Ontario

Ontario Geological Survey
Open File Report 6127

Report of Activities, 2003 Resident Geologist Program

Red Lake Regional Resident Geologist Report:

Red Lake and Kenora Districts

2004

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Red Lake Regional Resident Geologist Report:
Red Lake and Kenora Districts

by

A. Lichtblau, P. Hinz, C. Ravnaas, C.C. Storey, L. Kosloski and A. Raoul

2004

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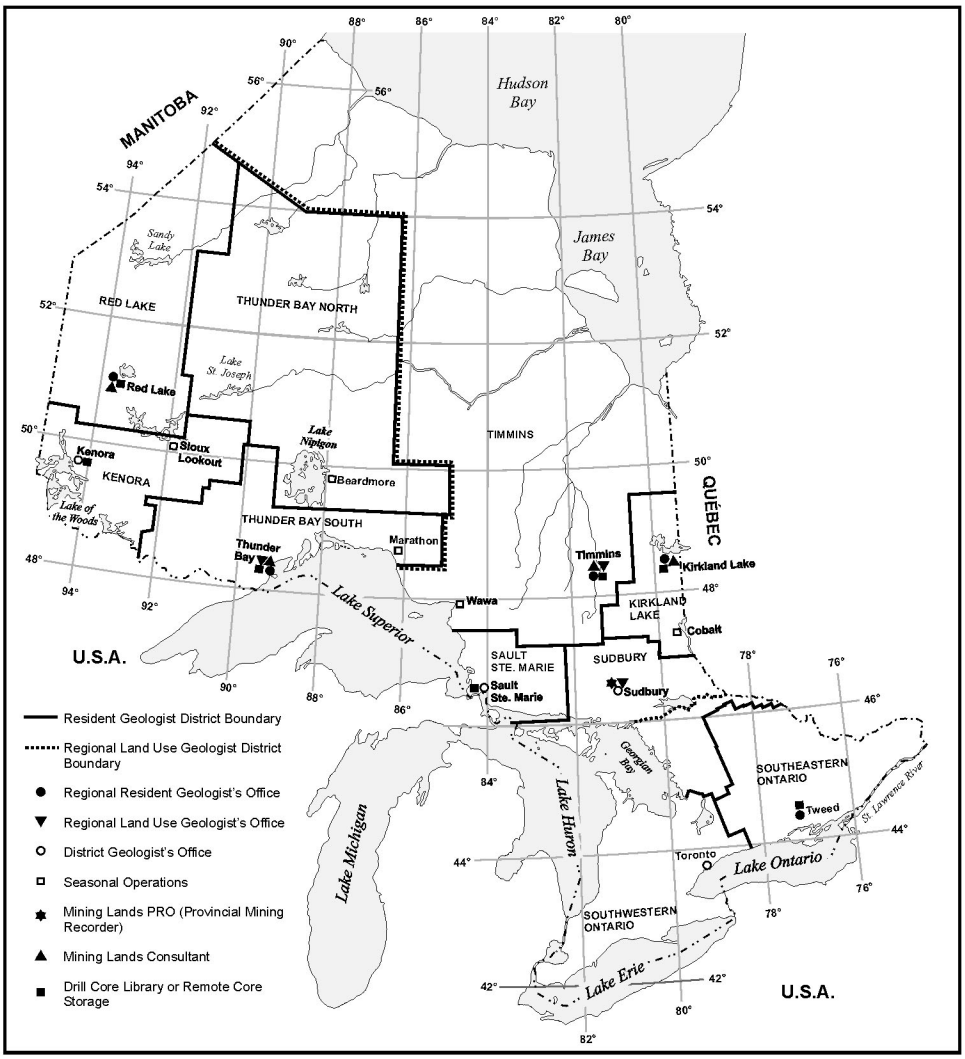

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ONTARIO GEOLOGICAL SURVEY

RESIDENT GEOLOGIST PROGRAM

REPORT OF ACTIVITIES - 2003

RED LAKE REGIONAL RESIDENT GEOLOGIST REPORT

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RED LAKE REGIONAL RESIDENT GEOLOGIST (RED LAKE DISTRICT)—2003

A. Lichtblau[1], C.C. Storey[2] and L. Kosloski[3]

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INTRODUCTION

Gold was the only commodity mined in the Red Lake District in 2003. Total yearly production increased slightly, by approximately 10 000 ounces (1.4%) over last year's total, to 729 142 ounces gold (Table 1). With continuing increases in production rates at both mines, the 1 million ounce annual total is within reach (Figure 1).

Table 1. Mine production and reserves in the Red Lake District in 2003.

Mine	Production in 2002		Production in 2003		Reserves Plus Resources (all categories) at end of 2003	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Goldcorp Inc. Red Lake Mine [(1)]	239 482 tons @ 2.29 opt Au (217 254 tonnes @ 77.49 g/t Au)	525 930 ounces Au	242 082 tons @ 2.20 opt Au (219 613 tonnes @ 75.4 g/t Au)	532 028 ounces Au	6 770 000 tons (6 148 000 tonnes)	1.09 opt Au (37.4 g/t Au)
Placer Dome (CLA) Ltd. Campbell Mine[(2)]	393 500 tons @ 0.51 opt Au (357 000 tonnes @ 17.5 g/t Au)	193 150 ounces Au	400 139 tons @ 0.51 opt Au (363 000 tonnes @ 17.6 g/t Au)	197 114 ounces Au	8 599 000 tons (7 801 000 tonnes)	0.35 opt Au (12.11 g/t Au)

(1) Goldcorp Inc., press release, February 17, 2004. (2) Placer Dome Inc., press release, February 26, 2004.

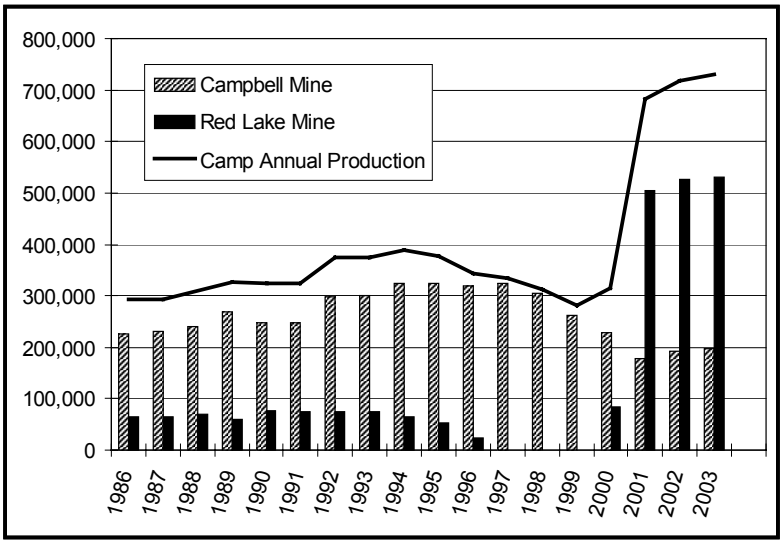

Figure 1. Annual gold production in the Red Lake belt, 1986–2003. No production at the Red Lake Mine between 1997 and 1999 due to strike by unionized employees.

The price of gold rose to a monthly average of approximately US$408 at year-end, an increase of 18% relative to the price at year-end 2002 (Figure 2).

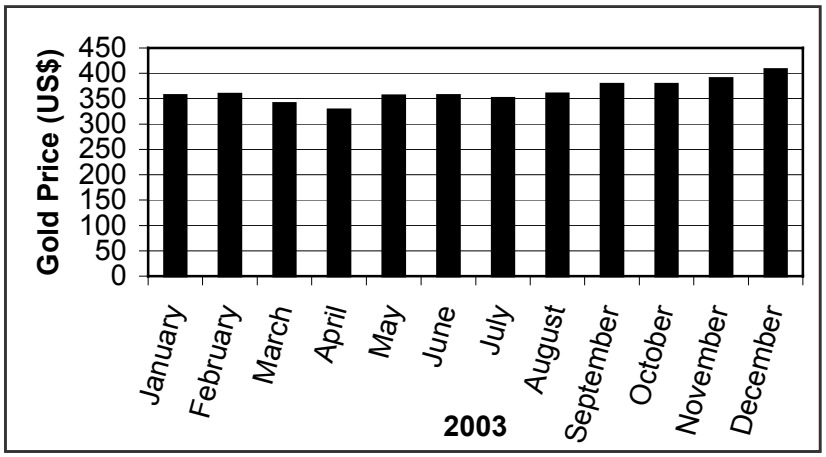

Figure 2. Average monthly price of gold.

Claim staking activity decreased from levels attained in 2002 (Table 2), most open ground in the Red Lake greenstone belt having been acquired. Staking in the Birch–Uchi greenstone belt also declined.

Table 2. Summary of claims recorded in the Red Lake District, 2003.

Year	Claim Units Cancelled	Claim Units Recorded	Claim Units Active
2003	1842	6781	21 127
2002	1795	7689	15 732
2001	290	291	2 269

During 2003, 92 assessment work reports, totalling $4 926 204, were submitted detailing exploration and development work in the Red Lake District.

Staff of the Resident Geologist's office made 21 visits to active and inactive mineral properties during the year, focussing on delivering high-quality services to the exploration and mining sector. The role of minerals, mining and the role of the prospector was explained and demonstrated to several First Nation communities, including Bearskin Lake and Pikangikum.

MINING ACTIVITY

Gold production in Red Lake continued at Goldcorp Inc.'s Red Lake Mine and at Placer Dome (CLA) Ltd.'s Campbell Mine. Historical statistics for all producers in the district are given in Table 3.

Goldcorp Inc.–Red Lake Mine

Gold production increased slightly, by 1%, over previous year's results with an increased cash cost of US$80 per ounce compared to US$65 per ounce in 2002 (press release, February 17, 2004). This was attributed to a stronger Canadian dollar (which contributed US$8 to the cost), a larger percentage of higher cost gold produced from concentrate (US$2 per ounce) and increased mining costs (US$5 per ounce). Mining costs increased due to a greater amount of underground development, increased contract labour costs, a slightly lower grade (2.20 versus 2.29 ounces per ton in 2002) and lower recovery (88.6% compared to 90.8% in 2002).

Table 3. Gold production in the Red Lake District to December 31, 2003.

Mine	Years of Production	Ore Milled (Short Tons)	Gold Produced	
			Troy Ounces	Ounces per Ton
Campbell	1949–Present[1]	18 773 490	10 725 512	0.571
Goldcorp (Dickenson)	1948–Present[1,2]	9 100 572	4 794 662	0.527[3]
Madsen	1938–1976, 1997[4]–1999	8 678 143	2 452 388	0.283[5]
Cochenour–Willans	1939–1971	2 311 165	1 244 279	0.538[6]
McKenzie Red Lake	1935–1966	2 353 833	651 156	0.277
Howey	1930–1941, 1957[7]	4 630 779	421 592	0.091[8]
Hasaga	1938–1952	1 515 282	218 213	0.144
Starratt Olsen	1948–1956	907 813	163 990	0.181
Berens River	1939–1948	560 607	157 341	0.281
Uchi	1939–1943	757 074	114 467	0.151
Jason (Argosy)	1934–1952	276 573	101 875	0.368
H.G. Young	1960–1963	288 179	55 244	0.192
Sachigo River	1938–1941	46 457	52 560	1.131
McMarmac	1940–1948	152 978	45 246	0.296
Gold Eagle	1937–1941	180 095	40 204	0.223
Jackson Manion	1934–1940	105 357	27 142	0.258
Red Lake Gold Shore	1936–1938	86 333	21 100	0.244
Hudson Patricia	1936–1937	11 228	1857	0.165
Buffalo	1981–1982	31 986	1656	0.052
Abino	1985–1986	2733	1397	0.511
Lake Rowan	1986–1988	13 023	1298	0.100
Mount Jamie	1976	972	377	0.388
Kostynuk Brothers	1963–1966	577	1126	1.951
Bobjo	1929	N/A	362[9]	N/A
Bathurst	1927–1937	562	307	0.546
Red Summit	1935–1936	591	277	0.469
Sol D'Or	1933–1936	458	258	0.563
McFinley	1987	N/A	N/A	N/A
TOTAL		**50 786 440**	**21 295 774**	**0.419**

Notes: (1) Includes final production figures for 2003.
(2) For 1997, 1998 and 1999, no production due to strike by unionized employees.
(3) From 1970, includes production from Robin Red Lake.
(4) Includes clean up of ore and materials from the mine site.
(5) Historic grade, actual grade for 1999 was 0.14 ounce per ton gold.
(6) Includes production from Annco and Wilmar properties.
(7) Continuous production 1930 to 1941; includes 268 ounces recovered from clean up in 1957.
(8) The ore mined at Howey, before sorting totalled 5 158 376 tons.
The average production from run-of-mine ore was therefore 0.0817 ounce per ton gold.
(9) Not included in total production figure
N/A Data not available

Total ore reserves, from all categories, increased by approximately 7% at year-end 2003 relative to 2002:

Category	Tons	Grade (ounces gold per ton)	Contained ounces gold
High Grade Ore			
Reserves	1 983 000	2.22	4 404 000
Resources	1 066 000	1.61	1 720 000
Subtotal	3 049 000	2.01	6 124 000
Sulphide Ore			
Reserves	1 594 000	0.34	535 000
Resources	2 134 000	0.35	740 000
Subtotal	3 728 000	0.35	1 275 000
Total Reserves	**6 777 000**	**1.09**	**7 399 000**

Early in 2003, Goldcorp announced it would proceed with an expansion of the Red Lake Mine. A new shaft, with a total (ore plus waste) hoisting capacity of 4000 tons per day, will be sunk to 7150 feet (2179 m). By year-end 2003, the new #3 shaft had been excavated to approximately 60 m, at which depth shaft-sinking equipment was installed preparatory to commencement of actual sinking in early 2004. Headframe and hoist were in place. Completion of the shaft is planned for the second half of 2006.

Production rate will be expanded to 1000 tons per day (80% from the "High Grade Zone", 20% from the "Sulphide Zones") to produce approximately 740 000 ounces gold annually within 3 years of project start-up. Capital costs (including mill expansion) are forecast to be approximately US$85 million, with a payback of 1.2 years (at a gold price of US$325 per ounce). Approximately US$40 million was spent as at December 31, 2003 (press release, February 17, 2004).

Goldcorp's budgeted US$13.2 million underground exploration drilling and development efforts produced results from the

- **High Grade Zone:** where the deepest multiple ounce intersection yet encountered, 2.92 ounces gold per ton over 72.0 feet (100.1 g/t Au over 21.95 m), occurred at a vertical depth of 7165 feet (2184 m). This is 15 feet (4.5 m) below the planned level of the new #3 shaft. Multiple zones of high-grade mineralization were encountered beneath current reserves (e.g., 16.46 ounces gold per ton over 22 feet (564.3 g/t Au over 6.71 m)); the maximum depth of estimated "High Grade Zone" resources is now 500 feet (152 m) below the currently planned base of the new shaft;
- **Sulphide Zone:** the deepest intersection (0.37 ounce gold per ton over 31.7 feet (4.88 m)) of this zone was encountered at a vertical depth of 7300 feet (2225 m), approximately 3000 feet (920 m) below where it was last mined, and 300 feet (91 m) below current resource limits (press release, September 22, 2003);
- **Far East Zone**: sulphide mineralization has been encountered over a vertical distance of 5000 feet (1524 m) and laterally for 1700 feet (518 m). A resource of approximately 240 000 ounces gold have been identified from the 16 Level to 3100 feet (945 m) depth (press release, September 22, 2003).

Forecast exploration budget for 2004 is US$14 million, which will include approximately 355 000 feet of underground diamond drilling and 3700 feet of development, targeting both high-grade and sulphide mineralization.

The mine employed approximately 450 full-time and contract staff throughout the year; Claude Lemasson was Mine Manager.

Placer Dome Inc.–Campbell Mine

The mine saw a 2% increase in the number of ounces poured, a slight increase in grade and a 17% increase in cash cost (from US$172 to US$202 per ounce gold), with a 21% increase in cash cost per ounce in the fourth quarter 2003 primarily due to the stronger Canadian dollar (press release, February 26, 2004). The mill operated at 96.1% recovery. Reserves increased by 11.8%, although grade decreased.

Total reserves in all zones at year-end are

Category	Tonnes	Grade (g/t)	Contained ounces gold
Proven	696 000	17.6	394 000
Probable	2 820 000	11.4	1 036 000
Total Reserves	3 516 000	12.6	1 430 000

A total budget of approximately $6.2 million was allocated to mine-site exploration (underground and surface) in 2003. Underground work concentrated on further delineating the DC Zone, and included drilling the extensions of the TP, SR and A5 zones. Drilling also focussed on gold mineralization in the Bruce Channel zone, approximately 1200 m northeast of the Reid shaft, previously encountered in exploration drilling from the 39 Level. The Bird's Foot zone, adjacent to the mine and north of Balmer Lake, where historical Placer Dome surface drilling returned 6.6 ounces per ton over 3.0 feet, was also a target area during 2003.

The mine had 385 employees at year-end; Peter Busse was Mine Manager.

EXPLORATION ACTIVITY

Assessment work received is listed in Table 4, and a summary of exploration activity is given in Table 5. The 18% increase in the price of gold through the year sustained high exploration interest in the Red Lake District.

Programs with significant exploration expenditures and/or significant known results, and properties whose location is of particular strategic or geologic interest are described below. Information included in this section is taken from assessment files in the Red Lake Resident Geologist's office, unless otherwise indicated. Programs are keyed with numbers to Table 5 and Figures 3, 4, 5, 6, 7 and 8.

Table 4. Assessment files received in the Red Lake District in 2003.

Abbreviations

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

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Avis Lake Area	Trinity Control Ltd. (Maskootch Lake Property)	2002	Technical Report, Recommendations	Non-Assessment	
Baird Township	Claude Resources Inc.–Placer Dome (CLA) Ltd. (Hager Project)	2002	DDH(1)=637m, Samp, Assays	2.25521	(732-2003)
Baird Township	English, P.V.	2003	Samp, Str, Assays	2.26207	(1372-2003)
Baird Township	Skyharbour Developments Ltd.–Cypress Development Corp. (Baird Property)	2002	DDH(8)=1586m, MMI, Soil Samp, Assays, Compilation and relogging of old drill core	Non-Assessment	
Baird, **Ball**, Fairlie, Killala, Mulcahy and Todd townships	Outokumpu Mines Ltd.	1994–1995	Aeromagnetic Interpretation, Review of Exploration Potential for Komatiite-hosted Nickel Sulphide Deposits	Non-Assessment	
Baird and **Fairlie** townships	Placer Dome (CLA) Ltd. (Humlin–Red Ruth Project)	2003	DDH(5)=3570m, Assays	2.25244	(470-2003)
Baird, **Fairlie**, and Heyson townships	Teck Cominco Ltd. (St. Paul Bay Property)	2003	GM, Lc	2.25012	(259-2003)
Ball Township	Redstar Gold Corporation (Claim KRL 1234502 Property)	2003	Pr, Samp	2.25860	(1046-2003)
Ball Township	Redstar Gold Corporation (Pipestone North Property)	2003	IP, Lc	2.25961	(1147-2003)
Ball Township	Redstar Gold Corporation (Pipestone South Property)	2002	GL, Channel Samp, Str, Tr, Assays	2.24871	(134-2003)
Ball and Todd townships	Placer Dome Inc. (Shane Option)	1989	GL, Samp, Tr, Assays	Non-Assessment	
Ball and **Todd** townships	Redstar Gold Corporation (Pipestone South Property)	2002	AEM, AM	2.25505	(716-2003)
Balmer Township	Rubicon Minerals Corporation (Adams Lake Project)	2003	DDH(6)=1983.5m, Assays	2.26143	(1309-2003)
Balmer Township	Rubicon Minerals Corporation (Adams Lake Project)	2002	Lc, Controlled-Source Audio-Frequency Magnetotelluric (CSAMT) Survey	2.25239 (formerly 2.24500)	(1722-2002)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Balmer Township	Rupert Resources Ltd. (Gold Centre Property)	2003	Property Review, Proposed Work Program and Budget	Non-Assessment	
Balmer, Bateman and Dome townships	Goldcorp Inc. (Abino Property)	2003	DDH(8)=2649m, Assays	2.27127	(2042-2003)
Balmer and Dome townships	Goldcorp Inc. (Marcus Property)	2001	DDH(22)=13841.5m, Assays	2.24500	(1722-2002)
Balmer, Bateman, Dome, Fairlie, **McDonough**, Shaver, Todd townships, and Blackbear Lake Area	Rubicon Minerals Corporation–AngloGold (Canada) (Red Lake Block)	2000	AEM (Time Domain)	2.24913	(170-2003)
Balmer, Bateman, **Fairlie** and Todd townships	Adaco Resources Inc. (Balmer–Bateman, Fairlie–Hammell and Martin Bay Properties)	1996	Summary Report on the Properties	Non-Assessment	
Balmer, and Ranger Townships	Rubicon Minerals Corp. (Balmer Block Property)	2001	AM	2.26472	(1633-2003)
Bateman Township, Blackbear Lake Area	Sunridge Gold Corp. (East Bay Property)	2002	Lc, MMI, Soil Samp, Assays	2.24222	(1464-2002)
Bateman Township, **Blackbear Lake Area**	Sunridge Gold Corp. (East Bay Property)	2002	MMI, Soil Samp, Assays	2.24565	(1788-2002)
Bateman, **Dome** and McDonough townships	Goldcorp Inc. (Abino Property)	2001	DDH(34)=15964m (No drill logs), Assays, Interpretation and Conclusions of Drilling	Non-Assessment	
Belanger Township	King's Bay Gold Corporation (Garnet Lake Project)	2002	DDH(12)=2944.6 feet, Assays	2.26170	(1336-2003)
Blackbear Lake and **Sobeski Lake** areas	Consolidated Abaddon Resources Inc.–Skyharbour Resources Ltd. (Sidace Lake and Black Bear II Properties)	2003	Property Evaluation, Recommendations	Non-Assessment	
Brownstone Lake Area	Tribute Minerals Inc.–Continuum Resources Ltd. (Richardson Lake Property)	2002–2003	Assays, Re-logging of core, Samp, Data compilation	2.25062	(304-2003)
Byshe Township	Masuparia Gold Corporation–Red Lake Resources Inc. (Starratt Channel Property)	2003	Lc, GM, VLF-EM	2.25493	(706-2003)
Byshe and **Heyson** townships	Skyharbour Development Ltd.–ITL Capital Corporation (Heyson Project)	2002	MMI, Pr, Till and Soil Samp, Exploration Recommendations	Non-Assessment	
Byshe and **Heyson** townships	Skyharbour Development Ltd.–ITL Capital Corporation (Heyson Project)	2003	DD, GM, Lc, OD, Samp, Assays, Exploration Recommendations	Non-Assessment	
Byshe and Heyson townships	Trinity Control Ltd. (Byshe and Heyson Township Properties)	2002	Property Review and Recommendations	Non-Assessment	
Camping Lake Area	Crawford, D.M. (Sandy Creek Beryl Property)	2001–2003	GC, Pr, Samp, Assays	2.24909	(166-2003)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Casummit Lake Area	Masuparia Gold Corporation–Red Lake Resources Inc. (Springpole Property)	2003	Lc, GM, VLF-EM	2.25392	(608-2003)
Casummit Lake Area	Trinity Control Ltd. (McIntyre Mine Property)	2002	Technical Report of Property	Non-Assessment	
Casummit Lake Area	Wolfden Resources Inc.–First Au Strategies Corp. (Argosy Mine Property)	2002	DDH(9)=1500m, Assays	2.24877	(140-2003)
Casummit Lake and Satterly Lake areas and Earngey Township	Adaco Resources Inc. (Springpole, Uchi–Hazard Properties)	1996	Summary Report on the properties	Non-Assessment	
Casummit Lake, Keigat Lake, Seagrave Lake and Satterly Lake areas	Gold Canyon Resources Inc. (Springpole Lake Property)	2002	Technical Property Report	Non-Assessment	
Casummit Lake and Little Shaumeni Lake areas	Fronteer Development Group Inc. (Mink Project)	2002	AEM, AM, GC, GL, Soil and Rock Samp, Assays	2.24984	(233-2003)
Coli Lake Area	Planet Exploration Inc.–Corsair Exploration Inc. (Sidace Lake Project)	2002	DDH(7)=1122m, Assays	2.24383	(1621-2002)
Coli Lake Area	Planet Exploration Inc. (Sidace Lake Property)	2002–2003	DDH(10)=2021m, Assays	2.25086	(327-2003)
Coli Lake Area	Planet Exploration Inc. (Sidace Lake Property)	2003	DDH(2)=534m, Assays	2.25177	(407-2003)
Corless, Dent, Knott, and Mitchell townships	Fronteer Development Group Inc. (Balmer Property)	2001–2002	AEM, AM, GL, Pr, Rock and Soil Samp, Assays	2.25017	(264-2003)
Dent Township	Nuinsco Resources Ltd. (South Bay Property)	2000	PEM	2.20915	(27-2001)
Dixie Lake Area	Sunridge Gold Corp. (Dixie Lake Property)	2002	GL, Pr, Channel Samp, Str, Assays	2.24172	(1420-2002)
Dixie Lake Area	Trinity Control Ltd. (Dixie Lake Property)	2002	GL	Non-Assessment	
Dome Township	Aquiline Resources Inc. (Dome Property)	2003	GM	2.25779	(970-2003)
Dome Township	Goldcorp Inc. (McKenzie Island Property)	2003	Lc, GM	2.25904	(1090-2003)
Dome Township	Goldcorp Inc. (Rahill Bay Property)	2003	Assays for MMI	2.25743	(935-2003)
Dome Township	Rubicon Minerals Corporation (Dorion–McCuaig Corridor)	2002	DDH(5)=1687.25m, Assays	2.25960	(1146-2003)
Dome Township	Rubicon Minerals Corporation (Dorion–McCuaig Corridor)	2002	DDH(3)=1215m, Assays	2.24721	(1954-2002)
Dome Township	Rubicon Minerals Corporation (Dorion–McCuaig Corridor)	2002	DDH(4)=900m, DGP, Assays	2.25018	(265-2003)
Dome Township	Southern Star Resources Inc.–Exall Resources Ltd. (Gold Eagle Mine Property)	2002	Property Report	Non-Assessment	
Dome and Fairlie townships	Cypress Development Corp. (McKenzie Island Project)	2002	MMI, Pr, Till and Soil Samp	2.24598	(1824-2002)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Dome and Fairlie townships	Skyharbour Developments Ltd.–Orko Gold Corporation (McKenzie Island Project)	2002	Property Evaluation, Pr, MMI, Till and Soil Samp, Assays, Recommendations	Non-Assessment	
Dome and **McDonough** townships	Rubicon Minerals Corporation (Red Lake–Island Zone Property)	2002	DGP, IP, Lc	2.25007	(253-2003)
Ear Falls, Karas Lake, Maskerine Lake and **Slate Lake** areas	877578 Ontario Ltd.	2001–2003	Bulk Samp	2.25508	(719-2003)
Earngey Township	Trinity Control Ltd. (Northgate Prospect Property)	2002	Technical Report on Property, Recommendations	Non-Assessment	
Fairlie Township	Rubicon Minerals Corporation (Humlin Property)	2003	DDH(2)=682m, DGP, Assays	2.25879	(1065-2003)
Fairlie Township	Rubicon Minerals Corporation (Humlin Property)	2002	DDH(1)=88.45m, Assays	2.24372	(1601-2002)
Fredart Lake Area	Tribute Minerals Corporation (Fredart Lake Property)	2003	Lc, Tensor Magnetotelluric {TM}, RES and IP (DCIP)	2.26520	(1678-2003)
Gerry Lake Area	Tribute Minerals Corporation (Ben Lake Property)	2002	Tensor Magnetotelluric {TM}, DC Resistivity and IP (DCIP)	2.26123	(1289-2003)
Gerry Lake Area	Tribute Minerals Corporation (Ben Lake Property)	2002	Lc, Tensor Magnetotelluric {TM}, DC Resistivity and IP (DCIP)	2.24922	(178-2003)
Goodall and Honeywell townships, Satterly Lake and **Casummit Lake** areas	Fronteer Development Group Inc. (Swain East, Sol D'Or, and Grace Properties)	2001–2002	AEM, AM, GC, GL, MMI, Pr, Soil and Rock Samp, Assays	2.24997	(243-2003)
Goodall and **Skinner** townships, Narrow Lake and Shabu Lake areas	Fronteer Development Group Inc. (Portage Property)	2002	AEM, AM, GL, Pr, Rock and Soil Samp, Assays	2.25014	(261-2003)
Granite Bay and **Rathouse Bay of Sandy Lake**, and Kakapitam Lake areas	Goldeye Explorations Ltd. (Sandy Lake Property)	2002	GL	Non-Assessment	
Heyson Township	Herbert, L.K.	2003	GL	2.25951	(1137-2003)
Heyson Township	Herbert, L.K.	2002	GL, Str	2.25584	(792-2003)
Heyson Township	Williamson, J.M.	2003	Pr, Samp, Assays	2.26464	(1625-2003)
Keigat Lake Area	Fronteer Development Group Inc. (Sandy Point Property)	2001–2002	AEM, AM, GC, GL, Pr, Soil and Rock Samp	2.24710	(1944-2002)
Killala Township	Altai Resources Inc. (Laird Lake Property)	1997	Property Report, Proposed Work Program	Non-Assessment	
Knott and **Mitchell** townships	Red Lake Resources Inc. (Mitchell–Dent Property)	2002	GC, Rock and Soil Samp, Assays	2.25191	(422-2003)
Lingman Lake Area	Anaconda Gold Corp. (Lingman Lake Property)	2003	Pr, Samp, Assays	2.26707	(1847-2003)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
McDonough Township	Goldcorp Inc. (Slate Bay Property)	2001	Lc, MMI, Soil Sampling, Assays	2.24752	(23-2003)
Medicine Stone Lake Area	Red Lake Resources Inc. (Leonard Lake Property)	2002	GC, GL, Rock and Soil Samp, Assays	2.25194	(425-2003)
Mitchell Township	Placer Dome Inc. (Trippier Option)	1990	GL, Samp, Assays	Non-Assessment	
Mitchell Township	Tribute Minerals Corporation (Garnet Lake East Property)	2003	Lc, MMI, Soil Samp, Assays	2.26238	(1403-2003)
Ranger and Willans Townships	Ansil Resources Ltd. (Ranger and Willans Twps. Properties)	2002	GM, Lc, MMI, Assays	2.24643	1866-2002; 1867-2002)
Root Lake Area	Watts, H.A. (Root Lake Property)	2002	Pr, Samp, Str, Tr, Assays	2.24151	(1400-2002)
Setting Net Lake Area	Anaconda Gold Corp. (Borthwick Lake Property)	2003	GL, Pr, Samp, Assays	2.26019	(1200-2003)
Setting Net Lake Area	Anaconda Gold Corp. (Borthwick Lake Property)	2002	GL, Pr, Samp, Assays	2.24763	(31-2003)
Slate Lake Area	Jonpol Explorations Ltd. (Slate Lake Property)	2002	GL, GC, Lc, Assays	2.24634	(1856-2002)
South of Otter Lake Area	Goldcorp Inc.–Tri Origin Exploration Ltd. (Snake Falls Project)	2002	DDH(3)=1575.5m, Assays	2.25058	(300-2003)
Rapson Bay and **Stull Lake** areas	Wolfden Resources Inc.–Kinross Gold Corporation (Stull Lake–Rapson Bay Property)	2002	GC, GL, Pr, Samp, Assays	2.25238	(466-2003)
South of Otter Lake Area	Tribute Minerals Corporation (Dixie Property)	2002	DDH(4)=1970m, DGP, Assays	2.26114	(1282-2003)
South of Otter Lake Area	Tribute Minerals Corporation (Dixie Property)	2003	Lc, TITAN-24 Distributed Array System (TM, IP, DC RES)	2.26117	(1285-2003)
Todd Township	Redstar Gold Corporation (Pipestone North Property)	2003	IP	2.25644	(845-2003)
Todd Township	Redstar Gold Corporation (Newman–Todd–Wolf Bay Property)	2003	TITAN-24 Distributed Array System (TM, IP, DC RES)	2.26314	(1478-2003)
Todd Township	Redstar Gold Corporation (Wolf Bay Property)	2002	Samp, Str, Tr, Assays	2.24486	(1708-2002)
Todd Township	Redstar Gold Corporation (Wolf Bay Property)	2003	Pr, Samp, Assays	2.25906	(1092-2003)
Todd Township	Rubicon Minerals Corporation (Rivard, Advance Red Lake, Newman–Todd Properties)	2002	GL, IP, Lc, Pr, Samp, Str, Assays, Road Building	2.25035	(280-2003)
Todd Township	Western Prospector Group Ltd.–Pacific Ridge Exploration Ltd. (Wolf Bay Property)	2002	Samp, Property Examination, Assays	2.26268	(1432-2003)
Todd Township	Zenda Capital Corp. (Pipestone Bay Gold Prospect – Mt. Jamie)	2003	Qualification Report (Reserve figures, recommendations)	Non-Assessment	
Uchi Lake Area and Earngey Township	First Au Strategies Corp. (Leg Lake Project)	2003	GM, HLEM, Lc	2.25435	(649-2003)

* **Bold** *corresponds to Resident Geologist Office file designation*

Table 5. Exploration activity in the Red Lake Resident Geologist District in 2003.

Abbreviations

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

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
1	Anaconda Gold Corp. (Borthwick Property)	Setting Net Lake Area (Au)	GL, Pr, Samp, Assays (2.26019, 1200-2003)
2	Anaconda Gold Corp. (Gold Hill Property)	North Trout Lake Area (Au)	GC, Pr, Samp, Staking, Assays
3	Anaconda Gold Corp. (Lingman Lake Property)	Lingman Lake Area (Au)	Pr, Samp, Assays (2.26707, 1847-2003) Staking
4	Anaconda Gold Corp. (Setting Net Lake Property)	Setting Net Lake Area (Au)	Pr, Samp, Staking, Assays
5	Aquiline Resources Inc.– Consolidated Global Minerals Ltd. (Dome Property)	Dome Township (Au)	GM (2.25779, 970-2003)
6	Belmont Resources Inc.– Montoro Resources Inc. (Blackbear Property)	Bateman and Shaver townships (Au)	Staking
7	Belmont Resources Inc.– Montoro Resources Inc. (Bateman Township Property)	Bateman Township (Au)	Assessment file research
8	Bjorkman, K.E.	Killala Township	Staking
9	Bullion Resources Ltd. (Blondin Lake Project)	Brownstone Lake, Casummit Lake, Upper Goose Lake (east) and Wavell Lake areas	GC, GL, Pr, Staking
10	Candor Ventures Corp.– Luxor Explorations Inc. (Slate Bay Property)	McDonough Township (Au, Cu, Ag)	IP
11	Cangold Ltd. (Formerly First Au Strategies Corp.) (Birch Lake Property)	Casummit Lake and Keigat Lake areas (Au)	Data compilation, GL, Pr
12	Cangold Ltd. (Formerly First Au Strategies Corp.) (Leg Lake Property)	Uchi Lake Area and Earngey Township (Au, Pt, Pd)	GM, HLEM, Lc (2.25435, 649-2003)
13	Champagne, G., Desmeules, M.J., Gervais, G.A., and Lamothe, M.F.	Dixie Lake and South of Byshe and Willans Township areas	Staking
14	Conquest Resources Ltd. (Alexander Project)	Balmer Township (Au, As)	DDH(10)=2650m, GM, MMI, Samp, VLF-EM, Assays, Airborne Geophysical Survey (3D Gradiometer)

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
15	Crossroads Explorations Inc. (Gullrock Property)	Ranger and Willans townships (Au)	AM (2.26962, 44-2004)
16	Dan Patrie Exploration Ltd.	Dent and Mitchell townships	Staking
17	Dan Patrie Exploration Ltd.	Blackbear Lake and Sobeski Lake areas	Staking
18	Desmeules, M.J.	Casummit Lake Area	Staking
19	Desmeules, M.J.	Gerry Lake Area	Staking
20	Desmeules, M.J.	Hanton Lake, Nungesser Lake, and Sobeski Lake areas	Staking
21	Dmitrovic, D.	Hanton Lake, Nungesser Lake, Pringle Lake, Sobeski Lake and Usick Lake areas	Staking
22	Dmitrovic, D.	Medicine Stone Lake Area	Staking
23	Dubreuil, C., Jr.	Nungesser Lake	Staking
24	Dubreuil, C., Jr.	Ranger Township	Staking
25	English, P.	Avis Lake Area	Staking
26	English, P.	Baird, Heyson, Killala, McDonough and Willans townships	Staking
27	English, P.	Baird Township	Str, Samp, Assays (2.26207, 1372-2003)
28	English, P.	Casummit Lake Area	Staking
29	English, P.	Dedee Lake and Dixie Lake areas	Staking
30	English, P.	Dent and Mitchell townships	Staking
31	English, P.	Faulkenham Lake Area	Staking
32	English, P.	Gerry Lake and South of Otter Lake areas	Staking
33	English, P.	Sobeski Lake and Usick Lake areas	Staking
34	Frank, R.A.	Dent Township	Staking
35	Fronteer Development Group Inc.–Alberta Star Development Corp. (Dixie Lake Gold Property)	Dixie Lake Area (Au)	DDH(10)=2400m, Assays, 3-D Gemcom block model of the 88-4 zone completed
36	Fronteer Development Group Inc.–Placer Dome Canada (CLA) Ltd. (Balmer Property)	Corless, Dent, Knott, and Mitchell townships (Au)	MMI, Pr, Soil + Till Samp
37	Fronteer Development Group Inc.–Placer Dome Canada (CLA) Ltd. (Portage Property)	Goodall and Skinner townships and Shabu Lake Area (Au)	AM, GL, Pr, Soil + Till Samp
38	Fronteer Development Group Inc.–Placer Dome Canada (CLA) Ltd. (Sandy Point Property)	Keigat Lake (Au, Ag)	Channel Samp, Assays
39	Fronteer Development Group Inc.–Red Lake Resources Inc. (Mink Lake Property)	Casummit Lake and Shabumeni Lake areas (Au)	DDH(5)=660m, Assays, Staking
40	Fronteer Development Group Inc.–Red Lake Resources Inc. (Sol D'Or–Swain East–Grace Lake Property)	Honeywell and McNaughton townships, Shabumeni Lake Area (Au, Cu)	DDH(4)=658.48m, Assays, Staking
41	GMD Resource Corp. (Red Lake Property)	Byshe and Heyson townships (Au)	Pr
42	Golconda Resources Ltd. (Medicine Stone Property)	Baird Township and Medicine Stone Lake Area (Au)	Pr, Samp, Staking, Property Evaluation and Assessment File Research

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
43	Gold Canyon Resources Inc. (Springpole Property)	Casummit Lake Area (Au)	GC, GL, Samp, Extensive analysis and modelling of Springpole, identified multiple structural intersections, target areas
44	Goldcorp Inc.	Blackbear Lake, Kavanagh Lake, Pringle Lake and Sobeski Lake areas	Staking
45	Goldcorp Inc.	Dome Township	Staking
46	Goldcorp Inc.	Otter Lake and South of Otter Lake areas (Au, Ag, Cu, Zn)	Staking
47	Goldcorp Inc.	Ranger Township	Staking
48	Goldcorp Inc.	Willans Township	Staking
49	Goldcorp Inc. (Abino Property)	Balmer, Bateman and Dome townships (Au)	DDH(8)=2649m, Assays (2.27127, 2042-2003)
50	Goldcorp Inc. (Cochenour–Willans Mine Property)	Dome Township (Au)	Crown Pillar Project, DDH(2)=2590m, Work on mine site - demolition of older buildings, water tower, tailings water management, dewatering stopped, ferric sulphate plant to be installed
51	Goldcorp Inc. (Marcus Property)	Dome Township (Au)	DDH(11)=4010m, GL, Samp, Str
52	Goldcorp Inc. (McKenzie Island Property)	Dome Township (Au)	Lc, GM (2.25904, 1090-2003)
53	Goldcorp Inc. (Middle Bay Property)	Ball and Todd townships	Pr, DD recovery, Staking
54	Goldcorp Inc. (Rahill Bay Property)	Dome Township (Au)	Assays for MMI (2.25743, 935-2003)
55	Goldcorp Inc. (Wilmar Property)	Dome Township (Au)	GL, Samp, Str
56	Goldcorp Inc.– MetalCORP Ltd. (Blackbear Property)	Blackbear Lake Area (Au)	High Resolution Aeromagnetic (HRAM) survey, Geophysical Program, DD
57	Golden Arm Mines Ltd.	Todd Township (Au)	Lc, GC, GL, Assessment file research
58	Golden Chief Resources Inc.	South of Otter Lake Area	Staking
59	GrandCru Resources Corporation (formerly New Stafford Industries Ltd.) (Coli East Property)	Sobeski Lake Area (Au)	Lc, Pr
60	Holden, P.D.	Honeywell Township	Staking
61	Huston, C.D.	Dent Township	Staking
62	Huston, C.D.	Gerry Lake Area	Staking
63	Huston, C.D.	Knott and Mitchell townships	Staking
64	Interquest Inc. (Earngey Township Property)	Earngey Township	AM (2.27092, 171-2004)
65	Interquest Inc. (Heyson Township Property)	Heyson Township	AM
66	Jilbey Gold Exploration Ltd. (Formerly Jilbey Enterprises Ltd.) (Red Lake–Birch Lake Diamond Project)	Unspecified Areas (Diamond)	GM, AM, MMI, Till, soil, and lake bottom Samp, 40 of 84 claims explored
67	Jilbey Gold Exploration Ltd. (Formerly Jilbey Enterprises Ltd.) (Shabumeni Lake Prospect)	Shabumeni Lake Area (Au)	GM, MMI, Pr, Samp

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
68	Jilbey Gold Exploration Ltd. (Formerly Jilbey Enterprises Ltd.)– Gold Canyon Resources Inc. (Springpole Lake Prospect)	Casummit Lake Area (Diamond, Au)	GM, AM, MMI, Till, soil, and lake bottom Samp
69	King's Bay Gold Corp. (Richardson Lake Property)	Casummit Lake Area (Au)	Staking
70	King's Bay Gold Corp. (Sidace Lake North Property)	Nungesser Lake Area (Au)	Lc, Staking
71	King's Bay Gold Corp.– Palomino Mining & Exploration– Horizon Gold Corp. (Headway Property)	Balmer and Dome townships (Au)	DDH(11), GM, Lc, Assays
72	King's Bay Gold Corp.– Solitaire Minerals Corp. (Garnet Lake Property)	Belanger Township (Au, Cu)	Assays from Oct 2002 DD
73	Labine, B.M.	Keigat Lake Area	Staking
74	Lake Shore Gold Corp. (Rapson Bay Property)	Rapson Bay Area (Au)	Samp, Ground Geophysics
75	MacDougall, D.M.	Nungesser Lake and Pringle Lake areas	Staking
76	Maciejewski, A.J.	Gerry Lake Area	Staking
77	McDougall, K.A.	Stull Lake Area	Staking
78	MetalCORP Ltd.	Blackbear Lake Area and Shaver Township	Staking
79	Middaugh, R.D.	Setting Net Lake Area	Staking
80	Patrie, B.C.	Blackbear Lake, Coli Lake and Sobeski Lake areas	Staking
81	Patrie, B.C.	Byshe Township	Staking
82	Patrie, B.C.	Dent Township	Staking
83	Placer Dome Canada (CLA) Ltd. (Humlin–Redruth Project)	Baird and Fairlie townships (Au)	DDH(5)=3570m, Assays (2.25244, 470-2003)
84	Placer Dome Canada (CLA) Ltd.– Claude Resources Inc. (Madsen Mine Property)	Baird Township (Au)	DDH(49)=20 017m, Assays, Geophysics, 3D modelling, Str, Tr, Road Construction
85	Placer Dome Canada (CLA) Ltd.– Sabina Resources Ltd. (80%)– Claude Resources Inc. (20%) (Redaurum Property)	Baird Township (Au)	DDH(9)=6029m, GL
86	Planet Exploration Inc.	Coli Lake, Nungesser Lake and Sobeski Lake areas	Staking
87	Planet Exploration Inc.– Goldcorp Inc. (Coli Lake Property)	Coli Lake Area (Au)	DDH(6)=1019m, Assays (2.25086, 327-2003) DDH(2)=534m, Assays (2.25177, 407-2003) DDH(6)=2915m, Assays, Pr, AM, Samp, GM, IP, relogging and Samp drill core, Overburden Samp, total for year DDH(22)=6618m
88	Planet Exploration Inc.–Goldcorp Inc. (Sidace Lake Property)	Coli Lake Area (Au)	DDH(3)=2300m
89	Red Lake Resources Inc.– Masuparia Gold Corporation (Springpole (Wagner) Property)	Casummit Lake Area (Au)	Lc, GM, VLF-EM (2.25392, 608-2003)
90	Red Lake Resources Inc.– Masuparia Gold Corporation (Starratt Channel Property)	Byshe Township (Au)	Lc, GM, VLF-EM (2.25493, 706-2003) Staking

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
91	Red Lake Resources Inc.– Renaissance Mining Corp. (Killala and Laird Lake Properties)	Killala Township and Medicine Stone Lake Area (Au)	Lc, GM, VLF-EM
92	Redstar Gold Corp (Claim KRL 1234502 Property)	Ball Township (Au)	Pr, Samp (2.25860, 1046-2003)
93	Redstar Gold Corp.– Biron Bay Resources Ltd. (Biron Bay Property)	Ball and Todd townships (Au, Cu, Zn)	GL, Lc, Pr, Str, Grab Samp, Assays, DD, Geophysics
94	Redstar Gold Corp.– Rubicon Minerals Corporation (Newman–Todd Property)	Todd Township (Au)	TITAN-24, DD
95	Redstar Gold Corp– Rubicon Minerals Corporation (West Red Lake Property–Pipestone East Property)	Todd Township (Au)	GL, Pr, Lc, Geophysics
96	Redstar Gold Corp.– Rubicon Minerals Corporation (West Red Lake Property–Pipestone North Property)	Ball and Todd townships (Au)	IP, Lc (2.2561, 1147-2003) IP (2.25644, 845-2003) GL, Pr, Grab Samp, Assays, Staking
97	Redstar Gold Corp– Rubicon Minerals Corporation (West Red Lake Property–Wolf Bay Property)	Todd and Killala townships (Au)	Assays, Pr, Samp (2.25906, 1092-2003) DD, GL
98	Rivard, D.	Skinner Township	Staking
99	Rubicon Minerals Corporation	Bateman Township	Staking
100	Rubicon Minerals Corporation	Blackbear Lake Area	Staking
101	Rubicon Minerals Corporation	Coli Lake Area	Staking
102	Rubicon Minerals Corporation	Dome Township	Staking
103	Rubicon Minerals Corporation	Hanton Lake Area	Staking
104	Rubicon Minerals Corporation	McDonough Township	Staking
105	Rubicon Minerals Corporation (Dorion–McCuaig Corridor)	Dome and McDonough townships (Au)	DDH(6), Assays, DDH(?)=16,500 feet
106	Rubicon Minerals Corporation (McFinley Gold Project)	Bateman Township (Au)	DDH(44)=9571m, Assays, Samp and re-logging drill core
107	Rubicon Minerals Corporation (Humlin Property)	Baird Township (Au)	DDH(2)=682m, DGP, Assays (2.25879, 1065-2003)
108	Rubicon Minerals Corporation (Sidace Lake Property)	Coli Lake Area (Au)	AEM, AM (2.26918, 8-2004)
109	Rubicon Minerals Corporation (Slate Bay Property)	McDonough Township (Au)	DDH(3)=1000m
110	Rubicon Minerals Corporation– AngloGold (Canada) Exploration Ltd.– Redstar Gold Corporation (Rivard–Advance Project)	Todd Township (Au)	TITAN-24 Distributed Array System (TM, IP, DC Res) (2.26314, 1478-2003) DDH(12)= 10,226 feet, Assays
111	Rubicon Minerals Corporation– Goldcorp Inc. (Adams Lake Project)	Balmer Township (Au)	DDH(6)=1983.5m, Assays (2.26143, 1309-2003)
112	Rubicon Minerals Corporation– Golden Tag Resources Ltd. (McCuaig Gold Project)	Dome Township (Au)	Assays, DDH(10)=5260 feet
113	Rupert Resources Ltd. (Gold Centre Property)	Balmer Township (Au)	Property Review, Proposed Work Program, Budget (Non-Assessment) DDH(6)=2500m

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
114	Ruza, J.	Baird, Bateman and Heyson townships	Staking
115	Ruza, J.	Bruce Lake Area	Staking
116	Ruza, J.	Faulkenham Lake Area	Staking
117	Ruza, J.	Medicine Stone Lake Area	Staking
118	Ruza, J.	South of Otter Lake Area	Staking
119	Skyharbour Resources Ltd.	Blackbear Lake Area	Staking
120	Skyharbour Resources Ltd. (Slate Bay Property)	Fairlie and Graves townships (Au, Pt, Pd)	ODH(61)=576m, Pr, Till Samp (2.26419, 1577-2003)
121	Skyharbour Resources Ltd.– Bayfield Ventures Corp.– Placer Dome (CLA) Ltd. (Baird Property)	Baird Township (Au)	Total DD for 2003 is DDH(13)=5189m, Assays
122	Skyharbour Resources Ltd.– Consolidated Abaddon Resources Inc. (Sidace Lake and Black Bear II Properties)	Black Bear Lake and Sobeski Lake areas (Au, Cu Zn)	Property Evaluation, Recommendations (Non-Assessment) DD, GC, GL, Geophysical Survey, MMI, Pr, Till Samp
123	Skyharbour Resources Ltd.– Cypress Development Corp.– Orko Gold Corporation (McKenzie Island and East Humlin Properties)	Dome, Fairlie and Heyson townships (Au)	Staking DDH(13)=2081.8m, Rock and Till Samp, ODH(133)=911.6m, Assays (Non-Assessment) MMI
124	Skyharbour Resources Ltd.– ITL Capital Inc. (Heyson and Byshe Township Property)	Heyson and Byshe townships (Au)	Assays, DD, GM, Lc, Samp, OD, Exploration Recommendations (Non-Assessment) Lc, Staking, Phase III - DDH(4)=1000m, Assays, Total field and vertical gradient mag survey, Total drilling in 2003, DDH(13)=2018m
125	Solitaire Minerals Corp.– United Bolero Development Corp. (South Baird Property)	Baird Township (Au)	Lc, Geophysics
126	Southern Star Resources Inc.– Exall Resources Ltd. (Gold Eagle Property)	Dome Township (Au)	DDH(9)=4175m total for 2003, Pr, GL, GC, GM, MMI, Tr, VLF-EM, Samp
127	Sunridge Gold Corp.– Continuum Resources Ltd.– Tribute Minerals Inc. (McIntyre Properties)	Casummit Lake Area (Au)	MMI, Rock and Soil Samp, Assays (Non-Assessment) GL, MMI, Rock and Soil, Assays (2.27065, 146-2004)
128	Teck Cominco Ltd. (St. Paul Bay Property)	Baird, Fairlie and Heyson townships (Au)	Lc, GM (2.25012, 259-2003) DDH(5)=1124.5m, Assays, Mag Susceptability (2.26646, 1790-2003)
129	Teck Cominco Ltd.	Killala Township	Staking
130	Tri Origin Exploration Ltd. (Red Lake Extension Property)	South of Otter Lake Area (Au, Ag, Cu, Zn)	Lc, GL, GC, IP, Samp, GC Assays
131	Tribute Minerals Inc.	Agnew, Bowerman, Dent and Mitchell townships	Staking
132	Tribute Minerals Inc.	Bruce Lake Area	Staking
133	Tribute Minerals Inc.	Dixie Lake Area	Staking
134	Tribute Minerals Inc. (Fredart Lake Property)	Fredart Lake Area and Belanger Township (BM)	Lc, Tensor Magnetotelluric (TM), DC Resistivity and IP (DCIP)(2.26520, 1678-2003) DDH(3)
135	Tribute Minerals Inc. (Copperlode Property)	Fredart Lake Area and Belanger Township (BM)	TITAN-24

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
136	Tribute Minerals Inc. (Garnet Lake (Arrow) Property)	Fredart Lake Area and Belanger Township (BM)	DD, TITAN-24 survey
137	Tribute Minerals Inc. (Garnet Lake East Property)	Mitchell Township (Cu, Zn, Cd, Pb)	Lc, Assays, MMI, Samp (2.26238, 1403-2003)
138	Tribute Minerals Inc. (Dixie 17, 18 and 19 Properties)	South of Otter Lake Area (Cu, Zn, Au, Ag)	TITAN-24 Survey (MT, IP, RES) (2.26117, 1285-2003) Staking DDH(1)=1833.3m (Dixie 18), Assays
139	Tribute Minerals Inc.– Continuum Resources Ltd. (Richardson Lake Property)	Brownstone and Casummit lakes Area (Au)	DD Re-logging and Samp (2.25062, 304-2003) GL, MMI, Rock and Soil Samp, Assays (2.27065, 146-2004)
140	Westchester Resources Ltd. (Formerly Nucanolan Resources Ltd.) (Satterly Lake Property)	Satterly Lake Area (Au)	AM, AEM, GL, Pr, Samp, Assays (Whole Rock) (2.26389, 1554-2003)
141	Williamson, J.M.	Casummit Lake Area	Staking
142	Williamson, J.M.	Heyson Township (Au)	Pr, Samp, Assays (2.26464, 1625-2003)
143	Wolfden Resources Inc. (Bateman (Rivard) Property)	Bateman Township (Au)	DD
144	Wolfden Resources Inc.– Cangold Ltd. (Formerly First Au Strategies Corp.) (Argosy Gold Mine Property)	Casummit Lake Area (Au)	DDH(12)=3350m, IP, Lc, Assays from re-sampled core
145	Wolfden Resources Inc.– Interquest Inc. (Follansbee Red Lake Property)	Dome Township (Au)	DDH(6)=3876m, Lc, GM, GC, Soil Samp, Assays
146	Wolfden Resources Inc.– Kinross Gold Corporation (Newman-Heyson–Nova-Co Property)	Heyson Township (Au)	DDH(11)=2407m
147	Wolfden Resources Inc.– Lateegra Resources Corp. (Bonanza Red Lake Property)	Dome Township (Au)	DDH(5)=625m, GL, GM, Lc, Assays
148	Wolfden Resources Inc.– Placer Dome (CLA) Ltd. (East Bay Property)	Bateman Township (Au)	AM, DDH(26)=9755m, GC, GL, Soil Samp, Pr, Assays
149	Wolfden Resources Inc.– Placer Dome Inc. (Marathon Red Lake Property)	Balmer Township (Au)	DDH(9)=3199m, GM, Lc
150	Wolfden Resources Inc.– Teck–Cominco Ltd. (My–Ritt Property)	Heyson Township (Au)	DDH(5)=2000m
151	Wolfden Resources Inc.– Teck Cominco Ltd. (St. Paul's Bay Property)	Heyson Township (Au)	DDH(5)=1124.5m, Assays, Mag Susceptability (2.26646, 1790-2003)
152	Wolfden Resources Inc.– Teck–Cominco Ltd. (Skinner Gold Property)	Skinner Township (Au)	AM, GC, GL, Rock and Till Samp, Assays (2.26564, 1720-2003)
153	Zenda Capital Corp.– Vedron Gold Inc.– Jamie Frontier Resources Inc. (Jamie Frontier Property)	Todd Township (Au)	Qualification Report (Reserve figures and recommendations) (Non-Assessment) DDH(6)=736m, Assays, Grab Samp, Pr

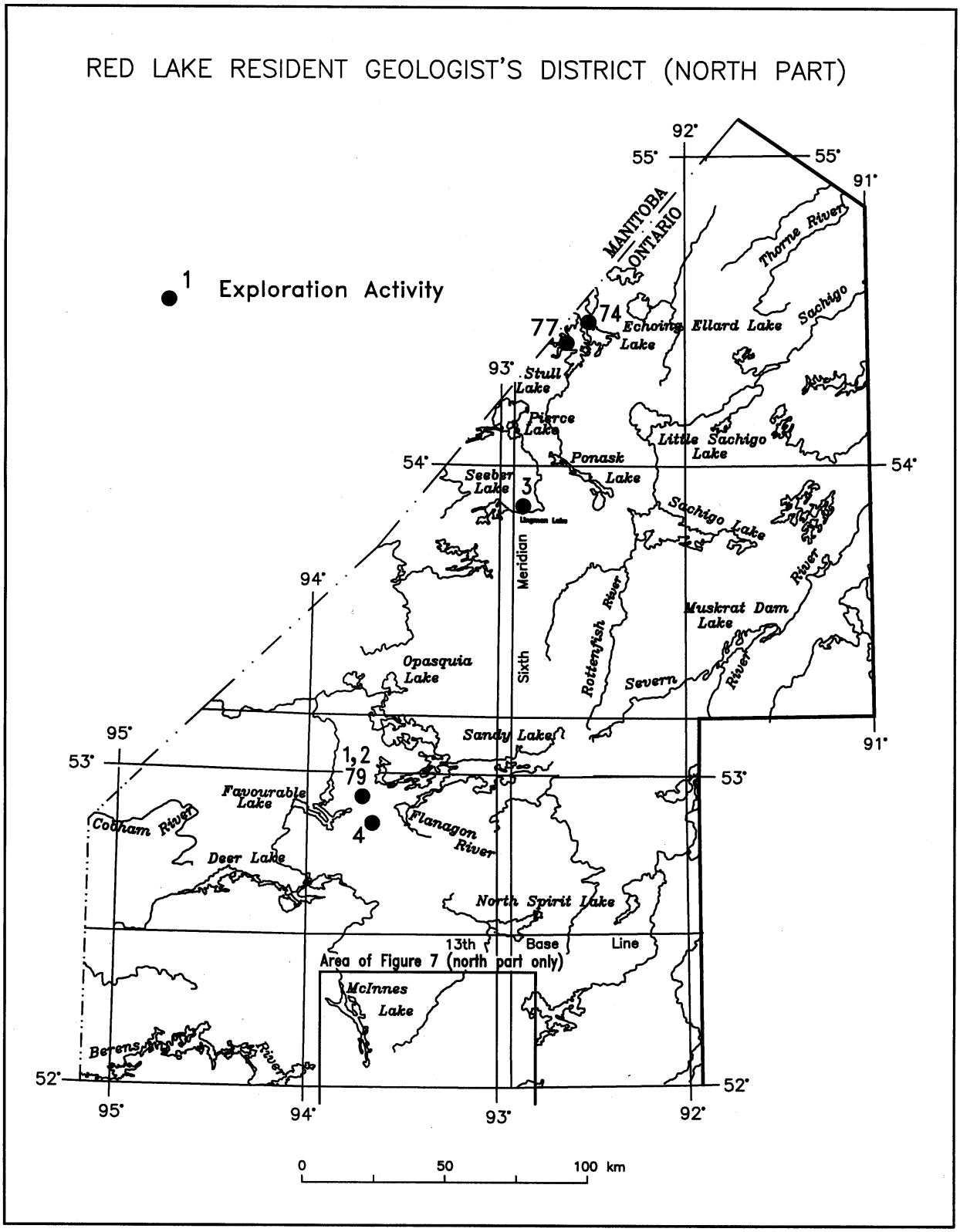

Figure 3. Red Lake District (north part): exploration activity (*see* Table 5).

Red Lake Greenstone Belt

Active exploration in the Red Lake belt has increased dramatically since 2001. Table 5 lists the companies and individuals who reported some activity on their property during 2003; several are described in more detail in the following pages. The increase in gold exploration coincided with multi-year investigations by the Ontario Geological Survey (OGS) and the Geological Survey of Canada (GSC) in conjunction with the Western Superior NATMAP program. This was the fourth year of a multi-year GSC project to investigate the Red Lake gold deposits. Work in 2003 continued to focus on the geology of the Red Lake Mine "High Grade Zone" and its relationship to the Red Lake "Mine Trend" in order to better understand the key geological parameters controlling its formation (Chi et al. 2003; Dubé et al. 2003). Uranium–lead (U/Pb) geochronological data combined with detailed mapping and interpretation of crosscutting relationships will provide, for the first time, timing constraints and new insights into

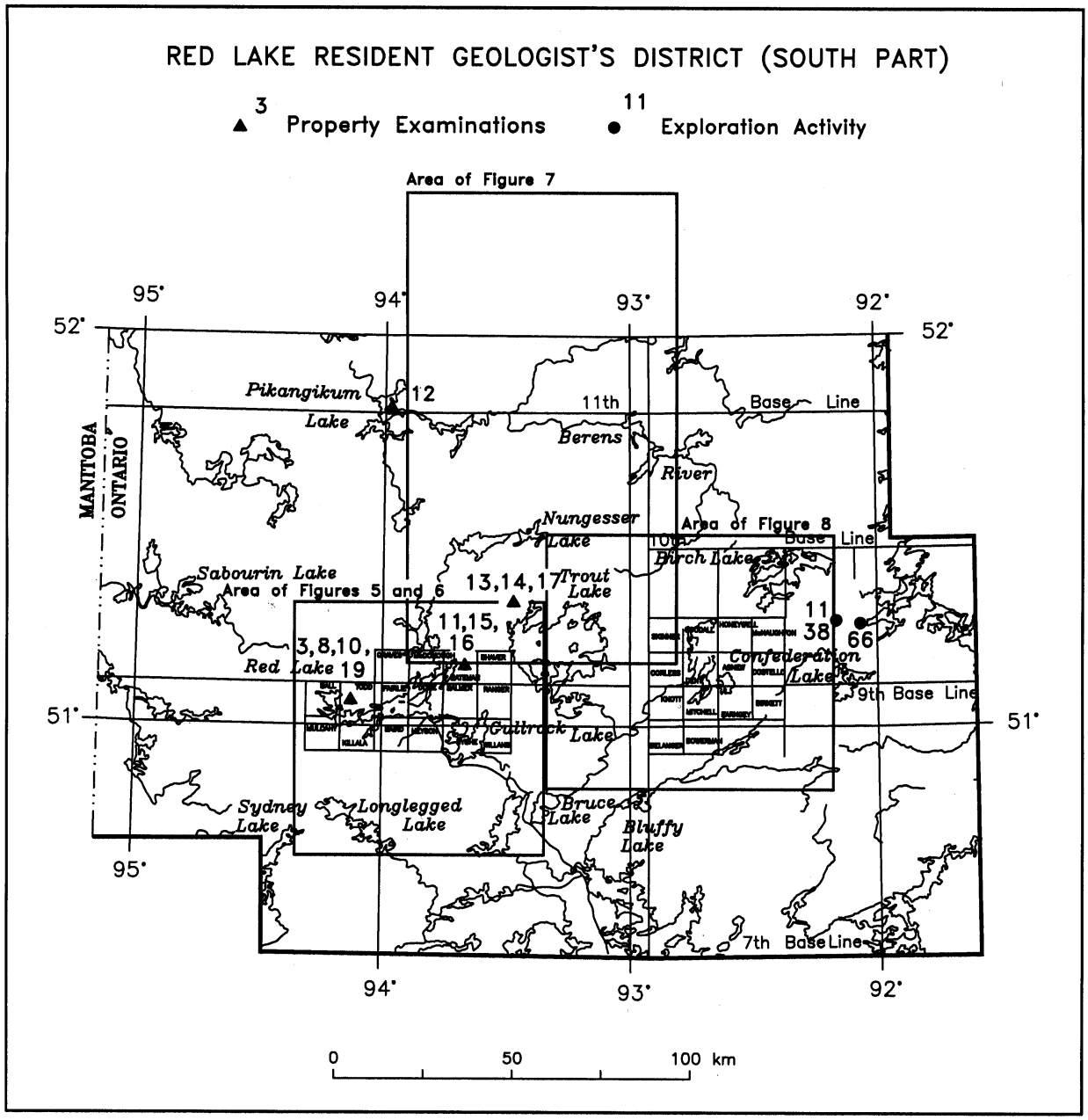

Figure 4. Red Lake District (south part): exploration (*see* Table 5) and property examinations (*see* Table 8).

the formation of the exceptionally rich Goldcorp "High Grade Zone" of the Campbell Mine–Red Lake Mine deposit (B. Dubé, Geological Survey of Canada, written communication, 2004; *see also* "OGS Activities and Research by Others"). This work and earlier programs have led to a reassessment of the genesis of the gold deposits of the Red Lake greenstone belt (Table 6). Recent publications on gold mineralization in the Red Lake camp cited by Lichtblau et al. (2003) and this volume have influenced the models now in use by explorationists in the Red Lake belt and other belts with similar geological environments.

Investigation of the gold deposits by both government and industry has led to a better understanding of the relationship between gold mineralization and metamorphism. The first phase of a project designed to produce a new, belt-scale metamorphic framework for gold exploration, financed by Placer Dome Inc. and the OGS, was completed in 2003 (Thompson 2003). This work has led to an increase in confidence of the importance of the link between metamorphic isograds and gold mineralization. In particular, the Campbell–Red Lake orebody and several of the past producing gold mines are located in zones of low-grade, low-pressure metamorphism, but close to the isograd between lower and upper greenschist facies. Further investigation of the relationship between metamorphic grade and gold mineralization could identify significant new exploration targets.

Isolated occurrences of high metamorphic grade rocks within low-grade zones and, conversely, low-grade rocks within high metamorphic grade zones, and areas of closely spaced metamorphic grade boundaries are suggested as local zones of focussed flow of heat and hydrothermal fluid. As potential areas for gold deposition, these areas should be considered for exploration and include 1) the head of Slate Bay, McDonough Township; 2) the Alcourt to Mount Jamie Mine trend, Fairlie and Todd townships; and 3) the area underlain by east-trending Confederation assemblage rocks between Highways 105 and 618 in north-central Heyson Township.

Combined production from the Campbell–Red Lake orebody and the Cochenour–Willans Mine, 5 km to the northwest along the "Mine Trend", shows that fully 78% of gold production has come from disseminated sulphide zones and siliceous replacement orebodies (Lichtblau et al. 2003).

Table 6. Red Lake greenstone belt gold production and grades versus ore type.

Mine	Mineralization	Gold Produced	
		Troy Ounces	Ounces per Ton
Campbell	Disseminated sulphide zones and structurally controlled siliceous replacement zones in Fe-carb veined and altered basalt	10 157 109	0.581
Red Lake	Disseminated sulphide zones and structurally controlled siliceous replacement zones in Fe-carb veined and altered basalt	4 794 662	0.527
Madsen	High-temperature disseminated-replacement-style in altered basalt	2 452 388	0.289
Cochenour–Willans	Siliceous replacement zones in Fe-carb veins, pods and altered basalt	1 244 279	0.538
McKenzie Red Lake	Qv in shear at granodiorite–diorite contact (McKenzie Stock)	651 156	0.277
Howey	Qv in tension fractures in Qtz-porphyry dike	421 592	0.091
Hasaga	Qv in tension fractures in Qtz-porphyry dike	218 213	0.144
Starratt Olsen	Disseminated-replacement-style in altered basaltic rocks	163 990	0.181
H.G. Young	Qtz and qtz-carb veins in altered basalt	55 244	0.192
McMarmac	Siliceous zones in massive carbonate pods and lenses	45 246	0.296
Gold Eagle	Qv in shear near granodiorite–diorite–sediment contact (McKenzie Stock)	40 204	0.223
Gold Shore	Qtz lenses at junction of conjugate shears in Dome Stock	21 100	0.244
Buffalo	Qv with tourmaline and sulphides in conjugate shears in Dome Stock	1656	0.052
Abino	Qtz-sulphide veins in granodiorite	1397	0.511
Lake Rowan	Qtz-sulphide veins in altered mafic rocks	1298	0.100
Mount Jamie	Qtz-sulphide vein in altered basalt	377	0.388
Red Summit	Qtz-sulphide veins in local shear zone	277	0.469
McFinley	Qtz-sulphide veins and replacements of mafic, ultramafic rocks and IF	N/A	N/A

Abbreviations: Fe-carb: iron-carbonate; Qv: quartz vein; Qtz: quartz; qtz-carb: quartz and carbonate; IF: iron formation

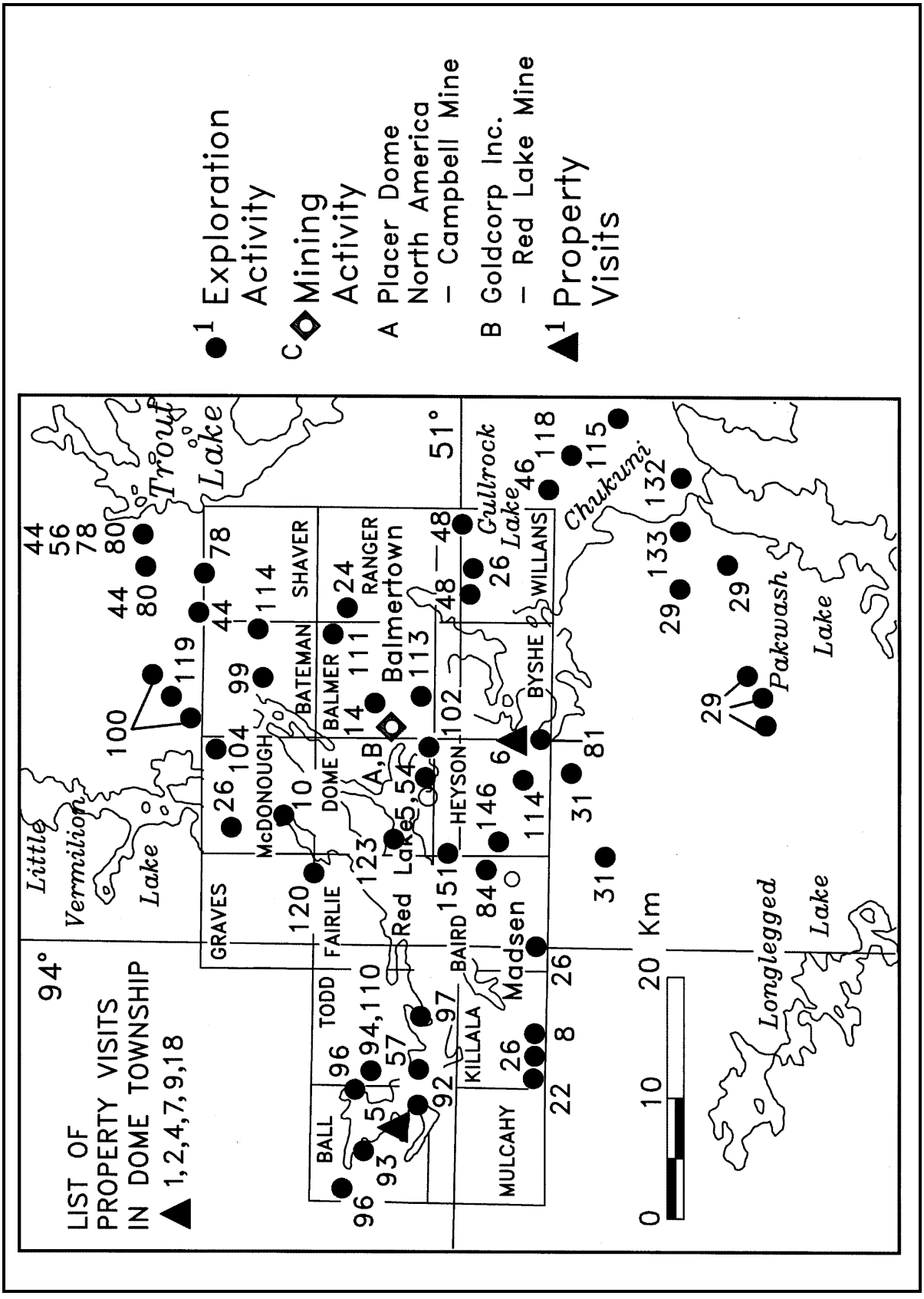

Figure 5. Red Lake greenstone belt: exploration (*see* Table 5) and mining activity, and property visits (*see* Table 8).

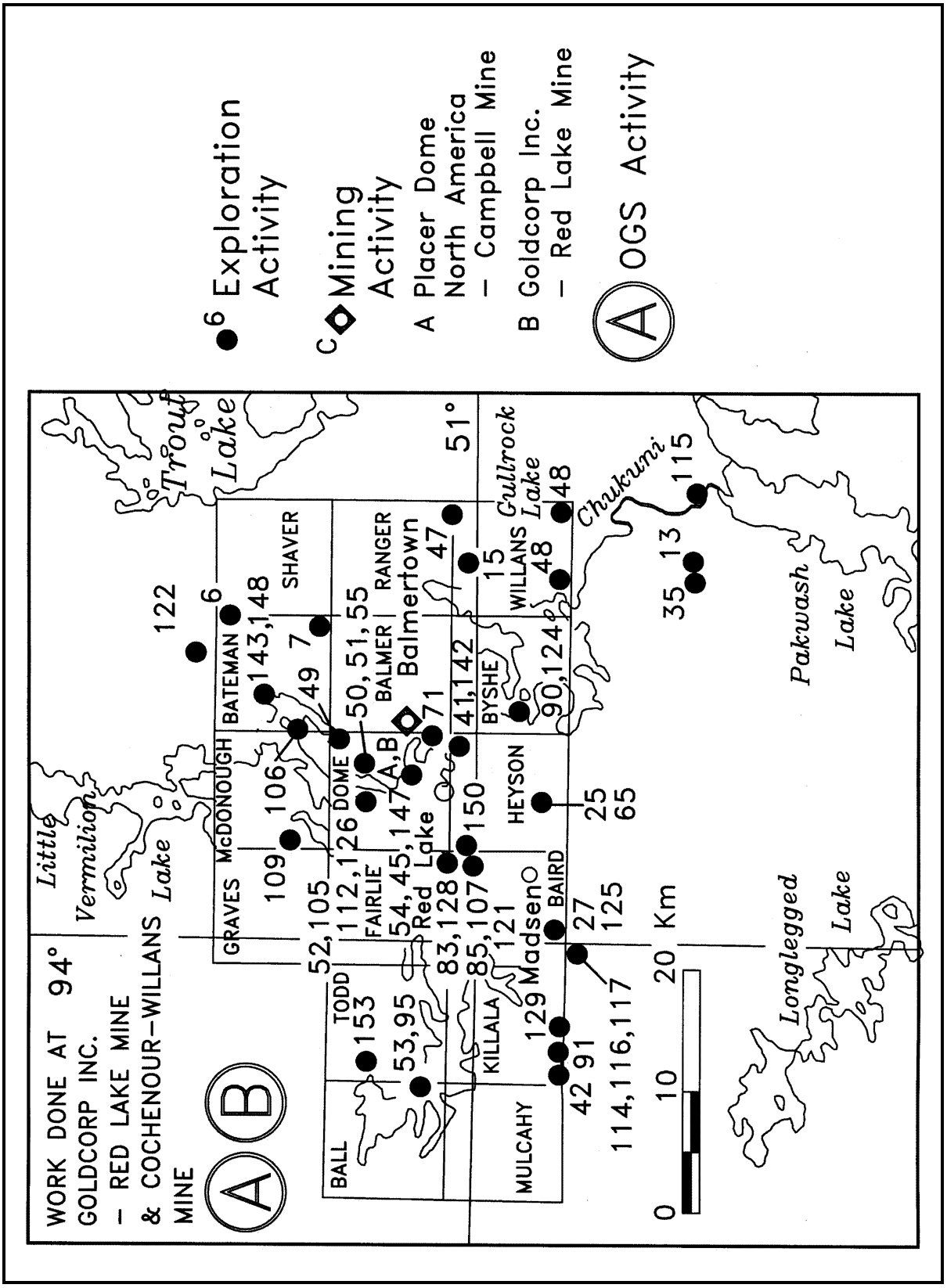

Figure 6. Red Lake greenstone belt: exploration (*see* Table 5) and mining activity, and OGS activities.

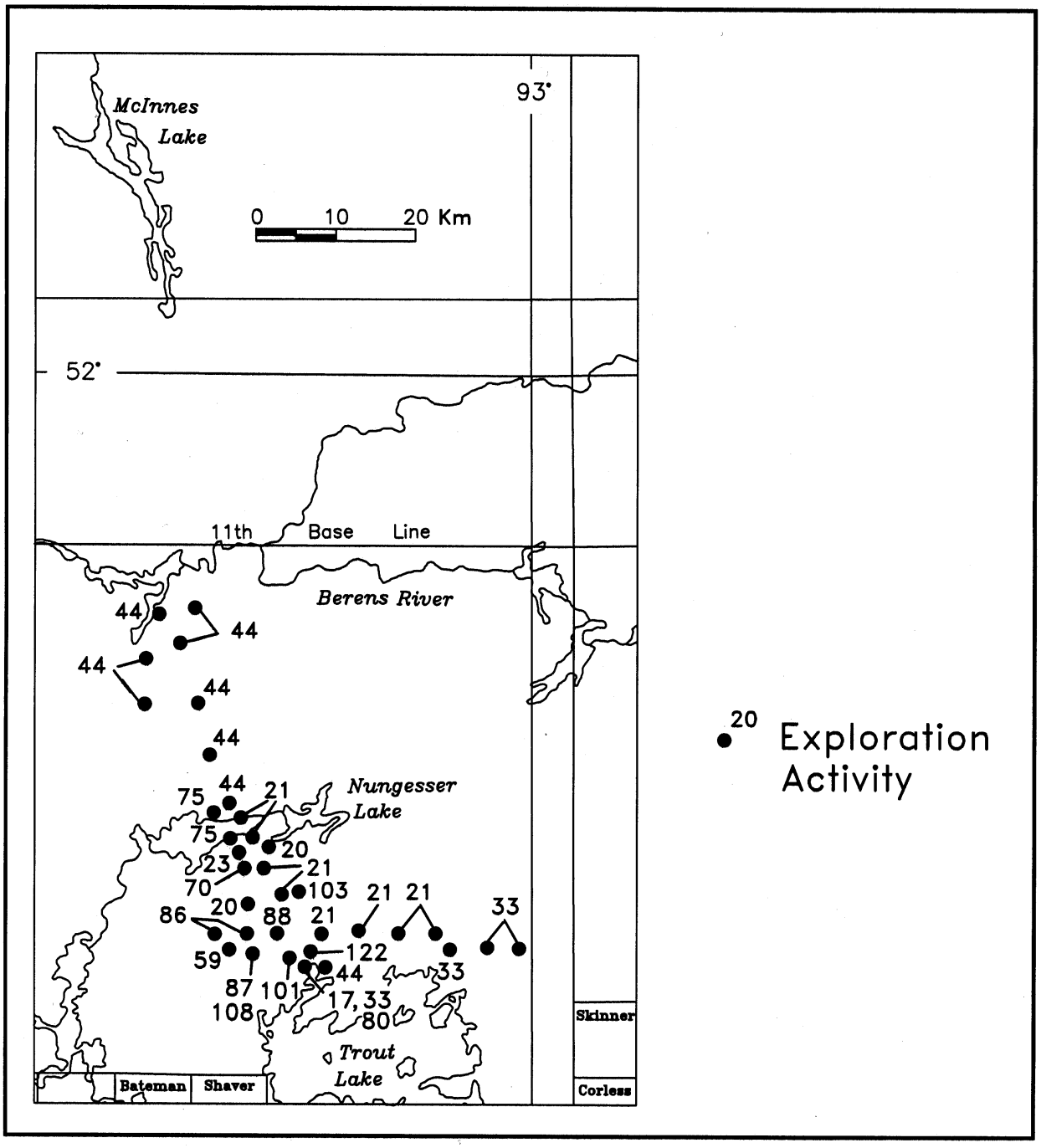

Figure 7. Northern extension of Red Lake greenstone belt: exploration activity (*see* Table 5).

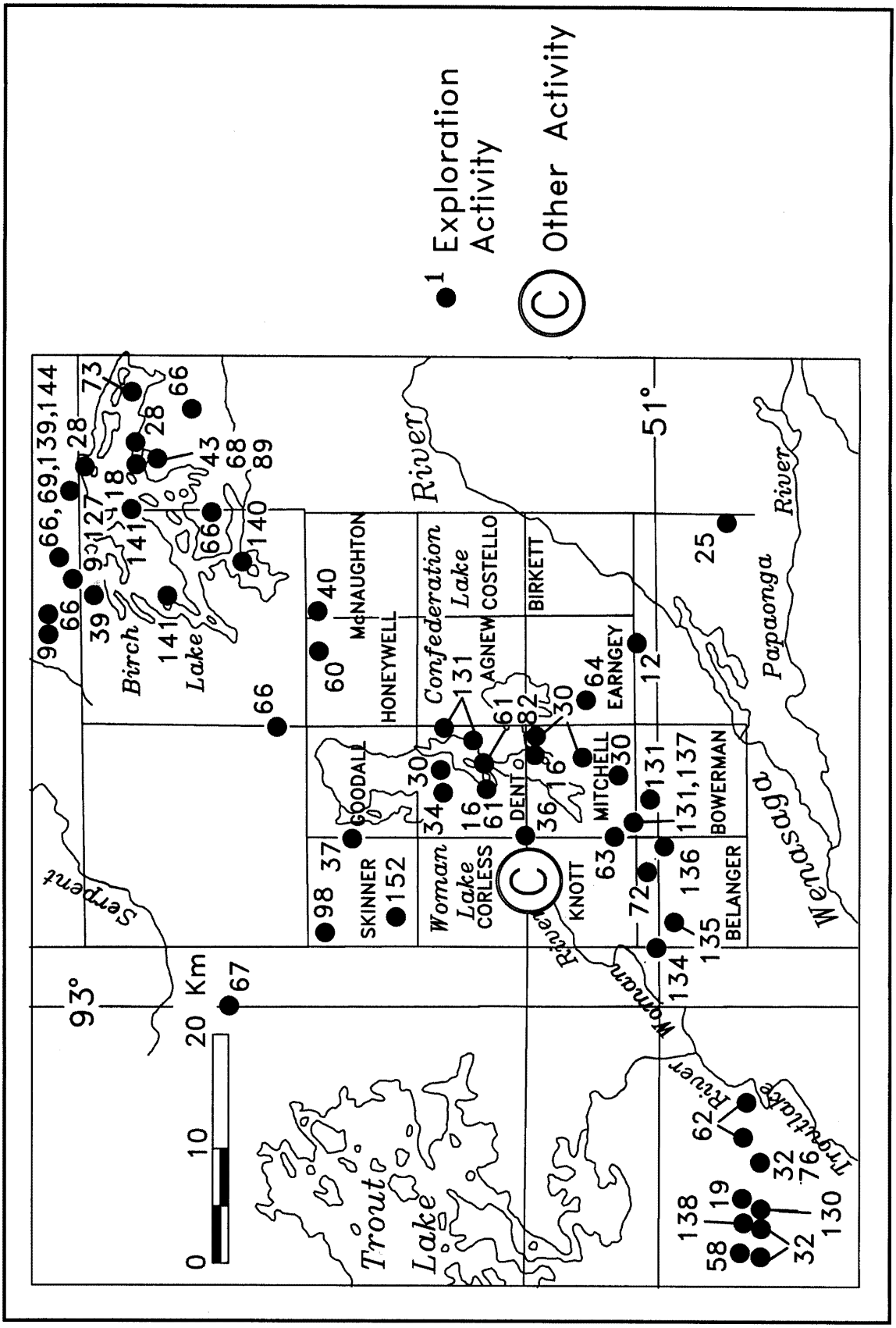

Figure 8. Birch–Uchi and Confederation greenstone belts: exploration (*see* Table 5), and other activity.

BELMONT RESOURCES INC.–MONTORO RESOURCES INC.

The companies have a joint venture agreement on 2 claim blocks, the 260 hectare (ha) Blackbear property in Bateman and Shaver townships and the Bateman property in Bateman Township, also comprising 260 ha. The Black Bear property covers the northeast extension of the East Bay deformation zone (EBDZ) and is immediately south of the MetalCORP–Goldcorp Inc. Black Bear property. The Bateman property is adjacent to Rubicon Minerals claims in Bateman Township.

CANDOR VENTURES CORP.

The **Slate Bay property** consists of 8 contiguous, patented claims located in southern McDonough Township, about 10 km north-northwest of the town of Red Lake. Candor has acquired the right to earn a 75% interest in the property from Luxor Explorations Inc. The initial work done on the property focused on the North (Gold) zone in the 1930s. Drilling in 1937 intersected up to 0.23 ounce gold per ton across 15.0 feet (4.57 m) in a weakly pyritic, "strata bound" chloritic tuff unit (Candor Ventures Corp., www.candorventures.com, accessed February 9, 2004). The Breccia zone, located a distance of about 1 km from the North zone to the southwest, consists of widespread Cu-Ag-Au mineralization associated with intense magnetite-actinolite-chlorite-epidote-garnet alteration. The mineralization is related to strong magnetic anomalies and consists of locally semi-massive pyrite and lesser pyrrhotite, chalcopyrite and tetrahedrite. Drilling in 1962 intersected erratic mineralization with values of up to 1.8% Cu and 130.38 g/t Ag within a 23.77 m interval (DDH 62-5) (Candor Ventures Corp., www.candorventures.com, accessed February 9, 2004).

The 2002 diamond drill campaign intersected a chalcopyrite-pyrrhotite mineralized volcanic breccia that averaged 2.42% Cu, 0.68 g/t Au and 90.80 g/t Ag over 2.68 m in hole SB-02-1 (Candor Ventures Corp., press release, October 23, 2002). Candor believes that the property has the potential to host large tonnage iron-oxide Cu-Au mineralization in the Breccia zone and high-grade, stratabound gold mineralization in the North zone (Candor Ventures Corp., www.candorventures.com, accessed February 9, 2004). Work on this property continued in 2003 with an extended induced polarization (IP) survey.

CONQUEST RESOURCES LIMITED

Conquest's **Alexander Property** consists of 27 patented claims (448 ha) adjoining the east side of the Goldcorp Red Lake mine property in Balmer Township. Exploration work in 2003 consisted of ground and airborne geophysical surveys, a fence of 9 diamond drill holes for a total of 2650 m, and a Mobile Metal Ion™ (MMI) survey.

The Alexander claims cover the projection of a wide zone of deformed rocks (the "Mine Trend") known to extend west from the claims for 8 km and to extend east to Gullrock Lake, a distance of about 10 km. Diamond drilling earlier in 2003 identified a new gold-bearing shear zone projected for 3500 m across the Alexander property. The shear zone strikes easterly and traverses the central part of the property. In the drilling, the shear was encountered on the southern (hanging wall) contact of the central diorite associated with quartz feldspar porphyry, disseminated arsenopyrite and magnetite iron formation. Elevated gold values were encountered within the 11 to 15 m wide zone of shearing (Conquest Resources Ltd., www.conquestresources.net, accessed February 2, 2004).

A 1500 m long zone of gold mineralization, previously identified by diamond drilling in the 1980s, also appears to be associated with this shear. A second shear has been identified 160 m to the north of the first and lies entirely within the diorite. Several other linear features revealed by geophysical surveys suggest the presence of additional, parallel shear zones. Several targets have been selected based on the 2003 exploration for further investigation in 2004 (Conquest Resources Ltd., www.conquestresources.net, accessed February 2, 2004).

FRONTEER DEVELOPMENT GROUP INC.–ALBERTA STAR DEVELOPMENT CORP.

The **Dixie Lake Gold Property** has a historic inferred resource of 417 000 tons grading 0.126 ounce gold per ton (*see* Table 10). While this does not conform to the standards of National Instrument 43-101, it does indicate the presence of gold mineralization. Work on this property included compiling and re-evaluating previous exploration work followed by a 10-hole, 2400 m diamond drill program. Results of the diamond drilling were released in December 2003 (Fronteer Development Group, press release, December 2, 2003) and included

Hole #	Interval (m)	Grade Gold (g/t)
DL-03-01	8.3	2.0
including	2.5	3.9
DL-03-05	21.0	1.8
including	4.0	3.0
and	1.2	5.3
DL-03-06	17.0	2.9
including	0.5	12.4
and	4.3	5.8
including	0.9	12.0
DL-03-08	4.0	10.7
including	1.5	21.0
and	0.6	50.6

GOLDCORP INC.

Goldcorp Inc. has an extensive land package in the Red Lake belt and has been carrying out exploration activities on several properties both on its own and with various partners. Goldcorp has bought into Planet Exploration Inc. (*see* "Planet Exploration Inc.") and is involved with exploration on their Sidace Project. Goldcorp has entered into an agreement to gain a 60% interest in Rubicon Minerals' Adams Lake and North Red Lake properties. Goldcorp had a US$3.6 million surface exploration budget for 2003 and actively increased its land package by staking in several areas in the northeast and southeast extensions of the Red Lake greenstone belt.

Goldcorp carried out a 2649 m, 8-hole diamond drill program on the **Abino property** in Balmer, Bateman and Dome townships early in 2003. This work was intended to follow up on previous exploration on this property; all holes were drilled from the ice of East Bay Red Lake. Elevated gold values were reported from all of the holes, 4 of the holes were deemed to have significant values, including Hole AB-03-208 that returned an intersection of 15.74 g/t Au over 1.45 m (Patrie 2003).

A Mobile Metal Ion™ survey was carried out on lake bottom sediment samples from the **Rahill Bay property** in Dome Township (Maciejewski and Strilchuk 2003). A reconnaissance ground magnetic survey was carried out on the **McKenzie Island property,** also in Dome Township. This identified a broad magnetic anomaly across the south half of the property trending in a west-northwest direction (Assessment Files, Red Lake District, Red Lake).

Goldcorp and MetalCORP Ltd. entered into an option agreement where Goldcorp can earn 50% of MetalCORP's **Blackbear property** in the Blackbear Lake area in the northeast extension of the Red Lake Belt. Work during 2003 included an high-resolution aerial magnetic (HRAM) survey and additional claim staking (MetalCORP Ltd., press release, November 3, 2003).

Goldcorp carried out stripping, sampling and geological mapping on its **Wilmar** and **Marcus** properties near the Cochenour–Willans Mine. Diamond drilling of 4010 m in 11 new diamond drill holes and the deepening of 2 other holes were carried out on the Marcus property in 2003. Goldcorp carried out prospecting and diamond drill core recovery (from old diamond drilling) on their **Middle Bay property**. Goldcorp and Tri Origin Exploration terminated their agreement on the **Red Lake Extension** and **Confederation** base metal-gold properties south of Red Lake (Tri Origin Exploration Ltd., press release, May 13, 2003).

On the **Cochenour–Willans Mine property,** Goldcorp drilled 2 deep diamond-drill holes (1524 m and 1066 m) and wedged off additional holes to explore the deeper parts of the property. Goldcorp continued carrying out rehabilitation activities at its **Cochenour–Willans Mine**. Mine dewatering was stopped and the workings allowed to flood. An extensive diamond-drilling project to locate and test the crown pillars of near surface stopes in the mine vicinity was completed. Remedial work on fencing and stabilizing the crown pillars took place in the later part of 2003. Demolition of the mill and associated buildings on the mine site has continued throughout the last half of 2003. A temporary ferric sulphate water treatment plant was installed and a permanent bioreactor to treat water containing arsenic draining from the tailings was nearing completion by year-end.

KING'S BAY GOLD CORPORATION

King's Bay Gold Corporation has 2 properties in the Red Lake greenstone belt. The **Headway property** in Balmer and Dome townships has received most of the exploration activity. Gold mineralization at the Headway is found in quartz stringers in diagonal and cross joints in a porphyry dike that strikes northwesterly across the property (Durocher et al. 1987). Phase I and Phase II diamond drill programs were carried out in 2003 for a total of 11 holes and preparations for Phase III commenced late in 2003.

Phase I and II drilling was directed at the Headway "Main Zone", while Phase III is intended to explore other targets including a second east-west quartz porphyry dike and a deep hole to intersect possible Balmer assemblage rocks. Assay results from Phase I and Phase II include an 18.0 m section of 1.1 g/t Au including 4.8 g/t Au over 1.0 m from hole HW03-1; a 10.8 m section of 3.08 g/t Au including sections of 7.18 g/t Au over 1.0 m and 15.17 g/t Au over 1.0 m from hole HW03-4; and a high value of 63.52 g/t Au over 0.5 m from hole HW03-9 (King's Bay Gold Corp., press release, November 25, 2003).

The **Sidace Lake North property** in the Nungesser Lake area is located approximately 1 km north of Planet Explorations' property. Line cutting was started late in 2003 in preparation for geophysical surveys in 2004; additional claims were staked during the year.

PLACER DOME (CLA) LTD.

Placer Dome had a budget of approximately $2.7 million for off-site exploration of its properties in the Red Lake greenstone belt (Placer Dome Inc., www.placerdome.com, accessed February 14, 2004). These included

- **Madsen Option:** Approximately $2 million was spent on an intensive program including 49 drill holes (totalling 29 047 m), stripping, trenching, geophysics and construction of a 5.5 km all-weather road (Claude Resources Inc., press release, February 11, 2004). The majority of work was performed in the Russet North and Treasure Box areas, north of Russet Lake, were diamond drilling has returned values as high as 17.81 g/t gold over 4.24 m. Very high-grade intersections were obtained from a series of folded, steeply dipping, parallel sheet veins. Coarse, visible gold appears confined to these narrow (<0.30 m) quartz-tourmaline veins hosted within 25 to 50 m corridor in iron-carbonate altered basalt. Significant reported assays from the latest phase of drilling included

Hole #	From (m)	To (m)	Length (m)	Grade Gold (g/t)
PDM03-902	67.45	67.75	0.30	35.10
	100.58	100.88	0.30	22.20
	231.03	231.94	0.91	6.20
PDM03-902W	104.54	104.85	0.31	15.95
	111.86	112.16	0.30	33.10
PDM03-903	67.47	67.77	0.30	35.20
	92.96	93.26	0.30	116.00
PDM03-904W	147.42	147.73	0.31	105.00
PDM03-906	224.60	224.90	0.30	42.40

Drilling resumed in early 2004 with a planned 3400 m, 12-hole program to further delineate the quartz-tourmaline veining envelope and also several other target areas.

Placer Dome (CLA) Ltd. has the right to earn a 55% interest in Claude Resources Inc.'s 10 500 acre Madsen property. The past producing Madsen Mine (2 452 388 ounces gold produced in 2 periods, 1938–1976 and 1997–1999) has an indicated mineral resource of 790 000 tonnes grading 12.3 g/t Au and an inferred mineral resource of 740 000 tonnes grading 8.6 g/t Au.

Drilling was also conducted on the adjacent, past producing (163 990 ounces gold between 1948 and 1956) Starratt Olson Mine property.

- **Redaurum Option:** Placer Dome (CLA) Ltd. is earning an initial 50% interest from Sabina Resources Limited. A program of geological and structural mapping, trenching and drilling of 6029 m in 9 drill holes was completed in 2003 (Y. Dobrotin, Placer Dome (CLA) Ltd., personal communication, 2004). The property is situated immediately north of the Russet North mineralized zone on the Madsen Option.
- **Humlin** and **Redruth:** These wholly owned Placer Dome (CLA) Ltd. properties, contiguous to the north of the Madsen Option, saw a limited 5-hole, 3573 m, drill program this year, testing a zone of intense quartz-carbonate believed to exhibit Campbell-style gold mineralization (Y. Dobrotin, Placer Dome (CLA) Ltd., personal communication, 2004).

PLANET EXPLORATION INC.

At year-end, Planet Exploration's Sidace Lake property comprises 268 claim units, totalling approximately 4288 ha, in the Coli Lake area, situated in the northeast portion of the Red Lake greenstone belt. Under terms of joint venture and option agreements with Madalena Ventures Inc., Planet increased its interest in the original property to 100% in the second quarter of 2003. Subsequently, Goldcorp Inc. acquired an option to earn up to a 60% interest in the property. Under the terms of the agreement, exploration of the Sidace Lake property will be handled by a joint Planet Exploration–Goldcorp Inc. (50:50) exploration management committee.

In March, Goldcorp participated in one-half of Planet's $1 million financing. Goldcorp then held 8.78% of Planet's outstanding shares. At year-end, Planet closed a financing for gross proceeds of $6 million; the funds to be used for exploration, including the Sidace Lake project and general working capital. Goldcorp subscribed for $2 520 000 bringing its share ownership in Planet to approximately 13.5% (Goldcorp Inc., press release, December 19, 2003).

Surface work programs were performed throughout the year on the Sidace Lake property. These included (Planet Exploration Inc., press release, March 14, 2003)

- A 12-hole, 1553 m drill program in the first quarter; assay results included

Hole	From (m)	To (m)	Length (m)	Grade Gold (g/t)
RL-03-23	N/A	N/A	102.0	1.637
including	N/A	N/A	16.4	4.687
and	N/A	N/A	4.0	8.575
RL-99-12 extension	N/A	N/A	11.5	2.671

- A 40 km program comprising detailed ground magnetic and IP surveys was completed, in addition to a detailed airborne magnetic survey.

- A subsequent 4-hole, 2150 m diamond drill program was completed. Hole RL-03-26 targeted the down-dip extension of the main gold mineralization, 75 m below the intersections in hole RL-99-12 located 200 m below surface. High antimony, arsenic and mercury accompany gold in quartz veins within an anomalously gold-enriched 200 m wide quartz-sericite schist zone (Planet Exploration Inc., press release, July 22, 2003). Assays included

Hole		From (m)	To (m)	Length (m)	Grade Gold (g/t)
RL-03-26		267.0	303.4	36.4	5.36
	including	282.0	303.4	21.4	7.59
	and	286.2	294.7	8.5	11.29

- Previously drilled hole RL-99-12 ended in mineralization and was extended to confirm the width of the mineralized package and to test the footwall rocks for additional zones. Gold mineralization was encountered to a down-hole depth of 573 m (Planet Exploration Inc., press release, July 22, 2003). Additional values included

Hole		From (m)	To (m)	Length (m)	Grade Gold (g/t)
RL-99-12 extension		297.0	309.0	12.0	0.89
	including	304.0	304.5	0.5	5.86
		316.0	332.0	16.0	0.37
		345.0	346.0	1.0	1.04
		363.0	364.0	1.0	2.42
		382.3	383.3	1.0	2.42
		417.95	419.5	1.55	1.97
		429.0	431.0	2.0	0.89
		570.4	573.0	2.6	1.92

A prospecting program discovered mineralized boulders of quartz-sericite schist, assaying up to 5.6 g/t Au in grab sample; the boulder train covers an area of approximately 20 by 20 m.

- Hole RL-03-29 tested the zone approximately 60 m below the intersection in RL-03-26 on the same section. Significant gold intersections were encountered, separated by a silica-flooded zone (Planet Exploration Inc., press release, December 1, 2003). Assays include

Hole		From (m)	To (m)	Length (m)	Grade Gold (g/t)
RL-03-29		236.0	276.6	40.6	3.13
	including	266.0	272.0	6.0	11.38
	and	269.0	272.0	3.0	19.27
		353.4	398.0	44.6	4.09
	including	366.0	394.0	28.0	5.41
	and	370.0	375.0	5.0	10.00

The current phase of drilling on the property concluded with the completion of 6 additional holes (RL-03-31 to RL-03-36), totaling 2915 m.

- A 3-hole, 2300 m program, was started in December 2003 and continued into 2004 (Planet Exploration Inc., press release, December 1, 2003). During the year, an additional 458 contiguous claim units (approximately 7328 ha) were acquired.

REDSTAR GOLD CORP.

The company is the largest junior landholder in the western Red Lake belt, holding approximately 6200 ha under option from Rubicon Minerals Corporation.

- **Biron Bay:** Redstar Gold acquired a 100% interest in 32 patented claims in Ball and Todd townships from Biron Bay Resources Ltd. The property is located between Redstar's Pipestone North and Pipestone South projects and is within the area of influence of the Rubicon–Redstar West Red Lake Agreement. During 2003, the company completed a mechanical stripping, mapping and surface sampling program on the property. A mineralized structural zone, hosted within mafic and felsic volcanic rocks and sulphidized iron formation units, was traced along an approximate strike length of 1100 m. Anomalous gold values were encountered in exposures along the entire strike length (press release, September 8, 2003), including

Zone	Gold (g/t)	Channel Length (m)
L1	19.25	0.60
L1	8.54	0.50
L1	8.04	0.50
L2	22.10	0.50
L2	5.97	0.50
L3	1.15	1.00
L4	2.70	2.00
L4	7.78	0.10

  The company is planning 3000 m Phase I diamond drill program on the Biron Bay and Pipestone North properties to commence in mid January 2004 (press release, November 19, 2003).

- **Newman-Todd and Pipestone East:** A TITAN-24 survey was completed over portions of the 2 properties, flanking AngloGold (Canada) Exploration Company's Rivard property. On Newman–Todd, a folded ultramafic unit, cut by a late northwest-trending gold-bearing structure was detailed for possible follow-up drilling.

- **Wolf Bay:** Detailed geological and structural mapping identified a folded ultramafic unit passing onto the property from the adjacent Newman–Todd property.

RUBICON MINERALS CORPORATION

Controlling over 260 km^2, Rubicon has the largest land position in the Red Lake greenstone belt. The majority of the properties were part of the Red Lake Joint Venture ("RLJV") agreement with AngloGold (Canada) Exploration Company ("AngloGold"). In August 2003, AngloGold vested as to a 60% interest in the RLJV properties having made exploration expenditures exceeding US$3.4 million within the earn-in period (Rubicon Minerals Corporation, press release, August 6, 2003).

Rubicon's total exploration budget for 2003 was anticipated to total $7 million, with approximately 42% being contributed by partners.

AngloGold will acquire a 100% interest in certain Rubicon properties in the area of, and including the Rivard project, located at the west end of the Red Lake greenstone belt, subject to a 1.75% NSR royalty granted to Rubicon (Rubicon Minerals Corporation, press release, October 2, 2003). Work undertaken on properties within the tenure of the RLJV with AngloGold included (Rubicon Minerals Corporation, press release, June 3, 2003):

- **Rivard–Advance Target:** An area of gold-bearing veins hosted by sulphide-rich ultramafic rocks was tested in the first quarter by Phase I drilling, comprising 12 holes, totalling 10 226 feet. Results include an intersection of 0.42 ounce Au per ton over 31 feet (plus visible gold) including a high-grade intercept of 11.9 ounce Au per ton over 1.0 foot. A summer, Phase II drill program of 13 779 feet in 11 holes, followed up on the previously reported intersections as well as other areas within a large alteration zone developed within the ultramafic-bearing sequence.

- **Dorion–McCuaig Corridor:** First quarter 2003 drilling focussed on 3 previously defined target areas. Ten holes, totaling 3873 m, were drilled in this area underlain by mine sequence rocks and structures.
- **Slate Bay:** Three holes, totalling 999 m, were completed in the target area. Widespread copper and low-grade gold mineralization was intersected within veined and brecciated intrusive and volcanic rocks. A large part of the target area remains unexplored, however, including the area of documented historical high-grade gold.
- **Humlin Property:** Two holes, totalling 682 m, were drilled in the Humlin target to test for mineralization in interpreted ultramafic rocks with no significant results. One hole did not reach target depth.

Work programs undertaken during the year outside the AngloGold joint venture included

- **Adams Lake:** The company completed a deep-penetrating CSAMT (controlled-source audio-frequency magnetotelluric) survey, which located a number of structural targets. The property is located 6 km east of the Campbell and Red Lake mines. A Phase I program of 6 diamond drill holes, totalling 1983 m, was completed with no significant results. At year-end, Rubicon optioned the Adams Lake property to Goldcorp Inc. (Rubicon Minerals Corporation, press release, November 21, 2003).
- **McFinley Gold:** Drilling during the last quarter of 2002 on Rubicon's 100% owned McFinley gold project discovered a new mineralized structure, the MAC-1 zone. An intensive follow-up diamond drill program was completed in the winter of 2003, comprising 44 drill holes (totalling 9571 m). Significant intersections encountered in the MAC-1 zone and several other target areas included (Rubicon Minerals Corporation, press release, May 14, 2003)

Target Area	Gold Grade (ounces per ton)	Length (feet)
MAC-1	1.34	3.28
	0.71	1.48
	0.51	1.64
MAC-3	0.32	1.64
MAC-4	0.50	1.89
MAC-5	0.36	2.62

A Phase II drill program of 4 holes, totalling 1103 m, was completed to follow-up on MAC-1 zone mineralization. Significant intersections included (Rubicon Minerals Corporation, press release, September 29, 2003):

Hole	From (feet)	To (feet)	Length (feet)	Gold (ounces per ton)
MF-03-46	387.47	388.78	1.31	0.14
	627.62	629.59	1.97	0.20
	1082.02	1084.48	2.46	0.19
MF-03-47	1149.93	1151.57	1.64	0.27
	145.34	146.65	1.31	0.13
	1106.30	1108.60	2.30	0.10

Drill intercepts of MAC-1 mineralization display continuity both with depth and between sections and include grades of potential economic importance over minimum mining widths. The zone is hosted in mafic volcanic rocks adjacent to an ultramafic unit and is interpreted to have a strike length of approximately 760 m.

The "D" vein comprises gold, silver and base metal mineralization and constitutes approximately 30% of the historical inferred resource of 334 007 tons at 0.20 ounce gold per ton to a depth of 400 feet, and is open laterally and at depth. Significant assays from the 6 holes, totalling 1955 m, that were drilled in 2003 on this target include (Rubicon Minerals Corporation, press release, September 29, 2003)

Hole	From (feet)	To (feet)	Length (feet)	Gold (ounces per ton)
MF-03-49	35.76	38.06	2.30	0.31
	38.06	40.85	2.79	0.20
	48.06	50.52	2.46	0.26
	50.52	53.48	2.95	0.29
MF-03-54	77.43	79.40	1.97	0.14
	110.07	113.35	3.28	0.24

- **Golden Tag Resources McCuaig JV:** The partners (Rubicon 60%; Golden Tag Resources 40%) completed a 10-hole, 1603 m drill program. Mineralization (the "1900 Gold Zone") is interpreted to be related to faults associated with a major northeast-trending structure which crosscuts silicified ultramafic rocks. Assays from the 2003 program include (Golden Tag Resources Ltd., press release, April 3, 2003)

Hole	From (feet)	To (feet)	Length (feet)	Gold (ounces per ton)
MF-03-42	440.64	445.56	4.92	0.09
MF-03-45	365.83	367.80	1.97	0.21
MF-03-46	467.54	469.18	1.64	0.11
MF-03-48	452.78	454.42	1.64	0.18

  The partners plan a winter 2004 drill program (totaling 2000 m) to test the "1900 Gold Zone" with a further 7 diamond drill holes; another 3 drill holes are designed to intersect new targets elsewhere on the property (Golden Tag Resources Ltd., press release, January 26, 2004).

Rubicon Minerals entered into an agreement with Perry English whereby Rubicon acquired rights to property and contractual interests in a portfolio of 63 mineral properties, mainly in the Red Lake greenstone belt (Rubicon Minerals Corporation, press release, March 10, 2003). Scheduled cash and share payments on the package of optioned properties exceed $580 000 in 2003. The properties were optioned to 21 different companies, including Rubicon. Rubicon thereby acquires the underlying agreements and royalties including those on 14 of its own projects, on which it extinguishes its option obligations.

In the fourth quarter 2003, Rubicon and AngloGold restructured their joint venture agreement: 1) AngloGold acquired a 100% interest in certain Rubicon properties in the area of, and including the Rivard project, located at the west end of the Red Lake belt, and 2) Rubicon acquired a 100% interest in all other (former RLJV) properties; both are subject to various other contractual obligations (Rubicon Minerals Corporation, press release, October 2, 2003).

SKYHARBOUR RESOURCES LTD.

Skyharbour has acquired over 11 340 ha (8 properties) in the heart of the Red Lake gold camp, in addition to over 810 ha in the Birch–Uchi greenstone belt 60 km to the east. Skyharbour has option agreements with the following companies, and is operator on all properties:

- **ITL Capital Corporation–Heyson Property:** Skyharbour drilled 13 holes, totalling 2018 m following up on a large gold in till anomaly identified by a Mobile Metal Ion™ (MMI) survey completed on the property in 2002. Gold values up to 0.62 ounce Au per ton were reported in till in the Sully Creek till anomaly. Hole H03-3 returned 59.4 g/t gold over 0.4 m within a wide hematite-magnetite-epidote alteration zone in diorite. An additional, contiguous claim block was staked (totalling approximately 600 acres), followed by 44 km of linecutting and ground magnetometer and gradiometer surveys. A 4-hole, 1000 m drill program was completed at year-end, and a 2000 m program is planned for early 2004. Skyharbour has earned its 51% interest in the property (Skyharbour Resources Ltd., press release, October 7, 2003).

- **Cypress Developments–Orko Gold, McKenzie Island Property:** Orko Gold entered into an agreement with Cypress Development Corp. and Skyharbour Resources Ltd. to acquire a 60% interest in the Mackenzie Island property in Dome, Heyson and Fairlie townships (comprising approximately 5200 acres). Overburden drilling, totalling 278 m, tested the basal till at 133 sites in 2 areas on the property to identify new targets. Gold was encountered along the MacAndrew trend on McKenzie Island as well as along the contact between the volcanic rocks and sediments north of McKenzie Island. A total of 13 diamond drill holes, totalling 2081 m, were drilled to test the 1 km long stretch of the MacAndrew trend on southern McKenzie Island and the North McKenzie Island target area. A 1500 m drill program is planned for 2004 to further test the MacAndrew trend where it is spatially associated with a regional unconformity interpreted to be a control on gold deposition (Skyharbour Resources Ltd., press release, December 3, 2003).
- **Bayfield Ventures Corp., Baird Property:** A total of 13 diamond holes (totaling 5189 m) were completed in 2003. The property is located approximately 1.5 km north of Placer Dome's "Treasure Box" area on its Madsen Option (from Claude Resources). Values up to 11.6 g/t gold over 0.8 m (hole B03-13) and 13.7 g/t Au over 0.4 m (hole B03-11) were encountered in an auriferous quartz-carbonate alteration system, hosted within mafic to ultramafic flows 400 m from previously known gold values. Placer Dome is earning a 51% interest from the 2 partners (Skyharbour Resources Ltd., press release, December 16, 2003).
- **Consolidated Abaddon Resources Inc., Blackbear East and Sidace Lake Properties:** The partners completed a till sampling program over their 2 properties adjoining Planet Explorations' gold discovery to the southwest and northeast. The properties are interpreted to be underlain by Balmer and Confederation assemblages; a number of iron-carbonate alteration zones have been identified. A 1500 m diamond drill program is planned for the Sidace Lake property in 2004 to follow-up a possible bedrock gold source interpreted from the overburden drilling program.

SOUTHERN STAR RESOURCES INC.

Southern Star performed detailed magnetic and very low frequency EM (VLF–EM) geophysical surveys, prospecting, mapping, sampling and Mobile Metal Ion™ (MMI) surveys over 60 km of grid on its Gold Eagle property during the summer of 2003. A subsequent 9-hole drill program, totalling 4175 m, targeted several key areas:

1. **Western Extension**, 2 holes totalling 965 m;
2. **1946 Zone,** 1 hole totalling 315 m;
3. **Gold Eagle Mine**, 3 holes totalling 1950 m;
4. **West Wilmar Extension**, 2 holes totalling 630 m;
5. **Northwest Extension,** 1 hole totalling 315 m.

The property comprises 35 patented claims (totalling approximately 726 ha) in Dome Township. During the period 1937 to 1941, the Gold Eagle Mine produced 40 204 ounces gold from the McKenzie stock. Underground workings of the past producing McKenzie Red Lake Mine (651 156 ounces gold), advanced to within approximately 150 m of the northern claim boundary of the Gold Eagle property. Adjacent to the northeast corner of the property, the Cochenour–Willans Mine produced over 1 244 000 ounces gold from Campbell–Red Lake style mineralization during the period 1939 to 1971.

The **Gold Eagle Mine** target area is approximately 75 m north of the Gold Eagle shaft. Three holes were drilled to intersect the north- striking ore-bearing structures of the McKenzie Red Lake Mine. Southern Star interprets the results obtained to date as indicating the structures pass onto Gold Eagle ground, at a depth of approximately 210 m below the lowest workings of the Gold Eagle Mine. Results include (Southern Star Resources Inc., press release, February 10, 2004)

Hole	Zone	From (feet)	To (feet)	Interval (feet)	Grade Gold (ounces per ton)
SS#6	Gold Eagle	410.5	411.3	0.8	0.93
		510.0	514.6	4.6	0.26
		1743.9	1750.5	6.6	2.89
	including	1749.5	1750.5	1.0	18.50
SS#8	Gold Eagle	553.4	555.4	2.0	0.11
		801.0	804.0	3.0	0.32
SS#9	Gold Eagle	563.7	564.7	1.0	0.57
		917.0	918.2	1.2	0.11
		1645.3	1646.8	1.5	0.14

Results of drilling carried out in the **Western Extension Zone**, approximately 1 km west of the Gold Eagle shaft, and the **1946 Zone**, approximately 800 m south of the mine, included (Southern Star Resources Inc., press release, November 12, 2003)

Hole	Zone	From (feet)	To (feet)	Interval (feet)	Grade Gold (ounces per ton)
SS#2	Western Extension	947.3	952.2	4.9	0.30
	including	948.9	950.2	1.3	0.83
SS#1	"1946 Zone"	N/A	N/A	1.25	0.18
SS#7	Western Extension	531.5	534.0	2.5	0.57
		701.2	705.8	4.6	0.10
	including	701.2	703.4	2.2	0.17
		817.6	820.0	2.4	0.58
	Discovery	925.51	928.89	3.38	0.52
		1586.5	1589.1	2.6	9.23

Southern Star has an option to earn a 50% interest in the property from Exall Resources. An extensive, 18 200 m diamond drill program is planned for early 2004.

TRI ORIGIN EXPLORATION LTD.

Early in 2003, Tri Origin acquired a 100% interest in the Red Lake Extension property (525 claim units, totaling 22 000 acres) adjoining Goldcorp Inc. in the southeastern portion of the Red Lake greenstone belt. The Red Lake Mine is situated approximately 10 km to the northwest of the Red Lake Extension claims. Tri Origin's 8649-acre Confederation property, located approximately 35 km southeast of the Red Lake Extension property, was subject to a 70% earn-in by Goldcorp, but was returned to Tri Origin during 2003 (Tri Origin Exploration Ltd., press release, May 13, 2003).

In 2003, the company undertook preliminary exploration work including geological mapping, prospecting, sampling and soil geochemical surveys on the Red Lake Extension property. Preliminary ground magnetometer and 35 km of IP surveys defined several areas for detailed follow-up work. Targets have been identified within these areas that had coincident IP and gold-in-soil anomalies. The property is, for the most part, covered with overburden and has received only a minimal amount of past exploration work. Bedrock lithology is interpreted, from the geophysical surveys, to be the extension of the Red Lake greenstone belt. Tri Origin is sufficiently encouraged by the preliminary results to plan a Phase I diamond drill program for early in 2004. The program is expected to consist of approximately 1000 m of drilling in 6 holes. Detailed exploration is planned for the summer as follow-up to the initial drilling program and to define targets in other areas of the property (Tri Origin Exploration Ltd., press release, December 3, 2003).

WOLFDEN RESOURCES INC.

Wolfden has 5 properties in the Red Lake greenstone belt on which it was operator during 2003.

- **Marathon Red Lake:** A 9-hole, 3199 m drill program was completed in the fourth quarter of 2003. The property is adjacent to the southwest of Placer Dome's producing Campbell Mine property, approximately 1200 m from the Reid shaft. The drilling targeted Campbell-style structurally controlled mineralization associated with mafic–ultramafic contacts that are interpreted to cross onto the property from the Campbell Mine workings. Placer Dome plans to drill the property from the 27 Level of its operations early in 2004. Placer Dome can earn up to a 60% interest in the property (Wolfden Resources Inc., press release, January 12, 2004).
- **East Bay Gold:** An extensive 26-hole, 9755 m drill program was completed on the Green Altered Zone (GAZ) gold prospect, Beatrice Peninsula and the Rivard option in 2003. Systematic drilling confirmed the presence of the GAZ mineralized horizon over a strike length of 500 m. The program intersected multiple lenses hosting potentially economic gold mineralization over a minimum strike length of 250 m. Significant intersections include (Wolfden Resources Inc., press release, December 3, 2003)

Lense	Hole #	Grade Gold (g/t)	Length (m)
G-1	EB-03-13	26.56	2.35
	EB-03-15	29.52	1.10
	EB-03-26	12.16	2.20
G-1a	EB-03-13	10.69	1.75
G-2	EB-03-13	5.55	15.20
	including	10.38	4.30
	EB-03-15	12.52	0.80

  Land-based drilling, targeting extensions of the GAZ gold horizon, discovered a second high-grade gold zone located approximately 600 m from the GAZ gold prospect at East Bay. The results from the first hole drilled to test this target, EB03-37, intersected 21.45 g/t Au across 4.3 m. Wolfden has earned a 50% interest in the property from Placer Dome; future expenditures will be on a 50:50 basis. The partners plan a $3 million drill program early in 2004 (Wolfden Resources Inc., press release, January 12, 2004).
- **Follansbee:** Wolfden completed an 6-hole, 3876 m drill program on this property situated adjacent to, and down-dip of, the Wilmar portion of Goldcorp Inc.'s Cochenour property. Linecutting, ground geophysics and a soil survey were also completed prior to drilling. Hole WF03-01 intersected the regional unconformity near 810 m down-hole (end of hole was at 1251 m). Approximately 820 m down-hole, the "Contact" zone returned 5.38 g/t Au over 2.0 m, and 5.91 g/t Au over 2.7 m, both of which occurred across a 19.9 m long mineralized zone (Wolfden Resources Inc., press release, August 6, 2003). Wolfden is earning a 50.5% interest in the property from Interquest Incorporated.
- **Newman-Heyson–Nova-Co:** Kinross Gold Corporation has the option to acquire a 51% interest in the property. Wolfden, as operator, completed an 11-hole, 2407 m program, targeting D_2 fault structures, which the company believes to be the main controlling factors in high-grade zone gold mineralization at the Campbell–Red Lake orebody. Structures on the property trend approximately 100° and dip steeply south (Wolfden Resources Inc., press release, January 28, 2003).
- **My-Ritt:** Wolfden increased its interest to 100% from Explorers Alliance Corporation early in January. Teck–Cominco was operator for an 1858.3 m, 8-hole program, before returning the property to Wolfden (E. Downie, Wolfden Resources Inc., personal communication, 2004).
- **St. Paul's Bay:** Teck–Cominco was the operator for a 1124.5 m, 5-hole program early in 2003. The property was subsequently returned to Wolfden, who returned it to the original vendors (E. Downie, Wolfden Resources Inc., personal communication, 2004).
- **Skinner Gold:** Teck–Cominco was operator of the 2003 work program, which included an airborne geophysical survey and ground follow-up. The property was subsequently returned to Wolfden (E. Downie, Wolfden Resources Inc., personal communication, 2004).

ZENDA CAPITAL CORP.

The company completed 6 diamond drill holes, totalling 736 m, on its Pipestone Bay property, covering the historic Mount Jamie Mine in Todd Township. Five of the holes were drilled in the immediate vicinity of the main historical workings; assays include (Zenda Capital Corp., press release, September 24, 2003)

Hole #	From (m)	To (m)	Length (m)	Grade Gold (g/t)	Location
JF-03-02	53.7	54.2	0.5	59.4	below 1st Level
JF-03-03	37.3	40.3	3.0	6.10	above 1st Level
JF-03-06	80.9	84.8	3.9	6.57	at 1st level

To date, the "Main Zone" has been explored to a vertical depth of only 170 m; future work will include the possible evaluation of deeper targets. The results of this drilling confirm the presence of narrow, high-grade gold-bearing zones.

Zenda and Vedron Gold Inc. are earning a combined 75% interest (Zenda 50%; Vedron 25%) in the property from Jamie Frontier Resources Inc.

Birch–Uchi and Confederation Greenstone Belts

CANGOLD LIMITED

Cangold Ltd. officially changed its name from First Au Strategies Corp. to Cangold Ltd. in April 2003. During 2003, the company conducted work on the following properties in the Birch–Uchi greenstone belt:

- **Argosy Gold Mine Property:** Comprising 44 patented and 57 unpatented claim units for a total of 101 contiguous claim units, including claims under option from Wolfden Resources Inc., Cangold has now earned a 51% interest in the property. The Argosy Mine produced 101 875 ounces of gold at an average grade of 0.37 ounce gold per ton (intermittently between 1934 and 1952) (Cangold Ltd., www.cangold.ca, accessed January 23, 2004). Exploration in 2003 included linecutting; induced polarization (IP) surveys over the southeastern portion of property, at Casummit Creek. Cangold carried out 3350 m of diamond drilling in 2 phases, testing 1) down-dip extensions of the gold mineralization below the old mine workings, 2) the up-dip projection of the "P" vein, and 3) IP targets near Casummit Creek (Cangold Ltd., www.cangold.ca, accessed January 23, 2004). Significant intersections from Phase I drilling included

Hole #	Target	Host Rock	From (m)	To (m)	Length (m)	Gold (g/t)
AM03-01A	P zone	Greywacke	368.30	371.28	2.98	9.86
AM03-02	#8 zone	Greywacke	251.58	252.00	0.42	8.03
	P zone	Greywacke	352.54	354.34	1.80	5.09
AM03-03	#11 zone	Greywacke	25.30	27.93	2.63	10.83
	including		25.83	27.43	1.60	17.27
	#8 zone	Argillite	228.37	228.88	0.51	9.19
	#1 zone	Argillite	401.00	402.42	1.42	3.66
AM03-04	#11 zone	Greywacke	26.42	28.14	1.72	6.75
	including		26.42	27.03	0.61	12.28
	#8 zone	Argillite	221.89	222.38	0.49	3.35
	#1 zone	Argillite	387.09	391.67	3.29	2.00
AM03-05	"Contact" zone	Basalt	99.60	101.00	1.40	11.28
	including		99.60	100.08	0.48	32.44
	P zone	Porphyry	170.68	172.21	1.53	16.82
	including		171.28	171.62	0.34	75.54

Phase II drilling included 2 shallow holes (AM03-08 and 09) to test the continuity of high-grade gold mineralization intersected in the "P" and "Contact" zones (75.54 g/t Au over 0.34 m and 32.4g/t Au over 0.48 m, respectively), 1 deep hole (AM03-10) to test the down-dip continuity of the No. 2 vein zone (11.75 g/t Au over 1.55 m and 14.39 g/t Au over 0.7 m) and No. 3 vein zone (14.67 g/t Au over 1.7 m).

Old diamond drill core from the Creek zone left on the property by previous operators was resampled and returned 4.82 g/t Au over 7.7 m including 2.5 m of 9.41g/t Au.

- **Birch Lake Property:** Totalling 239 contiguous unpatented claim units staked by Cangold, the property is located 3 km east-southeast of the Argosy Mine in the area of Casummit and Keigat lakes. The property covers 14 km of strike length on a major, northwesterly trending deformation zone that is known to be associated with gold mineralization. Scattered gold mineralization in iron formation has been intersected in several historical drill holes. The company believes the regional geophysical signature on the Birch Lake property to be similar to that of Placer Dome's Musselwhite Mine, in the Thunder Bay North District. Exploration work in 2003 included data compilation, prospecting and reconnaissance-scale mapping (Cangold Ltd., www.cangold.ca , accessed January 23, 2004).
- **Leg Lake Property:** Returned to vendor after carrying out ground magnetic and a horizontal loop electromagnetic surveys (Robert Archer, Cangold Ltd., personal communication).

FRONTEER DEVELOPMENT GROUP INC.

Fronteer Development Group has 7 active properties in the Birch–Uchi greenstone belt.

- **Balmer** and **Portage Properties:** The property was optioned to Placer Dome (CLA) Ltd., and covers a corridor of Balmer and Woman Lake assemblage rocks situated along the western margin of the belt adjacent to the Trout Lake batholith in Corless, Dent, Knott and Mitchell townships. The properties are transected by a series of prominent east- to southeast-striking fault zones and associated vein systems, many of them linked to historical gold occurrences. Exploration work has concentrated on 3 showings: 1) the Caribou vein (14.8 g/t Au over 0.47 m and 20.8 g/t Au over 0.55 m), 2) Shanty Bay showing (11.43 g/t Au over 1.20 m) and 3) Dome showing (6.29 g/t Au) (Fronteer Development Group Inc., www.fronteergroup.com, accessed January 26, 2004).

  Work performed in 2003 was focussed on the **Portage Property** and included an airborne magnetic survey, geological mapping, prospecting, and soil and till sampling (Fronteer Development Group Inc., press release, July 30, 2003).
- **Sandy Point Property:** The Sandy Point property was also optioned to Placer Dome (CLA) Ltd., covers an area of approximately 432 ha in the Keigat Lake claim map area. Gold mineralization is localized along silicified and pyritized east-striking axial zones of tightly folded iron formation. Channel sampling carried out on the main Sandy Point showing returned gold values of up to 21.73 g/t over 1.5 m (including 36.06 g/t Au over 0.50 m). Elsewhere on the property, grab samples from quartz veins assayed as high as 5.63 g/t Au with 7.25 ppm silver (Fronteer Development Group Inc., www.fronteergroup.com, accessed February 2, 2004).
- **Mink Lake Property:** The property was optioned to Red Lake Resources Inc., is located in the Casummit Lake and Shabumeni Lake claim map areas. A 4 km long mineralized corridor, the Mink Lake gold trend, strikes approximately west-northwest and is open both along and across strike. Mineralization consists of gold-bearing quartz-carbonate veins hosted within intensely sheared and altered felsic to intermediate volcanic rocks. The gold trend encompasses 4 separate showing areas referred to (from west to east) as the Loydex, Finn, Hatch and Peninsula showings. In 2003, 5 diamond drill-holes, totalling 660 m, were drilled at 4 locations along the Mink Lake gold trend. Results include hole MK03-1 (Peninsula showing) 6.5 m of 0.46 g/t Au; hole MK03-2 (Finn showing) 1.0 m of 6.74 g/t Au; hole MK03-4 (Loydex showing) 8.5 m of 0.81g/t Au and hole MK03-5 (Hatch showing) 1.0 m of 23.54g/t Au (Fronteer Development Group Inc., www.fronteergroup.com, accessed January 26, 2004).

- **Sol D'Or**, **Swain East, Grace Lake Properties:** The properties were bundled together and optioned to Red Lake Resources Inc. They contain several historic gold showings and a 2.3 km long new zone of gold mineralization and alteration identified by Fronteer. This zone extends from the Bobarris Lake showing on the Swain East property to the Cliff showing on the Sol D'Or property. Gold mineralization is associated with arsenopyrite and pyrite and is hosted by intensely silicified and sheared rocks. Four diamond drill holes, totalling 658.48 m, were completed on the property in 2003. All holes intersected gold mineralization within sulphide-silica alteration. The Sol D'Or property hosts the past producing Sol D'Or Mine with an inferred resource of 8 565 tons of 0.57 ounce Au per ton (*see* Table 10).

JILBEY GOLD EXPLORATION LTD.

Jilbey began exploration in 2002 with a staking program to protect magnetic geophysical target anomalies representing possible kimberlitic type intrusions. A total of 85 claim blocks of 1105 individual claim units covering 17 680 ha were staked (Jilbey Gold Exploration Ltd., www.jilbey.com, accessed February 9, 2004).

Exploration during 2003 consisted of detailed ground and airborne magnetic surveys, local till sampling, and Mobile Metal Ion™ (MMI) lake bottom and soil sampling. The MMI samples were analyzed for kimberliteindicator minerals, and samples from selected targets were also analyzed for precious metals (Jilbey Gold Exploration Ltd., press release, January 7, 2004). Four individual projects were singled out as potential for immediate gold exploration: **Car Lake, Shabumeni Lake, Lark Lake** and **Blue properties**. The Shabumeni Lake property is wholly owned by Jilbey while negotiations with other exploration companies under way for the other 3 properties.

- **Shabumeni Lake:** The property consists of 12 claim blocks (1360 ha) covering at least 9 zones of known base and precious metal mineralization last explored in late 1970s and 1980s. Individual gold assays up to 0.16 ounce gold per ton over 7 feet and 0.31 ounce Au per ton over 1.5 feet are reported. Swarms of lamprophyre dikes intersected in past exploration drilling suggest potential for alkali gold mineralization (Jilbey Gold Exploration Ltd., www.jilbey.com, accessed February 4, 2004). Work on the **Shabumeni Lake property** consisted of prospecting, sampling old trenches, a ground magnetic survey and MMI sampling.

Jilbey is continuing its agreement with Gold Canyon Resources Inc. covering diamond exploration on Gold Canyon's Springpole Lake gold property. Several of the sites investigated for diamonds fell within the 5 km zone of interest around the Springpole property (W. Ewart, Jilbey Gold Exploration Ltd., personal communication, 2004).

KING'S BAY GOLD CORPORATION

King's Bay Gold Corporation has 2 properties in the Birch–Uchi and Confederation greenstone belts. Additional assays from the 15-hole diamond drill program carried out in 2002 on the **Garnet Lake property** in Belanger Township were released. Assays reported include 7.6 g/t Au and 2% Cu over 1.0 feet (King's Bay Gold Corp., press release, May 2, 2003).

The **Richardson Lake Property** in Casummit Lake and Brownstone Lake areas was acquired by staking of 58 claim units covering a little over 900 ha, contiguous to the past producing Argosy gold mine property (King's Bay Gold Corp., www.kingsbaygold.com, accessed January 30, 2004).

TRIBUTE MINERALS INC.

The company has acquired a large land position, through acquisition and an option agreement with Noranda Inc., in the Confederation and Birch–Uchi greenstone belts and has made extensive use of TITAN-24 survey technology to probe to depths of 2000 m.

- **Fredart Lake:** A TITAN-24 survey was completed on the property in 2003. It provided additional information in the area of a previous ground magnetometer survey, and detailed the area of the known massive sulphide deposit. This deposit has an historical resource of 428 000 tons of 1.56% Cu and 33.6 g/t Ag, to a depth of 120 m. A drill program of 3 to 4 holes was planned to test the anomalies between 500 and 1500 m depth (Tribute Minerals Ltd., press release, October 27, 2003).

- **Garnet Lake (Arrow):** A diamond drill program designed to test geophysical targets identified by a Quantec TITAN-24 survey was started late in 2003. Further TITAN-24 surveying was completed in the summer of 2003 and a follow-up drill program commenced in December 2003 (Tribute Minerals Ltd., press release, December 16, 2003). The property is host to the Arrow zone, where historical drill hole GL97-2C returned values of 3.32% Cu, 30.6% Zn, 55.3 g/t Ag and 2.27 g/t Au over 3.8 m.
- **Dixie 17, 18 and 19:** Results of the first TITAN-24 survey (totalling 12.5 line-kilometres) indicated a large unexplained conductivity anomaly at depths greater than 700 m. A second survey (totalling 29.7 line-kilometres) confirmed the location of the target anomaly, extended the strike length to over 2.5 km and indicated the zone shallows to the west, to depths of only 300 m. A 4-hole, 3957 m drill program tested a large TITAN-24 anomaly believed to be the Dixie 18 horizon, which is a conductive feature from surface down to a depth of approximately 1000 m. Hole DX-2003-01 was drilled to a final depth of 1833 m to test 2 target models consistent with the anomaly. Sulphides, chiefly pyrite and intensely silica-sericite-clay altered felsic tuffs, and quartz-magnetite iron formation were encountered below 700 m depth: from 735 to 825 m, sulphide-bearing units may be related to the TITAN-24 anomaly (Tribute Minerals Ltd., press release, October 27, 2003). Assay results as high as 1.13% Cu over 1.0 m were obtained.
- **Copperlode:** A TITAN-24 survey was performed over the property that hosts the "E-Zone", which reported a historical resource of 160 000 tons grading 1.08% Cu and 8.3% Zn.

Northern Greenstone Belts

Exploration activities in the northern greenstone belts include work carried out in the Berens River and Sachigo subprovinces. Both of these subprovinces consist of relatively small, isolated greenstone belts surrounded by extensive granitic and gneissic terrane. Although numerous mineral occurrences are reported from both the Berens River and Sachigo subprovinces, mineral production has been restricted to 2 mines. Base and precious metals were produced at the Berens River Mine (157 341 ounces gold, 5 676 486 ounces silver, 5 105 873 pounds of lead and 1 797 091 pounds of zinc) and gold from the Sachigo River Mine (52 560 ounces gold) prior to 1950 (Mineral Deposit Inventory 2).

ANACONDA GOLD CORP

Anaconda Gold Corp has 4 properties in the Red Lake District:

- **Borthwick:** The property comprises 10 unpatented mining claims and includes the past producing Berens River Mine. Work on the property in 2003 consisted of data compilation, prospecting, sampling and limited geochemical soil sampling. The results were promising in that gold values were obtained from several samples. The highest value was 1271 ppb Au from vein #9 near the south end of Borthwick Lake (Nelson and Maitland 2003).
- **Lingman Lake:** The property comprises 7 contiguous unpatented mining claims that surround the 4 patented claims that cover the mine workings. Work in 2003 consisted of data compilation, prospecting the entire claim group, limited geochemical soil sampling and sampling mineralization along strike from the old Lingman Lake workings. The highest gold assay obtained was 3006 ppb (Cullen and Galley 2003). Prospecting outside the existing property resulted in additional claim staking.
- **Gold Hill** and **Setting Net Lake:** Both properties in the North Trout Lake and Setting Net Lake areas, respectively, were examined during 2003. Work consisted of data compilation, claim staking, prospecting, hand stripping, sampling and limited geochemical soil sampling (P. Walford, Anaconda Gold Corp., personal communication, 2004).

AURORA PLATINUM CORP.

In 2000 and 2002, Aurora Platinum Corp. entered into 2 agreements with Inco Limited, whereby Aurora acquired proprietary analogue geophysical airborne survey data for several areas in the Sachigo Subprovince, collectively referred to as the AEM Project. Company directors decided Aurora should concentrate on its core business, exploring for Cu-Ni-PGE deposits; therefore under 2 separate agreements

1. Superior Diamonds Inc. (formerly Consolidated Ouro Brasil Ltd.) acquired the diamond exploration rights. Superior Diamonds acquired Canabrava Diamond Corp. in November 2003 (Superior Diamonds Inc., press release, November 27, 2003).
2. Lake Shore Gold Corp. (formerly Consolidated Takepoint Ventures Ltd.) acquired the rights to explore for and develop gold and other minerals, exclusive of diamonds and kimberlites.

Aurora and its associated companies started actively exploring the **AEM Project** in 2002 and acquired a number of properties in both the Red Lake District and Thunder Bay North District as a consequence of this work. The AEM Diamond Project of Superior Diamonds covers some 33 000 km^2. Several key target areas based on kimberlite indicator mineral chemistries and airborne magnetic geophysical signatures have been identified. The AEM project is targeting similar structural environments to those hosting the Attawapiskat diamondiferous kimberlite cluster near James Bay (Superior Diamonds Inc., press release, June 12, 2003).

The **Rapson Bay Property** of Lake Shore Gold Corp. comprises 21 claim blocks totalling 4 928 ha and is located in the Stull Lake greenstone belt in the northern Sachigo Subprovince. This property is centred on Rapson Bay, an area being explored by a number of companies including Bema Gold Corporation, Boliden Westmin (Canada) Limited, Newmont Mining Corporation of Canada Limited and Wolfden Resources Inc. Mafic volcanic rocks and volcanic-derived sediments underlie the main part of the property and an extensive shear zone containing chlorite+sericite+carbonate schist straddles the Stull–Wunnumin and Rapson Bay fault zones. Fifty-five rock samples were collected within altered volcanic rocks and gabbro with the best results returning 12.1 g/t Au over 4 m in a stockworked gabbro. Further sampling and ground geophysics are planned to determine the extent of this mineralization (Lakeshore Gold Corp., press release, January 14, 2003).

GOLDEYE EXPLORATIONS LIMITED

Goldeye Explorations Limited's **Sandy Lake Property** consists of 220 claim units totalling 36 km^2, located in the Rathouse Bay (Sandy Lake) and Granite Bay of Sandy Lake claim map areas. The property includes an 8 km long northwest-striking deformation zone with gold showings of up to 172 g/t Au (5.0 ounces gold per ton) (Goldeye Explorations Limited., www.pathcom.com/~goldeye/, accessed February 2, 2004) underlain by a Mesoarchean volcanic sequence, similar in age to the sequence underlying the Red Lake greenstone belt, 170 km to the south.

The northern claim block along Northwest Arm of Sandy Lake contains several reported gold showings and the geological setting has been compared to the Red Lake gold environment (Goldeye Explorations Limited, press release, March 6 2003).

The southern claim block at Sanborn Bay of Sandy Lake is underlain by the volcano-sedimentary package, which includes several base metal occurrences with assays up to 9% Zn, 11 ounces Ag per ton and 1.09% Cu (Goldeye Explorations Ltd. 2003).

RESIDENT GEOLOGIST STAFF AND ACTIVITIES

At year-end, staff of the Red Lake Resident Geologist's office comprised Andreas Lichtblau, Regional Resident Geologist, Carmen Storey, District Geologist and Lynn Kosloski, District Support Geologist. Lindsay Fulawka and Marc Lichtblau were employed for a short period as office assistants in the Summer Experience Program.

C.C. Storey, A. Lichtblau and M. Grant (Mineral Development Coordinator, Thunder Bay) gave a 3-day Prospectors Course in Bearskin Lake First Nation. Rock and mineral identification, claim staking methods, basic exploration techniques and the Mining Cycle were explained. A. Lichtblau assisted P. Moses (First Nation Minerals Information Officer) in giving a Prospectors Course in Pikangikum First Nation. A. Lichtblau gave an introductory talk "Why do Explorationists Do What They Do?" to Pikangikum First Nation, in conjunction with a talk by M. Grant, on the Mining Sequence.

Resident Geologist Program staff presented a display of rocks and potentially economic minerals as part of the Whitefeather Forest Initiative Open Houses in both Pikangikum First Nation and Red Lake. In Pikangikum First Nation, a total of 294 visitors were in attendance, while in Red Lake, approximately 123 people toured the exhibits.

During the year, C.C. Storey organized the annual CIM Exploration Roundup, attended the CIM "Ore Deposits at Depth" Field Conference in Timmins and represented the Red Lake District at the annual Prospectors and Developers Association meeting in Toronto. For the 2003 Norseman Festival, C.C. Storey produced a display showing the importance of mining in everyday life, the ore deposits in the belt and the role of the MNDM.

A. Lichtblau assisted P. Hinz, Kenora District Geologist, teaching the applied Earth Science portion of the Dryden High School Conservation Course, and attended the Ontario Exploration and Geoscience Symposium in Toronto.

L. Kosloski represented the Red Lake District at the Manitoba Mining and Minerals Convention in Winnipeg.

Resident Geologist Program and Mining Lands staff in Red Lake–Kenora were presented with a plaque from the Northwest Ontario Prospector's Association, showing their appreciation for many years of service.

DRILL CORE STORAGE SITE

The remote diamond-drill core storage compound is located 6 km south of Red Lake, on Highway 105. The compound is operated as a self-serve facility by the Red Lake Resident Geologist's Office. The Kenora Drill Core Library houses an additional 14 529.9 m of diamond drill core from the Red Lake District.

In 2003, the remote drill core facility had 19 users, up from 2002 where the facility had 15 users. The number of users has been increasing every year. Many industry visits usually extend over several days.

Diamond drill core was donated to the facility this year by Skyharbour Resources Ltd. from their McKenzie Island property in Dome Township (13 holes totalling 2081.8 m) and has been added to the collection (Table 7).

Table 7. Summary of drill core stored at the Red Lake Resident Geologist's District Remote Drill Core Compound.

Company	Property	Township or Area	Footage
Ansil Resources Ltd.	Baird Township	Baird Township	177.9 m
Asarco Exploration Co. of Canada Ltd.	Skinner, Goodall	Skinner and Goodall townships	444.0 m
Barrick Gold Corporation	Hasaga Mine	Heyson Township	2889.8 m
Barrick Gold Corporation	Red Lake Gold Shore Mine	Dome Township	106.7 m
Barrick Gold Corporation	Red Lake Gold Shore Mine	Dome Township	257.6 m
Canadian Industrial Minerals Corp.	Bouzon Lake	Heyson Township	2029.2 m
CAMET Howey and Hasaga Mine Hazards Drilling	Howey–Hasaga	Heyson Township	1027.2 m
Central Geophysics Ltd.	Conifer Lake Complex	Sumach Lake Area	170.8 m
Cross Lake Minerals Ltd.	Gerry Lake	Gerry Lake Area	981.0 m
East West Resource Corporation	Bouzan Lake	Heyson Township	1489.5 m
Freewest Resources Ltd.	McQuaig Property	Dome Township	993.1 m
Hemlo Gold Mines Ltd.	Miles Red Lake	Todd Township	369.3 m
ITL Capital Corp.–Rupert Resources Ltd.	Durham–McEwen	Balmer Township	1682.5 m
Lac Properties Ltd.	Hasaga Mine – Time Domain Reflectometry (TDR) cables installed in the Crown Pillar	Heyson Township	33.7 m
Loydex Resources Inc.	Bug River	Heyson Township	190 m
Mutual Resources Ltd.	Dixie Lake	Dixie Lake Area	499.3 m
Noramco Explorations Inc.	Various	Ball Township	31 268.6 m
″		Balmer Township	
″		Byshe Township	
″		Dome Township	
″		Fairlie Township	
″		Goodall Township	
″		Honeywell Township	
″		McDonough Township	
″		Ranger Township	
″		Shabumeni Lake Area	
″		Skinner Township	
″		Todd Township	
Noranda Exploration Company Ltd.	Selco Dixie Joint Venture	South of Otter Lake and Karas Lake areas	1638.2 m
Pure Gold Resources Inc.	McKenzie Island	Dome Township	1762.4 m
Rio Algom Exploration Co. Ltd.	Fly Lake	Mitchell Township	731.0 m
*Skyharbour Resources Ltd.	McKenzie Island	Dome Township	2081.8 m
Teck Exploration Ltd.	Howey Mine	Heyson Township	7255.5 m
United Reef Petroleums Limited	Aiken–Russett	Baird Township	8154.0 m
Western Pacific Energy Corp.	Swain Lake	Goodall Township	1936.2 m
TOTAL			**68 169.3 m**

* 2003 acquisition

PROPERTY EXAMINATIONS

Major authorship of the following property examinations is indicated in parentheses following the titles. Table 8 lists the property visits conducted by staff in 2003; a location map, keyed to the property numbers, is shown in Figure 9.

Table 8. Property visits conducted by the Red Lake Regional Resident Geologist and Staff in 2003.

Number (keyed to Figures 4, 5 and 8)	Property or Occurrence
1	Follansbee property, Dome Township
2	Bonanza property, drill core storage site, Dome Township
3	Rivard (Heath) property, Todd Township
4	Cochenour–Willans Mine, Dome Township
5	May–Spiers Mine and hazard reconnaissance, Ball Township
6	Heyson–Byshe property, drill core storage site, Byshe and Heyson townships
7	Sanshaw property hazard, Dome Township
8	Lake Rowan Mine, Todd Township
9	Follansbee property, Dome Township (placer gold workings)
10	Red Crest Mine, Todd Township
11	Pine Ridge Road stromatolites, Bateman Township
12	Pikangkum First Nation area
13	Sidace Lake reconnaissance float, Coli Lake area
14	Mather Red Lake trenches and Sidace Lake reconnaissance, Coli Lake area
15	McFinley Mine, Bateman Township
16	East Bay property, drill core storage site, Bateman Township
17	Planet property, drill core storage site, Coli Lake area
18	Gold Eagle Mine, drill core storage site, Dome Township
19	Mount Jamie Mine hazard, Todd Township
(20)	Ghost Lake property, Zealand Township (Kenora District)
(21)	Straw Lake property, Bluffpoint Lake area (Kenora District)

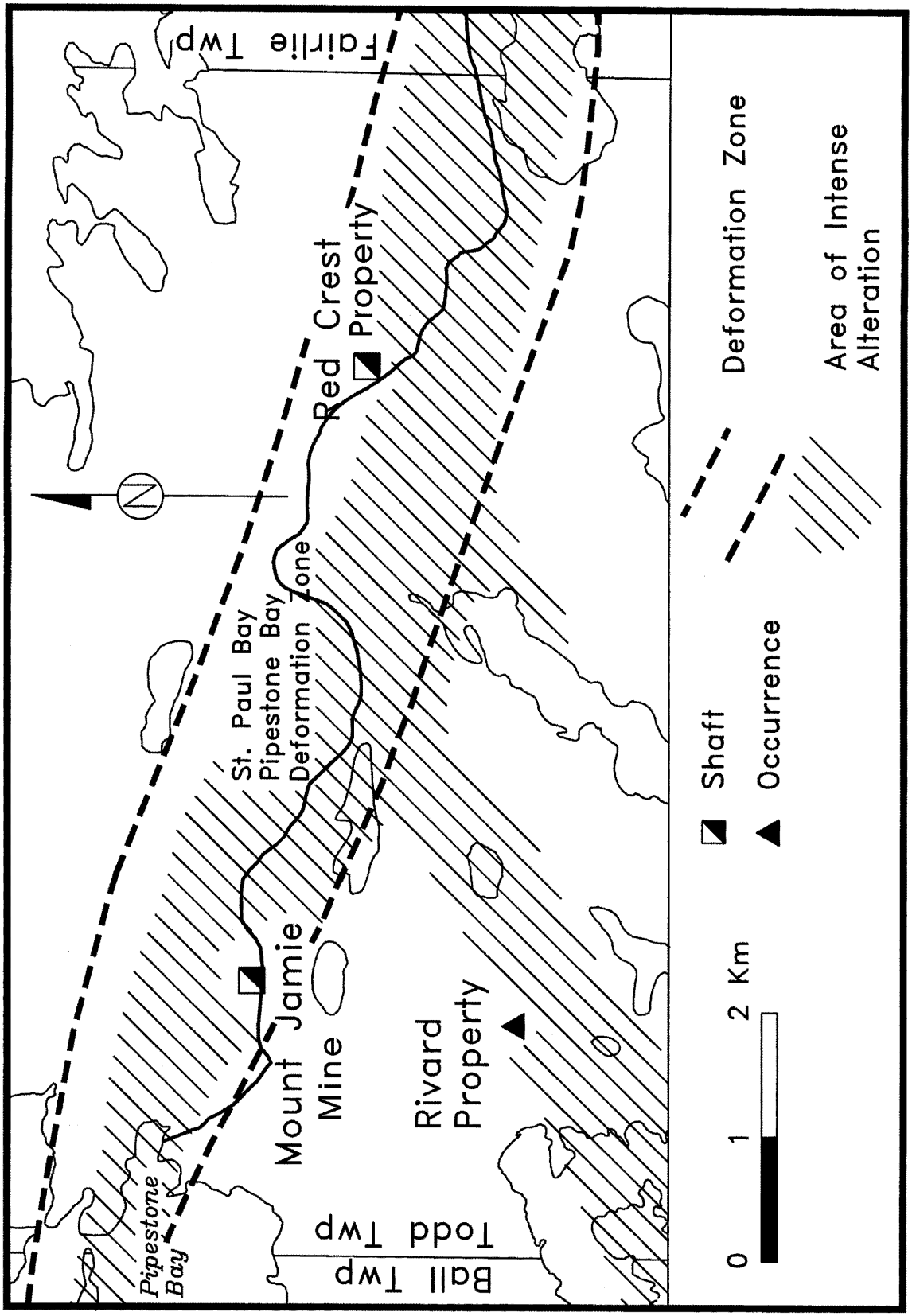

Figure 9. Location map for the Mount Jamie Mine, Red Crest property and Rivard property. Deformation and alteration zones *from* Durocher et al. (1991).

Mount Jamie Mine, Todd Township (C.C. Storey)

The Mount Jamie Mine is located in west-central Todd Township (*see* Figure 9) approximately 23 km west-northwest of the community of Red Lake. The site can be reached by the Mount Jamie Road, an unmaintained logging road, which extends southwest from the Pine Ridge forest access road. It is a total of 66 km by road from the mine site to the town of Red Lake. The property is held by Jamie Frontier Resources Inc. and is optioned to Zenda Capital Corp., which is currently exploring it for its gold potential.

The following history of the property was compiled from Horwood (1945), Durocher et al. (1987) and the Mineral Deposit Inventory (MDI2). Gold was discovered in the 1920s and the property was patented in 1928 by the Kelly–Carlson Syndicate. Frontier Red Lake Gold Mines was formed to acquire the property in 1934. It carried out surface exploration and in 1936 began sinking a 2-compartment shaft, the No. 1 shaft, to 244 feet. Work was then suspended. Gold Frontier Mines Ltd. was incorporated in November 1939 to take over the property. They owned the property from 1939 to 1944 and deepened No. 1 shaft to 495 feet in 1941, however, work was stopped in February 1942. Bayview Red Lake Gold Mines Ltd. held the property from 1944 to 1947 and carried out surface exploration, diamond drilling and deepened No. 1 shaft to 772 feet in 1947. The property was held from 1947 to 1975 by Red Poplar Gold Mines which became Consolidated Red Poplar Gold Mines in 1955 and New Dimension Resources Ltd. in 1971. Mount Jamie Mines (Quebec) Ltd. optioned the property in 1974 and dewatered the shaft to 230 feet to evaluate potential reserves. They erected a 100 ton per day mill in 1976 and carried out some test work. Lancer Resources Ltd. held an initial 5% interest in the property. It subsequently changed its name to Mount Jamie Mines Ltd. in January 1979 and acquired all the assets of Mount Jamie Mines (Quebec) Ltd. In February 1984, Mount Jamie Mines Ltd. merged with Keeley–Frontier Resources to form Jamie Frontier Resources Inc. Surface and underground exploration and test milling continued until 1988 (Atkinson and Storey 1989; Gordon 1989).

In 1976, 1224 tons of ore grading 0.49 ounce gold per ton was mined, however, only 552 tons of ore with a grade of 0.48 ounce gold per ton were milled at a recovery of 78.8% producing a concentrate containing 208.79 ounces of gold (Koskatalo and Panagapko 1978). An additional 420 tons were milled in 1980 with a grade of 0.50 ounce gold per ton and 80% recovery (Gordon 1989). This should have produced 168 ounces of gold for a total production of 377.34 ounces.

GEOLOGY

Todd Township was mapped by Riley (1975, 1978) and the deposit described by Horwood (1945) and Durocher et al. (1987) and later re-examined by Parker (1999). The area of the deposit is underlain by east-striking mafic to felsic metavolcanic rocks with minor intercalated chemical metasedimentary rocks. Several small quartz diorite stocks have intruded the metavolcanic rocks and a large ultramafic intrusive body (part of the Pipestone Bay mafic to ultramafic complex) has been mapped approximately 120 m south of the shaft (Riley 1975, 1978). Sanborn-Barrie (GSC, written communication, 2003) grouped the metavolcanic rocks into the lower calc-alkaline basalt, intermediate and felsic rocks of the Ball assemblage and the ultramafic intrusive rocks as Ball plutonic suite. The Ball assemblage metavolcanic rocks have an age of 2940 to 2925 Ma. The metavolcanic rocks have been intruded by quartz porphyry and diorite dikes as shown on Figure 10. Horwood (1945), Lavigne et al. (1986) and Gordon (1989) have described an intrusive breccia unit. This rock consists of angular fragments of quartz porphyry and mafic metavolcanic rock in a fine-grained matrix presumably of dioritic or gabbroic composition. The breccia forms a pod-like unit that crosses the Main vein and other structures at a strike of 070°. Its origin is uncertain.

The mine was developed on quartz veins in east-striking shear zones in altered metavolcanic rocks. Parker (1999) indicates the structure controlling the veins is oriented 107/84°S which corresponds well with Horwood (1945) and Gordon (1989). The rocks have been affected by the Pipestone Bay–St. Paul Bay deformation zone and show strong foliation and chlorite, sericite, iron carbonate and garnet alteration minerals (Parker 1999). The veins are grey quartz with small amounts of pyrite and pyrrhotite and minor galena, sphalerite, chalcopyrite and arsenopyrite. Occasional visible gold has been reported (Horwood 1945). The following vein description is summarized from Gordon (1989). Galena and to a lesser extent chalcopyrite is associated with high gold values. The veins are irregular in width and may dip steeply north or south. Veins extend over long distances, but gold concentrations are confined to ore shoots in dilatant zones in the shear zones notably at junctions with later crosscutting schistosity (070°).

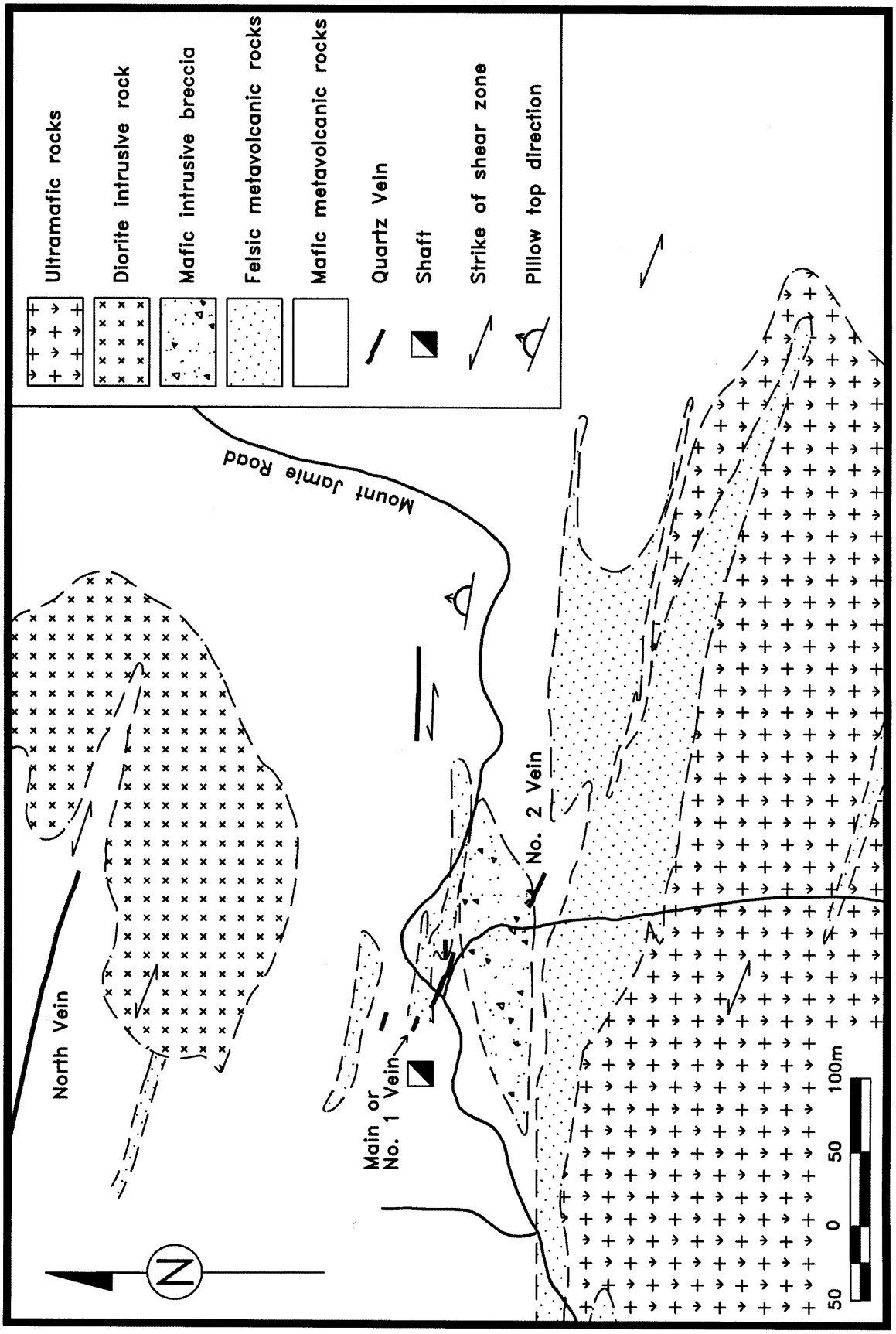

Figure 10. Sketch map showing the geology of the Mount Jamie Mine. Geology *after* Gordon (1987); No.1 and No.2 vein locations *from* Horwood (1945).

The Main zone contains an inferred resource of 47 048 tons of 0.425 ounce gold per ton (Gordon 1989). It is not known if this estimate complies with National Instrument 43-101 requirements so it has been downgraded to inferred resource from reserve. In addition to the Main zone, there are several additional mineralized shear zones exposed on the property. Durocher et al. (1987) indicate 6 zones based on their review of the available information. These were recommended for further exploration when operations ceased in 1988. Numerous gold and base metal sulphide occurrences are shown in this part of Todd Township on published geological maps (Riley 1975, 1978).

Recent exploration work on the Mount Jamie property by Zenda Capital Corp. (*see* "Exploration Activities") has confirmed the presence of high-grade gold mineralization. Diamond drill hole JF-03-02 intersected 0.5 m with 59.4 g/t gold (1.72 ounces gold per ton) in the Main zone below the first level of the mine. Studies of the aluminous alteration assemblages on this property compare favourably with the alteration assemblages at the Madsen and Starrat–Olsen mines (Durocher and Burchell 1983; Parker 1999). The Mount Jamie Mine falls in a metamorphic anomaly of higher grade rocks in a generally lower grade area (transition zone and amphibolite-facies rocks surrounded by greenschist-facies rocks). These "hot spots" have been indicated as favourable sites for gold mineralization (Thompson 2003).

The Mount Jamie Mine is an example of an underexplored property that has significant potential to host gold mineralization of both the quartz-sulphide vein-type mineralization sought in the first years of operation and the high-temperature disseminated-replacement-style mineralization as found at the Madsen Mine.

Red Crest (Red Summit) Property, Todd Township (C.C. Storey)

The Red Crest property is located in central Todd Township (*see* Figure 10) approximately 18 km west-northwest of the community of Red Lake. The site can be reached by the Mount Jamie Road, an unmaintained logging road, that extends southwest from the Pine Ridge forest access road. It is a total of 61 km by road from the mine site to the town of Red Lake. The property is currently held by Claude Resources Ltd.

The early history, which follows, was taken from Horwood (1945). The original claims were staked in 1930 and optioned to Coniagas Mines Ltd. in 1931. They carried out 2004 feet of diamond drilling in 11 holes. In 1934, Red Crest Gold Mines drilled 8 holes and began sinking a 3-compartment shaft with levels at 150 and 275 feet. A 5 ton test mill was installed in 1935 to test material from underground and surface mineralization. From 1935 to 1938, the shaft was deepened to 600 feet and levels were opened at 425 and 575 feet. In 1938, the property was closed down. All structures on the property have collapsed and all machinery has been removed. Contemporary estimates of grade and reserves published by Horwood (1945) include 47 439 tons with an uncut grade of 0.269 ounce Au per ton, 36 496 tons with a cut grade of 0.203 ounce Au per ton and an uncut estimate of 21 182 tons of 0.318 ounce Au per ton (allowing 10% dilution) when the mine closed in 1938. A further estimate of 38 000 tons of 0.3 opt Au was published in 1985 (*The Northern Miner*, March 14, 1985, p. 21). None of these estimates are considered to comply with National Instrument 43-101 requirements. In 1935 and 1936, 591 tons were mined from a surface cut and milled to produce 277 ounces of gold and 65 ounces of silver (Young 1937, 1938).

Riley (1975, 1978) mapped Todd Township; the deposit has been described by Horwood (1945) and Durocher et al. (1987) and re-examined by Parker (1999). The area of the deposit is underlain by east-striking mafic metavolcanic rocks intruded by a small quartz diorite stock. The Red Crest deposit is hosted in Balmer assemblage rocks (middle tholeiitic basalt, and gabbro of the Balmer plutonic suite) intruded by a quartz diorite stock of the Graves plutonic suite (M. Sanborn-Barrie, GSC, written communication, 2003). The Red Crest quartz diorite has an age of 2729±1.5 Ma (M. Sanborn-Barrie, GSC, written communication, 2003). In addition to the quartz diorite, Horwood (1945) mentions later diorite dikes that seem to be best developed in the underground workings.

The mineralized zones have been explored by a series of surface trenches, now heavily overgrown, in addition to the underground workings and diamond drilling. The northwest-striking Pipestone Bay–St. Paul Bay deformation zone crosses the property. The mineralized veins are hosted in a shear zone, associated with the deformation zone, that crosses the contact between the metavolcanic rocks and the quartz diorite and dips 60 to 70° north. The rheological contrast between the diorite and the mafic metavolcanic rocks was important in developing the vein system (Parker 1999). A composite level plan published by Horwood (1945) indicates several roughly parallel veins striking 135° dipping 55 to 70° north, with most of them dipping 64 to 70°. Three types of veins are present: barren white

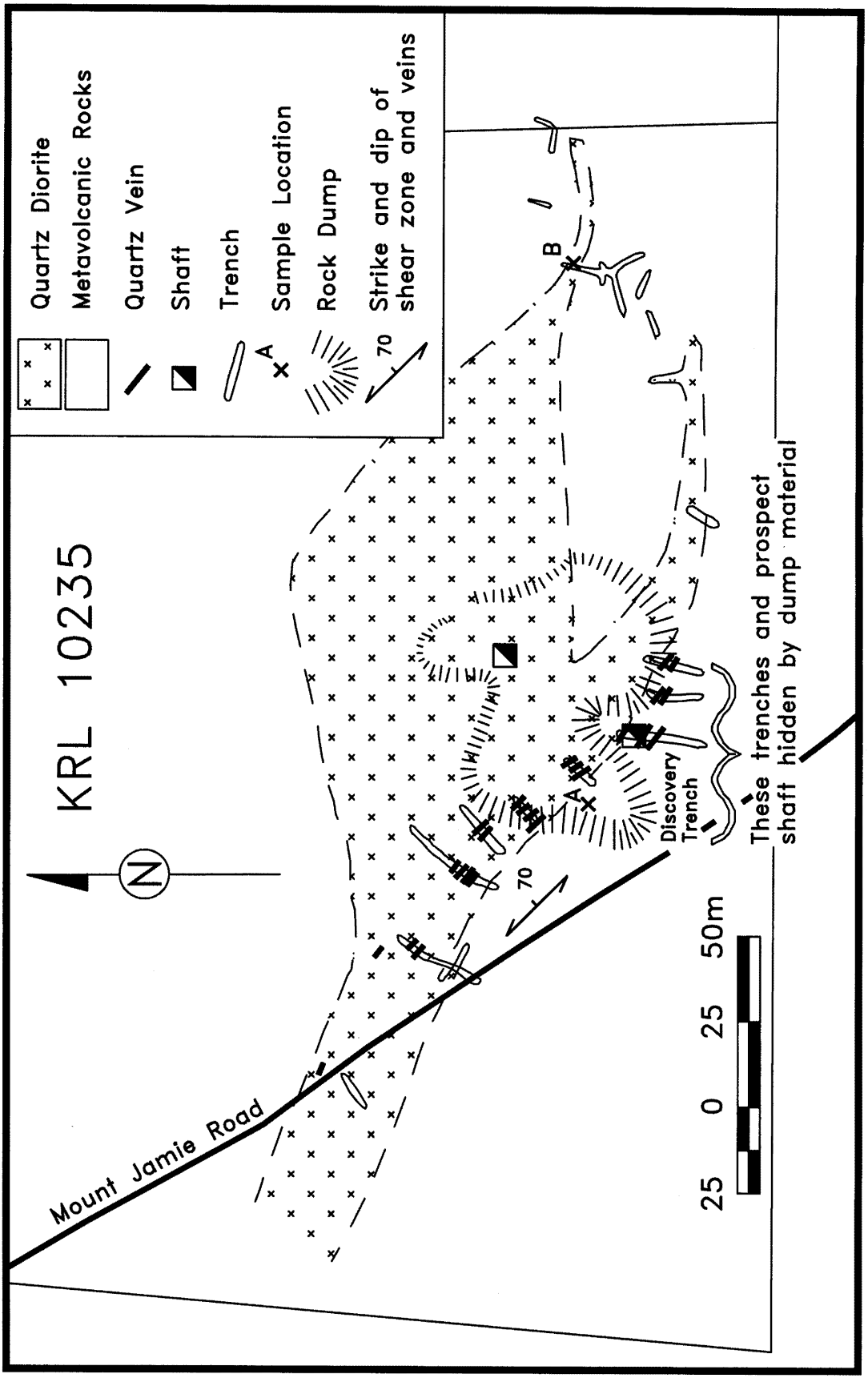

Figure 11. Sketch map showing the geology of the Red Crest property. Geology *after* Horwood (1945). Sample A is dump sample mentioned in text; Sample B is from long trench mentioned in text.

quartz veins, barren quartz-carbonate veins and auriferous blue-grey quartz veins. Gold is associated with coarse bronze coloured pyrite in the blue-grey quartz veins. These veins are erratically distributed giving rise to the problems determining grade and reserves when the mine was operating. Fine pale whitish pyrite present in the diorite and frequently in the walls of the vein system shows very little gold (Horwood 1945).

Figure 11 shows the surface geology of the shaft area and the location of old trenches. An exposure of chlorite schist at the base of the rock dump in the vicinity of the original discovery trench is composed of chlorite, quartz, talc and ankerite (analysis by GeoLabs, Sudbury, Ontario). The rocks exposed in the vicinity of the shaft show varying amounts of shearing and silicification. The intensity of shearing changes from low to intense over distances of a few metres. Alteration consists of chlorite and iron carbonate (Parker 1999) best illustrated in the immediate vicinity of the veins. As shown on Figure 11, the west side of the rock dump contained a large amount of quartz vein material identified as "ore" during the 1993 AMIS site visit (V. B. Cook Ltd. 1994). A selected grab sample of quartz with coarse bronzy pyrite from this dump assayed 1.17 ounce Au per ton (Sample A). Sample B, taken from a long trench east of the shaft, returned 39 ppb Au, 271 ppm Cu and 74 ppm Zn (both analyses by GeoLabs, Sudbury, Ontario). Pyrite is the most common sulphide mineral, but small amounts of chalcopyrite and minor arsenopyrite are also present.

The Red Crest deposit is located in the lower amphibolite metamorphic zone of Thompson (2003) just north of the boundary between the transition zone and the lower amphibolite zone. Thompson states that these zone boundaries are not precisely located so the position of the boundary with respect to the Red Crest deposit may not be as indicated. Thompson (2003) regards the transition zone as having potential for gold exploration. The Red Crest deposit has had limited exploration and only to relatively shallow depths. Reported gold grades, while variable, do support the potential for economic mineralization.

Rivard Property, Todd Township (A. Lichtblau)

The Rivard property (formerly known as the Heath property), situated in southwest Todd Township, is currently optioned to AngloGold (Canada) Exploration Company ("AngloGold") from the Estate of O'Brien Rivard. AngloGold can earn a 100% interest in the 6 patented claims comprising Mining Lease 105996 (UTM Zone 15, NAD83, 419539E, 5656059N).

The property is accessed from Balmertown via the Nungesser, Pine Ridge and Mt. Jamie roads. At the Mt. Jamie Mine site, a newly constructed access road heads south for approximately 2 km to the Rivard property.

Exploration has been carried out on the property since the 1930s. In 1944, Heath Gold Mines Limited quarried approximately 63.5 tons of material from 18 erratically distributed pits in the north-central part of the property. Bulk samples were prepared from the North, Northeast and Southwest zones, which were believed to exhibit elevated amounts of gold mineralization (Mackle 1944). The mineralized rock was crushed on-site and milled at the Cochenour–Willans Mine.

The Southwest zone was found to be the area with greater exploration potential. Blasted rock from 8 pits formed a bulk sample of approximately 20.5 tons representing an area roughly 450 m in strike extent. The average of unweighted samples assayed approximately 0.13 ounce gold per ton. This amount was cut to 0.09 ounce gold per ton to offset problems in sampling procedures (Bell 1944).

The most recent work on the property was performed by Rubicon Minerals in 2002 and 2003, which included linecutting, stripping, mapping, channel sampling, ground and airborne geophysical surveying and 2 diamond drilling programs (totalling 7317 m in 23 holes).

GEOLOGY

The area of extensive historical stripping on the Rivard property exposes an interpreted angular unconformity between the footwall Ball assemblage and the hanging-wall Slate Bay assemblage. The footwall rocks, situated in the northwest portion of the property, are dominated by a series of strongly iron-carbonate-veined and pervasively altered, chlorite- and fuchsite-bearing ultramafic (and minor mafic) sills intruding sericitized quartz crystal tuff. The sills strike 070° and attain an average thickness of approximately 50 m (Copeland 2003).

On the Rivard property, the hanging-wall Slate Bay assemblage is characterized by a lack of ultramafic rocks, and by the presence of a basal conglomerate, deposited on an angular unconformity. The conglomerate occurs as one to 3 separate 1 to 2 m thick units, striking approximately 030°. The units are pale to bright green in colour due to fuchsite in fine-grained matrix material supporting 40 to 70%, 1 to 10 cm diameter clasts of subangular to well-rounded quartz crystal tuff, similar to footwall lithology. Graded bedding dips steeply east-southeast, but is not overturned, and indicates an east-southeast younging direction.

Immediately overlying and interbedded with conglomerate is a 15 to 20 m thick unit of pale to emerald-green sandstone. Occasional millimetre to centimetre thick, heavy mineral bands are found within the unit: these non-magnetic oxides have been determined to be detrital chromite (J.R. Parker, OGS, personal communication, 2004).

A 1 m thick, weakly bedded, felsic quartz crystal ash tuff is interbedded, with both the conglomerate, and the sandstone, and has been recently sampled by the OGS for U/Pb zircon age determination.

A minimum 400 m thick succession of quartz crystal tuff overlies the sandstone unit and is mapped to the eastern and southern property boundaries, where it is capped by a chert-magnetite iron formation.

MINERALIZATION

The area of strong iron-carbonate alteration has been significantly enlarged by recent work, and measures roughly 1830 m wide and 2740 m long. Within this area, gold mineralization predominates in the higher stratigraphic levels of the footwall assemblage (i.e., within approximately 10 to 30 m of the unconformity) and occurs in several generations of widely spaced, narrow (<5 to 30 cm), up to 30 m long, predominantly 320°-striking veins, comprising quartz-tourmaline in felsic rocks and quartz-carbonate in carbonatized ultramafic rocks (Photo 1). Abundant visible gold and pyrite occurs in the northwest-striking veins, while gold, pyrite, galena, sphalerite and chalcopyrite occur in a more northerly striking set. Veins striking 090º are thought to be barren (Parker 1999).

Significant grades of gold also occur in areas of iron-carbonatized, chloritic and pyritic ultramafic rocks, in particular near the top of the footwall assemblage.

Photo 1. Quartz-carbonate veining in strongly carbonatized ultramafic rock, exposed on north side of ca. 1944 pit.

Channel sampling by Rubicon Minerals Corporation in 2002 indicated that highest gold grade was found in highly pyrite-ankerite-chlorite altered ultramafic rocks within the immediate footwall of the conglomerate marking the unconformity between the footwall Ball assemblage and hanging-wall Slate Bay assemblage (Copeland 2003). For example,

Channel Sample #	Length (m)	Gold (g/t)
RLJV-R00018 to 21	2.0	3.58
including	0.5	9.79
RLJV-R00064 to 67	2.0	5.95
including	0.5	7.89

Selected grab samples by the OGS of strongly carbonatized-pyritized and fuchsitic ultramafic rock returned the following assays (analyses by GeoLabs, Sudbury, Ontario):

Sample #	Description	Gold (ounce per ton)
2003CS002	strongly carbonatized mafic; 25–50% pyrite	0.34
2003CS003	quartz-carbonate vein; 10–25% pyrite	0.28
2003CS005	quartz-carbonate vein; 10–25% pyrite	0.13

Rubicon Minerals Corporation conducted a Phase I diamond drill program in early 2003, comprising 12 holes (totalling 3117 m). High-grade gold intercepts were encountered in steeply dipping quartz-carbonate veins beneath surface trenches and pits (e.g., hole RV-03-06, below). Significant results included the discovery of a shallow-dipping vein system with no known surface expression (e.g., hole RV-03-07, below) (Rubicon Minerals Corporation, press release, June 3, 2003).

Hole	From (m)	To (m)	Interval (m)	Grade Gold (g/t)
RV-03-06	273.50	274.00	0.50	9.65
	281.60	282.60	1.00	22.83
including	281.90	282.20	0.30	62.30
	368.80	369.10	0.30	12.80
RV-03-07	263.00	272.45	9.45	14.32
including	263.00	263.30	0.30	11.90
and	270.10	270.40	0.30	14.85
and	272.15	272.45	0.30	411.00
	332.50	332.80	0.30	17.75

A Phase II drill program of 4200 m in 11 holes, followed up on the previously reported intersections as well as other target areas.

RECOMMENDATIONS FOR EXPLORATION

Gold

Over 25 million ounces gold have been produced from the Archean Uchi Subprovince over the past 75 years. This volcano-plutonic belt is exposed for over 650 km, from Rice Lake in the west, through the Red Lake, Birch–Uchi, Pickle Lake and Fort Hope greenstone belts of northwestern Ontario. The bulk of gold production (over 15 million ounces) has come from the **Campbell–Red Lake deposit**, being currently mined by Placer Dome (CLA) Ltd. and Goldcorp Inc. Intense exploration work is being carried out on properties which contain any of the elements believed to be key guides to ore. Explorationists should note that

- significant deposits in the Red Lake greenstone belt occur within the Mesoarchean (ca. 2990 Ma) Balmer assemblage and near the unconformity with overlying Neoarchean (ca. 2740 Ma) Confederation assemblage;
- deposits are hosted within mafic and ultramafic rocks having undergone strong ferroan-dolomite alteration and multiple periods of quartz and arsenopyrite-rich selective carbonate vein replacement;
- the biotite isograd (occurring at approximately the transition from lower to upper greenschist facies) is within 900 m of more than half of past and current gold producers. The bulk of production has come from the Campbell–Red Lake deposit, which is less than 200 m from the isograd.

Planet Explorations Inc. on its Sidace Lake property in the northeastern portion of the Red Lake greenstone belt has encountered a potentially **new gold deposit type** for the belt. Significant gold mineralization is hosted by quartz-sericite schist, with disseminated pyrite and quartz veinlets. Gold values in quartz-sericite schist (e.g., 7.58 g/t Au over 21.4 m in hole RL-03-26) are associated with elevated antimony, arsenic and mercury. A high-grade assay (97.03 g/t Au over 0.20 m in Hole RL-02-04) is hosted by a quartz vein also containing 11 ppm Hg and 2589 ppm Sb. The style of alteration and metal association supports the tentative conclusion that this type of occurrence is related to a Hemlo- or Bousquet-style mineralizing event.

In the adjacent Birch–Uchi greenstone belt, east of the Trout Lake batholith and west of Woman Lake, the Balmer assemblage underlies the Woman (ca. 2840 Ma) and Confederation (ca. 2740 Ma) assemblages. Many historic gold properties in this 5 by 13 km area are underexplored and may offer excellent potential for high-grade Red Lake-style gold mineralization.

Iron formation-hosted gold mineralization is known in both the Red Lake and Birch–Uchi greenstone belts. The McFinley Mine, now 100% controlled by Rubicon Minerals Corporation, has reported significant historical gold values in magnetite-chert iron formation. Redstar Gold Corp. controls the Newman-Heyson property in Todd Township, where previous work by Noranda Exploration Company Ltd. intersected gold mineralization, as high as 0.553 ounce per ton over 2.93 m, in magnetite-chert iron formation. A number of gold-bearing, sulphidized chert-magnetite iron formations occur in the Keigat Lake area, in the northeastern Birch–Uchi greenstone belt. Some of the significant historical results from the Sandy Point, High Grade Island, Grimshaw and Dom–Keigat Creek occurrences were subject to successful ground investigations in 2002 and 2003.

Felsic to intermediate stocks and dikes, including quartz and plagioclase phyric **porphyries**, are associated with a number of gold occurrences and deposits in the Red Lake greenstone belt. A total of approximately 640 000 ounces gold were produced at the Howey and Hasaga mines from quartz veins in a sheared quartz porphyry dike. Close to 700 000 ounces gold were produced from the McKenzie granodiorite stock. On the Wilmar portion of the Cochenour property and at the Abino occurrence, small granodiorite to trondhjemite intrusions contain gold mineralization. Over half of the known gold occurrences in the belt have associated quartz porphyry stocks or dikes. It is conceivable that Hollinger–McIntyre-style gold mineralization may be discovered in the Red Lake and Birch–Uchi greenstone belts.

Base Metals

Volcanogenic massive sulphide (VMS) deposits and prospects, and associated proximal chloritic and alumino-silicate alteration, are well documented in the Red Lake, Birch–Uchi and Confederation greenstone belts hosted in Confederation assemblage rocks. Confederation assemblage rocks are exposed on the eastern and southern flank of the Birch–Uchi greenstone belt, the area between the Red Lake and Birch–Uchi greenstone belts and both the southern edge and northern edge of the Red Lake greenstone belt.

Tribute Minerals Inc. has successfully employed the TITAN-24 MT/IP system on their Dixie and Ben Lake properties in Confederation assemblage. FII-type and FIII-type rhyolites occur throughout a 100 km band stretching east from Red Lake to the past producing South Bay Mine (1.6 million tons grading 11.06% Zn, 1.8% Cu and 2.12 ounces Ag per ton). World-class deposits, such as Mattabi and Geco, are associated with FII-type rhyolite; the Kidd Creek deposit is associated with FIII-type rhyolite. A heightened awareness now exists in the Red Lake District of the potential of discovery of a major base metal sulphide deposit. In particular, the area mentioned, between Red Lake and South Bay Mine, is of prime exploration potential, but the other areas of Confederation assemblage rocks deserve attention to locate FII- and FIII-type rhyolites and possible VMS-type mineralization.

Copper-nickel has not been produced from the Red Lake or Birch–Uchi greenstone belts, but copper-nickel (and associated PGE) mineral occurrences have been reported from several mafic intrusive bodies. Sanukitoid-type intrusive bodies have been identified in the Red Lake greenstone belt and in some areas to the north. Their potential to host copper-nickel-PGE mineralization is unknown at the present.

Rare Metals

Breaks, Selway and Tindle (2001) and Lichtblau et al. (2003) have described rare-metal pegmatites from the Jubilee Lake area in Birkett Township. Pegmatitic rocks associated with the Allison Lake batholith in eastern Birkett Township form an attractive target for rare metal exploration. Breaks, Selway and Tindle (2001) also re-evaluated the McCombe pegmatite in the Root Lake area and found significant tantalum mineralization. This result, as well as tantalum values reported by Storey et al. (2000) also from the Root Lake area, indicates significant rare metal exploration potential in pegmatitic rocks hosted in mafic metavolcanic rocks of the Uchi Subprovince north of the Lake St. Joseph fault. The area of interest includes the western and southern margins of the Allison Lake batholith; the eastern tail of the batholith that extends east-southeast from Birkett Township; and the pegmatites hosted in mafic metavolcanic rocks along the south margin of the Uchi Subprovince, proximal to the English River Subprovince boundary.

Rare-metal pegmatites have also been identified on the Bear Head Lake fault system that separates the Berens River Subprovince from the Sachigo Subprovince (Breaks et al. 1999). This area has received considerable exploration interest in recent years and still warrants exploration for rare-metal pegmatites.

OGS ACTIVITIES AND RESEARCH BY OTHERS

There were 2 projects undertaken in the Red Lake District in 2003 (keyed to Figures 6 and 8). One project was a collaborative agreement between the Ontario Geological Survey (OGS), Peter H. Thompson and Placer Dome Inc.; and the other project was part of the Western Superior NATMAP (National Mapping Program) and a Geological Survey of Canada collaboration with partners.

A. P.H. Thompson in collaboration with the OGS and Placer Dome Inc., completed a metamorphic study of the relationship of gold mineralization with metamorphic facies in the Red Lake greenstone belt. This was achieved by using a combination of thin sections from the OGS and GSC archives and rock samples. An Open File Report was produced for the new, belt-scale, metamorphic framework for gold exploration targets. This report is accompanied by a metamorphic map of the Red Lake greenstone belt at a scale of 1:50 000 (Thompson 2003; Parker 2003).

The following study was part of the Western Superior NATMAP program:

B. B. Dubé and V.J. McNicoll of the Geological Survey of Canada (GSC), along with K. Williamson and M. Malo from the Université du Québec's (INRS) research branch, in collaboration with Goldcorp Inc., completed the fourth year of a multi-year study at the Red Lake Mine for contribution to the Western Superior NATMAP program. The study had focussed on the geology of the Red Lake Mine "High Grade Zone" (HGZ) and its relationship to the Red Lake "Mine Trend", to better understand the key geological parameters controlling its formation and exceptionally rich gold grade.

Field work was focussed on detailed structural and alteration mapping within the HGZ, as well as selected stripped outcrops within the Balmertown–Cochenour area. Samples were collected for U/Pb geochronology, to independently constrain the age of hydrothermal activity, gold mineralization and remobilization at the HGZ of the Red Lake Mine. For the first time, the combination of geochronology, detailed mapping and crosscutting relationships, has provided the timing constraints for new insights into the formation of the exceptionally rich Goldcorp HGZ of the Campbell–Red Lake deposit. These results have been submitted in an article to *Economic Geology* for publication (B. Dubé, Geological Survey of Canada, written communication, 2004).

Also completed was a GSC collaboration with G. Chi from the University of Regina (Chi et al. 2003), who studied and updated the fluid inclusion regimes of the Campbell–Red Lake gold deposit, in the Red Lake "Mine Trend". The GSC published the results in a *Current Research* report (B. Dubé, Geological Survey of Canada, written communication, 2004).

One university thesis (BSc(Hons.)) study was also completed:

C. R. Metsaranta of Lakehead University, completed geochemical sampling from a Mesoarchean Balmer assemblage, from the southern end of Woman Lake located in Corless and Knott townships, in the Birch–Uchi greenstone belt, under the supervision of Peter Hollings (P. Hollings, Lakehead University, written communication, 2004).

Publications received in the Red Lake Resident Geologist Office during 2003 are listed in Table 9.

Table 9. Publications received by the Red Lake Office in 2003.

Title	Author	Type and Year of Publication
Mineral Deposit Inventory Version 2 (MDI2)—October 2002 Release	Ontario Geological Survey	Digital Data, 2002, Ontario Geological Survey
Nature, Timing and Significance of Intermediate to Felsic Intrusive Rocks Associated with the Hemlo Greenstone Belt and Implications for the Regional Geological Setting of the Hemlo Gold Deposit	G.P. Beakhouse	Open File Report 6020, 2001, Ontario Geological Survey
Fertile Peraluminous Granites and Related Rare-Element Mineralization in Pegmatites, Superior Province, Northwest and Northeast Ontario: Operation Treasure Hunt	F.W. Breaks, J.B. Selway and A.G. Tindle	Open File Report 6099, 2003, Ontario Geological Survey
Toward a New Metamorphic Framework for Gold Exploration in the Timmins Area, Central Abitibi Greenstone Belt	P.H. Thompson	Open File Report 6101, 2002, Ontario Geological Survey
Investigation of Mafic-Ultramafic Intrusions in Ontario and Implications for Platinum Group Element Mineralization: Operation Treasure Hunt	C. Vaillancourt, R.A. Sproule, C.A. MacDonald and C.M. Lesher	Open File Report 6102, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts	A. Lichtblau, C. Ravnaas, C.C. Storey, L. Kosloski and S. Wilson	Open File Report 6110, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Thunder Bay North Regional Resident Geologist Report: Thunder Bay North District	J.K. Mason, G.D. White, M.S. O'Brien and C. Komar	Open File Report 6111, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Thunder Bay South Regional Resident Geologist Report: Thunder Bay South District	B.R. Schnieders, J.F. Scott, M.C. Smyk and M.S. O'Brien	Open File Report 6112, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts	B.T. Atkinson, M. Hailstone, G. Wm. Seim, A.C. Wilson, D.M. Draper, D. Farrow, P. Hope and A.M. Koroschetz	Open File Report 6113, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Kirkland Lake Regional Resident Geologist Report: Kirkland Lake and Sudbury Districts	G. Meyer, M. Cosec, G.P.B. Grabowski, D.L. Guindon, S. Beauchamp and E.C. Chaloux	Open File Report 6114, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Southern Ontario Regional Resident Geologist Report: Southeastern and Southwestern Districts, Mines and Minerals Information Centre, and Petroleum Resources Centre	P.J. Sangster, W.J. McGuinty, V.C. Papertzian, K.G. Steele, C.R. Lee, M. Barua, D.A. Laidlaw and T.R. Carter	Open File Report 6115, 2003, Ontario Geological Survey
Report of Activities 2002, Resident Geologist Program, Regional Land Use Geologist Report: Northwestern, Northeastern and Southern Ontario Regions	R.L. Debicki, A.P. Drost, P. Hinz, D.J. Rowell and G.R. Yule	Open File Report 6116, 2003, Ontario Geological Survey
Summary of Field Work and Other Activities 2003	Edited by C.L. Baker, R.I. Kelly, J.R. Parker, J.A. Ayer and R.M. Easton	Open File Report 6120, 2003, Ontario Geological Survey
Toward a New Metamorphic Framework for Gold Exploration in the Red Lake Greenstone Belt	P.H. Thompson	Open File Report 6122, 2003, Ontario Geological Survey
1:250 000 Scale Bedrock Geology of Ontario	Ontario Geological Survey	Miscellaneous Release—Data 126, 2003, Ontario Geological Survey

Title	Author	Type and Year of Publication
Electron Microprobe Analyses of Minerals From Fertile Peraluminous Granites and Related Rare-element Pegmatites, Superior Province, Northwest Ontario: Operation Treasure Hunt	Ontario Geological Survey	Miscellaneous Release—Data 127, 2003, Ontario Geological Survey
Geology and Tectonostratigraphic Assemblages, West Uchi Map Area, Manitoba and Ontario	A.H. Bailes, J.A, Percival, M.T. Corkery, V.J. McNicoll, K.Y. Tomlinson, C. Sasseville, N. Rogers, J.B. Whalen, and D. Stone	Preliminary Map P.3461, 2003, Ontario Geological Survey Open File 1522, 2003, Geological Survey of Canada Open File OF2003-1, 2003, Manitoba Geological Survey
The Physical Environment of the City of Greater Sudbury	Edited by D.H. Rousell and K.J. Jansons	Special Volume 6, 2002, Ontario Geological Survey
Geochemistry Workshop at the 2003 Northwestern Ontario Mines and Minerals Symposium	Kenora-Red Lake District Geologist's Offices	OGS Information Session, 2003
Fluid evolution and pressure regimes in the Campbell–Red Lake gold deposit, Red Lake mine trend, Red Lake, Ontario: Fluid-inclusion evidence for a protracted, highly dynamic hydrothermal system	G. Chi, B. Dubé and K. Williamson	Current Research 2003-C28, 2003, Geological Survey of Canada
Gold mineralization within the Red Lake mine trend: Example from the Cochenour–Willans mine area, Red Lake, Ontario, with new key information from the Red Lake mine and potential analogy with the Timmins camp	B. Dubé, K. Williamson and M. Malo	Current Research 2003-C21, 2003, Geological Survey of Canada
Geology, Bee Lake Greenstone Belt, Ontario–Manitoba	N. Rogers	Open File 4315, 2003, Geological Survey of Canada
Geochemistry of Sediments and Sedimentary Rocks: Evolutionary Considerations to Mineral Deposit-Forming Environments	Edited by D.R. Lentz	Geological Association of Canada, GeoTEXT 4, 2003
Overview of Trends in Canadian Mineral Exploration, 2002		Canadian Intergovernmental Working Group on the Mineral Industry, Minerals and Metals Sector, Natural Resources Canada, 2003
Explore in Manitoba, Report of Activities 2003		Manitoba Industry, Economic Development and Mines, Manitoba Geological Survey, 2003
Lithology, Metamorphism, and Structural Geology of Slate Bay, Red Lake, Ontario	Marianne Mader	Thesis BSc, 2000, University of New Brunswick
Gold Mineralization at the Campbell Mine, Red Lake Greenstone Belt, Uchi Subprovince, Ontario	Charles A. Tarnocai	Thesis PhD, 2000, University of Ottawa
Geologie und Petrographie der Frame Lake-Intrusion in der Berens River-Subprovinz, Nordwest-Ontario, Kanada (In German)	Michael Lange	Thesis, 1993, Westfalischen Wilhelms–Universität in Münster
Industrial Minerals in Canada	Edited by Susan Dunlop and George J. Simandl	Canadian Institute of Mining and Metallurgy, Special Volume 53, 2001
The Hemlo gold deposit, Ontario, Canada: prinicpal deposit characteristics and constraints on mineralization	T.L. Muir	Ore Geology Reviews, v.21, Issues 1-2, p.1-66, 2003
Structural evolution of the Hemlo greenstone belt in the vicinity of the world-class Hemlo gold deposit	T.L. Muir	Canadian Journal of Earth Sciences, v.40, p.395-430, 2003
Field Trip Guidebooks	Edited by B.A. Kjarsgaard	VIIIth International Kimberlite Conference 2003

Table 10. Mineral deposits not being mined in the Red Lake District in 2003.

Abbreviations

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

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Abino Bateman, Balmer and Dome Townships (52N/04SW)	Au	Total Granodiorite Zone: drill indicated tonnage 405 162 tons 0.203 opt Au from three sub-zones	AF (McClean 1976)	Patent
Aiken-Russet Baird Township (52K/13NW)	Au	Total reserves of 102 555 tons of 0.22 opt Au	AF (Kuryliw 1967)	Patent
Alcourt (Copper Man, Hanson-Campbell) Fairlie Township (52N/04SW)	Au	Reserves: 20 000 tons of 0.45 opt Au from 1959-60 diamond drilling No. 1 vein: 17 000 tonnes of 0.2429 oz per tonne Au from 1959-60 diamond drilling and 1981 sampling program	AF (Tilsley 1981)	Patent
Annco Mine Dome Township (52N/04SW)	Au	Reserves: 50 000 tons of "Excellent Grade" (0.35 opt Au?)	Energy Mines and Resources Canada 1989	Patent
Bathurst Mine Skinner Township (52N/07SW)	Au	Reserves: 80 000 tons of 0.587 opt Au	Energy Mines and Resources Canada 1989	Leased
Berens River Mine (Golsil, Zahavy) (53C/13SE)	Au, Ag, Pb, Zn	Reserves: No. 1 Zone: 75 000 tons of 0.1 - 0.2 opt Au, 4.0 – 5.0 opt Ag No. 3 Zone: 982 213 tons of 0.26 opt Au, 4.8 opt Ag, 0.77% Pb, 1.12% Zn (713 249 tons indicated, 268 964 tons inferred) at 0.15 opt Au cut-off to 750 metre level	AF (Bevan 1983)	Staked Claim
Bluffy Lake (52K/14SE)	Fe	Reserves: 21 000 000 tons at 22.86% Fe	Prelim. Map P.1199 (Breaks et al. 1976)	Licence of Occupation
Borland Lake (53D/16NE)	Ag, Au	Probable Reserves: 502 412 tons of 8.09 opt Ag and 0.02 opt Au	Massive Resources Ltd. Preliminary Prospectus - August 6, 1987	Open
Buffalo Red Lake Heyson Township (52N/04SW)	Au	Reserves: 421 728 tonnes of 0.139 opt Au drill indicated in 1980	AF (Kita 1988)	Patent
Cochenour-Willans Mine Dome Township (52N/04SW)	Au	Reserves: Proven and probable 173 000 tons of 0.51 opt Au, possible reserves 274 000 tons of 0.59 opt Au	NM - Dec. 12, 1994 p.7	Patent, Licence of Occupation
Cole Gold Mine Ball Township (52M/01SE)	Au	Reserves: 119 780 tons of 0.41 opt Au probable and indicated	AF (Wilton 1973)	Patent, Licence of Occupation
Consolidated Marcus Dome Township (52N/04SW)	Au	Reserves: 60 000 tons of 0.18 opt Au	Energy Mines and Resources Canada 1989	Patent
Copper Lode A-Rexdale Group Prospect (52K/15NW)	Cu, Ag	Reserves: 236 424 tons of 1.94% Cu, 1.22 opt Ag or 425 612 tons of 1.56% Cu, 0.98 opt Ag or 854 007 tons of 1.01% Cu, 0.57 opt Ag	AF (Archibald 1970) MP 152 (Atkinson et al. 1990b)	Staked Claim
Copper-Lode D Belanger Township (52K/15NW)	Cu, Zn	Reserves: 36 000 tons of 0.26% Cu, 7.58% Zn	AF (MacDougall 1996)	Leased

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Copper-Lode E Belanger Township (52K/15NW)	Cu, Ag	Reserves: 160 000 tons of 8.28% Zn, 1.02% Cu, 0.39 opt Ag	AF (Archibald 1970)	Leased
Dixie Creek (52K/13SE)	Au	Reserves: 500 000 tons of 0.12 opt Au	MDIR	Staked Claim
Dixie 3 Prospect (52K/14NW)	Cu, Zn	Reserves: 91 000 tons of 10.0% Zn, 1.0% Cu	AF (MacDougall 1995)	Leased - Mining Rights Only, Staked Claim
Dixie 18 Prospect (52K/14NW)	Zn	Reserves: 110 000 tons of 0.5% Cu, 12.5% Zn, 0.57 opt Ag	AF (King and Petrie 1998)	Staked Claim
Grassett Prospect Earngey Township (52N/02SE)	Au	Reserves: 78 295 tons of 0.22 opt Au (Part of the Hill–Sloan–Tivy Vein)	Energy Mines and Resources Canada 1989	Patent
Griffith Mine (52K/14SW)	Fe	Reserves: 120 000 000 tons of 29% Fe	GR82 (Shklanka 1970)	Withdrawn from staking
Hasaga Mine Heyson Township (52N/04SW)	Au	Reserves: C Block (below 1800 feet) - 200 203 tons of 0.192 opt Au (Ferguson 1968) Stopes - 41 430 tons of 0.104 opt Au Pillars - 6 365 tons of 0.134 opt Au	GR56 (Ferguson 1968)	Patent
Hill-Sloan-Tivy Earngey Township (52N/02SE)	Au	Reserves: 296 000 tons of 0.219 opt Au (Grassett Prospect Reserves may be included in total)	AF (Germundson 1995)	Patent
Horseshoe Island (52N/08NW)	Au	Reserves: 893 508 tons of 0.14 opt Au	Northwest Prospector, March/April 1990, p.27	Staked Claim
Howey Mine Heyson Township (52N/04SW)	Au	Reserves: 780 000 tons of 0.08 opt Au	Energy Mines and Resources Canada 1989	Patent, Licence of Occupation
Jackson-Manion Mine Dent Township (52N/02SE)	Au	Reserves: 40 000 tons of 0.5 opt Au	NM - March 14, 1985, p.21	Patent
Joy-New Zone (Diamond Willow Zone, Creek Zone) (52K/14NW)	Cu, Zn	Reserves: 300 000 tons of 4% combined Cu-Zn	AF (Lewis 1994)	Staked Claim
Kesaka Lake (52K/16NW)	Fe	Reserves: 312 500 000 tons of 31.1% Fe to a depth of 100 feet	ODM Annual Report (Bateman 1939, p.43)	Open, Staked Claim
Laverty (Thrall) Heyson Township (52N/04SW)	Au	Reserves: Speculative reserves from the Diabase dike zone: 329 000 tons of 0.08 opt Au or 75 000 tons of 0.15 opt Au	AF (Gillies 1982)	Patent
Lingman Lake (53F/15SW)	Au	Reserves: 1 172 753 tons of 0.20 opt Au in all zones at 5.0 foot minimum width and a cut-off grade of 0.08 opt Au	AF (McPhee 1989)	Patent
Madsen Mine Baird Township (52K/13NW)	Au	Measured & Indicated Mineral Reserves: 282 000 ounces Au Inferred Mineral Resources: 204 000 ounces Au	(Claude Resources Inc. www.clauderesources.com; accessed February 12, 2004)	Patent
May-Spiers Ball Township (52M/01SE)	Au	Reserves: 30 000 tons of 0.09 opt Au	AF (Bayne 1981)	Staked Claim
McCombe (Root Lake) (52J/13NE)	Lithia	Reserves: 2.3 million tons of 1.3% Lithia to the 500 foot level	MP90 (Breaks 1979)	Patent, Licence of Occupation

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
McFinley Mine Bateman Township (52N/04SE)	Au	Inferred Mineral Resource: 334,007 *in situ* at an average grade of 0.20 opt Au to a depth of 400 feet Broke down as follows: FWC-3 Zone: 3 875 tons of 0.50 opt Au C Zone: 10 520 tons of 0.87 opt Au FWC-1 + 2: 30 600 tons of 0.24 opt Au C-2 Zone: 128 700 tons of 0.11 opt Au C-3 Zone: 36 562 tons of 0.19 opt Au WL Zone: 10 500 tons of 0.49 opt Au 403 Zone: 5 000 tons of 0.80 opt Au BX Zone: 2 000 tons of 0.84 opt Au D Zone: 106 250 tons of 0.15 opt Au Resource Estimate: 890 000 tons at an in-place grade of 0.19 opt Au to a depth of about 1700 ft	AF (Hogg 2002)	Patent, Licence of Occupation
Mount Jamie Todd Township (52M/01SE)	Au	Reserves: Main Zone: 47 048 tons of 0.425 opt Au No. 2 Shaft area: 25 360 tons of 0.37 opt Au	AF (Gordon 1988)	Patent
My-Ritt (Coin Lake) Heyson Township (52N/04SW)	Au	Unknown	OFR 5558 (Durocher et al. 1987)	Patent
New Faulkenham Mines Ltd. (Faulkenham Lake) Baird Township (52K/13NW)	Au	Reserves: 15 000 tons of 0.428 opt Au ($15.00 at $35.00 per ounce Au)	AF (Holbrooke 1958)	Patent
North Spirit Lake (Crown Trust) (53C/07NW)	Fe	Reserves: 1.3 million tons per vertical foot of 33.94% Fe	ODM Annual Report (Bateman 1939) GR150 (Wood 1977)	Patent, Leased
Northgate Prospect Earngey Township (52N/02SE)	Au	Reserves: 64 600 tons of 0.28 opt Au	AF (Zinn 1984)	Staked Claim
Ogani Lake (52K/15NE)	Fe	Reserves: 100 000 000 tons of 21.6% Fe	MDC (Shklanka 1968)	Open
Papaonga Lake (52K/16NE)	Fe	Reserves: 13 500 000 tons of 31.06% Fe	MDIR	Open
Red Crest (Red Summit) Todd Township (52M/01SE)	Au	Reserves: 47 439 tons of 0.269 opt Au (uncut grade) (Horwood, 1945) 38 000 of 0.3 opt Au	NM - March 14, 1985, p.21 ODM Annual Report (Horwood 1945)	Patent
Redaurum Baird Township (52N/04SW)	Au	Possible Reserves: 14A Zone: 243 750 tons of 0.22 opt Au 26 250 tons of 0.20 opt Au No. 2 Zone: 137 500 tons of 0.18 opt Au No. 3 Zone: 102 500 tons of 0.18 opt Au Camp Zone: 24 750 tons of 0.13 pt Au	AF (Barclay 1986)	Patent
Richardson (Kostynuk Bros. Mine) (52N/09SW)	Au	Reserves: 700 000 tons of 0.2 opt Au inferred reserves	OFR 5835 (Parker and Atkinson 1992)	Patent
Rowan Todd Township (52M/01SE)	Au	Reserves: 10 900 tons of 0.657 opt Au ($23.00 a ton at $35.00 per ounce)	AF (Bishop 1939)	Patent
Sanshaw (Whitehorse Island) Dome Township (52N/04SW)	Au	Reserves: 175 000 tons of 0.20 opt Au	NM - June 11, 1953	Patent, Licence of Occupation
Setting Net Lake (53C/13SE)	MoS_2	Reserves: 100 000 000 tons of 0.09% MoS2	MDIR NM - March 23, 1973	Open

Deposit Name and NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status
Sol D'Or Honeywell Township (52N/07SE)	Au	Reserves: 8 565 tons of 0.57 opt Au	Energy Mines and Resources Canada 1989	Staked Claim
Springpole Lake Prospect (52N/08NW)	Au	Reserves: Portage Zone: 7.9 million tons of 0.07 opt Au 27 million tons of 0.035 opt Au including 4 million tons of 0.091 opt Au and 405 000 tons of 0.14 opt Au	OFR 5835 (Parker and Atkinson 1992)	Patent, Staked Claims
Starratt-Olsen Mine Baird Township (52K/13NW)	Au	Reserves: 15 000 tons of 0.45 opt Au	NM - July 26, 1973	Patent
Trout Bay Zinc Pit Zone Mulcahy Township (52M/01SE)	Zn, Cu, Pb, Ag, Au	Reserves: West Zone: 13 776 tons of 4.75% Zn, 0.68% Cu, 0.94 opt Ag East Zone: 124 760 tons 7.86% Zn, 1.5% Cu, 0.24% Pb, 1.7 opt Ag, 0.007 opt Au	MP147 (Atkinson et al. 1990a) Preliminary Map P.567 (Riley 1969) MDIR	Patent (Mining Rights Only), Leased (Mining Rights Only, Licence of Occupation
Uchi Mine Earngey Township (52N/02SE)	Au	Reserves: 214 000 tons of 0.147 opt Au	Energy Mines and Resources Canada 1989	Patent
Wilmar Mine Dome Township (52N/04SW)	Au	Reserves: Quoted from Durocher et al 1987 unless indicated otherwise: Diorite Dike Zone: 140 000 tons of 0.21 opt Au East Breccia Zone: 31 500 tons of 0.32 opt Au (Proven) 50 500 tons of 0.25 opt Au (Probable) 1 777 000 tons of 0.24 opt Au (Possible) Carbonate Zone: 25 000 tons of 0.17 opt Au (Probable) 7 500 tons of 0.15 opt Au (Possible) West Granodiorite Zone: 3.15 to 4.5 million tons of 0.076 to 0.131 opt Au (Energy Mines and Resources Canada 1989) Granodiorite Zone: 5 700 000 tons of 0.10 to 0.15 opt Au	OFR 5558 (Durocher et al. 1987) Energy Mines and Resources Canada 1989	Patent
Woco Vein Earngey Township (52N/02SE)	Au	Reserves: 21 263 tons of 0.80 opt Au	AF (Germundson 1995)	Staked Claims
Young, H.G. Mines Ltd. Balmer Township (52N/04SW)	Au	Reserves: 270 000 tons of 0.31 opt Au	OFR 5558 (Durocher et al. 1987)	Patent

Note: This table contains tonnage and grade estimates referred to as reserves (indicated, possible, probable) which were determined at various times by methods largely unreported. None of these estimates are known to conform to the standards required for National Instrument 43-101. All should be considered inferred mineral resources not reserves.

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Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Red Lake Regional Resident Geologist (Kenora District)—2003

by

P. Hinz, C. Ravnaas and A. Raoul

2004

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RED LAKE REGIONAL RESIDENT GEOLOGIST (KENORA DISTRICT)–2003

P. Hinz[1], C. Ravnaas[1] and A. Raoul[2]

[1]District Geologist, Kenora District, Resident Geologist Program, Ontario Geological Survey

[2]District Support Geologist, Kenora District, Resident Geologist Program, Ontario Geological Survey

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INTRODUCTION

Dimension stone (from 6 quarries) and railway ballast continued to be produced in the Kenora District in 2003. No metallic mineral production was recorded in the District. Advanced exploration projects at Cameron Lake (Nuinsco Resources Ltd.), Richardson Township (Nuinsco Resources Ltd.), Separation Rapids (Avalon Ventures Ltd. and Emerald Fields Resource Corp.), Shoal Lake (Sheridan Platinum Group), and Thunder Lake (Corona Gold Corp.–Teck Cominco Ltd.) were inactive during 2003.

With a rise in the gold price, exploration activity on Crown Land in the Kenora District increased by approximately 70% during 2003 compared to that recorded during 2002. A total of 63 exploration projects were conducted by mineral exploration companies and individual prospectors during the year. At year's end, several properties were being prepared for drilling. Work completed within the Kenora District and filed for assessment credits, or otherwise provided, is shown in Table 1.

MINING ACTIVITY

There was no production of either base or precious metals in the Kenora District in 2003. Production continued from 6 granite quarries and 1 railway ballast quarry in 2003. The quarries are keyed, with letters, to Figure 1.

Dimension and Monument Stone

NELSON GRANITE LTD. (A DIVISION OF GRANITE MONUMENTS LTD.)

Nelson Granite Ltd. continued year-round production from 4 stone quarries in the Kenora District, during 2003. Production continued at the Docker Township quarry (A), 10 km southwest of the town of Vermilion Bay. Homogenous, medium-grained, pink granite is produced from a granite plug, which is part of the Dryberry batholith. Fracturing is negligible, allowing for removal of blocks of virtually any size. The majority of the stone produced is used in the monument industry and is sold as "Vermilion Pink". In 2003, approximately 5431 m^3 (191 778 cubic feet) were produced (G. Zebruck, Nelson Granite Ltd., personal communication, 2004).

Nelson Granite Ltd. continued production at their Red Deer Lake quarry (B) in 2003. The quarry is located on the north shore of Red Deer Lake, approximately 40 km northeast of Kenora and 15 km northwest of the railway stop at Jones. A total of 1068 m^3 (37 707 cubic feet) were produced for use as monument and building stone (G. Zebruck, Nelson Granite Ltd., personal communication, 2004). The stone is marketed as "Red Deer Brown" or "Canadian Mahogany" and is sold primarily to clients in North American markets. The stone is reddish-brown and is composed of pink, potassium feldspar phenocrysts in a fine- to medium-grained matrix of potassium and plagioclase feldspars, quartz and biotite. The granite formation is part of the Lount Lake batholith and is very massive with few, widely spaced fractures. Sheeting, or horizontal fracturing is spaced from 1 to 5 m and greater allowing for extraction of large blocks (Hinz, Landry and Gerow 1994).

Nelson Granite Ltd. continued to produce stone from their Forgotten Lake quarry (C) in 2003. The quarry is located on the east side of Forgotten Lake, approximately 35 km north of Kenora and 10 km north of the hamlet of Redditt. The quarry can produce 2 colours: a green megacrystic granite marketed as "Pine Green" and a yellow megacrystic granite sold as "Crystal Gold". A combined total of 2515 m^3 (88 805 cubic feet) were produced and sold to North American markets (G. Zebruck, Nelson Granite Ltd., personal communication, 2004). The stone is a medium- to coarse-grained, porphyritic granite composed of yellow, potassic feldspar phenocrysts in a matrix of plagioclase, potassic feldspar, quartz and biotite. The granite, which is part of the Lount Lake batholith, is yellow at the surface (i.e., 60 cm to 6 m) and green at depth. The granite contains very few fractures; joints are spaced 2 to 3 m apart and sheeting is 1 to 2 m at the surface (Hinz, Landry and Gerow 1994).

Nelson Granite Ltd. continued production at their Shepody quarry (D) in 2003. The quarry is located approximately 45 km north of Kenora and 15 km northwest of the railway stop at Jones. A total of 871 m^3 (30 763 cubic feet) were produced in 2003 for construction and dimension stone use, under the market name "Shepody" (G. Zebruck, Nelson Granite Ltd., personal communication, 2004). The stone is a medium- to coarse-grained, porphyritic granite composed of potassic feldspar phenocrysts in a matrix of plagioclase, potassic feldspar, quartz and biotite. The granite is part of the Lount Lake batholith.

Nelson Granite Ltd. started production at their Second Mountain quarry (E) in 2003. The quarry is located approximately 3 km east of their Forgotten Lake quarry. The quarry produced 372 m^3 (13 127 cubic feet) of yellow granite (G. Zebruck, Nelson Granite Ltd., personal communication, 2004). The stone is very similar in appearance to Crystal Gold, which is produced at the Forgotten Lake quarry.

COLD SPRING GRANITE CANADA LTD.

Cold Spring Granite Canada Ltd. (F) re-established seasonal production from their Kenora Sage granite quarry, during 2003. The quarry is located approximately 38 km north-northeast of Kenora, on the Jones Road. The quarry produced 2 colours: a green megacrystic granite marketed as "Green Sage", and a yellow megacrystic granite sold as "Crystal Gold". The quarry produced 947 m^3 (33 434 cubic feet) of Green Sage and approximately 283 m^3 (10 000 cubic feet) of Crystal Gold. The granite, which is part of the Lount Lake batholith, is yellow at the surface (i.e., 60 cm to 6 m depth), while below this, the colour changes to green. Jointing and sheeting are widely spaced and allow for the removal of extremely large blocks. The majority of blocks were shipped to the company's fabrication plant in Lac du Bonnet, Manitoba, while the remainder went to the parent company's plant in Cold Spring, Minnesota (E. Charles, Cold Spring Granite Canada Ltd., personal communication, 2004).

Railway Ballast

BRODA CONSTRUCTION INC.

Broda Construction Inc. (G) of Kamsack, Saskatchewan, produced railway ballast for Canadian Pacific Railways from C.P.R.'s ballast quarry near Dyment, 42 km southeast of Dryden. The average manpower during the production period was approximately 30. The quarry produced the following quantities of product, 143 873 tonnes (317 185 tons) of 64 mm size fraction, 45 662 tonnes (100 667 tons) of 40 mm size fraction, and 9289 m^3 (15 150 cubic yards) of rip rap (> 0.9 m) material. The ballast product is primarily an intermediate metavolcanic rock with minor quartz carbonate veining and some carbonate and epidote alteration. The stone is used by C.P.R. on their rail lines between Alberta and Quebec (G. Broda, Broda Construction Inc., personal communication, 2004).

Table 1. Assessment files received in the Kenora District in 2003.

Abbreviations

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

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Bluffpoint Lake Area	Opawica Explorations Inc.	2003	Pr, Samp, Str, GL ($ 115,767)	2.26384	52F03NW	Y-1
Boyer Lake Area	Kozowy, A. and Glatz, A.	2002	GL, GM, GEM, Samp ($ 1,527)	2.24618	52F07NE	JJJ-2
Butler Lake Area	Glatz, A. and Riives, J.	2002	Pr, Samp ($ 2,306)	2.24860	52F10NE	MM-1
Dash Lake Area	Chute, M.	2003	Samp, GL, GC ($ 11,116)	2.26535	52F04SE	S-3
Dogpaw Lake Area	Houston Lake Mining Inc.	2003	GL, Samp, Str ($ 14,508)	2.25064	52F05SW	KKKK-2
Dogpaw Lake Area	Houston Lake Mining Inc.	2003	GM, GEM ($ 42,481)	2.25624	52F05SW	KKKK-3
Dogpaw Lake Area	Fenwick, K.	2003	Pr, Samp, Str ($ 3,120)	2.26362	52F05SW	JJJJ-3
Dogpaw Lake Area	Fenwick, K.	1999	Pr, Samp, GL ($ 15,260)	OPAP 99-477	52F05SW	JJJJ-2
Dogpaw Lake Area	Metalore Resources Limited	2003	Pr, Samp ($ 4,178)	2.25790	52F05SW	LLLL-1
Forgotten Lake Area	Nelson Granite Ltd.	2002	Pr, Str, Samp ($ 243,778)	2.24550	52L01SW	E-13
Garnet Bay Area	Emerald Fields Resource Corp.	2002	Pr, Str, Samp, GL ($ 3,118)	2.25209	52F11NW	Z-1
Glass Township	Machin Mines Ltd.	2003	2 DDH ($ 44,983)	2.26379	52E10SW	CCC-1
Glider Lake Area	877578 Ontario Ltd.	2003	Pr, Samp ($ 1,934)	2.25559	52K07SW	A-1
Goshawk Lake Area	Nelson Granite Ltd.	2002	GEM, GL, Samp ($ 174,306)	2.25121	52L02NW	C-2
Halkirk Township	Bond, J. and Eveleigh, A.	2003	Pr, Samp ($ 10,800)	2.25871	52C11NE	AAA-1

Township or Area	Company Name	Year	Type of Work (Work Value)	AFRO Number	Resident Geologist Office File Designation	
Halkirk Township	Cousineau, L.	2002	Str, Samp ($ 12,425)	2.24482	52C11NE	G-8
Halkirk Township	Cousineau, L.	2002	Pr, Str, Samp ($ 4,738)	2.25314	52C11NE	G-10
Halkirk Township	Cousineau, L.	2002	Pr, Samp, Str, GL, GC, Pet ($ 12,329)	2.25119	52C11NE	G-11
Halkirk Township	Cousineau, L.	2002	Str ($ 5,524)	2.24546	52C11NE	G-9
Halkirk Township	Cousineau, L.	2002	Str ($ 7,667)	2.24445	52C10NW	U-17
Halkirk Township	Cousineau, L.	2003	Pr, Str, Samp ($ 5,936)	2.26347	52C11NE	G-12
Halkirk Township	Cousineau, L.	2003	Pr, Str ($ 7,555)	2.26348	52C10NW	U-18
Hartman Township	Glatz, A.	2002	Pr, Samp, Str ($ 1,247)	2.25651	52F16SW	HH-2
Pickerel Township	Southern Rio Resources Ltd.	2002	8 DDH ($ 205,562)	2.24305	52F16NE	66
Line Lake Area	Atikwa Minerals Corporation	2002	GM ($ 4,825)	2.25038	52F11SW	S-4
Line Lake Area	Atikwa Minerals Corporation	2002	Samp, GL, GM, Str ($ 118,981)	2.25037	52F11SW	S-5
Lower Manitou Lake Area	Glatz, A., Riives, J. and Woitowicz, M.	2003	Pr, Samp ($ 8,122)	2.26435	52F07SW	JJ-3
Miscampbell Township	Fitch, Judge	1912	2 DDH, GM (Not Reported)	Donated	52C12NE	C-1
Patterson Lake Area	Champion Bear Resources Ltd.	2001–2003	Str, Samp, GL, GC ($ 14,186)	2.25539	52L07SE	M-11
Patterson Lake Area	Champion Bear Resources Ltd.	2002	Samp, Str, GL, 4 DDH ($ 71,758)	2.26454	52L07SE	M-12
Patterson Lake Area	Tantalum Mining Corp. Ltd.	2003	Pr, Samp, GL ($ 9,983)	2.26185	52L07SE	Q-8
Reynar Lake Area	Atikwa Minerals Corporation	2003	1 DDH ($ 16,628)	2.26452	52L06NE	X-3
Sharron Lake Area	Cameco Gold Inc.	2002	11 DDH, GL, Samp ($ 222,412)	2.24661	52J04NE	41
Swan Lake Area	877578 Ontario Ltd.	2003	Pr, Samp ($ 4,189)	2.25556	52L02SW	E-1
Treelined Lake Area	Emerald Fields Resource Corp.	2002	BS ($ 3,279)	2.25041	52L08SW	N-1
Van Horne Township	Glatz, A.	2003	Pr, Samp, GL ($ 6,433)	2.26327	52F15SW	E-4
Wonderland Lake Area	Manex Granit Inc.	2002	Pr, Samp, Str, Pet ($ 2,500)	2.24518	52L01SE	F-5
Zarn Lake Area	1179785 Ontario Ltd.	2003	Tr ($ 4,456)	2.26181	52J04SE	30
Zealand Township	Di, P.	2003	Pr, Str ($ 1,925)	2.26370	52F15SW	H-1

EXPLORATION ACTIVITY

A complete summary of exploration activity, including prospecting, is given in Table 2. Gold, rare-metal pegmatites and emeralds were the predominant targets in 2003. Described below are programs with significant exploration expenditures and/or known results. Where a number of commodities were targeted or discovered, projects are described according to the predominant commodity. Base metal programs are not discussed because only limited grassroots programs were conducted, with no significant results reported. Exploration information included in this section is taken from assessment files in the Kenora District office, unless otherwise indicated. Programs are keyed with numbers to Table 2 and Figure 1. The extent of staking is shown in Figure 2.

Table 2. Exploration activity in the Kenora District in 2003. Locations shown on Figure 1.

Abbreviations

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

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
1	877578 Ontario Limited (Glider Lake property)	Glider Lake Area (stone)	Pr, Samp
2	877578 Ontario Limited (Whitedog property)	Swan Lake Area (stone)	Pr, Samp
3	Amador Gold Corp. (KPM property)	Glass Township (Au, Cu)	11 DDH, Samp
4	Atikwa Minerals Corporation (Echo gold property)	Echo Township (Au)	Pr, Tr, Samp, GL
5	Atikwa Minerals Corporation (Fortune property)	Rex Lake Area (Cu, Ni, PGM)	Pr, Samp, Tr, GL
6	Atikwa Minerals Corporation (Mulcahy property)	Line Lake Area (Cu, Ni, PGM)	Pr, Samp
7	Atikwa Minerals Corporation (Osborne Lake property)	Ukik Lake Area (Cu, Ni, PGM)	Pr, Samp, GL
8	Atikwa Minerals Corporation (Reynar Lake property)	Reynar Lake Area (Cu, Ni, PGM)	8 DDH, Samp
9	Avalon Ventures Ltd. (Big Whopper deposit)	Paterson Lake Area (Li, Cs, Rb, Ta)	BS
10	Barker, H. (Bethune Lake property)	Dash Lake Area (Cu, Ni, PGM)	Pr, Samp
11	Best, A. (Sue Lake property)	Boucher Township (Cu, Zn, Au)	Pr, Samp
12	Best, A. (Stauton Lake Iron Formation)	Conant Township (Au)	Pr, Samp

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
13	Bond, J.and Eveleigh, A. (North Rock property)	Halkirk Township (Cu, Ni, PGM)	Pr, Samp, Comp
14	Champion Bear Resources Ltd. (Plomp Farm property)	Aubrey Township (Au)	Samp, Comp
15	Champion Bear Resources Ltd. (Separation Rapids property)	Paterson Lake Area (Li, Cs, Rb, Ta, Au, Ag, Cu, Zn)	Str, Samp, GL, GC, Comp
16	Chute, M. (Dash Lake property)	Dash Lake Area (Au, Ag, Cu, Zn)	Samp, GL, GC
17	Cousineau, L., Cousineau, R. and Desjardins, K. (Halkirk gold property)	Halkirk Township (Au, PGE)	Pr, Samp, Str, Tr
18	Cousineau, L., Cousineau, R. and Desjardins, K. (Halkirk Soapstone property)	Halkirk Township (Stone)	Pr, Str, Samp
19	Cousineau, L., Cousineau, R. and Desjardins, K. (Halkirk Ultramafic Pyroclastics)	Halkirk Township (Diamonds)	Pr, Str, Samp
20	Cunniah Lake Inc. (Dogpaw Lake property)	Dogpaw Lake Area (Au, Cu, Zn, Mo)	Comp, Pr, Str, Samp
21	Di, P. (Zealand property)	Zealand Township (Au, Ag, Cu, Zn)	Tr
22	Emerald Fields Resource Corp. (Big Mack property)	Paterson Lake Area (Ta, Li, Cs, Rb)	BS
23	Emerald Fields Resource Corp. (Brownridge property)	Brownridge Township (Ta, Li, Cs, Rb, Au, Ag, Cu, Zn)	Pr, Str, Tr, GL, Samp, 4 DDH
24	Emerald Fields Resource Corp. (Game Lake property)	Bridges Township (Cu, Zn, Ag, Au)	Pr, Samp
25	Emerald Fields Resource Corp. (Piskegamang Creek property)	Garnet Bay Area (Au, Ag, Cu, Zn)	Pr, Samp, GL
26	Emerald Fields Resource Corp. (Scarp Lake property)	Garnet Bay Area (Au, Ag, Cu)	Pr, Str, Tr, GL, Samp
27	Emerald Fields Resource Corp.– Zebruck, G. and Kuehbaum, B. (Treelined Lake property)	Treelined Lake Area (Graphite)	BS
28	Fenwick, K. (Dogpaw Lake property)	Dogpaw Lake Area (Au)	Pr, Str, Samp
29	Glatz, A. (New Klondike property)	Melgund Township (Au)	Pr, Samp
30	Glatz, A. (West Arm gold property)	Van Horne Township (Au)	Pr, Samp
31	Glatz, A.and Plomp, F. (AL91 property)	Aubrey Township (Au, Ag, Cu, Zn)	Pr, Samp
32	Glatz, A.and Riives, J. (Alto Gardner property)	MacFie Township (Au)	Pr, Samp
33	Glatz, A.and Riives, J. (Neepawa Island property)	Parnes Lake Area (Au)	Pr, Samp
34	Glatz, A., Riives, J. and Woitowicz, M. (Carleton Lake property)	Lower Manitou Lake Area (Au)	Pr, Samp
35	Glatz, A., Riives, J. and Fairservice, R. (Beartrack Lake South property)	Laval Township (Au, Cu)	Pr, Samp
36	Hawk Precious Metals Inc (Alcona property)	Zarn Lake Area (Au, Cu, Pb, Zn)	Pr, Tr, Samp
37	Hexagon Gold (Ontario) Limited (Foley Mine property)	Bad Vermilion Lake Area (Au)	Str, Samp, 2 DDH
38	Holmstrom, B. (Bending Lake property)	Bending Lake Area (Au, Ag, Cu, Zn)	Pr, Samp

No	Company or Individual (Occurrence Name or Property)	Township or Area (Commodity)	Exploration Activity
39	Houston Lake Mining Inc. (Ghost Lake rare-metals property)	Brownridge Township (Be, Li, Cs, Rb, Ta)	Lc, Pr, Str, Samp, GL
40	Houston Lake Mining Inc. (West Cedartree gold property)	Dogpaw Lake Area (Au)	Lc, GM, GEM, P, Str, Samp, GL, 8 DDH
41	King's Bay Gold Corporation (Swell Bay gold property)	Farrington Township (Au)	Pr, Samp, 4 DDH
42	KBG Minerals Corp. (King's Bay gold property)	Fourbay Lake Area (Au)	Comp, 2 DDH
43	Metalore Resources Limited (Cedartree gold property)	Dogpaw Lake Area (Au)	Lc, GM, GEM, Pr, Samp, 13 DDH
44	McTavish, K. (Airport property)	Obikoba Lake Area (Au, Ag, Cu, Zn)	Pr, Samp
45	Nuinsco Resources Limited (Cameron Lake deposit)	Cameron Lake Area (Au)	12 DDH, Samp
46	Opawica Explorations Inc. (Straw Lake gold property)	Bluffpoint Lake Area (Au)	Pr, Pr, Samp, GL, 20 DDH
47	Queen, L. (Queen Pegmatite property)	Paterson Lake Area (Li, Cs, Rb, Ta)	Pr, Samp
48	Riives, J. (Burr Lake property)	Contact Bay Area (PGM)	Pr, Samp
49	Riives, J. (Shoal Lake property)	Shoal Lake Area (Au)	Pr, Samp
50	Riives, J., Buchanan, J., Buchanan, D. and Buchanan, P. (Whalen showing)	Parnes Lake Area (Au)	Pr, Samp
51	Rio Fortuna Exploration Corp. (Drayton gold property)	Drayton Township (Au, Cu)	Pr, Samp
52	Robinson, J. (Kirkup property)	Kirkup Township (Au)	Pr, Samp
53	Robinson, J. (Nelly Lake property)	Work Township (Li, Rb, Cs, Ta)	Pr, Samp
54	Robinson, J. (Wendigo Mine property)	Code Township (Au, Cu)	Pr, Samp
55	Solana Petroleum Corp (Foley Mine property)	Bad Vermilion Lake Area (Au)	Comp
56	Sovereign, Bill (Good Luck occurrence property)	Zealand Township (Au)	Pr, Tr, Samp
57	Sovereign, Bill (Lost Mine property)	Zealand Township (Au)	Pr, Tr, Samp
58	Stares, M. and Stares, S. (Combined property)	Phillips Township (Au)	Pr, Samp
59	Tantalum Mining Corp. of Canada–Gossan Resources Limited (Separation Rapids property)	Paterson Lake Area (Ta, Li, Cs, Rb, Au, Ag, Cu, Zn)	Pr, Samp, GL
60	Theriault, R. (Nor Penn property)	Clearwater Bay Area (Stone)	Pr, Samp
61	True North Gems Inc. (Ghost Lake property)	Brownridge Township (Emeralds)	Pr, Str, Samp
62	Western Prospectors' Group (Hope Lake property)	Lobstick Bay Area (Au)	Pr, Samp
63	Withers, C. (Naumann property)	Southworth Township (Au, Ag, Cu, Zn)	Pr, Samp

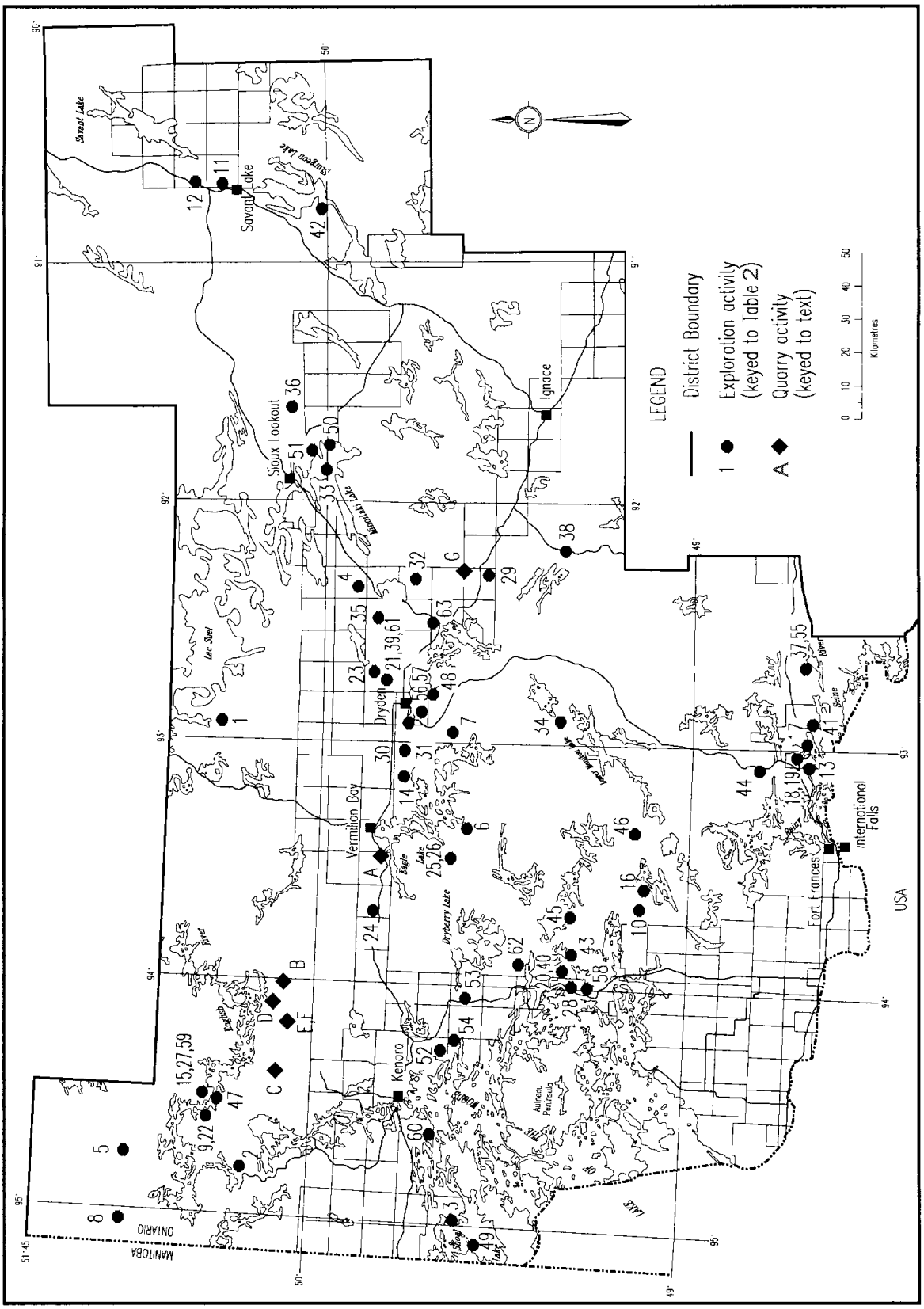

Figure 1. Exploration and quarry activity in the Kenora District in 2003. Locations listed in Table 2.

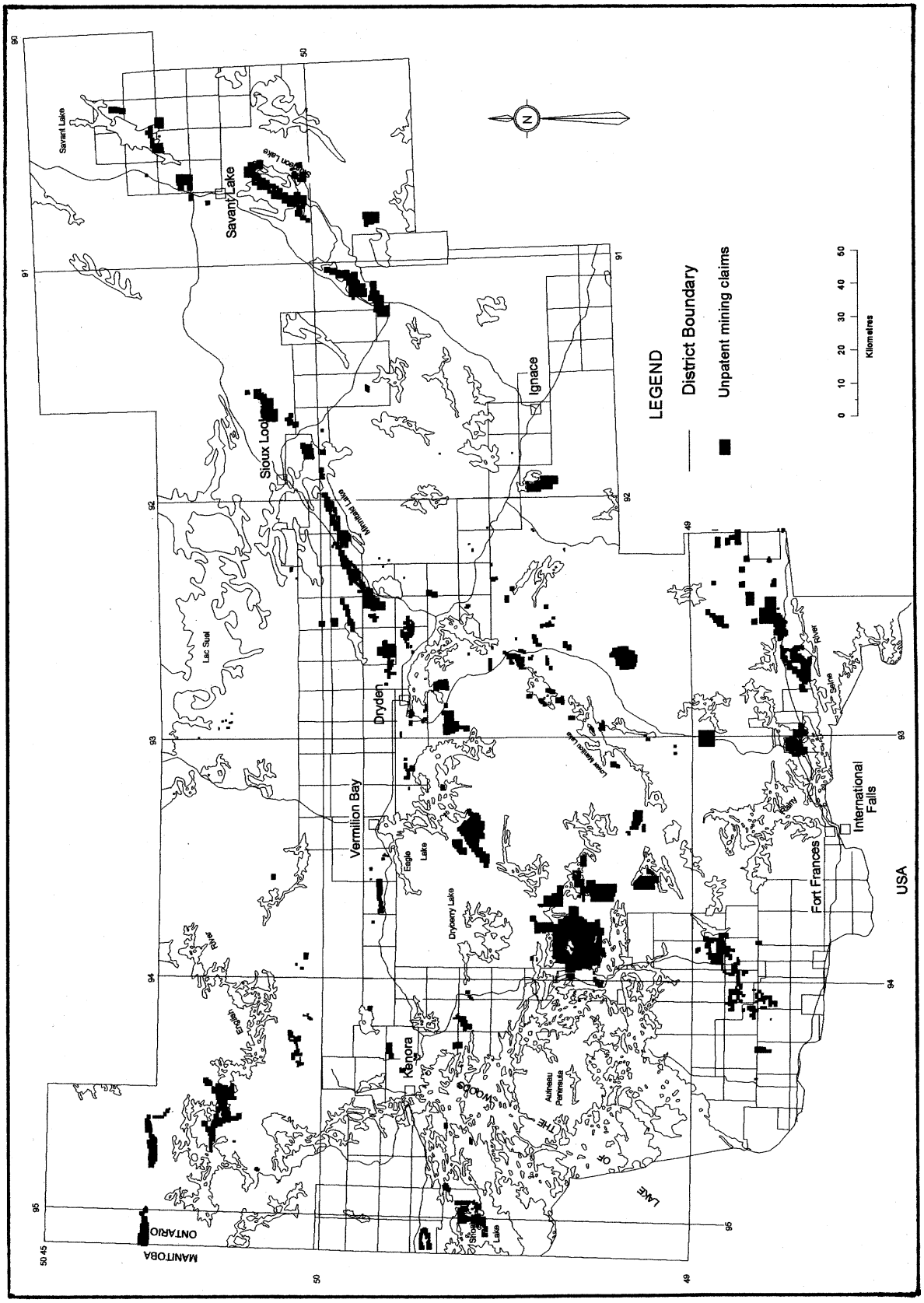

Figure 2. Extent of staking in the Kenora District as of December 31, 2003.

Gold

With the rise in the gold price, the Kenora District has once again become the focus of interest for prospectors and junior companies alike. The Kenora District contains numerous greenstone belts with some of the highest mineral potential in the northwest. Consequently, the District has the distinct potential to see a significant increase in exploration and development in the near future.

At present, there are 6 areas or properties which host sizeable reserves and/or resources that are prime targets for immediate development should gold hold above US $400. Table 3 highlights these properties; Figure 3 shows their location within the Kenora District.

Gold has been the driving force behind recent exploration activity in the Kenora District. Junior companies have focussed on historical areas where gold occurrences abound and assays are high. The most active area to date is the Dogpaw Lake area, a portion of the western Wabigoon Subprovince, which was the focus of much exploration in the early 1980s when gold peaked over US$800.

Table 3. Areas or properties hosting sizeable gold resources (>500 000 tonnes) in the Kenora District.

	Area or Property	**Resource and/or Current Development** *(These figures may or may not comply with NI 43-101 standards)*
1	Shoal Lake area	Two past producers held by different companies. Both have significant Au reserves.
	Duport Mine, Sheridan Platinum Group Ltd.	Total geological reserves: 2.0 million tons grading 0.35 ounce per ton Au. Estimated pre-production cost of $52.8 million. (*Canadian Mines Handbook* 1995–1996 p.111, Consolidated Professor Mines)
	Cedar Island deposit, Mikado Mine, Amador Gold Corp.	Re-calculation of resource completed late 2003: indicated category, 1.096 million tonnes grading 6.63 g/t Au; inferred category, 832 000 tonnes grading 5.63 g/t Au using a 3.0 g/t Au cut-off. Drill program planned for January 2004. (Amador Gold Corp., press release, October 6, 2003).
2	Cameron Lake deposit, Nuinsco Resources Limited	Reserves in proven and probable categories: 1.047 million tons grading 0.157 ounce per ton Au. Drill program in progress January 2004. (Nuinsco Resources Ltd., press release, November 18, 2003).
3	Rainy River property, Nuinsco Resources Limited	Calculated reserves: inferred resource of 1.05 million ounces of gold in 25.2 million tonnes (Nuinsco Resources Ltd., www.nuinsco.ca, accessed January 23, 2004).
4	Mine Centre property, Hexagon Gold (Ontario) Ltd.	Two past producers with down-dip potential. Large land package held by Hexagon Gold containing numerous high-potential targets including the Foley and Golden Star mines.
	Foley Mine	Reserves: proven/probable 40 000 tons grading 0.5 ounce per ton Au; speculative 400 000 tons grading 0.5 ounce per ton Au. (Mineral Deposit Circular 16, 1984, p.16).
	Golden Star Mine	Reserves: 20 000 tons grading 0.42 ounce per ton Au; and 35 000 tons grading 0.15 ounce per ton Au in tailings (Mineral Deposit Circular 16, 1984, p.20).
5	Thunder Lake deposit (Corona Gold Corp. and Teck Cominco Ltd.)	Drill indicated reserves: 2.97 million tonnes averaging 6.47 g/t Au. Site was rehabilitated in 1998. (Corona Gold Corp., Annual Report 2003, May 16, 2003).
6	Goldlund Mine (Goldlund Mines Ltd.)	Reserves: 781 000 tons grading 0.14 ounce per ton Au with 150 000 tons grading 0.15 ounce per ton Au which can be mined by open pit. (*Canadian Mines Handbook* 1995–1996, p.223, Locke Riche Minerals Ltd.).

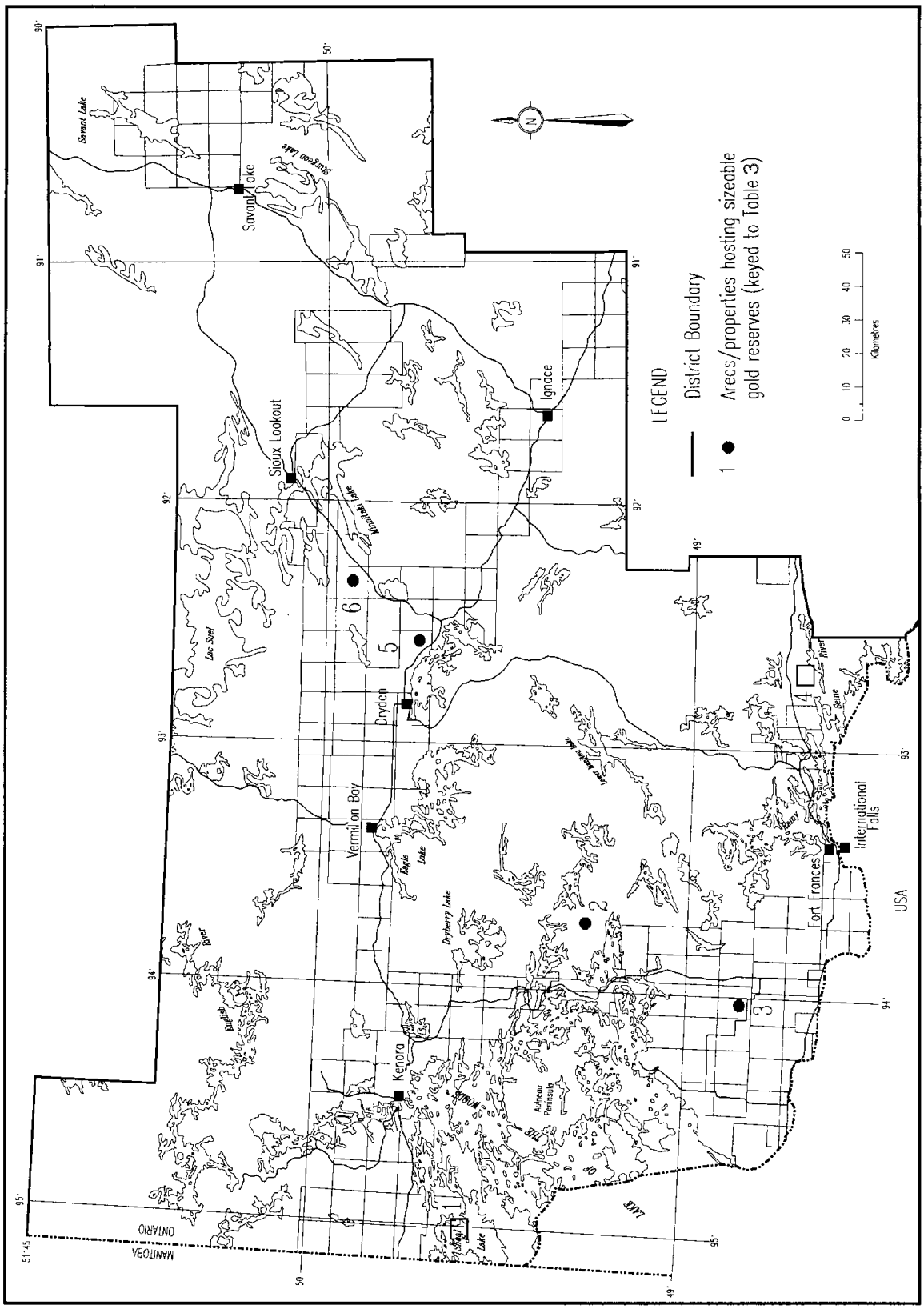

Figure 3. Areas or properties hosting sizeable (>500 000 ounces) gold resources. Locations keyed to Table 3.

Cunniah Lake Inc., a privately held company, has a sizeable land position in the Dogpaw Lake Area (>600 claim units). The company conducted a successful stripping and sampling program during the late summer and fall. Results are being evaluated and a winter exploration program planned (J. Bond II, Cunniah Lake Inc., personal communications, November 2003).

Houston Lake Mining Inc. continued work on the Angel Hill gold zone (40) (formerly known as the New Shear Zone). This zone, located on the McLennan gold property, is part of the West Cedartree gold project. This property is located approximately 60 km southeast of Kenora. A mechanized stripping, systematic channel sampling and a detailed mapping program over a 130 m segment of the Angel Hill gold zone was completed in 2003. The Angel Hill gold zone is an 8 to 10 m wide, north-trending shear zone within altered ultramafic and mafic intrusive rocks. This zone was tested with 77 channel samples that returned values up to 2.080 ounces gold per ton and had a weighted average of 0.118 ounce gold per ton. A twenty-hole 1000 m drill program is underway at year-end to systematically test the stripped portion of the zone to a depth of 40 m. Drilling and stripping has thus far confirmed the width of the zone varies from 4.25 to 16.09 m (G. Anthony, Houston Lake Mining Inc., personal communication, January 8, 2004).

Metalore Resources Ltd. acquired the Cedartree Lake gold property (43) from Avalon Ventures Ltd. in August 2002. The property is located approximately 60 km southeast of Kenora. The 2002 drill program on the main gold zone, initially discovered on surface by prospectors in 1998, intersected significant gold mineralization and abundant visible gold, including a 14.2 m section grading 0.963 ounce gold per ton (33.2 g/t Au). The 2003 program included linecutting, ground geophysical surveys, lithogeochemical sampling and approximately 3000 m of drilling. The 2003 drill program was planned to test outlying geophysical targets and further enhance the main zone. Results of this program are presently being compiled and studied in preparation for a major drill program in 2004 (G. Chilian, Metalore Resources Limited, personal communication, January 8, 2004).

In the Shoal Lake area, near the Manitoba–Ontario border, **Amador Gold Corp**. initiated a diamond drill program during the summer of 2003 on their KPM Shoal Lake project. Eleven holes, totalling 3205 m, were completed during the early summer. Based on results from this program, Giroux Consultants Ltd. estimated an indicated resource of 1.096 million tonnes grading 6.63 g/t Au (234 000 ounces gold) and an inferred resource of 832 000 tonnes grading 5.63 g/t Au (151 000 ounces gold), based on a 3.0 g/t Au cut-off. At the time of writing, a winter drill program was underway to follow up on this work (Amador Gold Corp., press releases, September 3 and October 6, 2003).

Atikwa Minerals Corp. conducted an exploration program on the Echo gold project (4), located approximately 35 km northeast of Dryden, adjacent to the Goldlund Mine property. Atikwa Minerals completed a mechanical stripping, channel sampling and geological mapping on the G-2 zone. Gold mineralization is associated with quartz-sulphide-tourmaline veins hosted in altered felsic intrusive rocks and in pyritic rocks devoid of veining. Channel samples from the zone returned an average assay of 12.78 g/t Au over 1.45 m. Verification sampling of drill core from previous drilling on the Echo Shaft area resulted in a gold value correlation with original and duplicate samples. The Echo Shaft area is located 2 km southwest of the G-2 zone. Atikwa Minerals plans a drill program in 2004 (Atikwa Minerals Corporation, press release, November 13, 2003).

Past exploration on the Kings Bay property, Sturgeon Lake (42) has included geological mapping, boulder tracing, ground geophysical surveys, soil and humus geochemical surveys, overburden and diamond drilling. The 2003 exploration program by **KBG Minerals Corp.** involved compilation of these past projects and completion of 2 drill holes. The target of the programs is the gold potential of the felsic intrusive rocks located beneath the waters of Kings Bay. A winter drill program is anticipated in 2004 (J. Wahl, KGB Minerals Corp., personal communication, January 8, 2004).

North of Fort Frances, in the Straw Lake area, **Opawica Explorations Inc.** conducted work on their Straw Lake property, acquired in late 2002. An initial surface stripping and sampling program was conducted on 4 mineralized zones. A total of 273 surface chip samples were collected with analyses up to 13.4 g/t Au reported. A drill program was completed in September, intersections included the following results: Hole OPW-2, 15.7 m grading 1.0 g/t Au; Hole OPW-3, 14.5 m grading 1.25 g/t Au; OPW-6, 3.2 m grading 3.43 g/t Au. A follow-up drill program was initiated in December (Opawica Explorations Inc., press release, July 7, 2003).

Emeralds

True North Gems Inc. confirmed the presence of gem-quality emeralds at their Ghost Lake property. The company conducted a reconnaissance mapping and sampling program during the late summer and is currently evaluating the results. (True North Gems Inc., press release, July 31, 2003)

Platinum Group Metals

Atikwa Minerals Corporation conducted work on their Reynar Lake–Fortune Lake Pt-Pd-Ni-Cu project. The Reynar and Fortune properties are part of this project and are located approximately 85 km north-northwest of Kenora. Eight diamond drill holes, totalling 1874 m, were drilled in the area of the Norpax Deposit on the Reynar property (8). The Norpax Deposit is hosted within metamorphosed ultramafic rocks adjacent to the Werner Lake fault. Significant assays from this program included 13.00 m grading 0.62% Ni, 0.36% Cu, 0.22 g/t Pt and 1.05 g/t Pd (Atikwa Minerals Corporation, press release, November 7, 2003). Prospecting, stripping, geological mapping and channel sampling were completed on the Fortune property (5). This property, located approximately 9 km east of the Norpax Deposit, is situated along the north shore of Rex Lake. Results of the sampling project are pending (Atikwa Minerals Corporation, press release, November 7, 2003).

KENORA DISTRICT STAFF AND ACTIVITIES

The Kenora office was staffed by P. Hinz, District Geologist; C. Ravnaas, District Geologist; A. Raoul, District Support Geologist; and C. Cyr, R. Peterson and J. Roulston, summer assistants (SEP).

Kenora staff attended the following conferences and symposia:

- the Prospectors and Developers of Canada Convention in Toronto in March, where a Northwestern Ontario regional display was staffed;
- a poster and oral presentation highlighting activities in the district were presented at the Northwestern Ontario Mines and Minerals Symposium held in Thunder Bay in April;
- the Institute on Lake Superior Geology in Iron Mountain, Michigan in May;
- the Manitoba Mining and Minerals Convention held in Winnipeg, Manitoba in November; and
- the Ontario Exploration Geoscience Seminar, sponsored by the Ontario Prospector's Association, in Toronto in December, where a poster highlighting activities in northwest Ontario and a provincial Recommendations for Exploration poster were staffed.

In addition to these events staff organized or participated in

- a Gold Seminar held in Dryden;
- the Dryden High School Conservation Course; and
- a Geochemistry Short Course, presented at the Northwestern Ontario Mines and Minerals Symposium.

In 2003, a total of 33 property visits were conducted by Kenora District Office staff (Table 4 and Figure 4).

Table 4. Property and field examination conducted by the Kenora District Geologists in 2003. Locations are keyed to Figure 4.

Number	Client – Occurrence
1	Best, A. – Staunton Lake iron formation
2	Best, A. – Sue occurrence
3	Cousineau Brothers – Grassy Portage ultramafic pyroclastic
4	Emerald Field Resources Ltd. – Cates occurrence
5	Emerald Field Resources Ltd. – Piskegamang Creek sulphide showing
6	Fogg, J. – Fogg property
7	Glatz, A. – AL91 property
8	Glatz, A. – New Klondike occurrence
9	Glatz, A. – Western Arm gold property
10	Hexagon Gold (Ont.) Ltd. – Foley Mine property
11	Houston Lake Mining Inc. – Angel Hill gold occurrence
12	KBG Minerals Corp. – King's Bay occurrence
13	McTavish, K. – Airport occurrence
14	Metalore Resources Ltd. – Cedartree occurrence
15	Opawica Exploration Ltd. – Straw Lake property
16	Queen, L. – Separation Rapids property
17	Sovereign, B. – Good Luck occurrence
18	Sovereign, B. – Lost Mine occurrence
19	Staff Examination – Deadbroke Island occurrence
20	Staff Examination – Duport Mine
21	Staff Examination – English River Test Quarry
22	Staff Examination – Golden Reef occurrence
23	Staff Examination – Mica Point Test Quarry
24	Staff Examination – Shoal Lake deformation zones
25	Staff Examination – Stevens Island occurrence
26	Staff Examination – Sturgeon Narrows lamprophyre dike
27	Staff Examination – Sunshine Lake lamprophyre dike
28	Staff Examination – Thunder Lake Assemblage
29	Staff Examination – Uphill Lake lamprophyre dike
30	Staff Examination – Victoria Island lamprophyre dike
31	True North Gems Inc. – Ghost Lake property
32	Western Prospectors Ltd. – Hope Lake property
33	Withers, C. – Naumann property

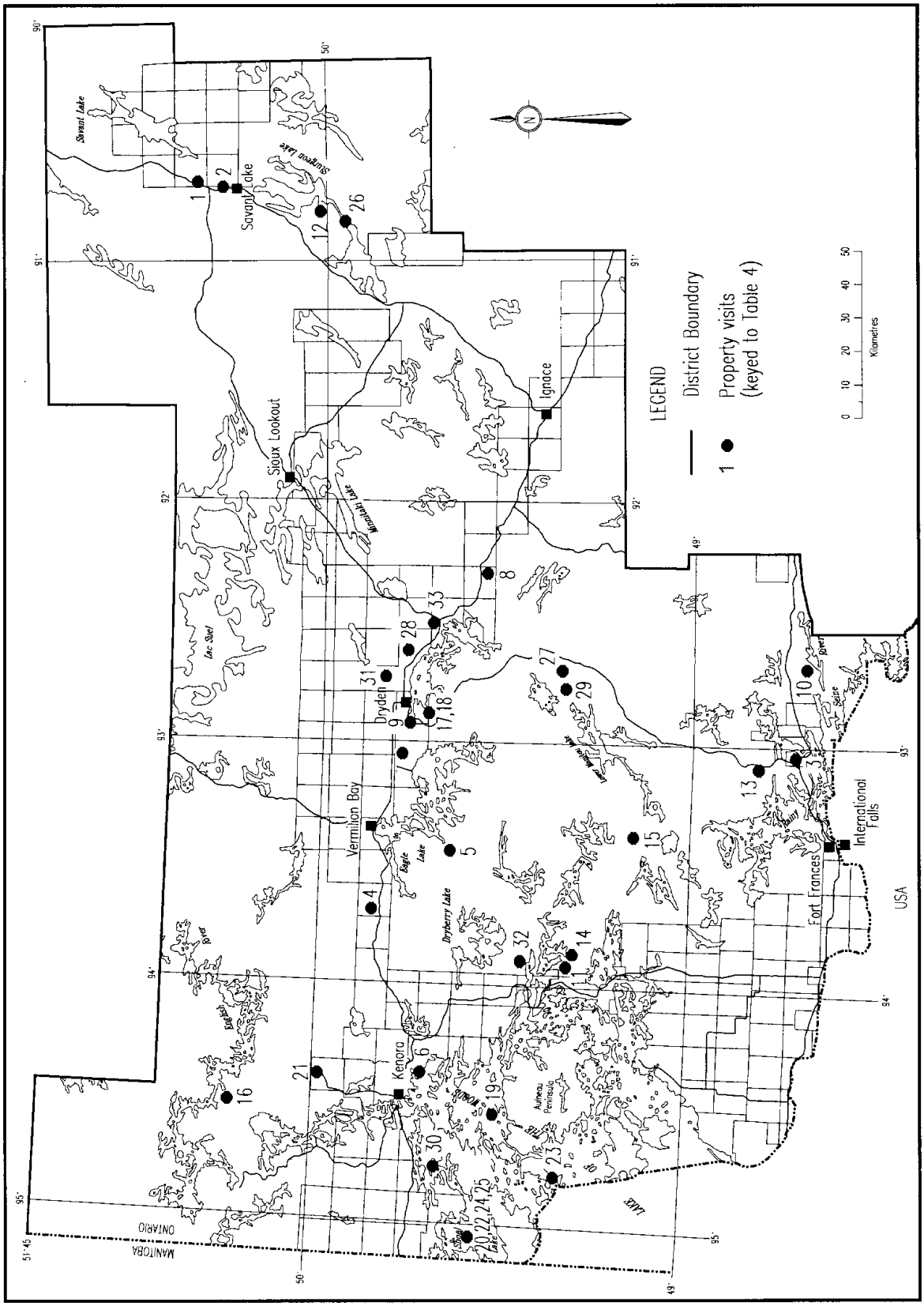

Figure 4. Property visits conducted in the Kenora District in 2003.

PROPERTY EXAMINATIONS

Major authorship for the following property visits is indicated in parentheses following the title. All Universal Transverse Mercator (UTM) co-ordinates are in North American Datum 1983 (NAD83), Zone 16.

Angel Hill Gold Zone, Dogpaw Lake Area (A. Raoul and C. Ravnaas)

During the summer of 2003, Houston Lake Mining Inc. continued stripping, mapping and sampling the Angel Hill gold zone, formerly known as the New Shear Zone, on the West Cedartree gold project in the Dogpaw Lake area.

The property is located 13 km southeast of Sioux Narrows, Ontario. Access is gained by travelling 8 km east on the Cameron Lake Road from Highway 71. The property consists of 7 patented and 4 unpatented mining claims (NTS 52 F/05SW; UTM 435542E, 5463995N).

RECENT WORK BY HOUSTON LAKE MINING INC.

In August 2003, Houston Lake carried out an extensive mechanized stripping, systematic channel sampling and detailed mapping program over a 130 m segment of the Angel Hill gold zone (AHGZ). The AHGZ was directly tested by 77 systematic channel samples, which returned values from trace to 71.30 g/t Au, and had a weighted average of 4.04 g/t Au (Houston Lake Mining Inc., press release, September 2, 2003).

By December of 2003, the company had completed 7 holes out of a twenty-hole program (projected total of 1000 m) designed to provide the basis for a resource estimate to a depth of 40 m below the stripped area of the AHGZ. Six of 7 drill holes encountered significant gold values. The best intercept encountered 3.78 g/t Au over 10.85 m, which included a high-grade section assaying 46.7 g/t Au over 0.80 m (Houston Lake Mining Inc., press release, January 12, 2004).

The gold is fine grained and evenly distributed throughout the entire assemblage. Analyses by inductively coupled plasma mass spectrometry (ICP–MS) and screen metallic assay gave very similar results, possibly indicating a minimal nugget effect. For description of screen metallic assay used, *see* press release, September 2, 2003, at http://www.houstonlakemining.com/press/presssep0203.html (accessed March 22, 2004).

Lithology, Mineralogy and Geochemistry

The AHGZ is hosted within the granite-greenstone terrane of the western Wabigoon Subprovince, within the Superior Province. The property is hosted by the Kakagi Lake sills of the Kakagi Lake group of the Kakagi–Rowan greenstone belt, south of the Pipestone fault (Blackburn et al. 1991).

The AHGZ is hosted in an 8 to 10 m wide, north-trending (020 to 025°) shear zone within altered ultramafic and mafic intrusive rocks. The trace of the shear may be represented on the geology map (Davies and Morin 1971) by a 2 km, north-trending (020°) lineament.

On a regional scale, Buck (1988) recognized 2 distinctive styles of carbonate alteration: 1) weak carbonatization represented by calcite alteration in the least deformed rocks, related to a D_1 event, and 2) a more intense ankerite and siderite alteration in the more highly strained rocks, related to a D_2 event. This study has found pervasive iron carbonate (ankerite-siderite), fuchsite and silica flooding occurring within the AHGZ, with minor amounts (<2%) of pyrite.

Three sigmoidal quartz veins (030°/V) cut across the shear. A diorite dike occurs within the shear, along the eastern boundary, and has been displaced along some of the later internal structures. A later felsic dike, parallel to the overall fault direction, trends along the length of the zone. The diorite and felsic dikes exhibit similar fracture patterns indicating similar time of emplacement (Figure 5). Brief descriptions of rock types follow, keyed to their geochemistry in Tables 5 and 6.

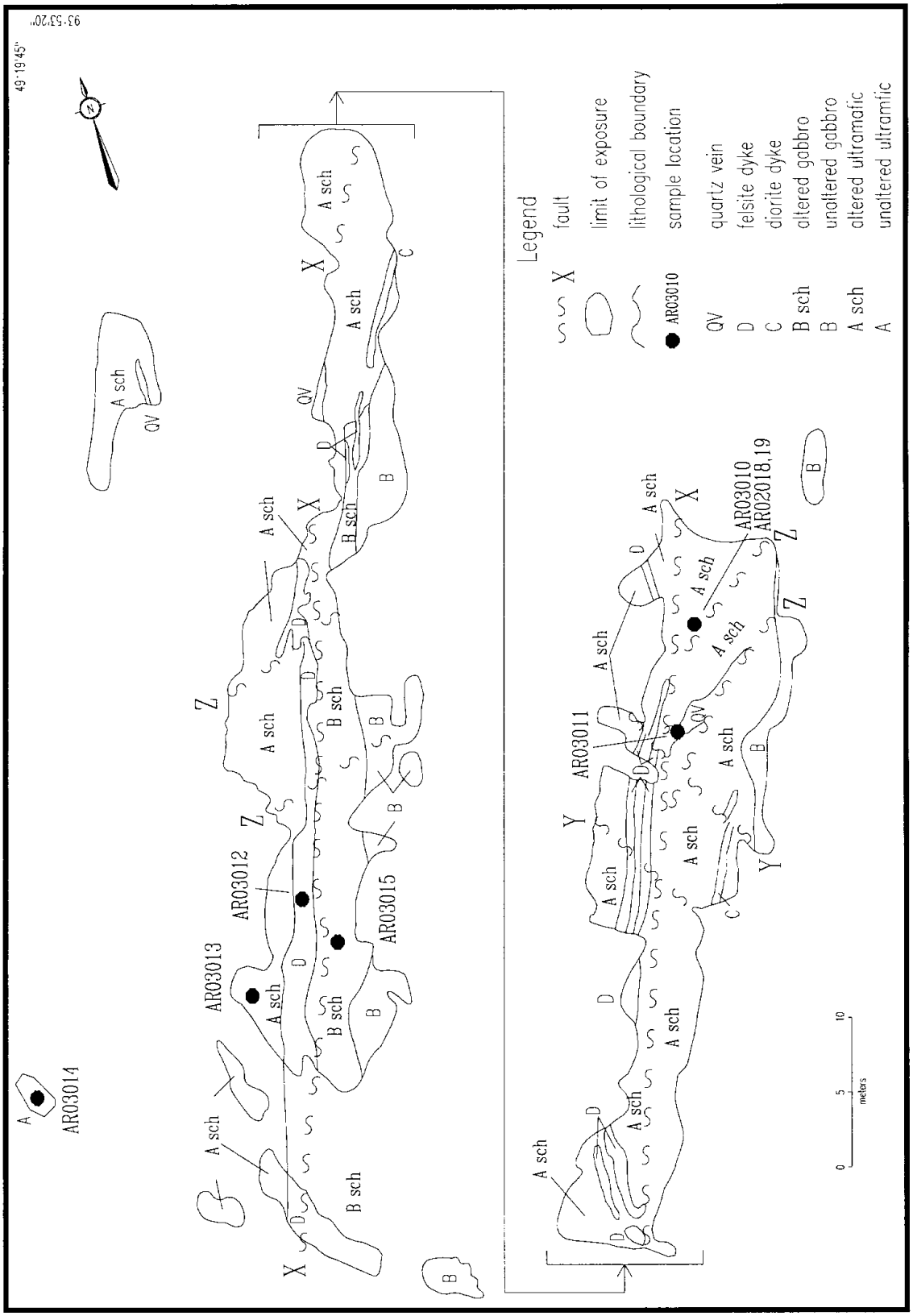

Figure 5. Geology of the Angel Hill gold zone (*after* Cutting 2003).

- **Unit A**: Ultramafic (sample AR03014)
  Unaltered to weakly altered, fine- to medium-grained, olivine clinopyroxenite.
- **Unit A, sch**: Altered ultramafic (sample AR03013)
  Medium-grained, dark, olivine clinopyroxenite. The sample is highly depleted in Na_2O and K_2O.
- **Unit B**: Gabbro (sample AR02016)
  Medium-grained, weakly to moderately saussuritized gabbro.
- **Unit B, sch**: Altered gabbro (sample AR03012)
  Fine-grained, tan coloured, altered rock comprising 30 to 40% relict, altered (dusty) clinopyroxene fragments hosted within a fine matrix of 25 to 30% altered (dusty) plagioclase with moderate to strong sericite replacement; >50% silicification overprinting earlier ankerite alteration. The sample is depleted in Al_2O_3, CaO, Na_2O and K_2O.
- **Unit C**: Diorite dike (sample AR02017)
  Fine-grained, 30 to 40 cm wide, grey dike of mafic to intermediate composition with trace sulphides (pyrite). This sample is enriched in Na_2O, possibly related to albitization, but is depleted in CaO and K_2O.
- **Unit D**: Felsic dike sample (AR03015)
  Fine-grained, grey, "felsic" dike. Geochemistry indicates a mafic to intermediate composition, similar to the diorite dike.
- **Unit QV**: Quartz veins (sample AR03011)
  Fine-grained, tan coloured, altered rock with >70% quartz pods (sigmoidal veins) overprinting earlier iron carbonate alteration and minor fuchsite (<2%). Groundmass of the host rock comprises relict, altered (dusty) clinopyroxene fragments within a fine matrix of altered plagioclase. Fine visible gold was evident in a chip sample.

Table 5. Major element geochemistry from the Angel Hill gold zone, West Cedartree property.

Sample	Unit	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	CaO %	MgO %	Na_2O %	K_2O %	MnO %	P_2O_5 %	TiO_2 %	LOI %
AR02016	B	45.22	10.17	11.14	**1.63**	**21.41**	**0.12**	**0.13**	0.10	N.D.	0.25	**9.61**
AR02017	C	52.95	**16.28**	9.43	**1.78**	7.41	**5.74**	**0.12**	0.11	0.36	1.07	**6.01**
AR03010	B, sch	38.19	6.01	12.24	5.84	19.13	0.53	0.32	0.17	0.02	0.20	**16.43**
AR03011	QV	**42.90**	4.25	8.45	5.44	14.69	0.33	0.25	0.16	0.01	0.15	**22.87**
AR03012	B, sch	45.94	7.33	10.86	5.74	11.51	0.37	**0.08**	0.18	0.08	0.32	**16.22**
AR03013	A, sch	37.68	5.98	12.94	4.10	23.32	**0.04**	**0.01**	0.18	0.03	0.24	**14.64**
AR03014	A	41.00	6.70	13.19	4.98	26.40	**0.20**	**0.09**	0.21	0.01	0.20	**6.01**
AR03015	D	52.10	**15.95**	9.88	**1.50**	6.53	**5.38**	**0.16**	0.08	0.36	1.03	**7.15**

Values in bold represent enrichment or depletion of the respective elements relative to unaltered samples.
(Ontario Geological Survey Geoscience Labratories, 2003).

Table 6. Metal analyses from the Angel Hill gold zone, West Cedartree property.

Sample	Unit	Rock Descriptions	Au (ppb)	Ag (ppm)	Pd (ppb)	Pt (ppb)	Zn (ppm)	Cu (ppm)	Pb (ppm)
AR02016	B	Gabbro (unaltered to weakly altered)	7	N.D.	N.D.	N.D.	61	16	2
AR02017	C	Diorite or andesite dike	N.D.	N.D.	N.D.	N.D.	69	12	6
AR03010	B, sch	Altered gabbro	17	N.A.	5	6	55	9	N.A.
AR03011	QV	Quartz vein in altered gabbro	25,470	N.A.	2	2	77	121	N.A.
AR03012	B, sch	Altered gabbro	25	N.A.	4	4	85	N.D.	N.A.
AR03013	A, sch	Altered ultramafic	13	N.A.	6	3	87	N.D.	N.A.
AR03014	A	Unaltered ultramafic	15	N.A.	5	2	85	6	N.A.
AR03015	D	Felsic dike	59	N.A.	N.D.	1	83	358	N.A.

N.D. – not detected; N.A. – not available (at the present time).

Structure

Stripped bedrock exposures (*see* Figure 5) of the Angel Hill shear zone contain at least 3 structural elements:

- A narrow (2 to 5 cm) fault (X in Figure 5) traverses most of the outcrop and is the predominant feature within the AHGZ. It trends 015° to 020°, making an angle of approximately 5° with the overall trend of the AHGZ. The fault crosscuts the contact between altered gabbro (unit B, sch) and altered ultramafic (unit A, sch). The felsic dike (D) and quartz veins (unit QV) are folded and/or truncated across this structure. This fault is interpreted to be a low-angle Riedel shear ("R", with reference to Figure 6, and Casey 1980), which is presumed to be the first to develop.
- A series of secondary faults (Y in Figure 5) trend 330° and crosscut the altered ultramafic (unit A, sch) in the north end of the outcrop. The felsic dike (unit D), diorite dike (unit C) and quartz veins (unit QV) are offset by this set of faults. These faults are interpreted to be high-angle Riedel shears (R´) and are believed to be the second to develop.
- Another series of secondary faults (Z in Figure 5) trends 040° and also crosscuts the altered ultramafic (unit A, sch). The quartz veins (unit QV) may have filled and follow this last stage of fault development. This fault is represented by the reverse, or pressure shear ("P"). These are second-order structures and are the last to develop in this shear zone.

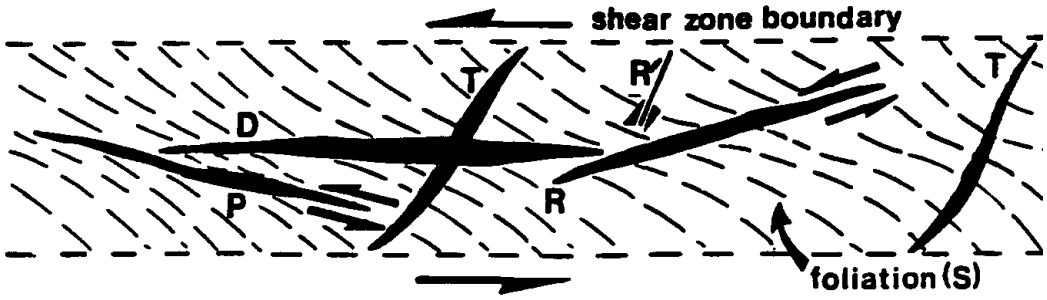

Figure 6. Riedel classification system for brittle-ductile shear zones (Casey 1980).

Conclusions

The following conclusions are based on outcrop mapping and thin section analysis:

- Calcite alteration is found in the rocks peripheral to the AHGZ.
- Ankerite ± siderite alteration overprints the core of the high strain zone.
- Veins of calcite (D_1) and ankerite (D_2) are cut by sericite ± fuchsite coated fracture planes.
- Late-stage quartz veins and quartz flooding crosscut both carbonate events (calcite and ankerite) in addition to the sericite ± fuchsite fractures.
- The fluid–wall rock reactions involved sulphidation (destruction) of the iron-oxide-bearing minerals, especially magnetite, in the mafic and ultramafic rocks within the AHGZ; the iron content of altered versus unaltered rocks show no change relative to the gold or pyrite content.
- Gold is found in both late-stage quartz veins and in quartz-flooded, strongly ankerite-fuchsite-pyrite altered rocks. In the AHGZ, no significant assays (>1 g/t Au) occur within the calcite altered rocks, i.e., in the weakly altered ultramafic (unit A) or the weakly altered gabbro (unit B).

Ghost Lake Property, True North Gems Inc. (P. Hinz)

Explorationists in the Dryden area have been aware of the presence of emeralds in the Dryden Pegmatite Field since the mid-1980s. In the summer of 2003, this information became generally known to the public when True North Gems Inc. confirmed the presence of gem-quality emeralds at their Ghost Lake property (True North Gems Inc., press release, July 31, 2003). The Ghost Lake property is located approximately 7.5 km northeast of the town of Dryden, Ontario (Figure 7). The property can be accessed by a bush trail, which departs from the end of Zealand Road, off Highway 601.

The Ghost Lake property is underlain by a mixed assemblage of rocks at the contact between the Wabigoon and Winnipeg River subprovinces. The rock types present include pegmatite dikes related to the Ghost Lake batholith, a late-tectonic, peraluminous, S-type granite (Breaks and Moore 1992); amphibolitized, pillowed mafic metavolcanic rocks; and metamorphosed ultramafic rocks. Satterly (1942) indicated the pegmatite dike are in contact with an ultramafic unit, which he mapped as soapstone. Breaks (1989) stated: "Both dykes occur in contact with a 45m wide talc-rich meta-ultramafic unit which was delineated for 1.2 km by Satterly (1941)[sic 1942] …"

The occurrence of beryl and pegmatite dikes in the Dryden area was first recorded by Satterly (1942), during his mapping of the Dryden–Wabigoon area. Satterly stated: "Samples of tourmaline pegmatite carrying small, green beryl crystals have been received from J.G. Taylor, of Dryden." The area was remapped between 1980 and 1983 by Breaks and Kuehner, of the Ontario Geological Survey and, as a result, the Dryden Rare-Metal Pegmatite Field (DRPF) was named (Breaks and Kuehner 1984). The mapping delineated 2 chemically and mineralogically distinct subfields within the DRPF: the Mavis Lake subfield and the Gullwing Lake–Tot Lake subfield. The Ghost Lake property lies within the Mavis Lake subfield of the DRPF. Breaks and Kuehner (1984) suggest that the pegmatites of the Mavis Lake subfield originated from a highly fractionated phase of the Ghost Lake Batholith. Breaks (1989) completed a Doctoral thesis on the area entitled "Origin and Evolution of Peraluminous Granite and Rare-Element Pegmatites in the Dryden Area, Superior Province of Northwestern Ontario". In the thesis, Breaks (1989) noted the presence of emerald in Pegmatite dyke 2 of the Taylor Beryl Occurrence, "this beryl-bearing dyke is of particular significance in that it represents the only known emerald occurrence in the Superior Province of Ontario".

Previous work on the property and the surrounding area included Lun-Echo Gold Mines Ltd., diamond drilling for lithium, 1956; D. Petrunka, electromagnetic geophysical survey, 1973; Sanmine Explorations Inc., stripping, trenching and diamond drilling for tungsten and gold, 1980s; and Green Ice Inc., prospecting, stripping and trenching for emeralds, 1996. The current program conducted by True North Gems Inc. included reconnaissance mapping, prospecting and sampling. At the time of writing, the company was evaluating the results of their summer program.

The author visited the property with company representatives in July 2003. Three stripped areas were observed and samples of emerald, beryl, tourmaline and apatite were collected. The ultramafic unit in contact with the pegmatite dike was observed by the author to have a brownish "knobby" weathered surface. When observed in a fresh blasted face, the ultramafic unit displays a schistose texture and intense folding, both potentially a result of the intrusion of the pegmatite and the accompanying strain event. Amphibolitized mafic volcanic rocks were observed with what appear to be relict pillow selvages. The pillows displayed intense deformation as evidenced by broken and discontinuous selvages. Alteration included local intense tourmalinization and moderate carbonatization. No holmquistite was observed in the host volcanic rocks: this is confirmed by lab results, which show only moderate enrichment in lithium. Holmquistite is a lithium-rich amphibole, which occurs in host volcanic rocks adjacent to other pegmatites in the Mavis Lake subfield known to contain spodumene.

The pegmatite dikes display varying degrees of zonation from partial to well zoned. Mineralization includes albite+tourmaline+quartz+potassium feldspar+muscovite+apatite+beryl or emerald.

Beryl appears in varying colours, white, colourless and emerald green. The emerald green colour is produced by high chromium and low iron contained in the beryl's crystal structure. Apatite is of the blue variety and weathers to a chalky white appearance. In places, a graphic intergrowth is observed between the quartz and plagioclase

feldspars. A white powdery oxidation product, believed by the author to be hydrozincite, is observed in a rusty, highly magnetic portion of the host rock adjacent to the pegmatite. This assertion is supported by the fact that a sample collected by the author returned an assay of 1427 ppm Zn (Geoscience Laboratories, Sudbury).

Initial geochemical results have been received at the time of writing from 4 grab samples collected from the 3 stripped areas. Two samples, PH-03-033 and PH-03-034, of the metamorphosed ultramafic unit returned highly elevated chromium values, 1177 ppm and 2608 ppm, respectively. These values suggest that the ultramafic unit may represent the chromium source, which resulted in the conversion of beryls to emeralds within the pegmatite.

True North Gems Inc. representatives in the course of their work, had identified and collected numerous emerald samples and many small emeralds were observed *in situ* by the author. The confirmation of the presence of emerald at the Ghost Lake property opens up the possibility that other occurrences within the DRPF may have similar potential. In "Recommendations for Exploration", the author suggests that other pegmatite fields in the province should be re-evaluated for the presence of emerald.

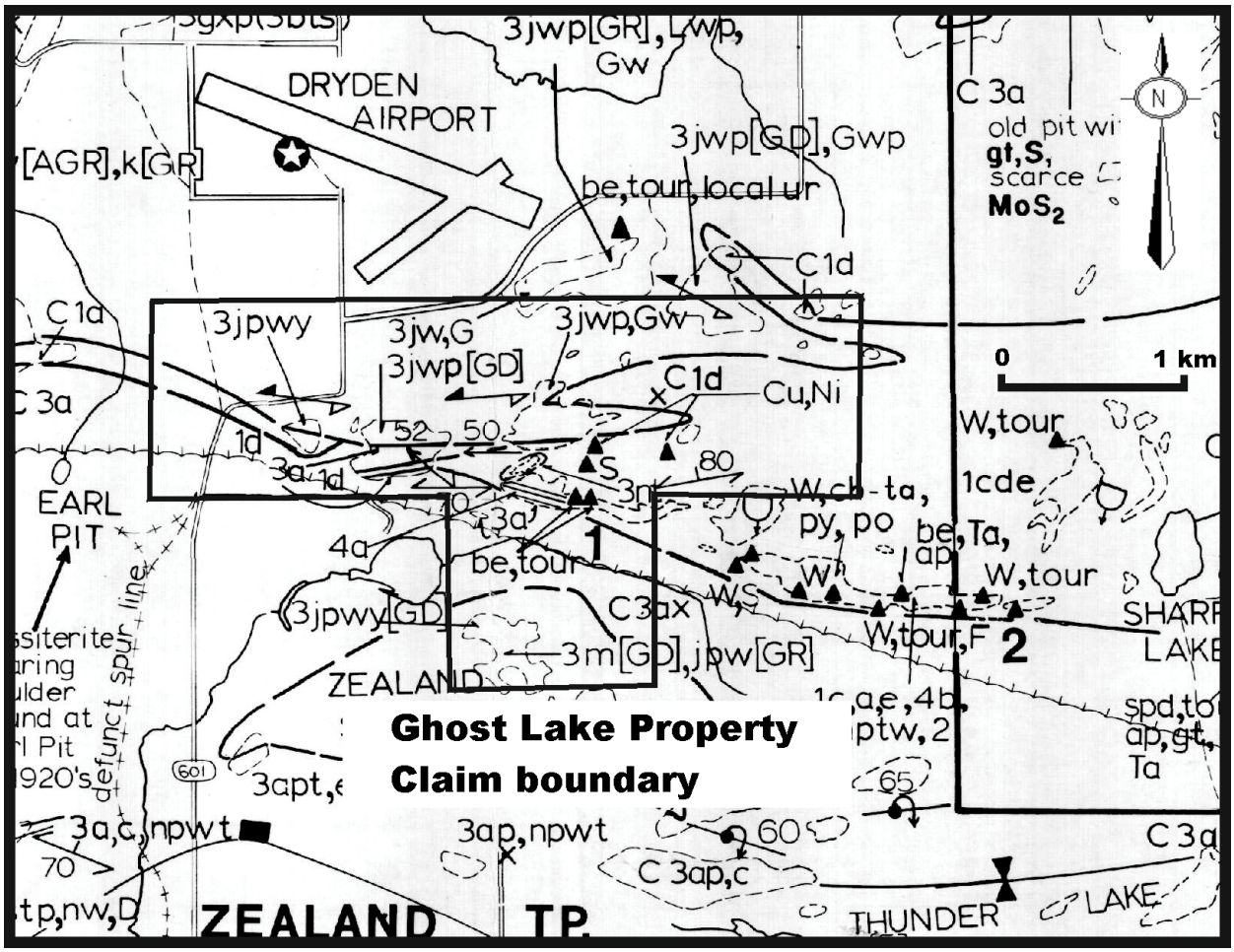

Figure 7. General geology map of the Ghost Lake property (*modified from* Breaks and Kuehner 1984).

Good Luck Occurrence (C. Ravnaas)

The Good Luck occurrence is situated in Lot 8, Concession I of Van Horne Township, approximately 6.5 km southwest of the City of Dryden. Mr. B. Sovereign has ownership of the unpatented claims that cover the Good Luck occurrence, and several other gold occurrences, in the area. The property is accessible from Wabigoon Lake and bush trails.

The area is underlain by rocks of the Lower Wabigoon Assemblage of the Eagle–Wabigoon–Manitou lakes greenstone belt. Intercalated intermediate and mafic metavolcanic flows and pyroclastic rocks host the gold occurrences in the area. Parker (1989, p.210) describes the rocks associated with the occurrences as follows:

> The metavolcanics are foliated 092°/090° and host a narrow, linear, shear/fracture zone trending 090°/095° for approximately 800 m. The shear zone controls a <0.3 m wide quartz-iron carbonate-tourmaline vein containing 1% disseminated, fine-grained pyrite and clots and stringers of dark green chlorite.

Prospecting by Mr. Sovereign concentrated on extending the length of the shear or fracture zone and quartz veins. Numerous pits have been excavated to expose the vein system, which can now be traced 130 m east of the Good Luck shaft to the edge of a swamp. The zone could extend under the swamp. Parker (1989) indicates the zone and quartz veins extend 160 m west from the Good Luck shaft to the Drake Prospect. Therefore, the known length of the zone and quartz veins associated with these occurrences is 290 m.

Van Horne Gold Exploration Incorporated previously conducted geological mapping, geophysical surveys and sampling of the area covering the Good Luck and numerous other gold occurrences. A grab sample from the Good Luck dump, taken by Van Horne Gold Exploration, was reported to contain visible gold and returned 0.12 ounce per ton gold (Assessment File 52F/10NW NN-2, Resident Geologist's Office, Kenora). Sampling of the quartz veins by Mr. Sovereign near the shaft area and along the extension of the zone returned anomalous gold values. Selected gold assay values are presented in Table 7 (from Assessment File 52F/10NW NN-2, Resident Geologist's Files, Kenora) and sample locations are illustrated in Figure 8.

Prospecting by Mr. Sovereign has also located 2 parallel quartz veins within the fracture or shear zone. Figure 8 illustrates that approximately 5 m of altered lapilli tuff is located between the 2 veins. This tuff has been fractured, altered and cut by late quartz-carbonate veinlets. The alteration consists of silicification, carbonatization ± iron carbonate and 1% fine-grained disseminated pyrite. The altered lapilli tuff has not been sampled. The average width of southern quartz vein is greater than the northern vein. It is evident now, following Mr. Sovereign's exploration program, that the 20 m deep Good Luck shaft was excavated on the southern quartz vein. The parallel veins appear to converge into 1 vein approximately 30 m east and west of the shaft.

Table 7. Selected assay results from the Good Luck occurrence.

Sample Location	Rock Type	Sample Width (cm)	Au (g/t)	Au (ounces per ton)
A	Quartz vein	11	106.10	3.08
B	Quartz vein	11	5.25	0.15
C	Quartz vein	74	14.17	0.41
D	Quartz vein	28	5.83	0.17
D	Wall rock - tuff	Grab	1.44	0.04
E	Quartz vein	26	40.65	1.18
F	Quartz vein	27	17.90	0.52
G	Quartz vein	29	4.58	0.14
H	Quartz vein	13	3.61	0.11

The fracture or shear zone and quartz veins associated with the Good Luck occurrence are bounded by mafic tuffaceous rocks. The strain and alteration within the tuff decreases away from the quartz veins and has experienced limited sampling.

Sampling of the altered lapilli tuff between the quartz veins near the shaft area is recommended. Combined with the known gold content in the quartz veins, this could increase the width of part of the target area.

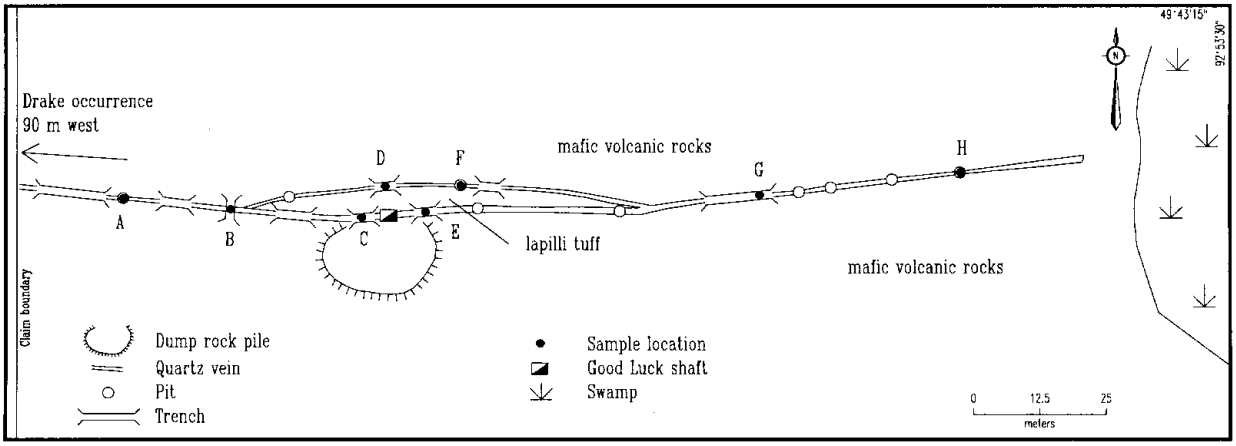

Figure 8. Quartz vein, trench and sample locations at the Good Luck occurrence.

Grassy Portage Ultramafic Pyroclastic, Messrs. Cousineau and Desjardins (P. Hinz)

The Grassy Portage ultramafic pyroclastic (GUP) property is located approximately 33 km east-northeast of the town of Fort Frances. The property straddles highways 11 and 502 and extends out into Grassy Portage Bay, Rainy Lake (Figure 9). Portions of the property are accessible by road or boat. The property is held by Messrs. R. Cousineau, L. Cousineau and K. Desjardins, all of Fort Frances.

The general geology of the area is adequately described by Poulsen (2000, p.xi):

> The rocks of the Rainy Lake area are part of the Archean Superior Province and form a fault-bounded wedge between 2 subprovinces, the Wabigoon granite-greenstone terrane to the north and the Quetico metasedimentary terrane to the south. The Quetico and Rainy Lake–Seine River faults define this wedge, which is interpreted to be a dextral wrench zone and which displays distinct stratigraphic, structural and metamorphic relationships.

Poulsen (2000, p.11) also described the GUP:

> A unique ultramafic unit occurs in the Redgut Bay–Grassy Portage Bay area. Rocks from this unit have distinctive textures as well as a magnesian chemical composition; samples plot as basaltic komatiites. Locally, the rock consists of angular to subrounded fine-grained clasts, up to 5 cm in diameter, set in a fine-grained chlorite-tremolite matrix. The rocks are moderately to strongly magnetic and, where visible fragments are not present, they are fine-grained magnetic tremolite schists. As a whole, this ultramafic unit strongly resembles the "ashrock" unit (Joliffe 1955) that overlies the iron ore horizon of the Steep Rock Group north of the Quetico Fault at Atikokan.

All 15 samples collected by the author from various parts of the property plotted at the boundary between basaltic komatiite (BK) and picritic (ultramafic) komatiite (PK) on a Jensen cation plot (Jensen 1976) (Figure 10a). A plot of total alkalis ($Na_2O + K_2O$) versus silica (SiO_2) (Le Maitre 1989) shows that the majority of samples plot within the komatiite or meimechite field (Figure 10b). The differentiation between the 2 rock types is based upon titanium oxide content, meimechite having greater than 1% TiO_2, and komatiite, less than 1% TiO_2. Meimechite is defined as "…the extrusive equivalent of kimberlite" (Mitchell 1985).

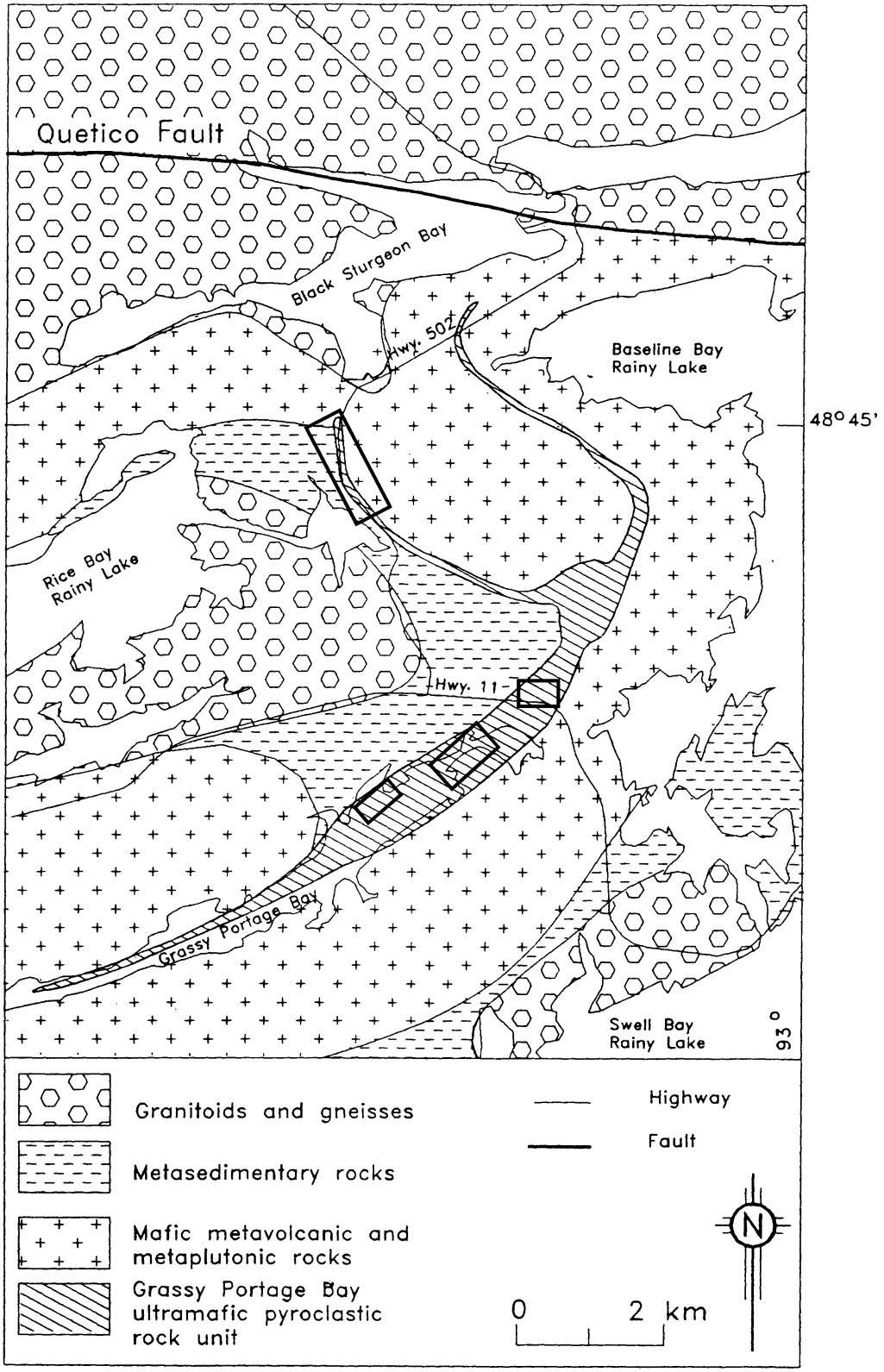

Figure 9. Geology of the Grassy Portage ultramafic pyroclastic (*modified from* Schaefer and Morton 1991). Rectangles represent sample areas, this study.

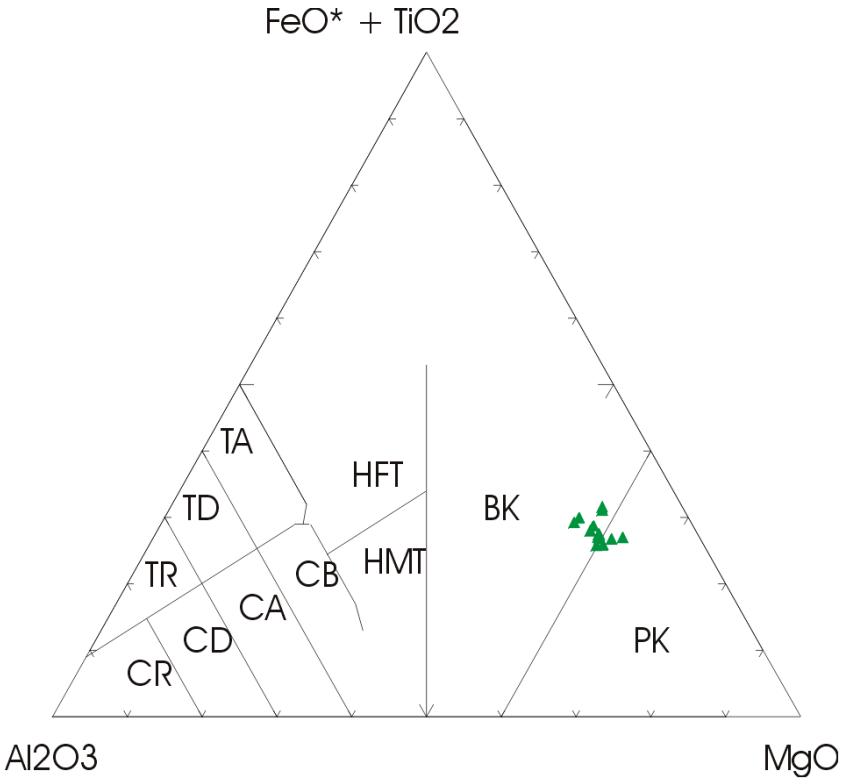

Figure 10a. Jensen cation plot (Jensen 1976) for samples collected from the Grassy Portage ultramafic pyroclastic. Triangles represent sample plots, this study.

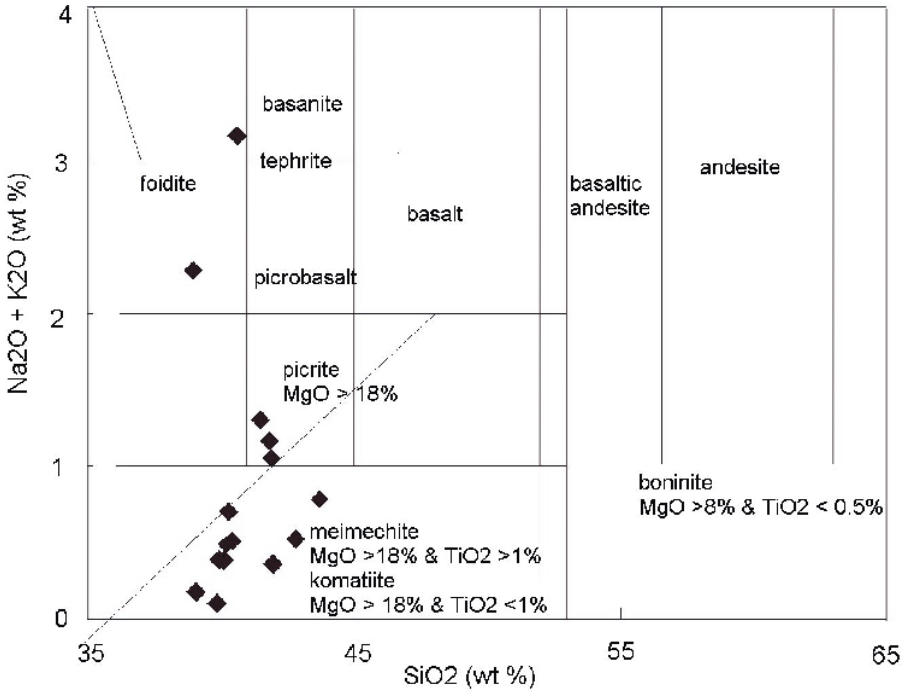

Figure 10b. Alkali versus silica plot for samples collected from the Grassy Portage ultramafic pyroclastic. Diamonds represent sample plots, this study.

Schaefer and Morton (1991) conducted research on both the GUP and the Dismal Ashrock of the Steep Rock Group. Their work indicated "GUP is divided into komatiitic lapilli tuff and komatiitic volcanic breccia. Both pyroclastic units contain cored and composite lapilli, evidence of explosive volcanism. Locally, some of the lapilli fragments are highly vesicular (up to 30% by volume), greater than reported for any other komatiite."

A variation in clast composition was noted at various locations in the GUP. The majority of clasts appear to be ultramafic in composition with <2% of exotic origin. At all locations, the clasts range from subangular to subrounded, with a maximum dimension of 15 cm. Cored clasts up to 10 cm across were noted on the shoreline (UTM 495819E, 5395232N) and islands (UTM 499902E, 5394822N) of Grassy Portage Bay. At the Beaver Pond occurrence (UTM 497137, 5396262N), clast-dominant GUP is seen to be in contact with a fine-grained matrix-dominant GUP. The contact between the 2 units suggests that the younging direction is roughly to the east. This is based on what is interpreted to be scouring of the fine-grained tuffs during passage of a pyroclastic debris flow.

Rocks of the GUP contain only trace sulphide minerals (pyrite ± pyrrhotite). Some sections contain appreciable amounts of euhedral magnetite, visible to the naked eye. A bronze-coloured mica was observed on a small island in Grassy Portage Bay and identified as phlogopite in the field, X-ray diffraction analysis indicated the presence of phlogopite-biotite. Talc was also noted in some sections.

Schaefer and Morton (1991) and Poulsen (2000) concur that the GUP has undergone amphibolite-grade metamorphism. Only late-stage, weak carbonatization was noted by the author. Schaefer and Morton (1991) make comment on the structure of the area: "GUP outcrops form an arcuate fold interference pattern, are strongly deformed …" However, outcrops observed by the author display very little deformation; the only structural fabric was a weak foliation observed at the Beaver Pond occurrence. This apparent lack of deformation is supported by observed clast morphology, which range from subangular to well rounded.

The property and surrounding area has undergone extensive exploration at various times since the late 1800s for copper, zinc, nickel, platinum group elements (PGE), gold and iron. Prior to the current acquisition, no record of diamond exploration is documented in the area. Under an agreement with the property owners, INCO Ltd. conducted a sampling program on the property in 2003, with samples being analyzed by Lakefield Research (L. Cousineau, Prospector, personal communication, 2003). One sample collected by INCO was reportedly identified as a hypabyssal kimberlite. If future work confirms the presence of hypabyssal kimberlite within the GUP, it will greatly increase the area's potential to host diamonds.

Straw Lake Property, Opawica Explorations Inc. (P. Hinz)

Opawica Explorations Inc. is currently exploring a property in the vicinity of Straw Lake (NTS 52F/03NW). The 15-claim property is located approximately 62 km north-northeast of Fort Frances, Ontario (Figure 11). The property can be accessed by the all-weather Cedar Narrows Road, which departs west from Highway 502. The Cedar Narrows Road transects the western portion of the property, whereas the eastern parts of the property may be accessed off the Floyd Lake Road, east of the Cedar Narrows Road.

The earliest documentation of gold mineralization in the area relates to exploration conducted in the 1930s at locations such as the Straw Lake Beach Mine; the Konigson occurrence; the Mathieu "Claim"; the Straw Lake occurrence; and the Viger property. The most significant of these was the Straw Lake Beach Mine where operations between 1938 and 1941 resulted in the production of 11 568 ounces of gold and 1049 ounces of silver at an average grade of 0.34 ounce gold per ton (historical files, Resident Geologist's Office, Kenora). All of these occurrences are located within the supracrustal rocks located south of the Straw Lake property.

The Straw Lake property is underlain by felsic intrusive rocks of the Lawrence Lake lobe of the Atikwa Batholith, within the western Wabigoon Subprovince. Mapping by Edwards (1983) differentiated the Lawrence Lake batholith into 3 phases, "… an early, marginal, subordinate amphibole diorite to gabbro phase at Sullivan Lake; a northern, intrusive diorite to quartz diorite phase between Bluffpoint and Harris lakes; and a later granodiorite to trondhjemite phase, south and southwest of Harris Lake." The property is underlain by the latter 2 phases of diorite-quartz diorite and granodiorite-trondhjemite and a mixed contact zone between the batholith and supracrustal rocks. During his mapping project, Edwards (1983) noted a sample of altered trondhjemite, located north of Floyd Lake, which assayed 0.54 ounce gold per ton. Edwards (1983) commented: "Exploration for gold in both the endocontact and exocontact zones of this part of the Lawrence Lake Batholith is warranted."

Following the release of the preliminary geology map in 1977 (Edwards and Sutcliffe 1977), prospector R. Fairservice staked the Edwards' gold occurrence. Initial prospecting yielded several other gold occurrences in the area west of Edwards' discovery assay. Fairservice was successful in optioning the property to several companies including Selco Mining Corp. (1980–82); Noranda Exploration Company (1982–84); Corporation Falconbridge Copper (1984–1987); and Minnova Inc. (1988–89). Work conducted by these companies included sampling; linecutting; geological mapping; induced polarization (IP), magnetometer and very long frequency electromagnetic (VLF-EM) geophysical surveys; humus geochemical sampling; stripping, trenching; and diamond drilling. After the Minnova option, the claims lapsed and the property sat dormant until 2000 when Fairservice started re-staking the core of the property. Additional prospecting by Fairservice identified additional gold occurrences, after which Opawica Exploration Inc. optioned the property in late 2002.

Opawica's initial exploration program included an extensive stripping and trenching program covering the Pine Centre, Pine West, Pine East and Pine Hill gold zones, all located west of Edward's occurrence. A total of 32 areas were stripped and 273 samples collected. At the Pine Centre gold zone, 100 samples averaged 1.74 g/t Au, and of these, 74 samples averaged 2.73 g/t Au. Twenty-three samples were taken at the Pine East area, and analyses ranged from nil to 13.4 g/t Au. Stripping and sampling was conducted at the Pine Hill area on 6 separate zones, 4 of which returned values up to 1.32 g/t Au. The other 2 stripped zones returned values ranging from 0.52 to 3.76 g/t Au. At the Pine West area, 7 areas were stripped and 37 samples collected. Five samples from one of the stripped zones returned values ranging from 0.74 to 3.25 g/t Au (Opawica Explorations Inc., press release, July 7, 2003).

In August 2003, Opawica initiated a twenty-hole Phase I diamond drill program. Holes OPW-2 and OPW-3 were drilled on the Pine Centre gold zone. The following results were reported: Hole OPW-2 intersected 15.7 m grading 1.00 g/t Au; Hole OPW-3 intersected 14.5 m grading 1.25 g/t Au. Hole OPW-6, targeting the Pine East zone, intersected 3.2 m grading 3.43 g/t Au and 0.8 m grading 6.39 g/t Au (Opawica Explorations Inc., press release, September 4, 2003). In early December 2003, Opawica continued their drill program, results from the next 6 drill holes yielded disappointing results and the Company announced that no further work would take place (Opawica Explorations Inc., press release, January 6, 2004).

The Straw Lake property represents an unusual gold deposit model within the Kenora District. Observations made during a property visit in August led the author to counter the Company's interpretation of Edward's lineaments as faults. Faulting in the host trondhjemite can be reinterpreted to represent conjugate fracture sets typical of cooling intrusive bodies. It has been interpreted that the development and transportation of hydrothermal fluids, including dissolved metallic minerals is controlled by these fractures and the lithology.

The Lawrence lobe may represent a series of intrusive pulses, parts of which may represent a subvolcanic source to the overlying Yoke–Straw Lake volcanic rocks. The initial intrusive pulse involved Edward's Contact Zone trondhjemite-granodiorite (CZtg), and possibly the Bluffpoint quartz diorite. Interaction with the overlying Yoke–Straw Lake volcanic sequence produced the Contact Zone agmatite (Edwards and Davis 1984). A lengthy period of quiescence allowed the formation of a conjugate set of cooling fractures. The Chuck Lake pluton and/or the Lawrence Lake trondhjemite possibly represent a subsequent renewal of intrusive activity. This second phase of intrusion could have generated sufficient hydrothermal activity to allow for transport of gold and other metals through the fractured CZtg.

The abundant fractures in the trondhjemite acted as a pathway for enhanced fluid flow, which allowed potentially mineralized hydrothermal fluids to alter the adjacent host rock and deposit gold. It has been noted that one of the major fractures appears to line up with the Straw Lake Beach Mine, a quartz vein system hosted by the overlying Yoke–Straw Lake volcanic rocks. It could be postulated that when the migrating hydrothermal fluids came into contact with the volcanic rocks, they "blew out" into the less competent units and formed the gold-bearing quartz veins, which host the Straw Lake Beach Mine. The Straw Lake Beach Mine is a viable exploration target, however, the potential for a large tonnage low-grade deposit within the intrusive rocks to the north is a significant and possibly more attractive target.

Based on this reinterpretation, fracture systems may occur north of the current property further into the Bluffpoint quartz diorite and Chuck Lake stock. Fractures with attendant alteration haloes and mineralization, similar to that observed on the property, will be explored for during a reconnaissance road traverse planned for the summer of 2004.

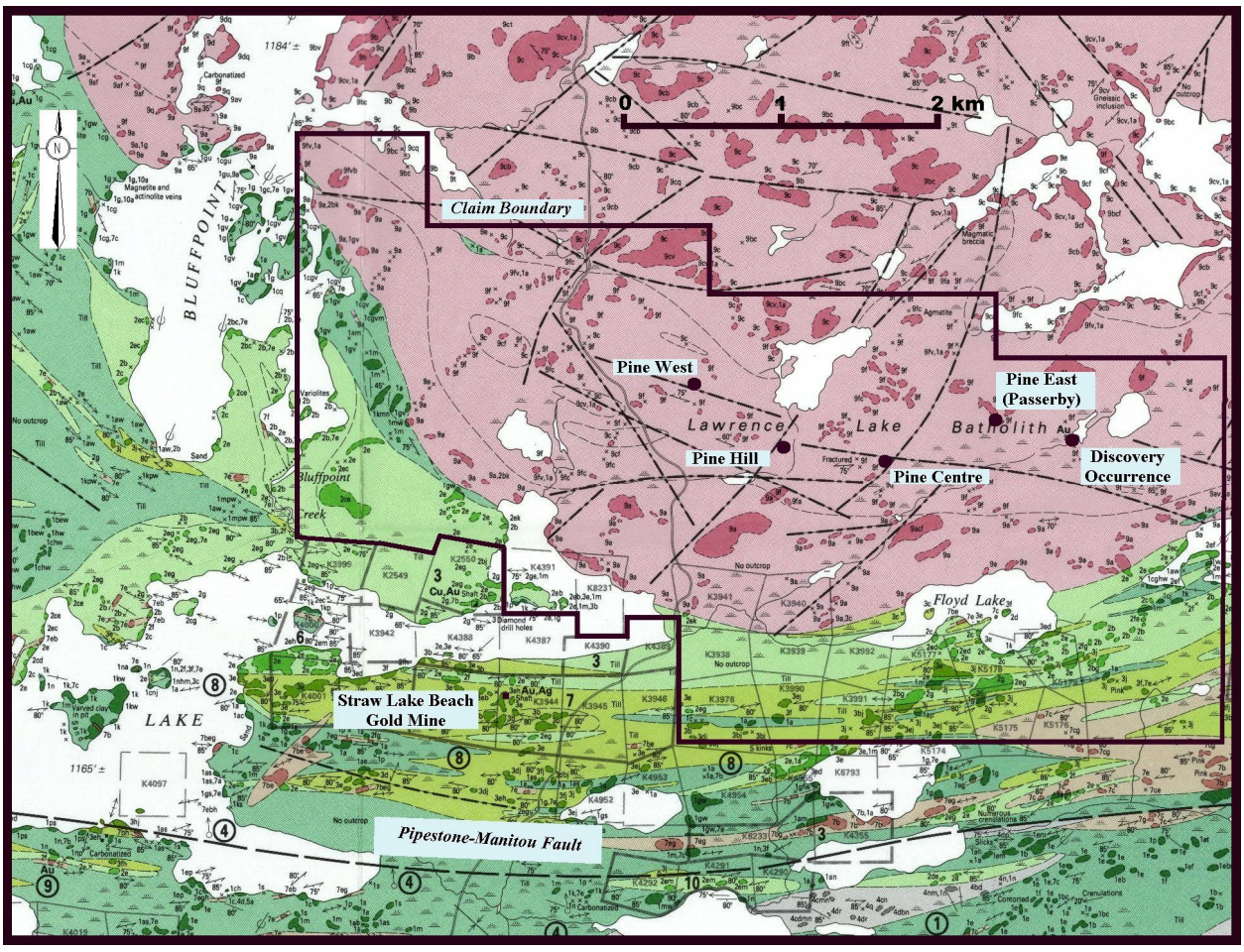

Figure 11. General geology map of the Straw Lake property (*modified from* Edwards 1983).

RECOMMENDATIONS FOR EXPLORATION

Emerald Potential in Rare-Element Pegmatites, Northwestern Ontario (P. Hinz)

In July 2003, True North Gems Inc. announced the confirmation of the discovery of the first gem-quality emerald occurrence in Ontario on their Ghost Lake property (True North Gems Inc., press release, June 16, 2003). The emerald occurrence, known locally as the Taylor Pegmatite, is located near the city of Dryden within the Dryden Rare-metal Pegmatite Field (DRPF)(Breaks and Kuehner 1984).

The occurrence of beryl at the Taylor Pegmatite is not unique within the DRPF as several other pegmatite occurrences within the field contain milky and clear beryl. However, the distinctive green coloured beryl and gem-quality emerald is, at this time, confined to this single occurrence. The unique green colouration of an emerald is imparted by elevated levels of chromium and low iron content within the crystal structure. The source of the chromium at the Taylor Pegmatite is postulated to be an ultramafic unit mapped as soapstone by Satterly (1942) and later identified as peridotite by Breaks and Kuehner (1984).

In addition to the DRPF, explorationists are recommended to evaluate the potential for emeralds in the following areas of northwestern Ontario:

- Separation Rapids rare-element pegmatite field (NTS 52L/07SE, 52L/08SW);
- pegmatites of the Pakwash–Lake St. Joseph trend (NTS 52J/13, 52K/11, 52K/15, 52K/16, 52N/01);
- the Pakeagama pegmatite field (NTS 53C/11, 53C/12, 53C/13); and
- the Raleigh Lake pegmatite field (NTS 52G/05NW).

Of prime importance is the necessity to establish the presence of chrome-bearing ultramafic units in close proximity to the pegmatites.

When evaluating a pegmatite for its emerald potential, explorationists should keep the following points in mind. The pegmatite must have beryl as one of its constituent minerals, a minerals handbook will provide the characteristics of beryl to allow for its identification. If beryl is identified, ascertain what colour varieties are present (clear, milky white, green, etc.). If green beryl is present, samples should be collected to evaluate the quality of their colour, clarity and potential carat size. As there are a variety of green minerals, the explorationist would be wise to seek the services of an accredited gemologist to confirm the identification of any potential emerald.

Gold Potential in the Dinorwic Lake Areas (C. Ravnaas)

Recent mapping by the Ontario Geological Survey (Beakhouse 2002) has delineated patterns of alteration and deformation that may have a positive bearing on the gold potential of the area. In particular, the Dinorwic Lake area is characterized by well-foliated, intensely altered rocks. This regional-scale area, which Beakhouse (2002) called the Dinorwic Lake structural domain (DLSD), parallels Dinorwic Lake and can be interpreted as a northern extension of the Manitou Straits fault and extends for approximately 30 km.

Fabric development and alteration in this domain is more intense than the surrounding rocks, but the overall strain is low. Areas of high strain are restricted to very narrow zones, with adjacent altered pillows showing little evidence of strain. This difference in degree of strain and lack of shear indicators may suggest the Dinorwic Lake structural domain is not the product of a shear event.

Weak pervasive calcite-chlorite alteration exists throughout a large area (Parker 1989) centred on the DLSD. More intense alteration is characterized by iron-carbonate alteration within the domain. The iron-carbonate overprints calcite-chlorite alteration. Quartz veins parallel the strain fabric and contain fragments of iron-carbonate altered material, indicating the veining may postdate carbonate alteration.

Large-scale iron-carbonate altered zones, localized silicification and the presence of known gold-bearing quartz vein occurrences (i.e., Big Ruby) suggest the Dinorwic Lake structural domain (Figure 12) is a prime target area for gold exploration.

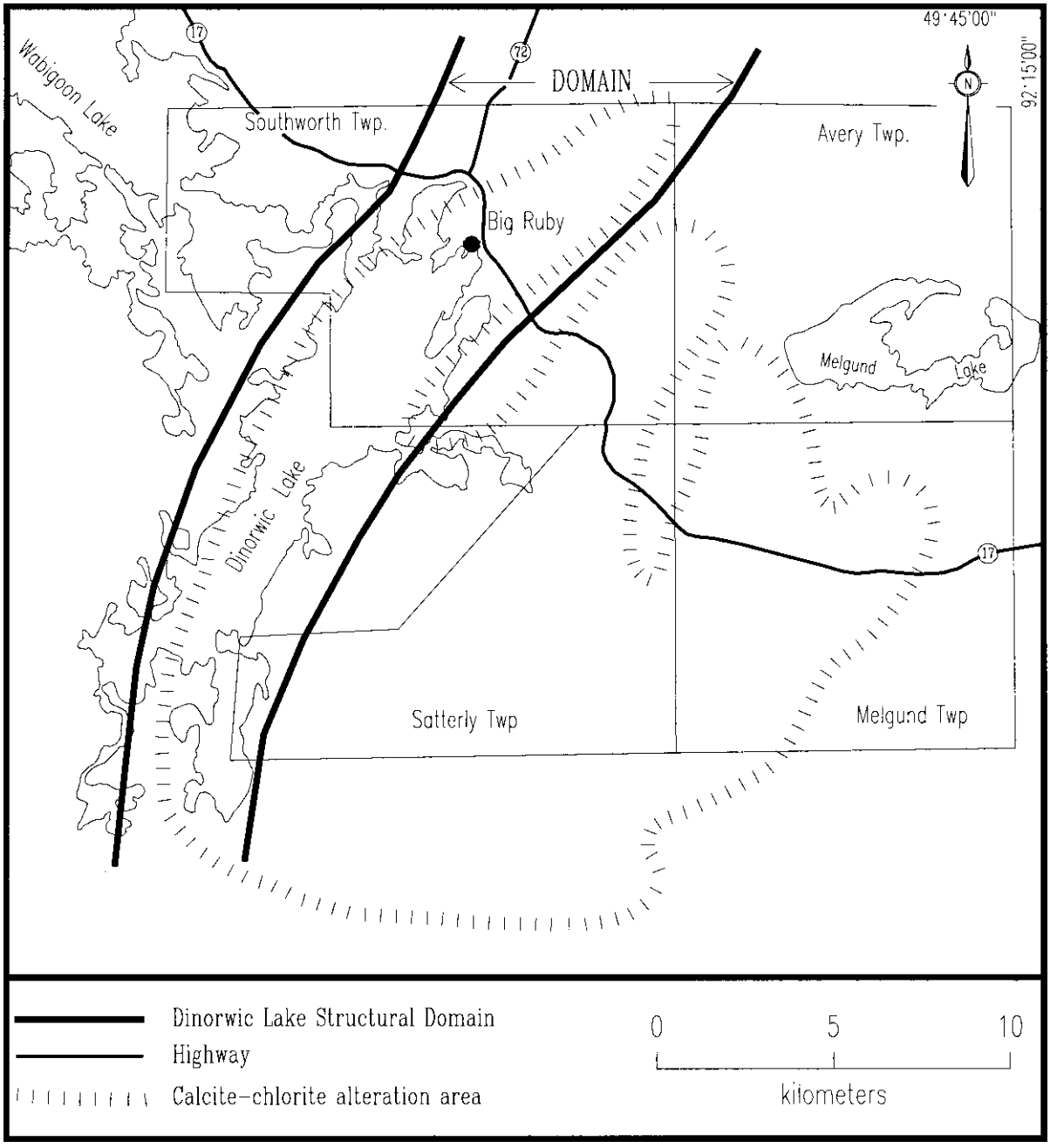

Figure 12. Location of the Dinorwic Lake structural domain.

OGS ACTIVITIES AND RESEARCH BY OTHERS

Two Ontario Geological Survey (OGS) field projects were conducted in the Kenora District in 2003. In addition, 2 university groups conducted research within the district. Figure 13 illustrates the location of the 4 projects.

A. G. Beakhouse, Precambrian Geoscience Section, OGS, continued a study of Archean granitoid plutons in the Kenora District as part of a larger provincial investigation.

B. D. Russell, Sedimentary Geoscience Section, OGS, conducted a preliminary high-density lake sediment and water geochemistry survey of the Kakagi Lake area.

C. P. Corcoran, University of Western Ontario, continued field research related to facies analysis of the Stormy Lake basin (2.69 to 2.7 Ga), western Superior Province, Ontario.

D. D. Czeck, University of Wisconsin, Milwaukee; J. Carreras and E. Druguet, Universitat Autonnia de Barcelona conducted reconnaissance field work in the Fort Frances–Mine Centre area. A collaborative research project is the anticipated result.

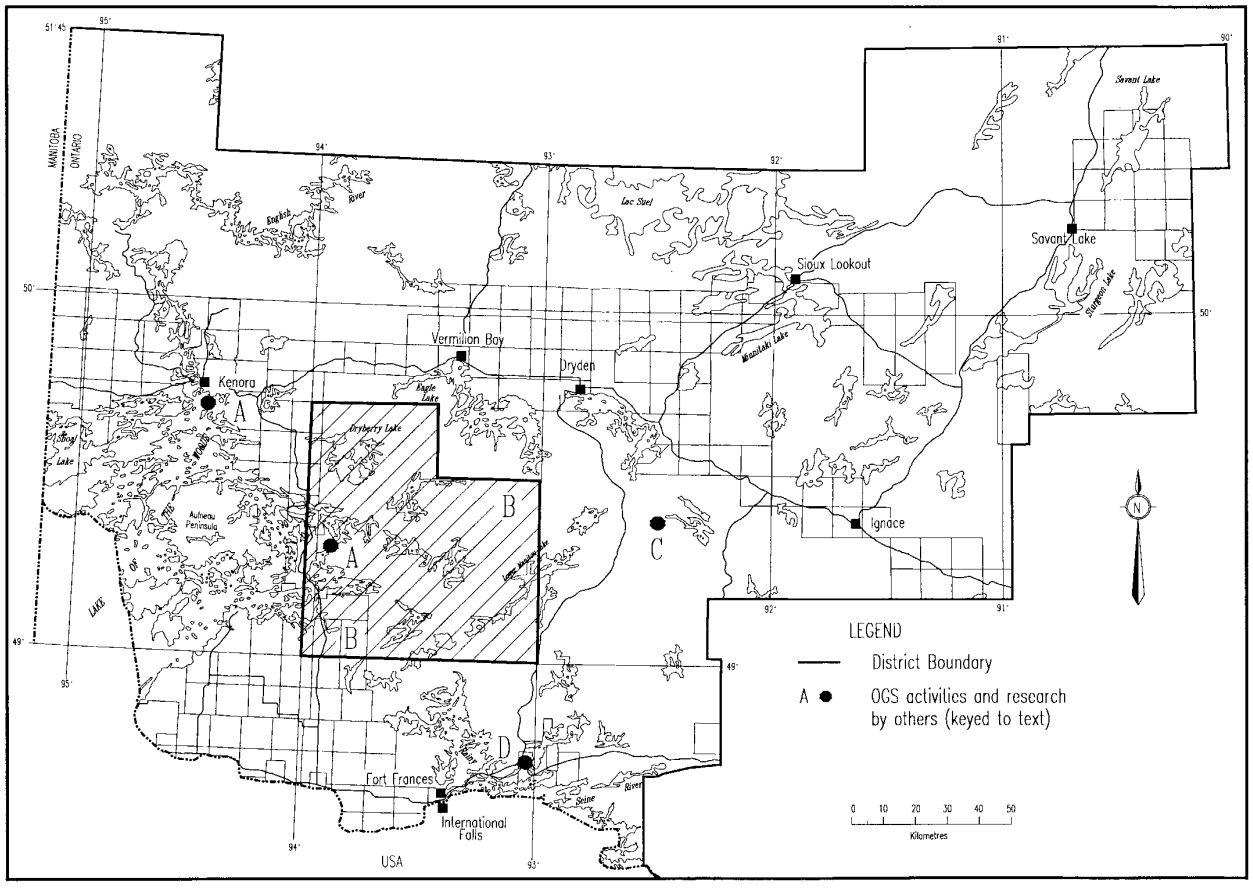

Figure 13. Location of Ontario Geological Survey and other research activities in the Kenora District in 2003.

Table 8. Mineral deposits in the Kenora District 2003.

Abbreviations

AF ..... Assessment Files
CMH ..... *Canadian Mines Handbook*
GR ..... Geological Report
MDC ..... Mineral Deposit Circular
MDIR ..... Mineral Deposit Inventory record
ROA ..... Report of Activities
MLS ..... Mining Lands, Sudbury
MR ..... Mining Recorder
NM ..... *The Northern Miner*
OFR ..... Open File Report
PC ..... Personal Communication
SMDR ..... Source Mineral Deposit Record

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Apex occurrence (52F/05NE)	Cu, Ni	Zone: 110m x 4m x 180m. Estimated Reserve: 237 600 tonnes at 1.03% Cu and 0.56% Ni.	GR 111, p.40	Staked claim K1239515
Bad Vermilion Lake–Seine Bay prospect (52C/10NW)	Fe, Ti, V	Reserves: 1.2 Mt tonnes at 15% TiO_2 and 45% Fe. Potential for 177 800 tonnes of titanium sponge	NM Aug. 15, 1985, p.3 (Beaver Energy Resources)	Inactive, 8 claims
Bending Lake prospect (52F0/8SE)	Fe	Main Zone: 1500m long by 300m wide at unknown grade (average of 34% Fe found by RGP staff, (Lichtblau et al. 2002)). Open pit reserves sufficient to maintain plant output of 2 Mt for 20 years.	MDIR NM April 14, 1977 (LTV Steel) OFR 6047, p.19 Table 16	Inactive, 70 patented claims MDIR file - K0133
Big Master (Kenwest Mine) (52F/07NE)	Au, Ag	Production: 2565 oz Au and 184 oz Ag from 14470 tonnes. Indicated 1967 drilling: 30 000 tonnes at 0.36 opt Au. Old workings: 19 000 tonnes at 0.30 opt Au. Reserves (proven and probable) : 123 000 tonnes at 0.30 opt Au and Indicated: 600 000 tonnes at 0.22 opt Au.	MDC 16, p.9 CMH 1988–1989, p.92 (Canamerica Precious Metals Inc.)	Inactive, patented claims HP366, HP373, HP301
Big Whopper pegmatite (52 L/07SE)	Li, Cs, Rb	Preliminary resource estimated at 11.6 Mt averaging 1.34% Li_2O and 0.30 Rb_2O.	CMH 2000–2001, p.45 (Avalon Ventures Ltd.)	Active, 12 staked claims
Bonanza Mine (52F/10NW)	Au	Reserves : 5000 tonnes at 0.25 opt Au across a width of 0.3m.	Van Horne Gold Expl. Inc. AF	Inactive, 59 claims
Cameron Lake deposit (52F/05SE)	Au	Reserves (proven, possible and probable) : 4.3 Mt at 0.13 opt Au (530,000 oz) to –760m.	Nuinsco Resources Limited – Cambior 1995	Care and maintenance, 61 leased claims
Canadian Arrow prospect (Dogpaw Lake) (52F/05SW)	Au	Indicated Reserves: 96 650 tonnes at 0.43 opt Au in 2 veins.	NM April 5, 1961 (Consolidated Golden Arrow Mines Ltd.)	Inactive, 17 claims
Canamerica E zone (52F/07NE)	Au	Reserves: 529 650 tonnes of 0.103 opt Au indicated and inferred in NE Zone.	NM July 13, 1987, p.17 (Canamerica Precious Metals Inc.), Cochrane Oil & Gas Ltd., AF	Inactive, 45 claims
Cates prospect (52F/13SE)	Zn, Ag	Zone: 2700m by 12m by 60m Reserves: 5.83 Mt at 0.5% Zn and 0.5 opt Ag.	AF 52F/13SE M-1 to M-6 (Noranda) AF 52F/13SE B-1 to B-6 (Rio Algom)	Active, 9 claims

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Cedar Island deposit (Cornucopia) (52E/10SW)	Au	Production: 4941 oz Au and 3884 oz Ag from 17 050 tons. Indicated reserves: 1.096 Mt at 6.63 g/t Au, Inferred reserves: 0.832 Mt at 5.63 g/t Au (both Cedar Island and Mikado)	MDC 16, p.13 Amador Gold Corp., press release, October 6, 2003	Inactive, patented claims D212, D265
Coste Island prospect (52E/07NE)	Soapstone	Zone: 600m long x 64m wide Production: unknown Reserves: open	MDF 52E/7NE (Coste Island) MDC 27, p.80	Inactive, OLL and Enhanced Land Management
Dobie deposit (52C/12NW)	Cu-Ni	Reserves: 5.0 Mt at 0.28% Cu and 0.24 % Ni	AF 52C/12NW B-3	Inactive, Patented landed and reserve.
Dubenski gold prospect (52F/05SW)	Au	Drill-indicated reserves: 355 286 tonnes at 6.32 g/t calculated to a depth of 150 m.	CMH 1999–2000, p.52 (Avalon Ventures Ltd.)	Inactive, 22 Leased claims
Duport Mine (Consolidated Professor) (52E/11SE)	Au	Total geological reserves: 2.0 Mt of 0.35 opt Au. Proven and Probable: 944 000 tonnes at 0.39 opt Au. Estimated pre-production cost $52.8 million.	CMH 1995–1996, p.111 (Consolidated Professor Mines)	Active, Patented claims S.170, K1332, K1333, K2374
Eagle Lake Soapstone Quarry (52F/11NW)	Soapstone	Production: 174 tonnes (1925–1926) Production: 547.5 tonnes (1993–2000) Reserves: open	MDC 27, p.81 OFR 5764, p.49	Active, Patented claim 1169628
Eagle Rock property (Campbell zone) (52F/02NE)	Au, Pt, Pd, Cu	Zone: 45m wide by 1000m long at 1.2 g/t Au-Pt-Pd, 4.8 g/t Ag and 0.5% Cu	Champion Bear Resources Ltd., press release, Feb. 2, 2001	Active operation, 28 claims
Electrum prospect-W zone (fault or west zone) (52E/11 NE)	Au	Zone: 0.23 opt Au from 61m x 2.1m x 19.8 m zone. Reserves: 100 000 tonnes of 0.33 opt Au in the P and W zones combined.	OFR 5695, p.108 Laramide Resources Inc., Annual Report, 1987	Inactive, Patented and Leased claims K20696-K28663
Elora (Jubilee) (52F/07NE)	Au	Production: 1370 oz Au and 296 oz Ag from 13 766 tonnes Reserves (Au) : Probable: 228 500 tonnes at 0.18 opt , Speculative: 5000 tonnes at 0.10 opt from dump.	MDC 16, p.15 OFR 5332, p.37 Table 8	Inactive, Patented claim HP 301
F-Group (52G/14SE)	Cu, Zn, Pb, Ag	Original Reserves (Dec. '78): 630 000 tonnes at 8.10% Zn, 0.98% Cu, 0.49% Pb, 1.80 opt Ag. Reserves (Dec. '82): 0.20 Mt at 8.20% Zn, 0.80% Cu, 0.60% Pb, 1.80 opt Ag	CMH 1979–1980, p.194 (Noranda) CMH 1982–1983, p.254 (Noranda)	Inactive, Patented claims PA312564-65, PA312567-68 and PA226490-91.
Flambeau Lake prospect (52F/10NW)	Au	Reserves: diamond drilling partially outlines a zone with potential for 572 000 tonnes (Au grade unstated).	AF 52F/10NW UU-1 and UU-2	Inactive, Patented claim AL88
Foley Mine (52C/10NE)	Au	Production: 855 oz Au and 149 oz Ag from 5568 tonnes. Reserves: 40 000 tonnes at 0.5 opt Au proven/probable and 400 000 tonnes at 0.5 opt Au speculative.	MDC 16, p.16 NM 09/25/80 Seaforth Mines Ltd., OFR 5539, p.194	Inactive, Patented claims K475101, K475102, K475103
Gaffney prospect (52F/07SW)	Au	Reserves: 300 000 tonnes at 0.15 opt Au	CMH 1990–1991, p.393	Inactive, Patents K3594-3595

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Golden Star Mine (52C/10NE)	Au	Production: 10 758 oz Au and 34 oz Ag from 19 345 tonnes. Reserves: 20 000 tonnes at 0.42 opt Au and 35 000 tonnes at 0.15 opt Au (tailings dump).	MDC 16, p.20	Inactive, Patented Claim AL116, Leased Claim K44632
Goldlund Mine (52F/16NW)	Au	Production: 111 891 tonnes at 0.15 opt Au (Dec. '84). Reserves: 781 000 tonnes at 0.14 opt Au with 150 000 tonnes at 0.15 opt Au that can be mined by open pit.	AF 52F/16NW 081 Locke Riche Minerals Ltd. CMH 1995–1996, p.223	Inactive. Patented claim KRL 18802
Gordon Lake Mine (52L/07NW)	Cu, Ni, PGE	Production: 1.6 Mt at 0.78% Ni, 0.41% Cu and 0.026 opt Pd (Dec. '71) Reserves: 110 000 tonnes at 0.85% Ni and 0.35% Cu (Dec. '71)	SMDR 000506 (edited)	Inactive, Mining Patents KRL 19096-97, 29065-66, 30055, 31373-74, 31823-26, 31829-32, 33206, 33208, 33210, 36272-74.
High Lake porphyry (52E/11NE)	Cu, Mo, Au	Zone: 61m long by 77m wide containing assay values of 0.10% to 1.35% Cu and 0.01 to 0.05 opt Au.	GR 41, p.46	Inactive, leased claim K32307
High Lake prospect (Eco occurrence) (52E/11NE)	Mo, Au	Reserves: 126 000 tonnes at 0.68% MoS_2 and 0.015 opt Au. Indicated: 200 000 tonnes at 0.63% MoS_2, Inferred: 550 000 tonnes estimated to a depth of 145m.	OFR 5695, p.114	Inactive, patented claims K8705, K8707 and staked claims 1229467, 1229468
Kenbridge prospect (52F/05NE)	Ni, Cu	Reserves: 3.2 Mt at 1.06% Ni and 0.54% Cu.	GR 111, p.44	Inactive, patented claims K6672, K6634, K6635
Kenricia Mine (52E/10NE)	Au, Ag	Production: 2553 oz Au and 521 oz Ag from 24 344 tonnes Reserves: 53 201 tonnes at 0.362 opt Au (1935).	MDC 16, p.23 AF 52E/10NE E-1	Inactive, Patented Mining Land P211
Laurentian Mine (52F/07NE)	Au	Production: 843 oz Au from 19 950 tonnes (grade 0.41 opt).Reserves (Au) : Possible: 50 650 tonnes at 0.25 opt and Speculative 20 000 tonnes at 0.10 opt on dump	MDC 16, p.24 OFR 5332, p.37 Table 8	Inactive, Patented Mining Land HP 371
Little Turtle Lake Soapstone Quarry (52C/15SE)	Soapstone	Production: 17 tonnes (1922–1923) Reserves: open	MDC 27, p.85	Inactive Quarry, Patented claim HP 141
Lockhart Lake (52C/10NW)	Zn, Cu, Au, Ag	Reserves: 6.1 Mt at 1.06% Zn, 0.27% Cu, 3.2 g/t Ag and 0.006 g/t Au	AF 52C/10NE Y-6 (Minnova 1989)	Inactive, Patented claims K417852-854, K418156-157, K446504-509.
Lyon Lake zone (Creek zone) (52G/15NW)	Cu, Zn, Pb, Ag	Original Reserves: 3.945 Mt at 6.53% Zn, 1.24% Cu, 0.63 % Pb, 3.42 opt Ag and 0.01 opt Au. Reserves: 695 000 tonnes of 10.34% Zn, 0.75% Cu, 1.62% Pb and 5.96 opt Ag	CMH 1979–1980, p.194 (Noranda) CMH 1990–1991, p.332 (Noranda)	Closed Mine, Patented claim CLM 185
Marchington Road deposit (52J/07SE)	Cu, Zn, Pb, Ag	Reserves: 150 000 tonnes at 0.98% Cu, 3.11% Zn, 1.16% Pb, 1.97% Ag	Umex Inc. AF 52J/7SW 0024	Inactive, Patented claim CLM 337

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Mattabi Mine (52G/15SW)	Cu, Zn, Pb, Ag	Original Reserves: 13.66 Mt at 7.50% Zn, 0.80% Cu, 0.77% Pb and 3.10 opt Ag. Reserves: 387 000 tonnes of 0.13% Cu, 9.28% Zn, 0.58% Pb and 1.77 opt Ag	GR 221 p.4 CMH 1988–1989, p.338 (Noranda)	Closed Mine, Patented claims GTP Block 7
Mavis Lake prospect (52F/15SE)	Li, Ta	Reserves: 500 000 tonnes of 1% LiO_2.	OFR 5718, p.151	Inactive, Leased claims K498288-290, K 498292, K498308, K498140
Maybrun Mine (52F/05NE)	Cu, Au	Production: 125 000 tonnes at unknown grades (Aug. '73 to Dec. '74). Reserves: 2.8 Mt at 1.18 % Cu and 0.08 opt Au (1966)	MDIR K0203 AF 52F/5NE P-1	Inactive, property on care and maintenance, Patented claims K15364-K15381, K15524- K15527
Mikado Mine (52E/10SW)	Au	Production: 28 335 oz Au and 41 oz Ag from 57 813 tonnes Reserves (Au): Probable: 200 00 tonnes at unknown grade with 30 977 tonnes at 0.356 opt Au in the Grano Zone.	MDC 16, p.27 OFR 5695, p.220	Inactive, Patented mining claim D148
Mironsky prospect (52C/11NE)	Cu	Zone: 122m long by 10m wide zone to a minimum depth of 90m averaging 0.53-1.01% Cu. Reserves: 300 000 tonnes at 0.8% Cu (estimated).	MDC 29, p.42	Inactive, Staked claim 1238036
Norpax (Reynar Lake) (52L/06NE)	Ni, Cu	2002 Drilling intersected 3.35m of 1.308 g/t PGE and 2.94% Cu, Ni. Reserves: 1 Mt at 1.2% Ni and 0.5% Cu.	Atikwa Minerals, press release, Aug. 28, 2003 Norpax Nickel Mines Ltd., AF	Inactive, Patented claims KRL350101 and KRL34767
North Kaskaweogama prospect (52J/07NW)	Fe	Reserves: 405 000 tonnes at 28% Fe in 4 zones and a possible 50 Mt at unstated grade.	MDC 11, p.443	Inactive, Open Crown Land
North Pines Mine (52K/01SE)	Pyrite	Production: 500 000 tonnes at 28% Fe (1909–21). Reserves: open	GR 101, p.36	Inactive, Patented claim HW 715
North Rock Mine (South Grassy) (52C/11NE)	Cu	Zone: 400m x 2-30m x 91m. Reserves: 1.1 Mt tonnes at 1.17 % Cu including 265 230 tonnes at 2.08% Cu.	OFR 5512, p.50	Active, 8 Staked claims.
Northern Peninsula mariposite (52E/10NE)	Mariposite	Zone: Over 700m long x 7-8m thickness at a vertical dip. Produced: unknown ('72–'76). Reserves: open	MDC 27, p.63	Inactive, Staked claim 1178801
Pidgeon molybdenum mine (52F/16NW)	Mo	Resource: 275 000 tonnes of 0.6 % Mo.	OFR 5518, p.113 MRC 7, p.38	Inactive, Patented claim Pa 14051
Pipestone Peninsula Soapstone Quarry (52E/09NW)	Soapstone	Zone: Over 500m long x 23m wide and vertically dipping. Production: four carloads Reserves: open	MDC 27, p.89	Inactive quarry, Open Crown Land, W.L.L. C-2366
Port Arthur Copper (51C/15SE)	Cu, Zn	Production: 26 509 lbs. Cu. Estimated Reserves: 48 895 tonnes at 1.18% Cu and 0.43% Zn.	MDC 29, p.31	Inactive, patented claim FF4261

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Purdex prospect (A-D Zones) (52E/11NE)	Au	Reserves: 1) 76 500 tonnes at 0.308 opt Au (indicated tonnage in 4 zones). 2) 241 000 tonnes at 0.226 opt Au in the P, A, B and C zones.	OFR 5695, p.273 CMH 1995–1996, p.233	Inactive, patented claims K25130-131
Rainbow Quarry (52K/01SW)	Mariposite	Trench: 46.5m x 1-3m x 1-2m est'd. Production: 186 m^3 Reserves: open	MDC 27, p.58	Inactive quarry, Staked claim 1162920
Rainy River zone 17, 34 (52D/16SE)	Au, PGE, Cu, Ni	Zone 17 Reserves: 25.2 Mt at 1.37 g/t Au. Zone 34 Resource: Weighted average grades of 1.98% Ni, 1.65% Cu, 0.09% Co, 2.35 g/t Pt, 5.94 g/t Pd, 1.59 g/t Au and 22.51 g/t Ag over a 350m strike length.	Information Session Handout, Nuinsco Resources, Sept. 28/98 www.nuinsco.ca	Active, Patented Land.
Regina Mine (52E/08NE)	Au, Ag	Production: Over 8000 oz Au and 1460 oz Ag from 36 828 tonnes. Reserves (Au) : Speculative 19 650 tonnes at 0.44 opt and 30 000 tonnes at 0.106 opt in tailings.	MDC 16, p.34 AF 52E/8NE Q-1 NM July 25, 1988, p.7 Sweaney Gold Corp	Inactive, Patented claims P566-67
Rush Bay Quarry (52E/10NW)	Flag-stone	Quarry: 100m x 12m x 4 m Estimated production: 4800 m^3 (1978–86) Reserves: open	MDC 27, p.59	Inactive quarry, Alienation 1516 (Rock Aggregate Permit)
Sakoose Mine (52F/09SW)	Au, Ag	Production: 3669 oz Au and 145 oz Ag from 8828 tonnes. Reserves: 50 000 tonnes at 0.41 opt. Au.	MDC 16, p.36	Inactive, Staked claim 1244771.
Scramble Mine (Homestake) (52E/16SW)	Au	Zone: 366m to 457m by 3.7m wide zone at 0.15 opt Au. Reserves: 150 000 tonnes at 0.24 opt., 1500 tonnes at 0.24 opt and 70 000 oz (at 0.05 opt. cut-off) drill indicated.	NM July 25, 1988 (Madeline Mines Ltd.) CIMM, Dist.4 Field Trip Guidebook, p.44	Inactive, Jaffray Twp., Con.6, Lot 13 and 14
St Anthony Mine (52J/02SE)	Au	Production: 331 069 tonnes at 0.19 opt Au. Reserves: 37 800 tonnes at 0.18 opt Au	MDC 13 p.295	Inactive, Patented claim BG 154
Straw Lake Beach Mine (52F/03NW)	Au, Ag	Production: 11 568 oz Au and 1049 oz Ag from 33 662 tonnes. Reserves (Au): Probable 32 000 tonnes at 0.20 opt Possible 32 000 tonnes 0.20 opt and 30 000 tonnes at 0.15 opt and Speculative 48 000 tonnes 0.20 opt	MDC 16, p.38 OFR 5332, Table 14, p.47	Inactive, 10 Patented mining claims K4021-4022, K4035-4040, K9037-9040.
Sturgeon Lake Mine (52G/15NW)	Cu, Zn, Pb, Ag	Original Reserves (Dec/74) : 2.10 Mt at 10.64% Zn, 2.98% Cu, 1.47% Pb, 6.14 opt Ag and 0.021 opt Au. Reserves (Dec. '78): 599 000 tonnes at 2.34% Cu, 8.98% Zn, 1.30% Pb, 5.17 opt Ag and 0.018 opt Au.	GR 211, p.4 CMH 1980–1981, p.102 (Falconbridge)	Inactive, Patented claim
Sultana Mine (52E0/9NW)	Au	Production: 15 977 oz Au from 77 481 tonnes (0.21 opt). Reserves: none available	MDC 16, p.38	Inactive, Patented mining claim K489932 and claim 1086199

Deposit Name (NTS)	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status (as of Jan. 20, 2004)
Tabor Lake Mine (52F/09SW)	Au, Ag	Production: 36 oz Au and 4 oz Ag from 87 tonnes. Indicated Reserves: 50 000 tonnes at 0.5 opt Au.	MDC 16, p.39	Inactive, 37 patented claims, mine site on K502044
Thunder Lake deposit (52 F/15SE)	Au	Reserves: drill-indicated 3.78 Mt averaging 7.02 g/t Au (equivalent to 853 000 oz Au)	CMH 1999–2000, p.125 (Corona Gold Corp.)	Inactive, Patented and Staked claims.
Trap Lake (52F/10NW)	Soapstone	2 Zones: Islands 246 & 249 (16.3 Ha and 0.3 Ha). Resource: open	MDC 27, p.90	Inactive, Patented land K3829
Vanlas prospect (52F/10NW)	Au	Reserves: 100 000 tonnes at 0.20 opt Au.	Power Expl. Inc. AF 52F/10NW UU-1	Inactive, patented claim K70627
Victor Island prospect (52F/05SE)	Au	Reserves: Drill indicated 300 000 tonnes at 0.12 opt Au to a depth of 213m.	MP 128, p.16	Inactive, patented claim K4712 Claims 690655, 718785
Wabigoon prospect (52F/10NE)	Soap-stone	2 Zones of 15-20m wide by 600m long Reserves: open	MDC 27, p.91	Inactive, Patented mining claim HW 133
Wendigo Mine (52E/09NE)	Au, Ag, Cu	Produced: 67 423 oz Au, 14 762 oz Ag and 1.89 million lbs. of Cu from 206 054 tonnes. Reserves (Au) : Vein 1: 110m x 0.8m @ 0.33 opt Au (all of the production was from this zone). Vein 2: 118m x 0.6m, Vein 3: 180m x 0.3m and Vein 4: unknown Tailings: 61 970 tonnes at 0.027 opt Au.	SMDR 001350 SMDR 001350 OFR 5695, p.352 OFR 5695, p.353	Inactive, Patented mining claims MH 208-210.
Werner Lake Cobalt (52L/07NW)	Co, Cu	Production: recovered 389 363 lbs. of Co (1932, 1940-44); grades 2% Co and 0.75% Cu. Reserves: 1.01 Mt at 0.31% Co and 0.29% Cu.	MDC 1, p.37 Canmine Resources, press release, Feb. 9, 1999	Inactive, Patented mining claim KRL 9383.
Wind Bay prospect (52C/10NW)	Zn, Cu	Zone: 1300m x 46m x 10m Estimated resource: 1.79 Mt at 1.5% Zn and 0.2% Cu.	OFR 5512, p.89	Inactive, Patented mining claim 594P

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Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		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

	Multiplied by	
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.

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