calcite-quartz-(chlorite)-opaque. In some patches, abundant secondary opaque is concentrated on grain borders and fractures.

Biotite forms irregular flakes averaging 0.5-1 mm in size, with a few up to 2 mm across. A few flakes contain cores of fresh biotite, whose pleochroism is from straw to dark brown. Elsewhere, alteration is complete to pseudomorphic chlorite with abundant Ti-oxide along cleavage planes. A few biotite grains are intergrown intimately with quartz and some grains are rimmed by quartz; these textures are of metamorphic origin.

K-feldspar forms interstitial grains averaging 0.3-0.8 mm in size; most show cross-hatched microcline twins. Locally along borders of K-feldspar grains, plagioclase contains minor myrmekitic intergrowths of quartz. Some K-feldspar grains contain rod-like exsolution lenses of albite .

Quartz forms interstitial grains averaging 0.3-0.5 mm in size. Some contain oriented, acicular grains of rutile averaging 0.01-0.02 mm long.

Opaque (probably ilmenite/magnetite) forms anhedral, equant to slightly elongate grains averaging 0.1-0.4 mm in size. One is altered to semiopaque leucoxene.

Apatite forms anhedral to euhedral, commonly prismatic grains ranging from 0.05-0.3 mm in length, and a few acicular grains up to 0.35mm long.

Zircon forms a few irregular grains averaging 0.15 mm long.

(continued)

A replacement patch 0.3 mm in size consists of quartz with skeletal aggregates of calcite and of tourmaline. Tourmaline is pleochroic from pale greyish green to very dark green.

A few wispy veinlets up to 0.08 mm wide are of very fine grained calcite. Two veinlets averaging 0.05 mm wide are of extremely fine grained chlorite with patches quartz. One of these veinlets contains a discontinuous lens of calcite in its core.

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Invoice 8166
May 1989

Samples: 80 series: 6-135', 11-128', 12-423', 15-613', 16-62', 18-76', 20-57',
others: 81-25-148', 14-807'

Summary:

Samples are from two main rock groups, one a felsic volcanic and subvolcanic suite ranging from dacite to rhyodacite, and including massive, subvolcanic intrusive to flow rocks, pyroclastic and reworked pyroclastic rocks, and breccias of fault and/or hydrothermal origin. The other is a plutonic suite consisting of altered quartz diorite and granodiorite.

1: Volcanic Suite

1.1 Flow or Hypabyssal Intrusion

80-16-62' coarse porphyritic rhyodacite/rhyolite: very coarse phenocrysts of sanidine, coarse ones of quartz and plagioclase, and minor ones of biotite are set in an extremely fine grained groundmass dominated by feldspars with lesser sericite.

81-25-148' porphyritic dacite: phenocrysts of quartz, lesser plagioclase, and minor biotite, K-feldspar, and hornblende are set in a groundmass dominated by plagioclase, altered moderately to sericite. A few replacement or cavity-filling patches are of quartz-(sericite).

1.2 Pyroclastic Rocks

80-15-613' quartz-hornblende crystal tuff: fragments of quartz phenocrysts, altered hornblende phenocrysts, and minor biotite phenocrysts are set in a groundmass dominated by sericite with lesser plagioclase/quartz. Hornblende is altered to chlorite-quartz-(sericite-hematite), and biotite is altered to muscovite-(Ti-oxide).

80-6-135' tuffaceous dacitic sandstone/siltstone: abundant angular fragments of quartz phenocrysts and latite/dacite, and minor ones of exotic types are set in a groundmass dominated by plagioclase with lesser patches of sericite and kaolinite, and disseminated grains of pyrite.

80-20-57' bedded felsic crystal-lithic tuff: two beds(?) of slightly different grain size and composition. In one layer, crystal fragments are dominantly of phenocrysts of quartz and lesser sanidine, with minor ones of plagioclase and microcline. Lithic fragments are dominantly of porphyritic rhyodacite and latite. The groundmass is dominated by sericite. In the other layer, fragments are smaller and dominated by quartz with lesser latite and K-feldspar, microcline, and plutonic aggregates. Pyrite is abundant along the contact of the two layers.

1.3 Breccia

80-12-423' heterolithic breccia: angular fragments of a few rock types, dominated by porphyritic rhyodacite, ranging from microscopic up to several cm in size. These are set in a groundmass of granulated rock dominated by sericite and quartz containing a few coarse clusters of pyrite.

80-18-76' fault breccia: major fragment types include porphyritic rhyodacite (K-feldspar-quartz-plagioclase) and porphyritic dacite (plagioclase-quartz), and single quartz grains (phenocrysts). These are set in a groundmass of sericite with replacement patches of ankerite.

2.0 Quartz Diorite

14-807' altered hornblende-biotite quartz diorite: medium to coarse grained, massive, dominated by plagioclase with lesser quartz and altered hornblende and biotite, with accessory pyrite, sphene, and apatite. Plagioclase is altered strongly to sericite, hornblende completely to chlorite-quartz-sericite-ankerite, biotite to sericite-ankerite-Ti-oxide, and sphene to Ti-oxide-(quartz-chlorite-sericite). A discontinuous vein averaging 1 mm wide is of quartz-hematite-(pyrite).

80-11-128' altered hornblende-biotite granodiorite: coarse to medium grained granodiorite dominated by plagioclase and quartz, with lesser K-feldspar and minor hornblende and biotite. Plagioclase is altered strongly to completely to sericite, K-feldspar is altered strongly to sericite, hornblende is altered completely to quartz-sericite-Ti-oxide, and biotite is altered completely to muscovite-(Ti-oxide).

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Sample 81-25-148' Porphyritic Dacite

Phenocrysts of quartz, lesser plagioclase, and minor biotite, K-feldspar, and hornblende are set in a groundmass dominated by plagioclase, altered moderately to sericite. A few replacement or cavity-filling patches are of quartz-(sericite).

phenocrysts			
quartz	22-27%	hornblende	1
plagioclase	10-12	ilmenite	0.1
biotite	2- 3	sphene	minor
K-feldspar	1- 2	apatite	trace
groundmass			
plagioclase	40-45		
sericite	15-17		
pyrite	2		
zircon	*		
replacement patches			
quartz-(sericite)	1		

Quartz forms subrounded to euhedral phenocrysts averaging 1-2 mm in size, with a few up to 6 mm across. A few smaller phenocrysts averaging 0.3-0.4 mm across are well rounded. A few are cut by early fractures, along which the phenocryst was recrystallized to much finer grained quartz. The surrounding groundmass was not affected by these fractures, indicating that they formed early in the cooling history of the rock.

Plagioclase forms subhedral phenocrysts averaging 1-2 mm in size. Alteration is complete to very fine to extremely fine grained sericite, in part with moderately abundant, dusty hematite.

K-feldspar forms a few subhedral phenocrysts up to 2.5 mm in size. They are altered strongly in patches to sericite, with local concentrations of ankerite or pyrite up to 0.8 mm in size.

Biotite forms stubby flakes averaging 0.3-0.5 mm in size, with a few up to 1 mm across. Alteration is complete to pseudomorphic muscovite and minor to moderately abundant Ti-oxide.

Hornblende(?) forms a few stubby prismatic grains up to 1 mm long. Alteration is complete to patches of very fine grained quartz, extremely fine grained ankerite, and minor extremely fine grained sericite.

Several subhedral, prismatic to irregular patches up to 0.4 mm long are of leucoxene, with or without minor sericite, probably secondary after ilmenite. A very few patches up to 0.4 mm in size are dominated by Ti-oxide intergrown with lesser sericite. These probably are secondary after sphene.

Apatite forms a few subhedral to euhedral, prismatic grains up to 0.2 mm long.

The groundmass is dominated by anhedral, slightly to moderately interlocking plagioclase grains averaging 0.03-0.1 mm in size. Sericite forms irregular patches and disseminations, formed by alteration of plagioclase. Dusty hematite inclusions are moderately abundant. Zircon forms a few euhedral to subhedral, prismatic grains up to 0.04 mm long.

Pyrite forms irregular clusters up to 0.5 mm in size of grains averaging 0.05-0.1 mm in size, and single grains averaging 0.2-0.4 mm in size, with a few up to 1 mm in size.

A few secondary replacement or cavity-filling patches up to 0.6 mm across are of very fine grained quartz with minor very fine grained sericite.

Sample 80-15-613' Quartz-Hornblende(?) Crystal Tuff

Fragments of quartz phenocrysts, altered hornblende phenocrysts, and minor biotite phenocrysts are set in a groundmass dominated by sericite with lesser plagioclase/quartz. Hornblende is altered to chlorite-quartz-(sericite-hematite), and biotite is altered to muscovite-(Ti-oxide).

fragments	
quartz	17-20%
hornblende	15-17
biotite	0.8
opaque	0.3
apatite	minor
zircon	*
groundmass	
sericite	45-50
plagioclase/quartz	15-17
opaque	0.5

Quartz forms anhedral to subhedral crystals and crystal fragments whose textures indicate that they are of volcanic phenocryst origin. Size averages 0.2-1.5 mm, with a few up to 2 mm across. A few quartz grains are strained and recrystallized slightly to coarse, subgrain aggregates with slightly variable extinction positions. A few grains are slightly offset along widely spaced fractures. A few quartz patches are fractured strongly, and some are recrystallized moderately to strongly along fractures to much finer grained aggregates. A few grains are brecciated strongly.

Hornblende forms anhedral to subhedral grains averaging 0.3-1.2 mm in size, with a few patches up to 2 mm across. Alteration is complete and variable. In many grains alteration is dominated by subradiating aggregates of green chlorite, with pleochroism from pale yellow green to medium green. Intergrown with these patches are variable amounts of quartz, patches and disseminated regions of extremely fine grained sericite, and much less patches of deep red hematite. Quartz grains average 0.05-0.2 mm in size, and hematite patches average 0.05-0.1 mm across. Patches with abundant sericite intergrown intimately with chlorite are more diffuse than those rich in chlorite and/or quartz. Some patches are dominated by quartz with minor to moderately abundant chlorite. The origin of these is less certain, but because of a gradation to the chlorite-rich patches, it is suggested that many of them also were formed by replacement of hornblende.

Biotite forms a few slender flakes averaging 0.2-0.3 mm in length, with a few from 0.5-1.3 mm long. The largest flake is warped moderately. Alteration is complete to pseudomorphic muscovite and minor Ti-oxide.

Opaque forms a few subhedral patches up to 0.45 mm in length, and anhedral patches averaging 0.05-0.15 mm in size.

Apatite forms anhedral grains averaging 0.05-0.2 mm in size, and a few euhedral, prismatic grains up to 0.07 mm in size. The latter are associated with biotite crystals.

Zircon forms a few stubby prismatic grains up to 0.08 mm in size.

The groundmass contains moderately abundant, angular fragments of quartz and lesser hornblende averaging 0.05-0.1 mm in size surrounded by an aggregate of sericite with lesser plagioclase/quartz averaging 0.005-0.015 mm in grain size. The latter contains angular quartz fragments averaging 0.02-0.03 mm in size. One irregular replacement patch up to 0.8 mm across is of extremely fine grained hematite(?).

our name: Dacite tuff

Sample 80-6-135 **Tuffaceous Dacitic Sandstone/Siltstone: Fragments of Quartz, Latite/Dacite, Minor Quartz Diorite; Groundmass of Plagioclase-Sericite-Kaolinite-Pyrite**

Abundant angular grains of quartz phenocrysts and latite/dacite, and minor ones of exotic types are set in a groundmass dominated by plagioclase with lesser patches of sericite and kaolinite, and disseminated grains of pyrite. Commonly, distinction is difficult between some finer grained latite fragments and groundmass.

fragments		
quartz	20-25%	
latite/dacite	17-20	
quartz diorite	3- 4	(one large fragment)
sphene	0.1	
quartz-(Ti-oxide)	one fragment	
groundmass		
plagioclase	35-40	
sericite	8-10	
kaolinite	4- 5	
pyrite	3- 4	
zircon	*	

Quartz forms angular to subangular grains averaging 0.2-1.2 mm in size. Many have textures of quartz phenocrysts in a felsic volcanic rock.

Latite/dacite fragments average 0.3-1.2 mm in size. Latite fragments are dominated by a slightly interlocking aggregate of equant plagioclase. Variation in grain size is moderate between fragments, from 0.01-0.02 mm in size up to 0.03-0.05 mm in others. Dusty opaque inclusions are common. Much less abundant dacite fragments are similar to the coarser grained latite, but also contain patches of quartz averaging 0.03-0.05 mm in grain size. One large dacite fragment contains grains averaging 0.07-0.1 mm in size. One dacite fragment contains a spheroidal quartz phenocryst 0.3 mm across.

The quartz diorite fragment is up to 15 mm across in hand sample and 3.5 mm across in thin section. It consists of an intergrowth of medium to coarse grained plagioclase and moderately abundant quartz. Plagioclase is altered completely to extremely fine grained aggregates of kaolinite. Superimposed on this alteration is the sericite-pyrite alteration as in the groundmass.

A few fragments from 0.2-0.4 mm across are of a very fine grained aggregate of equal amounts of Ti-oxide and quartz; they probably are secondary after sphene.

One fragment 0.6 mm across is of an aggregate of equant, anhedral quartz grains averaging 0.2-0.3 mm in size. It contains abundant anhedral to euhedral, prismatic Ti-oxide grains up to 0.03 mm long.

The groundmass averages 0.01-0.03 mm in grain size. Much is dominated by plagioclase, with textures similar to those of the latite fragments. Intergrown with plagioclase are patches of unoriented flakes of sericite and of kaolinite. Sericite also forms patches averaging 0.2-0.3 mm in size of slightly coarser grained flakes (0.03-0.05 mm); some of these enclose a grain of pyrite. They probably are of hydrothermal origin, and related to the formation of pyrite.

Pyrite forms disseminated, subrounded to irregular grains averaging 0.1-0.3 mm in size, with a few clusters of irregular grains up to 1.2 mm across.

Zircon forms a few subhedral to euhedral, prismatic grains up to 0.06 mm long in the groundmass and in quartz grains.

Sample 80-20-57' Bedded Felsic Crystal-Lithic Tuff

The sample contains two main zones (beds?) of slightly different grain size and composition. In one layer (A), crystal fragments are dominantly of phenocrysts of quartz and lesser sanidine, with minor ones of plagioclase and microcline. Lithic fragments are dominantly of porphyritic rhyodacite and latite. The groundmass is dominated by sericite. In Layer B, fragments are smaller and dominated by quartz with lesser latite and K-feldspar, microcline, and plutonic aggregates. Pyrite is abundant along the contact of the two layers.

Layer A	
fragments	
quartz	17-20%
rhyodacite	12-15
K-feldspar	7- 8
latite	4- 5
muscovite	0.2
groundmass	
sericite	30-35
plagioclase	10-12
ankerite	1

Quartz forms angular grains averaging 0.2-1 mm in size, most of which are volcanic phenocrysts or fragments of them.

K-feldspar (sanidine?) forms angular grains averaging 0.3-0.8 mm in size. Alteration is moderate in patches to kaolinite (0.005 mm grain size) and patches up to 0.1 mm across of ankerite.

Porphyritic rhyodacite forms fragments up to 2.7 mm across. A few large fragments contain a few euhedral phenocrysts of K-feldspar and subhedral to subrounded phenocrysts of quartz averaging 0.2-1 mm in size. K-feldspar is altered in patches to kaolinite and ankerite. Muscovite (probably after biotite) forms a few ragged flakes averaging 0.1-0.3 mm in length. The groundmass is equant and extremely fine grained (0.01-0.02 mm) and dominated by feldspar with dusty hematite inclusions.

A fragment of latite contains minor muscovite (after biotite) phenocrysts averaging 0.2 mm long in a groundmass of equant, slightly interlocking plagioclase grains averaging 0.04-0.06 mm in size. Plagioclase is altered slightly to moderately to sericite and contains abundant dusty hematite(?) inclusions. Other smaller latite fragments are dominated by plagioclase with minor muscovite.

The groundmass is dominated by extremely fine grained sericite and lesser plagioclase, with sericite probably secondary after plagioclase. Ankerite forms irregular replacement patches averaging 0.05-0.2 mm in size.

(continued)

Sample 8Ø-2Ø-57' (page 2)

Layer B

fragments

Major types	(1Ø-2Ø%)	quartz phenocrysts
Minor types	(2-5%)	K-feldspar, microcline, plutonic fragments, latite, biotite

groundmass

sericite	4Ø-45	
plagioclase	1Ø-12	
quartz	3- 4	
ankerite	3- 4	
pyrite	2- 3	(concentrated on contact)

Quartz forms angular fragments averaging Ø.1-Ø.4 mm in size, with a few up to 1.2 mm long. These are mainly of volcanic origin. A few much finer grained aggregates may be of plutonic or metamorphic origin.

K-feldspar (sanidine) forms fragments of phenocrysts averaging Ø.2-Ø.6 mm in size.

Microcline forms anhedral grains averaging Ø.1-Ø.3 mm in size, with a few up to Ø.9 mm across. Its presence indicates contamination of the magma by felsic plutonic rocks.

Plagioclase forms a few grains averaging Ø.2-Ø.4 mm in size. Alteration in is slight to moderate to sericite.

Latite forms fragments averaging Ø.2-Ø.3 mm in size. It consists of aggregates of equant, slightly interlocking plagioclase averaging Ø.Ø1-Ø.Ø2 mm in grain size.

One fragment 1.5 mm in size is dominated by very fine to fine grained muscovite intergrown with extremely fine grained sericite. One flake Ø.9 mm long of muscovite (after biotite) contains several inclusions of apatite (Ø.ØØ5 mm in size, and one patch of Ti-oxide Ø.2 mm across and several much finer disseminated patches of Ti-oxide.

One fragment Ø.9 mm across is an aggregate of fine to medium grained quartz and lesser plagioclase of plutonic origin. Other fragments of probable plutonic origin include one of quartz containing an inclusion Ø.12 mm long of apatite, and another consisting of two slightly interlocking, subhedral grains of plagioclase.

One fragment Ø.4 mm across consists of extremely fine grained quartz(?) with abundant dusty to extremely fine grained opaque.

Zircon forms an irregular fragment Ø.1 mm across.

The groundmass is dominated by extremely fine grained sericite intergrown with lesser quartz and plagioclase; sericite pro ably is secondary after original plagioclase. Ankerite forms irregular replacement patches averaging Ø.Ø5-Ø.15 mm in size.

Pyrite forms clusters up to 2 mm across of subhedral to euhedral, porphyroblastic grains averaging Ø.3-1 mm in size along the border of Layers A and B, and subhedral to euhedral grains averaging Ø.2-Ø.4 mm in size disseminated through Layer B.

Sample 80-16-62' Coarse Porphyritic Rhyodacite/Rhyolite

Very coarse phenocrysts of sanidine, coarse ones of quartz and plagioclase, and minor ones of biotite are set in an extremely fine grained groundmass dominated by feldspars with lesser sericite.

phenocrysts			
sanidine	20-25%	biotite	1%
quartz	12-15	apatite	trace
plagioclase	12-15		
groundmass			
K-feldspar-plagioclase	40-45	ilmenite	minor
sericite	8-10	carbonate	minor
pyrite	0.5	apatite	trace
hematite/limonite	0.1		
amygdules			
quartz-sericite-(carbonate)	1- 2		

Sanidine forms euhedral phenocrysts averaging 1-3 cm in size. Alteration is slight to moderate in patches averaging 0.1-0.3 mm in size to ankerite and minor kaolinite. Dusty hematite is common in irregular zones along borders of grains. Some grains contain subhedral to euhedral inclusions of plagioclase up to 1 mm in size; most of these are altered strongly to completely to sericite. One contains an inclusion of a small biotite altered phenocryst, which is altered completely to muscovite.

Quartz forms subrounded to irregular grains averaging 1-5 mm in size. A few are fractured and recrystallized slightly to irregular subgrain aggregates.

Plagioclase forms subhedral to euhedral, equant to slightly prismatic phenocrysts averaging 0.7-2 mm in size. A few clusters are up to 2.5 mm across. Alteration is moderate to sericite, ankerite, and dusty hematite. A few grains contain minor to moderately abundant, disseminated patches averaging 0.01-0.05 mm in size of limonite. One is cut by two carbonate veinlets from 0.02-0.05 mm wide.

Biotite forms stubby flakes averaging 0.3-0.5 mm in size, and a few flakes up to 1 mm long. One cluster 0.8 mm across is of equant grains averaging 0.2-0.3 mm in size. Alteration is complete to pseudomorphic muscovite and lenses of ankerite. In a few larger flakes, ankerite is the dominant alteration mineral, with minor muscovite, mainly along the borders of the book.

Apatite forms a few subhedral to euhedral phenocrysts up to 0.2 mm across. A few anhedral grains from 0.1-0.15 mm in size are associated with plagioclase phenocrysts, and a few euhedral grains 0.05 mm across associated with ilmenite.

The groundmass is dominated by anhedral, equant feldspar grains averaging 0.01-0.05 mm in size. Textures suggest that they may be intimate intergrowths of plagioclase and K-feldspar, possibly formed by exsolution from anorthoclase. Dusty semi-opaque hematite/limonite is common. Carbonate forms irregular patches up to 0.3 mm in size. Pyrite forms disseminated, irregular grains averaging 0.2-0.5 mm in size. Opaque (ilmenite?) forms subhedral, prismatic to tabular grains up to 0.4 mm long; these are altered partly to leucoxene.

A few amygdules(?) up to 0.7 mm across have a thin border zone up to 0.05 mm wide of quartz containing a core of extremely fine grained sericite. A few smaller patches of probable similar origin are dominated by very fine grained quartz.

Sample 8Ø-12-423' **Heterolithic Breccia**

The hand sample contains angular fragments of a few rock types, dominated by porphyritic rhyodacite, ranging from microscopic up to several cm in size. These are set in a groundmass of granulated rock dominated by sericite and quartz containing a few coarse clusters of pyrite.

fragments (% of hand sample)		
Major (2Ø-35%) :	porphyritic rhyodacite, dacite	
Minor (5-1Ø) :	quartz grains, pyrite, altered mafic	
groundmass		
sericite-quartz-(pyrite-ankerite)		25-3Ø%
veins		
quartz-(sphalerite-pyrite-kaolinite)		1- 2

The major fragment in the section is of porphyritic rhyodacite, somewhat similar to Sample 8Ø-16-62. Phenocrysts of K-feldspar, quartz, and plagioclase are set in a groundmass averaging Ø.Ø3-Ø.Ø7 mm in grain size dominated by intimately intergrown feldspars and much less patches of quartz and of sericite. Phenocrysts average 1-2 mm in size, with a few clusters of quartz grains up to 5 mm across. K-feldspar is altered slightly to sericite. Plagioclase phenocrysts are altered strongly to completely to extremely fine grained sericite, in part with minor to moderately abundant patches of limonite/ hematite. Pyrite forms disseminated, anhedral to euhedral grains averaging Ø.Ø5-Ø.15 mm in size, with a few patches up to 2 mm across. One equant patch 1 mm across is dominated by muscovite (after biotite) with abundant patches up to Ø.2 mm across of Ti-oxide and numerous euhedral zircon grains averaging Ø.Ø5-Ø.Ø7 mm long. Zircon also forms a slender, euhedral prismatic grain Ø.Ø9 mm long elsewhere.

In the hand sample, another large fragment appears to be of porphyritic dacite (quartz, plagioclase phenocrysts).

One smaller fragment with quartz and K-feldspar phenocrysts has a groundmass of equant grains of quartz with lesser K-feldspar and interstitial sericite.

One fragment a few mm across is of an altered mafic rock dominated by unoriented flakes of muscovite-Ti-oxide (after biotite) averaging Ø.1-Ø.2 mm long, with interstitial extremely fine grained sericite and minor quartz. On one border and a few fractures are concentrations of very fine to fine grained pyrite.

Smaller fragments are of a variety of mineral and rock types, mainly from the porphyritic rhyodacite. Other types include fragments of fine to very fine grained quartz (veins?), an equant apatite grain Ø.6 mm across, and a hornblende grain 1.2 mm long which is replaced completely by quartz-sericite,

The groundmass is dominated by extremely fine grained sericite intergrown with very fine grained quartz. Ankerite forms a few, irregular to skeletal patches up to 1 mm across. In the hand sample, pyrite forms a few equant patches up to a few mm across.

A few irregular veinlets up to Ø.5 mm wide are of very fine to fine grained quartz, with minor patches of sphalerite up to Ø.4 mm long, grains of pyrite up to Ø.1 mm across, and interstitial patches up to Ø.15 mm in size of kaolinite with grain size averaging Ø.ØØ3-Ø.ØØ5 mm.

Sample 80-18-76' **Fault Breccia: Major Fragments Porphyritic Rhyodacite and Porphyritic Dacite, Quartz; Sericite-(Ankerite) Groundmass**

Major fragment types include porphyritic rhyodacite (K-feldspar-quartz-plagioclase) and porphyritic dacite (plagioclase-quartz), and single quartz grains (phenocrysts). These are set in a groundmass of sericite with replacement patches of ankerite.

fragments
  Major (20-35%) : porphyritic rhyodacite, porphyritic dacite, quartz
  Accessory (1-5%) : biotite, Ti-oxide
groundmass : sericite-(ankerite)

Porphyritic dacite contains minor to locally abundant phenocrysts of plagioclase averaging 1-2.5 mm in size, abundant quartz phenocrysts averaging 0.7-1.2 mm in size, and minor to moderately abundant biotite phenocrysts averaging 0.2-0.3 mm long. Plagioclase is altered completely to sericite, and biotite is replaced completely by pseudomorphic muscovite. One quartz phenocryst is brecciated moderately and cut by a carbonate veinlet up to 0.4 mm wide. One fragment contain a patch 1.2 mm across of ankerite-quartz-muscovite/sericite, possibly after hornblende. Ti-oxide/leucoxene, with or without ankerite, forms a few patches up to 0.4 mm in size of very fine grained aggregates. The groundmass consists of equant plagioclase grains averaging 0.02-0.03 mm in size with interstitial sericite and dusty semiopaque. Pyrite forms scattered patches averaging 0.05-0.15 mm in size. Zircon forms a slender, euhedral prismatic grain 0.12 mm long in a plagioclase phenocryst.

Rhyodacite fragments contain phenocrysts of sanidine, quartz, and minor plagioclase in an extremely fine grained groundmass dominated by feldspars with dusty hematite inclusions. K-feldspar is altered in patches to ankerite and lesser sericite; intensity varies widely from minor to almost complete. One fragment 2.5 mm across consists of a strongly fractured K-feldspar phenocryst which was replaced moderately to strongly by three phases. One is patches of very fine to fine grained ankerite. The second is less abundant patches of extremely fine grained sericite. The third is cryptocrystalline, light brown Mineral X, which forms angular to subrounded patches averaging 0.1-0.3 mm in size. Mineral X has higher relief than sericite. Grain size is too fine to determine birefringence or other optical properties. Patches of Mineral X are intergrown coarsely with, and commonly surrounded by those of sericite. Some patches of ankerite are replaced by Mn-oxide or limonite/hematite. Plagioclase phenocrysts are altered completely to extremely fine grained sericite. Apatite forms a few euhedral phenocrysts up to 0.2 mm long. Interstitial patches up to 0.5 mm in size are of quartz-calcite. Zircon forms minor elongate, euhedral prismatic grains up to 0.1 mm long.

One fragment contains a patch 1.7 mm across of opaque containing near one side of the patch a cluster of subrounded Ti-oxide grains from 0.05-0.1 mm in size.

Finer fragments are dominated by angular quartz grains and rhyodacite groundmass, with minor ones of biotite grains up to 0.7 mm long. Biotite is altered completely to pseudomorphic muscovite and minor Ti-oxide. One subrounded patch 0.8 mm across is dominated by fine grained Ti-oxide intergrown intimately with carbonate.

The groundmass is dominated by extremely fine grained sericite. Ankerite and minor quartz form very fine to fine grained replacement patches up to 1 mm in size.

Sample 14-8Ø7' **Altered Hornblende-Biotite Quartz Diorite; Vein of Quartz-Hematite-(Pyrite)**

A medium to coarse grained, massive rock is dominated by plagioclase with lesser quartz and altered hornblende and biotite, with accessory pyrite, sphene, and apatite. Plagioclase is altered strongly to sericite, hornblende completely to chlorite-quartz-sericite-ankerite, biotite to sericite-ankerite-Ti-oxide, and sphene to Ti-oxide-(quartz-chlorite-sericite). A discontinuous vein averaging 1 mm wide is of quartz-hematite-(pyrite).

plagioclase	5Ø-55%	sphene	Ø.5%
quartz	17-2Ø	apatite	Ø.2
hornblende	15-17	ankerite	Ø.1
biotite	5- 7	zircon	*
pyrite	1- 2		
vein			
quartz-hematite-pyrite	1- 2%		

Plagioclase forms anhedral grains averaging 1-2 mm in size. Alteration is strong to extremely fine grained sericite, and locally minor to moderately abundant chlorite of similar grain size, intergrown in irregular patches with sericite.

Quartz forms patches up to 2 mm in size of fine to medium grained aggregates. Many have slightly to moderately strained extinction. Some quartz patches were recrystallized to irregular, very fine grained aggregates.

Hornblende forms patches averaging Ø.7-1.7 mm in size. It is altered variably to chlorite, sericite, quartz, ankerite, and opaque. Many hornblende grains contain inclusions of apatite averaging Ø.Ø2-Ø.Ø5 mm in size, and coarser apatite grains commonly occur along borders of hornblende grains.

Biotite forms ragged to subhedral flakes averaging Ø.5-1 mm in size, and a few flakes from 2-3.5 mm across. Several aggregates up to 2.5 mm across consist of intergrowths of several flakes in random orientation. Alteration is complete to pseudomorphic muscovite and much less chlorite, with disseminated patches of Ti-oxide. In some grains, ankerite forms thin lenses parallel to cleavage.

Pyrite forms irregular to subrounded to locally euhedral patches averaging Ø.2-Ø.7 mm in size, with a few up to 1.5 mm across.

Sphene forms a few subhedral to euhedral, wedge-shaped patches averaging Ø.3-Ø.6 mm long, and two patches 1 mm long. These are altered completely to aggregates of Ti-oxide averaging Ø.Ø1-Ø.Ø2 mm in size intergrown with variable amounts of one or more of quartz, chlorite, and sericite.

Ankerite forms a few anhedral patches averaging Ø.2 mm in size. Some ankerite grains associated with hornblende are altered strongly to opaque (hematite?).

Apatite forms anhedral grains averaging Ø.1-Ø.2 mm in size, and a few up to Ø.5 mm long. Many grains are associated with hornblende. Zircon forms a few, equant, anhedral grains averaging Ø.Ø5-Ø.Ø8 mm in size, mainly associated with hornblende.

A vein averaging 1 mm wide consists of very fine to fine grained quartz with abundant patches up to 1.5 mm across of specular hematite and minor equant pyrite grains averaging Ø.5-1 mm in size (up to 1.5 mm across in hand sample). Hematite forms aggregates of equant to platy grains up to Ø.2 mm in size; thin crystals have a deep red color.

Sample 80-11-128   Altered Hornblende-Biotite Granodiorite

The sample is a coarse to medium grained granodiorite dominated by plagioclase and quartz, with lesser K-feldspar and minor hornblende and biotite. Plagioclase is altered strongly to completely to sericite, K-feldspar is altered strongly to sericite, hornblende is altered completely to quartz-sericite-Ti-oxide, and biotite is altered completely to muscovite-(Ti-oxide).

plagioclase	35-40%
quartz	30-35
K-feldspar	20-25
hornblende	2- 3
biotite	2- 3
pyrite	0.5
ilmenite/sphene	0.2
zircon	minor

Plagioclase forms anhedral grains averaging 1- 2 mm in size. Alteration is complete to strong to extremely fine grained sericite, with a few relic patches of plagioclase preserved. Some secondary assemblages are of very fine grained plagioclase (probably more albitic than originally) intergrown with moderately abundant sericite. In places these grade into patches dominated by sericite.

Quartz forms patches up to several mm across of medium to coarse grained aggregates. Some are brecciated in irregular patches and seams to extremely fine grained angular fragments.

K-feldspar forms anhedral grains averaging 1-3 mm in size, concentrated in a few patches. Alteration is moderate to strong to extremely fine grained sericite. Sericite commonly is concentrated on cleavage planes. A few contain a few discontinuous lenses up to 0.05 mm wide of quartz, which are subparallel to one cleavage direction along which secondary sericite is concentrated.

Hornblende forms anhedral to subhedral grains averaging 1-2 mm in size. Alteration is complete to very fine grained quartz intergrown with patches of extremely fine grained sericite, and containing moderately abundant patches of Ti-oxide. Apatite and zircon each form a few inclusions up to 0.03 mm in size in some hornblende grains.

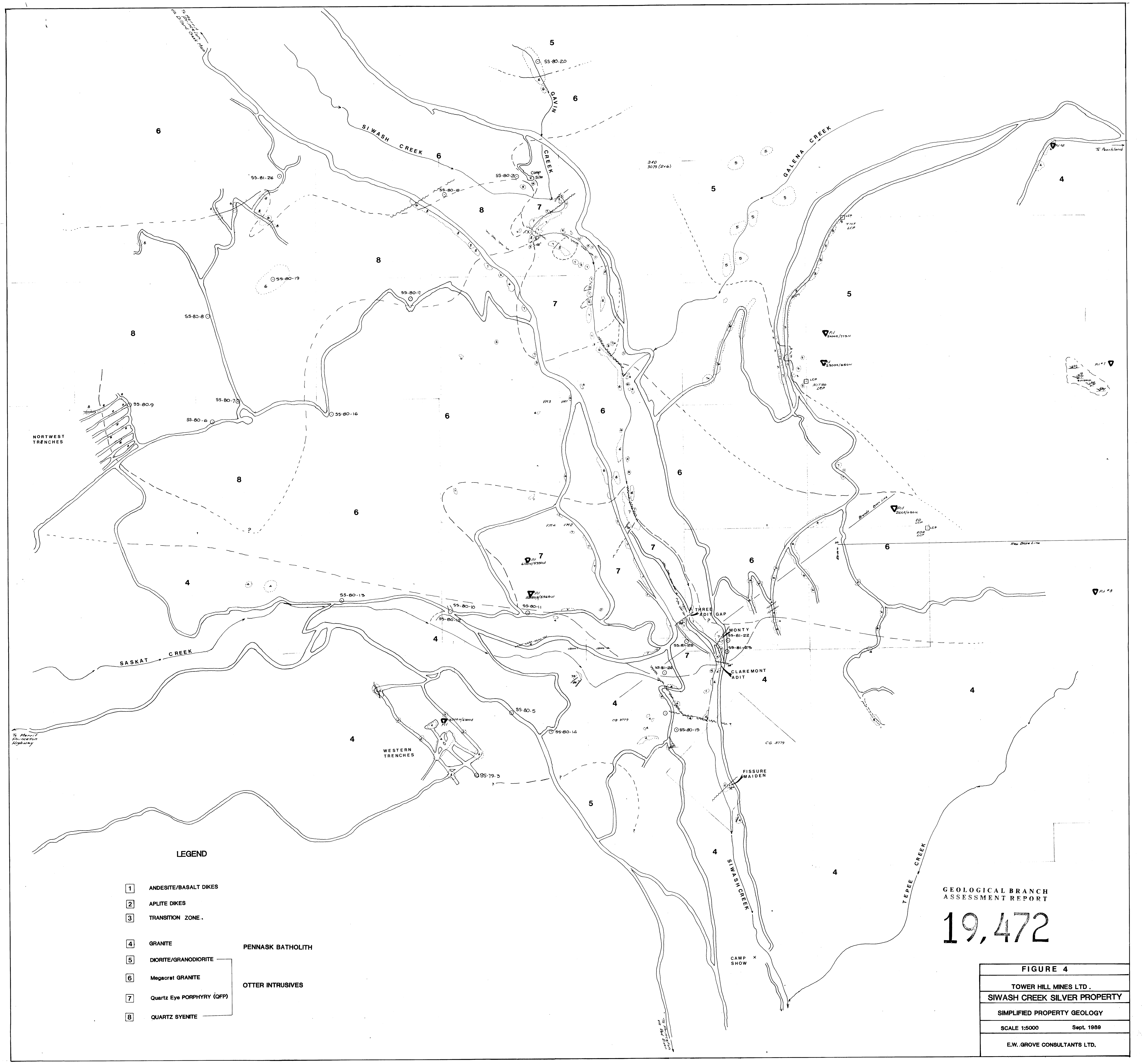
Biotite forms flakes up to 1.7 mm long. Alteration is complete to ragged pseudomorphs of muscovite intergrown with patches of extremely fine grained sericite, and containing moderately abundant patches and lenses of Ti-oxide.

Ti-oxide (after ilmenite or sphene) forms equant patches averaging 0.1-0.25 mm in size, in part intergrown with minor to moderately abundant sericite.

Pyrite forms disseminated grains and clusters of euhedral to subhedral grains averaging 0.08-0.2 mm in grain size, and one patch up to 1.2 mm across of subhedral to euhedral grains. Commonly associated with pyrite clusters are patches of Ti-oxide and concentrations of zircon.

Zircon forms anhedral, equant grains averaging 0.02-0.05 mm in size, commonly associated with clusters of pyrite.

At one end of the section, the rock is cut by a breccia zone a few mm wide. The zone has a fragmental texture in hand sample, which is not so prominent in thin section. Fragments of quartz and altered feldspars are set in a groundmass dominated by extremely fine grained sericite-plagioclase(?). Fragments of quartz aggregates are more strongly fractured and brecciated than normal.



LEGEND

1	ANDESITE/BASALT DIKES	
2	APLITE DIKES	
3	TRANSITION ZONE.	
4	GRANITE	PENNASK BATHOLITH
5	DIORITE/GRANODIORITE	OTTER INTRUSIVES
6	Megacrst GRANITE	OTTER INTRUSIVES
7	Quartz Eye PORPHYRY (QFP)	OTTER INTRUSIVES
8	QUARTZ SYENITE	OTTER INTRUSIVES

FIGURE 4

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SIWASH CREEK SILVER PROPERTY

SIMPLIFIED PROPERTY GEOLOGY

SCALE 1:5000 Sept. 1989

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