

LOG NO: 01-09	RD.
ACTION:	
FILE NO:	

**OBLING PROPERTY**  
**GEOLOGY AND GEOCHEMISTRY**  
**NANAIMO M.D., BRITISH COLUMBIA**

N.T.S. 102I/9 & 102I/16

Latitude  $50^{\circ}45'N$

Longitude  $128^{\circ}04'W$

Owner: Placer Dome Inc.

Operator: Placer Dome Inc.

Author: Dale A. Sketchley

**GEOLOGICAL BRANCH**  
**ASSESSMENT REPORT**

**20,766**

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## 1.0

## SUMMARY

The Obling property is 13 km north-northwest of Holberg, B.C. An exploration program was conducted on June 8, and between July 15 and July 21, 1990. The purpose of the program was to cover the possible source area of gold geochemical anomalies in stream sediments. The work consisted of prospecting, geological mapping, and rock and soil sampling. A total of 45 rock and 65 soil samples was collected.

The Obling property is underlain mostly by volcanic rocks of the Jurassic Bonanza Group, which were intruded by a large coeval pluton of Island Intrusions. Sedimentary rocks of Cretaceous Queen Charlotte Group crop out in the southwestern portion of the property. Tertiary felsic dykes are also exposed on the property.

Mineralization on the Obling property consists predominantly of pyrite with lesser pyrrhotite, uncommonly chalcopyrite, and rarely sphalerite and arsenopyrite. Pyrite is widespread and occurs in at least trace amounts in most rocks, although it is most common in mafic volcanic rocks. Pyrrhotite is more localized, generally occurring in hornfelsic rocks. Chalcopyrite occurs with pyrite in mafic volcanic and intrusive rocks. Sphalerite and arsenopyrite were observed only in veins.

There are no indications that a hydrothermal system similar to Red Dog, Hushamu or Island Copper existed on the Obling Property. Most mineralization appears to be related to thermal metamorphism and deuteritic fluids. Gold geochemical anomalies in the sediments of streams draining the Obling property are not related to the mineralization known on the property. The gold anomalies may be due to glacial dispersion from sources to the southeast.

Geological observations indicate that the potential for finding a significant gold deposit on the Obling property is low; therefore, no further work is recommended.

## 2.0

## INTRODUCTION

### 2.1 Purpose

The purpose of the field work was to evaluate Obling mineral claims, which were staked to cover the source area of gold geochemical anomalies in the stream sediments. These anomalies were discovered in 1989 by Placer Dome Inc.

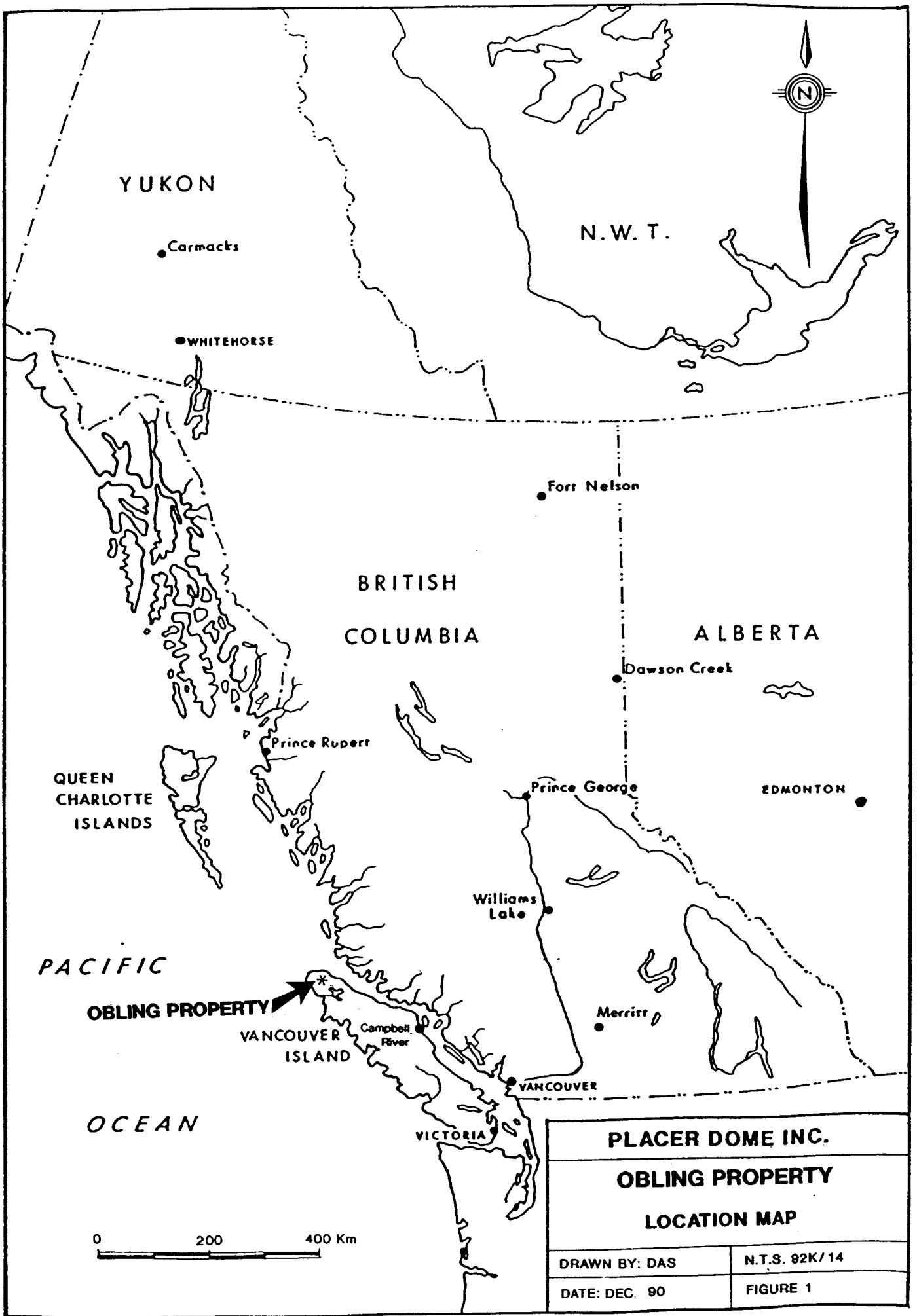
### 2.2 Property Location, Access and Topography

The Obling property is 13 km north-northwest of Holberg, B.C., within the Nanaimo Mining Division, N.T.S. map sheets 102I/9 and 102I/16 (Figure 1). Access to the property is by road and by helicopter.

Local relief on the property is up to 300 m; the highest elevation is 523 m, which occurs at Knob Hill. The vegetation comprises pine and yellow cedar and is patchy except in the valleys. Small ponds occur at headwaters of some creeks.

### 2.3 Claim Status

The Obling property comprises nine mineral claims, Obling 1 to Obling 9, which total 156 units (Figure 2). Their status is summarized in Table I. All of the claims are owned by Placer Dome Inc. The Obling 3, 4, 5, 6 and 7 were grouped on October 25, 1990 as Obling Group 90-1; Obling 1, 2, 8, and 9 were grouped on October 25, 1990 as Obling Group 90-2.



**PLACER DOME INC.**

**OBLING PROPERTY**

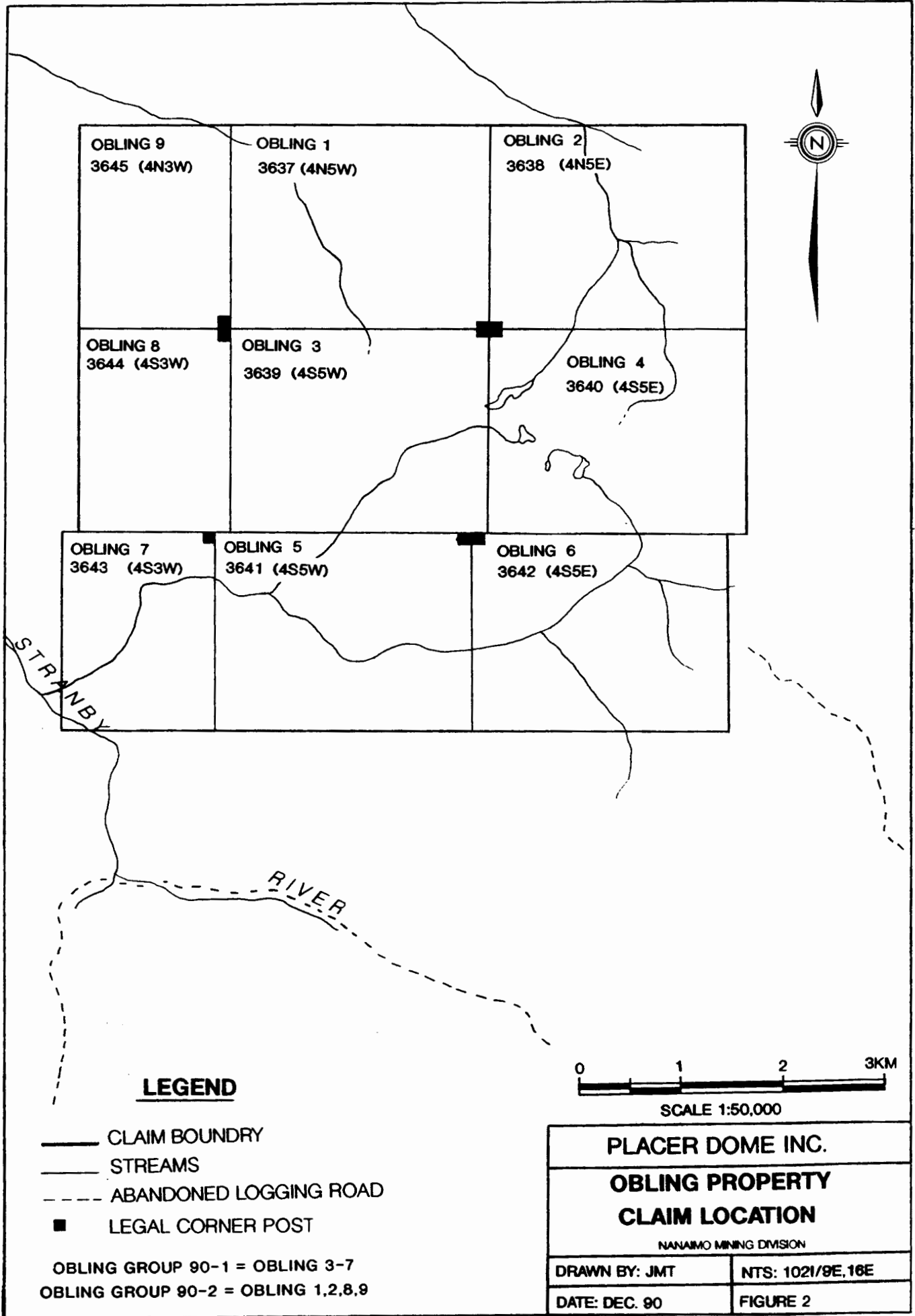
**LOCATION MAP**

DRAWN BY: DAS

N.T.S. 92K/14

DATE: DEC. 90

FIGURE 1

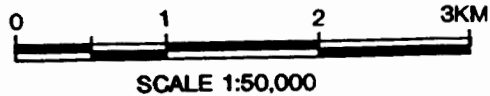


50°45

**LEGEND**

- CLAIM BOUNDARY
- STREAMS
- - - ABANDONED LOGGING ROAD
- LEGAL CORNER POST

OBLING GROUP 90-1 = OBLING 3-7  
 OBLING GROUP 90-2 = OBLING 1,2,8,9



<b>PLACER DOME INC.</b>	
<b>OBLING PROPERTY CLAIM LOCATION</b>	
<small>NANAIMO MINING DIVISION</small>	
<small>DRAWN BY: JMT</small>	<small>NTS: 1021/9E,16E</small>
<small>DATE: DEC. 90</small>	<small>FIGURE 2</small>

**TABLE I****Oblig Property Claim Status**

<b>Claim Name</b>	<b>Record Number</b>	<b>Number of Units</b>	<b>Anniversary Date*</b>
Oblig 1	3637	20	Oct. 28, 1992
Oblig 2	3638	20	Oct. 28, 1992
Oblig 3	3639	20	Nov. 1, 1992
Oblig 4	3640	20	Oct. 31, 1992
Oblig 5	3641	20	Nov. 1, 1992
Oblig 6	3642	20	Oct. 31, 1991
Oblig 7	3643	12	Nov. 2, 1991
Oblig 8	3644	12	Oct. 31, 1991
Oblig 9	3645	12	Oct. 31, 1991

\*After filing work detailed in this report.



## 3.0

## PREVIOUS WORK

The northern and eastern portions of the Obling property were explored extensively in the past. This exploration was for porphyry copper-molybdenum deposits similar to Island Copper. Most of the work was conducted by Chevron Standard Limited from 1972 to 1977 (Arscott, 1974; Laforme, 1976 and 1977). Chevron conducted geological mapping, basal till sampling, geophysical surveys and diamond drilling. In addition to Chevron's work, geological mapping, soil sampling and geophysical surveys were performed by: Challenger Mines Ltd. during 1969 and 1970 (Holcapek, 1970); Continental Cinch Mines Ltd. between 1969 and 1971 (Philp, 1969a and 1969b; Holcapek and Philp, 1970; Holcapek, 1971); Cities Service Minerals Corporation in 1974 (De Paoli, 1974); and Teck Explorations Limited in 1980 (McClymont, 1980). A minor amount of geological mapping and soil sampling was conducted in the southwestern portion of the property by Quintana Minerals Corporation between 1968 and 1970 (Stokes and Leighton, 1969; Stokes and Leighton, 1970).

During 1989, Placer Dome Inc. conducted some regional exploration in the area. The Obling property was staked as a result of stream sediment sampling.

## 4.0

**1990 WORK PROGRAM SUMMARY**

Field work on the Obling property was conducted on June 8, 1990, and from July 15 to July 21, 1990. It consisted of prospecting, geological mapping, and rock and soil sampling. This work, which covered approximately six km<sup>2</sup>, was conducted mostly to the north of Knob Hill on Obling 1 and Obling 2 mineral claims, and to the southeast of Knob Hill on Obling 4 mineral claim. The soil sampling consisted of two soil lines: one through the northeastern portion of Obling 3, northwestern portion of Obling 4 and southwestern portion of Obling 2 mineral claims; the other in the northeastern portion of Obling 4.

Control was established using an altimeter and a compass. Sample locations and geological information were plotted on maps at a scale of 1:10,000.

## 5.0

## GEOLOGY

The area covered by and surrounding the Obling property was mapped by Geological Survey of Canada (Muller et al., 1974) and British Columbia Department of Mines and Petroleum Resources (Northcote, 1970). Their work indicates that volcanic rocks of Jurassic Bonanza Group, which were intruded to the northeast by a large coeval pluton of Island Intrusions, underlie most of the claims. Sedimentary rocks of Cretaceous Queen Charlotte Group, intruded by Tertiary felsic dykes, unconformably overlie the volcanic rocks and crop out in the southwestern portion of the claims. Mafic volcanic rocks of Triassic Karmutsen Formation are exposed in a small area in the southwestern portion of the property. The regional geology of northern Vancouver Island is presented in Figure 3.

A limited geological mapping was conducted during the 1990 field season (Figure 4). Mapped areas are underlain dominantly by volcanic rocks of Jurassic Bonanza Group, and comprise mostly mafic rocks with lesser intermediate and felsic rocks. Mafic varieties consist of feldspar and pyroxene porphyry, tuff, lapilli tuff and amygdaloidal rocks. Intermediate volcanic rocks are composed of lapilli tuff; felsic rocks are massive to banded.

Most mafic volcanic rocks are weakly chloritized and epidotized. One kilometre northeast and two kilometres southeast of Knob Hill, mafic rocks locally exhibit stronger chloritization and epidotization as well as clay-sericite alteration. In the vicinity of Knob Hill, and two kilometres northwest and southeast of it, hornfelsic mafic volcanic rocks crop out.

Volcanic rocks are in contact with diorite to quartz diorite of Jurassic Island Intrusions. The contact trends northwest across the northeastern portion of the property. North and northeast of Knob Hill (Figure 4), it follows the base of the hill at about the elevation of 1,200 feet, indicating a shallow-dipping contact. The shallow-dipping nature and surface trace are suggestive of an embayment in the intrusion.

Diorite, separated from the main intrusion by volcanic rocks, crops out along a northwest-flowing creek about one kilometre northwest of Knob Hill (Figure 4). Diorite dykes were observed between the elevations of 1,100 and 1,200 feet along Obling Creek about two kilometres southeast of Knob Hill (Figure 4).

Intrusive rocks are generally speckled grey to green, and are medium grained, although smaller bodies are finer grained. Most exposures of the main intrusion consist of relatively fresh rock with minor chlorite and epidote alteration. Two kilometres northwest of Knob Hill, and one kilometre northeast of Knob Hill, diorite is commonly altered and mineralized (Figure 4). In the first area, weak chloritization and epidotization are present, and the rocks have purplish hue due to secondary biotite. These rocks also contain pyrrhotite. The biotite and pyrrhotite are

**OBLING PROPERTY**

**LEGEND**

**QUATERNARY**

14 Glacial deposits

**TERTIARY AND QUATERNARY**

13 Miocene-basalt, flows, sills, dykes

12 Eocene-sandstone, shale

11 Early Tertiary-quartz monzonite, quartz diorite

**CRETACEOUS**

10 Nanaimo and Queen Charlotte Groups: siltstone, sandstone, greywacke, conglomerate

9 Andesite, basalt, tuff, breccia, argillite

**JURASSIC AND CRETACEOUS**

8 Pacific Rim Complex: greywacke, argillite

**JURASSIC**

7 Island Intrusions: granodiorite, quartz-monzonite, granite, monzonite

6 Bonanza Group: andesite, dacite, rhyolite, argillite, greywacke

**TRIASSIC**

5 Quatsino and Parson Bay Formations: limestone, argillite

4 Karmutsen Formation: basalt, pillow lava

**MESOZOIC**

3 Metasedimentary rocks, schist, greenstone

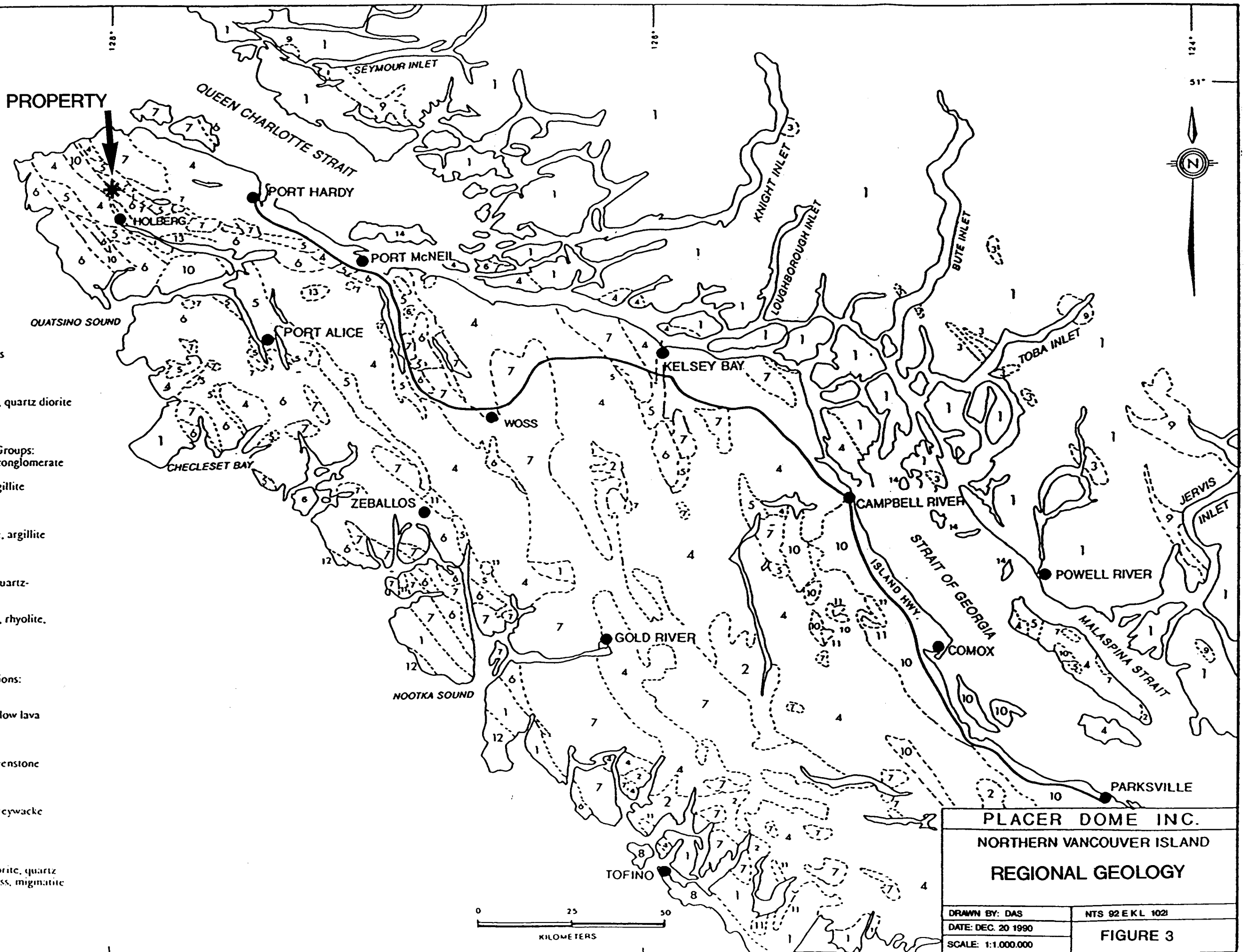
**PENNSYLVANIAN AND PERMIAN**

2 Sicker Group: andesite, diorite, greywacke, argillite

**AGE UNKNOWN**

1 Coast Plutonic Complex: granodiorite, quartz diorite, diorite, gabbro, schist, gneiss, migmatite of amphibolite grade

\* Geology after GSC Map 1386A



<b>PLACER DOME INC.</b>	
<b>NORTHERN VANCOUVER ISLAND</b>	
<b>REGIONAL GEOLOGY</b>	
DRAWN BY: DAS	NTS 92 E K L 102I
DATE: DEC. 20 1990	
SCALE: 1:1,000,000	<b>FIGURE 3</b>

related to thermal metamorphism. In the second area, alteration is more intense and consists of clay-sericite alteration, epidotization and chloritization.

Felsic dykes are locally common two kilometres southeast of Knob Hill. The dykes are generally narrow and pale green to white. Flow-banding was noted along margins of some dykes.

## 6.0

## MINERALIZATION

Mineralization on the Obling property consists predominantly of pyrite with lesser pyrrhotite, uncommonly chalcopyrite, and rarely sphalerite and arsenopyrite. Pyrite is widespread and occurs in at least trace amounts in most rocks, although it is most common in mafic rocks. Pyrrhotite is more localized, generally occurring in hornfelsic rocks. Chalcopyrite occurs with pyrite in mafic volcanic and intrusive rocks. Sphalerite and arsenopyrite were observed only in veins.

The most intense areas of pyritization on the Obling property are between the elevations of 1,200 and 1,400 feet along a northwest-flowing creek about one kilometre northwest of Knob Hill, and between the elevations of 1,100 and 1,200 feet along Obling Creek about two kilometres southeast of Knob Hill (Figure 4). In the first area, up to 5% pyrite occurs as disseminations, blebs and veins in clay-sericite-altered, chloritized and epidotized mafic and felsic volcanic rocks and diorite. Localized concentrations of up to 25% pyrite are associated with sparse white quartz and epidote veins within mafic volcanic rocks. In the second area, pyrite occurs in a similar manner; however, only mafic volcanic rocks are present.

Elsewhere on the property, most pyrite occurs in mafic volcanic rocks and diorite close to contacts; however, generally much less than 1% is present.

Pyrrhotite was observed in three areas on the Obling property: Knob Hill; between the elevations of 1,000 and 1,350 feet along a northerly-flowing creek about two kilometres northwest of Knob Hill; and at the elevation of 1,100 feet along Obling Creek about two kilometres southeast of Knob Hill (Figure 4). In these areas, up to 5% pyrrhotite occurs as disseminations and blebs in hornfelsic mafic volcanic rocks. Pyrrhotite also occurs in mafic and felsic volcanic rocks in old diamond-drill core.

Chalcopyrite generally occurs as sparse disseminations in mafic volcanic rocks where pyrite is abundant, and in the vicinity of the contact between volcanic and intrusive rocks (Figure 4). Chalcopyrite was also observed with sphalerite in narrow quartz veins in diorite about two kilometres northwest of Knob Hill (Figure 4).

Arsenopyrite was observed in old diamond-drill core where it occurs as masses in a calcite vein.

## 7.0

## GEOCHEMISTRY

A total of 45 rock and 65 soil samples was collected during the 1990 work program, and submitted to Placer Dome Inc. Research Centre for preparation and analysis. Locations and identification of these samples are plotted on Figure 5. Descriptions of the rock samples are given in Appendix I.

All samples were analyzed for silver, arsenic, gold, cobalt, copper, molybdenum, lead, antimony, selenium and zinc. Thirteen samples of old diamond-drill core were analyzed also for mercury. Analytical results are given in Appendix II and also in Figure 5; sampling, sample preparation and analytical procedures in Appendix III.

Grab-rock samples returned up to 0.7 ppm Ag, 236 ppm As, 15 ppb Au, 56 ppm Co, 460 ppm Cu, 34 ppm Mo, 184 ppm Pb, 8.4 ppm Se and 320 ppm Zn.

Samples from old diamond-drill core returned up to 1.1 ppm Ag, 0.72% As, 410 ppb Au, 125 ppm Co, 2,110 ppm Cu, 60 ppm Mo, 60 ppm Pb, 68 ppm Sb, 6.0 ppm Se, 230 ppm Zn and 40 ppb Hg.

Soil samples returned up to 1.4 ppm Ag, 100 ppm As, 150 ppb Au, 19 ppm Co, 192 ppm Cu, 53 ppm Mo, 54 ppm Pb, 4 ppm Sb, 2.4 ppm Se and 136 ppm Zn. The anomalous values on the two lines are isolated highs.

## 8.0

**CONCLUSIONS**

Volcanic rocks of Jurassic Bonanza Group, which are exposed in the central portion of the Obling property, are underlain at a shallow depth by a large pluton of the Island Intrusions, which crops out in the northeastern portion of the property. This relationship is indicated by a gently-dipping contact to the north and northeast of Knob Hill, and areas of hornfelsic rocks around Knob Hill and in the upper part of Obling Creek.

Geological observations indicate that a hydrothermal system similar to Red Dog, Hushamu or Island Copper did not exist on the Obling property. Most mineralization occurs adjacent to the volcanic-intrusive contacts.

Pyrrhotite occurs in hornfelsic rocks, and is caused by thermal metamorphism. Pyrite and chalcopyrite are probably related to deuteric fluids concentrated in an embayment in the intrusion. Arsenopyrite is related to Tertiary dykes.

Gold geochemical anomalies in sediments of streams draining the Obling property are not related to the mineralization known on the property. The anomalies may be due to glacial dispersion from sources to the southeast.



## 9.0

**RECOMMENDATIONS**

Geological observations indicate that the potential for finding a significant gold deposit on the Obling property is low; therefore, no further work is recommended.

## 10.0

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**APPENDIX I**

**ROCK SAMPLE DESCRIPTIONS**

**SAMPLE  
NUMBER**

**ROCK DESCRIPTION**

A5040 Medium to dark-grey feldspar porphyry with disseminated and blebby pyrite.

A5041 Medium to dark-grey feldspar porphyry with disseminated, fracture-controlled and blebby pyrite.

A5042 Medium to dark-grey feldspar porphyry with disseminated pyrite.

A5043 Quartz vein in feldspar porphyry; blebby to semi-massive pyrite along margins of the vein.

A5044 Medium-grained diorite with blebby and disseminated pyrite.

A5045 Mafic volcanic with disseminated pyrite.

A5046 Diorite with blebby to semi-massive and fracture-controlled pyrite and pyrrhotite.

A5047 Feldspar porphyry with semi-massive pyrite in a quartz vein.

A5048 Black hornfels with disseminated and blebby pyrite.

A5049 Feldspar porphyritic rhyodacite with disseminated and blebby pyrite.

A5050 Mafic volcanic with semi-massive granular pyrite.

A5053 Pale-grey rhyolite breccia with disseminated pyrrhotite.

A5201 Calcareous, carbonaceous black argillite with fracture-controlled pyrite.

A5202 Carbonaceous fault gouge.

A5203 Chloritized quartz diorite with disseminated, blebby and fracture-controlled pyrite and pyrrhotite.

A5204 Quartz diorite with quartz veinlets and fractures with minor chalcopyrite, sphalerite and pyrite.

A5205 Silicified diorite with epidote and pyrite-filled fractures; also disseminated and blebby pyrite.

A5206 Grey rhyodacite with disseminated and fracture-controlled pyrite.

A5207 Chloritized and epidotized diorite with disseminated pyrite.

A5208 Chloritized, epidotized and clay-sericite-altered diorite with disseminated and fracture-controlled pyrite.

A5209 Float of clay-altered and silicified rock with 5% disseminated to blebby pyrite.

A5210 Float of quartz vein with blebby semi-massive to massive pyrite.

A5211 Chloritized, epidotized and clay-sericite altered-diorite with 1% disseminated and fracture-controlled pyrite.

A5212 Intensely epidotized and chloritized diorite with minor blebs of white quartz; up to 25% blebby to semi-massive pyrite.

A5213 Felsic feldspar porphyry with epidote and chlorite in fractures.

- A5214 Banded rhyodacite with semi-massive and fracture-controlled pyrite.
- A5215 Banded rhyodacite with blebs and veinlets of pyrite with epidote and calcite.
- A5216 Clay-altered rhyodacite with blebby and fracture-controlled pyrite.
- A5217 Diorite with disseminated and blebby pyrite.
- A5218 Purple-brown hornfels with disseminated and blebby pyrite.
- A5219 Diorite with calcite vein containing blebs of arsenopyrite and pyrite.
- A5220 Pale-green feldspar porphyry with disseminated, blebby and fracture-controlled pyrrhotite.
- A5221 Purple-brown hornfels with disseminated to blebby pyrrhotite.
- A5222 Rhyodacite with fracture-controlled pyrite.
- A5223 Purple-brown hornfels with disseminated to blebby pyrrhotite and pyrite.
- A5224 Epidotized diorite with quartz vein containing blebs of pyrite.
- A5225 Pale-grey feldspar-porphyrific diorite with disseminated, blebby and fracture-controlled pyrite.
- A5226 Hornfels with semi-massive to disseminated pyrrhotite.
- A5227 Pale-grey clay-altered diorite with disseminated, blebby and fracture-controlled pyrite.
- A5228 Calcite-rich epidotized and chloritized mafic volcanic with 3% disseminated pyrite.
- A5229 Calcite-rich epidotized and chloritized mafic volcanic with 1% disseminated and fracture-controlled pyrite.
- A5230 Pale-grey epidotized and chloritized mafic volcanic with up to 5% disseminated to blebby pyrrhotite and minor pyrite.
- A5231 Pale-grey mafic volcanic with up to 4% disseminated, blebby and fracture-controlled pyrite and minor pyrrhotite.
- A5232 Pale-grey clay-altered mafic volcanic with up to 5% disseminated pyrite.
- A5233 Pale-grey epidotized, chloritized and clay-altered mafic volcanic with 2% disseminated pyrite.

**APPENDIX II**

**ANALYTICAL RESULTS**

SAMPLE NUMBER	Ag (ppm)	As (ppm)	Au (ppb)	Co (ppm)	Cu (ppm)	Hg (ppb)	Mo (ppm)	Pb (ppm)	Sb (ppm)	Se (ppm)	Zn (ppm)	
A5040	0.2	1	2.5	59	64	40	6	6	1	1.2	28	
A5041	0.3	2	2.5	27	50	36	7	7	1	0.1	26	
A5042	0.2	16	2.5	125	33	40	4	5	1	0.1	35	
A5043	0.3	15	2.5	66	12	28	8	7	1	0.2	34	
A5044	0.2	14	2.5	54	45	20	7	6	1	0.1	35	
A5045	0.3	17	2.5	71	92	32	6	7	1	0.1	40	
A5046	0.2	1	2.5	45	82	40	6	5	1	0.2	26	
A5047	0.2	1	2.5	55	74	24	7	6	1	0.2	33	
A5048	0.1	1	2.5	18	20	36	3	2	1	0.2	7	
A5049	0.1	1	2.5	18	22	36	6	6	1	0.1	38	
A5050	0.2	1	2.5	18	27	36	6	7	1	0.1	48	
A5053	0.2	1	2.5	26	68	20	10	7	1	0.4	34	
A5201	0.6	236	15	13	30		3	13	1	8.4	108	
A5202	0.5	60	5	8	41		4	8	1	2.8	63	
A5203	0.3	6	2.5	10	32		6	11	1	0.6	105	
A5204	0.2	2	2.5	7	32		8	6	1	0.6	200	
A5205	0.1	1	2.5	1	74		29	2	1	0.8	20	
A5206	0.4	12	2.5	6	35		11	55	1	2.4	255	
A5207	0.3	1	2.5	32	56		2	50	1	0.2	320	
A5208	0.3	1	2.5	37	332		4	7	1	0.1	88	
A5209	0.1	1	2.5	55	25		34	13	1	2.2	6	
A5210	0.1	1	2.5	31	13		14	1	1	3.2	4	
A5211	0.4	16	2.5	16	460		6	3	1	0.4	60	
A5212	0.7	8	2.5	36	12		4	9	1	0.2	4	
A5213	0.2	1	5	39	7		6	4	1	2.8	27	
A5214	1.1	6	10	53	210		0.5	5	1	6.0	230	
A5215	0.1	1	2.5	13	78		5	5	1	0.6	22	
A5216	0.7	18	5	18	82		30	7	1	4.0	60	
A5217	0.3	1	35	36	03		1	6	1	0.6	104	
A5218	0.1	1	2.5	19	23		6	4	1	1.2	19	
A5219	0.1	7200	410	11	7		4	8	68	0.1	6	
A5220	1.3	40	10	15	51		4	13	1	0.2	166	
A5221	0.1	1	15	50	120		3	11	1	0.2	71	
A5222	0.1	10	2.5	5	75		60	4	1	0.1	23	
A5223	0.2	1	2.5	25	70		0.5	9	1	0.8	46	
A5224	0.4	8	2.5	24	75		3	60	1	0.4	166	
A5225	0.5	2	2.5	12	14		7	22	1	1.4	69	
A5226	0.9	1	5	66	30		5	10	1	0.4	39	
A5227	0.1	4	2.5	35	16		3	4	1	0.6	24	
A5228	0.1	6	2.5	10	103		3	5	1	0.4	78	
A5229	0.3	16	2.5	18	15		3	9	1	0.1	73	
A5230	0.3	20	10	24	73		3	25	1	0.1	67	
A5231	0.6	40	10	56	41		4	184	1	0.2	316	
A5232	0.6	60	5	23	5		4	22	1	0.4	48	
A5233	0.1	28	5	16	54		4	12	1	0.4	98	
41+00N 46+00E	0.4	8	2.5	10	32			1	16	1	2.2	80
41+00N 66+00E	0.1	1	2.5	8	19			1	12	1		63
41+00N 68+50E	0.1	12	2.5	7	8			1	6	1		2
41+00N 71+00E	0.1	24	2.5	8	45			1	23	1	1.4	100
41+00N 76+00E	0.1	1	2.5	6	20			1	8	1	0.6	40
41+00N 81+00E	0.1	100	2.5	12	34			1	3	1	0.1	55

50+00N	40+00E	0.3	2	5	1	18	0.5	17	1		41
50+00N	40+40E	0.6	12	2.5	6	21	0.5	17	1	0.1	52
50+00N	41+20E	1.4	18	2.5	7	33	1	16	1	0.6	84
50+00N	41+60E	0.1	6	10	5	76	1	21	2	0.1	85
50+00N	42+00E	0.3	24	2.5	11	65	0.5	23	1	0.1	94
50+00N	42+40E	0.1	4	5	12	69	2	15	1	0.1	104
50+00N	42+80E	0.2	18	15	4	98	1	14	2	0.1	90
50+00N	43+20E	0.1	38	5	12	84	1	15	1	0.1	105
50+00N	43+60E	0.3	32	2.5	5	64	2	20	1	1.2	86
50+00N	44+00E	0.1	38	2.5	12	66	3	14	1	0.2	86
50+00N	44+40E	0.1	10	2.5	1	38	2	12	1		42
50+00N	44+60E	0.4	8	150	14	50	0.5	13	1		76
50+00N	44+80E	0.1	52	2.5	2	51	0.5	14	1	0.8	77
50+00N	45+20E	0.1	16	5	12	116	1	14	1	0.2	107
50+00N	45+60E	0.1	40	2.5	11	59	0.5	15	1		92
50+00N	46+00E	0.1	12	2.5	3	51	0.5	9	1	1.2	78
50+00N	46+40E	0.1	4	2.5	10	67	3	9	1	0.8	87
50+00N	46+80E	0.2	14	2.5	6	25	2	14	1	0.8	63
50+00N	47+20E	0.1	20	25	8	61	1	12	1	0.8	75
50+00N	47+60E	0.1	16	105	3	31	1	12	1	0.6	70
50+00N	48+00E	0.1	20	5	6	20	1	10	1		42
50+00N	48+40E	0.1	14	50	9	26	1	11	1	0.4	46
50+00N	48+80E	0.1	14	2.5	5	25	1	10	1	1.0	40
50+00N	49+20E	0.1	50	5	19	73	0.5	14	1	0.6	111
50+00N	49+60E	0.1	8	2.5	17	55	1	10	1	1.2	55
50+00N	50+00E	0.1	22	15	10	41	1	16	1	1.0	54
50+00N	50+40E	0.3	24	2.5	9	49	1	12	1	2.4	57
50+00N	50+80E	0.1	12	2.5	5	18	1	14	1	0.8	45
50+00N	51+20E	0.1	22	2.5	7	56	1	14	1	0.6	104
50+00N	51+60E	0.1	12	2.5	10	21	0.5	11	2		43
50+00N	52+00E	0.1	20	2.5	6	40	1	10	1	1.0	60
50+00N	52+40E	0.1	20	2.5	4	14	1	12	1	0.2	41
50+00N	52+80E	0.2	22	2.5	3	34	2	14	1	0.1	82
50+00N	53+20E	0.1	16	2.5	9	15	1	11	1	0.1	45
50+00N	53+60E	0.1	14	2.5	9	69	4	14	1	0.6	91
50+00N	54+00E	0.1	42	2.5	11	92	14	10	1	0.4	87
50+00N	54+40E	0.1	30	2.5	6	55	0.5	16	1	0.2	88
50+00N	54+80E	0.5	30	30	7	44	2	17	1	0.2	100
50+00N	55+60E	0.2	12	2.5	5	38	0.5	16	1		95
50+00N	56+40E	0.1	38	2.5	1	10	2	10	2		68
50+00N	56+80E	0.1	6		1	4	1	5	1		98
50+00N	57+60E	0.1	1	2.5	8	57	3	14	1	0.1	103
50+00N	58+00E	0.1	1	2.5	4	10	1	11	1	0.1	48
50+00N	58+40E	0.1	1	2.5	1	6	1	13	1		62
50+00N	58+80E	0.4	4	2.5	1	21	0.5	15	1	1.2	44
50+00N	59+20E	0.1	1	2.5	1	22	1	24	1	1.0	46
50+00N	59+60E	0.1	1	2.5	5	24	33	17	1	1.6	45
50+00N	60+00E	0.1	1	2.5	9	30	1	15	1	0.8	65
50+00N	60+40E	0.2	4	2.5	6	14	1	7	1		92
50+00N	60+80E	0.1	1	10	6	26	3	16	1	1.6	49
50+00N	61+20E	0.5	1	10	9	36	3	14	20	0.6	61
50+00N	61+60E	0.1	1	5	1	28	1	24	1	1.0	54
50+00N	62+00E	0.1	1	2.5	4	42	3	19	2	1.4	57
50+00N	62+40E	0.1	1	2.5	1	9	1	13	1	0.6	35



50+00N	62+80E	0.3	1	2.5	8	18	4	24	1	0.8	54
50+00N	63+20E	0.1	1	2.5	6	16	4	15	2	0.1	48
50+00N	63+60E	0.1	2	2.5	3	25	2	10	1	0.4	44
50+00N	64+00E	0.1	2	2.5	1	14	4	14	1	0.4	54
50+00N	64+40E	0.2	12	2.5	7	24	1	16	1	0.8	63

**APPENDIX III**

**SAMPLING, SAMPLE PREPARATION AND ANALYTICAL PROCEDURES**

## **SAMPLING PROCEDURES**

Rock samples generally comprised two fist size pieces of material representative of the outcrop or float being sampled. These are referred to as grab samples. One piece was submitted for analysis; the second retained for reference.

Soil samples were taken mostly from a "B", and to a lesser extent a "C" horizon, at a depth of 10 to 100 cm using a mattock or an auger. Samples from the "B" horizon were generally a reddish-brown mixture of clay and silt with minor sand and organic material. Samples from the "C" horizon were composed of a greyish mixture of silt, clay and sand with minor organic material and varying amounts of rock fragments. Descriptions of the sample site and material sampled were recorded at the time of sampling

## **SAMPLE PREPARATION PROCEDURES**

(Placer Dome Inc. Research Centre)

Rock samples were collected in plastic bags. They were dried, then crushed by a jaw crusher followed by a cone crusher. A 250 gram subsample of crushed material was separated using a riffle splitter. This subsample was pulverized by rolling to minus 100 mesh for analysis.

Soil samples were collected in kraft envelopes. They were dried at approximately 60°C, then screened to obtain the minus 80 mesh fraction for analysis.

## ANALYTICAL PROCEDURES

(Placer Dome Inc. Research Centre)

Element	Unit	Weight(g)	Digestion	Range	Instrumentation
Au	ppb	10.0	Aqua Regia 3 hours	5 - 4000	A.A. Solvent Ext.
Ag	ppm	0.5	HCL04/HN03 4 hours	0.2 - 20	A.A. Backgd. Cor.
As	ppm	0.5	Aqua Regia 3 hours	2 - 2000	D.C. Plasma
Sb	ppm	0.5	HCL/HN03 3 hours	2 - 2000	D.C. Plasma
Hg	ppb	0.25	HN03/HCL 3 hours	5 - 2000	A.A. C. Vap. Gen.
Cu	ppm	0.5	HCL04/HN03 4 hours	2 - 4000	Atomic Absorption
Pb	ppm	0.5	HCL04/HN03 4 hours	2 - 3000	A.A. Backgd. Cor
Zn	ppm	0.5	HCL04/HN03 4 hours	2 - 3000	Atomic Absorption
Co	ppm	0.5	HCL04/HN03 4 hours	2 - 2000	Atomic Absorption
Mo	ppm	0.5	HCL04/HN03 4 hours	1 - 1000	Atomic Absorption
Se	ppm	1.0	KCL03/HCL Org. Solv. Ext	0.2 - 0.01 %	Atomic Absorption

**APPENDIX IV**

**STATEMENT OF QUALIFICATIONS**

## STATEMENT OF QUALIFICATIONS

I, Dale A. Sketchley, hereby certify that:

1. I am a graduate of The University of British Columbia in Honours Geology -Geophysics (B.Sc. 1975) and Geology (M.Sc. 1986);
2. I have practised within the geological profession for the past eighteen years;
3. I am a member of the Canadian Institute of Mining and Metallurgy and a Fellow of the Geological Association of Canada;
4. The opinions, conclusions and recommendations contained herein are based on field work supervised and conducted by me on the Obling property during June and July, 1990.

  
Dale A. Sketchley

Vancouver, B.C.

January 4, 1991

**APPENDIX V**  
**STATEMENT OF EXPENDITURES**

**STATEMENT OF EXPENDITURES**  
Obling Property  
(October 28, 1989 to October 27, 1990)

**Personnel (field)**

D. Sketchey	- 6 days @ 371.25	2,227.50
D. Bridge	- 6 days @ 204.22	1,225.32
J. Taylor	- 6 days @ 167.72	1,006.32
W. Westman	- 6 days @ 135.20	811.20

**Personnel (office)**

D. Sketchley	- 7 days @ 303.75	2,126.25
J. Taylor	- 6 days @ 135.20	1,189.20

**Transportation**

Helicopter	- 10 hours @ 675.96 (Port McNeil/Obling Creek)	6,759.60
Vehicle	- 6 days @ 70.00	420.00
Ferry	- 2 trips @ 45.00 (Horseshoe Bay/Nanaimo)	90.00

Room and Board	- 24 man-days @60.00	1,440.00
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**Analytical Costs**

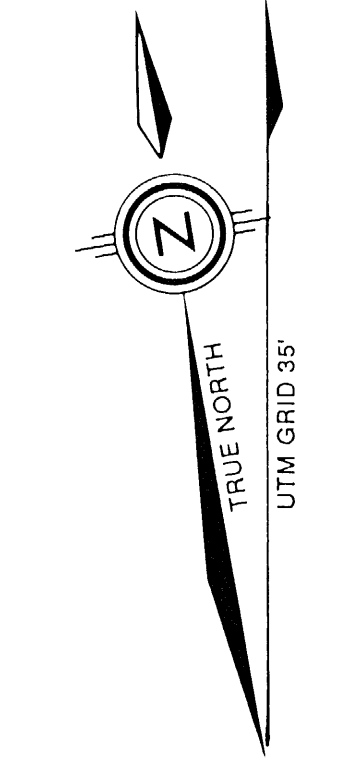
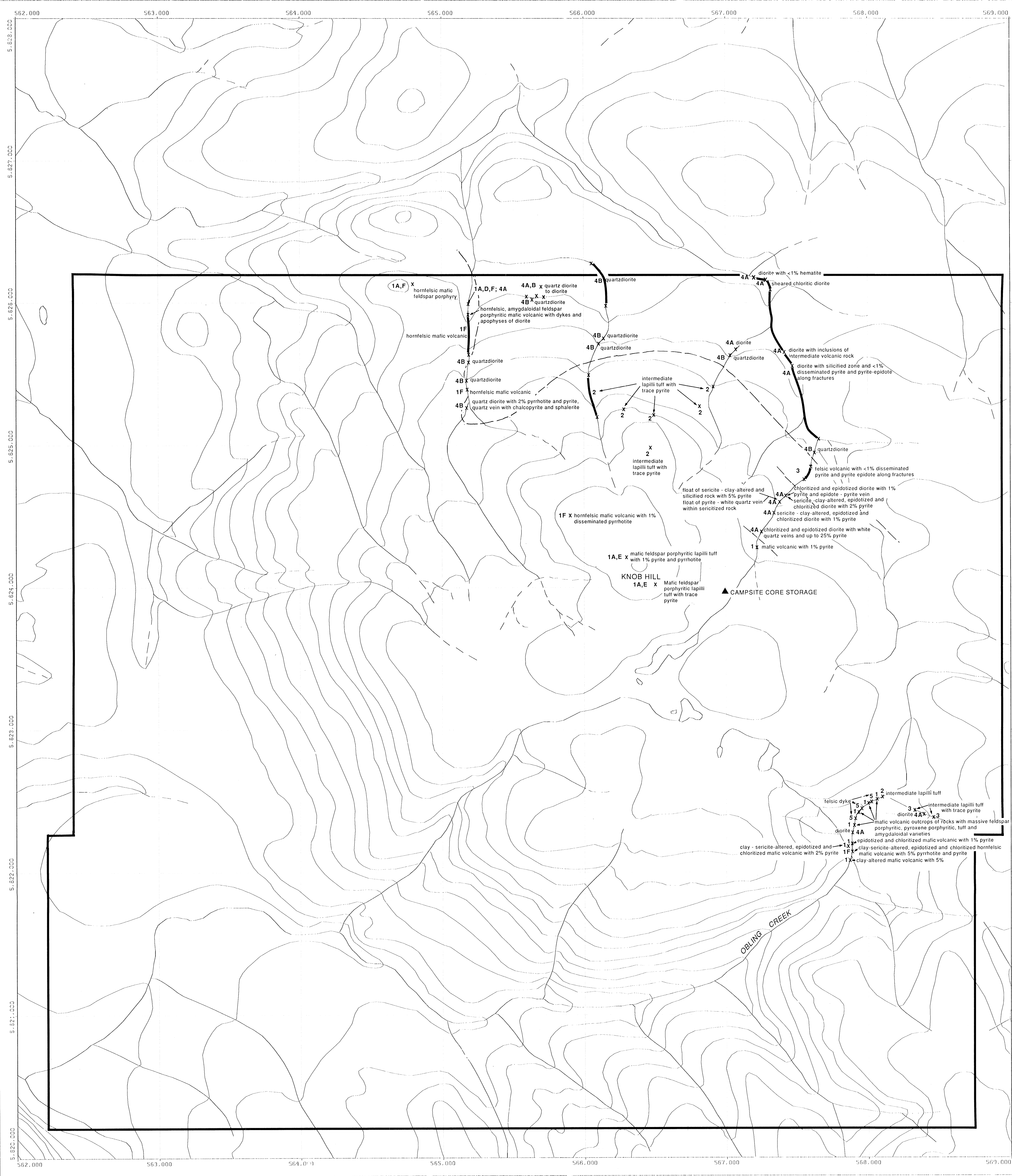
45 rock samples @ 22.75	1,023.75
65 soil samples @ 20.40	1,326.00

Field and Office Supplies	271.85
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Drafting/Reproduction/Report Preparation	2,100.00
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Total	<u>\$22,017.05</u>
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**LEGEND**

- ROCK UNITS**
- TERTIARY
    - FELSIC DYKES
  - JURASSIC - ISLAND INTRUSIONS
    - 4A DIORITE
    - 4B QUARTZ DIORITE
  - JURASSIC - BONANZA GROUP
    - 1 FELSIC VOLCANIC
    - 2 INTERMEDIATE LAPILLI TUFF
  - MAFIC VOLCANIC - UNDIVIDED
    - 1A FELDSPAR PORPHYRY
    - 1B PYROXENE PORPHYRY
    - 1C TUFF
    - 1D AMYGDALOIDAL ROCKS
    - 1E LAPILLI TUFF
    - 1F HORNFELS

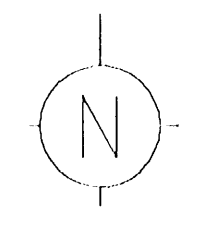
**MAP SYMBOLS**

- X OUTCROP
- X ABUNDANT OUTCROP
- - - APPROXIMATE CONTACT
- CLAIM BOUNDARY

**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**20,766**

DATA PLOTTED ON THIS MAP:  
 DIRECTORY: 3EXPL/001.IMG  
 FIELD FILE  
 SEG OBLING.CONT.LIN  
 SEG OBLING.PDCR1.LIN



PLACER DOME INC.  
 OBLING PROPERTY  
 GEOLOGY

DATE: 90-12-24  
 SCALE: 1:1000'  
 FIGURE 4

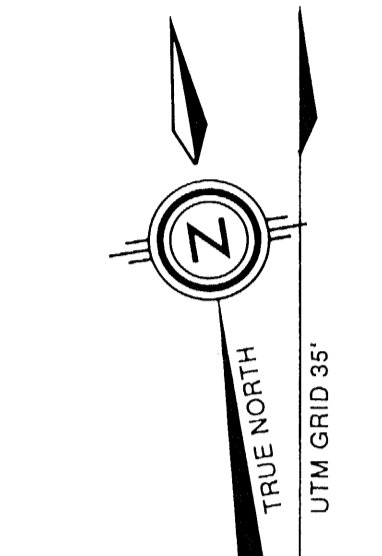


**LEGEND**

▲ A5211 ROCK SAMPLE LOCATION AND IDENTIFICATION

● 50+00N SOIL SAMPLE LOCATION AND IDENTIFICATION

--- CLAIM BOUNDARY



**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**20,766**

**ANALYTICAL RESULTS**

SAMPLE NUMBER	Ag	As	Au	Co	Cu	Hg	Mo	Pb	Sb	Se	Zn
	(ppm)	(ppm)	(ppb)	(ppm)	(ppm)	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
A5040	0.2	1	2.5	59	64	40	6	6	1	1.2	28
A5041	0.3	2	2.5	27	50	36	7	7	1	0.1	26
A5042	0.2	16	2.5	125	33	40	4	5	1	0.1	35
A5043	0.3	19	2.5	66	32	6	8	7	1	0.2	34
A5044	0.2	14	2.5	94	45	20	7	6	1	0.1	35
A5045	0.3	17	2.5	71	32	6	6	5	1	0.2	26
A5046	0.2	1	2.5	45	82	40	6	5	1	0.2	26
A5047	0.2	1	2.5	55	74	24	7	6	1	0.2	33
A5048	0.1	1	2.5	18	20	36	3	2	1	0.2	7
A5049	0.1	1	2.5	18	22	36	6	7	1	0.1	48
A5050	0.2	1	2.5	18	27	36	6	7	1	0.1	48
A5051	0.1	1	2.5	26	68	20	10	8	1	0.4	34
A5201	0.6	236	15	13	10			3	13	1	84
A5202	0.6	236	15	13	10			3	13	1	84
A5203	0.3	6	2.5	10	12			6	11	1	0.6
A5204	0.2	2	2.5	10	12			6	11	1	0.6
A5205	0.1	1	2.5	1	74			29	2	1	0.8
A5206	0.4	12	2.5	37	332			11	7	1	0.2
A5207	0.3	1	2.5	32	56			2	50	1	0.2
A5208	0.1	1	2.5	1	74			29	2	1	0.8
A5209	0.1	1	2.5	55	25			14	13	1	2.2
A5210	0.1	1	2.5	11	1			14	13	1	2.2
A5211	0.4	16	2.5	11	460			6	3	1	0.4
A5212	0.2	8	2.5	36	12			6	4	1	2.8
A5213	1	4	2.5	39	7			5	5	1	1.2
A5214	1.1	6	10	53	210			0.5	5	1	0.2
A5215	1	4	2.5	11	78			5	5	1	0.2
A5216	0.7	18	5	18	82			30	7	1	4.0
A5217	1	35	36	03				6	4	1	0.5
A5218	0.1	2.5	19	23				6	6	1	1.2
A5219	0.1	7200	11	7				8	68	1	6
A5220	1.3	40	10	15	51			4	13	1	0.2
A5221	0.1	1	2.5	50	1200			3	11	1	0.2
A5222	0.1	10	2.5	5	75			60	4	1	0.1
A5223	0.2	1	2.5	25	70			5	9	1	1.4
A5224	0.4	8	2.5	24	75			3	60	1	0.4
A5225	0.5	2	2.5	12	14			5	22	1	1.4
A5226	0.5	1	5	66	30			5	10	1	0.4
A5227	0.1	4	2.5	35	16			4	4	1	0.4
A5228	0.1	6	2.5	10	103			3	5	1	0.4
A5229	0.1	16	2.5	18	15			9	1	1	0.2
A5230	0.3	20	10	24	73			3	25	1	0.4
A5231	0.4	40	10	56	41			4	184	1	0.16
A5232	0.6	60	5	23	5			4	22	1	0.4
A5233	0.1	28	5	16	54			1	12	1	0.4
A5234	0.4	8	2.5	10	32			1	16	1	2.2
41+00N 64+00E	0.1	1	2.5	18	19			1	1	1	0.1
41+00N 68+00E	0.1	12	2.5	7	8			1	6	1	1
41+00N 71+00E	0.1	1	2.5	6	20			1	8	1	0.6
41+00N 74+00E	0.1	1	2.5	6	20			1	8	1	0.6
41+00N 76+00E	0.1	100	2.5	12	34			7	1	1	0.1
50+00N 40+00E	0.3	2	5	1	18			0.5	17	1	1
50+00N 41+00E	0.6	12	2.5	6	22			0.5	17	1	1
50+00N 41+00E	1.4	18	2.5	7	33			1	16	1	0.4
50+00N 41+00E	0.6	6	10	7	36			2	15	1	0.1
50+00N 42+00E	0.3	24	2.5	11	65			0.5	23	1	0.1
50+00N 42+00E	0.3	24	2.5	11	65			0.5	23	1	0.1
50+00N 42+00E	0.2	18	15	4	98			1	14	2	0.1
50+00N 42+00E	0.3	38	5	12	86			1	14	2	0.1
50+00N 43+00E	0.3	32	2.5	5	64			2	20	1	1.2
50+00N 44+00E	0.1	18	2.5	12	38			2	14	1	0.2
50+00N 44+00E	0.1	10	2.5	1	38			2	14	1	0.2
50+00N 44+00E	0.4	8	150	14	50			0.5	13	1	0.8
50+00N 44+00E	0.1	10	2.5	1	51			0.5	14	1	0.2
50+00N 45+20E	0.1	16	2.5	12	116			0.5	14	1	0.2
50+00N 46+00E	0.1	4	2.5	10	67			0.5	9	1	1.2
50+00N 46+00E	0.1	12	2.5	3	51			0.5	9	1	1.2
50+00N 46+00E	0.1	4	2.5	10	67			0.5	9	1	1.2
50+00N 46+00E	0.2	14	2.5	6	25			2	14	1	0.8
50+00N 47+20E	0.1	20	2.5	8	61			1	12	1	0.8
50+00N 47+60E	0.1	16	105	3	31			1	12	1	0.6
50+00N 48+00E	0.1	20	5	20	20			1	10	1	0.2
50+00N 48+40E	0.1	14	50	9	26			1	11	1	0.4
50+00N 48+80E	0.1	14	2.5	12	25			1	10	1	1.0
50+00N 49+20E	0.1	50	5	19	73			0.5	14	1	0.6
50+00N 49+60E	0.1	8	2.5	12	35			1	10	1	1.2
50+00N 50+00E	0.1	22	15	10	41			1	16	1	1.0
50+00N 50+00E	0.1	24	2.5	9	49			1	12	1	0.4
50+00N 50+00E	0.1	12	2.5	5	18			1	14	1	0.8
50+00N 51+20E	0.1	22	2.5	5	56			1	14	1	0.8
50+00N 51+60E	0.1	12	2.5	10	21			0.5	11	2	1.0
50+00N 52+00E	0.1	20	2.5	6	40			1	10	1	1.0
50+00N 52+40E	0.1	20	2.5	4	14			1	12	1	0.2
50+00N 52+80E	0.2	22	2.5	5	14			2	14	1	0.1
50+00N 53+20E	0.1	16	2.5	9	15			1	11	1	0.1
50+00N 53+60E	0.1	14	2.5	9	69			4	11	1	0.1
50+00N 54+00E	0.1	42	2.5	11	92			14	10	1	0.3
50+00N 54+00E	0.1	10	2.5	6	50			0.5	16	1	0.2
50+00N 54+00E	0.5	30	30	7	44			2	17	1	0.2
50+00N 55+00E	0.2	12	2.5	6	18			0.5	16	1	0.2
50+00N 56+40E	0.1	38	2.5	1	10			2	10	2	0.8
50+00N 57+60E	0.1	1	2.5	8	57			3	14	1	0.1
50+00N 58+00E	0.1	1	2.5	4	10			1	10	1	0.4
50+00N 58+40E	0.1	1	2.5	1	6			1	13	1	0.2
50+00N 58+80E	0.4	4	2.5	4	21			0.5	13	1	0.4
50+00N 59+20E	0.1	1	2.5	1	22			1	24	1	1.0
50+00N 59+60E	0.1	1	2.5	5	24			33	17	1	1.0
50+00N 60+00E	0.1	1	2.5	9	10			1	15	1	0.8
50+00N 60+40E	0.1	1	10	6	26			3	16	1	1.6
50+00N 60+80E	0.1	1	10	6	26			3	16	1	1.6
50+00N 61+20E	0.1	1	5	1	28			1	24	1	1.0
50+00N 61+60E	0.1	1	5	1	28			1	24	1	1.0
50+00N 62+40E	0.1	1	2.5	4	42			3	19	2	1.4
50+00N 63+00E	0.1	1	2.5	9	9			1	13	1	0.5
50+00N 63+20E	0.1	1	2.5	6	18			4	24	1	0.8
50+00N 63+40E	0.1	2	2.5	3	25			2	10	1	0.4
50+00N 64+00E	0.1	2	2.5	3	25			2	10	1	0.4
50+00N 64+40E	0.2	12	2.5	7	24			1	16	1	0.8

DATA PRINTED IN THIS MAP: DIRECTORY: #EXPLZOB.ING

FIELD FILE  
 ▲ PRINTS FILE DIR:DIR:PRINT  
 --- SEG DIR:DIR:CONTAIN  
 --- SEG DIR:DIR:POCKET:LIN

