GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORTS

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Geological Lithogeochemical Report

on the

ARBEE CLAIM GROUP Skeena Mining Division NTS 104B/9

for

Placer Dome Canada Limited 1440 Hugh Allan Drive Kamloops, BC V1S 1L8



Dated:



Author: T.D. Lewis Kamloops, BC

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ARBEE PROPERTY REPORT

SUMMARY and CONCLUSIONS

The Arbee Property (4 claims), is located on the south side of the Mitchell Glacier, at the headwaters of Mitchell Creek. This is approximately 70 kms north of Stewart, British Columbia, within the Coastal Mountains. Access to the property is by helicopter.

The property is underlain by lower to middle Jurassic volcanic and sedimentary rocks of the Hazelton Group, which have in turn been intruded by plutons of subalkaline composition. Earlier prospecting has yielded several copper-gold occurrences, plus showings of molybdenum.

From August 14, to August 20, 1996, the author accompanied by D. Moynes and C. Thynne, performed reconnaissance mapping, and lithogeochemical sampling of the Arbee Claim group. The main objective of the programme was to assess the economic potential of copper-gold mineralization on the property.

The geological mapping revealed a series of east west volcanics, dipping moderately to the north, which have been intruded by felsic intrusions. Silicification and pyritization is widespread on the property, and several copper showings were recognized.

The results from the gold analysis indicate gold mineralization is associated with silicification and pyritization and in quartz-sulphide veins. Seven of the thirty three(33) samples taken, assayed greater than 1.0 gm/t gold, and further work is recommended to follow-up this preliminary study.

Copper mineralization was observed on fracture surfaces, disseminated chalcopyrite in mafic volcanics, and in quartz-sulphide veins. The results are consistent with porphyry-style mineralization and further work is recommended to determine the relationship between copper and gold, and the extent of the deposition.

INTRODUCTION

Location and Access

The property is located within the Coastal Range Mountains of BC, approximately 70 kms north of Stewart and 925 kms northwest of Vancouver, BC. The property is centred on coordinates 56° 31.5'N, 130° 15.0'W on NTS mapsheet 104B/9 (John Peaks).

1



Access to the property was with Northern Mountain Helicopters, based at the Kenrich Camp at the confluence of Sulphurets and Unuk Creeks. Supplies were trucked over highway 37 to the new Eskay Mine road, between Bell II and Bob Quin Lake, then ferried by helicopter from a staging area at kilometre 54. Permission was obtained from the Eskay Mine prior to using the road.

Physiography and Vegetation

The topography at the Arbee Property is typical of the Coast Range Mountains, with steep glaciated U-shaped valleys. Elevations range from 670 m at the foot of the Mitchell glacier to 1500 m, at the south side of the property. The Mitchell Glacier dominates the headwaters of Mitchell Creek.

Vegetation throughout the property varies from stunted spruce and fir on the lower claims, to alpine lichens and mosses in the uplands.

Claim Status

The property consists of 4 claims within the Skeena Mining Division of BC. The claims were staked by T. Kirby and D. Kosneyka in August 1991. Each claim has a dimension of 457.2 m (1500') x 457.2 m (1500') and are described as follows. All claims are under option to PDC, as outlined in an agreement dated February 03, 1992. Three post were located during the current work programme.

<u>Claim Name</u>	Record #	<u># of Units</u>	Expiry Date
Arbee #35	254756	1	June 16, 2001
Arbee #39	254757	1	June 16, 2001
Arbee #54	254758	1	June 14, 2001
Arbee #55	254759	1	June 16, 2001

Previous Work

Exploration in the area dates back to the 1880's when placer gold was located in Sulphurets Creek. In 1935, copper-molybdenum mineralization was located in the vicinity of the Main Copper showing, on the north side of the Sulphurets Glacier. In 1960, exploration spread to the Mitchell Creek valley, and copper was discovered along the Sulphurets - Mitchell Ridge, with gold and silver values identified at the base of the Iron Cap on the north side of Mitchell Creek.



In 1961, Granduc discovered molybdenum mineralization on the south side of the Mitchell Glacier. Drilling followed on both molybdenum and copper-gold targets.

In 1980, Esso Minerals optioned claims in the area from Granduc, and their work of mapping, trenching and geochemical sampling resulted in the discovery of several new showings including Snowfields, Shore, West and Galena zones. Esso left in 1985.

In 1985, Newhawk Gold Mines worked the property, including the following zones: West, Shore, Snowfields, Golden Marmot, Sulphurets Gold, Main Copper Zones and the Mitchell Zone on Mitchell Creek. On June 4, 1991, the Arbee Claims were optioned to Newhawk in an agreement involving Newhawk, Granduc Mines Limited, and Donald F. Ross.

On February 4, 1992, Placer Dome Inc. optioned the claims from Newhawk Gold Mines Limited, subject to the underlying agreement among Newhawk, Granduc and Ross (see above). No further work has been completed on the property prior to the current work programme.

GEOLOGY AND MINERALIZATION

Regional Geology

The Arbee property is underlain by a sequence of lower to middle Jurassic metavolcanic and metasedimentary rocks of the Hazelton Group. These rocks have subsequently been intruded by plutons of sub-alkaline composition. The entire sequence has been folded and faulted, and elongated in a northerly direction. Bounding the group on the east is the Bowser Basin, and on the west by the Coast Crystalline Complex.

Property Geology

The main rock types encountered on the property consist of mafic to felsic volcanics, quartz-feldspar porphyry, and rocks of the Mitchell Showings which consist of weakly banded, sericite-pyrite-chlorite altered tuffs. The rocks generally trend east-west, and dip at 70° to the north. Glacial moraines and talus slides cover part of the property, however, exposures are excellent in creek valleys and along the numerous rock bluffs.

The extrusive rocks consist of fine grained grey to grey green felsic volcanics. Disseminated and fracture-filled pyrite is common and usually occurs in centimetre-wide fractures trending northeasterly. As a result, the felsic volcanics often form highly fracture gossans, and outcrop in the southern portion of the property. Interbedded, and associated with the felsic sequence, are mixed agglomerates. The fragments are subrounded to subangular, unsorted, with fragments up to .3 m across, and long-axis of the

fragments trending east-west.

In the central portion of the property, the rocks consist mainly of pyritizedsilicified quartz-feldspar porphyries. The rocks are generally rusty, with yellowish-brown weathering. An outcrop on the central-eastern portion of the claims, also contained minor molybdenite and fluorite.

On the northern claim boundary, the rocks consist of dark green to grey green, mafic volcanics. These rocks are highly fractured, and fracture surfaces are rusty, often with malachite-azurite copper staining. Disseminated pyrite is common, and chalcopyrite was observed in quartz-sulphide veins and disseminated within the volcanic host.

A 10 m wide east-west trending, steeply dipping fault, separates the underlying mafic volcanics from the sericite-pyrite-chlorite altered andestic tuffs, which form the Mitchell Zone. The Mitchell Zone is completed rusted, and exhibit a banding which trends from 098° to 130°.

The Mitchell Zone

"The Mitchell Zone" was tested by three BQTK drill holes (s91-386-387, 395) totalling 498.5 m, and numerous saw-cut channel samples on surface. The zone consists of a 1.2 km long by 300 m wide zone of quartz-sericite-pyrite-chlorite altered andesitic tuffs. The tuffs host an extensive gold-copper anomaly (defined by a 0.10% Cu and .02 opt Au contour). The mineralization occurs as quartz vein stockwork containing pyrite, chalcopyrite and molybdenite. In addition, weakly banded, coarse crystalline pyrite was widespread. Drilling suggests the zone extends to a depth of at least 200 m (D. Visagie, 1991).

The Alder Zone

"The Alder Zone" is along strike towards the west from the Mitchell Zone. It is defined by a surface gold anomaly of .10 opt Au over an area of 500 x 100 m. Altered andesitic tuffs host the mineralization, and higher grades of .07 opt gold were detected within an internal breccia pipe 30 m in diameter. DDH BQTK (s91-396) was drilled to a depth of 148.5 m, but did not yield significant results.

Lithogeochemical Study

A total of 33 rock chip samples were collected during the mapping programme, and analysed for copper and gold by Eco Tech Laboratories in Kamloops, BC. The results are tabled in Appendix II. A description of each sample is illustrated in TABLE I.

Rock Sample Sheet - Arbee Property, B.C.

TABLE I

Sample #	Type	Elevation(m)	Elevation(FT)	Width	Sampler	Date	Rock Type	Description
<u>Quinpiq.n.</u>								
A5401	chip	1164.336	3820	·	СТ	96-08-15	VA	malachite, pyrite in dark green, fine grained volc.
A5402	chip	1164.336	3820		DM	96-08-15	VA	ditto
A5403	chip	1165.86	3825		DM	96-08-15	VA	minor mal., disseminated cpy - 1 speck, qtz-carb veinlets
A5404	chip	1164.336	3820		СТ	96-08-15	veinlet	qtz and coarse crystals pyrite (30%)
A5405	chip	1264.92	4150		СТ	96-08-15	VA,f	str. diss py in grey-green f.g. volcanic - rusty
A5406	chip	1258.824	4130		DM	96-08-15		10% diss. py in grey, f.g. rock, poss sil.
A5407	float	0			TL TL	96-08-15	VF,p	40% py in pinkish, grey rock, hard
A5408	chin	1441.704	4730		DM/CT	96-08-15	VA	finely diss py (10%), in a pinkish, green fp
A5409	chip	1456.944	4780		СТ	96-08-15	VF, py	f.g. grey, dark rhyolite, f.g. diss py (7%)
A5410	chip	1463.04	4800		DM	96-08-15	VF, py	ditto
A5411	chip	1469.136	4820		DM	96-08-15	VF, py	ditto
A5412	chip	1295.4	4250		DM	96-08-16	VF	f.g. green volc, with py & qtz veins
A5413	chip	1298.448	4260		CT_	96-08-16		ditto
A5414	chip	1344.168	4410		CT	96-08-16	VF,†	f.g. grey rock with feldspar, 5% py
A5415						96-08-16		no sample
A5416	chip	1408.176	4620		DM/CT	96-08-16	VF,f	same as A5414
A5417						96-08-16		no sample
A5418	float	1493.52	4900		TL	96-08-16		felsic fragmental, py (30%) matrix
A5419	chip	1475.232	4840		DM	96-08-16	VF, py	qtz stockwork, pyritic grey matrix
A5420	chip	1353.312	4440		TL	96-08-16	VF, py	qtz stockwork, coarse & finr py in green volc.
A5421	chip	1456.944	4780		TL	96-08-16	VA	foliated, grey softer volc., diss py
A5422	chip	1456.944	4780		TL	96-08-16	VF, gos.	gossan - f.g. grey volc. with light brown weathering
A5423	chip	1487.424	4880		<u></u>	96-08-16	VF, py	ditto - 5% py
A5424	chip	1487.424	4880		TL	96-08-16		ditto
A5425						96-08-16		no sample
A5426						96-08-16		no sample
A5427	chip	1280.16	4200		CT	96-08-17	VF, py	f.g. green volc., with 5-10% diss py
A5428	chip	1274.064	4180		<u></u>	96-08-17	vein	gtz vein with 15% course py
A5429	chip	1280.16	4200		DM	96-08-17		f.g. grey volc., minor mai., tractured, rusty
A5430	chip	1298.448	4260		CT	96-08-17	vein	f.g. grey volc., mai. associated with qtz vein
A5431	chip	1295.4	4250			96-08-17	VF	gossan, mottled grey rock, pyritic
A5432	chip	1307.592	4290		CT/DM	96-08-17	<u></u>	rusty, grey voic., poss MOS2, pyntic
A5433	chip	0				96-08-17		no sample
A5434	chip	1196.34	3925		CT	96-08-17		grey voic., t.g. pyritic (5%)
A5435	chip	1127.76	3700		DM	96-08-17	UF	grey voic., cpy, mai., bottom of creek
A5436	float	0			<u> TL</u>	96-08-17		mai, across /5m, cpy, qtz veiniets, grey nost
A5437	chip	1261.872	4140		DM_	96-08-18	ļ	rusty gossan with mai.
A5438	chip	0				96-08-18	.[

Gold values ranged from .ll g/t to 21.33 g/t. Seven samples returned assays greater than .99 g/t, and the rejects from these samples were re-assayed to verify the results. The samples were plotted with the copper, on the property base map at a scale of 1:2500.

Anomalous gold values occurred in all rock types, especially where quartz veins, silicification or pyritization was prominent.

Copper values ranged from 15 ppm to 1.3% copper. Eleven values returned results greater than 1000 ppm. Anomalous copper values were particularly evident in the mafic volcanics proximal to the Mitchell Zone, and within the quartz-feldspar porphyry. The felsic volcanics on the southern portion of the property, returned very low copper values.

Copper and gold returned simultaneously anomalous values within the central portion of the property, especially within the quartz feldspar porphyry. Within the mafic volcanics on the north, the copper was consistently anomalous, whereas the gold was often low or missing, and occurred associated mainly with quartz veining. The felsic volcanics to the south were consistently anomalous in gold, but copper values were considered in the background range.

RECOMMENDATIONS

The property is a favourable setting for copper-gold porphyry mineralization. This preliminary study has demonstrated copper and gold mineralization is widespread, often occurring in rocks that have been sulphidized and silicified. Quartz veining and quartz stockwork also report anomalous gold and copper values. The fact that copper and gold often occur together enhances the attractiveness of the area.

The felsic volcanics on the south portion of the property, host numerous pyritic shear zones, which has the effect of developing widespread gossans. These rocks, when sampled, carry anomalous gold values, and are considered favourable hosts for gold mineralization. More work is required to evaluate the potential.

In conclusion, the Arbee claims represent a perimeter property to the Kerr-Sulphurets Zones, which are at present considered uneconomic. However, the property continues to hold the potential for porphyry-style copper-gold mineralization, and the attractiveness is enhanced because the copper and gold often occur together. It appears the area continues to hold potential, and the previously undetected mineralization found on the Arbee claims demonstrate the possibilities for the discovery of significant gold and copper mineralization. Furthermore, the gold mineralization found in the gossans within the felsic rocks to the south, are targets which should be reevaluated.

REFERENCES

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- BAHREY, D., 1992. Sulphurets Compilation Update, (in-house PDI Report).

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APPENDIX "A"

Eco Tech Laboratories

"Certificate of Analysis"

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ASSAYING GEOCHEMISTRY ANALYTICAL CHEMISTRY ENVIRONMENTAL TESTING

10041 E. Trans Canada Hwy., R.R. #2, Kamloops, B.C. V2C 6T4 Phone (604) 573-5700 Fax (604) 573-4557

CERTIFICATE OF ASSAY AK 96-987a

PLACER DOME CANADA LTD. 1440 HUGH ALLEN DRIVE KAMLOOPS, B.C. V1S 1L8

18-Sep-96

.

ATTENTION: T. LEWIS

No. of samples received: 33 Sample type: ROCK PROJECT #: 303 SHIPMENT #:NONE GIVEN Samples submitted by: C.THYNNE

 Cu

 ET #.
 Tag #
 (%)

 32
 A5437
 1.30

QC/DATA: Standard: Cpb-1

0.97

ECO-TECH LABORATORIES LTD.

*

Frank J. Pezzotti, A.Sc.T. B.C. Certified Assayer

XLS/96PLACERDOME

Page 1



ASSAYING GEOCHEMISTRY ANALYTICAL CHEMISTRY ENVIRONMENTAL TESTING

10041 E. Trans Canada Hwy., R.R. #2, Kamloops, B.C. V2C 6T4 Phone (604) 573-5700 Fax (604) 573-4557

CERTIFICATE OF ANALYSIS AK 96-987

PLACER DOME CANADA LTD. 1440 HUGH ALLEN DRIVE KAMLOOPS, B.C. V1S 1L8

17-Sep-96

2

ATTENTION: T. LEWIS

No. of samples received: 33 Sample type: ROCK PROJECT #: 303 SHIPMENT #:NONE GIVEN Samples submitted by: C.THYNNE

		Cu	
ET #.	Tag #	(ppm)	
1	A5401	4160	
2	A5402	4260	
3	A5403	689	
4	A5404	2000	
5	A5405	5220	
6	A5406	130	
7	A5407	652	
8	A5408	323	
9	A5409	48	•
10	A5410	47	
11	A5411	39	
12	A5412	1520	
13	A5413	48	
14	A5414	2070	
15	A5416	27	
16	A5418	66	
17	A5419	21	
18	A5420	64	
19	A5421	59	
20	A5422	97	
21	A5423	36	
22	A5424	32	
23	A5427	88	

PLACER DOME CANADA LTD. - AK987

17-Sep-96

		Cu	
ET #.	Tag #	(ppm)	
24	A5428	1145	
25	A5429	714	
26	A5430	1720	
27	A5431	894	
28	A5432	93	
29	A5434	15	
30	A5435	2080	
31	A5436	5420	
32	A5437	>10000	
33	A5438	740	
QC/DA	TA:		
Respli	it:		
1	A5401	4160	
4	A5404	1715	
5	A5405	4260	
7	A5407	636	
11	A5411	. 31	
20	A5422	94	
Repea	et:		
1	A5401	4100	
10	A5410	48	
19	A5421	57	
Stand	lard:		
GEO'S	96	.88	
GEO'S	96	84	

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Frank J. Pezzotti, A.Sc.T.

B.C. Certified Assayer

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ECRO · TECT LABORATORIES LTD Page 2 ECO-TECH KAM.



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CERTIFICATE OF ASSAY AK 96-987

1

PLACER DOME CANADA LTD. 1440 HUGH ALLEN DRIVE KAMLOOPS, B.C. V1S 1L8

4-Sep-96

ATTENTION: T. LEWIS

No. of samples received: 33 Sample type: ROCK PROJECT #: 303 SHIPMENT #:NONE GIVEN Samples submitted by: C.THYNNE

		Au	Au	
ET #.	Tag #	<u>(g/t)</u>	<u>(oz/t)</u>	
1	A5401	1.00	0.029	
2	A5402	0.29	0.008	
3	A5403	0.65	0.019	
4	A5404	21.33	0.622	
5	A5405	1.07	0.031	
6	A5406	0.31	0.009	
7	A5407	1.19	0.035	
8	A5408	0.50	· 0.015	
9	A5409	0.56	0.016	
10	A5410	0.38	0.011	
11	A5411	2.12	0.062	
12	A5412	0.56	0.016	
13	A5413	0.16	0.005	
14	A5414	0.27	0.008	
15	A5416	0.47	0.014	
16	A5418	0.90	0.026	
17	A5419	0.38	0.011	<i>.</i>
18	A5420	- 0.27	0.008	
19	A5421	0.19	0.006	
20	A5422	7.12	0.208	
21	A5423	0.67	0.020	

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PLACER DOME CANADA LTD. AK 96-987

22	A5424	0.25	0.007
23	A5427	0.20	0.006
24	A5428	0.99	0.029
25	A5429	0.14	0.004
26	A5430	0.13	0.004
27	A5431	0.20	0.006
28	A5432	0.11	0.003
29	A5434	0.51	0.015
30	A5435	0.03	0.001
31	A5436	0.13	0.004
32	A5437	1.08	0.031
33	A5438	0.13	0.004
QC/DA	TA:		
Resplit			
1	A5401	0.65	0.019
Repeat	F-		
1	A5401	0.78	0.023
10	A5410	0.44	0.013
19	A5421	0.21	0.006

3.38

- ----

0.099

Au

(g/t)

Au

(oz/t)

Standard:

STD-M

ET #.

Tag #

ECO-TECH LABORATORIES LTD.

XLS/96PLACERDOME

Frank J. Pezzotti, A.Sc.T. B.C. Certified Assayer

4-Sep-96

APPENDIX "B"

"Statement of Qualifications"

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STATEMENT OF QUALIFICATIONS

I Thomas D. Lewis, of the City of Kamloops, British Columbia, do hereby certify that:

- 1. I am a graduate of the Queen's University, with a Bsc (1975), Kingston, Ontario; and have practised continuously as a geologist for 21 years.
- 2. I have no direct or indirect interest in the property discussed in this report.
- 3. I am currently an employee of Placer Dome Canada Limited.

<u>ب</u>



Kamloops, BC September 25, 1996



APPENDIX "C"

"Statement of Costs"

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Items	Period	<u># of Units</u>	Unit Cost	Total
	(1996)			Expenditure
AT LABOUR:				
T. Lewis	AugOct.,1996	30days	\$600.00	\$18,000.00
C. Thynne	Aug. 11-Aug. 23	13 days	\$250.00	\$3,250.00
D. Moynes	Aug. 13-Aug. 21	9 days	\$200.00	\$1,800.00
(B) TRANSPORTATION:				
Truck	Aug 12- Aug 23	12 days	\$50.00/day	\$600.00
Helicopter	Aug. 14-Aug. 20	4 1 hours	\$765/hr.+ fuei	\$3 590 44
Fuel	//ug.14//ug.20	4.1 110010	•••••••	\$302.53
(C) SUPPLIES:				
				A 2222 (2)
Food				\$368.46
Hardware				\$83.21
Battenes				\$215.88
Field gear				\$59.23
Restaurant (meals)		•		\$166.47
(D) ACCOMODATION:				
Motel	Aug. 13.Aug. 20	2 nights		\$133.40
Rent	Aug. 11-12.	2 nights	\$25.00/night	\$50.00
	Aug. 21-22	2 nights	\$25.00/night	\$50.00
(E) Communication:				
FM radio	Aug. 1996			\$64.20
Satelite phone	Aug. 1996			\$140.00
(F) Freight				
Manitoulin				¢149 12
Couries				\$140.13 \$12.60
Couner				\$12.00
(G) Laboratory				<u>-</u>
		·		
Assays(Eco-tech)		33 @ Cu& Au	15.47/SAMPLE	\$510.75
(H) Drafting				
Able Drafting			0.5 days	\$100.00
() TOTAL				\$00 C45 00
(I) IOTAL	1			\$29,645.30





200m