11,659

ASSESSMENT REPORT

SILVER QUEEN MINE

OWEN LAKE, B.C.

Part 1 of 2

METALLURGICAL REPORT ON GOLD EXTRACTION FROM NADINA ORE SAMPLE AND HELICOPTER INPUT E.M. SURVEY OWEN LAKE AREA, B.C.

CLAIMS: As in Text.

Mining Division: Omineca

NTS: 93L2

Latitude: 54°05' Longditude: 126°44'

OWNERS: New Nadina Explorations Ltd.
Placer Developments Ltd.

OPERATORS: Campbell Resources Ltd.
Mattagami Lake Explorations Ltd.
Noranda Explorations Ltd.
New Nadina Explorations Ltd.

CONSULTANTS: Bacon, Donaldson, & Associates Ltd.
Questor Surveys Ltd.

AUTHORS: M.J.A. Vreugde, P.Eng.
Robert deCarle
Gordon Ford
Robert E. Reid

September 21, 1983

TABLE OF CONTENTS

INTRODUCTION

The Silver Queen, 28 miles by road, south of Houston, B.C. was discovered by prospectors in 1912, and the Cole Vein on the adjacent property to the north-east shortly after.

The properties were optioned by Noah A. Timmins in 1929, and the 2600-foot level adit cross-cut was driven as far as the Silver Queen No. 3 Vein. Some drifting was done on the No. 3 Vein and other unexpected veins intersected enroute. This cross-cut was originally scheduled to end at the Cole Vein.

Canadian Exploration (now Placer Development) purchased the claims in the 1940's and subsequently optioned them to Nadina Exploration in 1964. Nadina carried out an aggressive program of underground development on the No.3 Vein in subsequent years. In 1971 the Bradina Joint Venture was formed and the property put into production under the management of Bralorne Can-Fer Resources in March, 1972. An under-estimation of mining difficulties and over design of the mill resulted in a 350-400 T/day mine and a deluxe 600-700 T/day mill.

Operations ceased in September, 1973 after milling 200,000 tons, of which 40% was low grade oxidized development muck and waste. The mill and mining equipment were subsequently sold.

The property lay idle until 1980, when New Nadina Explorations Ltd. undertook an aggressive program consisting of trenching, mine rehabilitation, drifting, and surface and underground diamond drilling. This program was terminated due to lack of financing.

During 1982 Campbell Resources Ltd. under the direction

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of Gordon Ford, undertook a comprehensive review of all available data pertaining to the property, as well as contracting both Bacon, Donaldson and the B.C. Research Council to undertake metallurgical studies. New Nadina, at this time, was also proceding with gold recovery metallurgical studies through the University of Idaho.

Campbell Resources interest in the property terminated with the reorganization of that company early in 1983. Mr. Campbell in his report on the property states that proven and probable ore reserves in the No.3 Vein, which contains 90% of the known reserves on the property presently total 577,590 tons, grading 0.108 oz. Au/ton, 7.51 oz. Ag/ton, 0.49% Cu, 1.49% Pb, and 6.53% Zn. In addition to the probable reserves in other veins, the tailings from the previous operation contain, from incomplete records, run 0.06 oz. Au/ton and 2-3 oz. Ag/ton.

During the fall of 1982 and 1983, Noranda Exploration Co.,Ltd. contracted Questor Surveys Ltd. to fly Airborne Input Surveys in the Owen Lake area. A part of this program was the survey of New Nadina's Silver Queen Mine.

The purpose of this report is to present the Bacon, Donaldson & Associates Ltd. Report on Gold Extraction from Nadina Ore Sample, conducted by M.J.A. Vreugde, P.Eng., and the Questor Surveys Ltd. Airborne Input Report prepared by Robert deCarle, for Assessment credit.

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CLAIMS

The property is held by a block of 122 units and fractions, of these, 17 are Crown Granted claims optioned from Placer Developments Limited. The remainder, are Located claims owned by New Nadina Explorations Ltd. Details on the Located claims are as follows:

CLAIM NAME	UNITS	RECORD NO.
Silver 1	20	104
Silver 2	10	637
Silver 3	18	106
Silver 4	12	107
Silver 5	20	108
Silver 6	15	101
Tip Top #1	8	635
Cole #1	2	636

METALLURGY

In the previous mining operation on the Silver Queen, emphasis was placed on the recovery of base metals.

Pre-production metallurgical test work achieved high initial recoveries of gold (up to 93.9%). silver (97.3%), copper (99.1%), lead (98.1%) and zinc (99.3%). Cleaning, to produce marketable concentrates resulted in most of the gold and much of the silver going into the tailings.

Theoretical recoveries in the mill, as built, are reported to be, gold 50%, silver 60%, copper 70% and zinc 95%. These recoveries were never achieved in the actual operation, which is not surprising, as up to 40% of the mill feed consisted of oxidized low grade development muck and waste salvaged from the mine dump.

Minor research was carried out on improving gold recovery in the mill, but at $39.00/oz, a separate gold recovery circuit was not deemed economic. Small (4 to 25 micron) grains of native gold have been observed as inclusions in chalcopyrite, galena and sphalerite. These occurrences do not account for the ±30% of the contained gold that can be recovered in a pyrite concentrate or the high tailings losses.

In order to further study the occurrence of gold in the Silver Queen ores, a representative composite was prepared from available drill core sample rejects from New Nadina's 1981 drilling below the 2600-foot level. This composite, consisting of vein material diluted with 20% adjacent wall rock, was prepared at the Bacon Donaldson lab, and assayed 0.219 oz Au/t, 8.263 oz Ag/t, 0.32% Cu, 0.87% Pb and 8.46% Zn.

Robert E Reid

STATEMENT OF COSTS

Bacon, Donaldson, & Associates Ltd., Invoice #0665	4,070.03
Questor Surveys Ltd., Invoice	1,325.00
Report Preparation (Questor Surveys Ltd.)	600.00
	$5,995.03

INVOICE

0665

BACON, DONALDSON & ASSOCIATES LTD. • 2036 Columbia Street, Vancouver, B.C. V5Y 3E1 • 879-8461

Invoice No. 0565

File No. 3956

Purchase Order No.

Date 1983 September 30

ccount With Campbell Resources Inc.
A-105 Marine Building
355 Burrard Street
Vancouver, BC
V6C 2G6

Re: Metallurgical testwork of Nadina samples

Technicians	$ 1,938,00
Engineers	1,572.50
Assays	525.00
Expenses (Long distance calls)	34.53
	$ 4,070.83

(24% per annum)

This is a professional invoice and is due when presented.
2% per month charged on invoices over 30 days.

AUG 29 1983

QUESTOR SURVEYS
LIMITED

6580 Fiscount Road
Mississauga, Ontario
L4V 1H3
Tel: 676-9880
Telex: 06-983611

SEP 21 1983

RECEIVED
OCT - 8 1982
Mattagami Lake Exploration Limited

October 7, 1982.

Mattagami Lake Exploration Limited,
Suite #1110, 8 King Street East,
TORONTO, Ontario,
M5C 1B5.

RECEIVED
SEP 19 1983

To Invoice you for Helicopter INPUT Tests performed at the request of Mr. William Mercer on test sites in British Columbia.

Nadina Test - $1,325.00

10/50

October 2982 9578

MATTAGAMI LAKE EXPLORATION LIMITED

Project		Value
Nadina Sulphide	207.31.105	$ 38,111.00
		36,311.32
		$ 40,702.32
Date Paid:		

Questor Surveys Limited
6380 Viscount Road, Mississauga, Ontario, Canada L4V 1H3 Tel: (416) 676-9880 Telex: 06-983611

September 6, 1983.

Noranda Exploration Co. Ltd.,
1050 Davie Street,
BOX 2380,
VANCOUVER, British Columbia,
V6B 3T5.

To: The Production of a New

Nadina INPUT report

Total Invoice $ 600.00

APPENDIX A

BACON, DONALDSON & ASSOCIATES LTD.
Consulting Engineers

2036 Columbia St., Vancouver, B.C. V5Y 3E1 • Tel. 879-8461, Telex 04-53437

GOLD EXTRACTION FROM NADINA ORE SAMPLE

Carried out for:

Campbell Resources Ltd.
A-105 Marine Building
Vancouver, B. C.

File No.: 3762
1982 September 08

M. J. A. Vreugde, P.Eng.

INTRODUCTION

A test has been carried out at the request of Mr. Gordon Ford of Campbell Resources Ltd., to investigate the recovery of gold from a sample of ore from Nadina. Previous operation of this property had shown that much of the gold in the material was lost to the tailing during flotation. The present test consisted of flotation to produce rougher concentrate only, followed by cyanidation of the flotation tails.

TEST NO. 3762 - 1

PROCEDURE

STAGE	TIME (minutes)	ADDITIONS
Grind	15	0.5 LB/TON Na_2SO_3 0.1 LB/TON $ZnSO_4$ 0.2 LB/TON Z-200
Condition		pH = 6.7
Rougher Float	4	0.01 LB/TON Z-200 0.016 LB/TON Dow 250
Scavenger Float	4	0.81 LB/TON Lime to pH=8 0.05 Sodium Ethy Xanthate 0,011 LB/TON Dow 250
Condition	10	0.48 LB/TON Lime to pH=9.5 1 LB/TON $CuSO_4$
Zn Rougher	9	0.02 LB/TON Z-200 0.074 LB/TON Dow 250

Cyanide Zinc Ro Tails 48 hours

RESULTS

TEST NO. 3762 - 1

PRODUCT	WEIGHT %	ASSAYS					UNITS WT. % X ASSAY					% DISTRIBUTION				
		Cu	Fe	Pb	Zn	Ag	Cu	Fe	Pb	Zn	Ag	Cu	Fe	Pb	Zn	Ag
Cu Ro Conc	23.50	1.14	29.29	2.78	9.24		26.79	688.32	65.33	217.14		80.3	61.1	66.6	26.1	
Cu Scav Conc	12.60	0.21	21.05	1.31	10.58		2.53	253.86	15.80	127.59		7.6	22.5	16.1	15.4	
Zn Ro Conc	12.40	0.20	3.32	0.28	38.84		2.48	41.17	3.47	481.62		7.4	3.7	3.5	58.0	
Total Ro Conc	47.96	0.66	20.50	1.76	17.23		31.80	983.35	84.60	826.35		95.3	87.3	86.2	99.5	
Total Ro Tail	52.04	0.03	2.74	0.26	0.09		1.56	142.59	13.53	4.68		4.7	12.7	13.8	0.5	
HEAD(Calc)	100.00	0.33	11.26	0.98	8.31		33.36	1125.94	98.13	831.03		100.0	100.0	100.0	100.0	
Assayed HEAD		0.32	11.35	0.87	8.46											

SIZE ANALYSIS

FRACTION	WEIGHT %	
	IND.	CUM. % PASSING
+100	0.8	99.2
-100 +150	7.1	92.1
-150 +200	20.7	71.4
-200 +325	20.0	51.4
-325	51.4	

RESULTS

TEST NO. 3762 - 1

GOLD - SILVER BALANCE

PRODUCT	WEIGHT %	ASSAYS		UNITS WT.% X ASSAY		% DISTRIBUTION	
		Au	Ag	Au	Ag	Au	Ag
Cu Ro Conc.	23.50	0.480	19.012	11.28	446.78	53.0	53.3
Cu Scav. Conc.	12.06	0.340	11.133	4.10	134.26	19.2	16.0
Zn Ro Conc.	12.40	0.226	16.853	2.80	208.98	13.2	24.9
Total Ro Conc.	47.96	0.379	16.472	18.18	790.02	85.4	94.2
Total Ro Tail	52.04	0.060	0.938	3.12	48.81	14.6	5.8
HEAD (Calc)		0.213	8.388	21.30	838.83	100.0	100.0
Assayed HEAD		0.219	8.263				

CYANIDATION REPORT

FILE NUMBER 3762
TEST NUMBER 2
DATE September 8, 1982

NATURE OF FEED Zinc Flotation rougher tails

NOTES:
Started 12:00

STARTING CONDITIONS

950 dry gms. of feed
1.425 litres of water
40 % solids
lb. NaCN/ton solids
0.5 g. NaCN/l. solution
lb. $Ca(OH)_2$/ton solids
g. $Ca(OH)_2$/l. solution
10.5 pH target

total hours	sample volume cc	$AgNO_3$ titration cc	NaCN calc. g/l	NaCN added g.	H_2SO_4 titration cc	$Ca(OH)_2$ calc. g/l	$Ca(OH)_2$ added g.	pH
				0.71			1.41	10.7
4			0.19	0.44			0.20	10.3
20			0.22	0.40			0.80	9.1
23			0.48				0.93	10.0
44			0.35				0.50	9.8
48			0.41	(0.58)				10.5
total				0.97				

total hours	sample weight g	volume cc	I.D. of sample	solids assay oz/ton		solution assay mg/l		Recovery	
				Au	Ag	Au	Ag	solids Au %	solution Ag %
0				.060	.938				
48				.040	.503			33.3	46.4

SIZE ANALYSIS (Residue)

FRACTION	WEIGHT % IND.	CUM. % PASSING
+100	0.9	99.1
-100 +150	7.4	91.7
-150 +200	21.1	70.6
-200 +325	18.7	51.9
-325	51.9	

COMMENTS:

SUMMARY

It appears that the test may not be a fair assessment of gold recovery which may actually be achieved. The recovery of gold in the rougher flotation concentrates was 85.4% leaving only 14.6% of the gold in the cyanidation feed.

The cyanidation extracted 33.3% of the gold from the flotation tails. Since previous operation of this deposit indicated lower gold recovery than the 85.4% achieved it is apparent that a significant proportion of this gold is associated with gangue sulphides which would be rejected in the cleaner flotation stages.

Gold recovery in the flotation concentrates would therefore be lower and gold in the cyanidation feed would be higher. Gold extraction by cyanidation could remain at 33.3% of the gold going to this circuit so that a gold extraction of 90% or better would still not be achieved under present conditions. Alternatives which could result in improvement in gold extraction are regrinding of the flotation tails prior to cyanidation and production of a pyrite concentrate which is reground and cyanided.

RESUME

MORRIS J. A. VREUGDE

Education:

1971	Bachelor of Applied Science Mineral Engineering University of British Columbia
1973	Master of Applied Science Mineral Engineering University of British Columbia
1983	Ph.D. University of British Columbia

Birth Date:

August, 1948

Professional Societies:

Member	Association of Professional Engineers of British Columbia
Member	National Association of Corrosion Engineers (Chairman - B. C. Section 1979)
Member	Electrochemical Society
Member	Canadian Institute of Mining and Metallurgy

Fellow	The Institution of Mining and Metallurgy (Great Britain)

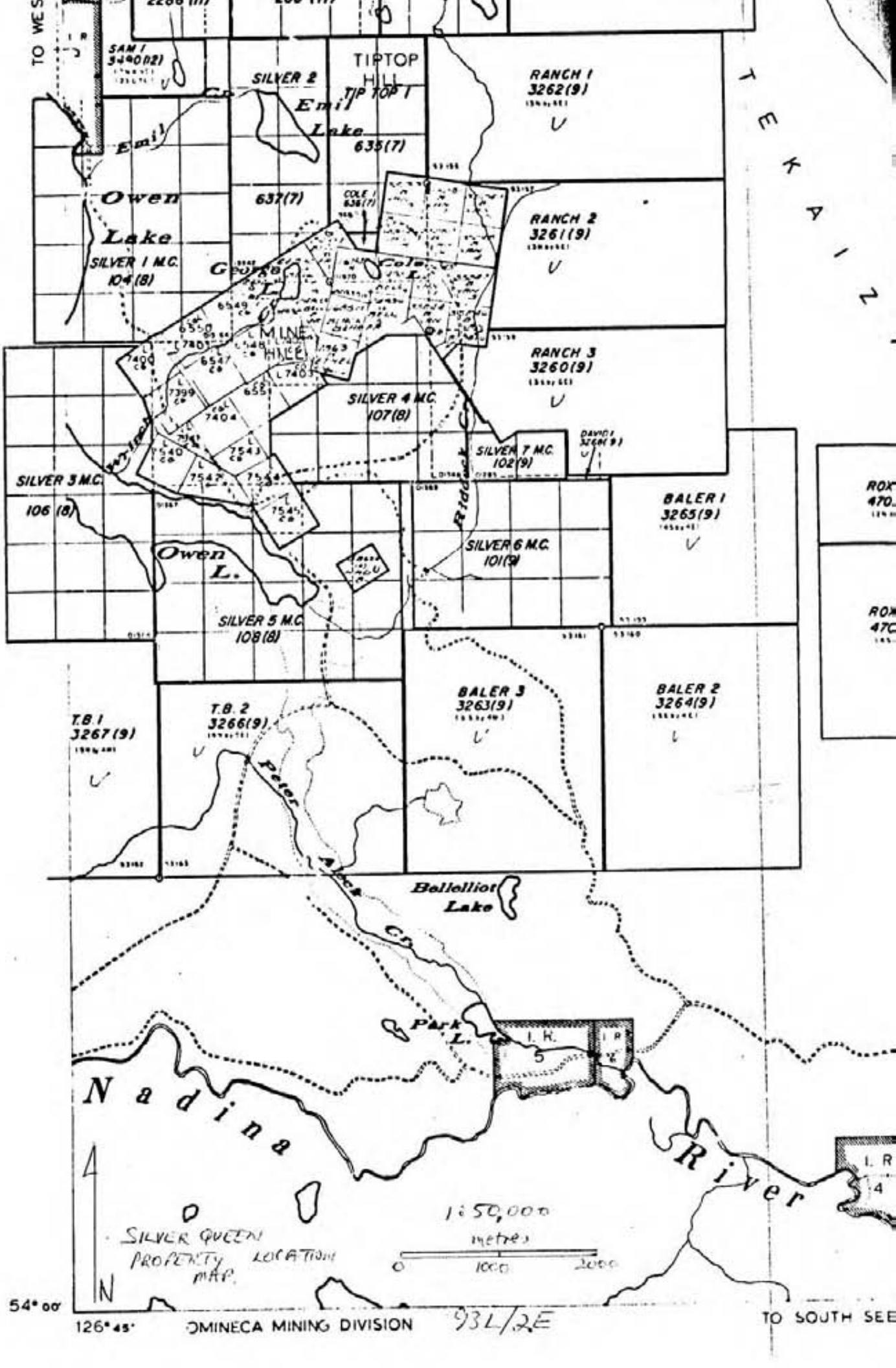
Experience:

1973 - present	Consulting Engineer, Principal Bacon, Donaldson & Associates Ltd.
1973 - 1974	Sessional Lecturer Mineral Engineering
1971 - 1973	Teaching Assistant Mineral Engineering University of British Columbia

Specialties:

Process Metallurgy

- Development of mineral processing flow sheets for new mineral prospects. Preliminary equipment selection.
- Microscopic and electron microscopic investigation of metallurgical problems.
- Electrochemistry of sulphide minerals.
- Hydrometallurgical process development for extraction of copper from sulphide materials and gold from arsenopyrite.


TO WESTSIDE
SAM I 3440(2)
SILVER 2
TIPTOP HILL
TIP TOP I
Emil Lake
635(7)
RANCH 1 3262(9)
TEKAIZ
Owen Lake
637(7)
COLE I 636(7)
RANCH 2 3261(9)
SILVER 1 M.C. 104(8)
MINE HILL
RANCH 3 3260(9)
SILVER 4 M.C. 107(8)
DAVID I 3260(9)
SILVER 7 M.C. 102(9)
SILVER 3 M.C. 106(8)
Ridduck Cr.
BALER I 3265(9)
Owen L.
SILVER 6 M.C. 101(9)
SILVER 5 M.C. 108(8)
BALER 3 3263(9)
BALER 2 3264(9)
T.B. I 3267(9)
T.B. 2 3266(9)
Peter
Bellellioit Lake
Park L.
I.R. 5
Nadina River
I.R. 4
1:50,000
metres
0 1000 2000
SILVER QUEEN PROPERTY LOCATION MAP
N
54° 00'
126° 45'
OMINECA MINING DIVISION
93L/2E
TO SOUTH SEE