

**Report on**

**MERC INTERNATIONAL MINERALS INC.'S**

**2005 Geophysical Program**  
**on the**

**Borthwick Lake Property**

**Setting Net Lake Area (G-1879)**  
**Red Lake Mining Division, Ontario**  
**N.T.S. 53C / NW**

**April 3<sup>rd</sup>, 2006**  
**Thunder Bay, Ontario**

**Desmond Cullen, P.Geo.**

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## Maps (in back pocket)

**North Grid Total Field Mag**  
**North Grid Max-Min Profile Fr. 444 Hz**  
**North Grid Max-Min Profile Fr. 3555 Hz**  
**South Grid Total Field Mag**  
**South Grid Max-Min Profile Fr. 444 Hz**  
**South Grid Max-Min Profile Fr. 3555 Hz**

**SUMMARY**

Clark Exploration Consulting of Thunder Bay, Ontario was contracted by Merc International Minerals Inc. ("Merc") of Toronto, Ontario to conduct an exploration program on their Borthwick Lake Property consisting of linecutting, Max-Min EM surveys and magnetometer surveys.

The property hosts the past producing Berens River Gold Mine and numerous occurrences of gold mineralization hosted in quartz veins. The gold bearing quartz veins are located within either volcanic and sedimentary rocks or trondhjemite intrusions. Gabbro and granitoids have intruded the supracrustal rocks. These occurrences have been the subject of past exploration, including sinking a number of shafts and pits, accompanied by sampling. The Berens River Mines Ltd. processed 560,607 tons of ore from the No.1 Vein producing 157,696 oz of gold, 5,796,177 oz of silver, 6,105,872 lbs of lead and 1,797,091 lbs of zinc (George, 1987).

The claims are located within Setting Net Lake Area, Red Lake Mining Division, in the vicinity of the abandoned town site of Favourable Lake 200 km north of Red Lake, Ontario (Figure 1). The property is connected to South Trout Lake, 5 km to the north-northwest, by an old bush road. The Sandy Lake First Nation's community is located 35 km to the north-northeast. The small First Nation's settlements of Deer Lake and North Spirit Lake are located 35 km and 50 km to the southeast, respectively.

The property consists of 17 unpatented, unsurveyed mining claims comprising 159 units totalling approximately 2544 hectares. The claims are located in the Setting Lake Area (G-1879), N.T.S. 53C NW. The claims are held in good standing by Anaconda Gold Corp. ("Anaconda") and J.F. Cook, an officer of Anaconda. Merc International Minerals Inc. can earn a 60% interest in the property by making payments to Anaconda totalling CDN \$80,000 and incurring total expenditures of \$1.0 million within four years ending October 1, 2009.

Gold mineralization on the property occurs in quartz veins located within a sequence of volcanic and sedimentary rocks. The most significant mineralization in the area is considered to be the precious-base metal mineralization of the Berens River Mines property. Here, a series of sub-parallel, south-dipping veins occur in the east-trending zones within felsic volcanics. The mineralization consists of silicification, pyrite, sphalerite, galena, minor chalcopyrite, and gold and silver minerals, and occurs in shoots in structures, which have been offset by faulting (Whittaker 1989).

At this time it is recommended that attention be paid to exploring several of the Max-Min conductors outlined by Merc's 2005 geophysics program. In particular, a previous drill hole by Noramco near the west end of the Max-Min conductor that crosses Borthwick Lake is reported to have intersected 0.419 ounces per ton gold over 2.0 metres. This target should be tested further, first by accurately locating the old drill hole if possible, and then drilling under it and stepping out along the strike of the conductor. The Max-Min conductors in the area of the Goldhill and Northrock Showings are also of interest, and should also be drill tested.

## **INTRODUCTION and TERMS OF REFERENCE**

Clark Exploration Consulting of Thunder Bay, Ontario was contracted by Merc International Minerals Inc. ("Merc") of Toronto, Ontario to conduct an exploration program on their Borthwick Lake Property consisting of linecutting, Max-Min EM surveys and magnetometer surveys.

The property hosts the past producing Berens River Gold Mine and numerous occurrences of gold mineralization hosted in quartz veins. The gold bearing quartz veins are located within either volcanic and sedimentary rocks or trondhjemite intrusions. Gabbro and granitoids have intruded the supracrustal rocks. These occurrences have been the subject of past exploration, including sinking a number of shafts and pits, accompanied by sampling. The Berens River Gold Mine produced 4,904 kg of gold between 1939 and 1948 (Winter, 1988).

## **PROPERTY DESCRIPTION AND LOCATION**

The claims are located within Setting Net Lake Area, Red Lake Mining Division, in the vicinity of the abandoned town site of Favourable Lake 200 km north of Red Lake, Ontario (Figure 1). The property is connected to South Trout Lake, 5 km to the north-northwest, by an old bush road. The Sandy Lake First Nation's community is located 35 km to the north-northeast. The small First Nation's settlements of Deer Lake and North Spirit Lake are located 35 km and 50 km to the southeast, respectively.

The property consists of 17 unpatented, unsurveyed mining claims comprising 159 units totalling approximately 2544 hectares. The claims are located in the Setting Lake Area (G-1879), N.T.S. 53C NW (Figure 2). The claims are numbered 3006092 to 3006094, 1185125, 1185126, 1215237, 12125238, 1205339, 1205340, 1205341, 1205342, 3002224 to 3002226, 4207398, 4207399 and 4207401. Individual claim data is listed in Table 1. The claims are held in good standing by Anaconda Gold Corp. ("Anaconda") and J.F. Cook, an officer of Anaconda. Merc International Minerals Inc. can earn a 60% interest in the property by making payments to Anaconda totalling CDN \$80,000 and incurring total expenditures of \$1.0 million within four years ending October 1, 2009.

There are a total 13 hazards located on the property: Berens River, AMIS report # 03901 lists 9 hazards and Berens River Zone 3, AMIS report # 03936 lists 4 hazards. In the Letter of Intent to Purchase Wolfden Projects it is stated that: "It is understood that there are no environmental liabilities associated with the Projects. Regardless of this, ANU will only be responsible for environmental matters in respect of work

conducted by ANU after the transfer of the Projects has taken place.” Work permits are not required in Ontario to perform the work prescribed in this report. Two shafts are located on the property, shaft #1 was sunk to a depth of 518 metres and shaft #2 was sunk to a depth of 232 metres (Roach, 1989). The shaft and raises are sealed and the open stope is fenced (V.B. Cook 1994).

**Table 1. Borthwick Lake Property Claims**

<b>Claim No.</b>	<b>Recording Date</b>	<b>Assessment Due Date</b>	<b>Work Required</b>	<b>Units</b>
1185125	June 26, 2000	June 26, 2006	\$3200	8
1185126	June 26, 2000	June 26, 2006	\$3200	8
3006092	Nov 12, 2002	Nov 12, 2006	\$6000	15
3006093	Nov 12, 2002	Nov 12, 2006	\$6000	15
3006094	Nov 12, 2002	Nov 12, 2006	\$6400	16
1215237	July 24, 1996	July 24, 2006	\$800	2
1215238	July 24, 1996	July 24, 2006	\$4000	10
1205339	Sept 29, 2003	Sept 29, 2006	\$1600	4
1205340	Sept 29, 2003	Sept 29, 2006	\$6400	16
1205341	Sept 29, 2003	Sept 29, 2006	\$1600	4
1205342	Sept 29, 2003	Sept 29, 2006	\$5200	13
3002224	April 17, 2002	April 17, 2006	\$5600	14
3002225	April 17, 2002	April 17, 2006	\$1600	4
3002226	April 17, 2002	April 17, 2006	\$2400	6
4207398	July 14, 2005	July 14, 2007	\$4000	10
4207399	July 14, 2005	July 14, 2007	\$2400	6
4207401	July 14, 2005	July 14, 2007	\$3200	8
<b>TOTAL</b>			<b>\$63,600</b>	<b>159</b>

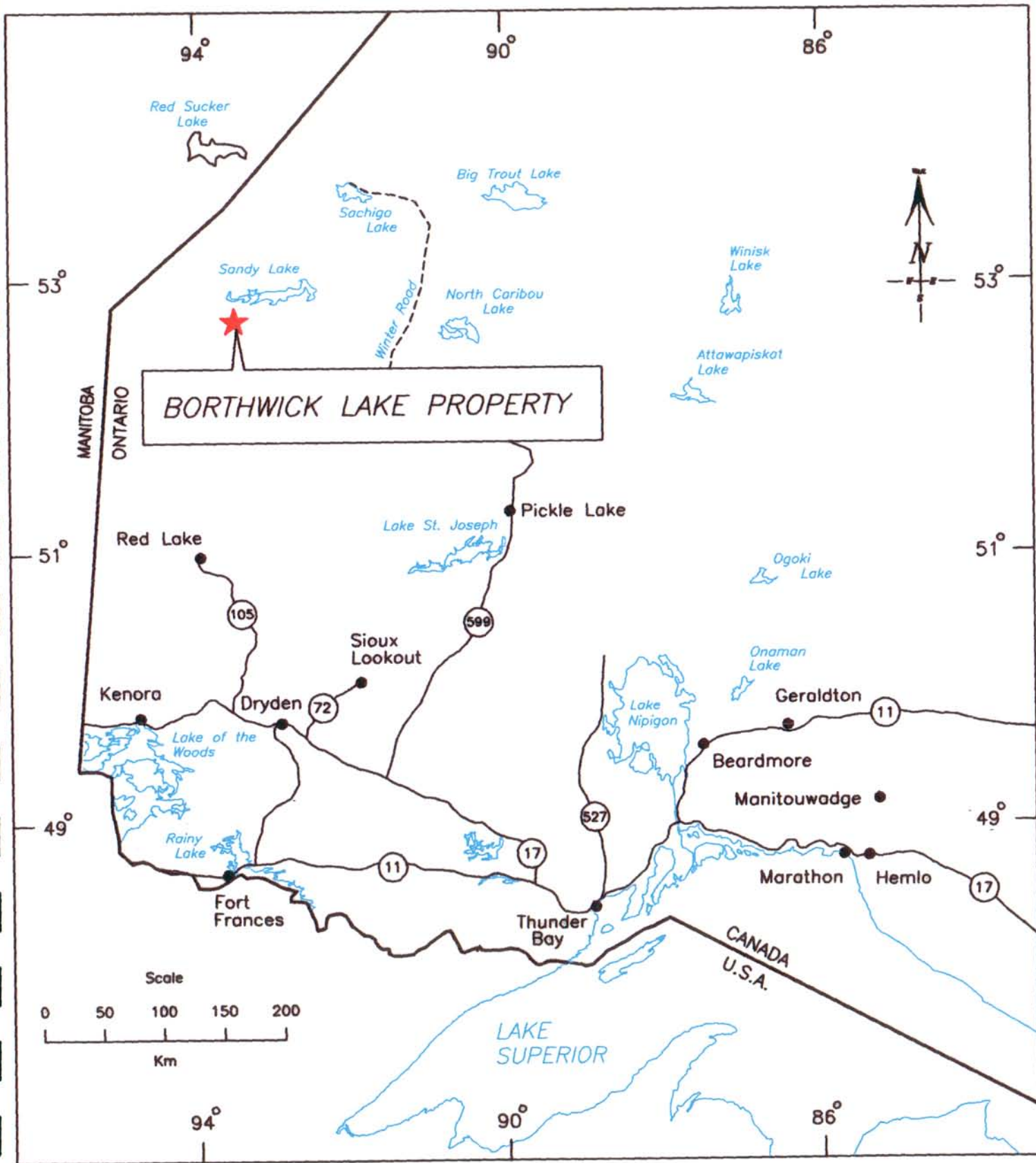
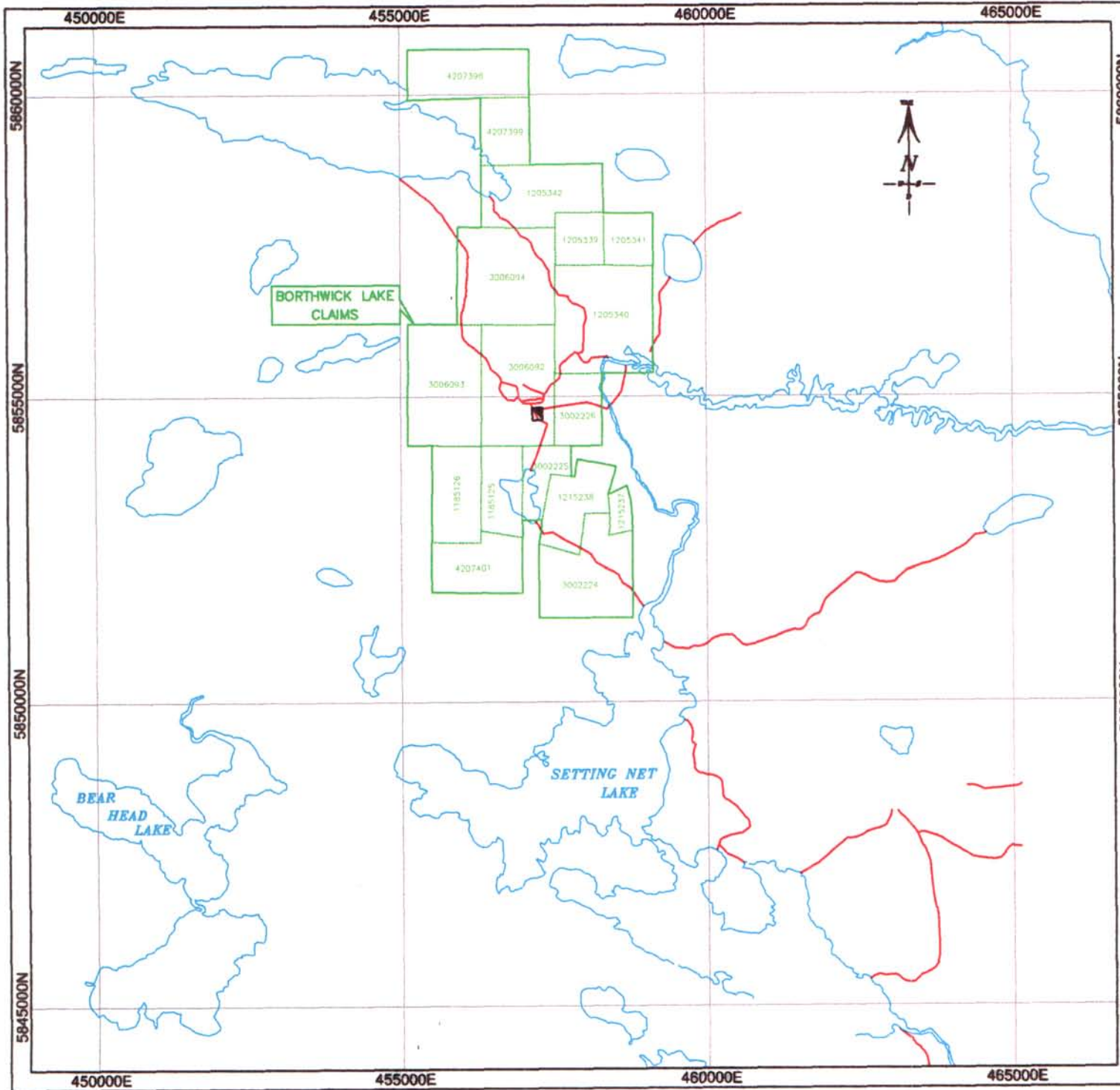







Figure 1. Regional-Scale Location Map





### LEGEND

-  SHORELINE
-  PROPERTY BOUNDARY
-  MINE SHAFT
-  ROAD
-  CLAIM LINE WITH NUMBER



SOURCE: MNDM WEBSITE

### MERC INTERNATIONAL MINERALS IN

BORTHWICK LAKE PROPERTY  
SETTING NET LAKE AREA, RED LAKE MINING DIVS

### CLAIMS

N.T.S. Map Sheet: 53C/138E	FIGURE 2
Digital Cartography by D. Cullen	
Revised: March 2006	

CLARK EXPLORATION CONSULTING

**ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND  
PHYSIOGRAPHY**

Elevations in the Borthwick Lake Property area are approximately 1000 feet above sea level. Topographic relief is low and generally does not exceed 50 feet. Outcrop density is variable and the dominant overburden cover is Pleistocene clay deposited from glacial Lake Agassiz. In general, drainage is poorly established (Ayers 1974).

The property lies within the Northern Coniferous Section of the Boreal Forest Region. The dominant tree species is ubiquitous black spruce, but balsam fir is abundant except in swamps and muskegs (Ayers 1974). The temperate climate is typical of northwestern Ontario with cold winters and warm to hot summers.

Access to the claims is provided by wheel-equipped aircraft landing at a 3000 ft unpaved runway at the mine-site, or by float or ski equipped aircraft landing at South Trout Lake, 5 km north of the old mine-site (Brown, 1988). Winter road access is possible from the end of the all-weather road at Windigo Lake north of Pickle Lake with the distance from Windigo Lake being approximately 205 km. Access within the property is enhanced by existing trails and skidder roads. The property can also be accessed during the winter months by means of winter road from Red Lake. The property is located approximately 200 km north of Red Lake, Ontario. Red Lake is an active mining camp with a population of approximately 7000. Road access to Red Lake is via Highway 105 from Trans-Canada Highway 17 at Vermillion Bay, Ontario.

The Berens River Mines Limited had a powerhouse capable of delivering 1,300 kilowatts of power on the Flanagan (formerly Duck) River. This is less than 50% of the estimated hydroelectric capacity at this site (Ayers 1974).

## **HISTORY**

1887: First recorded descriptions of the Favourable Lake volcanic-sedimentary belt resulted from the reconnaissance surveys by A.P. Low.

1926: Mineral exploration was initiated in the Favourable Lake area with the publication of ODM geology reports by G.V. Douglas.

1927-1928: Claims were staked in the Favourable Lake area by prospectors K.C. Murray, J. Ziode and D.G. Oliver.

1928-1929: The Favourable Lake Mining and Exploration Company was established, optioned much of the staked ground and conducted prospecting, trenching and 20 diamond drill holes totalling 1067 metres on the No. 1 vein. The work resulted in the discovery of four mineralized veins (No. 1, 2, 3 and 4). At the same time, trenching and 9 surface drill holes totalling 579 metres explored the No. 3 vein, which lies approximately 600 metres north of the No. 1 vein. Development was terminated due to depressed metal prices and lack of inexpensive transportation routes.

1929: Severn Mines Ltd. prospected ground in the area of the Berens River Mine.

1936: Berens River Mines Ltd., a subsidiary of Newmont Mining Corporation, acquired the property and carried out a 2900 metre diamond drill program.

1938-1939: Underground development was carried out by Berens River Mines Ltd. on the No. 1 Vein and by late 1939 the mill began operating.

1939-1948: Berens River Mines Ltd. processed 560,607 tons of ore from the No. 1 vein producing 157,696 ounces of gold, 5,796,177 ounces of silver, 6,105,872 pounds of lead and 1,797,091 pounds of zinc (George, 1987). The underground workings included 7,066 metres of drifts and 5,140 metres of crosscuts in 21 levels accessed by a 623 metre shaft and an internal vertical winze sunk from the 558 metre level to a depth of 1,071 metres (Coll, 1982).

1941-1947: Berens River Mines sunk the No. 2 exploration shaft on the No. 3 vein to a depth of 168 metres with 3 levels (Roach, 1989). This zone was not brought into production. Berens River Mines also completed a magnetic survey and surface work.

1959: W.C. Arrowsmith acquired the property by staking and formed Golsil Mines Ltd.

- 1960: Patnora Gold Mines Ltd. completed 3 diamond drill holes approximately 1.5 miles north of the Berens River Mine, no assays available.
- 1960: Roche Mines Ltd. completed 3 diamond drill holes approximately one mile north-northeast of Borthwick Lake, no assays available.
- 1961-1969: Golsil Mines Ltd. dewatered No. 2 shaft and drilled 24 surface diamond drill holes totalling 7,195 metres plus underground drilling of 3,295 metres. Also the No. 2 shaft was deepened to the 225 metre level and drifting was carried out on this level. Production was not undertaken because of economic conditions.
- 1965-68: North Rock Explorations completed magnetic and EM geophysical surveys and 12 diamond drill holes approx. one mile northwest of the Berens River Mine, no assays available.
- 1968: W.C. Arrowsmith completed one diamond drill hole approx. one mile northwest of the Berens River Mine, no assays are reported.
- 1971: Ducanex Resources optioned the property and carried out ground magnetic and EM surveys but the option was later dropped.
- 1973-75: Noranda Exploration Company Ltd. completed ground EM and magnetic geophysical surveys and geological assessment of claims west of Berens River Mine, drilled 3 diamond drill holes, assays available for silver, zinc and copper.
- 1974: Eastwest Resources Ltd optioned the property, dewatered the No.2 shaft and drilled 2 underground holes but the option was dropped in 1976.
- 1979: Denison Mines Ltd. conducted a geochemical survey southeast and south of Borthwick Lake.
- 1980-1981: Getty Canadian Metals Ltd. entered into a joint venture with Zahavy Mines Ltd. (formerly Golsil Mines Ltd.) Forty one surface drill holes totalling 6,600 metres were concentrated on the No. 3 vein.
- 1982-83: Getty Canadian Metals Ltd joint venture completed 350 metres of drifting on the 225 metre-level to provide access for drilling 26 underground diamond drill holes totalling 9,450 metres to test the No. 3 Vein at depth. Ore reserve calculations, geological interpretation and compilation were completed.
- 1986-87: Zahavy Mines Ltd drilled 10 diamond drill holes and completed ore reserve

calculations on the # 3 Vein.

1987: The Zahavy – Getty joint venture was terminated and the property was acquired by Noramco Mining Exploration.

1988: Zahavy Mines completed 9 diamond drill holes.

1988: Noramco Explorations Inc. conducted a VLF-EM and magnetometer survey that covered a large area including Borthwick Lake.

1988-1989: Zahavy Mines Ltd completed 12 diamond drill holes, assays available.

1988-1989: Numerous reports were written to evaluate the gold and silver potential of the No.3 Vein.

2000: The property was visited by D. B. McKay from August 9 to 15, 2000 while conducting a prospecting program for Wolfden Resources Inc.

2003: Anaconda performed a surface exploration program focussing on several of the previously discovered veins, away from the old mine workings. The work consisted of prospecting, geological mapping and sampling, stripping, an MMI geochemical survey, and a small VLF electromagnetic survey. The best assays returned were 1271 ppb Au by fire assay, and >2000 ppb Au from a multi-element analysis.

2004: Anaconda performed an airborne electromagnetic and magnetic survey over the entire property, including both the Borthwick and Setting Net claims.

#### History of Mining and Historic Reserves

“Gold-silver mineralization was first discovered in 1928-29 by the Favourable Lake Mining and Exploration Company. Four mineralized veins (No. 1,2,3,4) were trenched and 1750 metres (35 holes) of drilling was also carried out.

##### No. 1 Shaft (No.1 Vein)

Newmont Mining Corporation acquired Favourable Lake Mining and Exploration in 1926 and established a subsidiary, Berens River Mines. After 2900 metres (23 holes) of surface drilling on the No.1 Vein, the No. 1 shaft was sunk between 1936 and 1939. Surface and underground drilling outlined 318,000 tons grading 0.31 ounces per ton gold and 16.40 ounces per ton silver on the

**No.1 Vein.**

The mine was in production from 1939 to 1948 at a rate of 250 tons per day. A total of 560,607 tons of ore was processed with an average mill grade of 0.28 ounces per ton gold, 10.34 ounces per ton silver, 0.54% lead and 0.16% zinc. Recorded recoveries of gold were 96.4% and silver 80%. During this period, the No.1 shaft reached a depth of 518 metres (1700 ft) and a winze was installed at that level. A final depth of 990 metres (3250 ft) was reached. However, no production has been recorded below the 518 metre level. A total of 75,000 tons of drill indicated reserves with an average grade of 0.21 ounces per ton gold and 10.20 ounces per ton silver was calculated by MPH Consulting for Getty Metals Limited (Trembaly – 1981). These reserves are between 762 metre (2500) level and the 990 metre (3250) level.

**No. 2 Shaft (No. 3 Vein)**

Between 1941 and 1947, Berens River Mines sank the No. 2 shaft on the No. 3 Vein to a depth of 168 metres. A station was established at 58 metres and levels at 104 metres and 150 metres. A total of 267 metres of drifting was carried out. In addition, Berens River Mines drifted from the No. 1 shaft on the 475 level to explore the down-dip extension of the No. 3 Vein. Berens River Mines carried out a total of 252 metres of drifting and 1013 metres of drilling. The mine ceased operation due to lower grade and metal prices and higher operating costs.

After the claims were allowed to lapse in 1959, Golsil Mines Limited was formed to evaluate the property. A total of 6200 metres (24 holes) were drilled on the No. 3 Vein and 79 holes were drilled over the remaining part of the property between 1963 and 1964. In 1966, Golsil Mines deepened the No.2 shaft to a depth of 232 metres and established a station at 187.5 metres and a level at 225 metres. A total of 174 metres and 113 metres of drifting were completed on the 150 and 225 levels, respectively. Golsil estimated in situ reserves of 460,000 tons, grading 0.17 ounces per ton Au, 6.20 ounces per ton Ag and 5% combined lead-zinc.

The historic resources/reserves are not calculated in accordance with National Instrument 43-101.

**GEOLOGICAL SETTING**

The area is underlain by Archean rocks of the Favourable Lake metavolcanic-metasedimentary belt, comprising mafic to felsic metavolcanic rocks, lesser quantities of clastic and chemical metasediments, and a variety of subvolcanic intrusions. This package has been intruded by the granitic Setting Net Lake Stock, and by large granitic batholiths; the latter truncate and encompass the greenstone belt. The rocks of this belt have been isoclinally folded, and a number of late faults have been identified (Cruickshank, 1988).

The property hosts the past producing Berens River Gold Mine and numerous occurrences of gold mineralization in quartz veins. The gold bearing quartz veins are located within either volcanic and sedimentary rocks or trondhjemite intrusions. Gabbro and granitoids have intruded the supracrustal rocks. These occurrences have been the subject of past exploration, including sinking a number of shafts and pits, accompanied by sampling. The Berens River Gold Mine produced 4,904 kg of gold between 1939 and 1948 (Winter, 1988).

**Regional Geology**

The following regional geology description is taken from an exploration report written for Noramco Explorations Inc. by Brown (1988).

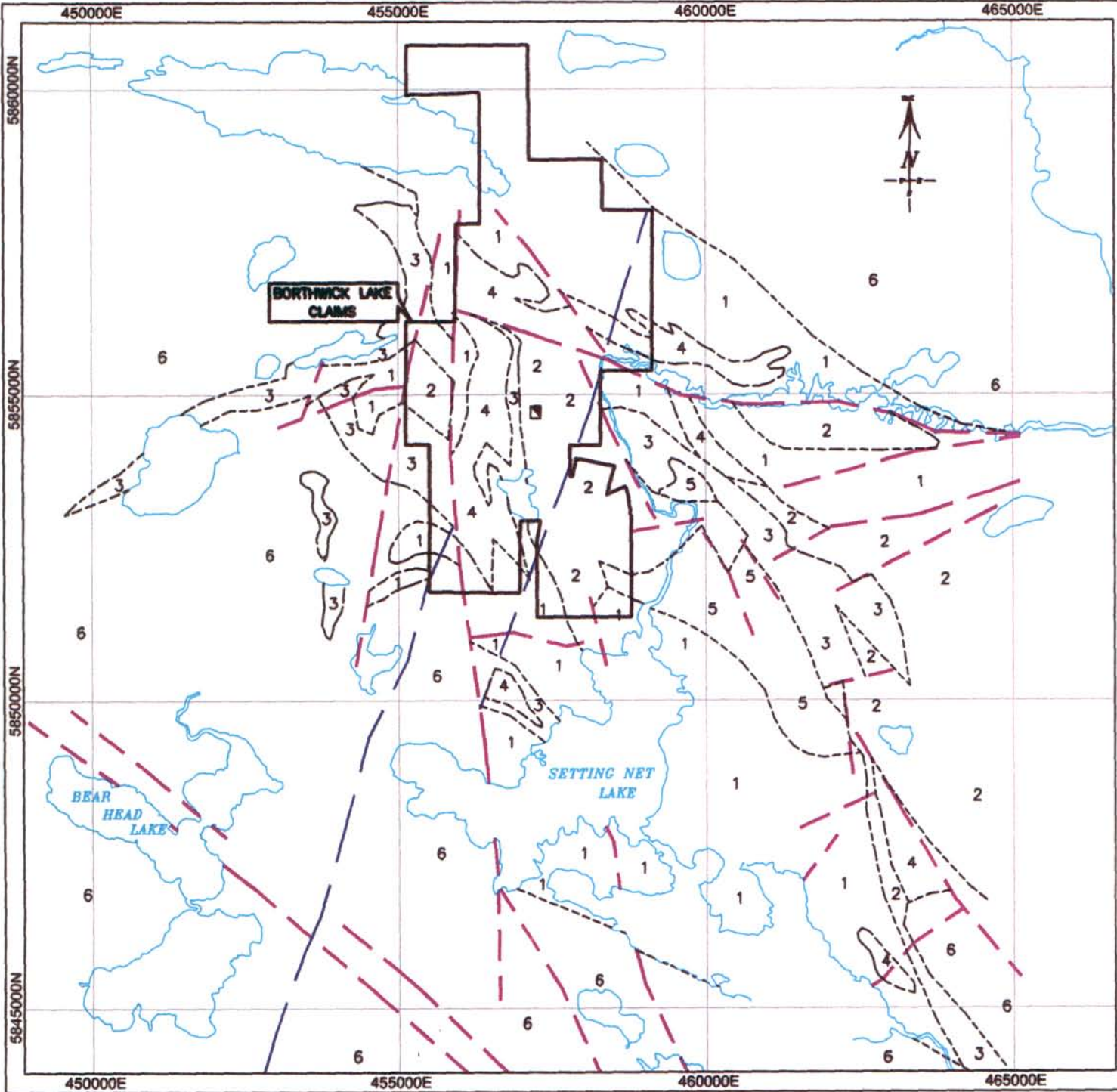
“The Favourable Lake metavolcanic metasedimentary belt is an Archean greenstone belt and part of the Sachigo sub-province of the Superior province of the Canadian Shield. The belt is 160 km long, trends west-northwest and extends from Northwind Lake to west of the Ontario-Manitoba border. The belt ranges in width from 3 to 13 km and reaches a maximum stratigraphic thickness of 7500 m in the Setting Net Lake area. In that area, the supracrustal sequence is bordered by younger composite granite batholiths. The supracrustal sequence is divided into 15 formations, which define 5 cycles that represent the progressive development of the volcanic complex (Table 2) (Whittaker, 1989). Cycle 1, the lowermost cycle, is 4 km thick and is interpreted to represent a stratovolcano. Cycles 2, 3 and 4 are 2.3, 2.0 and 0.6 km thick respectively. These cycles are interpreted to represent the development of 3 subaqueous basalt shields that progressively developed on the northwest flank of the stratovolcano and grade upward into andesitic to dacitic pyroclastic cones and associated detrital volcano-genic deposits. Cycle 5, a subaerial to shallow water

sequence of andestitic to dacitic flows, pyroclastic rocks and volcaniclastic deposits, unconformably overlies the other cycles.













Metamorphic grade ranges from middle greenschist facies in the centre of the belt to middle amphibolite and hornblende hornfels facies at the margins (Ayres, 1970).

This supracrustal sequence has been isoclinally folded about east to southeast trending axes that are generally parallel to the boundaries of the belt. (Ayres, 1970). Minor cross-folding had also occurred. Southeast trending faults with large vertical displacement define the two major fault systems in the sequence.”





**LEGEND**

-  SHORELINE
-  PROPERTY BOUNDARY
-  FAULT
-  GEOLOGICAL CONTACT
-  MINE SHAFT
-  DIABASE DYKE
-  6 GRANITIC INTRUSIVE ROCKS
-  5 METAMORPHOSED FELSIC INTRUSIVE ROCKS
-  4 MAFIC TO ULTRAMAFIC INTRUSIVE ROCKS
-  3 METASEDIMENTS
-  2 FELSIC TO INTERMEDIATE METAVOLCANIC ROCKS
-  1 MAFIC METAVOLCANIC ROCKS



UTM CO-ORDINATES: MAD 83, ZONE 15  
SOURCE: ODM COMPILATION MAP 2262

**MERC INTERNATIONAL MINERALS INC.**

BORTHWICK LAKE PROPERTY  
SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**REGIONAL GEOLOGY**

N.T.S. Map Sheet: 53C/133E	FIGURE 3
Digital Cartography by D. Cullen	
Revised: March, 2006	

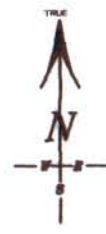
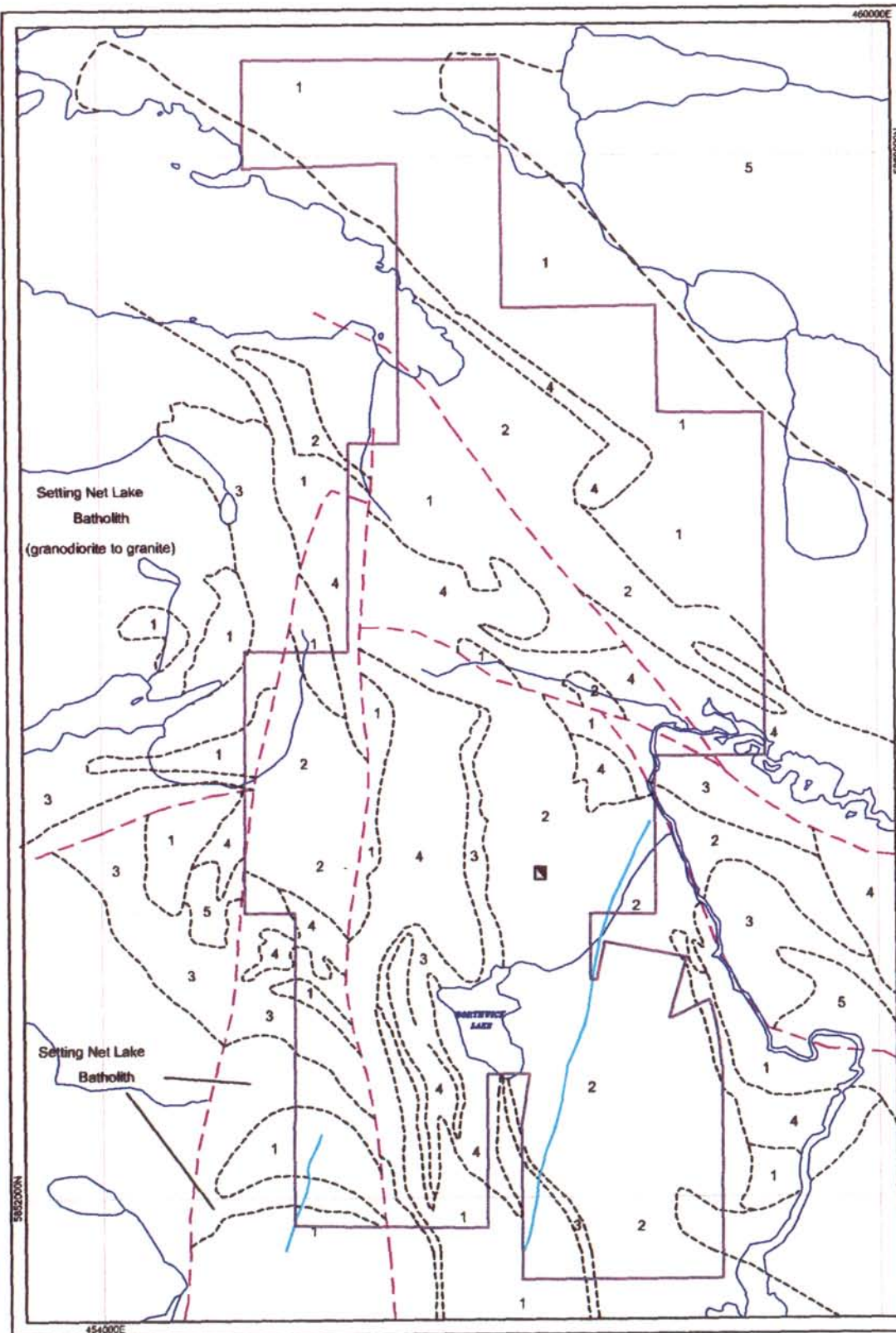
**CLARK EXPLORATION CONSULTING**

**Property Geology**




The following description of the property geology is taken from a report for Zahavy Mines Ltd. by L.D.S. Winter (1988).

“The geology of the property consists of a sequence of folded volcanic and metasedimentary rocks of cycles 2 and 3. Which trend approximately north-south and dip steeply to the east. These supracrustal units have been intruded by gabbro and granitoid masses. Most of the outcrops on the property are calc-alkalic volcanic and sedimentary rocks. A sequence of dominantly intermediate to felsic calc-alkalic volcanic rocks is host to the polymetallic veins on the Zahavy property.

The metavolcanics consist of andesitic flows, andesitic tuffs and flows, minor pyroclastics and brecciated units. The metasediments are composed of laminated cherts, argillites, siltstones, fine grained tuffs, marble and banded sulphide and oxide iron formation stratigraphically overlying the felsic volcanic unit. These units occur directly west of the mineralized veins.”



**LEGEND**

-  Water
-  PROPERTY BOUNDARY
-  ZAHAVY MINE SHAFT
-  FAULT
-  GEOLOGICAL CONTACT
-  DIABASE DYKE
-  5 TONALITE TO GRANODIORITE
-  4 MAFIC TO ULTRAMAFIC INTRUSIVE ROCKS
-  3 METASEDIMENTARY ROCKS
-  2 INTERMEDIATE TO FELSIC METAVOLCANIC ROCKS
-  1 MAFIC METAVOLCANIC ROCKS

Source: Stone et al., 1993.  
UTM Coordinates: NAD83, Zone 15



**MERC INTERNATIONAL MINERALS INC.**

BORTHWICK LAKE PROPERTY  
SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**Borthwick Lake Claims - Geology**

N.T.S. Map Sheet: B3C/135E	Figure 4
Digital Cartography by D. Cullen	
Revised: March, 2006	

**CLARK EXPLORATION CONSULTING**

**Table 2. Table of Lithologies**  
(from Whittaker, 1989)

Postvulcanism Intrusive Rocks			
Diabase dikes			
Mafic dikes (intrude felsic batholiths)			
Granitic batholith			
Setting Net Lake Stock (quartz monzonite)			
Coeval Intrusive Rocks			
Ultramafic sills			
Gabbro sills, dikes			
Diorite			
Feldspar porphyry			
Quartz feldspar porphyry			
Volcanic and Volcanogenic Sedimentary Rocks			
Ayres, (1977)			
Cycle	Formation	Thickness (metres)	Description
3	J	0 – 1450	Mafic flows, minor pyroclastics, shale, arenites
2	I	0 – 200	Clastic sediments, tuffs, chert
	H	0 – 1500	Felsic to intermediate flows, tuff, agglomerate and Sandstone
	G	0 – 630	Felsic tuff, sandstone, ferruginous chert
	F	0 – 60	Siltstone, sandstone, marble, chert
	E	300 – 2200	Mafic flows, minor mafic to intermediate pyroclastics, argillite, ferruginous chert
1	D	240 – 560	Argillite, siltstone, iron formation, coarse clastic sediments, tuff
	C	0 – 670	Felsic flows
	B	200 – 620	Mafic flows, ferruginous chert
	A	3000 +	Intermediate and felsic flows, lapilli tuff, tuff, iron formation

**DEPOSIT TYPES**

The deposit types that have been the focus of past work on Merc International's Borthwick Lake property, and will also be the focus of future work, is summarized by Winter (1988):

“Gold mineralization occurs in quartz veins located within a sequence of volcanic and sedimentary rocks. The most significant mineralization in the area is considered to be the precious-base metal mineralization of the Zahavy Mines property. Here, a series of sub-parallel, south-dipping veins occur in the east-trending zones within felsic volcanics. The mineralization consists of silicification, pyrite, sphalerite, galena, minor chalcopyrite, gold and silver minerals, occurring in shoots and structures which have been offset by faulting (Whittaker, 1989). These occurrences have been the subject of past exploration, including sinking a number of shafts and pits, accompanied by sampling. The Berens River Gold Mine produced 4,904.8 kg of gold between 1939 and 1948.”

The main focus of Merc is to outline economic Archean lode gold type mineralization.

## **MINERALIZATION**

### **Mineralization in the Borthwick Lake Area**

Gold mineralization occurs in quartz veins located within a sequence of volcanic and sedimentary rocks. The most significant mineralization in the area is considered to be the precious-base metal mineralization of the Berens River Mines property. Here, a series of sub-parallel, south-dipping veins occur in the east-trending zones within felsic volcanics. The mineralization consists of silicification, pyrite, sphalerite, galena, minor chalcopyrite, and gold and silver minerals, and occurs in shoots in structures, which have been offset by faulting (Whittaker 1989).

### **Mineralization, Alteration and Structure**

The following description of the mineralization, alteration and structure is taken from a report for Noramco Mining Corporation by Watts, Griffis and McOuat Limited (1989).

“Gold and silver mineralization is associated with strongly silicified hydrothermally altered zones which have been developed in steeply dipping, fracture-shear-fault systems. Numerous of these zones, or vein systems, have been identified on the property, however, exploration efforts have been concentrated only on two of them - the No. 1 vein system, the site of the former Berens River Mines and the nearby No. 3 vein system. Both the No. 1 and the No. 3 systems strike E-W and dip south, near 70° and bend in their eastern end to a S65°E direction. The systems crosscut the volcanic units at near right angles. K.B. Larsen (1988) described these vein systems as developing from multiple periods of hydrothermal activity (at least five) each preceded by the development of new faults, or the reactivation of existing faults and coupled with the development of characteristic alteration zones. Early investigators (George 1981) attributed the development of the fracture – shear – fault zones to a volcano-tectonic collapse structure, possibly a caldera. However more recent investigators (Larsen 1988) do not concur with this syn-volcanic theory citing evidence of development of these vein systems in the overlying post volcanic sedimentary units. Larsen attributes the vein systems to periodic adjustments to tensional forces possibly resulting from plutonic intrusive activity.

A quartz-sericite (variable content) buff coloured alteration is

thought to have been the first developed alteration zone and occur as plugs, or sheet like formations, along the fracture fault systems in close association with the quartz veins and mineralized ore shoots. The second hydrothermal alteration is characterized by an assemblage of magnetite, garnet, chlorite and actinolite minerals and is commonly referred to as the MGCA alteration.

Recent investigators have concluded that there appears to possibly be a spacial relationship, or association, to the areas of strong gold-silver mineralization with the MGCA alteration.

The failure to recognize the MGCA alteration by earlier investigators has been attributed to the masking affect of the wallrock alteration (chloritization and silicification)."

### **Emplacement of Mineralized Zones**

The following description of the emplacement of mineralized zones is taken from a report for Noramco Mining Corporation by Watts, Griffis and McQuat Limited (1989).

"The quartz systems are thought to have been emplaced due to multiple periods of hydrothermal activity each preceded by refracturing of the old fault fracture systems or by development of new fault systems. The quartz veins often followed the channels that produced the MGCA or quartz sericite alteration assemblages. Larsen (1988) describes a quartz, carbonate, actinolite vein system that cuts earlier quartz veins but predates the hydrothermal solutions thought to be responsible for the deposition of the gold-silver and base metal mineralization. These later quartz veins were logged as "late quartz veining". Pyrite mineralization appears associated with MGCA alteration but not with the gold-silver mineralization and although both are associated with MGCA it is thought the pyrite was formed from an earlier hydrothermal solution. The same may be true of the lead-zinc mineralization, however, the lead-zinc mineralization appears to have a closer spatial relationship and may represent deposition from more contemporaneous hydrothermal solutions, using the same conduit systems."

**Mineralized Zones**

The following description of mineralized zones is taken from a report for Noramco Mining Corporation by Watts, Griffis and McOuat Limited (1989).

“Pearson (1988) identified three distinct gold-silver mineralized quartz vein zones associated with the envelope of MGCA and quartz-sericite alterations and designated them as the C, or footwall zone, the A, or hanging wall zone, and B, the intermediate zone.

Larsen (1988) identified two additional sub-parallel zones, D and E, but it is not clear if these may represent offset faulted blocks of one of the above zones.

The exploration programs on the No. 3 vein system have been concentrated along a 30 to 50 metres wide hydrothermal alteration zone over a strike length of approximately 400 metres and to a depth 300 metres. Numerous faults were encountered in these exploration programs with the faulting appearing to have both during after hydrothermal-mineralization phases.”

**Structural Controls on Mineralization**

The following description of structural controls on mineralization is taken from a report for Noramco Mining Corporation by Watts, Griffis and McOuat Limited (1989).

“Noramco’s underground mapping has classified the faulting into two predominant fault groups. An initial series of normal faults that parallel the vein systems and dip 50° to 70° north have been intersected by a group of north-south striking easterly dipping, low angle reverse faults. Some of these faults were subject to multiple movements. As more closely spaced drilling was completed, more closely spaced faults were encountered. Larsen (1988) describes “a third set of minor faults, generally flat to low angle and at times very closely spaced, in certain areas so closely spaced as to make it uneconomic to mine the affected vein system”.

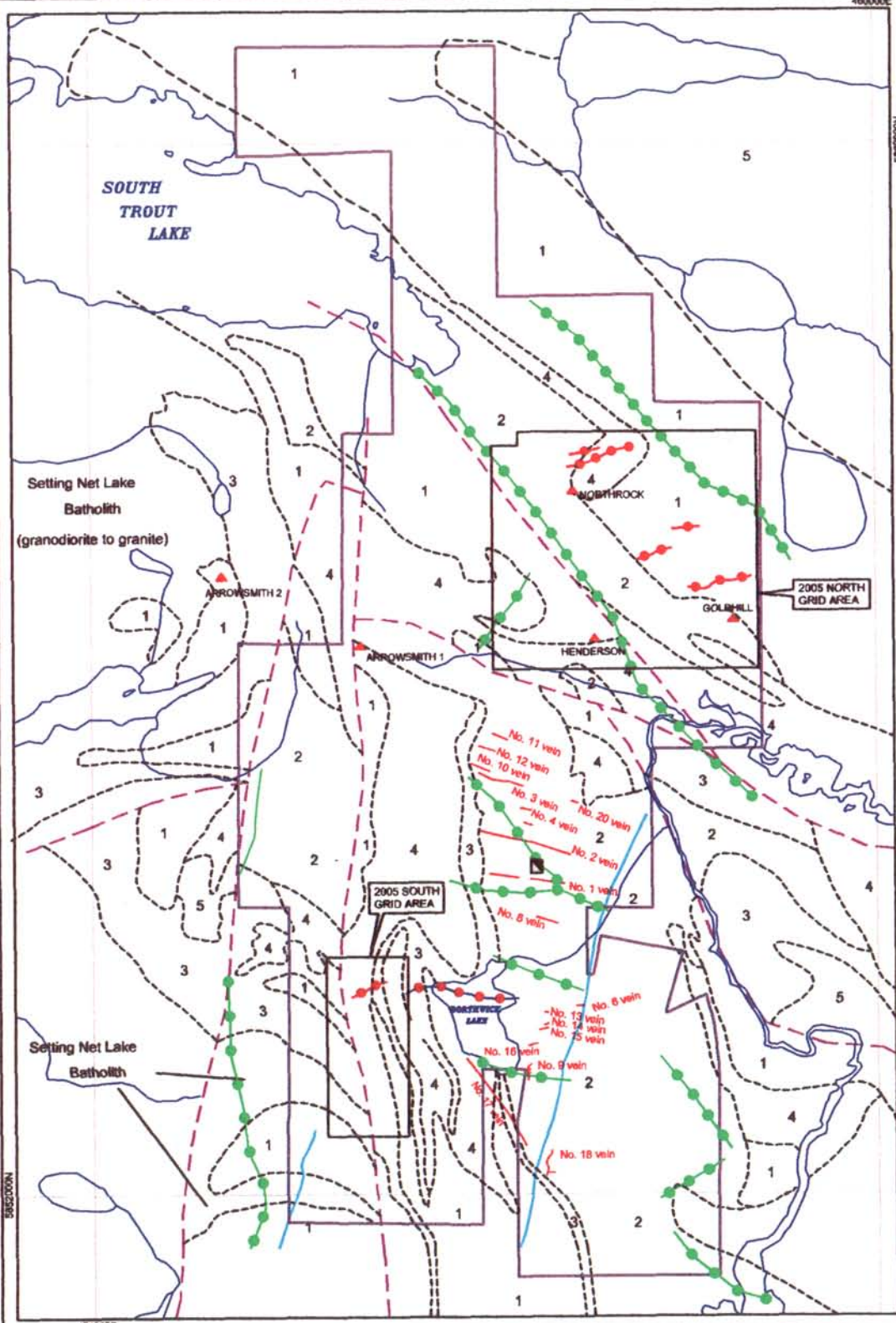
This closely spaced faulting, coupled with what probably was in many areas, prior to much of the faulting, a zone composed of relatively small, separated mineralized masses that were further



fragmented by faulting, has produced a very complicated structural setting. Furthermore these silicified zones cut the regional geology at near right angles, thus the lithology of these bedded volcanics provide little assistance unravelling the structural picture.”

Watts, Griffis and McOuat Limited, from a report for Noramco Mining Corporation, (1989), stated:

“Exploration programs started in the early 1940s and have continued, sporadically, up to the present day. However, a comparison of the reserve totals calculated at the end of each exploration program shows that the individual total amounts of calculated reserves have generally decreased with the increase in exploration data, particularly that from diamond drilling. Not only have the amount of total reserves decreased with time but the reserve categories have been downgraded to such an extent that the most recent calculations no longer contain any proven reserves.”



**LEGEND**

- Water
- PROPERTY BOUNDARY
- ZAHAVY MINE SHAFT
- FAULT
- GEOLOGICAL CONTACT
- DIABASE DYKE
- 5 TONALITE TO GRANODIORITE
- 4 MAFIC TO ULTRAMAFIC INTRUSIVE ROCKS
- 3 METASEDIMENTARY ROCKS
- 2 INTERMEDIATE TO FELSIC METAVOLCANIC ROCKS
- 1 MAFIC METAVOLCANIC ROCKS
- VEIN
- SHOWING, WITH NAME
- HEM CONDUCTOR AXIS
- VLF-EM CONDUCTOR AXIS
- MAX-MIN CONDUCTOR AXIS

Sources: Stone et al., 1993.  
 McPhar Geosurveys, 2004  
 Clark Exploration Consulting, 2005

UTM Coordinates: NAD83, Zone 15



**MERC INTERNATIONAL MINERALS INC.**

BORTHWICK LAKE PROPERTY  
 SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**Borthwick Lake Claims - Compilation**

N.T.S. Map Sheet: B3C/13E	Figure 5
Digital Cartography by D. Cullen	
Revised: March 2009	

**CLARK EXPLORATION CONSULTING**

## **MERC's 2005 GEOPHYSICS PROGRAM**

During 2005, Merc contracted Clark Exploration Consulting to conduct a program of linecutting, Max-Min EM and magnetometer surveys. The work was carried out between June 14 and August 15 of 2005. A total of 50.15 kilometres of line were cut on two separate grids on the claims, with 50 kilometres of magnetometer and 46.3 km of Max-Min surveys completed.

Dan Patrie of Massey, Ontario, carried out the surveys. The magnetic survey was a total field magnetics survey, using a Scintrex ENVI magnetometer. The Max-Min survey was done with an Apex Max-Min II – 5, and produced profiles at frequencies of 444 Hz and 3555 Hz. The results of these surveys are plotted at a scale of 1:5000 on maps located in the map pockets at the back of this report, and the conductor axes are plotted on Figure 5.

While Merc's magnetometer survey did not indicate any significant anomalies or features, the Max-Min survey did identify several new conductive anomalies. These conductors generally trend east-west to west-southwest-east-northeast.

## **INTERPRETATION and CONCLUSIONS**

Merc International Minerals Inc.'s Borthwick Lake Property has excellent potential to host an economic gold deposit. Berens River Mines Ltd. processed 560,607 tons of ore from the No.1 Vein producing 157,696 oz of gold, 5,796,177 oz of silver, 6,105,872 lbs of lead and 1,797,091 lbs of zinc (George, 1987).

At this time it is recommended that attention be paid to exploring several of the Max-Min conductors outlined by Merc's 2005 geophysics program.

In particular, a previous drill hole by Noramco near the west end of the Max-Min conductor that crosses Borthwick Lake (Figure 5) is reported to have intersected 0.419 ounces per ton gold over 2.0 metres. Merc's max-min survey indicates an extension of this conductor onto their grid to the west, possibly offset to the north. This target should be tested further, first by accurately locating the old drill hole if possible, and then drilling under it and stepping out along the strike of the conductor.

The Max-Min conductors in the area of the Goldhill and Northrock Showings (Figure 5) are also of interest, and should also be drill tested.

**16.0 RECOMMENDATIONS**

An exploration program with a budget of approximately **\$200,000** is proposed to evaluate the potential gold mineralization associated with several of the Max-Min conductors as outlined in section 15.0 "Interpretation and Conclusions" above. Due to the location of the property and the associated difficulties with access and mobilization, drilling will be relatively expensive.

It is the opinion of the authors that the property is of sufficient merit to justify the recommended program.

**17.0 PROPOSED BUDGET**

Diamond Drilling	
700 metres @ \$250/metre (all inclusive) .....	175,000.00
Final Summary Report, Sections and Maps .....	8,000.00
Contingencies.....	<u>17,000.00</u>
<b>TOTAL.....</b>	<b>\$200,000.00</b>

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**Certificate of Qualifications**

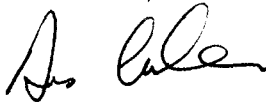
I, Desmond Cullen, P.Geo., do hereby certify that:

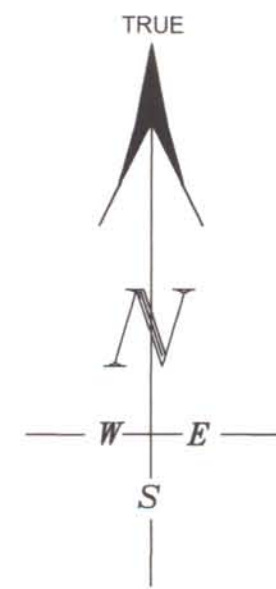
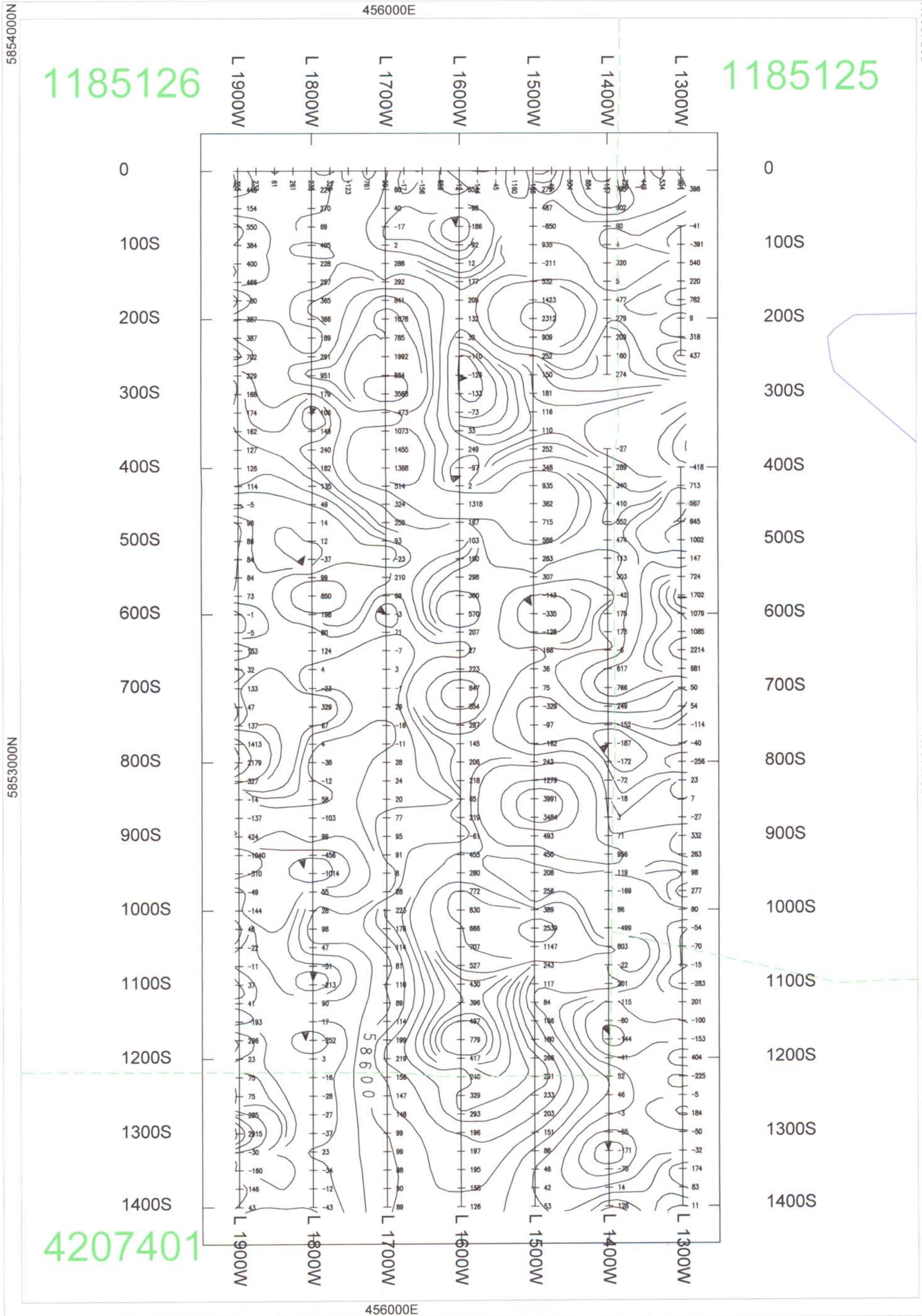
1. I am currently employed as a consulting geologist with Clark Exploration Consulting of Thunder Bay, Ontario.
2. I graduated with a degree of Honours Bachelor of Science from Lakehead University, Thunder Bay, in 1988.
3. I am a member of the A.P.G.O. (#0164), and am also a member of the Ontario Prospectors Association.
4. I have worked as a geologist for a total of 18 years since my graduation from university.

Dated this 3<sup>rd</sup> day of April, 2006

"Desmond Cullen"

Desmond Cullen, P.Geo.



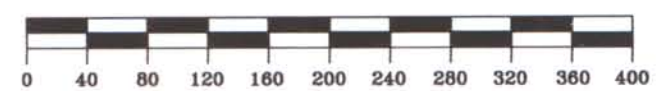


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 CONTOUR INTERVAL: 200 GAMMAS  
 MAGNETIC LOW:

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- Road
- Water
- Claim Line
- Claim Number



SCALE 1 : 5000

MERC INTERNATIONAL MINERALS INC.

**BORTHWICK PROPERTY**

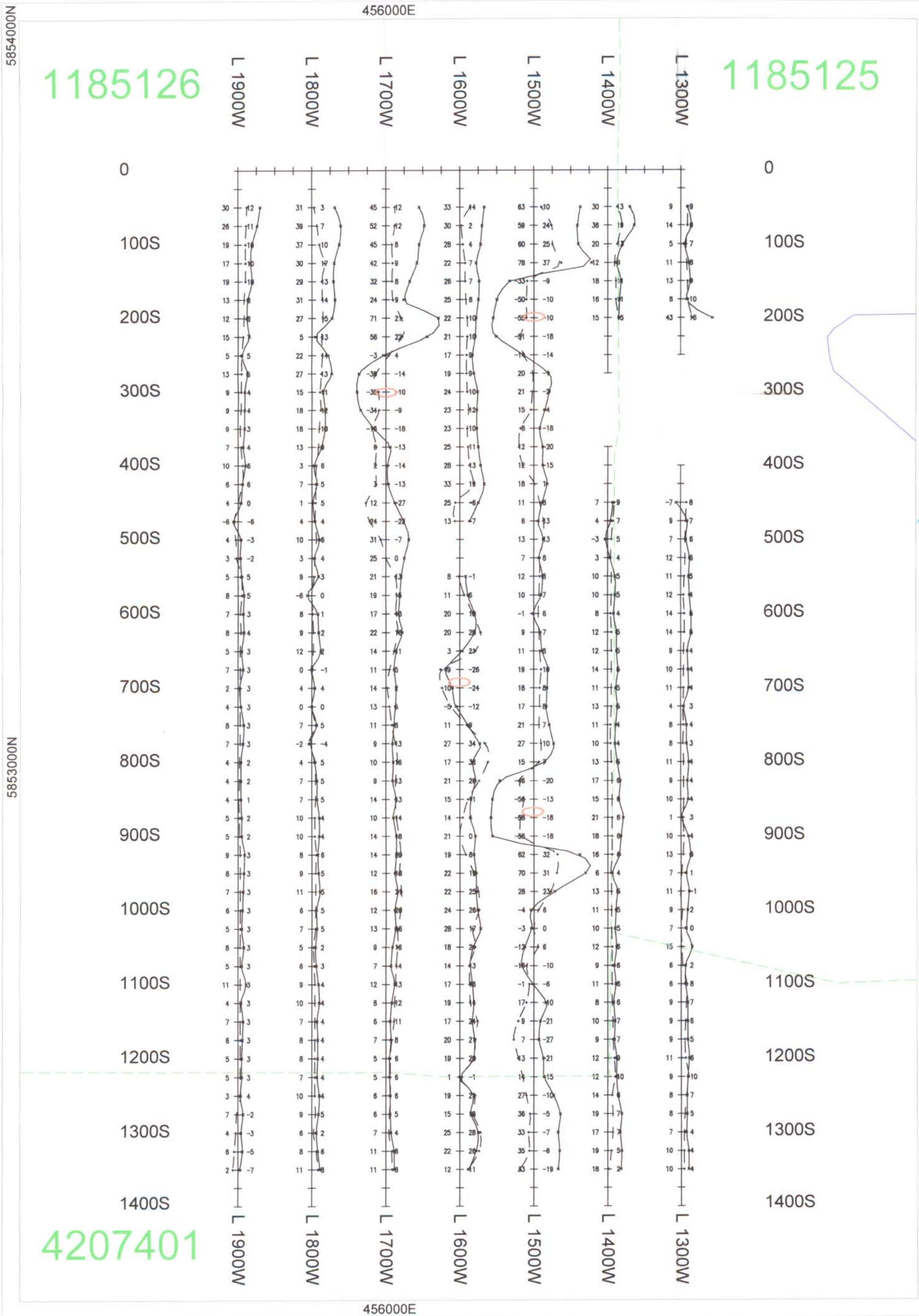
SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**SOUTH GRID  
 TOTAL FIELD MAGNETIC SURVEY**

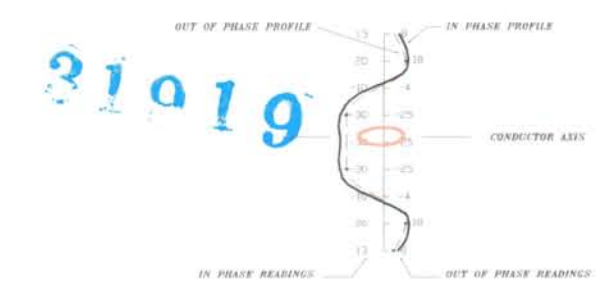
Map 4	March 24, 2006
NAD 83 ZONE 15	

CLARK EXPLORATION CONSULTING

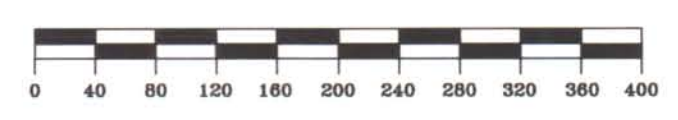




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 COIL SEPARATION: 100 METRES



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- Water
- Claim Line
- 1205341 Claim Number



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MERC INTERNATIONAL MINERALS INC.

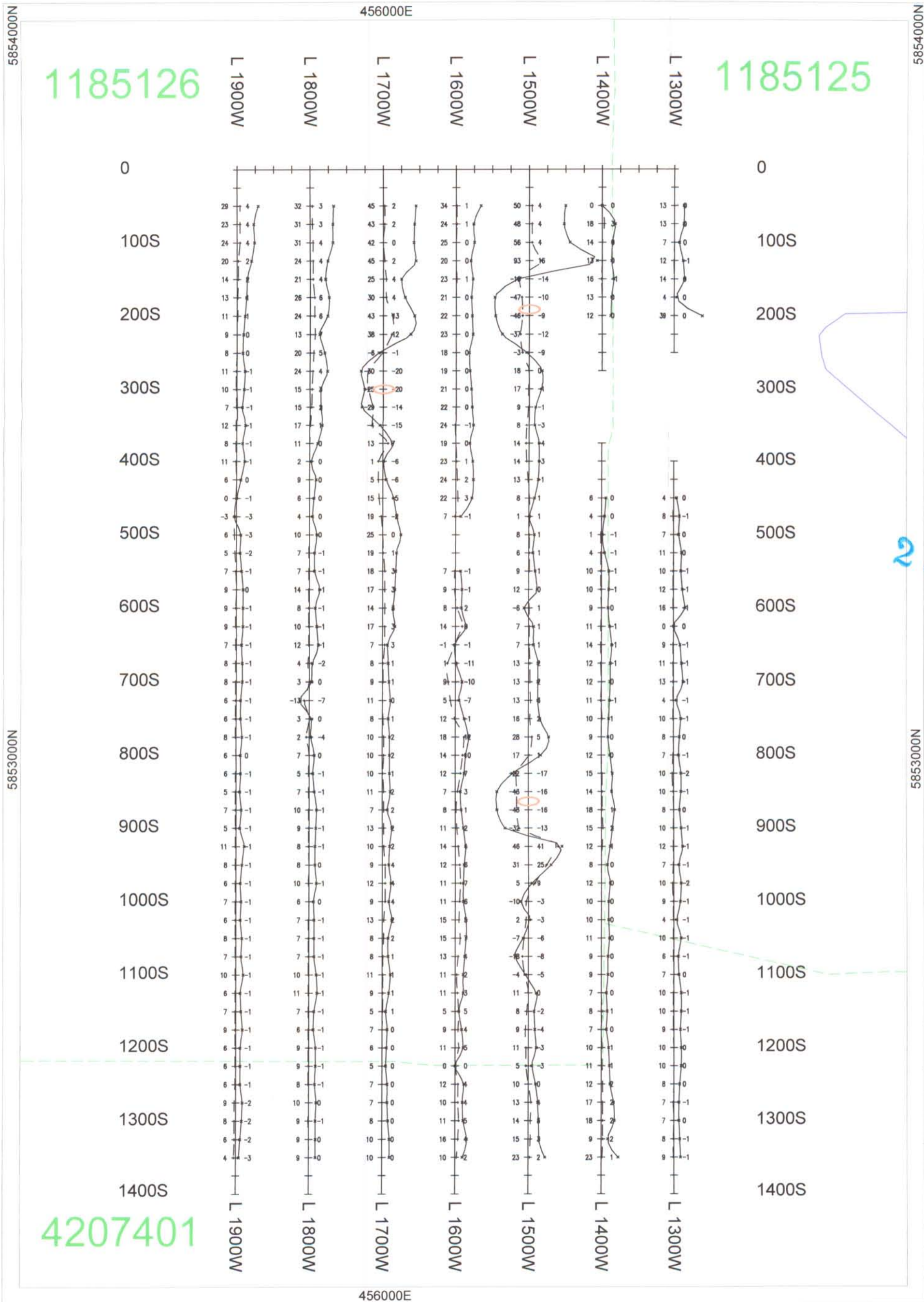
**BORTHWICK PROPERTY**

SETTING NET LAKE AREA, RED LAKE MINING DIVISION

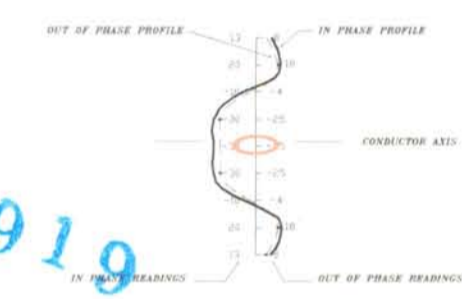
**SOUTH GRID  
 MAX-MIN PROFILE Fr. 3555 Hz**

Map 5	March 24, 2006
NAD 83 ZONE 15	

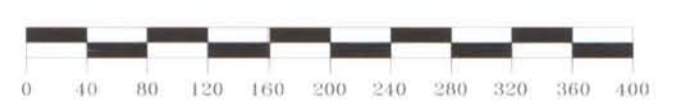
CLARK EXPLORATION CONSULTING



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- Road
- Water
- Claim Line
- 1205341 Claim Number



**SCALE 1 : 5000**

*MERC INTERNATIONAL MINERALS INC.*

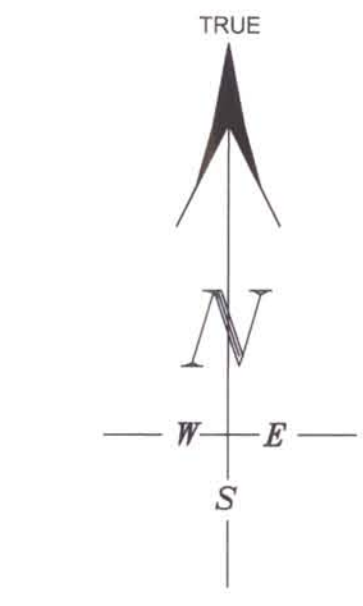
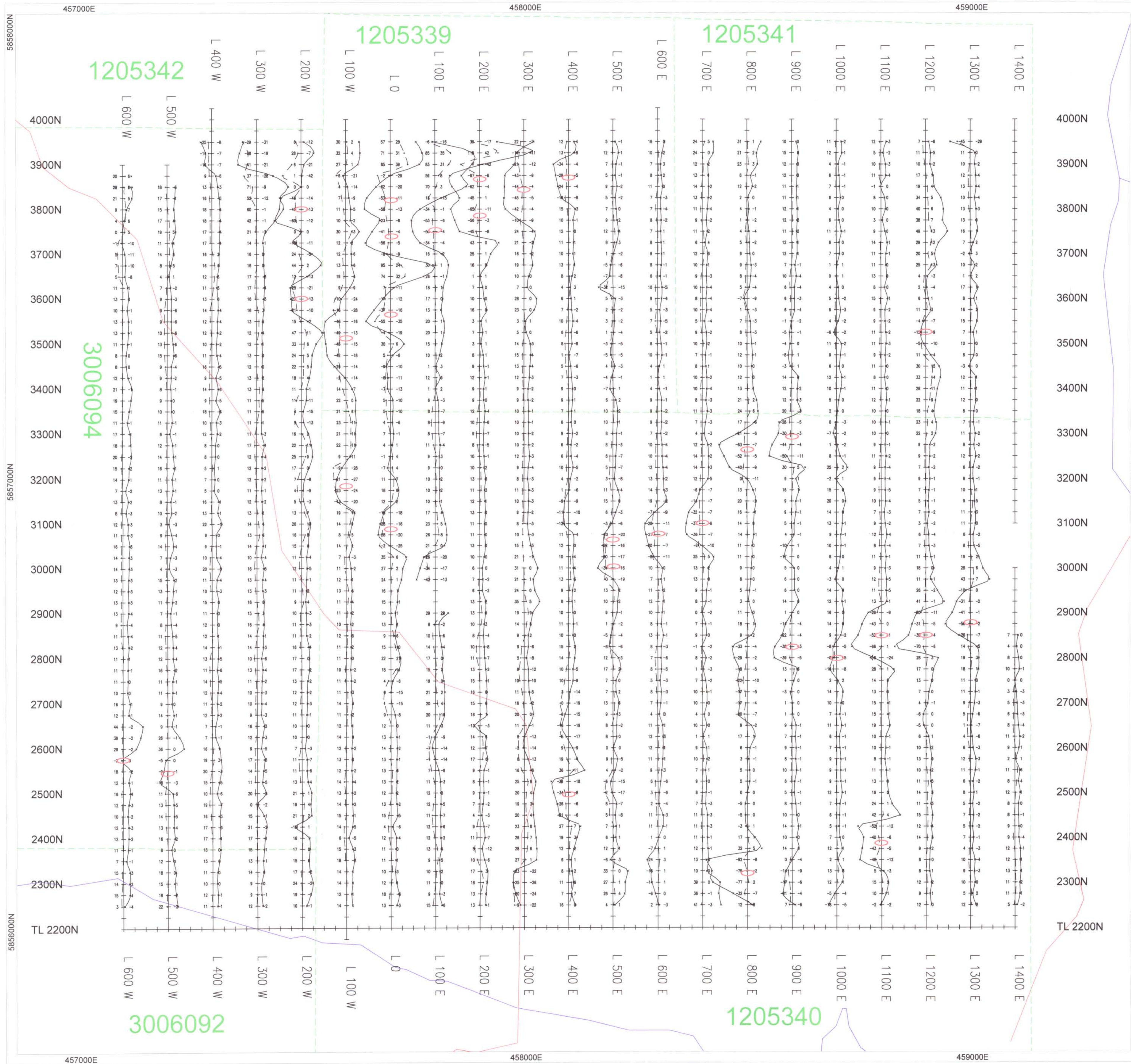
**BORTHWICK PROPERTY**

SETTING NET LAKE AREA, RED LAKE MINING DIVISION

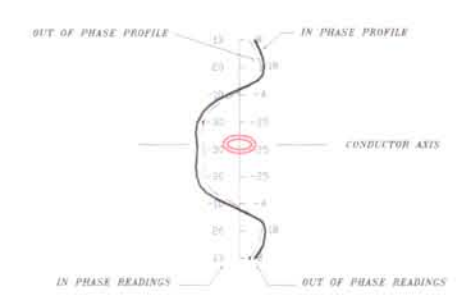
**SOUTH GRID  
 MAX-MIN PROFILE Fr. 444 Hz**

Map 6 March 24, 2006  
 NAD 83 ZONE 15

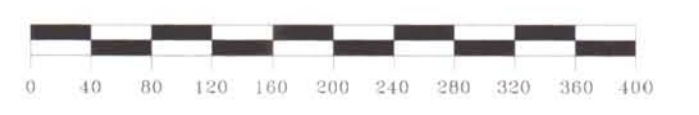
CLARK EXPLORATION CONSULTING



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 POSITIVE READINGS TO THE RIGHT OF LINE  
 COIL SEPARATION: 100 METRES



- Road
- Water
- Claim Line
- Claim Number



SCALE 1 : 5000

MERC INTERNATIONAL MINERALS INC.

**BORTHWICK PROPERTY**

SETTING NET LAKE AREA, RED LAKE MINING DIVISION

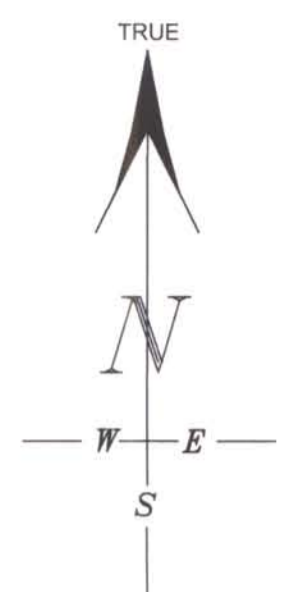
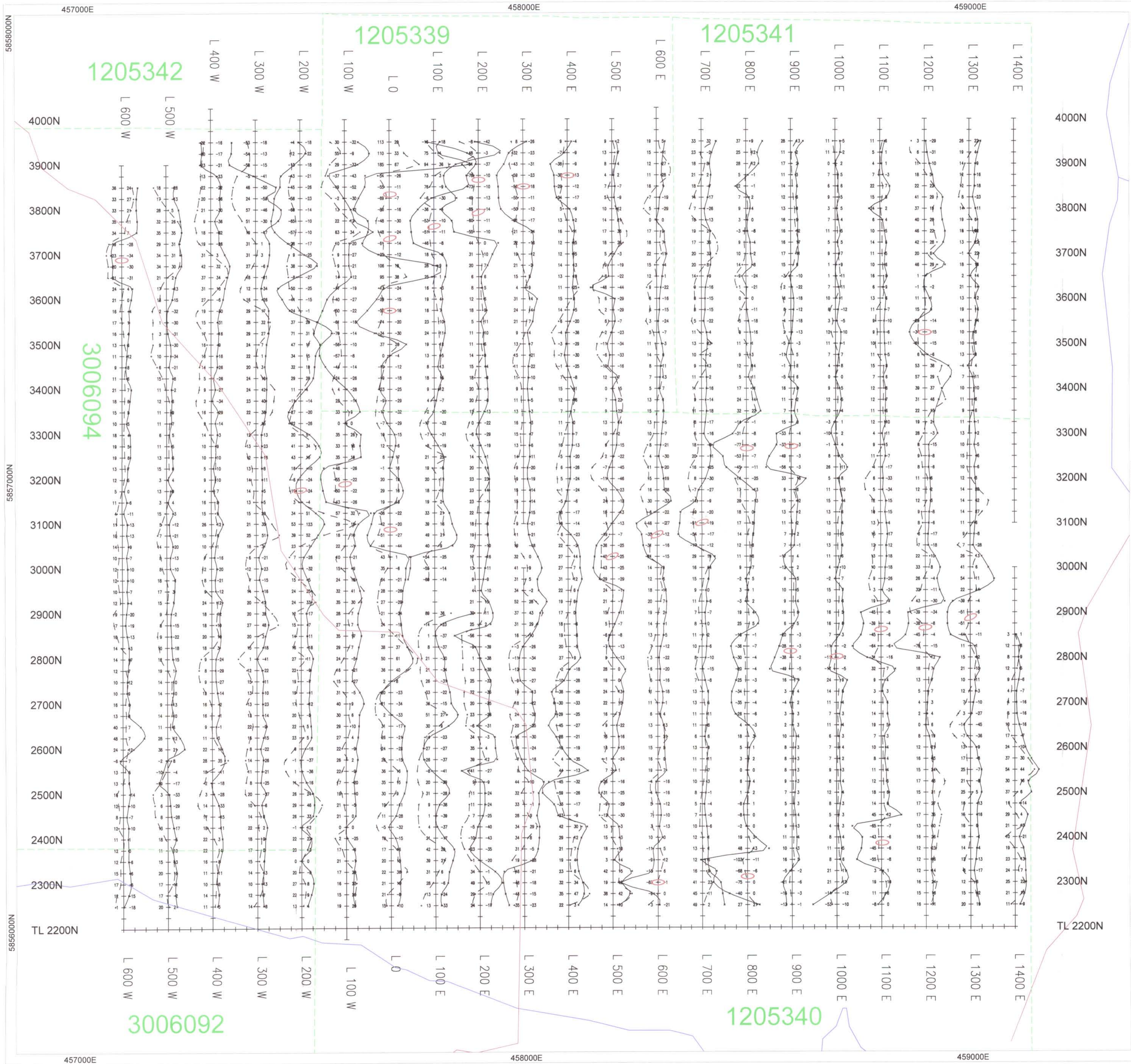
**NORTH GRID  
 MAX-MIN PROFILE Fr. 444 Hz**

Map 3  
 NAD 83 ZONE 15

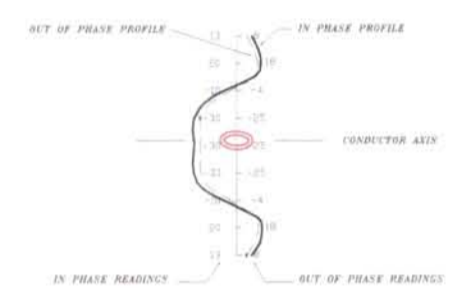
March 24, 2006

CLARK EXPLORATION CONSULTING

2.31919

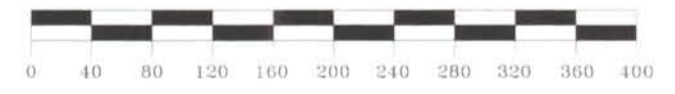


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- Road
- Water
- Claim Line
- Claim Number

2.31919



SCALE 1 : 5000

MERC INTERNATIONAL MINERALS INC.

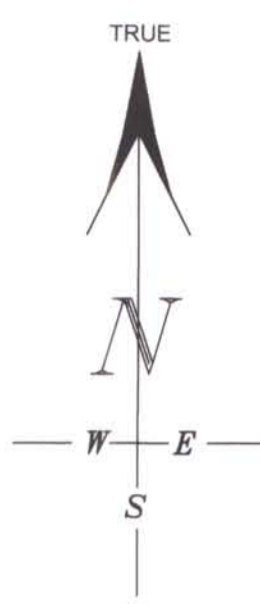
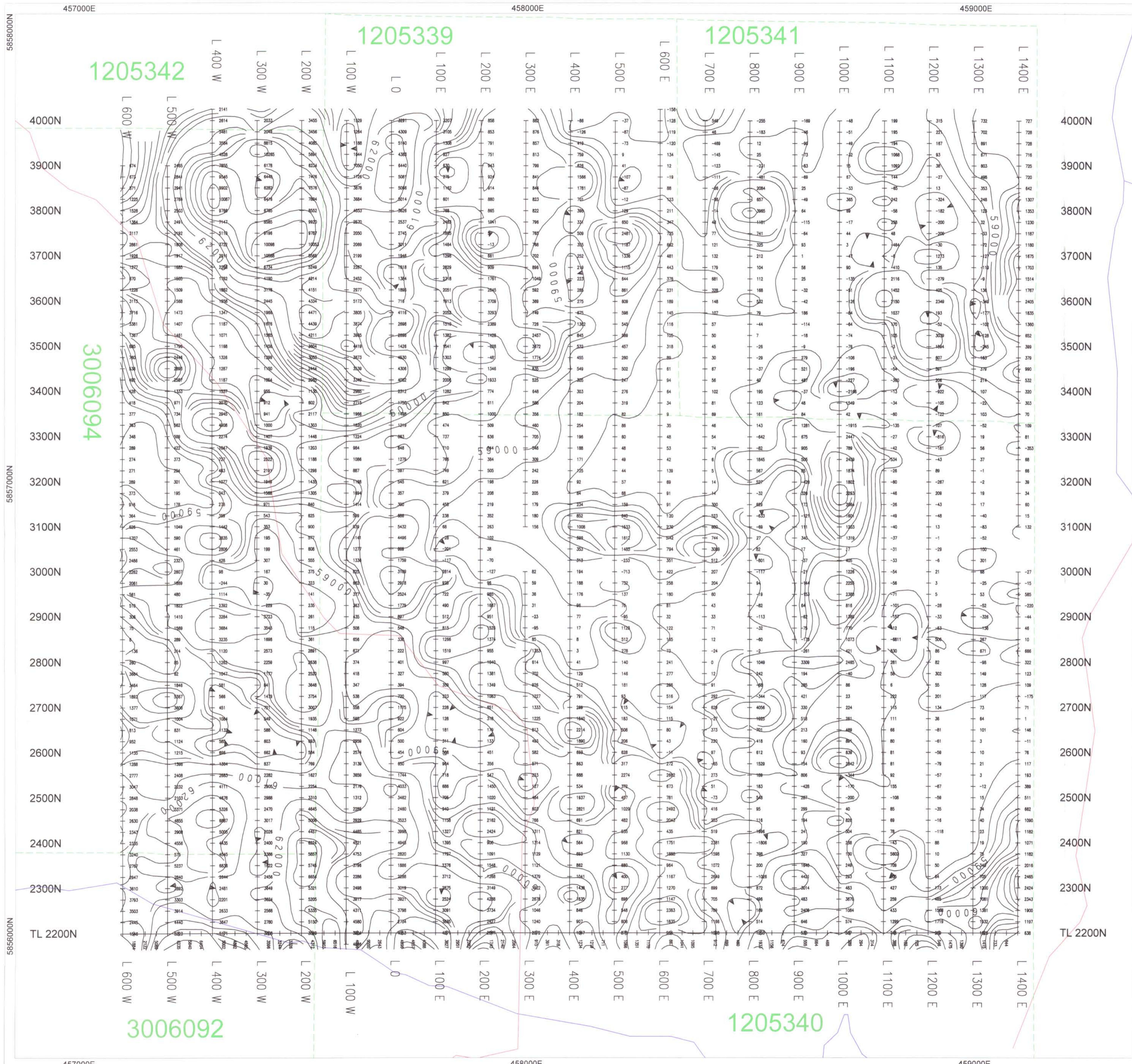
**BORTHWICK PROPERTY**

SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**NORTH GRID**  
**MAX-MIN PROFILE Fr. 3555 Hz**

Map 2  
 NAD 83 ZONE 15  
 March 24, 2006

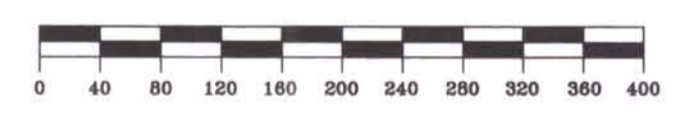
CLARK EXPLORATION CONSULTING



**GEOPHYSICAL LEGEND**

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 INSTRUMENT: SCINTREX ENVI  
 CONTOUR INTERVAL: 200 GAMMAS  
 MAGNETIC LOW:

- Road
- Water
- Claim Line
- Claim Number



SCALE 1 : 5000

MERC INTERNATIONAL MINERALS INC.

**BORTHWICK PROPERTY**  
 SETTING NET LAKE AREA, RED LAKE MINING DIVISION

**NORTH GRID**  
**TOTAL FIELD MAG**

Map 1 March 24, 2006  
 NAD 83 ZONE 15

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