ASSESSMENT REPORT

on

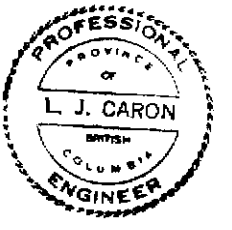
1997 SUMMER DRILL PROGRAM

PHOENIX (SYLVESTER K) PROPERTY

(for filing on the Phoenix 97 Group)

NTS 82E/2 E

Lat: 49° 06' 30"N
Long: 118° 36' 00"W



Kettle River Resources Ltd.
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Greenwood, B.C.
V0H 1J0

Linda Caron, P. Eng.
September, 1997

25,302

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1.0 SUMMARY

This report describes the results of a 10 hole, 3466 foot diamond drill program completed during July, August and September, 1997 on the Phoenix 97 Group of mineral claims, located about 6 kilometres east of Greenwood, B.C.

The Greenwood camp, and particularly the Phoenix area, has a long history of exploration and mining activity, dating back to 1881 when the first mineral claims were staked. The Phoenix mine operated from the 1890's until 1919 as an underground operation, and then again as an open pit mine during the period 1956 - 1976. Total production at Phoenix during the period 1900 - 1976 is reported at 27 million tons at a grade of 0.9% Cu and 0.04 oz/t Au, from a number of different ore bodies. No significant work was done on the property from the shut down of operations in the late 1970's, until 1981 when Noranda optioned the Phoenix property to Kettle River Resources Ltd., who carried out an exploration program focused on the precious metal potential of the property. A drilling program re-discovered and then aggressively explored the Sylvester K zone during the period 1983-87. In 1997 Echo Bay acquired the property as part of a joint venture with Kettle River Resources Ltd. covering a larger land package in the Greenwood area. In the summer of 1997, the drilling program described in this report was completed.

The Phoenix property is underlain by rocks of the Triassic Brooklyn Formation sitting unconformably upon Permian Knob Hill Group cherts and greenstones, and located in the uppermost thrust slice in the Greenwood Camp. The Brooklyn Formation consists of an interfingering sequence of chert breccia (sharpstone) and fine clastics, limestone and limestone breccia, and volcanics (greenstone, pyroclastics and subvolcanic microdiorite). Two distinct units of sharpstone conglomerate are recognized in the Phoenix area, commonly separated by a thick section of massive limestone (the Brooklyn limestone). Most of the mineralization discovered to date in the Phoenix area is skarn type copper (+ gold) developed in the sharpstone conglomerate (both in the upper and lower units). At the Sylvester K prospect, massive pyrite and pyrrhotite, typically grading about 0.25 oz/t Au occurs essentially at the contact between the Brooklyn limestone and the underlying lower sharpstone. The mineralized zone strikes at about 020°, with a near vertical to steep east dip. Footwall to the massive sulfides is a section of fine sulfidic volcanic siltstone which can average in the order of 0.3 oz/t Au. Where the entire massive sulfide horizon and underlying footwall rocks have been intersected uncomplicated by faulting, the mineralized zone ranges up to 40 feet in thickness. The horizon can be traced on strike for about 500 feet near surface, although the zone narrows in thickness at the north and south ends. The origin of the mineralization is much debated. Mineralization is consistent with a volcanogenic massive sulfide model, but may also be explained by a distal skarn model or manto type, related to the Phoenix deposit. While the area is very complicated by faulting, none of these faults appear to be controlling mineralization. In any case, mineralization is stratigraphically controlled, and the stratigraphy is characteristic and recognizable, although cut by numerous Triassic microdiorite or Tertiary dykes (early feldspar +/- biotite porphyry dykes, later, typically pink, syenite dykes, or very late less common, hornblende porphyry dykes). The Tertiary dykes are largely flat lying and are controlled by a series of flat to gently west dipping faults.

Compilation of previous drill data had suggested that 2 flat faults displaced stratigraphy at Sylvester K, the 100 Fault (about 100' below surface in the Sylvester K area), and the 400 Fault Zone, about 300' below this. Displacement appeared to be top to the west, with about 300 feet of movement on the 100 Fault, and an unknown amount on the 400 Fault. For the purpose of discussion, the panels have been named - the Sylvester K panel above the 100 Fault, which hosts the main Sylvester K trench and intersections drilled in 1983, the New York panel below this (between the 100 and 400 Faults), and the Brooklyn panel below the 400 Fault. Several hundred feet below the 400 Fault is the Snowshoe Fault, a regional, gently west dipping listric normal fault which has a similar top to the west sense of movement, and which places the Brooklyn Formation unconformably on Knob Hill Group rocks. The 100 and 400 Faults are thus sympathetic to this larger regional fault. Since the Sylvester K horizon is

stratigraphically controlled, and regardless of whether mineralization is related to the nearby skarns or represents a Triassic VMS deposit, it predates the flat faulting which offsets stratigraphy. As a result, the mineralized horizon should be present in offset panels of rock. The 1997 drill program was designed to test for the down dip, faulted offset to the Sylvester K horizon, to the east, in the New York and Brooklyn panels.

The 1997 drill program confirmed the presence of the 100 and 400 Faults, but revealed at least 3 later, vertical to steeply west dipping normal faults (with an unknown amount of strike-slip movement indicated on at least one of these faults). These later normal faults have the effect of bringing deeper panels closer to the surface to the east. As a result, the Sylvester K panel has been completely removed to the east, and the New York panel removed in part, so that by the time the eastern most steep fault is crossed, the New York panel seems to be completely removed. Unfortunately, the 400 Fault zone which marks the base of the New York panel, is occupied largely by thick Tertiary dykes, and a large part of drilling to date has been in these dykes. In the sections drilled, there appears to be little room left for the prospective horizon in the New York panel, due to the presence of these dykes, although it was encouraging that hole ML-06-97 intersected a 6 foot section of 0.115 oz/t Au in the mineralized zone immediately above the stratigraphic position of the "Sylvester K" horizon. Because of the unknown strike-slip movement on the faults, there may however be prospective ground to the south or north. Potential also exists in the Brooklyn panel, below the 400 fault, which is close to surface east of F1. The prospective horizon has be located in this area in one drill hole, although it was unmineralized where intersected. The on-strike offset along the steep late faults is unknown, and drilling should be done to test the "Sylvester K" horizon on strike to the north and south in the Brooklyn panel.

2.0 INTRODUCTION

2.1 Location, Access and Terrain

The Phoenix property is located about 6 kilometres east of Greenwood, B.C. on NTS 82E/2E, and centered at about 49° 06' 30"N latitude and 118° 36' 00"W longitude (see Figure 1). Access to the property is excellent, with an all-weather road from Greenwood east to Phoenix and then extending east from Phoenix to intersect Highway 3 north of Grand Forks. There are numerous secondary roads which provide further access to the property.

Elevations range from approximately 3000 feet in the northern portion of the property, to over 5100 feet at the height of Knob Hill, just south of the Phoenix pit. Generally, the topography is moderate, with rolling forested hills. The majority of the property is covered by mature fir, pine and larch forest, with typically minimal undergrowth. Wetter areas have dense immature cedar forest, while open grassy areas often occupy dry south and west facing slopes. There are numerous old mine workings and tailings deposits throughout the property, but particularly in the vicinity of the Phoenix pit.

The climate is moderate to semi-arid, with hot, dry summers. Snowfall generally averages 1 - 2 metres, and winter temperatures rarely drop below -25° C. Summer temperatures range up to about 35° C, although generally do not exceed 30° C. Water is available for drilling year round from the Phoenix pit or from Marshall Lake, a small man-made lake about 1 kilometre north of the pit.

2.2 Property and Ownership

For the purpose of filing assessment work, the claims have been grouped together as the Phoenix 97 Group, as listed below and shown in Figure 2. All claims are owned 100% by Kettle River Resources Ltd and are part of a larger land package in the Phoenix area. The Phoenix 97 Group consists of 11 Crown Grants, 5 Mineral Leases, 4 Reverted Crown Grants, and 46 Located 2 and 4 post mineral claims, for a total of 97 units. Expiry dates listed are after filing this report.

Phoenix 97 Group

CLAIM NAME	TENURE #	UNITS	EXPIRY
GARFIELD	CG1264	1	
SYLVESTER K	CG2385	1	
WOODSTOCK	CG2627	1	
LITTLE DALLES	CG2628	1	
MAY	CG2629	1	
DENVER	CG2875	1	
DEXTER FR	CG3298	1	
WAR EAGLE	CG678	1	
GREY EAGLE	CG793	1	
NEW YORK	CG901	1	
MISSING LINK	CG979	1	
SYLVESTER K FR.	216291 (M106)	1	22/09/98
MONTE CRISTO	351018	1	30/09/2004
MONTE CARLO	351019	1	30/09/2004
BIG MONTE	351020	1	30/09/2004
DIAMOND JOE FR	351036	1	30/09/2004
DIAMOND JOE	351037	1	30/09/2004
MULLAN	351038	1	30/09/2004

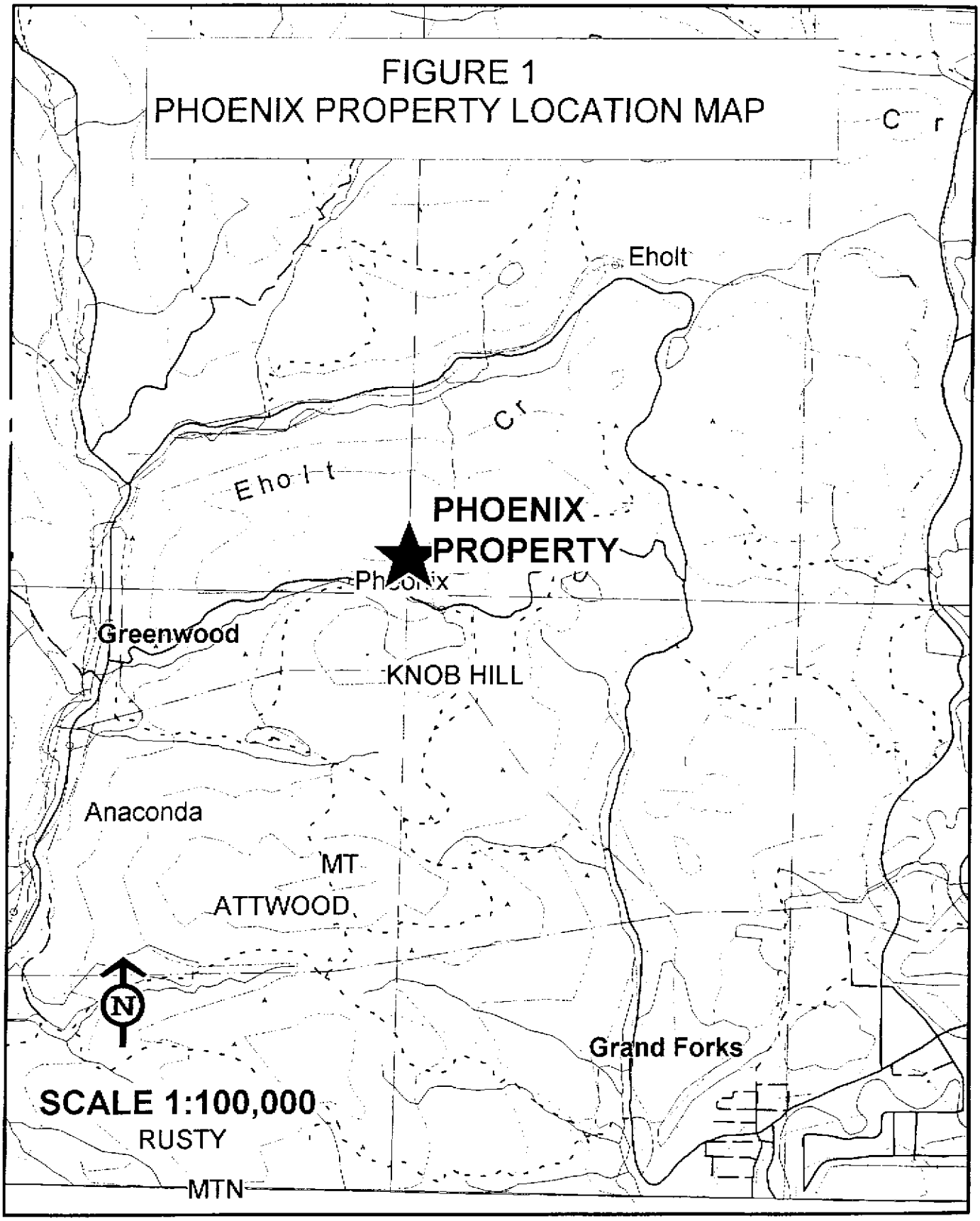


FIGURE 1
PHOENIX PROPERTY LOCATION MAP
Eholt
Eholt
PHOENIX
PROPERTY
Phoenix
Greenwood
KNOB HILL
Anaconda
MT
ATTWOOD
N
Grand Forks
SCALE 1:100,000
RUSTY
MTN

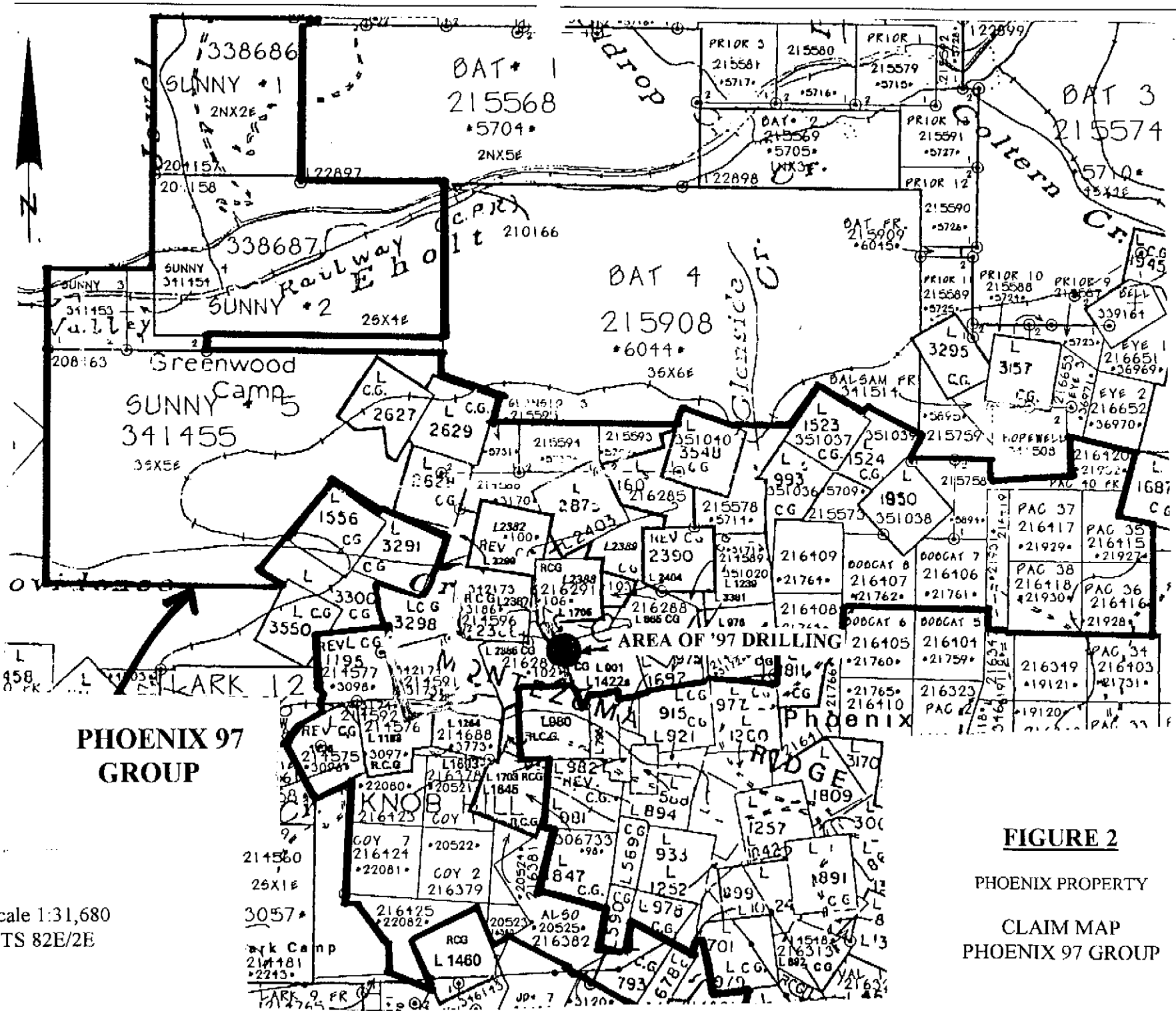


FIGURE 2

PHOENIX PROPERTY

CLAIM MAP
PHOENIX 97 GROUP

Phoenix 97 Group, cont...

CLAIM NAME	TENURE #	UNITS	EXPIRY
DOUBTFUL	351039	1	30/09/2004
TIGER	351040	1	30/09/2004
BRANDON FR.	216285 (M100)	1	22/10/97
LITTLE BROWN	216285 (M100)	1	22/10/97
LITTLE ANNIE	216285 (M100)	1	22/10/97
MARSHALL	216285 (M100)	1	22/10/97
BRANDON	216285 (M100)	1	22/10/97
CUSTER FR.	216285 (M100)	1	22/10/97
BELMONT FR	216287 (M102)	1	26/10/97
STAFFORD FR	306733 (M098)	1	21/11/97
BOSTON	306733 (M098)	1	21/11/97
WILLAMENA FR	306733 (M098)	1	21/11/97
MARSHALL FRACTION	216288 (M103)	1	21/04/98
SUNNY #1	338686	4	09/08/2004
SUNNY #2	338687	8	09/08/2004
SUNNY 3	341453	1	31/10/2004
SUNNY 4	341454	1	31/10/2004
SUNNY 5	341455	15	31/10/2004
WENDY N0 15 FR	216326	1	26/10/2004
GLENSIDE 2 FR	215573	1	28/03/2004
ORONOCO	214575 (RCG)	1	08/06/2004
YUKON FR	214576 (RCG)	1	08/06/2004
CRACKER JACK	214577 (RCG)	1	08/06/2004
PAX FR	214588	1	17/06/2004
COLTHERN #1	215758	1	20/06/2004
WENDY FR	214583	1	06/07/2004
BOBCAT #7	216406	1	07/07/2004
BOBCAT #8	216407	1	07/07/2004
BOBCAT #9	216408	1	07/07/2004
BOBCAT #10	216409	1	07/07/2004
LITTLE BURNE FR	214596 (RCG)	1	04/08/2004
PAC 35	216415	1	12/08/2004
PAC 36	216416	1	12/08/2004
PAC 37	216417	1	12/08/2004
PAC 38	216418	1	12/08/2004
PAC 39 FR	216419	1	12/08/2004
PAC 40 FR	216420	1	12/08/2004
GEM FR.	214590	1	23/08/2004
CRACKER JACK 2 FR	214592	1	23/08/2004
COY NO 1	216378	1	21/09/2004
COY NO 2	216379	1	21/09/2004
COY NO 3	216380	1	21/09/2004
COY NO 4 FR	216381	1	21/09/2004
COY NO 5 FR	216382	1	21/09/2004
COY # 6	216423	1	22/09/2004
COY # 7	216424	1	22/09/2004
COY # 8 FR	216425	1	22/09/2004
WENDY N0 13	216325	1	26/10/2004
GLENSIDE FR	215578	1	28/03/2004
GLENSIDE 1	215593	1	28/03/2004
GLENSIDE 2	215594	1	28/03/2004
GLENSIDE 3	215595	1	28/03/2004
PIPE 5 FR	214588	1	23/08/2004
BULLION FR.	214589	1	23/08/2004
CRACKER JACK 1 FR	214591	1	23/08/2004

2.3 History

The Greenwood camp, and particularly the Phoenix area, has a long history of exploration and mining activity. Total production at Phoenix during the period 1900 - 1976 is reported at 27 million tons at a grade of 0.9% Cu and 0.04 oz/t Au, from a number of different ore bodies (Church, 1986). Caron (1992) provides a detailed description of the history of the area and is quoted verbatim below. For further detail, the reader is referred to Peatfield (1978) and Church (1986) who also give historical accounts of the area. Additional information is also available on the BC Minfile (82ESE013-031, 82ESE046).

> The first claims in the Phoenix area were staked by Henry White and Matthew Hatter on July 15, 1881. In 1896, J.F.C. Miner, a rubber footwear manufacturer from Granby, Quebec, together with mining promoters J.P. Graves and A.L. Little of Spokane, Washington, formed the original Granby Company to work in the area.
>
> By 1889 the Canadian Pacific Railway had extended a branch line to Phoenix and underground mining of copper and gold ores began, using a combination of square set and room and pillar stopes, serviced by numerous shafts and adits. Later, open pit mining methods were developed and the Ironsides Mine became one of the first open pit mines in Canada.
>
> In 1890, the City of Phoenix was incorporated and the Granby Smelter in Grand Forks was completed. Most of the ore feeding the smelter in Grand Forks came from the Ironsides Mine; however, eight different mineralized zones contributed to production from the Granby property. Ore was also produced in the mining camp by the Consolidated Mining and Smelting Company, primarily from the Snowshoe Mine. Production rates from the camp at this time varied widely; a maximum rate of approximately 3000 tons per day was achieved. In 1919, the Granby mine and smelter closed due to low copper prices, lower ore grades and a shortage of coking coal for the smelter furnaces.
>
> In 1956, the Granby Company re-purchased the property and evaluated the property with the intent of mining by open pit trackless mining methods. Open pit production began in 1960 at a rate of 900 tons per day and was increased to 2000 tons per day in 1961 and was further increased to 3000 tons per day in 1972.
>
> By 1973, declining production was supplemented by processing low grade copper ore stockpiled in previous years. Mill feed was augmented by ore trucked from the Lone Star Mine 20 km to the south in Washington State. An unsuccessful attempt was also made to mill ore from the nearby Oro Denoro Mine. Granby terminated mining operations at Phoenix in 1976 and later dismantled and moved the Phoenix mill. The property later fell under the ownership of Noranda through the purchase of the assets of Granby Corporation.
>
> No significant work was done on the property until 1981 when Noranda optioned the Phoenix property to Kettle River Resources Ltd., who carried out an exploration program focused on the precious metal potential of the property. A drilling program re-discovered the Sylvester K zone in 1983. Noranda elected to participate in continuing exploration during 1984-1985 and continued drilling of the Sylvester K occurrence and other anomalies found during the course of geological, geophysical, and geochemical surveys.
>
> In 1987, Skylark Resources attempted to mine the Sylvester K zone but abandoned the operation after mining and unsuccessfully processing only a few hundred tons of ore.
>
> During 1989-1990, Kettle River Resources Ltd. acquired outright ownership of the present property from Noranda. Battle Mountain (Canada) Inc. optioned the property from Kettle River Resources Ltd. and conducted a program of reconnaissance geological mapping and sampling during the early portion of the 1990 field season. This work was subsequently expanded to a larger program including establishment of a survey-controlled grid over the southwestern portion of the property around the Phoenix mine workings, with cut and flagged cross lines at 100 metre intervals. A magnetometer survey and geochemical soil survey over the entire grid was followed by detailed geological mapping of a portion of the grid at a scale of 1:1250. Drilling programs were completed during both 1991 and 1992. (Caron, 1992).

Battle Mountain dropped the option on the property late in 1992. Apart from a program to test the potential of recovering gold from the old Phoenix tailings, no work was done on the property until 1997, when Echo Bay acquired the property as part of a joint venture with Kettle River Resources Ltd. covering a larger land package in the Greenwood area. In the summer of 1997, the drilling program described in this report was completed.

2.4 Summary of Current Work Program

Ten NQ diamond drill holes were drilled from July 21 to August 15, 1997, for a total of 3,466 feet. Drilling was done under contract by Bergeron Drilling of Greenwood, B.C.. Core was logged and sawed for sampling at Kettle River's core facility at Boundary Falls and is currently stored at this facility. Logging and drill hole set-up and supervision was L. Caron of Kettle River Resources Ltd. and M. Rasmussen of Echo Bay Minerals. Core was sawed by N. Braam. A total of 28 core samples were collected and sent to Custom Analytical Services in Republic WA for preparation and gold assay. Logging and sampling of drill core, plus plotting of drill sections was done between July 23 and September 10, 1997.

3.0 GEOLOGY AND STUCTURE

The Greenwood area has been mapped on a regional basis by Fyles (1990), and prior to this, by Little (1983) and Church (1986). Fyles' mapping shows the pre-Tertiary rocks form a series of thrust slices, which lie above a basement high grade metamorphic complex. A total of at least five thrust slices are recognised, all dipping gently to the north, and marked in many places by bodies of serpentine. Fyles' interprets these serpentinite bodies as representing part of a disrupted ophiolite suite, belonging to the Knob Hill Group of late Paleozoic age. Commonly, these serpentinite bodies have undergone Fe-carbonate alteration to listwanite, as a result of the thrusting event.

The oldest rocks in the camp belong to the late Paleozic Knob Hill Group of dominantly volcanic affinity, and consist mainly of chert, greenstone and related intrusives, and serpentine. Unconformably overlying these rocks are sediments and lesser volcanics (largely argillite, siltstone, limestone and andesite) of the late Paleozic Attwood Group. Rocks of the Knob Hill and Attwood Groups are unconformably overlain by the Triassic Brooklyn Formation, represented largely by limestone, clastic sediments and volcanics and pyroclastics. The historically important skarn deposits in the Greenwood area (i.e. Phoenix, Oro Denoro, Motherlode-Greyhound) are hosted within the Triassic rocks.

Three separate intrusive events are known regionally to cut the above sequence, the probable Jurassic aged Lexington porphyry, the Cretaceous Nelson intrusives, and the Eocene Coryell dykes and stocks. Tertiary sediments and volcanics unconformably overly the older rocks with the distribution of these Tertiary rocks largely controlled by series of north-south trending faults which form the Toroda Creek graben in the western portion of the map area, and the Republic graben in the east. Regionally, at least three distinct Tertiary fault sets are recognized, an early gently east dipping set, a second set of listric, normal, detachment type faults, with gentle west dips, and a late set of steep, north to northeast trending faults.

The Phoenix property is underlain by rocks of the Triassic Brooklyn Formation sitting unconformably upon Permian Knob Hill Group cherts and greenstones, and located in the uppermost thrust slice in the Greenwood Camp. The Brooklyn Formation consists of an interfingering sequence of chert breccia (sharpstone) and fine clastics, limestone and limestone breccia, and volcanics (greenstone, pyroclastics and subvolcanic microdiorite). Two distinct units of sharpstone conglomerate are recognized in the Phoenix area, commonly separated by a thick section of massive limestone (the Brooklyn limestone). Most of the mineralization discovered to date in the Phoenix area is skarn type copper (+ gold) developed in the sharpstone conglomerate (both in the upper and lower units). At the Sylvester K prospect, massive pyrite and pyrrhotite, typically grading about 0.25 oz/t Au occurs essentially at the contact between the Brooklyn limestone and the underlying lower sharpstone. The mineralized zone strikes at about 020°, with a near vertical to steep east dip. Footwall to the massive sulfides is a section of fine sulfidic volcanic siltstone which can average in the order of 0.3 oz/t Au. Where the entire massive sulfide horizon and underlying footwall rocks have been intersected uncomplicated by faulting, the mineralized zone ranges up to 40 feet in thickness. The horizon can be traced on strike for about 500 feet near surface, although the zone narrows in thickness at the north and south ends. The origin of the mineralization is much debated. Mineralization is consistent with a volcanogenic massive sulfide model, but may also be explained by a distal skarn model or manto type, related to the Phoenix deposit. While the area is very complicated by faulting, none of these faults appear to be controlling mineralization. In any case, mineralization is stratigraphically controlled, and the stratigraphy is characteristic and recognizable.

The type section in the Sylvester K area is shown in Figure 3. A very characteristic, repeatable sequence is recognized in drill core, from the overlying massive Brooklyn limestone, downwards through a sequence of detrital chert, cherty limestone and limey sediments, and interbedded limestone, through the Sylvester K massive sulfide horizon with a fine sulfidic volcaniclastic footwall, into a coarsening downwards sequence of clastics (siltstone, sandstone and conglomerate). The above sequence may be cut by Triassic microdiorite, or by several types of Tertiary dykes (early feldspar +/- biotite porphyry dykes, later, typically pink, syenite dykes, or very late less common, hornblende porphyry dykes). The Tertiary dykes are largely flat lying and are controlled by a series of flat to gently west dipping faults, sympathetic to the underlying Snowshoe Fault, mapped by Fyles (1990) as belonging to the middle set of Tertiary structures.

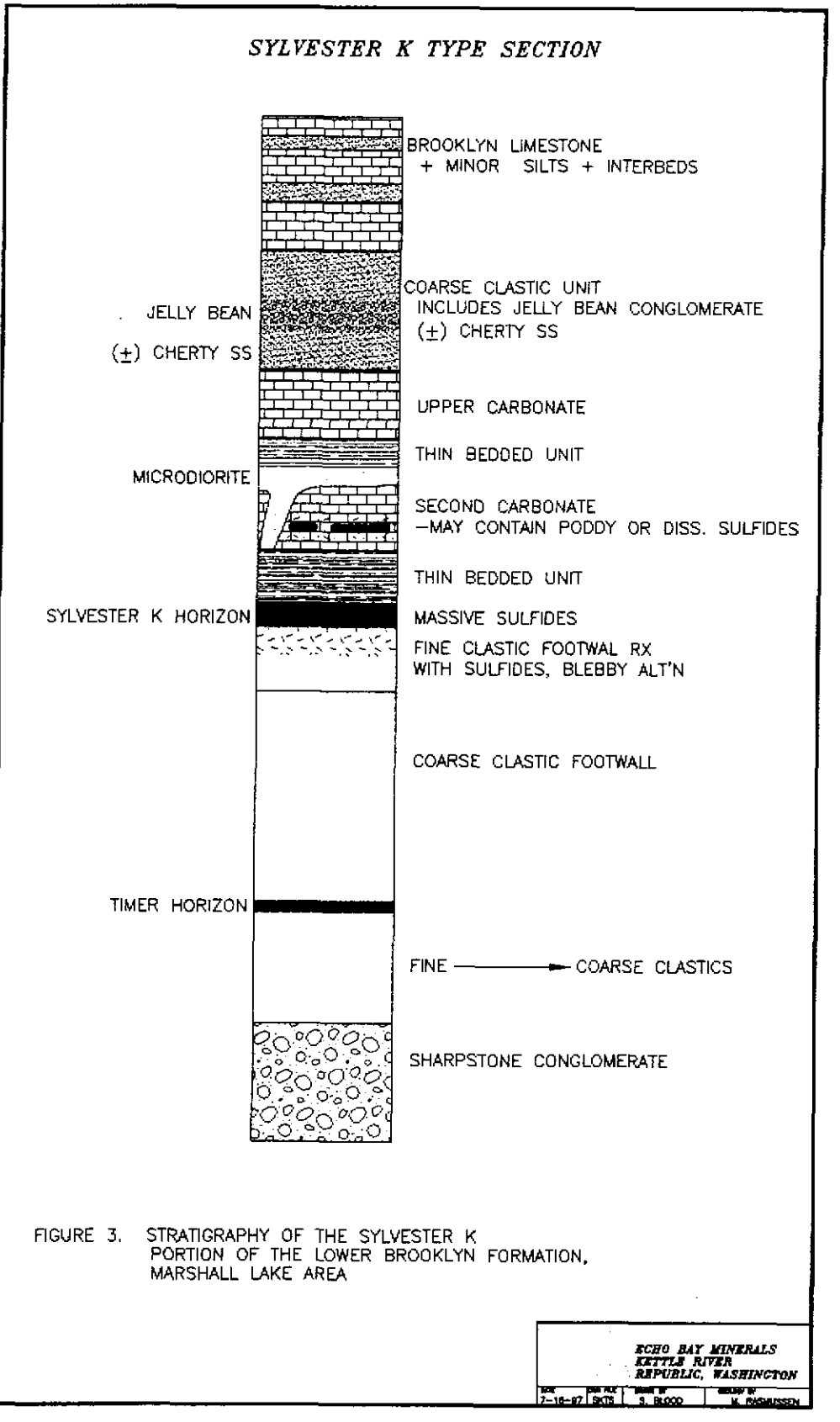


FIGURE 3. STRATIGRAPHY OF THE SYLVESTER K PORTION OF THE LOWER BROOKLYN FORMATION, MARSHALL LAKE AREA

4.0 DRILLING

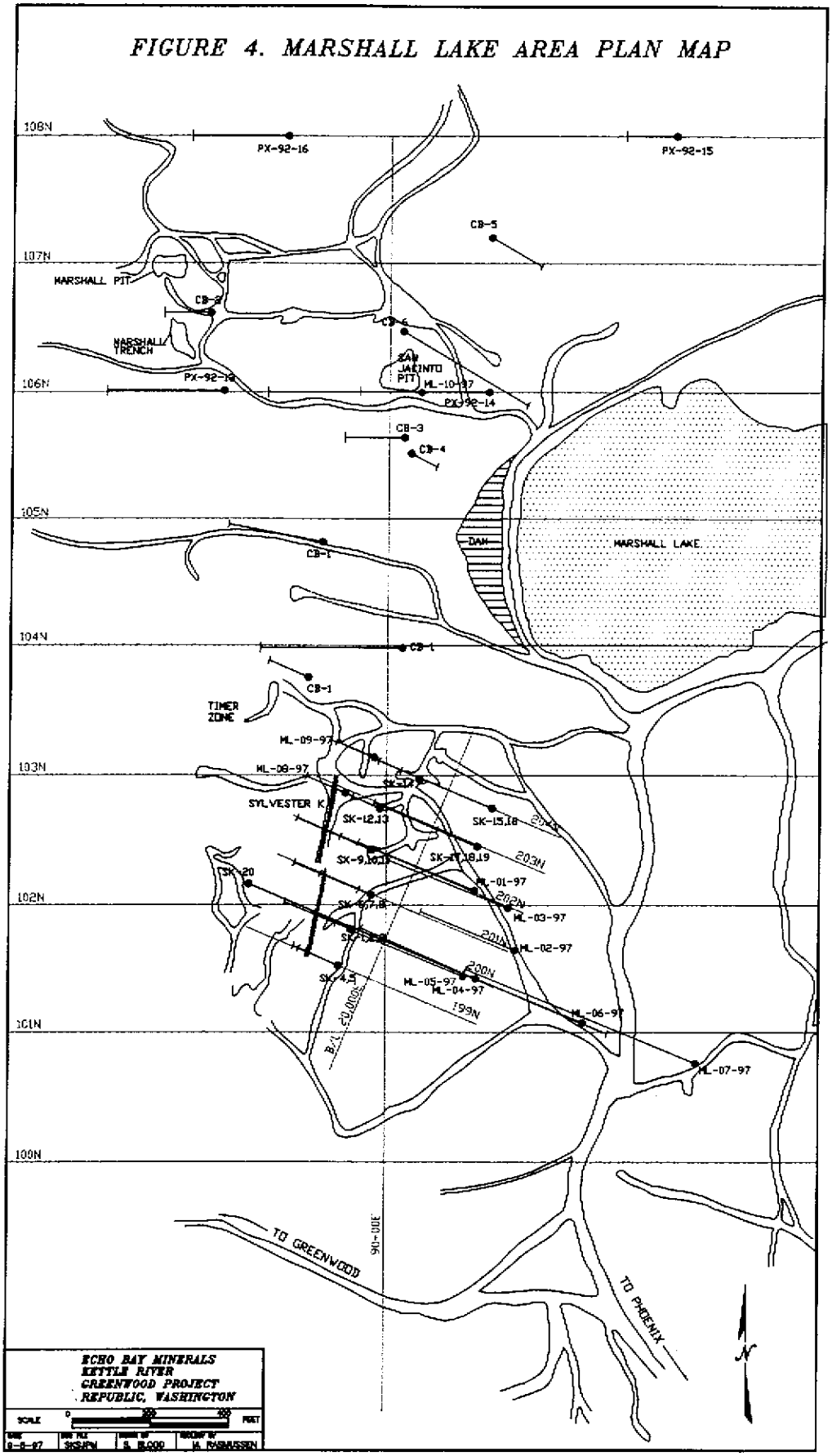
Ten holes were drilled during July and August, 1997 as detailed below. Drill hole locations are plotted on Figure 4 and logs are included in Appendix 1. Analytical results for core samples are contained in Appendix 2. A total of 3,466 feet were drilled, and 28 samples submitted for gold assay. Drill hole specifications and co-ordinates are tabulated below and holes ML-01-97 to ML-07-97 are plotted on sections included as Figures 5 - 7.

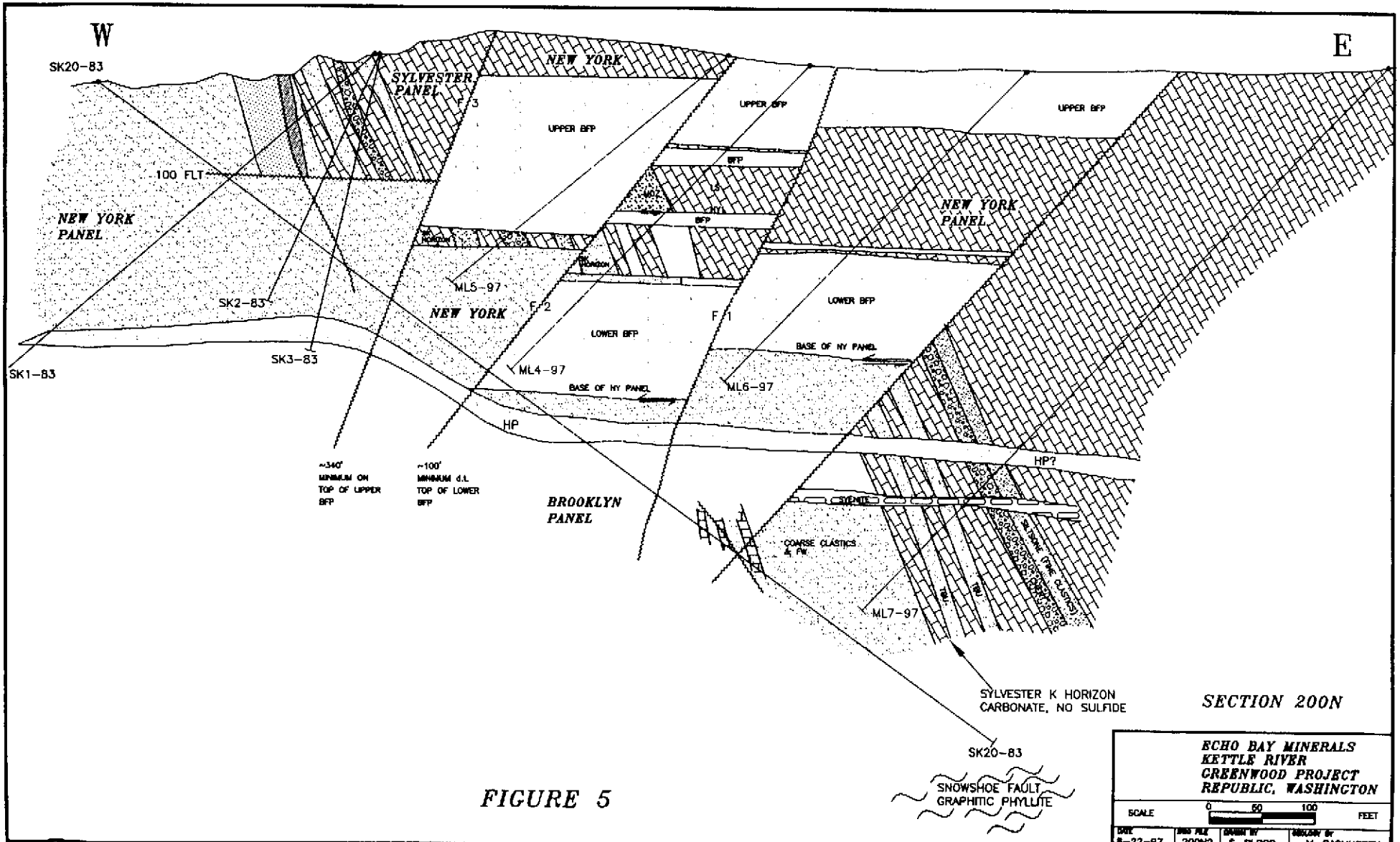
Drill Hole	Section	Syl K Grid Northing	Syl K Grid Easting	BMG Northing	BMG Easting	Azimuth	Inclination	Depth
ML-01-97	202N	202+00N	201+48E	102+14N	90+64E	290°	-40°	385'
ML-02-97	201N	201+00N	203+02E	101+71N	90+95E	290°	-60°	379'
ML-03-97	202N	202+00N	202+79E	102+00N	91+00E	290°	-45°	410'
ML-04-97	200N	200+00N	203+12E	101+38N	90+86E	290°	-45°	400'
ML-05-97	200N	200+00N	202+43E	101+47N	90+66E	290°	-40°	331'
ML-06-97	200N	200+00N	205+12E	101+17N	91+43E	290°	-45°	407'
ML-07-97	200N	200+00N	208+43E	100+68N	92+36E	290°	-45°	711'
ML-08-97	203N	203+00N	197+87E	102+82N	89+89E	290°	-45°	135'
ML-09-97	204N	204+00N	197+87E	103+14N	89+75E	290°	-45°	137'
ML-10-97	106+00N			106+00N		270°	-45°	171'

Compilation of previous drill data had suggested that 2 flat faults displaced stratigraphy at Sylvester K, the 100 Fault (about 100' below surface in the Sylvester K area), and the 400 Fault Zone, about 300' below this. Displacement appeared to be top to the west, with about 300 feet of movement on the 100 Fault, and an unknown amount on the 400 Fault. For the purpose of discussion, the panels have been named - the Sylvester K panel above the 100 Fault, which hosts the main Sylvester K trench and intersections drilled in 1983, the New York panel below this (between the 100 and 400 Faults), and the Brooklyn panel below the 400 Fault. Several hundred feet below the 400 Fault is the Snowshoe Fault, a regional, gently west dipping listric normal fault which has a similar top to the west sense of movement, and which places the Brooklyn Formation unconformably on Knob Hill Group rocks. The 100 and 400 Faults are thus sympathetic to this larger regional fault. The concept of the flat faulting and displaced panels of rock is most easily visualized in cross-section and the reader is referred to Figure 5 (Section 200N). Since the Sylvester K horizon is a stratigraphically controlled, and regardless of whether mineralization is related to the nearby skarns or represents a Triassic VMS deposit, it predates the flat faulting which offsets stratigraphy. As a result, the mineralized horizon should be present in offset panel of rock. The 1997 drill program was designed to test for the down dip, faulted offset to the Sylvester K horizon, to the east, in the New York and Brooklyn panels.

Drilling confirmed the presence of the 100 and 400 Faults, but revealed at least 3 later, vertical to steeply west dipping normal faults (with an unknown amount of strike-slip movement indicated on at least one of these faults). These later normal faults have the effect of bringing deeper panels closer to the surface to the east. As a result, the Sylvester K panel has been completely removed to the east, and the New York panel removed in part, so that by the time the eastern most steep fault (F1) is crossed, the New York panel seems to be completely removed (see Figure 5). Unfortunately, the 400 Fault zone which marks the base of the New York panel, is occupied largely by thick Tertiary dykes, and a large part of drilling was in these dykes. In the sections drilled, there appears to be little room left for the prospective horizon in the New York panel, due to the presence of these dykes. The prospective horizon was successfully intersected in the Brooklyn panel, uncomplicated by dyking or faulting, however was unmineralized where intersected.

FIGURE 4. MARSHALL LAKE AREA PLAN MAP




W
E
SK20-83
NEW YORK
SYLVESTER PANEL
F 3
UPPER BFP
100 FLT
NEW YORK PANEL
SK2-83
ML5-97
NEW YORK
F 2
LOWER BFP
F 1
SK3-83
SK1-83
ML4-97
BASE OF NY PANEL
ML6-97
HP
HP?
~340'
MINIMUM ON
TOP OF UPPER
BFP
~100'
MINIMUM d.l.
TOP OF LOWER
BFP
BROOKLYN PANEL
COARSE CLASTICS
ML7-97
SYLVESTER K HORIZON
CARBONATE, NO SULFIDE
SK20-83
SNOWSHOE FAULT
GRAPHITIC PHYLLITE
SECTION 200N
ECHO BAY MINERALS
KETTLE RIVER
GREENWOOD PROJECT
REPUBLIC, WASHINGTON
SCALE
0
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FEET
DATE
8-22-97
DWG FILE
200N2
DRAWN BY
S. BLOOD
DESIGN BY
M. RASMUSSEN

FIGURE 5

Holes ML-01-97 and ML-03-97 were drilled on Section 202N (Figure 7) to test for the on strike continuation of mineralization intersected in the New York panel during the 1983 drill program. At the time this was referred to as the New York zone and was not recognized as being the offset continuation of the Sylvester K horizon. Hole 1 collared to close to the surface showings, in the Sylvester K panel. The hole crossed the 100 fault before testing the critical horizon. Hole 3 collared about 110 feet further west, to test the zone in the New York panel below the 100 fault. Two thick Tertiary BFP dykes were intersected, between which Brooklyn limestone occurs. Faulting and dyking has eliminated the potential for intersecting the Sylvester K horizon in this area, however the Brooklyn panel, beneath the lower BFP dyke, remains prospective for the presence of the critical horizon.

ML-02-97 was designed to test the New York panel in Section 201N (Figure 6). The New York panel has been taken up almost completely be Tertiary BFP dykes in this section, with Brooklyn limestone intersected between the dykes. Hole 2 bottomed in coarse clastic rock, typical of the footwall to the Sylvester K horizon, after crossing a steep fault, with displacement down on the west. This suggest that the Sylvester horizon may occur to the east, below the lower BFP dyke in the Brooklyn panel. Additional drilling could be done to test this area.

Holes ML-04-97 and ML-05-97 were drilled on Section 200N, where mineralization was best developed in the Sylvester K panel (see Figure 5). Hole 4 collared in the upper BFP dyke, about 500 feet east of the surface expression of the horizon, to test for mineralization in the New York panel. The characteristic limestone/clastic sequence overlying the Sylvester K horizon was intersected, however the lower BFP dyke was hit before the key horizon. Hole 5 was then collared about 100 feet further west, in an attempt to intersect the Sylvester horizon above this lower dyke. The presence of a fault is necessitated between these holes, due to the markedly different intersections of the BFP dykes. A north-south trending, moderately west dipping, normal fault is inferred (F2), which has a minimum of 100 feet of dip movement, and unknown displacement in a strike-slip direction. A second fault is also necessitated between Hole 5 and Holes SK-1-83, -2-83, and -3-83, because of the nature of the dyke. The abundance and thickness of dykes in the New York panel in this area suggests that this is a poor place to explore for mineralization along the Sylvester K horizon.

Holes ML-06-97 continued to test for the possible faulted continuation of the Sylvester K horizon at depth and to the east in Section 200N (Figure 5). Hole 6 confirmed that there appears to be little room left for the prospective horizon in the New York panel, due to the presence of dykes, however it was encouraging that a 6 foot section of interbedded limestone and tuffaceous sediments (with sulfides) which sits in the immediate hanging wall to the stratigraphic position of the "Sylvester K" horizon, averaged 0.115 oz/t Au. The potential for developing tonnage in Section 200 in this zone, or on the "Sylvester K" horizon, is however, restricted by faulting and dyking. Because of the unknown strike-slip movement on the faults, there may however be prospective ground to the south or north, and it is recommended to test the New York panel for mineralization on the Sylvester K horizon on Sections 198N, 199N and 205N.

Hole ML-07-97 was drilled to test the prospective horizon in the Brooklyn panel, below the 400 fault, and east of the road to Marshall Lake in Section 200N (see Figure 5). The entire Sylvester K stratigraphy was intersected in the hole, uncomplicated by dyking, however no sulfides were present on the prospective horizon. Potential exists for this horizon to be mineralized on strike and further drilling is recommended to follow the "Sylvester K" horizon in the Brooklyn panel both north and south of the section tested by ML-07-97.

Holes ML-08-97 and ML-09-97 tested for the northern extension of the Sylvester K horizon, in the Sylvester K panel, since previous drilling indicated that the zone may be open to the north. Both holes intersected major fault zones and failed to intersect the Sylvester K horizon above the 100 Fault.

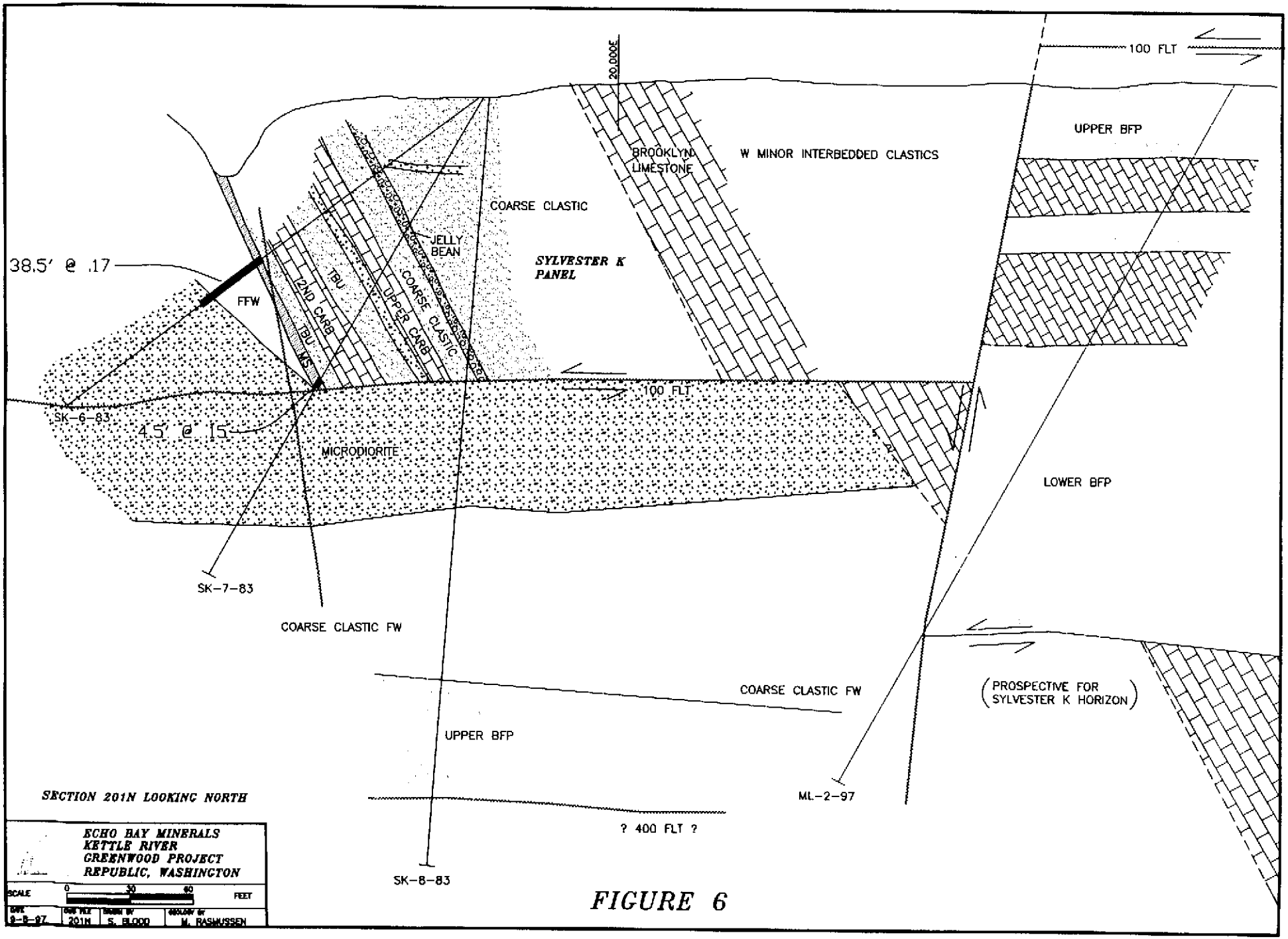
20,000E
100 FLT
UPPER BFP
BROOKLYN LIMESTONE
W MINOR INTERBEDDED CLASTICS
COARSE CLASTIC
JELLY BEAN
SYLVESTER K PANEL
38.5' @ .17
FFW
TBU
12ND CARB
TBU MS
UPPER CARB
COARSE CLASTIC
100 FLT
SK-6-83
45' @ 15
MICRODIORITE
LOWER BFP
SK-7-83
COARSE CLASTIC FW
COARSE CLASTIC FW
(PROSPECTIVE FOR SYLVESTER K HORIZON)
UPPER BFP
ML-2-97
? 400 FLT ?
SK-8-83
SECTION 201N LOOKING NORTH
ECHO BAY MINERALS
KETTLE RIVER
GREENWOOD PROJECT
REPUBLIC, WASHINGTON
SCALE
0
30
60
FEET
DATE
9-5-97
DWG NO.
201N
DRAWN BY
S. BLOOD
DESIGN BY
M. RASMUSSEN

FIGURE 6

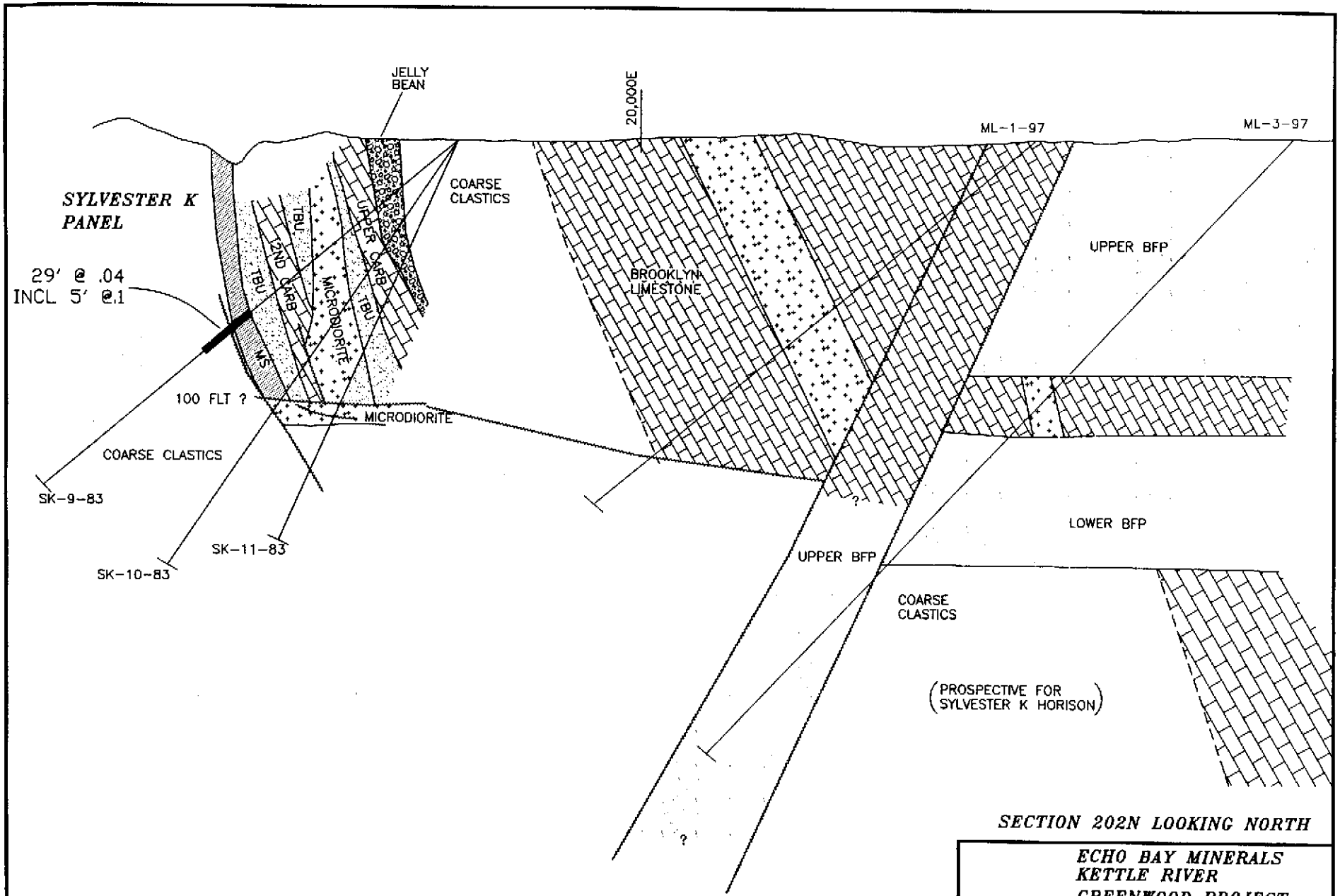
JELLY BEAN
20,000E
ML-1-97
ML-3-97
SYLVESTER K PANEL
29' @ .04
INCL 5' @.1
COARSE CLASTICS
TBU
2ND CARB
MICRODIORITE
UPPER CARB
TBU
MS
BROOKLYN LIMESTONE
UPPER BFP
100 FLT ?
MICRODIORITE
COARSE CLASTICS
SK-9-83
SK-11-83
SK-10-83
LOWER BFP
UPPER BFP
COARSE CLASTICS
(PROSPECTIVE FOR SYLVESTER K HORISON)
SECTION 202N LOOKING NORTH
ECHO BAY MINERALS
KETTLE RIVER
GREENWOOD PROJECT
REPUBLIC, WASHINGTON
SCALE 0 30 60 FEET
DATE 9-8-97
DWG FILE 202N
DRAWN BY S. BLOOD
GEOLOGY BY M. RASMUSSEN

FIGURE 7

Hole ML-10-07 was drilled to test the San Jacinto zone, in the same section as Battle Mountain's 1992 holes PX-13-92 and PX-14-92, to identify whether or not mineralization was situated at a similar stratigraphic position to the Sylvester K, and to test the zone above the flat fault which Battle Mountain's drilling had suggested was present. The San Jacinto (and nearby Marshall showings) consist of massive pyrite/pyrrhotite mineralization which grades in the order of 1 oz/t Au. Several hundred tons of production are reported from surface workings. Hole 10 failed to intersect mineralization, and did not intersect the same stratigraphic section seen at Sylvester K, implying a different style of mineralization at the San Jacinto (probably structurally controlled and related to a near surface flat to gently west dipping fault - the Marshall Fault). Several shallow vertical holes are recommended to test this structure for mineralization between the San Jacinto and Marshall workings.

5.0 CONCLUSIONS AND RECOMMENDATIONS

A ten hole, 3466 foot diamond drill program was completed on the Kettle River Resources Ltd.'s Phoenix 97 Group, in the vicinity of Marshall Lake, north of the old Phoenix pit. Drilling was done by Bergeron Drilling of Greenwood, B.C. during July and August, 1997. Funding for the program was provided by Echo Bay Minerals Co.

The program was designed primarily to test for the down dip, faulted offset to mineralization exposed in the Sylvester K trenches and tested by shallow drilling during the mid 1980's. The Sylvester K occurrence is stratigraphically controlled gold bearing massive sulfide deposit, with an auriferous sulfidic volcaniclastic footwall. It's origin is debatable, potentially related to the nearby skarns or possibly representing a Triassic VMS deposit, but in either case, stratigraphically controlled and predating Tertiary faulting.

Drilling confirmed that at least 2 flat faults displace the stratigraphy, the 100 Fault (about 100' below surface in the Sylvester K area), and the 400 Fault Zone, about 300' below this. Displacement is top to the west, with about 300 feet of offset on the 100 Fault, and an unknown amount on the 400 Fault. For the purpose of discussion, the panels have been named - the Sylvester K panel above the 100 Fault, which hosts the main Sylvester K trench and intersections drilled in 1983, the New York panel below this (between the 100 and 400 Faults), and the Brooklyn panel below the 400 Fault. Several hundred feet below the 400 Fault is the Snowshoe Fault, a regional, gently west dipping listric normal fault which has a similar top to the west sense of movement, and which places the Brooklyn Formation unconformably on Knob Hill Group rocks. The 100 and 400 Faults are thus sympathetic to this larger regional fault.

In addition to the offset on the 100 and 400 Faults, at least 3 later, vertical to steeply west dipping normal faults offset stratigraphy, and thus mineralization, (with an unknown amount of strike-slip movement indicated on at least one of these faults). These later normal faults have the effect of bringing deeper panels closer to the surface to the east. As a result, the Sylvester K panel has been completely removed to the east, and the New York panel removed in part, so that by the time the eastern most steep fault is crossed, the New York panel seems to be completely removed. Unfortunately, the 400 Fault zone which marks the base of the New York panel, is occupied largely by thick Tertiary dykes, and a large part of drilling was in these dykes. In the sections drilled, there appears to be little room left for the prospective horizon in the New York panel, due to the presence of these dykes. Because of the unknown strike-slip movement on the faults, there may however be prospective ground to the south or north, and it is recommended to test the New York panel for mineralization on the Sylvester K horizon on Sections 198N, 199N and 205N. The prospective horizon was successfully intersected in the Brooklyn panel, uncomplicated by dyking or faulting, however was unmineralized where intersected. Potential exists for this horizon to be mineralized on strike and further drilling is recommended to follow the "Sylvester K" horizon in the Brooklyn panel both north and south of the section tested by ML-07-97.

The final hole, Hole ML-10-07 was drilled to test the San Jacinto zone, to determine whether mineralization was situated at a similar stratigraphic position to the Sylvester K, and to test the zone above the flat fault which previous drilling had suggested was present. The San Jacinto (and nearby Marshall showings) consist of massive pyrite/pyrrhotite mineralization which grades in the order of 1 oz/t Au. Several hundred tons of production are reported from surface workings. Hole 10 failed to intersect mineralization, and did not intersect the same stratigraphic section seen at Sylvester K, implying a different style of mineralization at the San Jacinto (probably structurally controlled and related to a near surface flat to gently west dipping fault - the Marshall Fault). Several shallow vertical holes are recommended to test this structure for mineralization between the San Jacinto and Marshall workings.

6.0 REFERENCES

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APPENDIX 1

DIAMOND DRILL LOGS

ECHO BAY MINERALS | Project GREENWOOD | Dhid ML-1-97 | Coord: N | E | Elev | Az 290° Incl -40° TD | Date 7/22 | Logger MR | Page 1 of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	Bp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			0-4 OVERBURDEN																											
5			4-124 LIMESTONE											5																
10			- light grey to off white fine grained marble, sparry fractures			Healed bx'n to 23'								10																
15			- stylolitic from 13-23'											15																
20														20																
25														25																
30														30																
35														35																
40														40																
45			49', 53', 58', 63' have FeOx on frac's and in pits											45																
50														50																
55														55																
60			58-63' Healed bx together			58'-75' FAULT & SLICKS @ 5°-20° to CA								60																
65														65																
70														70																
75														75																
80														80																
85														85																
90														90																
95														95																
100														100																

ECHO BAY MINERALS | Project GREENWOOD | Ddh ML-1-97 | Coord: N | E | Elev | Az 280° Incl -40 TD | Date 7/22- | Logger MR | Page 2 of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
		LS																												
105			106'-109' bx (cm-scale) c̄ black matrix											105																
110			Off-white marble to 124'											110																
115														115																
120			MDI Microdiorite on fltd surfaces (123-123.5)											120																
		LS	124'																											
125		MDI	124-158': Faulted contact @ 45° to CA - Microdiorite Type I(?) Fine-med grained, equigranular			FLT CNTCT @ 45° to CA No bx'n								125	Pervasive epidotization															
130														130																
135														135																
140														140																
145														145																
150														150																
155			158' FLTD CNTCT			FLTD CNTCT mod to hi ∠								155		2" massive py in flt contact														
160		LS	MDI in flt @ 162'											160																
		MDI	162'																											
165			White Marble 162'- Stylolitic											165																
170														170																
175														175																
180			healed/semi healed bx'n			semi-healed bx @ 180' to 181' mod ∠ to Core								180																
185														185																
190														190																
195			194'-195' fractured interval c̄ sulfide detrital chert unit, poss vole											195																
200						@ 200' FLT @ 40° to CA								200																

ECHO BAY MINERALS | Project GREENWOOD | Dhld ML-1-97 | Coord: N | E | Elev | Az 290 | Incl -40 | TD | Date '97 | Logger [illegible] | Page 3 of

Depth	Lith	RC	Lithologic Description	Structures: Fractures/Faults	Alt Code	Alteration Description	Mineralization Description	Comments
		LS	203-204, frag'l rx w/ detrital chert; 206.3'					
205					205			
		ch	206.3 — 238: DETRITAL CHERT, most is v. limy					
210					210		Finely dissem. PY common thru interval 206 — 238. Rarely exceeds 1%, however	
			212-218 Limy chert pebble conglom.					
215					215			
220					220			
225			225-226' two beds of chert pebble conglomerate	Beds @ 40 to 50° to CA	225			
230			228'-229' 12" bed of "nougat" chert pebl. conglom. 231'-238' Fine to coarse congl.		230			
235				235' flt	235			
			238'	FLT @ 45° to CA				
240		s	Fine sediment, grn to brown argillite, strongly tectonized thru-out interval.	strong bx'n, mostly healed	240	splotchy black & sulf.		
245			245'	FLT 45° to CA	245			
		MD1	245-291' Microdiorite hb-phyric Porphyritic, MICRODIORITE #1					
250					250	epidote on fracs & around mafic phenos		
255					255			
260					260			
265					265			
270					270			
275					275			
280					280			
285				283, flt // to CA, strong FLT	285			285 to 290 104-0201
290		MD1	291' unfaulted contact		290			290 to 295 104-0202
295		CSC	CSC — Mostly sandstn & cong		295			295 to 300 104-0204
300				298-299 flt				

ECHO BAY MINERALS | Project GREENWOOD | Dhld ML-1-97 | Coord: N | E | Elev | Az 290 Incl -45 TD 385 | Date 7/2- | Logger MR | Page 4 of 4

Depth	Lith	RC	Lithologic Description	RQD	Rec	Structures Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	Alteration Description	Mineralization Description	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
305		SS	From ft at 299; sediment lacks conglom until ±323'													305														300 to 305 104-0205
310																310														305 to 310 104-0206
315																315														310 to 315 104-0207
320																320														315 to 320 104-0208
325			Fault zone; more deformation			323'-329' Fault zone, bottom ... to ... ≈ 329'										325														320 to 325 104-0209
330			329' Flt													330														325 to 330 104-0210
335																335														330 to 335 104-0211
340																340														335 to 340 104-0212
345			344'-349' conglom.													345														340 to 345 104-0213
350																350														345 to 350 104-0214
355																355														350 to 355 104-0215
360																360														355 to 360 104-0216
365																365														360 to 365 104-0217
370			370'-373' - conglom													370														365 to 370 104-0218
375																375														370 to 375 104-0219
380			Bedding @ 65° to CA			Flt @ 381'										380														375 to 380 104-0220
383		RL	383-385' limestone, ... interbedded w/ gk materials												Strong ... interbeds ...															380 to 383 104-0221; 383 to 385 104-0222
385			TD = 385'													385														

ECHO BAY MINERALS | Project GREENWOOD | Dhld ML-02-97 | Coord: N | E | Elev | Az 290° | Incl -67° | TD 379' | Date 8/01/97 | Logger LC | Page 1 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Silica% Cc	Dolo	Vn	Priv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	si	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
5			0-8 overburden																										
10			8-46' BFP Dyke coarse grained equigranular w ~50% blocky plag aug 1-2mm, sub-euhedral, 35% 1mm mafics -some large biotite - looks like bi after hnbld tr py in fsp rich grnass																									
40			42-46' darker, finer grained, porphyritic - felted text.																										
45			45-46' Faulted contact - very broken, contact @ 60° to CA																										
50			46 - 71.6' LIMESTONE pale grey to locally white fine grained, very stylolitic marble																										
65			65-66.5' healed bx text w tr py - low core angle			65-66.5 healed flt.										65-66.5 tr py													
70			@ 71.6' sharp contact w slickens @ 40° to CA																										
75			71.6 - 88.5 BFP Dyke Typical BFP dyke as in 8-46' w dark purple chills top & bottom.																										
85			Faulted, crushed zone @ contact - no good angle.																										
90			88.5 - 148' LIMESTONE fine grained, pale grey to white, massive																										

ECHO BAY MINERALS | Project Greenwood | Dhld ML-02-97 | Coord: N | E | Elev | Az 290 | Incl -60 | TD 379 | Date 8/1/97 | Logger LC | Page 2 of 4

Depth	Lithologic Description	Structures Fractures/Faults	Alteration Description	Mineralization Description	Comments
	locally weakly stylolitic				
105					
110	114-128' weakly stylolitic + v. weakly bx'd w/ tr py. @114' slicks on frac @ 20° to CA	114-128' v. weakly bx'd. 114' slicks @ 20°			
115	@117' 1" v. fine grained sulfide rich zone @ 60° to CA			@117' 1" v fine grained py rich zone	
120	@122' slicks on frac @ 25° to CA	122' slicks @ 25°			
125	@127' 2" pale green bedded bx'd limey band w/ v. fine ang. chert frags + tr py				
130					
135					
140	147-148 bx'd. white bx'd lst + narrow zones of fine green bx w/ py'rich mtx & ang. chert frags as @ 127'. @148' sharp contact @ 75° to CA			147-148 minor py ov. fine grained in bx mtx	
145					
150	148 - 318' BFP DYKE				
155					
160	typical coarse equigranular bfp dyke as in 8-46'				
165					
170	@169' slicks @ 30° to CA				
175					
180					
185					
190	@193' slicks @ 10° to CA				
195					
200					

ECHO BAY MINERALS | Project Greenwood | Dhld MC-02-97 | Coord: N | E | Elev | Azz90 Incl -60 TD 379' | Date 8/1 | Logger LC | Page 3 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	STRUCTURES RQD	Rec	Fractures/Faults	Silica% Cc	Dolo	Vn	Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	no/ft	ang	Au thick	Au moz	Comments
205																														
210																														
215																														
220																														
225			@ 226' slicks on fracs @ 20° & 45° to ch																											
230																														
235																														
240																														
245																														
250			@ 251' slicks on fracs @ 40° to ch																											
255			@ 252', " @ 05° to ch																											
260																														
265																														
270																														
275			@ 272' slicks on fracs @ 20° to ch																											
280			279-282 pale pink, course grained K-spar altd												279-282' potassic alt'n															
285			@ 282' contact of coarse K altd dyke w/ fine dark porphyritic phase for 2', then coarsens again																											
290																														
295																														
297																														

ECHO BAY MINERALS | Project Greenwood | Dhld ML-02-94 | Coord: N | E | Elev | Az 200 | Incl -70 | TD 379 | Date 8/1 | Logger LC | Page 4 of 4

Depth	LITHOLOGIC DESCRIPTION	STRUCTURES Fractures/Faults	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Comments
305					
310	311-318 : [illegible] [illegible]	311-318 [illegible] [illegible]			
315	@ 317.8' frac w/ slicks @ 10° to CA	@317.8' slicks 10° to CA			
	@ 318' sharp contact @ 75° to CA				
320	318 - 371.5' SSC				
325	brown-green to grey green, interbedded sltst, sst, cgl, locally limey. well dev. bedding @ 60° to CA. Minor py diss + along bedding planes. blotchy & perv epid altn				
330			moderate blotchy & pervasive epidote altn	Minor py diss + along bedding planes.	Should sample.
335	334 - 337 Grey-green limey sst				
340					
345					
350					
355					
360					
365	@ 366' contact @ 40° to CA				
370	366-371 LIMEY SST Grey-green, locally banded granular limey sst w/ tr py	broken core poss flt 370 - 371'			
	@ 371.5 contact @ 30° to CA				
375	371.5 - 379' BFP Dyke dark, fine grained porphyritic chill phase w/ 10% mafic phenos in fg gnass				
	TD 379'				

ECHO BAY MINERALS | Project Greenwood | Dhld ML-03-97 | Coord: N | E | Elev | Az 290° Incl -45° TD 410' | Date 9-...-97 | Logger LC | Page 1 of 5

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Pxv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			0-5' overburden																											
5	+		5-154' BFP Dyke																											
10	+		5-20' pale grey, coarse equigranular phase - 40% blocky 2-6 plag, 20% 1mm mafics, p-alt'd to bi in fg gmass. Rusty fracs.																											
15	+																													
20	+		20-29' Dark grey, finer grained mafic porphyritic phase																											
25	+																													
30	+		29-37' pale coarse phase as in 5-20'																											
35	+																													
40	+		39-154' med-coarse grained, med grey, equigranular phases into & out of darker grey, finer grained intervals, typically 2-5' in thickness ie) 68-70, 72-75, 76-83', 95-96', 105-109', 123-128'																											
45	+																													
50	+																													
55	+																													
60	+																													
65	+																													
70	+																													
75	+																													
80	+																													
85	+																													
90	+																													
95	+																													
100																														

ECHO BAY MINERALS | Project | Dhld HL-03-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger LC | Page 2 of 5

Depth	Lithologic Description	Structures Fractures/Faults	Alteration Description	Comments
105				
110				
115				
120				
125				
130				
135				
140				
145	146-154 pale pink, coarse grained kspar alt'd ~ 2' grey muddy chill zone @ contact, sharp contact @ ~30°		146-154 potassic alt'n	
150				
155	154-156 ls-sk fault zone strongly epidotized skarny lst, bxd w/ white lst frags in green skarny mtx. slides on fracs @ ~40° to C/A	154-156 FLT zone healed bx, slides @ 40°	154-156 epid. skarn	
160	156-163 LIMESTONE - white massive lst w/ 1.5' skarn alt'n @ bottom contact		163.5-165 ep skarn	
165	163-179 MICRODIORITE MDI hbld porph. ep alt'd		mod. perv. epidote alt'n	
170				
175				
180 (Sample →)	179-181 mixed zone of ls & MDI w/ sulfide stringers or vn, poss flt	poss flt	2% diss py	179-181
	181-182 MDI w/ ep		epidote	
185	182-186 ls, white, med xlline marble, locally v. broken	poss flt @ 185.5'		
	186-188 MDI w/ ep		epidote	
190	188-192 limestone - dirty lst w/ abund ep xtals - rel to MDI?			
195	192 - 277.5 BFP Dyke @ 192', sharp contact @ 35° to C/A. @ 198', 1' bx zone, mottled lst + fine grained banded sltstn. @ v low core angle. FLT zone.	198' FLT zone @ 0 to 30° to C/A		
200				

ECHO BAY MINERALS | Project | Dhld ML-03-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger |

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Pvr	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
205	+		192-201' Dark grey fine grained mafic porph chill phase																											
210	+		201-227 Typical med grained hbld-fsp porph phase.																											
215	+																													
220	+																													
225	+					@ 227' slicks on fracs @ 30° to CA																								
230	+		227-231 Dark grey fine grained, felted text																											
235	+		231-276 coarse grained med grey, fsp+hbld phyric w/ bi after hbld																											
240	+																													
245	+																													
250	+																													
255	+					@ 259' slicks on fracs @ 5° to CA																								
260	+																													
265	+															268-273' weak K altn															
270	+																													
275	+		276-278 fine grained muddy fsp phyric, chill zone																											
280			278-283 siltstone-sandstone becoming quite coarse locally to v. fine congl. Minor diss py + weak epid altn												278-295 weak epid	278-295 minor diss py.														278-283
285			283-288 Fine grained brown sulfidic siltstone w/ blotchy sulfide blebs w/ bleached epid rims + diss py													283-288 2% py coarse diss par. to bedding + blebs to 3 mm w/ cp, bleached rims													283-288
290			288-295 siltst-sst, as in 278-283																											288-295
295			@ 295' Faulted contact - no orient			@ 295 Fault zone																								
300	+		295-410' BFP Dyke																											

ECHO BAY MINERALS | Project | Dhld HL-03-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page 4 of 5

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	STRUCTURES RQD	Rec	Fractures/Faults	Silica% Cc	Dolo	Vn	Py	CN	Arg	Sil	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
305	⊥		295 - 410'																											
	+		ZFP Dyke																											
310			Typical coarse grained, medium grey fsp. knitted																											
	+		phyric w bio after																											
315			hbld; locally from																											
	+		slightly finer grained																											
320			& darker ie) 384-389'																											
	+																													
325																														
	+																													
330																														
	+																													
335																														
	+																													
340																														
	+																													
345																														
	+																													
350																														
	+																													
355																														
	+																													
360																														
	+																													
365																														
	+																													
370																														
	+																													
375																														
	+																													
380			@ 382' 1 cm white																											
	+		chalcedonic vn @ 30° to c/a																											
385																														
	+																													
390			389-403 weak - mod												389-403															
	+		potassic alt'n												weak - mod															
395			391-397' zone of grey												K alt'n															
	+		chalc flooding as braided																											
400			zones 1 vnlts to 2 cm wide,																											
			typically @ 30° to CA. ~1-2/ft																											

ECHO BAY MINERALS | Project | Dhld MC-03-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page 5 of 5

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Co	Dolo	Silica% Sil	Prv	Chl	Arg	Sil	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
405																														
410			T.D 410'																											

ECHO BAY MINERALS | Project Greenwood | Dhld MG-04-97 | Coord: N E Elev | Az 295° Incl -45° TD 400' | Date 8/5/97 | Logger L.C. | Page 1 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	STRUCTURES ROD	Rec	Fractures/Faults	Silica% Cc	Dolo	Vn	Pv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
5			0 - 8.5 overburden																											
10	+		8.5 - 104 DFP cycle.																											
15	+		8.5 - 80' Typical coarse grained fsp-hbld-bt phase, med grey, equigranular																											
20	+		8.5 - 20' rusty fract, broken																											
25	+																													
30	+																													
35	+																													
40	+																													
45	+																													
50	+																													
55	+																													
60	+																													
65	+																													
70	+																													
75	+																													
80	+		80-104 fine grained, dark grey, wild porph phase 10% mafic phenos in fg gmass.																											
85	+																													
90	+																													
95	+																													
100	+																													

ECHO BAY MINERALS | Project | Dhld ML-04-97 | Coord: N | E | Elev | Az 295 Incl -45 TD 400' | Date | Logger | Page 2 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica % Vn	Pvr	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	gp	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
	+		@104' sharp contact @ 50° to c/A																											
105			104-106' LIMESTONE massive white BF																											
	+		106-146' BFP Dyke																											
110	+		@106' sharp contact @ 40° to c/A																											
115	+		Intermediate phase - medium grey, porphyritic w fsp+hnbld·bi phenos 30→40% phenos in fg gmass. > phenos than in 80-104', but porph is darker than 85-80'																											
120																														
125																														
130																														
135																														
140																														
145	+		@146' sharp contact w slicks @ 45° to c/A			@146' faulted contact																								
150			146 - 186' Limestone massive, white - pale grey fine grained marble @147' 1" bx zone, 70° to c/A													tr py on fracs.														
155																														
160																														
165																														
170			@172.5' 1' microdiorite @ 60° to c/A. MDZ fine grained, equigran.																											
175																														
180																														
185			@186' sharp contact @ 70° to c/A																											
190			186-192.5' MDZ·ep fine grained, equigran, ep alt'd microdiorite. 191.5-192' 6" lst bx @ 65° to c/A 192-192.5' bx MDZ			191.5-192 FH zone 65° to c/A																								
195	+		192.5-209' BFP Dyke @192.5 sharp contact 75° to c/A, - no chill			@194' slicks on fracs @ 30° to c/A																								
200	+																													

ECHO BAY MINERALS | Project | Dhld ML-04-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger |

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	QN	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
205			Typical med grey, coarse grained, equigran phase																											
210			207-209' v fine dark chilled zone @ 209' contact @ 70° to c/a. 209 - 214.5 ch fine chert pebble congl-cherty ss w limey mtx																											
215			@ 214.5 contact @ 80° to c/a													@ 214.5 minor py @ contact														
220			214.5 - 235 lsc massive mod hard lst w fine chert ss grains																											
225			Mottled grey-green colour. Mod-str fiz.																											
230			Somewhat arbitrary distinct. between ch & lsc. based on grain size of ch - could all be ch unit.																											
235																														
240			235-244' ch cherty ss to fine chert pebble congl as in 209-214.5' w limey mtx																											
245																														
250			248 - 259.5 ls			248-250 Broken zone FM																								
255			Massive finely x'talline, grey-green mottled marble. Weak bedding @ 60° to c/a			@ 254' hem fracs @ 15° to c/a																								
260			259.5 - 274.5 tbu																											
265			thinly bedded grey-pale green siltstone w minor diss py par. to bedding @ 60° to c/a.													259.5-274.5 minor diss py														
270			Thicker beds of brown s have blebby pale green ep alt'n																											
275			274.5-276' healed bx zone in lsc & fine green s.			274.5-276' healed bx zone 50° to c/a																								
280			276-283 v. fine grained green-black siltstone. Dom dark grey-black													276-283 minor fine diss py														
285			@ 280' sharp contact @ 45° to c/a w 8" BFP																											
290			283 - 400' BFP			285-290' minor slicks on fracs @ 45° to c/a																								
295			@ 283' sharp contact @ 30° to c/a																											
300			283-287' } fsp-hnbld/bi phyric chill phase																											

ECHO BAY MINERALS | Project | Dhid NIL-04-97 | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page 4 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	ROD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Pv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	gp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
305	+		287-400' Typical med.-coarse grained, med grey hb-biotite(?) equigranular phase of BFP.																											
310	+																													
315	+																													
320	+		317-325' slightly darker, finer grained felted txt																											
325	+																													
330	+																													
335	+																													
340	+																													
345	+																													
350	+																													
355	+		@ 354' 3" calcite vn @ 60° to C/A																											
360	+																													
365	+																													
370	+																													
375	+																													
380	+																													
385	+																													
390	+																													
395	+																													
400	+		T.D. 400'																											

ECHO BAY MINERALS | Project Greenwood | Dhid MCDS-97- | Coord: N | E | Elev | Az 290 Incl -70 TD 331' | Date | Logger MR | Page 1 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Pvr	Chl	Arg	Sid	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	gn	cp	ap	sl	Veins Type	no/ft	ang	Inlck	Au moz	Comments
5			Overburden																											
			6-78.5																											
10			Marble																											
15																														
20																														
25			grey, massive																											
30																														
35																														
40																														
45															45-70															
50			white, massive												- wide irreg bands of impure ep-px- altered material forms matrix to limestone															
55																														
60			App. bedding @ 45° to CA																											
65																														
70																														
75			Apparent bedding at 45° to CA			Fault contact @ 60° to CA																									
80			ENTRANCE 74.5-256																											
			BFP			60-90° Sheared fract's @ ave 45° to CA																									
95																														
90																														
95																														
100																														

ECHO BAY MINERALS | Project | Dhld | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page | of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Vn	Prv	CN	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			78.5-256																											
105	+																													
110	+		BFP			110-130 widely spaced slicked frac's @ ~ 0-30° to CA (some 30-50°)																								
115	+																													
120	+																													
125	+																													
130	+																													
135	+																													
140	+																													
145	+																													
150	+																													
155	+																													
160	+																													
165	+																													
170	+																													
175	+																													
180	+																													
185	+																													
			187'			FH at 60° (or 15°) to CA									Fe-stained ++															
190	+																													
195	+																													
200	+																													

ECHO BAY MINERALS | Project | Dhld | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Pkr	CH	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	ml	hm	po	cp	sp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
205	+		BFP																											
210	+																													
215	+																													
220	+																													
225	+																													
230	+																													
235	+																													
240	+																													
245	+																													
250	+																													
255			Flt'd contact			Flt contact																								
			siltstone c minor ss thin bedded to massive			@ 60° to CA									green	259 thin lense of PY ~½"														
260			~259-262. granular carbonate unit																											
			262-270. ss to conglom. c PY pebbles & small lenses													262-270 grains & small lenses of PY														
265																														
270			Detrital chert - ss & cong 270-274																											
275			274'			mostly healed flt @ 60° to CA																								
			274-300 green siltstone / minor ss																											
280															poddy bleaching	dissem py & blobs < 1cm in sparse bleached pods ≤ 3cm														
285			↓																											
290																														
295			V																											
300																														

ECHO BAY MINERALS | Project ML-6-97 | Dhld Greenwood | Coord: N | E | Elev | Az 290 | Incl -45 | TD 407' | Date 8/6/97 | Logger MR | Page 1 of 4

Depth	Lith	RC	Lithologic Description	RQD	Rec	Structures Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	Alteration Description	Mineralization Description	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
0-6			OVERBURDEN																											
6-78'	+		BFP DIKE Coarse grained, equigran to porphyritic, black + gray, variably altered (sericite primarily, [illegible] epidote) unfaulted contact			Dike broken 75-78'																								
78'-95'			"baked" seds @ contact Thin bedded Limestone w/ argillite interbeds gray to green limestn beds (60%) with 40% cm-scale dark argillite beds Beds average 45° to CA																											
95-121'			Gray limestone																											

ECHO BAY MINERALS | Project GREGORY | Dhld MC-C-97 | Coord: N E Elev | Az 240 Incl -45 TD 457 | Date 4/16/97 | Logger HR | Page 2 of 4

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Silica% Diss	Vs	Piv	Chl	Arg	Sil	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	Veins no/ft	Veins ang	Au thick	Au moz	Comments
105			95-121' Massive to granular moderately recrl'zd limestone																											
110																														
115																														
120																														
125			121-139' - Thin-bedded to mottled limestone - Minor black argillite interbeds																											
130																														
135																														
140			Black, thin bedded to argillite & clastic component;																											
145																														
150			144-166 Massive, mottled Fragmental limestone w/ dk gray matrix																											
155																														
160																														
165						~ ~ ~ bf @ 163 45° to CA																									
170			166-173 Limestone gray, granular																											
175			173 - 194 Limestone, thin-bedded carg argillite, with interbeds of gray granular limestone ≤ 10 cm thick Average bdg @ 80° to CA													Pyritic laminae w/in black thinly bedded argillite units													
180																														
185																														
190																														
195			194-204' SYENITE green & carbonate																											
200																														

ECHO BAY MINERALS | Project GREENWOOD | Dhld MC-G-97 | Coord: N | E | Elev | Az 290 Incl -45 TD 407 | Date 8/6/97 | Logger MR

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Frv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			194-204 SYENITE green, w/ fsp phenos wkly ...td																											
205			204-227' MIXED LIMESTONE & FINE VC			FLT @ 205									brown hfls															204-207 104-0223
210			6" sulfide @ 208 8" sulfide @ 210 2" sulfide @ 212												"	6" massive py par to beds, fragmented														207-210 104-0224
															"	3" banded pyrite, 2" banded														210-213 104-0225
215			from 208-218, as interbedded w/ thin beds of pale green tuffaceous siltst																											
220																														
225			223-225 Black, thin-bedded argillite white massive marble 225-227 Hfld, weakly pltd cont																											
230	+		BFP Dike 227'-364'																											
235	+																													
240			238-241 LS, possibly foundered blocks																											
245	+					Flt @ 245-247																								
250	+																													
255	+																													
260	+		FAULTED ZONE			258-277' Lots of slicks on fractures in BFP. many fracs ∥ to CA																								
265	+																													
270	+																													
275	+																													
280	+																													
285	+																													
290	+																													
295	+																													
300																														

ECHO BAY MINERALS | Project GREENWOOD | Dhld ML-6-97 | Coord: N E | Elev | Az 290 | Incl -45 | TD 407 | Date 6/6/97 | Logger ML | Page 4 of 4

Depth	Lith	RC	Lithologic Description	RQD	Rec	Structures Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	Chl	Arg	Sil	Alt Code	Alteration Description	Mineralization Description	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
305	+		297-364																											
310	+																													
315	+		BFP																											
320	+		DIKE																											
325	+																													
330																														
335	+																													
340	+																													
345	+																													
350	+																													
355			Low angle to core slicked fractures			354-361 Possible 25° CA Flt zone																								
360	+		Not Flt'd @ cntct																											
365			364-407																											
370			GREEN SSC												Very Epidotized, both as perv. & blebby (cm-scale)															
375																														
380																														
385																														
390																														
395						Flt @ 395																								
400			Conglom. 397-402 TD = 407'																											

ECHO BAY MINERALS | Project | Dhld | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
305			5 5 - cong 305 - 331'																											
310			↓													sparse dissem sulf (py)														
315																														
320																														
325																														
330																														
			TD = 331'																											

ECHO BAY MINERALS | Project GREENWOOD | Dhld MI-07-97 | Coord: N | E | Elev | Az 290 | Incl -45 | TD 711 | Date 9/4/97 | Logger WJL | Page 1 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Pv	Cht	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sf	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			0-5 Overburden																											
5			5-102'																											
10	+																													
15	+		BFP,																											
20	+		Variably populated w/ fsp vs. bt phenos,																											
25	+		generating variable C.I. values																											
30	+		say, 8-12.																											
35	+																													
40	+																													
45	+																													
50	+																													
55	+																													
60	+																													
65	+																													
70	+																													
75	+																													
80	+																													
85	+																													
90	+																													
95	+																													
100	+		FH @ 102'			FH Into ~1'																								

ECHO BAY MINERALS | Project Greenwood | Dhid ML-07-97 | Coord: N | E | Elev | Az 290 | Incl -45 | TD 711 | Date 9/4/97 | Logger MR | Page 2 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
100–105		light grey	FIT @ 100'? -Cherty detritus 100-101 -BFP - 101-102'																											
105–145		grey / blackish gray	102-147' Thin bedded limestone (variably argillic). Thin beds are mm-scale, tend to alternate in rythmic patterns from light to dark, with longer color trends superimposed. More massive. More massive			Beds are ~45° to CA																								
147–155			147-155' Syenite, abund. fsp laths, no hb, pinkish-green																											
155–157			155-157 Thin-bedded gray limestone																											
157–172.5			157'-172.5 SYENITE. as above; only fsp laths in aphan. green matrix																											
172–185			172'-185' Dark gray, thin bedded limestone, v. disrupted from 174' to bottom of int.			sev. disruption from 175-180; less severe 180-185	SLICKS || to CA 90°, 40°																								
185–187			185-187 SYENITE																											
187–197			187-197 Thin-bedded ls, black etc			FH @ 192' v. gougy (prior gouge at 195'.)																								
197–200			197'-206' SYENITE																											

ECHO BAY MINERALS | Project Greenwood | Dhld MC-07-97 | Coord: N | E | Elev | Az 280 | Incl -45 | TD 711 | Date 9/4 | Logger MR | Page 3 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	Cht	Arg	Sil	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
200–205			197-206' SYENITE green ε fsp laths																											
205–245			206-245 LIMESTONE – thin-bedded, – gray to black, – rythmic bedding, – mm-scale laminae etc. As above			same ave 45° to CA																								
245–280			245-280 CLAST-SUPPORTED FRAGMENTAL LIMESTONE – fragments range from rounded, globular clasts in carbonate (finely rexllized micrite) matrix to angular, broken textures resembling in-situ brecciation. – Matrix is sulfide (py) in last foot of interval (179'-180')												matrix is generally dark gray carbonate, clasts are white, but pattern reverses from 260'-270'															104-0551 270-275; 104-0552 275-280
280–296			280'-296' Thin bedded, greenish CHERT V. sulfidic, ≤5% py													≤5% Py														104-0553 280-285; 104-0554 285-290; 104-0555 290-295;
296–300	#	#	296-299' Felsic, coarse grained Intrusive rock fsp/hbl phenos			light colored									strong sericitic alter'n	≤2% Py														104-0556 295-300

ECHO BAY MINERALS | Project Greenwood | Dhid MCr 07-97 | Coord: N | E | Elev | Az 290 | Incl -45 | TD 711 | Date 9/4 | Logger MR | Page 4 of 8

Depth	Lithologic Description	Structures Fractures/Faults	Mineralization Description	Comments
	299-310 Thin-bedded green CHERT		sulfides (Py) ≤3%	104-0557 300-305
305	Flt @ 309.5' contact	flt at contact		104-0558 305-310
310	310-322' Globular (fragmental) LIMESTONE	prob hi ∠ to Core; 60°(?) to CA	sulfidic 6 ft	104-0559 310-315
315				
320				
325	322'-485'			
	327' [illegible]	Flt @ 327' 40°-90° ∠ CA		
330	Massive to "globular"-textured LIMESTONE			
335				
340	No Bedding planes			
345				
350	white, rexll'zd			
355				
360				
365				
370				
375				
380				
385				
390				
395				
400				

ECHO BAY MINERALS | Project Greenwood | Dhld ML-07-97 | Coord: N | E | Elev | Az 240 | Incl -45 | TD 711 | Date 7/14/97 | Logger MQ | Page 5 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
			322'-455'																											
405																														
410			MASSIVE WHITE LIMESTONE (MARBLE)																											
415																														
420																														
425																														
430																														
435																														
440			"globular" texture partially developed by darkened alteration on irreg. fracture surfaces.																											
445																														
450																														
455			Flt contact 455'-498.5' LIMESTONE w/ DETRITAL CHERT																											
460																														
465			- Distinct unit, but still is overall a limestone																											
470																														
475			- Contains chert granules, from sand-sized to cobbles, but always with fine calcareous (micritic?) matrix.			Beds @ 35° to CA																								
480																														
485																														
490																														104-0560 490-495
495			~~FH~~ sulfidized thin bedded chert Thd. Cont. = ~35° to CA 499-524' BEP			FH ~65° to CA																								104-0561 495-500
500																														

ECHO BAY MINERALS | Project Greenwood | Dhid MC-07-97 | Coord: N | E | Elev | Az 290 | Incl -45 | TD 711 | Date 9/1997 | Logger MD | Page 6 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Ca	Dolo	Silica% Si	Prv	Chl	Arg	Sid	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	no/ft	ang	thick	Au moz	Comments
505			497-524 BLACK BFP																											
510																														
515																														
520																														
525			Intrusive contact @ ~ 60° to CA																											
530			Thin-bed SSC to 526' Ls 526'-530'																											
535			530-550' SSC tuffs ↑ Conglom 540-550																											
540																														
545																														
550			550-560 PIN-STRIPED 550-555 LIMESTONE																											
555			Impure, granular 555-560																											
560			560-577 Disrupted contact (faulted?)																											
565			SYENITE fsp laths in pink fine to aphan. matrix																											
570																														
575			Int. contact @ 70° to CA																											
580			577-598' . Limestone & clast granules																											
585																														
590			- cloudy gray, ± detrital dust grains 580-590																											
595																														
600			598-611 Thin bed SILTSTONE																											

ECHO BAY MINERALS | Project Greenwood | Dhld MC-07-97 | Coord: N E | Elev | Az 290 | Incl 45 | TD 711' | Date 9/4/97 | Logger MK

Depth	Lithologic Description	Structures Fractures/Faults	Alteration Description	Mineralization Description	Comments
605, 610	599-611' Tbu green siltstone c̄ blotchy alteration	thin beds @ 50° to CA	blotchy bleaching		
615	611-616 massive white CARBONATE				
620	616-620.5 Tbu				
625	620.5-628' Sulfidic Carbonate (white)				104-0562 620-625
630	Thin bedded siltstone to limy interbeds			py ≤5% dependent on interbeds	-0563 625-630
635					-0564 630-635
640	638-655 - White grainy Carbonate				-0565 635-640
645					-0566 640-645
650					-0567 645-650
655					-0568 650-655
660	fine green s to ssc				-0569 655-660
665					-0570 660-665
670					-0571 665-670
675					-0572 670-675
680					-0573 675-680
685					
690					
695					
700					

ECHO BAY MINERALS | Project Greenwood | Dhld MC-07-97 | Coord: N | E | Elev | Az 200 | Incl -45 | TD 711 | Date 9/14/97 | Logger MP | Page 8 of 8

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vs	Prv	Chl	Arg	Sil	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	si	Veins Type	no/ft	ang	thick	Au moz	Comments
705																														
710			TD = 711'																											

ECHO BAY MINERALS | Project GREENWOOD | Dhld MC-08-97 | Coord: N | E | Elev | Az 240 | Incl -45 | TD 135 | Date 9/14 | Logger MR | Page 1 of 2

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			0-6' OB																											
5																														
10			6-24' DETRITAL CHERT ss - cong lm																											
15																														
20			mass py + siltstone (green)													23 to 22' Heavy PY		50%												
25			24'-29.5' LIMESTONE																											
30			29.5-30.5' massive py 30.5-38'																											
35			LIMESTONE ± detrital chert																											
40			38'-41' sulfide siltite (green)			Flt @ 40'												5-10%												
45			41'-67' Green SILTSTONE																											
50			- splotchy sulfides ± sericitic halos; sulf (py ±50%) + chlor; bleached zone - mostly sericite																											
55																														
60																														
65			67-67.5' massive py + chlor													mass py														
70			67.5-135' siltstone & sandstone green, with decreasing sulfides																											
75																														
80																														
85						84'-100' Bx textures, mostly healed c̄ chlorite																								
90																														
95																														
100																														

ECHO BAY MINERALS | Project GREENWOOD | Dhld MC-08-97 | Coord: N E Elev | Az 340 Incl -45 TD 135 | Date 9/16 | Logger MC | Page 2 of 2

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	STRUCTURES: RQD	Rec	Fractures/Faults	Cc	Dole	Silica%: Vn	Prv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	sp	sl	Veins: Type	no/ft	ang	thick	Au moz	Comments
105			siltstone - sandstone - minor conglom																										
110																													
115																													
120																													
125																													
130																													
135			TD=135																										

ECHO BAY MINERALS | Project GREENWOOD | Dhld ML 09-97 | Coord: N | E | Elev | Az 290 | Incl -45 | 137 | Date 9/17 | Logger M/R | Page 1 of 2

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Prv	CM	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	mt	hm	po	cp	ap	sf	Veins Type	no/ft	ang	thick	Au moz	Comments
5–15			OVERBURDEN																											
15–25	+		15-25 MICRODIORITE Hb phenos, grn mtx																											
25–27			25-26 TBU; WHITE MARBLE																											
27–33			27-33 TBU (thin-bedded unit) 2" ms @ 34'													2" mass py @ 34'														
33–49.8	+		33'–49.8' MICRODIORITE Hb phenos c epid. haloes																											
49.8–50.5	SK		49.8-50.5 Ep/gt + py																											
50.5–95			50.5'-95' GRAY to WHITE MARBLE; sulfide vns ½" thick, 1-2/ft to 62'; CHERT GRAINS 64'-66'; V. STYLOLITIC 65-95'; 2' py vn + epidote													py vns @ mod to hi ∠ to core														
95–100			95' Fragmental to conglom. grn matrix, clasts of carb, chert & siltstone																											

ECHO BAY MINERALS | Project GREENWOOD | Dhld MC-09-97 | Coord: N | E | Elev | Az 240 | Incl -45 | TD 137 | Date 9/17 | Logger MS

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rec	STRUCTURES Fractures/Faults	Cc	Dolo	Silica% Vn	Silica% Flv	Chl	Arg	Sd	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	ml	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
			100-137' Siltstone ±																											
105			minor ssandstone																											
110	...		- complun - green,																											
115			rare dissem py																											
120																														
125																														
130																														
135																														
			TD = 137'																											

ECHO BAY MINERALS | Project GREENWOOD | Dhid MC-10-97 | Coord: N E Elev | Az 270 Incl -45 TD 171 | Date 9/17 | Logger MK | Page 1 of 2

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	ROD	Rec	STRUCTURES Fractures/Faults	Silica% Cc	Qvb	Vn	Prv	Chl	Arg	Sid	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	ml	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	Au thick	Au moz	Comments
5			OVER BURDEN																											
10																														
15			LIMESTONE white to gray recrystallized																											
20																														
25			23-28 siltstone to argillite gra to buff																											
30			28-64' LIMESTONE (MARBLE) GRAY, IMPURE Epidotized frac's Splotchy gray to green alter'n																											
35																														
40																														
45																														
50																														
55																														
60																														
65			64-78' green siltstone some thin			65-70 fractured																								
70																														
75																														
80			78'-132 MICRODIORITE Fine grained, & crowded mm-scale fsp phenos																											
85																														
90																														
95																														
100																														

ECHO BAY MINERALS | Project | Dhld | Coord: N | E | Elev | Az | Incl | TD | Date | Logger | Page | of

Depth	Lith	RC	LITHOLOGIC DESCRIPTION	RQD	Rle	STRUCTURES Fractures/Faults	Silica% Cc	Dole	Vn	Prv	Chl	Arg	Sul	Alt Code	ALTERATION DESCRIPTION	MINERALIZATION DESCRIPTION	Min Code	py	el	hm	po	cp	ap	sl	Veins Type	Veins no/ft	Veins ang	thick	Au moz	Comments
105			MICRODIORITE																										
110			- Fn grnd																										
115			- Abund. white plag phenos ≤ 1mm																										
120																													
125																													
130																													
135			132 - 171' green siltstone to sandstone			no angle pebs																							
140																													
145																													
150																													
155																													
160						no angle pebs																							
165																													
170																													
			TD = 171'																										

APPENDIX 2

ANALYTICAL RESULTS

JSTOM ANALYTICAL SERVICES
O. Box 722 * 101-4 Hwy 21 So.
·public, WA 99166
09) 775-3885

ECHO BAY MINERALS (1362)
2251 W KETTLE RIVER RD.
CURLEW, WA 99118
ATTN:MIKE RASMUSSEN
ATTN:DAN HUSSEY

gust 4, 1997 R71431

ST FOR:	Au
THOD:	FIRE
ED:	ASSAY
SULTS IN:	oz/ton

4:201	.002
4:202	.003
4:203	<.002
4:204	.007
4:205	<.002
4:206	.004
4:207	.003
4:208	.002
4:209	.003
4:210	.005
4:211	.008
4:212	.006
4:213	.004
4:[illegible]	<.002
4:[illegible]	.004
4:216	.005
4:217	.003
4:218	<.002
4:219	.002
4:220	.004
4:221	.003
4:222	<.002
RESUS-97-1	<.002
4:220 PULP DUP	.005
RESUS-97-1 DUP	<.002
K STANDARD	.148
LICA BLANK	<.002

CHARGES

TOTAL CHARGES $0.00

James P. Gubler, Manager

CUSTOM ANALYTICAL SERVICES
P. O. Box 722 * 101-4 Hwy 21 So.
Republic, WA 99166
(509) 775-3885

ECHO BAY MINERALS (1362)
2251 W KETTLE RIVER RD.
CURLEW, WA 99118
ATTN:MIKE RASMUSSEN
ATTN:DAN HUSSEY

August 26, 1997 R71562

TEST FOR:	Au
METHOD:	FIRE
USED:	ASSAY
RESULTS IN:	oz/ton
104:223	.012
104:224	.108
104:225	.122
104:226	.006
104:227	.008
104:228	.006
WR:97-1	.037

Wild Rose

CHARGES

==========

TOTAL CHARGES $0.00

Chris Kitchell

James P. Gubler, Manager

CUSTOM ANALYTICAL SERVICES
P.O. Box 722 * 101-4 Hwy 21 So.
Republic, WA 99166
(509) 775-3885

ECHO BAY MINERALS (1362)
2251 W KETTLE RIVER RD.
CURLEW, WA 99118
ATTN:MIKE RASMUSSEN
ATTN:DAN HUSSEY

August 26, 1997 R71562

TEST FOR:	Au
METHOD:	FIRE
USED:	ASSAY
RESULTS IN:	oz/ton
104:223	.012
104:224	.108
104:225	.122
104:226	.006
104:227	.008
104:228	.006
WR:97-1	.037

Wild Rose

CHARGES

==========

TOTAL CHARGES $0.00

Chris Kitchell

James P. Gubler, Manager

Excellence Begins Here...

APPENDIX 3

COST STATEMENT

COST STATEMENT

LABOUR		
M. Rasmussen	20 days @ $300/day	$ 6,000.00
L. Caron	10 days @ $250/day	2,500.00
N. Braam	2 days @ $100/day	200.00
		$ 8,700.00
DRILLING		
Bergeron Diamond Drilling		
3466 feet @ $14.00/ft		$ 48,524.00
reclamation, site prep, mobilization, core boxes		1,478.00
		$ 50,002.00
ANALYTICAL COSTS		
Custom Analytical Services, Republic WA - Au assay		
28 core samples @ $16.00 (including shipping)		$ 448.00
		$ 448.00
SUPPLIES AND TRANSPORTATION		
General field supplies (bags, etc)		$ 100.00
Vehicle rental	20 days @ $50/day	1,000.00
Fuel		100.00
Office expenses		150.00
		$ 1,350.00
	TOTAL:	**$60,500.00**

APPENDIX 4

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Linda J. Caron, certify that:

1. I am an exploration geologist residing at Bubar Road (RR #2), Rock Creek, B.C.

2. I obtained a B.A.Sc. in Geological Engineering (Honours) in the Mineral Exploration Option, from the University of British Columbia (1985).

3. I graduated with an M.Sc. in Geology and Geophysics from the University of Calgary (1988).

4. I have practised my profession since 1987 and have worked in the mineral exploration industry since 1980.

5. I am a member in good standing with the Association of Professional Engineers and Geoscientists of B.C. with professional engineer status.

6. I am employed by Kettle River Resources Ltd. as an exploration geologist.

L. Caron
Linda Caron. P. Eng

Nov 19/97
Date