# Diamond Drilling Report February 1997, May 1997

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W.W. 1 Claims

**Atlin Mining Division** 

104K12

N 58 42' lat., W 133 37' long.

New Polaris Gold Mines Ltd.

Canarc Resource Corp.

Peter Karelse

May 25, 1998

GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORT

25,533

# NEW POLARIS GOLD MINES Ltd.

# **DIAMOND DRILLING REPORT**

#### FEBRUARY 1997/98

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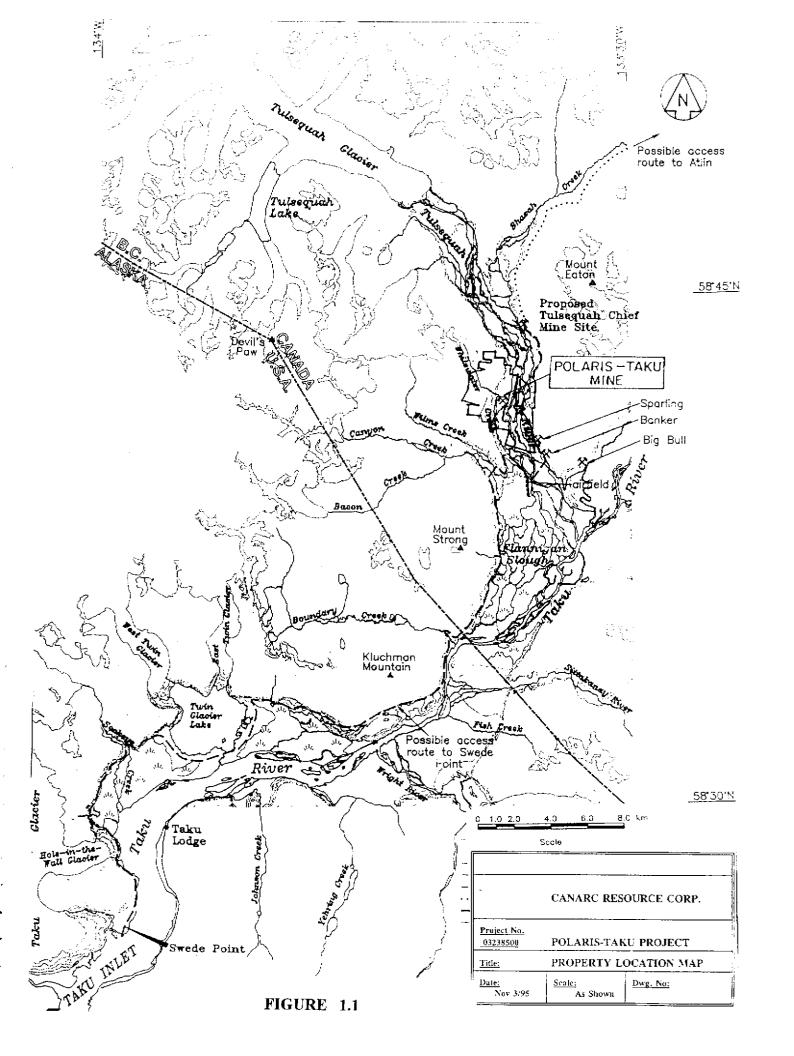
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#### 1.0 Introduction

#### 1.1 Location

The New Polaris Gold Mine (formerly Polaris – Taku Gold Mines) is located in the Atlin mining district approximately 90 air miles south of the town of Atlin, British Columbia, and approximately 40 air miles east of Juneau Alaska. The index map (figure 1.1) indicates the relative location of the property.

Locally the property is located on the west shore of the Tulsequah River, approximately 6 miles north of its' confluence with the Taku River.

Located at approximately 133 37' W longitude and 58 42' N latitude the deposit lies in close proximity to Redfern's Tulsequah Chief deposit.

#### 1.2\_Access

The property is accessible only by air. The nearest towns with airstrips to the property would be either Juneau or Atlin. The nearest road access terminates 5 miles south of Atlin, and 13 miles southeast of Juneau. Historically the property has been accessible by boat, however recent siltation of the river has limited this form of access to small jet boats capable of carrying passengers only.

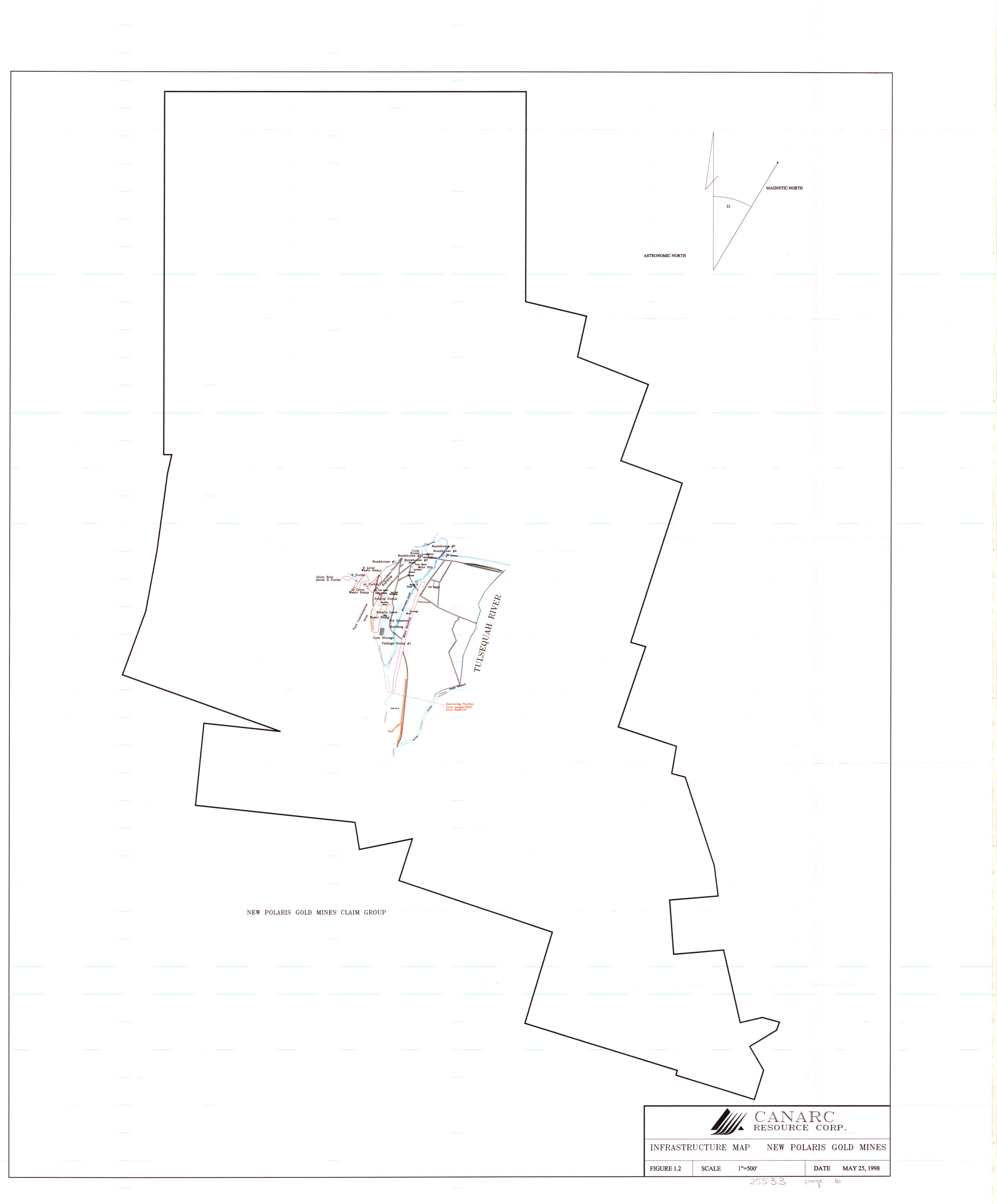
Two airstrips service the property. The first a 1300' gravel strip is located immediately adjacent to the property and the second is located approximately 3 miles to the south. This strip is accessible by bush road from the property. The length and condition of the second strip is undetermined. The present operators have not used this strip in the past five years. Being proximal to the river it is subject to annual erosion, and therefore a careful study would be necessitated to determine the overall suitability for use. In the past this strip was long enough for larger aircraft such as DC 3's and 4's. The first strip is suitable for use by fully loaded Cessna's, Beaver's, and larger capacity aircraft with STOL capability such as the Short's Skyvan.

On the property there are numerous roads and trails providing access to all parts of the property. These have been left from previous mining activities, and have been in some cases modified. The roads are suitable for use by small pick-up or all-terrain vehicle. The trails are suitable for foot passage only.

Figure 1.2 indicates the approximate location of the roads and airstrips about the property.

#### 1.3 Physiography

Rugged relief characterizes the project site located in the Coastal Mountains. Regionally the topography ranges between sea level and 8500 feet. Elevations on the property itself range between 30' ASL and 2400' ASL on the west portion of the property.



A number of glacial streams cross the property with flows being both seasonal and permanent in nature depending on the individual stream. The Tulsequah glacier provides the majority of the source water for the Tulsequah River. The Muir Ice Cap lies to the northeast of the property and provides the feed for the majority of the glaciers in the area. Some of the glaciers are of the alpine type and are therefore independent in nature.

The entire region is typical of an area, which has been influenced by recent glaciation. The Taku and Tulsequah Rivers are broad till-filled valleys commonly more than 1 mile wide. The vertical extent of the till is unknown, however past seismic work and surface diamond drilling undertaken, suggests depths up to 400° in the floodplain area immediately adjacent to mine property, deepening to 800° towards the valley centre are possible.

Outcrops on the property are scarce and represent only 5% of the total surface area.

#### 1.4 Vegetation

Vegetation on the property consists of heavily forested slopes and floodplains. The forest was cutover approximately 50 years ago to provide lumber for the mining and residential requirements of the day. Today the forest is composed of cottonwoods, alders and brush in the near floodplain area, and spruce, hemlock and red on the mountain slopes to elevation of approximately 3500°. Above this elevation alpine vegetation (sedge, heather) prevails. This secondary growth is mature enough to provide a valuable resource for current mining purposes.

#### 1.5 Wildlife

Local wildlife is limited to moose, black and grizzly bear, mountain goat, wolf and wolverine along with other small furbearers. Trumpeter swans, bald eagles, rock ptarmigan and grouse are indigenous to the area. The Tulsequah River has a low to negligible fishery value due to disruptive nature of the flow caused by the seasonal glacial outbursts resulting in severe scouring. However, the Whitewater and Shazah creeks, and pools in the Tulsequah River flood plain have been identified as spawning and rearing habitat for Steelhead, Dolly Varden char, and all five species of Pacific salmon.

#### 2.0 Property History

The property was originally staked as the Whitewater Group in 1929 by Art Hedman, Ray Walker, Ray Race and Associates of Juneau after mineralzation was discovered along Whitewater Creek. Follow up work consisted of some trenching and open cutting during 1929 and 1930. These claims and several contiguous other blocks were optioned to the Noah A. Timmins Corporation in 1930 who conducted extensive trenching and diamond drilling in 1931. The trenching exposed a number of veins of which at least 10 showed promising grades. A short exploration adit (about 30 feet long) was also driven into the side of the hill. In all, Timmins drilled 19 holes for a total of 5297 feet but was unable to correlate the intersections and elected to drop the option in September 1932.

The Alaska Juneau Gold Mining Company then optioned the property and conducted underground exploration from the "AJ" (Alaska Juneau) adit. Alaska Juneau drove a total of 625 feet of drifting and although they intersected "ore grade" mineralization, they too had problems with correlation and dropped the property in the fall of 1934.

H. Townsend and M.H. Gidel of the Anaconda Corporation were able to unravel some of the complexities of the structures whereupon D.C. Sharpstone secured an option on the property on behalf of Edward C. Congdon and Associates of Duluth, Minnesota. Congdon then conducted 775 feet of further underground exploration in the "AJ" tunnel and collared 85 feet into the Canyon adit. The Polaris-Taku Mining Company was then incorporated in 1936 to take over the property from Congdon. Polaris-Taku erected a 150 to 250 ton per day flotation mill in 1937 and mined underground continuously until it was closed down in April 1942 due to labour restrictions brought on by the Second World War. Mining operations resumed on April 16, 1946; production continued uninterrupted until 1951 when the mine was closed due to high operating costs, a fixed gold price and the sinking of the first 1951 concentrate barge shipment during a storm in March 1951.

In an attempt to improve gold recoveries and reduce the high cost of shipping concentrates to the Tacoma smelter, the company began testwork on roasting and cyanidation in 1946. An Edwards roaster and a cyanide plant were installed and tested in 1949; after some modifications to the equipment and circuits, the plant commenced operation in September 1950. Although the addition of the roaster helped improve milling economics, its capacity was somewhat limited as it could treat only about 45 % of the concentrates produced from the flotation plant. The roaster continued to be used for flotation concentrates for a short period after the mine and mill closed in March 1951.

Shortly following the mine closure, the mill was leased to Tulsequah Mines Ltd. who modified and upgraded the mill to process 600 TPD of massive sulphide polymetalic ore (containing gold, silver, copper, lead, and zinc) from the Tulsequah Chief and Big Bull mines. The mill processed ore from the Big Bull and Tulsequah Chief mines from 1951 until the two mines closed in 1956 and 1957, respectively.

Numalake Mines acquired the property along with the assets and liabilities in 1953 who then changed their name to New Taku Mines Ltd. The property lay dormant after milling of the Tulsequah Chief and Big Bull ore until 1971 when New Taku undertook repairs of the facilities. A negative feasibility study in 1973 halted any further rehabilitation.

New Taku changed its name to Rembrandt Gold Mines Ltd in 1974. The property remained dormant until Suntac Minerals Corp. optioned the property in 1988 and resumed surface exploration.

Canarc merged with Suntac in 1992 and bought out Rembrandt's interest in 1994 and has continued working on the property up to the present. The details of their exploration activities are covered further on in this report. The property is currently operated by New Polaris Gold Mines Ltd, a wholly owned subsidiary of Canarc Resources Ltd.

Power to the mine and an on-site diesel and hydroelectric plant utilising water from Whitewater Creek during the summer supplemented by diesel generators as needed provided townsite.

Some pieces of major equipment were removed from the Polaris-Taku site since closure (crushers and mills) and no further mining has taken place on the property. Most of the buildings have been removed. A few of the townsite houses and the mechanical shop are in reasonably good condition and are currently being used for exploration purposes.

Although the underground equipment has been removed, the hoist, sheaves and conveyances are still in place. The shaft was in excellent condition and required very little repair. The "AJ"adit was reopened a few years ago and is in good condition with rotted timbers being replaced. The "Polaris" adit collar has been reestablished and is currently being used as the main entrance.

#### 4.0 - GEOLOGY AND RESOURCES

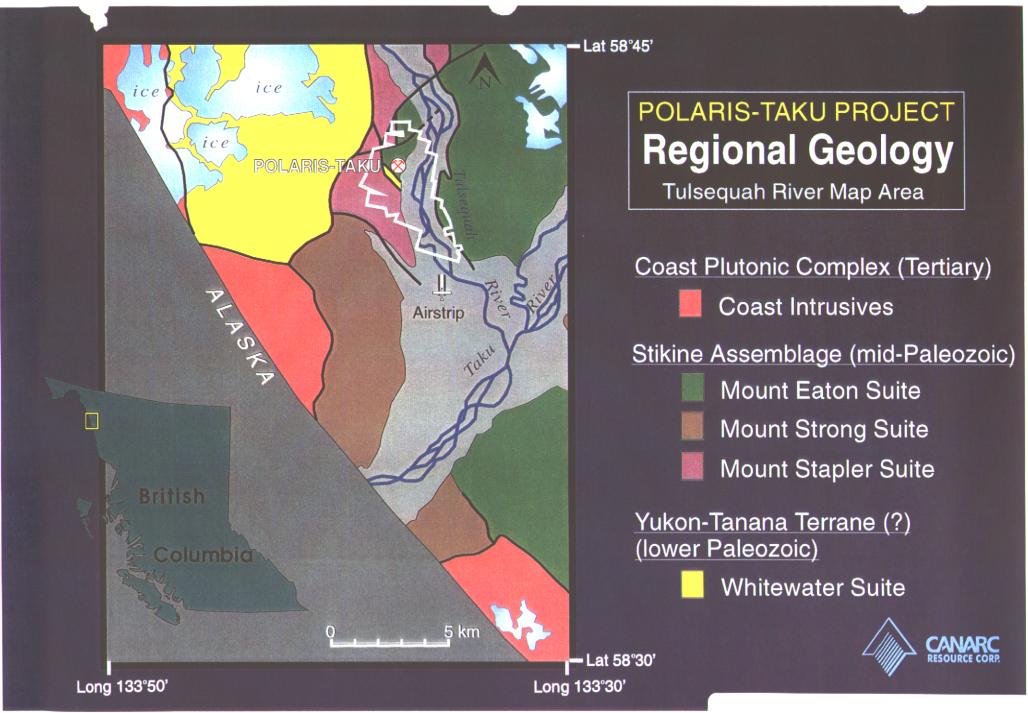
#### 4.1 GEOLOGY AND MINERALIZATION

#### 4.1.1 Regional Geology

The Polaris-Taku mine lies within the Intermontane Province of the Western Cordillera approximately 3 miles from its western contact with the Coast Plutonic Complex. This portion of the Intermontane belt is predominantly composed of the lowermost sections of the Stikine Terrane (See Figure 4. 1).

The Whitewater Suite represents the oldest rocks in the area, possibly early Palaeozoic in age, and dominates the geology on the western edge of the property. It consists primarily of strongly metamorphosed and deformed quartzite and quartz-rich graphitic schist with interlayers of mafic, ultramafics, marble, and gneiss. The Whitewater Suite grades to the east into the less metamorphosed metavolcanic and metasedimentary rocks of the Mount Stapler Suite. Continuing east across the property, the Mount Stapler Suite is in fault contact with the similar yet less deformed mid to upper greenschist facies metamorphosed rocks of the Mount Eaton Suite.

This group of rocks hosts the deposit and composes the northeastern third of the property. It dominates the geology on the opposite (eastern) bank of the Tulsequah River where it hosts the Tulsequah Chief and Big Bull volcanogenic massive sulphide Cu-Pb-Zn-Au-Ag deposits as well.



#### 4.1.2 Regional Structure

The structural trend in the area is north-northwest to south-southeast, parallel to the alignment of the Late Cretaceous-Tertiary Coast Plutonic Complex which dominates the geology immediately west of the B.C.-Alaska international border. The older rocks have been intensely folded, sheared and deformed into broad doubly plunging symmetrical folds with large amplitudes.

The Mount Stapler and Mount Eaton Suites are separated by the Llewellyn fault which is a regionally significant north-south structure having a long history of movement. The most recent movement has been dextral (west side to the north). Slightly north of the Tulsequah Chief deposit on the east bank of the Tulsequah River, the Llewellyn fault is truncated and offset to the west onto the Polaris-Taku property by the east-west oriented Chief Cross fault.

#### 4.1.3 Property Geology

The Mount Eaton Suite is a package of weakly metamorphosed volcanic rocks within the middle to upper Palaeozoic Stikine assemblage, which constitutes the basement of the Stikine Terrane. The Polaris-Taku portion of this suite is composed predominantly of basaltic to andesitic augite-phyric volcaniclastics and associated intrusives with lesser amounts of limestone, serpentinised ultramafics, and gabbro. These volcaniclastic and sedimentary units are northwest to north striking, vertical to steeply dipping and range in character from laminated ash to coarse tuffbreccia. Radical lateral facies changes typical of a dynamic depositional environment preclude reliable correlation of individual units across significant distances and thus hamper accurate interpretation of large-scale folding and fault offsets.

#### 4.1.4 Structural Geology

All of the strata within the property have been subjected to compression, rotation, and subsequent extension. Figure 4.2 shows the prominent structural orientation, which is characterised by folds trending, northwest southeast and plunging to the southeast. The plunge of folds appears to be variable though generally shallow. Pervasive, weak to moderate, bedding-parallel flattening across the property is suggested both by the absence of oblique fabrics and by local strongly foliated zones having the same attitude as bedding within weakly foliated units. Small-scale isoclinal and intra-folial folds strike north-north-westerly and plunge moderately to the north. This is typical across most of the Mount Eaton suite. Numerous faults are found on the property, the more significant of which are summarised below.

The possible extension of the Llewellyn fault, termed the South Llewellyn fault, continues south from the Chief Cross fault along mine grid co-ordinate 4400 East. Slightly north of Whitewater Creek it is offset to the west by an east-west fault, the 101 fault, to continue in a more southeast orientation on the opposite side of Whitewater Creek. This northwest-southeast oriented structure was named the Limestone Fault due to its bedding parallel attitude within a discontinuous limestone/marble horizon. It marks the southwest boundary of the "mine wedge"; the wedge shaped package of rock within which all past production took place. The northern boundary of the "mine wedge" is further defined by the Whitewater Creek Schist Zone, a zone of schistose chlorite-amphibolite-serpentinite altered andesitic to ultramafic rocks less than 300 feet thick. A complex network of brittle faults is also found within this zone.

# 5000E 3000E Claim Boundary South Llewellyn Fault 101 Fault 1000 ft

# POLARIS-TAKU PROJECT

# Property Geology Northern Portion

alluvium

# **Mount Eaton Suite**

- serpentinite
- amphibolite
- gabbro
- basalt
- feldspar porphyry andesite
- metavolcanic rocks
- limestone

# Mount Stapler Suite

- siliceous schist
- schist
- boundary schist
- Portal



Three major faults, Numbers 1 and 5, and an unnamed fault, lie within the Mine wedge. The No. 1 and No. 5 faults strike northwest southeast, dip approximately 45' to the northeast, and are subparallel to the unnamed fault, which dips steeply to the southwest. The No. 1 fault has reverse displacement of up to 100 feet while the displacement of the No. 5 fault is poorly defined. The southwest dipping, unnamed fault shows no displacement, as it apparently parallels the A-B vein system. Between the No. 1 and No. 5 faults, the subparallel Nos. 2, 3 and 4 faults have been mapped in the upper levels. Displacement along these three faults is poorly defined, although movement of up to 30 feet is observed. Nos. 2, 3 and 4 faults appear to converge into a single fault and to weaken with depth.

#### 4.1.5 Deposit Geometry

The plan of the stoped areas, Figure 4.3 shows the general structure of the veins. The mined-out areas indicate the wedge shape, the predominant orientations and continuity of the zones, and the overall plunge of the system to the southeast. An early interpretation of the structure shows that various veins appear to meet and form "junction arcs" where both thickness and grade improve.

The most prominent vein orientations are: northwest striking and southwest dipping, the "A-B" veins; north striking and east dipping, the 'Y" veins; and the less extensive but economically important east to northeast striking and south dipping zones at the intersection of the previously mentioned vein sets. Recent workers interpreted these zones initially as "junction arcs". Historically they were known individually as the 25 vein, the 1-3-5 veins, and the deep, similarity oriented component of the current resource, the "C" vein. Up to 75% of total past production came from within 300 feet to either side of these junction arc centre lines. The recently discovered north zone bears many similarities to the AB zone and is interpreted as its fault offset northward continuation.

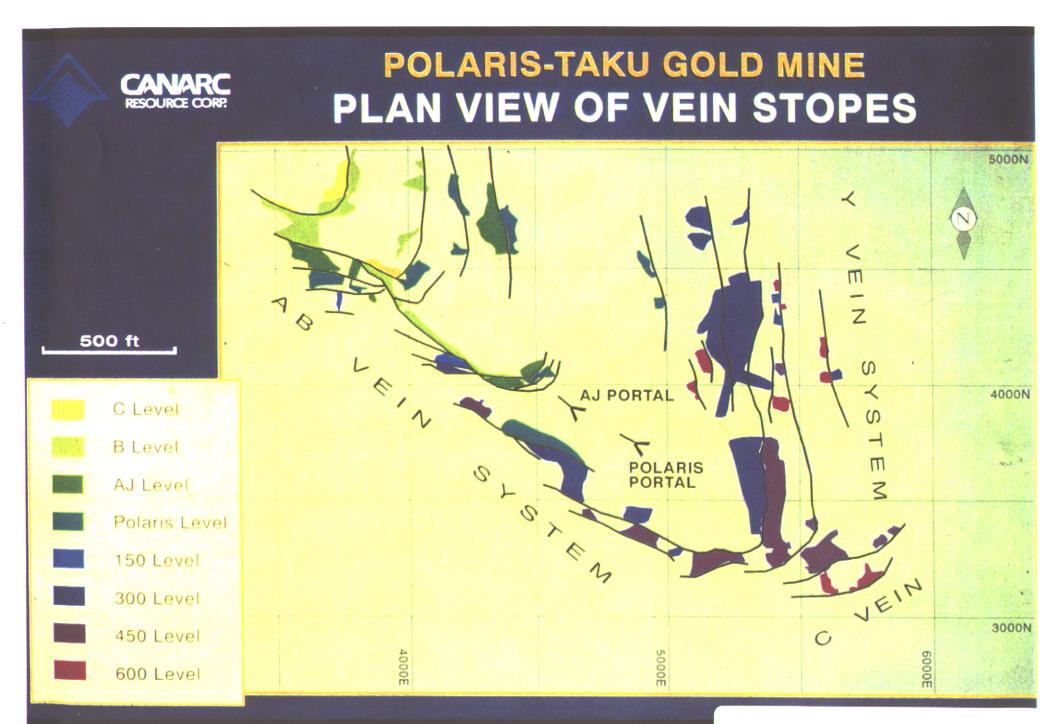
More detailed analysis of the vein sets suggests they developed as a conjugate shear system during northeast to southwest compression. Respectively, the AB and Y vein systems represent the sinistral and dextral shears, while the Junction Arc and C vein systems represent the tensional component of the conjugate system. Orebodies of commercial size have been deposited only in the larger and stronger shears. Minedout oreshoots range from 50 to 800 feet in length with widths up to 35 feet. The walls pinch and swell and show considerable irregularity, both vertically and horizontally. The arcuate nature of the deposit geometry within the mine wedge lends itself to an interpretation as a fold structure. However, this interpretation is not supported by both the intersection relationships between the ore structures and regional foliation, and textural differences between the individual vein sets.

Work regarding the structural genesis and geometry of the deposit is presently on going.

#### 4.1.6 Mineralisation

Mineralisation of the Polaris-Taku deposit bears strong similarities to many Archean Lode gold deposits such as the arsenical gold camp of Red Lake, Ontario, and the deposits of the Wiluna Belt in Western Australia.

Mineralisation lies within a shear controlled quartz-ankerite vein stockwork system hosting high-grade refractory gold in arsenopyrite-pyrite (± stibnite mineralised), silica-ankerite-sericite (± fuchsite) altered volcaniclastic rocks of a probable Carboniferous age. Age dating by 'Ar / "Ar on sericite/fuchsite alteration associated with mineralisation provides an early tertiary date of 63.44 Ma. Gold is associated primarily with arsenopyrite and to a lesser extent with pyrite. Arsenopyrite is very fine-grained (<1 mm) and acicular with a mode of occurrence commonly referred to as the "replacement type".



It is predominantly seen pervasively and patchily disseminated throughout strongly altered wall rocks proximal to, or as breccia fragments within, quartz-ankerite filled shear-controlled fractures.

In a general sense, as the grain size of arsenopyrite and the amount of pyrite decrease, the gold grade increases. Metallurgical tests suggest that pyrite does contain some gold, however its does not seem to be as enriched as the arsenopyrite. This is corroborated by a comparative study of Au:As ratios across the property. Lower grade zones with typically higher proportions of pyrite (eg. north zone, py: aspy = 2: 1) have higher Au: As ratios, whereas higher grade zones with lesser proportions of pyrite (eg C and Y veins, py: aspy  $\leq 1:1$ ) have lower Au: As ratios. Stibnite has no apparent influence on gold grade as it is only found in what are interpreted to be post-mineralisation quartz veinlets. It is also fine to very fine grained, frequently occurring as stylitic stringers within quartz. Past production averages indicate it composes a quarter of one percent of the deposit. Histograms have been produced to illustrate the distribution of gold values from more than 3500 analyses. The data used represented sample assays on drill core performed at the mine site during the years of development and production. These histograms of gold grade show positively skewed distributions with no obvious population breaks. Gold is distributed in three weakly defined populations, 0 to 0. 12, 0.12 to 0. 52, and greater than 0.52 oz Au/t.

The quartz-ankerite veining associated with the ore is itself not mineralised. Evidence from drillcore and historic observations confirm that with an increase in the proportion of veining comes a corresponding dilution of the ore zone. Ankerite veining may represent a slightly later veining event, which exploited the same structurally prepared fluid pathways as those which may have carried the earlier silica-sulphide-gold mineralisation. This is displayed quite well by the abundant breccia veining throughout the deposit where angular wall-rock fragments, both altered and unaltered, mineralised and unmineralised, are suspended in an ankerite-quartz vein matrix. Sulphide rich ribbon veinlets may represent mineralised host rocks, which have undergone subsequent flattening/shearing and veining.

#### 4.2 EXPLORATION

#### **4.2.1** Exploration Results, 1988-1995

Recent exploration drilling consists of 104,380 feet in 129 holes drilled since 1988. Initial efforts were confined to the lower elevations of the property due to limited availability of road building equipment and were designed to test the "Y" Vein system either down dip or along strike from old workings. Discovery of the "C" Vein system in 1989 resulted in a refocusing of efforts towards defining this Zone. Recent drilling during 1994 and 1995 has been designed to test the North Zone and the downward continuity of the "C" Zone.

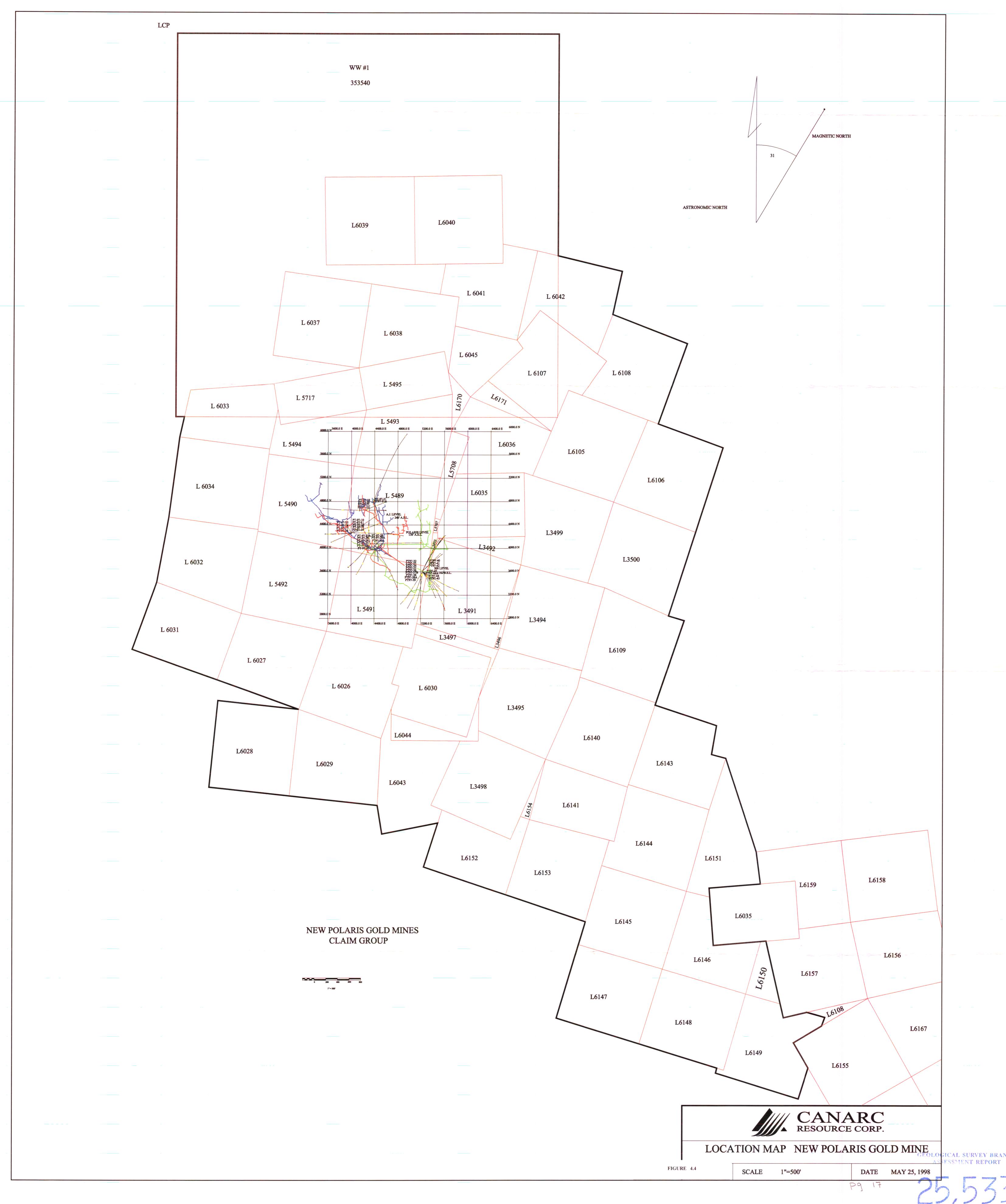
Drilling on the "Y" Vein has confirmed its existence and continuity at depth and although it is high grade in places, its character is generally narrow and consists of at least 12 different "lenses". This phase of drilling not include the "AB" Vein system; all references to grade and tonnage within this zone were extracted from historical drillhole data. The "C" vein has received the bulk of recent attention. It appears to represent a continuation of the "structural knots" discovered on the lower levels immediately prior to cessation of operations in 1951. It exhibits good grade over significant widths approaching 25 feet in places and reportedly appears to be more consistently mineralised than the other veins.

Table 4.1
SUMMARY OF EXPLORATION DRILLING TO 1995

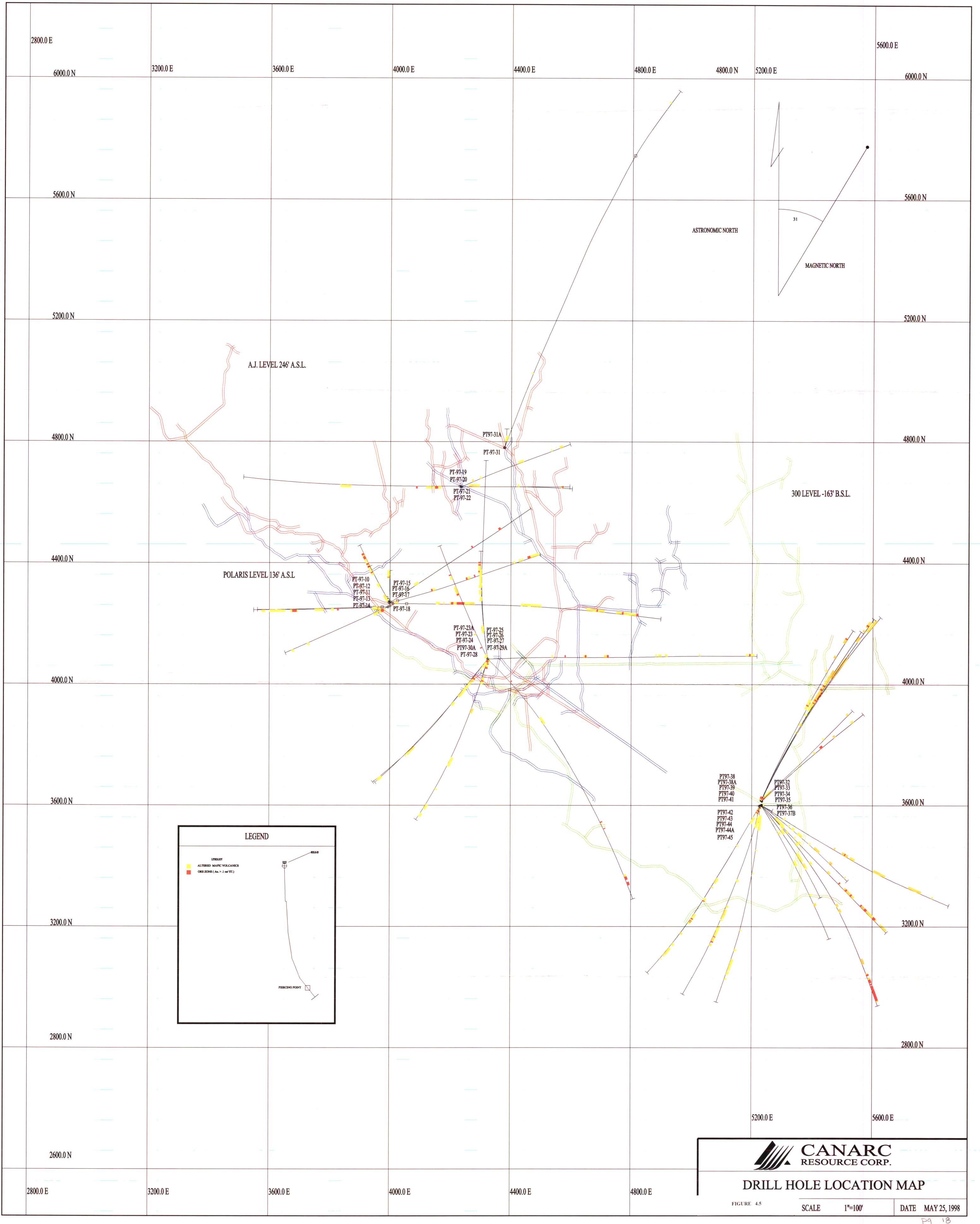
	Year	Zone	# Holes		Footage
1988		Y VE	EIN	8	3,373
1989		Y VE	IN	19	13,378
1990		C VE	IN	10	9,391
1991		Y VE	EIN	4	4,205
1991		C VE	IN	7	6,729
1992		Y VE	EIN	5	5,262
1992		C VE	ſΝ	18	15,662
1993		C VE	IN	8	4,270
1994		C VE	IN	9	7,729
1994		Y VE	IN	5	5,044
1995		C VE	īN	6	13,338
T	OTALS	9:	9		88,381

#### 4.2.2 Exploration Results, 1997

Commencing in 1996, a drill program to delineate additional tonnage at the New Polaris site was undertaken from several underground locations. The program was designed to address the zones identified by previous work, and add to the resource figures indicated above. The exception to this was the north zone, which was inaccessible from underground locations. For the purpose of this assessment report only those holes drilled after February 4, 1997 will be indicated in Table 4.1 below. Figures 4.4 and 4.5 will indicate the locations of these holes as well as the altered mafic and mineralised intersections. Currently, the lithologic data derived from all drilling is being compiled. This compilation will result in the identification of the individual veins with their respective alteration zone. The goal of this process is to derive a mining reserve for the property. The current data base for the property reflects a total of 933 drill holes for a total of 237,290 feet.



25,533



#### 4.2.3 Drilling Program Costs, 1997

During the assessment work period (February 4, 1997 to February 4, 1998), several mining and environmental operations were taking place simultaneously, and our costs for this period were actually higher than indicated in Table 4.2 attached. This table indicates a summary of direct drilling costs submitted for assessment purposes. The drilling program addressed several differing targets with the objective of increasing the resource figure indicated in the above sections. All of the drilling during this phase has a hole diameter of BQTK.

All of the drilling during this phase of the development program was undertaken entirely from underground locations. This necessitated the rehabilitation of several of the mine headings as well as the recollaring of the Polaris adit. Additionally at the commencement of the drilling program, which was initiated in November of 1996, the mine was flooded to a depth of 42' below the Polaris level. Drilling was phased in as dewatering and rehabilitation allowed access to various areas throughout the mine.

The drill cost of \$ 25/ ft. includes drilling, sample preparation, analysis, and transportation of samples to the assay lab. This cost is however exclusive of the geologist cost and this is reflected as a separate item in Table 4.2.

Part of the development drill program necessitated drilling from the 300 level. This level was inaccessible as of February 4<sup>th</sup> 1997. The amount indicated in table 4.2 under the heading mining crew reflects the cost of labour to access this level.

At the commencement of the development program below the Polaris level, the entrance to the Polaris level required rehabilitation as the existing entrance had collapsed over the years. Additionally there was a significant amount of clean-up to do on the Polaris level. Track was taken-up, "loose" was scaled and rotted timbers replaced in the shaft area. Additionally derelict mine equipment from previous mining activities was removed.

An electrically powered alimack raise climber was installed in one half of the two-compartment shaft to enable personnel to access the levels below the Polaris level. Additionally an electric hoist was installed in the other half of the shaft to allow equipment and pumps to be lowered to the lower levels. The installation of the electric hoist required that the existing hoist ropes and associated hardware be removed.

On February 4<sup>th</sup> the mine was flooded to 32' below the Polaris level. A pumping schedule to de-water was initiated approximately February 11<sup>th</sup>. Approximately 65 days later the mine was de-watered to the 600 level. The water level was maintained till June 7<sup>th</sup> at the completion of this phase of the development program. The pumps were shutoff at this point and the mine was allowed to re-flood. The pumping phase of the program required the installation of pumps, piping to the levels, and a 2000' discharge line.

As each level became accessible, the crew removed deleterious material, ensured the safety of the level, and washed the walls and back in preparation for mapping of the level. This process was undertaken on the 150, 300, 450, and 600 levels. Two drill stations were established on the 300 level.

As previously indicated, the Polaris site is located in a remote location. Air-freighting of material, fuel, and personnel from Atlin, British Columbia was the only option available at this time. During the 1997 assessment period an average of 1.75 flights daily were made into the site from Atlin. The flights were more frequent during the mine de-watering phase because of increased fuel (~ 550 imp. Gals/day) consumption.

•		<u> </u>			ROGRAM COS		
<u> </u>			_	1.5	DDD 4.3		
HOLE-ID	NORTHING	EASTING	ELEVATION	LENGTH	COST@ \$25/FT		
PT97-44	5232.7		-152.2		\$23,800		
SUB TOTAL		·			\$23,800		
<u> </u>	M	INING CREV	V 8@\$35/HI	<b>.</b>		ACCOMMODATION @\$25/DAY	
FEB 4, 1997 T	O MAY 4, 199		Ŭ			FEB 4, 1997 TO MAY 4, 1997 (90 DAYS)	
тот	AL MAN HOU	RS	8,640			TOTAL PERSONS	13
SUB TOTAL					\$302,400	SUB TOTAL	\$29,25
	CAMP SUPPO	ORT CREW 2	@ \$18/HR			TRANSPORTATION @ \$1400/ DAY	
	FEB 4, 1997 T	TO MAY 4, 19	97 (90 DAYS	)		FEB 4, 1997 TO MAY 4, 1997 (90 DAYS)	
тот	AL MAN HOU	RS	2,160				
SUB TOTAL					\$38,880	SUB TOTAL	\$126,00
SUBTOTAL							
	CHNICAL SUI			<u>.</u>		CORE RACK	
F	EB 4, 1997 TO	MAY 4, 1997	7 (90 DAYS)			1	
TOT	AL MAN HOU	RS	2,160				
SUB TOTAL					\$38,880		54,00
					<del>-</del>		
F	SITE GEO EB 4, 1997 TO	LOGIST @ \$ MAY 4, 199					
тот	AL MAN HOU	RS	1,080				
SUB TOTAL			<u></u>		\$37,800		

#### 4.3 MINERAL RESOURCES

A review of previous resource calculations has been made with the goal of identifying the probable order of magnitude of "reserves" that may be defined over time. While very little of these resources can be defined as proven mineable reserves at this time. There is sufficient available data to qualify them as probable and possible resources.

An estimate of Polaris-Taku reserves was made prior to closure in 1951 based on stringent precepts. "Reasonably Assured" ore was projected 25 feet in the plane of the vein above and below sampled drift sections of mineable grade while "possible" ore was projected an additional 25 feet beyond these confines (Parliament 1949). These reserves were apparently based solely on underground sampling without using underground diamond drill intercepts (WGM 1992). The "remaining reserves" at the time of closure was 105,000 tons grading 0.42 oz/ton including 17% dilution.

Adtec Mining Consultants (1972) recalculated these "reserves" in contemplation of reopening the mine. These were recalculated to be 148,000 tons at 0.29 oz/ton. Based on similar definitions and existing mine drawings and assay plans, Adtec Consultants (1983) recalculated the remaining "reserves" within the mine workings. These were defined to be in the order of 223,000 tons at 0.32 oz Au/SDT (diluted) based on a 0.15 oz/t cut-off and a minimum mining width of 4 feet. These reserves were subdivided into 151,000 tons of "reasonably assured" reserves.

Beacon Hill recalculated these reserves in 1988 for Suntac Minerals Corporation using a minimum mining width of 5 feet (instead of 4 feet) with similar results. Their reserve estimate was "limited to those areas where continuous sampling data was available along drifts, raises and stope backs, etc. and where it appears that minimal development work would be required to access the reserves". Beacon Hill estimated a total probable and possible reserve of 244,420 tons at 0.33 oz. Au/SDT with 132,210 tons at 0.33 oz./t classed as probable and 112,210 tons at 0.32 classed as possible. Table 4.2 summarises their calculations. In 1989, Beacon Hill added further probable and possible mining reserves from 27 new drill holes completed by Suntac. They estimated that the new drilling had increased the reserves by 380,000 tons at 0.39 oz. Au/SDT (probable) and 820,000 tons at 0.39 Au/SDT (possible) which, added to their previously calculated reserves, brought the overall reserve potential up to 1,450,000 SDT @ 0.38 oz. Au/SDT (diluted) above the lowest worked level of the mine (600 level at elev. –462 feet Below Sea Level 'BSL').

Montgomery Consultants were commissioned to conduct a Geostatistical Study of the Geological Resource for the Polaris-Taku Deposit in 1991. G.H. Giroux carried out this review and calculated a total resource of 2,225,000 tons grading 0.433 oz./ton based on a geostatistical approach using a cut-off grade of 0.25 oz/ton. These reserves were divided into 333,000 tons @ 0.437 oz./t (probable) and 1,892,000 tons @ 0.432 oz./ton (possible). The calculation discounted much of the reserves around the old workings and did not include dilution and minimum mining width provisions. These calculations were based on both old and new drilling and extended the resource base down to roughly 1200 feet BSL.

Table 4.3
BEACON HILL RESERVES (1988) WITHIN MINE WORKINGS

PROBA	PROBABLE RESOURCES					BLE RESO	URCES		
Level	In-Situ		Diluted		In-Situ		Diluted	Diluted	
	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	
	(SDT)	(oz/SDT)	(SDT)	(oz/SDT)	(SDT)	(oz/SDT	(SDT)	(oz/SDT)	
	Above Po	olaris Adit							
Canyon	8,120	0.5	10,650	0.38	2,380	0.47	3,340	0.33	
C	9,700	0.31	11,840	0.25	5,170	0.33	6,700	0.25	
B	16,930	0.36	10,120	0.3	16,930	0.36	20,120	0.3	
AJ	6,020	0.28	8,470	0.2	6,630	0.29	9,210	0.21	
Polaris	12,670	0.37	16,720	0.28	10,450	0.36	14,080	0.27	
Sub									
Total	53,440	0.37	67,800	0.29	41,560	0.35	53,450	0.27	
	Below Po	olaris Adit							
150	310	0.52	570	0.28	400	0.52	740	0.28	
300	19010	0.51	23830	0.4	14640	0.51	18870	0.39	
$-{450}$	120600	0.46	27080	0.35	18910	0.45	25080	0.34	
600	10050	0.51	12930	0.4	11050	0.51	.14,070	0.4	
Sub									
Total	50170	0.5	64410	0.39	45000	0.48	58760	0.37	
TOTAL	103,610	0.43	132,210	0.33	85,560	0.42	112,210	0.32	

Watts, Griffis, and McQuat were contracted to review the previous reserves in August 1992. Their review incorporated the residual reserves within the mine workings, as calculated by Beacon Hill in 1989, into their overall estimate of a total (diluted) mineral resource of 1,600,000 tons at 0.46 oz. Au/SDT. Their calculations were based upon a minimum mining width of 5 feet or 15 % dilution and a cut-off grade of 0.25 oz/ton. The improvement in grade stems from the inclusion of new deeper holes that extend the known mineralization to a depth of 1200 feet BSL and exclusion of lower grade material previously included in the Montgomery estimate.

Giroux was further contracted to provide reserve updates throughout 1992 and in February 1995 he recalculated the resources for the newly drilled portions of the "C" Zone. Recent drilling has also confirmed the existence of a new "North" Zone which, although it appears to be low grade (0. 18 oz/t) has exhibited possible significant widths in the order of 22 feet. Giroux has included calculations for this zone, which for purposes of this review have been excluded due to grade. The results of his recalculation show that the "C" Vein discovered just prior to mine closure represents a significant new addition to the resource base. He has calculated a total of 85,700 tons grading 0.426 oz/ton (probable) and 595,000 tons grading 0.425 oz/ton (possible) for this zone below the 450 Level (elev. 313 ft BSL) and 1000 feet BSL. Most of this resource lies above 800 feet BSL and within 200 feet of the existing shaft bottom. The total resources calculated by Giroux to date are summarised on Table 4.2. His calculations were in situ based on a 0.25 oz/ton cut-off and did not include dilution provisions as shown below.

In order to summarise the variety of RESOURCE CALCULATIONS identified above; the Beacon Hill calculation of residual reserves within and around the workings were totalled. To this total, the geostatistical resource calculations of Giroux were added after applying a general dilution factor of 25 % at zero grade to Giroux's figures for the "Y" Zone and 15% at zero grade for the "AB" and "C" Zones. The in-situ resource base is presently estimated as 582,910 SDT @ 0.359 oz. Au/SDT (Probable), and 2,614,210 SDT @ 0.363 oz. Au/SDT (Possible) including appropriate dilution factors. The dilution factors were estimated based on vein characteristics. The "Y" Veins are described as being high grade but narrow which makes them prone to high dilution from overbreak during mining as well as overmining. The "AB" veins in-situ grade, as calculated by Giroux, already contains internal dilution from a parallel dike. To this total, an overall additional dilution of 15 % is considered appropriate. The "C" vein should not experience much dilution since it is generally thought to be fairly thick however it has been diluted 15% to allow for its relatively flat slope in places.

	POLARIS	TAKU G		ISTICAL OURCES			Table 4.4		
	PROBA	BLE RESC	URCES		POSSII	BLE RESO	URCES		
Zone	In-Situ		Diluted		In-Situ	Γ	Diluted	<u> </u>	
	Tons (SDI)	Grade (oz/SDT)	Tons (SDI)	Grade (oz/SDI)	Tons (SDI)	Grade (oz/SDT)	Tons (SDI)	Grade (oz/SDI)	
GIROUX (	(1995)								
Y Zone	210,000	0.461	262,500	0.369	987,000				
AB Zone	78,000	0.403	89,700	0.35	508,000			·	
C Zone	85,700	0.426	98,500	0.37	595,000	0.425	684,000	0.37	
Sub	222.000	0.441	450,700	0.365	2,090,000	0.437	2,502,000	0.365	
Total	373,000	0.441	430,700	0.303	2,070,000	0.137	2,302,000	3.5.15	
BEACON 1988									
Upper				<u> </u>		<u> </u>		<u> </u>	
Levels	53,440	0.37	67,800	0.29	41,560	0.35	53,450	0.27	
Lower	<del></del>	<del> </del>							
Levels	50,170	0.5	64,410	0.39	45,000	0.48	58,760	0.37	
Sub							11000	0.22	
Total	103,610	0.43	132,210	0.33	85,560	0.42	112,210	0.32	
TOTAL	476,610	0.439	582,910	0.359	2,175,560	0.436	2,614,210	0.363	

Currently a detailed mine model is being compiled which identified the individual vein structures within their respective alteration zones. This approach will allow the identification of mining reserves for the New Polaris Property. At the completion of drilling, the mineral resource for all zones was calculated to be 3.9 million short tons at .41 oz.

# SECTION 5.0 STATEMENT OF QUALIFCATIONS

I Peter Karelse of 32474 Marshall Road, Abbotsford, British Columbia hereby certify that:

- 1. I am a geologist under the employ of Canarc Resource Corp.; and have from May 1996, till present been responsible for the geology at the Polaris Gold Mines site.
- 2. I am a graduate of Cambrian College of Applied Engineering Technology, with a diploma in Engineering Technology (1975).
- 3. I am a member of the Prospector's and Developer's Association of Canada.
- 4. I was a past member of the Ontario Association of Certified Engineering Technologists with an Applied Science (A.ScT.) designation.
- 5. I have practised as development geologist, and engineering geologist in the province of Ontario from 1975 to 1996.
- 6. This report was prepared by me

Peter Karelse

Dated this 25th day May 1998.

VANCOUVER, BRITSH COLUMBIA

I John Sefton of 66 Howe, Victoria, British Columbia hereby certify that:

I was a geologist under the employ of Canarc Resource Corp.; and have until June 1996, been responsible for the logging and mapping at the Polaris Gold Mines site.

I am a graduate of the University of Alberta, with a degree BSc. in Geology . (1975).

I have practised as a geologist, in the province of British Columbia from 1975 to 1996.

The drillhole log was prepared by me

John Sefton

Dated this 5th day June1998.

VANCOUVER, BRITSH COLUMBIA

# APPENDIX 1 NEW POLARIS GOLD MINES 1997 ASSESSMENT REPORT DRILLHOLE PT97-44



#### DIAMOND DRILL HOLE LOG

HOLE NUMBER: P197-44 DATE STARTED: June 18/97 GRID COORDINATES: 5232.7N,3600.4E LAT./LONG.:

AZIMUTH: 136 DIP: -36 LOGGED BY: J. Sefton

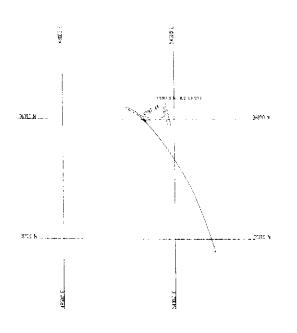
DATE COMPLETED: June 22/97

UTM COORD'S:

LENGTH: 952 ft

CORE SIZE: BQTK
CORE LOCATION: MINE SITE

#### LOCATION SKETCH:



	SURVEY		
DEPTH 0 35 240 440 640	AZIMUTH 136 136.5 143 148.5	DIP 36 36 36.5 36 35.5 35.5	
852	160	00.0	

Hole Number: PT97-44

Project: Polaris-Taku

Page 1

# DIAMOND DRILL HOLE LOG

FROM	то	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au
Λ	53.0	NUTS OF A STATE OF THE STATE OF	NUMBER				oz/St
0	53.0	PYROCLASTICS					
	<del> </del>	Meddk.grn. grey; very fine to med grained, moderately hard,					
	<del> </del>	Slightly calcareuos; minor carboante stringers randomly oriented				<u></u>	
		1-7cm. wide qtz. veins @ 30-40/ca ;Several 1-4' basaltic flows					<del>                                     </del>
	<del> </del>	@40/ca					
53	109.5	TUFF					
		Med. To dk. green grey; very fine grained, moderately hard.	20041	58.5	CO F	0.0	
		beautiful mart.	20041		60.5	2.0	< 0.001
		58.5-60.5 4" qtz. Vein @40/ca 4" halo about vein sulphide	20065	77.7	81.1	3.4	< 0.001
		Grey- poss. finely diss. stibnite?		<del></del>			
		77.7-81.1 pale green -lt. grey; several qtz. Veins 1-3cm.					
		@45/ca					
109,5	130	AX MEDING TO THE STATE OF THE S	20067	111.2	113.9	2.7	0.002
109,3	130	ALTERED TUFF					
	<u> </u>	109.5-111.2 lt. grn. grey to med. brn. grey	20069	115.6	120.6	5.0	< 0.001
····	<del>- </del>	111.2-113.9 3" qtz. vein @ 5/ca	20070	120.6	125.6	5.0	< 0.001
	╁	113.9-115.6 mottled med brn grey to med green	20071	125.6	130.0	4.4	0.002
	<u> </u>	115.6-130 lt grey; 5% 1cm wide qtz. veins @ 10-20/ca; minor					
<del></del>	<del> </del>	(<1%) pyrite blebs					
130	147	TUFF					
		As above 53-109.5					<del> </del>
147	154.7	ALTERED TUFF	000=0				
		147-149 med brn grey	20072	147	149.7	2.7	0.007
<del></del>	<del>                                     </del>	149.7-153.1 10% qtz veins <1cm wide @ 40-60/ca	20073	149.7	153.1	3.4	0.016
	<del>                                     </del>	Pale grn to lt grey to med brn grey	<del>                                     </del>				
	.L	ole Number: PT07-44					

#### **DIAMOND DRILL HOLE LOG**

FROM	то	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au oz/St
147	154.7	ALTERED TUFF (continued)	NUMBER				
	121.7	153.1-154.7 med brown to lt grn grey <5% qtz veins < 1cm.					
		Wide @30/ca					
154,7	182.9	TUFF					
	Ţ .	Med grn grey, fine to very fine grained, moderately hard, weak					
		Carbonatisation @ upper contact to strongly carbonatised @					
		Lower contact					
		н					
182.9	187.4	BASALT		ļ			
	ļ. <u> </u>	Med brn grey; 10% flattened mafic phencrysts up to 2 cm long;					
		Unit soft to moderatley hard; sharp contacts @ 25-30 /ca					
187.4	207.7	TUFF					
		Same as 154.7-182.9 reduced carbonate content					
			22272				
207.7	220.9	ALTERED TUFF	20076	211	215.9	4.9	< 0.001
		207.7-211 lt to med grn grey	20077	215.9	220.9	5.0	< 0.001
	<u> </u>	211-215.9 several 2-3" qtz veins @ 70 /ca pale green to pale					1
	-	grey halo grading to dk grey; below 3" vein in middle is 7" pale green with 1-2 mm bright green crysts.	-				<del> </del>
<u> </u>		215.9-220.9 pale green to dark grey; 5% qtz veins towards					<del> </del>
-		220.9 ;2" vein @ 70/ca					<del> </del>
	<del> </del>	LLO, 7, L YOM (cg. 10) Cd					
220.9	235.1	TUFF					
		Dk grn grey; fine grained to very fine grained; moderately hard					
	ļ						
			1	1	<u> </u>		

# DIAMOND DRILL HOLE LOG

FROM	то	DESCRIPTION	SAMPLE NUMBER	FROM	TO	INTERVAL	Au oz/St
235,1	238.4	LAPILLI TUFF					
		Med grn grey; fragments up to 1cm.; moderately hard					
238.4	267.4	BASALT					
		Dk grn grey; fine grained moderately hard; locally carbonatised;			•		
		Local usbhedral mafic phenocrysts up to 2 mm;					·
		258-265 5% irregular patchy qtz/carb veins					
267.4	271	LAPILLI TUFF					
		Med grn grey; fragments up to 1cm; upper contact @ 20/ca;					
		Lower contact @ 25/ca					
271	305	TUFF					
		Med grn grey to dk brn grey; very fine grained; several 6" wide					
		Med grained intervals in upper 20°; moderately hard		_			
305	317	ALTERED TUFF	20078	307	312.0	5.0	0.004
		Lt brn green to med grey; 10" qtz vein @ 45/ca @308.2; 6" qtz vein @ 309.7 with 3' silicified zone below; 1" qtz vein @ 60/ca @315.5; rare visible sulphides; middle 6" vein with minor			J. 1.1.		0.00-1
		Fuchsite streaks					
317	357.5	TUFF					
		Med grey to med brn grey; fine grained; subhedral dk green					
	<u> </u>	phenocrysts < 1 mm in upper portion; moderately hard; bottom 5' interbedded argillite 1-10 mm @20/ca					

#### **DIAMOND DRILL HOLE LOG**

FROM	ТО	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au oz/St
050.6	000 5		NUMBER				
357,5	380.6	ALTERED ARGILLITE	20080	359.7	363.4	3.7	<0.001
	<u> </u>	Black; fine grained; moderately hard; numerous quartz veins					
	<u> </u>	359.1-363.4 and 372.4-376.6; 368.6-372.4 altered tuff, lt grn	20081	368.6	372.4	3.8	<0.001
		Grey; several 1cm qtz veins @ 20/ca	20082	372.4	376.6	4.2	0.003
380.6	509.2	TUFF			· · · · ·		
		Med brn green; interbedded with black argillite @20/ca in					
		Upper 5'; fine grained; rare bedding features; moderate to very					
		Hard; 383.3-385.8 altered it grn grey with fuchsite streaks; 2cm					
		Qtz vein @ 383.3					
		399.5-401.5 med brn green to pale green with lt grey bands	20084	399.5	401.5	2.0	< 0.001
		Adjacent 3cm qtz vein @30/ca					
		447-482 common 1 mm calcite stringers with associated black					
		Patches and veining					
509.2	521	ALTERED TUFF					
		Med brown to buff; 2% qtz veins @ 30-50/ca; rare AsPy	20085	510	515.0	5.0	0.008
			20086	515	520.0	5.0	< 0.001
521	533	TUFF					10.00
		Same as 380.6-509.2					
533	547	ALTERED TUFF					
		533-538.4 interbedded tuff, black with buff sections @ 10/ca;	20088	538.4	543.0	4.6	0.002
		Numerous qtz/carb stringers <5 mm @ 50/ca		300.1	0 1010		0.002
-		538.4-543 several qtz veins 5-40mm @20 /ca; lower 4' pale	20089	543	547.0	4.0	< 0.001
		Green with numerous fuchsite streaks			0 1710	1.0	(0.00)
		543-547 lt brn. Grey; 5% qtz/carb veins randomly oriented			· · · · · · · · · · · · · · · · · · ·		
		2-100mm wide	1				

#### **DIAMOND DRILL HOLE LOG**

FROM	то	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au oz/St
547	670.6	BVD CCL ACTIVICS	NUMBER				
347	570.5	PYROCLASTICS	ļ				
		Dk brown to med. Brn grey; fine to med grained; med to hard;					
	<u> </u>	Numerous qtz/carb stringers; common pyrite crystals <.5mm					
		550-551 lapilli sized fragments < 1cm				·	
		568.1-570.1 med grn grey with 5" qtz vein @70/ca					
570.5	609.7	BASALT					
		Dk brn grey; fine grained; hard; calcareous; local pyroclastic					
		Interbeds @20/ca			•		
	L	582.4-585.3 weakly altered; pale green; unit fuchsitic adjacent					
		To qtz veins (5%) 5-30mm @50/ca					
609.7	753,7	PYROCLASTICS				<u> </u>	
		Med grn grey; very ifne to med grained					
<del></del>		639.9-635.9 med brn grey; silicified with 1cm qtz veins and					
		minor stringers					
	<u> </u>	695-753.7 predominantly soft, med grained foliated med grained			•		-
		Pyroclastics					
753,7	775,6	ALTERED PYROCLASTICS	20091	757	761.4	4,4	< 0.001
		Weakly altered		,,,,	701.4	7,7	<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>
		753.6-757 lt brgrn grey to dk brown	20093	765.8	770.8	5.0	< 0.001
		757-765.8 med to lt grn grey; several 1-2 cm qtz veins @10-20		100.0	770.0	0.0	<del>\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ </del>
		/ca; no visible mineralisation; soft					
		765.8-775.6 black with numerous cross-cutting qtz/carb					<u> </u>
		Stringers <2mm; moderately hard					
775.6	815.2	PYROCLASTICS	ļ. <u></u>				

# DIAMOND DRILL HOLE LOG

FROM	то	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au oz/St
775,6	815.2	PYROCLASTICS	NUMBER				
		Med grey to med grn grey; very fine to med grained; soft to					
	<del>                                     </del>	Moderately hard					
	<u> </u>	782-783.5 lapilli up to 1cm					
		797 bedding @ 5/ca					
815.2	825.1	ALTERED PYROCLASTICS	20095	015.0	010.0		
		815.2-819.8 med brn green <10% qtz veins 1-2cm @20/ca	20095	815.2	819.8	4.6	0.006
		819.8-821.7 30% broken qtz veins @ 30/ca, unit pale green; 2%	20096	819.8	821.7	1.9	0.867
		AsPv					
		821.7-825.1 qtz vein breccia lt grey sulphide grey; 90% fractured					
		Vein and slicified host with 10% matrix of py/AsPy/stibnite(?);					
		Contact @ 821.7 @ 20/ca					
825.1	833.1	ANDESITE DYKE					
		Med brn; fine grained with 5% euhedral to subhedral .5-2mm	20098	825.1	830.1	5.0	0.017
		Mafic phenocrysts which are altered lt grey	20099	830.1	833.1	3.0	0.017
		1-2' from contact inwards; 5% qtz veins 1mm -60mm @50/ca;		300.1	000.1	3.0	0.009
		Lower 6" soft and broken					
833.1	855,6	ALTERED PYROCLASTICS	20100	833.1	837.0	3.9	0.007
		833.1-837 30% irregular qtz vein @ 10-20/ca;	20100	033.1	837.0	3,9	0.037
		Unit It to med green with 1%py/stibnite	20102	840.4	843.6	3.2	0.017
		837-843.6 med brn green with 1cm interbeds @ 20/ca; 5% qtz	20103	843.6	845.7	2.1	0.017
		Stringers and veis @5 -80/ca	20104	845.7	850.9	5.2	0.132
		843.6-845.7 pale green with fuchsite streaks; 5% qtz veins @ 10/ca; 1% py/aspy	20105	850.9	855.6	4.7	0.205

# DIAMOND DRILL HOLE LOG

FROM	то	DESCRIPTION	SAMPLE	FROM	то	INTERVAL	Au oz/St
833.1	855,6	ALTERED PYROCLASTICS	NUMBER				
		continued	20106	855.6	860.2	4.6	0.022
			20100	000.0	800.2	4.0	0.022
		845.7-855.6 qtz vein breccia lt grey to sulphide grey with several					
		4-10" pale green intervals; fractured vein and silicified host		-			
		Sample 20104 contains <5% sulphides as hairline fracture filling;					
		Sample 20105 20% sulphides as matrix					
855.6	860.2	ANDESITE DYKE					
	333.2	Lt brn grey; as above, mafic phenocrysts altered it grey;					-
		Moderately hard; upper contact @50/ca; @ 857 6" of sulphide fractures					
860,2	864.2	QUARTZ VEIN BRECCIA					
		40% fractured qtz vein & 50 % silicified pale green pyroclastic;			·		
	<u> </u>	10% sulphides in matrix and patches of pale green mafic					
864.2	869,1	ANDESITE DYKE	20108	864.2	869.1	4.9	0.054
		As above contains 4" of mineralised qtz vein breccia @ 866.5	20100	804.2	803.1	4.9	0.051
869.1	873.1	ALTERED PYROCLASTICS	20109	869.1	873.6	4.5	0.045
		25 % qtz veins @ varying angles 10-80/ca; lt green grey with	20103	003.1	6/3.0	4.5	0.645
		Fuchsite; 5% sulphides					
873.1	874.7	ANDESITE DYKE	20110	873.6	874.7	1.4	0.000
		As above contacts @ 30/ca	20110	6/3.6	6/4./	1.1	0.038
<u> </u>							
	1						

# DIAMOND DRILL HOLE LOG

FROM	TO	DESCRIPTION	SAMPLE NUMBER	FROM	TO	INTERVAL	Au oz/St
874.7	879.6	ALTERED PYROCLASTICS	20111	0747	070.0	4.0	
		20% qtz vein @ 20/ca; lt grn grey with 5% py/aspy	20111	874.7	879.6	4.9	0.737
879.6	881.4	ALTERED ANDESITE DYKE	20112	070.0			
		Lt grn brown; 10% 5-10mm veins @45/ca; 4" altered pyroclastic	20112	879.6	881.4	1.8	0.217
		At lower contact.					
881.4	883.6	ANDESITE DYKE					
		Contacts @ 30/ca; minor < 1 cm qtz veins @ 70/ca	20113	881.4	883.6	2.2	0.007
883.6	0000						0.007
0,686	887.3	ALTERED PYROCLASTICS					
		40% qtz veins and patches 1-5 cm in pale green unit with 5%	20114	883.6	887.3	3.7	0.501
		Sulphides; lower 6" sulphide grey with 10% sulphides				<u> </u>	0.501
887.3	896.8	ALTERED PYROCLASTICS/ ANDESITE DYKE	20115	887.3	000.0		
		Pyroclastics It grn grey with 20 % qtz veins and 5% py/aspy in	20116	892	892.0	4.7	0.841
		Stringers and patches; 5 4-12" intervals of andeite dyke @ 30	20110	092	896.8	4.8	0.3
		/ca					
896.8	927.9	QUARTZ VEIN BRECCIA	20117				
		LENGTHs of fractured qtz vein and silicified host with sulphides	20117	896.8	902.0	5.2	0.713
		Filling fractures alternating with intervals of lt grn grey altered	<del></del>				<u> </u>
		Pyroclastics containing less broken veining @ 20-30/ca and					
		sulphide stringers and patches			İ		
896.8	902	60% qtz; 2% py/aspy					
902	907	70% qtz; 3% py/aspy	20118	902	007.0		
			20110	902	907.0	5.0	0.869

# DIAMOND DRILL HOLE LOG

FROM	то	DESCRIPTION	SAMPLE	FROM	TO	INTERVAL	Au oz/St
907	912	40% qtz; 5% py/aspy	NUMBER				
912	915.7	40% qtz; 5% py/aspy	20119	907	912.0	5.0	0.506
915	919	95% qtz; 5% py/aspy	20120	912	915.7	3.7	0.59
919	922.2	90% qtz; 10% py/aspy	20121	915.7	919.0	3.3	0.242
922.2	927.9	60% qtz; 5% py/aspy	20122	919	922.2	3.2	0.621
			20123	922.2	927.9	5.7	1.264
927.9	936.5		20124	927.9	932.0	4.1	0.165
921.9	930.3	ALTERED PYROCLASTICS					
		927.9-932 5% qtz veins < 1cm @ 5 /ca & 3" vein @ lower					
		Contact @ 60/ca; It grn grey with 5% py/aspy in patches and					
		Stringers	20125	932	937.0	5.0	0.014
		932-936.5 med brn green with minor It green zones; 10% qtz veins and stringers					
936.5	952	PYROCLASTICS					
		Med brown to med brn green; fine to medium grained bedding @ 10/ca	20126	937	942.0	5.0	0.002
		Numerous < 1cm qtz veins @ 30/ca		-			
		END OF HOLE					