ISSN 1916-6192 (online)
ISBN 978-1-4435-9086-D (PDF)

ISSN 1484-947X (print)
ISBN 978-1-4435-9085-3 (print)

THESE TERMS GOVERN YOUR USE OF THIS DOCUMENT

Your use of this Ontario Geological Survey document (the "Content") is governed by the terms set out on this page ("Terms of Use"). By downloading this Content, you (the "User") have accepted, and have agreed to be bound by, the Terms of Use.

Content: This Content is offered by the Province of Ontario's *Ministry of Northern Development and Mines* (MNDM) as a public service, on an "as-is" basis. Recommendations and statements of opinion expressed in the Content are those of the author or authors and are not to be construed as statement of government policy. You are solely responsible for your use of the Content. You should not rely on the Content for legal advice nor as authoritative in your particular circumstances. Users should verify the accuracy and applicability of any Content before acting on it. MNDM does not guarantee, or make any warranty express or implied, that the Content is current, accurate, complete or reliable. MNDM is not responsible for any damage however caused, which results, directly or indirectly, from your use of the Content. MNDM assumes no legal liability or responsibility for the Content whatsoever.

Links to Other Web Sites: This Content may contain links, to Web sites that are not operated by MNDM. Linked Web sites may not be available in French. MNDM neither endorses nor assumes any responsibility for the safety, accuracy or availability of linked Web sites or the information contained on them. The linked Web sites, their operation and content are the responsibility of the person or entity for which they were created or maintained (the "Owner"). Both your use of a linked Web site, and your right to use or reproduce information or materials from a linked Web site, are subject to the terms of use governing that particular Web site. Any comments or inquiries regarding a linked Web site must be directed to its Owner.

Copyright: Canadian and international intellectual property laws protect the Content. Unless otherwise indicated, copyright is held by the Queen's Printer for Ontario.

It is recommended that reference to the Content be made in the following form:

Atkinson, B.T., Bousquet, P., Pace, A., Butorac, S., Harvey, S., Draper, D.M., Debicki, R.L. and Wilson, A.C. 2012. Report of Activities 2011, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts; Ontario Geological Survey, Open File Report 6274, 141p.

Use and Reproduction of Content: The Content may be used and reproduced only in accordance with applicable intellectual property laws. *Non-commercial* use of unsubstantial excerpts of the Content is permitted provided that appropriate credit is given and Crown copyright is acknowledged. Any substantial reproduction of the Content or any *commercial* use of all or part of the Content is prohibited without the prior written permission of MNDM. Substantial reproduction includes the reproduction of any illustration or figure, such as, but not limited to graphs, charts and maps. Commercial use includes commercial distribution of the Content, the reproduction of multiple copies of the Content for any purpose whether or not commercial, use of the Content in commercial publications, and the creation of value-added products using the Content.

Contact:

FOR FURTHER INFORMATION ON	PLEASE CONTACT:	BY TELEPHONE:	BY E-MAIL:
The Reproduction of the EIP or Content	MNDM Publication Services	Local: (705) 670-5691 Toll-Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales.ndm@ontario.ca
The Purchase of MNDM Publications	MNDM Publication Sales	Local: (705) 670-5691 Toll-Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales.ndm@ontario.ca
Crown Copyright	Queen's Printer	Local: (416) 326-2678 Toll-Free: 1-800-668-9938 (inside Canada, United States)	Copyright@gov.on.ca

Ontario

Ontario Geological Survey
Open File Report 6274

Report of Activities, 2011 Resident Geologist Program

Timmins Regional

Resident Geologist Report:

Timmins and Sault Ste. Marie Districts

2012

Ontario

ONTARIO GEOLOGICAL SURVEY

Open File Report 6274

Report of Activities, 2011
Resident Geologist Program

Timmins Regional Resident Geologist Report:
Timmins and Sault Ste. Marie Districts

by

B.T. Atkinson, P. Bousquet, A. Pace, S. Butorac, S. Harvey, D.M. Draper,
R.L. Debicki and A.C. Wilson

2012

Open File Reports of the Ontario Geological Survey are available for viewing at the John B. Gammon Geoscience Library in Sudbury and at the regional Mines and Minerals office whose district includes the area covered by the report (see below).

Copies can be purchased at Publication Sales and the office whose district includes the area covered by the report. Although a particular report may not be in stock at locations other than the Publication Sales office in Sudbury, they can generally be obtained within 3 working days. All telephone, fax, mail and e-mail orders should be directed to the Publication Sales office in Sudbury. Purchases may be made using cash, debit card, VISA, MasterCard, American Express, cheque or money order. Cheques or money orders should be made payable to the *Minister of Finance.*

John B. Gammon Geoscience Library 933 Ramsey Lake Road, Level A3 Sudbury, Ontario P3E 6B5	Tel:	(705) 670-5615
Publication Sales 933 Ramsey Lake Rd., Level A3 Sudbury, Ontario P3E 6B5	Tel: Toll-free: Fax: E-mail:	(705) 670-5691 (local) 1-888-415-9845 ext. 5691 (705) 670-5770 pubsales.ndm@ontario.ca

Regional Mines and Minerals Offices:

Kenora - Suite 104, 810 Robertson St., Kenora P9N 4J2

Kirkland Lake - 10 Government Rd. E., Kirkland Lake P2N 1A8

Red Lake - Box 324, Ontario Government Building, Red Lake P0V 2M0

Sault Ste. Marie - 875 Queen St. E., Suite 6, Sault Ste. Marie P6A 6V8

Southern Ontario - P.O. Bag Service 43, 126 Old Troy Rd., Tweed K0K 3J0

Sudbury - 933 Ramsey Lake Rd., Level A3, Sudbury P3E 6B5

Thunder Bay - Suite B002, 435 James St. S., Thunder Bay P7E 6S7

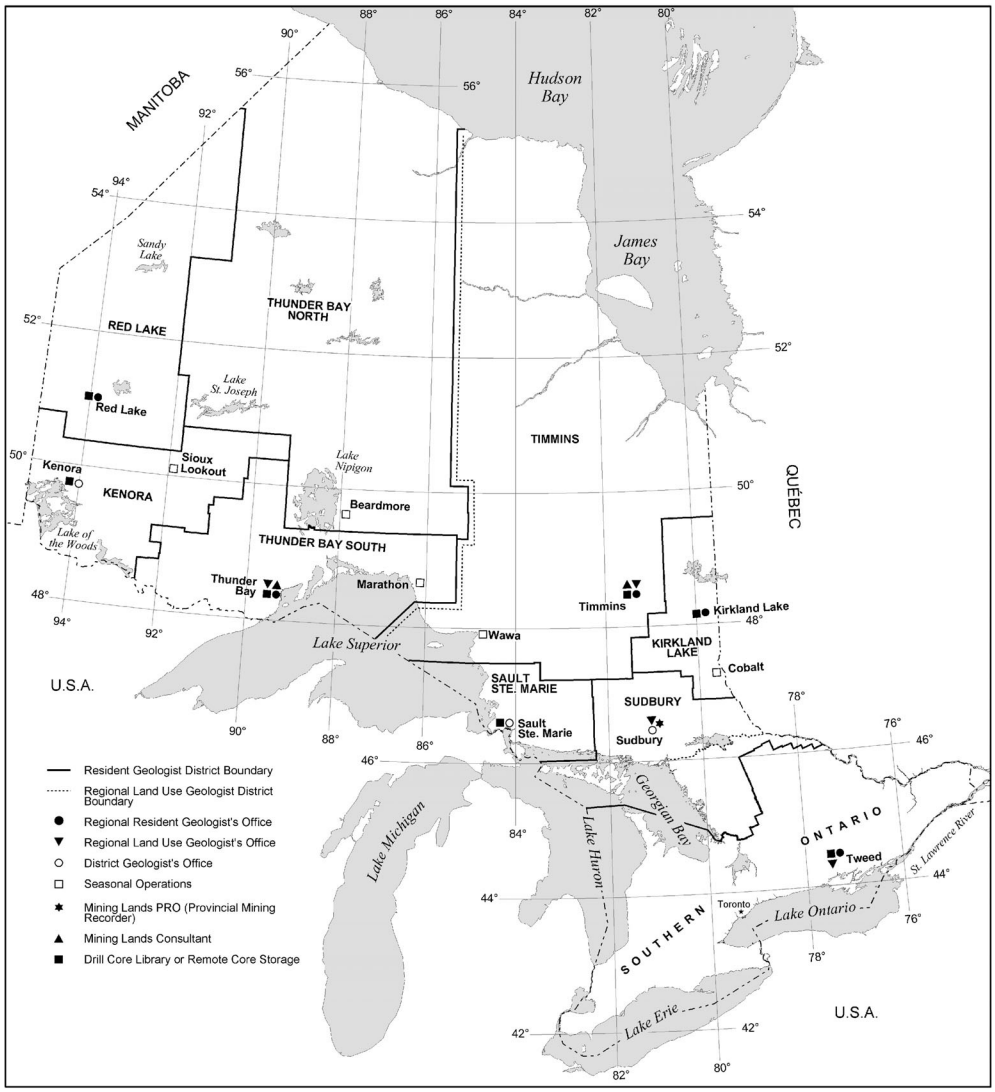
Timmins - Ontario Government Complex, P.O. Bag 3060, Hwy. 101 East, South Porcupine P0N 1H0

This report has not received a technical edit. Discrepancies may occur for which the Ontario Ministry of Northern Development and Mines does not assume any liability. Source references are included in the report and users are urged to verify critical information. Recommendations and statements of opinions expressed are those of the author or authors and are not to be construed as statements of government policy.

Cette publication est disponible en anglais seulement.

Parts of this report may be quoted if credit is given. It is recommended that reference be made in the following form:

Atkinson, B.T., Bousquet, P., Pace, A., Butorac, S., Harvey, S., Draper, D.M., Debicki, R.L. and Wilson, A.C. 2012. Report of Activities 2011, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts; Ontario Geological Survey, Open File Report 6274, 141p.



Mines and Minerals Division Regional and District Offices

CITY	ADDRESS	OFFICE(S)	TELEPHONE	FAX
Kenora	Suite 104, 810 Robertson St., Kenora P9N 4J2	○ ■	(807) 468-2819	(807) 468-2930
Red Lake	227 Howey Street, P.O. Box 324, Red Lake P0V 2M0	● ■	(807) 727-2464	(807) 727-3553
Thunder Bay – North	Suite B002, 435 James St. S., Thunder Bay P7E 6S7	● ■ ▼ ▲	(807) 475-1331 (807) 475-1311	(807) 475-1112 (807) 475-1112
Thunder Bay – South	Suite B002, 435 James St. S., Thunder Bay P7E 6S7	● ■ ▼ ▲	(807) 475-1331 (807) 475-1311	(807) 475-1112 (807) 475-1112
Sault Ste. Marie	Suite 6, 875 Queen St. E., Sault Ste. Marie P6A 2B3	○ ■	(705) 945-6931	(705) 945-6935
Timmins	Ontario Government Bldg., P.O. Bag 3060, 1270 Hwy 101 East, South Porcupine P0N 1H0	● ■ ▼ ▲	(705) 235-1619 (705) 235-1600	(705) 235-1620 (705) 235-1610
Kirkland Lake	10 Government Rd. E., P.O. Box 100, Kirkland Lake P2N 3M6	● ■	(705) 568-4518	(705) 568-4524
Sudbury	Willet Green Miller Centre, Level A3, 933 Ramsey Lake Rd., Sudbury P3E 6B5	○ ▼ ✶	(705) 670-5735 (705) 670-5887 (705) 670-5742	(705) 670-5770 (705) 670-5807 (705) 670-5681
Tweed (Southern Ontario)	P.O. Bag Service 43, 126 Old Troy Rd., Tweed K0K 3J0	● ■ ▼	(613) 478-3161	(613) 478-2873

Ontario Geological Survey
Resident Geologist Program
Report of Activities—2011

TIMMINS REGIONAL RESIDENT GEOLOGIST REPORT

CONTENTS

Ontario Geological Survey
Regional Resident Geologist Program

Timmins Regional Resident Geologist (Timmins District)—2011

by

B.T. Atkinson, P. Bousquet, S. Harvey, D.M. Draper, A.C. Wilson and R.L. Debicki

2012

CONTENTS

Timmins District—2011

Figures

Photos

Tables

Tables in Appendix 1

Tables in Appendix 2

Timmins Regional Resident Geologist—2011

B.T. Atkinson[1], P. Bousquet[2], S. Harvey[3], D.M. Draper[4], A.C. Wilson[5] and R.L. Debicki[6]

[1]Regional Resident Geologist, Timmins District, Resident Geologist Program, Ontario Geological Survey

[2]Acting District Geologist, Timmins District, Resident Geologist Program, Ontario Geological Survey

[3]Acting District Geological Assistant, Timmins District, Resident Geologist Program, Ontario Geological Survey

[4]GIS/Data Specialist, Northeastern Ontario, Resident Geologist Program, Ontario Geological Survey

[5]Mineral Deposit Compilation Geologist, Northeastern Ontario, Resident Geologist Program, Ontario Geological Survey

[6]Land Use Planning and Policy Coordinator, Resident Geologist Program, Ontario Geological Survey

---

INTRODUCTION

The Timmins District experienced a significant increase in exploration activity, advanced development projects and mining operations as a result of record high gold prices and robust base metal prices through much of the year, despite global recession concerns. Although the high Canada–US dollar exchange rate resulted in lower profit margins on Canadian gold production, exploration expenditures for the precious metal surged with the price of gold. Overall exploration investment in the Timmins District surpassed $200 million for the year while mine construction and expansion, lead by development at Detour Lake Mine, amounted to more than $500 million. Work filed for assessment credits had a value of $35 304 765.

Eleven advanced exploration projects included 7 gold projects, 2 nickel projects and 2 diamond projects.

As a result of district boundary changes effective April 1, 2011 (Figure 1), that transferred the McFaulds Lake “Ring of Fire” area to Thunder Bay North District, and the far northwestern reach to Red Lake District, expenditures and activities for those areas are no longer reported for the Timmins District. The number of claims recorded declined by 16% over the previous year and active claims declined by 7% during the same period, resulting in 6362 fewer active claims throughout the district. Nonetheless, assessment work credits increased by 30%.

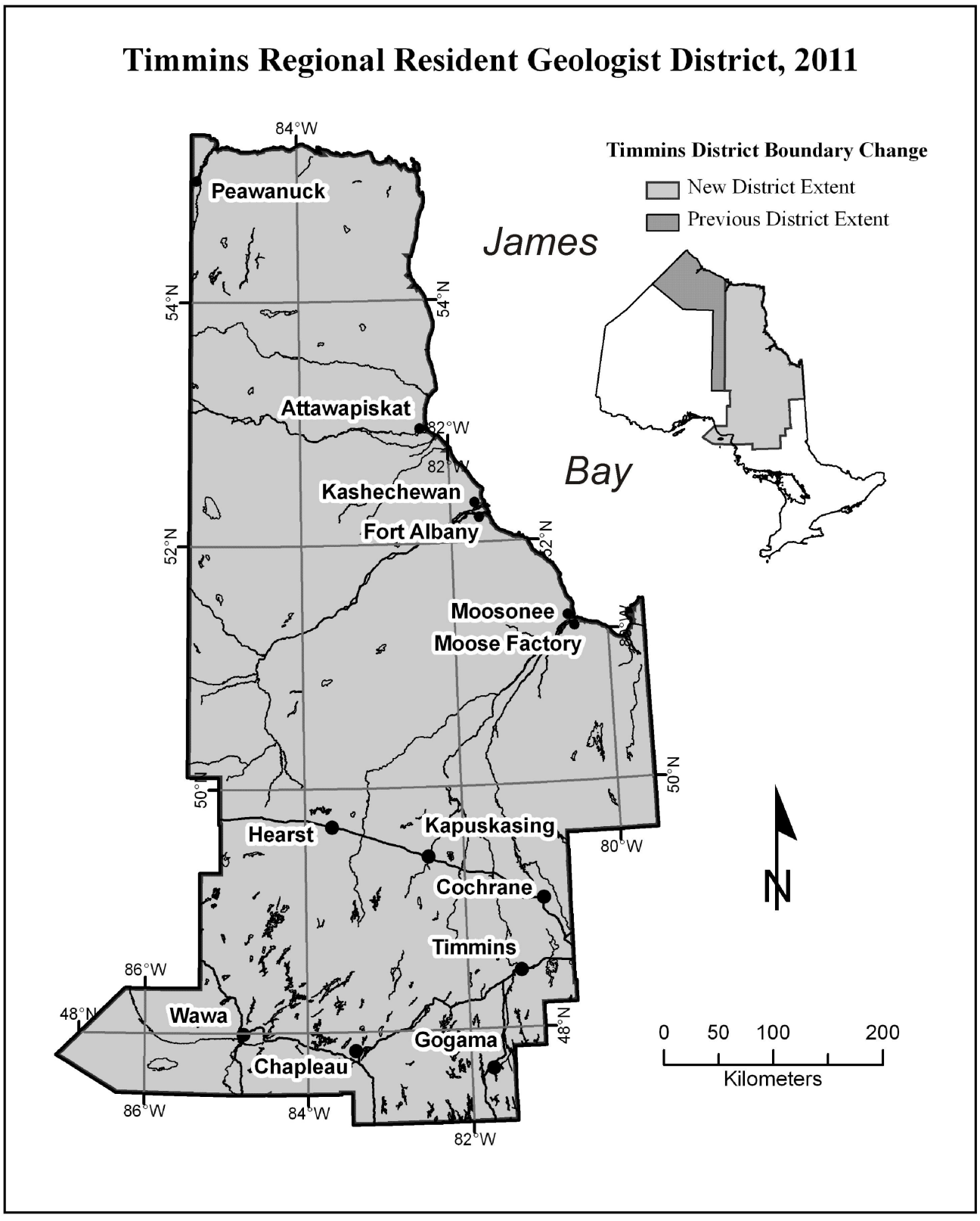


Figure 1. Timmins Regional Resident Geologist District.

Table 1. Summary of statistical claims information in the Timmins District, 1955–2011.

Year	Claim Units Recorded	Claim Units Cancelled	Claim Units Active	Assessment Work Credits ($)	Man Days*
2011	13 519	16 330	79 139	35 303 634	N/A
2010	16 116	29 540	85 501	24 592 810	N/A
2009	18 018	14 318	97 506	41 270 807	N/A
2008	32 625	9789	93 675	19 504 181	N/A
2007	23 028	7261	66 423	18 406 983	N/A
2006	16 588	16 254	64 432	6 981 017	N/A
2005	16 069	13 147	64 889	6 258 661	N/A
2004	17 377	1280	56 478	14 269 311	N/A
2003	28 154	18 860	57 384	5 728 049	N/A
2002	11 423	14 705	39 964	5 419 054	N/A
2001	18 258	11 759	42 835	4 996 755	N/A
2000	11 035	15 723	35 905	4 946 371	N/A
1999	12 312	16 557	42 270	10 665 577	N/A
1998	12 642	11 300	46 515	17 308 110	N/A
1997	10 771	16 908	45 173	10 707 864	N/A
1996	13 859	15 876	50 739	8 418 072	N/A
1995	14 376	7769	60 705	5 052 359	N/A
1994	19 738	6689	47 497	3 186 244	N/A
1993	7852	3191	34 779	4 437 645	N/A
1992	10 474	2248	28 987	2 323 218	N/A
1991	4682	4367	19 879	1 067 217	279 806
1990	4864	10 431	19 472	N/A	313 085
1989	4724	12 347	24 715	N/A	522 490
1988	5867	6117	34 553	N/A	532 820
1987	8934	4402	34 474	N/A	807 277
1986	17 889	8689	33 181	N/A	717 522
1985	6052	10 024	23 207	N/A	503 338
1984	7633	11 040	27 179	N/A	738 038
1983	11 859	4967	30 586	N/A	407 161
1982	5420	6457	23 694	N/A	596 097
1981	8934	2934	24 731	N/A	471 827
1980	10 742	1778	18 753	N/A	296 852
1979	3975	2504	9597	N/A	151 003
1978	3623	4429	8126	N/A	94 045
1977	2438	4336	8932	N/A	228 090
1976	5837	3621	10 830	N/A	97 258
1975	4162	4142	8614	N/A	200 034
1974	3456	3692	7594	N/A	142 136
1973	2258	3728	6460	N/A	114 917
1972	2980	3509	7939	N/A	149 387
1971	3840	3708	8500	N/A	195 457
1970	3903	3916	8600	N/A	167 465
1969	3482	3687	8700	N/A	143 303
1968	3935	4906	9000	N/A	74 580
1967	2944	8356	9800	N/A	117 299
1966	5724	10 352	15 250	N/A	227 732
1965	47 900	9922	19 000	N/A	486 246
1964	20 823	931	25 000	N/A	146 633
1963	1971	1326	5250	N/A	40 370
1962	1440	1425	4500	N/A	35 000
1961	1443	1578	4500	N/A	30 000
1960	1321	2296	4750	N/A	39 000
1959	2247	1803	5600	N/A	30 000
1958	1451	2147	5280	N/A	30 000
1957	2456	2440	5800	N/A	25 000
1956	1536	958	5800	N/A	45 000
1955	1793	757	5250	N/A	10 000

* Before 1992, assessment work credits were filed as man days. After revision of the *Ontario Mining Act*, assessment value is reported in dollars.

MINING ACTIVITY

Timmins District had production from 6 gold mines, 2 base metal mines, 1 diamond mine and 2 industrial mineral mines in 2011. Production statistics and brief descriptions of the individual mining operations are presented below. The locations of the producing mines are indicated on Figures 2, 3a, 3b, 3c and 4 and current mine production and reserves are indicated in Table 11. Historical gold production for Timmins and Wawa is presented in Tables 12 and 13, respectively; base metal production for Timmins is presented in Table 14. Lists of mineral deposits not being mined in the Timmins and Wawa areas are presented in Appendix 1 (Tables 33 and 34, respectively).

Base Metal Mining

LIBERTY MINES INC. – REDSTONE MINE

The Redstone Mine was in temporary suspension and on care and maintenance throughout the year with no production. The on-site mill continued to operate and concentrate nickel ore delivered from the McWatters Mine.

Table 2. Ore reserves at the Redstone Mine, 2011.

Category	Tonnes	Grade Nickel (%)	Contained Nickel (Tonnes)
Proven + probable	50 252	1.48	744

Source: B. Zuidema, Liberty Mines Inc., written communication, January 27, 2012.

LIBERTY MINES INC. – McWATTERS MINE

The McWatters Mine is located 9.5 km east of the Redstone Mine, in Langmuir Township.

Production amounted to 209 388 tonnes of ore milled at a grade of 0.45% Ni to produce 17 936 wet tonnes of nickel concentrate. The daily milling rate was 448.4 tonnes. Mining was carried out on 5 headings and ore was extracted by sublevel caving and long hole mining methods.

Table 3. Ore reserves at the McWatters Mine, 2011.

Category	Tonnes	Grade Nickel (%)	Contained Nickel (Tonnes)
Proven + probable	5 791 586	0.55	31 854

Source: B. Zuidema, Liberty Mines Inc., written communication, January 27, 2012.

The combined labour force at the Redstone Mine and McWatters Mine includes 45 employees. B. Zuidema is the Mine Manager for both mines.

XSTRATA COPPER – KIDD CREEK MINE

Kidd Creek Mine production during 2011 amounted to 2 238 269 tonnes ore milled at a grade of 1.97% Cu, 3.99% Zn, 0.14% Pb and 48 g/t Ag. The daily milling rate was 6132 tonnes over 362 days of the year. The mill achieved a recovery of 95.82% Cu, 80.00% Zn, 0.0% Pb and 74.95% Ag.

Ore reserves and resources at the Kidd Creek Mine are reported in Table 4.

Table 4. Ore reserves and resources at the Kidd Creek Mine, 2011.

Category	Tonnes	Copper (%)	Zinc (%)	Lead (%)	Silver (g/t)
Proven	13 273 000	1.89	5.09	0.18	62
Probable	2 273 000	1.61	4.53	0.11	36
Measured and Indicated	5 203 000	1.77	2.50	0.09	30
Inferred Resources	4 179 000	1.70	6.51	0.13	58

Underground mining operations included 4399 m of drifting including capital development and 9 m of raising. Mining was active on 35 levels and 20 headings. Ore extraction methods utilized blasthole open stoping with delayed backfill for 95% of the operations using 95% cemented paste fill and 5% uncemented development waste. The remainder of the ore was mined using upper retreat mining with caving rubble. Underground drilling for ore definition purposes amounted to 30 405 m. Stoping began on the 9400-foot level, development work continued on the 9500 Level and evaluation for potential mining was initiated on the 9600 Level.

The Kidd Creek Mine has a work force of 1058 employees in both the mine and mill and has an additional 258 contract workers. T. Semadeni is General Manager of Kidd Operations, P. Calloway is Chief Mine Geologist and G. Maxwell is Manager of Exploration.

Gold Mining

The six operating mines in the Timmins District produced 459 907 ounces of gold from 5 215 234 tonnes of ore for an average grade of 2.74 g/t gold. Four mines operate at Timmins while the other 2 are located near Wawa. Historical gold mining over the last century for each of the Timmins mines is presented in Appendix 2 (Tables 35 to 45).

GOLDCORP INC. – PORCUPINE GOLD MINES

Goldcorp Inc. operates 3 mines in the Timmins District, including the Dome Mine in Tisdale Township, the Hoyle Pond Mine in Hoyle Township and the Pamour Mine in Whitney Township. Production from the combined operations was 298 679 ounces of gold from 4 109 878 tonnes milled at an average grade of 2.260 g/t gold. The daily milling rate was 11 260 tonnes and the overall recovery was 91.52%. Mine ore reserves and resources for the combined operations are listed in Table 11.

Goldcorp's 3 Timmins mining operations collectively employ 673 people. M. Lauzier is the Mine Manager overseeing all operations and S. Price is the Chief Geologist.

Dome Mine

The Dome Mine produced 73 120 ounces gold from 868 576 tonnes of ore obtained from underground operations and from surface stockpiles previously extracted from the open pit. The underground operations contributed 61 960 ounces of gold from 457 764 tonnes with a grade of 4.210 g/t gold. Mill recovery was 92.86%. A total of 11 160 ounces of gold was recovered from 410 812 tonnes of stockpiled ore and mill recovery on that was 88.08%.

Mining was carried out on 12 levels with 18 active headings using long hole stoping. A total of 2950 m of drifting and 335 m of raising was completed in the underground mining operations. Ore definition drilling amounted to 2190 m.

The Dome Mine has 80 employees.

Hoyle Pond Mine

The Hoyle Pond Mine is operated as an underground mine. Production for 2011 was 141 202 ounces of gold from 314 680 tonnes with a grade of 13.957 g/t gold. Mill recovery was 94.62%. Mining methods included drifting, paste cut and fill, mechanized cut and fill and long hole stoping. There were 349 active headings on 22 levels. Drifting amounted to 9491 m and raising totalled 696 m. Underground drilling of 26 495 m was for ore definition and an additional 56 618 m was completed for exploration. Winze construction commenced to access ore at depth beneath the existing mine workings.

Hoyle Pond Mine has 244 employees.

Pamour Mine

No active mining occurred at the Pamour Mine but it provided surface stockpiled ore to the Goldcorp Porcupine Gold Mines. A total of 84 357 ounces of gold was recovered from 2 926 622 tonnes of ore with a grade of 0.897 g/t gold. Mill recovery was 85.81%.

The Pamour Mine employs 36 people.

LAKE SHORE GOLD CORP. – TIMMINS MINE

The Timmins Mine is located 20 km west of Timmins in Bristol Township at the intersection of Highway 101 and Highway 144. From north to south, mine geology consists of extrusive and intrusive ultramafic rocks, mafic volcanic rocks, metasedimentary rocks, then mafic volcanic rocks in contact with Porcupine metasedimentary rocks. Deformation, including folding, shearing and faulting, affects the geology and imparts a northwest plunge to the gold mineralization. The Bristol fault and structural features associated with the Porcupine–Destor Deformation Zone complicate the mine geology (Ontario Geological Survey 2011).

Lake Shore Gold Corp. declared official production at the Timmins Mine at the start of 2011. For the year, Lake Shore produced 83 585 ounces of gold from 671 467 tonnes ore for a realized grade of 4.03 g/t gold (Lake Shore Gold Corp., press release, January 12, 2011). Included in this production is 59 003 ounces gold recovered from 492 790 tonnes ore from the Timmins Mine at a grade of 3.72 g/t gold. An additional 24 585 ounces of gold was recovered from 178 677 tonnes processed from the Bell Creek Mine complex at a grade of 4.28 g/t gold. Gold milling operations were all done at the Bell Creek Mine complex. The mill operated at a rate of 1840 dry tonnes per day and achieved a gold recovery rate of 95.98%.

Ore reserves at the Timmins Mine include 5 826 000 tonnes at a grade of 5.99 g/t gold and probable reserves of 4 272 000 tonnes at 5.76 g/t gold.

Underground mine work included 3191 m of development, 8662 m of drifting and 1722 m of raising. Mining was active on 20 headings using long hole mining with limited shrinkage stope mining. Underground drilling amounted to 100 000 m, of which 12 870 m was for ore definition.

During the year, the company extended its knowledge of the mine geology and expanded its resources. Drilling intersected high-grade mineralization in the Ultramafic zone of up to 21.67 g/t gold, up to 5.95 g/t gold in the Footwall zone and 17.17 g/t gold north of the Ultramafic zone and in between the Footwall and Main zones (Lake Shore Gold Corp., press release, May 2, 2011).

Lake Shore Gold has a workforce of 486 employees. D. Battiston is the Mine Manager, N. Vas is Chief Mine Engineer and M. Ross is Chief Mine Geologist.

RICHMONT MINES LTD. – ISLAND GOLD MINE

The Island Gold Mine property is located in Finan Township, 50 km northeast of Wawa and 10 km southeast of Dubreuilville. The Island Gold Mine produced 49 443 ounces of gold from 255 103 tonnes ore at a grade of 6.05g/t gold. The mill operated at a rate of 699 tonnes per day and achieved a gold recovery of 95.9%.

Table 5. Island Gold Mine ore reserves, 2011.

Category	Tonnes	Grade (g/t gold)
Proven	354 698	6.48
Probable	463 368	5.86
Total	818 066	6.13

Underground mining was carried out by long hole blasting using 2.5 inch diameter blast holes. Mining advanced on 10 active headings on 12 levels. A total of 4112 m of drifting and 30 m of raising was completed as part of the mining operations. Mucking and backfilling operations utilized 6 yard and 3.5 yard remote scoops. Ore was trammed to surface by a ramp and 26 tonne trucks.

Surface exploration amounted to 32 982 m of diamond drilling. At year end, development of an exploration ramp on the 400 m level began with exploration concentrated on the area between 400 to 800 m below surface.

The Island Gold Mine employs 172 people. Jean Bastien is the Mine Manager.

WESDOME GOLD MINES LTD. – EAGLE RIVER MINE

The Eagle River Mine is located approximately 7 km north of the north shore of Lake Superior and 50 km west of the town of Wawa, in the Mishibishu Lake greenstone belt.

Gold production for 2011 amounted to 28 200 ounces of gold from 178 786 tonnes ore at a grade of 5.27g/t gold. The daily milling rate was 500 tonnes and the mill achieved a gold recovery rate of 95%.

Table 6. Eagle River Mine ore reserves, 2011.

Category	Tonnes	Grade (g/t gold)	Contained ounces
Proven	75 000	12.03	29 100
Probable	429 000	10.64	146 600
Total	504 000	10.85	175 700

Underground mining operations were carried out using sublevel long hole retreat. Underground operations included 28 500 m of drifting and 150 m of raises. Mining was active on 8 headings on 6 levels. Four new ore lenses centred around the 600 m depth in the central portion of the mine were identified for development.

Wesdome commenced pre-production development at the Mishi pit where the company has outlined ore reserves of 760 000 tonnes grading 2.4 g/t gold. It is expected to contribute 12 000 ounces gold per year to mining operations commencing in 2012. A stockpile of 21 000 tonnes ore grading 2.0 g/t gold extracted from the open pit will provide the initial mill feed.

The Eagle River Mines has a work force of 225 employees. J. Hutchings is the Mine Manager (G. Mannard, Wesdome Gold Mines Ltd., written communication, January 20, 2012).

Table 7. Combined gold production from the Wesdome Gold Mines Ltd., Wawa operations.

Mine	Year	Tonnes milled	Recovered Grade (g/t gold)	Ounces
Eagle River				
	1990	60 857	4.93	9946
	1995	28 571	10.56	9700
	1996	162 075	12.38	64 523
	1997	156 294	8.97	45 070
	1998	199 464	11.79	75 629
	1999	163 156	9.1	47 749
	2000	229 262	7.03	51 843
	2001	246 012	8.6	68 074
	2002	281 603	8.17	73 938
	2003	241 926	9.1	70 781

Mine	Year	Tonnes milled	Recovered Grade (g/t gold)	Ounces
	2004	246 012	8.34	65 977
	2005	198 217	8.33	53 062
	2006	135 100	10.05	43 669
	2007	76 676	13.07	32 299
	2008	118 961	12.98	49 660
	2009	132 004	14.32	60 753
	2010	155 554	7.34	36712
	2011	178 786	5.27	28 200
	Total	3 013 530	9.2	886 745
Edwards				
	1997-2002	389 550	11.15	139 692
Mishi				
	2002	20 000	4.41	2838
	2003	28 090	3.61	3256
	2004	43 947	3.6	5086
	2007	43 458	3.14	4382
	Total	135 495	3.57	15562
	Combined Total	3 201 421	9.5	1 014 339

Diamond Mining

DE BEERS CANADA INC. – VICTOR MINE

De Beers Canada Inc.'s Victor Mine is located 90 km west of the community of Attawapiskat in the James Bay Lowlands, approximately 500 km north of Timmins. It is operated as a year-round open-pit operation. Access is by winter road from Moosonee via Attawapiskat and by aircraft to the mine site runway. Employees work on a rotational fly-in fly-out basis.

Production amounted to 780 114 carats of diamonds from 2 731 299 tonnes of processed kimberlite. Diamond grade was 0.286 carats per tonne and the mill operated at a rate of 7500 tonnes per day and achieved a recovery of 97%. Ore resources for the Victor Mine are listed in Table 8.

Table 8. Victor Mine ore reserves, 2011.

Category	Tonnes	Carats	Grade (carats per tonne)
Proven	-	-	-
Probable	15 200 000	3 040 000	0.20

Source: B. Wood, De Beers Canada Inc., written communication, February 3, 2012.

Mining commenced on the southwest lobe of the Victor kimberlite during the year and progressive rehabilitation of the processed kimberlite stockpiles and exploration sites continued. The pit dewatering system was expanded with the installation of new wells.

The Victor Mine employs 452 people. R. Greyvensteyn is the Mine General Manager and B. Wood is Superintendent of Technical Services (B. Wood, De Beers Canada Inc., written communication, February 3, 2011).

Industrial Minerals

AGRIUM INC. – KAPUSKASING PHOSPHATE OPERATIONS

Agrium Inc.'s Kapuskasing Phosphate Operations, located 40 km southwest of Kapuskasing, operated throughout the year. Ore reserves for the Kapuskasing Phosphate Operations are listed in Table 9.

The Kapuskasing Phosphate Operations produced 854 391 tonnes of phosphate concentrate from 1 992 483 tonnes mined. The ore grade was 36.6% phosphate and the mill operated at a rate of 6285 tonnes per day. Mill recovery was 42.9%.

Table 9. Ore reserves at the Kapuskasing Phosphate Operations, 2011.

Category	Tonnes	Grade (% P_2O_5)
Proven	3 294 175	-
Probable	907 638	-
Total	4 201 813	24.0

The Kapuskasing Phosphate Operations utilize open pit shovel and truck mining methods and the ore concentrate is transported by rail to the company's fertilizer production facilities in Redwater, Alberta. Ore definition drilling amounted to 13 871 m. The mine is projected to exhaust resources and close in 2013.

The Kapuskasing operations currently employ 113 people. G. Baril is the Plant Manager.

IMERYS – PENHORWOOD MINE

The Penhorwood Mine is located 70 km west of Timmins in Penhorwood Township. Ownership changed from Rio Tinto Minerals – Luzenac Inc. to Imerys during the year. Operations continued throughout the year.

Table 10. Ore reserves at the Penhorwood Mine, 2011.

Category	Tonnes	Grade (% talc)*
Reserves	6 664 000	N/A
Resources	9 000	N/A

* Rio Tinto reports proven and probable reserves category as product sold, so no grade is reported.

Imerys Talc operates the Penhorwood Mine and concentrator, a micronizing facility in Timmins and a bulk loading facility at Foleyet. Open pit mining is conducted on a seasonal basis in winter and talc-magnesite ore is stockpiled in the open pit for use throughout the year. Overburden stripping is carried out in summer months in advance of mining operations, which use contract miners and conventional open pit methods. Ore is blasted and trucked to the primary crusher where it is reduced to minus 4 inch size then conveyed and stacked into 4 grades on segregated stockpiles according to colour. The concentrator plant operates year-round and produces a dry talc concentrate. Further crushing occurs according to product requirements, and cyclone and floatation processes are used to tailor the concentrate. Tailings are transported hydraulically by pipeline and deposited in the nearby open pit of the former Reeves asbestos mine. Talc is either trucked to the Foleyet railroad siding or delivered to the Timmins micronizing plant for further processing. The mine has been in operation since 1976 and has identified ore reserves for 114 years at the current production rate.

Imerys has 21 full time employees at the Penhorwood Mine and 39 in the Timmins plant. R. Byron is the Mining Operations Manager and D. Marek is the Manager of Mine Engineering.

MILLING ACTIVITY

Brigus Gold Corp.

Brigus Gold Corp. has several operating mines in the Kirkland Lake District including the Black Fox Mine and the Hislop open pit. Ore is trucked from both operations to the Black Fox Mill located in Stock Township, Timmins District. The Black Fox Mill underwent expansion to increase capacity to 2200 tonnes per day.

Table 11. Mine production and reserves in the Timmins District, 2010–2011.

Mine	Production in 2010		Production in 2011		Reserves/Resources at end of 2011	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Agrium Inc., Kapuskasing Phosphate Operations	1 893 584	826 358 concentrate @ 37% P_2O_5	1 992 483	854 391 concentrate @ 36.6% P_2O_5	4 201 813 incl: 3 294 175 proven and 907 638 probable	24.0 % P_2O_5
De Beers Canada Inc., Victor Mine	2 636 489 @ 0.302 carats per tonne	797 505 carats	2 731 299 @ 0.286 carats per tonne	780 114 carats	15 200 000	0.20 carats per tonne
Goldcorp Inc. Porcupine Gold Mines, Dome Mine	684 759 @ 3.04 g/t	67 030 ounces gold	868 576 @ 2.618 g/t gold	73 120 ounces gold	27 910 000[1] proven and 67 410 000 probable, [1] 45 990 000 measured[1], 146 640 000 indicated[1], 15 100 000[1] inferred	1.61 g/t gold 1.21 g/t gold 1.18 g/t gold 1.09 g/t gold 2.08 g/t gold
Goldcorp Inc. Porcupine Gold Mines, Hoyle Pond Mine	327 208 @ 11.24 g/t	118 244 ounces gold	314 680 @ 13.957g/t gold	141 202 ounces gold	N/A	N/A
Goldcorp Inc. Porcupine Gold Mines, Pamour Mine	3 117 410 @ 0.987 g/t	98 921 ounces gold	2 926 622 @ 0.897 g/t gold	84 357 ounces gold	N/A	N/A
Imerys, Penhorwood Mine	201 000 @ 46.1% talc	55 000 talc concentrate	N/A	65 000 tonnes talc concentrate	6, 664 000 tonnes reserves, 9000 tonnes resources	~46% (reported on basis sold)
Lake Shore Gold Corp., Timmins Mine[2]	200 000	46 800 ounces	671 467 @ 4.03 g/t gold	83 585 ounces gold[2]	5 826 000 tonnes proven, 4 272 000 tonnes probable	5.99 g/t gold proven, 5.76 g/t gold probable
Liberty Mines Inc., McWatters Mine	148 921 @ 0.76% Ni		209 388 @ 0.45% Ni	17 936	791 586 proven and probable	0.55% Ni
Liberty Mines Inc., Redstone Mine	42 288 @ 1.07% Ni, 0.03% Cu		nil	nil	50 252	1.48% Ni
Richmont Mines Inc., Island gold mine	246 712 @ 6.03 g/t gold	45 654.8 ounces gold	255 103 @ 6.05g/t gold	49 443 ounces gold	819 066 incl: 354 698 proven and 463 368 probable	6.13 g/t Au 6.48g/t proven, 5.86g/t probable
Wesdome Gold Mines Ltd., Eagle River Mine	155 554 @7.34 g/t gold	36 712 ounces gold	178 786 @5.27 g/t gold	28 200 ounces gold	504 000 incl. 75 000 @ 12.03g/t Au proven, 429 000 @ 10.64 g/t Au probable	10.85g/t Au 12.03 g/t proven 10.64 g/t probable

Mine	Production in 2010		Production in 2011		Reserves/Resources at end of 2011	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Xstrata Copper, Kidd Creek Mine	2 429 104 @ 2.28% Cu, 4.24% Zn, 0.09% Pb, 47 g/t Ag	188 254 tonnes Cu conc. 52 568 tonnes Cu, 37 973 tonnes Cu cathode 160 980 tonnes Zn conc. 86 084 tonnes Zn	2 238 269 @ 1.97% Cu, 3.99% Zn, 0.14% Pb, 48g/t Ag	162 758 tonnes Cu conc. 42 322 tonnes Cu 134 413 tonnes Zn conc. 71 497 tonnes Zn	15 546 000 incl: 13 273 000 proven, 2 273 000 probable Also: 5 203 000 measured and indicated and 4 179 000 inferred	Proven grade: 1.89% Cu, 5.09 % Zn, 0.18% Pb, 62g/t Ag Probable grade: 1.61% Cu, 4.53% Zn, 0.11% Pb, 36g/t Ag

Notes: [1] Goldcorp Inc. Porcupine Gold Mines reserves and resources are for all Porcupine mines combined. [2]Lake Shore Gold Corp. Timmins Mine data includes 24 585 ounces gold produced from 178 677 tonnes recovered from the Bell Creek Mine bulk sample at a grade of 4.88 g/t gold. Abbreviations: conc. – concentrate; N/A – data not available; g/t – grams per tonne.

Table 12. Gold production in the Timmins District to the end of 2011.

Mine	Township	Years of Production	Tons Milled	Production (ounces gold)	Grade[1] (oz./ton)
Ankerite/March	Deloro	1926–1935	317 769	61 039	0.19
Aquarius	Macklem	1984, 1988–1989	139 634	27 117	0.19
Aunor Pamour (#3)	Deloro	1940–1984	8 482 174	2 502 214	0.30
Banner	Whitney	1927–1928, 1933, 1935	315	670	0.13
Bell Creek[2]	Hoyle	1987–1991, 1992–1994,	576 017	112 739	0.196
		2011[2]	178 677	24 585	0.143
Bonetal	Whitney	1941–1951	352 254	51 510	0.15
Bonwhit	Whitney	1951–1954	200 555	67 940	0.34
Broulan Porcupine	Whitney	1939–1953	1 146 059	243 757	0.21
Broulan Reef Mine	Whitney	1915–1965	2 144 507	498 932	0.23
Buffalo Ankerite	Deloro	1926–1953, 1978	4 993 929	957 292	0.19
Cincinnati	Deloro	1914, 1922–1924	3200	736	0.23
Clavos	Stock	2005–2007	188 743	24 609	0.13
Concordia	Deloro	1935	230	16	0.07
Coniarum/Carium	Tisdale	1913–1918, 1928–1961	4 464 006	1 109 574	0.25
Crown	Tisdale	1913–1921	226 180	138 330	0.61
Davidson–Tisdale	Tisdale	1918–1920, 1988	53 221	9739	0.18
Delnite	Deloro	1937–1964	3 847 364	920 404	0.24
(open pit)		1987–1988	56 067	3602	0.064
DeSantis	Ogden	1933, 1939–1942, 1961–1964	196 928	35 842	0.18
Detour Lake[3]	Sunday Lake Area	1983–1999	17 643 085	1 781 858	0.10
Dome	Tisdale	1910–2011	106 094 297	16 051 189	0.137
Faymar	Deloro	1940–1942	119 181	21 851	0.180
Fuller (Vedron)	Tisdale	1940–1944	44 028	6566	0.15
Gillies Lake	Tisdale	1921–1931, 1935–1937	54 502	15 278	0.28
Goldhawk	Cody	1947	636	53	0.08
(open pit)		1980	40 000	3967	0.10
Halcrow–Swayze[4]	Halcrow	1935	211	40	0.19
Hallnor (Pamour #2)	Whitney	1938–1968, 1981	4 226 419	1 645 892	0.39
Hollinger–Schumacher	Tisdale	1915–1918	112 124	27 182	0.24

Mine	Township	Years of Production	Tons Milled	Production (ounces gold)	Grade[1] (oz./ton)
Hollinger	Tisdale	1910–1968	65 778 234	19 327 691	0.29
Pamour Timmins property		1976–1988	2 615 866	182 058	0.07
Hoyle–Falconbridge	Whitney	1941–1944, 1946–1949	725 494	71 843	0.10
Hoyle Pond	Hoyle	1985–2011	8 486 252	2 949 630	0.315
Hugh–Pam	Whitney	1926, 1948–1965	636 751	119 604	0.19
Jerome[4]	Osway	1941–1943, 1956	335 060	56 893	0.17
Joburke[4]	Keith	1973–1975, 1979–1981	440 117	43 571	0.10
Kingbridge/Gomak[4]	Chester	1935–1936	1387	98	0.07
Marlhill	Hoyle	1989–1991	156 800	30 924	0.197
McIntyre Pamour Schumacher	Tisdale	1912–1988	37 634 691	10 751 941	0.29
(ERG tailings recovery)		1988–1989	2 549 189	18 260	0.007
McLaren	Deloro	1933–1937	876	201	0.23
Moneta	Tisdale	1938–1943	314 829	149 250	0.47
Naybob (Kenilworth)	Ogden	1932–1964	304 100	50 731	0.17
Nighthawk	Macklem	1995–1999	1 479 607	175 803	0.12
Owl Creek	Hoyle	1981–1989	1 984 400	236 880	0.12
Pamour # 1 (incl. pits 3, 4 and	Whitney	1936–1999	45 795 863	4 078 525	0.09
7 and Hoyle)		2005–2011	17750 312	698 771	0.036
Pamour (other sources)	Whitney	1936–1999	7 416 634	676 645	0.091
Paymaster	Deloro	1915–1919, 1922–1966	5 607 402	1 192 206	0.21
Porcupine Lake (Hunter)	Whitney	1937–1940, 1944	10 821	1369	0.13
Porcupine Peninsular	Cody	1924–1927, 1940, 1947	99 688	27 354	0.27
Preston	Tisdale	1938–1968	6 284 405	1 539 355	0.24
Preston NY	Tisdale	1933	2800	153	0.05
Preston/Porcupine Pet	Deloro	1914–1915	N/A	314	N/A
Preston/Porphyry Hill	Deloro	1913–1915	46	312	6.78
Stock	Stock	1989–1994, 2000	821 304	129 856	0.16
Timmins[5]	Bristol	2009–2011	692 790	134 885	0.11
Tionaga/Smith Thorne[4]	Horwood	1938–1939	6653	2299	0.35
Tisdale Ankerite	Tisdale	1952	14 655	2236	0.15
Tommy Burns/Arcadia	Shaw	1917	21	14	0.66
Triple Lake	McArthur	1932	155	121	0.78
Vipond	Tisdale	1911–1941	1 565 218	414 367	0.26
Young Shannon[4]	Chester	1937, 1975	3265	91	0.028
		Total	**365 417 997**	**69 384 189**	**0.190**

Notes: [1] Grade: ounce gold per ton; [2] Lake Shore Gold Corp. Bell Creek Mine 2011 pre-production bulk sample; [3]Detour Lake greenstone belt; [4] Swayze greenstone belt; [5] Lake Shore Gold Corp. Timmins Mine – includes gold recovery from underground development and bulk sample Thunder Creek Deposit; N/A = data not available.

Table 13. Gold production in the Wawa area to the end of 2011.

Mine	Township	Years of Production	Tons Milled	Production (oz. gold)	Grade (oz./ton)
Alden–Goudreau	Cowie	1937, 1940, 1943, 1945	13 479	3220	0.24
Centennial	Naveau	1939–1940	8612	610	0.07
Cline	Jacobson	1938–1940, 1947–1948	331 842	63 328	0.19
Darwin/Grace	McMurray	1902–1903, 1907–1908, 1910, 1923, 1925, 1930, 1935, 1937, 1940, 1943–1944	45 528	15 191	0.33
Deep Lake	McMurray	1936–1938, 1943	2790	1633	0.59
Eagle River	Point Isacor	1995–2011	3 061 367	876 201	0.286
Edwards	Jacobson	1938 1997–2002	1537 389 550	485 139 692	0.32 0.327
Holdsworth Prospect	Corbiere	1933	60	10	0.17
Island Gold	Finan	2006–2011	1 088 403	209 544	0.192
Kremzar	Finan	1988–1990	392 858	37 678	0.10
Magino/Algoma Summit	Finan	1930–1940, 1988–1992	>768 679	113 228	0.15
Magnacon	Mishibishu Lake	1989–1990	165 000	15 356	0.09
Minto (includes Jubilee and Cooper)	McMurray	1929–1942	184 600	37 678	0.20
Mishi	Mishibishu Lake	2002–2007	140 056	15 169	0.108
Murphy/Algold/Amherst	Abotossaway	1926–1932, 1936–1938, 1940	23 211	2450	0.10
Norwalk/Manxman	Naveau	1904, 1910	820	60	0.07
Parkhill	McMurray	1902, 1929, 1930–1938, 1940–1944	125 778	54 301	0.43
Ranson	Rabazo	1939	774	156	0.20
Renabie	Leeson	1947–1970, 1981–1991	5 583 895	1 100 000	0.20
Smith/Van Sickle	McMurray	1935–1936	9228	536	0.06
Stanley	McMurray	1936	1963	84	0.04
Surluga	McMurray	1968–1969, 1988–1989	87 460	8898	0.10
Total			**12 427 490**	**2 695 508**	**0.217**

Table 14. Base metal production in the Timmins Regional Resident Geologist District to the end of 2011.

Mine	Township	Years of Production	Ore Milled	Grade
Alexo	Dundonald	1912–1919 1943–1944	51 857 tons 4923 tons	4.5% Ni, 0.55% Cu
Alexo / Kelex	Dundonald, Clergue	2004–2005	17 398 tonnes	2.3% Ni, 0.23% Cu, 0.07% Co
Canadian Jamieson	Godfrey	1966–1971	816 173 tons	2.44% Cu, 4.22% Zn
Genex	Godfrey	1966	Produced 240 tons Cu concentrate	
Jameland	Jamieson	1969–1972	509 356 tons	0.99% Cu, 0.88% Zn
Kam Kotia	Robb	1943–1944 1961–1972	6.6 M tons	1.1% Cu, 1.17% Zn, 0.10 oz/t Ag, 0.00085 ounce/ton gold
Kidd Creek	Kidd	1966–2011	145 096 277 tonnes	2.26% Cu, 6.09% Zn, 0.21% Pb, 84.2 g/t Ag
Langmuir #1	Langmuir	1990–1991	111 502 tons	1.74% Ni
Langmuir #2	Langmuir	1972–1978	1.1 M tons	1.43% Ni
McIntyre	Tisdale	1963–1982	10 M tons	0.67% Cu
McWatters	Langmuir	2008	15 361 tonnes	0.55% Ni
		2010	148 921 tonnes	
		2011	17 936	0.45% Ni
Montcalm	Montcalm	2004–2009	3 931 610 tonnes	1.25% Ni, 0.67% Cu, 0.051% Co
Redstone	Eldorado	1989–1992 1995–1996 2006–2008 2009-2010	294 895 tons 10 228 tons 133 295 tonnes 78 956 tonnes	2.4% Ni 1.7% Ni 1.92% Ni 1.11% Ni

Table 15. Exploration activity in the Timmins Regional Resident Geologist District in 2011 (*see* Figures 3a, b, c and d).

Abbreviations

AEM ..... Airborne electromagnetic survey
AMAG ..... Airborne magnetic survey
Anlys ..... Analysis
ARAD ..... Airborne radiometric survey
Bulk ..... Bulk sampling
Comp ..... Data compilation
DD ..... Diamond drilling
DGP ..... Down-hole geophysics
EM ..... Electromagnetic survey
Env ..... Environmental studies
GC ..... Geochemical survey
GL ..... Geological survey
Grav ..... Gravity survey
IP ..... Induced polarization survey
Lc ..... Linecutting
Mag ..... Ground magnetic survey
Met ..... Metallurgical testing
OVD ..... Overburden drill holes
PGE ..... Platinum group elements
Pr ..... Prospecting
RAD ..... Ground radiometric survey
Rcalc ..... Resource calculations
REE ..... Rare Earth Elements
Samp ..... Sampling (other than bulk)
Str ..... Stripping
Tr ..... Trenching
UG ..... Underground work (exploration/development)
UGD ..... Underground drilling

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
1	99 Capital Corporation	Shaw	EM, Mag
2	99 Capital Corporation	Shaw	EM, Mag
3	2128700 Ontario Inc. (Dyment Lake gold property)	Denyes (Au)	Pr, Samp, Str, Tr
4	6070205 Canada Inc.	Carscallen	EM, Mag
5	6070205 Canada Inc.	Godfrey	DD-1-60 m
6	6378366 Canada Inc.	Lackner	AEM, AMAG
7	Amador Gold Corp. (Jamieson property)	Godfrey, Jamieson	Mag
8	Amador Gold Corp. (Tionaga Gold East Grid)	Horwood (Au)	Mag, IP
9	Amseco Exploration Ltd.	Tisdale	GC
10	Apella Resources Inc. (Game Changer Project)	Sheraton (V, Fe, Ti)	Assays, Pr, Samp
11	Augen Gold Corp. (West Coté Lake)	Chester (Au)	Assays, DD-22-8648 m, GC
12	Augen Gold Corp. (Opeepeesway Lake)	Huffman, Osway	EM, GC, Mag
13	Augen Gold Corp. (Jerome Mine)	Osway	Rcalc
14	Augen Gold Corp. (North Shore property)	Osway	Assays, DD-47-14,369 m
15	Avalon Rare Metals Inc. (Warren Township)	Warren (anorthosite)	Anlys
16	Benton Resources Corp. (Sewell West property)	Sewell (Au)	Assays, DD-8-1475 m, GL, IP, Mag, Pr, Samp
17	Brigus Gold Corp. (Stock Mill property)	Stock (Au)	Assays, DD-5-1618 m
18	Broomhead, F. and Broomhead, K.	Cunningham, Greenlaw	Assays, Pr, Samp, Str
19	C. Villeneuve Construction Co. Ltd.	Avon (Au, Cu, Zn)	Assays, GC, Samp
20	C. Villeneuve Construction Co. Ltd.	Hopkins (REE)	Assays, GC
21	Canadian Arrow Mines Ltd. (Alexo and Kelex property)	Dundonald, Clergue (Ni, Cu, Co, Pt, Pd)	Assays, DD-17-2802 m, Met, Rcalc
22	Canterra Minerals Corporation (Weiland property)	BMA 533 852	Mag
23	Cascadero Copper Corporation (South West Jerome property)	Fingal	EM, Mag

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
24	Cascadero Copper Corporation (Garnet claims)	Garnet	GL, Pr, Samp
25	Cascadero Copper Corporation (Mallard property)	Mallard	EM, Mag
26	Cascadero Copper Corporation (Jerome West property)	Osway	EM, Mag
27	Cascadero Copper Company (Raney property)	Raney	GL, Samp
28	China Metallurgical Explorations Corp.	Reid (Au, VMS)	Assays, GC, Samp
29	Claim Post Resources Inc.	Bonar	Assays, GC
30	Claim Post Resources Inc. (Dayton Porcupine property)	Deloro (Au)	Assays, DD-4, GC
31	Claim Post Resources Inc. (McLaren Porcupine property)	Deloro (Au)	DD
32	Claim Post Resources Inc. (Southeast Godfrey)	Godfrey (Au, Co, Zn)	GC
33	Claim Post Resources Inc. (Kraft Creek Road property)	Godfrey (Au)	Assays, DD-2-805 m, DGP
34	Claim Post Resources Inc. (South Central Jamieson property)	Jamieson (Au)	Assays, DD-1-449 m
35	Claim Post Resources Inc.	Mountjoy	AMAG, ARAD, GC
36	Claim Post Resources Inc. (Racetrack property)	Ogden (Cr, Ni)	AEM, AMAG, Assays, DD-3-1800 m, DGP, Grav, GC
37	Claim Post Resources Inc.	Ogden	EM, IP, Mag
38	Claim Post Resources Inc. (Turnbull South property)	Turnbull (Cu, Zn)	Assays, DD-1-651 m
39	Croxall, J.E.	Price	Str
40	Daxl, H.	Musgrove (Au)	Assays, Pr, Samp
41	Debut Diamonds Inc. (Debut Victor area properties)	BMA 527 841, BMA 528 834, BMA 528 841	AMAG
42	Denton Resources Inc.	Carscallen	DD
43	Detour Gold Corporation (Aurora Project)	Lower Detour Lake area (Au)	DD-2114 m
44	Detour Gold Corporation (Detour Lake Project)	Sunday Lake Area (Au)	Assays, DD-177-86,644 m, GC, IP, Rcalc
45	Detour Gold Corporation (Sunday Lake property)	Sunday Lake Area (Au)	DD-6-1209 m, IP
46	Detour Gold Corporation and Trade Winds Ventures Inc. (Block A property)	West of Sunday Lake area (Au)	Assays, DD-72-29,756 m, Met, Rcalc
47	Entourage Metals Ltd. (Benton property)	Benton (Au)	GC, Grav
48	Excellon Resources Inc. (DeSantis Project)	Ogden (Au)	Assays, DD-16-7190 m
49	Explor Resources Inc. (Timmins Porcupine West property)	Bristol, Ogden (Au)	DD-45,000 m, Rcalc
50	Explor Resources Inc. (Kidd Township property)	Kidd	DD-8-4000 m, Mag
51	Explor Resources Inc. (Prosser property)	Prosser	EM, Mag
52	Explorers Alliance Corporation (Enid Creek Project)	Loveland	DD-1-306 m
53	Falcon Gold Corp. (Burton property)	Esther (Au)	Assays, Comp, DD-21-3000 m, IP

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
54	Fancamp Exploration Ltd. (Desolation Lake block)	Desolation Lake area	EM
55	First Lithium Resources (Mollie River Project)	Benneweis (Au, Cu, Ni)	Assays, DD-1
56	Geomark Exploration Ltd. (Nighthawk property)	Cody	EM, IP
57	Geomark Exploration Ltd.	Deloro	EM, IP
58	Geomark Exploration Ltd.	Mountjoy	Lc
59	Geomark Exploration	Thorneloe	Assays, DD-4-2659 m, EM, IP
60	Gervais, L.N.	Godfrey	Assays, GC, OVD-1-17 m
61	Giyani Gold Corp.	Shaw	EM, Mag
62	Globex Mining Enterprises Inc. (Timmins Talc-Magnesite property)	Adams, Deloro Mg, talc	Bulk
63	Goldcorp Porcupine Gold Mines (Hoyle Pond Mine property)	Hoyle (Au)	Assays, DD-3-2787m
64	Goldcorp Porcupine Gold Mines (McIntyre Mine property)	Tisdale (Au)	Assays, DD-4-3271m
65	Goldstone Resources Inc. (Faymar property)	Deloro (Au)	AEM, AMAG, DD-4-1028 m
66	Gowest Gold Ltd. (Pipestone Project)	Evelyn, Prosser, Wark (Au)	AEM, AMAG, GC
67	Gowest Gold Ltd. (Frankfield East Project)	Tully (Au)	Assays, DD-90-26,080 m, Env, GC, Rcalc
68	Harron, G.A. and 6070205 Canada Inc.	Carscallen	EM, Mag
69	Harron, G.A. and 6070205 Canada Inc.	Loveland	DD-1-150 m
70	Inspiration Mining Corporation (KCC-Allerston claims)	Langmuir (Ni, Cu, PGE)	Assays, DD-15-7133 m
71	International Explorers & Prospectors Inc.	Carscallen	Assays, Samp
72	International Explorers & Prospectors Inc. (Turnbull property)	Carscallen, Turnbull	IP, Mag
73	International Explorers & Prospectors Inc. (Godfrey–Mountjoy property)	Godfrey	DD-1-60 m
74	International Explorers & Prospectors Inc. (Halfmoon Lake property)	Loveland, Robb	EM, Mag
75	International Explorers & Prospectors Inc. (Murphy Project)	Murphy	IP
76	International Explorers & Prospectors Inc.	Robb	IP, Mag
77	Knick Exploration Inc. (Triple Lake property)	Bartlett, McArthur, Musgrove (Au, VMS)	Pr
78	Lake Shore Gold Corp. (Thunder Creek property)	Bristol (Au)	Assays, DD and UGD-48,000 m, UG-1510 m, Rcalc
79	Lake Shore Gold Corp. (RTM/AGE Option)	Bristol (Au)	DD-1-3016 m
80	Lake Shore Gold Corp. (Timmins Mine Project)	Bristol (Au)	Assays, UG-1512 m, UGD-8000 m
81	Lake Shore Gold Corp. (Thorne property, Golden River Trend)	Thorneloe (Au)	Assays, DD-128
82	Lake Shore Gold Corp. (144 property)	Thorneloe (Au)	DD
83	Lake Shore Gold Corp. (Bell Creek Mine)	Hoyle (Au)	Dewatering, DD and UGD-34,000 m, Assays
84	Lake Shore Gold Corp. (Marlhill property)	Hoyle (Au)	DD, Rcalc
85	Lake Shore Gold Corp. (Vogel property)	Hoyle (Au)	DD-3411 m, Rcalc

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
86	Lalonde, D. (Campbell Lake property)	Halliday (Au, Cu)	Assays, Samp, Str, Tr
87	Lefort, D.M. (Telluride Lake property)	Beemer (Au)	Pr
88	Lefort, D.M. (Quartz Lake property)	Fripp (Au)	Pr, Samp
89	Lexam VG Gold Inc. (Buffalo Ankerite property)	Deloro (Au)	Assays, DD-24-9486 m
90	Lexam VG Gold Inc. (Fuller property)	Tisdale (Au)	Assays, DD-5-1952 m
91	Lexam VG Gold Inc. (Paymaster West property)	Tisdale (Au)	Assays, DD-3-1702 m
92	Liberty Mines Inc. (Croxall-Mustang Project)	Adams (Ni, Cu)	Assays, DD-4-1614 m
93	Liberty Mines Inc. (Hart Project)	Eldorado (Ni, Cu)	Assays, DD-23-8000 m
94	Liberty Mines Inc. (Groves Project)	Groves (Au, Ni, Cu, PGE)	Assays, DD-13-1245 m, DGP, IP, Mag
95	McKinnon, D.	Langmuir	Mag
96	McLaren Resources Inc. (Timginn property)	Tisdale (Au)	DD
97	Melkior Resources Inc. (Carscallen gold property)	Carscallen, Denton (Au)	Assays, DGP, DD-15-5488 m, GL, IP, Pr
98	Melkior Resources Inc.	Eldorado (Ni, Zn)	Assays, DD-6-911 m
99	Melkior Resources Inc.	Fripp	Pr, Samp
100	Melkior Resources Inc.	Shaw	AEM, AMAG
101	Metalex Ventures Ltd. (T1 Kimberlite)	South of Missisa River (diamond)	Anyls
102	Metalex Ventures Ltd. (U2 Kimberlite)	BMA 528 844 (diamond)	Anlys
103	Metals Creek Resources Corp. and Goldcorp Canada Ltd. (Ogden property)	Ogden (Au)	Assays, DD-13-5000 m, IP
104	Mexivada Mining Corp. (Golden Porcupine property)	Deloro (Au)	EM, DD-12-2738 m, GC, GL, IP, Mag, Tr, Samp
105	Mexivada Mining Corp. (Rypan Target area)	Deloro (Au)	DD-3, GL, Samp, Str
106	Mhakari Gold Corp. (Whitesides property)	Massey	IP, Mag
107	Mhakari Gold Corp.	Ogden	EM, Mag
108	Mhakari Gold Corp. (Shaw property)	Shaw	EM, Mag
109	Mill City Gold Corp. (Croxall property)	Thorneloe (Au)	Assays, DD-3-1254 m
110	Moneta Porcupine Mines Inc. (Nighthawk Lake property)	Macklem (Au)	DD-3
111	Moneta Porcupine Mines Inc. (Kayorum property)	Tisdale (Au)	DD-15-523 m, GT
112	Moon Energy Corp. Foundation Canada (Keefer North property)	Keefer	DD-1-200 m
113	Mortimer, C.H. (Allen Lake Project)	Cunningham	Tr
114	Mortimer, C.H. (Jasper property)	Garnet	Tr
115	Nebu Resources Inc. (Mallard property)	Mallard (Au)	Assays, DD-9-1500 m, IP, Mag

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
116	Nebu Resources Inc. (Cork Lake property)	Nursey, Semple, Sothman (Au)	Comp, DD-3, IP
117	Newcastle Minerals Ltd. (Mollie River property)	Benneweis (Au)	DD, IP, Mag, Samp
118	Newcastle Minerals Ltd. (Carscallen property)	Carscallen (Au)	Assays, DD-10-2000
119	Newcastle Minerals Ltd. (Chester property)	Chester (Au)	DD-4-1050 m, GL, IP, Pr, Samp
120	Newcastle Minerals Ltd. (Neville-Poitier Project)	Neville, Potier (Au, Cu)	Assays, GL, Pr, Samp
121	Platinex Inc. (Ivanhoe property)	Hellyer, Sandy	Assays, GC
122	Probe Mines Limited (Borden Lake Project)	Cochrane, Gallagher (Au)	AEM, AMAG, Assays, DD-143-37,495 m, EM, IP, Mag, Met
123	Probe Mines Limited (Borden Lake North)	Cochrane (Au)	Assays, DD-6-
124	Probe Mines Limited (Cree Lake Project)	Swayze (Au)	Assays, DD-5
125	Pyke, D.R. (Union Shaft property)	Whitesides (Au)	Assays, Samp
126	Raine, B. and Pyke, D.	Cody (Au)	Assays, Samp
127	Rare Earth Metals Inc. (Clay-Howells property)	Clay, Hopkins, Howells, Mowbray (REE)	Assays, DD-8-2154 m, Rcalc
128	Recoskie, D. and Salo, R.	Whitney	Pr, Samp
129	Red Pine Exploration Inc. (Butler-Yarie property)	Bliss, Gilliland, Hill, Strathearne	GC, Pr, Samp
130	Red Pine Exploration Inc. (Ava-Claire property)	Crockett, Raney, Sandy	GC, Pr, Samp
131	Red Pine Exploration Inc. (Saracourt property)	Coppell, Newton, Dale	Comp, DGP, DD-9-2067 m, GC
132	Red Pine Exploration Inc. (Charlie Mortimer Project)	Dore, Swayze, Rollo (Au)	DD-1030 m, GC
133	Red Pine Exploration Inc. (Gibb Lake property)	Horwood, Silk (Au)	GC
134	Reliant Gold Corp. (Borden Lake South property)	Gallagher, McNaught (Au)	IP, Mag
135	Richmont Mines Inc. (Cripple Creek property)	Denton (Au)	GC, Pr
136	Ring of Fire Resources Inc. (Project 81)	Aubin, Bradburn, Calder, Crawford, Dargavel, Kingsmill, Lennox, Lucas, Mabee, Nesbitt (Au, Ni)	AEM, AMAG, Comp
137	Ring of Fire Resources Inc.	Duff, Lucas, Tully	EM, Mag, RAD
138	Rogue Resources Inc. (Radio Hill Iron Project)	Keith, Penhorwood (Fe)	Assays, DD-15-3140 m, Rcalc
139	Rogue Resources Inc. (Langmuir Nickel Project)	Langmuir (Ni)	Assays, DD-13-2282 m, Met
140	Rogue Resources Inc. (Monpre property)	Sothman	GL
141	Sage Gold Inc. (Clavos Project)	Clergue (Au)	Assays, DD-31-10,200 m
142	Sanatana Resources Inc. (Watershed property)	Chester, Yeo (Au)	AEM, AMAG, Assays, DD-9-4195 m, GL, IP, Pr, Samp, Str
143	SGX Resources Inc. (Delnor property)	Deloro	DD-1-121 m

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity*
144	SGX Resources Inc. (Croxall property)	Halliday, Nursey, Semple, Sothman	DD-44-7115 m
145	SGX Resources Inc. (Odyssey property)	Ogden	DD-4-377 m
146	SGX Resources Inc. (Northwest Tisdale Project)	Tisdale	Assays, DD-5-1636 m
147	SGX Resources Inc. (Timmins North property)	Tully (Au)	DD-101-26,696 m, Mag
148	Shynchorenko, E. and Hermeston, P.	Whalen (REE)	GL, Pr, Samp
149	Silver Shield Resources Corp. (Lost Dog property)	Denton (Au)	Mag, IP
150	Somerville, D.E.	Shaw	Mag
151	Starfire Minerals Inc. (Eldorado grid)	Eldorado (Cu, Co, Ni, Zn)	IP
152	Temex Resources Corp. and Goldcorp Canada Ltd. (Whitney JV Hallnor property)	Whitney (Au)	Assays, DD-68-17,880 m
153	Trelawney Mining and Exploration Inc. (Chester 1 property)	Chester (Au)	Bulk, DD
154	Trelawney Mining and Exploration Inc. (Côté Lake)	Chester (Au)	Assays, DD-120-64,000 m, Met, Rcalc
155	Trelawney Mining and Exploration Inc. (Chester property)	Chester (Au)	DD-10-3000 m, GC, GL, Samp, Str
156	Trelawney Mining and Exploration Inc. (West Côté property)	Chester (Au)	DD-3-1175 m
157	Trillium North Minerals Ltd. (West Porcupine property)	Kenogaming, Sewell (Au)	Assays, DD-5-1812 m
158	United Reef Limited (Nixon Bartleman property)	Keefer (Au)	Assays, DD-7-597 m
159	Vendome Resources Corp. (Ivanhoe Lake property)	Foleyet	EM, Mag
160	Victoria Bullion Exchange Ltd.	Thorneloe	Mag
161	Viper Gold Ltd. (Campbell Lake property)	Halliday (Au, Ag)	Assays, Samp
162	Western Kidd Resources Inc.	Loveland (Au, Ag, Cu, Pb, Zn)	DD
163	Xstrata Copper Canada	Whitesides, Carscallen	EM
164	Zenyatta Ventures Ltd. (Albany Project)	Pitopiko River Area (Ni, Cu, graphite)	DD-26-10,000 m
165	Zinccorp Resources Inc.	Denton	Pr
166	Zinccorp Resources Inc. (Highway 101 property)	Keefer	EM, IP, Mag
167	Zinccorp Resources Inc. (Crest Lake property)	Keefer	IP
168	Zinccorp Resources Inc. (Crest Lake Central)	Keefer	IP

* DD-8-2196 m = 8 diamond-drill holes totalling 2196 m.

Table 16. Exploration activity in the Wawa area in 2011 (keyed to Figure 4).

Abbreviations

AEM ..... Airborne electromagnetic survey	Mag .....Ground magnetic survey
AMAG ..... Airborne magnetic survey	Met ..... Metallurgical testing
DD..... Diamond drilling	Pr .....Prospecting
DGP .....Down-hole geophysics	Rcalc ..... Resource calculations
GC .....Geochemical survey	Samp .....Sampling (other than bulk)
GL .....Geological survey	Str ..... Stripping
IP.....Induced polarization survey	Tr ..... Trenching

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	3814793 Canada Inc.	Esquega (Fe)	Assays, Pr, Samp
2	Augustine Ventures Inc. (Jubilee–Surluga property)	McMurray (Au)	AEM, AMAG, Assays, DD-18-2944 m, Rcalc, Samp
3	Canada Iron Inc. (Josephine property)	Corbiere (Fe)	AEM, AMAG, Samp
4	Chalice Diamond Corp. (Old Cabin property)	Jacobson (Au)	Assays, GL, Samp
5	Conquest Resources Limited (Smith Lake property)	Leeson (Au)	Assays, DD-10-1109 m, Mag, Pr, Samp, Tr
6	Cyr, D. (DAC property)	Jacobson (Au)	Assays, Pr, Samp
7	GoldTrain Resources Inc. (Nudulama Mine property)	Leeson (Au)	Assays, Samp
8	Harte Gold Corp. (Halverson Claim Group)	Hambleton (Au)	Mag
9	Harte Gold Corp. (Sugar Zone property)	Hambleton, Odlum (Au)	AEM, AMAG, Assays, DD-24-15,000m, DGP, IP, Mag, Samp
10	Hudson River Minerals Ltd. (Forge Lake property)	Cowie (Au)	AMAG, Assays, DD-17-1339 m
11	Lakeland Resources Inc. (Midas gold property)	Bruyere (Au)	Assays, DD-16-2350 m, GL, Samp, Str, Tr
12	MetalCorp Limited (Eagle River property)	Mishibishu Lake area (Au, Mo)	Assays, Pr, Samp
13	Pele Gold Corporation Inc. (East Highland gold project)	Abotossaway (Au)	Assays, Pr, Samp
14	Prodigy Gold Incorporated (Lovell Lake area)	Finan (Au)	Assays, DD-14-3846 m
15	Prodigy Gold Incorporated (Magino Mine Project)	Finan (Au)	Assays, DD-131-45,000 m, Met, Rcalc
16	Rastel, J.	Rabazo	GC, Pr, Samp
17	Rencore Resources Ltd. (Lizar Project)	Breckenridge, Lizar, Mosambik, Nameigos (Cu, Ni, PGE, VMS)	AEM, AMAG, Assays, DD-1000 m, GL, Pr, Samp
18	Richmont Mines Inc. (Island Gold property)	Jacobson (Au)	Assays, DD-1-235 m
19	Richmont Mines Inc. and Red Pine Exploration Ltd. (Edwards property)	Jacobson (Au)	Assays, DD-2-768 m
20	Robert, J. and Associates (Midas property)	Bruyere (Au)	IP
21	Rogue Resources Inc. (Ellen Creek property)	Mishibishu Lake area	Mag
22	Strike Minerals Inc. (Clement property)	Jacobson (Au)	Assays, GL, Samp, Str
23	Strike Minerals Inc. (Edwards Mine property)	Jacobson (Au)	Dewatering, DD-12-2998 m, Samp

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
24	Trelawney Mining and Exploration Inc. (Mishi property)	Mishibishu Lake area (Au)	DD-5-1224 m
25	Upper Canada Explorations Ltd. (Abbie Lake property)	Abbie Lake Area (Au)	Pr, Tr
26	Upper Canada Explorations Ltd. (Rockstar property)	Riggs (Au)	Mag
27	Wesdome Gold Mines Limited (Mishi Pit Project)	Mishibishu Lake area (Au)	DD-37-15,000 m, dewatering, mine site development, Rcalc
28	Windarra Minerals Ltd. (Mishi Leases)	David Lakes area, Mishibishu Lake area (Au)	Assays, DD-25-3111 m

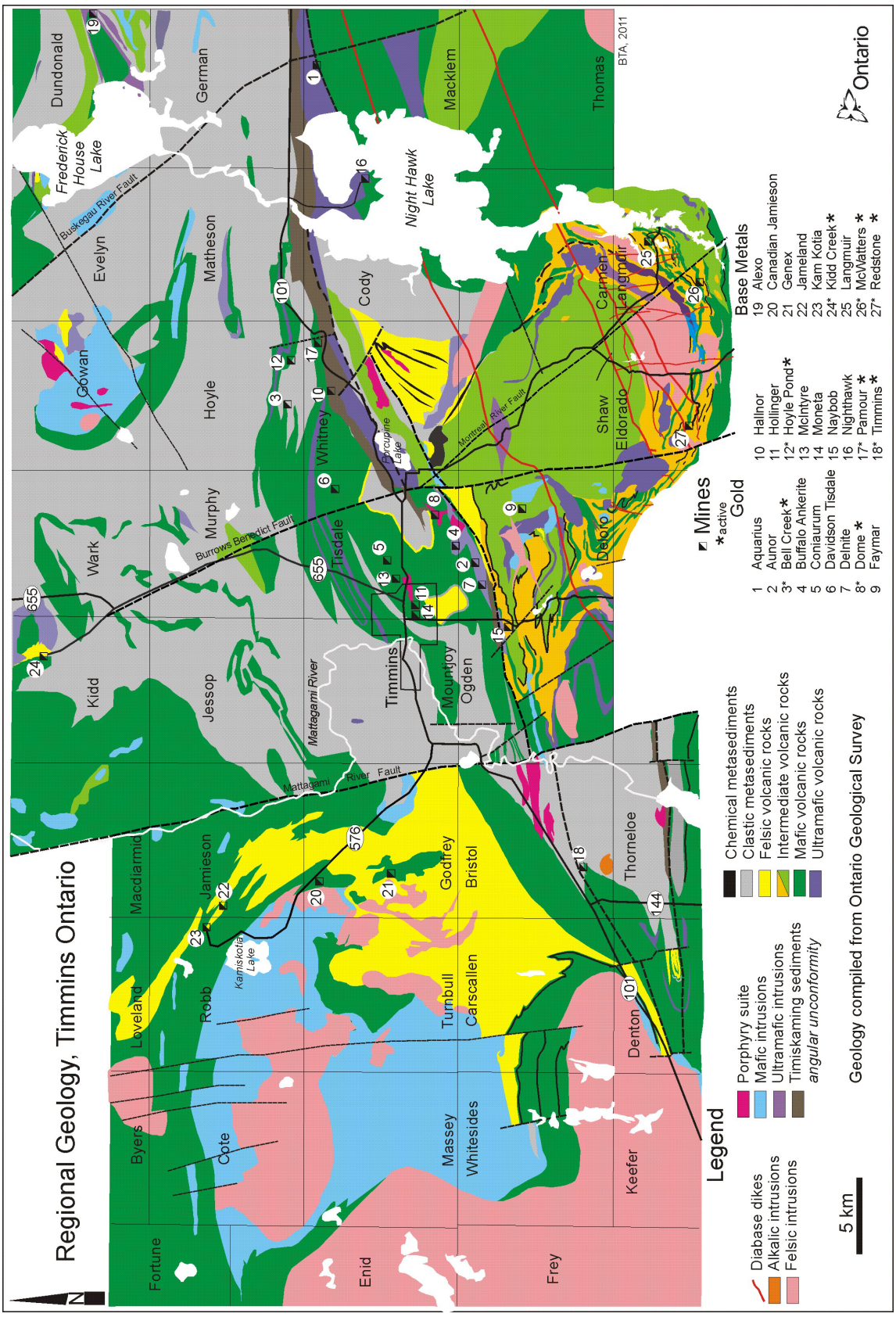


Figure 2. Regional geology of the Timmins area with location of major mines.

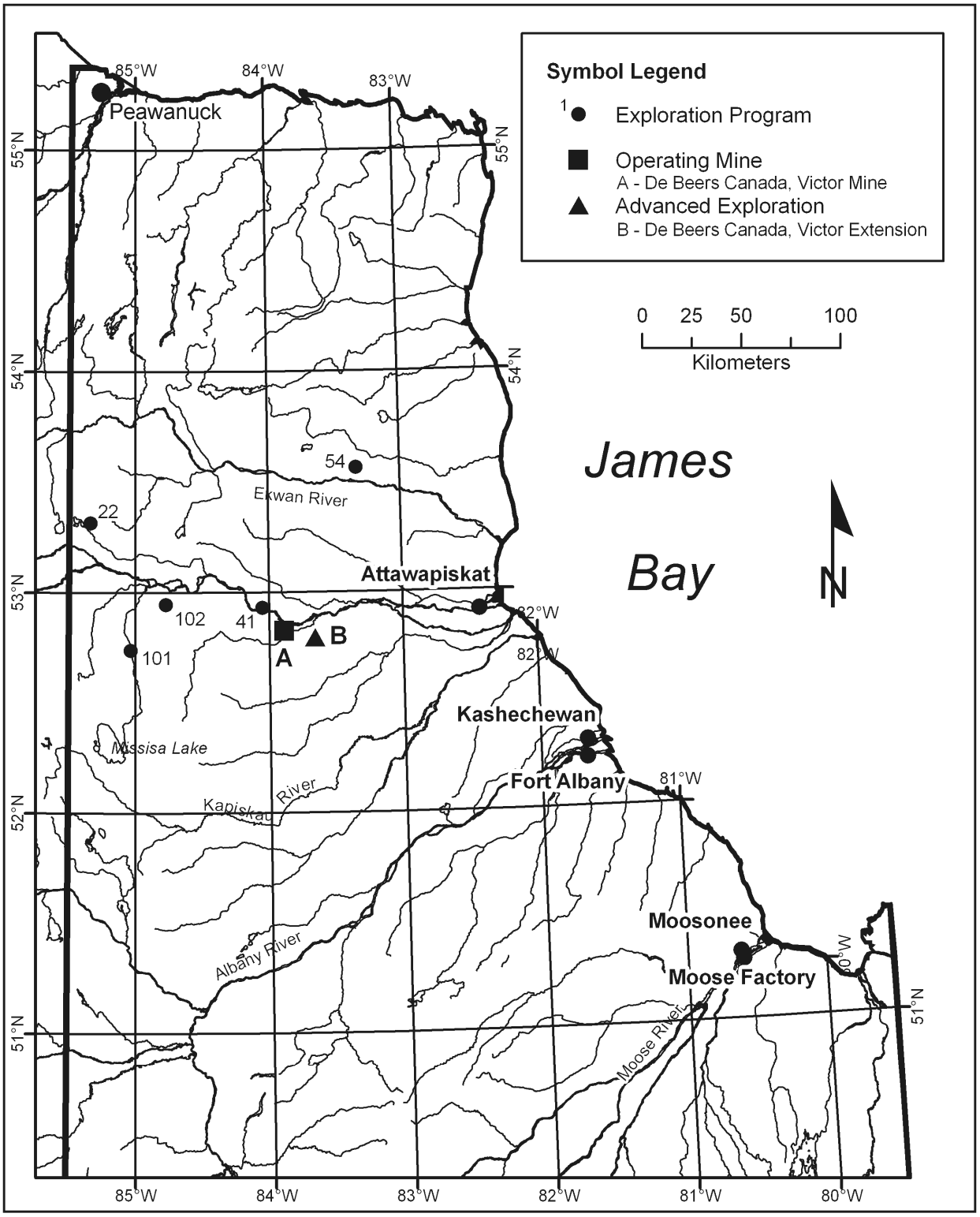


Figure 3a. Exploration programs, advanced exploration and operating mines in the Timmins Regional Resident Geologist District (north part). Keyed to Table 15.

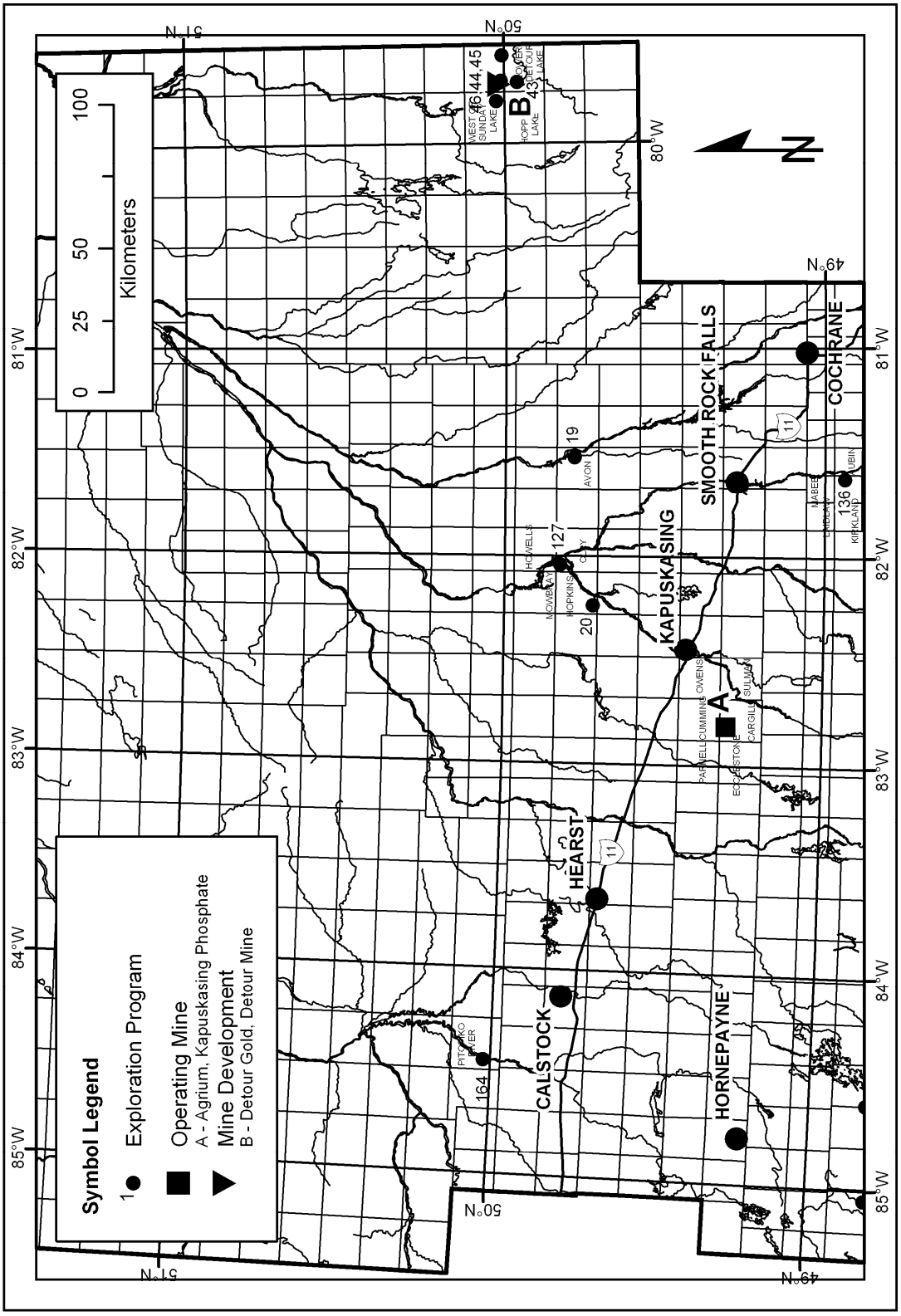


Figure 3b. Exploration programs, advanced exploration, mine development and operating mines in the Timmins Regional Resident Geologist District (central part). Keyed to Table 15.

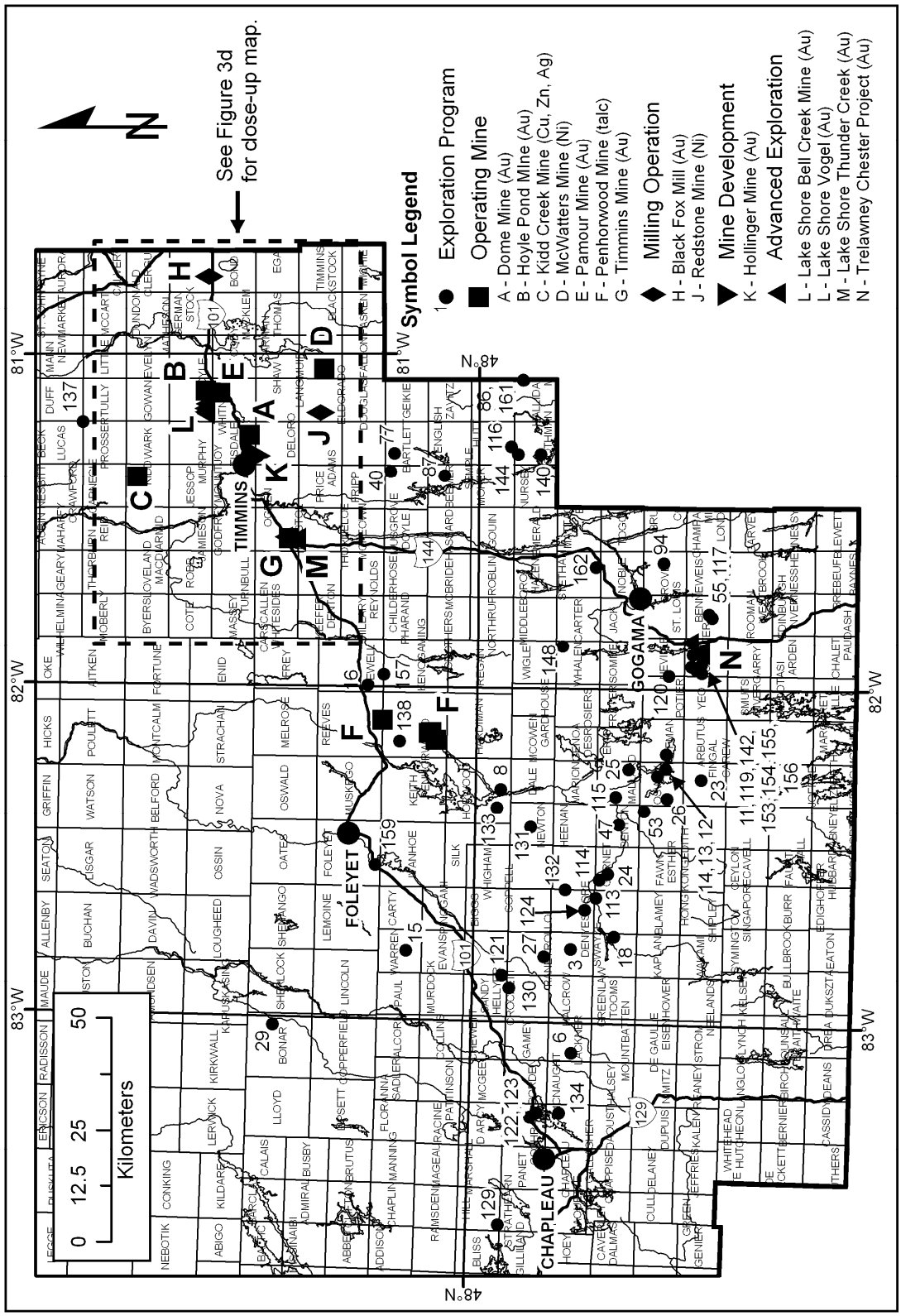


Figure 3c. Exploration programs, advanced exploration, mine development, operating mines and milling operations in the Timmins Regional Resident Geologist District (south part). Keyed to Table 15.

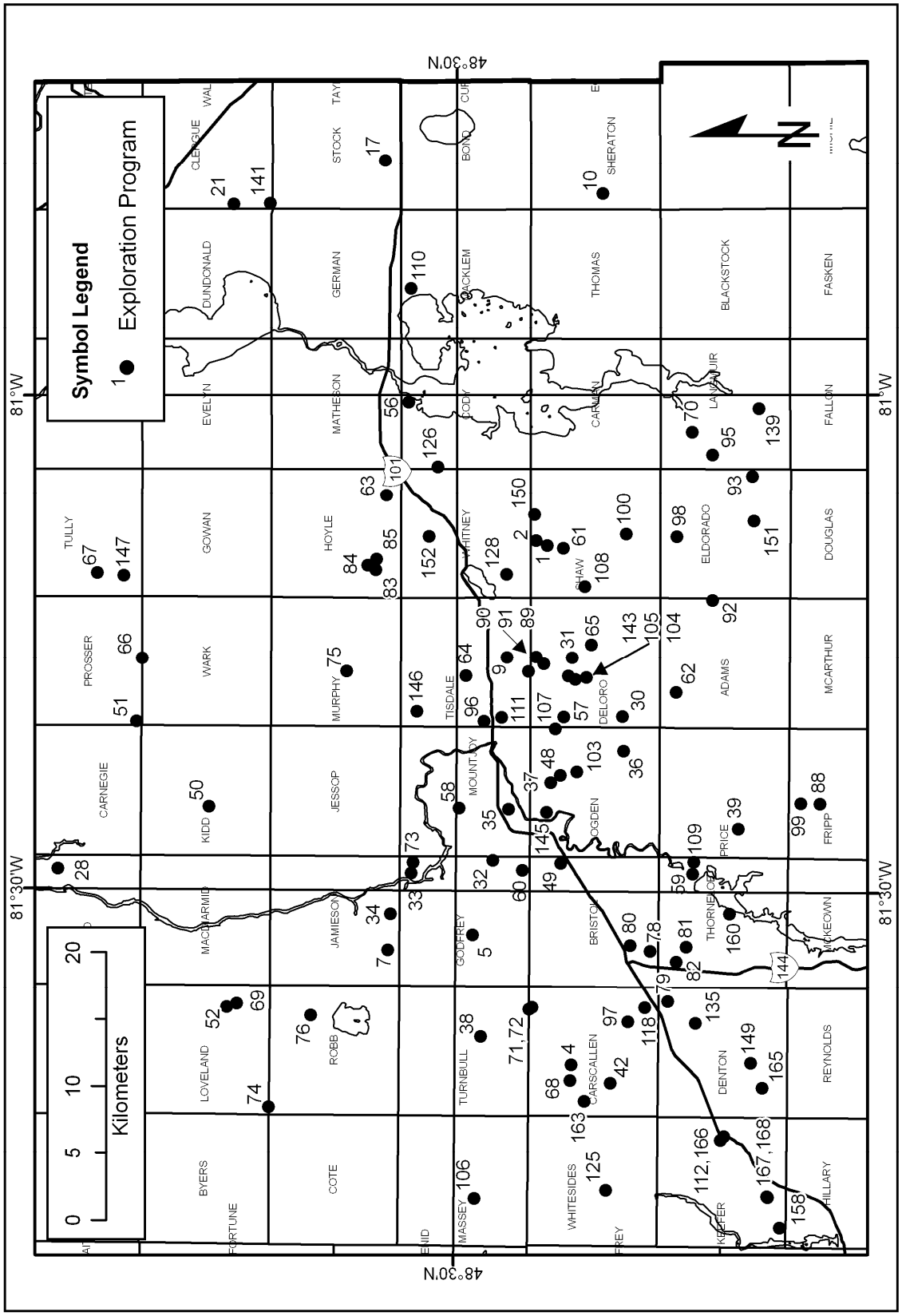


Figure 3d. Exploration programs in the Timmins Regional Resident Geologist District (Timmins area). Enlargement of area shown in northeast part of Figure 3c. Keyed to Table 15.

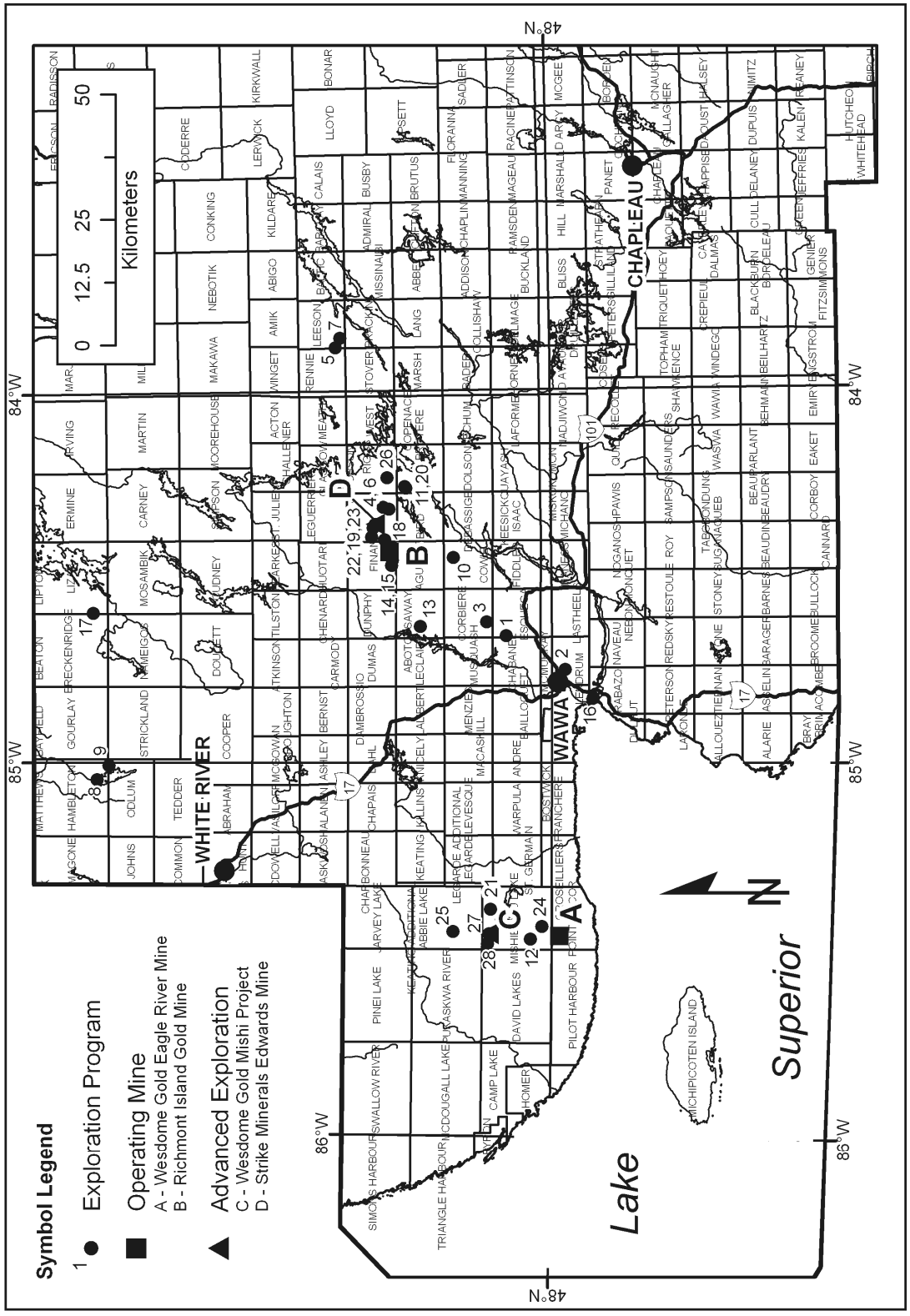


Figure 4. Exploration programs, advanced exploration and operating mines in the Timmins Regional Resident Geologist District (Wawa area). Keyed to Table 16.

MINE DEVELOPMENT

Detour Gold Corporation

Detour Gold Corporation's project at the Detour Lake Mine is located 185 km northeast of Cochrane. Access is by way of paved Highway 652. The deposit was originally discovered by Amoco Canada Petroleum Company Limited in 1974 (Johns 1982) and operated from 1983 to 1999. The Detour Lake Mine exploited a gold deposit in mafic to intermediate volcanic rocks and cherty tuffs, between basalts and ultramafic rocks (Johns 1982; Pressacco 1999). Production started under the ownership of Campbell Red Lake Mines Ltd., a subsidiary of Dome Mines Limited and Amoco. The companies amalgamated with Placer Development Limited in 1987 to become Placer Dome Inc. (Luhta et al. 1992). Detour Lake Mine produced 1 781 858 ounces of gold from 17 643 085 tonnes at a grade of 3.49 g/t gold from both open pit and underground operations. (Atkinson et al. 2010; BBA 2011.)

At the time of closure, Placer Dome rehabilitated the site and removed all mine infrastructure, including the hydroelectric transmission line from Island Falls. Goldcorp Canada Ltd. acquired the Detour Lake Mine along with other interests when Placer Dome merged with Barrick Gold Corp. Pelangio Mines Inc. subsequently explored the Detour Mine property and did a limited amount of diamond drilling. Detour Gold Corporation got involved in 2007, acquired Pelangio Mines' interests and purchased the property from Goldcorp Canada Ltd. in 2008. Detour Gold began a comprehensive exploration program of diamond drilling that established a large mineral resource on the property. Following a positive feasibility study and initial permitting, Detour Gold began mine construction in January 2011 and provided an updated reserve estimation from its 2010 drilling campaign (BBA 2011): proven and probable open pit reserves of 14.9 million ounces gold at a grade of 1.03 g/t gold, measured and indicated mineral resources of 20.5 million ounces at a grade of 1.07 g/t gold (inclusive of mineral reserves), and an additional 5.1 million ounces in inferred resources at a grade of 0.84 g/t gold, with a 0.5 g/t gold cut-off.

In April, Detour Gold reported assay results for their 2011 drilling campaign, which focused on the western extension of the open pit. Diamond drilling encountered intersections of 7.0 to 127 m with grades ranging from 1.42 to 10.97 g/t gold (Detour Gold Corporation, press release, April 20, 2011). One drill hole on the Aurora claim block targeting the Lower Detour deformation zone intersected 60 to 80 m of strongly altered, shear-zone hosted mineralization with grades of 22.6 g/t gold over 1 m and 1.4 g/t gold over 3 m (Detour Gold Corporation, press release, June 22, 2011).

Mine construction is well underway with most of the mining and milling equipment in place. Mill foundations have been poured and building shells are largely complete. Pre-stripping of the ore-body is proceeding and the initial haul road from pit to mill is complete. The leach tanks have been constructed, and tailings facilities and the 400 man permanent camp construction is underway. Detailed engineering plans are largely finalized and most of the major contracts have been awarded. Mechanical services, plumbing and piping, and instrumentation component installation in the process plant has commenced.

Open pit mining will use 320 tonne trucks and electric and hydraulic shovels. The stripping ratio of the pit is projected to be 3.6:1. Milling will use 2 independent grinding circuits with semi-autonomous grinding (SAG) mills and ball mills for crushing followed by conventional gravity, cyanide leaching and carbon-in-pulp extraction and electrowinning for gold recovery. Over its planned 20-year mine life, Detour Mine will mine and mill 449 443 000 tonnes of ore at a grade of 1.03 g/t gold. At a daily mining rate of 55 000 tonnes, it will be Ontario's largest mining operation. (BBA 2011).

The power transmission line from Island Falls was re-established and an additional line from Fraserdale, Abitibi Canyon is under construction to meet the full power requirements of the mine. Detour Gold opened a regional office in Cochrane in July. It also acquired Trade Winds Ventures Inc. which owned the adjacent Block A gold property (Detour Gold Corporation, press releases, June 22, 2011, December 1, 2011; *see* Trade Winds Ventures Inc. in "Exploration Activity").

Projected total capital cost for the operation is $1.45 billion, of which over $1 billion has been incurred. During the construction phase, over 1000 workers have been on site and when scheduled production commences in 2013, the mine will employ 500 people.

Goldcorp Inc. – Hollinger Project

Goldcorp Inc. continued work on returning the Hollinger Mine in Tisdale Township to producing status. Work began on the construction of a mine access road to the Dome mill, where ore will be trucked and milled once operations begin.

The Hollinger Project has an open pit reserve of 1.8 million tonnes with a grade of 1.5 g/t gold with a cut-off grade of 0.6 g/t gold. The projected mine life is 7 years and ore will be extracted from 4 sequential open pits within a confining mine perimeter berm. The average production rate is projected to be about 8500 tonnes per day, necessitating the mining of 35 000 tonnes at a stripping ratio of 4:1. The trucking distance to the Dome mill is 5 km. (Goldcorp Canada Ltd., Porcupine Gold Mines, Hollinger Closure Plan 2011.)

On regional projects distal to the company's operating mines, Goldcorp completed 62 445 m of exploration diamond drilling.

ADVANCED EXPLORATION

De Beers Canada Inc. – Victor Extension

The De Beers Canada Inc. Victor Extension project initiated a desktop feasibility study on the Tango Extension kimberlite. An outline of the pipe, delineated by ground magnetic surveys by De Beers, is illustrated in Figure 5. It covers an area of 4.6 hectares.

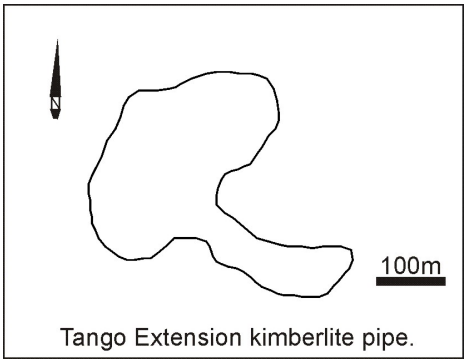


Figure 5. Inferred shape of the Tango Extension kimberlite based on magnetic surveys by De Beers Canada Inc.

Lake Shore Gold Corp. – Bell Creek Mine Complex

The area of Bell Creek Mine, with the adjacent properties of Marhill, Vogel and Schumacher, is located in the south part of Hoyle Township. It is underlain by metavolcanic rocks of the Tisdale Assemblage and clastic metasedimentary rocks of the Porcupine Assemblage intruded by ultramafic, mafic and felsic plutonic rocks and by diabase dikes. A well-developed east-trending fabric affects the rocks. Gold mineralization occurs along selvages of wall rocks and quartz veins, in stylolithic features in the veins, in fine-grained pyrite and in association with amorphous carbon (Berger 1998).

Lake Shore is presently conducting an advanced exploration program at the Bell Creek Mine Complex, including excavation of an inclined portal to the neighbouring Marlhill, Schumacher and Vogel properties to the east. A total of 1646 m of ramp development was completed and underground drilling amounted to 22 000 m. An additional 6200 m of drilling was directed towards ore definition. The company had 3 diamond drills working underground and 5 on surface for exploration, in-fill and resource expansion purposes. On the basis of the diamond drilling, Lake Shore Gold extended the depth of known gold mineralization to over 400 m below the current resources (Lake Shore Gold Corp., press release, August 16, 2011). Grades from 1.22 g/t to 9.37 g/t gold were intersected over apparent widths of 0.8 to 40.8 m (Lake Shore Gold Corp., press release, August 16, 2011).

A 178 677 tonne bulk sample of gold mineralization from the 450 Level of the North A Deep zone at the Bell Creek Mine complex produced 24 585 ounces gold at a recovered grade of 4.28 g/t gold.

Mill expansion continued through the year to increase capacity to 3000 tonnes per day. A new 22- by 36.5-foot semi-autonomous grinding (SAG) mill was delivered to the site in November.

Lake Shore Gold Corp. – Marlhill

Lake Shore Gold Corp. completed resource estimates for the Marlhill deposit. The deposit contains 395 000 tonnes at 4.52 g/t gold in the indicated resources category (Lake Shore Gold Corp., press release, May 2, 2011).

Lake Shore Gold Corp. – Vogel, Schumacher

Lake Shore Gold Corp. completed resource estimates for the Vogel deposit. The Vogel Pit estimate contains 2 219 000 tonnes at 1.75 g/t gold in the indicated resources category and 692 000 tonnes at 1.43 g/t gold in the inferred resources category (Lake Shore Gold Corp., press release, May 2, 2011). The underground resources at Vogel include 767 000 tonnes at 5.56 g/t gold in the inferred category (Lake Shore Gold Corp., press release, May 2, 2011). Exploration diamond drilling included 2550 m on the Vogel and 861 m on the Schmacher property.

Lake Shore Gold Corp. – Thunder Creek Deposit

The Thunder Creek deposit is a gold-bearing zone located 600 to 800 m south of and parallel with the Timmins Mine in Bristol Township. Underground access is via the Timmins Mine infrastructure.

Lake Shore Gold continued an advanced exploration program and completed a NI 43-101 compliant resource estimate for the project. The reported resources include 2 877 000 tonnes at an average grade of 5.64 g/t gold in the indicated category and 2 693 000 tonnes at an average grade of 5.89 g/t gold in the inferred category (Lake Shore Gold Corp., press release, December 29, 2011). The company completed 15 250 m of surface diamond drilling on the Thunder Creek deposit.

Strike Minerals Inc. – Edwards Mine

Throughout the year, Strike Minerals Inc. continued to advance development at the Edwards Mine. By the end of October, the mine had been dewatered to the 60 m level in preparation for underground exploration by drifting and/or diamond drilling on the 5 mineralized zones that have been identified on the property since 2002 (Strike Minerals Inc., Management Discussion and Analysis, December 22, 2011).

A surface diamond-drilling program comprising 12 drill holes (2998 m) was completed on the property in early 2011. The purpose of the program was to test the continuity, structure and extent of the mineralization in the known mineralized zones. As a result of this program, the strike extent of the Plowman #1 zone has been extended to 152 m and a vertical depth of 158.2 m. The strike extent of the Plowman #2 zone has been extended to 198 m and a vertical depth of 229 m. The Plowman #3 zone has been extended to 122 m and a depth of 122 m. Data from the drill program will be included in an updated mineral resource calculation (Strike Minerals Inc., press release, June 16, 2011).

The Edwards Mine produced 139 692 ounces of gold from 389 550 tons milled between 1997 and 2002. At the end of 2000, the mine had a known resource of 96 000 tonnes grading 11.3 g/t gold (Atkinson et al. 2011).

Trelawney Mining and Exploration Inc. – Chester 1 Gold Mine

Trelawney Mining and Exploration Inc. dewatered underground mine workings on the Chester Project in Chester Township and extracted a bulk sample of gold-bearing felsic intrusive rock. The bulk sample was trucked to Cobalt for test purposes but results were unavailable at year-end. Subsequently, the underground operations were suspended and placed on care and maintenance. The company continued with a major exploration diamond-drilling campaign on the adjacent Côté Lake zone. (*See* "Exploration Activity", Trelawney Mining and Exploration Inc. – Côté Lake.)

Wesdome Gold Mines Ltd. – Mishi Project

Wesdome Gold Mines Ltd. continued to focus on the development of the Mishi Project with a goal of commencing mining operations at the site in early 2012. Wesdome envisions a five-year mine life for the project. The Mishi pit is located in the Mishibishu Lake area, 2 km west of the Eagle River mill. Mining took place at the site from 2002 to 2004 and in 2007. A total of 134 204 tonnes were mined at a grade of 3.4 g/t gold (12 076 ounces).

During 2011, Wesdome conducted a systemic shallow-drilling program to the east and west of the main Mishi pit. Diamond drilling tested the eastern strike potential and provided preliminary testing of the western strike potential of the deposit. A total of 21 drill holes were completed at the western end of the pit. Highlights from this drilling program include intersections of 18.2 g/t gold over 2.75 m in MW11-03; 7.18 g/t gold over 1.5 m in MW11-12; 1.87 g/t gold over 9.25 m, including 4.20 g/t gold over 3.25 m in MW11-17 and 4.92 g/t gold over 4.40 m, including 9.97 g/t gold over 1.85 m in MW11-20 (Wesdome Gold Mines Ltd., press release, November 22, 1011).

Development work completed at the pit in 2011 included pit dewatering, brush clearing, pre-stripping and waste pad construction. Initial blasting of waste rock and drilling-off of over 13 000 tonnes of ore had taken place by the end of the year (Wesdome Gold Mines Ltd., press releases, July 12 and November 7, 2011).

EXPLORATION ACTIVITY

Over 80 companies were active on a wide variety of projects and programs throughout the Timmins District. A complete listing of exploration activities known to have occurred in the Timmins District in 2011 is presented in Table 15. Exploration activities performed in the Wawa area are presented separately in Table 16. Highlights of select company exploration projects are summarized below.

Augustine Ventures Inc. – Jubilee–Surluga Property

Augustine Ventures Inc. acquired the Jubilee–Surluga property late in 2010. Eight past-producing gold mines, which sporadically produced gold from 1902 to 1991, are situated on the property. Total production from these mines was 120 485 ounces of gold recovered from 462 485 tons mined, at an average grade of 0.26 ounce per ton gold (Duke 2011). The property comprises 3 contiguous groups of patented claims and Crown leases and lies entirely within McMurray Township. The total area of the property is 2022 ha.

During 2011, Augustine completed an 18-hole (2926 m) confirmation drilling program on the property. Twelve of the drill holes were exact twins of historical holes, while the remainder of the drill holes were shifted slightly from their target holes in order to avoid drilling into underground workings. The purpose of the drilling was to confirm and validate assay and geological data from 365 historical surface drill holes and 1463 historic underground drill holes. The Jubilee–Surluga property has an NI 43 101 compliant inferred resource of 32 169 000 tonnes grading 1.14 g/t gold, for a total of 1 182 000 ounces of contained gold (Duke 2011).

The Jubilee–Surluga property lies within the Jubilee stock, which has been interpreted by the Ontario Geological Survey as a diorite-monzonite-granodiorite intrusion emplaced within a caldera structure of felsic to intermediate metavolcanic rocks. Mineralization is related to the Jubilee and Darwin shear zones, which are prominent northeast trending structures. These 2 structures have been offset by the northwest-trending Parkhill fault. The Jubilee shear strikes north-northeast and dips 40 to 50° east (Sage et al. 1982).

Conquest Resources Limited – Smith Lake Gold Property

Conquest Resources Limited completed a summer exploration program at their Smith Lake gold property. The property consists of 6 patented mining claims and 24 newly staked mining claims located over a 50 km^2 area in Leeson, Rennie and Stover townships. The claims are located northeast of the past-producing Renabie Mine.

Diamond drilling on the property by Conquest Yellowknife Resources Limited in the 1970s and 1980s led to the discovery of a north-trending shear zone along the west side of Smith Lake. Visible gold was noted in 4 holes and assay values up to 2.25 ounces per ton gold over 6 feet were obtained. Lower grade values in the 0.10 ounce per ton range were obtained over widths up to 18.6 feet (Trebilcock and Dickenson 2004).

Conquest Resources completed a 10-hole (1109 m) diamond-drilling program in the vicinity of Smith Lake. Significant assays from the drilling program include 63.3 g/t gold over 0.28 m in CSL-11-001; 17.53 g/t gold over 0.22 m in CSL-11-003 and 4.76 g/t gold over 1 m in CSL-11-003. All drill holes targeted the contact between the granitic rocks to the east and mafic to intermediate metavolcanic rocks in the west. A follow-up trenching program targeted a series of mineralized quartz veins. Sampling from these trenches yielded values ranging from 4.57 g/t gold over 1.07 m to 14.7 g/t gold over 0.69 m (Conquest Resources Limited, press releases, November 7 and 17 2011).

Globex Mining Enterprises Inc.

Globex Mining Enterprises Inc. is continuing a prefeasability study on its Timmins Talc-Magnesite Project located in Deloro Township (Globex Mining Enterprises Inc., press release, October 13, 2011).

Gowest Gold Ltd. – North Timmins Gold (Frankfield East)

Gowest Gold Ltd. and the company's predecessor Gowest Amalgamated Resources Ltd. have been exploring the Frankfield East property over the last decade. The recently expanded property covers 60 km^2 in the southwest part of Tully Township. Access is by way of a 15 km improved logging road that leads east from Highway 655, approximately 30 km north of Timmins. During the year, Gowest completed a major diamond-drilling campaign on the Frankfield East gold deposit and upgraded the mineral resources on the property. Drilling has identified multiple parallel gold mineralized zones hosted by altered mafic volcanic rocks spatially associated with the contact with ultramafic rocks. Gold has been encountered in the drilling to a depth of 1000 m and the company has completed a preliminary economic assessment study for the Frankfield East deposit. Table 17 indicates the current mineral resources for the Frankfield East gold deposit.

The entire North Timmins gold property was covered by a helicopter-borne magnetic and electromagnectic (EM) survey and 3505 soil samples were collected for soil gas hydrocarbon analyses. Environmental base line data collection was initiated.

Table 17. Mineral resources for the Frankfield East gold deposit.

Resource Category	Tonnes	Grade g/t gold	Contained ounces gold
Indicated	1 621 000	6.68	348 000
Inferred	4 342 000	6.01	838 900

Source: K. Montgomery, written communication, January 30, 2012.

Harte Gold Corp. – Sugar Zone Property

During 2011, Harte Gold Corp. continued its evaluation of the Sugar Zone property, located approximately 25 km northeast of the community of White River. The property is situated in Hambleton and Odlum townships within the Dayohessarah Lake greenstone belt.

Harte Gold continued a program of infill and expansion drilling on the Sugar Zone deposit. The in-fill drilling examined the area from surface to 300 m, and the results were used to upgrade inferred resources to measured and indicated resources, as well as to complete a block model of the deposit. Typical assays from the in-fill drilling include 4.65 g/t gold over 4.22 m, including 19.4 g/t gold over 0.80 m from SZ-11-03; 13.05 g/t gold over 1.98 m, including 19.38 g/t gold over 1.2 m in SZ-11-05 and 46.49 g/t gold over 1.23 m, including 78.20 g/t gold over 0.83 m in SZ-11-17. Additional diamond drilling beneath the 300 m level has confirmed the presence of mineralization at the 400 and 700 m level. Drill hole SZ-11-18 intersected gold mineralization between 416 and 418.5 m. Assays from this drill hole returned values of 6.60 g/t gold over 2.5 m and 19.60 g/t gold over 0.5 m within the same interval. (Harte Gold Corp., press releases, April 5 and June 1, 2011.)

Other drill targets examined during 2011 include the Fold Nose area located 5 km north of the Wolf Zone; discovery of the Gossan Zone on the western shore of Dayohessarah Lake; the newly discovered Lynx Zone located 500 m south of the Sugar Zone Deposit; and the area between the Sugar Zone deposit and the Wolf Zone discovery (Harte Gold Corp., press release October 11, 2011).

Hudson River Minerals Ltd. – Forge Lake Property

Hudson River Minerals Ltd. acquired the Forge Lake property and 2 other adjacent properties in the fall of 2011. These properties are located in Cowie Township, approximately 32 km northeast of the town of Wawa.

The Forge Lake property is underlain by intercalated north-dipping mafic flows, mafic and felsic tuffs with occasionally silty or siliceous horizons. The rocks strike between 90 and 110° and dip north from 35 to 45°. Two well developed oxide-facies, iron formation strike roughly eastward across the property. They are well-bedded and are up to 1.5 m in width. Gold mineralization is hosted within 2 subparallel quartz vein systems. These systems appear to be conformable to stratigraphy on a broad scale, but show low-angle crosscutting relationships on a detailed scale. The vein system consists of a swarm of individual veins and veinlets ranging from a few millimetres to 3 m in width.

A 17-hole (1669 m) diamond-drilling program was completed in December 2011. The drill program focused on 2 known gold zones that form part of the Forge Lake deformation zone (FLDZ). Diamond drilling was concentrated along a 300 m section of the FLDZ north of the adit.

Significant assays from the East zone include 16.45 g/t gold over 0.5 m in HR-FL-04; 4.03 g/t gold over 3.0 m in HR-FL-15, within a zone grading 1.93 g/t gold over 7.5 m; and 4.35 g/t gold over 3.9 m in HR-FL-16, within a zone grading 3.25 g/t gold over 12.7 m. Significant assays from the Main zone include 4.7 g/t gold over 1.5 m in HR-FL-09; 4.10 g/t gold over 1.5 m in HR-FL-10, within a zone of 0.95 g/t gold over 13.0 m; and 4.56 g/t gold over 3.3 m in HR-FL-12, within a zone grading 1.99 g/t gold over 9.1 m (Hudson River Minerals Ltd., press release, January 25, 2012).

The Forge Lake property hosts the past-producing Alden–Goudreau Mine (MDI42C01NW00002). The mine operated intermittently between 1936 and 1945. It has a published historic resource of 150 000 tons grading 0.5 ounces per ton gold (Ontario Geological Survey 2011).

Lakeland Resources Inc. – Midas Gold Property

Lakeland Resources Inc. conducted an extensive preliminary exploration program on the Midas property, located in western Bruyere Township. The original property covered 2 historic gold showings. The Peters Vein #1 (MDI42C08SE00011) was discovered in 1949 and consists of a narrow quartz vein in sheared mafic metavolcanic rocks. Reportedly, it was possible to pan free gold from a 24-foot wide vein. The Consolidated Lundmark No. 1 showing (MDI42C08SW00188) lies approximately 1.6 km west of the Peters Vein #1(Ontario Geological Survey 2011). The occurrence consists of a series of subparallel quartz-carbonate veins within mafic metavolcanic rocks. Grab samples collected from this showing returned values up to 0.54 ounces per ton gold. Additional claim staking has extended the property to the east and it now encompasses an additional 5 known gold occurrences.

Lakeland completed a 16-hole diamond-drilling program during 2011. Two gold zones were identified. The M-16 zone occurs in deformed, folded and fractured iron formation with crosscutting quartz-carbonate-tourmaline-pyrite veins. The M-11 zone lies approximately 75 m north of the M-16 zone and it consists of quartz-carbonate-pyrite-altered mafic metavolcanic rocks. Typical assays from the M-16 zone included 5.92 g/t gold over 4.7 m, including 8.88 g/t gold over 2.6 m and 12.07 g/t gold over 0.8 m in M-11-04. Typical assays from the M-11 zone include 1.7 g/t gold over 6 m including 4.61 g/t gold over 2 m in drill hole M-11-01 (Lakeland Resources Inc., press release, May 18, 2011).

The Midas property lies within the eastern extension of the southern domain of the Goudreau Lake deformation zone. This structure is composed of a ductile-brittle zone (striking 70°) of subparallel, dextral, oblique-slip high-strain zones developed within strongly altered and deformed, felsic to intermediate metavolcanic rocks. The

Goudreau shear is the dominant structural feature of this domain and it hosts the Magino Mine, the Lochalsh zone and the Island gold mine (Heather and Arias 1992).

Lake Shore Gold Corp. – Golden River Trend (Thorne)

Exploration continued over the Gold River Trend property in Thorneloe Township. The Gold River Trend is a 5 km long zone of mineralization that parallels the Porcupine–Destor Fault (Atkinson et al. 2011), located south of the Timmins Mine. Lake Shore Gold intersected gold mineralization ranging from 1.32 to 254 g/t gold in their diamond drilling program. The company commenced a NI 43-101 report on the property (Lake Shore Gold Corp., press releases, January 11, 2011; August 30, 2011).

Lake Shore Gold Corp. – 144 Property

The 144 property is located to the southwest of Lake Shore Gold's Timmins Mine. Drilling over the past year outlined a large mineralized system similar to the Thunder Creek Rusk and Porphyry zones (Lake Shore Gold Corp., press release, February 28, 2011). Significant intersections range from 1.16 to 4.96 g/t gold (Lake Shore Gold Corp., press release, February 28, 2011).

Lake Shore Gold drilled a 3.4 km deep hole on the adjoining Timmins West Meunier 144 property to the west of the Timmins Mine. The purpose of the deep hole was to explore for the down-plunge continuation of the Timmins Mine orebody. The drilling intersected ultramafic- and footwall-style gold mineralization 2380 m below the surface. This project is a joint venture effort with Adventure Gold Inc. and RT Minerals Corp. (Lake Shore Gold Corp., press release, November 10, 2011).

Liberty Mines Inc. – Hart Nickel Deposit

Liberty Mines' Hart nickel deposit is located in Langmuir Township approximately midway between the company's Redstone and McWatters mines. The mine road between the 2 operations crosses the Hart property.

The Hart deposit consists of komatiite-hosted magmatic sulphides of the Tisdale Assemblage in contact with chemical sediments consisting of chert and iron formation of the Deloro Assemblage on the south rim of the Shaw Dome. Liberty completed 3052 m of diamond drilling on the Hart zone and an additional 6030 m of drilling on the Hart East zone (B. Zuidema, Liberty Mines Inc., written communication, January 27, 2012).

Melkior Resources Inc. – Carscallen

The Carscallen project is located in the southeast part of Carscallen Township and northeast part of Denton Township. The property consists of 21 claims totalling 104 claim units that cover the contact between granodiorite to tonalite intrusive rocks of the Carlton Lake pluton on the west side, and mafic metavolcanic rocks and chemical metasediments to the east. Quartz feldspar porphyry dikes intrude the pluton and both the dikes and the plutonic rocks are cut by brittle faults that are in-filled with quartz-chlorite veins mineralized with auriferous massive to stringer sulphides (Hall 2001).

With interesting diamond-drilling results from the previous year, Melkior continued follow-up drilling to test induced polarization (IP) targets at 200 to 250 m vertical depth and to further test for the source of gold-bearing massive sulphide xenoliths (Melkior Resources Inc., press release, February 14, 2011).

Diamond drilling tested the northern extension of the ZamZam and Jowsey gold zones. The best intersection assayed 10.15 g/t gold over 0.50 m. Other holes tested the Shenkman zone, with assays ranging from 0.63 to 39.40 g/t gold over widths of 0.50 to 24.35 m (Melkior Resources Inc., press releases, April 18, June 28 and November 2, 2011). In total, Melkior completed 15 holes on the property with a combined length of 5488.07 m. Twelve line-kilometres of IP surveying as well as down-hole IP surveying were completed on the property. (N. Hansen, Melkior Resources Inc., written communication, February 1, 2012.)

Melkior Resources Inc. – Eldorado-Shaw

Melkior holds 384 claim units in 41 claims covering an area of 61 km^2 in Eldorado and Shaw townships. The Eldorado–Shaw property boundary is located 2 km north of the Redstone Mine. The Eldorado–Shaw property covers the contact between Deloro Assemblage rocks and Tisdale Assemblage rocks on the southwest rim of the Shaw Dome. Mafic to intermediate volcanic flows and iron formation of the Deloro Assemblage are overlain by felsic to intermediate volcanic rocks and ultramafic rocks of the Tisdale Assemblage. Melkior completed six diamond-drill holes with a combined length of 910.8 m to test electromagnetic anomalies identified on airborne geophysical surveys that covered the property in 2009 and 2010. The drilling encountered anomalous base metals values up to 2200 ppm Zn, 863 ppm Ni and 440 ppm Cu. (Melkior Resources Inc., press release, March 22, 2011).

Metalex Ventures Ltd. – T1 and U2 Kimberlites

On May 16, 2011, Metalex Ventures Ltd. announced the final macro diamond results from the T1 Kimberlite bulk sample (420 tons). The results of the diamond size distribution for the T1 Kimberlite are shown in Table 18.

Table 18. Size distribution for diamonds recovered from T1 Kimberlite.

	Sieve Size							Total Diamonds
through	0.6 mm	0.85 mm	1.18 mm	1.7 mm	2.36 mm	3.35 mm	4.75 mm	
on	0.425 mm	0.6 mm	0.85 mm	1.18 mm	1.7 mm	2.36 mm	3.35 mm	
Total Diamonds	5242	4834	1770	470	109	19	2	12 446

† (Metalex Ventures Ltd., press release, May 16, 2011)

Metalex Ventures Ltd. also processed the remainder of a 450 ton bulk sample collected from the U2 Kimberlite in 2010. The largest stone recovered from the bulk sample was a 2.61 carat, white, gem-quality diamond. In addition to this stone, a 0.54 carat and 6 other stones exceeding 0.13 carats also were recovered from drill hole U2-RC-10 (Metalex Ventures Ltd., press release, July 21, 2011). Table 19 details the size distribution of the diamonds recovered from the entire bulk sample.

Table 19. Size distribution for diamonds recovered from U2 Kimberlite.

	Sieve Size								Total Diamonds
through	0.6 mm	0.85 mm	1.18 mm	1.7 mm	2.36 mm	3.35 mm	4.75 mm	6.70 mm	
on	0.425 mm	0.6mm	0.85 mm	1.18 mm	1.7 mm	2.36 mm	3.35 mm	4.75 mm	
Total Diamonds	338	804	505	213	56	23	5	2	1946

† (Metalex Ventures Ltd., press release, September 14, 2011)

Based on the high proportion of gem quality diamonds, the diamond grade and the large size (9 ha) of the U2 kimberlite pipe, Metalex is considering the collection of a larger bulk sample in order to more accurately assess the diamond grade.

Mexivada Mining Corp. – Golden Porcupine, Rypan

Mexivada Mining Corp. acquired several properties in Deloro Township by option agreements. These include the Golden Porcupine group of claims held by Mhakari Resources Inc. consisting of patented claims HS 1036, HS 1037, HS 1038 and HS 1039 and unpatented claims P4246731, P4246732, P1248902, P4217852 and P4246718. The adjoining four-claim Rypan property on the east side of the Golden Porcupine claims was optioned from P. Robert

and W. Kornick. The company focused on 3 areas on the Golden Porcupine property: the Big Bif area, in the south part of the claims underlain by banded iron formation with anomalous soil geochemistry, north-northwest-trending IP chargeability anomalies and coincident magnetic-low response; the PDFZ area in the northeast part where a series of fault structures are identified parallel to the Porcupine Destor Fault Zone; and the Gold Chlorite zone in the vicinity of the historic Novack shaft (Figure 6). In each target area, excavator trenching and bedrock washing was followed by geological mapping, sampling and diamond drilling. A similar work program completed on the Ryan claims identified the Clorinda quartz, ankerite, pyrite vein system with an inferred strike length of 700 m and up to 6 m in width.

Mexivada drilled 12 holes with a combined length of 2738 m. Nine holes tested targets on the Golden Porcupine claims and 3 were drilled on the Rypan claims. No assay results were available at time of writing. As part of property rehabilitation after the bedrock excavations were completed, the company back-filled the 5 m deep Novack shaft with sand.

Nebu Resources Inc. – Mallard Property

Nebu Resources acquired and started a drilling program on the Mallard property (Nebu Resources Inc., press releases, February 22 and April 27, 2011). The drilling returned assays from trace to up to 6.75 g/t gold over 0.8 m (Nebu Resources Inc., press release, October 24, 2011). It was followed by magnetic and induced polarization surveys (Nebu Resources Inc., press release, December 9, 2011).

Probe Mines Limited – Borden Lake Project

During 2011 Probe Mines focused most of its attention on the Borden Lake gold discovery in Cochrane Township, located 20 km east of Chapleau. Highway 101 crosses the property and the focus of most of the drilling is located on the Borden Lake gold zone, 1 km south of the highway.

Gold mineralization is hosted by Timiskaming-age metasediments within the Kapuskasing Structural Zone. An initial NI 43-101 compliant resource estimate, based on 77 drill holes describing an area 1600 m long by up to 340 m deep, and up to 200 m in thickness, was released on the Borden Lake gold zone in August, 2011. It estimated an indicated resource of 11 607 000 tonnes averaging 0.8 g/t gold containing 305 000 ounces of gold and an additional inferred resource of 169 322 000 tonnes averaging 0.69 g/t gold for 3 755 000 ounces of gold, at a 0.3 g/t gold cut-off. Diamond drilling continued throughout the year with the completion of 37 495 m, 143 holes using 4 drill rigs. Three drills completed infill and expansion of the Borden Lake gold zone while the fourth drill explored satellite gold zones identified during the resource estimation and exploration targets along-trend of the discovery.

The Borden Lake deposit is a surface gold discovery and is characterized by broad zones of disseminated sulphide within mid- to upper-amphibolite grade metasediments. There is a well-developed zonation within the deposit consisting of a higher grade core surrounded by a broad, lower grade envelope (D. Palmer, Probe Mines Limited, personal communication, February 15, 2012).

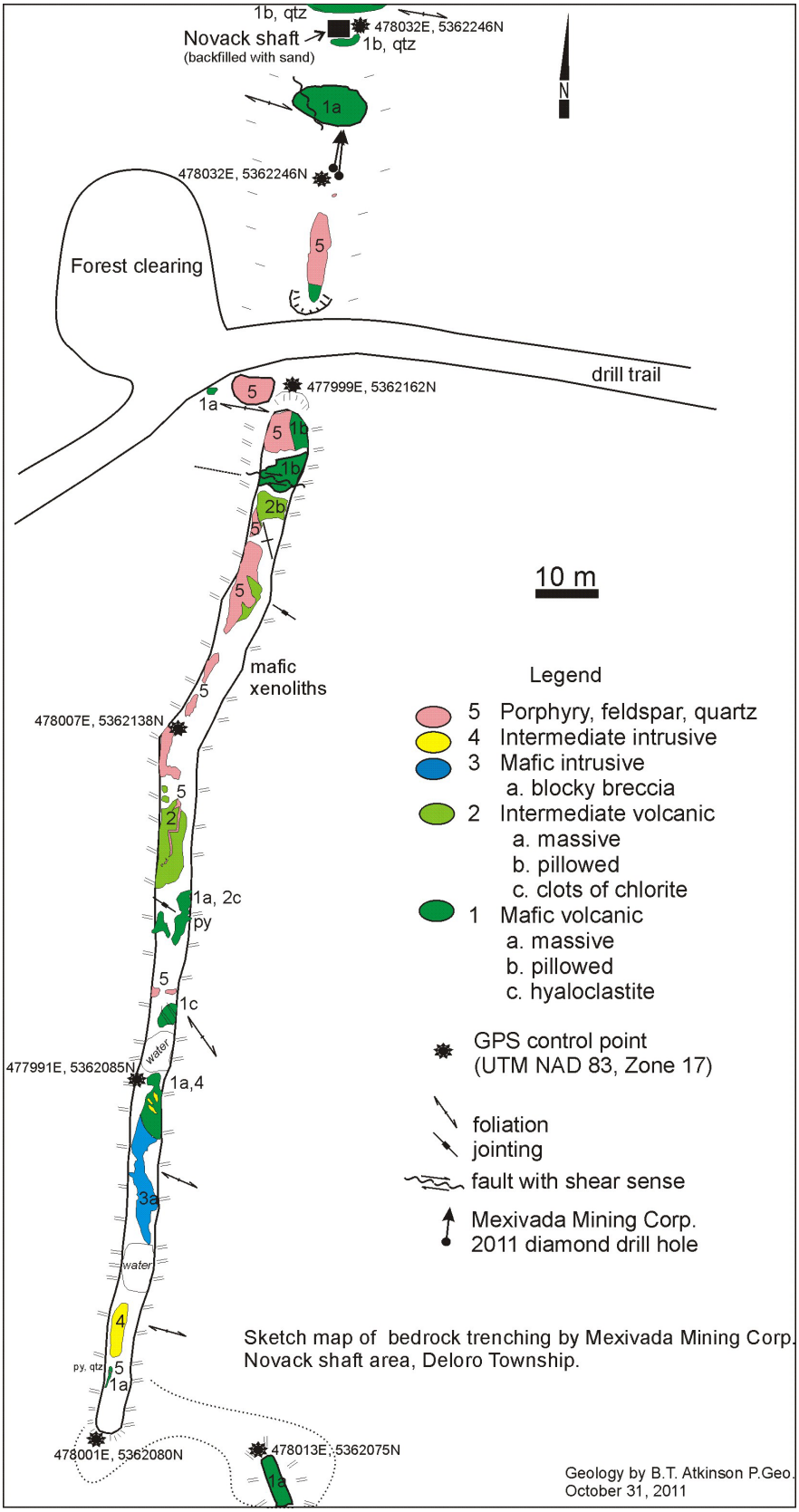


Figure 6. Geological sketch of bedrock trenching in the vicinity of the Novack shaft, Deloro Township.

Prodigy Gold Incorporated – Magino Mine Project

Prodigy Gold Incorporated acquired the Magino Mine in December 2010. Between January and September, Prodigy completed an extensive infill, resource expansion and geotechnical drilling program comprising 131 drill holes for a total of 45 000 m of drilling. The resource expansion drilling was successful in intercepting previously undiscovered gold mineralization along the southwestern and northeastern margins of the deposit. For example, drill holes MA11-007, -008, -009, and -012 cut very thick intervals of gold mineralization, up to 417 m grading 0.71 g/t gold in MA11-008 (Prodigy Gold Incorporated, Management Discussion and Analysis, December 8, 2011). Late in 2011, Prodigy completed an initial test of the southwest extension of the Magino deposit. A total of 7 drill holes (2054 m) were completed over a 300 m strike extent. The preliminary results confirmed widespread gold mineralization southwest of the main gold deposit. Drill hole MA11-160 intersected 127 m grading 0.84 g/t gold (Prodigy Gold Incorporated, press release, January 24, 2011).

The company completed a NI 43-101 compliant Preliminary Economic Assessment (PEA) for the Magino Mine project. The PEA projected the life of mine to be more than 2 614 000 ounces of gold, averaging 249 300 ounces per year over an 11-year mine life. Total mineable resources are estimated to be 74 234 000 tonnes grading 1.5 g/t gold (Prodigy Gold Incorporated, press release, December 22, 2011).

The Magino gold project has an indicated resource of 67 555 000 tonnes grading 1.00 g/t gold (2 176 300 ounces of gold) and an inferred resource of 54 242 000 tonnes grading 0.99 g/t gold (1 721 200 ounces of gold) at a cut-off grade of 3.0 g/t gold) (Ross 2011).

Red Pine Exploration Inc. – Swayze Greenstone Belt

In 2011, Red Pine Exploration Inc. completed a regional till sampling program covering the following properties: Abitibi-West property, Charlie Mortimer Project property, Algoma-Talisman property, Goldcorp property (SaraCourt), Gibb Lake property and Ava-Claire property (Red Pine Exploration Inc., Management Discussion and Analysis, November 15, 2011).

Diamond drilling was carried out on the Goldcorp property (SaraCourt) following a cross-hole induced polarization survey (Red Pine Exploration Inc., press release, February 8, 2011). Drill core assays ranged from 0.643 g/t gold to 4.98 g/t gold on intervals from 0.3 to 6.77 m (Red Pine Exploration Inc., press release, September 1, 2011) on the Michelle and Mortimer zones. The Michelle zone mineralization is contained in tightly folded porphyry dikes while the Mortimer zone is contained in a shear system adjacent to the Kenty Mine (Red Pine Exploration Inc., press release, April 28, 2011).

Rogue Resources Inc. – Langmuir Nickel

The Langmuir nickel deposit was discovered by Golden Chalice Resources Inc. in 2007 by diamond-drilling versatile time domain electromagnetic (VTEM) anomalies in komatiite lavas of the Shaw Dome. Golden Chalice was subsequently renamed Rogue Resources Inc. The company drilling identified 3 parallel zones of nickel mineralization hosted by peridotitic komatiite, referred to as the A, B and C zones. Mineralization consists of pentlandite and pyrrhotite occurring as disseminations, blebs, veins and semi-massive lenses in the komatiite. Nickel tenor varies with sulphide content so the highest grade occurs with the semi-massive sulphides. The mineralized zones are subvertical and dip to the north. Mineral resources for the W4 deposit are listed in Table 20.

Table 20. Mineral resources for the W4 nickel deposit, Langmuir Township.

Resource category	Tonnes	Grade % Ni
Measured and Indicated	677 000	1.0
Inferred	171 000	0.89

Source: K. Montgomery, Rogue Resources Inc., written communication, February 8, 2012.

In 2011 Rogue Resources drilled 13 holes totalling 2282 m on the W4 nickel deposit. Six HQ size diamond-drill holes on the A Zone were completed for metallurgical testing and 7 NQ holes on the W4 deposit tested for the eastward extension of the deposit. Highlights of the metallurgical test results included an intersection that assayed 1.2% Ni over 29 m and 1.68% Ni over 17.3 m. The east extension exploration drilling intersected a section that assayed 1.54% Ni over 9.4 m. Environmental, geotechnical and metallurgical studies on the W4 zone were initiated during the year. (K. Montgomery, Rogue Resources Inc., written communication, February 8, 2012).

Rogue Resources Inc. – Radio Hill

Rogue Resources acquired the Radio Hill iron deposit in Penhorwood Township from several Timmins prospectors who staked the deposit after mining leases on the property had expired. Prior to that staking, Kukatush Mining Corp. (Ontario) Ltd. had done a considerable amount of work on the property between 1959 and 1965 including extensive diamond drilling and metallurgical testing of a 3000 ton bulk sample. In 1961 several historic mineral resource determinations using variable depths and pit parameters indicated the Radio Hill iron deposit contained between 158 million tons grading 27.8% iron and 427 million tons grading 27.3% iron. In 1965, a positive feasibility study was completed but no production was achieved.

The Radio Hill iron deposit is an Archean banded iron formation consisting of thinly bedded chert and magnetite (Photo 1). The deposit is east-striking, plunges to the northwest and is considerably thickened by folding over a length of 4 km.

Rogue Resources completed a diamond-drilling campaign on the property to confirm the historic resource and to test for extensions to the deposit. Rogue Resources duplicated historic drilling on the south portion of the deposit and also drilled the thicker central part. A total of 4202 m was drilled in 22 holes. One drill hole intersected 141 m of iron formation that assayed 49% total iron over 62 m. A second drill hole intersected 75 m of iron formation that assayed 46% total iron (K. Montgomery, Rogue Resources Inc., written communication, February 8, 2012).

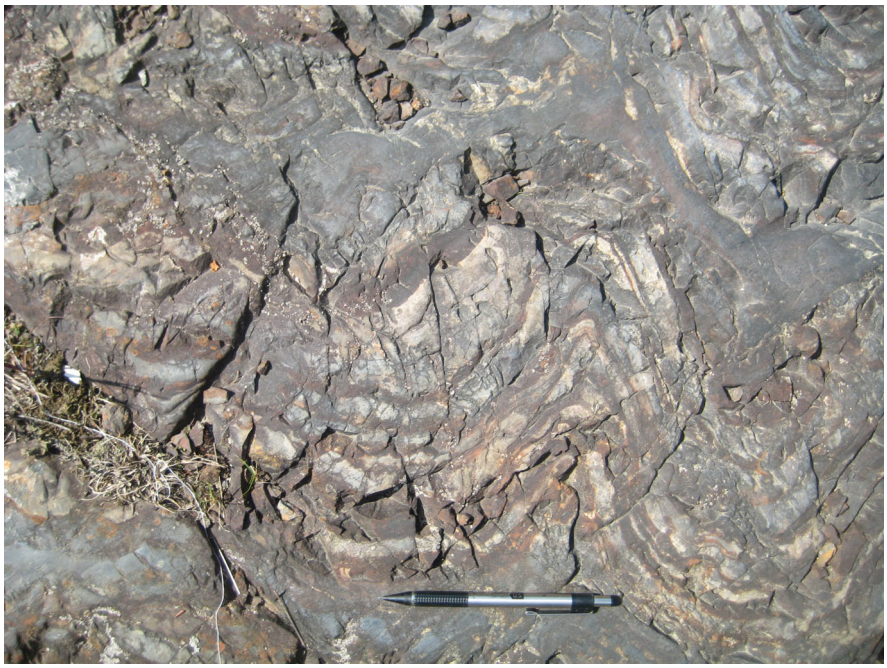


Photo 1. Folded, thinly bedded banded iron formation consisting of chert and magnetite, Radio Hill iron deposit, Penhorwood Township.

Sage Gold Inc. – Clavos Mine

Sage Gold Inc. continued its drilling program at the Clavos Mine, in German, Stock and Clergue townships. The area is transected by the Pipestone Deformation Zone which defines the contact between the mafic and ultramafic rocks of the Kidd–Munro Assemblage to the north, and metasedimentary rocks of the Porcupine Assemblage to the south. The presence of bleaching and sericitization is noted in the vicinity of the gold mineralization. Gold mineralization is hosted by variably carbonatized and silicified fault breccia composed of metasedimentary rocks and serpentinized peridotite in the north footwall and Porcupine Assemblage metasedimentary rock in the south hanging wall (Ayer et al. 2005; Johnstone 1991).

The drilling program extended the mineralization below and to the east of the underground mine workings. It also included holes drilled for geotechnical purposes for the mine closure plan (Sage Gold Inc., press releases, April 26, June 2, August 25 and December 14, 2011).

SGX Resources Inc. – Timmins North Deposit

The Timmins North deposit consists of 18 patented claims in Tully Township. SGX Resources Inc. and San Gold Corporation acquired the property, formerly known as the Nickel Offsets and later the Black Pearl gold prospect, from Canadian Lithium Inc. Over the last year, the company completed a diamond-drilling program of 4727 m in 13 holes to expand historic gold resources on the property and to in-fill gaps between previously drilled zones of gold mineralization. The deposit is overlain by up to 35 m of clay, silt and till overburden. In the search for near-surface bedrock for development of an underground ramp portal, SGX carried out a seismic survey over the deposit. Baseline data collection for water quality was initiated in anticipation of a future underground exploration program.

SGX Resources Inc. – Timmins South Deposit

The Timmins South property includes 37 claims consisting of 335 claim units in Sothman, Semple, Halliday and Nursey townships. SGX Resources Inc. has been actively exploring the property over the last 2 years. A diamond-drilling program of over 40 drill holes was completed in 2011.

In January, SGX drilled hole SL-11-08 under the Sirluga occurrence. UTM coordinates at the drill collar are NAD83, Zone 17, 478577E 5307365N. The drill hole was oriented 180/45S and overburden was 5.3 m deep. The hole intersected felsic fragmental lapilli tuff to tuff breccia with disseminated pyrite and weak carbonate alteration. A 12 m wide, dark grey to brown feldspar porphyry dike with 3 mm euhedral feldspar phenocrysts intrudes the volcanic rocks. Down-hole, 2 m of massive to semi-massive pyrrhotite mineralization occurs at the contact with carbonate-altered komatiite flows followed by basalt with rare clasts of spinifex-textured komatiite up to 15 cm in diameter. The basalt is fine grained, moderately foliated, green and chloritic in contact with felsic crystal tuff. The crystal tuff has a weak fabric and in places consists of felsic fragments interbedded with finer ash material.

The main focus of SGX's drilling is west of Smylie Lake in Sothman Township where the company has been targeting gold mineralization hosted by ultramafic volcanic rocks in contact with felsic volcanic flows and graphitic sediments. Gold mineralization occurs associated with broadly disseminated pyrite in silicified ultramafic rocks. Several generations of quartz and carbonate veining are present. The rock units are east-trending, south-facing and are intruded by several sills of feldspar porphyry. Drill-hole locations and the geology based on that drilling is illustrated in Figure 7. No outcrop is exposed in the area but the drilling has defined gold mineralization over an area of 350 by 100 m to a depth of 150 m. The discovery drill hole SL-11-14 intersected 0.85 g/t gold over a width of 63.6 m and hole SL-11-36 drilled beneath it encountered 1.27 g/t gold over 68.5 m.

In total, SGX Resources Inc. drilled 42 049 m in 178 holes on their Timmins properties in 2011 (J. Boissoneault, SGX Resources Inc., personal communication, February 21, 2011).

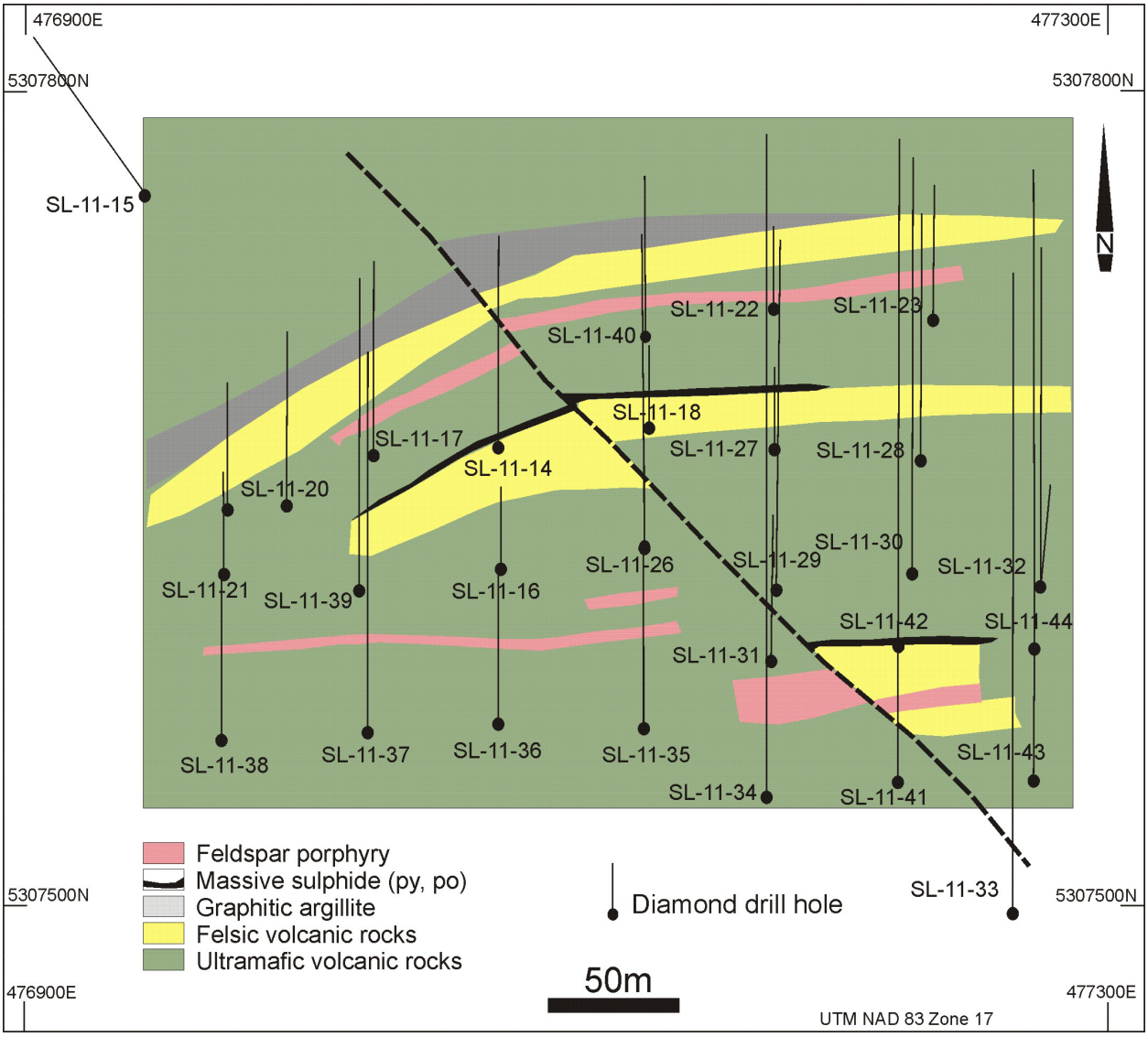


Figure 7. Drill plan and geology on the Timmins South gold project in Sothman Township (*modified from* SGX Resources Inc.).

Temex Resources Corp. – Whitney Joint Venture

The Whitney Joint Venture project is a 60:40 joint venture exploration project between Temex Resources Corp. and Goldcorp Inc. Temex is the operator on the project which includes 6 past-producing mines including Banner, Bonetal, Broulan Reef, Broulan–Porcupine, Hallnor and Hugh–Pam. The combined gold production of these mines exceeded 2.5 million ounces. In 2011 Temex completed 68 diamond-drill holes on the property, with a total length of 17 880 m. Major drill targets were the upper areas of the Broulan Reef Mine, Hallnor 6 Vein area, Hallnor 1-55 zone and the C zone, a near-surface gold discovery located between the Hallnor and Broulan Reef mines. Drilling on the Bonetal Mine main vein system and the hanging wall to the vein system intersected 2 gold-bearing intervals. One interval assayed 5.61 g/t gold over 8.7 m and the second intersected 5.37 g/t gold over 1.9 m. Shallow drilling in the vicinity of the Broulan Reef Mine (Photo 2) tested flat veins and quartz stockwork zones beyond previously mined areas. Drilling highlights include 4.51 g/t gold over 3.0 m and 37.90 g/t gold over 8.8 m including 648.13 g/t gold over 0.5 m (Temex Resources Corp., press release, October 19, 2011).

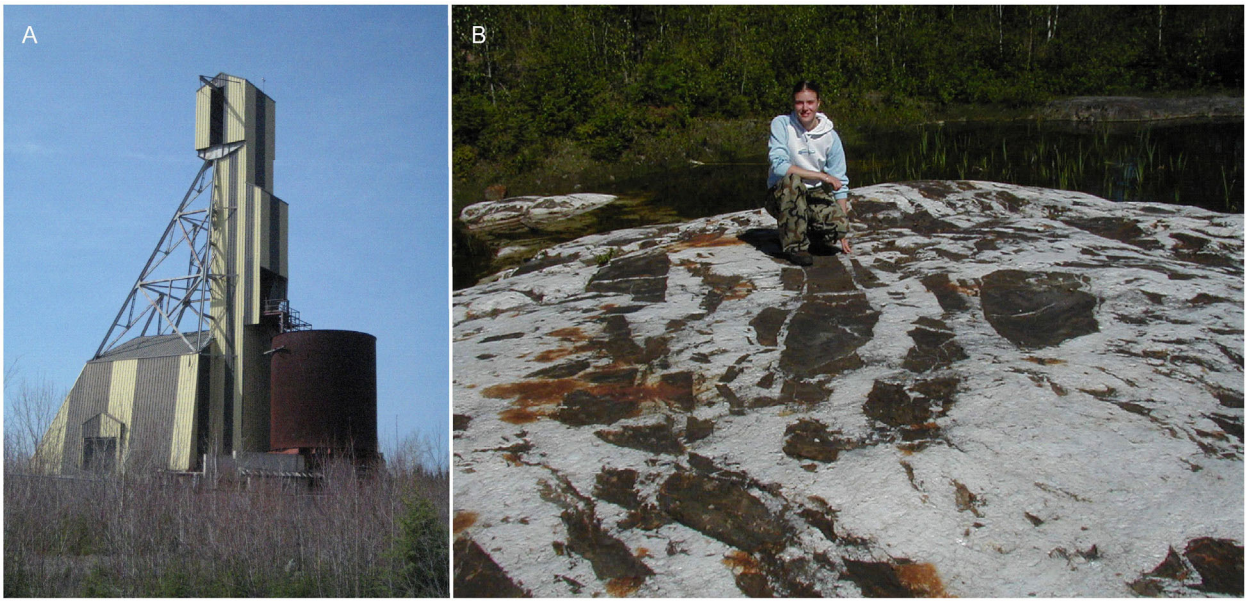


Photo 2. Broulan Reef Mine, Whitney Township. A) Broulan Reef Mine headframe. As part of the on-going rehabilitation of mine sites, this headframe was demolished last year. B) Large quartz stockwork breccia vein south of the Broulan Reef Mine.

Trade Winds Ventures Inc. – Block A

Trade Winds Ventures Inc. performed a 30 000 m diamond-drilling program on its Block A property, adjacent to Detour Gold's Detour Lake gold project. Trade Winds Ventures reported intersections of up to 4.18 g/t gold over 18.4 m (Trade Winds Ventures Inc., press release, July 14, 2011). The company also filed a NI 43-101 report on the property and completed metallurgical testing. Mineral resources are indicated in Table 21. (Trade Winds Ventures Inc., press release, February 16, 2011).

Table 21. Indicated and inferred resources on Block A property, Trade Winds Ventures Inc.

Resources Category	Tonnes (millions)	Grade Capped (g/t gold)	Gold Ounces
Indicated	70.8	0.85	1 924 000
Inferred	27.3	0.87	762 000

Source: Trace Winds Ventures Inc., press release, May 2, 2011)

A second phase of diamond drilling on the property included an additional 20 000 m (Trade Winds Ventures Inc., press release, August 16, 2011). In the later part of the year, Trade Winds was acquired by Detour Gold Corporation, consolidating the Detour Lake camp under single ownership of Detour Gold Corporation (Trade Winds Ventures Inc., press release, September 26, 2011).

Trelawney Mining and Exploration Inc. – Côté Lake

Exploration activity through the year continued to focus on the Côté Lake gold-bearing zone in Chester Township where the company has identified a resource of over 4 million ounces of gold. A total of 64 000 m of resource definition diamond drilling was completed on the zone using 7 drill rigs during 2011. (D. Beilhartz, personal communication, January 31, 2012).

Gold mineralization occurs in anastomosing alterations zones hosted by brecciated tonalite. Hydrothermal biotite, chlorite and tourmaline accompany quartz and auriferous pyrite veining. To date, gold mineralization has been identified over a strike length of 1200 m and up to 300 m in width.

Geochronological studies on the tonalite utilized 2 age dating methods including U/Pb analysis on zircon at the University of Toronto Jack Satterly Laboratory and Re/Os analysis on molybdenite at University of Alberta Radiogenic Isotope Facility. The U/Pb analysis yielded an age of 2741±1 Ma while Re/Os dating gave an age of 2737±7 Ma (D. Kontak, Laurentian University, personal communication, February 8, 2012).

Trelawney completed 3000 m of diamond drilling in 10 holes on other prospects and showings as well as geological mapping, soil and lithogeochemical sampling on the company's Chester Township claims.

Windarra Minerals Ltd. – Mishi Leases

Windarra Minerals Ltd. completed a 25-hole (3111 m) diamond-drilling program on their Mishi Leases property. The Mishi Leases property is located in the Mishibishu Lake area, approximately 1 km west of the Mishi Open Pit.

The drilling program focused on the KK zone (MDI42C03SW00052), the White Swan zone (MDI42C03SW00056) and the Granges Glory zone (MDI42C03SW00056). These targets were selected based upon encouraging results from geophysical and soil geochemical surveys completed in late 2010. All drill holes intersected bulk tonnage-style gold mineralization, similar to that found at the Mishi Pit.

Results from the drilling completed on the KK zone were the most encouraging. All 8 drill holes intersected multiple zones of gold mineralization, with the most significant intervals being 1.03 g/t gold over 20.1 m in M11-18; 0.77 g/t gold over 12.0 m in M11-20; 0.54 g/t gold over 20.9 m in M11-22 and 0.61 g/t gold over 20.6 m in M11-25. These results demonstrate that the mineralization is continuous across broad widths. Drilling on the central part of the property (White Swan zone) yielded assays of 2.96 g/t gold over 5.8 m from M11-17, and drilling on the eastern part of the property (Granges Glory zone) yielded 2.29 g/t gold over 12.4 m within an overall grade of 1.03 g/t gold over 32.0 m (Windarra Minerals Ltd., press release, June 9, 2011).

Zenyatta Ventures Inc. – Albany Project

In 2011, exploration work was conducted by Zenyatta Ventures Ltd. on the Albany Project claims. Cliffs Natural Resources Exploration Canada Inc. owns 75% interest and 25% is held by Zenyatta Ventures Ltd. The claim blocks are located in the James Bay Lowlands region, north of Hearst. Zenyatta initiated a diamond-drilling program based on results of an airborne magnetic and electromagnetic survey flown by Geotech Limited in 2010. A total of 26 holes (9809 m) were drilled on the Albany claim blocks and 2472 core samples were analyzed (G. Carey, Zenyatta Ventures Inc., written communication, February 14, 2012).

RESIDENT GEOLOGIST PROGRAM STAFF AND ACTIVITIES

The Timmins Resident Geologist office was staffed by B. Atkinson, Regional Resident Geologist, and P. Bousquet, District Geologist. S. Harvey and S. Burnett worked on short-term contract positions filling in the role of District Geological Assistant. A. Girard provided field and office support under the Summer Experience Program 2011.

The Timmins office serves as the regional centre for the Northeast Ontario Regional Resident Geologist Program. R. Ferguson is the Northeast Regional Manager responsible for the Timmins and Kirkland Lake regional offices and the Sudbury and Sault Ste. Marie district offices. F. Boucher is the Regional Administrative Assistant, D. Draper is the GIS/Data Specialist and A. Wilson holds the position of Mineral Deposit Compiliation Geologist for Northeastern Ontario. D.-A. Metsaranta was the Regional Land Use Geologist for Northeastern Ontario.

The Timmins Regional Resident Geologist Office summary statistics are provided in Table 22. Assessment files received in 2011 are listed in Table 23 and publications received are listed in Table 24.

Table 22. Summary of staff activities, Timmins Regional Resident Geologist's Office, 2011.

Activity	Number
Assessment files received (including donations)	148
Client visits – Office	524
Client visits – Drill Core Library	63
Geological tours given (participants)	9 (41)
Geoscience library accessions	34
Property visits by staff	30
Telephone inquiries	549

Table 23. Assessment files received in the Timmins District in 2011.

Abbreviations

AEM ..... Airborne electromagnetic survey
MAG ..... Airborne magnetic survey
Anlys ..... Analysis / Analyses other than Assays
ARAD ..... Airborne radiometric survey
Benef..... Beneficiation
DD..... Diamond drilling
DGP ..... Down-hole geophysics
EM ..... Ground electromagnetic survey
GC ..... Geochemical survey
GL ..... Geological survey
IP ..... Induced polarization survey
Lc ..... Linecutting/Recutting
Mag ..... Ground magnetic survey
OVD..... Overburden drilling
Pet ..... Petrographic analyses
Pr ..... Prospecting
RAD ..... Ground radiometric survey
Rept ..... Report
Samp ..... Sampling (other than bulk)
Str ..... Stripping
Tr ..... Trenching

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Abbie Lake	Tremblay, M.A. and Robert, J.	2011	Tr	2.49301	WP Abbie Lake.38*
Abbie Lake	Upper Canada Explorations Ltd.	2010	IP, Lc, Mag	2.47152	WP Abbie Lake.36
Abbie Lake, Pukaskwa River	Precambrian Ventures Ltd.	2009 – 2010	Assays, Pr, Samp	2.48261	WP Abbie Lake.37
Abotossaway	Pele Gold Corporation Inc.	2011	Assays, GL, Pr	2.48853	WP Abotossaway.53
Arbutus, Huffman	Augen Gold Corp.	2009 – 2010	DD - 4 - 751m, Assays	2.47029	T-6188
Avon	C. Villeneuve Construction Co. Ltd.	2011	Assays, Pr, Samp	2.49383	T-6289
Bartlett, English	Klondike Silver Corp.	2010	EM, Mag	2.44241	T-6206
Beemer	Lefort, D.M. and Simon, S.B.	2011	Pr	2.49623	T-6276
Benneweiss	Newcastle Minerals Ltd.	2010 – 2011	DD - 11 - 2052m, Assays	2.49233	T-6283*
BMA 526 833, BMA 527 834	De Beers Canada Inc.	2009	DD - 2 - 147m	2.47776	T-2273
BMA 527 834, 527 841, 528 834, 528 841	Debuts Diamonds Inc.	2011	AMAG	2.49915	T-6299*
BMA 533 852	Canterra Minerals Corporation	2011	Mag	2.47924	T-2279
Bond, Stock	Brigus Gold Corp.	2010	AMAG	2.47692	T-6236
Borden, Cochrane, Gallagher, McNaught	Probe Mines Limited	2011	AEM, AMAG	2.49500	T-6293*
Brackin, Leeson, Stover	Micon Gold Inc.	2009 – 2010	Assays, GC, Samp	2.48343	WP Brackin.60
Breckenridge	Jet Mining Exploration Inc.	2009 – 2010	Assays, Pr, Str	2.46761	WP Breckenridge. 2

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Breckenridge	Rencore Resources Ltd.	2011	DD - 3 - 738m, Assays	2.49831	WP Breckenridge.3
Breckenridge, Lizar, Mosambik, Nameigos	Rencore Resources Ltd.	2011	AEM, AMAG	2.47520	WT Lizar.34
Bristol	Lake Shore Gold Corp.	2009 – 2010	DD - 19 - 5073m, Assays	2.46956	T-0797
Bristol, Carscallen, Denton	Melkior Resources Inc.	2010	AEM, AMAG	2.47318	T-6228
Bristol, Thorneloe	Lake Shore Gold Corp.	2010	IP, Lc, Mag	2.47440	T-2278
Brower	Haire, P.G.	2010	DD - 3 - 151 m, Assays	2.48047	T-2275
Brunswick	Benton Resources Corp.	2010	IP	2.46769	T-6197
Bruyere	Jack Robert and Associates	2011	IP, Lc	2.47817	WP Bruyere.27
Bruyere	Robert, Tremblay, Salo	2010	Assays, Pr	2.46986	WP Bruyere.26
Byers, Loveland	Amador Gold Corp.	2009 – 2010	DD - 13 - 3363m, Assays	2.48051	T-6055
Carnagie, Kidd	Xstrata Copper Canada	2005 – 2008	DD - 4 - 2037m, Assays	2.44408	T-6052
Carscallen	6070205 Canada Inc.	2011	EM, Mag	2.48312	T-3167
Carscallen	Harron, G.A. / 6070205 Canada Inc.	2011	EM, IP, Lc, Mag,	2.49425	T-6278
Carscallen	International Explorers and Prospectors Inc.	2011	Assays, Pr	2.49899	T-6301
Carscallen	Melkior Resources Inc.	2009	DD - 2 - 475m, Assays	2.44015	T-6204
Carscallen	Moon Energy Corporation Foundation Canada	2009	DD - 1 - 411m, Assays	2.44423	T-6219
Carscallen	Silver Shield Resources Corp. / Mhakari Gold Corp.	2009 – 2011	Assays, Samp	2.47446	T-6026
Carscallen	Xstrata Copper Canada	2010	IP	2.46813	T-6203
Carscallen, Denton	Melkior Resources Inc.	2009 – 2010	DD - 58 - 17650m, DGP, GC, IP, Mag, Pr	2.48699	T-6267*
Carscallen, Massey, Turnbull, Whitesides	Mhakari Gold Corp.	2010	AEM, AMAG	2.49759	T-6309*
Carscallen, Massey, Turnbull, Whitesides	Mhakari Gold Corp.	2010	AEM, AMAG	2.47081	T-6149
Chabanel	Dickson, R.	2010	Assays, Samp	2.44488	WP Chabanel.93
Chabanel, Esquega	Colbert, P.J.	2010	Assays, Benef	2.46394	WP Esquega.38
Champagne	Salo, A.J.	2010	Mag	2.46794	T-0778
Chester	Augen Gold Corp.	2010	EM, IP, Mag	2.48167	T-6067
Chester	Newcastle Minerals Ltd.	2011	IP	2.48619	T-6244
Clay	Rare Earth Metals Inc.	2010	DD - 18 - 5433m, Assays	2.49582	T-6295*
Clay, Howells, Hopkins, Mowbray	Rare Earth Metals Inc.	2009 – 2010	AMAG, ARAD	2.49546	T-6308*
Clergue	Matamec Exploration Inc.	2007	DD - 6 - 1354m, Assays	2.48811	T-6270

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Cochrane	Probe Mines Limited	2010	AEM, AMAG	2.47268	T-6227
Cody	Goldcorp Canada Ltd. P.J.V.	2008	IP, Mag	2.43897	T-6200
Cody	Raine, B. and Pyke, D.	2011	Assays, Samp	2.48770	T-6253
Coppell, Dore, Heenan, Horwood, Newton, Rollo, Silk, Swayze	Red Pine Exploration Inc.	2010	AEM, AMAG, IP	2.46831	T-6230
Cunningham	Mortimer, C.H.	2010 – 2011	Tr	2.49841	T-6300*
Deloro	Benton Resources Corp.	2010	DD - 1 - 150m, Assays	2.44695	T-6209
Deloro	Bergeron, D.A.	2009	Str	2.49050	T-6291*
Deloro	Claim Post Resources Inc.	2010	DD - 1 - 609m	2.46932	T-6210
Deloro	SGX Resources Inc.	2010	IP	2.49845	T-6288*
Denton	Nebu Resources Inc.	2009	Mag	2.46762	T-6191
Denton	RT Minerals Corp.	2010 – 2011	DD - 3 - 1467m, Assays	2.47554	T-6175
Denton	Zinccorp Resources Inc.	2011	Pr	2.48872	T-6245
Denton	Zinccorp Resources Inc.	2010	Lc, Mag	2.46808	T-6002
Denton, Keefer	RT Minerals Corp.	2009 – 2011	IP, Lc	2.47583	T-6163
Denton, Keefer	RT Minerals Corp.	2009 – 2011	IP, Lc	2.47517	T-6135
Denyes	2128700 Ontario Inc.	2011	Pr, Str	2.48861	T-6268*
Desolation Lake Area	Fancamp Exploration Ltd.	2011	EM	2.48573	T-6246
Dore	Mortimer, C.H.	2009	DD - 1 - 218m	2.44660	T-6198
Eldorado, Shaw, Carman, Langmuir	Melkior Resources Inc.	2010	DD - 6 - 910 m, Assays	2.47751	T-6118
Esquega	3814793 Canada Inc.	2011	Assays, Pr	2.49895	WP Esquega.39*
Finan	Golden Goose Resources Inc.	2009	Assays, GC	2.47300	WP Finan.86
Finan	MPH Ventures Corp.	2010	Assays, RAD	2.47010	WP Finan.85
Finan, Jacobson	Richmont Mines Inc.	2009	DD - 18 - 5321m, Assays	2.48046	WP Finan.87
Fingal	Cascadero Copper Corporation	2011	EM, Mag	2.47947	T-6048
Fournier	Blazecka, J.S.	2010	OVD - 1 - 40m, Assays	2.47552	T-6035
Fripp	Lefort, D.M.	2011	Pr, Samp	2.48664	T-6263
Fripp	Lefort, D.M.	2009	Str	2.48493	T-6262
Fripp	Lefort, D.M.	2011	GL, Lc, Samp	2.48494	T-6265*
Fripp	Lefort, D.M.	2009	Assays, Samp	2.48491	T-6264*
Fripp	Lefort, D.M.	2010 – 2011	Pr	2.48503	T-2691
Fripp	Lefort, D.M.	2010	Assays, Pr, Samp	2.48492	T-6258
Fripp	Moon Energy Corporation Foundation Canada	2010 – 2011	DD - 2 - 514m	2.48434	T-5984
Garnet	Mortimer, C.H.	2010 – 2011	Str	2.49840	T-6305*
German	Sage Gold Inc.	2010	DD - 2 - 520m, Assays	2.48392	T-2284
Glasgow, Meath, Rennie	Rockcliff Resources Inc.	2010	AMAG	2.47153	WP Rennie.37

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Godfrey	6070205 Canada Inc.	2011	DD - 1 - 60m	2.49087	T-6256
Godfrey, Jamieson	Amador Gold Corp.	2011	Mag	2.48038	T-2281
Godfrey	Claim Post Resources Inc.	2011	DD - 2 - 805m	2.49586	T-6269
Godfrey	Claim Post Resources Inc.	2011	GC	2.49599	T-6272*
Godfrey	Gervais, L.N.	2011	OVD - 1 - 17m, Assays	2.47843	T-2265
Godfrey	International Explorers and Prospectors Inc.	2010	DD - 1 - 33m	2.47040	T-6212
Godfrey	International Explorers and Prospectors Inc.	2011	Lc, Mag	2.48235	T-2280
Godfrey, Jamieson	China Mining of Canada Corp.	2010	EM	2.46259	T-6196
Godfrey, Jamieson	Claim Post Resources Inc.	2010	Assays, GC	2.46989	T-6202
Godfrey, Jamieson, Robb	Claim Post Resources Inc.	2010	DD - 4 - 1300m, Assays	2.47250	T-6225
Godfrey, Jamieson, Robb, Turnbull	Claim Post Resources Inc.	2009	Assays, GL, Pr	2.48035	T-2274
Greenlaw	Sino Minerals Corp.	2010	AEM, AMAG	2.48765	T-6261
Halcrow	Lund Gold Ltd.	2009	Assays, EM	2.45617	T-6189
Halliday	Lalonde, D.	2011	Str	2.49143	T-6273
Hambleton	Harte Gold Corp.	2010 – 2011	Lc, Mag	2.48979	WP Hambleton.21
Hopkins	C. Villeneuve Construction Co. Ltd.	2011	Assays, GC	2.47859	T-2277
Horwood	6378366 Canada Inc.	2010	EM, Mag	2.47282	T-6229
Horwood	Amador Gold Corp.	2011	Lc, Mag	2.47625	T-2269
Horwood	Amador Gold Corp.	2010	DD - 11 - 1851m, Assays	2.48228	T-6024
Horwood	Amador Gold Corp.	2011	IP, Mag	2.48229	T-6016
Horwood	Amador Gold Corp.	2009	DD - 14 - 1886m, Assays	2.46955	T-6154
Hoyle	Goldcorp Porcupine Gold Mines	2010 – 2011	DD - 3 - 2787m, Assays	2.48589	T-3175
Hoyle	Lake Shore Gold Corp.	2010	DD - 88 - 15131m, Assays	2.48836	T-6259
Hoyle	Lake Shore Gold Corp.	2010 – 2011	DD - 4 - 3116m, Assays	2.48432	T-2690
Huffman	Augen Gold Corp.	2009 – 2010	IP, Mag	2.46431	T-6193
Ivanhoe	Morin, J.R.	2010	Assays, Pr	2.49568	T-6274
Jacobson	Chalice Diamond Corp.	2009, 2011	Assays, GL, Samp, Str	2.48844	WP Jacobson.110
Jacobson	Richmont Mines Inc.	2011	DD - 1 - 235m, Assays	2.48645	WP Jacobson.109
Jacobson	Richmont Mines Inc. / Red Pine Exploration Inc. J.V.	2011	DD - 2 - 762m, Assays	2.49026	WP Jacobson.111*
Jacobson	Strike Minerals Inc.	2011	GL, Samp, Str	2.48851	WP Jacobson.108
Keefer	Moon Energy Corporation Foundation Canada	2011	DD - 1 - 200m	2.49719	T-6282*
Keefer	United Reef Limited	2011	DD - 7 - 597m, Assays	2.49196	T-6260
Keefer	Zinccorp Resources Inc.	2011	EM, IP, Lc, Mag	2.49349	T-6279

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Keefer	Zinccorp Resources Inc.	2011	IP	2.48621	T-6238
Keefer	Zinccorp Resources Inc.	2011	IP	2.48621	T-3177
Kidd	Explor Resources Inc.	2011	Mag	2.48506	T-3065
Lackner	6378366 Canada Inc.	2009	Samp	2.44240	T-6221
Lackner	6378366 Canada Inc.	2011	AEM	2.47826	T-6234
Langmuir	McKinnon, D.	2011	Mag	2.49266	T-6281*
Langmuir	Rogue Resources Inc.	2009	DD- 11 - 3939m, Assays	2.47414	T-6182
Langmuir	Rogue Resources Inc.	2009	DGP	2.47417	T-6232
Lizar, Breckenridge, Nameigos	Rencore Resources Ltd.	2011	Assays, Pr	2.49378	WT Lizar.35*
Loveland	6070205 Canada Inc.	2010	IP	2.46739	T-6192
Loveland	Explorers Alliance Corporation	2011	DD - 1 - 306 m	2.48522	T-3176
Loveland	Harron, G.A. / 6070205 Canada Inc.	2011	DD - 1 - 150m	2.48932	T-6251
Loveland	Western Kidd Resources Inc.	2008 – 2009	GL, IP, Mag	2.43776	T-6195
Loveland, Robb	International Explorers and Prospectors Inc.	2011	EM, Mag	2.48771	T-6239
Lower Detour Lake	Atocha Resources Inc.	2010	DD - 7 - 1237m, Assays	2.48899	T-6257
Mallard	Bruce Durham and Associates	2011	EM, Mag	2.48163	T-6076
Mallard	Cascadero Copper Corporation	2011	EM, Lc, Mag	2.48189	T-6025
Mallard	Morin, R.	2009	Assays, Samp	2.44944	T-6220
Massey	Mhakari Gold Corp.	2011	Lc, Mag	2.49877	T-6307*
Massey	Mhakari Gold Corp.	2011	IP, Lc	2.49878	T-6306*
Massey	Mhakari Gold Corp.	2011	IP, Lc	2.49745	T-6304*
Matheson	Matamec Exploration Inc.	2009 – 2010	DD - 8 - 2790m, Assays, Lc, Mag	2.47661	T-2267
McMurray	Northquest Ltd.	2010	DD - 3 - 384m, Assays	2.45496	WP McMurray.100
McMurray, Rabazo	Northquest Ltd.	2009	Assays, GL, Pr, Str	2.44038	WP McMurray.101
Meath	Strike Minerals Inc.	2008	Assays, GL, Samp	2.44334	WP Meath.21
Mishibishu lake	MetalCORP Limited	2011	Pr, Samp	2.48909	WP Mishibishu Lake.88*
Mishibishu Lake	Rogue Resources Inc.	2011	Lc, Mag	2.47587	WP Mishibishu Lake.84
Mishibishu Lake	Trelawney Mining and Exploration Inc	2011	DD - 3 - 693m	2.49769	WP Mishibishu Lake.89*
Mishibishu Lake	Trelawney Mining and Exploration Inc	2011	DD - 2 - 530m	2.49029	WP Mishibishu Lake.86
Mishibishu Lake	Tremblay, M.A.	2010	Assays, GL, Str	2.48815	WP Mishibishu Lake.85
Mishibishu Lake, Abbie Lake, Point Isacor	Trelawney Mining and Exploration Inc	2008	Assays, Pr	2.48835	WP Mishibishu Lake.87*
Mountjoy	Claim Post Resources Inc.	2010	Assays, GC	2.47409	T-6224
Mountjoy	Claim Post Resources Inc.	2010	GC	2.48794	T-6243
Mountjoy	Claim Post Resources Inc.	2010	GC	2.49005	T-6249
Mountjoy	Claim Post Resources Inc.	2010 – 2011	Assays, GC	2.47424	T-6069

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Mountjoy	Claim Post Resources Inc.	2010 – 2011	GC	2.47962	T-2270
Mountjoy	Claim Post Resources Inc.	2010	GC	2.49006	T-6250
Mountjoy	Claim Post Resources Inc.	2010	GC	2.49004	T-6248
Mountjoy	Geomark Exploration Ltd.	2011	Lc	2.49542	T-6292*
Murphy	International Explorers and Prospectors Inc.	2011	IP, Lc	2.48865	T-6255
Musgrove	Daxl, H.	2010 – 2011	Assays, Pr, Samp	2.48457	T-2689
Newton	Red Pine Exploration Inc.	2010	DD - 18 - 3915m, Assays	2.49238	T-6284*
Ogden	Claim Post Resources Inc.	2011	DD - 3 - 1662m, Assays	2.49789	T-6287*
Ogden	Claim Post Resources Inc.	2010	Assays, EM	2.46521	T-6222
Ogden	International Explorers and Prospectors Inc.	2010	DD - 1 - 474m, GL	2.49589	T-6310*
Ogden	Knick Exploration	2010	EM, Mag	2.47070	T-6213
Ogden	Knick Exploration	2010	IP	2.47053	T-6215
Ogden	Mhakari Gold Corp.	2011	EM, Mag	2.48380	T-6240
Ogden	Nebu Resources Inc.	2010	DD - 4 - 1230m, Assays	2.49843	T-6298*
Osway	Cascadero Copper Corporation	2011	EM, Mag	2.49422	T-6294*
Penhorwood	Golden Chalice Resources Inc.	2010	DD - 4 - 650m, Assays, EM, Lc, IP, Mag	2.46685	T-6194
Penhorwood	Rogue Resources Inc.	2010	DD - 1 - 446m, Pet	2.48504	T-6252
Penhorwood	Rogue Resources Inc.	2011	DD - 7 - 1395m	2.49706	T-6303*
Price	Croxall, J.E.	2011	Str	2.49224	T-6275
Price, Adams	Mainstream Minerals Corporation	2010	IP, Mag	2.49104	T-6286*
Prosser	Explor Resources Inc.	2011	EM, Lc, Mag	2.49237	T-6280
Prosser	Xstrata Copper Canada	2006	DD - 2 - 2181m, Assays	2.44235	T-6207
Raney	Cascadero Copper Corporation	2011	Pr, Samp	2.49791	T-6302*
Raney	MPH Ventures Corp.	2009 – 2010	DD - 14 - 2151m, Assays, Rept	2.48564	T-6254
Raney	MPH Ventures Corp.	2010	IP, Lc, Mag	2.48544	T-6001
Reeves	Sedex Mining Corp.	2010	GL	2.47069	T-6214
Reid	China Metallurgical Explorations Corp.	2011	Assays, GC	2.49367	T-6290*
Riggs	Upper Canada Explorations Ltd.	2011	Lc, Mag	2.49027	WP Riggs.77
Shaw	99 Capital Corporation	2011	EM, Mag	2.47626	T-6233
Shaw	99 Capital Corporation	2010	EM, Mag	2.46606	T-6208
Shaw	99 Capital Corporation	2010	Mag	2.47120	T-6205
Shaw	99 Capital Corporation	2011	EM, Mag	2.47398	T-6226
Shaw	Mhakari Gold Corp.	2011	EM, Mag	2.48381	T-6241
Shaw	Somerville, D.E.	2011	Lc, Mag	2.49069	T-6271
Sheraton	Gervais, L.N.	2010	GC	2.46994	T-6190

Township or Area	Company Name	Year	Type of Work**	AFRO Number	Resident Geologist Office File Designation
Sothman	Rogue Resources Inc.	2011	GL	2.48367	T-3166
Sothman	SGX Resources Inc.	2010	IP, Lc, Mag	2.47634	T-6171
St.Germain	Precambrian Ventures Ltd.	2009 – 2010	Assays, GL, Pr	2.47614	WP St.Germain.10
Stock	Brigus Gold Corp.	2011	DD - 5 - 1618m, Assays	2.48705	T-6266*
Sunday Lake	Detour Gold Corporation	2009	DD - 56 - 16744m, Assays	2.47761	T-6170
Sunday Lake	Detour Gold Corporation	2010	DD - 32 - 15425m, Assays	2.47766	T-6129
Sunday Lake	Detour Gold Corporation	2007	DD - 101 - 37232m, Assays	2.47731	T-6121
Sunday Lake Area	Detour Gold Corporation	2008	DD - 93 - 26442m, Assays	2.48374	T-6237
Sunday Lake, West of Sunday Lake	Detour Gold Corporation	2010	Assays, GC	2.46797	T-6201
Thorneloe	Gervais, L.N.	2010	Assays	2.47234	T-6218
Thorneloe	Victoria Bullion Exchange Ltd.	2011	Lc, Mag	2.47927	T-2276
Tisdale	Goldcorp Canada Inc.	2010 – 2011	DD - 4 - 3271m, Assays	2.48560	T-2283
Tisdale	Moneta Porcupine Mines Inc.	2010	DD - 1 - 317m, Assays	2.48628	T-6235
Tisdale	SGX Resources Inc.	2011	DD - 1 - 443m, Assays	2.48814	T-6242
Tully	SGX Resources Inc.	2010	EM, IP, Mag	2.47341	T-6231
Turnbull	6070205 Canada Inc.	2010	IP	2.47150	T-6211
Turnbull	Claim Post Resources Inc.	2011	DD - 1 - 651m, Assays	2.49602	T-6296
Turnbull	Claim Post Resources Inc.	2010	DD - 1 - 460m, EM	2.47086	T-6216
Turnbull	Claim Post Resources Inc.	2010	DD - 1 - 600m, Assays	2.47082	T-6217
Turnbull	International Explorers and Prospectors Inc.	2010	IP, Lc, Mag	2.46832	T-6168
Whalen	Redore Mining Company Ltd.	2010	Pr	2.47473	T-2261
Whitesides	Pyke, D.R.	2011	Samp, Assays	2.49311	T-6277
Whitney	Recoskie, D.	2011	Pr, Samp	2.48905	T-6247
Whitney	Touchdown Resources Inc.	2010	IP, Lc	2.46718	T-6199
Yeo	Augen Gold Corp.	2009	DD - 5 - 628m, Assays	2.49681	T-6297*
Yeo, Chester	Augen Gold Corp.	2009 – 2010	EM, IP, Mag	2.49320	T-6285*
Zavitz	Claim Lake Nickel Inc.	2010	EM, Mag	2.46915	T-6223

**File available in office in digital format only.*
*** DD - 8 - 2196m = 8 diamond-drill holes totalling 2196 m.*

Table 24. Publications received by the Timmins Regional Resident Geologist's Office in 2011.

Title	Author	Type and Year of Publication
Report of Activities 2010, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts	Atkinson, B.T., Bousquet, P., Pace, A., Burnett, S., Butorac, S., Draper, D.M., Metsaranta, D.-A. and Wilson, A.C.	OGS Open File Report 6264, 2011
Geological Compilation of the Abitibi Greenstone Belt	Ayer, J.A. and Chartrand, J.E.	OGS Miscellaneous Release—Data 282, 2011
Surficial Geology of the Moosonee Area Northeast, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3730, 2011
Surficial Geology of the Moosonee Area Southwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3741, 2011
Surficial Geology of the Moosonee Area Southeast, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3742, 2011
Surficial Geology of the Fort Rupert Area Southwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3743, 2011
Surficial Geology of the Moose River Area Northwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3749, 2011
Surficial Geology of the Moose River Area Northeast, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3750, 2011
Surficial Geology of the Harricana River Area Northwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3751, 2011
Surficial Geology of the Moose River Area Southwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3756, 2011
Surficial Geology of the Moose River Area Southeast, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3757, 2011
Surficial Geology of the Harricana River Area Southwest, Northern Ontario	Barnett, P.J., Yeung, K.H. and McCallum, J.D.	OGS Preliminary Map P.3758, 2011
The Abitibi Subprovince Plutonic Record: Tectonic and Metallogenic Implications	Beakhouse, G.P.	OGS Open File Report 6268, 2011
Lithogeochemical Data for Abitibi Subprovince Intermediate to Felsic Intrusive Rocks	Beakhouse, G.P.	OGS Miscellaneous Release—Data 285, 2011
Northeastern Ontario Rhyolite Database	Berger, B.R. and Chartrand, J.E.	OGS Miscellaneous Release—Data 281, 2011
Results from the Targeted Geoscience Initiative III Kidd–Munro Project	Berger, B.R., Bleeker, W., van Breemen, O., Chapman, J.B., Peter, J.M., Layton-Matthews, D. and Gemmell, J.B.	OGS Open File Report 6258, 2011
Report of Activities 2010, Resident Geologist Program, Kirkland Lake Regional Resident Geologist Report: Sudbury District	Cosec, M., Farrow, D., Alemany, R.M., Sangster, P.J., Debicki, R.L., Metsaranta, D.-A. and Wilson, A.C.	OGS Open File Report 6266, 2011
Graphite Occurrences in the Algonquin Region, Grenville Province, Ontario	Davidson, A.	Geological Survey of Canada Open File 870, 1982
Airborne Gravity Gradiometer and Magnetic Survey, Residual Total Magnetic Field, McFaulds Lake Area	Dumont, R. and Hefford, S.W.	OGS Maps 82 506 to 82 514 / Geological Survey of Canada, Open File 6934 to 6942, 2011
Airborne Gravity Gradiometer and Magnetic Survey, First Vertical Derivative of the Magnetic Field, McFaulds Lake Area	Dumont, R. and Hefford, S.W.	OGS Maps 82 515 to 82 523 / Geological Survey of Canada, Open File 6934 to 6942, 2011
Airborne Gravity Gradiometer and Magnetic Survey, Vertical Component of the Gravity, McFaulds Lake Area	Dumont, R. and Hefford, S.W.	OGS Maps 82 524 to 82 532 / Geological Survey of Canada, Open File 6934 to 6942, 2011
Airborne Gravity Gradiometer and Magnetic Survey, Vertical Gravity Gradient, McFaulds Lake Area	Dumont, R. and Hefford, S.W.	OGS Maps 82 533 to 82 541 / Geological Survey of Canada, Open File 6934 to 6942, 2011

Title	Author	Type and Year of Publication
Summary of Field Work and Other Activities, 2011	Easton, R.M., Burnham, O.M., Berger, B.R., Beakhouse, G.P., Bajc, A.F., Parker, J.R., Kelly, R.I. and Debicki, E.J.	OGS Open File Report 6270, 2010
Report of Activities 2010, Resident Geologist Program, Kirkland Lake Regional Resident Geologist Report: Kirkland Lake District	Guindon, D.L., Grabowski, G.P.B., Wilson, A.C., Metsaranta, D.-A. and Greenfield, M.J.	OGS Open File Report 6265, 2011
Report of Activities 2010, Resident Geologist Program, Red Lake Regional Resident Geologist Report: Red Lake and Kenora Districts	Lichtblau, A.F., Ravnaas, C., Storey, C.C., Bongfeldt, J., McDonald, S., Lockwood, H.C., Bennett, N.A. and Jeffries, T.	OGS Open File Report 6261, 2011
Airborne Magnetic and Electromagnetic Surveys, Colour-Filled Contours of the Residual Magnetic Field and Electromagnetic Anomalies, Magpie River–Missinaibi Lake Area—Purchased Data	Ontario Geological Survey	OGS Maps 60 314 to 60 320, 2011
Airborne Magnetic and Electromagnetic Surveys, Shaded Colour Image of the Second Vertical Derivative of the Residual Magnetic Field and Keating Coefficients, Magpie River–Missinaibi Lake Area—Purchased Data	Ontario Geological Survey	OGS Maps 60 321 to 60 327, 2011
Airborne Magnetic and Electromagnetic Surveys, Colour-Filled Contours of the EM Decay Constant and Electromagnetic Anomalies, Magpie River–Missinaibi Lake Area—Purchased Data	Ontario Geological Survey	OGS Maps 60 328 to 60 334, 2011
Ontario Airborne Geophysical Surveys, Magnetic and Electromagnetic Data, Grid and Profile Data (ASCII and Geosoft® Formats) and Vector Data, Magpie River–Missinaibi Lake Area—Purchased Data	Ontario Geological Survey	OGS Geophysical Dataset 1237, 2011
Description and Genesis of Conglomerate Units from the Dome Mine, Timmins, Ontario	Richardson, J.	BSc Thesis, University of Waterloo, 1979
Report of Activities 2010, Resident Geologist Program, Southern Ontario Regional Resident Geologist Report: Southeastern and Southwestern Ontario Districts, and Petroleum Resources Centre	Sangster, P.J., LeBaron, P.S., Laidlaw, D.A., Wilson, A.C., Carter, T.R. and Fortner, L.	OGS Open File Report 6267, 2011
Report of Activities 2010, Resident Geologist Program, Thunder Bay South Regional Resident Geologist Report: Thunder Bay South District	Scott, J.F., Campbell, D.A., Lockwood, H.C., Bennett, N.A., Brunelle, M.R. and Pelaia, R.	OGS Open File Report 6263, 2011
Report of Activities 2010, Thunder Bay North Regional Resident Geologist Report: Thunder Bay North District	Smyk, M.C., White, G.D. and Lockwood, H.C. and Bennett, N.A.	OGS Open File Report 6262, 2011
A Revised Terrane Subdivision of the Superior Province in Ontario	Stott, G.M.	OGS Miscellaneous Release—Data 278, 2011

PROPERTY EXAMINATIONS

A number of property visits were made during the course of the year by staff of the Timmins Regional Resident Geologist office. Several of these are described below. Property visits provide geological insight into an area and help in identifying key indicators that could be deemed favourable for the discovery of new mineral deposits. Recommendations for exploration derived from property visits are presented in a separate section of this report (*see* "Recommendations for Exploration").

D. Lalonde, Halliday Township

LOCATION AND ACCESS

Mr. Lalonde holds a group of 96 claim units in Halliday and Midlothian townships (Figure 8) and has been exploring these over the last 2 years.

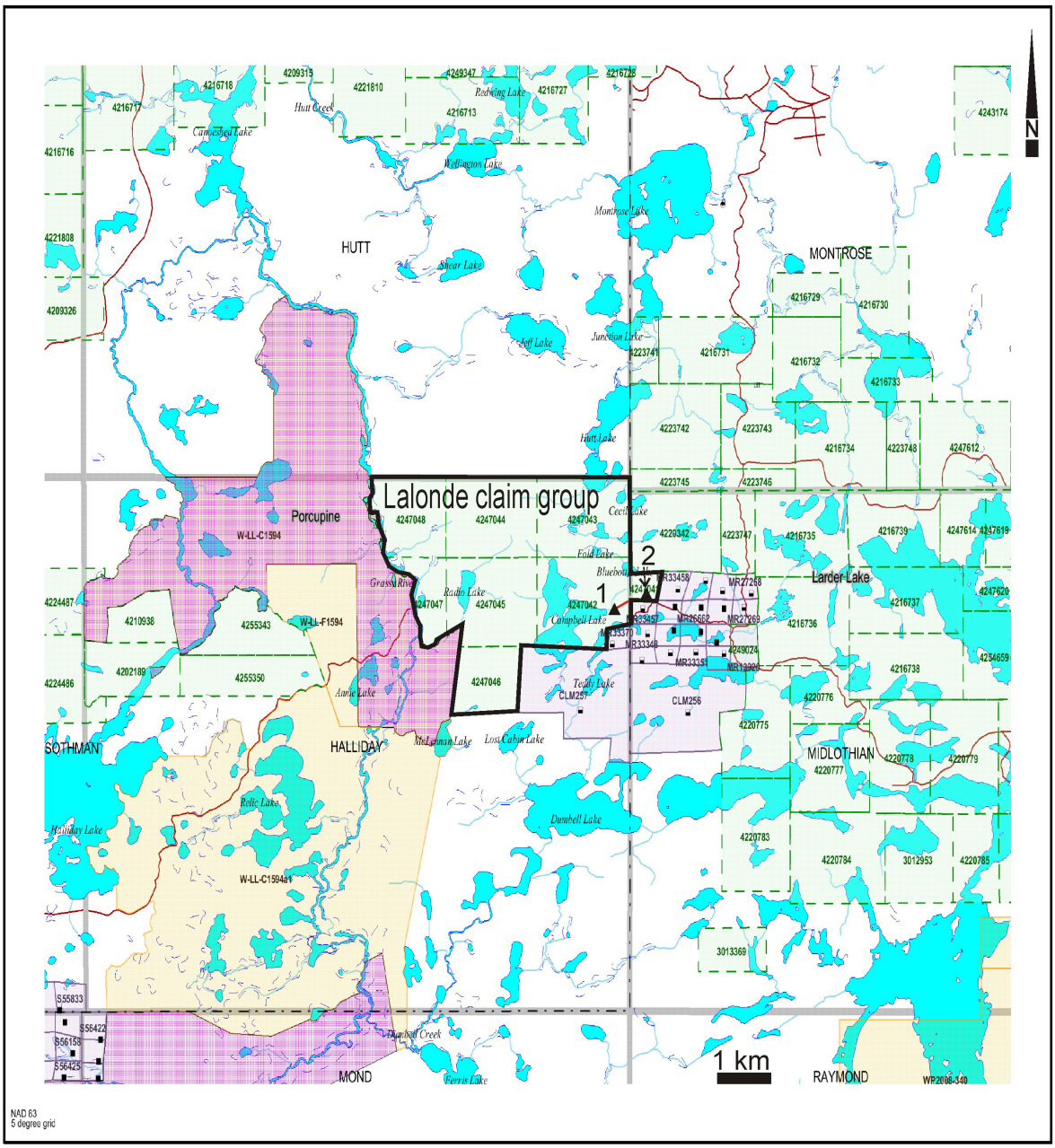


Figure 8. Claim location map of D. Lalonde claim group in Halliday and Midlothian townships showing location of mineral occurrences (▲) described in the text: 1) Campbell Lake, 2) Midlothian conglomerate.

Two mineral occurrences were examined during the property visit. The first showing, referred to as the Campbell Lake quartz vein occurrence is located in Halliday Township east of Campbell Lake at UTM NAD83, Zone 17, 494207E 5306318N. The second occurrence at UTM NAD83, Zone 17, 494935E 5306385N lies in Midlothian Township, (Kirkland Lake District) located west of the Stairs Mine.

The Campbell Lake occurrence on unpatented mining claim 4247042 consists of a 175 m long quartz vein hosted by fine- to medium-grained quartz feldspar porphyry located 300 m east of Campbell Lake. The vein pinches and swells from 0.3 m to 2 m in width and is continuous for the entire strike length of the exposure. It trends 080/90S and is slightly discordant to the pronounced host rock foliation that trends 070/65S. The vein is mineralized with abundant pyrite and minor chalcopyrite, bornite, galena and malachite and azurite. The vein is hosted by medium-grained quartz feldspar porphyry. The foliation defines a discreet 10 m wide shear zone in the porphyry. A second quartz vein parallels the main vein approximately 25 m to the southeast. Host rocks around the second vein are similar to the main vein and these are also strongly foliated. Lack of outcrop between the 2 veins leaves the question whether there was a single bifurcating vein, or 2 separate veins within a wide shear zone unresolved. To the southeast, outcrop consists of fine-grained to aphanitic felsic volcanic rock.

Mr. Lalonde has trenched the main vein for its entire length using heavy equipment and an air-powered drill and small compressor to drill blast holes to depths up to 3 m. Several samples of vein material and wall rock were collected during the property visit for geochemical analyses. Results are presented in Table 25.

Table 25. Sample locations and assay results from the Lalonde property.

Sample No.	Township	Description	Occurrence	UTM NAD83 Zone 17		Ag	Au	Cu	Pb	Zn
				Easting	Northing	oz/ton	oz/ton	ppm	ppm	ppm
2011 BTA 09	Halliday	quartz vein with sulphides	Campbell Lake	494339	5306416	<0.01	<0.01	-	-	-
2011 BTA 10	Halliday	fine-grained felsic volcanic	Campbell Lake	494356	5306338	<0.01	<0.01	-	-	-
2011 BTA 11	Halliday	quartz porphyry	Campbell Lake	494286	5306358	0.01	0.01	-	-	-
2011 BTA 12	Halliday	quartz vein with sulphides	Campbell Lake	494286	5306358	<0.01	<0.01	-	-	-
2011 BTA 13	Halliday	quartz vein with sulphides	Campbell Lake	494286	5306358	0.03	0.03	3807	166	8015
2011 BTA 14	Halliday	quartz vein, fuchsite with sulphides	Campbell Lake	494221	5306312	<0.01	<0.01	-	-	-
2011 BTA 15	Midlothian	conglomerate with fuchsite and pyrite	Midlothian	494935	5306385	0.03	0.03	-	-	-
2011 BTA 16	Midlothian	conglomerate with fuchsite and pyrite	Midlothian	494927	5303694	<0.01	<0.01	-	-	-
2011 BTA 17	Halliday	quartz vein with sulphides	Campbell Lake	494221	5306312	<0.01	<0.01	2854	955	9425

The second occurrence lies in the northwest part of Midlothian Township, a short distance to the northwest of the Stairs Mine. The showing occurs on unpatented mining claim 4247041 and forms part of the Sylvanite Gold Mines Ltd. occurrence described by Bright (1966). It consists of a series of small pits and trenches on narrow discontinuous quartz and iron carbonate veins invading a zone of widespread, strongly altered and deformed polymictic clast supported conglomerate.

Mr. Lalonde has trenched an area measuring approximately 40 by 60 m in the vicinity of the historic prospector trenches. An intense foliation trends 050/90S across the stripped area. The conglomerate is heavily mineralized with several generations of pyrite including clasts of massive pyrite and cubes and irregular masses of pyrite. Multiple

generations of veining are evident, as depicted in Photo 3D, where an early iron carbonate and quartz vein crosscuts a black argillite clast and that vein is cut by a 1 cm wide quartz vein. Clast constituents include fuchsite, felsic volcanic, lithic fragments and fine-grained sediments and volcanic clasts.

EXPLORATION HISTORY

Bright (1970) reports:

> "In the early 1950s, L. Lamothe held a group of nine unsurveyed claims southeast of Campbell Lake in Halliday Township. In 1952, W.S. Savage, Resident Geologist for the Ontario Department of Mines at Kirkland Lake, observed disseminated pyrite and sphalerite in sheared rhyolite on what was then claim S56711. Between 1962 and 1967, Stairs Exploration and Mining Company Limited held the property."

Assessment report T-2682 indicates that in 1933,

> "P.H. Silams (completed) prospecting, trenching and sampling of a 6 to 20 foot wide , N75°E trending shear zone located between Campbell Lake and the east boundary of Halliday Township. Assays indicated low gold content with 9 oz silver and 2.5% copper. Zinc occurrences were also reported in the area."

In 1950 to 1952, Lamothe trenched coarse rhyolite breccia and W.S. Savage (in 1952) sampled pits and reported assays of up to $6.00 per ton gold and 2% zinc.

A 250 line-mile airborne magnetic and electromagnetic survey for Stairs Exploration and Mining Company Limited was completed in 1963. Flight lines were north-south, spaced 400 feet apart. (AFROID 63.1224).

A geological report dated April 1964 authored by R.J. Roach and K.G. Hope for Stairs Exploration and Mining Company covered 72 claims and included the Stairs Mine in Midlothian Township and the Campbell Lake area in Halliday Township. Mapping was carried out at a scale of 1 inch to 200 feet. Diamond drilling was completed on claim 33368 and encountered sediments of argillite, greywacke and conglomerate. Quartz veining with pyrite mineralization was reported in the drill logs. Chromic (fuchsitic) clasts were observed in the conglomerate, and variable shearing, foliation, graded bedding and alteration, including sericite, carbonate and leucoxene, affect the rocks (AFROID 63.1224).

From 1968 to 1970, J. Larche and A. Rousseau prospected sphalerite-bearing rhyolite breccias in the area.

In 1972, Canadian Arrow Mines Limited completed geological and geophysical surveys, trenching, rock and soil sampling and diamond drilling on the Rousseau–Larche property. Drilling amounted to 1078.4 feet (329 m) in 7 holes focused on the North and South showings.

Newmont Mining Corp. completed a horizontal loop electromagnetic (HLEM) survey over the area in 1973 and drilled 3 holes totalling 1616 feet (493 m) the following winter (AFROID 2.1319). Drill hole 74-2 was drilled in Campbell Lake and penetrated alternating units of graphitic black shale, conglomerate and quartz porphyry while drill hole 74-3 collared on the west side of Campbell Lake encountered rhyolite breccia, laminated black shale, chert and quartz carbonate veining with up to 5% pyrite.

Teck Corporation Limited completed a geological examination of the area summarized in a report by J.R. Goodwin dated January 15, 1976. The report indicates the area is underlain by 3 episodes of volcanic pyroclastic rocks of andesite to dacite composition with marker horizons containing chert or rhyolite fragments with associated sulphide mineralization. The pyroclastic rocks include intercalated ash, lapilli, tuff breccia and chert. Pumice clasts and poorly sorted, tuff breccia clasts ranging up to 3 feet in diameter are reported. The pyroclastic rocks are overlain by, and locally interbedded with, a pyrite-marcasite-bearing sedimentary sequence of Timiskaming rocks including black slate, greywacke and conglomerate.

In 1988 Goldteck Mines Ltd. carried out an exploration program on the Stairs Mine property including claims covering Campbell Lake in Halliday Township. The program consisted of line cutting, geophysical and geological surveys, soil geochemistry, trenching, sampling and diamond drilling. On the Campbell zone, systematic sampling

of a series of trenches yielded 66 channel samples. All but 5 samples were weakly anomalous in gold with results ranging from 5 to 177 ppb Au. Channel samples varied from 0.7 to 2.4 m in length. Goldteck tested the Campbell Lake occurrence by diamond drilling. Drill holes GW 003, GW 004, G24 and G24A probed the immediate area of the vein outcrops beneath surface trenches while drill holes G30, G33 and G38 stepped north of the vein and drilled back toward it. Goldteck's drill results indicated the Campbell veins are continuous, wide and mineralized with pyrite, minor chalcopyrite and galena but gold values were all low. Diamond-drill hole G24A encountered values up to 0.033 ounce per ton gold over 3.0 feet in a quartz-bearing shear zone near the rhyolite-sediment contact. From north to south, the diamond drilling passed through "chromic (fuchsitic) conglomerate, quartz rich tuff, rhyolite tuff and lapilli tuff". Assay results from this hole indicated anomalous gold to a depth of 190 m. (AFRO ID 2.12825).

In 2000, Canadian Arrow Mines Limited did an IP survey over the Campbell Lake area. The property included leased claims 103655 (CLM 257), 103654 (CLM 256) and 89 unpatented claim units 1240743, 1240746 and 1240750 optioned from Moneta Porcupine Mines Inc. However, the survey didn't cover the immediate Campbell Lake occurrence (AFRO ID 2.20954).

In 2001, Canadian Arrow carried out a 10-hole diamond-drilling program of 2018 m to the south of the Campbell occurrence (AFRO ID 2.25718).

D. Lalonde completed stripping, trenching and sampling of the Campbell Lake vein in 2011 and Viper Gold Ltd. carried out sampling of the vein but reported only low gold values.

Photo 3. A) View to the southwest along the Campbell Lake quartz vein. B) Contact between the quartz vein and strongly foliated quartz feldspar porphyry host rock, indicated by dashed line (*see* hammer for scale). C) Detail of sulphide mineralization hosted by the quartz vein; sulphides include pyrite, chalcopyrite, bornite, sphalerite and galena. D) Timiskaming clast-supported conglomerate from the Midlothian Township claim 4247041. A black argillite clast is crosscut by an iron carbonate veinlet which is subsequently offset and cut by a late quartz vein. Several generations of fine- to coarse-grained pyrite are evident in the rock sample as are a variety of clast types including fuchsite clasts, felsic volcanic and lithic clasts. Location, UTM NAD83 Zone 17, 494915E 5306384N.

Kapuskasing Structural Zone Reconnaissance, Lougheed, Ossin, and Wadsworth Townships

LOCATION AND ACCESS

A reconnaissance road traverse through the central portion of the Kapuskasing Structural Zone (KSZ) was completed to assess the area's geology and mineral prospects. Access to the area is south from Kapuskasing by way of a series of active logging roads or north from Highway 101 by way of the Montcalm Mine road. Virtually no exploration is currently underway in this extensive area that lies within the KSZ on the west side of the Montcalm greenstone belt and only very limited historic exploration is documented. Outcrop is generally sparse throughout the area, overburden is thin and consists of clay to silt, sand and boulder till.

GEOLOGY

The area geology consists of felsic intrusive rocks, amphibolite grade metamorphic rocks composed predominantly of paragneiss and interbedded, volcanic-derived amphibolite gneiss and migmatite and cataclastite. Unmetamorphosed diabase dikes intrude most other lithologies. Several graphite and sulphide occurrences are indicated on regional scale maps, otherwise, the mineral endowment of the area is unknown. Various aspects of the geology are presented in Photo 4. A suite of representative rock samples were collected from the area and their location and analytical results are presented in Table 26. A north-trending diabase dike in Strachan Township and a mafic intrusive rock in Fenton Township have slightly anomalous values in platinum and palladium.

Table 26. Outcrop locations and geochemistry of rocks collected from the Kapuskasing Structural Zone.

Sample No.			**2011 BTA 47**	**2011 BTA 48**	**2011 BTA 49**	**2011 BTA 50**	**2011 BTA 51**	**2011 BTA 52**	**2011 BTA 53**	**2011 BTA 54**
Township			Reeves	Nova	Ossin	Ossin	Strachan	Fenton	Wadsworth	Wadsworth
Easting			415059	393476	393278	393065	409538	394349	388538	385999
Northing			5349095	5379858	5379669	5379214	5380341	5433870	5396035	5391539
Description			Granite	Coarse-grained granodiorite gneiss	Amphibolite with plagioclase, garnet, hornblende, quartz	Biotite, hornblende tonalite	Diabase dike	Mafic intrusion	Quartz, biotite, garnet, plagioclase paragneiss	Garnetiferous paragneiss
Element		Detection Limit								
Au	ppb	6	-	-	-	-	<6	<6	-	-
Pd	ppb	1.3	-	-	-	-	6.5	6.6	-	-
Pt	ppb	0.4	-	-	-	-	7.5	11.8	-	-
Al^2O^3	wt%	0.01	15.53	-	-	-	12.89	13.79	-	18.48
CaO	wt%	0.01	2.35	-	-	-	9.63	11.16	-	3.02
Fe^2O^3	wt%	0.01	1.5	-	-	-	16.17	12.39	-	9.33
K^2O	wt%	0.01	2.37	-	-	-	0.86	0.09	-	2.24
LOI	wt%	0.05	0.78	-	-	-	1.04	0.47	-	0.53
MgO	wt%	0.01	0.44	-	-	-	5.56	7.66	-	6.01
MnO	wt%	0.01	0.03	-	-	-	0.23	0.18	-	0.12
Na^2O	wt%	0.01	5.05	-	-	-	2.33	1.67	-	2.36
P^2O^5	wt%	0.01	0.05	-	-	-	0.15	0.06	-	0.09
SiO^2	wt%	0.01	71.11	-	-	-	49.82	51.31	-	56.24
TiO^2	wt%	0.01	0.15	-	-	-	1.32	0.86	-	0.91
Total	wt%		99.36	-	-	-	99.99	99.63	-	99.34

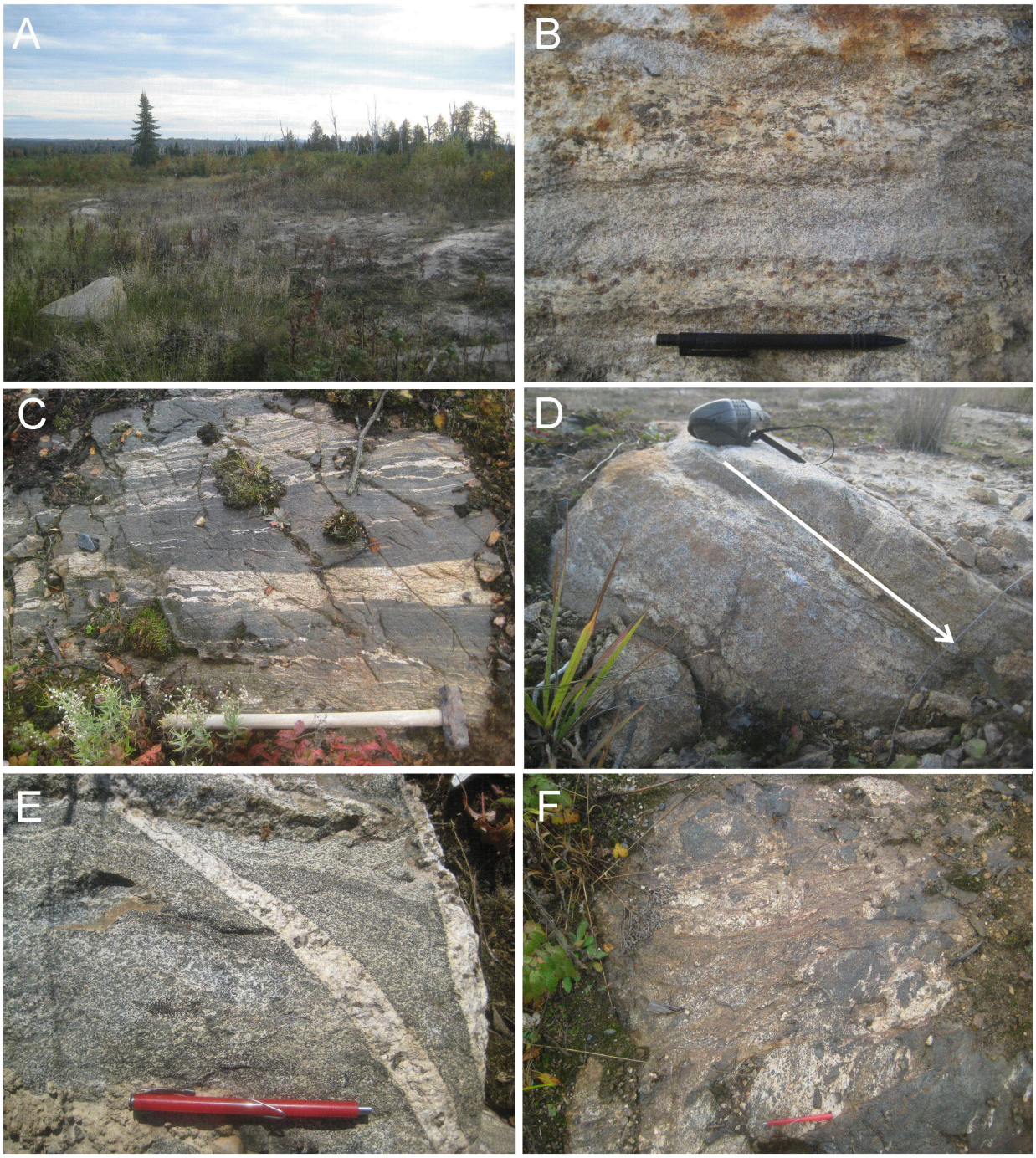


Photo 4. Select photos from the Kapuskasing Structural Zone west of the Montcalm greenstone belt. A) Typical peneplained terrain with rare flat-lying outcrops with thin clay to silt till overburden cover of generally less than 3 m depth. B) Tonalite gneiss consisting of garnetiferous-rich bands with segregations of coarse-grained plagioclase, quartz and biotite, with layer segregations of leucosome, Lougheed Township. Pen for scale. C) Light and dark, feldspathic and amphibolitic banded gneiss, Ossin Township. Sledge hammer for scale is 1 m in length. D) Moderately north-dipping (arrow) garnetiferous paragneiss, Wadsworth Township. E) Coarse-grained, layered gabbro intruded by narrow tonalite pegmatite dikes, Lougheed Township. F) Cataclastite composed of angular blocks of amphibolite xenoliths intermixed with tonalite leucosome with a pervasive hematite overprint, Ossin Township. This unit is similar to tectonized rocks in the Ivanhoe Lake cataclastic zone that delineates the eastern boundary of the Kapuskasing Structural Zone. Pen magnet for scale.

Partridge River Greenstone Belt, James Bay Lowlands

LOCATION AND ACCESS

A one-day helicopter reconnaissance of the Partridge River greenstone belt (Figure 9), located 250 km north of Timmins and 70 km south of Moosonee, was completed in October. The belt is the most northerly exposed Archean greenstone belt in northeastern Ontario before the onlap of Phanerozoic rocks of the Hudson Bay and James Bay lowlands blanket the Canadian Shield. Winter trails south from Moosonee provide seasonal access, otherwise the area is aircraft accessible only. The lack of large lakes and major rivers further impedes access and navigation within the belt. Although the area lies at the south edge of the James Bay Lowlands and large open muskeg swamps are prevalent, specific areas within the belt have topographic relief up to 60 m and bedrock outcrop is adequate for mapping, prospecting and exploration purposes (Photos 5A and 5B).

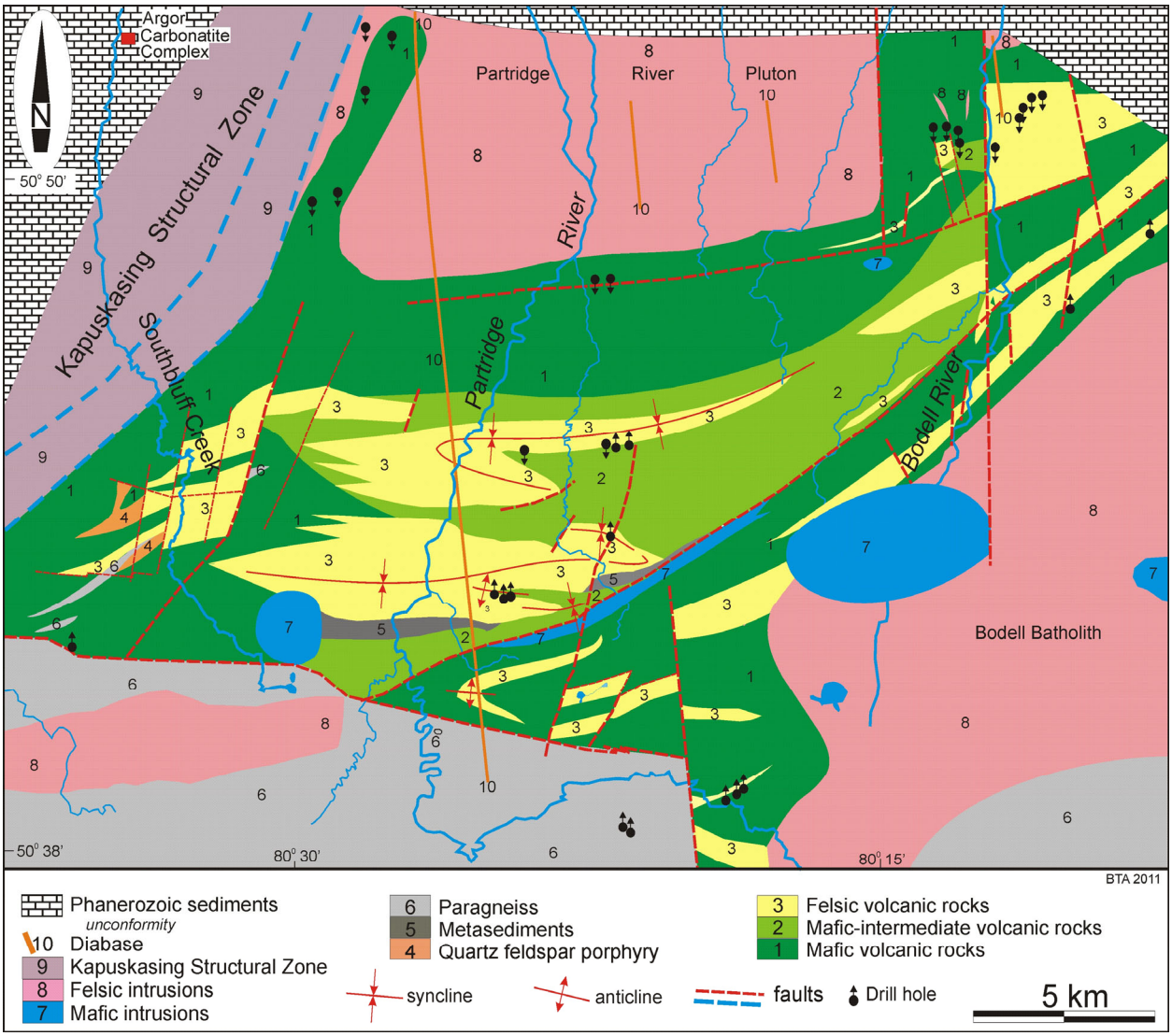


Figure 9. Generalized geology of the Partridge River greenstone belt, compiled from exploration company files noted in the text, Longe (1967), Middleton (1967), airborne geophysical surveys, diamond-drill hole records, Bennett et al. (1969), Ontario Geological Survey (1990) and Bennett et al. (1967), with additions by the author.

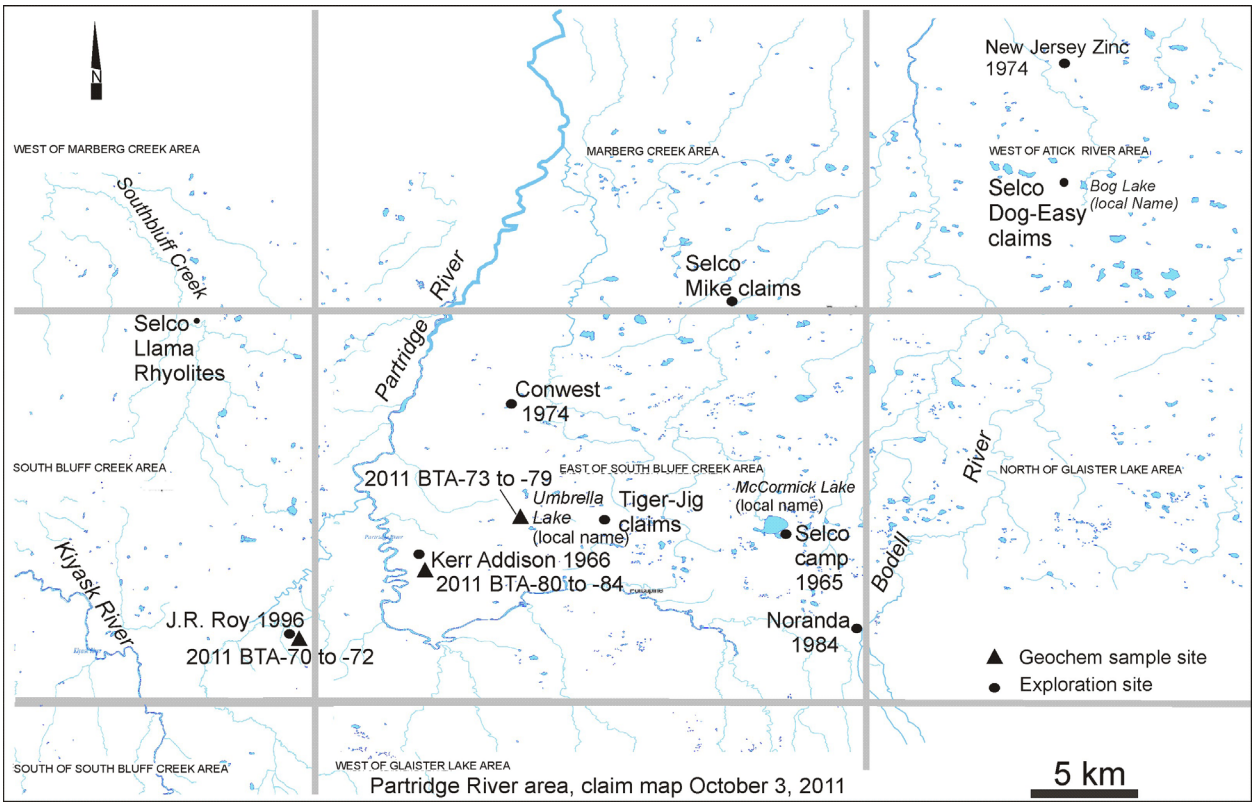


Figure 10. Claim map of the Partridge River area showing location of geochemical sample sites and areas of historic exploration.

PREVIOUS WORK

The Partridge River greenstone belt has had only limited exploration work, largely due to its remote location (Figure 10). Exploration was mainly focused on the search for base metal mineralization as a result of the discovery of gold and base metal deposits in Ontario and Quebec in the mid 1960s and 1970s. Selco Exploration Company Limited, Kerr Addison Mines Limited, New Jersey Zinc Exploration Co. (Canada) Ltd., Conwest Exploration Co. Ltd. and Noranda Exploration Co. Ltd. each had exploration programs over various parts of the belt. Several airborne magnetic and electromagnetic surveys by the companies lead to claim staking and follow up ground work during that time period. Reconnaissance-scale mapping was completed by the Ontario Department of Mines (Bennett et al. 1966), and government airborne magnetic and electromagnetic surveys covered the entire belt in 1990 (OGS 1990). A summary of work reported on the belt, including that filed for assessment work credits, is listed in Table 27.

Results of the diamond drilling completed by Conwest Exploration Company Ltd. are summarized in Table 28. The drilling targeted a number of airborne conductors and each conductor was explained as either graphitic horizons or barren sulphides. Although no drill core is available from that campaign, the drill records point to a mineral alteration assemblage characteristic of volcanogenic massive sulphide (VMS) environments. Overburden thickness varied from 1 foot to 33 feet in depth at the drill locations.

Reports indicate that Selco Exploration Company Limited drilled 24 holes on various conductors in 1965 and Kerr Addison Mines Ltd. and New Jersey Zinc Exploration Co. (Canada) Ltd. also did diamond drilling on several targets. The Selco drill hole locations plotted on Figure 9 are derived from a sketch map in a donated file (Longe 1967, Figure 1) but precise hole locations and orientations are unknown.

In 1996, J. Roy staked 16 claim units in the southeast corner of South Bluff Creek area. The claims coincided with an isolated cluster of airborne EM and magnetic anomalies identified in the 1990 OGS airborne survey of the belt. Roy completed limited ground work on the property but the cause of the anomalies remained unexplained. Outcrops

in the immediate area consist of paragneiss of the Quetico–Opatica subprovince, confirmed during the October 2011 property visit (Photo 5B).

GEOLOGY

The Partridge River greenstone belt trends east and measures 16 km wide by 50 km long with an areal extent of 800 km^2 (*see* Figure 9). It abuts against and is truncated to the west by the Kapuskasing Structural Zone defined by pronounced northeast-trending foliations and gneissosity and high-grade metamorphic rocks. To the east, felsic intrusive rocks of the Bodell batholith compose the country rock while metasedimentary rocks, derived paragneiss and migmatite of the Quetico–Opatica subprovince border the south margin of the belt. North-trending Proterozoic-aged diabase dikes invade the volcanic rocks of the belt. The Phanerozoic unconformity and Paleozoic sedimentary rocks partly overlie the north part of the belt or are separated from it by up to 5 km of intervening granitic intrusive rocks of the Partridge River pluton. The Argor Carbonatite Complex is located 5 km to the northwest.

The geology of the belt is similar to many of the small greenstone belts of the Superior Province in northern Ontario in that it consists of several sequences of volcanic rocks. These range in composition from a lower suite of submarine mafic flows to intermediate volcanic rocks overlain by felsic pyroclastic rocks and chemical and clastic sediments. All rocks are metamorphosed to upper greenschist or amphibolite facies. Komatiites or ultramafic rocks have not been recognized in the belt. In general, the volcanic rocks are south-facing with a base of mafic flows adjacent to the Partridge River pluton that is transitional to andesite in composition. Three units of felsic volcanic rocks outcrop across the belt but it is uncertain whether these are discrete units or a single horizon that is the result of fold or thrust duplication. The central unit of felsic volcanic rocks is enveloped by mafic flows and disposed in an east- to northeast-trending synclinal symmetry (Bennett et al. 1967). Several large mafic intrusions occur on the south side of the belt but Bennett et al. (1967, p.24) noted:

> "…in the Partridge River area… some of the material mapped as mafic intrusive rocks may be coarsely recrystallized mafic metavolcanics."

Details of the various rock types, gleaned for company reports and drill records indicate that the felsic volcanic rocks include pyroclastic breccias, tuffs, agglomerate, rhyolitic flows, quartz porphyries and related aqueous sediments. Middleton (1967) identified several episodes of volcanism that include a lower basaltic suite and an upper felsic suite of volcanic rocks and sediments. Property-scale mapping on the Tiger-Jig and Dog-Easy claim groups (Figure 10) by Selco Exploration Company Ltd. identified intervening horizons of mafic to intermediate volcanic rocks and felsic flows consisting of rhyolite breccias, tuffs and flows and associated sediments. Where preserved, cross-bedding and graded bedding indicate the metasedimentary rocks are south-facing. Syntectonic to posttectonic intrusions of diorite to gabbro composition, including anorthosite in the vicinity of Selco's Mike claims, intrude the volcanic rocks. Selco's Llama rhyolite claims in the west part of the belt are affected by numerous north-trending faults with small offset displacements, possibly related to deformation associated with the Kapuskasing Structural Zone. Geological mapping by Conwest Exploration Company Ltd. identified a thick central sequence of felsic volcanic rocks including rhyolite flows, tuffs and breccias and quartz feldspar porphyry, graphitic argillite and a 10-foot wide zone of massive sulphides of pyrite and pyrrhotite intersected in diamond drill CG-04.

MINERALIZATION

Only low values of copper mineralization were noted in any of the reported diamond drilling or sampling by the various companies in the belt, although pyrite and pyrrhotite are widespread. Several minor copper occurrences are depicted on geological sketch maps by Kerr Addison Mines Ltd. but these weren't examined during the property visit.

Several grab samples collected at each stop during the October 2011 visit were analyzed, with results presented in Table 29. Overall, the major oxide chemistry of the samples indicate they are generally unaltered despite metamorphism and development of schistosity. The major oxide geochemistry closely corresponds with the rock type identified in the field. Trace element chemistry of the samples was not available at the time of writing.

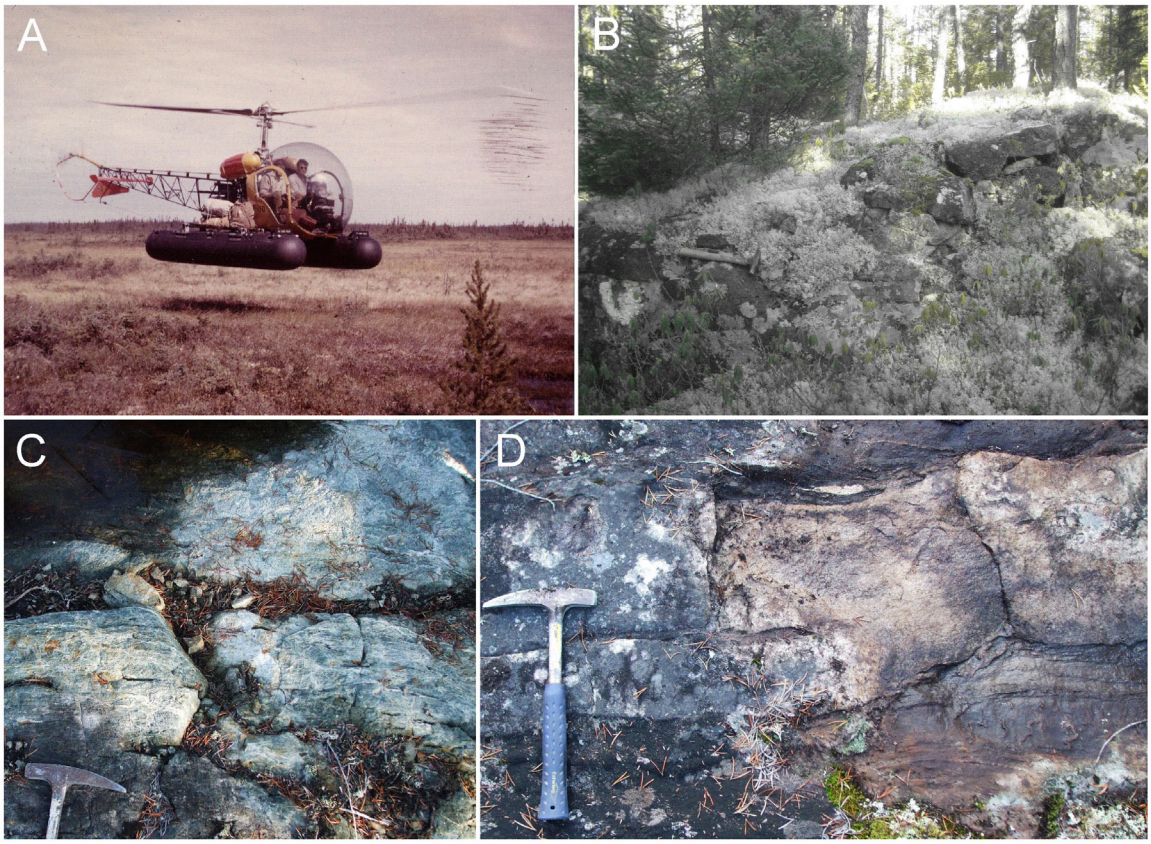


Photo 5. A) Selco Exploration geological reconnaissance of the Partridge River greenstone belt, 1965, (R.S. Middleton photo). B) Low ridge outcrop of paragneiss, vicinity 534469E 5610644N. C) Epidotized mafic metavolcanic flows with contorted foliation and carbonate alteration from the South Bluff Creek area, 542100E 5615570N. D) Deformed tonalite dike intruding schistose metasedimentary rocks, 538808E 5614575N.

Table 27. List of exploration and related activities in the Partridge River greenstone belt.

Assessment File No.	Company	Year of Work	Type of Work	Detail	Notes
T-1149	Selco Exploration Company Limited	1965	Amag, AEM Input, alt 380 feet, 1320 foot line spacing	875 line miles, 215 miles^2	East of South Bluff Lake, West of Atick River, multiple claim blocks.
	Selco Exploration Company Limited	1965-1966	Geological mapping, diamond drilling	Donated file, diamond-drill logs not available	Report on Geology of the Dog-Easy and Tiger-Jig map areas, Partridge River Project, Ontario for R.V. Longe; by R. S. Middleton, 1967.
T-1290	Kerr Addison Mines Ltd.	1965	Amag, AEM	248.5 line miles, N-S lines, alt 150 ft, 1/8 to 1/4 mile line spacing	East of South Bluff Creek
	Kerr Addison Mines Ltd.	1966	Mag, VLEM surveys, geological mapping	Mag/EM surveys: Anomaly 4E, 2.5 line miles, Anomaly 12, 1.7 line miles, Anomaly 14, 3.27 line miles	assays < 0.10% Cu.

Assessment File No.	Company	Year of Work	Type of Work	Detail	Notes
	OGS	1966	Geological mapping		Operation Kapuskasing, helicopter reconnaissance survey (Bennett et al.1967).
T-1399	Partridge River Mines Limited	1967	Consultant report		South of Partridge River area and South of Bushy Island area. Report by S.S. Szetu.
T-1399	Partridge River Mines Limited	1967	Mag, 18.86 miles, VLF-EM, 0.81 miles		Property covered a magnetic anomaly east of the Argor niobium deposit overlain by Paleozoic sediments.
T-1399	Partridge River Mines Limited	1968	Mag, 39.16 miles, DDH (4)-2426 feet		Drilling encountered all Paleozoic sediments but the last part of Hole# 4 encountered granodiorite at a vertical depth of 587 feet.
T-1674	New Jersey Zinc Exploration Co. Limited and Duncanex Resources joint venture	1974	Geoterrex Amag, AEM over entire belt, gravity, magnetic, HLEM, refraction seismic survey, geological mapping		West of Atick River area. Airborne survey data and geology not included in assessment files. Company report refers to massive sulphide intersection in Selco diamond drill hole No.5 near the Bodell River.
T-1711	Conwest Exploration Co. Ltd.	1975	Amag, AEM	Questor survey, 1000 line miles, alt. 150 feet, 660 foot line spacing	Marberg Creek, South Bluff Creek, East of South Bluff Creek, West of Atick River.
T-1711	Conwest Exploration Co. Ltd.	1975			Conwest stakes 713 claims covering core of the rhyolite part of the Partridge River belt, inspired by discoveries of gold and base metals by Amoco and Selco in the Turgeon River area, 60 miles south.
T-1711	Conwest Exploration Co. Ltd.	1975	Geological mapping, magnetic, EM surveys	30.99 miles	Discussion of 42 airborne geophysical anomalies. Report indicates Selco drilled at least 24 holes on conductors and New Jersey Zinc drilled in 1974. Cores from both campaigns left in camps near the Bodell River were examined by Conwest geologists.
T-1711	Conwest Exploration Co. Ltd.	1976	DDH (8)1049 feet	Winkie drill	Drill logs report only graphite and barren sulphides, py, po encountered in the drilling.
T-2856	Noranda Exploration Co. Ltd.	1983	Magnetic survey	6.35 line km	East of South Bluff Creek, North of Glaister Lake area, West of Glaister Lake area.
T-2866	Noranda Exploration Co. Ltd.	1984	Geology, magnetic, HLEM surveys	7.3 line km	Geology includes mafic to intermediate and felsic pyroclastic rocks. Pyrite, pyrrhotite and traces of chalcopyrite noted.
	OGS	1990	Amag, AEM		
T-3928	J.R. Roy	1996	Geology, prospecting, PEM	Crone PEM, 4 line km	South Bluff Creek area.

Note: DDH (8) 1049 = 8 diamond-drill holes totalling 1049 m.
Abbreviations: Amag – airborne magnetic survey; AEM – airborne electromagnetic survey; DDH – diamond-drill hole; EM – electromagnetic survey; HLEM – horizontal loop electromagnetic survey; Mag – magnetic survey; PEM – pulse electromagnetic survey; VLEM – vertical loop electromagnetic survey; VLF-EM – very low frequency electromagnetic survey.

Table 28. Summary of diamond-drill results, Partridge River area by Conwest Exploration Company Ltd., 1976.

Hole No.	Approximate Location UTM NAD83, Zone 17		Historic Claim No.	Overburden depth (feet)	Hole length (feet)	Orientation, dip	Notes, quick log
	Easting	Northing					
541229	5617672		422967	8	114	Grid south, 50°	Quartz feldspar porphyry, secondary chlorite, <1/4% pyrite.
CG-02	541254	5617324	422972	1	100	Grid south, 50°	Argillite, graphitic, py + po; basic tuff, chlorite, garnet, 2% sulphides; intermediate volcanic rocks, 1% po + py; argillite, intermediate volcanic rocks.
CG-03	541254	5617324	422972	10	100	Grid south, 50°	Argillite, 1 to 2% po; bedded rhyolite tuff and argillite; basic tuff up to 50% chlorite; intermediate tuff breccia; argillite.
CG-04	542995	5617059	422991	8	129	Grid south, 45°	Rhyolite tuff breccia; argillite, clay altered feldspar, py in chlorite knots; basic tuff with <3% garnet, 5% po; argillite with felsic tuff and 40% sulphide zone 6" wide; massive sulphide 10 feet wide py, minor po between breccia fragments; basic tuff 3% garnet, 1% po; rhyolite tuff.
CG-05	543059	5621367	454967	11	110	Grid south, 45°	Basic volcanic; intermediate tuff, 10% chlorite as 3 mm knots enclosed in sericite; graphitic argillite; rhyolite, sericite and chlorite alteration.
CG-06	543059	5621367	454967	33	170	Grid south, 55°	Graphitic argillite, 4% py, chloritized rhyolite 6"; rhyolite crackle breccia, chlorite and Fe carbonate with py; graphitic argillite breccia; rhyolite, minor chlorite and sericite alteration.
CG-07	540256	5620333	422949	20	176	Grid south, 45°	Graphitic argillite breccia, schistose, talc, 1% py; andesite.
CG-08	540256	5620333	422949	2	150	Grid south, 45°	Andesite, black chlorite, sericite, 1% py; argillite with up to 10% py; massive andesite.

***Cautionary Note:** locations are for the mining claim on which the hole was drilled. Claim locations are approximated from map sketches provided with claim recording documents; consequently, the accuracy for the mining claim or the drill collar hasn't been verified and should be considered as estimates only.

Table 29. Major oxide geochemistry of select samples from the Partridge River Greenstone Belt.

Sample #			**2011 BTA 71**	**2011 BTA 72**	**2011 BTA 73**	**2011 BTA 76**	**2011 BTA 77**	**2011 BTA 79**	**2011 BTA 80**	**2011 BTA 80 (Duplicate)**	**2011 BTA 81**	**2011 BTA 83**	**2011 BTA 84**
Area			South Bluff Creek	South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek	East of South Bluff Creek
Field Description			quartz rich gneiss	quartz rich gneiss	mafic flow, porphyro-blasts of amphibole, minor pyrite	mafic flow with calcite	mafic flow with calcite	carbonate altered mafic flow	paragneiss	paragneiss	paragneiss mafic/felsic banding segregations	biotite-muscovite quartzofelds pathic gneiss	orthogneiss
Foliation/ Schistosity/ Gneissosity			100/40N	100/40N	100/?	-	120/?	-	110/40N	-	110/85N	-	106/90
Easting			534461	534425	542071	542105	542200	542197	538707	538707	538794	538777	538808
Northing			5610651	5610664	5615566	5615622	5615524	5615566	5614705	5614705	5614681	5614608	5614575
Element	Units	Detection limit											
Au	oz/ton	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Al_2O_3	wt%	0.01	10.85	14.67	13.76	14.45	14.03	13.9	15.12	14.88	14.3	16.32	14.63
CaO	wt%	0.01	1.14	1.24	11.44	10.56	10.56	11.06	1.7	1.67	1.09	2.19	10.21
Fe_2O_3	wt%	0.01	4.8	4.3	13.62	13.2	14.08	12.97	1.18	1.19	0.47	6.51	15.77
K_2O	wt%	0.01	2.59	4.28	0.44	0.31	0.29	0.42	3.2	3.2	3.66	3.15	0.48
LOI	wt%	0.05	1.02	2.07	2.63	2.52	2.2	4.63	0.5	0.5	0.81	1.19	0.59
MgO	wt%	0.01	2.27	1.75	6.38	5.16	5.54	5.44	0.48	0.49	0.09	2.73	2.47
MnO	wt%	0.01	0.06	0.05	0.23	0.23	0.25	0.22	0.02	0.02	<0.01	0.07	0.2
Na_2O	wt%	0.01	1.74	2.6	1.82	2.3	1.73	1.78	4.97	4.93	3.4	3.31	1.97
P_2O_5	wt%	0.01	0.04	0.1	0.07	0.08	0.08	0.08	0.06	0.06	0.01	0.13	0.14
SiO_2	wt%	0.01	74.61	67.99	48.04	49.83	49.64	48	72.01	71.54	76.07	62.75	51.55
TiO_2	wt%	0.01	0.41	0.41	1	1.13	1.1	1.08	0.13	0.13	0.02	0.59	1.65
Total			99.55	99.46	99.43	99.77	99.5	99.59	99.37	98.6	99.92	98.95	99.67

Abbreviation: LOI – loss on ignition.

RECOMMENDATIONS FOR EXPLORATION

Gold in Felsic Intrusions

Geochronological age dating of the Chester tonalitic pluton that hosts porphyry-style gold mineralization at Trelawney Mines and Exploration Inc.– Côté Lake Project indicates that the intrusion is 2741 ± 1 Ma in age and molybdenite mineralization hosted by the intrusion has a Re/Os age of 2737 ± 7 Ma (D. Kontak, Laurentian University, personal communication). This age corresponds to the Deloro Assemblage and enhances the possibility that similar-aged rocks may also be mineralized with gold. The recognition that porphyry-type gold mineralization occurs in Archean-aged rocks is significant and validates exploration for this type of gold deposit throughout the Abitibi Subprovince. Known gold-bearing felsic intrusive rocks adjacent to greenstone belts include the host to the Renabie Mine in Leeson Township and a new gold discovery in the Carlton Lake pluton made by Melkior Resources Inc. in Carscallen Township. Although the ages of these intrusions have yet to be determined, porphyritic phases within them enhance their attractiveness for porphyry-style gold mineralization. But the age of the intrusion alone may not be the determinant factor on its gold content, rather, its proximity to gold-bearing volcanic rocks may be prerequisite. A common characteristic of the 3 cited intrusions is their proximity with, and partial assimilation of, enclosing greenstone. In Leeson Township for example, the Renabie pluton enfolds volcanic scepta about its perimeter. Similarly, the Carlton Lake pluton and Chester pluton are partly cloaked by greenstone. Felsic magmas co-existing with, and assimilating auriferous greenstone may be a necessary condition for their gold enrichment.

Pathfinder elements that have proved effective in the search for porphyry gold deposits include gold, copper, molybdenum and fluorine.

The Carlton Lake pluton is an apophysis of the Nat River granitoid complex that lies between Timmins and the Montcalm greenstone belt. It underlies much of Keefer Township, the northeast part of Denton Township and the southwest part of Carscallen Township. Diamond-drill programs by Melkior Resources Inc. in Carscallen Township and by Moon Energy Corp. Foundation, Canada, in Keefer Township present opportunities to examine details of the pluton in three dimensions. Gold mineralization on Melkior's ZamZam zone occurs with pyrite and minor chalcopyrite sulphides in quartz veins hosted by medium-grained tonalite. At depth, gold is found associated with pyritic mafic xenoliths and the contact with *underlying* greenstone.

Moon Engergy Corp. Foundation, Canada drilled vertical hole 2011-K-01 in Keefer Township to a depth of 199.5 m. (Galata 2011). The drill collar was located at NAD83, Zone 17, 5352300E 444460N. Drilling encountered massive to foliated biotite granodiorite with occasional, partly assimilated and carbonate-altered mafic metavolcanic xenoliths. Five samples of core were collected and analysed as a down-hole geochemical traverse; results are presented in Table 30 and Figure 11. The change in geochemistry with depth suggests a vertical heterogeneity of the granodioite. An increase in SiO_2 and Al_2O_3 at a depth of 83 m corresponds with a reduction in Fe_2O_3, MgO, MnO and TiO_2. The LOI (loss on ignition) data may be due to a subtle mineralogical change or a deep weathering that is not visibly apparent. The major oxide geochemistry of the Carlton Lake pluton classify it in the high-Al-TTG plutonic suite. The structural control on gold-bearing veins in the pluton exposed in outcrop stripping by Melkior Resources in Carscallen Township may have regional significance. An appeal to the structurally controlled, magmatic hydrothermal model (Beakhouse 2007) may explain the gold content of the Carlton Lake pluton and serve as a guide to exploration for this type of gold deposit.

Table 30. Major oxide geochemistry of select core samples from diamond-drill hole 2011-K-01, Keefer Township, Carlton Lake pluton.

Oxide (Weight %)	Al_2O_3	CaO	Fe_2O_3	K2O	LOI	MgO	MnO	Na_2O	P_2O5	SiO_2	TiO_2	Total	Core Depth
Detection limit %.	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01		(m)
Sample No.													
2011BTA-02	15.13	3.32	3.15	1.78	0.76	1.02	0.04	4.78	0.11	69.47	0.38	99.95	6.5
2011BTA-03	14.94	3.24	3.17	1.8	0.87	1.04	0.05	4.68	0.11	68.81	0.39	99.09	47.2
2011BTA-04	15.17	3.04	2.68	1.83	0.88	0.89	0.04	4.86	0.1	70.19	0.33	100	83
2011BTA-05	15.06	3.51	3.36	1.8	1.14	1.2	0.05	4.71	0.23	69.09	0.41	100.55	113
2011BTA-06	14.65	3.96	3.22	0.54	1.49	1.18	0.05	4.95	0.11	70.39	0.39	100.94	198.8

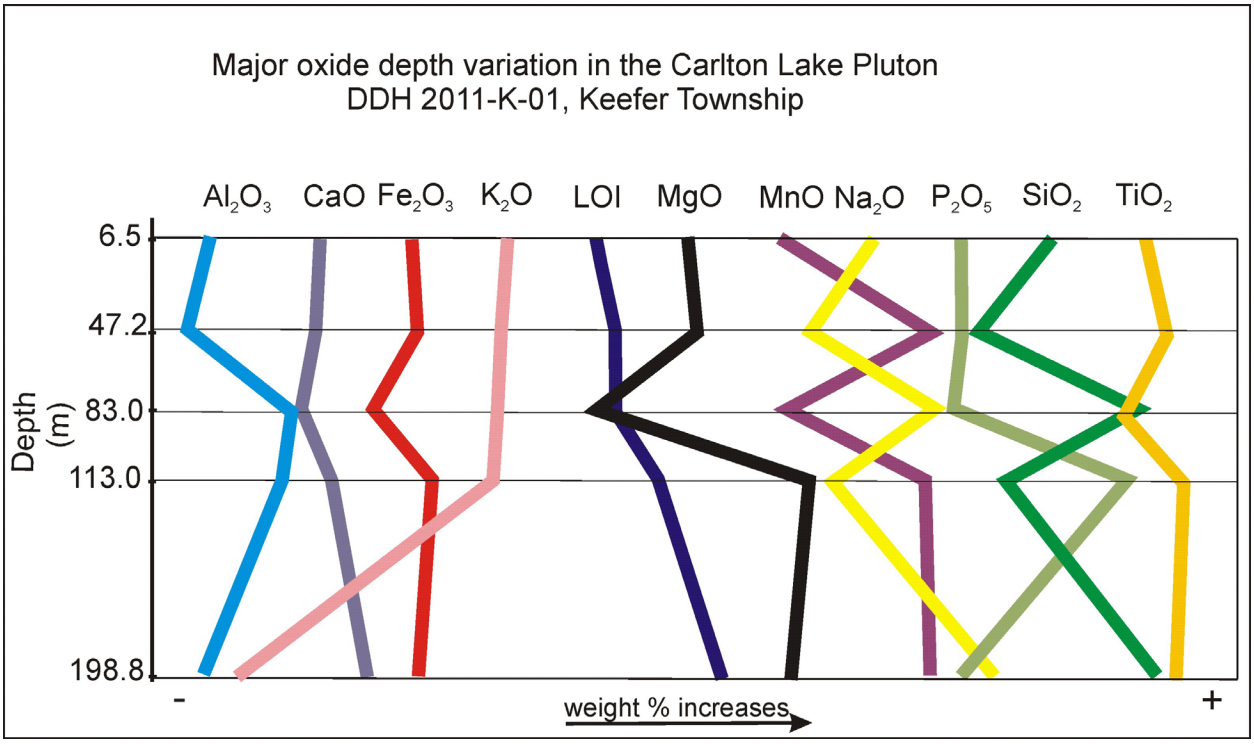


Figure 11. Geochemical variation with depth in the Carlton Lake pluton from diamond-drill hole 2011-K-01 in Keefer Township, drilled by Moon Energy Corp. Foundation, Canada.

Kapuskasing Structural Zone

The recent discovery of gold mineralization hosted by Timiskaming metasediments in the Borden Lake area, currently being explored by Probe Mines Limited is significant in that it demonstrates that amphibolite grade metamorphic rocks in the Kapuskasing Structural Zone (KDZ) can be gold bearing. Amphibolitized, garnetiferous paragneiss outcrop along logging trails in Wadsworth Township (*see* Photo 4D) and an unconfirmed gold occurrence is reported in Lougheed Township (Groulx 1957). Overburden cover is generally thin in the area and a network of logging roads and trails provide convenient access. The area has seen only very limited exploration and should be considered as a new prospecting frontier. Although the age of the Wadsworth Township paragneiss is unknown, the prospector should be alert to the possibility that Timiskaming-aged rocks may be present here. Tell-tale signs include the presence of polymictic conglomerate with clasts of felsic intrusive rocks. Bear in mind that the high strain associated with deformation in the KSZ often results in extreme flattening and elongation of the clasts of conglomerate, so close attention should be paid to any outcrops that exhibit this trait. At Borden Lake, gold is not restricted to the conglomerate facies but is widespread and found in the finer grained metasediments as well, usually associated with pyrite and pyrrhotite. Let these clues serve as guides to exploring in Lougheed, Ossin and Wadsworth townships for similar types of gold mineralization.

A single grab sample of a fine-grained mafic intrusive rock in Fenton Township was slightly anomalous in platinum and palladium (2011-BTA-52, Table 26). Further investigation is required to determine the significance of the assay.

Partridge River Greenstone Belt, James Bay Lowlands

As reported by Middleton (1967), rocks in the Partridge River greenstone belt include “basic rocks including plugs that resemble kimberlite … and alkalic zones.” This is noteworthy in the fact that the plugs occur associated with a major “10 mile wide fault zone” (Middleton 1967) and lie within the area that has been referred to as the Ontario kimberlite corridor linking the Attawapiskat and Kirkland Lake kimberlite clusters. A close examination of the OGS

1990 airborne survey over the belt to identify circular magnetic anomalies may serve as a guide to discovery of kimberlite pipes. Bear in mind that the absence of the Paleozoic cover rocks of the James Bay Lowlands that naturally suppress background magnetic signatures of the volcanic rocks through which the kimberlite might erupt will make their identification more subtle and difficult to detect. The numerous creeks in the area present favourable sampling opportunities for kimberlite indicator minerals.

Significant volumes of felsic pyroclastic rocks with accompanying VMS style alteration and numerous untested EM conductors in the belt present favourable conditions for the discovery of VMS mineralization. Specifically, the presence of rhyolitic breccias intermixed with graphitic zones accompanied by chlorite and sericite alteration, including knots of black chlorite as noted in the Conwest Exploration Company Limited drill core, are positive indicators (*see* Table 28). Conwest's assay results all indicated traces of gold, enhancing the potential for gold-rich VMS discovery.

The vigorous search for VMS mineralization in the 1960s and 1970s waned in Ontario's far north as mineral economic studies demonstrated the high costs of production and transportation weighed against discovery of economically viable deposits. Consequently, the Partridge River greenstone belt has remained unexplored since that time despite a belt-wide Ontario Geological Survey airborne survey that identified numerous EM conductors with coincident magnetic anomalies.

The entire belt is wide open for staking with no current active mining claims. It is suggested a drill-ready, high-priority target in the vicinity of the Conwest Exploration Company Limited drill hole No 4. Barren massive sulphides accompanied by mineral alteration assemblages characteristic of footwall alteration to VMS mineralization have been encountered in the company's grassroots drilling program in 1976. No known follow-up work has been completed. The VMS potential should be balanced with the knowledge that no significant mineralization has been reported from the belt to date but elsewhere, similar barren sulphides define fertile VMS horizons. An example is the Kam Kotia Mine where the north end of the mined-out open pit preserves one such lense of "barren massive sulphides."

A sample of quartz biotite paragneiss with pegmatitic quartz veining, located immediately south of the Partridge River greenstone belt in metasedimentary rocks of the Quetico subprovince, assayed 0.03 ounce per ton gold (Table 29, 2011 BTA-71). In light of recent gold discoveries in similar geolgical settings in the Borden River area and in Eastmain Opinaca district, Quebec, the area around the anomalous sample site should be examined further for its gold potential.

The proximity of rail transportation and community infrastructure at Moosonee add to the attractiveness of exploring the Partridge River area. When combined with the discovery of VMS in other northern greenstone belts such as the recent McFaulds Lake discovery or that at Favourable Lake, this provides further incentive for re-evaluating the mineral prospects of the Partridge River greenstone belt.

OGS ACTIVITIES AND RESEARCH BY OTHERS

Details of activities completed during the year by OGS staff based in Sudbury Ontario are provided in Summary of Field Work and Other Activities 2011 (Easton et al. 2011).

D. Armstrong, Ontario Geological Survey, examined Paleozoic rocks of the Hudson Platform, Hudson Bay and James Bay lowlands for their hydrocarbon resource potential.

B. Berger, Ontario Geological Survey, did reconnaissance bedrock mapping of metavolcanic rocks along the south margin of the Kenogamissi batholith south of Gogama.

L. Bruce, University of British Columbia, continued work on her MSc thesis studying the characteristics of diamonds in Archean conglomerates from Wawa and comparing them with characteristics of other diamonds found in lamprophyres in the Wawa area.

S. Buse, Ontario Geological Survey, continued work on the geochemistry of the Paleoproterozoic gabbro sills of the Sutton Inlier and granitoid rocks of the Hudson Bay Lowlands.

T. Garcia, University of Toronto, continued work on her PhD thesis studying the characteristics of the Algoma iron formations in the Wawa area.

C. Gao, Ontario Geological Survey, conducted surficial geological mapping in the Chapleau area.

T. Gemmell, University of Ottawa, commenced MSc research on the Kidd Creek Mine. The objectives of the project are to study the three dimensional (3D) geology and petrology in order to develop a more comprehensive understanding of the Deep Mine (Mine D), which will result in a reconstruction of the original stratigraphy and volcanology, characterization of the associated lithologies and alteration, and geochemical and mineralogical signatures of specific areas of the ore zones. The information will then be integrated into the 3D block model of the mine to improve ore characterization, definition drilling, and predictive metallurgy.

L. Katz, Laurentian University, initiated an MSc project on the "Geological Setting and Geology of the Côté Lake Deposit, northern Ontario: A Possible Archean Porphyry-Style Au-Cu System."

C. Miller, University of British Columbia, continued work on her MSc thesis investigating a suite of inclusions in diamonds from the Archean conglomerates at Wawa.

E. Smith, University of British Columbia, continues work on his PhD project to develop new X-ray diffraction methods to detect minerals crystallized from fluid inclusions in fibrous diamonds. Studied samples include Kongo, Jericho, Wawa (Ontario, S. Superior craton) and Diavik diamonds.

S. Prefontaine, Ontario Geological Survey, continued bedrock mapping in the Halliday Dome south of Timmins.

Mars Explorers

As part of the Augoren field school lead by J. Grotzinger, California Institute of Technology, and A. Knoll, Harvard University, a group of 17 geoscientists, microbiologists and astrobiologists who are presently working on the remote study of Mars using mobile rovers, visited Timmins for an eight-day field trip to compare Abitibi greenstone geologic history with that on Mars. Of particular interest are the hydrothermal systems that accompany mineral deposits at Timmins as analogues for primitive Martian environments that could support life (e.g., Russell and Hall 2006) and the recognition of serpentine on Mars (e.g., Ehlmann, Mustard and Murchie 2010). Subsequent to their visit, a texturally unique rock examined at Endeavour Crater on Mars with an anomalous zinc content of 0.6% Zn was named "Tisdale" after the host assemblage to a number of major mineral deposits in Timmins.

Discover Abitibi

M. Hannington, University of Ottawa, completed a lithogeochemical study of graphitic shales in the Abitibi Subprovince which investigated the use of chemical signatures in the sediments as a means of discriminating between fertile and barren graphitic horizons. The study involved extensive sampling of archived diamond-drill core in the Resident Geologist's drill core libraries in Timmins and Kirkland Lake as well as select cores from exploration company projects and mines.

A summary of projects funded through the Discover Abitibi initiative are listed in Table 31.

Table 31. Discover Abitibi Projects underway in 2011.

Project	Request for proposal release date	Principle Investigator	Status
Study of gold-bearing semi-massive sulphide mineralization in the Montclerg prospect	November 10, 2010	T. Barrett	Underway
Gold and iron oxide copper gold occurrences – Matachewan and Shining Tree area	November 10, 2010	J. Ayer	Underway
Lithogeochemical investigation, Kidd–Munro Megatem survey area, Timmins–Kirkland Lake	October 1, 2010	M. Hannington	Underway

Targeted Geoscience Initiative 4 (TGI-4)

Targeted Geoscience Initiative 4 continued the fourth phase of geoscience investigations with the aim of discovery of deep deposits of gold and base metal mineralization. TGI-4 research in the Timmins area include the investigation of fertile fault systems as vectors to large gold deposits (Dubé et al. 2011), and nickel, copper, platinum group elements and chromium in mafic to ultramafic rocks (Ames and Houlé 2011).

MINERAL DEPOSIT COMPILATION GEOLOGISTS—PROVINCIAL ACTIVITIES

The Mineral Deposit Compilation geologists (MDCG) investigate and document mineral deposits and occurrences across the province. Through field visits, comprehensive literature research and personal research, they work with regional and district Resident Geologist Program staff to ensure that the Mineral Deposit Inventory (MDI) database is regularly updated. Regular updates are required to ensure that the Ministry of Northern Development and Mines is using the most up-to-date information in making land-use planning and policy decisions. A.C. Wilson is the northeastern Ontario MDCG. N.A. Bennett was the northwestern Ontario MDCG until mid 2011.

In December 2011, an updated version of the MDI was released. In addition to being made available through the MNDM web site, through *GeologyOntario* and OGS Earth, the entire digital data set is also on CD as "Mineral Deposit Inventory—2011". All three have search capabilities.

In mid 2011, a new administrative layer was incorporated into the MDI database. This change was implemented in order to maintain consistency with the administrative layer (townships and areas) used by the Mining Lands Section (Mineral Development and Lands Branch, MNDM). As a result, a significant number of pre-existing records were revised to include a new township or area name. Significant contributors to the database in 2011 included J. Bongfeldt (Kenora), D.L. Guindon (Kirkland Lake), A. McKee (Red Lake), A. Pace (Sault Ste Marie), N.A. Bennett (Thunder Bay North and South), R.M. Cundari (Thunder Bay North) and P. Bousquet (Timmins).

Total contributions to the MDI database in 2011 included 2267 updated records, 519 records deleted and 390 new records. A breakdown of the provincial records revised by office is provided in Table 32.

Table 32. Mineral Deposit Inventory records revision in 2011.

Resident or District Office	Updates	Deletions	New
Kenora	175	2	99
Kirkland Lake	89		10
Red Lake	59		7
Sault Ste Marie	46	1	1
Southeastern Ontario	863	414	20
Southwestern Ontario	6	0	0
Sudbury	217	98	8
Thunder Bay North	214	1	66
Thunder Bay South	389	2	110
Timmins	209	1	69
Total	2267	519	390

The MDI database is a dynamic compilation of over 19 000 records describing most of the known mineral occurrences in Ontario. It is an important reference tool for explorationists interested in exploring and acquiring mining properties in Ontario. When used in conjunction with other spatial databases generated by the Ontario Geological Survey, it provides additional tools for making mineral discoveries in Ontario.

REGIONAL LAND USE GEOLOGIST ACTIVITIES

Land Use Planning Activities

The northeast Regional Land Use Geologist, based in Timmins, co-ordinates input into land use planning activities in the Sault Ste. Marie, Timmins and Kirkland Lake Resident Geologist districts and the part of the Sudbury District that is north of the French River. This report includes information about activities in all of these districts.

From the beginning of 2011 until late September, when she left to take up a new job with the Ministry of Northern Development and Mines' Mineral Development and Lands Branch, the position was staffed by Dawn-Ann Metsaranta, P.Geo. From that time until the end of the year, essential job duties were shared between Hugh Lockwood, P.Geo, northwest Regional Land Use Geologist, Debbie Laidlaw, P.Geo, southern Regional Land Use Geologist, and Ruth Debicki, P.Geo, Land Use Policy and Planning Coordinator, with support from other staff members in the Timmins Regional Office.

The objectives of the position are to:

- effectively represent mineral-related values in the context of competing interests for land use;
- optimize the land base available for mineral exploration and development; and
- raise awareness within the mineral sector of the implications of legislation and regulations other than the *Mining Act* on their activities.

The competing interests for land use vary from place to place across the province, but most have the potential to restrict the availability of land, access to it, and /or the activities on it. In 2011, the northeast Regional Land Use Geologist dealt with a variety of land use planning issues throughout the Northeast Region.

CROWN LANDS

The Ministry of Northern Development and Mines (MNDM) engages with the Ministry of Natural Resources (MNR) when Crown land use planning initiatives may affect provincial mineral interests. Such activities include Forest Management Planning, Far North Land Use Planning, and other work related to managing Crown land.

Forest Management Planning

The forest management planning process involves consideration of a wide range of values on forestry activities, including mineral values, and the relevance of legislation other than the *Crown Forest Sustainability Act*, including the *Mining Act*.

The northeast Regional Land Use Geologist provides input into the development of forest management plans, including

- the distribution of areas of high mineral potential, so that forestry planners are aware of areas where there may be pressures from the mineral sector for access for exploration;
- the locations of existing mining claims and leases, so that exploration workings such as grid lines are not inadvertently damaged or destroyed by forestry activities;
- information regarding current exploration and development activities in the area;
- the location of mining-related hazards, so that forestry workers are not put at risk; and
- the socio-economic impact of mineral exploration and mining in the forest management unit, so that its importance can be considered in the context of other sectors, such as tourism, that may be active within the forest management unit.

In 2011, there were no forest management units in the northeast region requiring input of this sort, because of the implementation of changes to the forest management planning process. In the past, forest management plans have been for five-year periods, with planning for each five-year term beginning 2 years before its implementation. Plan terms have recently been increased from 5 to 10 years, with two 2-year phases, beginning with plans implemented in 2007.

The Regional Land Use Geologist assisted with forest management planning in 2011 by working with the Mining Lands Consultant to provide addresses for claimholders in several forest management units so that the claimholders could be contacted with regard to the annual work schedules in the areas of their claims.

Provincial Parks and Conservation Reserves

The Regional Land Use Geologist responded to requests from MNR to resume work on disentangling 2 of the Ontario's Living Legacy candidate protected areas that covered areas of pre-existing mining claims and leases. Some claims in a site identified as F1506, near White Lake Provincial Park, had been allowed to lapse and work was done to help prepare them to be officially added to the park. In addition, work was done on a site identified as F175, in the Wolf Lake area northeast of Sudbury. The proposed solution was posted on the Environmental Registry on June 1 for a 47-day public review period. Environmental nongovernmental organizations are campaigning against adopting the proposed solution, and no decision about it has been announced to date.

Crown Land Use Atlas Harmonization Project

MNR has engaged members of the public to help it update the policies for Crown land in the Wawa District. This initiative is called the Crown Land Use Atlas Harmonization Project. It was begun in 2006, but revisited in 2011 after public opposition to policy proposals posted on the Environmental Registry as outcomes of the earlier work.

The northwest Regional Land Use Geologist attended meetings with the group and with MNR staff to provide input with regard to MNDM interests, and to highlight the potential effects that the proposed land use policies might have on mineral sector interests and activities in the area. She also worked to ensure that MNR had contact information for all holders of mining claims and leases in the area, so that the claimholders and leaseholders could be included in the public consultation process with regard to proposed new policies for activities on Crown land in the area.

Withdrawal Orders

The northeast Regional Land Use Geologist reviewed a number of Section 35 (*Mining Act*) requests for withdrawal orders in 2011. Some applications were for surface rights only; some were for mining rights only; and some were for both surface and mining rights. Such requests are made for a wide range of reasons, including

- developing waste disposal sites and sewage lagoons;
- selling Crown land for cottage lots;
- enabling land exchanges;
- supporting First Nation land claim / treaty entitlement negotiations;
- allowing hydroelectric and other infrastructure developments;
- facilitating Ministry of Transportation review of aggregate potential in support of highway maintenance; and
- assessing applications under Section 35.1 of the *Mining Act* for the withdrawal of Crown-owned mining rights in Northern Ontario, where the surface rights are privately held.

After review, 10 applications were recommended for approval; 1 was recommended for approval with conditions; and 2 were not recommended for withdrawal because of the presence of provincially significant mineral potential or the presence of mining claims or leases.

MUNICIPAL/PRIVATE LANDS

MNDM supports planning for municipal and private land by providing input into the Planning Service led by the Ministry of Municipal Affairs and Housing (MMAH). MNDM input includes

- supplying data with regard to mineral potential, mining claims and leases, exploration and mining activity and mining-related hazards to planning authorities, planning consultants and MMAH in support of the new municipal Official Plans, Official Plan Amendments, Zoning By-laws, and Consents (lot severances);
- reviewing land use policies proposed in municipal planning documents and providing comments on those policies to MMAH "One-Window" planners for consolidation with feedback from other ministries; and
- supporting the development of municipal policies and guidelines, and working to enhance the availability of data to support wise planning decisions.

Municipal Planning

The Provincial Policy Statement (PPS), which guides municipal planning in Ontario, is issued under the provisions of the *Planning Act*. The PPS was last modified in 2005. A compulsory five-year review of the PPS was initiated in 2010 to ensure that it is up to date and meets current environmental standards, ensures human health and safety, and protects Ontario's cultural and natural heritage. The northeast Regional Land Use Geologist's assistance with the PPS review in 2011 included reviewing 10 existing Official Plans and commenting on how well they comply with the requirements of the Provincial Policy Statement. This work is helping to guide the revision of the Provincial Policy Statement.

In 2011, the northeast Regional Land Use Geologist provided direct support for municipal planning by supplying background information in support of new Official Plans for the communities of Tarbutt and Tarbut Additional, Nairn and Hyman, Kirkland Lake, Greater Sudbury, Sault Saint Marie, Temagami, and Huron Shores; providing site-specific information with regard to mineral potential, mineral occurrences and mining-related hazards in a number of municipalities; and reviewing and commenting on the policies in 9 draft Official Plans, 1 Official Plan amendment, 16 Zoning Bylaw amendments, and 8 Consents. Note that Consents are only reviewed for areas such as unorganized territory where the province has not delegated the decision-making authority to a municipality.

In 2011, technical information on mining-related hazards was provided with regard to sites in Timiskaming, Timmins, and Kirkland Lake, with the assistance of MNDM's Mineral Development and Lands Branch. Such information is of particular importance where proposed municipal developments are in or close to areas where mining activity has gone on in the past and there is a risk that the proposed developments may put people or property at risk.

Exemptions from Mining Tax

Section 189 (1) of the *Mining Act* now allows for owners of patented mining rights to apply for exemption from paying mining tax on the land. Key factors that are considered when applications are reviewed are whether or not the lands are being used for mining-related purposes, and whether or not there would be third party interest in using the lands for mining related purposes (e.g., the surrounding lands are staked and being explored or the sites in question have provincially significant mineral potential). The northeast Regional Land Use Geologist reviewed approximately 30 such applications in 2011 and provided comments to MNDM's Mining Lands Section to be consolidated with other information for the Minister's consideration and decision.

FIRST NATIONS

The northeast Regional Land Use Geologist provides information in support of First Nation interests in land use planning in a number of different ways. In 2011, she provided feedback to 2 tribal councils with regard to their requests about land use planning on private and Crown land. She also provided input with regard to applications to have Aboriginal cultural heritage sites withdrawn from staking. It is anticipated that input will be provided in 2012 and beyond with regard to Far North land use planning initiatives in northeast Ontario.

OTHER

The northeast Regional Land Use Geologist also participated in other initiatives in 2011, as outlined below.

Class Environmental Assessments

Class environmental assessments (Class EAs) are documents that set out streamlined environmental assessment processes. They apply to routine projects that have predictable and manageable environmental effects. There are currently 10 Class EAs in effect in Ontario, with regard to initiatives including the development of new infrastructure such as dams, transmission lines, pipelines, highway corridors, commuter rail stations and bus terminals, and sewer and water facilities; the establishment of new parks and conservation reserves; forest management plans; and Crown land dispositions.

The northeast Regional Land Use geologist provided input on mineral potential, known mineral occurrences, mining land tenure, and mining-related hazards for 10 Class EA initiatives in northeastern Ontario in 2011. The Class EA initiatives were related to projects including several new hydroelectric developments, a number of transmission line developments, and a proposal for a wind farm.

Data Committee

MNR and MMAH jointly host an interministerial committee that is working to identify and work to implement ways of making more data more readily available to support land use planning, and especially municipal planning, in Ontario. The northeast Regional Land Use Geologist was MNDM's representative on the committee until her departure, when the southern Regional Land Use Geologist became the MNDM representative on the committee.

Northern Ontario Heritage Fund Corporation Applications

The Northern Ontario Heritage Fund Corporation (NOHFC) was established as a Crown agency in 1988, with a mandate to promote and stimulate economic development by providing financial assistance to projects of merit across Northern Ontario. From time to time, NOHFC circulates applications to staff of MNDM for review and comment.

During 2011, the northeast Regional Land Use Geologist was asked to review and comment on 2 applications. One was for a major waterfront development in an area where there are historic tailings deposits. She recommended that the tailings be sampled for deleterious elements such as arsenic before they are disturbed by the proposed development. She also noted that Section 164(3) of the *Mining Act* prohibits any disturbance of a mining-related hazard without the prior approval of the Minister of Northern Development and Mines, if the site has been rehabilitated in accordance with the *Mining Act*. The other was for waterfront upgrades near a former mine site in another community to accommodate larger crowds at local events. There were no concerns with regard to the second application.

ACKNOWLEDGMENTS

Information on past activities reported in the text is from assessment files and other files of the Timmins Resident Geologist Office, unless otherwise noted. Information on current mining and exploration activities was provided by individual prospectors and exploration and mining company personnel, compiled from assessment files and obtained from public information sources, company web sites and SEDAR (System for Electronic Document Analysis and Retrieval). Photo 5A is reproduced with the permission of R.S. Middleton.

REFERENCES

Ames, D.E. and Houlé, M.G. 2011. Overview of the Targeted Geoscience Initiative 4 nickel-copper-platinum group elements-chromium project (2010–2015)—mafic to ultramafic ore systems: Footprint, fertility and vectors; *in* Summary of Field Work and Other Activities 2011, Ontario Geological Survey, Open File Report 6270, p.37-1 to 37-7.

Atkinson, B.T., Bousquet, P., Pace, A., Burnett, S., Butorac, S., Draper, D.M., Metsaranta, D.-A. and Wilson, A.C. 2011. Report of Activities 2010, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste Marie Districts; Ontario Geological Survey, Open File Report 6264, 127p.

Atkinson, B.T., Pace, A., Beauchamp, S.A., Bousquet, P., Butorac, S., Draper, D.M. and Wilson, A.C. 2010. Report of Activities 2009, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts; Ontario Geological Survey, Open File Report 6247, 99p.

BBA 2011. Technical report mineral resource and mineral reserve update of the Detour Lake Project, Ontario, for Detour Gold Corporation. NI43-101 Report. March 15, 2011.

Ayer, J.A., Thurston, P.C., Bateman, R., Dubé, B., Gibson, H.L., Hamilton, M.A., Hathway, B., Hocker, S.M., Houlé, M.G., Hudak, G., Ispolatov, V.O., Lafrance, B., Lesher, C.M., MacDonald, P.J., Péloquin, A.S., Piercey, S.J., Reed, L.E. and Thompson, P.H. 2005. Overview of results from the Greenstone Architecture Project: Discover Abitibi Initiative; Ontario Geological Survey, Open File Report 6154, 146p.

Beakhouse, G.P. 2007. Structurally controlled, magmatic hydrothermal model for Archean lode gold deposits: A working hypothesis; Ontrio Geological Survey, Open File Report 6193, 133p.

Bennett, G., Brown, D., and George, P. 1966. Partridge River sheet; Ontario Department of Mines, Preliminary Map P.376, scale 1:126 720.

Bennett, G., Brown, D.D., George, P.T. and Guillet, G.R. 1969. Moosonee sheet, Geological Compilation Series, Cochrane District; Ontario Department of Mines, Map 2171.

Bennett, G., Brown, D.D., George, P.T. and Leahy, E. J. 1967. Operation Kapuskasing; Ontario Department of Mines, Miscellaneous Paper 10, 98p.

Berger, B.R. 1998. Precambrian geology, Hoyle and Gowan townships; Ontario Geological Survey, Report 299, 49p.

Bright, E.G. 1966. Geology of Halliday and Midlothian townships, District of Timiskaming; Ontario Department of Mines, Geological Report 79, 33p.

Closs, L.G. 1974. Geochemical Series, geochemical distribution of copper in 'B' horizon soils and till components in parts of Halliday and Midlothian townships, Districts of Sudbury and Timiskaming; Ontario Division of Mines, Preliminary Map P.938, scale 1:15 840.

Dubé, B., Mercier-Langevin, P., Castonguay, S., McNicoll, V.J., Pehrsson, S.J., Bleeker, W., Schetselaar, E.M. and Jackson, S. 2011. Targeted Geoscience Initiative 4. Lode gold deposits in ancient, deformed and metamorphosed terranes—Footprints and exploration implications: A preliminary overview of themes, objectives and target areas; *in* Summary of Field Work and Other Activities 2011, Ontario Geological Survey, Open File Report 6270, p.38-1 to 38-10.

Duke, C.J. 2011. Amended technical review and mineral resource estimate for the Jubilee–Surluga property, near Wawa, Ontario, Canada, for Augustine Ventures Inc., 73p.

Easton, R.M., Burnham, O.M., Berger, B.R., Beakhouse, G.P, Bajc, A.F., Parker, J.R., Kelly, R.I. and Debicki, E.J., eds. 2011. Summary of Field Work and Other Activities 2011, Ontario Geological Survey, Open File Report 6270.

Ehlmann, B.L., Mustard, J.F. and Murchie, S.L. 2010. Geological setting of serpentine deposits on Mars; Geophysical Research Letters, v.37, L06201, 5p.

Galata, G. 2011. Diamond drilling report for Moon Energy Corp. Foundation, Canada, on the Keefer North Project, Keefer Township, Timmins Resident Geologist Office, Keefer Township, assessment file AFRO-ID# 2.49719, 16p.

Groulx, J.L. 1957. Diamond drill report, J.L Groulx property, Lougheed Township; Timmins Resident Geologist office, Lougheed Township, assessment file RGID# T-784, 5p.

Hall, L.A.F. 2001. Geology and mineral potential of Carscallen and Denton townships, Timmins West area; *in* Summary of Field Work and Other Activities 2001, Ontario Geological Survey, Open File Report 6070, p.5-1 to 5-11.

Heather, K.B. and Arias, Z. 1992. Geological and structural setting of gold mineralization in the Goudreau–Lochalsh area, Wawa gold camp; Ontario Geological Survey, Open File Report 5832, 159p.

Johns, G.W. 1982. Geology of the Burntbush–Detour Lakes area, District of Cochrane; Ontario Geological Survey, Report 199, 82p.

Johnstone, R.M. 1991. The geology of the northwestern Black River–Matheson area, District of Cochrane; Ontario Geological Survey, Open File Report 5785, 288p.

Longe, R.V. 1967. Selco Exploration Ltd. Partridge River District final report, March 1967, assessment file RGID# T-6333, 87p.

Luhta, L.E., Sangster, P.J., Draper, D.M., Hamblin, C.D. and Leroux, M.L. 1992. Timmins Resident Geologist's District—1992; *in* Report of Activities 1992, Resident Geologists, Ontario Geological Survey, Miscellaneous Paper 161, p.233-272.

Middleton, R.S. 1967. Geology of the Dog-Easy and Tiger-Jig map areas, Partridge River Project, Ontario,. assessment file RGID# T-6334, 44p.

Ontario Geological Survey 2011. Mineral Deposit Inventory—2011, Ontario Geological Survey.

Ontario Geological Survey 1990. Airborne electromagnetic and total intensity magnetic survey, Partridge River area; Ontario Geological Survey, Maps 81 543 to 81 550, scale 1:20 000.

Pressacco, R. ed. 1999. Special project: Timmins ore deposit descriptions; Ontario Geological Survey, Open File Report 5985, 222p.

Ross, A.F. 2011. Prodigy Gold Incorporated: Mineral resource estimate update, Magino Gold Project, Sault Ste. Marie Mining District, Ontario, 118p.

Russell, M.J. and Hall, A.J. 2006. The onset and early evolution of life; *in* Evolution of Early Earth's Atmosphere, Hydrosphere, and Biosphere – Constraints from Ore Deposits, Geological Society of America Memoir 198, p.1-32.

Sage, R.P., Sawitsky, E., Turner, J., Leeselleur, R. and Sagle, E. 1982. Precambrian geology of McMurray Township, Wawa area; Ontario Geological Survey, Preliminary Map P.2441, scale 1:15 840.

Trebilcock, D. and Dickenson, S.L. 2004. Report on the Smith Lake property, Leeson Township, Missinabie, Ontario; prepared for Conquest Resources Limited, 32p.

APPENDIX 1

Table 33. Mineral deposits not being mined in the Timmins District in 2011.

Abbreviations

CMH ..... Canadian Mines Handbook
DD.....Diamond drilling
OFR.....Open File Report
RGF.....Resident Geologist Files
Study .....Ontario Geological Survey Study
TREO ..... Total rare earth oxides
UGD..... Underground drilling

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Alexo property Dundonald and Clergue Tp.	Ni, Cu, Co	Open pit indicated: 18,000 t @1.36% Ni, 0.16%Cu, 0.06% Co Underground indicated: 4,0000 t @0.84% Ni, 0.11% Cu, 0.04% Co	Canadian Arrow Mines Limited	NI 43-101 Rpt 03/11/2010	Past producer, DD in 2010
Aquarius Project Macklem Tp.	Au	Indicated resource: 23,112,000 t @ 1.49 g/t Au Inferred resource: 502,000 t @ 0.83 g/t Au	St Andrew Goldfields Ltd.	Press release 20/11/2006	Past producer 1984, 1988-89.
Augdome property Tisdale Tp.	Au	160 000 tons @ 0.10 oz/t Au	Lexam VG Gold Inc.	CMH 1986-87 p.50	Last active 1985
Bell Creek Mine (past producer) Hoyle Tp.	Au	Measured and Indicated resources: 1,790,000 t @ 4.36 g/t Au (251,200 ounces) Inferred resource: 8,427,500 t @4.40 g/t Au (1,192,900 ounces)	Lake Shore Gold Corp.	NI 43-101 Rpt 14/01/2011	Past producer 1987–94
Block A property west of Sunday Lake area	Au	Global Mineral Inventory (surface to 5750 elev) Indicated resource 21,633,000 t @1.59 g/t Au (1,109,200 oz); inferred resources 17,126,000 t @ 1.56 g/t Au (861,200 oz)	Detour Gold Corporation and Trade Winds Ventures Inc.	Trade Winds Ventures Inc. NI 43-101 Rpt 14/02/2011	Diamond drilling 2011
Borden Lake gold deposit Cochrane and Gallagher tps	Au, Ag	Indicated resource: 11,607,000 t @ 0.82 g/t Au (305,000 ounces Au); Inferred resource: 169,322,000 t @0.39 g/t Au (3,755,000 ounces Au)	Probe Mines Limited	NI 43-101 Rpt 6/10/2011	Diamond drilling, metallurgical testing 2011
Broulan Reef Mine (past producer) Whitney Tp.	Au	100 000 tons @ 0.22 oz/t Au	Temex Resources Corp. and Goldcorp Canada Inc.	CMH 1965 p.50	Diamond drilling 2010
Buffalo Ankerite property (past producer) Whitney Tp.	Au	Indicated resource: 1,667,327 tons @ 0.135oz/t (224,309 ounces); Inferred resource: 2,160,734 tons @ 0.127oz/t (274,632 ounces)	Lexam VG Gold Corp.	Lexam VG Gold Inc. press release 10/01/2011	Past producer 1939–53. Diamond drilling 2011

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Carshaw-Malaga Shaw Tp.	Au	145,250 t @ 5.17 g/t Au (proven & probable)	Marshall Minerals Corp.	CMH 2001	Inactive
Clay–Howells Project Clay and Howells tps.	Fe, REE	Inferred resource: 8,500,000 t @ 44.5%% Fe_2O_3, 0.73% TREO	Rare Earth Metals Inc.	NI 43-101 Rpt 26/09/2011	Diamond drilling 2011
Clavos property (past producer) Stock and German tps.	Au	Indicated resource: 126,000 t @21.6 g/t Au; inferred resource 93,000 t @ 15.5 g/t gold	Sage Gold Inc.	CMH 2010	Diamond drilling 2010
Côté Lake deposit Chester Tp.	Au	Inferred resource: 131,000,000 t @ 1.00 g/t (4,200,000 ounces)	Trelawney Mining and Exploration Inc.	NI 43-101 Rpt 21/04/2011	Diamond drilling 2011
Davidson–Tisdale (past producer) Tisdale Tp.	Au	Indicated resource: 934,558 tons @0.139 oz/t (129,442 ounces): Inferred resource: 295,857 tons @ 0.136 oz/t (40,199 ounces)	Lexam VG Gold Corp.	Lexam VG Gold Inc. press release 10/01/2011	Diamond drilling 2003–04
DeSantis Mine (past producer) Ogden Tp.	Au	Albitite Zone: 72,212 tons @ 0.229 oz/t gold (probable non-NI 43-101 compliant); Hydrothermal Zone: 334,308 tons @ 0.19 oz/t gold (estimated non-NI 43-101 compliant)	Excellon Resources Inc.	Lateegra press release 30/05/2011	Past producer 1933, 1939–42, 1961-64.
Detour Lake Project (past producer) Sunday Lake area	Au	Proven reserve: 101,635,000 t @1.29 g/t Au (4,222,,000 contained ounces) Probable reserve: 368,407,000 t @ 0.96 g/t Au (11,351,000 ounces)	Detour Gold Corporation	Detour Gold press release 25/01/2012	Mine in development 2011
Detour Lake Block A west of Sunday Lake area	Au	Inferred resource: 73,693,000 @ 0.83 g/t Au (1,967,300 ounces) Total indicated resource: 90,510,0000 t @ 0.84 g/t Au (2,447,500 ounces)	Detour Gold Corporation	NI 43-101 Rpt 14/02/2011	Diamond drilling 2011
Detour Lake Gowest property west of Sunday Lake area	Au	Indicated resource: 2,340,000 t @1.16 g/t Au (87,374 ounces) Inferred resource: 4,040,000 t @ 1.16 g/t Au (150,574 ounces)	Detour Gold Corporation	NI 43-101 Rpt 28/04/2009	
Extender Minerals Penhorwood Tp.	Ba	100,000 t @ 95% Ba	Extender Minerals of Canada Ltd.	RGF	Inactive.
Frankfield East Project Tully Tp.	Au	Total indicated resource: 1,621,000 t @6.68 g/t Au (348,000 oz) Total inferred resource: 4,342,000 t @6.01 g/t Au (838,900 oz)	Gowest Gold Ltd.	NI 43-101 Rpt 03/08/2011	Diamond drilling 2011

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Fuller Deposit Deloro Tp.	Au	Indicated resource 1,533,489 tons @ 0.162 oz/t gold (248,005 ounces); Inferred resource: 1,813,065 tons @ 0.165 oz/t (299,960 ounces)	Lexam VG Gold Corp.	Lexam VG Gold Inc. press release 10/01/2011	Diamond drilling 2011
Goose Lake iron prospect Shaw Tp.	Fe	100,000,000 tonnes @ 68.8% Fe	N/A	RGF	Inactive
Groves property Groves Tp.	Ni, Cu	Historic resource: 500,000 tons @1.5% Ni + Cu	Liberty Mines Inc.	Liberty Mines Inc. press release 25/02/2011	Diamond drilling 2011
Hart prospect Eldorado Tp.	Ni, Cu	Indicated resource: 1,133,140 t @1.44% Ni (42,406,000 lb Ni); Inferred resource: 396,060 t @ 0.79% Ni (6,899,200 lb Ni)	Liberty Mines Inc.	Liberty Mines Inc. press release 02/03/2011	Diamond drilling 2011
Jack Rabbit property (Chester 3 property) Chester Tp.	Au	Historic indicated resource 342,000 tons @ 0.36 oz/t Au	Trelawney Mining and Exploration Inc.	Northville Gold Corporation Qualifying report 08/06/2002	Diamond drilling 2010
James Bay Niobium Project (Argor Carbonatite) Centre Pt of Southbluff Creek	Nb_2O_5	63 MT @ 0.52% Nb_2O_5	N/A	Study 41	Last active 1969
Jerome Mine (past producer) Osway Tp	Au	Total inferred (cut-off grade 0.3 g/t Au: 18,737,000 t @1.7 g/t gold (1,030,000 ounces)	Trelawney Mining and Exploration Inc.	NI 43-101 Rpt Augen Gold Corp. 06/08/2011	Diamond drilling 2010
Kelex property Clergue Tp.	Ni, Cu, Co	Open pit indicated: 131,000 t @1.1% Ni, 0.04%Cu, 0.04% Co Underground indicated: 90,000 0t @1.00% Ni, 0.04% Cu, 0.04% Co Underground inferred: 54,000 t @ 0.84% Ni, 0.04% Cu, 0.03% Co	Canadian Arrow Mines Limited	NI 43-101 Rpt 03/11/2010	Past producer, DD in 2010
Kenilworth (Naybob) Ogden Tp.	Au	North Zone unclassified: 138,900 tons in 13 areas grades up to 0.25 oz/t Au; South Zone unclassified: 600,000 tons @0.23 oz/t Au	Goldcorp Canada Inc.	RGF	Inactive
Kenty Mine Swayze Tp.	Au	#9 vein has possible resource of 43,3000 tonnes @ 4.7 g/t Au	Red Pine Exploration Inc.	RGF	Inactive
Kidd #3 Zone Chester Tp.	Au	408,000 tonnes @ 9.9 g/t Au	N.A.	OFR 5912	Inactive
Kipling Kaolin Kipling Tp.	Kaolin, silica sand, ball clay	Large - possibly 212.5 km^2 in size	A & T Energy	Study 21	Sampling 2009

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Langmuir No. 1 Deposit Langmuir Tp.	Ni, Cu	Indicated resource 1,733,000 t @ 0.51% Ni	Inspiration Mining Corporation	NI 43-101 Rpt 06/01/2010	Past producer
Langmuir #2 North Deposit Langmuir Tp.	Ni, Cu	Indicated resource: 8,324,000 t @0.40% Ni	Inspiration Mining Corporation	NI 43-101 Rpt 06/01/2010	Past producer
Langmuir W4 Project Langmuir Tp.	Ni, Cu	Indicated resource: 677,000 t @ 1.00% Ni, 0.06% Cu Inferred resource 171,000t @ 0.89% Ni, 0.06% Cu (combined open pit and underground)	Golden Chalice Resources Inc.	NI 43-101 Rpt 29/06/2010	Metallurgical testing 2011
Loveland property Loveland Tp.	Cu, Ni, PGE	Cominco zone: 130,000 tons @0.68% Ni, 0.73% Cu (historic resource) Hollinger zone: 422,000 tons @ 0.71% Ni, 0.42% Cu (historic resource)	Amador Gold Corp.	Amador Gold Corp. website 19/01/2011	Diamond drilling 2010.
Lucas prospect Lucas Tp.	Au	150,000 tons @ 0.12 oz/t (drill indicated)	Ring of Fire Resources Inc.	RGF	Airborne geophysics 2011
Martison Lake deposit south of Ridge Lake	Phosphate, REE	Measured and indicated resources (Anomaly A) 62,300,000 t @ 23.55% P_2O_5, 0.34% Nb_2O_5 Inferred resource: 55,700,000 t @ 21.87% P_2O_5, 0.34% Nb_2O_5	PhosCan Chemical Corp.	NI 43-101 Rpt 16/05/2008	Feasibility study
Multi Minerals Zone 3 and 4 McNaught Tp.	Phosphate, niobium	11,000,000 MT @ 0.17% Nb_2O_5 and 20% apatite	6378366 Canada Inc., 6070205 Canada Inc., International Explorers & Prospectors Inc.	Study 32	Airborne geophysics 2011
Multi Minerals Zone 6 McNaught Tp.	Iron, Phosphate, niobium	4,557,000 tonnes @ 69.9 magnetite, 21.88% apatite, 0.12% Nb	Multi Minerals Limited	Study 32	Sampling 2010
Murgold–Chesbar property (Chester 1 property) Chester Tp.	Au	Historic measured resource: 144,500 t grading 14.7 g/t Au	Trelawney Exploration and Mining Inc.	Northville Gold Corporation Report 089/06/2002	Bulk sampling 2010
Nemegosenda D zone Collins Tp.	Nb_2O_5	18 MT @ 0.47% Nb_2O_5	Nio Star Corp.	Study 34	Diamond drilling 2009–10
Nighthawk Mine Cody Tp.	Au	101,114 tons @0.195 oz/t Au	Goldcorp Canada Inc.	OFR 6006	Past producer. Inactive.
North Rundle property Newton Tp.	Au	Historic possible resource: 13,912 t @6.14 g/t Au: Historic probable resource: 2,917 t @ 11.99 g/t Au	Tamaka Holdings Inc.	NI 43-101 Rpt 25/05/2006	Inactive.
Onakawana Lignite Dyer Tp.	Lignite	21 MT @ 5246 BTU	Onakawana Development Ltd.	OFR 5111	Inactive.

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Orofino Mine Silk and Horwood Tp.	Au	Measured and indicated: 322,000 t @7.02 g/t Au; Inferred: 423,000 t @ 5.46 g/t Au	Tamaka Holdings Inc.	NI 43-101 Rpt 25/05/2006	Inactive.
Owl Creek East Hoyle Tp.	Au	Historic assay resource: 3,019,685 t @ 7.17 g/t Au	Goldcorp Canada Ltd.	OFR 5985	Inactive.
Owl Creek (West) Hoyle Tp.	Au	Historic assay resource: 5,709,954 t @ 2.31 g/t Au (above 200m); 821,000 t @ 9.79 g/t Au (below 200m)	Goldcorp Canada Ltd.	OFR 5985	Inactive.
Paymaster West Project Tisdale Tp.	Au	Indicated resource: 3,231,554 t @1.82 g/t Au (189,082 ounces); Inferred resource: 2,786,499 @1.72 g/t Au (154,404 ounces)	Lexam VG Gold Corp.	Lexam VG Gold Corp. press release 10/01/2011	Diamond drilling 2011
Radio Hill iron property Penhorwood Tp.	Fe	Historic reserve: 90,245,000 long tons @ 27.30% Mag Fe	Rogue Iron Ore Corp.	NI 43-101 Rpt. 30/04/2010	Diamond drilling 2011
Rundle Mine Newton Tp.	Au	Unclassified resource: 624,850 t @ 8.19 g/t Au; Probable resource: 207,000 t @ 9.7 g/t Au	Tamaka Holdings Inc.	OFR 5912	Inactive
Sangold property Keith Tp.	Au	125,000 tons @ 0.25 oz/t Au (historic resource)	Goldcorp Canada Ltd.	CMH 2001	Diamond drilling 2005
Shawmere Anorthosite Warren Tp.	Anorthosite	858,504 tonnes @ 30.92 st% Al	Avalon Rare Metals Inc.	RGF	Bulk sampled 2006; product testing 2007.
Shunsby property Cunningham Tp.	Cu, Zn	Total inventory in Main & South Zones is 3.7 MT @ 0.59% Cu and 2.56% Zn	Kirkton Resources Corp.	CMH 1992	Inactive
Sothman property Sothman Tp.	Ni	190,000 t @ 1.24% Ni (1% Ni cutoff) or 350,000 t @ 0.89% Ni (0.5% cutoff)	Xstrata Canada Corporation	RGF	Diamond drilling by Liberty Mines Inc. 2008
Stock Mine German Tp.	Au	Total measured and indicated: 143,000 t @ 8.07 g/t Au (37,100 ounces, cut); Total inferred: 529,000 t @ 6.49 g/t Au (110,300 ounces, cut)	Sage Gold Inc. (optioner)	NI 43-101 Rpt 02/10/2006	Diamond drilling 2011
Texmont deposit Bartlett Tp.	Ni	3.8 MT @ 1% Ni to a depth of 488m	Fletcher Nickel Inc.	Study 20	Inactive.
Thunder Creek property Bristol Tp.	Au	Indicated resource: 2,877,000 t @5.64 g/t Au (521,600 ounces); Inferred resource 2,693,000 t @ 5.89 g/t Au (510,000 ounces)	Lake Shore Gold Corp.	NI 43-101 Rpt 23/12/2011	UGD 2011

Deposit Name/ Township	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Timmins talc-magnesite deposit Adams, Deloro tps.	Magnesite, Talc	A Zone Core: Indicated resource: 12,728,000 t @52.1% magnesite, 3504% talc; Inferred resource: 18,778,000 t @ 53.1% magnesite, 31.7% talc	Globex Mining Enterprises Inc.	NI 43-101 Rpt 24/02/2010	Hydrometallurgical testing in 2010
Timmins Porcupine West Bristol, Ogden tp.	Au	Indicated resource: 770,000 t @ 5.13 g/t Au (127,000 ounces) Inferred resource: 5,532,000 t @3.97 g/t gold (704,000 ounces)	Explor Resources Inc.	NI 43-101 Rpt 12/01/2012	Diamond drilling 2011-12
Tully gold property Tully Tp.	Au	Indicated resource to 350m 362,090 t @8.0 g/t gold (93,140 ounces) Total inferred resource 592,070 t @ 7.3 g/t gold (139,880 ounces)	San Gold Corporation and SGX Resources Inc.	NI 43-101 Rpt 19/10/2010	Diamond drilling 2011
Thorne property, Golden River zones Thorneloe Tp.	Au	Estimated resource: 4,154,096 t @ 3.33 g/t gold (444,471 ounces)	Lake Shore Gold Corp.	Summary report for Band-Ore Resources Ltd. 06/12/2004	Diamond drilling 2011
Thunderwood JV Hoyle Tp.	Au	327,230 tonnes @ 7.14 g/t	Goldcorp Canada Inc.	OFR 5985	
Vogel/Schumacher deposit Hoyle Tp.	Au	Indicated resource: 2,219,000 t @ 1.75 g/t Au (125,000 ounces) Total inferred resource: 1,459,000 t @ 3.60 g/t Au (168,800 ounces)	Lake Shore Gold Corp.	NI 43-101 Rpt 14/06/2011	Includes former Marlhill Mine
Whitney talc-magnesite deposit Whitney Tp.	Magnesite, Talc	36.8 MT (est.) North and South Zones	General Magnesium Corp.	Study 28	Diamond drilling 2009
Young–Shannon property (Chester 2) Chester Tp.	Au	Historic indicated resource 220,000 tons @ 0.354 oz/t Au; historic inferred resource 725,000 tons @0.16 oz/t Au	Trelawney Mining and Exploration Inc.	Northville Gold Corporation Qualifying report 08/06/2002	Diamond drilling in 2010.

Table 34. Mineral deposits not being mined in the Wawa Area in 2011.

Abbreviations

CMH ..... Canadian Mines Handbook
GR ..... Geological Report
NM ..... The Northern Miner
NM ..... The Northern Miner
OFR ..... Open File Report
RGF ..... Resident Geologist Files

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Alden-Goudreau (past producer) Cowie Township	Au	170,000 tons @ 0.50 oz/t Au	Michipicoten Forest Resources and Cedar Falls Forest Resources	CMH 1937–43	Diamond drilling 2011
Betty Lake Iron Range Knicely Township	Fe	1,570,140 tonnes @ 39.5% Fe	Essar Steel Algoma Inc.	RGF	Inactive. Bulk sampled 1999
Big Lake Iron Range Corbiere Township	Fe	302,150 tons per 100 feet @36.6% Fe	Michipicoten Forest Resources and Cedar Falls Forest Resources	GR 153	Last active exploration 1955
Braminco prospect Brackin Township	Au	100,000 tons @ 0.15 oz/t (#21 Vein); 23,000 tons @ 0.31 oz/t (#7 Vein); 5000 tons @ 0.26 oz/t (B Vein)	Conquest Resources Limited	RGF	Last explored 2004
Cline gold mine (past producer) Jacobson Township	Au	204,000 tons @ 0.221 oz/t Au (88-60 Zone)	Cline Mining Corporation.	NI 43-101 Rpt. 30/11/2009	Diamond drilling 2008
Edwards Mine (past producer) Jacobson Township	Au	96,000 tonnes @ 11.3 g/t Au (at the end of 2000)	Strike Minerals Ltd.	RGF	Dewatering and diamond drilling 2011
Ego Mines Claims Abotossaway Township	Au, Cu	7 mineralized zones; W-8 zone hosts 442,080 tonnes @ 2.6 g/t Au, 1.91% Cu	Richmont Mines Inc.	OFR 5587	Inactive
Goudreau zone Finan Township	Au	Indicated resource: 220,667 t @ 12.0 g/t Au (85,262 ounces); Inferred resource: 169,027 t @ 10.3 g/t Au (55,730 ounces)	Richmont Mines Inc.	RGF	Diamond drilling 2010
G.W. Macleod Mine (past producer) McMurray Township	Fe	18,700,000 tonnes (blocked out) @ 31% Fe	Essar Steel Algoma Inc.	OFR 5990	Mine closed in 1998.
Josephine–Bartlett Iron Range Corbiere Township	Fe	7,555,788 tonnes @ 58.36% Fe	Essar Steel Algoma Inc.	OFR 5578	Diamond drilled 1946.
Josephine Mine (past producer) Corbiere Township	Fe	3,965,00 tons @ 51.65% Fe, 14.92% Si, 1.88% S	Canada Iron Inc.	RGF	Mine cave-in in 1946. Inactive.

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Jubilee–Surluga property (past producer) McMurray Township	Au	Inferred resource: 32,200,000 tonnes @1.14 g/t Au	Augustine Ventures Inc.	NI 43-101 Rpt 21/11/2011	Past producers (8) 1902–1991. Diamond drilling 2011.
Kabinakagami Lake occurrence Lizar Township	Fe	10,100,000 tonnes @ 66.5% Fe	Crown land	RGF	Inactive
Kremzar Mine (past producer) Finan Township	Au	229,777 tonnes @ 7.65 g/t Au	Richmont Mines Inc.	RGF	Active exploration 2000
Lakemount property Esquega Townships	Ni, Cu	Inferred resource 3,048,000 tonnes @ 0.35%Ni, 0.20% Cu, 0.13 g/t Pt, 0.09 g/t Pd	First Development Holdings Corporation	NI 43-101 Rpt. Platinum Group Metals 21/01/2005	Diamond drilling 2003-04
Lochalsh zone (past producer) Finan Township	Au	Probable reserves: 185,450 t @ 5.6 g/t Au (33,161 ounces); Indicated resource: 252,755 t @ 5.3 g/t Au (42,875 ounces); Inferred resource: 210,160 t @ 6.4 g/t Au (43,083 ounces)	Richmont Mines Inc.	RGF	Diamond drilling 2010
Lucy Iron Range (past-producer) Chabanel Township	Fe	13,780,000 tonnes @ 33.2% Fe	Essar Steel Algoma Inc.	RGF	Mine closed 1970.
Magino Mine (past producer) Finan Township	Au	Indicated resource: 67,555,000 t @ 1.00 g/t Au (2,176,300 ounces @ 0.35 g/t cut-off) Inferrred resource: 54,242,000 t @ 0.99 g/t Au (1,1721,200 ounces @ 0.35 g/t cutoff)	Prodigy Gold Incorporated	NI 43-101 Rpt. 2/11/2011	Diamond drilling 2011
Magnacon Mine (past producer) Mishibishu Lake area	Au	1.47 million tons aver. 0.19 oz/t Au (drill indicated). Past producer 1990, 19 397 oz from 163 366 tons	Wesdome Gold Mines Ltd.	CMH, 1997–98, p.204	Underground exploration 2004. Drifting westward toward Mishi Mine.
Magpie Iron Range (past producer) Leclaire Township	Fe	332,400 tonnes @ 36% Fe	Essar Steel Algoma Inc.	RGF	Mine closed 1921. Underground mine.
Markes occurrence Jacobson Township	Au	65,000 tonnes @ 5.75 g/t Au	Pele Mountain Resources Inc.	RGF	Diamond drilling 2010

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Mishi deposit Mishibishu Lake area	Au	Open pit measured+indicated resource: 5,169,200 t @2.14 g/t Au; inferred resource 764,100 t @ 2.42 g/t Au Underground measured+indicated resource: 567,100 t @4.52 g/t Au; inferred resource 437,600 t @5.78 g/t Au	Wesdome Gold Mines Ltd.	NI 43-101 Rpt 12/01/2011	Diamond drilling, dewatering 2011. Commercial production January 2012
Missanaibi magnetite Lang Township	Fe, Ti	16,160,000 tonnes @ 35% Fe	N.A.	RGF	350 ton bulk sample taken in 1958–59
Murphy-Algold-Amherst gold mine (past-producer) Abotossaway Township	Au	248,800 tons @ 0.305 oz/t Au	Lake Shore Gold Corp.	RGF	Diamond drilling 2003.
Nudulama prospect Leeson Township	Au	579,325 T @ 0.194 opT Au	GoldTrain Resources Inc.	RGF	Inactive
No.8 zone Finan Township	Au	90,700 tonnes @ 6.9 g/t Au	Richmont Mines Inc.	RGF	Exploration 1997
Pine Zone Finan Township	Au	70,000 tonnes @ 6.4 g/t Au	Richmont Mines Inc.	RGF	Inactive
Ranson Mine Rabazo Township	Au	30,3000 tonnes @ 12.4 g/t Au	N.A.	RGF	Diamond drilling 2001
Renabie Mine (past producer) Leeson Township	Au	1 million tonnes @ 0.2 g/t Au. Past producer 1,100,000 oz Au	N/A	RGF	Rehabilitated
Ruth Iron Range (past-producer) Chabanel Township	Fe	34,608,000 tonnes @ 30.9% Fe	Essar Steel Algoma Inc.	RGF	Diamond drilling 1967 by Algoma Ore Company Ltd.
Shenango gold mine Hawkins Township	Au	37,440 tonnes @ 4.3 g/t Au	Canadian Orebodies Inc.	RGF	Inactive
Shihan VMS property Meath and Rennie Townships	Zn, Pb, Cu	Indicated: 199,699 tonnes @ 3.81% Zn, 0.21% Pb, 0.09% Cu, 91.82 g/t Ag, 0.30 g/t, 0.30 g/t Au Inferred: 44,362 tonnes @ 4.30% Zn, 0.20% Pb, 0.09% Cu, 72.82 g/t Ag, 0.21 g/t, 0.30 g/t Au	Goldpath Resources Corp.	NI 43-101 Rpt 14/11/2011	Inactive
Sir James Dunn Mine (past-producer) Chabanel Township	Fe	65,454,545 tonnes @ 34% Fe, 7% SiO_2	Essar Steel Algoma Inc.	RGF	Inactive.

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References	Status
Sugar zone Hambleton and Odlum townships	Au	Indicated resource: 980,900 tonnes @ 8.72 g/t Au (274,970 ounces) Inferred resource: 580,500 tonnes @7.03 g/t Au (131,280 ounces)	Harte Gold Corp.	Press release 12/01/2012	Diamond drilling 2011
Surluga Mine (past producer) McMurray Township	Au	385,000 tons @ 0.21 opT Au	Augustine Ventures Inc.	NI 43-101 Rpt 21/11/2011	Diamond drilling 2011

APPENDIX 2

Tables 35 to 45: Historic gold production from Timmins by mine and year from 1910 to 2011. All tonnages are converted to Imperial units using a factor of 1.1023113.

Table 35. Historic Timmins gold production by mine and year, 1910 to 1919.

Mine	Year	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
Coniaurum/Carium	Tons Milled				2,456	11,607			340	401	
	Au (oz.)				909	6,032	2,017		70	73	
Davidson-Tisdale	Tons Milled								2,537	3,831	
	Au (oz.)								752	1,208	
Dome	Tons Milled	247	240	75,088	131,149	221,390	317,740	444,900	359,370	Mine Cleanup	187,580
	Au (oz.)	214	207	35,515	59,912	51,026	73,726	103,809	71,193	3,948	61,893
Dome Lake	Tons Milled							6,542	16,388	11,929	4,433
	Au (oz.)							871	2,166	4,894	1,157
Hollinger–Schumacher	Tons Milled								214,361		
	Au (oz.)	1,733	300	43,690	119,618	130,853	204,880	254,983		322,022	
Hollinger (later known as Timmins property)	Tons Milled						334,750	601,854	514,301	578,755	711,882
	Au (oz.)			778			152,673	244,139	204,810	276,045	322,022
McIntyre Pamour Schumacher (ERG Tailings Recovery)	Tons Milled						101,955	136,489	175,893		
	Au (oz.)						36,094	55,756	81,827		
McIntyre Porcupine	Tons Milled			14,500						176,976	185,018
	Au (oz.)			3,742						75,556	95,038
Newray	Tons Milled								340	401	
	Au (oz.)								70	73	

Mine	Year	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
Porcupine Crown	Tons Milled						41,326	51,273	39,111	10,907	
	Au (oz.)						29,032	27,877	18,180	5,979	
Porcupine V.N.T	Tons Milled								34,971	15,134	
	Au (oz.)								10,416	3,977	
Schumacher	Tons Milled							46,463	37,323	19,098	
	Au (oz.)							10,844	9,551	4,463	
Tough-Oakes	Tons Milled							39,865			
	Au (oz.)							33,991			
Vipond (a.k.a. Anglo-Huronian)	Tons Milled						35,899	43,041			
	Au (oz.)						11,871	8,509			
Miscellaneous Items[1]	Tons Milled						106,486	26,846	31	300	
	Au (oz.)						49,933	9,230	343	119	
Total Tons Milled		247	240	89,588	133,605	232,997	938,156	1,397,273	1,392,429	816,438	1,092,744
Ounces Gold		1,947	507	83,725	180,439	187,911	560,226	750,320	398,327	697,901	481,319

[1] *Miscellaneous items include: Amca milled 106,486 tons with 49,993 ounce gold; Long Lake milled 26,846 tons with 9,230 ounce gold; Tommy Burns and Gold Reef milled 31 tons with 41 ounce gold in 1917; West Done milled 300 tons with 119 ounce gold in 1918.*

Table 36. Historic Timmins gold production by mine and year, 1920 to 1929.

Mine	Year	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Ankerite/ March	Tons Milled							23,060	69,863	66,606	12,912
	Au (oz.)							6,785	17,318	13,986	3,458
Clifton Porcupine	Tons Milled										
	Au (oz.)			80	402	254					
Coniaurum/ Carium	Tons Milled									52,005	103,293
	Au (oz.)									10,634	30,641
Dome	Tons Milled	295,220	335,680	368,400	399,800	493,400	530,200	555,700	543,300	548,000	452,900
	Au (oz.)	97,023	110,316	201,124	210,610	207,277	210,051	189,632	194,200	188,626	173,042
Hollinger (later known as Timmins Property)	Tons Milled	650,205	1,072,493	1,491,381	1,366,352	1,659,476	1,929,988	1,932,559	2,178,329	1,778,470	1,549,157
	Au (oz.)	298,223	435,404	590,385	502,680	645,965	757,306	713,421	699,657	515,233	455,094
March Gold	Tons Milled							4,655	4,566	32,627	48,484
	Au (oz.)							533	957	6,460	12,370
McIntyre Porcupine	Tons Milled	191,032	172,287	217,208	291,390	390,497	419,640		522,880	524,695	550,100
	Au (oz.)	106,527	87,837	97,229	122,528	173,193	178,556		190,562	201,842	206,628

Mine	Year	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Nighthawk Peninsular	Tons Milled					38,326	39,778	21,604			
	Au (oz.)					12,426	9,460	5,365	8		
Northcrown Porcupine	Tons Milled	11,678									
	Au (oz.)	4,676	382								
Paymaster	Tons Milled							28,049	62,129	94,050	
	Au (oz.)			134				3,065	6,512	8,836	
Scottish Ontario	Tons Milled								60	255	
	Au (oz.)								274	327	
Vipond (a.k.a. - Anglo-Huronian)	Tons Milled				2,623	52,301	61,294	79,717	90,863	88,896	108,225
	Au (oz.)				1,149	28,704	27,244	30,452	32,189	33,465	39,569
West Dome	Tons Milled					8,114	35,278	36,946	16,982		35,142
	Au (oz.)					2,928	13,582	10,627	1,985		7,501
Miscellaneous Items[2]	Tons Milled	13,930						498,653			5,048
	Au (oz.)	6,176			138			185,685	10,458	7	6,564
Total Tons Milled		1,162,065	1,580,460	2,076,989	2,060,165	2,642,114	3,016,178	3,180,943	3,488,972	3,185,604	2,865,261
Au (oz.)		512,625	633,939	888,952	837,507	1,070,748	1,196,199	1,145,576	1,154,120	979,415	934,866

[2] Miscellaneous items include: While in production during 1928, Blue Quartz obtained 7 ounces gold; Dome Lake milled 4,707 tons in 1920 with 2,264 ounces gold; Gillies Lake obtained 2,134 ounces gold in 1929; McIntyre Pamour Schumacher (ERG Tailings Recovery) milled 498,653 tons in 1926 with 185,685 ounces gold; Porcupine Crown milled 6,220 in 1920 with 3,434 in ounces gold); Davidson-Tisdale milled 3,003 in 1920 with 478 ounces gold; J. Huddlestone and P. Clyne obtained 138 ounces gold in 1923; Porcupine United (Rochester) milled 5,048 tons in 1929 with 2,134 ounces gold.

Table 37. Historic Timmins gold production by mine and year, 1930 to 1939.

Mine	Year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Buffalo Ankerite	Tons Milled			55,267	111,402	131,720	159,383	271,736	343,093	362,838	360,014
	Au (oz.)			10,602	22,343	20,603	29,042	53,877	80,893	84,363	72,393
Canusa	Tons Milled										
	Au (oz.)				43		28				
Coniaurum/Carium	Tons Milled	122,972	130,585	144,654	145,657	138,114	151,055	168,715	166,980	188,975	187,405
	Au (oz.)	35,664	36,278	41,582	33,596	28,436	32,152	39,587	41,700	47,517	48,189
Delnite (open pit)	Tons Milled								38,750	85,816	111,395
	Au (oz.)								6,521	18,812	22,726

Mine	Year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
DeSantis	Tons Milled										35,539
	Au (oz.)										6,659
Dome	Tons Milled	67,600	542,600	536,450	546,500	547,600	549,100	553,900	576,300	601,700	615,000
	Au (oz.)	37,416	169,686	195,111	218,485	206,158	206,795	208,528	213,403	206,957	205,480
Gillies Lake	Tons Milled						5,122	18,410	16,911		
	Au (oz.)		263				1,612	4,748	3,776		
Hallnor (Pamour #2)	Tons Milled									60,979	122,868
	Au (oz.)									38,960	71,555
Hollinger (later known as Timmins property)	Tons Milled	1,625,868	1,640,705	1,754,863	1,727,102	1,900,490	1,837,153	1,755,768	1,719,199	1,734,647	1,700,355
	Au (oz.)	494,532	487,123	499,648	481,279	434,257	416,050	413,966	424,073	439,194	425,614
Marbuan	Tons Milled					26,030	59,380				
	Au (oz.)					3,304	8,145				
March Gold	Tons Milled	53,953	5,846	26,812							
	Au (oz.)	14,794	10,514	3,809							
McIntyre Porcupine	Tons Milled	565,510	617,425	723,285	754,360	851,345	869,100	869,000	870,160	872,740	877,830
	Au (oz.)	226,266	229,413	261,725	261,529	239,099	245,206	230,822	233,029	234,737	231,744
McLaren (Porcupine)	Tons Milled					50	600		200		
	Au (oz.)					10	109		66		
Moneta	Tons Milled									54,577	63,206
	Au (oz.)									28,823	29,593
Naybob (test runs)	Tons Milled									10,339	
	Au (oz.)								474	1,179	
Pamour # 1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled							138,187	276,168	515,193	585,399
	Au (oz.)							23,119	58,348	94,012	70,447
Paymaster	Tons Milled					13,824	79,845	140,962	169,658	190,107	201,775
	Au (oz.)					2,021	16,028	27,766	36,071	39,722	42,353

Mine	Year	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Porcupine Lake (Hunter)	Tons Milled								52	4,714	1,123
	Au (oz.)								37	624	136
Porcupine United (Rochester)	Tons Milled	7,815	1,396								
	Au (oz.)	2,745	263								
Preston	Tons Milled										118,853
	Au (oz.)									3,933	56,810
Vipond (a.k.a. - Anglo-Huronian)	Tons Milled	114,667	100,214	107,197	107,562	101,806	106,393	105,487			
	Au (oz.)	43,883	27,236	21,939	24,245	15,541	11,865	13,191			
Vipond (Mace)	Tons Milled								94,240	62,070	37,515
	Au (oz.)								11,602	6,506	5,167
Miscellaneous Items[1-3]	Tons Milled	757	9	155	10,023	530	10,681				59,182
	Au (oz.)	15,681	1,549	121	846	72	775		37		9,914
Miscellaneous (incl. Hayden and recoveries from scrap machinery)	Tons Milled			2,580							
	Au (oz.)			1,481							
Miscellaneous (incl. J.M. McLaren and recoveries from scrap machinery)	Tons Milled				26						
	Au (oz.)				3,727						
Miscellaneous (incl. Northern Metals Ltd.)	Tons Milled							68			
	Au (oz.)							1,300			
Miscellaneous (scrap machinery)	Tons Milled										
	Au (oz.)								542	162	
Miscellaneous (high grade)	Tons Milled										
	Au (oz.)	2,985									
Total Tons Milled		2,559,142	3,038,780	3,351,263	3,402,632	3,711,509	3,827,812	4,022,233	4,271,711	4,744,695	5,077,459
Au (oz.)		873,967	962,325	1,036,019	1,046,091	949,501	967,805	1,016,904	1,110,573	1,245,500	1,298,779

[3] *Miscellaneous items include: Amalgamated Goldfields milled 500 tons in 1934 with 19 ounces gold; Amca obtained 37 ounces gold in 1937; Ankerite/March milled 42 ounces gold in 1930; Broulan Porcupine milled 14,911 tons in 1939 with 2,746 ounces gold; Hayden milled 1,593 tons in 1933 with 122 Au (Oz.); Naybob (Hayden) milled 10,681 tons in 1935 with 671 Au (Oz.); Naybob (Kenilworth) milled 44, 271 tons in 1939 with 7,168 ounces gold; Northern Turnbull milled 30 tons in 1934 with 5 ounces gold; P De Santis (Hayden Mill) milled 5,630 tons in 1933 with 571 ounces gold; Preston NY (a.k.a - New York Porcupine) milled 2,800 tons in 1933 with 153 ounces gold; Triple Lake (J. Spence) milled 155 tons in 1932 with 121 ounces gold; West Dome milled 757 tons in 1930 with 15,639 ounces gold.*

Table 38. Historic Timmins gold production by mine and year, 1940 to 1949.

Mine	Year	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Aunor Pamour (#3)	Tons Milled	127,111	159,341	173,369	159,436	137,321	143,390	167,705	172,489	176,564	176,090
	Au (oz.)	35,640	43,052	47,963	49,720	50,154	56,143	56,712	58,211	57,079	63,315
Bonetal	Tons Milled		6,805	40,318	27,798	26,081	23,992	26,698	38,139	42,919	45,377
	Au (oz.)		1,053	6,076	4,299	3,913	4,381	4,674	4,268	4,916	5,775
Broulan Porcupine	Tons Milled	110,637	138,888	137,701	118,007	100,481	89,392	75,791	83,639	69,808	58,497
	Au (oz.)	30,893	27,705	26,948	28,609	20,001	16,966	15,851	14,650	15,024	12,705
Buffalo Ankerite	Tons Milled	378,337	448,621	358,419	260,271	235,442	197,691	234,379	210,045	186,635	129,313
	Au (oz.)	65,104	71,654	63,431	49,151	41,066	32,532	37,873	36,640	31,277	32,645
Coniaurum/Carium	Tons Milled	185,455	186,885	162,390	111,455	98,540	98,210	114,385	116,220	129,175	141,730
	Au (oz.)	48,495	48,576	43,144	30,842	26,905	26,275	28,114	27,987	33,859	33,778
Delnite (open pit)	Tons Milled	127,741	166,596	172,727	125,887	93,112	66,120	92,731	101,927	124,835	149,087
	Au (oz.)	22,150	30,702	31,676	21,271	14,799	9,422	17,171	28,519	33,789	38,847
DeSantis	Tons Milled	56,444	60,405	38,910							
	Au (oz.)	11,248	10,655	6,651							
Dome	Tons Milled	621,600	627,700	559,700	525,900	519,800	527,100	573,400	595,200	620,800	639,300
	Au (oz.)	205,584	201,472	170,547	149,641	134,230	126,677	147,649	159,384	155,470	151,519
Faymar	Tons Milled	50,666	55,626	12,889							
	Au (oz.)	9,883	8,598	3,370							
Hallnor (Pamour #2)	Tons Milled	140,529	132,267	128,973	105,544	102,742	95,436	112,357	112,272	127,059	129,745
	Au (oz.)	68,764	65,585	59,921	37,918	41,145	44,757	52,519	41,985	45,216	47,465
Hollinger (later known as Timmins property)	Tons Milled	1,780,377	1,756,923	1,530,712	1,078,946	955,447	933,748	1,048,646	1,021,955	1,127,523	1,120,203
	Au (oz.)	436,712	425,633	370,611	282,356	226,447	219,213	250,075	241,241	263,967	274,184
Hoyle–Falconbridge	Tons Milled		159,470	187,620	105,606			65,639	103,026	103,101	1,032
	Au (oz.)		16,719	19,890	9,731	1,101		5,383	10,614	8,310	95

Mine	Year	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Hugh-Pam	Tons Milled									1,207	6,255
	Au (oz.)									46	347
McIntyre Porcupine	Tons Milled	885,930	865,670	798,260	668,700	589,940	565,320	613,200	630,270	673,950	716,910
	Au (oz.)	247,772	238,118	224,031	192,869	170,636	161,044	168,587	186,863	194,525	202,974
Moneta	Tons Milled	64,439	61,416	57,103	14,088						
	Au (oz.)	29,614	30,480	24,813	5,928						
Nakhodas	Tons Milled	3,968	23,782	16,278							
	Au (oz.)	652	3,696	2,173		45					
Naybob (Kenilworth)	Tons Milled	53,524	53,807	58,870						11,481	
	Au (oz.)	14,541	13,783	8,975	881					547	
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	575,728	559,528	574,653	525,557	470,532	417,914	386,686	299,633	412,352	584,190
	Au (oz.)	70,818	66,876	60,825	54,074	41,908	38,006	35,447	27,257	37,914	56,857
Paymaster	Tons Milled	207,168	215,113	207,566	138,531	132,063	130,793	140,015	138,085	158,123	180,745
	Au (oz.)	45,101	46,878	44,169	29,504	28,754	27,299	31,158	33,186	33,968	36,305
Porcupine Lake (Hunter)	Tons Milled	4,932									
	Au (oz.)	470				102					
Porcupine Reef	Tons Milled								11,006	47,817	84,648
	Au (oz.)								1,545	10,353	15,826
Preston	Tons Milled	175,773	194,817	306,687	247,026	249,268	222,359	230,899	225,812	237,405	237,623
	Au (oz.)	60,753	62,256	72,444	59,215	57,561	56,328	40,604	52,032	53,115	56,276
Miscellaneous Items[4]	Tons Milled	2,333							636		
	Au (oz.)	42	1,300		90				53		
Miscellaneous (Nighthawk Peninsular, mint statement, clean-up)	Tons Milled										
	Au (oz.)	93				50					
Miscellaneous (mint sundries)	Tons Milled										
	Au (oz.)			148							

Mine	Year	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
Miscellaneous (high grade)	Tons Milled										
	Au (oz.)						247	179			
Miscellaneous[4] (high grade and scrap machinery)	Tons Milled										
	Au (oz.)									9	44
Total Tons Milled		5,552,692	5,873,660	5,523,145	4,212,752	3,710,769	3,511,465	3,882,531	3,860,354	4,250,754	4,400,745
Au (oz.)		1,404,330	1,414,791	1,287,806	1,006,099	858,817	819,288	891,994	924,433	979,385	1,028,957

[4] Miscellaneous items include: Goldhawk (open pit) milled 636 tons in 1947 with 53 ounces gold; Mace (clean-up) obtained 1,300 ounces gold in 1941; Coulson (Devon) milled 2,333 tons in 1940 with 42 ounces gold..

Table 39. Historic Timmins gold production by mine and year, 1950 to 1959.

Mine	Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Aquarius	Tons Milled							180,839			
	Au (oz.)							66,027			
Aunor Pamour (#3)	Tons Milled	177,371	175,977	178,827	139,759	167,388	180,271		194,809	236,106	265,558
	Au (oz.)	65,424	65,483	74,347	54,663	62,361	69,886		70,085	81,870	86,183
Bonetal	Tons Milled	37,614	36,513								
	Au (oz.)	6,293	5,862								
Bonwhit	Tons Milled		8,068	67,009	63,762	61,716					
	Au (oz.)		2,944	25,119	19,017	20,860					
Broulan	Tons Milled	43,926		137,666							
	Au (oz.)	12,777		35,040							
Broulan Reef Mine	Tons Milled		169,120		82,520	79,551	195,341	145,424	148,632	133,429	113,750
	Au (oz.)		51,123		21,480	16,684	36,039	46,024	41,842	34,983	31,218
Buffalo Ankerite	Tons Milled	106,900	118,995	117,795	1,125						
	Au (oz.)	29,472	25,151	18,933	3,158			5			
Coniaurum/Carium	Tons Milled	133,995	126,295	129,325	89,952	118,180	128,870	123,225	118,005	122,460	120,345
	Au (oz.)	31,636	31,940	29,669	23,535	28,160	28,054	26,304	26,013	25,636	27,595
Delnite (open pit)	Tons Milled	153,165	139,278	158,794	106,027	144,431	158,710	166,694	155,826	181,842	182,746
	Au (oz.)	39,316	40,413	52,650	30,752	38,052	38,281	35,612	34,693	44,909	43,933

Mine	Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Dome	Tons Milled	680,000	688,000	687,400	687,300	697,600	711,800	709,600	696,800	707,900	712,900
	Au (oz.)	159,904	165,747	168,795	169,743	171,399	170,620	170,013	169,836	174,701	173,851
Hallnor (Pamour #2)	Tons Milled	131,760	138,424	134,236	69,385	119,630	134,922	127,222	117,845	125,752	118,601
	Au (oz.)	48,994	48,733	51,186	25,231	43,410	48,544	44,053	42,660	52,073	46,043
Hollinger (later known as Timmins property)	Tons Milled	1,127,616	933,081	1,068,778	751,690	1,069,689	1,034,549	958,398	949,369	1,031,518	980,887
	Au (oz.)	288,929	243,157	302,241	198,137	303,638	273,441	267,845	264,748	297,746	260,145
Hugh-Pam	Tons Milled	8,298	7,740	26,053	42,625	61,562	45,857	38,490	52,358	62,624	62,871
	Au (oz.)	2,484	1,449	7,862	9,735	10,543	11,831	12,005	9,885	9,488	10,752
McIntyre Porcupine	Tons Milled	741,410	754,470	760,230	574,090	750,570	810,420	742,880	771,560	802,870	773,980
	Au (oz.)	201,459	207,028	211,075	159,664	203,554	217,378	214,197	220,138	228,948	228,373
Naybob (E.W. Hartling, clean up)	Tons Milled										
	Au (oz.)						34		29		
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	605,081	581,746	611,270	627,398	637,012	635,984	619,056	628,509	647,127	637,403
	Au (oz.)	58,212	55,654	56,430	58,474	55,865	52,235	50,552	51,499	60,335	61,574
Paymaster	Tons Milled	186,055	174,416	174,454	154,246	28,135	165,480	191,398	186,033	197,496	207,831
	Au (oz.)	37,693	37,482	39,509	39,790	5,705	39,890	44,239	39,914	43,815	43,493
Porcupine Reef	Tons Milled	99,585									
	Au (oz.)	40,630									
Preston	Tons Milled	238,657	233,516	239,500	128,720	209,510	245,410	251,780	254,270	250,380	223,460
	Au (oz.)	56,931	60,467	68,341	42,107	58,186	68,937	70,729	68,376	63,903	57,878
Miscellaneous (high grade and scrap machinery)	Tons Milled										
	Au (oz.)	24	70	106	17	93			15		
Total Tons Milled		4,471,433	4,285,639	4,491,337	3,518,599	4,257,702	4,447,614	4,255,006	4,274,016	4,499,504	4,400,332
Au (oz.)		1,080,179	1,042,704	1,141,306	855,502	1,038,919	1,055,170	1,047,605	1,039,733	1,118,407	1,071,038

Table 40. Historic Timmins gold production by mine and year, 1960 to 1969.

Mine	Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Aunor Pamour (#3)	Tons Milled	264,867	278,730	274,024	276,633	271,800	265,687	254,303	241,340	269,123	260,793
	Au (oz.)	83,697	86,932	81,971	89,426	83,340	78,601	78,693	74,834	91,348	77,208
Broulan Reef Mine	Tons Milled	132,215	109,445	105,883	157,251	179,218	116,259				
	Au (oz.)	23,066	23,018	14,786	25,468	31,846	16,739				
Coniaurum/Carium	Tons Milled	126,125	67,570								
	Au (oz.)	25,808	22,174								
Delnite (open pit)	Tons Milled	184,491	183,314	181,144	183,901	110,277					
	Au (oz.)	46,437	48,114	48,827	51,665	30,345					
Dome	Tons Milled	714,600	714,700	714,500	714,800	714,500	713,000	712,500	708,800	712,900	705,500
	Au (oz.)	176,338	174,283	172,118	175,048	177,594	177,984	177,515	177,205	188,262	174,399
Hallnor (Pamour #2)	Tons Milled	120,614	121,721	128,347	133,014	121,760	131,375	133,774	132,174	132,528	130,439
	Au (oz.)	41,260	38,098	35,859	44,129	42,567	53,128	50,206	50,875	50,518	49,722
Hollinger (later known as Timmins property)	Tons Milled	1,051,222	1,056,323	1,049,369	965,094	1,019,474	936,876	715,789	499,151	86,517	
	Au (oz.)	284,118	284,272	269,200	248,271	260,980	251,110	191,866	127,495	44,864	
Hugh-Pam	Tons Milled	50,464	37,077	37,942	44,970	28,449	21,909				
	Au (oz.)	8,977	7,132	4,805	5,056	4,135	3,071				
McIntyre Porcupine	Tons Milled	775,348	747,030	723,120	687,082	626,182	512,545	406,140	323,370	329,010	330,670
	Au (oz.)	217,650	225,066	223,039	199,145	183,742	157,323	126,125	130,735	105,700	112,374
Naybob (Kenilworth)	Tons Milled					58,444					
	Au (oz.)					2,313					
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	646,118	647,618	632,679	627,974	601,818	584,454	612,496	609,765	624,495	621,936
	Au (oz.)	62,682	59,784	62,138	64,869	70,685	64,343	64,527	64,175	71,579	86,644
Paymaster	Tons Milled	199,119	194,293	157,992	175,654	193,737	170,845	33,129			
	Au (oz.)	41,052	39,382	32,236	29,416	34,516	37,254	14,192			

Mine	Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Preston	Tons Milled	227,100	214,840	201,440	199,400	188,500	180,810	155,000	147,000	48,590	
	Au (oz.)	53,885	45,973	40,502	39,902	38,092	33,993	29,881	28,250	11,695	
Miscellaneous[5]											
Total Tons Milled		4,492,283	4,372,661	4,206,440	4,165,773	4,114,159	3,633,760	3,023,131	2,661,600	2,203,163	2,049,338
Au (oz.)		1,064,970	1,054,228	985,481	972,395	960,155	873,546	733,005	653,569	563,966	500,347

[5] *Kam Kotia Mine recovered 5604 ounces gold from milling 6.6 million tons of base metal ore from 1960 to 1972.*

Table 41. Historic Timmins gold production by mine and year, 1970 to 1979.

Mine	Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Aunor Pamour (#3)	Tons Milled	261,720	276,844	232,798							
	Au (oz.)	73,151	78,792	56,343							
Dome	Tons Milled	690,400	658,000	629,800	682,200	701,600	708,000	708,300	685,800	679,200	663,900
	Au (oz.)	187,164	170,443	144,895	149,561	121,032	117,089	119,504	94,261	94,161	94,702
Hallnor (Pamour #2)	Tons Milled	129,559	42,309								
	Au (oz.)	41,787	16,670								
McIntyre Porcupine	Tons Milled	310,170	322,520	302,840							
	Au (oz.)	104,270	108,728	104,079							
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	633,665	690,550	723,522	877,331	859,525	820,058	920,838	767,351	782,549	848,806
	Au (oz.)	79,817	85,140	96,001	127,110	91,571	109,170	112,270	71,419	64,952	87,091
Pamour Timmins property	Tons Milled					214,130	812,763	698,438	205,214	620,697	728,079
	Au (oz.)					39,508	54,944	44,107	21,320	59,169	62,400
Pamour (other sources)	Tons Milled					706,940			684,046	266,079	
	Au (oz.)					12,183			42,659	22,455	
Miscellaneous Items[6]	Tons Milled				237,800						
	Au (oz.)	98	417	435	90,245						
Total Tons Milled		2,025,514	1,990,223	1,888,960	1,797,331	2,482,195	2,340,821	2,327,576	2,342,411	2,348,525	2,240,785
Au (oz.)		486,287	460,190	401,753	386,049	264,294	281,203	275,881	229,659	240,737	244,193

[6] *Miscellaneous items include: McIntyre Pamour Schumacher (ERG Tailings Recovery) milled 237,800 tons in 1973 with 88,618 ounces gold.*

Table 42. Historic Timmins gold production by mine and year, 1980 to 1989.

Mine	Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Aquarius	Tons Milled					32,000	67,157	65,817	66,065	68,000	39,634
	Au (oz.)					0	31,958	14,850	13,616	10,880	9,037
Bell Creek	Tons Milled								55,180	135,324	132,054*
	Au (oz.)								9,558	27,055	30,477*
Dome	Tons Milled	678,100	557,200	708,000	762,000	780,179	1,028,000	1,060,000	1,100,000	1,100,000	1,300,000
	Au (oz.)	85,873	73,131	85,201	100,602	129,985	125,797	137,023	132,017	109,890	144,135
ERG Resource Incorporated	Tons Milled									565,850	5,443,108
	Au (oz.)									3,245	34,216
Hoyle Pond	Tons Milled							99,200	103,500	103,617	
	Au (oz.)							60,810	55,500	52,888	
Owl Creek	Tons Milled			98,150				134,672	194,812	208,668	
	Au (oz.)			7,528				21,682	30,600	16,400	
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	931,956	921,289	873,629		877,078	877,003	885,782	884,873	934,520	1,115,837
	Au (oz.)	89,007	72,428	75,726		69,384	68,326	61,200	69,243	63,528	77,991
Pamour Timmins property	Tons Milled	845,982	808,923	765,746		758,363	675,861	796,527	901,291	734,920	134,865
	Au (oz.)	54,678	53,966	78,146		74,534	65,398	68,185	66,879	61,835	10,864
Pamour (other sources)	Tons Milled						9,097	46,514			
	Au (oz.)						1,023	6,984			
Schumacher	Tons Milled								171,969	240,000	
	Au (oz.)								10,042	22,364	
Miscellaneous Items [7]	Tons Milled					68,039			178,144	9,500	221,236
	Au (oz.)					17,849			11,099	468	85,011
Total Tons Milled		2,456,038	2,287,412	2,445,525	762,000	2,515,659	2,657,118	3,872,319	3,655,834	4,100,399	8,080,856
Au (oz.)		229,558	199,525	246,601	299,723	291,752	292,502	457,086	398,554	368,553	391,731

[7] *Miscellaneous items include: Delnite property (small open pit) milled 9,500 tons in 1988 with 468 ounces gold; Hollinger (later known as Timmins property) milled 178,144 tons in 1987 with 11,099 ounces gold; St Andrew Goldfields – Stock milled 47,412 tons in 1989 with 6,773 ounces gold; Gail Resources Deloro - Carshaw?) milled 68,039 in 1984 with 17,849 ounces gold; Hoyle – Falconbridge milled 173,824 tons in 1989 with 78,238 ounces gold.*

**Bell Creek 1989 production and test mining by Canamax Resources Inc. includes gold recovered from Marlhill Mine.*

Table 43. Historic Timmins gold production by mine and year, 1990 to 1999.

Mine	Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Bell Creek	Tons Milled	339,490	137,077	4,990	15,659	30,509					
	Au (oz.)	23,577	26,667	1,115	4,300	6,659					
Dome	Tons Milled	770,800	1,267,200	1,507,800	1,616,400	1,691,000	3,041,286	4,207,000	4,229,269	4,691,426	4,747,323
	Au (oz.)	75,646	144,765	172,997	184,810	175,002	256,000	305,183	328,729	328,939	328,149
Hoyle – Falconbridge	Tons Milled	153,314	110,447	120,444							
	Au (oz.)	79,366	59,724	63,760							
Hoyle Pond	Tons Milled				79,156	102,824	178,652	416,400	517,179	467,797	419,108
	Au (oz.)				47,092	55,170	100,496	161,038	174,317	158,953	136,328
Moneta	Tons Milled					20,000					
	Au (oz.)					4,000					
Nighthawk	Tons Milled						14,000	238,283	238,283	318,610	137,000
	Au (oz.)						1,750	30,285	30,285	31,736	14,200
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled	1,231,125	1,106,765	1,111,117	1,207,211	1,350,007	1,222,655	1,381,665	1,381,665	1,077,216	787,600
	Au (oz.)	79,452	101,518	108,291	94,464	85,755	71,280	104,577	101,613	61,220	39,690
St Andrew Goldfields – Stock	Tons Milled	147,606	142,698	191,152	166,652	22,792					
	Au (oz.)	19,426	21,547	36,250	23,788	3,352					
Miscellaneous (Kidd Creek custom ore)	Tons Milled				121,563						
	Au (oz.)				15,238						
Total Tons Milled		2,642,335	2,764,187	2,935,503	3,206,641	3,217,132	4,456,593	6,243,348	6,366,396	6,555,049	6,091,031
Au (oz.)		277,467	354,222	382,413	369,692	454,438	551,526	721,371	634,944	721,378	579,820

Table 44. Historic Timmins gold production by mine and year, 2000 to 2009.

Mine	Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Clavos	Tons Milled						41,283	104,099	27,730		
	Au (oz.)						7,948	14,355	2,306		
Dome	Tons Milled	4,667,332	5,008,462	3,992,487	4,075,969	3,602,000	3,231,451	2,140,940	2,013,111	446,540	772,543
	Au (oz.)	313,904	302,795	280,206	314,759	257,342	172,483	88,926	106,638	47,325	81,709

Mine	Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Hoyle Pond	Tons Milled	507,698	489,307	500,449	412,775	394,000	444,199	407,031	398,523	367,727	368,311
	Au (oz.)	140,036	156,261	157,287	135,018	138,168	146,581	130,654	133,336	114,986	125,516
Pamour #1 (incl. pits 3, 4 and 7 and Hoyle)	Tons Milled						1,026,720	2,101,165	1,914,230	3,367,777	3,296,401
	Au (oz.)						45,404	100,448	71,321	156,116	142,204
St Andrew Goldfields – Stock	Tons Milled						41,283				
	Au (oz.)						7,948				
Timmins	Tons Milled										200,415
	Au (oz.)										7,500
Total Tons Milled		5,175,030	5,497,769	4,492,936	4,488,744	3,996,000	4,784,936	4,753,235	4,353,594	4,182,044	4,637,670
Au (oz.)		453,940	459,056	437,493	449,777	395,510	380,364	334,383	313,601	318,427	356,929

Table 45. Historic Timmins gold production by mine and year, 2010 to 2011.

Mine	Year	2010	2011
Bell Creek[8]	Tons Milled	-	196,958
	Au (oz.)	-	24,585
Dome	Tons Milled	754,818	957,441
	Au (oz.)	67,030	73,129
Hoyle Pond	Tons Milled	360,685	346,875
	Au (oz.)	118,244	141,202
Pamour # 1 (incl. pits 3, 4 & 7 and Hoyle)	Tons Milled	3,436,356	3,226,049
	Au (oz.)	98 921	84 357
Timmins	Tons Milled	220,462	543,208
	Au (oz.)	46,800	59,003
Total	Tons Milled	4,772,321	5,270,531
	Au (oz.)	330,995	382,276

[8] *Bell Creek pre-production bulk sample gold recovery*

Tonnes have been converted to tons using a factor of 1.1023113

Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Timmins Regional Resident Geologist
(Sault Ste. Marie District)—2011

by

A. Pace and S. Butorac

2012

CONTENTS

Sault Ste. Marie District—2011

Figures

Tables

Timmins Regional Resident Geologist (Sault Ste. Marie District)—2011

A. Pace[1] and S. Butorac[2]

[1]District Geologist, Sault Ste. Marie District, Resident Geologist Program, Ontario Geological Survey

[2]District Geological Assistant, Sault Ste. Marie District, Resident Geologist Program, Ontario Geological Survey

INTRODUCTION

Mineral production from the Sault Ste. Marie District during 2011 consisted of bedrock aggregate extraction from 179 established quarries. A total of 67 individuals and companies are known to have performed mineral exploration and prospecting in the district during the year. Gold, base metals, uranium and rare earth metals were the major metal commodities targeted by exploration this year. Details on exploration activity can be found in the following text and by reference to Table 1.

QUARRYING ACTIVITY

Production continues from the quarry activities within the Sault Ste. Marie and Algoma district. The production of aggregate material consists primarily of sand and gravel for its use in the production of concrete and asphalt. The products derived from these aggregate resources are used for the construction industry. Trap rock and decorative stone were also extracted. A total of 179 quarry permits and licences are located throughout the district. The following 2 properties described below were properties that staff of the Sault Ste. Marie District Geologist office had the opportunity to visit.

Ontario Trap Rock (A Division of R.W. Tomlinson Ltd.)

Ontario Trap Rock (Figure 1) continued quarrying crushed bedrock aggregate from Nipissing gabbro at their operation located 3 km east of the town of Bruce Mines in Plummer Additional Township.

The company produces approximately 800 000 to 1 000 000 tonnes of high-quality aggregate from this facility yearly. The main product produced from the trap rock operation is high-quality aggregate used for rail ballast, asphalt and road construction in Canada and the United States.

The operating season begins in March and normally ends in November, with 27 to 30 people employed fulltime, with many of the employees hired from the Lake Huron area. About 90% of the aggregate product is transported by ship from Ontario Trap Rock's deep-water port on Lake Huron, with the remaining product transported by rail and truck.

There are 7 sizes of product that are crushed at the trap rock operation. These include, in inches, 5, 2.5, 1, 5/8, 3/8, 1/4 and sand or silt.

Tandem trucks are loaded with product and driven to the deep water port located on the shores of Lake Huron. Product falls through a gate and into an underground cement container which is able to dispense product onto a conveyor that automatically loads the lake freighters when they arrive.

Figure 1. Extraction of trap rock from the Nipissing diabase located in Bruce Mines during a recent property visit by the staff of the Sault Ste. Marie Resident Geologist Office.

Palmer Aggregates Quarry

Palmer Construction Group Inc., owned and operated by Terry Rainone, has been serving Sault Ste. Marie and surrounding area in the construction industry since 1965. The company currently produces 250 000 tons/year in aggregate for concrete and asphalt manufacture for its own operations and also for 3 local concrete operators.

Geologically the property is located along the south side of the Gros Cap batholith within the northern city limits (Figure 2). The sand and gravel deposits in this area represent Quaternary sediments that resulted from the most recent Wisconsinan glaciation and were deposited on bedrock of Jacobsville Formation sandstone. Like Palmer Aggregates, many of the other aggregate operations situated along the northern limits of the city are located along the south face of the Gros Cap batholith where the greatest sand and gravel potential exists.

Figure 2. Susan Butorac (Sault Ste. Marie District Geologist Assistant) and John Pinder (Chief Superintendent, Palmer Aggregates) at quarry entrance.

EXPLORATION ACTIVITY

A summary of exploration activity in the Sault Ste. Marie and Algoma District is reported in Table 1. Locations for the activities are shown on Figure 3.

Table 1. Exploration activity in the Sault Ste. Marie District in 2011 (keyed to Figure 3).

Abbreviations

AEM	Airborne electromagnetic survey
Ag	Silver
AirGeo	Airborne geophysical survey
AMAG	Airborne magnetic survey
ARAD	Airborne radiometric survey
AVLF	Airborne very low frequency survey
Au	Gold
Co	Cobalt
Cu	Copper
Data	Database
DD	Diamond drilling
Dia	Diamond
Fe	Iron
Geochem	Geochemical survey
Geol	Geological survey
Grav	Gravity survey
IOCG	Iron oxide copper gold
IP	Induced polarization survey
KIM	Kimberlite indicator mineral sampling
Lc	linecutting
MAG	Magnetometer survey
Micro	Microscopic studies (e.g., geochronology)
Mo	Molybdenite
Ni	Nickel
Pb	Lead
PDrill	Diamond drilling
PDewat	Dewatering shafts, pits, etc.
PGE	Platinum group element(s)
Photo	Photographic work
PMan	Physical manual work
Pros	Prospecting
PStrip	Overburden stripping
PTrench	Bedrock trenching
Rad	Radiometric
REE	Rare earth elements
U	Uranium
VLF	Very low frequency electromagnetic survey
VMS	Volcanogenic massive sulphide
Zn	Zinc

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
1	2128700 Ontario Inc.	Anderson, DeRoche, Hodgins, Jarvis. (Cu, Pb, Zn, Ag)	Prospecting
2	Appia Energy Corp.	Beange, Bolger, Bouck, Buckles, Gunterman, Joubin, Lehman (U, REE)	AEM, AMAG, Assaying, PDrill, IP, Photo.
3	Argentium Resources Inc.	VanKoughnet (Ag, Pb)	IP, Geochem.
4	Ashley Gold Mines Limited	Gunterman (U)	Mag., VLF, Rad.
5	Atwell, Brent James	Dablon, Gapp, Lunkie (Au, base metals)	Staking, Prospecting.
6	Barry, Rita F.M.	Otter (Au, Ag, base metals)	PMan, PStrip, PTrench, Assay, MAG., Prosp., VLF.
7	Benninghaus, William George, Porcheron, Andy	Varley (Cu, Au)	Pros, PMan, Assay.
8	Blanchard, Jacques Michel, Nicholson, Terrance Stanely	Slater (Au, Ag, base metals)	Staking, Prospecting
9	Carina Energy Inc.	Albanel, Kamichisitit, Nicholas, Raimbault, Sagard. (U, IOCG)	Staking, Prospecting
10	China Metallurgical Exploration Corp.	Montgomery, Nouvel, Palmer, Ryan (base metals, PGE)	Prospecting, Geochem., AMAG, AVLF.
11	Clark, Terrance Abslam	Sagard (U, base metals)	Staking, Prospecting.
12	Clavet, Charles Bernard, Weber, Kenneth Raymond, Clavet, Ruth Adeline	Sturgeon (U, base metals)	Staking, Prospecting.
13	Creso Exploration Inc.	Beange, Raimbault (U, base metals)	Staking Prospecting.
14	Dan Patrie Exploration Ltd.	Chesley, Gaiashk, Joubin, Proctor (U, Base metals).	Lc, MAG., IP, AEM, AMAG
15	Darien Resources Inc.	Long (trap rock).	Assay, Geol, Micro.
16	De Carle, Robert John	Esten (Au, Cu, Ag)	IP, Lc, assay, geology, AEM, AMAG and Prospecting.
17	Dennison Mines Inc.	Joubin (U)	AEM, AMAG, assaying, DD, Photo, ore rehabilitation.
18	Fenwick, Kenneth George, Lucuick, George, Shelley, Dan.	Nicolet, Norberg (Cu, Mo, Ag)	Assay, Geol., Geochem, Lc, MAG, VLF, IP, PDrill.
19	First Canadian Uranium Inc.	Deagle, Gaiashk, Gunterman, Joubin, Proctor (U)	Prospecting, PDrill, Assaying
20	First Minerals Exploration Limited	Kincaid, Ryan (Au, Ag, base metals, Mo)	AMAG, Geochem, Geol., Lc, Prospecting, Assay, Gravity.
21	Fleury, Alphee Joseph	Otter (Ag, Au, Co, base metals)	Staking, Prospecting
22	Forbes, James Bill	Bridgland, Gladstone, Patton, Shields (Base metals)	Staking, Prospecting
23	Fox Creek Investments Ltd.	Moggy (VMS)	Prospecting, PDrill, Assaying
24	Frankow, Philip Leo	Neil (Au, Ag, Cu)	Prospecting, PDrill, Assaying
25	Gagne, Yvonne Michael	Brideland, Montgomery, Nouvel (Cu, Au)	Staking, Prospecting
26	Gibbs, Bill Edward	Kincaid, Ryan (Cu, Ag, Au, IOCG)	Staking, Prospecting
27	Gold Insight Resources Ltd.	Galbraith (Au)	Staking, Prospecting
28	Harrington, Patrick Michael	Montgomery, Raimbault (U)	Staking, Prospecting
29	Hicks, Clifford Ray	Jollineau, Maeck, VanKoughnet (Pb, Zn, Ag, REE)	Staking, Prospecting, Assay
30	Hudson River Minerals Ltd.	Palmer, Ryan (Cu, Au, Mo, Ag)	AEM, AMAG, PDrill.

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
31	International Montoro Resources Inc.	Gaiashk, Joubin (U, REE)	AEM, AMAG, PDrill, Assay, Data, AirGeo, Micro, Pros.
32	Kehoe, Carl William	Scriven (Cu, Au, base metals)	Staking, Prospecting
33	Lanthier, Gerard Joseph	Schembri (unknown)	Staking, Prospecting
34	Lavoilette, Robert Joseph	Gapp, Gaudry, Schembri, Wlasy (Fe, Au, base metals)	Staking, Prospecting
35	Leahy, Michael John	Moggy (Cu, Zn, Ni, Au)	PDrill, Assay
36	Lucuick, George	Gould, Jollineau, Nicolet, Norberg, Ryan, VanKoughnet (Base metals, Ag, Mo, Au)	Prosp.,Lc, IP, MAG, VLF, Geochem, Assaying, Geol.
37	Maverick Investment Corp	Shields (Cu, Ni, Ag)	Staking, Prospecting.
38	Moses, John Ross	VanKoughnet (Ag, Pb)	Staking, Prospecting
39	Nicholson, Terrance Stanley	Slater (U)	Staking, Prospecting
40	O'Connor, Thomas A.	Kincaid, Ryan (Cu, basemetals)	Stripping, Trenching, Geol., Assaying, PMan, PDewat.
41	Patrie, Bryan Calvin	Albanel, Spragge (Cu, Ag, Pb, silica, traprock)	Staking, Prospecting
42	Patrie, Daniel F.	Spragge (Silica, traprock)	Staking, Prospecting
43	Pelsky, Robert Joseph	Lewis, Proctor (Cu, Au, Ag)	Prospecting, PDrill, trenching
44	Porcheron, Andre R.	Varley, (Au, Ag, base metals)	Prospecting, Assaying, PMan
45	Precambrian Ventures Ltd.	Gaiashk, Joubin, Varley (Au, Co, Ni, Mo)	AEM, AMAG, IP, Lc, MAG., Data, AirGeo.
46	Ralph, James Gordon	Gould, Jessiman, Jollineau, Maeck, Ryan (Cu, Ni, Au, Dia.)	Assay, Prosp., PStrip, PMan., Geol., Lc., MAG., VLF, IP
47	Renner, Lawrence R.	Jackson (Cu, Au)	Staking, Prospecting.
48	Robert, Jacques	Aweres, Kincaid, Nicolet, Olsen, Runnalls (Au, Ag, base metals, PGE)	Prospecting, Assaying
49	Roy, Gabriel	Albanel, Anderson (Cu, Au)	Staking, Prospecting
50	Rupert, Roy John	Kincaid, Nicolet, Palmer, Ryan (Au, Ag, base metals, Mo)	PStrip, AEM, AMAG, PDrill, Assay.
51	RX Mining Corp.	VanKoughnet (Pb, Ag)	Staking, Prospecting
52	Salo, Larry John	Shields (Ag, base metals)	Staking, Prospecting
53	Salo, Randall W.	Aweres, Nicolet (base metals)	Staking, Prospecting,
54	Shelley, Daniel Ian	Nicolet, Norberg, Palmer, Ryan (Cu, Au, base metals, Mo)	Assay, Geol., Geochem, Lc, MAG, VLF, IP, AEM, AMAG, PDrill.
55	Skead Holdings Ltd.	Gunterman, Hughes (U, Cu)	MAG, VLF, Rad, Assay, Geol., Geochem.
56	TNR Gold Corp.	Maeck (REE)	Staking, Prospecting
57	Tortosa, Delio, J-J	Kincaid, Nicolet, Ryan (Au, Ag, Cu, base metals)	PStrip, Geochem, AEM, AMAG.
58	Tremblay, Michael A.	Aweres, Bolger, Kincaid, Nicolet, Olsen, Runnalls, VanKoughnet (Au, Ag, base metals, PGE)	Lc., Prospecting, Assaying, MAG, Geol.
59	Troon Ventures Ltd.	Moen (Au, Ag, base metals)	Assay, Geochem, Geol., EM, Lc, MAG, PMan, PStrip, Pros, PDrill.

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
60	Vance, James	Deagle, Shedden (U, Cu)	Assay, Geol.
61	Verbina Resources	Deagle (Silica)	Assay, Bulk, PDrill
62	Ward, Mai Elizabeth	Daegle, Shedden (U, Cu)	Assay, Geol.
63	Weber, Kenneth Raymond	Sturgeon (Cu)	Staking claims, Prospecting.
64	Wilson, Wendy Sheila	Bridgland, Gladstone, Patton, Wells (Cu, Co, base metals)	Staking claims, Prospecting.
65	Winter, Lionel Stewart	Anderson (Au, Ag, base metals)	Staking claims, Prospecting
66	Xstrata Canada Corporation	Aweres (IOCG)	Grav, Lc, IP, assay, AMAG, PDrill, Geochem.
67	Young, Robert Joseph	Runnalls, Waywhite (Au, base metals)	Staking claims, Prospecting.

Pele Mountain Resources Inc.—Eco Ridge Mine Rare Earths and Uranium Project

The Eco Ridge Mine Rare Earths and Uranium Project consists of 38 mining claims totalling 392 claim units covering approximately 6272 ha in Elliot Lake, Ontario (Sault Ste. Marie Mining Division). All of the lands are currently 100% held under the name of First Canadian Uranium Inc., a wholly-owned subsidiary of Pele Mountain.

In 2011 Pele Mountain Resources Inc. provided an updated National Instrument 43-101 (NI 43-101) resource estimate, conducted 7000 m of diamond drilling and completed a Preliminary Economic Assessment (PEA) that includes both uranium and rare earth oxide estimates (Table 2).

Table 2. Mineral resource estimates of uranium oxide and rare earth oxides as per the 2011 Preliminary Economic Assessment.

Classification	Tonnes ('000s)	U_3O_8 (%)	U_3O_8 ('000 lbs)	LREO (%)	HREO (%)	TREO (%)	TREO ('000 lbs)
Indicated	14 312	0.048	15 182	0.149	0.016	0.164	51 858
Inferred	33 121	0.043	31 444	0.120	0.012	0.132	96 351

(Source: Pele Mountain Resources Inc., press release, February 24, 2011). Abbreviations: LREO – light rare earth oxides; HREO – heavy rare earth oxides; TREO – total rare earth oxides.

The company completed a 7000 m drilling program that consisted of in-fill drilling within the existing resource area with an objective of upgrading up to 5 million tonnes of inferred resources into the indicated category. The indicated resources will be required for mine planning purposes in NI 43-101 reports subsequent to the updated preliminary assessment. The program also included step-out drilling to the north and east of the resource area, with an objective of bringing up to 10 million additional tonnes of the mineralized reef into the inferred resource category. (Pele Mountain Resources Inc., press release, May 24, 2011.)

The company targeted and intercepted the Main Conglomerate Bed (MCB) that hosts mineralization typical of the Eco Ridge deposit. Results averaged 0.142% rare earth oxides and 0.040% uranium oxide over an estimated true thickness of 3.16 m.

In September, the company re-sampled the core and discovered that the rare earth oxide mineralization outside the MCB extends farther than previously realized, with 1 drill hole revealing more than 140 m of continuous mineralization. The company believes the presence of wide zones of rare earth oxide (REO) mineralization outside of the MCB has the potential to substantially increase mineral resources. (Pele Mountain Resources Inc., press release, October 13, 2011.)

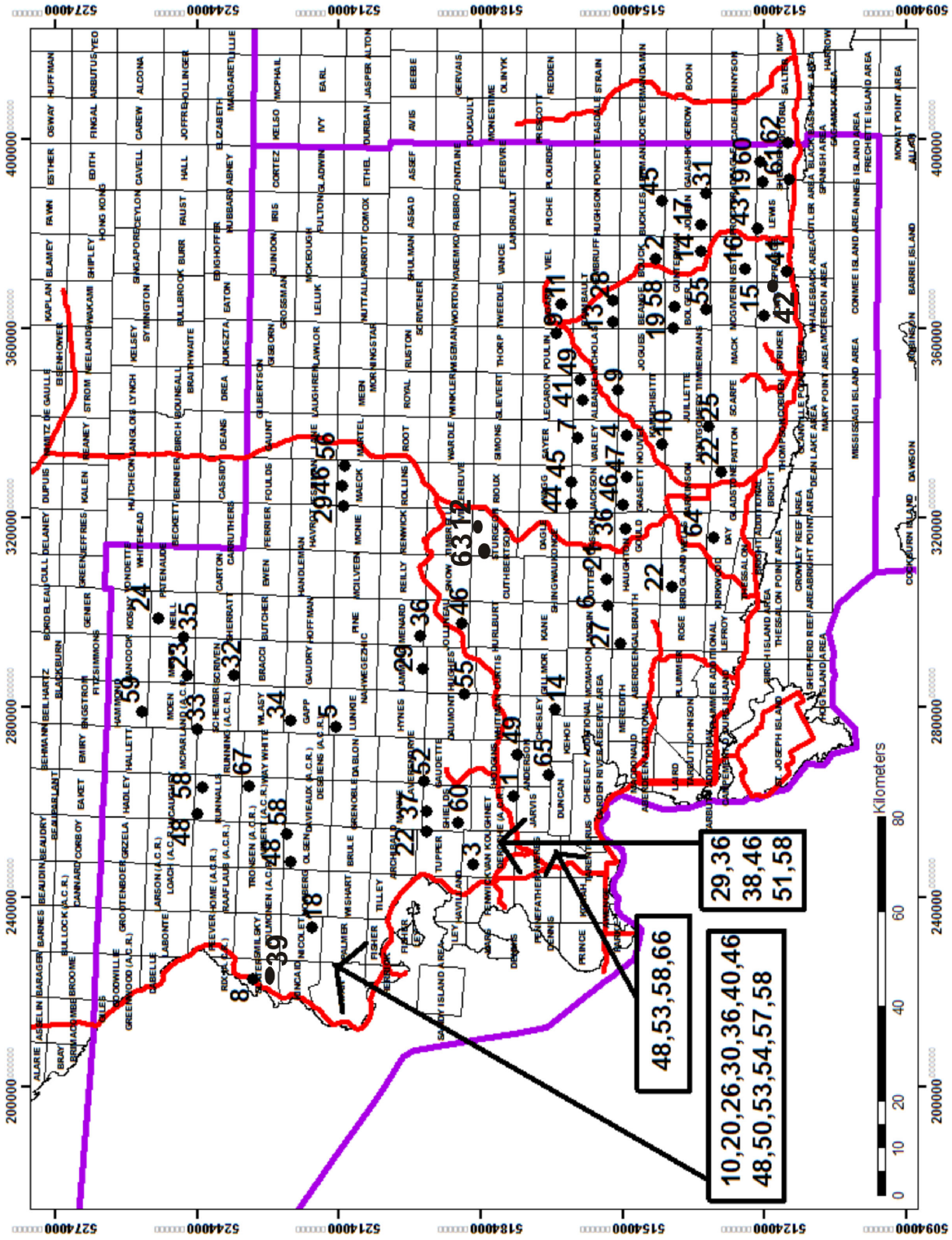


Figure 3. Exploration activity in the Sault Ste. Marie and Algoma District, 2011 (keyed to Table 1).

Along with the updated NI 43-101 resource estimates as seen in Table 2 above, the PEA highlights the development of an underground mine ramping up to a 9000-tonne per day operation with a life-of-mine production of 10.7 million pounds of total REO and 24.9 million pounds of U_3O_8 over a 15-year mine life. In November, the company reported on processing design improvements that could result in higher recoveries of critical rare earth oxides including neodymium, dysprosium and yttrium oxides. An updated PEA incorporating these improvements is expected in the first quarter of 2012. (Pele Mountain Resources Inc., press release, November 23, 2011.)

Further details can be found on the company's website: www.pelemountain.com.

Appia Energy Corp.—Uranium in the Elliot Lake Area

Appia Energy Corp. is a privately owned company that holds the largest known resource in the Elliot Lake camp. They hold over 500 claims, covering approximately 20 000 acres, which includes the following 5 zones: Teasdale Lake zone, Banana Lake zone, Canuc zone, Bouck Lake zone, and the Buckles Lake zone. These properties include 2 known uranium ore bodies in the Elliot Lake area, the Quirke Ore zone and the Nordic Ore zone, together hosting 12 of the 13 past-producing uranium mines.

The company released an updated technical report describing all work completed on the properties, including NI 43-101 compliant mineral resource estimates of both uranium and rare earth elements (REE). The report highlights the 2 diamond-drilling programs carried out by Appia between 2007 and 2008 that confirmed the presence of uranium resources in the Banana Lake and Teasdale zones.

The grades within the Banana Lake zone may be 20% higher than the historical estimates, or the uranium-bearing zones may be thicker at similar grades with an increase in the grade and thickness towards the northwest. In the Teasdale Lake zone Appia's drilling confirmed and enlarged the previous historical resource estimate (Appia Energy Corp., Technical Report, July 2011). Results are shown below in Table 3.

Table 3. NI 43-101 compliant inferred and indicated mineral resources of uranium oxide in the Banana Lake and Teasdale Zones.

Zone	Resource Category	Tonnes ('000)	Tons ('000)	Average Grade (lbs U_3O_8/ton	Contained U_3O_8 (lbs)
Banana Lake	Inferred	27 501	30 315	0.912	27 638 000
Teasdale Lake	Indicated	15 785	17 400	1.10	19 000 000
	Inferred	43 545	48 000	1.10	52 700 000

(Appia Energy Corp., Technical Report, July 2011).

In an adjacent property, the Eco Ridge Mine Rare Earths and Uranium Project has released an updated Preliminary Economic Assessment where it has included resource estimates on rare earth element oxide. With the assessment of the Eco Ridge results and the close proximity of the Teasdale Lake zone, the company began analyzing its uranium-bearing drill core for rare earth elements based on the knowledge that both Denison and Rio Algom produced yttrium as a by-product of uranium mining. Historical information for the Elliot Lake uranium mines does not include rare earth metal data other than some yttrium data. The company estimated the rare earth element and uranium resources in the Teasdale Lake zone based on REE data provided from drill core from the 2007 and 2008 drilling programs. This new mineral resource estimate was constrained by the geological boundaries indicated by the upper surface of the highest reef and the lower surface of the deepest reef. It is important to note that the volume of rock included in this resource estimate is a subset within the larger volume of the uranium-only estimate reported above. Results are shown in Table 4.

Table 4. Uranium oxide and rare earth oxide as part of the mineral resource estimate.

Resource Category	Tonnes ('000s)	Tons ('000)	TREE (lb/ton)	U_3O_8 (lb/ton)	Average Thickness (m)	Contained TREE ('000 lbs)	Contained U_3O_8 ('000 lbs)
Indicated	3366	3710	0.146	0.506	9.76	10 852	1878
Inferred	21 217	23 388	0.181	0.615	7.22	85 895	14 379

(Appia Energy Corp., Technical Report, July 2011). Abbreviation: TREE – total rare earth elements.

This small part of the Teasdale zone contains a significant REE and uranium resource. The report discusses the entire Teasdale zone having the potential to contain approximately 400 million pounds of rare metals in addition to approximately 70 million pounds of uranium. Appia intends to continue its testing of the historical resource area to enlarge these NI 43-101 compliant resources, especially to the northwest of the current drilling sites. (Appia Energy Corp., Technical Report, July 2011.)

International Montoro Resources Inc.—The Serpent River Property

The Serpent River property is located about 13 km east of the town of Elliot Lake on the south limb of the Quirke syncline and covers approximately 4000 m of the contact between the Matinenda Formation and the underlying basement rocks. International Montoro Resources Inc. has a 100% interest in 10 mining claims (1840 hectares) in the Sault Ste. Marie mining division.

The company is considering further work on the property to following-up on recent geological interpretations by the Ontario Geological Survey (OGS). Ontario Geological Survey Open File Report 6240, titled *Compilation Mapping, Pecors–Whiskey Lake Area, Southern and Superior Provinces*, has shed some additional light on the discovery of a strong geophysical anomaly. This large airborne magnetic anomaly was outlined by a versatile time domain electromagnetic (VTEM) survey conducted by International Montoro Resources Inc., Pele Mountain Resources Inc., and Verbina in 2008, data from which were acquired by the OGS in 2009. Previously it was thought that these anomalies were caused by iron formation. However, in this study the OGS came to the conclusion that the magnetic anomaly is likely caused by a Paleoproterozoic mafic intrusion.

In 1959, Algom Uranium Mines Ltd. drilled 2 holes along the south and southeastern edge of the magnetic and gravity anomaly that penetrated the Huronian sediments, and encountered underlying basement rocks at depths of 2002 feet and 1477 feet. The holes penetrated only a short distance into the basement before they were terminated. The basement rocks were identified as diabase-textured greenstone containing disseminated pyrrhotite, pyrite and chalcopyrite mineralization. This suggests that the source of the anomalies as interpreted by the OGS may be correct and these lithologies may have potential to host contact-style nickel-copper-PGE mineralization.

Montoro, has located the vertical casing of 1 of the 2 drill holes and will consider further down-hole probing technology to acquire additional geological data. The company has contracted an independent geophysical expert to analyze the anomaly area from the VTEM survey and define a geochemical sampling area and prospective sites for drilling. (International Montoro Resources Inc., press release, June 2, 2011.)

Superior Copper Corporation—Batchawana Copper Project

The Batchawana Copper Project is located approximately 85 km northwest of Sault Ste. Marie, Ontario, in Ryan and Kincaid townships. Superior Copper Corporation (previously Cenit Corporation) and its joint venture partner First Minerals Exploration Ltd., retain approximately 60 square kilometres of contiguous claims at the project.

The Batchawana Copper Project includes the past-producing Coppercorp Mine that operated from 1965 to 1972, milling approximately 1 million tons of ore and producing about 23 million pounds of copper, 200 000 ounces of silver and 2000 ounces of gold. The Coppercorp Mine was an underground mine that produced from mineralized vein systems along a strike length of 4.2 km and to a depth of 160 m. Since the Coppercorp Mine was reopened for staking in 2002, several companies have carried out exploration and identified the potential for iron oxide copper-gold (IOCG). (Superior Copper Corporation, press release, June 24, 2011.)

Superior Copper Corporation has completed a NI 43-101 technical report in February 2011. The report recommended a follow-up program consisting of geophysics and diamond drilling. The report is available on the Superior Copper Web site at www.superiorcopper.ca. The Batchawana First Nations and First Minerals Exploration Ltd., Superior Copper Corporation 50/50 Joint Venture partner for the project, signed a two-year exploration agreement (Superior Copper Corporation, press release, August 18, 2011.)

The company completed a Phase 1 drilling program consisting of 14 drill holes totalling an estimated 1200 m of drilling. The drilling program was designed to test the B zone and the depth extension of the past-producing Coppercorp Mine C zone but was later expanded to test the Kincaid Breccia and the SB zone (Tables 5, 6 and 7).

The SB zone and the Kincaid Breccia represents additional claim units staked to the north side of the project area and the south extension of the past-producing Coppercorp Mine. In conjunction with the drilling program was a mapping and surface sampling program along the north end extension of the original Coppercorp Mine, the B zone and north and west step-outs from the B zone. Results from the surface sampling include 18.7% and 51.6% Cu and a channel sample weighted average grade of 2.17% Cu over 2 m from the north extension, and a weighted average grade of 4.94% Cu over 3 m and 2.84% Cu over 3 m from the B zone. Grab samples assayed as high as 15.8% Cu from the North B zone step-out. The Kincaid Breccia zone was traced over 400 m in the northwest direction.

Four drill holes totalling 250 m in length are planned to test the contact between the breccia and mafic volcanics and the extent of copper-silver mineralization in the breccia (Superior Copper Corporation, press releases, August 18 and November 7, 2011).

Table 5. Significant drill results at the Coppercorp B zone and C zone.

Diamond-Drill Hole ID	Length (m)	Cu (%)	Ag (g/t)
BCP-1-11	5.58	1.97	20.85
BCP-4-11	3.65	1.4	3.9
BCP-9-11	0.9	0.45	
BCP-12-11	1	0.9	

(Superior Copper Corporation, press release, September 26, 2011)

Table 6. Significant drill results at the Coppercorp SB zone.

Diamond-Drill Hole ID	From	To	Length	Cu (%)	Ag (g/t)	Au (ppb)
BCP-15-11	9.1	12.9	3.8	1.67	14.8	111
BCP-16-11	13.1	17	3.9	1.83	18.1	119
BCP-17-11	213.6	220.8	7.2	0.72	12.2	13
BCP-19-11	193.7	198.5	4.8	7.27	144.5	29

(Superior Copper Corporation, press release, November 7, 2011)

Table 7. Assay results from grab samples of the mineralized portions of the Kincaid Breccia.

Sample	Cu (%)	Ag (g/t)	Au (g/t)
1	1.61	1	0.031
2	1.63	6.2	0.034
3	17.06	23.4	0.078
4	3.14	29.6	0.184

(Superior Copper Corporation, press release, November 7, 2011)

Hudson River Minerals Ltd.—Glenrock Gold Prospect

The Glenrock property consists of 2515 ha located approximately 70 km north of the city of Sault Ste. Marie, Ontario, in Palmer Township, north of Batchawana Bay. The property contains 3 known gold showings: STP, Bjornaa and the Glenrock. All 3 showings have been previously drilled and all returned anomalous gold in drill core. The 3 intersections appear to form part of the same mineralized trend that plunges to the west and increases in width where it remains open along strike and a depth.

A high resolution magnetic and radiometric helicopter survey was completed in November 2010 and the final data has now been received and is being integrated into a geological compilation that includes previous sampling, trenching, drilling, assaying and surface mapping.

An exploration grid baseline has been cut and a drilling program was planned in late February 2011. The drilling was to consist of a 12 drill holes for a total of 2000 m in drilling. The first 9 holes were to target the main Glenrock

gold trend along a strike length of 450 m. This trend has been previously tested by drilling, trenching and sampling back to the 1950s. In the early 1990s Noranda Inc. completed 2 exploration trenches across the trend 50 m apart, with grades returning 3.96 g/t gold over 8 m and 4.96 g/t gold over 6 m. Three additional holes will test for the continuation to a second gold trend located north of the main zone where a previous drill hole intersected 1.34 g/t gold over 13.7 m. This north trend was intersected in 2 other drill holes as well, both holes returning anomalous gold. (Hudson River Minerals Ltd, press release, May 30, 2011.)

The Glenrock drill program has been suspended at the request of the Batchawana First Nation, which is claiming traditional Aboriginal rights within the area (Hudson River Minerals Ltd., press release, June 13, 2011).

TNR Gold Corp.—Seabrook Niobium and Rare Earth Elements Property

The company has acquired 100% interest in the Seabrook Niobium and Rare Earth Elements property through a combination of staking and option. The Seabrook property consists of 3 claims covering 32 units and totalling 512 hectares. Historical results include 4 grab samples grading 0.6, 1.5, 4.7 and 10.3% Nb_2O_5 and one sample grading 0.47% Ce_2O_5 and 0.22% La_2O_3 where only cerium and lanthanum were analyzed (TNR Gold Corp., press release, March 1, 2011). The company completed a geochemical and mineralogical characterization of 22 samples, some of the results of which are shown in Table 8. TNR Gold Corp., press release, October 25, 2011).

The company has identified evidence of past exploration activity in a hematite alteration zone. An orientation soil survey was conducted within this zone and results are pending at this time (TNR Gold Corp., press release, October 25, 2011).

Table 8. Samples containing greater than 0.20% total rare earth oxides and yttrium.

Sample ID	TREO (%)	CeO_2 (ppm)	Nd_2O_3 (ppm)	La_2O_3 (ppm)	Nb_2O_5 (ppm)
16205	0.71	3233	1779	1163	594
16204	0.48	2026	1065	842	1903
16206	0.42	1851	799	903	302
16222	0.31	1242	549	634	436
16207	0.28	1283	702	365	144
16203	0.28	1236	500	585	388
16211	0.27	1277	552	568	346
16216	0.25	1032	545	486	104
16209	0.24	1113	367	620	396
16208	0.24	1089	321	677	714

(TNR Gold Corp., press release, October 25, 2011)

Boxxer Gold Corp.—East Breccia Copper-Molybdenum-Silver Exploration Program

Boxxer Gold Corp. has acquired the East Breccia copper-molybdenum-silver exploration property. The property is located approximately 65 km north of Sault Ste. Marie, Ontario. The property consists of 11 contiguous mineral claims covering approximately 4300 acres. The majority of the exploration on the East Breccia property was completed between 1961 and 1982, and since that time very little systematic exploration has been completed (Boxxer Gold Corp., press release, June 16, 2011).

The reported copper-molybdenum-silver mineralization is hosted in the East Breccia and the south half of the West Breccia, located near the former Tribag Copper Mine site. Historical drill hole intersections include 0.25% copper, 0.04% MoS_2 and 7.2 g/t silver over 142.4 m and 0.31% copper, 0.038% MoS_2, and 4.8 g/t silver over 143.2 m. The East Breccia has a surface dimension of approximately 550 by 700 m and has been explored to a depth of 750 m below surface (Boxxer Gold Corp., press release, June 16, 2011).

Anconia Resources Corp.—SSM Property

Anconia Resources Corp. began exploration on 354 claim units located in Gapp, Lunkie and Dablon townships located 65 km northeast of Sault Ste. Marie. The property is located in the southeast portion of the Batchawana greenstone belt. The company has plans to undertake prospecting, geological mapping, and rock sampling, focusing on areas that are prospective for gold mineralization (Anconia Resources Corporation, November 2, 2011).

SAULT STE. MARIE DISTRICT STAFF ACTIVITIES

The Sault Ste. Marie District Geologist Office is staffed by A. Pace, District Geologist, and S. Butorac, District Geological Assistant. H. Pinder worked as a summer student for the months of May through August, providing technical and administrative assistance to the office. H. Pinder reviewed all map plans and publications within the office's geoscience library. An index was developed and all information was referenced into a database for efficient client and staff usage.

Staff of the Sault Ste. Marie District Geologist Office oversaw the construction of drill-core racks at the Sault Ste. Marie offsite drill-core facility. This included erecting metal core racks onto concrete blocks over a levelled surface followed by the construction of roofs to protect the core from the weather.

Staff were involved in the planning and supervision of office renovations. The renovations involved the installation of high-density filing units and the erection of a dividing wall to separate the office working space from the client working space.

A. Pace provided 4 field trips over the year. There were 2 field trips provided specifically to the Batchawana First Nation and the Missassaugi First Nation to provide them with an understanding of the geology and mineral deposits located within their traditional territories.

In January of 2011, A. Pace attended Cambridge House resource investment conference and Cordilleran Round-up in Vancouver, British Columbia. A. Pace had the opportunity to meet with various exploration companies working in and outside of Ontario to promote Ontario as a place to continue mineral exploration. A. Pace provided booth duty along with expert advice and information at the MNDM pavilion.

In March of 2011, S. Butorac attended the PDAC in Toronto, Ontario, where she had the opportunity to meet with various exploration companies and discuss mineral exploration opportunities in Ontario. S. Butorac provided booth duty along with expert advice and information at the MNDM pavilion.

In April of 2011, A. Pace attended the Northwest Ontario Mines and Minerals exploration geoscience symposium in Thunder Bay, where he provided a presentation on *Exploration Highlights in Northeastern Ontario*.

In April of 2011, A. Pace and S. Butorac attended the Northeast Ontario Mines and Minerals exploration geoscience symposium in Timmins, Ontario. A. Pace provided a presentation *Mid-Proterozoic Polymetallic Deposits in the Batchawana Area*.

In May of 2011, A. Pace provided a presentation on *Mid-Proterozoic Polymetallic Deposits in the Batchawana Area* to the Sault and District Prospectors Association.

In May of 2011, A. Pace attended the 57th annual meeting of the Institute on Lake Superior Geology (ILSG) in Ashland, Wisconsin. This involved taking part in 2 days of technical sessions along with participating in 2 field trips. A. Pace provided a presentation on behalf of Mike Easton of the Precambrian Geoscience Section of the Ontario Geological Survey, titled *Detrital Zircon Geochronology of Matinenda Formation Sandstone at Elliot Lake: Implication for Uranium Mineralization*. The ILSG is an annual event that provides a forum for professionals and students to exchange geological ideas and scientific data in order to promote a better understanding of the geology of the Lake Superior region.

In September 2011, A. Pace, S. Butorac, B. Berger and S. Préfontaine spent 4 days examining mineral properties in the eastern section of the Michipicoten greenstone belt. The purpose of this field visit was to examine the various mineral occurrences in townships that are currently actively being explored but lack government mapping. In September 2011, A. Pace, took R. Mandal and D. Bell (Mineral Development and Lands Branch, MNDM), along with R. Mantha, Assistant Deputy Minister of the Mines and Minerals Division, MNDM, on a tour to the operating mines in the Wawa area. The mines included the Wesdome gold mines, located in the Mishibishu greenstone belt, and Richmont gold mines at the Island gold deposit in the eastern portion of the Michipicoten greenstone belt.

In November 2011, A. Pace and S. Butorac attended the Ontario Prospectors Association, Ontario Exploration and Geoscience Symposium in Sudbury. A. Pace provided a presentation on *Northeastern Ontario Exploration Opportunities.*

In November 2011, A. Pace provided a presentation to the Sudbury Prospectors and Developers Association in Sudbury on *Northeastern Ontario Exploration Opportunities.*

Table 9. Assessment files received in the Sault Ste. Marie District Geologist Office in 2011.

Abbreviations

AEM ..... Airborne electromagnetic Survey	MAG..... Magnetometer survey
Ag ..... Silver	Micro ..... Microscopic studies (eg: geochronology)
AirGeo ..... Airborne geophysical survey	Mo..... Molybdenite
AMAG ..... Airborne magnetic survey	Ni ..... Nickel
ARAD ..... Airborne radiometric survey	Pb ..... ……Lead
AVLF ..... Airborne very low frequency survey	PDrill ..... Diamond drilling
Au ..... Gold	PDewat ..... Dewatering shafts, pits, etc.
Co..... Cobalt	PGE ....Platinum group element(s)
Cu..... Copper	Photo..... Photographic work
Data..... Database	PMan ..... Physical manual work
Dia..... Diamond	Pros ..... Prospecting
EM ..... Electromagnetic	PStrip ..... Overburden stripping
Fe ..... Iron	PTrench ..... Bedrock trenching
Geochem..... Geochemical survey	Rad..... Radiometric
Geol..... Geological survey	REE ..... Rare earth elements
Grav ..... Gravity survey	U ..... Uranium
IOCG..... Iron oxide copper gold	VLF ..... Very low frequency electromagnetic survey
IP..... Induced polarization survey	VTEM ..... Versatile time domain electromagnetic
KIM..... Kimberlite indicator mineral sampling	Zn..... Zinc
Lc ..... linecutting	

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
41J /08 SW	Verbina Resources Inc.	2008 – 2010	Diamond drilling to develop 3 dimensional resource estimate.	2.45529	SSMP Deagle – 04 (CD)
41N / 02 SE, 41K /15 NE	Cenit Corporation and First Minerals Exploration Limited	2010 – 2011	Geology, stripping, trenching, sampling and assaying.	2.47257	SSMP Ryan – 37 (CD)
41 N/01 NW, 41 N/01 SW	Amador Gold Corp.	2009 – 2010	Assessment report on diamond drilling program on the East Breccia.	2.44313	SSMP Norberg – 17 (CD)
41J / 08NW, 41J /08 SW	PreCambrian Ventures Ltd.	2010	Geophysical report on the Whitefish Lake property.	2.46457	SSMP Gaiashk – 23
41J / 08NW, 41J / 08 SW	PreCambrian Ventures Ltd.	2010	Prospecting and rock sampling of VTEM anomalies on the Whitefish Lake Property	2.46950	SSMP Gaiashk - 24
41O/03 SE, 41O/03 SW, 41J/ 14 NW, 41J/14 NE	Jim Ralph	2010	Work report on JR Lamprophyres for Jim Ralph, written by Cliff Hicks	2.46235	SSMP Maeck - 04 (CD)

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
41J/13 SW, 41J/13 SE	Skead Holdings	2010 – 2011	B Horizon soil sampling – compassed grid lines, 9 samples collected and sent for Au and metallics to lab. Assay certificates included.	2.48117	SSMP Hughes-12 (CD)
41N / 02 SE, 41K / 15 NE	Cenit Corporation Coppercorp property.	2010	NI-43-101 Technical Report written by MPH Consulting Limited.	SEDAR Website	SSMP Ryan - 38
41N/02 SE, 41K/15 NE	RRS Syndicate. Mamainse Lake Property. Claim holders are Roy Rupert, Dan Shelly and Delio Tortosa.	2010	Diamond drilling - 4 holes and final drill report.	2.48230	SSMP Ryan - 39 (CD)
41N/01 SW, 41N/01 SE 41N/01 NW, 41N/01 NE	Black Panther Mining Corp., Olsen Property	2010	Geological reconnaissance, prospecting and sampling.	2.48523	SSMP Olsen - 44 (CD)
41K/ 09 NW, 41K/ 09 SW 41K / 09 NE, 41K /09 SE	TRS Syndicate, Island Copper Project.	2009 – 2011	Historical review of past work and current prospecting to date.	2.49142	SSMP Aweres - 21 (CD)
41J / 08 NW, 41 J/ 08 SW	Claim 4214924 (Pecors Claim) for Geo Earth Ventures Ltd. prepared by Dan Patrie Exploration Limited and L.D.S. Winter, P.Geo.	2011	MAG and IP survey and Report.	2.49179	SSMP Gaiashk - 25 (CD)
41N/1, 41/ N2	China Metallurgical Exploration Inc., submitted by Keystone Associates Inc.	2010 – 2011	A helicopter-borne aero TEM system, EM and magnetic survey and prospecting.	2.48980	SSMP Palmer - 41 (CD)
41K/16 SE	Pro Minerals Inc. (optioned claims from Maverick Investment Corporation. Report is written by James H. Forbes.	2011	Handheld gamma ray spectrometer GR 135G survey. Radiometric survey.	2.48738	SSMP Shields - 03 (CD)
41K/16 SE, 41K/16SW, 41K/09 NE, 41K/09NW	Assay results and webpage of MMC Electronics and webpage of Puretechnologies.com (3 pages). Donated by George Lucuick (claim holders are J. Ralph, G. Lucuick and C. Hicks).	2002	Assaying	donated	SSMP VanKoughnet - 19
41J/06 NE, 41J/06 SE	China Metallurgical Exploration Corp., written by Keystone Associates Inc.	2010 –2011	Prospecting and soil and gas hydrocarbon survey and report	2.49139	SSMP Montgomery - 26
41J/ 06 NW, 41J /11 SW	George Lucuick and James Ralph	2011	Prospecting - sampling	2.49787	SSMP Gould - 14 (CD)

PROPERTY EXAMINATIONS

The Eco Ridge Mine Property

LOCATION AND ACCESS

The Eco Ridge Mine property (UTM Zone 17, 383983E 5137712N) is located approximately 11 km east of the city of Elliot Lake (Figure 4). The project is located in Gunterman, Deagle, Gaiashk, Joubin and Proctor townships. Access to the property is via Highway 108, which crosses the western portion of the Eco Ridge property. The turn-off for the access road to the property from Highway 108 is located 3 km south of Elliot Lake.

REGIONAL GEOLOGY

The Elliot Lake area lies within the Precambrian Canadian Shield at the boundary between the Superior and Southern geological provinces. The Superior Province consists of Archean-aged basement rocks made up of metavolcanic and metasedimentary rocks, granite and minor mafic intrusive rocks. The Southern Province consists of Proterozoic-age Huronian metavolcanic and metasedimentary rocks intruded by mafic and felsic intrusive rocks.

The Huronian metavolcanic and metasedimentary rocks are folded and form shallow westward-plunging, gently folded syncline and anticline structures, referred to as the Quirke syncline and the Chiblow anticline (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011). The Elliot Lake uranium deposits are located within the sediments that form the Quirke syncline. The uranium deposits are hosted in conglomerate beds or reefs situated within the Nordic and Quirke channels. These 2 major channels in the Elliot Lake area are of the result of erosion and weathering of the surrounding rocks, particularly from the northwest and then transported by fast flowing streams during early Proterozoic time. Three other channels have been identified in the syncline, the Pardee, Pecors and Whisky Lake channels, but no mining has taken.

PROPERTY DESCRIPTION

Pele Mountain Resources Inc. has been exploring the Eco Ridge Mine property since October of 2006. During this period the company has completed a series of diamond-drill holes and has recently released an updated NI 43-101 Preliminary Economic Assessment (PEA). The Eco Ridge Mine property is situated to the east of the Nordic Channel on the south limb of the Quirke syncline (*see* Figure 6A). The company has focused most of its diamond drilling on a series of quartz-pebble conglomerate beds that make up the Ryan Member of the lower Matinenda Formation. The conglomerate beds host the uranium deposits that were historically mined in the Elliot Lake area. The Ryan Member is approximately 100 m thick; it is well sorted, consisting of quartz arenite with intercalated quartz-pebble conglomerates. The quartz arenite displays a light green sericite alteration. Clasts of the quartz-pebble conglomerates vary in size from pebble to boulder and are deposited in normally graded, fining-upward sequences. Pyrite is the dominant sulphide disseminated throughout the matrix of the conglomerate; however, in areas where the larger pebbles are concentrated, the pyrite crystals along the margins of the quartz pebbles occur as massive patches. These beds are also host to rare earth oxides (REO) and have most recently been the main focus of exploration for Pele Mountain Resources Inc.

The company has completed a series of diamond-drilling programs on the Eco Ridge Mine property that have included a total of 207 drill holes. The early drilling was aimed at confirming the historical data, and then focusing on further delineating the mineralized conglomerate. The drilling has identified higher grade uranium and rare earth oxide mineralization within 3 conglomerate beds: the Basal Conglomerate Bed (BCB), the Main Conglomerate Bed (MCB) and the Floater Reefs.

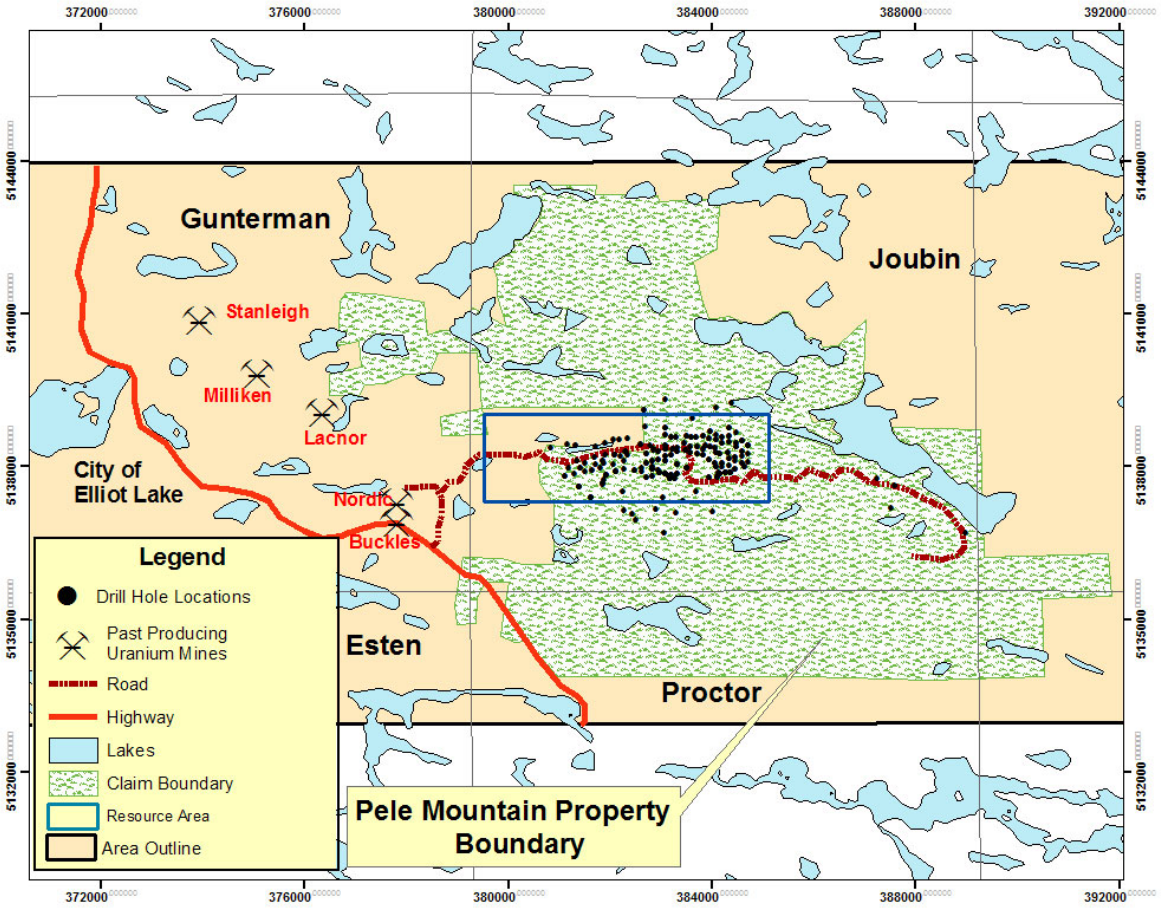


Figure 4. Location map of the Eco Ridge Mine property currently being explored by Pele Mountain Resources Inc.

STRATIGRAPHY OF THE MINERALIZED CONGLOMERATE BEDS

The stratigraphy of the lower Matinenda Formation varies between the channels. The mineralized reefs within the Eco Ridge Mine property are situated on the Pardee Channel that correlates with the stratigraphy of the reefs in the Nordic Channel to the west (*see* Figure 6A). It has an average strike length of about 2130 m and hosts the former Nordic, Lacnor, Milliken and Stanleigh mines. The upper reef or Pardee reef of the Nordic Channel had a limited amount of mining that took place and correlates with the Main Conglomerate Bed (MCB) of the Pardee Channel situated on the Eco Ridge Mine property (*see* Figure 6A). To the east of the Pardee Channel lies the Pecors and Whiskey channels but no mining has taken place on these latter channels.

THE BASAL CONGLOMERATE BED

The BCB uncomforably overlies Archean basement rocks. This unit consists of poorly sorted, angular clasts averaging 5 cm in diameter. Clast compositions include pebble, volcanic rocks, quartzite and pyrite with up to 5% pyrite in the matrix (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011). The bed is discontinuous and averages 0.5 m in thickness based on recent drill hole intersections (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011) (*see* Figure 6B).

THE MAIN CONGLOMERATE BED

The MCB (Figure 5) is located 10 to 15 m above the BCB (*see* Figure 6B). The MCB hosts the mineral resource on the Eco Ridge Mine property. The conglomerate contains quartz and dark cherty pebbles in a fine-grained pyrite-rich matrix. The pebbles make up a significant portion of the rock. The pebbles are well rounded and the bed fines upwards with narrow intercalated beds of quartzite. Pyrite occurs disseminated within the matrix and in massive patches along the margins of the pebbles (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011.)

FLOATER REEFS

The Floater Reefs represent a series of thin conglomerate beds within the quartz arenite. The reefs generally extend from 6 to 15 m above the MCB. They average from 0.1 to 2.0 m in thickness and the uranium content is generally low (Roscoe Postle Associates, Preliminary Economic Assessment, 2011). Drilling has illustrated that the floater reef beds are thin and discontinuous and therefore it is not possible to correlate individual beds between the drill holes (*see* Figure 6B).

URANIUM MINERALIZATION

The Elliot Lake uranium deposits were originally interpreted to be modified paleoplacer (detrital) deposits derived from granite source rocks to the north. As a result of weathering under anoxic conditions, the uranium and rare earth-bearing minerals were liberated from the granites, then transported as detrital mineals by fast-flowing streams and deposited in channelized placers during the early Proterozoic period. As a result of the reducing environmental conditions during this period, the pyrite, uranium and other heavy minerals were precipitated out and deposited in conglomerate beds (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011).

Recent work completed by Pele Mountain Resources Inc. indicates that uranium mineralization hosted within the deposits exists in other mineral phases than previously reported. The mineral phases are similar in all the conglomerate beds; however, the amounts of each mineral phase varies between the beds. The only detrital uranium mineral identified is uraninite. All other uranium minerals and phases are minerals that have been formed by secondary processes subsequent to the primary deposition of the uranium as uraninite (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011).

Figure 5. A) Examining outcrops of the Main Conglomerate Bed on the Eco Ridge Mine property. B) Examining diamond-drill hole locations on the Eco Ridge Mine property.

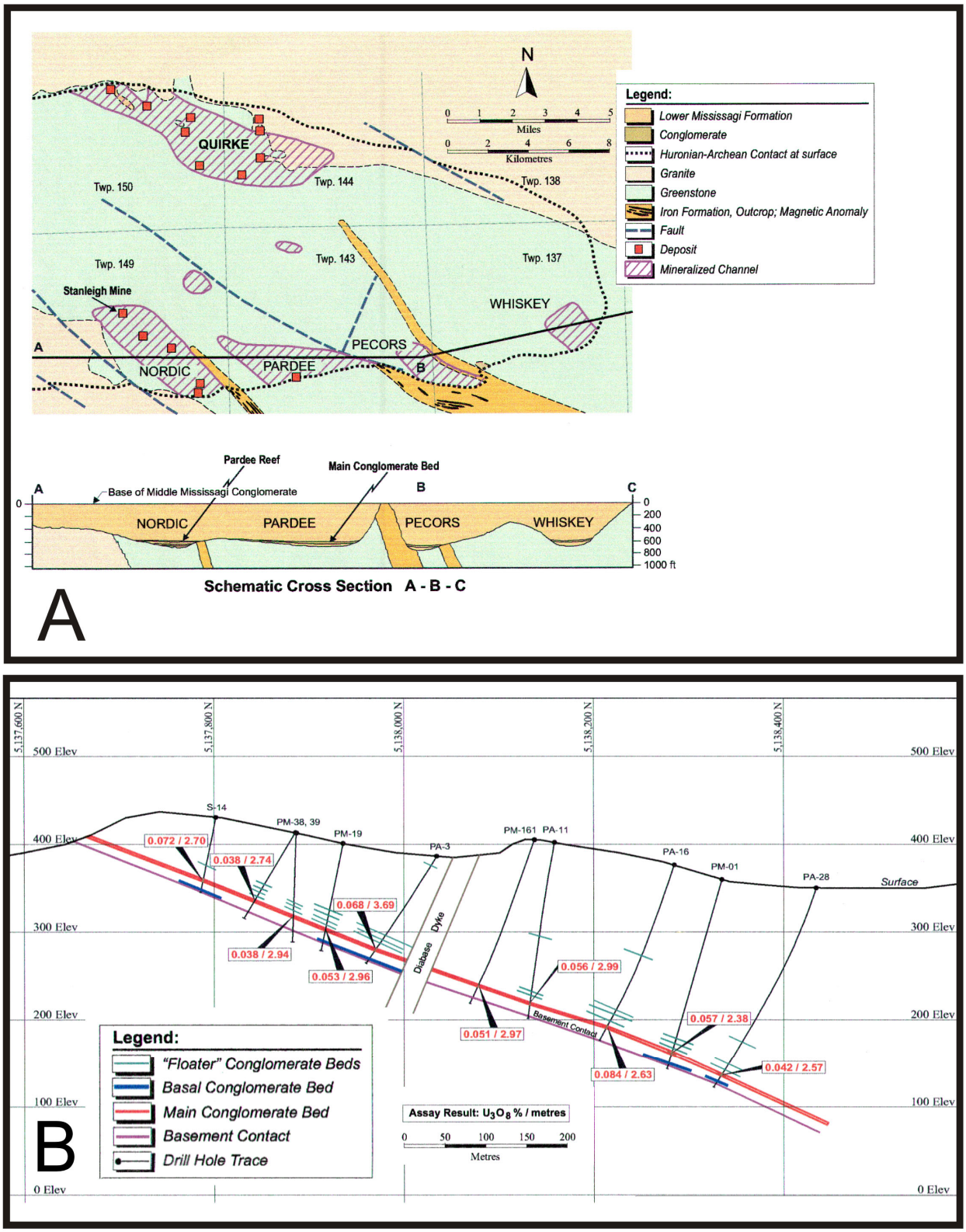


Figure 6. A) Plan view showing the mineralized reefs and a longitudinal section along the south limb of the Quirke syncline. The figure displays how the upper reef in the Nordic Channel correlates with the MCB in the Pardee Channel on the Eco Ridge Mine property. The cross section below the plan view demonstrates the correlation of the mineralized conglomerate beds through the Nordic, Pardee, Pecors, and Whisky channels. B) Cross section illustrating the 3 main conglomerate beds of the Ryan Member.

The BCB was observed to contain higher grade uranium than the MCB. The higher grade mineralization is associated with permeable zones within the BCB where fluid flow has reacted with pyrite to deposit secondary uranium minerals and mineral phases (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011). The secondary uranium minerals include coffinite, thucolite, and pitchblende. The presence of pyrite appears to be a very important factor in the deposition of the secondary uranium. Secondary uranium minerals such as pitchblende have been deposited from the alteration of uraninite by oxidizing fluids and have been precipitated by reduction of fluid upon encountering pyrite (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011).

RARE EARTH OXIDE MINERALIZATION

Historical drilling followed by recent drilling by Pele Mountain Resources Inc. has confirmed the presence of that rare earth oxide (REO) mineralization in the conglomerate beds. Monazite is the primary mineral and constitutes over 90% of the REO in the MCB. The remaining 10% of the REO occurs in uraninite, pitchblende, coffinite and brannerite (Roscoe Postle Associates Inc., Preliminary Economic Assessment, 2011). The REO content varies within each of the beds, with the MCB having a greater concentration of REO than the BCB.

The Batchawana Copper Property

LOCATION AND ACCESS

The Batchawana copper property (UTM Zone 16, 670744E 5209863N) is located 85 km north west of the city of Sault Ste. Marie. Access is gained by travelling northwesterly along the Trans Canada Highway 17, then eastward along a logging road for 4 km. The property consists of 39 contiguous mining claims in Kincaid and Ryan townships.

REGIONAL GEOLOGY

The Batchawana copper property is located on the eastern edge of the Mid-Continental Rift (MCR) which underlies what is now Lake Superior and was active during the mid-Proterozoic, Keweenawan period (1100–1200 Ma). The Keweenawan rocks of the MCR consists of a thick sequence of subaerial flood basalts intercalated with conglomerates and felsic volcanic units that unconformably overlie Archean rocks of the Batchawana greenstone belt. The rocks have been intruded by felsic dikes, felsic porphyries and felsic breccias considered to be Keweenawan in age and related to the Keweenawan felsic volcanic and intrusive rocks occurring more extensively within the Mamainse Point Formation to the west.

PROPERTY GEOLOGY

Several visits were made by the staff of the Resident Geologist Program to the Batchawana copper property. The property is situated within the area of the former past-producing Coppercorp Mine that operated from 1965 to 1972 and produced 1.02 million tons at 1.16% Cu (Figure 7). The mineralization in the area is structurally controlled and occurs within breccia zones and veins that transect the Keweenawan basalt flows and conglomerates. In some instances many of the mineralized veins are in contact with felsite dikes (*see* Figure 8D).

Three main occurrences were visited within the Batchawana copper property: the “B Zone”, “L Zone” and “SB Zone”.

B Zone

A sampling, trenching and mapping program completed in 2010 by Superior Copper Corporation focused on the “B Zone” (UTM Zone 16, 670960E 5210091N) located 200 to 300 m northeast of the historical Coppercorp Mine site. The Coppercorp Mine site lies within a north-northwest-trending structural zone named the “C Zone” (UTM Zone 16, 670744E 5209863N) that parallels the newly trenched “B Zone” with mineralization hosted within a vein/breccia.

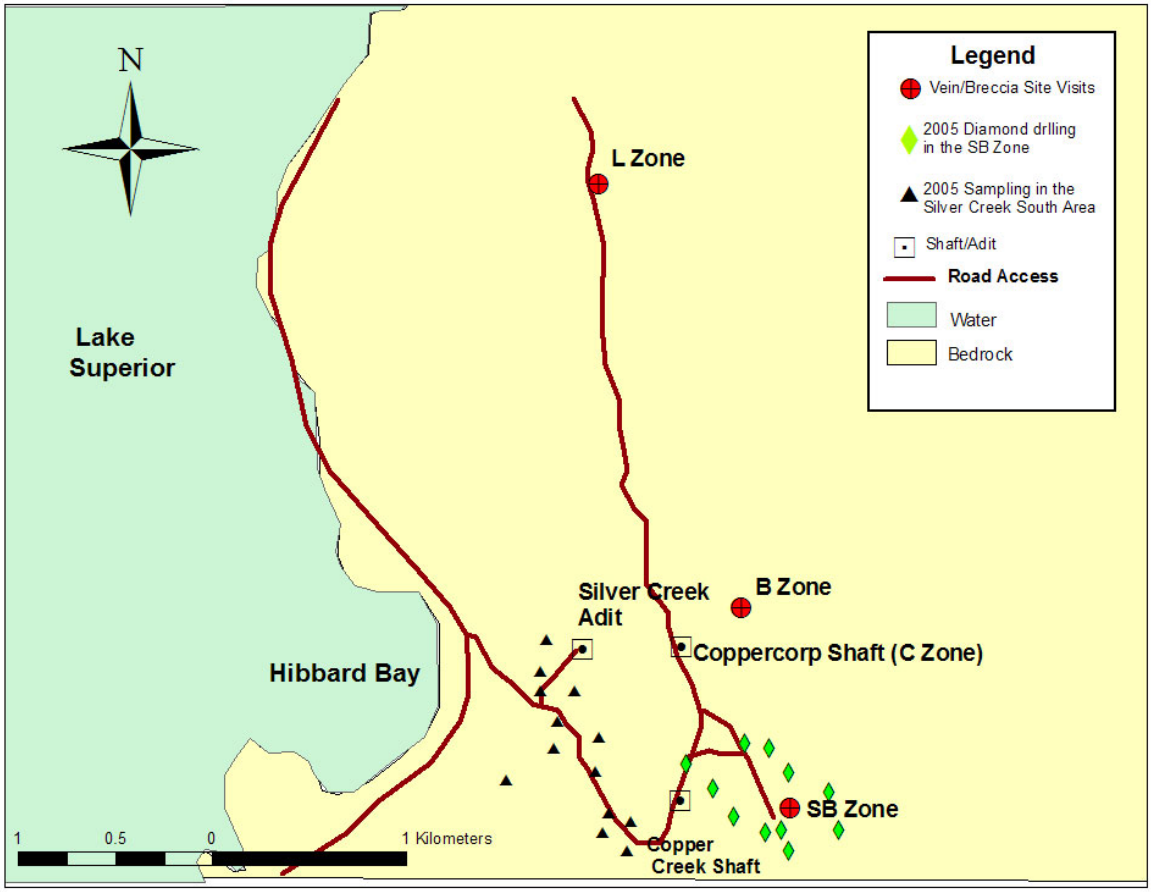


Figure 7. Location map of the Batchawana Copper property currently being explored by Superior Copper Corporation.

The mineralized veins/breccia zones consist of quartz, carbonate, secondary laumontite and barite, strike 350° with a steep dip to the east, and are hosted by amygdaloidal basalt. The trenched "B Zone" is approximately 200 m in length and 5 m in width. The stripping and trenching has revealed copper mineralization in the form of chalcocite, bornite, specular hematite, malachite accompanied by pyrite, chalcopyrite (Figure 8A and 8B).

Chalcocite appears as the dominant copper sulphide, being widely distributed throughout the trench both along the vein margins and in massive thick bands. These chalcocite bands become more prevalent at the far north end of the trench as it pinches and swells within a vein/breccia zone. The basalt, particularly the wall rocks that are in close proximity to the vein/breccia zones, displays chlorite, epidote and hematite alteration along with irregularly oriented quartz/carbonate veining.

In some areas of the trench, amygdaloidal basalt is in contact with a felsite dike that strikes in the same orientation of the mineralized structure. The felsic dike is fine grained, flow banded, siliceous and carries disseminated malachite and chalcopyrite in proximity to the contact. A total of 5 grab samples were taken from the trench (*see* Figure 8A and 8B) for analysis by the OGS Geoscience Laboratories, Sudbury (Table 10). All 5 grab samples had anomalous copper values, 2 samples had silver assays of 10 g/t silver and 15g/t silver. A gold assay of 0.8 g/t gold was returned from a sample taken at the contact between the felsite flow and a vein/breccia zone.

Table 10. Results of multi-element analysis from samples collected at the "B Zone". All analyses were performed at the OGS Geoscience Laboratories, Sudbury. UTM coordinates are NAD 83, Zone 16.

Sample Number	B Zone 2011-1	B Zone 2011-2	B Zone 2011-3	B Zone 2011-4	B Zone 2011-5	L Zone 2011-1	L Zone 2011-2
Easting	670960	670960	670940	670963	670940	670107	670096
Northing	5210091	5210091	5210206	5210123	5210206	5212265	5212278
Rock Name	Mineralized Vein	Hematite altered basalt	Mineralized vein	Mineralized vein in close proximity to felsite flow	Mineralized vein/breccia	Mineralized vein/breccia in close proximity to felsite flow	Mineralized vein breccia
Al	42 279	67 450	47 070	7824	3280	20 502	48 907
Ba	506	441	131	389	107	66	120
Be	3	3	2	2	<1	1	2
Ca	8503	4843	82 275	>100 000	469	1207	2849
Cd	0.951	0.317	1.613	3.931	2.754	3.515	0.694
Co	30	71	14	3	<1	41	91
Cr	81	60	71	32	162	30	138
Cs	12.305	21.221	12.064	2.934	4.893	2.883	12.379
Cu	1315	749	11 257	>14 400	>14 400	>14 400	1733
Fe	90 567	>95 000	37 253	25 752	10 161	>95 000	>95 000
Ga	7.45	24.03	14.11	2.52	1.51	7.75	18.35
Hf	3.29	6.29	3.28	<0.14	0.31	1.75	2.28
K	29 825	23 371	22 987	3845	1310	3965	6897
Li	63	55	16	10	31	48	112
Mg	11 818	18 814	3515	745	361	6261	23 853
Mn	1141	2909	1404	1441	40	818	2667
Mo	1.60	1.91	1.79	1.87	1.54	7.21	1.73
Na	<500	<500	<500	<500	<500	<500	<500
Nb	8.044	15.510	7.940	0.593	6.265	16.058	5.314
Ni	28.1	76.2	16.3	7.2	3.0	21.7	73.0
P	702	1448	<15	<15	>6400	<15	444
Pb	82	59	40	19	55	1005	54
Rb	57.36	158.33	181.79	23.79	10.98	31.54	53.33
S	69	<60	2861	8801	>16 000	>16 000	710
Sb	2.61	1.20	1.64	1.01	>28	1.72	1.46
Sc	32.4	47.8	30.2	4.8	1.1	12.6	23.9
Sn	1.35	2.56	1.31	<0.16	0.53	1.01	0.68
Sr	29.6	18.8	35.1	40.1	5.4	5.5	12.4
Ta	0.527	1.021	0.527	0.044	0.483	1.047	0.358
Th	1.245	2.441	1.194	<0.018	1.149	2.911	0.850
Ti	9746	18 832	9818	601	31	3606	6543
U	2.876	1.067	1.730	2.551	1.784	4.310	1.242
V	254.6	>370	249.7	57.4	137.7	94.6	208.2
Y	28.16	45.49	32.43	6.52	3.09	22	17.30
W	5.18	3.53	3.73	0.59	1.83	3.87	14.14
Zn	129	362	67	9	14	154	466
Zr	124	240	123	<6	8	57	86
Total REE	104.35	155.33	100.91	34.98	8.04	56.44	67.48

Notes: All trace element data are in ppm.

L Zone

A trenching and stripping program in the area identified as the "L Zone" (UTM Zone 16, 670100E 5212306N) has provided better exposure of another mineralized zone identified within the Batchawana copper property. The "L Zone", like the "B Zone", is characterized as a quartz-carbonate vein/breccia zone hosted in a mineralized structure that transects amygdaloidal basalt. The mineralization consists of specular hematite, chalcocite, bornite, malachite,

and chalcopyrite. Iron gossan has also been identified along the fracture margins hosting the vein/breccia zones (Figure 8E). Hematite alteration has been widely identified particularly in proximity to the quartz-carbonate veining. The "L Zone" vein is on strike with and approximately 2 km north of the "B Zone".

A flow-banded felsite flow is exposed in the trench striking 358° and dipping to the east 40°. The felsite is in contact with the mineralized structure and striking in the same orientation (Figure 8D). The felsic dike is exposed for approximately 8 m and then pinches out into the pit. Widespread hematite alteration of the felsite is most intense at the contact with sulphide mineralization. In some sections along the contact, irregularly oriented quartz veining was identified within the felsite flow, with disseminated sulphide, particularly chalcopyrite and malachite, appearing along the margins. Two grab samples were taken from the "L Zone" that returned anomalous copper values. One grab sample taken at the contact between the felsite flow and the mineralized structure returned 0.4g/t gold. See Table 10 for all assay results.

SB Zone

The "SB Zone" (UTM Zone 16, 671365E 5208977N) is located approximately 1 km south of the "B Zone" and is on strike with both the "L Zone" and the "B Zone". The area is made up of amygdaloidal basalt that is in contact with poorly sorted polymictic conglomerates. The basalt exhibits quartz-carbonate veining similar to what was seen in both the "B Zone" and the "L Zone" previously mentioned. Many of the quartz-carbonate veins contain disseminated malachite along with iron gossan staining. Hematite, chlorite and epidote occur as broad zones of alteration within the basalts. No grab samples were attainable in this location as it was difficult to locate a proper sampling site.

SUMMARY AND CONCLUSION

The "B Zone", "L Zone", and "SB Zone" are examples of the mineralized structures identified within this area and hosted within the amygdaloidal basalts, consisting of quartz-carbonate vein/breccias containing copper mineralization with secondary silver and gold values. All 3 zones are colinear and parallel the "C Zone" of the Coppercorp Mine. In both the "B Zone" and "L Zone", felsite flows were identified to be in contact with and strike in the same direction as the mineralized structures. All rock samples collected from the newly trenched zones were submitted for multi-element analysis with the assay results displayed in Table 10. Grab samples taken from the "B Zone" and "L Zone" show copper assays greater than 1%. There were no gold values obtained in samples from the mineralized vein/breccias. However, samples taken at the contact between the felsite flow and the mineralized structures assayed gold values of 0.8g/t and 0.4 g/t gold, respectively.

In 2005, samples acquired by Nikos Exploration Ltd. identified 2 samples in the Silver Creek south area (*see* Figure 7) with assays of 1.56g/t gold, 8.58% copper and 1.66g/t gold, 4.65% copper. A subsequent drilling program followed with 1 hole intersecting 1.63% copper and 5.15 g/t silver over a core length of 35.5 m (Moss 2004).

The high sulphur levels as seen in Table 10 may be attributed to the deposition of sulphide minerals within the deposit. The widespread hematite alteration observed in the host basalt is reflected by the high Fe assays reported in Table 10. The elevated K, Na, and Ba levels attained from the vein/breccia zones may suggest that metal deposition was the result of hydrothermal alteration. High barium levels have also been identified in the areas north of the "SB Zone" and in the areas of the Silver Creek south. Barite was identified in the "B Zone" vein/breccia. This would coincide with the fluid inclusion work completed by Richards and Spooner (1989), suggesting that the mixing between hot saline fluids and cooler meteoric ground waters was an important mechanism for the deposition of copper-iron sulphides.

Figure 8. A) and B) Sampling along the recently stripped, mineralized vein/breccia at the "B Zone". C) A diamond-drilling program testing the depth of the mineralized "B Zone" vein/breccia. D) Contact between a flow-banded felsite and a mineralized vein/breccia at the "L Zone". E) Sampling along the mineralized vein/breccia at the "L Zone".

Palmer Gold Property

LOCATION

The Palmer gold property (UTM Zone 16, 684674E 5206500N) is located in Palmer Township, approximately 7 km north of Batchawana Bay and 70 km northwest of the city of Sault Ste. Marie. Access to the property is via the Trans Canada Highway 17 north and then down a bush road named the Carp River road.

REGIONAL GEOLOGY

The Palmer gold property is situated in the west part of the Archean, Batchawana greenstone belt. The geology of the west part of the belt is dominated by mafic metavolcanic rocks intruded by northwest- to west-trending diabase, olivine gabbro and gabbro dikes. The belt is bounded north and south by Archean granite, granodiorite and gneissic terrains. The granitic Griffin Lake stock is located approximately 8 km northeast of the Palmer gold property (Figure 9A).

PROPERTY EXPLORATION

The Palmer gold property is underlain by massive to pillowed mafic metavolcanic rocks striking N60°E and dipping 75°N. Intercalated within the metavolcanic rocks, a banded magnetite/jasper iron formation contains minor sulphide mineralization in the form of pyrite stringers. The iron formation was discovered in the late 1800s and explored by the Batchewanung Mining Company. The company had developed several pits and a 7.6 m deep exploration shaft. During the 1960s and 1980s a series of geophysical surveys were completed over the property to assist in delineating the extent of the iron formation.

In 1964, Pall Mall Copper Mines Ltd. completed a diamond-drilling program consisting of 4 holes totalling 751 m. These initial exploration programs were designed to test the iron ore potential of the iron formation. However, prospecting within many of the old pits and trenches uncovered anomalous gold mineralization.

In 1984, Getty Mines completed 10 diamond-drill holes totalling 1208.5 m intersecting the targeted banded iron formation. The drilling had determined that the iron formation had good strike length and averaged 7.1 m in width; however, the drilling also intersected a magnetic ultramafic intrusive that may have attributed to the magnetic response in that specific location.

An electromagnetic and magnetic survey completed by China Metallurgical Exploration Inc. during the summer of 2010 identified an area of high magnetic intensity in the vicinity of the Getty prospect and the Palmer gold prospect (Figure 9B). The high magnetic anomaly appears to coincide and strike in the same orientation as the iron formation. However, drilling indicates that the iron formation pinches out and therefore may not have solely generated the magnetic highs.

The discoveries of gold in grab samples and drill intersections have made the property favourable for its gold potential.

THE PALMER GOLD PROSPECT

With limited exposure because of heavy overburden and forest cover, outcrops and past trenching locations in the areas surrounding the Getty prospect were difficult to locate. However a trench identified as the Palmer gold prospect was located. The trench is 2.8 km west of and appears on strike with the Getty prospect. Outcrops observed within the trench consisted of mafic metavolcanic rocks and a small outcrop of banded iron formation. The Palmer gold prospect was the name given to this property by the local prospectors who have recently staked these claims.

The mafic volcanic rocks are chloritized, silicified and carbonate/ankerite altered, carrying semi-massive pyrite mineralization. The iron formation is banded magnetite-chert iron formation devoid of sulphides. There have been many occurrences identified within Palmer Township described over the years with similar alteration, mineralization

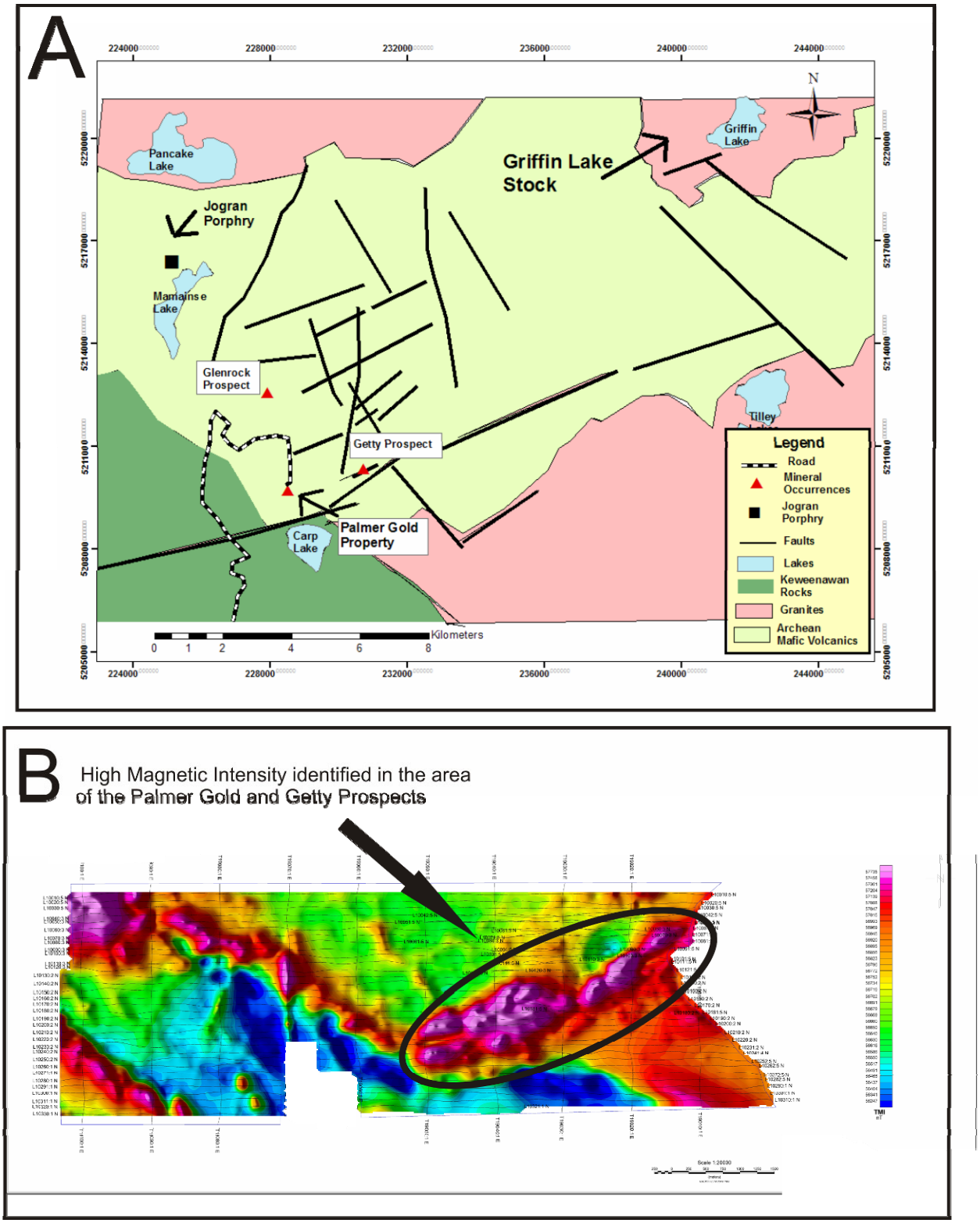


Figure 9. A) Location map of the Palmer gold, Getty and the Glenrock properties (*modified from* Giblin 1973). B) A total magnetic intensity map encompassing the area of the Palmer gold and Getty prospects. The geophysical survey was completed by China Metallurgical Exploration Inc. and submitted for assessment work in 2011 (Keystone Associates Inc. 2011).

and anomalous gold values to the Palmer gold prospect. For example, the Glenrock prospect (UTM Zone 16, 683731E 5208932N) is an occurrence that is located 3 km to the north of the Palmer gold prospect (Pace and Butorac 2011).

A series of localized faults affect the geology and 1 fault in particular strikes N60°E, parallel with the Palmer gold prospect. Felsic intrusive rocks have been identified in the area and include the Jogran porphyry (UTM Zone 16, E681035 and N5212725) to the north and the Griffin Lake stock (UTM Zone 16, E696774 and N5217620) to the north east. The close spatial association of the felsic intrusive rocks along with a series of localized faults may account for the alteration and mineralization observed on the property (*see* Figure 9A).

A sample of the silicified mafic volcanic rock taken by the staff of the District Geologist office returned anomalous gold values. A sample of the banded iron formation did not result in any gold assays. This may suggest that the mineralization is not related to the iron formation but rather is the result of sulphide-bearing fluids percolating through the localized faults.

Assay results from grab samples taken by Getty Mines in 1984 include

1) 0.49 ounces per ton gold
2) 0.24 ounces per ton gold
3) 0.19 ounces per ton gold

Assay results from diamond-drill intersections completed by Getty Mines in 1984 include

1) 0.038 ounces per ton gold over 0.25 m
2) 0.034 ounces per ton gold over 0.5 m

An assay result from a grab sample on the Palmer gold prospect collected by the staff of the Sault Ste. Marie District Geologist Office returned 0.66 ounces per ton gold.

Renner Iron Occurrence

LOCATION

The Renner claims are located in the northeast quadrant of Jackson Township. Access is via Highway 17 east to Iron Bridge and approximately 50 km north on Highway 546. Proceed north and northwest onto a bush road, followed by a well-marked trail to the base of a ridge (UTM Zone 17, 327695E 5162975N).

PREVIOUS EXPLORATION

In 1970, several mineral occurrences were discovered by prospectors L. Renner and G. Renner. The area is located in the vicinity of the Pearl Lake fault and a series of subsidiary faults and shear zones where the mineral occurrences have been discovered.

In 1956 Harico Mining and Development Co. Ltd. discovered pink granite pegmatites along the East Caribou fault 1 km east of Renner #2 occurrence. Narrow fractures within the pegmatites carried radioactive minerals (Harico Mining and Development Co. Ltd, Sault Ste. Marie Assessment, 1956).

GEOLOGY AND MINERALIZATION

Renner #1 and #2 occurrences lie on the border between the Superior and Southern Provinces of the Canadian Shield. The geology consists of Archean felsic intrusive, middle to late Precambrian mafic intrusive rocks and Huronian-aged metasedimentary rocks. The felsic intrusive rocks form the basement rocks, which are uncomformably overlain by Huronian-aged metasediments of the Gowganda and Hough Lake Group.

Copper has been prospected along the north shore of Lake Huron since the beginning of the twentieth century. Many of these copper discoveries have been documented as occurring in fault zones related to the Nipissing diabase.

Based on magnetic data compiled by the Ontario Department of Mines and Geological Survey of Canada of the Wakomata Lake area in 1963, the area displays a series of aeromagnetic anomalies. Many of the mafic dikes observed on the property are strongly magnetic and may explain some of the anomalies.

Both the Renner #1 and #2 occurrences are described, below, to show similarities in geology and style of mineralization.

Renner #1

Renner #1 (UTM Zone 17, 326834E 5164444N) occurrence is located in a series of pits where the rocks consist of granite to granophyre and a series of mafic intrusive rocks. Mineralization consists of chalcopyrite, malachite, hematite, and cobalt staining hosted within a sheared quartz vein. Results from assays range from 0.1 to 3% copper (Rupert 1970).

Renner #2

The second occurrence (UTM Zone 17, 327563E 5163217N) is in a pit that exposes the contact between the Archean felsic intrusive rocks and sulphide-bearing magnetic diabase or gabbroic sills. Chalcopyrite mineralization is disseminated and patchy in the gabbro. A series of shear-hosted quartz-carbonate veins in the gabbro occur at the crest of an outcrop ridge. They are mineralized with fine- to medium-grained chalcopyrite, azurite, malachite and magnetite. A grab sample of the gabbro collected by the staff of the Sault Ste. Marie District office assayed 0.08% copper.

A magnetite-hematite-rich outcrop was exposed at the base of the ridge where 3 additional samples were collected (UTM Zone 17, 327783E 5163359N). All 3 samples had Fe values > 94 000 ppm.

This outcrop exposure forms a topographical high measuring 200 by 100 m and is in contact with a felsic intrusion.

The rock outcrop is dark grey-blue-black, with some reddish hematite banding. Certain zones have up to 5% chalcopyrite and possibly pyrrhotite mineralization in patches. It is characterized as having a strong magnetic response, is massive in composition and magnetite and hematite are the dominant iron-oxide minerals.

A second sample of iron formation was sent to the Ontario Geological Survey Geoscience Laboratories in Sudbury for an XRD analysis. The analysis identified 3 major phases that include magnetite, hematite, quartz and possibly goethite. A 6 pound sample was also sent to the Geoscience Laboratories in an attempt to get a quantitative estimate of magnetite vs. hematite. These 2 iron oxides were indeed present and a Rietveld Refinement Method was used to determine the following semiquantitative concentrations: magnetite, 62%; hematite, 5%; quartz, 23%; and chlorite, 10%.

ECONOMIC VIABILITY

The discovery of radioactive fractures within pink pegmatites located 1 mile east of the Renner #2 occurrence may suggest the possibility of a hydrothermal overprint that may have remobilized naturally occurring uranium hosted in the surrounding felsic intrusive rocks. The discovery of a widespread iron-oxide rich outcrop of both magnetite and hematite in unequal proportions with minor quartz and sulphides within a felsic pluton is characteristic of a zoned magnetite-hematite-siliceous group of an IOCG type deposit (Williams 2010).

Further investigation of the deposit should be made in the context of an IOCG model.

RECOMMENDATION FOR EXPLORATION

Nickel-Copper-PGE Mineralization in the Stone Ridge Intrusion

A compilation mapping project of the Pecors–Whiskey Lake area has been published in *Summary of Field Work and Other Activities* (Easton 2009, 2010). The area was selected for mapping because of a renewed interest and increase in uranium exploration in the area. During the mapping project an east-trending metagabbro intrusion, 700 to 1000 m wide, with a minimum strike length of 15 km, was identified lying 1 to 2 km south of and roughly parallel to the Archean–Proterozoic unconformity (Easton 2009).

Historical maps have indicated this intrusive to be a Nipissing intrusive suite metagabbro. Field and geochemical observations have suggested that this classification is incorrect and that the intrusion is Paleoproterozoic in age and related to the East Bull Lake intrusive suite. Dr. Easton of the Ontario Geological Survey's Precambrian Geoscience Section has named the intrusion the Stone Ridge intrusion because of its close proximity to the Stone Ridge golf course where the intrusion is well exposed.

The intrusion has been classified as a leuconorite to leucogabbronorite. The rock is weakly metamorphosed, grey-weathering and medium-grained, and is dominated by orthopyroxene and plagioclase. The intrusion is uniform in texture with coarser grained patches occurring along the margins of the intrusion. The East Bull Lake intrusion is east of the Pecors–Whiskey Lake mapping area (Figure 10), as are the Agnew Lake and River Valley intrusions.

Although part of the East Bull Lake intrusive suite, the Stone Ridge intrusion is not a thick, layered mafic intrusion in comparison to the East Bull Lake, Agnew and River Valley intrusions (Easton 2009). Rather, it is a linear, relatively massive body with cryptic igneous layering exposed in some locations, possibly representing part of the feeder system to the large East Bull Lake intrusive complexes (Easton, Jobin-Bevans and James 2010).

The margins of the layered East Bull Lake intrusion are known to be favourable exploration targets for contact-style nickel-copper-PGE mineralization (James et al. 2002). The mineral potential of the Stone Ridge intrusion is not fully known at this point but the intrusion is sulphur undersaturated, with Pd and Pt contents of 35 to 50 ppb in unmineralized rock. The Stone Ridge intrusion is also associated with a regional lake sediment geochemical copper-nickel-PGE anomaly (Dyer 2010).

Results from the compilation mapping of the Pecors–Whiskey Lake area during the 2009 and 2010 field seasons (Easton 2009, 2010) have provided assistance in understanding the nature of these undifferentiated mafic rocks and have yielded criteria, using a hand-held scintillometer to determine potassium, uranium and thorium contents of the rocks (Table 11), and geochemical analyses (Table 12) to distinguish between them. These techniques greatly assist in mapping many of the undifferentiated mafic rocks within the Elliot Lake area.

Table 11 displays the median scintillometer assay-mode readings for the major mafic rock units within the Pecors–Whiskey Lake area during the 2009 and 2010 field seasons. This table is an example of how this technique can be used to differentiate rocks based on potassium, uranium and thorium contents. Archean and East Bull Lake intrusive suite rocks are characterized by low potassium, uranium and thorium contents. Thessalon Formation rocks and feeders are characterized by higher potassium, uranium and thorium contents compared to other mafic units in the mapping area. More information regarding the use of the scintillometer to differentiate mafic rocks can be found in Easton (2009, 2010).

The recognition and reclassification of this intrusive suggests that many of the mafic rocks cutting intermediate to felsic plutonic rocks of the Superior Province and Archean greenstone belts in the Elliot Lake region require further investigation. The discovery of additional intrusions related to the East Bull Lake intrusive suite in the region could bring new attention to the exploration potential for nickel-copper-PGE mineralization in the area.

Table 11. Median scintillometer assay-mode readings for the major mafic rock units in the area.

Rock Unit	K (wt%)	U (ppm)	Th (ppm)
Archean Rocks			
Tholeiitic mafic metavolcanic rocks	0.0	0.0	0.0
Calc-alkalic mafic metavolcanic rocks	0.6	0.0	1.6
Intermediate metavolcanic rocks	0.9	0.0	1.4
East Bull Lake Intrusive Suite			
Stone Ridge intrusion	0.2	0.0	0.9
Matachewan Dike Swarm			
Matachewan dikes, plagioclase-phyric	0.7	0.4	1.7
Other			
Nipissing gabbro	0.8	0.0	2.3
Thessalon Formation			
Mafic metavolcanic rocks	0.8	0.9	4.5
Feeder to Thessalon mafic flows	1.1	1.6	7.6
Intermediate metavolcanic rocks	3.2	2.0	6.1
Vesicular dikes (feeder to Thessalon intermediate metavolcanic rocks)	2.8	2.7	7.0

Notes: Table 11 was developed by Easton (2010) and *modified by* Pace (2011).

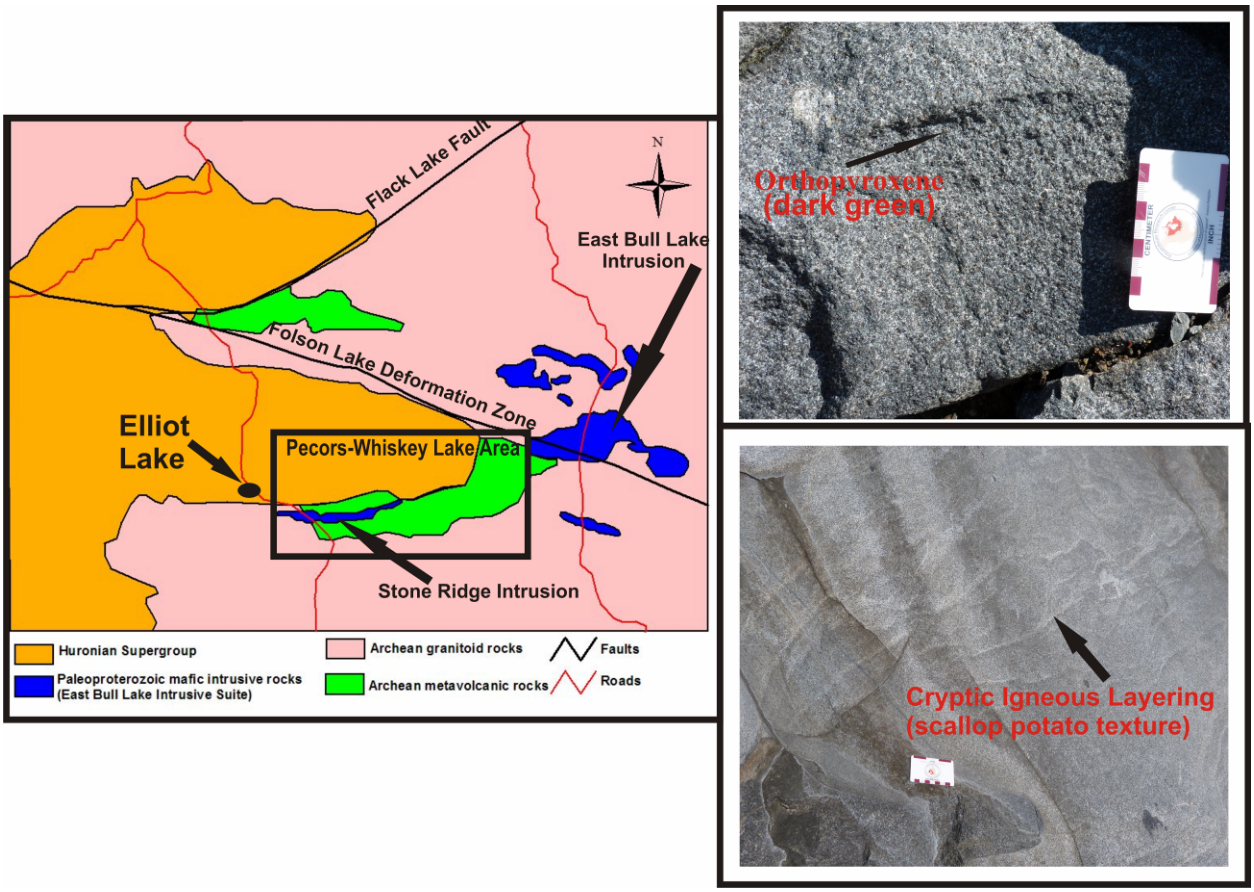


Figure 10. Simplified geological map of the Elliot Lake area (*modified after* Easton 2010). Photos illustrating textural features commonly associated with the Stone Ridge intrusion (photos taken by A. Pace).

Table 12. Geochemical data displaying the results of differentiated mafic rocks sampled in the area.

Sample Number	09RME-0042	09RME-0034	11AP-Stone Ridge-002	09RME-0331	09RME-0055	10RME-0348
Easting	385173	384826	379067	399674	380132	361800
Northing	5138008	5137826	5135915	5137877	5130065	5165105
Rock Unit	Thessalon Formation (vesicular flow-feeder dikes)	Thessalon Formation (mafic metavolcanic)	Stone Ridge Intrusion (Hwy 108)	Gerrow Townhip Intrusion (EBLI))	Matachewan Dike Swarm (Plagioclase-phyric gabbro dike)	Nipissing Gabbro (Sagard Tp)
SiO2	54.26	55.59	50.90	50.59	50.47	50.43
TiO_2	1.84	1.52	0.47	1.44	1.13	0.62
Al_2O_3	14.47	11.95	17.35	13.30	14.26	17.06
Fe_2O_3	15.56	15.14	7.56	14.92	14.27	10.02
MnO	0.13	0.15	0.13	0.22	0.21	0.16
MgO	1.96	0.93	7.21	5.60	5.85	5.31
CaO	1.61	4.75	12.76	8.69	10.09	10.39
Na_2O	<0.01	3.38	1.53	2.60	1.81	2.01
K_2O	6.43	1.16	0.49	0.20	0.87	1.32
P_2O_5	0.36	0.24	0.04	0.20	0.12	0.06
LOI	2.71	5.48	1.82	2.49	1.90	2.77
Cr	16	7	364	142	143	78
Co	55	30	38.37	44.9	52	41.76
Cu	247	32	83.6	162.7	159	141.0
Ni	123	12	124.7	59.4	74	80.7
Pb	5	3	7.2	3.7	6	6.9
Zn	87	66	63	114	113	85
Ba	931	217	78.9	100.2	187	147.0
Rb	168	39	14.36	11.64	52	56.86
Sr	20	31	134.5	128.8	199	195.8
Th	9.0	4.9	1.151	3.05	2.0	1.57
U	2.2	1.0	0.351	0.61	0.5	0.51
Hf	6.7	4.7	0.97	3.88	2.7	1.36
Nb	26.8	7.0	1.538	5.83	5.1	2.25
Y	27	33	11.31	35.6	29	16.2
Zr	271	177	36	146	101	52
Total REE	210	77	29.96	115.9	75	41.7
Au	n/a	n/a	6	<6	n/a	n/a
Pt	n/a	n/a	14.4	3.8	n/a	n/a
Pd	n/a	n/a	5.6	2.7	n/a	n/a

Notes: Major oxides are in weight percent, trace element data are in ppm, Au, Pt, Pb are in ppb. All samples beginning with RME abbreviations were collected and assayed by Easton (2009). Sample with the abbreviation AP were collected and sampled by Pace (2011).

A compilation of recommendations for exploration made in past years by Resident Geologist Program staff in Sault Ste. Marie is shown in Table 13. Mineral deposits not being mined in the Sault Ste. Marie District in 2011 are shown in Table 14.

Table 13. Compilation of recommendations for exploration made in past years by Resident Geologist Program staff in Sault Ste. Marie.

Author(s)	Report of Activities (publication year/page)	Recommendations/Township
R.J. Rupert	1973, p.88	NW Viel Tp. Cu prospect associated with NW-trending Nipissing diabase.
R.J. Rupert	1973, p.89	Gaudette Tp. Radioactive structure is favourable for copper, molybdenum and nickel.
G. Bennett and E.J. Leahy	1980, p.99	VanKoughnet Tp. The argentiferous galena occurrences in the area have a high potential value which increases with silver prices.
G. Bennett	1982, p.133 and 137	Hughes Tp. There seems to be a close spatial association between base metal-silver occurrences and dike rocks of Keweenawan age, especially felsite and lamprophyre. This association may be simply structural in that the deposits, namely argentiferous galena, lead, copper and zinc, occupy linear trends of N10ºW.
G. Bennett	1983, p.149 and 150	Aweres Tp. Radioactive quartz-pebble conglomerate found near or at the base of the Thessalon Formation between Sault Ste. Marie and the NE part of the Quirke Lake syncline contain numerous anomalous gold values of up to 600 ppb. Also in Day Tp,
G. Bennett, E.J. Leahy and K.D. Booth	1985, p.218	Davieux Tp. Evidence suggests there is a direct relationship with gold occurrence and primary magnetite presence in lean iron formation.
G. Bennett, E.J. Leahy and K.D. Booth	1985, p.227	From Goulais Bay to Elliott Lake. Within the Huronian Supergroup, selected outcrops have a variety of colour, textures and exhibit distinct structures. These make an attractive ornamental stone and the integrity and dimension of these outcrops remain to be measured.
G. Bennett, E.J. Leahy, J.P. Donald, E. Frey, J.J. Kral, and D.J.J. Tortosa	1986, p.253	VanKoughnet Tp. While examining the area for industrial mineral potential the authors noted Black Granite outcrop with the dimension of 10 by 1 by 66 km.
G. Bennett, E.J. Leahy, J.P. Donald, E. Frey, J.J. Kral, and D.J.J. Tortosa	1987, p.237	Olsen and Southern Tronsen Tps. Geochemical anomaly surveys, prospecting, mapping and drilling over pyritic iron formation. A structure traced for 5 miles in an east-trending direction has potential for gold..
G. Bennett, E.J. Leahy, J.P. Donald, E. Frey, J.J. Kral and D.J.J. Tortosa	1987, p.244	Prince Tp. Building dimension stone – red granite-monzonite. Large deposit over 4 km^2. The deposit is homogenous, no deleterious minerals or staining and is good for building or monumental stone. Wells Tp. Nipissing diabase – black granite is another large deposit which is homogenous and dimensions need to be measured.
G. Bennett, E.J. Leahy, J. Walmsley	1992, p.223	Hughes Tp. Mineralized breccia zone within the granite gneiss. Shear zone crosscutting consists of diabase fragments, quartz stringers and carbonate. 10–15% mineralization includes sphalerite, pyrite, galena, chalcopyrite and pyrrhotite and Cu values range from 0.05 to 4%, Zn from 1 to 13%, Pb from 1 to 7%, Ag from 1 to 2000 ppm.
G. Bennett, E.J. Leahy and J. Walmsley	1992, p.225	Fenwick Tp. Barite in dolostone associated with stratabound copper occurring at the base of the Gordon Lake Formation. Mineralization includes very fine-grained pyrite and specular hematite. The depositional environment is suitable for base metal concentration.
G. Bennett, E.J. Leahy, J. Walmsley and M. Hailstone	1993, p.225	Montreal Mining Location. Domeykite occurrence within felsite intrusion on Hwy 17, 50 km north of Sault Ste. Marie. The copper arsenide occurs within fractures.
G. Bennett, E.J. Leahy, J. Walmsley and M. Hailstone	1993, p.230	Batchewana greenstone belt remains a prime area for mineral exploration as well as greenstone belts in Deroche, Shields and Gaudette tps.
G. Bennett, M. Hailstone and B. Fremlin	1995, p.250 and 251	Northeast corner of Ryan Tp. Gold associated with Archean-hosted iron formation within the northern margins of the Batchewana greenstone belt. There are similarities to the Geraldton greenstone belt.
G. Bennett, M. Hailstone and B. Fremlin	1995, p.251	Flack Lake fault 45 km north of Blind River: the Flack Lake fault has potential for copper mineralization.
M. Hailstone and P. Morra	1998, p.11	Day Tp: Gold associated with basal pyritic units of the Livingston Creek Fm.

Table 14. Mineral deposits not being mined in the Sault Ste. Marie District in 2011.

Abbreviations

AF ..... Assessment Files
AR ..... Annual Report
CAMH ..... *Canadian and American Mines Handbook*
CMH ..... *Canadian Mines Handbook*
GR ..... Geological Report
MRC ..... Mineral Resource Circular
MDC ..... Mineral Deposit Circular [No.15–] [*formerly* Mineral Resources Circular, No.1-14]
MDIR ..... Mineral Deposit Inventory record
OBM ..... Ontario Bureau of Mines
OFR ..... Open File Report
OGS ..... Ontario Geological Survey

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status	AMIS site #	Coordinates
Pater Mine Spragge Tp. 41J/02NE	Cu, Au, Ag	Total production was 70 460 264 lbs Cu. Est. 2 000 621 ton @ 1.8% Cu.	MRC 12, p.65. GR 76, p.90-94.	Past Producer 1960 - 1968	07955	UTM Zone 17 N 5118145 E 372775
Bar–Fin Mine Thompson Tp. 41J/03NE	Cu	Production of 120 000 lbs of Cu from 1500 tons of ore. 1.82% over 3 feet. and 9.27% over 1.9 feet.	MRC 12, p.67 GR 17, p.62-63	Past Producer 1906	07968	UTM Zone 17 N 5122194 E 339368
Bald Dome prospect Plummer Add. Tp. 41J/05SW	Cu	80 – 100 feet true width averaging 0.25% Cu, diamond-drill core.	MRC 12, p.52 AF 0014	showing	07885	UTM Zone 17 N5137810 E 286041
Bruce Mines Plummer Add. Tp. 41J/05SW	Cu, Ag	40 000 ton @ 1.8% Cu above 155-foot level Bruce Mines Taylor site.	MDC 12	Past Producer 1915–1921	07888 - 07891	UTM 17 N 5131314 E 285843
Campbell–Dukes prospect Plummer Add. Tp. 41J/05SW	Cu	33 000 ton @ 1.2% Cu in 230 by 8 by 220 foot block	MRC 12, p.54 AF 0014	Past Producer 1956	07883	UTM Zone 17 N 5136375 E 282300
Rock Lake Mine Aberdeen Tp. 41J/05NE	Cu, Ag	1 524 000 lbs Cu from 43 300 tons of ore.	MDC 12, p.14	Past Producer 1899 – 1903	07781	UTM Zone 17 N 5146699 E 289973
Havilah Mine – Ophir Mine Galbraith Tp. 41J/05NE	Au, Ag, Cu	1 main vein, 2 – 150 foot shafts, 1 – 183 foot adit In 1911, 1030 oz Au and 214 oz Ag from 6589 tons ore milled.	MRC 13, p.18 OBM 1893, AR Vol 3, pg 37-45	Past Producer 1892 -1894, 1900, 1910 and 1911	07851	UTM Zone 17 N 5150362 E 292443
Steinberg Mine Plummer Add. Tp. 41J/05SW	Cu	124 000 T @ 1.1% Cu (drill indicated) for a length of 200 feet to a depth of 200 feet.	OGS 1969, MRC 12, p.56-57 AF Plummer - 0014-0017	Past Producer 1919	07884	UTM Zone 17 N 5136487 E 284315
Stobie Mine – Rainbow Mine Johnson Tp. 41J/05SW	Cu, Ni, Au	9 tons of ore shipped from 100 foot level, 280 feet of lateral work. Shaft is 160 feet depth.	MRC 12, p.34-35. MRC 2, p.74. AF Index plan	Past Producer 1899–1901	08013	UTM Zone 17 N 5137699 E 278563
Bilton Option Patton Tp. 41J/06SE	Cu	95 160 tons @ 1.72% Cu over a width of 7.3 feet to a depth of 200 feet.	ODM 1953, GR 17, p.55-58 AF	Past Producer Pre 1956	08093	UTM Zone 17 N 5128384 E 332229
Boyea Lake Adit and East zones Montgomery Tp. 41J/06NE	Cu	50 000 tons @ 2.5-3% Cu 135 150 tons @2.32% Cu across 7 feet over 1068 feet. 75 000 tons @ 1.0% Cu across 20 feet over a length of 300 feet.	Sudbury Contact Mines AR 1971 MRC 12, p.43-44 AF	Past Producer Pre-1942	08060	UTM Zone 17 N 5143883 E 336162

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status	AMIS site #	Coordinates
Crownbridge (Cannon) prospect Kamichisitit Tp. 41J/06NE	Cu	415 000 tons @ 1.8% Cu over a width of 6.5 feet.	MRC 12, p.94 AF	Past Producer 1966–1967	08018	UTM Zone 17 N 5150798 E 343478
Glagoma Mine Gladstone Tp. 41J/06SE	Cu	1917 2 shafts sunk to 250 feet	MRC 12, p.25-26 OGS 1963, GR.17, p.52-55	Past Producer 1917 and 1962	07865	UTM Zone 17 N 5128675 E 330138
Goulding Mine Cobden Tp. 41J/06SE	Cu	1962- 263.3 dry tons shipped @ 1.45% and 222.5 dry tons shipped @ 1.34%.	MRC 12, p.19 OGS 1964, GR 20, p.62-65	Past Producer 1962	07823	UTM Zone 17 N 5124201 E 342514
North Montgomery–Grand Portage Mine Gould Tp. 41J/06NW	Cu	No production or reserve data found.	OGS 1969, MRC 12, p.27-28. OGS 1899, AR v.8, pt.1, p.37-38 SMDR 00463 or MDIR A0229	Past Producer 1899	07871	UTM Zone 17 N 5146205 E 314356
Milgate (Abbican) prospect Nouvel Tp. 41J/06NE	Cu	105 750 tons @ 1.08% Cu (drill indicated) A zone L-600 by W-10 by D-235 feet	OGS 1969, MRC.12, p.97. ODM 1957, MRC.2, p.71.	1936–1955, 1956 Development work.	08076	UTM Zone 17 N 5149601 E 334929
Principle Strategic Minerals prospect Gladstone Tp. 41 J/06SE	Cu	112 300 tons containing 3 128 196 lbs. Cu	MRC 12, p.26, GR 17, p.50-51. AF	Pre 1957	07864	UTM Zone 17 N 5129251 E 330351
Sheba prospect Nouvel Tp. 41J/06NE	Cu	L-1000 by W-3 feet on surface @ 0.59% Cu, weighted diamond-drill assays.	MRC 12, p.98	1956–57 Development work.	08077	UTM Zone 17 N 5149076 E 334238
Twin Lakes prospect Esten Tp. 41J/07SE	Cu	Probable - 76 900 tons@ 1.73% Cu over 8 foot width, drill indicated.	MRC 12, p.23 AF Esten 0010-D1	1957 Trenching and dd.	07841	UTM Zone 17 N 5128385 E 375156
Bi-Ore Mine Sagard Tp. 41J/10NW	Cu	2726 tons of concentrate containing 1 647 079 lbs. of Cu.	ODM 1951, AR. v.60, pt.2, p.2. MRC 12, p.70-71	Past Producer 1947–1949	07931	UTM Zone 17 N 5165679 E 362351
Cheney Mine Gould Tp. 41J/11SW	Cu	39 405 tons @ 3.97% Cu (drill indicated) 3500 tons mined in 1967.	MRC 12, p.26-27 ODM, 1929, v.38, pt.7, p.10-15	Past Producer 1966–1967	07874	UTM Zone 17 N 5152729 E 315784
Copper Prince Mine Kamichisitit Tp. 41J/11SE	Cu, Au	4 shoots 310 by 6.3 feet averages 3% Cu 60 by 9.7 feet averages 1.9% Cu 45 by 6.6 feet averages 2.3% Cu 110 by 9.6 feet averages 0.9% Cu Weighted average of 4 diamond-drill holes, 2.7% Cu over 7 feet and 0.03 oz/ton Au.	MRC 12, p.93-94 GR 178, p.66-67 SMDR File 00823 MP 57, p.87	1928–29 Diamond drilling, trenching and grabs. 1973 mining operations suspended after shipping small quantity of Cu concentrate.	08019	UTM Zone 17 N 5152886 E 343662
Jardun Mine Jarvis Tp. 41K/09NE	Pb, Zn, Ag, Cu, Au	No.1 and 4 zone reserves are 20 000 tons averaging 7.25% Pb, Zn and 1.52 oz/ton Ag. No.3 zone reserve estimate is 19 367 tons averaging 9.56% Pb and Zn with 1.10 oz/ton Ag.	MRC 12, p.32-33 AR v.67, pt.2. p.108-109.	Past producer 1954–1957	08007	UTM Zone 16 N 5168849 E 718670
Kerr Scott (Algoma Galena) Deroche Tp. 41K/09NE	Pb, Zn, Ag, Au	1859 tons of hand-cobbed ore recovered. Deposit reserves have not been calculated.	MRC 12, p.21-22 AR v.49, pt.1, p.223 ODM 1928 v.37, pt.3, p.72-73	Past Producer 1939	07833	UTM Zone 16 N 5178328 E 713959

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status	AMIS site #	Coordinates
Goulais River, Doughty, Eagle Mine, Tribag, Edwards. VanKoughnet Tp. 41K/16SW	Cu, Ag	250 000 ton @ 2.35% Cu, 0.26 oz/ton Ag in 3 zones (drill-indicated).	GDIF #75, OBM 1905, v.14, pt.1 AR 1970, MP 46, p.92-93 AR 1973, MP 57, p.86.	Past Producer 1900	07974	UTM Zone 16 N 5182030 E 709174
Kristina Mine (Supercrest) (Superior) LaVerendrye Tp. 41K/16NE	Cu	369 350 tons @ 1.95% Cu in No.4 and No.6 shaft zones. No.6 Shaft Zone, 10 000 tons @ 4% Cu and 200 000 tons @ 2.53 % Cu.	MRC 12, p.75 MRC 1, p.43 OBM, v.11, 1902, p.274 OBM, v.17, 1908, p.79	Past producer 1903–1907 1952–1957: 22 000 ft of diamond drilling	08040	UTM Zone 16 N 5197178 E 720957
Prace–Sill Lake Mine VanKoughnet Tp. 41K/16SW	Pb, Zn, Ag	20 000-60 000 tons @ 12 oz/ton Ag, and 20 000 tons @ 41.65 oz/ton Ag and 33.7% Pb over 1.13 ft width.	AF SSMP Vankoughnet 16, 17.	Past Producer 1975, 1979, 1981, 1983–84 and 1985–1987	07976	UTM Zone 16 N 5183011 E 709355
Caputo–Just (Caputo-Thompson, Ontex) Wishart Tp. 41N/01SW	Cu	475 tons @ 1.18 % Cu recovered from 3 zones	MRC 12, p.78 MP 25, p.5	Past Producer 1968	07985	UTM Zone 16 N5209568 E 700846
Coppercorp Mine Ryan Tp. 41N/02SW	Cu, Ag, Au	1.02 million tons @ 1.16% Cu production.	MRC 12, p.45-46 ODM 1953, AR 62, pt.4, p.18-24 AF –Montreal Mining Co. SSMP-0012 AF SSMP Ryan 15, p.30 AF SSMP Ryan – 37 (cd). 2.47257, p.3.	Past Producer 1965–72	07937, 07938, 07939, 8061	UTM Zone 16 N 5209840 E 671180
Glenrock (Rockdale) Palmer Tp. 41N/02SE	Co, Au, Cu	Several zones – main zone L-250 by W-3.5 feet (drill indicated) 1953, 11 diamond-drill holes, failed to show continuity with depth, best assay 16% Co.	MRC 12, p.103 MRC 10, p.20	Glenrock 1952 Rockdale 1958	08081	UTM 16 N 5209332 E 683888
Jogran prospect Ryan Tp. 41N/02SE	Cu, Mo	Reserve est. 18 M tons @ 0.19% Cu and 0.05% MoS_2	MRC 12, p.60-61 MRC 7, p.11 AF RYAN SSMP - 15, p.30	1965/66: diamond drilling	07924	UTM Zone 16 N 5209332 E 683888
Mamainse Mine Ryan Tp. (A.McDonell Location-west of Ryan Tp.) 41N/02SW	Cu	Vein L-1500 by W-13 feet 3 shafts sunk to depth 60, 280, 320 feet. No production recorded.	MRC 12, p.57 AR v.62, pt.4, p.23 MRC 2, p.79	Past Producer 1882–1884	08050	UTM Zone 16 N 5213827 E 669980
Maricona prospect (Rankin Location-Point Aux Mines) Slater Tp. 41N/02NE	Cu	295 405 tons @ 1.17% Cu (1098x345x8.1 feet)	MRC 12, p.58 AF Rankin Mnrl 1964, 0013-A1 AF Rankin Mnrl 1956, 0012 AF Rankin Mnrl 1949, 0017A	Past Producer 1865–66 and 1949, 1955–56	07902 Same as 07899	UTM Zone 16 N 5223436 E 672385
Pancake Lake (Richards) Kincaid Tp. 41N/02SE	Cu	310x21.5x310 feet @ 0.76% Cu Developed Prospect.	MRC 12, p.38	1952 intermittent until 1964	08026	UTM Zone 16 N 5213746 E 679883

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Reserve References	Status	AMIS site #	Coordinates
Tribag Mine Nicolet Tp. 41N/02SE	Cu, W, Ag, Au	4 Zones (Breton, West, East and South) Reserve est. 2004 : Breton, 40 M tons @ 0.2% Cu above 300m. East Breccia, 125 M tons @ 0.13% Cu and 0.04% MoS2 West Breccia, 0.1 M tons @ 0.6 – 1.0% Cu.	MRC 12, p.80 AF SSMP Ryan - 15, p.30	Past Producer 1967–1973 Production from Breton and West Breccia Zones	08068	UTM Zone 16 N 5217719 E 689136
Goulais River Nahwegezhic Tp. 41O/04SW	Fe	Algoma Ore Division Iron Range: 25-40% total iron. Estimated reserves 30 480 000 tons of iron pellets in Cowie Lake Section. McPhail deposit (southern extension): 31% total iron, est. Reserves 5 080 000 tons of iron pellets.	MRC 11, p.41-42 OGS Report 192, p.49-56	1910–1944 Development work 1963–1966 diamond drilling, trenching, metallurgical studies.	08065	UTM Zone 17 N 5215685 E 285159

*N.B. This table contains tonnage and grade estimates, referred to as "reserves" (indicated, possible, probable), which were determined at various times by methods largely unreported. Unless specifically indicated, it must be assumed that these estimates are not in compliance with the reporting standards required by National Instrument 43-101. Abbreviation: AMIS = Abandoned Mine Information System.

MINERAL DEPOSIT COMPILATION GEOLOGISTS—PROVINCIAL ACTIVITIES

For the report of the Mineral Deposit Compilation Geologist on the Timmins District, *see* page 71 in the Timmins District report.

REGIONAL LAND USE GEOLOGIST ACTIVITIES

For the report of the northeast Regional Land Use Geologist, *see* pages 72 to 75 in the Timmins District report.

ACKNOWLEDGMENTS

Information on past activities reported in the text are from assessment files and other files of the Sault Ste. Marie District Geologist Office unless otherwise noted. Information on current mining and exploration activities was provided by individual prospectors and exploration and mining company personnel, compiled from assessment files and obtained from public information sources.

REFERENCES

Dyer, R.D. 2010. Elliot Lake–Sault Ste. Marie Area lake sediment geochemical survey, northeastern Ontario; Ontario Geological Survey, Open File Report 6251, 195p.

Easton, R.M. 2009. Compilation mapping, Pecors–Whiskey Lake area, Southern and Superior Provinces; *in* Summary of Field Work and Other Activities 2009, Ontario Geological Survey, Open File Report 6240 p.10-1 to 10-21.

Easton, R.M., James, R.S. and Jobin-Bevans, L.S. 2010. Geological guidebook to the Paleoproterozoic East Bull Lake intrusive suite plutons at East Bull Lake, Agnew Lake and River Valley: a field trip for the 11th International Platinum Symposium; Ontario Geological Survey, Open File Report 6253, 108p.

Easton, R.M., 2010. Compilation mapping, Pecors–Whiskey Lake area, Southern and Superior Provinces; *in* Summary of Field Work and Other Activities 2010, Ontario Geological Survey, Open File Report 6260 p.8-1 to 8-12.

Giblin, P. 1973. Batchawana, Algoma District; Ontario Department of Mines, Map 2251, scale 1:63 360.

James, R.S., Jobin-Bevans, S., Easton, R.M., Wood, P., Hroninchuk, J.L., Keay, R.R. and Peck, D.C. 2002. Platinum group element mineralization in Paleoproterozoic basic intrusions in central and northeastern Ontario, Canada; *in* Geology, geochemistry, mineralogy and mineral beneficiation of platinum group elements, Canadian Institute of Mining and Metallurgy, Special Publication 54, p.339-365.

Keystone Associates Inc., 2011. Electromagnetic and magnetic survey, China Metallurgical Exploration Inc., Assessment File SSMP-Palmer-41.

Moss, R. 2004. Assessment report for the Coppercorp property, Nikos Exploration Ltd., Assessment File SSMP-Ryan-15.

Pace, A. and Butorac, S. 2011. Timmins Regional Resident Geologist (Sault Ste. Marie District)—2010; *in* Report of Activities 2010, Resident Geologist Program, Timmins Regional Resident Geologist Report: Timmins and Sault Ste. Marie Districts; Ontario Geological Survey, Open File Report 6264, 127p.

Richards, J.P and Spooner, E.T, 1989. Evidence of Cu-Ag mineralization by magmatic-meteoric fluid mixing in Keweenawan fissure veins, Mamainse Point, Ontario; Economic Geology v.84, p.360-385.

Roscoe Postle Associates Inc. 2011. Technical report on the Eco Ridge Mine Rare Earths and Uranium Project, Pele Mountain Resources Inc.

Rupert, R.J. 1970. Prospect examination – Township182; Resident Geologist Office, Ontario Geological Survey, Assessment File, Jackson-0010-A1

Williams, P.J. 2010. Exploring for iron oxide copper-gold deposits, classifying IOCG deposits; Short Course Notes, v.20, Geological Association of Canada, p.16-17.

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

ISSN 1484-947X (print)
ISBN 978-1-4435-9085-3 (print)

ISSN 1916-6192 (online)
ISBN 978-1-4435-9086-0 (PDF)