



**Ontario Geological Survey
Open File Report 5970**

**Report of Activities, 1997
Resident Geologist Program**

**Thunder Bay North Regional
Resident Geologist's Report:
Thunder Bay North–Sioux Lookout
Districts**

1998



ONTARIO GEOLOGICAL SURVEY

Open File Report 5970

Report of Activities, 1997
Resident Geologist Program

Thunder Bay North Regional Resident Geologist's Report:
Thunder Bay North–Sioux Lookout Districts

by

J.K. Mason, G. Seim, G.D. White, C. Bath

1998

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Mason, J.K., Seim, G., White, G.D., and Bath, C. 1998. Report of Activities 1997, Resident Geologist Program, Thunder Bay North Regional Resident Geologist's Report: Thunder Bay North–Sioux Lookout Districts; Ontario Geological Survey, Open File Report 5970, 58p.

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ONTARIO GEOLOGICAL SURVEY
RESIDENT GEOLOGIST PROGRAM – 1997
THUNDER BAY NORTH REGIONAL RESIDENT GEOLOGIST'S
DISTRICT

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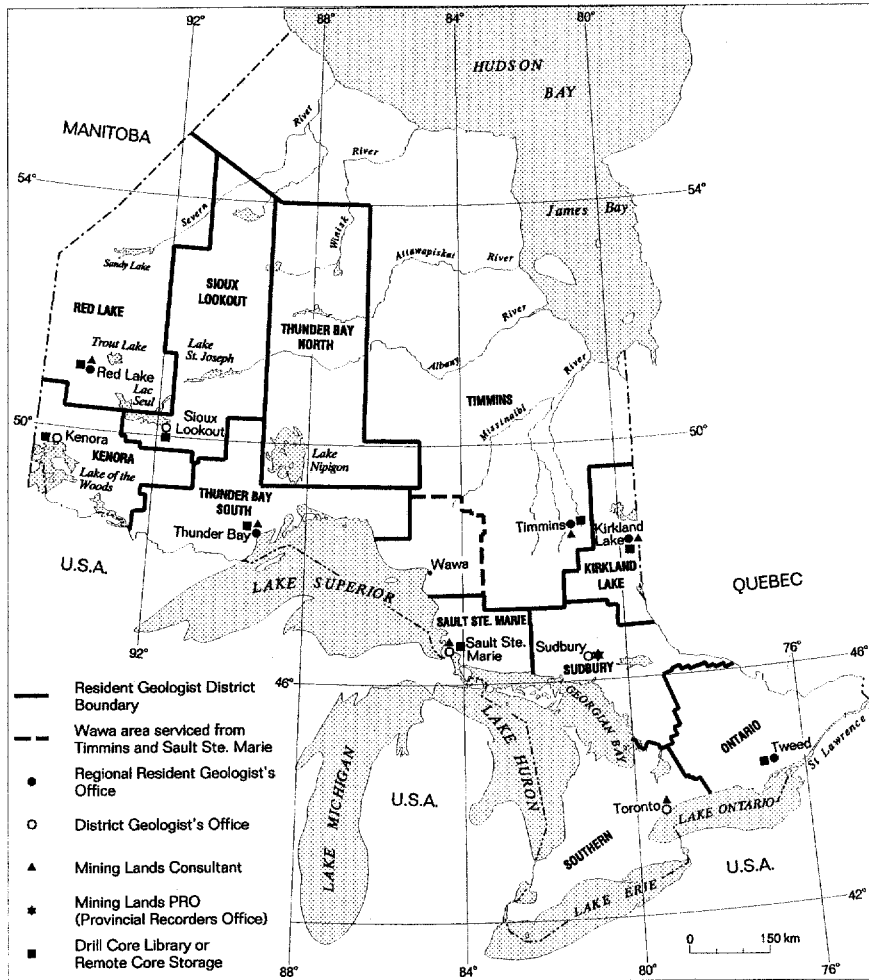
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**Ontario Geological Survey
Resident Geologist's Program - 1997**

Thunder Bay North Resident Geologist's District

Beardmore-Geraldton Area

by

J.K. Mason and G.D. White

1998

Thunder Bay North (Beardmore–Geraldton) District — 1997

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Introduction

The Thunder Bay North District includes the former Beardmore–Geraldton District and Lake Nipigon, representing the central and northern portion of the Thunder Bay Mining Division. The communities of Beardmore, Jellicoe, Longlac, Geraldton, Macdiarmid, Nakina, Armstrong, Fort Hope, Lansdowne House, Summer Beaver and Webequie are situated within the district. The Thunder Bay North Regional Resident Geologist is also responsible for the supervision of the Sioux Lookout District.

The Ontario Prospectors Assistance Program (OPAP) funded 35 programs, totalling \$350 000 in the Thunder Bay North District in 1997. This represents the second largest grant allocation, per district, in the province.

Exploration Activity

Major companies, junior companies and prospectors conducted 77 exploration programs in the district during 1997. Exploration was conducted for gold, silver, copper, zinc, lithium and diamonds.

Cyprus Canada Inc. conducted work in 1997 on the Kaby gold project (Larsen occurrence) in Rickaby Township and the Roxmark, Barrick, Octopus and Skinner gold projects in the Geraldton area.

Cameco Gold Corp. continued with a multiphase exploration program on the Onaman River (Knucklethumb Lake) gold project.

Roxmark Mines Limited has refurbished the Northern Empire Mill located in Beardmore, Ontario. Development of a portal on the Contact zone, east of the Northern Empire shaft is planned. Mill feed from the Magnet Mine in Geraldton will also be processed at the Beardmore mill facility.

Spruce Ridge Resources and Columbia Metals Corporation Limited are currently conducting a major stripping program on their Crooked Green Creek gold property. Work on the strike extension of the No. 1 zone and No. 2 zone has uncovered gold-bearing chalcopyrite- and pyrrhotite-rich stock-work vein systems across 10 to 15 m widths. Magnetic, VLF-EM, geochemical and IP surveys, prospecting extensive stripping, geological mapping and sampling have been completed to date.

Table 3. Assessment files received in the Thunder Bay North (Beardmore-Geraldton) District in 1997.

Abbreviations			
AEM	Airborne electromagnetic survey	Lc	Linecutting
AM	Airborne magnetic survey	Met	Metallurgical testing
ARA	Airborne radiometric survey	OD	Overburden drilling
Beep	Beep Mat survey	ODH	Overburden drill hole(s)
Bulk	Bulk sampling	OMIP	Ontario Mineral Incentive Program
DD	Diamond drilling	OPAP	Ontario Prospectors Assistance Program
DDH	Diamond drill hole(s)	PEM	Pulse electromagnetic survey
DGP	Down-hole geophysics	PGM	Platinum group metals
GC	Geochemical survey	Pr	Prospecting
GEM	Ground electromagnetic survey	RES	Resistivity survey
GL	Geological Survey	Samp	Sampling (other than bulk)
GM	Ground magnetic survey	Seismic	Seismic survey
GRA	Ground radiometric survey	SP	Self-potential survey
Grav	Gravity survey	Str	Stripping
HLEM	Horizontal loop electromagnetic survey	Tr	Trenching
HM	Heavy mineral sampling	UG	Underground exploration/development
IM	Industrial mineral testing and marketing	VLEM	Vertical loop electromagnetic survey
IP	Induced polarization survey	VLFEM	Very low frequency electromagnetic survey

Table 3. cont'd. Assessment files received in the Thunder Bay North (Beardmore-Geraldton) District in 1997.

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Ashmore Township	Houghton, Frank (Peninsula Gold Expl. Ltd.)	1996	GC, GM, Lc, VLFEM	2.17214	42E10/NW
Ashmore Township	Wilson, Alexander	1994	DD	OP 94-315	42E10/NW
Ashmore Township, Errington Township	Asarco Exploration Co. of Can. Ltd.	1994	DD, assays	OM 94-005	42E10/NW
Bicknell Lake, Eager Lake areas	Panterra Minerals Inc. (Pegg, Chris)	1996	AM, AEM	2.17247	42F13/SE, 42F12/NE
Bicknell Lake, Eager Lake areas	Panterra Minerals Inc. (Pegg, Chris)	1996-1997	GM, IP, Lc	2.17480	42F13/SE
Clist Lake area	Checkley, Fred	1994	Pr, Samp	OP 94-151	42E12/NE
Clist Lake area	Founder Resources Inc., Harte Resources Corp., Tenacity Mining Corp.	1996	Str, Samp	2.17323	42E12/NE
Clist Lake area	Harte Resources Corp., Founder Resources Inc., Tenacity Mining Corp.	1996	Tr, Str		42E12/NE
Clist Lake area	Holt, Lyle	1997	Pr, Lc, Samp	2.17641	42E12/NE
Coltham Township	Malouf, Michael	1995	Str	2.17608	42E10/NE
Croll Township	Swereda, Mel	1995-1997	DD, assays	2.17215	42E10/NW
Dorothea Township	Houghton, Frank, Lassila, Pentti	1994	Samp	OP 94-192	52H09/NE
Dorothea Township	Houghton, Frank, Lassila, Pentti	1996	Pr, Str, Samp	2.16982	52H09/NE
Dorothea Township	Lafontaine, Shirley	1996	Str		52H09/NE
Elmhirst Township	Douglas, Art	1994	Pr, Beep	OP 94-402	42E13/SE
Elmhirst Township	Edda Resources Inc.	1996	GL	2.16891	42E13/SE
Elmhirst Township	Edda Resources Inc.	1996-1997	Str, Samp	2.17594	42E13/SE
Elmhirst Township	Kindla, David	1996	Str, Tr, VLFEM	2.17384	42E13/SE
Errington Township	Cyprus Canada Inc.	1997	DD, assays	2.17623	42E11/NE
Errington Township, Lindsley Township	Cyprus Canada Inc.	1996	GL	2.17622	42E11/NE
Errington Township, Lindsley Township	Cyprus Canada Inc.	1996-1997	GEM, GM, IP	2.17624	42E10/NW, 42E11/NW
Gzowski Township	Goodman, Herb	1996	Str	2.17352	42L06/NW, 42L03/NW
Gzowski Township	Lance, Carey	1997	Lc, IP	2.17590	42L06/SW
Gzowski Township	Milks, Gerry	1996	Tr		42L06/SW, 42L05/SE
Gzowski Township	Milks, Gerry	1997	Str	2.17581	42L05/SE, 42L06/SW
Gzowski Township	Tontine Mining Ltd.	1970	DD		42L06/SW
Hurst Lake, Felsia Lake areas	Parent, Shaun	1994	Pr, VLFEM	OP 94-022	52P08/SW
Irwin Township	Pettit, Cyril	1996	DD	2.17276	42E12/NW
Irwin Township, Pifher Township, Elmhirst Township	Holt, Lyle, Checkley, Fred	1996	Pr, Str, Tr, Samp	2.17330	42E12/NW, 42E13/SW

Table 3. cont'd. Assessment files received in the Thunder Bay North (Beardmore-Geraldton) District in 1997.

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Irwin Township, Sandra Township	Houghton, Frank Houghton, Phil	1994	Tr, Str, Pr	OP94-192 OP94-193	42E12/NW
Irwin Township, Tyrol Lake area	Checkley, Fred	1995	Pr, Str, Tr, Samp	2.16418	42E12/NW, 42E13/SW
Kaby Lake area	Checkley, Fred, Lafontaine, Shirley	1996	Pr	2.17260, 2.17248	42E13/SE
Kaby Lake area	Checkley, Fred, Lafontaine, Shirley	1996	Str		42E13/SE
Kaby Lake area	Lafontaine, Shirley	1996	Str		42E13/SE
Klotz Lake area	Salo, Randy	1997	GM, Lc, VLFEM	2.17381	42F13/SW
Klotz Lake area	Shields, Scott	1996	Str	2.17390	42F13/SW
Klotz Lake area	Swereda, Mel	1996	DD, assays, GL, Str	2.17245	42F13/SW
Lapierre Lake area	Davies, Raymond, Davies, Alan	1996	GL, GM, GRA	2.16834	42E14/SW
Lapierre Lake, Treptow Lake areas	Sharpley, Fred (Seal River Explorations Ltd.)	1995	GL, GM, GC, VLFEM, Samp	2.16832	42E14/SW/SE
Leduc Township	Auger, Tony	1994	Tr, Samp	OP 94-376	42E12/NE
Legault Township	Checkley, Fred	1994	Tr, Samp	OP 94-151	42E11/NW
Lindsley Township	Cyprus Canada Inc., Roxmark Mines Ltd., Placer Dome Can. Ltd.	1996	DD, Samp, petrographic report		42E11/NE
Maun Lake area	Clark, G., Gagne, P., Eveleigh, A.	1994	Tr, Samp	OM 94-064	42L07/NW
Maun Lake area	Gagne, Pierre, Eveleigh, A., Clark, G., Crowbush Minerals	1996	GM, VLFEM	2.17003	42L07/NW
McComber Township	Cote, Robert	1996	Pr, Str, Tr, Samp	2.16977	42E12/NW
McComber Township	Skalesky, Ann	1996	Tr, Samp		42E12/NW
Metcalfe Lake area	Callisto Minerals Inc.	1997	GM, Lc, GRA	2.17637	42L04/NE
Metcalfe Lake area	Yzerdraat, Walter	1996-1997	Lc, GM, EM	2.17327	42L04/NE
Mungo Park Point area	Michon, Robert	1994	Pr, Samp, Beep	OP 94-471	52H16/SE
Oboshkegan Township, Metcalfe Lake areas	Lance, Carey	1997	Lc, IP	2.17597	42L04/NE
Petawanga Lake, Ka- witos Lake areas	Noranda Mining and Exploration Inc., Falconbridge Ltd.	1996	DDH, assays, petro- graphic report		52P08/NW/NE
Pifher Township	Cowan, Michael	1996	DD, assays	2.17472	42E13/SW
Pifher Township	Quebec Sturgeon River Mines Ltd., Northern Concentra- tors Ltd., Spruce Ridge Resources Ltd., Cowan, M.	1996	Bulk, Met	2.17009	42E13/SW
Poplar Point area	Lafontaine, Shirley	1995	Pr, Str	2.16931	52H09/SE
Poplar Point area	Lafontaine Shirley	1996	Pr	21.7067	52H09/NE

Table 3. cont'd. Assessment files received in the Thunder Bay North (Beardmore-Geraldton) District in 1997.

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Poplar Point area	Lafontaine, Shirley	1996	Pr, Samp	2.17068	52H09/NE
Rich Lake area	O'Reilly, Gerry	1996	Lc, GL, Samp	2.17473	52P09/SE
Rickaby Township	Houghton, Frank	1995	GL, Samp	2.17140	42E13/SE
Rickaby Township	Miron, William	1996	Str		42E13/SE
Sandra Township	Edda Resources Ltd.	1997	GM, VLFEM	2.17309	42E12/NW
Sandra Township	Edda Resources Ltd.	1997	IP	2.17353	42E12/NW
Speckled Trout Rapids, Ogoki Lake, Tenant Lake areas	Wahl, John (John Wahl Consulting)	1996	Lc, EM, GM	2.17588	42L15/SW
Summers Township, Irwin Township, Pifher Township areas	Holt, Lyle, Checkley, Fred	1996	Pr, Str, Tr, Samp	2.17330	42E12/SW, 42E13/SW
Summit Lake area	Giant Gripp Mines Ltd., Challenger Minerals Ltd.	1994	DD, assays, GC, PEM	OM 94-079	42L05/NE
Summit Lake area	NWT Copper Mines Ltd.	1996	DD, assays	2.17360	42L05/NE
Toronto Lake area	Michon, Robert	1994	Pr, Samp	OP 94-471	42L05/SW
Treptow Lake, Alfred Lake areas	Willy, A.J., North, J., Woolham, R.	1994	GL, Pr, Str, Samp	2.16930	42E14/SE, 42E15/SW
Treptow Lake, Alfred Lake areas	Willy, A., North, J., Woolham, R.	1994	Pr, Samp	OP 94-398, OP 94-399, OP 94-400	42E14/SE, 42E15/SW
Treptow Lake, Kirby Township areas	Johansen, Thorwald	1996	Str		42E14/SE
Trident Lake area	Parent, Shaun	1994	Pr	OP 94-022	42L07/NE
Vincent Township	Harte Resources Corp.	1997	DD, GM, Str, Samp	2.17611	42E12/NE
Vincent Township	Maki, Neil, Maki, Aili	1995	Str, Pr		42E12/NE
Vincent Township	Maki, Neil, Maki, Mark	1996	Tr, Str		42E12/NE/NW
Vincent Township	Pichette, Valerie	1995-1996	Pr, Samp		42E12/NE
Walters Township	Clark, D., Clark, C.	1996	DD, assays	2.17308	42E12/NE
Walters Township	Clarke, Leroy, Clarke, Leonard	1994	Tr, Samp, GM, VLFEM	OP 94-416, OP 94-415	42E12/NE
Walters Township	Houghton, Frank, Lassila, Pentti	1996	Pr, Str, Samp	2.16981	42E12/NE

Land Use Planning Activity

Information and data were provided for the following land use activities:

- Fort Hope Reserve #64 (Eabametoong)
- Township of Beardmore
- Jellicoe-Beardmore
- Ogoki Forest Management Plan
- Nakina North Forest Management Plan
- “Lands for Life”, Boreal West planning region

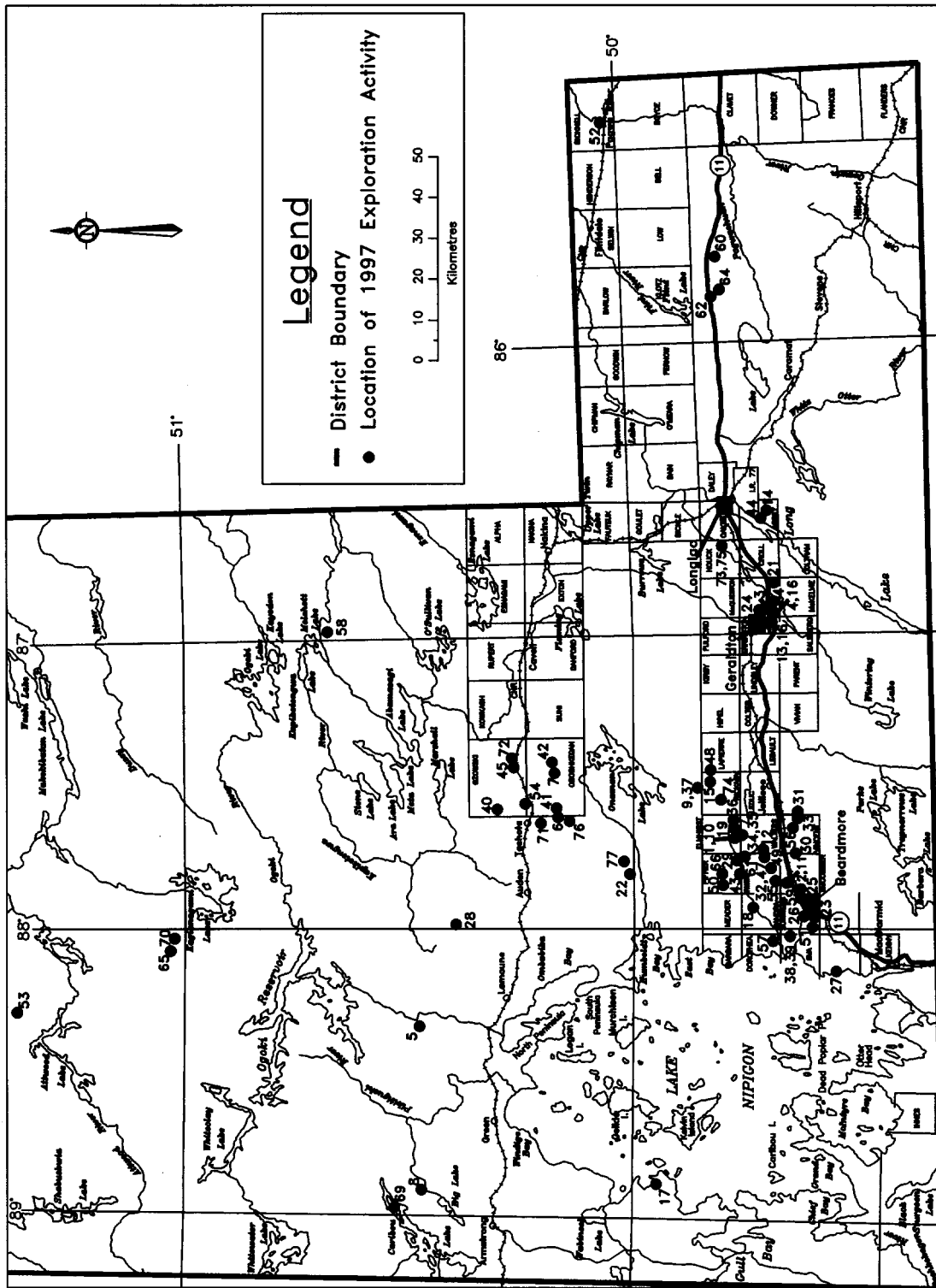


Figure 1. Thunder Bay North Resident Geologist's (Beardmore-Geraldton) District (South Map), Exploration Activity, 1997.

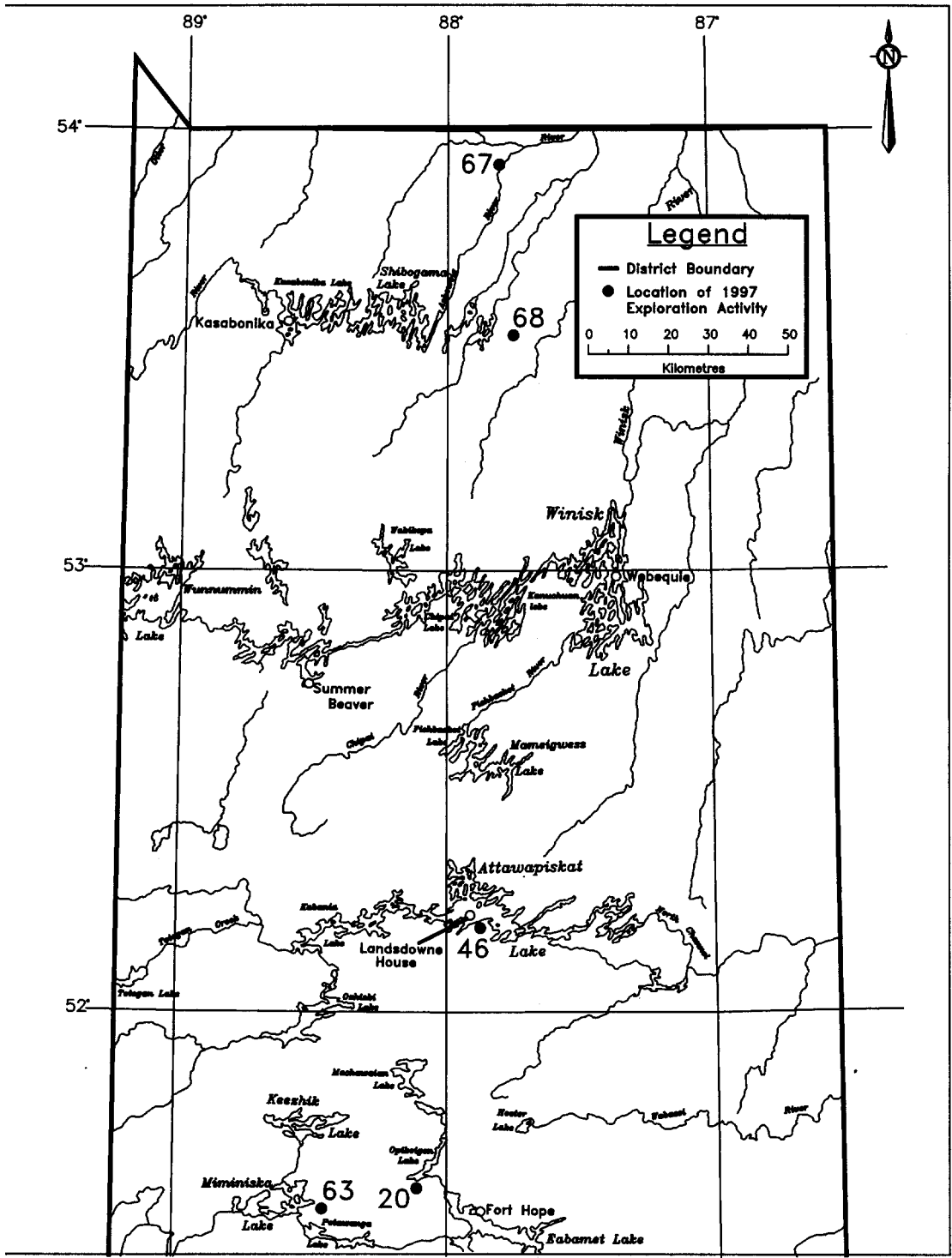


Figure 2. Thunder Bay North Resident Geologist's (Beardmore-Geraldton) District (North Map), Exploration Activity, 1997.

Table 4. Exploration activity in the Thunder Bay North (Beardmore-Geraldton) District in 1997 (keyed to Figures 1 and 2).

Abbreviations			
AEM	Airborne electromagnetic survey	Lc	Linecutting
AM	Airborne magnetic survey	Met	Metallurgical testing
ARA	Airborne radiometric survey	OD	Overburden drilling
Beep	Beep Mat survey	ODH	Overburden drill hole(s)
Bulk	Bulk sampling	OMP	Ontario Mineral Incentive Program
DD	Diamond drilling	OPAP	Ontario Prospectors Assistance Program
DDH	Diamond drill hole(s)	PEM	Pulse electromagnetic survey
DGP	Down-hole geophysics	PGM	Platinum group metals
GC	Geochemical survey	Pr	Prospecting
GEM	Ground electromagnetic survey	RES	Resistivity survey
GL	Geological Survey	Samp	Sampling (other than bulk)
GM	Ground magnetic survey	Seismic	Seismic survey
GRA	Ground radiometric survey	SP	Self-potential survey
Grav	Gravity survey	Str	Stripping
HLEM	Horizontal loop electromagnetic survey	Tr	Trenching
HM	Heavy mineral sampling	UG	Underground exploration/development
IM	Industrial mineral testing and marketing	VLEM	Vertical loop electromagnetic survey
IP	Induced polarization survey	VLFEM	Very low frequency electromagnetic survey

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	A.D.R. Exploration Ltd.	Elmhirst/Walters townships (Au)	Pr, Str, Samp, Lc, GL, GM, VLFEM
2	Angle Lake Explorations Inc.	McComber Township (Au)	Lc, GM, VLFEM
3	Auger, T.	Ashmore Township (Au, Ag)	Pr, Str, Samp
4	Barrick Gold Corporation (Hard Rock Gold Mine) (MacLeod-Cockshutt Gold Mine)	Errington/Ashmore townships	Rehab
5	Bowdidge, C.-Complex Minerals Corp. (Dempster Deposit)	Crescent Lake (Li)	Lc, VLFEM, Samp
6	Callisto Minerals Inc.	Metcalfe Lake	Lc, GM, GRA
7	Cameco Gold Inc. (Knucklethumb Lake occurrence)	Oboshkegan Township (Au)	Lc, GM, GL, IP, DD, Samp, Tr, Str, Pr
8	Castagne, P.	Dalton Lake (Au, Cu)	Pr, Str, Samp
9	Checkley, F. (Ballina Lake occurrence)	Kaby Lake (Au)	Pr, Str, Samp
10	Clarke, L. (Houghton-Clarke Elmhirst property)	Elmhirst Township	Pr, Str, Samp, GM, VLFEM
11	Cote, R. (Angle Lake occurrence)	McComber Township (Au)	Pr, Str, Samp
12	Cox, N., Holt, L. and Nelson, M. (Bearskin Lake occurrence)	Walters Township (Au)	Pr, Str, Samp
13	Cyprus Canada Inc.	Errington Township (Au)	DD, Samp
14	Cyprus Canada Inc.	Long Lake (Au)	Lc, GC, GL, IP, DD, Samp

Table 4. cont'd. Exploration activity in the Thunder Bay North (Beardmore-Geraldton) District in 1997 (keyed to Figures 1 and 2).

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
15	Cyprus Canada Inc. (Larsen occurrence)	Rickaby Township (Au)	Lc, IP
16	Cyprus Canada Inc. (MacLeod-Cockshutt Mine) (Consolidated Mosher Mine)	Errington/Ashmore townships (Au)	GEM, GM, IP, DD, Samp
17	Dean, R. and Kathmann, P.	Lake Nipigon (Au)	GC, GL, Samp
18	Edda Resources Inc.	Sandra Township (Au)	Lc, IP, GM, VLFEM
19	Edda Resources Inc. (Oliver-Severn occurrence)	Elmhirst Township (Au)	Str, Samp
20	Ella Resources Inc.-Slam Exploration (OL-12, OL-29 occurrences)	Opikeigen Lake (Au)	Lc, GL, VLFEM
21	Forrester Gold Mining Corp.	Ashmore Township (Au)	Lc, GM, VLFEM
22	Goldbrook Explorations Inc.-Shane Resources Ltd. (Myrtle occurrence)	Onaman River (Au, Cu)	DD, Samp, GM, HLEM
23	Goldbrook Explorations Inc.-Shane Resources Ltd. (Pipeline gold occurrence)	Summers Township (Au)	DD, Samp, GM, VLFEM, Str
24	Goldmint Explorations Ltd. (Barton Bay gold occurrence)	Ashmore Township (Au)	Lc, Pr, Str, Samp, VLFEM, GL, GM
25	Goldmint Explorations Ltd. (Spooner Gold Mine)	Summers Township (Au)	DD, Samp
26	Goodman, H.G. (Morgan Extension occurrence)	Summers Township (Au)	Pr, Str, Samp
27	Goodman, H.K. (Speke Point occurrence)	Eva Township (Au)	Pr, Str, Samp
28	Grant, J.R.	Juneau Lake (Cu, Ni, Au, Zn)	Pr, Samp
29	Grant, J.R.	Pifher Township (Au)	Pr, Samp
30	Harte Resources Corporation (Craskie-Vega Prospect)	Vincent/McComber townships (Au)	Lc, GM, GEM, Str, Samp, DD
31	Holt, L.	Clist Lake area (Au)	Pr, Lc, Samp
32	Holt, L.	Irwin Township (Au, Ag, Cu)	Pr, Str, Samp, VLFEM
33	Holt, M.	Clist Lake (Au)	Pr, Samp, VLFEM
34	Houghton, F.	Elmhirst Township (Au, Ag, Cu)	Pr, Str, Samp, VLFEM
35	Houghton, P.	Elmhirst Township (Au, Ag, Cu)	Pr, Str, Samp, VLFEM
36	Kindla, D.	Elmhirst Township (Au)	Pr, Str, Samp
37	Lafontaine, A. (Ballina Lake occurrence)	Kaby Lake area (Au)	Pr, Str, Samp
38	Lafontaine, D.	Eva Township (Ag)	Pr, Str, Samp
39	Lafontaine, S.	Eva Township (Ag)	Pr, Str, Samp
40	Lance, C.	Gzowski Township (Au)	Lc, IP
41	Lance, C.	Oboshkegan Township/Metcalf Lake (Au)	Lc, IP
42	Landis Mining Corporation	Oboshkegan Township (Au)	Lc, GM, GC, VLFEM, Pr, Samp
43	MacAdam, R.	Pifher Township (Au)	Pr, Str, Samp, VLFEM
44	Malouf, M.	McBean Lake area (Au)	Lc, GM, GEM, Str, Samp, DD
45	Milks, G. (Royal Crown occurrence)	Gzowski Township (Zn)	Pr, Str, Samp
46	Moonias, D.	Lansdowne House (Au)	Pr, Samp
47	Nelson, M.	Irwin Township (Au)	Pr, Str, Samp

Table 4. Cont'd. Exploration activity in the Thunder Bay North (Beardmore-Geraldton) District in 1997 (keyed to Figures 1 and 2).

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
48	Nelson, M. and Holt, L. (Koch-Daneff occurrence)	Lapierre Township (Au)	Pr, Tr, Samp
49	Norvane Explorations Inc. (Nordic-Gooseneck Lake property)	Irwin Township (Au)	DD, Samp, Str
50	Ontex Resources Ltd.-Pifher Resources	Pifher Township (Au)	Lc, GM, IP
51	Pangea Goldfields Inc.-Miniére Du Nord (Lafontaine-Summers Township gold occurrence)	Summers Township (Au)	DD, Samp
52	Panterra Minerals Inc.	Bicknell and Eager Lakes area (Au)	Lc, GM, IP
53	Parent, S.	Fort Hope (Cu, Zn)	Pr, Samp, GM, GEM
54	Pelky, R.	Gzowski Township (Au)	Pr, Str, Samp
55	Pettit, C.	Irwin Township (Au)	DD, Samp
56	Pichette, V.	Vincent Township (Au)	Pr, GC, Str, Samp
57	Poplar Point Explorations Ltd.	Dorothea Township (Au)	Lc, GM, VLFEM, IP, Pr, GL, Str
58	Redbird Gold Corp.	Durer Lake (Au, Zn, Cu)	DD, Samp
59	Roxmark Mines Limited (Northern Empire Mine)	Summers Township (Au)	Mill refurbishing
60	Royer, G.	Mann/Lauri lakes (Cu, Ag)	Pr, Samp, GL, GC, GM, GEM
61	St. Andrew Goldfields Ltd. (Sturgeon River Gold Mine)	Irwin Township (Au)	compilation
62	Salo, R.	Klotz Lake area (Au)	Lc, GM, VLFEM
63	Shear Corp. (Wottam/Conwest occurrence)	Fort Hope (Au)	Pr
64	Shields, J.	Klotz Lake (Au)	Pr, Str, Samp
65	Smith, B.	Sim Lake (Cu, Ni, PGE)	Pr, Samp, Beep
66	Spruce Ridge Resources-Columbia Metals Corp. (Crooked Green Creek gold prospect)	Pifher Township (Au)	Lc, Str, Samp, GL, GM, IP
67	Suganaqueb, S.	Sourdough Rapids (Au, Cu, Ni)	Pr, Str, Samp
68	Suganaqueb, S.	Tabasokwia River (Cu, Ni)	Pr, Str, Samp
69	Sutton, K. and Sutton, E.	Caribou Lake (Au, Cu, Zn)	Pr, Str, Samp
70	Thibault, D.	Sim Lake (Cu, Ni)	Pr, Samp, Beep
71	Totem Mining Corporation	Tashota (Au)	Lc, IP
72	Totem Mining Corporation (MacFarlane-Manion occurrence)	Gzowski Township (Au)	Lc, IP
73	W.N.W. Exploration	Ashmore Township (Au)	DD, Samp
74	Whalen Resources Ltd. (Kenty-Douglas prospect)	Rickaby Township (Cu, Zn)	Comp
75	Willy, A. and Woolham, R.	Hutchison Lake (Au)	DD, Samp
76	Yzerdraat, W.	Metcalfe Lake (Au, Cu)	Lc, GM, GEM, Samp
77	Zygmunt, K. & J.	Conglomerate Lake (Au)	Pr, Samp

Regional Resident Geologist Staff and Activities

The staff of the Thunder Bay North (Beardmore–Geraldton) District included: J. Mason, Regional Resident Geologist; G. White, District Geologist; C. Komar, Administrative Assistant; S. Warren, Assessment File Clerk; and A. Walden, Geological Assistant.

In 1997, 48 property visits were conducted on 32 properties in the district. Nine property visits were conducted outside the district. The Regional Resident Geologist's Program handled 1823 personal consultations and 904 telephone inquiries in the Beardmore, Geraldton and Thunder Bay offices. The Beardmore field office, established in 1996 in conjunction with the community of Beardmore, was staffed one day per week from May to October and on demand to year end. The Geraldton field office was maintained in conjunction with the Northern Development Office one day per week from May to October. Staff attended the Northwestern Ontario Prospectors Association Mines and Minerals Symposium in Thunder Bay during April, providing a display and talk, and the Prospectors and Developers Convention in Toronto during March, providing displays.

Property Examinations

BEARSKIN LAKE GOLD PROPERTY

The Bearskin Lake gold property is located in mid-western Walters Township and eastern Irwin Township, approximately 19 km northeast of Beardmore. The property consists of the following 14 unpatented mining claims (totalling 19 units): TB 1204958 to TB 1204967 inclusive and TB 1217154 to TB 1217197 inclusive. The Bearskin Lake gold property can be accessed by travelling on Highway 11 east of Beardmore for 22 km and then north on Highway 801 for 8 km to a backhoe trail. This trail accesses the east end of the property. Prospectors N. Cox, L. Holt and M. Nelson of Beardmore, Ontario are the property owners.

In 1944, the Lake Bearskin Syndicate completed trenching, diamond drilling and bulk sampling on several gold occurrences encompassing a portion of the current claim group and a portion of the Metalore Resources Limited claims immediately to the west. Bulk sampling results averaged 0.16 ounce per ton gold (400 m west of the west boundary of the current claim group) and up to 1.17 ounces per ton gold over unknown intervals (Cox, Holt and Nelson 1997). Coulson Exploration Inc. (1984-87) completed stripping, line cutting, geological mapping, VLF-EM and sampling. N. Cox, L. Holt and M. Nelson undertook an exploration program in 1997 with the funding assistance of 3 OPAP grants assigned to the Bearskin Lake property. Prospecting, stripping, trenching, sampling, line cutting, geological mapping, a reconnaissance VLF-EM survey and a magnetometer survey were completed.

The Bearskin Lake property is situated on the main Beardmore-Geraldton belt, a portion of the Wabigoon Subprovince. A sequence of mafic metavolcanic rocks (iron to magnesium tholeiites), consisting of massive to fine-grained flow rocks, is in tectonic contact with a turbidite unit to the south made up of sandstone, siltstone and argillite (Mackasey 1975, 1976). The tectonic contact is the eastern extension of the Brookbank deformation zone, which hosts the 1.3 million ton, 0.25 ounce per ton gold, Brookbank gold deposit 6.6 km to the west. The surface expression of the Brookbank deformation zone on the Bearskin Lake property is up to 60 m wide and strikes 80 to 95°. The southern contact is largely obscured by overburden. Secondary and tertiary faults at various attitudes relative to the Brookbank fault--including subparallel--have been noted in the bedrock and represented as VLF-EM conductors.

Gold mineralization is associated with 1 to 10% disseminated to semi-massive pyrite and rare chalcopyrite and galena in strongly foliated to intensely sheared metavolcanic rocks, discrete quartz (+/-carbonate) veins and breccia (i.e. shatter) zones. Alteration minerals present related to gold mineralization include quartz, epidote, hematite, potassium feldspar, ankerite, calcite, chlorite, sericite, tourmaline and fuchsite. A distinctive, intensively silicified, tourmaline-bearing "fault gouge"--a key marker horizon in the stratigraphy of the Brookbank gold deposit--was noted in Trench #11 and Trench #12 on the Bearskin Lake properties. Sericite schist, observed in Trenches #11, 16 and 28, may represent sheared and altered porphyry dikes and/or sills. The highest gold values obtained were from grab and chip samples ranged from 0.03 to 0.17 ounce per ton gold in the north portion of Trench #12 (Cox, Holt and Nelson 1997). Grab samples taken by the Regional Resident Geologist assayed up to 4800 ppb or 0.16 ounce per ton gold (Chemex Labs Ltd., Vancouver, B.C., January 16, 1998). The highest values came from the north portion of Trench #12.

Further prospecting and stripping will be conducted in 1998 on geological and VLF-EM targets. Cross and lateral trenching will be undertaken along strike of Trench #12. The south contact of the deformation zone may require diamond drilling because of deep till, which prevents conventional backhoe excavation.

The west end of the Bearskin Lake property, in the area of Bearskin Lake proper, has not been explored. A diamond drill hole, reportedly containing gold values, was drilled in the late 1980s, but the previous operators did not file the assessment work.

CROOKED GREEN CREEK MINE PROPERTY

The Crooked Green Creek Mine property is located in the central portion of Pifher Township, approximately 22 km northeast of Beardmore. The property is accessible by travelling along Highway 801 (Paint Lake Road) for 25.7 km north from Highway 11 to the “mine road”, then by proceeding a further 3.2 km southwest to the old headframe at the main No. 1 vein. In 1997, the present owner, Spruce Ridge Resources Ltd., assembled a package of 30 claims, totalling 108 units, including both staked and leased claims. Following this, a joint venture (i.e. earn-in) agreement was signed with Columbia Metals Corporation Limited. During the 1997 field season, operator Spruce Ridge Resources conducted a detailed exploration program over a 38 km grid. Ground magnetometer, VLF-EM and induced polarization (IP) geophysical surveys were completed, in addition to a soil geochemical survey and extensive stripping which was primarily focussed on the No. 1, No. 2 vein, and No. 2 vein systems. Further stripping and diamond drilling are planned for 1998.

The property has a history of exploration dating back to 1946, when the high grade No. 1 gold-bearing vein was discovered and staked by N. Smith. Several parties conducted stripping, trenching and diamond drilling through the 1960s. Crooked Green Creek Mine Limited sank a small, inclined shaft on the No. 1 vein in 1967. In 1981, Northern Concentrators Limited was formed and through joint venture agreements involving Great Western Petroleum Corporation, Anglo-Canadian Mining Corporation and Hillsborough Exploration Limited (known as the Thunder Bay Joint Venture), a total of 1655 tons of gold ore was mined from the No. 1 and No. 2 vein zones. Milling of the ore was conducted both at the Northern Concentrators Limited’s Thunder Bay mill and at Teck Corporation’s custom mill facility in Beardmore (on the former Northern Empire Mine property currently held by Roxmark Mines Limited) from 1981-85. Grades from the No. 1 vein material ranged from 0.19 to 0.43 ounce per ton gold and averaged 0.42 ounce per ton gold from the No. 2 vein. Partners Sweaney Gold Corporation and Parklane Technologies Inc. conducted a mapping and diamond-drill program on the No. 2 vein zone, as well as other geological and structural targets in 1988. In 1997, Spruce Ridge Resources Ltd. optioned the property and staked additional ground surrounding the key claims.

The Crooked Green Creek property is situated in the southwest portion of the Onaman-Tashota metavolcanic belt. Locally, much of the area is underlain by a series of alternating layers of mafic and felsic metavolcanic rocks. Units of feldspar porphyry, occurring both as sill-like bodies and irregular dikes, are found in close proximity to mineralized quartz vein material. Gold occurs in blue-gray quartz-chalcopyrite-pyrrhotite veins (visible gold is prominent in some veins). In addition to the No. 1 vein, previous work has located gold mineralization in the No. 2, 2A and 2B veins, and the No. 3, 4 and 5 veins (Bowdidge 1997). Stripping in 1997 by Spruce Ridge Resources Ltd. also uncovered at least four, previously unknown, gold-bearing veins.

As mentioned, a large portion of a major stripping program conducted by the company was concentrated along a 100-foot by 400-foot area covering the western extension of the No. 1 vein, down to the No. 4 vein at the edge of Chellev Lake. The area surrounding the No. 2 vein open cut was also uncovered by stripping and has been exposed at intervals over a length of 600 feet.

The following excerpts from Bowdidge (1997) of Spruce Ridge Resources Ltd. describes the detailed geology, structure and mineralization of the exposed zones:

The alternating bands of mafic and felsic volcanics strike north-south and dip east at about 30°. There is abundant small- and medium-scale folding about east-west, steeply dipping axial planes with east-plunging (also at 30°) axes.

Small-scale faults are evident in many stripped areas.

Fracturing in an east-west direction is very common. They are commonly filled with quartz seams and stringers, or have been mineralized with sulphide minerals.

The sulphide-impregnated fractures appear to be earlier than the conjugate fault set, which offsets them. The quartz veins appear in general to be later than the conjugate fault set.

The stress pattern that emerges from this brief and probably simplistic analysis is one of alternating compression and extension along a more or less north-south line. The blue quartz veins that host the gold mineralization appear to have been emplaced during the last extensional phase.

The stripping activities, in combination with a re-examination of the No. 2 vein pit, has revealed that there are two main sets of quartz veins. These carry different amounts of gold in different areas and different geological situations.

There are "Flat Veins", which conform to the primary layering of the host rocks (i.e. striking north-south and dipping at 30° to the east), and generally occur at the lithological contacts in the volcanic pile. The Nos. 2, 2A, 2B, and 3B veins all occur at the top of mafic units where they are overlain by rocks of the mixed felsic unit.

The second set of veins ("Steep Veins") strike east-west and dip steeply (50° or more), usually to the south. The No. 1 vein is of this type, as are the numerous small veins and stringers connecting to the 1C, 1D and 1E veins.

Host rock lithology plays a crucial role in vein development. The mafic volcanics seem to have fractured most readily. The feldspar porphyry and the massive felsic lavas have sustained a lesser amount of fracturing, and the mixed felsic unit seems to have been remarkably resistant to fracturing.

A summary of significant gold assay results from sampling of stripped areas completed by the company in 1997 over four key zones is given below.

<u>Location</u>	<u>Grab Sample (oz/ton Au)</u>	<u>Channel Sample (oz/ton Au)</u>
No. 1 vein (west extension)	0.660	0.436/4.5ft.
No. 2 vein	1.643	2.200/2.0 ft.
No. 3 vein	6.40	2.065/2.3 ft.
No. 4 vein	--	0.491/1.7 ft.

ENGLISH BAY PROPERTY – OLYMPIC DAM TYPE TARGET

The English Bay property is located on the west shore of Lake Nipigon, approximately 165 km north-northeast of Thunder Bay. The property was staked in September 1997 and consists of 5 claims (80 claim units), TB 1231615-TB 1231619, located immediately south of English Bay. Access is by boat from Gull Bay, by charter boat from Beardmore, or by fixed-wing aircraft from Armstrong or Thunder Bay. Property owners are R. Dean of Burlington and P. Kathmann of Geraldton. At the time of writing, the property is available for option.

There is no record of previous mineral exploration on English Bay in Lake Nipigon. In 1997, R.J. Dean, under an OPAP grant, completed prospecting, geological mapping, soil geochemical sampling, stream sediment sampling and lithochemical sampling. Ninety stream and soil samples were submitted for 38-element ICAP package and 12 rock samples were assayed for Cu, Ag, Au and U.

Dean (1997) described the geology:

The Nipigon Embayment consist of a sequence of Mesoproterozoic pre-Keweenaw sedimentary rocks of the Sibley Group and the Keweenaw Nipigon diabase sills. Overlying the Archean Superior Province they form a broad basinal structure extending north of Lake Superior for 160km. The OGS has mapped a fluorite-bearing subvolcanic porphyry to granite inclusion centered on English Bay Lake Nipigon. They suggest that an arcuate reverse fault along the east shore of northern Lake Nipigon provides evidence for a caldera structure which may be associated with the emplacement of the English Bay Granite and associated rocks. The quartz-feldspar-porphyry and granite locally contain numerous inclusions of felsite, porphyry, pumice fragments and it is considered to be a center of felsic volcanism.

Volcanic fragmental rocks (dacite to rhyolite) associated with the granite intrusion on English Bay include debris flow, welded tuff, and tuff-breccia. They are sparsely preserved beneath the diabase sills as are sedimentary rocks consisting of mainly quartz arenite with minor conglomerate that contains clasts of porphyry and felsite in a quartz arenite matrix. The 1.54 billion-year-old anorogenic (A-type) English Bay Granite exposed in northwestern Lake Nipigon contains moderately to strongly hematized and sericitized orthoclase with quartz, chloritized biotite, [zircon] and fluorite. The granite on English Bay has elevated levels of zirconium, yttrium and rare earth elements (OGS).

Minor pyrite has been observed to be disseminated in the quartz-feldspar porphyry. Sericite and hematite alteration were noted in R.J. Dean's 1997 OPAP final submission. Anomalous geochemical values were obtained for the following elements: silver, arsenic, barium, bismuth, cerium, cobalt, chromium, copper, iron, gallium, potassium, lanthanum, lithium, magnesium, antimony, strontium, thorium, titanium, vanadium, yttrium and zinc, according to Dean (1997). A positive copper-bismuth metal association is present at one sample point. Elevated potassium, thorium and uranium were documented by the Geological Survey of Canada in a radiometric geophysical survey at the English Bay property. Based on these findings, the property owners are proposing a detailed exploration program in 1998 including line cutting and geological, geochemical and geophysical surveys. The geology, geochronology, geophysics and geochemistry of the English Bay property suggest mineral deposit similarities to the Olympic Dam copper-uranium-gold-silver deposit in Australia.

Dean (1997) has described the Olympic Dam deposit:

The Olympic Dam copper-uranium-gold-silver deposit in South Australia contains over 2000 million metric tons of mineralized hematite breccias which occur as steeply dipping, dike like bodies within a fractured 1.59 billion year old granite. The middle Proterozoic basement (potassium feldspar granite) which hosts the deposit in a graben is overlain unconformably by about 350m of younger Adelaidean (late Proterozoic) and Cambrian sedimentary rocks (dolomitic shales, quartzites and dolomitic limestone). Mineralization zones range from steeply dipping, discontinuous veins less than 1m thick, through moderately dipping lenses 30m to 50m thick with strike and dip dimensions in the order of hundreds of meters, to flat-lying zones over 200m thick with areal extents of hundreds of thousands of square meters. Copper mineralization is found in stratabound and transgressive zones with higher grades in massive hematite bodies and breccias. Uranium mineralization is closely associated with copper zones but locally uranium-rich, copper-poor zones do occur. Significant gold mineralization occurs in intensely quartz-sericite altered zones which are spatially separate from copper-uranium mineralization.

Lavigne and Scott (1995) and Rogers (1995) first proposed the Olympic Dam model for the English Bay porphyry, a unique intrusion dated at 1.54 Ba, as illustrated on the Bedrock Geology of Ontario (1991).

HOUGHTON-CLARKE ELMHIRST PROPERTY

The main portion of the Houghton-Clarke Elmhirst property is located approximately 25 km northeast of Beardmore, in south-central Elmhirst Township. The property consists of 72 contiguous claims in 10 blocks, aligned along a southerly trend. It is currently held by Beardmore prospectors F. Houghton and L. Clarke and was optioned in 1997 by ADR Explorations Ltd. of Toronto. Work to this point was conducted with financial assistance of 1997 OPAP grants. Access to the main occurrences is via Highway 11, travelling 23 km east to Highway 801 (the Paint Lake Road), then north for 11.5 km to the Paint Lake haul road. The centre portion of the claim group is located roughly 4 km northeast along this road.

The area containing the Houghton-Clarke property, which is underlain by granodioritic rocks, has seen very little exploration activity compared to the surrounding metavolcanic terrain. An exception is the Oliver Severn occurrence to the east, a highly mineralized (i.e. pyrite, chalcopyrite), gold-bearing vein system within an altered metavolcanic xenolith. The Oliver Severn property was first trenched and diamond drilled in 1935 by Oliver Severn Gold Mines Limited. From 1989-90, Noranda Exploration Co. Ltd. conducted an extensive exploration program over the same occurrence, which involved detailed geological mapping, stripping, rock sampling, and several geophysical surveys.

Outside the northeast boundary of the Houghton-Clarke property and within the metavolcanic sequence, several groups conducted extensive work over what is known as the Milestone-Kengate option, from 1971 to 1980. Carling Copper Mines Limited completed extensive geological mapping and sampling, 2 geophysical surveys, and 31 diamond-drill holes over several copper-zinc-gold occurrences on the property. In 1987 and 1988, E. Maruska explored what was the known as the Coyle Lake property, which covered the north and northwest portions of the current Houghton-Clarke claim group. Airborne magnetic and VLF-EM geophysical surveys, geological mapping, stripping and trenching were conducted. The current Houghton-Clarke property was staked in 1995, with extensive prospecting and sampling conducted until its option in 1997.

The centre portion of the Coyle Lake granodiorite stock underlies the entire Houghton-Clarke ground. This is one of three late Archean intrusive bodies occupying the surrounding townships, which are located in the extreme southern part of the Onaman-Tashota metavolcanic belt. Intermediate to felsic metavolcanic rocks dominate this area. The southern boundary of the property lies only 1.5 km north of the Paint Lake fault (Mackasey and Wallace 1978).

Much of the exploration work to date (1997) has occurred in an area west and northeast of a major northeast-trending break (named the Coyle Lake fault) which bisects the main, south-central portion of the claim group. It is this fault that hosts the Oliver Severn gold occurrence to the northeast of the property. Several less well-defined parallel and cross-cutting structures or shear zones have been discovered in the area during the course of the 1997 field season. In general, the granodiorite at these sites becomes finer grained, more highly sheared and more intensely quartz-veined, with prominent chlorite-sericite alteration and 1 to 2% disseminated pyrite. Specular hematite and fine-grained magnetite mineralization is also associated with some of these shear horizons. However, its importance with respect to gold mineralization has yet to be determined. The most significant of these zones, known as the "Clarke Shear", is located approximately 700 m northwest of the Coyle Lake fault and strikes 87°. The zone has been stripped for 50 m along strike and exposed over a width of 20 m. It consists of two 5 m wide, highly sheared sections to the north and south enclosing a less altered core of fine- to medium-grained granodiorite. The north and south portions are highly schistose, quartz-veined and mineralized with 1 to 3% pyrite and minor chalcopyrite. The entire zone lies along the west boundary of a 60 m wide, north-trending, late diabase dike. Grab and 35 cm channel samples assayed up to 0.25 and 0.30 ounce per ton gold respectively (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay). A well-defined, coincident VLF-EM and magnetometer anomaly was detected during a late season survey at the Clarke Shear. Further work is warranted.

Two, additional, gold-bearing shear zones were uncovered during the course of the field season. The Stump and Main Vein zones are located approximately 300 m northwest of the Coyle Lake fault and northeast of the Clarke shear. Separated by 350 m and striking along a northeast trend, they range up to 6 m wide and are characterized by silica flooded, carbonate altered granodiorite containing less than 1 to 2% disseminated pyrite and minor chalcopyrite. Grab samples collected at the Stump zone assayed up to 0.03 ounce per ton gold. A 40 cm channel sample from the Main Vein zone assayed 0.2 ounce per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay).

A fourth area of interest and one of the first showings uncovered on the property is the Pond occurrence. Located roughly 1.0 km southwest of the Clarke shear, it is a north-trending, sheared quartz vein system containing 1 to 2% disseminated pyrite. Grab samples yielded assays from 0.18 to 0.40 ounce per ton gold. A 1 m channel sample assayed 0.12 ounce per ton gold. Approximately 100 m southeast of the Pond showing, a highly angular piece of float, 50 cm in diameter, was discovered. Several grab samples consistently assayed approximately 0.11 ounce per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay). The float consists of highly sheared, quartz-veined granodiorite, but is of different character than the rocks of the Pond showing. As a result, the source bedrock for this material has yet to be located.

The high degree of outcrop exposure, resulting from recent logging operations, in addition to several strong geophysical anomalies detected by ADR Explorations Ltd. during a late 1997 survey, greatly enhance the potential of the property. The most interesting anomaly is a set of parallel conductors with coincident, strong, VLF-EM and magnetometer signatures that trace the Coyle Lake fault for approximately 700 m in the east-central portion of the property. This should be a first priority for the 1998 exploration field season.

KOCH-DANEFF OCCURRENCE

The Koch-Daneff occurrence is located in the northwest corner of Lapierre Township. The property is reached by travelling 8 km east of Jellicoe on Highway 11 and north for 19.2 km along the

Kinghorn Road to an access point on Atigogama Lake. Proceed north from this point, via a bulldozer trail, to the first ridge. In late 1997, Beardmore prospectors M. Nelson and L. Holt undertook a limited program of stripping, trenching and sampling. Since its initial discovery and subsequent work conducted by Smelter Gold Mines in 1935, which included stripping, trenching and diamond drilling, little or no activity has taken place on the property. This follows underground development and production on the adjoining Rickaby Township Dik Dik Mine group from 1934–36. This production involved the extraction of approximately 2500 ounces of gold and 1500 ounces of silver at an average grade of 0.70 ounce per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay). A 10.5 m (35-foot) shaft was sunk on the Koch-Daneff vein, which appears to be the southeast extension of the main Dik Dik vein.

The Koch-Daneff property is underlain by intermediate to felsic metavolcanic rocks of the southern Onaman-Tashota belt. The Kaby Lake granodioritic stock is located roughly 100 m northwest of the shaft, where the Koch-Daneff vein (Dik Dik extension) crosses the contact zone. Historical data (The News Chronicle, February to March 1935) suggesting the existence of 3 vein systems has been confirmed in ground work conducted in 1997 by the property owners.

According to old reports in the Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay, the Koch-Daneff vein (Dik Dik extension) or Shaft vein strikes at approximately 140° , with a near vertical dip. Work in 1935 indicated a width of 1.5 to 2.4 m (5 to 8 feet) of "quartz and mineralized schist" in the shaft area, which averaged 0.30 ounce per ton gold. Three 1935 diamond-drill holes cut 1.8 m (6-foot) sections of the same material at a vertical depth of approximately 58 m (190 feet). The old reports also mention the presence of visible gold in "liberal amounts", a 1-inch seam of electrum and associated sulphide minerals consistent with high-grade ore from the Dik Dik Mine. Two high-grade samples taken during this period assayed 6.22 and 18.16 ounces per ton gold. A grab sample collected at the shaft by Resident Geologist's staff in 1992 assayed 0.79 ounce per ton gold. It was described as grey, recrystallized quartz vein material and sheared metavolcanic host rock containing 3 to 5% pyrite and chalcopyrite. Additional sulphide minerals noted to occur within this vein system on the Dik Dik ground include pyrrhotite, sphalerite and galena. Stripping in 1997 exposed this zone for 15 m. Initial grab samples collected along this trend by the owners range in assay from 0.17 to 6.88 ounces per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay).

In term of historical records, of greater significance is a parallel vein system, located approximately 70 m northeast of the shaft, known as the "New Vein". Two 1935 drill holes completed by Smelter Gold Mines intersected 7.0 m (23 feet) of what is presumably sheared host and vein material, of which 3.5 m (11.5 feet) averaged 0.46 ounce per ton gold. Limited surface work late in 1997 exposed the vein for 10 m along strike. Grab sample assays ranged from 0.03 to 0.11 ounce per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay).

A third vein, known as the Aker vein, lies between the Koch-Daneff and New Vein systems on a northerly trend. Historical reports from 1935 indicate that the Aker vein was traced for 37.5 m (125 feet), with widths ranging from 10 cm (4 inches) to 1.2 m (4 feet). Visible gold was reported and 3 samples were said to average 2.80 ounces per ton gold. Prospecting by the property owners in 1997 indicated that this vein was widest, from 1.2 to 1.5 m, where it appeared to intersect the New Vein. Grab samples assayed from 0.15 to 0.35 ounce per ton gold (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay).

The potential significance of the Koch-Daneff occurrence is demonstrated by the existence of 3 known, gold-bearing vein systems over a 60 to 70 m width. The most impressive is the 7.0 m wide (true width) diamond-drill intersection on the New Vein system obtained by Smelter Gold Mines in 1935. This historic target has yet to be tested and should be a priority target for the 1998 exploration season. It should also be noted that assay results from preliminary surface sampling in 1997 replicate, or are similar to those indicated in the historical reports (Resident Geologist's Files, Thunder Bay North (Beardmore-Geraldton) District, Thunder Bay).

Recommendations for Exploration

The Brookbank deformation zone, Barton Bay lithotectonic zone (Bankfield-Tombill fault) and Watson Lake fault represent tectonic targets that have potential to host significant gold mineralization. The deformation zones are ductile-brittle fault systems displaying alteration and mineral assemblages which include iron carbonate, silica, tourmaline, potassic feldspar, hematite, fuchsite, pyrite, arsenopyrite and pyrrhotite.

Recent gold discoveries in the Metcalfe-Knucklethumb Lake felsic metavolcanic sequence have enhanced the exploration potential of this area. East-trending deformation zones host auriferous, disseminated to massive pyrite-bearing porphyry units and visible gold in crack-seal vein systems. The same felsic metavolcanic package extends north and northeast from Oboshkegan Lake to Kowkash station on the C.N.R. mainline.

The northern portion of the Onaman-Tashota belt, the English River Subprovince and the eastern Uchi Subprovince will be accessed, over the next 10 years, by new logging roads constructed under the Nakina North and Ogoki Timber Management Agreements. Potential targets include:

1. The Attwood Lake and Melchett Lake metavolcanic-metasedimentary belts, which may be the same lithological assemblages (G. Stott, OGS, personal communication, 1997);
2. The Uchi Subprovince, which has produced over 17 million ounces of gold; for the first time, roads will access the eastern portion of the Uchi Subprovince, an area with a good geological and exploration database and
3. Within the eastern English River Subprovince, where little detailed mapping has been done, the opportunity for new gold, base metal and diamond discoveries in previously unrecognized metavolcanic rocks is significant.

Mining claims staked and worked in the mid- to late-1980s were converted from man-days to dollars in 1991, when the Ontario Mining Act was revised. Consequently, claims in these areas, which had not been worked since the 1980s, nonetheless remained in good standing. However, during the second half of 1997 and throughout 1998, many of these "old Mining Act" claims will lapse. Excellent precious and base metal properties may therefore become available for staking. Continual claim map and abstract research is necessary to identify such targets.

Table 5. Property visits conducted by the Thunder Bay North (Beardmore-Geraldton) District in 1997

Number (keyed to Figure 3)	Property/Occurrence
1	Bankfield Gold Mine (Roxmark Mines Limited): Au
2	Barton Bay Occurrence (Goldmint Explorations Ltd.): Au
3	Bearskin Lake (N. Cox, M. Nelson, L. Holt): Au
4	Brookbank Prospect (Metalore Resources Limited/Ontex Resources Ltd.): Au
5	Conlon Occurrence: Au
6	Consolidated Louanna Gold Mine (J. Shier): Au
7	Copper Jim Occurrence (A.E. Traverse): Au
8	Cote-Angle Lake Occurrence (Angle Lake Explorations Inc.): Au
9	Crooked Green Creek Mine (Spruce Ridge Resources Ltd./Columbia Metals Corp. Limited): Au
10	Discovery West Occurrence (Norvane Explorations Inc.): Au
11	Farley Island Occurrence: Au
12	Galena Occurrence (Tenajon Resources Corp.): Cu, Pb, Zn
13	Hard Rock Gold Mine (Cyprus Canada Inc./Lac Properties Inc.): Au
14	Houghton-Clarke Elmhirst Property (ADR Explorations Ltd.): Au
15	Hutchison Lake Mine (Royal Oak Mines Inc.): Au
16	J.J. Perry Occurrence (Tenajon Resources Corp.): Cu, Pb, Zn
17	Jelex Gold Mine (Roxmark Mines Limited/Cyprus Canada Inc.): Au
18	Knucklethumb Lake Gold Property (Cameco Gold Inc.): Au
19	Koch-Daneff Occurrence (L. Holt, M. Nelson): Au
20	Leitch Gold Mine (Teck Corporation): Au
21	Len Clarke Occurrence (K. Zygmunt): Au
22	Long Lake Aggregates Property (Long Lake Aggregates/Barino Construction): Granite
23	MacLeod-Cockshutt Gold Mine (Cyprus Canada Inc./Lac Properties Inc.): Au
24	Miner Lake Occurrence (R. Cote): Au
25	Missing Link Extension Occurrence (M. Nelson): Au
26	Missing Link Occurrence (N. Cox): Au
27	Nordic Lake Occurrence (Norvane Explorations Inc.): Au
28	Northern Empire Mine (Roxmark Mines Limited): Au
29	Oliver Severn Occurrence (J. Parres): Au
30	Ovansull Occurrence (A.E. Traverse): Au
31	Speke Pt. Occurrence (H. Goodman): Au
32	Watson Lake Occurrence (C. Pettit): Au

At the time of writing, palladium prices have doubled from a January 1997 average price of approximately \$120 US per ounce to a January 1998 average price of \$240 US per ounce. Meanwhile, platinum prices have remained in the \$375 US per ounce range over the last 12 months. Copper-nickel-platinum-palladium-cobalt magmatic targets in Thunder Bay North should be assessed in light of these strong platinum and palladium prices. The Jacobus prospect, Juneau Lake prospect, Deeds Creek occurrence, Sim Lake occurrence, Norton Lake prospect and Lavoie Lake prospect host Cu-Ni mineral deposits with unknown platinum and palladium potential for many of these magmatic targets.

OGS Activities and Research by Others

G.M Stott and J.R. Parker completed year three of a multi-year program to map major portions of the Onaman-Tashota greenstone belt, with a mineral deposit and tectonic focus. The O'Sullivan Lake-Muriel Lake areas were mapped in 1997. D. Davis, Royal Ontario Museum, is processing samples for geochronology determinations in conjunction with the OGS mapping.

The GSC-OGS continued with a LITHOPROBE seismic-refraction/reflection program transecting the east Wabigoon Subprovince by means of Highway 801.

Table 6. Publications received by the Thunder Bay North (Beardmore-Geraldton) District Office in 1997.

Title	Author	Type and Year of Publication
Report of Activities 1996, Resident Geologists	Newsome, J. and Laderoute, D. (editors)	Ontario Geological Survey, Open File Report 5958 (1997), 465p.
Summary of Field Work and Other Activities	Ayer, J.A., Baker, C.L., Laderoute, D.G. and Thurston, P.C. (editors)	Ontario Geological Survey, Miscellaneous Paper 168 (1997), 149p.

Acknowledgements

C. Komar (Administrative Assistant) typed, formatted and proofread the report. D. Laderoute edited the manuscript. M. O'Brien assisted in the production of the AutoCAD™ figures. Prospectors and company personnel are thanked for these contributions.

Table 7. Mineral deposits not being mined in the Thunder Bay North (Beardmore–Geraldton) District in 1997.

Abbreviations					
AF	Assessment Files	MLS	Mining Lands, Sudbury		
CMH	Canadian Mines Handbook	MR	Mining Recorder		
GR	Geological Report	NM	The Northern Miner		
MDC	Mineral Deposit Circular	OFR	Open File Report		
MDIR	Mineral Deposit Inventory record	PC	Personal Communication		
Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Brookbank (42E12/NW)	Au	1.3 M t @ 0.26 opt Au	Metalore Resources Limited	CMH 1995-96, p.245	Reserves defined by diamond drilling 1983-88. Other gold zones diamond drilled 1994-95. Stripping 1996.
Goss Lake (52P9/SW)	Au	300 000 T @ 0.23 opt Au to 60 m depth	Ayrex Resources Ltd./Tandem Re- sources Ltd.	CMH 1995-96, p.50	Last active 1988.
Headway Coulee (42L4/SE)	Zn, Ag	250 000 T @ 4.44% Zn, 1.32 opt Ag	Goldbrook Explora- tions Inc.	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995. Geo- physics 1997.
Howells Lake (52P10/SW)	Au	83 000 T @ 0.07 opt Au (+1.37% antimony) and 660 000 T (+3.1% anti- mony) with erratic Au values	Homestake Canada Inc.	OFR 5926, p.68	Last active in 1988.
Jacobus (42E13/SE)	Cu, Ni, PGE	1 M T @ 0.94% Cu-Ni	NWT Copper Mines Limited	CMH 1995-96, p.275	Most recent work diamond drilling by SEG in 1993. De- posit open down plunge.
Juneau Lake (42L5/SW)	Ni, Cu	2.2 M T @ 0.87% Ni, 0.59% Cu	Brancote Res. Ltd.	OFR 5630, p.41	Acquired in 1996 – work planned.
Lavoie Lake (43D5/NE)	Cu, Ni	14.6 M T @ 0.58% Cu, 0.37% Ni	Tullaree Resources Ltd.	OFR 5926, p.101	Last active 1992. Mineral inventory defined by diamond drilling. Compila- tion 1995.
Lynx Canada (42L4/SE)	Cu, Ag	25 000 T @ 4.0% Cu, 300 000 T @ 2.0% Cu, 1.0 opt Ag	Goldbrook Explorations Inc.	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995.
MacLeod- Cockshutt Mine/Hardrock Mine(42E10/NW)	Au	400 000 ounces Au	Barrick Gold Corporation	MP 164, p.143	Diamond drilling 1996-97.
Magnet Consolidated Mine (42E11/NE)	Au	150 700 T @ 0.38 opt Au, 1 082 340 T @ 0.34 opt Au	Roxmark Mines Limited/Beaurox Mines	CMH 1995-96, p.330	U/G development in 1982-87.

Table 7. cont'd. Mineral deposits not being mined in the Thunder Bay North (Beardmore-Geraldton) District in 1997.

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Marshall Lake (42L5/NE)	Cu, Zn, Ag, Au	1.22 M T @ 3.2% Zn, 0.94% cu, 2.2 opt Ag	Avalon Ventures Ltd./Giant Gripp Mines	CMH 1995-96, p.275	Diamond drilling 1996-97.
Norton Lake (42M14/NW)	Ni, Cu	1.0 M T @ 0.72% Ni, 0.56% Cu		OFR 5926, p.136	Last active 1987.
Paulpic (42L4/NE)	Au	200 000 T @ 0.231 opt Au	Canada Tungsten Inc.	OFR 5630, p.465	Last active 1987.
Zulapa (42M12/SW)	Au	700 000 T @ 0.28 opt Au to 200 m deep	Eabametoong First Nation	OFR 5926, p.208	

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**Ontario Geological Survey
Resident Geologist's Program - 1997**

Sioux Lookout District

by

Glenn Seim and Christopher Bath

1998

Sioux Lookout District – 1997

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Introduction

During 1997, re-organization saw the new Sioux Lookout District office staffed by a District Geologist and a Geological Assistant. The Sioux Lookout District came under the supervision of the Thunder Bay North Regional Resident Geologist. The Patricia Mining Recorder's office was closed and amalgamated in Sudbury. A minimal level of Mining Lands service remains available in Sioux Lookout.

With respect to mining, 1997 witnessed the closure of the Barrick Gold Corp.'s Golden Patricia Mine after nearly a decade of production. Placer Dome North America Ltd and TVX Gold Inc. made their first pour of gold from the Musselwhite mine within days of the shutdown of the mill at Golden Patricia.

In terms of exploration, 1997 started with the focus almost solely on gold. With the collapse of gold prices through the year, prospectors started to focus on other commodities such as volcanogenic massive sulphides, copper-nickel-PGE and rare element pegmatite intrusions.

Mining Activity

Two milestones marked the year within the Sioux Lookout District. Placer Dome Inc. and TVX Gold Inc. brought the Musselwhite gold mine into production early in March after less than a year of construction. At about the same time, Barrick Gold Corp. ceased production at its Golden Patricia mine and started clean up and rehabilitation. Rehabilitation and removal of equipment continued at the Thierry mine site near Pickle Lake and in the Matabi camp north of Ignace.

PLACER DOME NORTH AMERICA LTD. / TVX GOLD INC. — MUSSELWHITE MINE

In early March, Placer Dome North America Ltd. and TVX Gold Inc. poured the first bar of gold from the Musselwhite gold deposits. Production was achieved a full month ahead of schedule and at, or under, the capital budget. Construction on the mine and mill complex started in March 1996 at an estimated capital cost of \$190 million U.S.

The Musselwhite mine is located about 126 km north of Pickle Lake. Access to the mine site is via an all-weather airstrip on site or a 43 km, all-weather, single lane, gravel road connecting the mine site to the northern extension of Highway 599. The mine employs about 235 persons working on a two-week in, two-week out rotating schedule. About 25% of the workforce is Aboriginal.

Gold at the Musselwhite mine occurs principally in a sulphidized (pyrrhotite), garnet-amphibole-chert-grunerite-magnetite iron formation. The major ore zones occur in shallow-plunging, antiformal fold closures of minor folds within a large, complex fold structure. Sulphidization and quartz-flooding occur along a well-developed axial planar cleavage in the fold hinges. Access to the ore is by means of a ramp and an open pit. In the future, a production shaft is being considered to hoist ore from the deeper levels of the mine. A second open pit to access other near-surface ore is also in the planning stages.

The mill is rated at 3300 tonnes per day and utilizes conventional crushing and grinding circuits feeding a carbon-in-pulp plant.

In 1997, the mine produced 153 145 ounces of gold (this includes 6634 ounces during the commissioning of the mill). This was extracted from 155 119 tonnes of open pit ore at an average grade of 3.98 g/t gold and 752 429 tonnes of underground ore at an average grade of 5.62 g/t gold. In total 907 549 tonnes were milled at a head grade of 5.34 g/t gold. Recovery was 94.10%.

Mine site exploration continues through the year and added to the reserves and resources. At year end, 1997, proven and probable ore reserves were 10 241 000 tonnes at 5.65 g/t gold. (Dan Gagnon, Chief Geologist Musselwhite Mine, Placer Dome North America Ltd., written communication, January 1998).

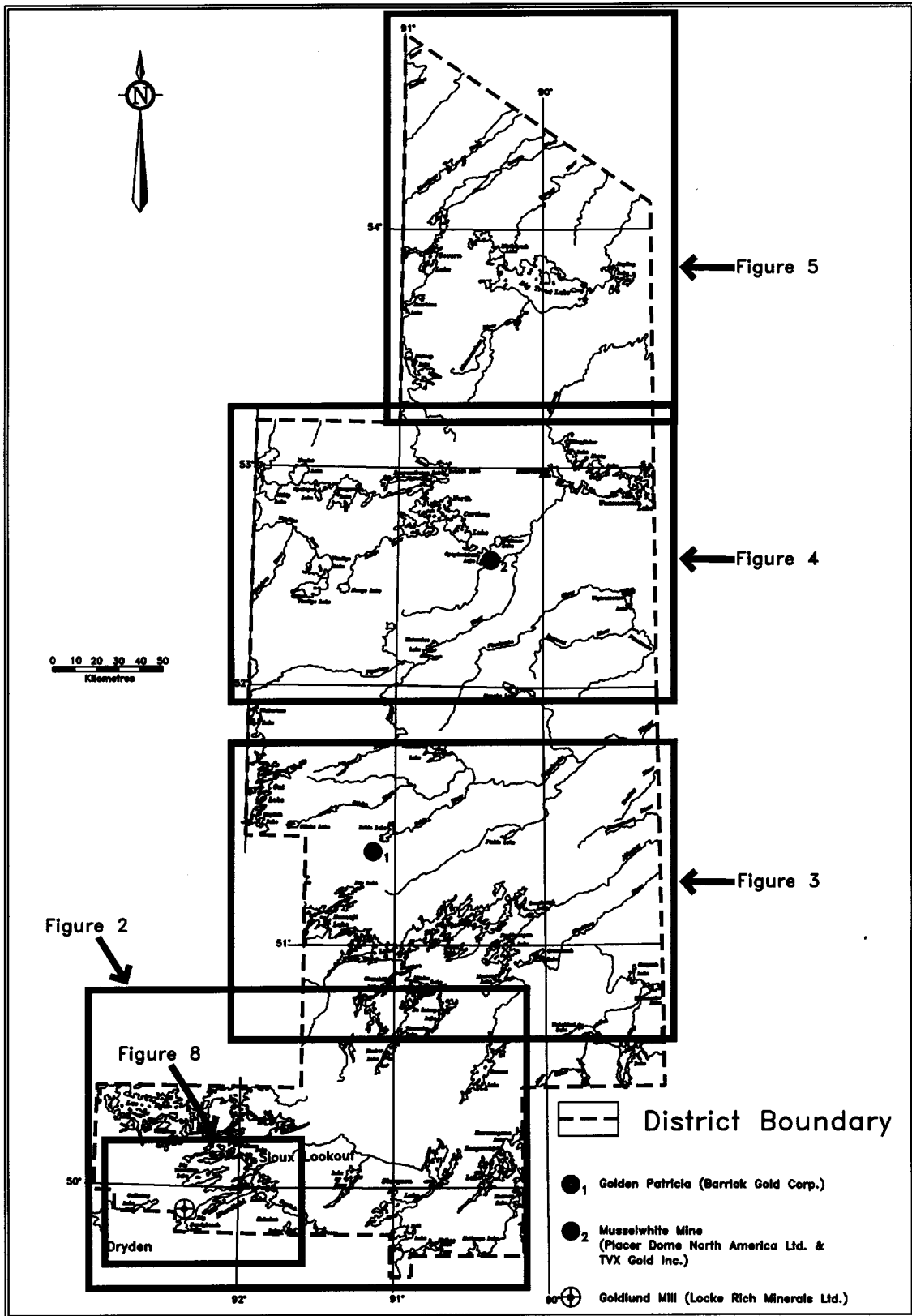


Figure 1. Producing mines, advanced exploration, mills, and location maps for the Sioux Lookout District.

Table 1. Mine production and reserves in the Sioux Lookout District.

Mine	Production to end of 1996		Production in 1997		Reserves at end of 1997	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Golden Patricia Mine	1 186 950 t @ 16.59 g/t Au	607 368 oz. Au	29 215 t @ 12.06 g/t Au*	12 428 oz.	Depleted	N/A
Musselwhite Mine	0	0	907 549 t @ 5.34 g/t Au	153 145 oz.	10 241 000	5.65

* estimated from 1997 total commodity and 1996 production grade.

BARRICK GOLD CORP. — GOLDEN PATRICIA MINE

Production at Barrick Gold Corp.'s Golden Patricia mine ceased in early March 1996 due to exhaustion of the ore reserves. This mine was located 70 km southwest of Pickle Lake, immediately to the north of Muskegsagagen Lake (Figure 5.1). The ore body was a 0.3 m thick quartz vein, which was traced for several kilometers. The mine was serviced by two declines located about 1 km apart and a 490 m production shaft. The deepest working level was about 750 m below surface. A shrinkage stoping method was used to mine the quartz vein. Stope widths were between 0.8 m and 1.3 m.

The mine site is accessed year-round by air using a private strip, and by a temporary road in winter. About 175 people were employed on a rotating basis at the mine site. The mill used conventional grinding, gravity separation and cyanidation, followed by zinc precipitation to recover gold. During 1997, the mine produced 12 428 ounces of gold with some additional amount recovered during clean-up. (Brian Grebenc, Barrick Gold Corp., personal communication, 1997).

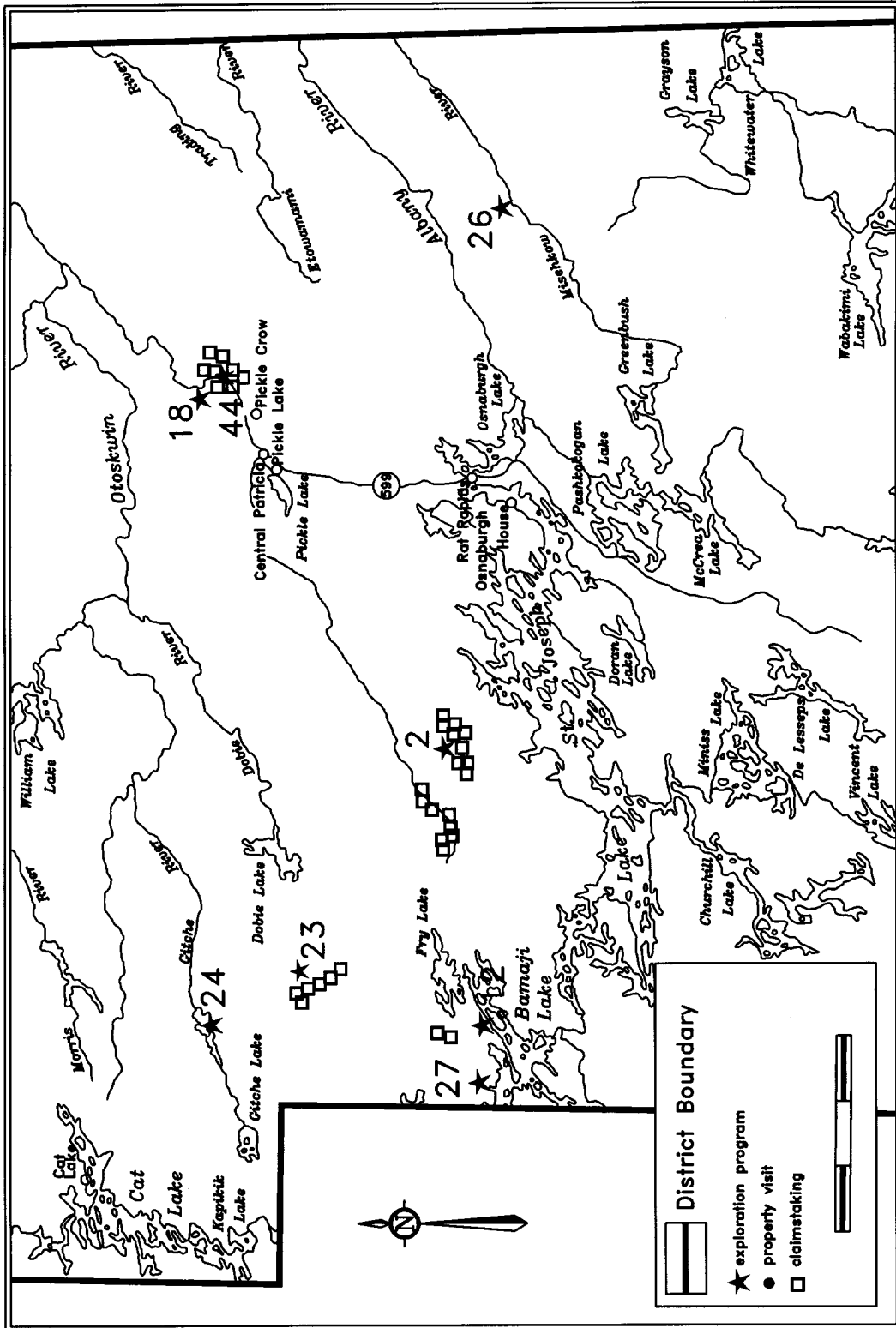


Figure 3. Exploration activity, staking and property visits in the Uchi subprovince, Sioux Lookout District.

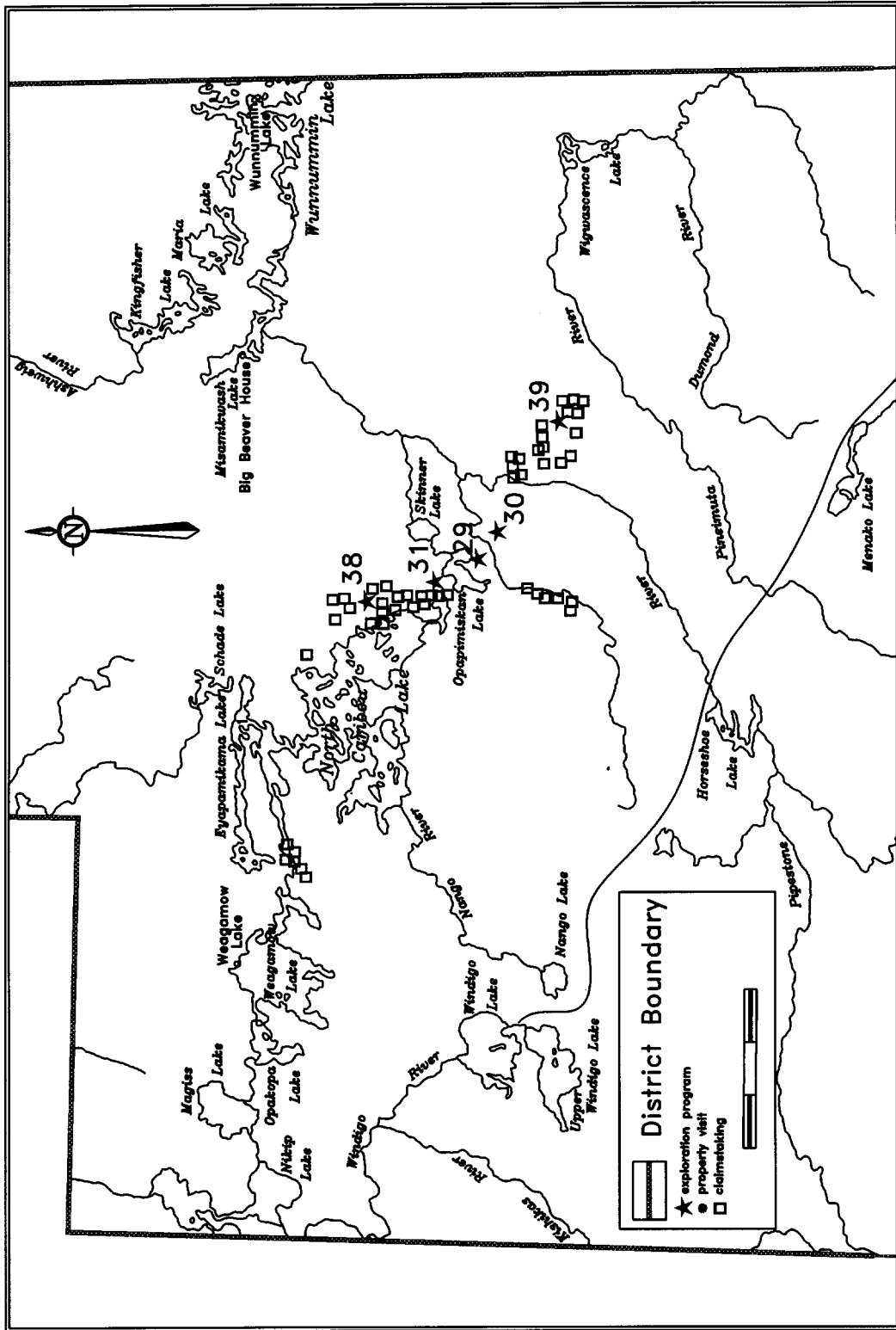


Figure 4. Exploration activity, staking and property visits in the Sachigo subprovince (southern part), Sioux Lookout District

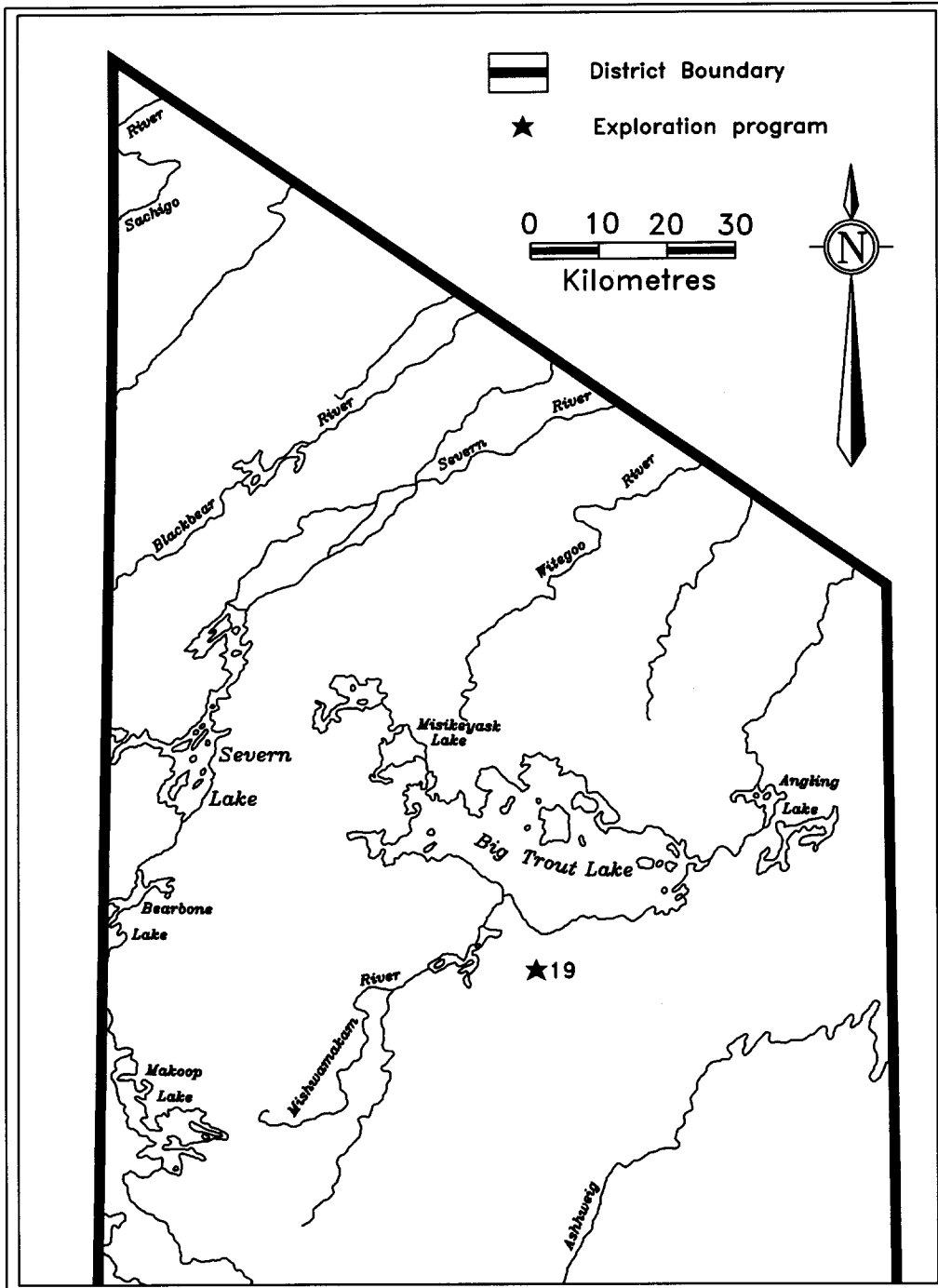


Figure 5. Exploration activity, staking and property visits in the Sachigo subprovince (northern part), Sioux Lookout District.

Exploration Activity

There were 44 exploration programs in the Sioux Lookout District in 1997. This is a slight increase from the 41 reported in 1996. The activity of junior mining companies and prospectors in the district increased over 1996 levels, while the major mining companies appear to have been somewhat less active in terms of the number of active programs (Figure 6). This does not, however, necessarily reflect the proportion of dollars spent on the respective exploration programs. Placer Dome North America Ltd. alone drilled more than 10 000 m on property around the Musselwhite mine.

Gold was the commodity of choice in the Sioux Lookout district in 1997, accounting for 86% of the exploration programs (Figure 7). Programs aimed at discovering base metal deposits accounted for 9% (this includes 2% of projects targeted at platinum group elements (PGE) and base metals) of the activity. There were two prospecting programs aimed at locating rare element pegmatite deposits.

At the end of 1997, there were 11 102 claims active in the Sioux Lookout District. During 1997, there were 3245 claim units cancelled and 3474 claim units staked (the Sioux Lookout District office compiled these statistics). These numbers indicate that while there were 37% more claim units cancelled during 1997 when compared to 1996, there was also a 76% increase in the number of claim units staked.

Significant exploration programs are discussed in the text.

PLACER DOME NORTH AMERICA LTD.

Placer Dome North America Ltd. concentrated its exploration work in the Musselwhite area during 1997. A total of 67 diamond-drill holes totalling 7891.27 m were completed on the mine property itself, in an effort to outline additional mineralization. On the adjoining Karl-Zeemel option to the southeast, 7 diamond-drillholes totalling 1118 m were completed. To the north of the mine, on the Opapimiskan Lake option, line cutting, a magnetometer survey and 10 diamond-drill holes totalling 1436 m were completed.

ROMIOS GOLD RESOURCES INC.

Romios Gold Resources Inc. discovered a new gold occurrence on their Lundmark-Akow lakes property located 18 km northwest of the Musselwhite mine. The gold occurrence is contained within a "deformation zone" with an average exposed width of 13.75 m. According to a Romios press release, the deformation zone consists of "sheared and altered mafic volcanic flows and tuffs liberally intruded by a series of narrow, sill-like, quartz-feldspar porphyry intrusives. The zone is characterized by abundant, sulphide-bearing quartz veins and stringers with which the gold appears to be associated" (Romios Gold Resources Inc., Press Release, Nov. 24, 1997). Three outcrop areas along the known length of the deformation zone were sampled. At the most southerly exposure, assay values ranged from 12.26 g/t Au to a high of 1323.81 g/t Au. An arithmetic average of 14 samples analyzed is 402.85 g/t Au. Twenty-five meters to the north, notable assay values are indicated to range between 11.21 g/t Au and 71.55 g/t Au. Still further north, where the zone disappears under a swamp, assay values have ranged from 7.57 g/t Au to a high of 30.14 g/t Au (Romios Gold Resources Inc., Press Release, Nov. 24, 1997). At the end of the year, the company was mobilizing to start a 20-hole diamond-drilling program early in January 1998.

Romios also did considerable staking throughout the North Caribou Lake greenstone belt and completed programs involving line cutting, prospecting, and magnetometer and horizontal loop electromagnetic surveys on some of the properties.

Table 2. Exploration activity in the Sioux Lookout District in 1997.

Abbreviations			
AEM	Airborne electromagnetic survey	Lc	Linecutting
AM	Airborne magnetic survey	Met	Metallurgical testing
ARA	Airborne radiometric survey	OD	Overburden drilling
Beep	Beep Mat survey	ODH	Overburden drill hole(s)
Bulk	Bulk sampling	OMIP	Ontario Mineral Incentive Program
DD	Diamond drilling	OPAP	Ontario Prospectors Assistance Program
DDH	Diamond drill hole(s)	PEM	Pulse electromagnetic survey
DGP	Down-hole geophysics	PGM	Platinum group metals
GC	Geochemical survey	Pr	Prospecting
GEM	Ground electromagnetic survey	RES	Resistivity survey
GL	Geological Survey	Samp	Sampling (other than bulk)
GM	Ground magnetic survey	Seismic	Seismic survey
GRA	Ground radiometric survey	SP	Self-potential survey
Grav	Gravity survey	Str	Stripping
HLEM	Horizontal loop electromagnetic survey	Tr	Trenching
HM	Heavy mineral sampling	UG	Underground exploration/development
IM	Industrial mineral testing and marketing	VLEM	Vertical loop electromagnetic survey
IP	Induced polarization survey	VLFEM	Very low frequency electromagnetic survey

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	Richard Angove (Stillar Bay)	McGillis Tp. Au	Pros.
2	E.W. Bazinet, Gulfstream Trading Ltd.	Duffel Lake (Au)	Pros. VLFEM, GM
3	Wayne Bellinger and the Stares Bros. (Savant Lake, Shoal occurrence)	Poisson Tp. McGillis Tp., (Au)	Pros, Samp
4	Allan Best (Bucke{Bucksaw's} occurrence)	Beckington Lake (Au)	Pros
5	Allan Best (Northern Lights occurrence)	Beckington Lake (Au)	Pros
6	Allan Best (Davidson Carr occurrence)	Beckington Lake (Au)	Pros
7	Allan Best (McGee Lake)	Squaw Lake (Au)	Pros
8	James Bond II and Sherridon Johnson (Wedge occurrence, Pickerel Arm Porphyry)	Kabik Lake and Pickerel Tp., Parnes Lake (Au)	Pros, Str, Samp
9	James Bond II and Sherridon Johnson (Conecho Claims, High Grade occurrence)	Parnes Lake, Drayton Tp. (Au)	Pros, Str, Samp
10	James Bond II and Sherridon Johnson (Central Patricia occurrence)	Drayton Tp. (Au)	Pros, Samp
11	Dan Brown and Terry Darling (Misfit Lake occurrence)	Kabik Lake and Pickerel Tp. (Au)	Pros, Str, Samp, GC
12	Don Brown (Fry Lake gold occurrences)	Fry Lake (Au)	Pros, GL, Str, Tr, Beep Mat
13	Colin Bowdidge, Nolan Cox (Fairchild Minerals Ltd., Armit Lake)	Armit Lake (Au, BM)	Pros, Samp
14	Cameco Gold Inc. (Clamshell Lake)	Sharron Lake (Au)	Pros, Str, Samp, GL, LC, IP
15	Champion Bear Resources Ltd.	McAree Tp., Kabik Lake and Pickerel Tp. (Au)	Pros.,GL

Table 2. cont'd. Exploration activity in the Sioux Lookout District in 1997.

No	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
16	Cecil Cranton (Hackett Lake/Northern Canada occurrence)	Jutten Tp. (Au)	Pros, Samp
17	Alex Glatz	Echo Tp. (Au)	Pros.
18	Homestake Canada Inc. (Best Option)	Tarp Lake (Au)	2 DDH (447.0 m)
19	International Precious Metals Corporation (Big Trout Lake)	Beardy Creek, Nemiegusabins Lake (PGE, BM)	Lc, HLEM
20	Alexander Kozowy (Gullwing Gold)	Drope Tp. Webb Tp. (Au)	Pros, Tr, Str, Samp
21	Alexander Kozowy (Tot Lake)	Webb Tp. (Rare element pegmatite)	Pros
22	Alexander Kozowy (Drope Tp.)	Drope Tp. (Rare element pegmatite)	
23	Major General Resources Ltd. (Dorothy Lake Property)	Meen Lake (Au)	55 km Lc, 55 km GM, 42.25 km IP
24	McVicar Minerals Ltd.	McVicar Lake , Stoughton Lake (Au)	DD
25	Noranda Mining and Exploration Inc. (Sturgeon Lake Camp)	Valora Lake, Bell Lake (Au)	Seismic, GM, GEM
26	Northern Dynasty Minerals Ltd. (Mishkowi River)	Achapi Lake (Au)	AM, AEM, AVLFEM
27	Orezone Resources Inc, (Slate Falls Option)	Wesleyan Lake, Fry Lake (Au)	AM, AEM, Pros, Samp, Geol, Tr.
28	Placer Dome North America Ltd. (Black Lake)	Sharron Lake, Zarn Lake, Drayton Tp. (Au)	Lc, GM,
29	Placer Dome North America Ltd. (Musselwhite)	Skinner Lake, Zeemel Lake (Au)	67 DDH (7891.27 m) plus U/G drilling
30	Placer Dome North America Ltd. (Karl Zeemel)	Zeemel Lake, Karl Lake (Au)	7 DDH (1118 m)
31	Placer Dome North America Ltd. (Opapimiskan North)	Zeemel Lake, Skinner Lake, Akow Lake (Au)	10DDH (1436 m), Lc, GM
32	Prospectors Alliance Corp.	Conant Tp. (BM)	DD, Lc, GM, HLEM, Gravity, Pros, Samp
33	Raymond Ramsay, G.M. Hogg and Associates	Armit Lake (Au)	Tr, Samp
34	Redbird Gold Corp. (King Bay)	Fourbay Lake (Au)	DD, IP, 6DDH (711 m +)
35	Redbird Gold Corp. (Best/Armstrong {King Bay North})	Fourbay Lake (Au)	Tr. Samp, 3 DDH (240 m)
36	Joe Riives	McAree Tp. (Au)	Pros.
37	Edward Roberecki	Squaw Lake (Au)	Pros
38	Romios Gold Resources Ltd.	Akow Lake, North Caribou Lake (Au)	Lc, GM, HLEM, Pros, Tr, Samp
39	Romios Gold Resources Ltd.	Neawagank Lake (Au)	Lc, GM, HLEM,
40	Steven and Michael Stares, Ken Fenwick (Vermilion Lake)	Lomond Tp. Vermilion Tp., Jordan Tp., (Au)	Pros, Samp
41	Stuarton Resources Ltd.	McIlraith Tp. Webb Tp., Lomond Tp (BM)	Pros, GC
42	Tri Origin Exploration Ltd.	McAree Tp. , Echo Tp, Kabik Lake and Pickerel Tp. (Au)	GL, GC, Tr, Samp
43	Mike Woitowicz and Alex Glatz, (Gullwing Lake)	Webb Tp. (Au)	Pros, Beep Mat
44	Wolfden Resources Ltd,	Tarp Lake (Au)	200 km Lc, 200 km GM

MAJOR GENERAL RESOURCES LTD.

Major General Resources Ltd. completed a program of line cutting, magnetometer survey, dipole-dipole IP survey and claim staking on and near their Dorothy Lake property. The magnetometer survey outlined 4 linear magnetic highs. The first of these correlates well with the known gold mineralization in the Main and West zones of the Dorothy Lake deposit. The Main and West zones are related to iron formations and faulting proximal to the footwall of a northwest-trending, northeast-dipping diorite sill. A second magnetic high is 200 to 400 m south of the first and is parallel to it. The second magnetic high may represent the folded limb of the diorite sill indicated by regional mapping. The 2 other magnetic highs can be correlated with HLEM anomalies and mapped mafic intrusive bodies.

The IP survey results indicate intense chargeability and low to moderate resistivity anomalies associated with the known zones of gold mineralization. One anomaly of this type, measuring 100 m by 600 m, that has never been drilled may represent the faulted continuation of the main zone. Another similar anomaly is up to 1.2 km in length and appears to coincide with the magnetic highs and HLEM anomalies. These are considered good gold exploration targets by Major General (D. Graham Gill, Exploration Manager, Major General Resources Ltd., written communication, 1998).

OREZONE RESOURCES INC.

Early in the summer, Orezone Resources Inc. conducted a program of prospecting, sampling and geological mapping on the Slate Falls option. This work confirmed that high-grade gold values occur in the polymetallic quartz veins present on the property. This work also indicates that the shear zones that host the quartz veins contain little gold. Later in the year, a backhoe was brought to the property and stripping of the known zones of mineralization was completed. Further cleaning of the outcrops and more thorough sampling are planned for 1998.

WOLFDEN RESOURCES INC.

Wolfden Resources Inc. completed approximately 200 km of line cutting and magnetometer surveying on their North Pickle Crow property. This included a 50 m box grid with magnetometer readings taken every 5 m. The results provide good detail as to the structure on the property. Wolfden believes, based on the interpretation of airborne geophysics, that the property contains the northward extension of the iron formation horizon that is associated with most of the gold mineralization on the Pickle Crow property. The company has identified 10 preferred targets that have not been previously tested by diamond drilling. Among these are a number of features that Wolfden refers to as a "breaks of folds" of the iron formation (Ewan S. Downie, Wolfden Resources Inc., written communication, 1998).

PROSPECTORS ALLIANCE CORPORATION

Prospectors Alliance Corporation started acquiring claims to the north of the village of Savant Lake midway through the year. In the fall, prospecting and line cutting and geophysical surveys were complete which outline some high priority targets. Late in the year, a diamond-drilling program commenced on a 16 claim-unit property in Conant Tp. A news release dated Dec. 3, 1997 indicates that work on the claim had located a "base metal occurrence with anomalous values in copper, zinc, lead and silver." The base metal occurrence is "situated along an east-west trending Archean Rhyolite-Andesite contact." Geophysical surveys outlined "a 2000 foot-long electromagnetic and magnetic conductor" adjacent to the base metal occurrence. Adjacent and partially coincident with the conductor is a gravity anomaly.

By Christmas, 5 drill holes totalling 726 m were completed on the 16 claim-unit property. The drilling tested 2 geophysical anomalies. The drilling encountered a narrow horizon of massive pyrite

in contact with a lapilli tuff containing sphalerite- and chalcopyrite-bearing clasts. John Harvey, President of Prospectors Alliance, indicates this tuff is similar to the footwall fragmentals of the Mattabi deposit 40 km to the south. More than 50 m of the mineralized lapilli tuff was encountered in the core. (John D. Harvey, President, Prospectors Alliance Corporation, personal communication, 1998 and Prospectors Alliance Corporation, News Release, January 8, 1998)

REDBIRD GOLD CORP.

Redbird Gold Corp. completed 2 phases of diamond drilling on their King Bay property on Sturgeon Lake. In the time period between the 2 drilling programs, the company completed a real section induced polarization (IP) survey across King Bay.

Redbird Gold Corp. reported encouraging assay values from diamond drilling on their King Bay properties on Sturgeon Lake. Hole KB97-4, targeted to intersect 5 real section IP anomalies, intersected zones of altered mafic metavolcanic rocks and quartz-feldspar porphyries mineralized with pyrite, pyrrhotite and chalcopyrite. The highest assay value obtained was 1650 ppb Au over 28 cm. Hole KB97-5 returned a best assay of 11.1 g/t Au over 25 cm (true width), from a strongly chloritized and carbonatized quartz-feldspar porphyry unit containing several narrow black quartz veins with blebs of pyrite, pyrrhotite, and chalcopyrite. Anomalous gold values were intersected over a 4.07 m interval. Hole KB97-6 cut three intersections of rock similar to those in KB97-5. Assay values of 1.3 g/t Au over 1.0 m, 2.31 g/t Au over 1.0 m, and 6.72 g/t Au over 25 cm.

On the Best-Armstrong property to the north, gold-bearing mineralization was intersected in 3 holes drilled to test a high-grade surface exposure. The best gold value was intersected in hole KBN97-3. It was 6.85 g/t Au over 0.5 m. (Redbird Gold Corp. Press Release, Canada Newswire, Nov. 7, 1997.) (John Burns, Geological Consultant, Redbird Gold Corp., personal and written communications, 1997,1998.)

Proportion of Exploration Activity by Industry Sector

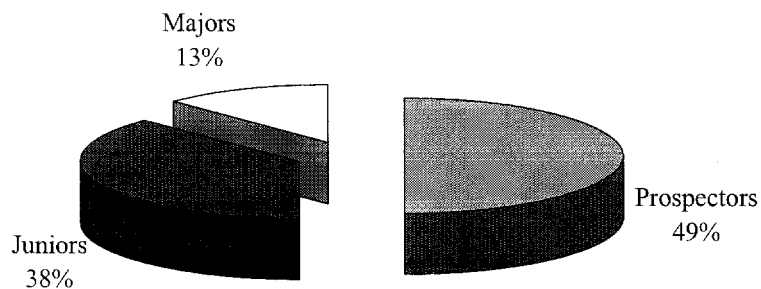


Figure 6. Proportion of Exploration Activity by Industry Sector in the Sioux Lookout District

Exploration Activity by Commodity

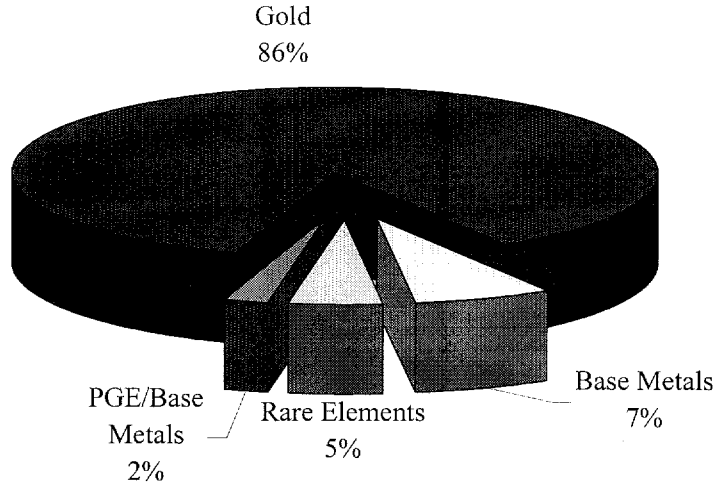


Figure 7. Exploration Activity in the Sioux Lookout District by Commodity

CAMECO GOLD INC.

Cameco Gold Inc. acquired the claims in the Black Lake area from NWT Copper Mines Ltd. The claims cover a number of high-grade gold occurrences. In the fall, Cameco did a large mechanical stripping program on the property complete with washing and sampling of the new exposures. This work was followed by line cutting and an IP survey.

PROSPECTOR ACTIVITY

Prospector activity accounted for close to 50% of the exploration programs conducted in the Sioux Lookout District in 1997.

In the Bamaji Lake area, D. Brown of Ottawa spent June and part of July prospecting and mapping his claims. He completed 30.3 km of prospecting and geological mapping and 22 km of Beep Mat traverses. He also sampled the Kirkland Townsite Showing # 1 occurrence and obtained an assay of 0.24 ounce per ton gold over 3.0 feet. (D.D. Brown, written communication, 1998)

N. Cox, of Beardmore, sampled a group of old trenches southeast of Armit Lake. The trenches exposed three or more parallel vein systems. Grab samples yielded values up to 0.61 ounce per ton gold. The property was optioned to C. Bowdidge of Toronto who has formed the company Fairchild Minerals Ltd. to explore claims in the area (C. Bowdidge, written communication, 1997).

J. Bond II of Welch, West Virginia and S. Johnson of Dryden, teamed up to prospect and to acquire claims in northwestern Ontario. Their activities in the Sioux Lookout district concentrated in the Minnitaki Lake area where they acquired several gold occurrences. One property covers much of the Pickerel Arm porphyry intrusion and surrounding rocks. Two occurrences from this property – the Wedge occurrence and the Malachite zone – are described in “Property Examinations” (below).

D. Brown of Trent River and T. Darling of Campbellford staked and explored the area south of Misfit Lake. Their property covers the Misfit Lake occurrence, which is also known as the Batch River occurrence. They cleaned off the outcrop on the old occurrence, prospecting it and the surrounding area. The sampling of the occurrence yielded discouraging results. Anomalous gold values were obtained from new showings located by the pair. The Misfit Lake occurrence is described in "Property Examinations" (below).

A. Kozowy and T. Grouette of Dryden continued to prospect in the Gullwing Lake area in 1997. They did further stripping and sampling of the Gullwing gold occurrence, which is described in "Property Examinations" (below). Additionally, A. Kozowy and A. Glatz of Dryden prospected the Tot Lake rare element pegmatite occurrence. A. Kozowy reports finding additional rare element pegmatite intrusions in the Gullwing Lake area.

Land Use Planning Activity

Land use planning activities during the year included preparing maps showing areas with high mineral resource assessment ratings near communities for use by the Ministry of Municipal Affairs and Housing, and assisting in preparation of the mineral resource assessment map which will be used by the Boreal West planning region “Lands for Life” Round Table. Also, the draft land use plans of the Windigo and Shibogama Interim Planning Boards were reviewed and comments forwarded to senior management of MNDM. The Environmental Assessment report for the Sioux Lookout Waste Management System Plan was reviewed. It was found acceptable with respect to addressing issues pertaining to mineral development.

Table 3. Property visits conducted by the Sioux Lookout District Geologist and Staff in 1997

Number (keyed to Figure 2)	Property/Occurrence
1	Thunder Lake deposit (Kenora District)
2	Floregold occurrence, Sharron Lake area
3	Bonanza Vein occurrence, Sharron Lake area
4	Misfit Lake occurrence, Kabik Lake area and Pickerel Tp. (4)*
5	Little Vermilion Lake Fault, Vermilion and Jordan Tps.
6	Glatz-powerline occurrence, Echo Tp.
7	Wedge occurrence, Kabik Lake area and Pickerel Tp.
8	Malachite occurrence, Kabik Lake area and Pickerel Tp.
9	Claim KRL 30579 occurrence, Kabik Lake area and Pickerel Tp.
10	Gullwing Gold occurrence, Webb Tp.
11	King Bay property, Fourbay Lake area
12	Central Patricia occurrence, Drayton Tp.
13	High Grade occurrence, Parnes Lake area

**(4) means 4 visits made to this property.*

Staff and Activities

The reorganization of the Resident Geologist's Program into the Regional Resident Geologist's Program during 1997 placed the Sioux Lookout District under the supervision of the Thunder Bay North Regional Resident Geologist, J. Mason. G. Seim, District Geologist and C. Bath, Geological Assistant now staff the Sioux Lookout District office. The office does not have a Mining Lands Consultant and provides only limited Mining Lands functions, consisting of selling claim tags and licenses, maintaining a set of claim maps for the district for viewing and photocopying, and providing Mining Lands forms. The office also stocks and sells a limited set of publications that are relevant to the district. These are available to walk-in customers.

Adjusting to and implementing the reorganization accounted for a large amount of staff time during the field season. Moreover, the office operated without a Geological Assistant from May to October, when C. Bath was hired. The field work that was completed concentrated on mineral occurrences close to Sioux Lookout. This work prompted the suggestion that there is an unmapped deformation zone along the axis of the Sioux Lookout greenstone belt. This is described in further detail in the "Property Examination" section (below). Table 3 lists the Property/Occurrence examinations made in 1997.

In March, G. Seim attended the Prospectors and Developers Convention in Toronto and assisted in the Northwest Ontario Resident Geologist's Program display. In April, G. Seim attended the Northwest Ontario Prospectors Association's Geoscience Symposium and presented both a talk and a display. In late December, G. Seim also attended the University of Toronto's Ore Deposits Workshop and learned about recent developments in understanding regarding intrusion-hosted copper-nickel-PGE deposits and volcanogenic massive sulphide deposits.

Property Examinations

In 1997, the Sioux Lookout District Geologist made 13 property visits as listed in Table 3. All but 2 of the visits were to mineral occurrences within the Sioux Lookout greenstone belt. Additionally, the District Geologist spent time examining outcrops along Highway 72 southwest of Sioux Lookout.

A POSSIBLE “SIOUX LOOKOUT DEFORMATION ZONE”

Observations made by the Sioux Lookout District Geologist this and past field seasons suggest that there is an undocumented deformation zone that traverses the length of the Sioux Lookout greenstone belt. This suspected deformation zone hosts many of the 68 documented gold occurrences found within the greenstone belt. The deformation zone trends east-northeast from south of the Goldlund deposits, to the Misfit Lake area, whereupon it follows a more easterly trend. East of Neepawa Island on Minnitaki Lake, the deformation zone trends east-northeast once again and projects to the Black Lake-Clamshell Lake area.

Six of the gold occurrences visited by the District Geologist during the summer and fall of 1997 lie within the deformation zone. From northeast to southwest these are the Floregold occurrence, the Bonanza Vein occurrence, the Wedge occurrence, the Malachite Zone occurrence, the Misfit Lake occurrence and the Claim KRL 30579 occurrence.

The Floregold Occurrence

The Floregold Occurrence is located about 27 km east-northeast of Sioux Lookout and about 500 m north of the creek flowing out of Clamshell Lake. The Floregold occurrence consists of a few areas of quartz-iron carbonate (\pm albite) veins cutting sheared quartz porphyry and gabbro. The first known exploration activity on this occurrence dates back to 1938. The veins have been prospected, stripped, trenched and drilled over the ensuing years. A property containing this occurrence (and the Bonanza Vein occurrence) is currently under option to Cameco Gold Inc. from NWT Copper Mines Ltd.

Chisholm (1951) describes the Floregold Occurrence as follows:

The main showing is located on claim K. 7,456, about a mile southwest of McDougall Mills. It consists of a 2- to 3-foot wide quartz vein in a well-defined shear zone from 30 to 140 feet wide in a granite plug. The vein strikes N. 47° E. and dips 60°. It has been traced by a series of surface pits and drilling for a distance of 550 feet and by diamond drilling for an additional 250 feet. The vein consists of white quartz almost barren of mineralization. The drilling cut the vein at a vertical depth of 300 feet. Visible gold was noted in the quartz, associated with chlorite threads and ankerite veinlets. A 5-ton bulk sample from the surface pits was reported to have returned 0.48 ounces per ton in gold. Owing to the nature of the occurrence of the gold, channel and drill samples do not appear to give reliable indications of the grade. An additional trench across the strike of the vein to the south indicates that the total length of the vein may be at least 3,200 feet. The intervening ground is swamp-covered and is being drilled.

The bulk sample reported by Chisholm (1951) appears to be from a 1951 report written by R. McCombe for Floregold Red Lake Mines Ltd. It would appear that the same area was previously bulk-sampled by the Ghost River Syndicate in 1941. A report by R. H. Hutchison in 1941 indicates that split samples totalling 423.5 lbs. of material from 6328 lbs. mined yielded an averaged result of \$23.68 (0.677 ounce gold per ton at \$35.00 per ounce gold) over an average width of 2.9 ft, for a length of 100 ft. (Sioux Lookout District office, assessment files). This indicates that even bulk sampling of the vein may yield variable results depending on the method used. Nevertheless this occurrence has significant high-grade portions. This is further evidenced by 2 grab samples taken by the District Geologist that returned 5.23 ounces gold per ton and 9.54 ounces gold per ton. These samples were of white, fractured quartz, in which the fractures were filled with grey quartz, ankerite, and chlorite. The samples contained traces of pyrite and fine specks thought to be free gold.

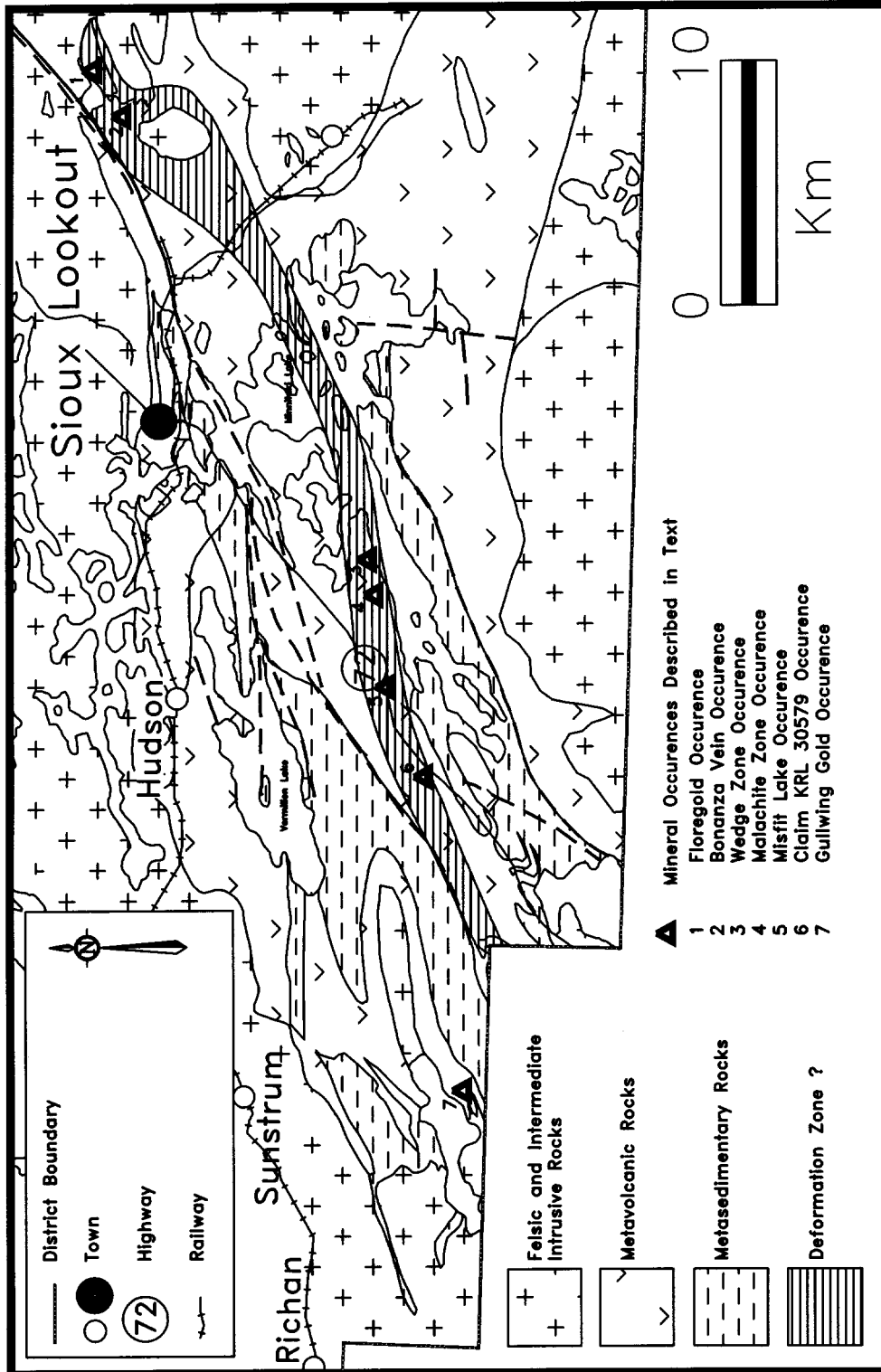


Figure 8. Location map for the mineral occurrences described in the text and for the suspected Sioux Lookout deformation zone.

The Bonanza Vein Occurrence

The Bonanza Vein occurrence is located about 24 km northeast of Sioux Lookout and about 600 m south of the southwest end of Black Lake. The occurrence is hosted in a thick sequence of quartz-sericite schists possibly derived from felsic metavolcanic rocks. The occurrence consists of a 2 to 4 m wide stockwork of white quartz-iron carbonate veins in an intensely iron-carbonate-altered host rock. There appear to be two sets of quartz veins— shear parallel veins and oblique ladder veins. Vein widths are up to 30 cm. They are variably mineralized with pyrite, chalcopyrite, galena and sphalerite. The best mineralization is found at the northeast end of the trench. The schistosity in the host rock is oriented at 240/85 NW.

Chisholm (1951) may be describing this occurrence in his description of the Richards Group. He writes:

A quartz stockwork is exposed in a sheared and altered porphyry dike, for a width of 20 feet and a length of 125 feet. The stockwork is made up of one main quartz stringer from 6 inches to a foot wide, which strikes N. 70° E parallel to the regional schistosity, and a series of smaller stringers angling off it. The main stringer is locally mineralized with scattered pyrite, chalcopyrite, and patches of galena. Visible gold was noted at one place associated with galena.

Gold values associated with this occurrence are noted to be erratic, ranging from trace to “several ounces per ton” (Chisholm, 1951). The District Geologist took 2 samples from this occurrence. One, with up to 3% sulphide minerals, yielded an assay of 1.06 ounces per ton gold while the other, with only trace sulphide minerals, returned no detectable gold.

The Wedge Occurrence

The Wedge occurrence is found on the east contact of the Pickerel Arm porphyry stock. This occurrence is exposed in a series of trenches located on a ridge, about 250 m south of the shore of Pickerel Arm of Minnitaki Lake. Access is by boat. Johnston (1969) indicates that the Wedge occurrence is “in an area where intermediate to mafic metavolcanics have been intruded by a mass of quartz and quartz-feldspar porphyry. This porphyry body terminates to the east on claim KRL24476. It is near this nose that a number of quartz veins have been explored by trenches and test pits. The quartz veins intrude both the metavolcanics and the porphyry and some are slightly mineralized with specks of pyrite and, rarely, chalcopyrite.” Johnston (1969) further determined that “pits and quartz veins located between KRL24476 and the tip of RJ13 are probably those referred to as ‘Claim K. 3,311’” in Hurst (1932). Hurst (1932) describes claim K 3311 as follows:

Claim K. 3,311. — A number of irregular quartz masses and veins have been found in the area between the north boundary of K 3,421 and the middle of K3,311. These showings occur near the porphyry greenstone contact, where it is evident that both rocks have been considerably shattered. The wallrock adjoining the quartz bodies has a bleached, yellowish-green appearance and shows evidence of silicification, development of carbonates and impregnation with pyrite. Some of the quartz bodies contain disseminated grains of pyrite, chalcopyrite, and galena. In one exposure small patches of white barite were observed in the quartz. Chip samples from the point indicated on the accompanying plan [not reproduced in this report] were submitted to the provincial assay office. One sample consisting of quartz, with no visible sulphides, gave negative results when assayed for gold and silver. Another sample composed of quartz containing disseminated grains of pyrite, chalcopyrite, and galena yielded \$5.60 per ton in gold and no silver.

In 1997, J. Bond II of Welch, West Virginia and S. Johnson of Dryden acquired claims covering a large part of the Pickerel Arm porphyry, including the Wedge occurrence. The District Geologist visited this showing in early September. Mr. Johnson had relocated many of the old trenches and pits, and where possible manually cleaned off bedrock exposures. This work exposed geology matching, for the most part, the description of Hurst (1932). The trenches and pits located at the time of the visit indicate that the mineralization has a surface expression of at least 100 m by 30 m, but subsequent work by Mr. Johnson suggests a surface expression up to 100 m by 100 m. The trenches and pits observed during the visit suggest that the mineralized zone trends northeast. This is parallel to a weak foliation in altered country rock, that strikes 230/80 N. The District Geologist observed various ages of quartz veining, but was not able to discern which generation(s) of quartz veins are auriferous. The sulphide minerals observed include variable concentrations of disseminated euhedral pyrite in the wall rock and disseminated and stringer pyrite, chalcopyrite and galena in the quartz veins. Locally, chalcopyrite is also found in the wall rock.

Assay results for sampling done by the District Geologist on this showing were not, at the time of writing, available. Assay results supplied by J. Bond and S. Johnson are as follows: quartz mineralized with pyrite, chalcopyrite and galena — 960 ppb Au, 1841 ppb Au, 2355 ppb Au and 9762 ppb Au, wallrock mineralized with pyrite and some quartz — 695 ppb Au, 1550 ppb Au 3341 ppb Au and 20,464 ppb Au.

The Malachite Zone

The Malachite zone is located on the south shore of Pickerel Arm of Minnitaki Lake. It is approximately in the middle of the Pickerel Arm porphyry intrusion and is part of the claims held by J. Bond II and S. Johnson. Johnston (1969) terms this showing the Campbell occurrence. The main showing is located at the shoreline. The host rock to the mineralization is a phase of the Pickerel Arm porphyry. This is quartz porphyry that, according to Hurst (1932) (see above quote), has been considerably shattered. The rock shows evidence of iron carbonate alteration and is weakly sericitic. The outcrop surface is highly fractured and deeply weathered. Pyrite and chalcopyrite are disseminated throughout the rock and are also concentrated as stringers in narrow, poorly defined shear zones.

Assay results for sampling done by the District Geologist on this showing were not, at the time of writing, available. Assay results supplied by J. Bond and S. Johnson for 2 mineralized samples were 7404 ppb Au and 861 ppb Au, while other samples from shoreline outcrops of the porphyry yielded anomalous results ranging from 28 to 659 ppb Au.

In 1971, Dome Exploration Ltd. completed 13 diamond-drillholes in the part of the porphyry that includes the Malachite zone. These drill holes intersected considerable disseminated pyrite and chalcopyrite and yielded many assays in the range 0.2% to 0.4% Cu. The assaying done for gold was not as complete as that done for copper, but many samples of core yielded values of 0.01 ounce per ton gold or more (Sioux Lookout District office, assessment files).

In 1980, Cominco Ltd. did a gold lithochemical survey covering the Pickerel Arm porphyry. This survey indicates large areas of the porphyry body returning more than 50 ppb Au and several samples yielding 500 ppb or more (Sioux Lookout District office, assessment files).

J. Bond and S. Johnson believe that the Pickerel Arm porphyry should once again be examined for its potential as a large tonnage, low-grade, copper-gold target.

The Misfit Lake Occurrence

The Misfit Lake gold occurrence is located about 23 km southwest of Sioux Lookout. It is located on the south side of the Minnitaki Lake Road (formerly Highway 72), south of Misfit Lake. Chisholm (1951) describes the Misfit Lake gold occurrence as follows:

A stockwork of narrow quartz stringers is exposed in an altered tuff or spherulitic horizon in the lavas. The zone is about 15 feet wide and strikes northeast. About half of the rock in the zone is made up of quartz. Mineralization consists of fine pyrite and tourmaline. Gold values reported by the company from the drilling and channel-sampling on surface were low. The best reported value was 0.1 ounce per ton in gold across a width of 6 feet located underneath the surface exposure.

The District Geologist visited this property with co-owners D. Brown of Trent River and T. Darling of Campbellford, collecting 4 grab samples from the Misfit Lake occurrence proper. Gold was not detected in these samples. Two samples from a new showing along strike yielded values of 18 ppb Au and 380 ppb Au.

The metavolcanic rocks that host the Misfit Lake occurrence are strongly deformed. A siliceous rock that outcrops 3 to 5 m north of the occurrence was mapped as tuff by Johnston (1969). The District Geologist interprets this rock as mylonite. The spherulitic lavas northeast of the occurrence are intensely sheared, the spherules being extremely flattened. Outcrops on the shores of Misfit Lake indicate that the strong deformation extends at least to the north shore of the lake. About 1 km east of

the occurrence is a microwave tower located on a large outcrop. The mafic metavolcanic rocks here are strongly deformed and contain lenticular pods of more siliceous rock cut by deformed quartz veins. Quartz-tourmaline veins form distinct ladder veins through one of the lenticular pods of siliceous rock. To the south of the Misfit lake occurrence, Johnston (1969) notes several small faults on the north shore of Pickerel Arm of Minnitaki Lake. These faults parallel the shearing noted near the occurrence. Together, the observations made around the Misfit Lake gold occurrence suggest the presence of a wide (i.e. greater than 2 km) deformation zone that trends east-northeast through this area.

The Claim KRL 30579 Occurrence

The Claim KRL 30579 occurrence is located about 29 km southwest of Sioux Lookout to the north of Highway 72. A gravel pit access road and tractor trails lead to the occurrence. Chisholm (1951) describes this occurrence as follows:

Claim K.R.L. 30,579 is situated north of the Sioux lookout highway at mileage 20. Six hundred feet north of the highway a stripping 50 feet square (10) has exposed a granodiorite dike 45 feet wide with the typical albitized cross-fracture and coarse cubic pyrite. The dike strikes N. 63° E. and Dips 70° S. The cross-fractures range from 1 to 3 inches in width and are spaced from 1 to 5 feet apart. A well-mineralized sample of albitized material and quartz assayed 0.01 ounces per ton in gold. Values to 0.10 ounces per ton in gold across a width of 2 1/2 feet were reported to have been obtained from a x-ray diamond-drill hole on the showing."

The District Geologist made a brief visit to this occurrence in August. About 300 m north of Highway 72, along the gravel pit access road, a network of trails extend about 500 m to the northeast and southwest. These are from a stripping program conducted by Norontex Exploration Ltd. for Tarbush Lode Mining Ltd. in 1984, that exposed two granodiorite dikes and a feldspar porphyry dike. During the subject visit, the District Geologist examined only that area to the southwest of the gravel pit access road. In that area, a rusty-weathering, feldspar porphyry dike is exposed. It is up to 15 m wide and is cut by both shear-parallel and transverse quartz (\pm carbonate) veins. The dike contains coarse-grained, disseminated, euhedral pyrite in concentrations up to 15%. Samples taken by Norontex in the area yielded assays between 0.01 and 0.04 ounce per ton gold (Sioux Lookout District office, assessment files). To the southwest, the porphyry dike narrows to about 3 m width. Though quartz veining and pyrite mineralization is still evident, the sampling by Norontex yielded only trace and 0.01 ounce per ton gold assays.

Norontex indicated that the mineralization described by Chisholm (1951) is located about 200 m northeast of the gravel pit access road.

Discussion

The outlines of mineral claim properties on the Index Map accompanying Chisholm (1951) crudely outlines the trace of the suspected Sioux Lookout Deformation Zone through most of the Sioux Lookout greenstone belt. This deformation zone trends east-northeast from south of the Goldlund deposits, to the Misfit Lake area where it follows a more easterly trend. East of Neepawa Island on Minnitaki Lake, the deformation zone trends east-northeast once again and projects to the Black Lake-Clamshell Lake area. Evidence for the existence of the Sioux Lookout Deformation Zone is as follows:

- 1) Ductile and/or brittle deformation is observed at the many gold occurrences, and in outcrop between the occurrences. For example, along Highway 72 between the Misfit Lake occurrence and the Claim KRL 30579 occurrence, many roadside outcrops exhibit intense shearing and weak to intense pervasive iron-carbonate alteration. The highway trends about 050° in this area while the strike of the shearing averages 070°.
- 2) Most quartz and quartz-feldspar porphyries and granodiorite intrusive bodies in the belt are located along the trace of the deformation zone. Many of these host, or are associated with, the gold occurrences. Those intrusive bodies that are not associated with the deformation zone are associated with other mapped fault zones.

- 3) Johnston (1969, 1972) mapped many faults along the trace of the deformation zone. Some of these have been projected for some length and are generally parallel to the deformation zone. Many faults are limited in their strike length and are at a shallow angle to the trace of the deformation zone.

The width of the Sioux Lookout deformation zone is not well defined at present and its relationship to other structures in the belt is also open to question. In the northeastern part of the belt (e.g. at the Floregold and Bonanza Vein occurrences), highly sheared rock is observed from the south shore of Botsford Lake to the north shore of Clamshell Lake, a distance of over 3 km. The south shore of Botsford Lake is where previous workers have mapped the Miniss River Fault. What deformation is attributable to this fault and what deformation results from some other event(s) is not known at this time.

Other deformation structures in the Sioux Lookout greenstone belt have associated gold occurrences or anomalous gold content and weak to pervasive iron carbonate alteration. Many, especially along the Sturgeon River, Abram Lake, Little Vermilion Lake and Vermilion Lake coalesce or merge toward the northeast end of the belt, where the Miniss River Fault System extends to the northeast.

J. Devaney (Geoscientist, Precambrian Mapping Section, Ontario Geological Survey, personnel communication, 1997) presented a Ridell shear concept to explain and predict the location of gold occurrences within the Sioux Lookout greenstone belt. This concept places most of the gold occurrences in the belt on one or more of the three elements of the Ridell shear system. The major gold occurrences are located at the intersections of the Ridell shear elements. This concept assumes the Ridell shear zones to be true linears. The mapped faults and shear zones (and deformation zones) within the Sioux Lookout greenstone belt are curvilinear structures. This includes the trace of the suspected Sioux Lookout deformation zone. A Ridell shear system model for deformation structures in the Sioux Lookout greenstone belt has merit, but the simple case has to be modified to reflect the complexities of the geologic units.

Further study is needed to define the nature of deformation in the Sioux Lookout greenstone belt and relate the significance of the structures to gold mineralization.

GULLWING GOLD OCCURRENCE

In 1996, A. Kozowy of Dryden prospected near the boundary between Webb and Drope Townships about 1.2 km south of Gullwing Lake. He discovered that a pyrrhotite–chalcopyrite–bearing, garnet–biotite–amphibole–quartz–feldspar schist returned gold assays ranging from 0.01 ounce gold per ton and 0.762 ounce gold per ton. The Sioux Lookout District Geologist visited this property in October 1996 and again in September 1997.

Page (1984) indicates that the area of the Gullwing gold occurrence is underlain by metasedimentary rocks belonging to the Abram group. The metasedimentary rocks consist of conglomerates, feldspathic arenites and siltstones, and schists variably composed of quartz, feldspar, biotite, garnet, amphibole and possibly magnetite. Locally, quartz–muscovite schist and sillimanite–bearing rock is observed. Bedding and the prominent foliation strike northeast and dip steeply south. Tight fold closures and boudinaged limbs occur in the mineralized outcrops. The fold axis plunge southwest at about 45°. All rock in the area is cut by north–trending pegmatite dykes associated with the Ghost Lake Batholith.

Sampling in the area of the initial discovery by A. Kozowy indicates that the gold is strongly associated with sulphide–rich pods within garnet–biotite–amphibole–quartz–feldspar schist. These pods occur either at fold closures or as boudinages along the limbs of the folds. This relationship is not always obvious. One sample taken by the District Geologist in 1996 returned an assay value of 0.03 ounce per ton gold while samples donated by A. Kozowy returned assay values of 0.05 and 0.06 ounce per ton gold. Assay results from 4 samples taken in September 1997 were not available at the time of writing.

About 500 m to the southwest of the initial discovery area, along the axial direction of the folding, the garnet-biotite-amphibole-quartz-feldspar schist changes to a gossaned amphibolite that carries traces to 1% pyrrhotite. The relationship between the two rock types is not known. A. Kozowy reports an assay of 0.01 ounce gold per ton from a sample of gossaned amphibolite 500 m west of the discovery area, while a sample of float 340 m west of the discovery area assayed 0.074 ounce gold per ton. Most of the gold values reported by A. Kozowy are from outcrops along the south side of a low, southwest-trending ridge. Southeast of the ridge is a low-lying, linear swamp. Geophysical surveys that include the swampy area may reveal anomalies worth further testing.

Recommendations for Exploration

SIoux LOOKOUT DEFORMATION ZONE

Gold exploration along the suspected Sioux Lookout deformation zone is recommended. Work should concentrate on areas with contrasting competency, such as the contacts between metavolcanic and/or metasedimentary rocks and early felsic intrusions. The flexure points of the deformation zone to the west of Misfit Lake and to the east of Neepawa Island on Minnitaki Lake may also be important areas to prospect. Other faults, like the Little Vermilion Lake fault and the Abram Lake fault, which contain iron carbonate alteration and pyrite mineralization are also attractive targets.

RARE ELEMENT PEGMATITE INTRUSIONS ALONG THE ENGLISH RIVER-UCHI SUBPROVINCE BOUNDARY

Breaks, F.W., Bond, W.D., and Stone, D. (1978) recommended exploration for lithium-cesium-beryllium-tantalum-tin-bearing pegmatitic diatexites near the boundary between the English River and Uchi subprovinces, between western Lake St. Joseph and and Paponga Lake.

With the recent interest in rare element pegmatites generated by the discoveries in the Separation Lake area of the Kenora District, the timing is right to re-examine the above area in this district, where this type of mineralization is known to occur. Two rare element pegmatite bodies are known to occur along the boundary between the two subprovinces. The Roadhouse River occurrence, in the Red Lake district, is the more well-explored of the two and contains an estimated 2.3 million tons averaging 1.3% LiO₂ to the -150 m level. The other occurrence is found on the southeast shore of Pashkokogan Lake. A grab sample from this occurrence taken by Breaks, Bond and Stone (1978) assayed 1.3% LiO₂. Given the location of the Pashkokogan Lake occurrence, the recommendation of Breaks, Bond and Stone (1978) is extended east to the Greenbush Lake area.

In the past several years the Vermilion Lake forest access road system has pushed into the area south of Lake St. Joseph. This makes the area much more accessible. Moreover, new exposures of outcrop often result from the work of the forest products industry.

While exploring for pegmatites, prospectors should also keep any eye out for industrial and other minerals of possible value. For instance, in recent years, tourists in the area have collected coarse crystals of cordierite.

OGS Activities and Research by Others

The OGS did not have any active projects in the Sioux Lookout District during 1997.

Two NatMap projects are ongoing in the Sioux Lookout District. M. Sanborn-Barrie and T. Skulski did geological mapping in the east-central part to the Sturgeon Lake belt and in the Savant Lake area. J. Percival mapped the Seseganaga Lake area to the east of the Sturgeon Lake greenstone belt.

CAMIRO studies continued in the South Sturgeon Lake Base Metal Camp.

The seismic reflection part of the Western Superior Lithoprobe study took place late in the year. As well, several studies were conducted in conjunction with the seismic work. A.R. Cruden is leading a study entitled "Structure and geochronology of the Winnipeg River Subprovince". A.J. Hynes continues on the "Origin and tectonic evolution of the English River Subprovince." R.R. Keays is studying "The early history of the North Caribou Terrain." Y. Pan is examining "The Geochemistry of Mafic-Ultramafic rocks in the English River Subprovince" with emphasis on their tectonic significance and their economic potential. C.J. Tomson is completing teleseismic studies in the Western Superior Transect.

Table 4. Mineral deposits not being mined in the Sioux Lookout District in 1997.

Abbreviations					
AF	Assessment Files	MLS	Mining Lands, Sudbury		
CMH	Canadian Mines Handbook	MR	Mining Recorder		
GR	Geological Report	NM	The Northern Miner		
MDC	Mineral Deposit Circular	OFR	Open File Report		
MDIR	Mineral Deposit Inventory record	PC	Personal Communication		

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Arseno Lake 53B/14NE	Zn,Pb,Cu, Ag	1 MT @ 8.7% comb. Zn-Pb, 1.5 opt Ag	Northern Dynasty Minerals Ltd., Ener- gold Minerals Inc.	1988 Annual Report Northern Dynasty Explorations Ltd.	Inactive
Big Trout Lake 53H/12SW	Pt,Pd,Cr	not available	International Pre- cious Metals Corp., Jenkim Holdings (Canada)	AF	Active
Dobie Zone 520/06NE	Au	301 000 t @ 5.5 g/t Au	Barrick Gold Corp.	MDIR KP1082	Inactive
Goldlund Mine 52F/16NW	Au	781 000 t @ 0.14 opt Au	Locke Rich Miner- als Ltd..	MDIR K0311	Inactive
Kasagiminnis Lake 520/08SW	Au	284 000 t at 5.8 g/t Au	Greenshields Re- sources Inc.	MDIR KP1129	Inactive
Koval-Ohman 520/07SE	Au	471 589 t @ 5.81 g/t Au	Barrick Gold Corp. Moss Resources Ltd.	MDIR KP0243	Inactive
Pickle Crow Gold Mine 520/09SE	Au	1 395 700 t @ 0.186 opt Au (diluted)	Unknown	MDIR KP0255	Inactive
Thierry Mine 520/08NW	Cu,Ni	7 MT @ 1.88% Cu, 0.23% Ni	Etruscan Enterprises Ltd.	MDIR KP0247	Inactive

Table 4. cont'd. Mineral deposits not being mined in the Sioux Lookout District in 1997.

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Umex-Dorothy Lake 52O/06NW	Au	236 220 t @ 6.17 g/t Au	Major General Re- sources Ltd.	MDIR KP1072	Inactive
Karl-Zeemel 53B/09SW	Au	327 000 t @ 4.6 g/t Au	Pangea Goldfields Inc. Placer Dome North America Ltd.	N M, Jan. 8, 1996, p15	Active

Acknowledgements

A thank you is extended all the prospectors and companies who contributed information to this report. Thanks specifically to Mike Koziol, Senior Geologist, Cameco Gold Inc. who invited the District Geologist along on the fly-in visit to the Floregold and Bonanza Vein occurrences and to the prospectors who invited the District Geologist to visit their properties this year.

Thanks to Phil Thurston for providing a list of Lithoprobe activities in the Sioux Lookout District.

John Mason, Regional Resident Geologist, Thunder Bay North reviewed this report and David Laderoute, Regional Manager of Resident Geologist's Program, Northwest Ontario conducted the editing.

Table 5. Publications received by the Sioux Lookout District Office in 1997.

Title	Author	Type and Year of Publication
Report of Activities 1996, Resident Geologists	Newsome, J.W. and Laderoute, D (editors)	OGS OFR 5958
Prospector's guide to drift prospecting for diamonds, Northern Ontario	Morris, T.F. and Kaszycki, C.A.	OGS MP 167

Table 6. Assessment files received in the Sioux Lookout District in 1997.

Abbreviations			
AEM	Airborne electromagnetic survey	Lc	Linecutting
AM	Airborne magnetic survey	Met	Metallurgical testing
ARA	Airborne radiometric survey	OD	Overburden drilling
Beep	Beep Mat survey	ODH	Overburden drill hole(s)
Bulk	Bulk Sampling	OMIP	Ontario Mineral Incentive Program
DD	Diamond drilling	OPAP	Ontario Prospectors Assistance Program
DDH	Diamond drill hole(s)	PEM	Pulse electromagnetic survey
DGP	Down-hole geophysics	PGM	Platinum group metals
GC	Geochemical survey	Pr	Prospecting
GEM	Ground electromagnetic survey	RES	Resistivity survey
GL	Geological Survey	Samp	Sampling (other than bulk)
GM	Ground magnetic survey	Seismic	Seismic survey
GRA	Ground radiometric survey	SP	Self-potential survey
Grav	Gravity survey	Str	Stripping
HLEM	Horizontal loop electromagnetic survey	Tr	Trenching
HM	Heavy mineral Sampling	UG	Underground exploration/development
IM	Industrial mineral testing and marketing	VLEM	Vertical loop electromagnetic survey
IP	Induced polarization survey	VLFEM	Very low frequency electromagnetic survey

Table 6. cont'd. Assessment files received in the Sioux Lookout District in 1997.

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Achapi Lake	Northern Dynasty Minerals Ltd.	1997	AEM, AMAG, AVLFEM	2.17509	52P/04NE-0029
Akow Lake, North Caribou Lake	Romios Gold Resources Inc.	1997	Lc, HLEM, GM	2.17602	52B/15SE-0027
Armit Lake	R.G. Ramsay, G.M. Hogg & Assoc. Ltd.	1996-1997	Tr, Samp, Assays	2.17366	52J/07NW-0042
Beardy Creek, Nemiegusabins Lake	International Precious Metals Corporation	1997	Lc, HLEM	2.17467	53H/12SW-0030
Beckington Lake	Allen Best, Richard Koski, Wm. Hollingsworth	1995	Pros, 9-DDH (1755.3'), GM, VLFEM, OPAP		52J/02NE-0076
Bell Lake	Noranda Mining and Exploration Inc.	1996	Lc, GL, GM, HLEM, Lithochem	2.17442	52G/15SW-0050
Duffel Lake	Gulfstream Trading Limited/ E.W. Bazinet	1995-1997	GM, VLFEM	2.17545	52O/02NW-0053
Echo Tp, McAree Tp, Pickerel Tp,	Tri Origin Exploration Ltd.	1996	GC	2.16936	52F/16NW-0094
Echo Tp, McAree Tp, Pickerel Tp,	Tri Origin Exploration Ltd.	1996	12 DDH (1959.7 m), Assays	2.16937	52F/16NW-0095
Echo Tp, McAree Tp, Pickerel Tp,	Tri Origin Exploration Ltd.	1996	GL, Assays	2.16939	52F/16NW-0096
Fourbay Lake	Armstrong, G., Kuryliw, C., Johnson, S., and Read, Wm.	1996	7 DDH (1025') Assays	2.16878	52J/02SW-0102
Fry Lake	Major General Resources Ltd.	1996	IP	2.17182	52O/03NW-0059
Kabik Lake & Pickerel Tp	Tri Origin Exploration Ltd	1996	GM, GL	2.16938	52F/16NE-0058
Karl Lake, Zeemel Lake	Placer Dome (CLA) Ltd.	1996-1997	5 DDH (1,033.75 m) Assays	2.17166	53B/09SE-0018
Karl Lake, Zeemel Lake	Placer Dome (CLA) Ltd.	1997	7 DDH (1118.0 m) Assays	2.17272	53B/09SE-0019
Kecheokagan Lake	Jean & Sharon Dignard	1995	3-DDH (130') Assays, OPAP		53B/02NW-0020
Kecheokagan Lake, Wapamisk Creek	Jean & Sharon Dignard	1996	Lc, GM, PROS, DD	2.17078	53B/02NE-0027
Keikewabik Lake	Alex Kozowy	1995	Pros, Samp, Assays, OPAP		52F/16SE-0023
Keikewabik Lake, MacFie Tp	Champion Bear Resources Ltd.	1995	1 DDH (189 m) Assays	2.17194	52F/16SW-0051
McAree Tp, Keikewabik Lake	Champion Bear Resources Ltd	1994-1995	19 DDH (3500 m) Assays	2.17157	52F/16SW-0050
McIlraith Tp	Stuarton Resources Ltd.	1997	Pros, GC	2.17443	52F/15NE-0023
McIlraith Tp	Stuarton Resources Ltd.	1995-1996	GM, VLFEM, GC	2.17305	52F/15NE-0022
Meen Lake	Major General Resources Ltd.	1997	GM	2.17498	52G/06NW-0074
Neawagank Lake	Romios Estates Ltd.	1997	Lc, GM, HLEM,	2.17544	53A/05NW-0044
Neawagank Lake	Romios Estates Ltd.	1996	AM	2.16707	53A/05NW-0041
Neawagank Lake	Placer Dome Canada Ltd.	1995-1996	GC	2.16793	53A/05NW-0042
Neawagank Lake	Romios Estates Ltd.	1997	GM	2.17336	53A/05NW-0043

Table 6. cont'd. Assessment files received in the Sioux Lookout District in 1997.

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Poisson Tp	Best, Allan	1981	Tr		52J/08NW-0050
Seeseep Lake	Artisan Gold Inc.	1996	Lc, GM, VLFEM, GC	2.17274	53B/15NW-0034
Sharron Lake	Placer Dome Canada Ltd.	1996	10 DDH (1622 m), Assays	2.16872	52J/04NE-0032
Sharron Lake, Zarn Lake, Drayton Tp,	Placer Dome Canada Ltd.	1997	GM	2.17079	52J/04NE-0033
Six Mile Lake	Redden, J.W.	1996	GC	2.17074	52G/15NW-0108
Squaw Lake	Krumbeck, Keith	1981	GM		52J/02SE-0126
Squaw Lake	Equator Mining Corp.	1996	Str, Tr, Pros	2.16911	52J/02SE-0127
Tarp Lake	Homestake Canada Inc.	1997	2 DDH (447.0 m) Assays	2.17315	52O/09SE-0100
Tarp Lake	Inmet Mining Corp.	1996	3 DDH (552 m) Assays	2.17273	52O/09SE-0101
Tarp Lake	Inmet Mining Corp. and Avalon Ventures Ltd.	1996	IP, GM(INTRP OF PRIOR SRVY), 5 DDH (1078 m) Assays	2.16934	52O/09SE-0097
Tarp Lake	Inmet Mining Corp. and Avalon Ventures Ltd	1996	IP	2.16989	52O/09SE-0098
Tarp Lake, Atik Lake, Collishaw Lake, Firstloon Lake	Inmet Mining Corp. and Avalon Ventures Ltd	1996	GM	2.17007	52O/09SE-0099
Valora Lake	Kangas, Matti and Morgan, Charles	1981	Tr		52G/14SE-0090
Wesleyan Lake, Fry Lake	Orezone Resources Inc./ Douglas P. Parker	1997	Pros., GL, Samp	2.17785	52O/03NW-0061
Wesleyan Lake, Fry Lake	Orezone Resources Inc.	1997	AEM, AMAG (AERO-DAT)	2.17372	52O/04NE-0028
Wesleyan Lake	Parker, Douglas P.	1996	GL, GC, Samp	2.16627	52O/04NE-0027
Whipper Lake	Kuryliw, Chester J.	1996	Str, Samp, GL	2.16935	52K/01SW-0038
Zeemel Lake, Skinner Lake, Akow Lake,	Placer Dome (CLA) Limited	1996-1997	8 DDH (2672.3 m), Assays	2.17821	53B/09SW-0058
Zeemel Lake, Skinner Lake	Placer Dome Canada Ltd.	1994-1996	243 DDH (43,674.82 M) Assays	2.16975	53B/09SW-0056
Zemmel Lake, Karl Lake	Placer Dome (CLA) Limited	1996-1997	GM	2.17312	53B/09SW-0057

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Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
<i>SI Unit</i>	<i>Multiplied by</i>	<i>Gives</i>	<i>Imperial Unit</i>	<i>Multiplied by</i>	<i>Gives</i>
LENGTH					
1 mm	0.039 37	inches	1 inch	25.4	mm
1 cm	0.393 70	inches	1 inch	2.54	cm
1 m	3.280 84	feet	1 foot	0.304 8	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	1.609 344	km
AREA					
1 cm ²	0.155 0	square inches	1 square inch	6.451 6	cm ²
1 m ²	10.763 9	square feet	1 square foot	0.092 903 04	m ²
1 km ²	0.386 10	square miles	1 square mile	2.589 988	km ²
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
VOLUME					
1 cm ³	0.061 023	cubic inches	1 cubic inch	16.387 064	cm ³
1 m ³	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m ³
1 m ³	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m ³
CAPACITY					
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	4.546 090	L
MASS					
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	31.103 476 8	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	0.453 592 37	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	907.184 74	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	0.907 184 74	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	1016.046 908 8	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	1.016 046 90	t
CONCENTRATION					
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	<i>Multiplied by</i>	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

ISSN 0826-9580
ISSN 0838-3677 (sub-series)
ISBN 0-7778-7278-1