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Ontario Geological Survey
Open File Report 6272

Report of Activities, 2011
Resident Geologist Program

Thunder Bay North Regional Resident Geologist Report:
Thunder Bay North District

2012

Ontario

ONTARIO GEOLOGICAL SURVEY

Open File Report 6272

Report of Activities, 2011
Resident Geologist Program

Thunder Bay North Regional Resident Geologist Report:
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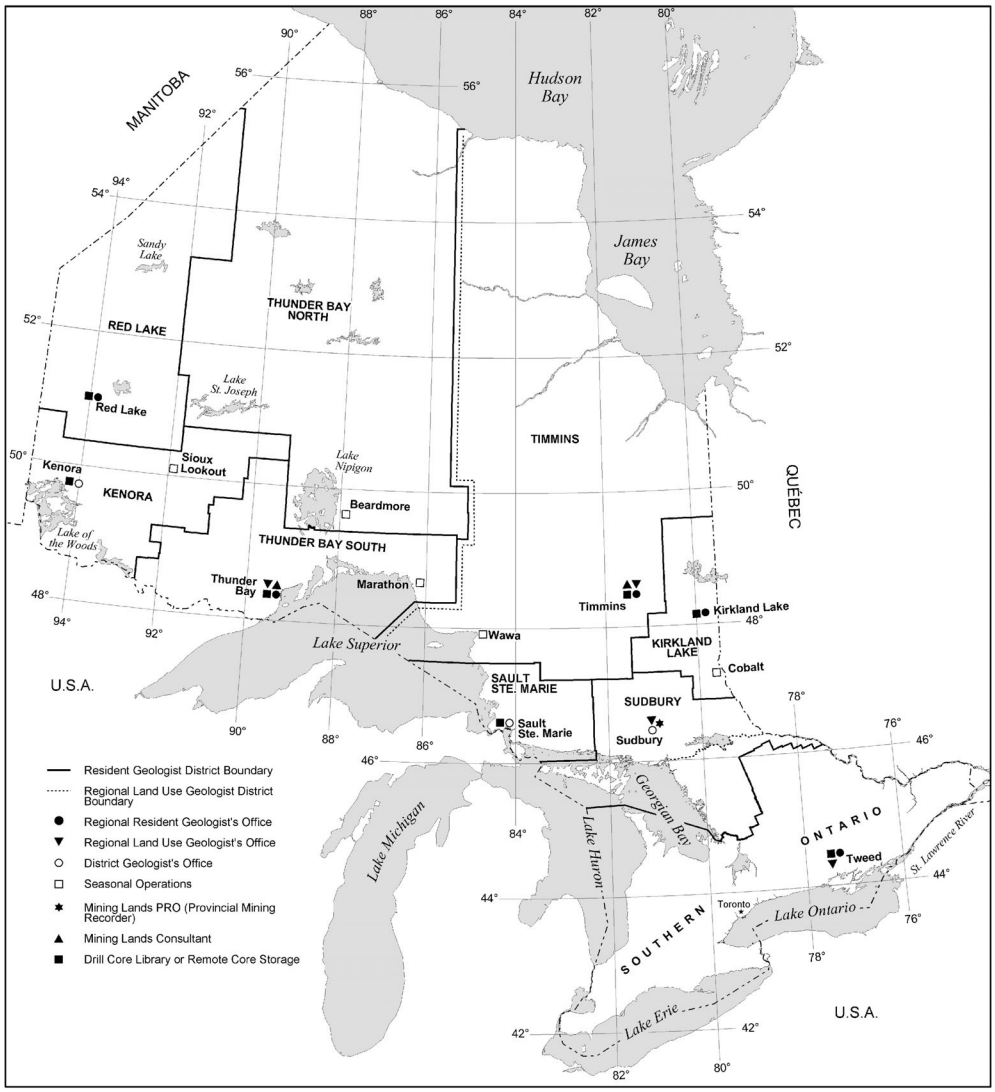

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Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Thunder Bay North Regional Resident Geologist (Thunder Bay North District)—2011

by

G.D. White, M.C. Smyk, A. Cooke, H.C. Lockwood and A.C. Wilson

2012

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Thunder Bay North Regional Resident Geologist—2011

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INTRODUCTION

The Thunder Bay North District encompasses Lake Nipigon and extends over 700 km north from Highway 11 to the Hudson Bay coast (Figure 1). In 2011, the Thunder Bay North District boundaries were moved approximately 70 km east to include all of the "Ring of Fire" area and north 200 km to the Hudson Bay coastline. (These areas were formerly covered by the Timmins Resident Geologist District.) The following communities are situated within the district: Angling Lake (Wapakeka First Nation (FN)); Armstrong; Beardmore; Bearskin Lake FN; Big Trout Lake (Kitchenuhmaykoosib Inninuwug FN); Cat Lake FN; Fort Hope (Eabametoong FN); Fort Severn FN, Geraldton; Gull Bay FN; Jellicoe; Kasabonika FN; Kingfisher Lake FN; Lansdowne House (Neskantaga FN); Longlac; Macdiarmid; Martin Falls; Nakina; North Caribou Lake (Weagamow FN); Osnaburgh House (Mishkeegogamang FN); Pickle Lake; Summer Beaver (Nibinamik FN); Webequie FN; and Wunnummin Lake FN.

The authors note that, for ease of reading, all Web addresses were accessed on February 1, 2012, unless otherwise noted. All Universal Transverse Mercator (UTM) co-ordinates are reported in North American Datum 1983 (NAD83), zones 15 and 16, unless otherwise noted.

MINING AND EXPLORATION ACTIVITY

Mine production and reserves in the Thunder Bay North District for 2011 are shown in Table 1. Work completed within the Thunder Bay North District and filed for assessment credits, or otherwise provided, is shown in Table 2.

Table 1. Mine production and reserves in the Thunder Bay North District in 2011.

Mine	Production to end of 2010		Production in 2011	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity
Musselwhite Mine	17 914 394 t @ 5.63 g/t Au	3 102 031 ounces	1 327 300 t @ 5.91g/t Au	242 600 ounces

Reserve Classification	Tonnes (× 1000)	Gold Grade (g/t)	Gold (Ounces (× 1000))
Proven	3388.5	5.78	629.2
Probable	7899.8	6.50	1650.2
TOTAL	**11,288.3**	**6.28**	**2279.4**
Measured	149.4	4.81	23.10
Indicated	696.5	5.50	123.11
TOTAL	**845.9**	**5.38**	**146.2**
Inferred	4986.0	5.72	916.8

Musselwhite Mine is the only active mining operation in the Thunder Bay North District. Rising metal prices drove record exploration expenditures in Ontario. In 2011, 95 exploration programs were undertaken in the District by prospectors, junior and major exploration companies (Table 3; Figure 2). Gold was the most sought-after commodity, followed by copper-nickel-platinum group elements (PGE), rare metals, copper-zinc and other commodities (iron, molybdenum, etc.). There were 7436 active claims (totalling 82 850 active claim units) in Thunder Bay North District as of February 1, 2012.

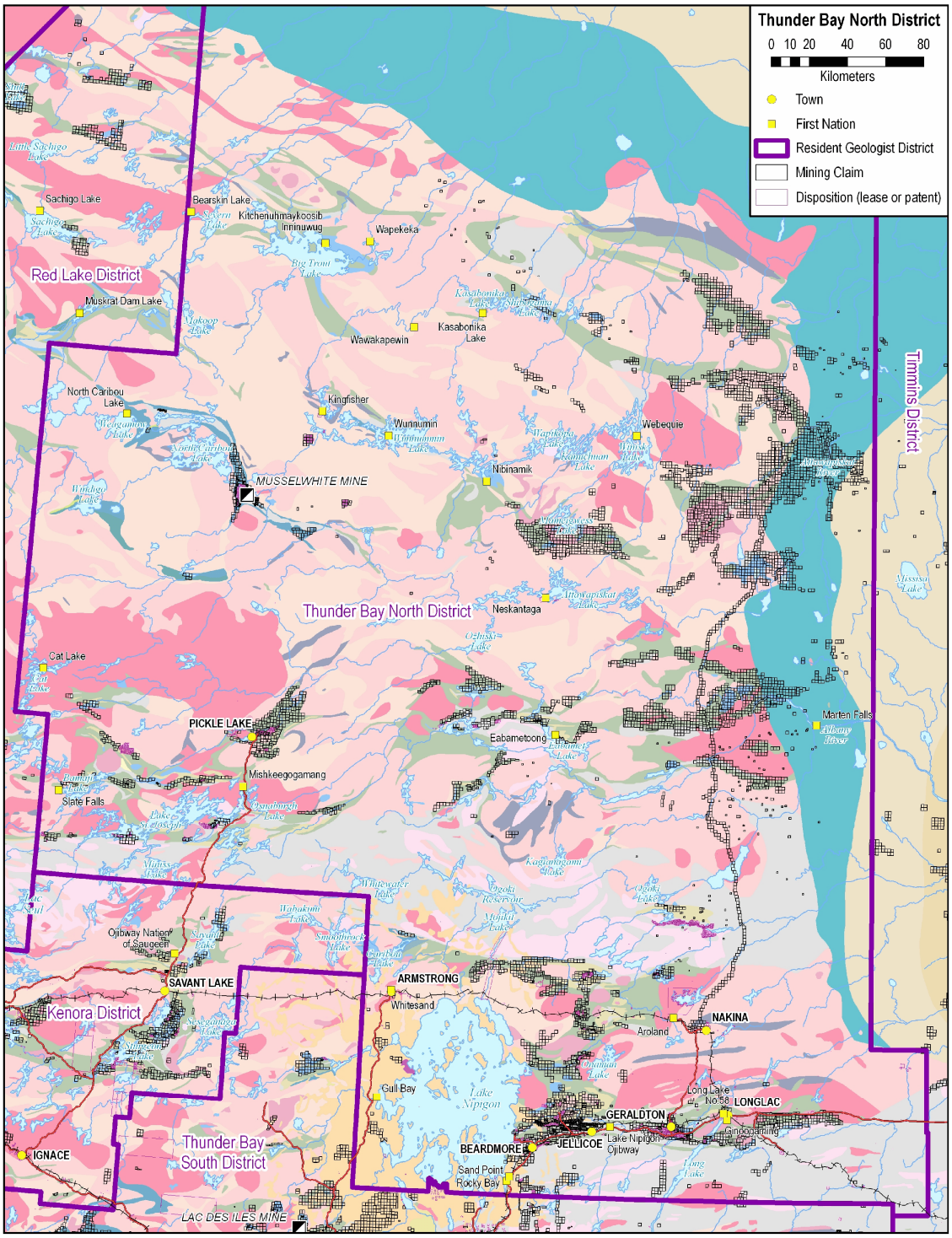

Figure 1. Location of the Thunder Bay North District showing active mining claims as of January 30, 2012.

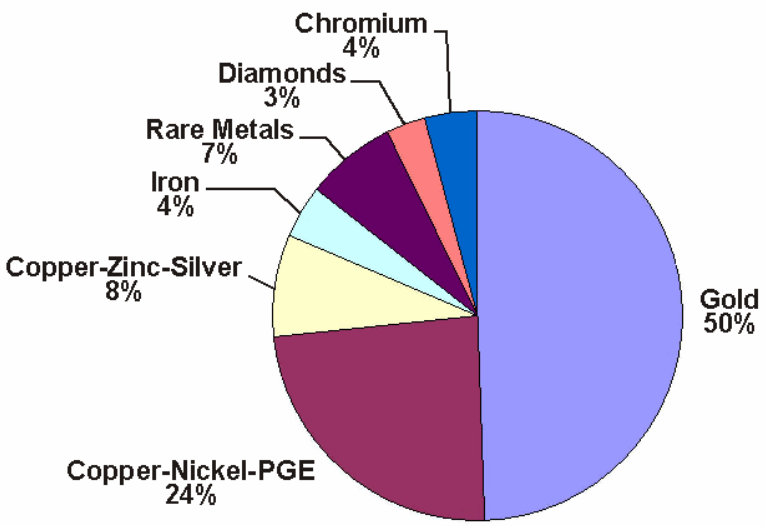

Figure 2. Active exploration programs by commodity in the Thunder Bay North District in 2011.

Musselwhite Mine

Musselwhite Mine (Goldcorp Inc.) is located 126 km north of Pickle Lake. Access to the mine site is by means of an all-weather airstrip or a 43 km, all-weather gravel road connecting the mine site to the northern extension of Highway 599. Musselwhite is a fly-in operation with pickup points in Thunder Bay and 5 northern communities. The mine has 855 employees (*Canadian and American Mines Handbook*, 2011–2012). Musselwhite established an innovative agreement with Cat Lake, North Caribou Lake, Wunnummin Lake and Kingfisher Lake, First Nations, which provides for a range of education, training and employment opportunities and business-related services for these communities (Goldcorp Inc., www.goldcorp.com/operations/musselwhite/).

In 2011, the mine produced 242 600 ounces of gold from 1 327 300 milled tonnes at a grade of 5.91g/t Au (Goldcorp Inc., Management's Discussion and Analysis, February 15, 2012). From 1997 to 2010, 17 914 394 t of ore with an average grade of 5.63 g/t Au were mined and milled to produce 3 102 031 ounces of gold (*see* Table 1). Proven and probable reserves (as of December 31, 2011), were 11 288 300t at a grade of 6.28 g/t Au, representing 2.28 million ounces of contained gold (R. Millar, Goldcorp Inc., personal communication, February 2012). Measured and indicated resources (as of December 31, 2011) stood at 845 900 t at a grade of 5.38 g/t Au, representing 146 200 ounces of contained gold, whereas inferred resources stood at 4 986 000 t at a grade of 5.72 g/t Au, representing 916 800 ounces of contained gold (R. Millar, Goldcorp Inc., personal communication, February 2012).

Goldcorp Inc. provided a synopsis of production, development and exploration activity (Figure 3) for 2011:

> Gold production for 2011 was 6%, or 16,100 ounces, less than in 2010 due to 8% lower throughput, partially offset by 2% higher grades. Lower throughput for the year was primarily attributable to forest fires in July when, due to their proximity to the mine site and camp, the majority of Musselwhite's 380 employees were evacuated for 20 days. The increased grades were due to mining of higher grade material in the PQ Deeps zone.
>
> Cash costs were 16%, or $100 per ounce, higher than in 2010 due to decreased gold production ($41 per ounce, or 41%), a stronger Canadian dollar ($35 per ounce, or 35%) and higher operating costs ($24 per ounce, or 24%). The increase in operating costs for the year was primarily attributable to reaching the threshold for additional royalty payments ($5 million), increased employee costs ($4 million) due to increased manpower and higher wages, higher diesel fuel costs ($3 million), partially offset by lower power costs upon implementation of the energy management plan ($5 million) and reduced underground operational development costs ($3 million).
>
> Exploration drilling in 2011 continued to focus on the underground extension of both the Lynx Zone discovery and PQ Deeps resources. The Lynx resource has been extended 300 metres north and 100 metres south of the 2010 resource boundary, with mineralization open along strike and up and down dip. Underground drilling in the PQ Deeps has extended the resource 200 metres north of the 2010 resource boundary and remains open along strike. Surface drilling on the north shore of Opapimiskan Lake continues to investigate the projection of the Lynx Zone.

Exploration in the first quarter of 2012 will see the existing surface rigs continue to target the northern extensions of mineralization, while two additional rigs will drill from the frozen Lake Opapimiskan focusing on the up-dip projection of the Lynx Zone above the existing resource.

Gold production at Musselwhite for the fourth quarter of 2011 was 5%, or 2,900 ounces, less than in the third quarter of 2011 due to a decrease in grades of 12%, partially offset by a 13% increase in mill throughput. Grades were lower in the fourth quarter due to lower grade stopes mined in PQ Deeps and increased dilution of the ore. Higher tonnage was processed in the fourth quarter of 2011 compared to the prior quarter with the mill being offline for much of July as a result of the forest fires in the area.

Cash costs for the fourth quarter of 2011 were 3%, or $25 per ounce, lower than in the prior quarter due a weaker Canadian dollar ($31 per ounce, or 124%) and lower operating costs ($7 per ounce, or 28%), partially offset by lower gold production ($13 per ounce, or 52%). The lower operating costs were primarily due to lower surface infrastructure maintenance costs ($1 million) and lower underground operational development costs ($1 million), partially offset by higher power costs ($2 million) due to colder temperatures.

Musselwhite Mine contained 2.28 million ounces of proven and probable gold reserves at December 31, 2011 (up 8% compared to December 31, 2010) due to exploration success in the Lynx and PQ Deeps and a decrease in cut-off grade associated with a higher gold price assumption. Increased reserves were partially offset by revisions to reserves in the PQ Deeps. Resources declined by 44,000 ounces year over year. The decline in resources is attributable to the conversion of resources into reserves in the Lynx Zone.

(Goldcorp Inc., Management's Discussion and Analysis, February 15, 2012)

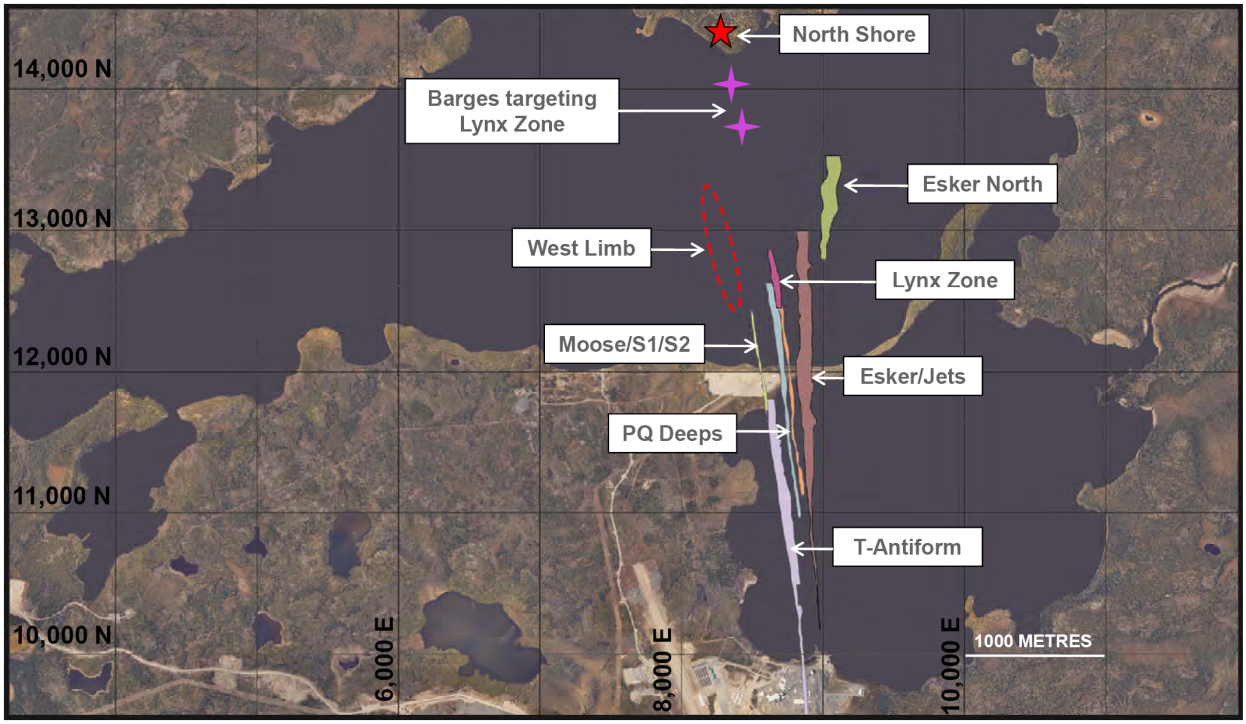

Figure 3. Exploration targets and surface traces of ore zones, Musselwhite Mine (*from* Goldcorp Inc., www.goldcorp.com/_resources/Combined_Exploration_Slides_v2-opt2.pdf [accessed January 2011]).

Table 2. Assessment files received in the Thunder Bay North District in 2011.

Abbreviations

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

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Ashmore Twp. (Hutchinson/ Shields Property)	Prodigy Gold Incorporated / Shields, S.	2010-2011	ASD, Str, GL, Pr, Samp	2.47964	42E10NW-091
Ashmore Twp. (Shields Property)	Prodigy Gold Incorporated / Shields, S.	2010-2011	ASD, DD, GL	2.47854	42E10NW-090
BMA 523 861 Area (Highbank Property)	Northern Shield Resources Inc.	2010	IP, Lc	2.46719	43D08SE-011
BMA 523 863 Area (Fishhook Property)	East West Resource Corporation / Rainy Mountain Royalty Corp.	2008-2010	ASD, DD	2.44148	43D07SE-002a-f 43D07NE-007a-c
BMA 525 863 Area (McFaulds Lake Property)	Hudson River Minerals Ltd.	2009-2010	AEM, AM	2.46720	43D10SE-011 43E06NW-002 43E06SE-004 43E06SW-011a,b 43D07NE-008 43D08NW-010 43D09SW-005
BMA 526 861 Area (McFaulds Lake Area)	UC Resources Ltd. / Peplinski, M.	2010	AEM, AM	2.46928	43D09NE-015 43D16SE-036 43C12NW-009 43C13SW-019
BMA 526 863 (McFaulds Lake Project)	UC Resources Ltd. / KWG Resources Inc. / Spider Resources Inc. / Noront Resources Inc.	2011	AGRAD	2.48617	43D10NE-021 43C13NW-015 43D09NW-030a-c 43D15SE-009 43D16NE-021 43E01SE-013 43F04SW-021
BMA 526 863 (Butler Property)	MacDonald Mines Exploration Ltd./ Ring of Fire Resources Inc.	2010	DD	2.47360	43D10NE-014
BMA 526 863 Area (Grid 1 Extension Property)	Noront Resources Ltd.	2009	ASD, DD	2.46826	43D10NE-019 43D09NW-027
BMA 526 864 Area (Butler Property)	MacDonald Mines Exploration Ltd.	2010	DD	2.47532	43D10NW-023a-c 43D10NE-018 43D15SE-008 43D15SW-013

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
BMA 527 853 (Trillion Project)	Mantle Diamonds Canada Inc.	2008-2011	DD	2.48883	43C13SE-017
BMA 527 853 Area (Trillion Project)	Mantle Diamonds Canada Inc.	2008-2011	Report	2.47603	43C13SE-015a,b 43C13NE-009
BMA 527 861 Area (Black Creek Property)	Probe Mines Limited	2010	GC	2.47696	43D16SE-037
BMA 527 861 Area (Thunderbird North Property)	Noront Resources Ltd.	2011	ASD, DD	2.48369	43D16SE-038
BMA 527 862 Area (McFaulds West Property)	Probe Mines Limited	2011	Report	2.47639	43D16SW-023
BMA 528 854 Area (East Rim Property)	Melkior Resources Inc.	2010	GEM, Lc	2.47315	43C13NW-012 43C13NE-008a-c 43C13SE-014a-c
BMA 528 861 Area (Hawk, Lund & Southampton Properties)	Noront Resources Ltd.	2008-2009	ASD, DD	2.46455	43D16NE-019a-d 43C13NW-013 43F04SW-019
BMA 528 862 Area (Broke Back & Riverbank Properties)	Melkior Resources Inc.	2010	AEM, AM	2.46909	43D16NW-010 43D16NE-020 43D16SW-022 43C13NW-014
BMA 531 854 Area (Trillion Project - Claim 3013664)	Mantle Diamonds Canada Inc.	2010	ASD, GC	2.47075	43F04SW-020
BMA 532 862 Area (Ekwan Property)	Noront Resources Ltd.	2009	ASD, GC	2.44367	43E01NW-022 43E01NE-014a-c 43E01SE-012a,b 43E01SW-015
BMA 532 863 Area (Northeast & Oval Properties)	Noront Resources Ltd.	2010	AEM, AM, VLFEM	2.48508	43E02NE-016 43E01NW-023a,b 43E07SE-016 43E08SE-008 43E08SW-012
BMA 533 862 Area (Ring of Fire Project)	Noront Resources Ltd.	2008	AEM, AM	2.42608	43E08SW-010 43E08SE-007
BMA 533 862 Area (Seafield & Northeast Properties)	Noront Resources Ltd.	2008-2009	ASD, DD	2.44523	43E08SW-011a-c 43E07SE-013a, b
BMA 533 864 (Winiskisis Channel Properties)	Coordinates Capital Inc. / 52/86 Northwest Company Ltd.	2011	GM, Lc	2.48940	43E07SW-011a,b 43E07SE-017 43E02NW-010a,b
BMA 533 864 (Luc Bourdon Property)	White Pine Resources / Golden Valley Mines Ltd.	2009	ASD, DD, GL	2.44428	43E07SW-009a,b 43E07SE-010a-c 43E02NE-011
BMA 533 864 Area (Luc Bourdon Property)	White Pine Resources Inc. / Abitibi Royalties Inc.	2009-2010	ASD, DD	2.48443	43E07SW-010 43E07SE-014
BMA 533 871 Area (Winisk Property Block G)	Noront Resources Ltd.	2010	AEM, AM	2.48436	43E06SE-005 43E06SW-012 43E03NE-005
BMA 536 864 Area (Winiskisis Channel Property)	Sinocan Resources Corp.	2009-2010	AEM, AM	2.46838	43E10NW-001a,b 43E10NE-001 43E10SE-002 43E10SW-002 43E09SW-003 43E07NE-002 43E07NW-001 43E11NE-001 43E14SE-001 43E15SW-001a,b

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Castlebar Lake Area (LL3 Gold Property)	Melkior Resources Inc.	2010	Lc, IP	2.46763	42E16SE-024 42F13SW-039
Connell Twp. (Connell & North Tarp Properties)	MetalCORP Limited	2010-2011	GC, Lc	2.48831	52O09SE-011a, b 52O09NE-002 52P12NW-002 52P12SW-005
Connell Twp. (Pickle Crow Property)	PC Gold Inc.	2010	Pr	2.46967	52O08NE-007
Connell Twp. (Pickle Crow Property)	PC Gold Inc. / Teck Resources Limited	2009	ASD, DD, GL, Lc	2.48029	52O09SE-008
Connell Twp. (Pickle Crow Property)	PC Gold Inc. / Teck Resources Limited	2009	GM, IP	2.44915	52O09SE-009 52O08NE-008
Connell Twp. (Pickle Crow Property)	PC Gold Inc. / Teck Resources Limited	2010-2011	ASD, GL, Str, Tr	2.48536	52O09SE-010a-d 52O08NE-011a, b
Connell Twp. (Pickle Gold Property)	Newcastle Minerals Ltd. / Cadillac Ventures Holdings Inc.	2010-2011	ASD, DD	2.47578	52O08NE-009
Connell Twp. (Pickle Gold Property)	Newcastle Minerals Ltd. / Cadillac Ventures Holdings Inc.	2010-2011	ASD, DD	2.48744	52O08NE-010
Coughlan Lake Area (Currie - Tom Johnson Showing)	Sage Gold Inc. / Nelson, W.	2009	ASD, Pr, Str	2.43487	42L04SE-062
Coughlan Lake Area (Onaman Lake Property)	Sage Gold Inc. / Nelson, W.	2010-2011	AEM, AM	2.47262	42L04SE-063 42E13NE-053a,b
Crescent Lake Area (Zig Zag Property)	Canadian Orebodies Inc./ Fenwick, K.	2009-2010	ASD, GL, Str	2.46173	52I08NW-022a,b 52I08NE-028
Crump Lake Area (Trump Property)	Canadian Orebodies Inc. / Rainy Mountain Royalty Corp.	2011	IP, Lc	2.49043	42M11NE-006
Doran Lake Area (Doran Lake Property)	Rockex Limited	2011	AM	2.48242	52J15NE-001
Elbow Lake Area (Humboldt Bay Property)	Highland Resources Inc.	2011	ASD, DD, Grav, GEM, GM, Lc	2.49254	42L04SW-021 42E13NW-024 52H16NE-008 52I01SE-002
Elbow Lake Area (Cote - Two Rivers Property)	Sage Gold Inc. / Cote, R. / Cote, R.	2009	Assay Data Str	2.44460	42L04SE-061 42L04SW-018 42E13NE-052
Elbow Lake Area (Little John Project)	Kodiak Exploration Limited / Prodigy Gold Inc.	2010-2011	Lc, GM	2.47493	42L04SW-019 42E13NW-022
Elmhirst Twp. (Hercules Property)	Prodigy Gold Inc.	2010-2011	ASD, DD	2.47683	42E13SE-174
Elmhirst Twp. (Mud Lake & Expansion Lake Properties)	Alto Ventures Ltd.	2009-2011	ASD, Str, GL, Pr	2.47671	42E13SE-173a, b 42E12NE-229a-c
English Bay Area (English Bay Property)	Arctic Star Diamond Corp.	2009-2011	AM, GC	2.47963	52H15NW-004 52H14NE-023 52I03SE-002
Errington Twp. (West Geraldton GK Property)	Kodiak Exploration Limited / Corp. of the Town of Geraldton	2010-2011	DGP, IP, GM	2.47760	42E10NW-092
Errington Twp. (West Geraldton Property)	Prodigy Gold Inc.	2009-2011	ASD, DD	2.49958	42E11NE-058
Errington Twp. (West Geraldton Property)	Prodigy Gold Inc.	2010-2011	ASD, DD	2.47993	42E11NE-057
Errington Twp. (Hardrock Property)	Premier Gold Mines Limited	2010	ASD, DD, GM, Lc	2.46264	42E10NW-089 42E11NE-055
Eva Twp. (Claim # 4242032)	Rutherford, H.	2011	Pr, Lc	2.48626	52H09NE-067

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Exton Twp. (Infrastructure Corridor Property)	Canada Chrome Corporation	2009-2011	ASD, OD	2.47956	42L02NW-003 Multiple NTS areas
Exton Twp. and northward (Infrastructure Corridor Property)	Canada Chrome Corporation	2009-2010	GC	2.47132	42L02NW-002a-c 42L07NE/SE/SW 42L10SE 42L15NE 42M02NE/SE 42M07NE/SE 42M10NE/NW/SE 42M15NW/SW 43D01NW 43D02NE/SE/SW 43D08SW
Falcon Lake Area (Claim # 4247162)	Wallenius, W.	2010	Pr, Str, Samp	2.48419	52I08NE-032
Falcon Lake Area (Despard Property)	Canadian Orebodies Inc.	2011	ASD, Pr	2.48911	52I08NE-033
Falcon Lake Area (Despard Property)	Canadian Orebodies Inc.	2009-2010	ASD, Pr	2.46946	52I08NE-031
Falcon Lake Area (Falcon Property)	Canadian Orebodies Inc.	2009-2010	ASD, Pr, Samp	2.46925	52I08NE-030
Falcon Lake Area (Junior Lake Property)	Landore Resources Canada Inc.	2009	ASD, DD	2.46409	52I08NE-026
Falcon Lake Area (Junior Lake Property)	Landore Resources Canada Inc.	2009-2010	ASD, GL, Tr	2.47716	52I08NE-029 42L05NW-049
Falcon Lake Area (Junior Lake Property)	Landore Resources Canada Inc.	2010	ASD, DD	2.46947	52I08NE-027a,b
Irwin Twp. (Paint Lake Property)	Sage Gold Inc. / Holt, L. / Cox, N.	2009	ASD, DD, Str	2.44562	42E12NW-241 42E12NE-227
Junior Lake Area (Junior Lake Property)	Landore Resources Canada Inc.	2010	ASD, DD	2.49300	42L05NW-050 42L05SW-042
Junior Lake Area (Junior Lake Property)	Landore Resources Canada Inc. / Brancote Canada Limited	2009	ASD, DD	2.46827	42L05NW-048
Kapkichi Lake Area (Thierry Property)	Cadillac Ventures Holdings Inc.	2011	IP, Lc	2.48600	52O08NW-001 52O09SW-001
Keeyask Lake Area (Arseno Lake Property)	Northern Dynasty Minerals Ltd.	2010	AEM, AM	2.47001	53B14NE-007
Keezhik Lake Area (Keezhik Lake Property)	Slam Exploration Ltd.	2010	ASD, DD	2.46808	52P16SW-021
Kitchen Lake Area (Lynx Lake Property)	Fairservice, R.	2009-2011	ASD, Pr	2.48467	52H11SW-021
Kitto Twp. (Goodman Half Claim Property)	Goodman, H. / Goodman, M.	2009	ASD, Pr	2.44321	52H09SE-052
Klotz Lake Area (Adel Grid)	Kodiak Exploration Limited / Teck Resources Limited	2010	IP, Lc, GM	2.47914	42F13SW-040 42E16SE-025
Klotz Lake Area (Milestone Option Property)	Kodiak Exploration Limited / Prodigy Gold Inc. / Teck Resources Limited / Jubilee Gold Inc.	2009-2010	ASD, DD	2.46821	42F13SW-038
Laponen Lake Area (Pagwachuan Lake Property)	52/86 Northwest Company Ltd.	2009-2010	ASD, Tr, GC, Met, GL	2.48363	42E09NW-026a-d
Laponen Lake Area (Pagwachuan Lake Property)	Coordinates Capital Corporation / 52/86 Northwest Company Ltd.	2010	ASD, GC, OD	2.46892	42E09NW-025a,b 42E09NE-024 42E10NE-067

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Leduc Twp. (Three Towers Property)	Alto Ventures Ltd.	2011	ASD, Pr, Samp	2.48849	42E12NE-231
Leopard Lake Area (Clist Lake Property)	Prodigy Gold Incorporated / Goodman, H.	2010-2011	ASD, Pr, Str, Tr, GL	2.49243	42E12NE-232
Leopard Lake Area (Vincent Lake Property)	Sage Gold Inc. / Holt, L. / Cox, N.	2011	ASD, Pr	2.48876	42E12SE-006
Lindsley Twp. (Key Lake Property)	Goldstone Resources Inc. / Roxmark Mines Limited	2010	ASD, DD	2.47193	42E11NE-054
Lindsley Twp. (Wildgoose Property)	Prodigy Gold Incorporated / Ginguro Exploration Inc.	2009-2011	ASD, DD, GL	2.47858	42E11NE-056
Linklater Lake Area (Linklater Lake Property)	Hollingsworth Minerals Inc.	2010	Str, Tr	2.46005	52I10SW-038
Martin Lake Area (Castlewood Lake Property)	Prodigy Gold Inc.	2010-2011	GC, DD	2.48778	42E13NE-054
Martin Lake Area (Little John Property)	Prodigy Gold Inc.	2010	IP	2.47673	42E13NW-023 42L04SW-020
Martin Lake Area (Crooked Green Lake Property)	Sage Gold Inc. / Holt, L. / Nelson, M.	2009-2011	ASD, Pr	2.47413	42E13NW-021
Matapesatakun Bay Area (Sky Lake Property)	Tri Origin Exploration Ltd.	2009-2010	AEM, AM	2.45957	52O02NE-030 52O02NW-007 52O07SE-003a, b
Matapestakun Bay Area (Sky Lake Property)	Tri Origin Exploration Ltd. / Norcanex Resources Ltd.	2010	ASD, GC, GL	2.46268	52O02NE-029a-d 52O07SE-002a-c
McBean Lake Area (Long Lac Property)	Tims, A.	2010	ASD, Pr	2.46999	42E10NE-064
McBean Lake Area (Longlac East Project)	Kodiak Exploration Limited	2010	ASD, GL, Lc, Str	2.46795	42E10NE-065
McBean Lake Area (McBean Gold Prospect)	Kerr, W. C.	2010	Lc	2.46475	42E10NE-066
McComber Twp. (Gwyn Lake Gold Prospect)	Ultra Uranium Corp. / Houghton, F.	2009-2010	ASD, GL	2.46688	42E12NW-244
McComber Twp. (Moose Mountain–Watson Lake Property)	Alto Ventures Ltd.	2011	ASD, Pr, Str, Samp	2.48691	42E12NW-245
McComber Twp. (Moose Mountain & Watson Lake Properties)	Alto Ventures Ltd.	2009-2010	ASD, Samp, Pr	2.44960	42E12NW-242a-c
Metcalfe Lake Area (Wascanna Mine Property)	Plum Tree Gold Corp. / Lafontaine, A. / Malouf, J.	2010-2011	ASD, Str	2.49359	42L04NE-147
Metcalfe Lake Area (Paulpic Property)	Plum Tree Gold Corp. / Malouf, J. D.	2010	AEM, AM, Lc	2.47137	42L04NE-145
Nabish Lake Area (Winisk River Grids)	Coordinates Capital Inc. / 52/86 Northwest Company Ltd.	2011	GEM, GM, Lc	2.48874	43E06SW-013
Norwood Lake Area (Norwood Property)	Arctic Star Diamond Corp.	2009-2011	AM, GC	2.47982	52I03SE-003
Oboshkegan Twp. (Onaman Property)	Spruce Ridge Resources Ltd. / N.W.T. Copper Mines Limited	2009	ASD, Pr, GL, Str, Samp	2.47729	42L04NE-146
Opikeigan Lake Area (Opikeigan Property)	Slam Exploration Ltd.	2011	AM	2.49356	52P09NE-023 52P09SE-029
Pifher Twp. (Crooked Green Creek Property)	Sage Gold Inc. / Holt, L. / Cox, N.	2011	ASD, Pr	2.48866	42E13SW-120

Township or Area (Property)	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Pifher Twp. (Miner Lake Property)	Alto Ventures Ltd.	2009-2011	ASD, GL, Pr, Str	2.48370	42E13SW-119
Rich Lake Area (Opikeigan Property)	Slam Exploration Ltd.	2010	ASD, DD	2.46246	52P09SE-028
Rickaby Twp. (Rickaby Property)	Highland Resources Inc.	2010	ASD, DD	2.48435	42E13SE-175a,b 42E14SW-059
Sandra Twp. (Dorothea Property)	Terra Ventures Inc. / Novus Gold Corp.	2010	ASD, Str	2.48666	52H09NE-068
Sandra Twp. (Harasym & Lyytinen Property)	Harasym, J. / Lyytinen, E.	2011	Str	2.49421	42E13SW-121 42E12NW-246
Sandra Twp. (Cote - Nortoba Two Property)	Cote, R. / Cote, R.	2009-2010	ASD, Str, Samp	2.47388	52H09NE-066
Skinner Lake Area (Musselwhite Mine Property)	Goldcorp Inc.	2009-2010	ASD, DD	2.47126	53B09NW-018
Skinner Lake Area (Musselwhite Property)	Goldcorp Inc.	2009-2010	ASD, DD	2.47544	53B09NW-019
Suni Twp. (Suni Iron Property)	Natural Resource Holdings / 1401385 Ontario Inc.	2011	AM	2.48344	42L03NW-041
Toronto Lake Area (Junior Lake Property)	Landore Resources Canada Inc.	2010-2011	ASD, GL, Str	2.49306	42L05SW-043a-c 42L05NW-051a-c 42L12SW-003
Trist Lake Area (Lake St. Joseph Property)	Rockex Limited	2010	ASD, Samp	2.45788	52J14NE-024
Veekay Lake Area (Reserve Creek Property)	Slam Exploration Ltd.	2010-2011	ASD, DD	2.48641	42M12SE-014
Vincent Twp. (Maki Project)	Kodiak Exploration Limited / Maki, M. / Maki, N. / Moore, S.	2008-2010	ASD, DD	2.46881	42E12NE-224 42E12NW-239
Vincent Twp. (Vega Gold Property)	TLC Explorations Inc. / Advantel Minerals (Canada) Ltd.	2009-2010	ASD, DD	2.46406	42E12NE-228
Vincent Twp. (Blackwater Property)	Advantel Minerals (Canada) Ltd.	2010	ASD, Str	2.44594	42E12NE-226
Walters Twp. (Bearskin Property)	Sage Gold Inc. / Nelson, M. / Holt, L. / Cox, N.	2009-2011	ASD, GL, Pr	2.47478	42E12NE-230 42E12NW-243
Walters Twp. (Solomon Pillars and Paint Lake Properties)	Sage Gold Inc. / Holt, L. / Cox, N.	2008-2009	AEM, AM	2.44442	42E12NE-225a,b 42E12NW-240
Wapitotem Lake Area (Ti-paa-haa-kaa-ning Gold Property)	Northern Superior Resources Inc.	2010	OD	2.48164	43D05NW-020

Table 3. Exploration activity in the Thunder Bay North District in 2011 (keyed to Figures 4 and 5).

Abbreviations

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

Map No.	Company / Individual(s)	Property	Commodity	Location (Area, NTS) UTM Zone and Co-ordinates (m) (NAD83)	Exploration Activity
1	Advantel Minerals (Canada) Ltd. / Markinch Resources Inc.	Tashota	Gold	Metcalfe Lake Area (42L04/NE) UTM Zone 16: 454000E, 5563000N	Pr, Str, Samp, GL
2	Advantel Minerals (Canada) Ltd. / TLC Explorations Inc.	Blackwater	Gold	Vincent Township (42E12/NE) UTM Zone 16: 449600E, 5500430N	Pr, Str, Samp, GL
3	Alto Ventures Ltd.	Miner Lake	Gold	Pifher Township (42E13/SW) UTM Zone 16: 443000E, 5519250N	Str, Pr, Samp, GL, DD
4	Anglo Swiss Resources Inc. / INV Metals Inc.	Lansdowne House	Copper-nickel-cobalt-PGE	Springer Lake and Bartman Lake Areas (42D05/NE) UTM Zone 16: 464079E, 5813868N	Compilation
5	Benton Resources Corp. / Parkside Resources Corp.	Forester Lake	Gold	Neawagank Lake Area (53A05/NW) UTM Zone 16: 300650E, 5814400N	AM
6	Bold Ventures / Rencore Resources Ltd. / Dundee Resources Limited	Ring of Fire Project	Copper-nickel-PGE	BMA 534 861 (43E08/NE) UTM Zone 16: 563000E, 5916600N	AM, AEM
7	Bold Ventures / Rencore Resources Ltd. / Dundee Resources Limited	Ring of Fire	Copper-nickel	North of Wapikopa Lake Area and Stockman Lake Area (43D14/NE and 53A01/SE) UTM Zone 16: 494500E, 5860500N; 428500E, 5892500N	DD
8	Cadillac Ventures Inc.	Thierry Mine	Copper-nickel	Ponsford Lake Area (52O09/SW) UTM Zone 15: 684000E, 5708500N	DD
9	Cadillac Ventures Inc.	K1-1	Copper-nickel	Ponsford Lake Area (52O09/SW) UTM Zone 15: 687000E, 5708500N	DD
10	Canadian Orebodies Inc.	Falcon	Lithium, rare metals	Falcon Lake Area (52I08/NE) UTM Zone 16: 420000E, 5591500N	DD
11	Canadian Orebodies Inc. / Ultra Uranium Inc.	Zigzag	Lithium, rare metals	Crescent Lake Area (52I08/NE) UTM Zone 16: 410300E, 5591000N	DD
12	Checkley, F. and Lafontaine, A	Sturgeon Bridge	Gold	Legault Township (42E11/NW) UTM Zone 16: 468500E, 5508000N	Str, Samp
13	Cliffs Natural Resources Inc	Black Label	Chromium	BMA 527 861 (43D16/SE) UTM Zone 16: 554111E, 5849791N	DD

Map No.	Company / Individual(s)	Property	Commodity	Location (Area, NTS) UTM Zone and Co-ordinates (m) (NAD83)	Exploration Activity
14	Cliffs Natural Resources Inc	Black Thor	Chromium	BMA 527 861 (43D16/SE) UTM Zone 16: 553031E, 5847817N	DD
15	Cliffs Natural Resources Inc. / KWG Resources Inc.	Big Daddy	Chromium	BMA 527 861 (43D/16SE) UTM Zone 16: 551087E, 5845306N	DD, Met, PEA
16	Debut Diamonds Inc.	Nakina	Diamonds	East of Tanase Lake Area (42M01/NW) UTM Zone 16: 549060E, 5675340N	Compilation
17	Fancamp Exploration Ltd.	McFaulds Lake (Black Horse)	Chromium-copper-nickel-PGE	BMA 526 862 (43D09/NW) UTM Zone 16: 547520E, 5842640N	DD, DGP
18	Goldcorp Inc.	Musselwhite Mine	Gold	Zeemel Lake and Skinner Lake areas (53B09/SW) UTM Zone 15: 678496E, 5832565N	DD, Samp, GL
19	Golden Valley Mines Ltd. / Abitibi Royalties Inc. / Noront Resources Ltd. / White Pine Resources Inc.	Luc Bourdon / Luc Bourdon West	Zinc, copper silver	BMA 533 864 (43E07/SE) UTM Zone 16: 515400E, 5903900N	Compilation
20	Goldstone Resources Inc.	Key Lake	Gold	Lindsley Township (42E11/NE) UTM Zone 16: 492000E, 5506250N	DD, Lc, IP
21	Goldstone Resources Inc.	Northern Empire Mine	Gold	Summers Township (42E12/SW) UTM Zone 16: 432500E, 5496000N	Pr, Samp
22	Goldstone Resources Inc.	Sand River–Leitch Mine	Gold	Eva Township (52H09/SE) UTM Zone 16: 425280E, 5497460N	Pr, Samp, DD, Str
23	Goldstone Resources Inc.	Brookbank	Gold	Irwin Township (42E12/NW) UTM Zone 16: 439800E, 5507300N	Pr, Samp, Str
24	Goodman, H., Jr.	Clist Lake	Gold	Leopard Lake Area (42E12/NE) UTM Zone 16: 455500E, 5499900N	Pr, Samp
25	Highland Resources Inc.	Humboldt Bay	Gold	Elbow Lake Area (42L04/SW) UTM Zone 16: 430500E, 5544000N	VLFEM, GEM, DD
26	Jiminex Inc.	Misehkow River	Gold	Achapi Lake Area (52P04/SE) UTM Zone 16: 319500E, 5668500N	DD, Samp
27	Kasabonika Minerals Corporation	Kasabonika	Gold	BMA 535 882 (53H09/SW) UTM Zone 16: 407000E, 5938000N	Pr, Samp
28	KWG Resources Inc. / Canada Chrome Corporation / Debut Diamonds Inc.	Railroad right-of-way	Diamonds	Saarimaki Lake Area (42M10/SE) UTM Zone 16: 519380E, 5714620N	Samp
29	Lance, C. and Pettit, C.	Jorsco (Blackwater)	Gold	Leduc Township (42E12/NE) UTM Zone 16: 461000E, 5503000N	Pr, Samp
30	Landore Resources Limited	Junior Lake	Nickel-copper; iron; gold	Falcon Lake Area (42L05/NW, SW) UTM Zone 16: 436000E, 5581000N	DD, Pr, Samp
31	Laurion Mineral Exploration Inc.	Sturgeon River	Gold	Irwin Township (42E12/NW) UTM Zone 16: 444182E, 5511176N	Pr, Samp, GL, Str, DD
32	Linear Metals Corporation / Canadian Copper Core Inc.	Seymour Lake	Lithium, rare earth elements (REE)	Crescent Lake Area (52I08/NW) UTM Zone 16: 398000E, 5585000N	Compilation
33	MacDonald Mines Exploration Limited	Semple–Hulbert	Copper, nickel, PGE	Croal Lake and East of Croal Lake areas (43E12/SE) UTM Zone 16: 449000E, 5933000N	DD
34	MacDonald Mines Exploration Limited / HudBay Minerals Inc.	Butler (McNugget)	Copper, nickel, PGE; copper, zinc	BMA 526 864 (43D10/NW) UTM Zone 16: 514000E, 5840500N	DD, GEM
35	MacDonald Mines Exploration Limited / Ring of Fire Resources Inc.	McNugget JV (Butler #5)	Copper, nickel, PGE, chromium	BMA 526 864 (43D10/NW) UTM Zone 16: 514000E, 5840500N	DD
36	Manicouagan Minerals Inc. / Trillium North Minerals Ltd.	Kasagiminnis	Gold	Little Ochig Lake Area (52O08/SW) UTM Zone 15: 681404E, 5682384N	DD

Map No.	Company / Individual(s)	Property	Commodity	Location (Area, NTS) UTM Zone and Co-ordinates (m) (NAD83)	Exploration Activity
37	Manicouagan Minerals Inc.	Pickle Lake East	Gold	First Loon Lake Area (52P12/SW) UTM Zone 15: 297000E, 5716000N	DD
38	Mantis Mineral Corp.	Orphan Mine	Gold	Rickaby Township (42E13/SE, 42E14/SW) UTM Zone 16: 465000E, 5518500N	Compilation
39	Mantle Diamonds Canada Inc.	Trillion	Diamonds	Attwood River Area (42M05/SW) UTM Zone 16: 435875E, 5686500N	DD, GM
40	Melkior Resources Inc. / Green Swan Capital Corp.	Broke Back	Copper-nickel-PGE	BMA 528 862 (43D16/NW) UTM Zone 16: 543395E, 5859003N	DD
41	Melkior Resources Inc.	Longlac	Gold	Laponen Lake Area (42F12/SW) UTM Zone 16: 551528E, 5506886N	IP
42	Melkior Resources Inc.	McFaulds East Rim	Nickel-copper-PGE	BMA 527 853 (43C13/NE) UTM Zone 16: 584000E, 5864000N	Grav, IP, DD
43	Melkior Resources Inc. / Green Swan Capital Corp.	River Bank	Copper-nickel-PGE	BMA 528 854 (43C13/NW) UTM Zone16: 575657E, 5863030N	DD
44	MetalCORP Limited	Pickle Lake	Gold	Tarp Lake area (52O/09SE) UTM Zone 15: 706700E, 5721185N	IP, GM, DD
45	MetalCORP Limited	Solomon's Pillars	Gold	Walters and Leduc townships (42E12/NE) UTM Zone16: 454618E, 5504134N	GL, Samp
46	Newcastle Minerals Ltd.	Pickle Lake	Gold	Connell and Ponsford Townships (52O08/NW) UTM Zone 15: 698000E, 5701000N	AEM, AM, DD
47	Noront Resources Ltd.	Eagle's Nest	Copper-nickel; PGE	BMA 526 862 (43D/09NW) UTM Zone 16: 547200E, 5843645N	DD, Met, GEM
48	Noront Resources Ltd.	Blackbird	Chromium	BMA 526 862 (43D09/NW) UTM Zone 16: 546050E, 5842100N	DD, GEM
49	Noront Resources Ltd.	Thunderbird	Iron, titanium, vanadium	BMA 527 861 (43D/16SE) UTM Zone 16: 557783E, 5852828N	DD
50	Noront Resources Ltd.	McFaulds Lake	Copper-nickel-PGE, Au	BMA 526 862 (43D09/NW) UTM Zone 16: 547200E, 5843645N	DD
51	Northern Shield Resources Inc.	Highbank Lake	Copper-nickel-PGE	BMA 523 861 (42D08/SE) UTM Zone 16: 554100E, 5795500N	DD
52	Northern Shield Resources Inc.	Storm Claim Group	Copper-nickel-PGE	Nottik Island Area (42M09/NW) UTM Zone 16: 545120E, 5724260N	AEM
53	Northern Shield Resources Inc.	Tempest	Silver	BMA 517 861 (42M16/SE) UTM Zone 16: 552190E, 5739360N	DD
54	Northern Shield Resources Inc. / Discovery Harbour Resource Corp.	Wabassi	Copper-nickel-PGE; copper-zinc	Oxtoby Lake Area (42M15/SE) UTM Zone 16: 528000E, 5735350N	DD, AM, AEM, DGP, GEM
55	Northern Superior Resources Inc.	New Growth	Gold	Michikenopik Lake Area (53A08/NE) UTN Zone 16: 425360E, 5814800N	AM, Samp
56	Northern Superior Resources Inc. / Lake Shore Gold Corp. / Rainy River Resources Ltd.	Ti-pa-haa-kaa-ning	Gold	Wapitotem Lake Area (43D05/NW) UTM Zone 16: 441040E, 5814920N	DD, ODH, IP, RES
57	PC Gold Inc.	Pickle Crow	Gold	Connell Township (52O09/SE) UTM Zone 15: 704327E, 5709884N	DD, Samp, Str, Tr, PEA
58	Pettit, C.	Watson Lake	Gold	Irwin Township (42E12/NW) UTM Zone 16: 440500E, 5502500N	Pr, Samp
59	Platinex Inc.	McFaulds Lake South	Chromium-copper-nickel-PGE	BMA 526 864 and BMA 525 863 (43D10/SW/SE) UTM Zone 16: 515300E, 5820800N	Compilation
60	Platinex Inc.	McFaulds Lake North	Chromium-copper-nickel-PGE	BMA 528 861 and BMA 531 861 (43E01/SE and 43D16/NE) UTM Zone 16: 554700E, 5873300N	Compilation

Map No.	Company / Individual(s)	Property	Commodity	Location (Area, NTS) UTM Zone and Co-ordinates (m) (NAD83)	Exploration Activity
61	Platinex Inc.	Norton Lake	Chromium-copper-nickel-PGE	Norton Lake Area (42M14/NW) UTM Zone 16: 465900E, 5751100N	Compilation
62	Premier Gold Mines Limited	PQ North	Gold	Skinner Lake Area (53B09/NW) UTM Zone 15: 674000E, 5838500N	DD
63	Premier Gold Mines Limited / Goldstone Resources inc.	Hardrock	Gold	Errington and Ashmore townships (42E10/NW) UTM Zone 16: 503000E, 5505100N	DD, Str, Samp
64	Premier Gold Mines Limited	Hardrock	Gold	Errington and Ashmore townships (42E10/NW) UTM Zone 16: 503000E, 5505100N	DD
65	Premier Gold Mines Limited	Key Lake	Gold	Lindsley Township (42E11/NE) UTM Zone 16: 492000E, 5506250N	DD
66	Premier Gold Mines Limited	Brookbank	Gold	Irwin Township (42E12/NW) UTM Zone 16: 439800E, 5507300N	DD
67	Prodigy Gold Incorporated	Adel	Gold	Klotz Lake Area (42F13/SW) UTM Zone 16: 575800E, 5512900N	AEM, AM, GL, Samp, Str, Tr
68	Prodigy Gold Incorporated	Milestone	Gold	Klotz Lake Area (42F13/SW) UTM Zone 16: 574250E, 5514000N	AEM, AM, GL, Samp, Str, Tr
69	Prodigy Gold Incorporated	Pagwachuan Lake	Gold	Pagwachuan Lake Area (42E09/NE) UTM Zone 16: 562970E, 5581050N	AEM, AM, GL, Samp, Str, Tr
70	Prodigy Gold Incorporated	Solarus	Gold	Klotz Lake Area (42F13/SW) UTM Zone 16: 588720E, 5513500N	AEM, AM, GL, Samp, Str, Tr
71	Prodigy Gold Incorporated	Hercules	Gold	Elmhirst and Rickaby townships (42E13/SE) UTM Zone 16: 453000E, 5518000N	Rehabilitation
72	Rainy Mountain Royalty Corporation	Fry–McVean	Gold	Drum Lake Area (52O03/NE) UTM Zone 15: 629100E, 5674200N	Samp
73	Rainy Mountain Royalty Corp. / International Bethlehem Mining Corp./ Citation Resources Inc.	Eva Kitto	Copper-nickel-PGE	Eva and Kitto Townships (52H09/SE) UTM Zone 16: 420000E, 5490000N	Compilation
74	Rencore Resources Ltd. / Bold Ventures Inc.	Ring of Fire	Copper-nickel	North of Wapikopa Lake Area and Stockman Lake Area (43D14/NE and 53A01/SE) UTM Zone 16: 494500E, 5860500N; 428500E, 5892500N	DD
75	RJK Exploration Ltd	Dempster Lake	Gold	Duffell Lake Area (52O2/NW) UTM Zone 15: 642200E, 5677230N	DD
76	Rock Tech Lithium Inc.	Georgia Lake	Lithium, rare metals	Barbara Lake Area (42E05/SW) UTM Zone 16: 427500E, 5461500N	DD, Str, Tr, Samp, Bulk, Met
77	Rockex Mining Corporation	Western Lake St. Joseph	Iron	Trist Lake Area (52J14/NE) UTM Zone 15: 636000E, 5647500N	AM, DD
78	Rockex Mining Corporation	Root Lake	Iron	Root Lake Area (52J13/NE) UTM Zone15: 605100E, 5643900N	AM
79	Romios Gold Resources Inc.	Lundmark–Akow Lake	Gold, copper	Akow Lake Area (53B15/NE) UTM Zone 15: 669600E, 5852800N	Compilation
80	Sage Gold Inc.	Clist Lake	Gold	Leopard Lake Area (42E12/NE) UTM Zone 16: 455670E, 5498870N	Pr, Str, Samp
81	Sage Gold Inc.	Lynx–Onaman	Copper, silver, gold	Coughlan Lake Area (42L4/SE) UTM Zone 16: 456800E, 5543300N	AM, AEM
82	SLAM Exploration Ltd. / Namex Explorations Inc.	Miminiska–Keezhik	Gold	Miminiska and Keezhik lakes areas (52P10/SE) UTM Zone 16: 384000E, 5720000N	DD, Samp, AEM

Map No.	Company / Individual(s)	Property	Commodity	Location (Area, NTS) UTM Zone and Co-ordinates (m) (NAD83)	Exploration Activity
83	SLAM Exploration Ltd.	Reserve Creek	Gold	Reserve and Veekay lakes areas (42M12/SE) UTM Zone 16: 450000E, 5713500N	DD, Samp
84	SLAM Exploration Ltd. / Beatrix Ventures Inc.	Opikeigen	Gold	Opikeigen Lake Area (52P09NE) UTM Zone 16: 427270E, 5723100N	DD, Samp, AM, IP
85	Source Gold Corp.	KRK West	Gold	Meader Township (42E13/SW) UTM Zone 16: 432700E, 5512600N	Samp
86	TNR Gold Corp.	Big Beaver House	REE	Misamikwash Lake Area (53A13/NW) UTM Zone 16: 304100E, 5864300N	Compilation
87	TNR Gold Corp.	Soules Bay	Iron	Riach Lake Area (52O01/SW) UTM Zone 15: 686060E, 5658500N	Compilation
88	TNR Gold Corp. / International Lithium Corp. / Cricket Resources Inc.	Forgan Lake	Lithium, REE	Oskawe Lake area (52H08/SW) UTM Zone 16: 407000E, 5464500N	Compilation
89	TNR Gold Corp. / International Lithium Corp. / Cricket Resources Inc.	Niemi Lake	Lithium, REE	Barbara Lake Area (42E05/SW) UTM Zone 16: 434366E, 5461300N	Compilation
90	Tri Origin Exploration Ltd.	Sky Lake	Gold	Caley Lake area (52O07/SE, 02/NE) UTM Zone 15: 671800E, 5681400N	Lc, IP, GL, GC, DD
91	UC Resources Limited / Cliffs Natural Resources Inc. / KWG Resources Inc.	McFaulds Lake West	Copper, Zinc	West Block BMA 526 863 (43D10/NE) UTM Zone 16: 524000E, 5840000N	DD, Grav, AEM
92	UC Resources Limited / Cliffs Natural Resources Inc. / KWG Resources Inc.	McFaulds Lake East	Copper, Zinc	East Block BMA 527 861 (43D16/SE) UTM Zone16: 562800E, 5850900N	DD, Grav, AEM
93	White Pine Resources Inc. / Noront Resources Ltd. / Golden Valley Mines Ltd.	Luc Bourdon	Zinc, copper, silver	BMA 533 864 (43E07/SE) UTM Zone 16: 515400E, 5903900N	DD
94	White Tiger Mining Corp. / Rainy Mountain Royalty Corp. / Marshall Lake Mining PLC	Marshall Lake	Copper, zinc, silver, gold	Summit Lake Area (42L05/NE); Sollas Lake Area (42L06/NW) UTM Zone 16: 457500E, 5586000N	IP, DD, Samp
95	Wildcat Exploration Ltd.	McVicar	Gold	McVicar Lake Area (52O11/SW) UTM Zone 15: 609200E, 5713600N	GL, Samp, Pr, AM, ARA, DD

ADVANCED EXPLORATION

There were 2 active exploration programs in Thunder Bay North District in 2011 with Advanced Exploration status: Prodigy Gold Incorporated's (formerly Kodiak Exploration Limited) Hercules project; and Cadillac Ventures Inc.'s (formerly Richview Resources Inc.) Thierry Mine project. The Nortoba–Tyson and Northern Empire projects were inactive in 2011.

Prodigy Gold Incorporated has submitted a closure plan and completed rehabilitation work on portions of the Hercules property, northeast of Beardmore. However, the main Golden Mile zone, which hosts indicated (231 800 t @ 14.95 g/t Au) and inferred (761 300 t @ 4.13 g/t Au) resources totalling 212 500 contained ounces of gold, has been left uncovered and remains accessible for future work (Prodigy Gold Incorporated, news release, May 26, 2010).

Most of Prodigy Gold's work in 2011 in the Thunder Bay North District was conducted on 4 properties east of Longlac, part of the Hardrock East project. Extensive prospecting, mapping, mechanical stripping, sampling and geophysical work was completed on the Milestone, Adel, Solarus and Pagwachuan Lake properties in this area. At the end of the field season, the company entered into an agreement with Goldstream Exploration Ltd. (a private Ontario corporation) whereby Goldstream has the option to acquire 100% of Prodigy's interest in the group of properties that make up the Hardrock East project (Prodigy Gold Incorporated, news release, October 19, 2011).

Cadillac Ventures Inc. completed an extensive diamond-drilling program at its Thierry Mine property located approximately 10 km west of Pickle Lake. The program was designed to test the eastern and western strike extensions, as well as the central, triangular, tooth-shaped void (Figure 6) of the main Thierry deposit. Six deep holes, totalling 6817 m, were completed and were successful in defining ore in a critical area where there had been no previous drilling (Cadillac Ventures Inc., news release, May 26, 2011). In this area, hole CV-11-03 returned 1.42% Cu over 10.2 m. Drilling at the eastern and western portions of the main deposit was also successful in extending the known deposit along strike in both directions; both directions remain open. As a result of this diamond-drilling program, Cadillac Ventures announced an updated NI 43-101–compliant resource estimate for the main Thierry deposit consisting of 6.28 Mt Measured and Indicated grading 1.73% Cu and 0.20% Ni and 14.64 Mt Inferred grading 1.70% Cu and 0.16% Ni (Cadillac Ventures Inc., news release, September 1, 2011). The company also announced that AECOM has been commissioned to provide an implementation plan for dewatering the main Thierry Mine site. Upon completion, the dewatering implementation plan will facilitate the drafting of tenders for aspects of the project such as site infrastructure, dewatering systems and water treatment facilities (Cadillac Ventures Inc., news release, August 17, 2011).

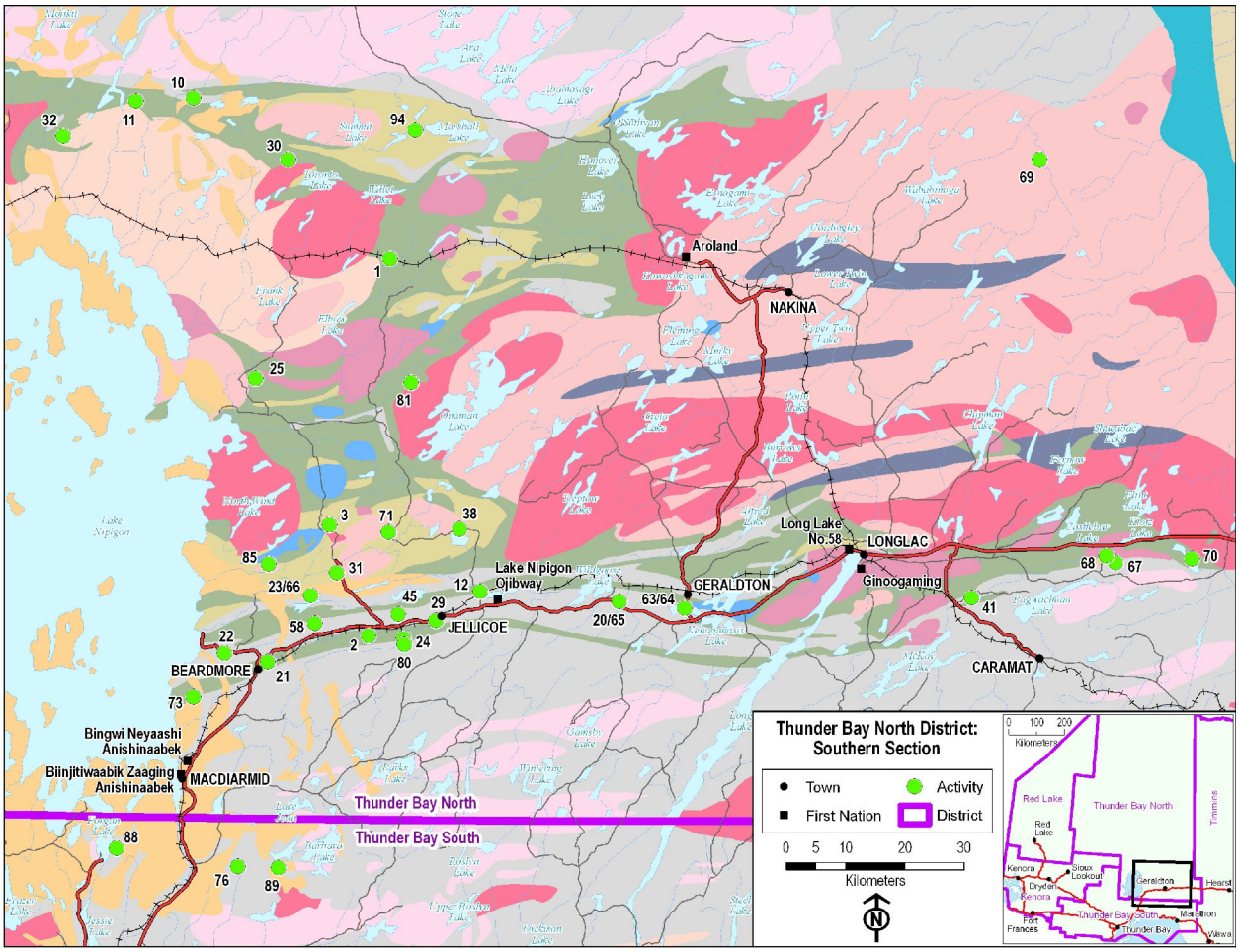

Figure 4. Thunder Bay North District (southern portion) exploration activity, 2011 (keyed to Table 3). Bedrock geology *from* Ontario Geological Survey (2006).

Cadillac Ventures also completed a 16-hole diamond-drilling program commencing in March 2011 at the K1-1 satellite deposit located 3 km east of the main Thierry deposit. Some of the best assay results were obtained from drill-hole K-11-03, which returned 0.11% Ni and 0.39% Cu over 177.4 m (Cadillac Ventures Inc., news release, May 06, 2011). The company announced a NI 43-101–compliant inferred resource estimate for the K1-1 open pit deposit of 19.9 Mt grading 0.10% Ni, 0.42% Cu, 2.0 g/t Ag, 0.03 g/t Au, 0.05 g/t Pt and 0.15 g/t Pd (Cadillac Ventures Inc., news release, October 25, 2011). In October 2011, the company initiated another exploration program on the K1-1 deposit. The program will involve 10 000 m of drilling over the next several months, utilizing 2 diamond drills. The purpose of this drilling program is to upgrade and expand the mineralization at the K1-1 by infill drilling adjacent to the pits, as well as targeting the area under the pits and along strike.

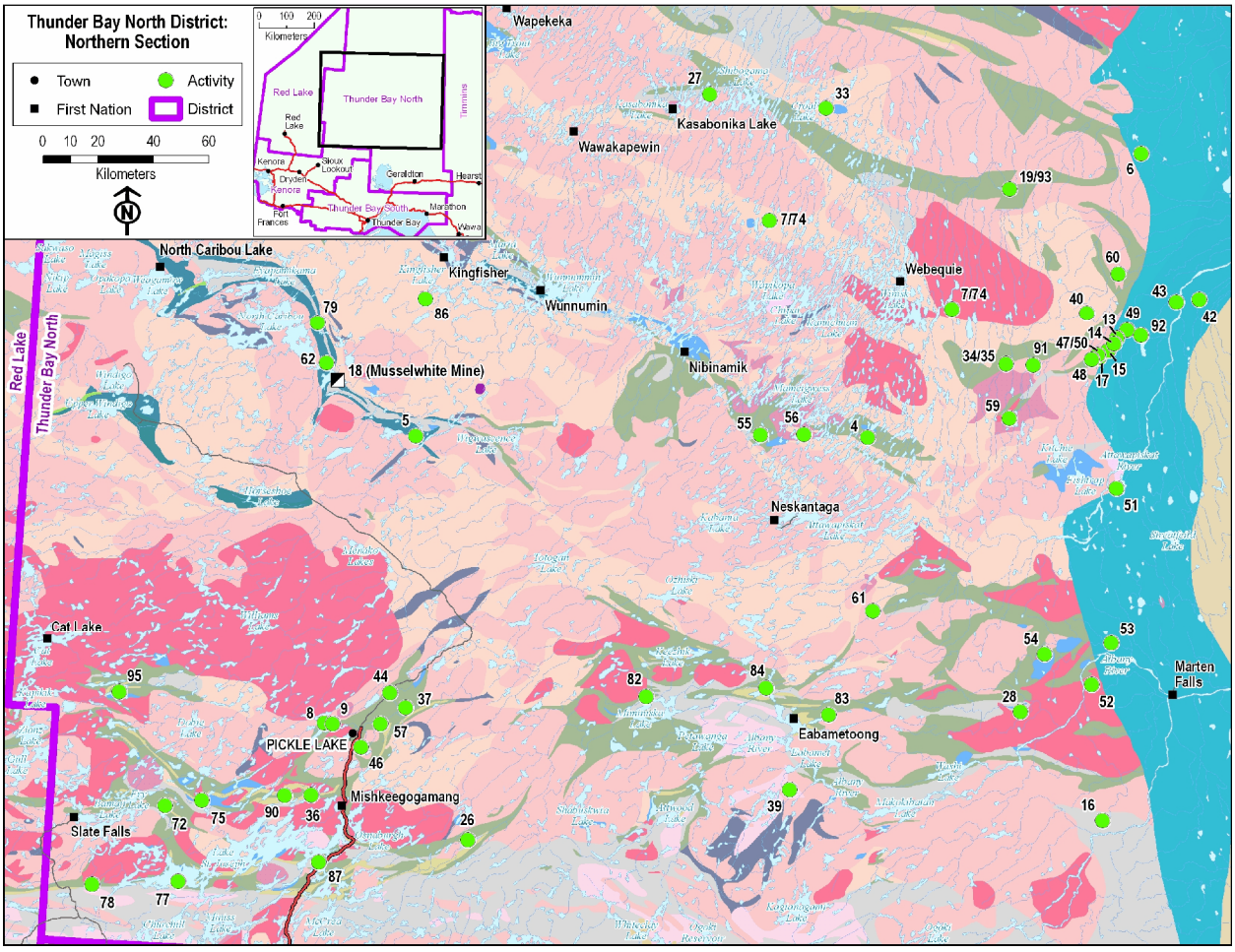

Figure 5. Thunder Bay North District (northern portion) exploration activity, 2011 (keyed to Table 3). Bedrock geology *from* Ontario Geological Survey (2006).

Major Exploration Projects

Alto Ventures Ltd. announced results from the 2011 summer exploration program on the **Miner Lake property** in Pifher Township, north of Beardmore. The program consisted of extensive bedrock sampling, geological mapping, mechanical and hydraulic stripping and diamond drilling. Drilling, consisting of 1732 m in 9 drill holes, confirmed the existence of widespread hydrothermal breccia zones that contain anomalous gold mineralization. Highlights included a zone in drill-hole MIN11-06, which intersected 39.2 m averaging 0.6 g/t Au (Alto Ventures Ltd., news release, October 18, 2011). Large areas of the intrusion hosting the gold mineralization, which has surface dimensions of 2.5 by 1.5 km, have yet to be prospected and sampled. A second phase of drilling is planned for this area in 2012.

Cliffs Natural Resources Inc. completed 10 095 m of diamond drilling on the **Black Thor** and **Black Label** properties in the "Ring of Fire" area for exploration and resource delineation. In addition, 954 m of HQ diamond drilling was undertaken to obtain a metallurgical test sample from both of these properties. The company also drilled 7800 m (of NQ diameter) on the **Big Daddy property** for resource delineation and 1900 m (of HQ diameter) for metallurgical sampling (A. Mitchell, Cliffs Chromite Ontario Inc., personal communication, February 21, 2012). Engineering and environmental studies were ongoing in both areas throughout the year.

Fancamp Exploration Ltd. announced the continuation of its deep diamond-drilling program and the discovery of a new chromite horizon known as the **Black Horse occurrence**, on their McFaulds Lake property located in the western James Bay Lowland "Ring of Fire" area. Drill-hole FN-10-25 was drilled in a southwesterly direction to intersect the possible extension of Noront Resources Ltd.'s Eagle's Nest copper-nickel-PGE deposit, located approximately 1 km north of Fancamp's claims. An unexpected intersection of high-grade chromite was encountered at a depth of 838.5 m to 1048.3 m downhole (Fancamp Exploration Ltd., news release, April 21, 2011). The company believes the property is geologically and structurally associated with the massive nickeliferous sulphides of the Eagle's Nest and the Blackbird chromite deposits on the adjacent Noront Resources Ltd. property.

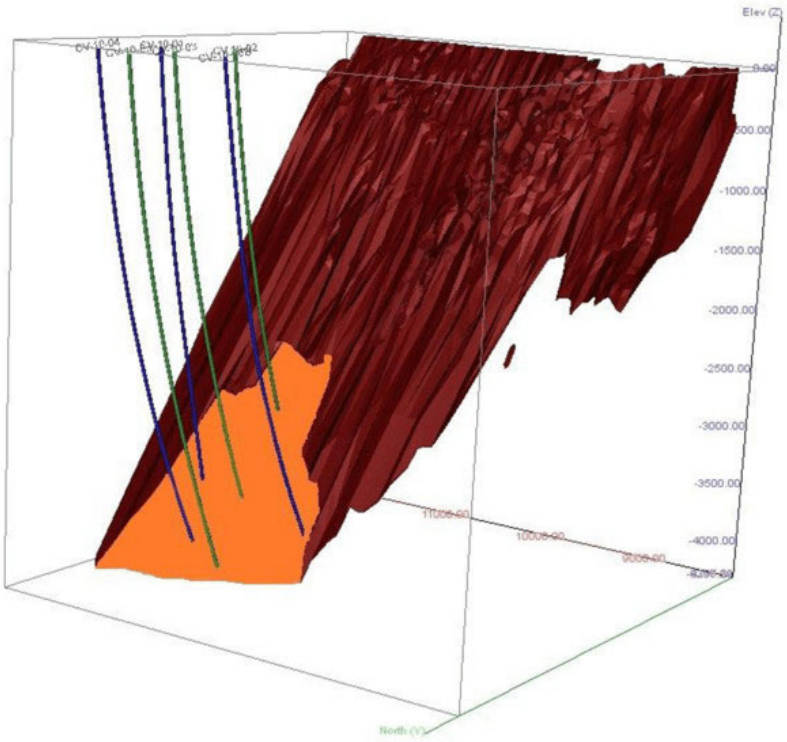

Figure 6. Drilling targeting the tooth-shaped void at the Cadillac Ventures Inc. Main Thierry deposit (*from* Cadillac Ventures Inc., news release, May 26, 2011, www.cadillacventures.com/s/NewsReleases.asp?ReportID=459876).

Drill-holes FN-10-25 and FN-10-26, drilled to depths of 1082 m and 1086 m, respectively, in the very eastern portion of the McFaulds Lake property, passed through the granodiorite and, at depths below 700 m, through significant thicknesses of high-grade chromite in peridotite that appear to overlie a lower dunite horizon. Drill-hole FN-10-25 intersected over 200 m of chromite with an estimated average grade of 43.5% Cr_2O_3, drilling down-dip. Drill-hole FN-10-26, drilling across strike, intersected 56.6 m of an interlayered sequence of peridotite and chromite with an estimated grade of 27.6% Cr_2O_3 followed by 53.2 m of massive chromite with an estimated average grade of 43.7% Cr_2O_3. The lower dunite unit hosts elevated copper-nickel-PGE values ranging up to 1.16% Ni, 674 ppm Cu and 2670 ppb Pd (Fancamp Exploration Ltd., news release, October 28, 2011).

The **Hardrock project** in Geraldton, operated by **Premier Gold Mines Limited**, was one of the company's more active projects in 2011. Premier acquired a 100% interest in the project after a successful takeover of joint-venture partner **Goldstone Resources Inc.** (Premier Gold Mines Ltd., news release, June 22, 2011). As a result of the Goldstone acquisition, Premier obtained ownership to 3 past-producing mines (Northern Empire, Leitch and Sand River); a NI 43-101–compliant deposit at the Brookbank property (Indicated 1.33 Mt @ 8.8 g/t Au, Inferred 1.01 Mt @ 7.3 g/t Au); and the Key Lake property (which adjoins the western portion of the Hardrock project) (Figure 7). The Key Lake property (host to the past-producing Jellicoe Mine) was the site of an intensive ongoing diamond-drilling program by Goldstone prior to the Premier takeover.

The Hardrock project is host to several past-producing mines (Macleod–Cockshutt, Hardrock, Mosher, Little Long Lac, Magnet and Bankfield) that collectively yielded close to 3.0 million ounces of gold, primarily from shallow depths (within 600 m of surface). The mineralized zones remained open at depth and along strike when all operations at the MacLeod–Cockshutt Mine ceased due to low gold prices in 1968. Additionally, developed but unmined historic resources were left in place within the existing mine workings.

A total of 110 603 m of diamond drilling was completed on the Hardrock property during 2011 (Premier Gold Mines, Management's Discussion and Analyses, November 14, 2011, October 24, 2011, and June 14, 2011, *see* SEDAR Home Page). The drilling was focussed on delineating and expanding several high-grade gold zones (Figure 8) in advance of completing an updated resource (expected to be released in the first quarter of 2012) and a preliminary economic assessment, expected to be released in the second quarter of 2012 (Premier Gold Mines Limited, news release, December 6, 2011). Highlights from the drilling include the following results:
F2 Zone: 147.01 g/t Au over 2.0 m and 54.26 g/t Au over 3.0 m; HGN Zone: 28.78 g/t Au over 3.5 m;
North Shear: 53.67 g/t Au over 2.5 m; and Key Lake (West Extension): 12.70 g/t Au over 1.0 m.

Early in 2011, updated NI 43-101–compliant open-pit and underground resources were announced by the company (Premier Gold Mines Limited, news release, April 6, 2011):

Material	Classification	Cut-off (g/t Au)	Grade Estimate (g/t Au)	Resource (Tonnes)	Contained Gold (Ounces)
Open Pit	Measured	0.83	2.446	6 865 000	540 000
Open Pit	Indicated	0.83	2.280	5 833 000	427 500
Open Pit	Measured + Indicated	0.83	2.370	12 698 000	967 500
Open Pit	Inferred	0.83	2.483	615 000	49 200
Underground	Measured	2.80	5.993	2 312 000	445 800
Underground	Indicated	2.80	5.827	5 757 000	1 078 500
Underground	Measured + Indicated	2.80	5.875	8 069 000	1 524 300
Underground	Inferred	2.80	5.397	6 187 000	1 073 500
Open Pit + Underground	Measured	—	3.340	9 177 000	985 800
Open Pit + Underground	Indicated	—	4.042	11 590 000	1 506 000
Open Pit + Underground	Measured + Indicated	—	3.732	20 767 000	2 491 800
Open Pit + Underground	Inferred	—	5.133	6 802 000	1 122 700

It is anticipated that this resource will be updated in the latter portion of the first quarter of 2012 and include all drilling to the end of 2011.

Premier Gold Mines Limited was also active on their **PQ North** property, north of Musselwhite Mine, in 2011. They completed 11 987m of diamond drilling in the first 3 quarters of 2011 (Premier Gold Mines Limited, Management's Discussion and Analysis, November 14, 2011).

Goldstone Resources Inc. completed approximately 72 holes (totalling 16 000 m of a planned 30 000 m diamond-drilling program) and an induced polarization survey on the **Key Lake property** before Goldstone was acquired by Premier Gold Mines Limited. Some highlights from this program included drill-hole KL-11-114, which returned 1.19 g/t Au over 45.5 m. Higher grade intersections were obtained from drill-hole KL-11-117, which returned 420.0 g/t Au over 0.38 m, and drill-hole KL-11-108, which returned 229.0 g/t Au over 0.50 m (Goldstone Resources Inc., news release, July 26, 2011).

KWG Resources Inc. announced that a historic milestone was achieved on February 3, 2011, when the first high-carbon ferrochrome was produced in a test melt of the **Big Daddy chromite** bulk sample (KWG Resources Inc., news release, February 3, 2011). The pilot plant test was conducted at the Xstrata Process Support facility in Falconbridge, Ontario, which is an independent and certified testing facility engaged by KWG to undertake metallurgical analysis of a bulk sample of material from the Big Daddy chromite deposit in the "Ring of Fire" area in the James Bay Lowland. This demonstration that the Big Daddy chromite may be readily smelted into ferrochrome was considered important in the determination of the economic viability and technical feasibility of the "Ring of Fire" chromite discoveries. The company received the final report from Xstrata in June. The report confirms that the samples collected from 4 boreholes of the Big Daddy chromite deposit are amenable to refining at a relatively modest energy consumption, resulting in high yields of refined ferrochrome product (KWG Resources Inc., news release, June 10, 2011).

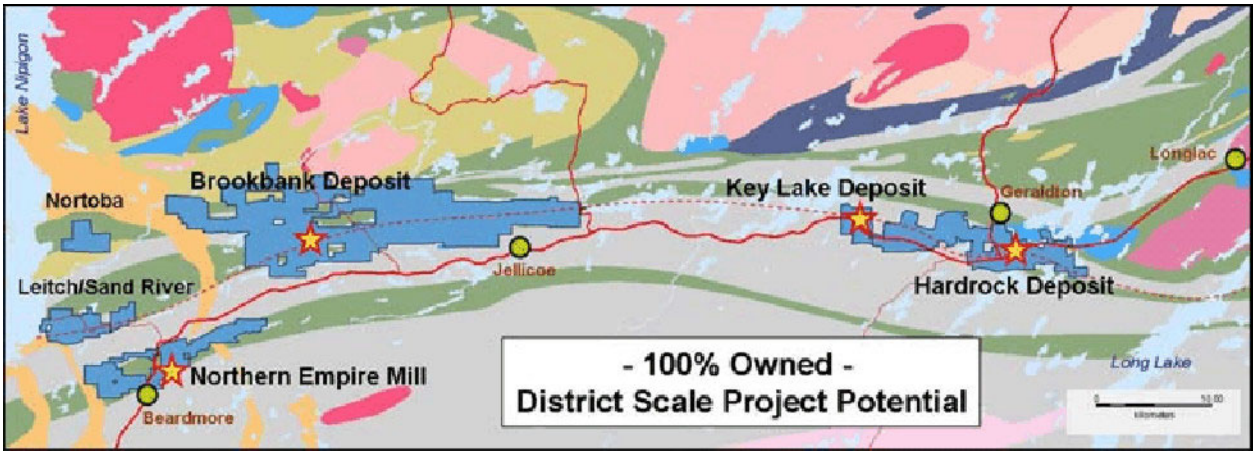

Figure 7. Premier Gold Mines property map for the Beardmore–Geraldton area (*from* Premier Gold Mines Ltd., news release, October 26, 2011).

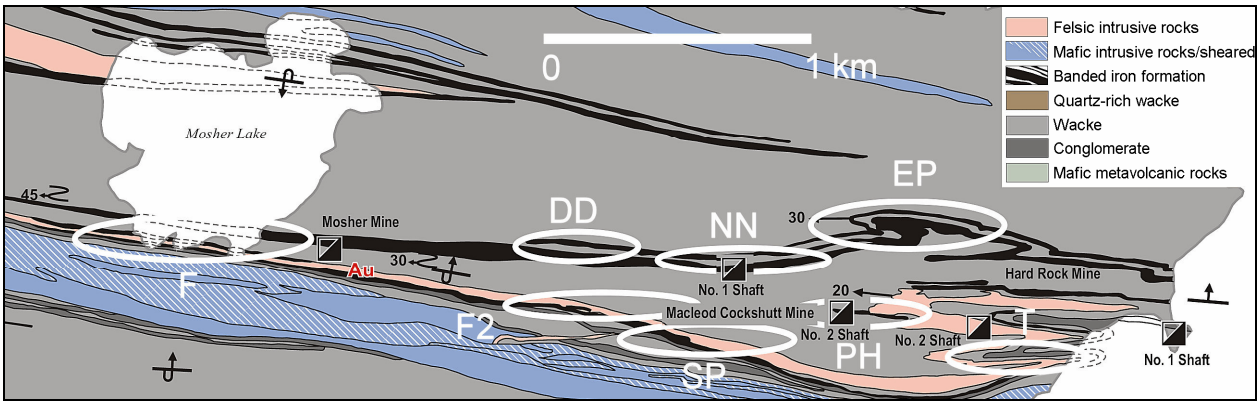

Figure 8. Targeted gold-bearing zones, Hardrock property, Premier Gold Mines Limited (m*odified from* Premier Gold Mines Limited, www.premiergoldmines.com/s/Home.asp). Key to zone labels: DD, Deep Drilling; EP, East Porphyry; F, F zone; F2, F2 zone; NN, New North; PH, Porphyry Hill; SP, South Porphyry; T, Tenacity; however, acronyms are always used to name zones.

KWG Resources Inc. completed a preliminary economic assessment on the Big Daddy chromite deposit. The study recommends that the project be advanced to the feasibility study phase. KWG Resources has a 28% interest in the Big Daddy chromite deposit and is presently earning an additional 2% interest under an option agreement to create a joint venture with Cliffs Natural Resources on April 1, 2012. KWG Resources also holds a 1% net smelter royalty on production from both the Big Daddy project and the adjacent **Black Thor** and **Black Label chromite deposits** (**Cliffs Natural Resources Inc.** currently owns 72% of the Big Daddy chromite deposit and 100% of the Black Thor and Black Label deposits). The project as described in the preliminary economic assessment includes the development of a railway and power line to the site, an open pit mine and associated crushing plant and infrastructure. It is estimated that the pre-production construction would be completed over 3 years and that the open pit would produce a total indicated resource of 25.35 Mt and an inferred resource of 13.54 Mt of lump chromite mineralization, over a 16-year operating life. The preliminary economic assessment includes a proposed railway which would extend approximately 350 km from the mine and connect to the Canadian National Railway's main line near Nakina. The construction cost for the railway line is the largest single capital expenditure for the project, at an estimated cost of $900 million. The open pit would be mined conventionally using shovels and diesel haul trucks. The ultimate open pit would measure approximately 1.7 km long by 1.3 km wide by 570 m deep. Approximately 1 billion tonnes of waste would be produced over the life of mine at an overall stripping ratio of 27:1. Product preparation would consist of crushing the lump chromite to –51 mm size, prior to trans-shipment by rail (KWG Resources Inc., news release, April 12, 2011).

KWG Resources Inc. announced initiatives by its subsidiary **Debut Diamonds Inc.** on KWG Resources' properties within and south of the "Ring of Fire" area. Debut will analyze glacial till samples recovered from Canada Chrome Corporation's claims along the 330 km planned rail corridor to Nakina. Nearly 6000 soil samples from 811 borings were collected as part of an exploration program conducted by Golder Associates for KWG subsidiary **Canada Chrome Corporation**. To facilitate the analysis of the geotechnical soil profile samples recovered at 500 m intervals along the entire length of the railroad corridor claims, KWG Resources Inc. and its subsidiary Debut Diamonds Inc. have entered into a joint-venture agreement. The agreement will allow Debut Diamonds to conduct heavy mineral separation and analysis of the entire suite of samples. Heavy minerals, representing a variety of mineral deposit types, have been identified (KWG Resources Inc., news releases, July 6 and November 24, 2011).

KWG Resources Inc. announced that a diamond-drilling program was initiated on Big Daddy property in late October, 2011 (KWG Resources Inc., news release, October 27, 2011). The metallurgical drilling portion of this program was to consist of 1900 m of HQ-sized drilling. The program commenced on October 6, 2011 with 1 drill rig, with a second rig added on October 11, 2011. Drilling totalled 1909 m in 9 holes and concluded on October 22. A 4600 kg bulk sample of massive chromitite was removed from core boxes and packaged for transport to Xstrata Process Support in Falconbridge, Ontario. The furnace runs are scheduled for February, 2012 (KWG Resources Inc., news release, January 24, 2012). The resource delineation portion of the program was to consist of 12 000 m of NQ-sized drilling in 38 boreholes. Drilling started immediately following the completion of the metallurgical sampling holes as the rigs became available and was carried out continuously with 2 rigs until winter shut down on December 15. In that time, 23 of the 38 holes were completed for an aggregate total of 7754 m. Completion of the drilling is anticipated in the third week of February, 2012 (KWG Resources Inc., news release, January 24, 2012).

Landore Resources Limited's Junior Lake property, east of Armstrong, hosts numerous highly prospective mineral occurrences (Figure 9). In 2011, Landore completed 67 diamond-drill holes for a total of 16 599 m, focussing on the B4-7 copper-nickel deposit, the B4-8 copper-nickel zone and the Swole Lake nickel and lithium prospects. Some of the more significant results from their drilling are provided (Landore Resources Limited, news releases, May 10, 2011, August 10, 2011 and January 23, 2012):

Drill-Hole No.	From (m)	Width (m)	Ni (%)	Cu (%)	Co (%)	Pd (ppb)	Pt (ppb)	Au (ppb)
0411-315	185.50	3.00	0.23	0.33	0.02	134	35	10
0411-318	125.95	2.77	0.27	0.34	0.03	306	51	11
0411-321	209.25	0.64	0.67	0.25	0.03	459	423	16
0411-322	98.71	2.69	0.54	0.15	0.04	472	54	9
0411-323	43.23	**25.68**	0.13	**0.66**	0.02	139	26	43
including	55.82	**10.01**	0.18	**1.17**	0.03	230	31	83
including	57.70	**1.00**	0.13	**3.69**	0.02	289	<15	276
0411-337	167.00	**2.15**	0.47	**1.13**	0.06	124	36	84

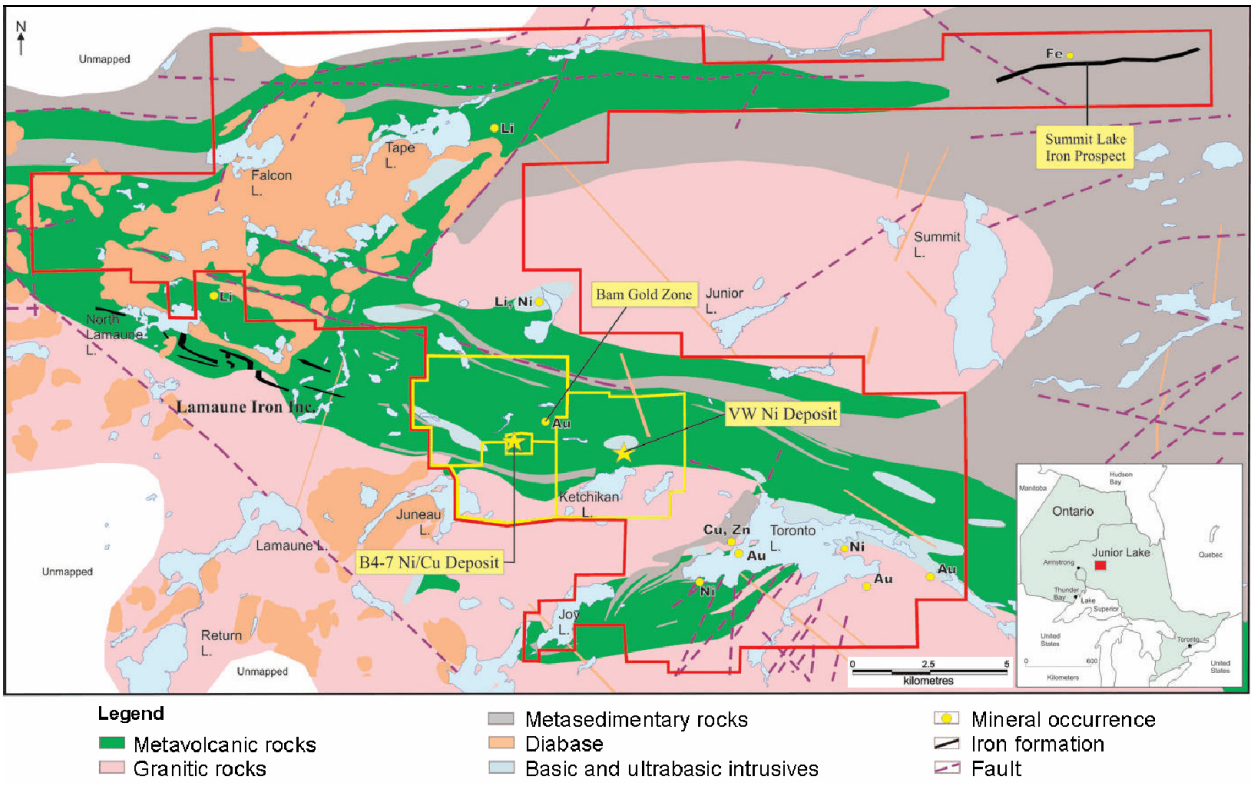

Figure 9. Geology and mineral deposits on the Landore Resources Limited Junior Lake property (*from* Landore Resources Limited, www.landore.com/junior-lake.htm).

Laurion Mineral Exploration Inc. continued work on the **Sturgeon River** property, located 22 km northeast of Beardmore. Exploration activity in 2011 included diamond drilling, an induced polarization (IP) survey and expanding their land package. Laurion acquired a total of 34 claims and 34 mining leases from local prospectors, Beaurax Mines Ltd., Prodigy Gold Inc. and Jubilee Gold Inc. (Figure 10). All the acquired lands are contiguous to the Sturgeon River property (Laurion Mineral Exploration Inc., news releases, February 24, 2011, August 30, 2011, September 8, 2011, and November 22, 2011).

In January 2011, Laurion received results from its 2010 waste rock and tailings sampling program. The results ranged from 0.06 to 10.2 g/t Au and averaged 2.83 g/t Au from 8 samples. Assay results from the tailings sampling program ranged from 0.13 g/t Au over 1 m to 9.65 g/t Au over 0.90 m (Laurion Mineral Exploration Inc., news releases, January 4 and 6, 2011).

Laurion completed a deep drilling program on the No. 3 vein; results included 17.50 g/t Au over 0.50 m, 9.67 g/t Au over 0.74 m and 8.20 g/t Au over 2.99 m (Laurion Mineral Exploration Inc., news releases, February 2 and 22, 2011). The company also conducted an IP survey over the Ahki zone and Asha zone and completed a diamond-drilling program to test the resultant anomalies. Results from the drilling program included 3.10 g/t Au, 27.5 g/t Ag, 0.38% Cu and 5.63% Zn over 3.10 m (Laurion Mineral Exploration Inc., news releases, March 31, 2011 and May 26, 2011). An eight-hole, 1539 m drilling program was also completed on the Teyha (2 holes, 179 m) and Asha (6 holes, 1360 m) zones. Results included 7.59 g/t Au, 2.0 g/t Ag and 1.02% Zn over 1.26 m, as well as 2.3 g/t Ag and 0.33% Zn over 7.50 m (Laurion Mineral Exploration Inc., news releases, July 6, 2011 and October 4, 2011). In December 2011, Laurion initiated a diamond-drilling program on the Mahki zone to target anomalies from a recently completed versatile time-domain electromagnetic (VTEM) survey (Laurion Mineral Exploration Inc., news release, December 12, 2011).

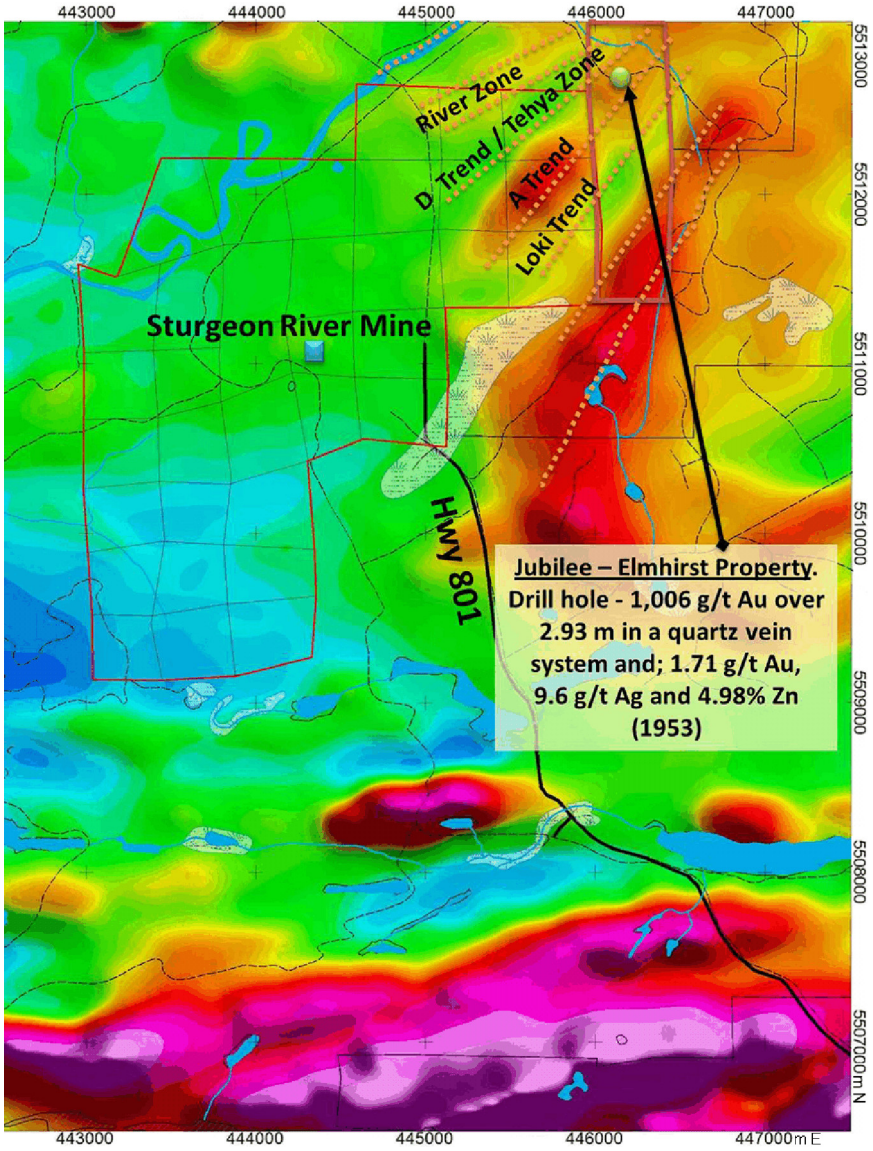

Figure 10. Map of Laurion Mineral Exploration Inc. Sturgeon River property (*from* Laurion Mineral Exploration Inc., www.laurion.ca/s/sturgeon_river.asp?ReportID=497424).

MacDonald Mines Exploration Ltd. continued their exploration programs on the **Butler property**, located within the southern portion of the "Ring of Fire" area, southeast of Webequie First Nation and the **Semple–Hulbert property,** east of Kasabonika First Nation.

The company completed 3800 m in 17 diamond-drill holes on the Butler property, targeting volcanogenic massive sulphide (VMS), copper-nickel-PGE and vanadium mineralization. Highlighted assay results from VMS targets in the Butler 3 zone included 1.76% Zn over 8.11 m in hole BP11-Cu03. Vanadium targets returned up to 1.17% V_2O_5 (MacDonald Mines Exploration Ltd., news releases, May 9 and June 6, 2011). The company also completed a surface pulse electromagnetic (DPEM) survey on the Butler 3 zone in June.

Nine diamond-drill holes, totalling 2553 m, were completed on the Semple–Hulbert project in the northern portion of the "Ring of Fire" area, targeted massive sulphide and nickel-copper-PGE mineralization associated with a largely unexposed mafic intrusion(s). Highlights from drill core samples in hole SH11-04 included 0.607 g/t Pd and 0.325 g/t Pt. Elevated values in nickel, cobalt and copper were also encountered (MacDonald Mines Exploration

Ltd., news release, November 14, 2011). Data analysis of a magnetic and Crone Pulse electromagnetic survey conducted at the Butler property in August, has resulted in the identification of a large geophysical target below the current drill holes. The overall characteristics indicate the possible presence of a VMS-type copper-zinc system.

Melkior Resources Inc. completed a 681 line-kilometres airborne gradient gravity survey in March, 2011 and an eight-hole (1644 m) diamond-drilling program on its 193.28 km^2 **McFaulds East Rim property** (consisting of 1208 claim units), located 110 km east of Webequie in the "Ring of Fire" area. Three short diamond-drill holes were also completed on the **Broke Back** (located 10 km north of Noront Resources Limited Eagle's Nest deposits) and **River Bank** (located immediately west of Melkior's East Rim property) properties. Melkior Resources Inc. signed an option agreement with **Green Swan Capital Corp.**, which allows Green Swan to earn up to a 70% interest in the Riverbank and Broke Back claim groups (Melkior Resources Inc., news release, October 27, 2011).

Melkior was also completing a 12 km induced polarization geophysical survey on a gold-bearing trend in the Longlac area. The property encompasses 28.16 km^2 and consists of a 176 unpatented mining claims in 2 blocks (LL and LL3; Melkior Resources Inc., news release, October 27, 2011).

Noront Resources Ltd. announced an updated mineral resource estimate for the **Eagle's Nest deposit**, located at its McFaulds Lake property in the "Ring of Fire" area. During 2010, the company drilled a total of 20 200 m at the Eagle's Nest deposit. The drilling program expanded the deposit and mineralization has been traced to a depth of approximately 1650 m. The NI 43-101–compliant resource estimate for Eagle's Nest deposit has significantly increased (Noront Resources Ltd., news release, March 4, 2011):

	Tonnage (t)	Ni (%)	Cu (%)	Pt (g/t)	Pd (g/t)	Au (g/t)
MAIN ZONE:						
Measured	5 346 000	2.08	1.07	1.04	3.55	0.20
Indicated	5 643 000	1.50	0.89	0.94	3.27	0.20
Total Measured + Indicated	**11 000 000**	**1.78**	**0.98**	**0.99**	**3.41**	**0.20**
Inferred	**8 966 000**	**1.10**	**1.14**	**1.16**	**3.49**	**0.30**
EAST ZONE:						
Inferred	**1 615 000**	**0.31**	**0.09**	**0.12**	**0.45**	**0.04**

The updated resource is based on 116 holes, totalling 58 300 m, that define the mineralized envelope. This resource estimate includes the Eagle's Nest deposit and the newly reported East zone. Noront is compiling a resource estimate for the Eagle Two deposit. The company also initiated a ground-based geophysical survey and follow-up diamond-drilling program for the Eagle's Nest Complex (which includes Eagle's Nest, Eagle 2 and Blackbird deposits).

Noront Resources Ltd. announced the final assay results from the 2010–2011 winter exploration program at the company's **McFaulds Lake project**. The company completed 16 holes, totalling 8006 m, during the winter field season, 7 of which were completed at the **AT-12 occurrence** to test surface geophysical anomalies. Highlights of assay results from the AT-12 occurrence included a 114.43 m section averaging 0.51% Ni, 0.20% Cu, 0.23 g/t Pt and 0.74 g/t Pd in hole NOT-09-2G30 and a 359.70 m section averaging 0.29% Ni, 0.15% Cu, 0.11 g/t Pt and 0.34 g/t Pd in hole NOT-11-2G50 (Noront Resources Ltd., news release, June 28, 2011).

The company also presented an updated NI 43-101–compliant pre-feasibility study for its Eagle's Nest deposit. The study, supervised by Micon International, indicated that the deposit could support a stand-alone, eleven-year underground operation. The infrastructure would include upgrading an existing winter road from Pickle Lake to Webequie to an all-weather road, building a diesel power plant at Webequie, and constructing a submerged slurry pipeline and power transmission lines from Webequie to the mine site. The mine would produce 1 Mt/year of ore, exploiting a deposit of 11.1 Mt at 1.68% Ni, 0.87% Cu, 0.89 g/t Pt, 3.09 g/t Pd and 0.18 g/t Au (Noront Resources Ltd., news release, August 23, 2011).

Noront completed a summer diamond-drilling program, consisting of 47 holes, totalling 21 137 m, at the **Blackbird chromite deposit**, which is part of the McFaulds Lake project. Significant drill-core assay results from hole NOT-11-1G201 included a 46.97 m section averaging 42.74% Cr_2O_3 at a 2.29:1 Cr to Fe ratio (Noront Resources Ltd., news release, September 13, 2011). The company's current phase of drilling at Blackbird has been completed and

results indicated that the limits of the high-grade chromite mineralization have been expanded to the north-northeast along strike as well as down-dip. The company plans to update the chromite resource and complete a preliminary assessment by the second quarter of 2012.

In December 2011, Noront Resources Ltd. released 2 official notices that begin the public involvement in the regulated processes for the Federal and Provincial government environmental reviews of the Eagle's Nest Mine Project (Noront Resources Ltd., news release, December 2, 2011). This is a critical part of the company's environmental assessment related to the development of the mine project. The 2 notices include a draft "Terms of Reference" prepared by the company in compliance with the Ontario Ministry of the Environment and a federal draft "Environmental Impact Statement Guidelines" released for public review (Noront Resources Ltd., news release, December 2, 2011).

Northern Shield Resources Inc. initiated a winter exploration program on their **Wabassi property** east of Eabametoong First Nation in February, 2011. The program consisted of 7 diamond-drill holes and ground and down-hole electromagnetic and magnetic surveys. The focus of the geophysical surveys and drilling program was a very strong and large, magnetic anomaly identified by an airborne survey carried out subsequent to the initial drilling program in May, 2010. This anomaly is 500 m in length and 70 m wide. The program will be funded by **Discovery Harbour Resources Corp.** under the option agreement with Northern Shield whereby Discovery has the option of earning a 51% interest in the Wabassi property by incurring $3.4 million in exploration expenditures. Prior to the current expenditure programs, Discovery had spent $1.7 million towards its earn-in. Results from drill-core sections in hole 11WA-17 ranged up to 9.1% Cu, 25.5% Zn and 217 g/t Ag (Northern Shield Resources Inc., news release, April 14, 2011). As a result, the companies announced the discovery of a new copper-zinc-silver-(gold) volcanogenic massive sulphide (VMS) occurrence. Northern Shield and Discovery Harbour have jointly staked an additional 180 claims, covering 40 km of the zone that hosts the 2 known occurrences. The new claims triple the size of the Wabassi property to 230 claims.

Northern Shield conducted an airborne versatile time-domain electromagnetic (VTEM) survey covering 6 separate blocks and totalling 7024 line-kilometres. Approximately half the survey was completed over the Wabassi joint-venture property, with the remainder of the survey covering 5 claim blocks composing the **Storm Claim Group** in which Northern Shield maintains a 100% interest. (The Storm Claim Group consists of 6 claims blocks identified as Tempest, Typhoon, Blizzard, Squall, Gale and Monsoon). These survey blocks were designed to cover unflown portions of the Wabassi intrusion and new claims covering horizons favourable for hosting VMS occurrences in the Wabassi area of the Fort Hope greenstone belt (Northern Shield Resources Inc., news release, August 16, 2011).

Northern Shield Resources Inc. also announced the completion of 3 diamond-drill holes, totalling 1168 m, at its 100% owned **Tempest property**. Drill core from hole 11TP-02 returned 19 g/t Ag over 104.2 m (Northern Shield Resources Inc., news release, December 5, 2011). The silver mineralization is associated with stringer, semi-massive and massive sulphides dominated by pyrite and pyrrhotite and hosted by intensely altered metavolcanic rocks. The company also announced that a 10 000 m diamond-drilling program and a 200 line-kilometres ground geophysical program will be initiated on the Wabassi joint-venture property at the end of January 2012.

Northern Superior Resources Inc. and joint-venture partner **Rainy River Resources Ltd.** continued exploration on the **Ti-pa-haa-kaa-ning (TPK)** and **New Growth** properties, located northwest of Neskantaga First Nation (Lansdowne House), in 2011. (The New Growth property is 100% owned by Northern Superior and is located adjacent to, and immediately northwest of, the TPK joint-venture property). The properties currently consist of 85 claims covering an area of 18 189 ha (Figure 11). An 80 line-kilometres induced polarization (IP)–resistivity survey was completed over targets 1 to 4. The preliminary data from the survey identified 15 targets that may be associated with disseminated mineralization. A 2900 m diamond-drilling program was completed on target 3. Assay highlights included 4.74 g/t Au over 6.84 m, including 15.52 g/t Au over 1.50 m. Reverse-circulation drilling was conducted concurrently with the diamond-drilling program, completing the program of 117 holes initiated in July 2010. Preliminary results indicated that the main source of the major gold-grains-in-till anomaly is a 3 km wide area extending from targets 2 and 4 on the leucogranite porphyry stock (Northern Superior Resources Inc., news release, April 13, 2011). An airborne magnetic survey identified that the 5 km long gold-bearing structure on TPK can be traced an additional 8 km northwest onto the New Growth property. This was accomplished using a high-resolution, low-elevation airborne total field magnetic geophysical survey completed this summer over 3950 line-kilometres. The airborne anomaly on the New Growth property is defined by anomalous arsenic-in-till and locally derived gold-

in-till values (Northern Superior Resources Inc., news release, September 14, 2011). The company identified 4 additional gold targets during the 2011 Phase II, reverse-circulation drilling program. This brings to eight the total number of gold targets identified within the strong and regionally extensive TPK gold-grain-in-till dispersal apron.

Northern Superior also recovered 83 gold-bearing boulders, grading up to 727 g/t Au, from the Company's fall exploration program. The boulders were recovered on the margins, within, and down-ice of a narrow, faulted and sheared greenstone belt that measures at least 7 km in length by 2 km in width (Northern Superior Resources Inc., news release, December 7, 2011).

PC Gold Inc. continued with a comprehensive diamond-drilling program on their **Pickle Crow property**, immediately east of Pickle Lake, in 2011. The company announced the discovery of a new, large-scale, gold-arsenic anomalous zone, named the Central Pat East zone, approximately 2 km northwest of the past-producing Pickle Crow Mine. The zone was intersected in 3 diamond-drill holes; results, exemplified by wide, near-surface intersections of up to 0.70 g/t Au over 137.50 m, included multiple higher grade zones, such as 5.36 g/t Au over 9.02 m (PC Gold Inc., news release, January 10, 2011). Drilling in the core area of the Central Pat East zone through the summer continued to confirm a pattern of very broad, low-grade intersections encompassing higher grade shoots. Drill-core assay results from the Central Pat East zone included 0.78 g/t Au over 254 m, including 106 m of 1.0 g/t Au and 6 m of 7.67 g/t Au (PC Gold Inc., news release, July 25, 2011).

The company announced the first NI 43-101–compliant mineral resource estimate for the Pickle Crow Mine property. The inferred mineral resource estimate totals 10.15 Mt averaging 3.9 g/t Au, for 1.26 million ounces of contained gold (cut and diluted), comprising both potential underground and open pit-mineable zones. This initial mineral resource is restricted to the historical Pickle Crow Mine proper and encompasses 3 areas (Shaft 1, Shaft 3, and Albany Shaft – all interconnected underground) with 17 separate mineralized zones (Figure 12). Gold mineralization is hosted in banded iron formations, shear zones (Conduit zone-style), and high-grade quartz veins (PC Gold Inc., news release, April 18, 2011).

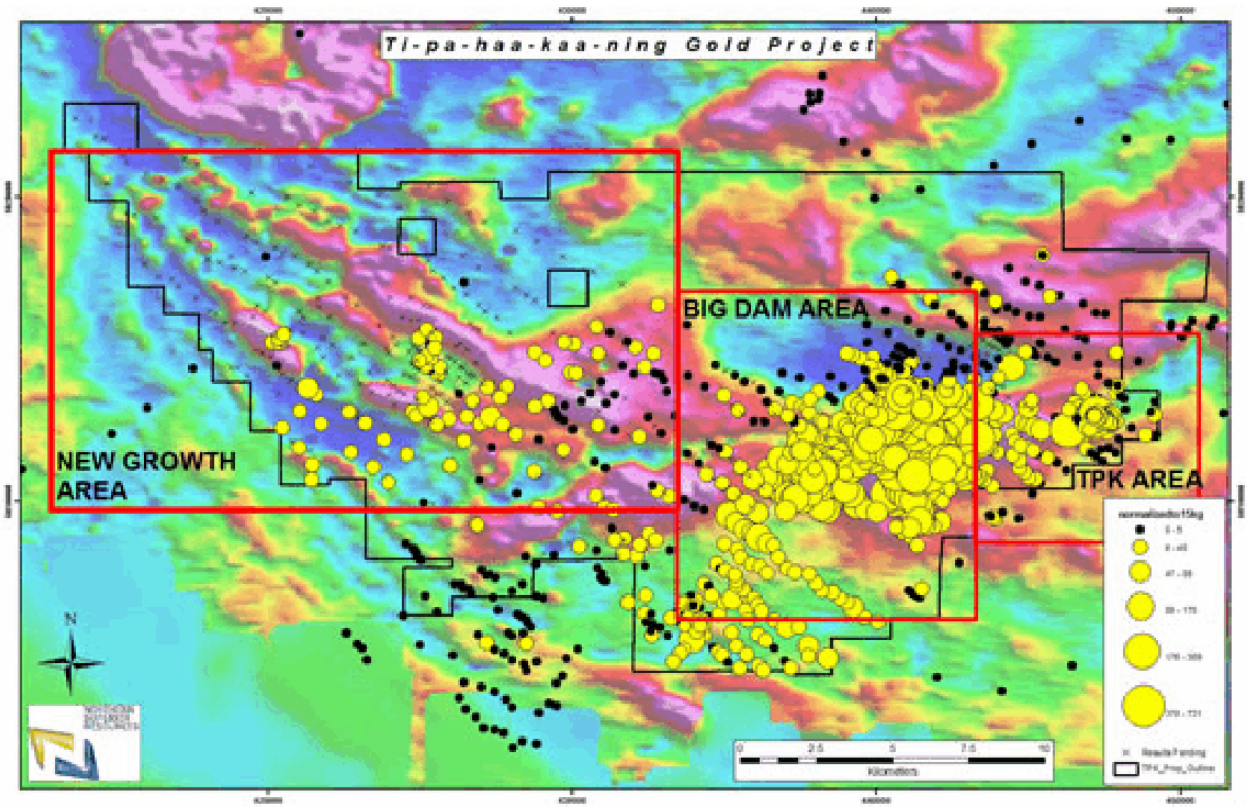

Figure 11. Map of the Northern Superior Resources Inc. Ti-pa-haa-kaa-ning property, showing gold-grain-in-till results and airborne geophysical data (*from* Northern Superior Resources Inc., www.nsuperior.com/Projects/Stull-Wunnimun-Gold-District/TI-PA-HAA-KAA-NING-Gold-Property.aspx).

Micon International Limited was retained to complete a NI 43-101–compliant preliminary economic assessment for the Pickle Crow gold project (PC Gold Inc., news release, July 6, 2011). In addition, discussions with contractors for the dewatering and rehabilitation of the mine are also underway.

PC Gold completed a 75-hole, fall diamond-drilling program, totalling 16 544 m, that targeted near-surface areas of the Core Mine Trend banded iron formation. Assay highlights from this drill program included a 28.5 m section grading 2.33 g/t Au, including 8.96 g/t Au over 3.0 m and 2.54 g/t Au over 10.00 m (PC Gold Inc., news release, January 3, 2012).

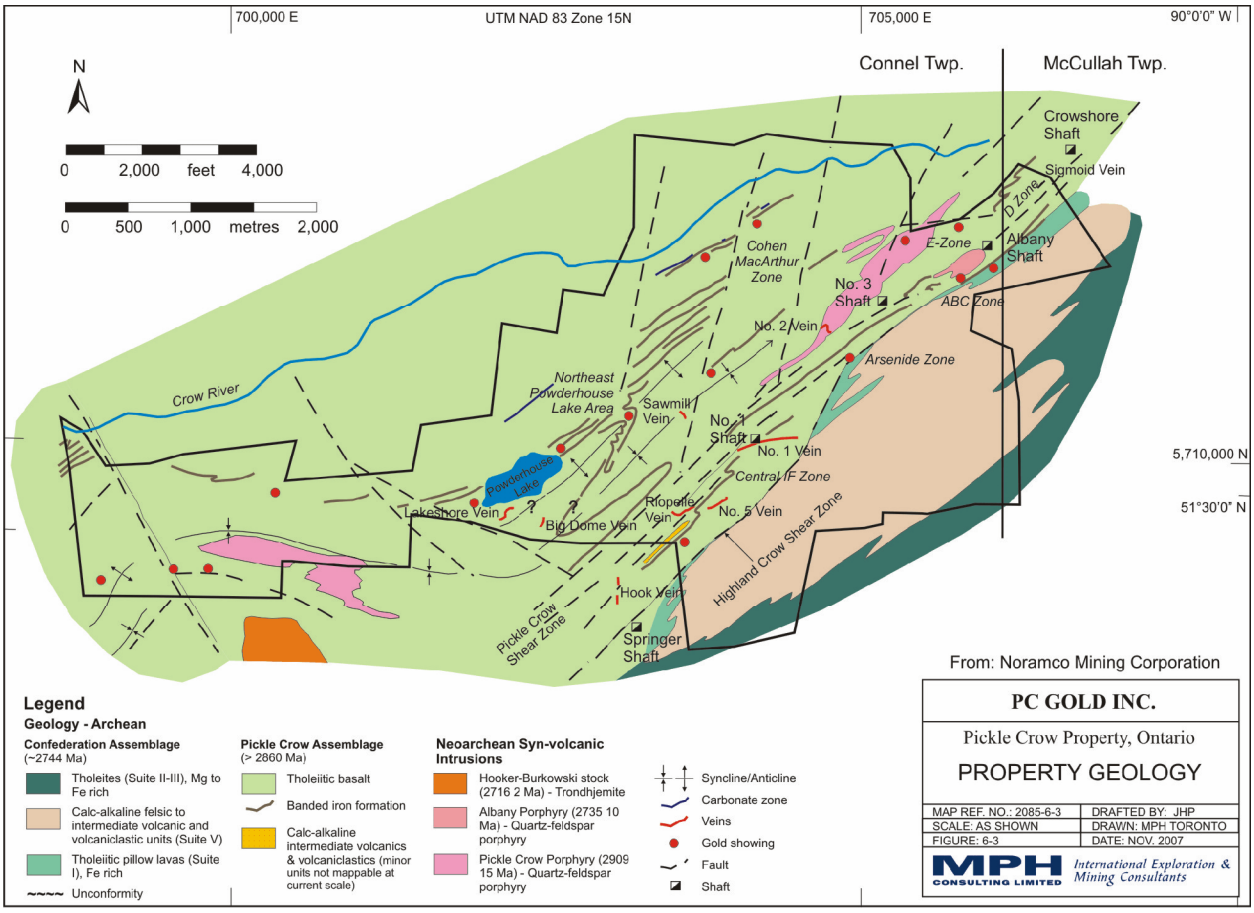

Figure 12. Geology of the PC Gold Inc. Pickle Crow property (*from* PC Gold Inc., www.pcgold.ca/en/Photos_&_Images_-_Geology_40.html).

Rockex Mining Corporation announced a NI 43-101–compliant mineral resource estimate for the company's Eagle Island deposit at its western Lake St. Joseph iron ore project, southwest of Pickle Lake. The mineral resource estimate used a total of 63 drill holes that were dispersed along an area approximately 2.4 km in a north-south direction and 2.9 km in an east-west direction on Eagle Island. The program covered the iron mineralization over the island and slightly into Lake St. Joseph. At an 18% soluble iron cut-off grade, the Eagle Island deposit has an indicated mineral resource of 590 847 000 t grading 28.84% Fe and an inferred mineral resource of 415 757 000 t grading 29.47% Fe (Rockex Mining Corporation, news release, February 4, 2011). The company also initiated the preparation of an economic impact study on the Eagle Island deposit (Rockex Mining Corporation, news release, June 9, 2011). Rockex also completed a high-resolution aeromagnetic survey over its western Lake St. Joseph project and nearby Doran Lake and Root Lake projects. The survey was designed to better define the known iron deposits and to locate new magnetic zones on the properties. Preliminary interpretations of the data indicated an increase in the previously known size of the banded iron formations, extensions to those iron formations and additional mineralized zones in and around the 3 project areas (Rockex Mining Corporation, news release, October

17, 2011). Rockex also released initial results from a planned 8000 m diamond-drilling program on the Eagle Island deposit. The program is targeting recently discovered airborne anomalies as well as testing the mineralized zone at Eagle Island below the 300 m level. By the end of November, 2 drills completed 9 holes totalling 4720 m. Hole EI-106 intersected a 524 m section grading 29.93% Fe underneath the currently defined NI 43-101–compliant resource (Rockex Mining Corporation, news release, November 30, 2011). (Note: Privately held Rockex Limited formed a public company known as Rockex Mining Corporation, which was listed on the Toronto Stock Exchange in March of 2011.)

Rock Tech Lithium Inc. has been actively exploring on their **Georgia Lake Lithium property,** located approximately 35 km south of Beardmore, since December 2010. The property encompasses 10 432 ha in 3 non-contiguous claim blocks: northwestern (containing the Nama Creek, Conway and McVittie properties); the northeastern (Jean Lake and Foster–Lew properties); and the southern (Aumacho and MNW properties). The objective of the first phase of the program was to advance the historic resource of approximately 9.78 Mt averaging 1.18% Li_2O on the Nama Creek and Conway claim blocks, to a NI 43-101–compliant resource.

Caracle Creek International Consulting compiled the resource estimate using 97 historical drill holes in addition to 39 drill holes from Rock Tech's 2009 and 2011 diamond-drilling programs. Of the 55 channel samples included in the resource estimate, 44 were taken by Rock Tech in 2011 from various lithium-bearing dikes on the Nama Creek and Conway properties. However, most of the data for the resource estimate were taken from the nearly 8000 m of diamond drilling completed by the company during the 2011 exploration program. The results of the initial independent NI 43-101–compliant resource estimate for the Georgia Lake project (Rock Tech Lithium Inc., news release, October 26, 2011) are summarized as

Indicated Mineral Resource:	2.36 Mt at 1.17% Li_2O
Inferred Mineral Resource:	4.36 Mt at 1.08% Li_2O
Total Indicated and Inferred Mineral Resource:	6.72 Mt at 1.11% Li_2O

Assay highlights for the 2011 diamond-drilling program (Rock Tech Lithium Inc., news release, September 21, 2011) included

Drill Hole	Length (m)	Li_2O (%)	BeO (ppm)	Rb_2O (ppm)
NC11-14	10.55	1.22	458	854
PL11-01	6.29	2.0	400	563
CW11-09	10.25	0.9	315	1029
NC11-07	6.70	1.39	423	988

An intersection in drill hole PL11-01 also returned 111 ppm Nb_2O_5.

A one-ton bulk sample was also collected from the Nama Creek property in March 2011 and sent to SGS Metallurgical Laboratories in Lakefield, Ontario. This sample was tested for the potential to produce battery-quality lithium carbonate. Preliminary metallurgical testing, announced June 27, 2011, produced a sample of 99.96% Li_2CO_3. Further testing improved the quality of the bulk sample and achieved a purity of 99.988% Li_2CO_3 (Rock Tech Lithium Inc., news release, September 21, 2011). Though specifications for lithium carbonate purity varies among battery manufacturers, purity must meet or exceed a 99.5% threshold.

In November 2011, the company initiated a second-phase exploration program on its Georgia Lake property. The goal of this program was to expand the current NI 43-101–compliant resource by conducting step-out drilling on the Nama Creek claim block in addition to testing the strike extensions on known pegmatite dikes on the property. By January 2012, Rock Tech Lithium completed 4608 m of diamond drilling in 18 drill holes, completed an additional 16 channel samples and tested pegmatite dikes located on the Nama Creek, Conway and Newkirk claim blocks. Highlights of the drill results included 1.09% Li_2O over 8.33 m and 0.94% Li_2O over 3.0 m in drill hole L60-11-03. Channel sampling results included 1.45% Li_2O over 19.51 m in channel L60-11-C08. Anomalous values of rare metals, including rubidium, beryllium, cesium, niobium and tantalum, were also encountered (Rock Tech Lithium Inc., news release, January 18, 2012). Further work in 2102 will focus on developing a preliminary economic assessment for the Georgia Lake Lithium property.

SLAM Exploration Ltd. was active on 3 properties in the Fort Hope greenstone belt in 2011. On the **Reserve Creek property** east of Eabametoong First Nation, SLAM drilled a total of 26 holes in 2 phases of drilling. Significant results from the drilling on Reserve Creek are presented below. The company staked an additional 12 claims (157 claim units totalling 2512 ha) based on the positive drilling results to date (SLAM Exploration Ltd., news release, February 2, 2011).

DDH	From (m)	To (m)	Length (m)	Gold (g/t)
RS1147	187.00	188.00	1.00	2.15
and	192.00	192.80	0.80	3.05
RS1145	180.50	183.00	2.50	6.47
including	181.00	181.50	0.50	18.33
RS1144	149.25	152.15	2.90	4.09
including	149.75	150.25	0.50	16.84
RS1143	109.00	112.00	3.00	2.48
RS1142	11.00	11.50	0.50	3.02
RS1141	77.50	79.00	1.50	2.18
RS1140	122.50	123.00	0.50	6.65
RS1137	122.00	128.00	6.00	2.90
RS1135	142.50	146.50	4.00	2.72
RS1133	131.00	132.20	1.20	5.59
RS1130	81.00	82.00	1.00	4.11

Source: SLAM Exploration Ltd., www.slamresources.com/projects/ontario/reserve-creek-gold/

Beatrix Ventures Inc. and **SLAM Exploration Ltd.** announced the completion of a high-resolution airborne magnetic survey over their jointly owned **Opikeigen Lake gold property,** located northwest of Eabametoong FN (Beatrix Ventures Inc., news release, June 3, 2011). The survey covered 515 line-kilometres at 100 m spacing. The companies also announced initial results from a diamond-drilling program on the Opikeigen property (SLAM Exploration Ltd., news release, September 13, 2011). Highlights included drill-hole OG11-05 that intersected 1.834 g/t Au over 0.7 m within a 33.9 m gold-anomalous interval grading 0.149 g/t Au. A total of 7 holes, totalling 1538 m, were completed during the summer exploration program.

Slam Exploration Ltd. entered into an agreement with **Namex Exploration Inc.** whereby Namex can earn up to a 70% interest in the **Miminiska property**, located 52 km west of Eabametoong FN (SLAM Exploration Ltd., news release, May 9, 2011). Namex undertook a helicopter-borne aeromagnetic survey over the northern portion of the property. They also completed a mobile metal ion (MMI) geochemical soil sampling survey (Namex Exploration Inc., news release, November 23, 2011).

Operator **White Tiger Mining Corp.** and joint-venture partners **Rainy Mountain Royalty Corp.** and **Marshall Lake Mining PLC** completed a detailed induced polarization (IP) survey, down-hole geophysical surveys, three-dimensional (3-D) modelling and 2 phases of diamond drilling on the **Marshall Lake property**, west-northwest of Nakina (Figure 13), in 2011 (White Tiger Mining Corp., news release, May 30, 2011). The goal of the 2011 exploration program was to test the extension of the RM zone. Results from the drilling programs include 0.24% Cu and 0.9 g/t Ag over 100 m, including 20 m of 0.59% Cu and 2.6 g/t Ag from hole RMZ11-25, and 0.60% Cu and 2.7 g/t Ag over 62.5 m, including 24 m of 1.01% Cu and 4.0 g/t Ag from hole RMZ11-23 (White Tiger Mining Corp., news release, May 3 and November 9, 2011).

Wildcat Exploration Ltd. completed a detailed mapping and sampling program over the **McVicar property,** southwest of Pickle Lake, in 2011. The objective of the program was to evaluate and test for extensions to the known gold occurrences and to develop a new mineralization model for the property (Wildcat Exploration Ltd., news release, June 9, 2011). The company collected 139 samples for assay. Highlights included a grab sample with 1.21 g/t Au, a chip sample with 4.22 g/t Au and a channel sample with 1.3 g/t Ag over 1 m. As a result, the company decided to stake additional claims increasing the property size to 22 claims and 5248 ha (Wildcat Exploration Ltd., news release, October 3, 2011).

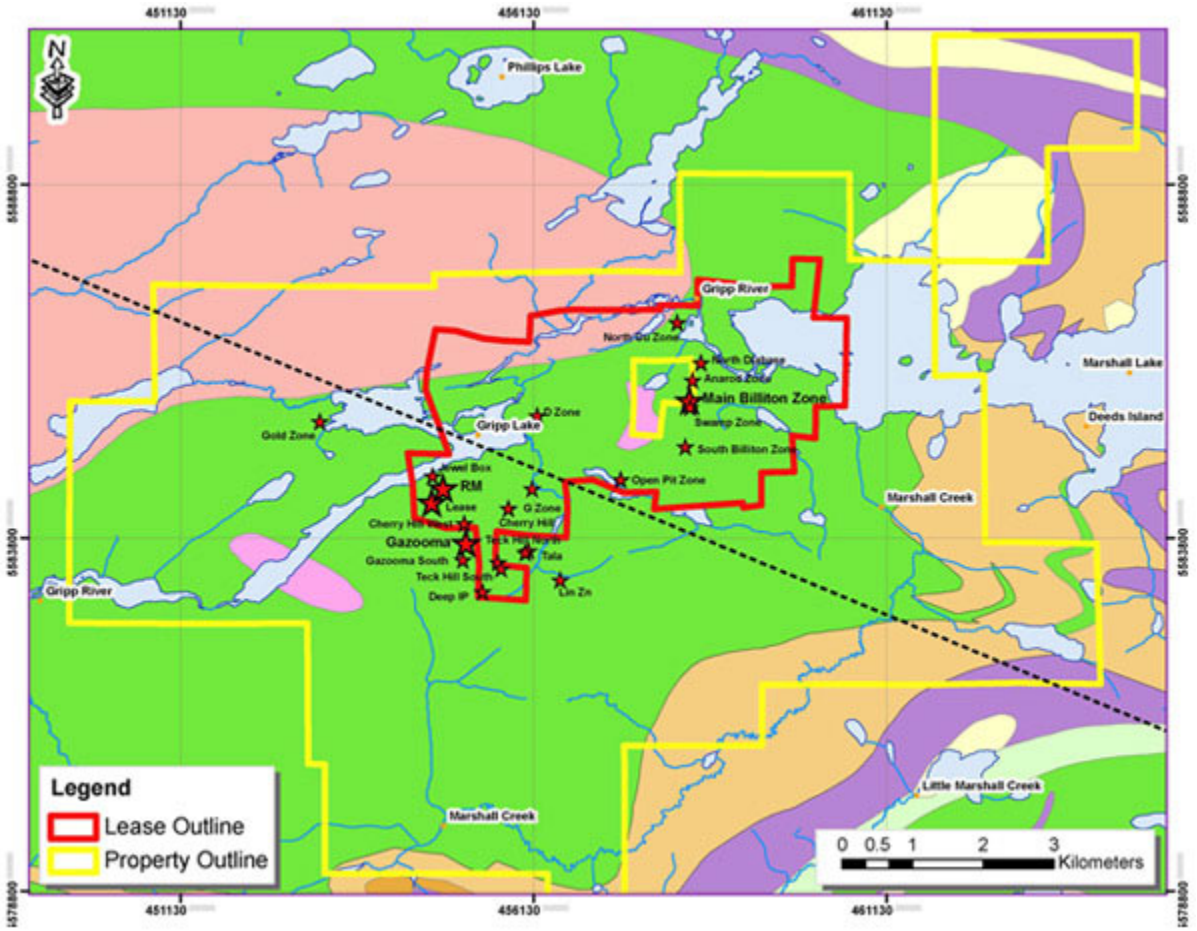

Figure 13. Property outline and geology of the White Tiger Mining Corp. Marshall Lake property (*modified from* White Tiger Mining Corp., www.whitetigermining.com/files/marshall_lake_diagrams_and_maps.php).

RESIDENT GEOLOGIST STAFF AND ACTIVITIES

In 2011, the Thunder Bay North Resident Geologist Program (RGP) comprised Mark Smyk, *P.Geo*. (Regional Resident Geologist), Gerry White, *P.Geo*. (District Geologist), Marcia Brunelle (District Geological Assistant) and Rosey Pelaia (Administrative Assistant). During the year, Mark Smyk assumed the role of Northwest Regional Manager and Gerry White became Acting Regional Resident Geologist. He was assisted by Rob Cundari (Acting District Geologist) on a contract basis. Andrew Cooke, *G.I.T*., assumed Acting District Geologist duties in early 2012 and contributed to the preparation of this report. Significant support was also provided by Cyndee Komar (Administrative Assistant), Genevieve Dorland (GIS/Data Specialist), Hugh Lockwood, *P.Geo*. (Regional Land Use Geologist), Peter Moses (First Nations Minerals Information Officer), and Mike Grant and Mark O'Brien (Mineral Development and Lands Branch), especially in dealing with Far North and First Nations issues.

In 2011, 31 property visits were conducted to 22 properties in the Thunder Bay North and Thunder Bay South districts (Table 4). The RGP staff dealt with over 850 visitors and over 870 telephone, facsimile and e-mail inquiries in the Thunder Bay office, in the Beardmore and Geraldton satellite offices and at symposia. The Beardmore office, established in 1996 in conjunction with the community of Beardmore, was staffed one day per week from May to October. The Geraldton office, co-located in the Greenstone Economic Development Corporation office, was staffed on an *ad hoc* basis. Thunder Bay North RGP staff attended or assisted in the production of materials for the following symposia in 2011: Cordilleran Round-Up, Vancouver (display); Prospectors and Developers Association of Canada Annual Meeting, Toronto (display); Northwestern Ontario Mines and Minerals Symposium, Thunder Bay (presentation and display); Institute on Lake Superior Geology, Ashland,

Wisconsin (presentation); Manitoba Mining and Minerals Convention, Winnipeg (display); and the Ontario Exploration and Geoscience Symposium, Sudbury (display). Regional and district exploration, mining activity and geology presentations were also made to various local organizations including the Greenstone Economic Development Corporation (Geraldton), several community groups and First Nation communities, as well as primary and secondary school students in Thunder Bay.

G.D. White continued in his position as Health and Safety Co-ordinator for the Thunder Bay Mines and Minerals office and co-ordinated tasks associated with the Thunder Bay Drill Core Library, *Northwest Region Summary* and *Recommendations For Exploration* booklets. P. Moses, First Nation Minerals Information Officer, delivered a prospector training course in the Webequie First Nation community in Thunder Bay North District in 2011. Assistance was provided by RGP staff in preparing samples, maps and reports for the course.

Table 4. Property visits conducted in the Thunder Bay North District in 2011.

Number	Property/Occurrence
1	Clist Lake
2	Dona Lake
3	East Leitch
4	Georgia Lake
5	Golden Patricia
6	Hardrock
7	Hercules
8	Kilometre 51
9	King Solomon's Pillars
10	Leitch
11	Limestone Lake
12	Milestone
13	Miner Lake
14	Minnow Lake[PE]
15	Missing Link
16	Paulpic
17	Pickle Crow Mine
18	Rooster Canyon*
19	Sturgeon River
20	Thierry Mine
21	Three Towers
22	Wascanna

[PE] described in "Property Examinations"

* outside Thunder Bay North District

PROPERTY EXAMINATIONS

Minnow Lake Property

The Lafontaine–Minnow Lake property is located immediately north of Minnow Lake in the northeastern portion of Summers Township, approximately 5 km due north of Beardmore. Access to the Minnow Lake claim group is via Highway 580 north from Highway 11 to the 72 Road. The main stripped zone can be reached by travelling a further 5 km north on the 72 Road to a small bush road and proceeding east for 500 m. Beardmore prospectors, Amede and Shirley Lafontaine, control a 16-unit claim block (TB1174268) covering the Minnow Lake occurrence. Prospecting, stripping and limited sampling have been completed by the owners since 1998, tracing a sulphidized banded iron formation for over 400 m along a northeasterly trend.

The earliest exploration in the immediate vicinity of the Lafontaine–Minnow Lake claim group was initiated in 1935, during the same time period as the Leitch gold mine discovery, 5 km to the southwest. Various prospecting syndicates, including the Calhet Exploration and Jake–Stur syndicates, individual prospectors and several companies conducted field programs on more than a dozen properties surrounding the Lafontaine–Minnow Lake property from 1935 to 1989 (Resident Geologist's Office files, Thunder Bay North District, Thunder Bay). Stripping, trenching, sampling and diamond drilling were conducted over numerous pyrite- and arsenopyrite-mineralized, locally shear zone-related, stockwork quartz-carbonate vein systems and related iron formation units, with limited favourable results. Three diamond-drill holes, totalling 340 m, were completed by the Jones–Sijpkens partnership in 1972 (Thompson 1972) over what later became known as the Archie Lake occurrence, located approximately 700 m south of the Lafontaine–Minnow Lake property. The highest value was obtained from a 0.7 m drill section grading 1.13 g/t Au in a pyrite-rich, quartz-rich volcanic breccia unit (Thompson 1972).

In 1989, Placer Dome Inc. completed a five-hole diamond-drilling program, totalling 884 m, on the Archie Lake occurrence (MacEachern 1989). The holes intersected sheared, highly silicified and carbonatized mafic metavolcanic rocks and quartz veins containing up to 40% disseminated pyrite, arsenopyrite and chalcopyrite. No assay results were reported. The Calhet occurrence, located approximately 800 m west of the main stripped zone on the Lafontaine–Minnow Lake property, was first explored in 1935 and later examined by Freewest Resources Canada Inc. in 1992 (Fekete 1992). A stripping and sampling program uncovered 3 significant values greater than 1.42 g/t Au. A grab sample collected from a banded quartz vein containing 2% to 3% disseminated pyrite and chalcopyrite returned 2.95 g/t Au (Hart, ter Meer and Jolette 2002). The Candela occurrence, located just outside the western boundary of the Minnow Lake claim, was explored and diamond drilled by Candela Development Company from 1952 to 1954. Stratmin Incorporated completed a series of 8 diamond-drill holes, totalling 1203 m, over an exploration grid covering the Candela showing in 1987 (Kilbourne 1987). The holes intersected intermediate to mafic metavolcanic rocks with interflow chert-magnetite iron formation and quartz-carbonate veins containing various amounts of pyrite, chalcopyrite and minor arsenopyrite. A grab sample of quartz-carbonate vein, collected from an old trench near the Candela occurrence, returned 1.50 g/t Au, 64.07 g/t Ag, 6.7% Cu and 4% Zn (Hart, ter Meer and Jolette 2002).

The Lafontaine–Minnow Lake property is located along the southern margin and within the western portion of the main, east-trending, Beardmore–Geraldton greenstone belt. This margin represents the southern boundary of the eastern Marmion domain–Wabigoon Subprovince. The Lafontaine–Minnow Lake claim lies in the central metavolcanic sub-belt (Devaney and Williams 1989). Hart, ter Meer and Jolette (2002) described the geology of this belt in the Beardmore area as consisting of intermediate massive and pillowed flows with significant tuffs, lapilli tuffs and tuff breccias, and minor interflow chert and magnetite banded iron formation. Mapping and geophysical interpretation by Hart, ter Meer and Jolette (2002) indicated the presence of several parallel banded iron formation units (including the main stripped zone on the Lafontaine–Minnow Lake claim) that continue to the west of the property.

The main stripped zone (UTM 430116E 5500674N, Zone 16) on the Lafontaine–Minnow Lake occurrence, as observed by staff of the Thunder Bay North Resident Geologist office during a September 2011 visit, is a heavily gossaned, sulphide-rich (mainly pyrite, pyrrhotite and minor chalcopyrite) chert-magnetite banded iron formation approximately 30 to 35 m wide. Previous cross-stripping to the east indicates that this zone can be traced for over 420 m along a northeasterly trend (ranging from 075 to 080°). Discontinuous seams and patches of mainly pyrite up

3 cm in width were noted at various locations within the iron formation across the zone. This sulphidized iron formation appears to be enclosed within a larger, 150 to 160 m wide, deformation zone. This is most evident along the southern contact of the iron formation with the host mafic metavolcanic rocks. Here, well-developed pillowed and amygdaloidal flows have been flattened and strongly sheared along the northeasterly trend.

Samples collected by Resident Geologist Program staff from locations along the sulphidized portion of the iron formation (Photo 1) returned assay results as high as 28 g/t Au (Resident Geologist's Office files, Thunder Bay North District, Thunder Bay).

The potential exists to locate additional, parallel iron formation units that may be gold mineralized in the northern and western portions of the property. Ground-truthing known geophysical anomalies, as discussed by Hart, ter Meer and Jolette (2002), and a careful study of historical diamond-drilling records indicating the presence of iron formation not exposed on surface, would be a valuable exercise for future exploration.

Photo 1. Staff of the Thunder Bay South Resident Geologist Program sampling the heavily gossaned, sulphide-rich iron formation on the Minnow Lake property.

RECOMMENDATIONS FOR EXPLORATION

Gold in the Meen–Dempster and Lang Lake Greenstone Belts

The Meen–Dempster and Lang Lake greenstone belts, occupying the central portion of the Uchi Subprovince (also referred to as the Uchi domain) west of Pickle Lake, warrant re-examination as gold mineralization targets. Past gold production at the Golden Patricia Mine (which produced 620 000 ounces of gold between 1988 and 1997; Resident Geologist's Office files, Thunder Bay North District, Thunder Bay) and numerous documented gold occurrences support the high potential of this area. Although the belts have drawn the attention of the exploration community recently, many areas of known gold mineralization still remain un-staked (Figure 14).

Seim (1993) studied and documented many of the gold occurrences in the Meen–Dempster greenstone belt and described 5 principal types of mineralization:

1. Gold-bearing quartz veins occurring in discrete shear zones (e.g. Golden Patricia Vein, Tonsil zone, Koromond occurrence, Flicka occurrence).
2. Gold-bearing quartz veins filling tension-induced fractures (e.g. Sudbury Point occurrence, South Dunlop Lake occurrence).
3. Shear zone-hosted areas of silicification and/or sericitization and/or carbonatization and/or sulphidization (e.g. Dobie River zone, Umex–Dorothy Lake, Koval–Ohman).
4. Gold-bearing sulphide replacement zones within iron formation and ferruginous metasediments (e.g. Kasagiminnis Lake deposit, McVean Lake occurrence, Esker zone, Powerline zone, B-zone).
5. Gold-uranium mineralization in the sheared contact between the metavolcanics [sic] and the North Bamaji Pluton (e.g. Kirkland Townsite Showing #1).

Many of the gold occurrences described in this report include mineralization that can be placed into one or more of the above deposit sites. For many others, the geological information available is not sufficient to classify the deposit type.

A common feature of the majority of the gold occurrences in the Meen–Dempster greenstone belt is their association with highly sheared and deformed rocks. These highly deformed rocks may be parts of a belt-wide set of deformation zones as suggested above. Andrews et al. (1986) suggested that, in the Red Lake greenstone belt, the gold deposits are essentially products of hydrothermal fluids introduced into ductile deformation zones at a late stage in the tectonic history of the belt and at about the time of plutonic emplacements. This may also be the case on the Meen–Dempster greenstone belt. Stott and Wallace (1984) and Stott and Corfu (1991) suggest that the deformation zones in the Meen–Dempster greenstone belt were active at different points late in the tectonic history of the belt and at about the time of the emplacement of some of the internal plutons. Thus, it is suggested that the role of the deformation zones in the Meen–Dempster greenstone belt, with respect to gold mineralization, may have been similar to that of the deformation zones in the Red Lake greenstone belt.

The Fry Lake area, in the central portion of the Meen–Dempster greenstone belt, was mapped by the staff of the Ontario Geological Survey in 2006 (Dinel and Pettigrew 2008). A number of exploration recommendations were made by Dinel and Pettigrew (2008), focussing not only on areas of known mineralization, but also on relatively unexplored areas that displayed favourable lithologic, alteration and/or structural characteristics.

Those areas of known mineralization that merit further investigation include the Flicka (gold), Don's Lake (gold-uranium-thorium), Sanderson (gold-silver-lead-zinc-copper; cf. Smyk et al. 2007) and McVean Lake (gold) occurrences. The majority of these occurrences were previously documented by Seim (1993) and compiled by Puumala (2009). It should be noted that recent exploration activity in this area has resulted in the staking of some of the known gold occurrences.

Occurrence / Area (UTM Zone 15, NAD83)	Commodity	Targets For Exploration
Flicka occurrence (613800E 5677600N)	Gold	Large northeast-trending shear zones (such as the Fry Lake #9 zone), specifically high-angle splay faults as well as subhorizontal, north-trending extensional fractures hosted within the shear zones in areas of increased quartz veining and sulphide mineralization
Don's Lake occurrence (610120E 5670215N)	Gold-uranium-thorium	Gold-uranium-thorium-mineralized, S_1-parallel shear zones; gold-uranium-thorium–mineralized shear zones within felsic intrusive rocks related to the North Bamaji pluton
Sanderson occurrence (602285E 5671945N)	Gold-silver-lead-zinc-copper	Discrete centimetre- to metre-scale shear zones that strike eastwards and dip steeply, consisting primarily of biotite, chlorite and calcite (and quartz veins contained therein), cutting both mafic metavolcanic rocks and the surrounding North Bamaji pluton, perhaps traced further east into the Rockmere Lake area
McVean Lake occurrence (631200E 5674000N)	Gold	Gold-bearing banded iron formation within a strongly deformed zone of intercalated quartz-feldspar porphyry dikes and chemical sedimentary rocks

Sources: Dinel and Pettigrew (2008); Smyk et al. (2009)

Relatively unexplored areas that should attract exploration consideration for gold include the Fry Lake stock, the Relyea Lake porphyry and an area to the north of Relyea (Dinel and Pettigrew 2008).

Occurrence / Area (UTM Zone 15, NAD83)	Targets For Exploration
Fry Lake stock (620000E 5675500N)	Sericite-carbonate alteration, fine-grained disseminated pyrite and minor tourmaline, as well as locally pervasive, fracture-controlled iron carbonate (with minor quartz and pyrite) alteration and/or veining; 5 cm quartz-tourmaline veins; silicification
Relyea Lake porphyry (627000E 5678000N)	Metre-scale zones of moderate silicification and 1 to 20 cm wide greasy, translucent, bluish quartz veins
North of Relyea Lake (629000E 5680000N)	Gold-anomalous quartz vein in a strongly foliated and tightly folded zone of biotite-sericite alteration in fine-grained sandstone

Recommendations were also made by Dinel and Pettigrew (2008) for volcanogenic massive sulphide copper-zinc, orthomagmatic copper-nickel and molybdenum-copper-gold-silver mineralization in the Fry Lake area.

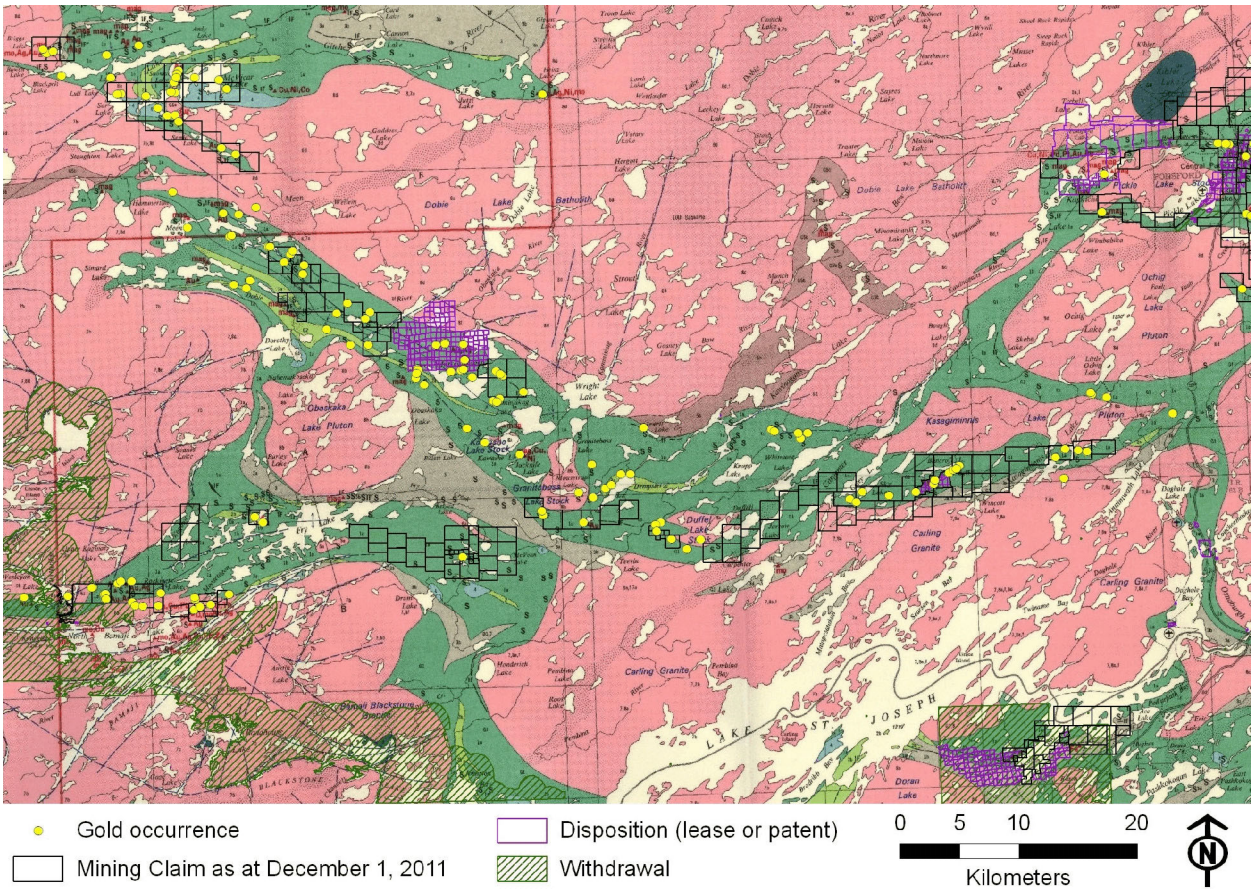

Figure 14. Staked and patented mining claims in the Meen–Dempster and Lang Lake greenstone belts. Geology *from* Sage, Breaks and Troup (1975).

Copper-Nickel-Platinum Group Element Mineralization in the Quetico Basin–Marmion Domain Boundary

The Quetico Basin–Marmion domain boundary east of Longlac has experienced minimal exploration activity related to copper-nickel-PGE mineralization. The lack of any detailed geological mapping and interpretation, in particular where rocks of the eastern Marmion domain are overlain by Paleozoic cover of the James Bay Lowland northeast of Caramat (cf. Innes and Ayres 1969), has deterred exploration in this area. Discovery of PGE-bearing, mafic intrusive bodies along the northern boundary of the Quetico Basin, both in the Atikokan–Shebandowan area to the west and in the Hearst area to the east, enhances the mineral potential of the entire domain boundary zone east of Lake Nipigon. Work in 1999 and 2000 by East West Resource Corporation and Canadian Golden Dragon Resources Ltd. on their McCoig–Fintry–Shuel townships properties, 80 km west of Hearst, identified several pyroxenite-gabbro bodies containing anomalous copper-nickel-PGE mineralization (Resident Geologist's Office files, Thunder Bay North District, Thunder Bay).

There are several sources of information, both historic and recent, that can be used to identify magnetic anomalies, which may be related to mafic intrusive bodies in this area. The 1962 joint federal–provincial government regional airborne magnetometer survey maps (ODM–GSC 1962) and the 1:1 000 000 scale Geology of Ontario maps should be studied. In particular, the total magnetic field (Gupta 1991a: Map 2586) and vertical magnetic gradient (Gupta 1991b: Map 2590) series are highly useful in delineating anomalous magnetic features. The Operation Treasure Hunt Nakina–Longlac area lake sediment survey (OGS 2000) contains information that should be utilized in conjunction with the geophysical data (1991 and 1962) for the eastern Longlac region. Several anomalous areas related to copper-nickel-PGE mineralization have been identified by the survey and should be explored. These are listed in order of importance as follows:

1. East Chipman Lake–Fernow Lake area (O'Meara–Fernow townships)
2. Sadie–Meg–McKay lakes area (south-southeast of Longlac)
3. Caramat–Mustela Creek area (Caramat area)
4. East Lukinto–Sandlink lakes area (east of Longlac)

It is significant to note that all 4 of these areas display multi-site, multi-element anomalies (i.e., PGE with accompanying base metal signatures). The drainage systems within each of these areas should be studied carefully with special attention to in-flow points, basin influence and any known local bedrock geology.

OGS ACTIVITIES AND RESEARCH BY OTHERS

S. Buse (Precambrian Geoscience Section, OGS) carried out bedrock mapping in the Miminiska Lake area, west of Eabametoong First Nation (Buse 2011). This mapping is part of a multi-year bedrock geology mapping project and a PhD thesis study by S. Buse, which are designed to map the entire eastern Uchi Subprovince (also referred to as Uchi domain), including the Fort Hope greenstone belt, the surrounding granitoid rocks to the north and English River metasedimentary basins to the south. The project started with the mapping of the Keezhik Lake area in 2010, which had not been mapped since the 1930s. The goals of the eastern Uchi Subprovince (Uchi domain) bedrock mapping project are to

1. create a set of 1:50 000 scale bedrock geology maps for the Fort Hope greenstone belt;
2. subdivide the Fort Hope greenstone belt into tectonic assemblages and correlate them westward with the Pickle Lake and Red Lake greenstone belts using lithogeochemistry and geochronology;
3. determine the evolution of tectonic settings for individual tectonic assemblages and the overall tectonic setting of the Fort Hope greenstone belt during its construction during the Uchian orogeny (Percival et al. 2006);
4. determine the nature of the terrane and domain boundaries to the north and south of the eastern Uchi Subprovince (Uchi domain); and
5. examine and, based on the above, interpret the mineral potential of the eastern Uchi Subprovince (Uchi domain).

R.T. Metsaranta (Precambrian Geoscience Section, OGS) continued a multi-year compilation and bedrock geology mapping project designed to better understand the geological context of various new metal discoveries in the McFaulds Lake area of the James Bay Lowland (Metsaranta and Houlé 2011). Some basic goals of the project will be refining the existing broad regional compilation maps, developing stratigraphic sections through the volcanic-sedimentary stratigraphy, conducting geochronologic studies to constrain the ages of various rock units and mineralization events, developing a better understanding of the size and distribution of the mafic to ultramafic intrusions and developing a better understanding of the structural and metamorphic history of the region. The project should also help to constrain the broader tectonic evolution of the northern Superior Province, particularly the easternmost exposed part of the Oxford–Stull domain.

G.M. Stott and **S. Buse** (Precambrian Geoscience Section, OGS) published results of the lithogeochemistry and isotopic geochemical work related to a study of Paleoproterozoic gabbro sills of the Sutton Inliers and Neoarchean granitoid rocks in the Hudson Bay Lowland (Buse and Stott 2011). The Sutton Inliers were visited in August 2009 over a four-day period in order to briefly examine their geology, determine their economic potential and collect samples for lithogeochemistry, isotope geochemistry, geochronology and paleomagnetism. The results of the geochronology study, as well as structural and regional tectonic interpretations, are described in Stott et al. (2010) and Stott, Hamilton and Kamo (2010).

P.J. Barnett and **K.H. Yeung** (Sedimentary Geoscience Section, OGS) completed a third year of a continuing Far North Terrain Project in the Hudson and James Bay lowlands (Barnett and Yeung 2011). In 2008, the Ontario government announced plans to permanently protect half of the Far North region of Ontario and launched a planning process, the Far North Information Knowledge Management (FNIKM) Plan, to support this goal. The project involved a combination of both the analysis of remotely sensed imagery and field-based mapping and sampling. Field work for the FNIKM Plan Terrain Mapping project (Barnett and Yeung 2009) began during the summer of 2009 with helicopter-supported field surveys. In 2011, field work was centred around the "Ring of Fire" area in response to the interest in the mineral potential and the significance of the chromite deposits discovered in this area. The area of field observations was also extended beyond the Far North southern boundary to include the communities of Nakina, Aroland and Pickle Lake where existing transportation infrastructure exists. Key components of the field work include making observations of landform–sediment relations and observations of the associated vegetation communities.

C. Gao (Sedimentary Geoscience Section, OGS) conducted a helicopter-supported program of surficial geology mapping and drift sediment sampling in the McFaulds Lake area of the James Bay Lowland during the 2011 field season (Gao 2011). This project was undertaken to gain an understanding of the Late Quaternary stratigraphy and glacial history in the "Ring of Fire" area, which will assist in the interpretation of both the field and laboratory data for follow-up exploration work.

A number of thesis-related and faculty research projects, Lakehead University, took place in the Thunder Bay North District in 2011. They are listed in Table 5.

Jeff Steadman (University of Tasmania) began field work in the Beardmore–Geraldton and North Caribou Lake greenstone belts in 2010 as part of his PhD study of laser ablation inductively coupled plasma mass spectrometry (LA-ICP–MS) mapping of iron-rich phases, rare earth element characteristics and the composition of sulphur isotopes in sulphides associated with banded iron formation-hosted gold deposits. His continuing study will investigate the implications of his results in understanding ore genesis.

Dylan Wales (University of Ottawa) completed an undergraduate thesis on the synvolcanic intrusion in the centre of the Keezhik volcanic complex, northwest of Eabametoong First Nation, in order to characterize its composition and to describe the nature of gold-related sulphide mineralization and alteration.

A .Van Lankvelt, D. Schnieder, K. Hattori (Department of Earth Sciences, University of Ottawa) conducted research with J. Biczok (Goldcorp Canada Ltd.) on magmatism in the North Caribou greenstone belt near Musselwhite Mine.

T. Kalbfleisch, J. Duff, D. Schneider, K. Hattori (Department of Earth Sciences, University of Ottawa) conducted research with J. Biczok (Goldcorp Canada Ltd.) in providing evidence of tectonism at 2.45 Ga in the North Caribou greenstone belt.

Table 5. Lakehead University HBSc and MSc thesis and other research projects (2011).

Faculty Member	Research Topic(s)
Dr. P. Hollings	Greenstone belt geochemistry; Midcontinent Rift-related intrusions (with M.C. Smyk, OGS)
Dr. P.W. Fralick	Precambrian sedimentary sequences (English River–Wabigoon–Quetico–Wawa subprovinces; banded iron formation; Sibley Group)
Dr. M.L. Hill	Structural geology of the Musselwhite Mine
MSc Theses:	
Robert Cundari (In Progress)	Geochemistry of Midcontinent Rift-related intrusive rocks around Thunder Bay
Maura Kolb (Completed)	A microstructural study of Musselwhite Mine and Hammond Reef shear-zone-hosted gold deposits (2011)
Robert Scott (In Progress)	Deformation and gold mineralization at Musselwhite Mine
Steve Siemieniuk (In Progress)	Prospectivity analysis of the Wabigoon Subprovince, Ontario
Victoria Stinson (In Progress)	Structural control of gold mineralization, Beardmore–Geraldton belt
HBSc Theses:	
Daana Magi (Completed)	Geology and gold mineralization of the Paint Lake property, Beardmore–Geraldton belt, Ontario (2011)

Publications received in the Thunder Bay North Resident Geologist office in 2011 are shown in Table 6. Mineral deposits not being mined in the district are listed in Table 7.

Table 6. Publications received by the Thunder Bay North Resident Geologist's Office in 2011.

Title	Author(s)	Type and Year of Publication
Index to Maps, Bedrock Geology, 1991–2010	Ontario Geological Survey	Ontario Geological Survey, set of 4 maps, scale 1:1 000 000 (2011)
Index to Maps, Surficial Geology, 1991–2010	Ontario Geological Survey	Ontario Geological Survey, set of 4 maps, scale 1:1 000 000 (2011)
Index to Published Reports, Maps and Digital Data, Mines and Minerals Division, 1993 to 2010	Ontario Geological Survey	Ontario Geological Survey, Miscellaneous Paper 177 (Supplement 1993–2010), 2011
Geographic Index to Published Reports, Maps and Digital Data, Mines and Minerals Division, 1994 to 2010	Ontario Geological Survey	Ontario Geological Survey, Miscellaneous Paper 178 (Supplement 1994–2010), 2011
1:250 000 Scale Bedrock Geology of Ontario	Ontario Geological Survey	Ontario Geological Survey, Miscellaneous Release—Data 126 – Revision 1 (2011)
Ontario Airborne Geophysical Surveys, Magnetic and Electromagnetic Data, Grid and Profile Data (ASCII and Geosoft® Formats) and Vector Data, Pickle Lake Area	Ontario Geological Survey	Ontario Geological Survey, Geophysical Data Set 1012 – Revised (2011)
Summary of Field Work and Other Activities, 2011	Edited by R.M. Easton, O.M. Burnham, B.R. Berger, G.P. Beakhouse, J.R. Parker, R.I. Kelly and E.J. Debicki	Ontario Geological Survey, Open File Report 6270, 378p. (2011)
Report of Activities 2010, Resident Geologist Program, Thunder Bay North Regional Resident Geologist Report: Thunder Bay North District	M.C. Smyk, G.D. White, H.C. Lockwood and N.A. Bennett	Ontario Geological Survey, Open File Report 6262, 47p. (2011)
Mineral Occurrences of the Central North Caribou Terrane	M.A. Puumala and N.A. Bennett	Ontario Geological Survey, Open File Report 6256, 203p. (2011)
GIS Compilation of Mineral Occurrences in the Central North Caribou Terrane, Northwestern Ontario	M.A. Puumala and N.A. Bennett	Ontario Geological Survey, Miscellaneous Release—Data 271 (2011)

Title	Author(s)	Type and Year of Publication
Airborne Magnetic and Electromagnetic Surveys, Colour-Filled Contours of the Residual Magnetic Field and Electromagnetic Anomalies, Mameigwess Lake–Highbank Lake Area—Purchased Data	Ontario Geological Survey	Ontario Geological Survey, Maps 60 335 to 60 347, scale 1:20 000 (2011)
Airborne Magnetic and Electromagnetic Surveys, Shaded Colour Image of the Second Vertical Derivative of the Residual Magnetic Field and Keating Coefficients, Mameigwess Lake–Highbank Lake Area—Purchased Data	Ontario Geological Survey	Ontario Geological Survey, Maps 60 348 to 60 360, scale 1:20 000 (2011)
Airborne Magnetic and Electromagnetic Surveys, Colour-Filled Contours of the EM Decay Constant and Electromagnetic Anomalies, Mameigwess Lake–Highbank Lake Area—Purchased Data	Ontario Geological Survey	Ontario Geological Survey, Maps 60 361 to 60 373, scale 1:20 000 (2011)
Ontario Airborne Geophysical Surveys, Magnetic and Electromagnetic Data, Grid and Profile Data (ASCII and Geosoft® Formats) and Vector Data, Mameigwess Lake–Highbank Lake Area—Purchased Data	Ontario Geological Survey	Ontario Geological Survey, Geophysical Data Set 1235 (2011)
Airborne Gravity Gradiometer and Magnetic Survey, Residual Total Magnetic Field, McFaulds Lake Area	R. Dumont and S.W. Hefford	Geological Survey of Canada, Open File 6934 to 6942; Ontario Geological Survey, Maps 82 506 to 82 514, scale 1:50 000 (2011)
Evidence for 2.45 Ga Tectonism Recorded in the North Caribou Greenstone Belt, Northwestern Ontario	T. Kalbfleisch, J. Duff, D. Schneider, K. Hattori and J. Biczok	Abstract 2011 GSA Annual Meeting, Minneapolis, Minnesota, Paper No. 190-6 (2011)
Punctuated Magmatism in the North Caribou greenstone belt, Superior Province	A .Van Lankvelt, D. Schnieder, K. Hattori and J. Biczok	Abstract 2011 GSA Annual Meeting, Minneapolis, Minnesota, Paper No. 190-4 (2011)
Neoarchean Magmatism in the NW Superior Craton: Granitoids of the North Caribou Terrane	A. Van Lankvelt, D. Schneider, K. Hattori, and J. Biczok	Abstract, 57th Institute of Lake Superior Geology, Ashland, Wisconsin (2011)

Table 7. Mineral deposits not being mined in the Thunder Bay North District in 2011.

Abbreviations

AF ..... Assessment Files
CAMH .....*Canadian and American Mines Handbook*
CMH ..... *Canadian Mines Handbook*
GR..... Geological Report
MDC .....Mineral Deposit Circular [No.15–]
[*formerly* Mineral Resources Circular, No.1-14]
MDIR.....Mineral Deposit Inventory record
MLS.....Mining Lands, Sudbury
MR.....Mining Recorder
NM.....*The Northern Miner*
OFR ..... Open File Report
PC ..... Personal Communication

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Arseno Lake (53B14/NE)	Zn, Pb, Cu, Ag	920 000 t @ 8.7% Zn+Pb, 1.5 opt Ag	Energold Minerals Inc. – Northern Dynasty Minerals Ltd. (CAMH 2011–2012, p.230; CAMH 2009–2010, p.207, 424)	CAMH 2006–2007, p.157	Inactive
Aumacho River (Brink) (42E05/SW)	Li	855 475 tons @ 1.633% Li_2O	Rock Tech Lithium Inc. (CAMH 2011-2012, p.545)	GR 31, p.64 (1965)	Active
B4-7 (42L05/NW)	Ni, Cu, Co, PGE	Indicated: 2.00 Mt @ 1.06% Nickel Equivalent (NiEq) Inferred: 0.61 Mt @ 0.87% NiEq (using a Cut-off grade of 0.25% Ni) (NI 43-101–compliant resources)	Landore Resources Inc., Annual Report, 2010	Landore Resources Inc., Annual Report, 2010	Active

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Barton Bay (42E10/NW)	Fe	500 000 000 tons (grade ~ 25.2%)	Premier Gold Mines Limited (formerly Roxmark Mines Limited, CAMH 2009–2010, p.498)	Resident Geologist's files, Thunder Bay North District	Optioned in 2007 by Premier Gold Mines Limited as part of Hardrock (Geraldton) project
Big Daddy (Ring of Fire) (43D16/SE)	Cr	Indicated Resource: 23.2 Mt @ 40.66% Cr_2O_3 Inferred Resource: 16.3 Mt @ 39.09% Cr_2O_3 (NI 43-101-compliant resources)	Cliffs Natural Resources Inc. / KWG Resources Inc. (CAMH 2011–2012, p.165, 367)	CAMH 2011-2012, p.165, 367	Active
Blackbird (Ring of Fire) (43D09/NW)	Cr	Measured and Indicated Resource: 7.562 Mt @ 36.34% Cr_2O_3 Inferred Resource: 3.488 Mt @ 34.93% Cr_2O_3 (NI 43-101-compliant resources)	Noront Resources Ltd. (CAMH 2001–2012, p.452)	Noront Resources Ltd., news release, December 9, 2009	Inactive
Black Creek (Ring of Fire) (43D16/SE)	Cr	Measured and Indicated Resource: 8.645 Mt @ 37.41% Cr_2O_3 Inferred Resource: 1.61 Mt @ 37.78% Cr_2O_3 (NI 43-101-compliant Resources)	Probe Mines Limited (CAMH 2011–2012, p.512)	CAMH 2011-2012, p.512	Inactive
Black Thor (Ring of Fire) (43D16/SE)	Cr	Inferred Resource: 16.71 Mt @ 40.46% Cr_2O_3 (cut-off grade of 35% Cr_2O_3 (NI 43-101-compliant resource)	Cliffs Natural Resources Inc. (CAMH 2011–2012, p.163)	Freewest Resources Canada Inc., news release, January 14, 2010	Inactive
Brookbank (42E12/NW)	Au	Indicated Resource of 1.33 Mt @ 8.8 g/t Au (376 200 oz) and Inferred Resource of 1.01 Mt @ 7.3 g/t Au (236 300 oz) (at 3.4 g/t Au cut-off) (NI 43-101–compliant)	Premier Gold Mines Limited (CAMH 2011–2012, p.509)	CAMH 2011–2012, p.509	Active
Central Onaman Range (42L03/NW)	Fe	200 000 000 tons @ *ca.* 30% Fe	1401385 Ontario Inc. (MDC 11, p.407)	MDC 11, p.407	Active
Conway (52H08/NE)	Li	1.83 Mt @ 0.96% Li_2O to 300 m	Rock Tech Lithium Inc. (CAMH 2011–2012, p.545)	GR 31, p.68 (1965)	Active
Dobie Zone (52O06/NE)	Au	301 000 t @ 5.5 g/t Au	K. Kukkee, optioned to Trillium North Minerals Ltd. and Manicouagan Minerals Inc. (CAMH 2011–2012, p.650, 394)	OFR 5869, p.161-162	Drilling in 2010; joint venture with Manicouagan Minerals Inc.
Doran Lake (52J15/NE)	Fe	171 000 000 tons @ 22.3% magnetic Fe; 205 000 000 tons @ 16.7% magnetic Fe	Privately held	MDC 11, p.450	Inactive
Eagle and Fish Island (52J14/NE)	Fe	Indicated Mineral Resources of 590 847 000 t grading 28.84% Fe and Inferred Mineral Resources of 415 757 000 t grading 29.47% Fe (Eagle Island deposit, @ 18% soluble iron cut-off grade) (NI 43-101–compliant resources)	Rockex Mining Corporation (CAMH 2011–2012, p.545)	CAMH 2011–2012, p.546	Active; drilling 2011–2012 to upgrade resource
Eagle's Nest (43D09/NW)	Ni, Cu, PGE, Au	Reserves: 11.13 Mt @ 1.68% Ni, 0.87% Cu, 0.89 g/t Pt, 3.09 g/t Pd and 0.18 g/t Au Inferred Resources: 8.966 Mt @ 1.10% Ni, 1.14% Cu, 1.16 g/t Pt, 3.49 g/t Pd and 0.30 g/t Au (NI 43-101-compliant resources)	Noront Resources Ltd. (CAMH 2011–2012, p.452)	CAMH 2011–2012, p.452	Active

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Eva Township (52H09/NE)	Fe, P	A.L. 414: 3 500 000 tons @ 33.5% Fe, 0.118% P to 600 foot depth A.L. 416: 5 000 000 tons @ 30% Fe		MDC 11, p.378	Inactive
Georgia Lake (Nama Creek and Conway) (52H08/NE)	Li	Indicated Resource: 2.36 Mt @ 1.17% Li_2O Inferred Resource: 4.36 Mt @ 1.08% Li_2O (NI 43-101–compliant resources)	Rock Tech Lithium Inc. (CAMH 2011–2012, p.545)	Rock Tech Lithium Inc., news release, October 26, 2011	Active
Goss Lake (Frond Lake) (52P09/SW)	Au	271 000 t @ 5.10 g/t Au	Landore Resources Limited (www.landore.com/miminiska-lake.htm)	Landore Resources Inc., news release, March 9, 2010	2003–2006 ongoing exploration program as part of Miminiska Lake property
Hardrock (Ashmore / Errington) (42E10/NW)	Au	Measured and Indicated Resources (open pit and underground): 20.77 Mt @ 3.73 g/t Au (2 491 732 ounces) Inferred Resource: 6.80 Mt @ 5.13 g/t Au (1 122 700 ounces) (NI 43-101–compliant resources)	Premier Gold Mines Limited (CAMH 2011–2012, p.509)	CAMH 2011–2012, p.509	Active; ongoing drilling 2011–2012
Headway Coulee (42L04/SE)	Zn, Ag	250 000 t @ 4.44% Zn, 1.32 opt Ag	N. Cox, L. Holt (optioned to Sage Gold Inc.) (Sage Gold Inc., news release, May 4, 2006)	OFR 5630, p.41	Active
Hercules (Elmhirst) (42E13/SE)	Au	Indicated Resource: 231 800 t @ 14.95 g/t Au Inferred Resource: 761 300 t @ 4.13 g/t Au (NI 43-101–compliant resources)	Prodigy Gold Inc. (CAMH 2011–2012, p.512)	CAMH 2011–2012, p.512	Inactive
Howells Lake (52P10/SW)	Au	83 000 t @ 0.07 opt Au (+1.37% Sb) and 660 000 t (+3.1% Sb) with erratic gold values	Barrick Gold Corporation	OFR 5926, p.68	Last active in 1988
Jacobus (42E13/SE)	Cu, Ni	1 million tons @ 0.94% Cu+Ni	Sage Gold Inc. (CAMH 2011–2012, p.557)	CAMH 2006–2007, p.305	Inactive
Jean Lake (42E05/NW)	Li	1.689 Mt @ 1.30% Li_2O	Rock Tech Lithium Inc. (CAMH 2011–2012, p.545)	Jean Lake Lithium Mines Ltd., Annual Report (1957)	Active
Junior Lake (B4-7 Deposit) (42L05/SW)	Ni, Cu, PGE	Inferred Resource 5 870 000 t @ 0.32% Ni, 0.20% Cu, 0.03% Co (@ 0.2% Ni Equivalent cut-off) (NI 43-101–compliant resources)	Landore Resources Inc. (CAMH 2008–2009, p.341)	Landore Resources Limited, news release, May 14, 2008	Diamond drilling 2003–2009, active
Karl Zeemel (53B09/SW)	Au	n/a	Goldcorp Inc.	n/a	Active as part of Musselwhite Mine-based exploration
Kasagiminnis Lake (52O08/SW)	Au	2.9 Mt @ 5.8 g/t Au	K. Kukkee, optioned to Trillium North Minerals Ltd. and Manicouagan Minerals Inc. (CAMH 2011–2012, p.650, p.394)	NM, April 18, 1988	Active; drilling in 2011
Key Lake (Lindsley) (42E11/NE)	Au	Indicated resource potential of 200 000 ounces per 100 vertical metres	Premier Gold Mines Limited (news release, Premier Gold Mines Limited, June 22, 2011)	CAMH 2004–2005, p.368 (Goldstone Resources Inc.)	Active; drilling in 2011

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Kilometre 61 (52I08/NW)	Mo, Cu, Ag	Indicated Mineral Resources (@ 0.02% Mo cut-off grade): 66.6 Mt @ 0.063% Mo, 0.09% Cu and 2.6 g/t Ag Inferred Mineral Resources (@ 0.02% Mo cut-off grade): 38.9 Mt @ 0.065% Mo, 0.09% Cu and 2.7 g/t Ag (NI 43-101-compliant resources)	Linear Metals Corporation (CAMH 2011–2012, p.379)	CAMH 2011–2012, p.379	Inactive
Koval–Ohman (52O07/SE)	Au	471 589 t @ 5.81 g/t Au	Barrick Gold Corp.	OFR 5869, p.317	Inactive
Lake St. Joseph (52O01/SW)	Fe	616 000 000 tons @ 23.0% soluble Fe to 550 foot depth	J. and J. Buchanan	MDC 11, p.455	Inactive
Lamaune (42L05/NW)	Fe	Exploration target of 545 000 000 t at an average grade of 29% Fe (@ a cut-off grade of 20% Fe, to a depth of 300 m)	Landore Resources Limited (www.landore.com/junior-lake.htm)	Landore Resources Limited, news release, March 15, 2010	Active
Lavoie Lake (43D05/NE)	Cu, Ni	14.6 Mt @ 0.58% Cu, 0.37% Ni	INV Metals Inc. (CAMH 2010–2011, p.322); International Nickel Ventures Corporation (news release, November 12, 2007)	OFR 5926, p.101	Inactive
Lynx (Onaman) (42L04/SE)	Cu, Ag	Inferred Resource: 1 936 000 t @ 1.44% Cu, 39.6 g/t Ag, 0.58 g/t Au	Sage Gold Inc. (CAMH 2011–2012, p.557)	Sage Gold Inc., news release, March 31, 2009	Resource generated in 2009; active
Magnet Mine (42E11/NE)	Au	69 200 tons @ 0.34 ounce Au per ton measured and indicated	Premier Gold Mines Limited (CAMH 2010–2011, p.282)	CAMH 2006–2007, p.376	Active
Marshall Lake (42L05/NE)	Cu, Zn, Ag, Au	2.211 million tons @ 1.22% Cu, 4.2% Zn, 2.45 ounces Ag per ton, 0.012 ounce Au per ton	White Tiger Mining Corp. / Rainy Mountain Royalty Corp. / Marshall Lake Mining PLC (CAMH 2011–2012, p.698)	CAMH 2005–2006, p.289	Active
McFaulds 1 (43D16/SE)	Cu, Zn	Inferred Resource: 279 000 t @ 2.13% and 0.58% Zn	UC Resources Ltd. / Cliffs Natural Resources Inc. / KWG Resources Inc. (CAMH 2011–2012, p.368)	CAMH 2011–2012, p.368	Inactive
McFaulds 3 (43D16/SE)	Cu, Zn	Indicated Resource: 802 000 t @ 3.75% Cu and 1.1% Zn	UC Resources Ltd. / Cliffs Natural Resources Inc. / KWG Resources Inc. (CAMH 2011–2012, p.368)	CAMH 2011–2012, p.368	Inactive
McVittie (52H08/NE)	Li	261 000 T @ 1.03% Li_2O	Rock Tech Lithium Inc. CAMH 2010–2011, p.503)	GR 31, p.89 (1965)	Active
Miminiska Lake (52P09/SW)	Au	232 000 t @ 5.62 g/t Au	Landore Resources Ltd.. (www.landore.com)	Landore Resources Limited, news release, March 9, 2010	Diamond drilling 2003–2006; active
Nortoba–Tyson (52H09/NE)	Mo	72 000 t @ 1.04% Mo	Premier Gold Mines Limited (Goldstone Resources Inc., CAMH 2010–2011, p.282)	Roxmark Mines Limited Technical Report , P.A. Bevan, April 2006 (Resident Geologist Files, Thunder Bay)	Inactive
Norton Lake (42M14/NW)	Ni, Cu, Co, Pd	Measured and Indicated Resource 2 258 654 t @ 0.67% Ni, 0.61% Cu, 0.03% Co and 0.46 g/t Pd (NI 43-101–compliant resource)	White Tiger Mining Corp. / Rainy Mountain Royalty Corp. / Trillium North Minerals Ltd. (CAMH 2011-2012, p.523, 650, 698)	CAMH 2009–2010, p.629, 197, 584	Active

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Northern Empire Mine (42E12/SW)	Au	Indicated Resource: 86 652 tons @ 10.70 g/t Au Inferred: 64 748 tons @ 9.95 g/t Au (NI 43-101–compliant resources)	Premier Gold Mines Limited (Goldstone Resources Inc., CAMH 2010–2011, p.282)	Roxmark Mines Limited, Qualifying Report, November 2008	Active
Paulpic (42L04/NE)	Au	200 000 t @ 0.231 ounce Au per ton	Advantel Minerals (Canada) Ltd. / Markinch Resources Inc. (www.advantelminerals.com)	OFR 5630, p.465	Active
Pickle Crow Mine (52O09/SE)	Au	10.15 Mt @ 3.9 g/t Au (1 262 000 ounces) (NI 43-101–compliant resource)	PC Gold Inc. (CAMH 2011–2012, p.492)	CAMH 2011-2012, p.492	Active
Skibi Lake (42L10/NW)	Fe	335 000 000 tons @ 26.2% acid-soluble Fe		MDC 11, p.445	Inactive
Stewart Lake (42L11/NW, NE)	Fe	49 500 000 tons @ 30% Fe		MDC 11, p.446	Inactive
Summit Lake (42L05/NE)	Fe	40 000 000 tons @ 30% Fe to 1000 foot depth	Landore Resources Limited, news release, November 30, 2010	MDC 11, p.438	Inactive
Thierry Mine (52O08/NW)	Cu, Ni, PGE	Main Deposit: Measured and Indicated Resource: 8.281 Mt @ 1.73% Cu, 0.20% Ni, 4.3 g/t Ag, 0.05 g/t Au, 0.04 g/t Pt and 0.13 g/t Pd Inferred Resource: 14.639 Mt @ 1.70% Cu, 0.16% Ni, 6.5 g/t Ag, 0.10 g/t Au, 0.07 g/t Pt and 0.21 g/t Pd K1-1 deposit (Open Pit): Inferred Resource: 19.897 Mt @ 0.10% Ni, 0.42% Cu, 2 g/t Ag, 0.03 g/t Au, 0.05 g/t Pt and 0.21 g/t Pd (NI 43-101–compliant resource)	Cadillac Ventures Inc. (CAMH 2011–2012, p.125)	CAMH 2011-2012, p.125	Active
Umex–Dorothy Lake (52O06/NW)	Au	236 220 t @ 6.17 g/t Au	K. Kukkee, optioned to Trillium North Minerals Ltd. and Manicouagan Minerals Inc. (CAMH 2011–2012, p.650, 394)	OFR 5869, p.260; NM, June 11, 1990, p.13	Active
Vegan–Newkirk (42E05/SW)	Li	750 000 T @ 1.38% Li_2O	Rock Tech Lithium Inc. (CAMH 2011–2012, p.545)	NM, March 22, 1956	Active
VW (42L05/NW)	Ni, Cu	Indicated Resource (@ 0.2% Ni cut-off): 4.49 Mt @ 0.393% Ni, 0.054% Cu Inferred Resource (@ 0.2% Ni cut-off): 473 000 t @ 0.38% Ni, 0.05% Cu (NI 43-101–compliant resources)	Landore Resources Inc. (CAMH 2008–2009, p.341)	Landore Resources Limited, news release, March 26, 2008	Active
Zulapa (42M12/SW)	Au	700 000 t @ 0.28 opt Au to 200 m	Eabametoong (Fort Hope) First Nation	OFR 5926, p.208	Inactive (within FN boundary)

**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. Many of these estimates are not in compliance with the reporting standards required by National Instrument 43-101.*

Resources estimate values presented as measured, indicated or inferred are in compliance with the reporting standards required by National Instrument 43-101.

Unit abbreviations used: *lbs = pounds; Mt = million tonnes; opt = ounces per ton; oz = ounce(s); t = tonnes*.

REGIONAL LAND USE GEOLOGIST ACTIVITIES

Land Use Planning Activities

The northwest Regional Land Use Geologist, based in Thunder Bay, co-ordinates input into land use planning activities in the Thunder Bay South, Thunder Bay North, and Red Lake–Kenora Resident Geologist districts. Hugh C. Lockwood, *P.Geo.*, filled this position throughout 2011.

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 northwest Regional Land Use Geologist dealt with a variety of land use planning issues throughout the Northwest Region; the following sections summarize issues, and describe the work that was done.

CROWN LANDS

The Ministry of Northern Development and Mines engages with the Ministry of Natural Resources when Crown land use planning activities have the potential to impact Provincial mineral interests. These activities include Forest Management Planning, energy and other major infrastructure projects, Far North land use planning, proposed parks, and various other initiatives related to Crown land use.

Forest Management Planning

The forest management planning process involves consideration of a wide range of values including mineral values in the context of forestry activities, and the relevance of legislation other than the *Crown Forest Sustainability Act*, including the *Mining Act*. The northwest Regional Land Use Geologist normally 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.

Formal comments and mineral values maps were provided for the Pic River, Ogoki, and Wabigoon forest management units in 2011. The data provided included past mineral production; known mineral resources; the locations of mining land tenure and mining-related hazards; and a discussion of current exploration activity and trends.

Far North Land Use Planning

Providing geoscience advice in support of the community-based land use planning initiatives of First Nation communities in the Far North remains a priority in the Northwest Region. In 2011, the northwest Regional Land Use Geologist, together with other Resident Geologist Program staff members from the Thunder Bay North and Red Lake districts, worked extensively with the Ministry of Natural Resources and the Cat Lake, Slate Falls, Pauingassi, and Little Grand Rapids First Nations as they finalized and began to implement their land use plans through the Far North land use planning initiative. Mineral values mapping and mineral industry information were provided, mineral potential was discussed, and compromise solutions to conflicting land uses and Best Management Practices for mineral industry activities developed.

Mineral values mapping and initial industry activity summaries were also prepared for the traditional territories of the Deer Lake, Wawakapewin, and Kasabonika First Nations, as land use planning began in those areas. The northwest Regional Land Use Geologist also gave a presentation on MNDM's role in community-based land use planning to representatives from a number of Far North First Nations at the Boreal Prospectors Association's Northern Ontario Mines and Minerals Symposium.

In addition, guidance was provided with regard to excluding a part of the Little Grand Rapids First Nation planning area with high mineral potential—the Cherrington Lake greenstone belt—from a rapidly evolving candidate site for UNESCO World Heritage designation that was initially proposed to overlay the entire Pikangikum, Little Grand Rapids and Pauingassi land use plans. The Cherrington Lake belt was ultimately kept open for staking.

Withdrawal Orders

Other work related to Crown land use in the Northwest Region included reviews of 32 applications for withdrawal of lands from staking under Section 35 of the *Mining Act*. Some applications were for surface rights only; some were for mining rights only; and some were for both surface and mining rights. The requests were done 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 and/or 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.

Reviews by the Regional Land Use Geologist ensured that mineral potential, mineral industry activity, and mining related hazards are identified and considered before decisions were made.

Comments, guidance and recommendations were provided for 7 aggregate extraction proposals throughout northwestern Ontario.

Of special note is the review of 6 applications for withdrawal of Crown mining rights under private surface rights under Section 35.1(8) of the *Mining Act*. The *Mining Act* requires that mineral potential be considered in these cases, and 3 of these applications were not recommended on grounds that the properties had high mineral potential.

MUNICIPAL AND PRIVATE LANDS

The Provincial Policy Statement (PPS), which guides municipal planning in Ontario, is issued under the provisions of the *Planning Act*. The Provincial Policy Statement was last modified in 2005. A compulsory five-year review of the Provincial Policy Statement 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 northwest Regional Land Use Geologist's assistance with the Provincial Policy Statement 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.

The Ministry of Northern Development and Mines supports municipal and private land use planning directly through the One-Window Planning Service led by the Ministry of Municipal Affairs and Housing. When requested, the northwest Regional Land Use Geologist provides input into, and reviews, draft Official Plans, Official Plan Amendments, draft plans of subdivision and consent (severance) applications to ensure that Provincial mineral interests are appropriately considered in the planning process. MNDM input includes

- providing data regarding mineral potential, mining claims and leases, exploration and mining activity and mining-related hazards to planning authorities, planning consultants and the Ministry of Municipal Affairs and Housing 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 Ministry of Municipal Affairs and Housing "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.

In 2011, reviews, comments, mineral values mapping and other input as required were provided for Official Plans and Official Plan Amendments for the municipalities of Dryden, Rainy River, Emo, LaVallee, Chapple, Schreiber, Atikokan, Oliver–Paipoonge, Dorion, Alberton, Shuniah, and Conmee. In addition, preconsultations and reviews were provided in conjunction with 24 subdivision and consent applications.

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).

Comments and recommendations were made for 52 applications for exemption from mining taxes under Section 189 of the *Mining Act*. The northwest Regional Land Use Geologist recommended against granting 28 of these applications on grounds that the properties in question have high mineral potential.

FIRST NATIONS

In addition to doing work related to Far North land use planning, the northwest Regional Land Use Geologist reviewed the mineral potential of lands planned for transfer to Canada on behalf of the Rainy River, Red Rock, Pays Plat, Biinjitiwaabik Zaaging Anishinaabek (Rocky Bay), and Mitaanjigamiing (Stanjikoming) First Nations in fulfillment of land claim agreements.

OTHER ACTIVITIES

The northwest Regional Land Use Geologist also undertook a variety of other work in 2011, as outlined below.

Client Inquiries

The northwest Regional Land Use Geologist handled inquiries from a number of concerned landholders affected by mineral industry activities or mining-related hazards. He also responded to inquiries from mineral industry proponents regarding camps, access issues in general, conflicts with other land users, and the decommissioning of forest industry roads and water crossings installed by the forest industry throughout the Northwest Region. These inquiries typically required inter-ministerial consultations and discussion with private parties to develop solutions.

Class Environmental Assessments

Class Environmental Assessments 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 Environmental Assessments 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 northwest Regional Land Use Geologist worked with staff of the Ministry of Natural Resources and other ministries to ensure that mineral values and mineral industry interests were identified and accommodated early in the planning process of projects subject to Class Environmental Assessments. Infrastructure proponents commonly require considerable assistance to understand the various mineral industry interests that might be affected by their projects, and how mining land tenure may restrict their development plans.

Guidance regarding claimholders' interests, exploration activity, mining activity, mineral potential, and mining-related hazards was provided for 9 Class Environmental Assessment reviews for projects throughout northwestern Ontario in 2011, including a run-of-river power project near Thunder Bay, a major power-line corridor to serve the Little Jackfish power development north of Lake Nipigon, and the realignment and four laning of Highway 11/17 east of Thunder Bay.

Environmental Registry

The Environmental Registry is an online resource that contains public notices about environmental matters being proposed by all Ontario government ministries covered by the Environmental Bill of Rights. The public notices contain information about proposals including new acts, regulations, policies and programs; plans to change or eliminate existing ones; and plans to issue permits for a wide range of activities across Ontario.

The northwest Regional Land Use Geologist monitored the Environmental Registry and distributed a monthly summary of postings of interest to MNDM staff.

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 8.

Table 8. 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.

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Metric Conversion Table

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

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