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**Assessment Work Report  
On  
Prospecting, Mapping, and Ground Magnetic Surveying  
Of the  
Jean Iron Property**

**Thunder Bay Mining District  
Northwestern Ontario, Canada**

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## 1.0 SUMMARY

The Jean Property consists of 88 mineral claims (single cell and boundary claims) covering 1,840 hectares' land located in Thunder Bay Mining District of Northwestern Ontario, Canada. The Property is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. It can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

AsiaBaseMetals Inc. ("ABZ" or "the Company") (Client Number: 412660) owns 100% of the Mineral Claims. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. Fieldwork portion of the current exploration work commenced from October 24-31, 2017 and its purpose was to map Gunflint Iron Formation outcrops for trenching and channel sampling, and to collect representative samples for iron analysis. A total of 26 grab rock samples were collected during this work from different outcrops or subcrops.

This assessment work report summarizes the exploration work and its findings with recommendations regarding a follow up exploration program.

The Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Apebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenaw diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low-lying parts of the area.

Gunflint Iron formation of Animikie Group is part of extensive Lake Superior-type iron formation (LSTIF) ranges developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga. It is banded iron formation (BIF) mainly comprised of taconite rocks, and is characterized by unusually high iron content, as well as by a variety of textures, of which the granular texture of the taconite rock being most distinctive. The Gunflint formation, approximately 145 m thick, is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost member, a limestone bed, is unique to the formation and marks the top of the iron-bearing rocks. The key economic parameters for magnetite iron being economic in BIF are the crystallinity of magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. The typical grade of iron at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% iron by weight.

The historical exploration data available for the Property area includes geophysical



surveys, geological mapping, diamond drilling, bulk surface sampling, and magnetic tube testing of core and surface samples. This work was carried out during the period from 1943 to 1962. The total Fe% obtained through magnetic tube separation and acid roasting with magnetic concentration range from 23.95% to 39.85% for feed, from 38.66% to 54.21% for minus 100-mesh and from 43.42% to 56.77% for minus 200-mesh.

In 2011-12, Great Lakes Resources Ltd. (GLR) re-activated exploration work on a portion of the current Property which included surface sampling, bulk sampling, diamond drilling, and assaying samples for iron content, Davis Tube Testing (DTT) and Mineral Liberation Analysis (MLA) test. All eight holes intersected iron bearing Lower Taconite Member, whereas two complete Lower Taconite Member vertical intersections were delineated in holes JN12-03 (56.81m) and JN12-05 (57.75m). The average true thickness is estimated to be 57.06m.

During the current exploration work, a total 26 rock samples were collected for XRF analysis and 2 for Davis Tube Testing, and 2 field duplicate samples for XRF as part of field QA/QC program.

Prospecting and mapping work indicated that the majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial overburden with the exception of diabase sill rocks which are more resistant to weathering. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, ground magnetic survey was helpful in locating Taconite. Iron content of shales were observed to be generally low with rusty brown surface weathering due to disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas.

Total Field Magnetometer survey was carried out over a GPS laid grid survey lines covering an area of 1400 m x 700 m. Magnetometer used for this work is a GEM GSMT-19 v 7.011 XI 2006. The vertical component of total field strength was measured. Diurnal corrections corrected by looping and comparing corrections to NRC magnetic observatory data. Magnetic measurements were collected along the grid lines at 100 metres spacing. A total of 9.8-line- kilometer of ground magnetic survey was completed. The results of magnetic survey indicate high magnetic trend in the southwestern side of the survey area. Grab samples collected from this area also show high iron values. The high magnetic trend continues further to the south.

The results of 26 grab rock samples indicate that total iron is in the range of 5.46% to 60.48%. The results of two samples (JN-17-11 and JN-17-18) selected for Davis Tube Testing (DTT) indicate consistent values of iron (52.22 to 57.23 Fe<sub>2</sub>O<sub>3</sub>), silica (34.59 to 41.63% SiO<sub>2</sub>) and other oxides. Magnetic fraction also ranges from 44.8 to 46.1%. Of

particular interest is the sampling trend associated with a magnetic anomaly and structure identified as a result of ground magnetic survey. This northwest-southeast trend sampling indicated up to 60.48% Fe<sub>2</sub>O<sub>3</sub>.

Based on its favorable geological setting indicating surface and subsurface presence of Gunflint Iron formation (GIF), and the results of present study, it is concluded that the Property is a property of merit and possess a good potential for discovery of economic concentration of iron bearing rocks through further exploration and improvement of beneficiation processes. Good road access, availability of exploration and mining services in the vicinity makes it a worthy mineral exploration target.

### ***Recommendations***

The following work program is recommended as a follow up of the current exploration work.

### ***Geological Mapping, Ground Geophysical Survey, Sampling, and Diamond Drilling***

The present work was successful in mapping high iron percentage rock outcrops based on ground magnetic survey. Although the weather was not very supportive but the combination of ground magnetics with mapping and prospecting worked very well. It is recommended that this work should be continued in other areas of the property where the outcrops are covered with overburden.

## **2.0 INTRODUCTION**

### **2.1 Purpose of Report**

The Present report summarizes findings of exploration work carried out by AsiaBaseMetals Inc. (“ABZ” or “the Company”) on the Jean Iron Property (“the Property”) during period October- November 2015. The work included prospecting and surface sampling, geological mapping of Gunflint Iron Formation (GIF), and ground magnetic surveying.

### **2.2 Sources of Information**

This report is based on published assessment reports available from the Ministry of Northern Development, Mines and Forestry (MNDMF) Ontario, and published reports by the Ontario Geological Survey (OGS), the Geological Survey of Canada (“GSC”), various researches, websites, and results of present exploration work. All consulted sources are listed in the References section. The sources of the maps are noted on the figures.

The exploration work was carried out under the supervision of the author who visited the property from October 05-18, 2015.

## **3.0 PROPERTY DESCRIPTION AND LOCATION**

The Jean Property consists of 88 mineral claims (single cell and boundary claims as shown in Table 1) covering 1,840 hectares’ land located in Thunder Bay Mining District of Northwestern Ontario, Canada (Figure 1 and 2). Originally, the Jean Property consisted of 15 mineral claims covering 1840 hectares land. On April 10, 2018, Ontario converted Ontario’s manual system of ground and paper staking, and maintaining unpatented mining claims to an online system as part of Modernizing the Mining Act (MAM) process. All active, unpatented claims were converted from their legally defined location by claim posts on the ground or by township survey to a cell-based provincial grid. Mining claims are now legally defined by their cell position on the grid and coordinate location in the [MLAS Map Viewer](#).

The property is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. AsiaBaseMetals Inc. (Client Number 412660) holds 100% interest on the Property.

The Property claims were staked and registered on November 16, 2009 by Great Lakes Resources Ltd. and were transferred to AsiaBaseMetals on June 04, 2015. The claims were staked on ground by erecting physical posts as required by claim staking regulations in

Ontario. In Ontario all mineral claims staked are subject to \$400 per claim worth of eligible assessment work to be undertaken before year 2 anniversary, followed by \$400 per unit per year thereafter. There is no past producing mine on the Property and there were no historical mineral resource or mineral reserve estimates documented.

An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. The permit was issued to carry out trenching, stripping, line-cutting, and drilling. Aboriginal communities potentially affected by the exploration permit activities were consulted during the exploration permit application process and at the beginning of the work program.

Claim data is summarized in the Table 1, while a map showing the claims is presented in Figure 2.

**Table 1: Claim Data**

Claim Number	Tenure Status	Mining Claim Type	Holder	Legacy Claim Number
337802	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110, 4252111
340689	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252105
340690	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252105
339809	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252115
101515	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
101516	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
103759	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107, 4252108, 4252110
107031	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
107332	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
107333	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
107334	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
105362	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113
113644	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
116847	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105, 4252108
125274	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252111, 4252112, 4252113

Claim Number	Tenure Status	Mining Claim Type	Holder	Legacy Claim Number
123324	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107, 4252108
123325	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107
129318	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252110
130152	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252111
136727	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113, 4252114
140801	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
139471	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
147636	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110, 4252111
148581	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
163268	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
166293	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
167442	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
167818	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107
169771	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113, 4252115
175955	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252110
183237	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113
188007	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252109
194348	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252115, 4289790
195556	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252105, 4252108
195557	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
194729	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252112
204718	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
204719	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
214992	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252105
217313	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252109
217314	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252108, 4252109
216604	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107

Claim Number	Tenure Status	Mining Claim Type	Holder	Legacy Claim Number
216823	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
216824	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
218589	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110, 4252111, 4252113
228779	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
228107	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4289790
232994	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
232995	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
236690	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252107
242686	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
249519	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252110
249520	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
251329	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
251330	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
251331	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
247621	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
247622	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
247623	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
255414	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113, 4252114, 4283669
262182	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252105
262738	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
262739	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
278552	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252108
278553	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252110
282251	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
284558	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113, 4252114, 4252115, 4283669
288093	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252115, 4283669
286764	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104

<b>Claim Number</b>	<b>Tenure Status</b>	<b>Mining Claim Type</b>	<b>Holder</b>	<b>Legacy Claim Number</b>
291876	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252109
294781	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
294782	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
300028	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
300029	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110
300558	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252115
305310	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110, 4252113
305311	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110, 4252113
310225	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252111, 4252112
314172	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104
315431	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252104, 4252108
315432	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
315540	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4289790
321812	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252112, 4252113
336993	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108
328823	Active	Boundary Cell Mining Claim	(100) ASIABASEMETALS INC.	4252105
344218	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252113
343437	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252108, 4252109
330661	Active	Single Cell Mining Claim	(100) ASIABASEMETALS INC.	4252110

Figure 1: Property Location Map

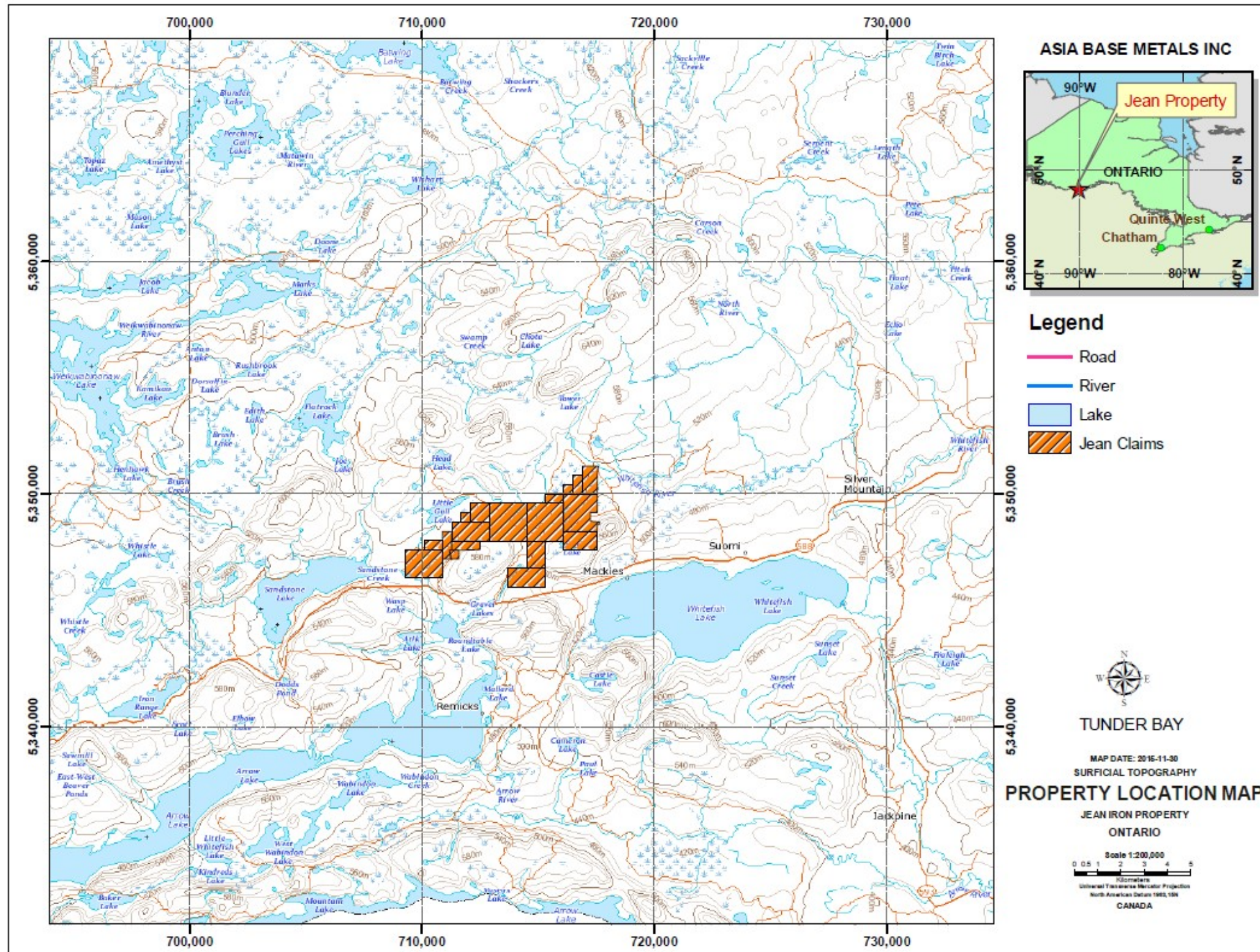




Figure 2: Mineral Claim Map

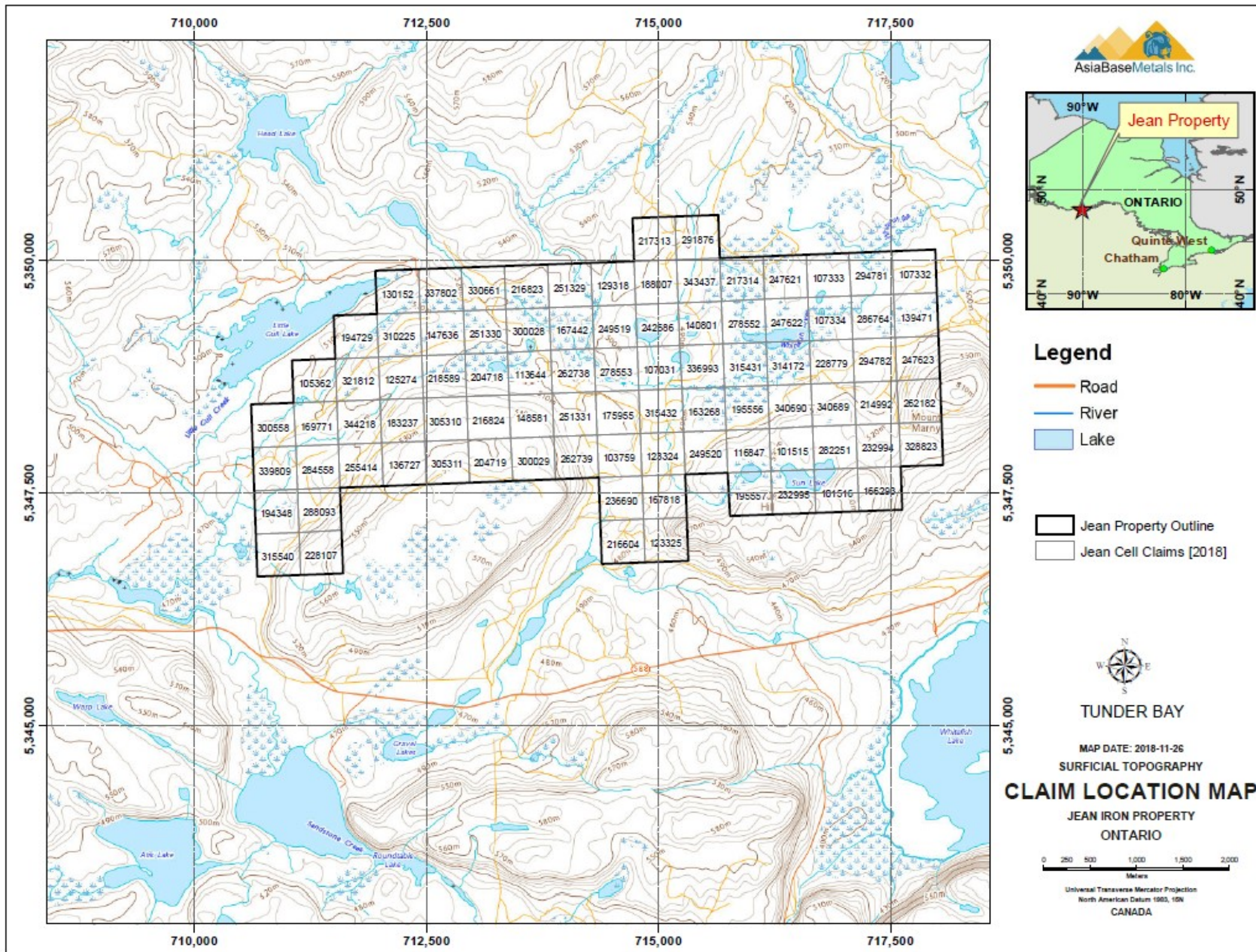
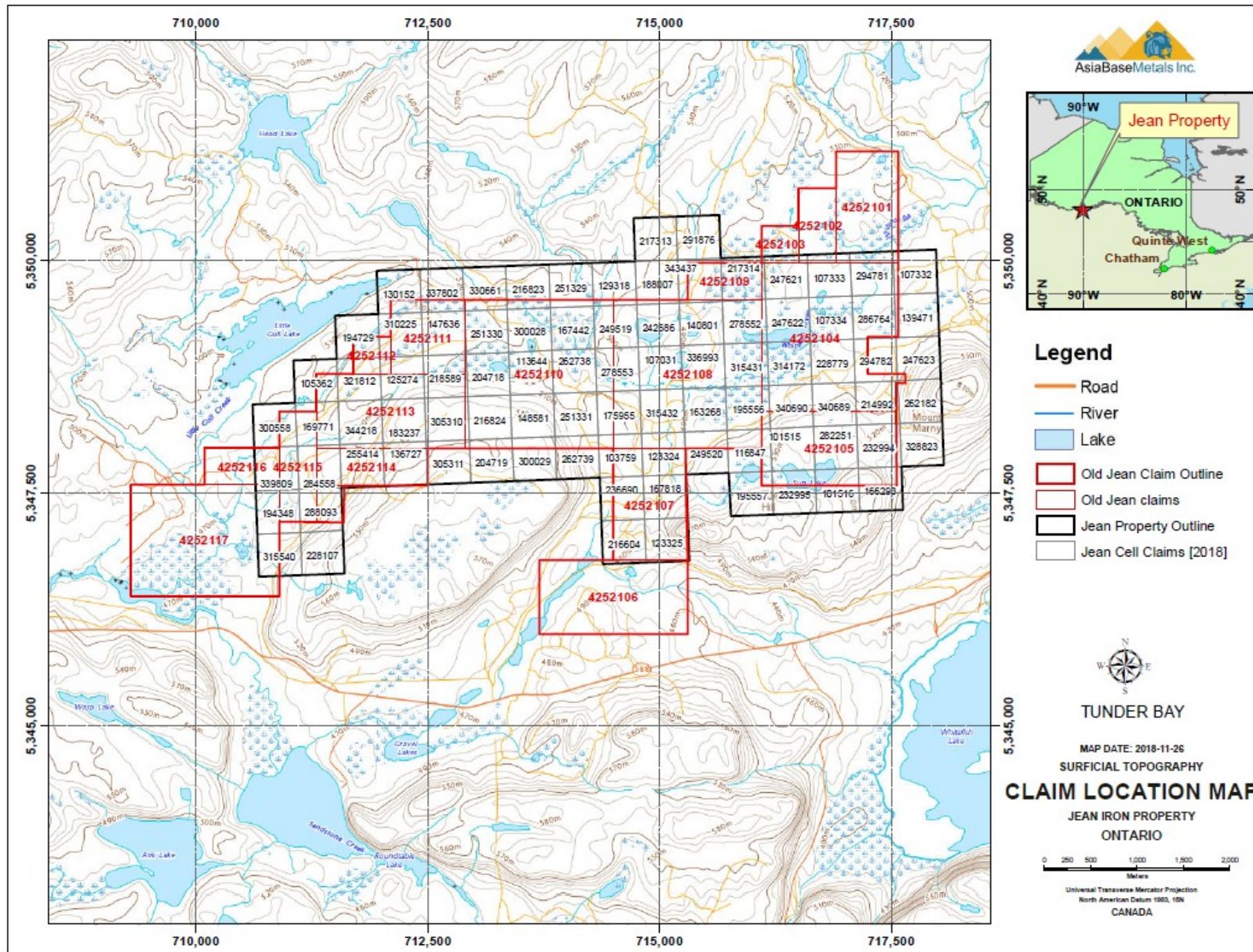


Figure 3: Mineral Claim map with Legacy Claims



## 4.0 ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES, AND INFRASTRUCTURE

### 4.1 Access

The Jean Property has good year-round road access from the town of Thunder Bay, Ontario (Figure 1). Highway 588, located immediately to the south of the Property is a paved all season road. The Property can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. Travel time by road from Thunder Bay to the Property is approximately one hour. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

### 4.2 Climate

The climate of Thunder Bay region including the Jean Property area is influenced by Lake Superior, resulting in cooler winter temperatures and warmer summer temperatures for an area extending inland as far as 16 km. The average daily temperatures range from a high of 17.6 °C in July and a low of -14.8 °C in January. The summer period is approximately 97 days in length extending from the beginning of June to the beginning of September; fall lasts about 60 days and extends to November. The winter season lasts approximately 6 months extending from November through to May. Although the area normally has about six months of snow-free conditions, exploration and mining work can be carried out throughout the year.

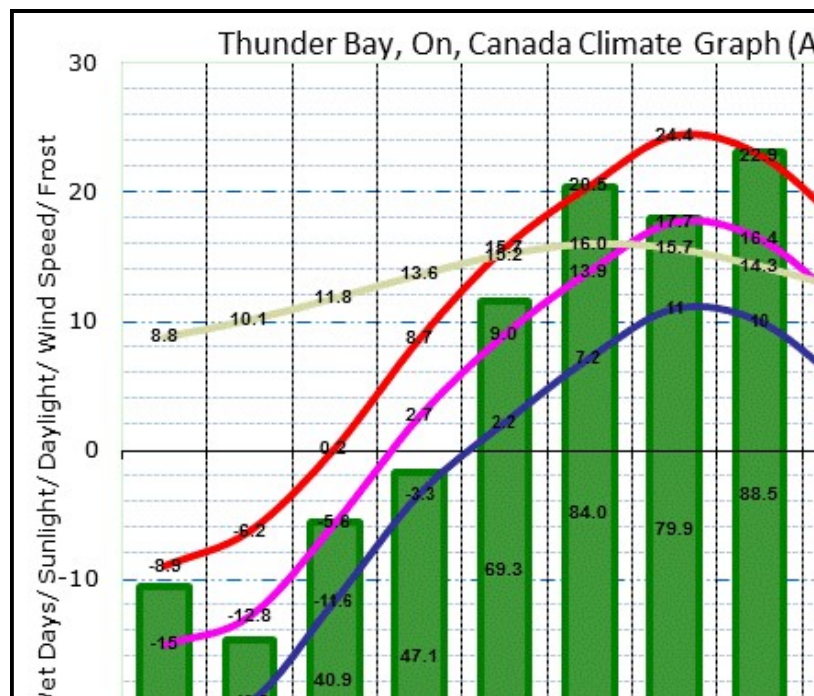


Figure 4: Climate Data

### 4.3 Physiography

The maximum relief in the area is about 110 metres (from 470 m to 580 m above sea level). Topography is generally flat with the exception of hills located in the southern part of the Property and were formed due to the presence of diabase sill rocks that has resisted erosion and now stands above the surrounding flat lying terrain in the form of large round mesas such as Mink Mountain and Sun Hill (Figures 2 and 4). The southern and western areas of the Property drain southward by the tributaries of the Pigeon River, which enters Lake Superior at Pigeon Point. Drainage in the eastern part of the Property mostly runs through tributaries of the Whitefish River, which joins the Kaministikwia River, and thence flows through Fort Williams to Lake Superior.

The Property area is a part of the Whitefish River watershed. Some of the more common wildlife species that live in the area include otters, beavers, white-tailed deer, black bear, muskrat, pileated woodpecker and various migratory birds. The Whitefish River watershed includes many other mammals, birds, fish and insects that are commonly found in the Great Lakes and Boreal Forest Regions. Most of the watershed is dominated by white spruce, trembling aspen, black ash and balsam fir (Zago 2012). The Property area is mostly covered by forest and bush mostly of second growth.

Exposures of iron-bearing rocks are scarce in the low-lying country adjoining streams and lakes because of drift cover. Beneath the diabase capping of hills and ridges, however, the rocks are well exposed.

### 4.4 Local Resources and Infrastructure

The town of Thunder Bay, located about 65 kilometres from the Property, is the largest city in Northwestern Ontario, serving as a regional commercial Centre. The town is a major source of workforce, contracting services, and transportation for the forestry, pulp and paper and mining industry. Thunder Bay is a transportation hub for Canada, as the TransCanada highways 11 and 17 link eastern and western Canada. It is close to the Canada-U.S. border and highway 61 links Thunder Bay with Minnesota, United States. Thunder Bay has an international airport with daily flights to Toronto, Ontario and Winnipeg, Manitoba, and the United States. There is a large port facility on the St. Lawrence Seaway System which is a principal north-south route from the Upper Midwest to the Gulf of Mexico.

The city of Thunder Bay has most of the required supplies for exploration work including drilling and geophysical survey companies, grocery stores, hardware stores, exploration equipment supply stores, restaurants, hotels, and a hospital. The population of the city of Thunder Bay was 109,140 people in 2006 (Statistics Canada, [www.statcan.gc.ca](http://www.statcan.gc.ca)). Many junior exploration and mining companies are based in Thunder Bay, and thus the city is a source of skilled mining labour.

There are several lakes, rivers and creeks in and around the Jean Property area which can be a source of water. Power lines are also within a few kilometres range.

(Source: [http://www.thunderbaydirect.info/about\\_thunder\\_bay](http://www.thunderbaydirect.info/about_thunder_bay)  
[http://www.thunderbay.ca/Doing\\_Business/About\\_Thunder\\_Bay.htm](http://www.thunderbay.ca/Doing_Business/About_Thunder_Bay.htm))

## 5.0 HISTORY

The Jean Property is underlain by Gunflint Iron Formation (GIF) which was first discovered in 1850. The earliest recorded geological investigation of the Gunflint was conducted by E. O. Ingall in 1887 who briefly described the iron-bearing strata near Silver Mountain and Whitefish Lake. Other early accounts were made by Smith (1905) and Silver (1906). Van Hise and Leith in 1911 presented a general overview of the iron bearing rocks in the Thunder Bay district. In 1924 J. E. Gill was the first to describe the Gunflint Iron Formation in detail, and in 1926, its stratigraphy northeast of Silver Mountain. T. L. Tanton described the iron prospects at Mink Mountain in 1923, and in 1931 gave an overview of the general geology in the vicinity of Thunder Bay (Pufahl 1996). The Property was part of historical exploration work carried out by various operators in this area. The historical exploration and geological work documented on the Property area is summarized in the following sections, and the work on adjoining properties is summarized in Section 23 of this report.

### 5.1 Gunflint Iron Mines Ltd. (1943)

Gunflint Iron Mines Ltd. (GIML) in 1943 staked and explored southern portion of Mink Mountain which is now located within the Jean Property with 10-hole diamond drilling program out of which only one was located on the Property. The assessment report on their work is not available. However, drill logs of 10 holes were attached in the 1952 assessment report of Lloyd K. Johnson Exploration.

During 10-hole drilling program, four holes were abandoned because of thick overburden and only six holes, No. 1, No. 3, No. 4, No. 5, No.7 and No. 8, were completed. A compilation of drill hole data indicated that hole number 7 is located on the Jean Property claim 4252106 (Figure 4). The original drill logs were pre-Moorehouse and Goodwin's 1960 stratigraphic classification and nomenclature, and were just purely lithologic descriptions.

In 1960, Moorehouse and Goodwin re-interpreted five (No. 1, No. 3, No. 4, No. 5 and No.7) of six drill logs of completed holes using their adopted stratigraphic classification and nomenclature system and included in their Ontario Department of Mines (ODM)-Report ORV 69.

In 1952, ODM collected four Lower Taconite Member drillcore samples totaling 25.92m from one hole located west of Mink Mountain (possibly GF-04 out of the current Property) and conducted partial chemical analysis together with minus 100- and minus 200-mesh magnetic DTT test.

The partial chemical assays obtained for Lower Taconite Member were 24.44% Fe and 45% SiO<sub>2</sub>. The results from four drillcores samples for minus 100-mesh DTT test were reported as 22.18% to 26.86% Fe for feed, 18.23% to 25.21% for magnetic concentrates recovery and the

grade of 34.68% to 52.62% Fe for magnetic concentrates. The non-magnetic concentrates assays ranges from 17.73% to 19.51% Fe.

The corresponding values for minus 200-mesh were 11.51% to 15.13% for magnetic concentrates recovery and the grade of 50.08% to 62.26% Fe for magnetic concentrates. The non-magnetic concentrates graded between 17.73 to 20.97% Fe.

## **5.2 Great Lakes Resources Ltd. (2011-12)**

Great Lakes Resources Ltd. (GLR) staked the Jean Iron Property in 2009 and started exploration work in 2011 with two-phase geologic exploration and surface sampling programs, one in May 2011 and the other in August 2011. A diamond drill program was completed in May-June 2012.

Five grab samples from lower portions of Upper Gunflint Formation, namely Upper Shale, Upper Jasper, Upper Algae Chert Member, were collected and assayed. The assay returns range from 5.58% to 41.06% iron (Fe) and 27.14% to 90.10% Silica (SiO<sub>2</sub>).

DTT using -150 mesh size fraction, were also conducted on these grab samples. The size fraction used was -150 mesh and magnetic recoveries ranging from 2.8% to 58.3% were obtained.

In August 2011, a total of 25 saw-cut channel samples, 2.5cm by 2.5cm and of varying length and three 25-kg bulk samples were collected on Lower Taconite and Lower Shale members belonging to Lower Gunflint Formation during the program. In addition, three bulk samples were also collected from Lower Taconite Member exposures. All samples were assayed for iron content.

Assays of channel samples obtained from Lower Taconite Member averaged 25.60% Fe and bulk samples of Lower Taconite Member averaged 26.16% Fe.

DTT conducted on four bulk samples, having average 24.58% Fe feed grade, at minus 200-mesh size indicated the magnetic concentration weight% or recovery% averaged 9.12%, 53.50% Fe respectively for magnetic concentrates and 21.80% Fe for non-magnetic concentrates. The corresponding values for minus 325-mesh sizes were 7.57% for magnetic concentrates recovery, 60.67% Fe for magnetic concentrates and 21.69% Fe for non-magnetic concentrates.

MLA test using two fractions, -106 and +106 mesh, were also conducted on composite sample. The salient information obtained indicated that the sample is composed of 22% combined hematite and magnetite (magnetite estimated as 4%), 61% quartz and 7% Fe-silicates (minnesotiate predominantly) and 6% calcite with traces of apatite, feldspars, Fe-chlorite and kaolinite. MLA test also suggested the average grain size of combined Fe-oxides is between 24 and 53 microns (Aung 2011).

The diamond drill program carried out in May-June 2012 consisted of eight vertical NQ-size diamond drillholes totaling 492.88m. The drilled area bounded by the eight drillholes measured 3km in length and 0.5km in width covering 1.5sq.km. All drillholes were located on the grid with 1000m spacing along baseline and 400-500m along tie-line. Both GPS and grid co-ordinates of

drillholes and their lengths are tabulated in Table 2. They were also plotted on the property geology map (Figure 4)

**Table 2: Co-ordinates and Lengths of Drill holes - May-June 2012 Drilling Program**

Hole Number	NAD83-Z15			Grid + Map Elev. (m)	Attitude	Depth (m)
	Easting	Northing	Elev. (m)			
JN12-01	711270	5347265	485	10E/00N 480m	Vertical	102.00
JN12-02	710989	5347679	477	10E/5N 475m	Vertical	30.00
JN12-03	712073	5347856	541	20E/00N 540m	Vertical	96.00
JN12-04	711865	5348200	513	20E/4N 515m	Vertical	36.88
JN12-05	712910	5348412	538	30E/00N 535m	Vertical	87.00
JN12-06	712665	5348750	518	30E/4N 515m	Vertical	39.00
JN12-07	713705	5349014	498	40E/00N 495m	Vertical	60.00
JN12-08	713591	5349219	500	40E/2+50N 500m	Vertical	42.00

(GPS Reading by Garmin 60CSx)

Lower Taconite Member is the main iron bearing stratigraphic horizon within the Jean Iron Property and the weighted assay information obtained from 84 drill core samples from Lower Taconite Member is summarized in Table 5.

**Table 3: Weighted Assay: Lower Taconite Member -May-June 2012 Drilling Program**

DDH No.	Length (m)	Fe%	Mn%	SiO2%	P2O5%
JN12-01	49.71	<b>21.65</b>	0.346	43.40	0.03
JN12-02	10.50	<b>24.36</b>	0.299	44.10	0.05
JN12-03	56.81 (complete)	<b>24.39</b>	0.337	47.54	0.03
JN12-04	29.62	<b>24.31</b>	0.259	50.53	0.04
JN12-05	57.722 (complete)	<b>23.88</b>	0.287	47.76	0.04
JN12-06	29.67	<b>25.02</b>	0.364	46.24	0.04
JN12-07	49.05	<b>22.03</b>	0.529	47.37	0.03
JN12-08	31.87	<b>23.37</b>	0.570	44.92	0.04
<b>Weighted Average</b>		<b>23.44</b>	<b>0.377</b>	<b>46.66</b>	<b>0.04</b>

**Davis Tube Test**

In addition to assaying, DTT on two composite samples combined from drill core samples of Lower Taconite Member of Lower Gunflint Formation, one from JN12-03 and the other from JN12-05, were also contracted to and conducted at ActLabs Laboratories, Ancaster, Ontario.

The weighted average feed grade is 24.08% Fe. For minus 200-mesh size, the magnetic concentrates recovery averaged 7.48% with the magnetic concentrates grade of 57.79% Fe. The non-magnetic concentrates values for this size fraction were 91.45% for recovery and 22.55% Fe for grade.

In regard to minus 325-mesh, the magnetic concentrates recovery was 7.20% and the concentrates grade was 53.62% Fe. The non-magnetic concentrates values are 91.55% and 22.42% Fe respectively.

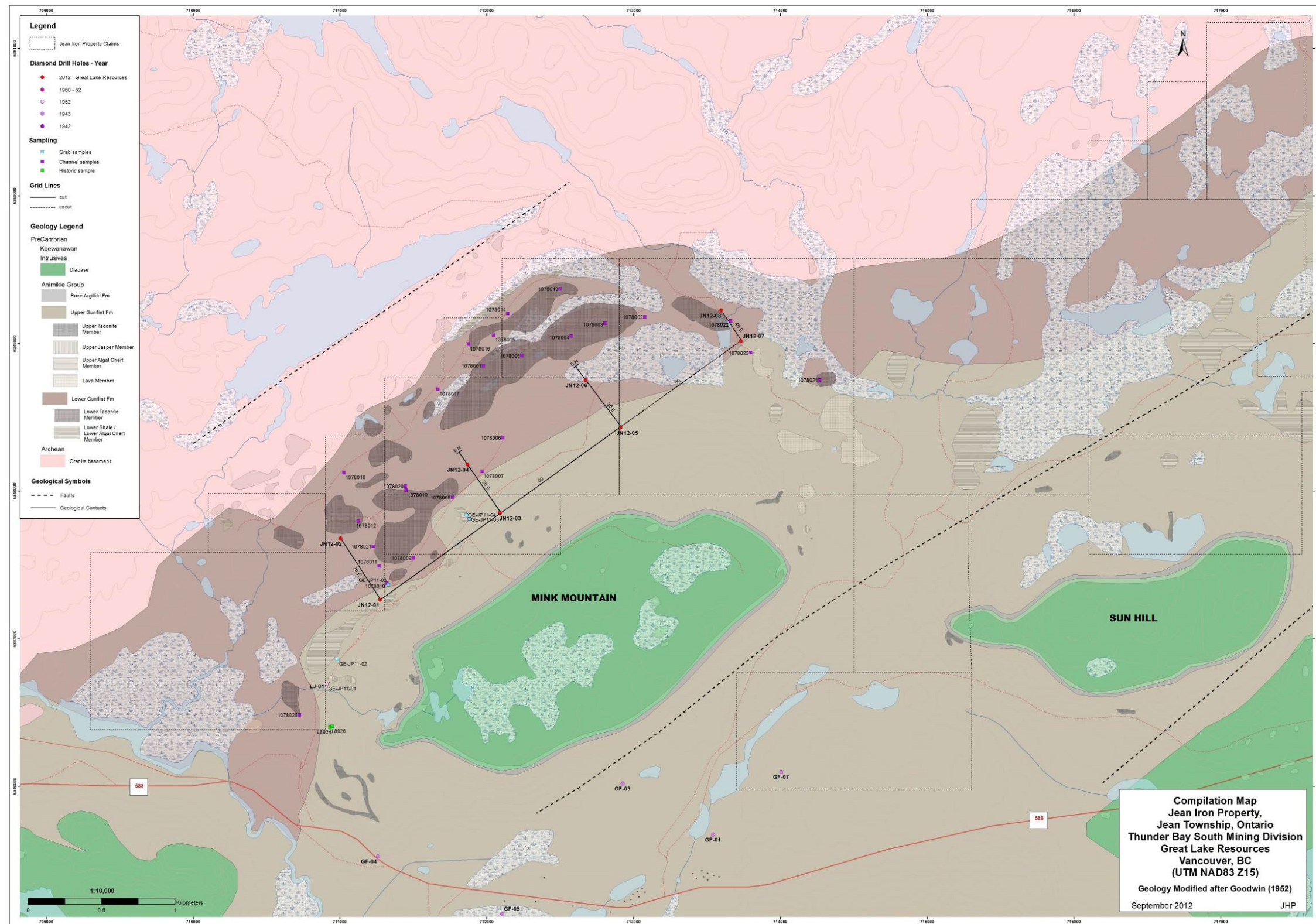
**Mineral Liberation Analysis (MLA test)**

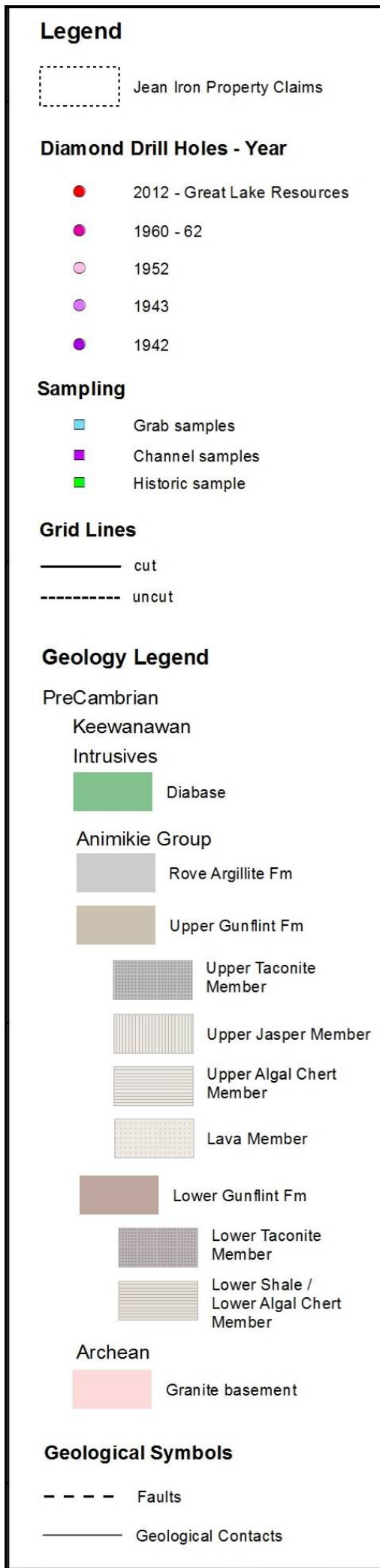
MLA test was also conducted on three samples. Two samples, DT Composite #1 and DT Composite #2 were from Lower Taconite Member. The remaining #1078112 was from Lower Shale Member of Lower Gunflint Formation and was included to determine mineralogy of associate iron minerals that elevated Fe% in this member.

The results indicated that, Lower Taconite Members samples are mineralogically fairly similar with average magnetic content of 8.34% (from 9.5% to 7.14%) and average magnetic grain size of 23 microns (20 to 26 microns). The non-magnetic goethite/siderite averaged 4.1% (3.8%-4.4%). The other sample, Lower Shale contains <0.1% magnetite with main iron minerals as pyrite (14.3%) and goethite/siderite contents (combined 17.3%) (Aung 2012).



Figure 5: Location of Historical Drill Holes and Property Geology





Legend for Figure 4

## 6.0 GEOLOGICAL SETTING AND MINERALIZATION

### 6.1 Regional Geology

The Paleoproterozoic iron formations in the seven iron ranges of the Lake Superior region crop out in northwestern Ontario, east-central and northern Minnesota, northern Wisconsin, and the Upper Peninsula of Michigan as an oval shaped region encompassing 220,000 km<sup>2</sup>. Iron formation strata in the Lake Superior region were the first to be mined on a large scale in North America and to have their geology described in detail (Figure 5). Iron formations in other parts of the world were compared to the Lake Superior ranges and genetic concepts were developed with direct reference to the sedimentary basins in this classical area. Similar iron formation lithofacies and stratigraphic- tectonic settings have been reported on all continents. The iron ranges of the Lake Superior region have provided an excellent type-area for reference and study of iron formation and other stratafer sediments in continental shelf and platform settings (Gross 2009).

Extensive Lake Superior-type iron formation (LSTIF) ranges were developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga (Figure 5). Thicker iron formations were deposited in shallow basins on continental shelves and platforms in neritic environments, interbedded with mature dolostone, quartz arenite, black shale and argillite. Iron formation units in the Animikie basin were the first examples of LSTIF to be described in detail and remain as the principal type area for reference (area around L. Superior and L. Michigan on Figure 5).

The Paleoproterozoic sedimentary rocks deposited in the Animikie Basin form: a southward-thickening wedge covering the southern margin of the Superior province, which is truncated in east-central Minnesota and northern Wisconsin by: the "Penokean" magmatic terranes". Sedimentation began approximately 2.1 Ga ago and ceased roughly 1.85 Ga ago. The nature of the sediment varies from volcanic and clastic to the chemical precipitates which form the thick successions of iron formation. The termination of the Penokean orogeny marked the onset of an intrusive igneous phase which emplaced subduction related tonalitic and granitic plutons into the Animikie sediments and the arc related volcanics of the Wisconsin magmatic terranes. The present form of the basin was achieved around 1 Ga ago when a north-northwest trending branch of the-Midcontinental Rift System separated the Animikie sediments into a northwestern and southeastern segment. The northwestern segment of the Animikie Group unconformably overlays the Superior Province and consists of a basal sandstone-siltstone (Pokegama Quartzite, Mahnomen Formation), iron formation (Gunflint, Biwabik, Trommald iron formations), and a thick, upper, shale-siltstone sequence (Rove, Virginia and Rabbit Lake Formations) (Gross 2009).

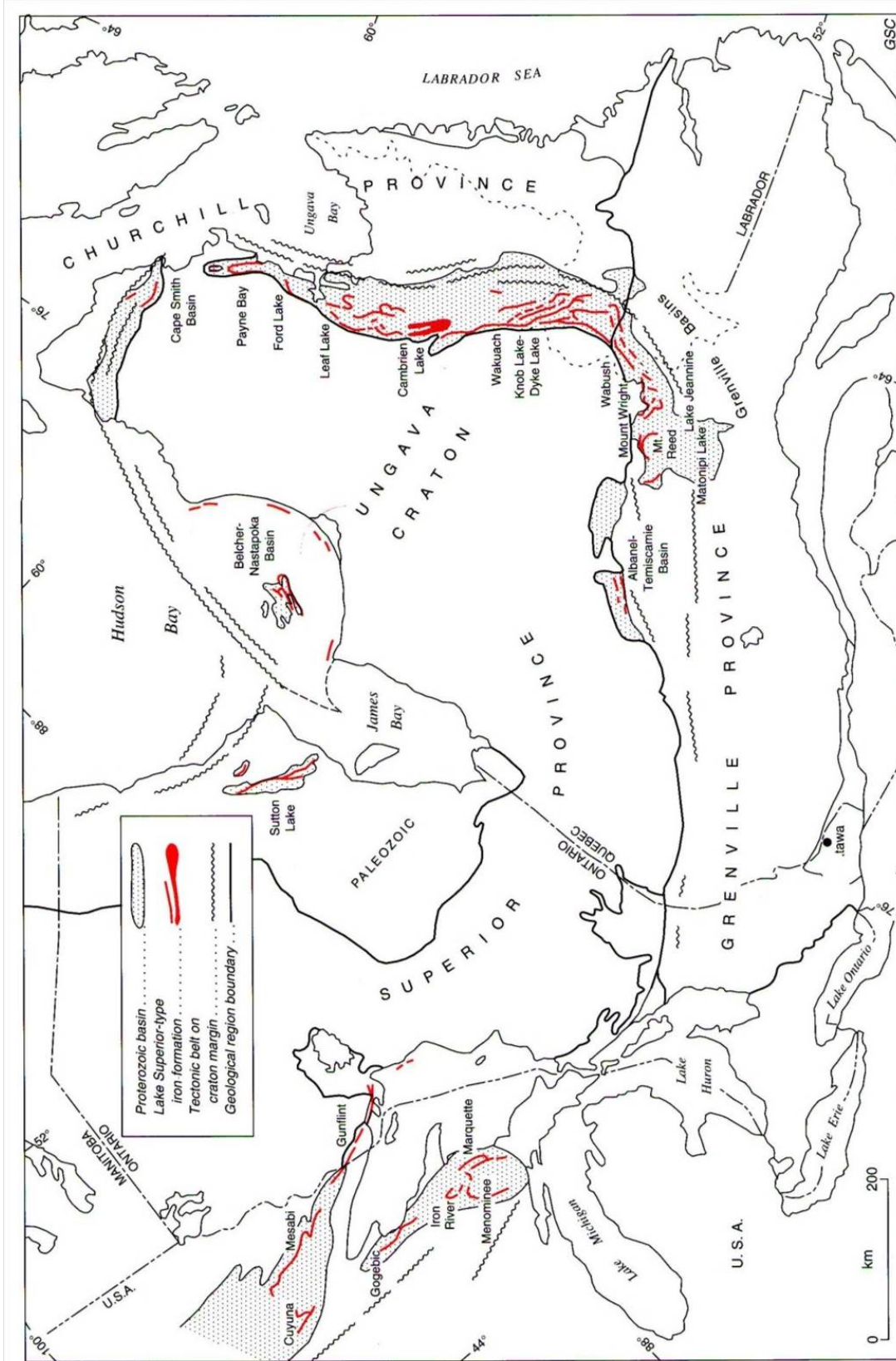


Figure 6: Regional geological map showing location of iron ranges (G.A Gross 2009).

## 6.2 Local Geology

Locally, the Jean Lake Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low-lying parts of the area (Table 7).

**Table 4: Generalized stratigraphic column of the area**

<b>Era</b>	<b>Group</b>	<b>Formation/ Rocks</b>
Pleistocene and Recent	Glacial Till	Unconsolidated gravel, sand, and clay
<b><i>Unconformity</i></b>		
Helikian (1.0 GA)	Keweenawan Group	Diabase sill and related rocks
<b><i>Intrusive Contact</i></b>		
Aphebian (Lower Proterozoic)	Animikie Group	Rove Formation argillites Gunflint Iron Formation
<b><i>Unconformity marked by Kakabeka Formation Conglomerate</i></b>		
Archean	Algoman	Granite, granite gneiss, with inclusion of chlorite and mica schist

Source: Goodwin, A.M. (1952)

### 6.2.1 Archean Basement Rocks

Basement related Algoman-type granitic rocks consist predominantly of normal, pink granite and granite gneiss. The texture ranges from conspicuously gneissic to coarsely pegmatitic. Numerous inclusions of chloritic and micaceous schist, and gneiss of various shapes and sizes, occur within the granite.

### 6.2.2 Aphebian Animikie Group

Sedimentary and volcanic rocks of Animikie Group consist of two formations: the lower Gunflint iron formation, and the upper, the Rove argillite formation. These rocks gently dip south at an average angle of 5 degrees.

#### **Gunflint Iron Formation**

The Gunflint iron formation consists mainly of sedimentary rocks that are unusually rich in iron. Zircon dating of the Gunflint formation yielded an age of  $1878.3 \pm 1.3$  million years. The formation is characterized by unusually high iron content, as well as by a variety of textures, the granular texture of the taconite rock being most distinctive. The Gunflint formation is approximately 145 m thick is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost

member, a limestone bed, is unique to the formation and marks the top of the iron-bearing rocks. The general stratigraphy of Gunflint formation is presented in the following table.

**Table 5: Stratigraphy of Gunflint Iron Formation**

Cycle	Member	Thickness (metres)
Upper Gunflint	Upper Limestone	1.5 – 6
	Upper Taconite	45 – 55
	Upper Shale	1.5 – 5
	Upper Jasper	12 – 20
	Upper Algal Chert	2.5 – 6.5
	Lava Flow Locally	0 – 12
	<b>Total Upper Gunflint</b>	<b>62.5 – 104.5</b>
Lower Gunflint	Lower Taconite	46 – 64
	Lower Shale	1 – 6
	Lower Algal Chert	0.6 – 4.5
	Basal Conglomerate	0 – 0.3
	<b>Total Lower Gunflint</b>	<b>47.6 – 74.8</b>
<b>Total Thickness of Gunflint Iron Formation</b>		<b>110.1 – 179.3</b>

*Source: Goodwin (1952)*

### **Basal Conglomerate**

The pebbles of the conglomerate are formed of white vein quartz, milky white chert, and occasionally jasper. Most pebbles are around 2.5 centimeter in diameter, although several with diameters of 15 centimeters are present, and the majority is well rounded. The matrix consists of sandy quartz grains with considerable admixed chloritic material.

### **Lower Algal Chert**

The algal chert is commonly in the form of reef-like mounds, which are roughly elliptical in plan view and average 3-meter-long, 1.5-meter-wide, and 0.6 meter thick. The chert forming the mounds is finely contorted in the manner typical of algal structures. Small brown, white, and red granules are often closely associated. The algal chert typically grades upwards into green and white banded chert with massive texture.

### **Lower Shale**

The shale is soft, black and typically fissile. Thin-section examination carried by previous workers revealed much fine-grained clastic material together with carbonaceous matter. Bands of grey to black chert, commonly flecked with pyrite, are present near the top of the member.

### **Lower Taconite**

The lower taconite is approximately 60 m thick and contains roughly 26% iron 46% silica. The upper unit is 40-50m thick and averages 31% iron with 43% silica (Goodwin 1961). Weathered rocks of the member are characterized by a shingly appearance due to numerous closely spaced parting planes, rusty colour, and finely granular texture. Under the microscope, the typical rock of this member is seen to consist of small granules up to 2 millimeters in diameter, in a fine-grained chert or carbonate matrix. The granules consist of a mixture of fine-grained chert, a green silicate mineral (probably greenalite), and iron oxide. The iron oxide is commonly an intimate mixture of hematite and magnetite, or near the weathered surfaces, the hydrated equivalents. The oxides often form the rims of granules.

The matrix to the granules is fine-grained chert or ferruginous carbonate. Where the carbonate is present the granules are not well formed. Carbonate nodules are common in certain beds. In cross-section, the nodules are characteristically round and occasionally slightly elliptical. The individual nodule when fresh is typically composed of salmon pink, finely crystalline carbonate, commonly with a rim of greenalite. The carbonate shows rusty weathering, the colour being yellow, orange, brown, or black, depending on the degree of oxidation and hydration. There is a variation in the relative proportions of chert, greenalite, hematite, and magnetite, within the unweathered beds of the member. Some beds are unusually rich in the iron oxide minerals, whereas adjacent beds contain a high proportion of chert and greenalite.

### **Upper Algal Chert**

This member can be further divided into three parts based on the mode of occurrence of chert; which include from bottom to top: i) Granular chert with jasper veinlets (0.6m – 3m thick); ii) Algal-oolitic chert, lava flow locally (1.2m – 15m thick); and iii) Coarse granular ferruginous chert (0.6m – 2m thick).

Hematite bearing veinlets are present in the flow rock. Thin-section study reveals oolitic granules formed of concentrically banded red hematite and chert up to 5 millimetres in diameter, in a fine-grained chert matrix (Goodwin 1952).

### **Upper Jasper Member**

The rocks of this member grade upwards by increase in shaly material to shale of the overlying member. The jasper lenses consist of abundant, close-packed, small red granules in a chert matrix having a granular texture. Not all granules are red; occasionally a lens has a local concentration of green granules or a general intermixture of red and green. There is an increase of green granules relative to red granules towards the top of the member, and the uppermost lenses are predominantly green. The lower beds of the member are characterized by granules and small lenticles, or beads, of jaspery chert; this

grades upwards into beds consisting of thick lenses of granular jaspery chert with shaly partings.

### **Upper Shale Member**

The member consists largely of black, fissile shale. Locally, small concretions are present; they are generally 5-7 cm in diameter and composed of black sideritic carbonate. A prominent feature of the Shale Member, and a good horizon marker, is the presence of a pisolite layer near the top of the member. The layer is 22-45 cm thick. It consists of pisolites averaging 1/8 inch in diameter that are somewhat flattened along the bedding plane. They weather characteristically to a rusty brown colour and are easily noticed against the background of black shale.

### **Upper Taconite Member**

The rocks of this member consist of thick-bedded granular chert with shaly partings. The chert layers are commonly green in colour, due to abundant greenalite granules. The thickness of the chert layers' ranges from 12 to 60 centimeters. An occasional layer is of uniform thickness, but most are noticeably wavy banded; such bands pinch and swell within a lateral distance of 3-7 metres. Within a vertical section, chert lenses are arranged so that the thick part of a particular lens rests in the hollow formed by the tapered extensions of subjacent lenses. The plan view of a lens is typically circular to elliptical, so far as was determined.

The shaly partings that separate chert beds range in thickness from 2-30 centimetres, most commonly about 10 cm. The partings are dark-brown to black and very fine grained. They consist of an intermixture of ferruginous carbonate, magnetite, and occasional fragmental grains. Beds within 25 metres of the diabase sills have considerably higher magnetite content than normal. In such beds, the magnetite grains are up to 3 millimetres in diameter; they occur in both the chert layers and shaly partings, but more abundantly in the partings. Bands up to 12 cm thick, rich in magnetite were observed; however, cherty material is usually intimately associated.

The upper 7 metres of this member consists locally of beds that have been highly contorted and brecciated. The rock now consists of chert fragments, up to 15 cm thick and 60 cm long, within a matrix of magnetite, secondary iron bearing amphibole minerals, and calcite. The chert of the fragments is commonly dark-grey to black and finely laminated. The rock appears to have consisted originally of thinly inter-banded chert and ferruginous carbonate.



### **Upper Limestone Member**

The limestone of this member is typically dark-grey to black and very fine grained. It is easily confused with the finer-grained phases of diabase. There are usually thin inter-bandings of grey-to-black massive chert up to 5 cm thick.

### **Rove Formation**

The Rove formation consists typically of thinly-bedded, black to dark-grey argillite. They are several hundreds of metres thick, intruded by the Keweenawan diabase sills and cut by steeply dipping northwest and northeast trending normal faults. Within the Rove formation, quartz carbonate veins emplaced along these faults in a belt extending northeast and southwest of Thunder Bay are mineralized with native silver, argentite, sphalerite, galena, pyrite, pyrrhotite, and chalcopyrite. The veins are predominantly hosted in the flat-lying Rove formation sediments, but also occur in the diabase sills and rarely in the Archean basement. This type of mineralization supported several mines, the largest of which were the Beaver, Silver Mountain, and Badger.

### **6.2.3 Helikian Keweenawan Group**

Rocks of the Keweenawan in the Jean Property area consist of diabase intrusives dipping gently southward, conforming more or less with the attitude of enclosing sedimentary rocks.

### **6.2.4 Pleistocene and Recent**

Unconsolidated sand and gravel of Pleistocene and Recent age are widespread and at places very thick. Most of the material is unsorted and appears to represent glacial debris; along the river banks, however there has been considerable reworking and sorting. The thickness of the debris ranges from a thin discontinuous mantle of boulders on top of the diabase-capped hills to sand and boulder deposits up to 75 metres thick, such as occur on the southeast side of Mink Mountain. There is a gravel pit adjacent to the southwest corner of claim 4252106 where quaternary deposits exposed thickness is approximately 30 meters.

### **Structure**

The Animikie sedimentary rocks are essentially flat-lying and rest upon a granite terrain of low relief. The principal disturbance has been due to normal gravity faults which are common throughout the area. The beds of Gunflint iron formation are gently dipping southward with an average angle of 5 degrees. Local folding and brecciation occur in the uppermost part of the Gunflint iron formation due to violent volcanic disturbances that occurred towards the end of the deposition of iron-bearing rocks.

There appear to be two principal systems of normal gravity faults within the map area. One system strikes northeast; the other, generally northward. The age relationship between them was not determined, as individual faults cannot be traced with certainty for more than a few kilometres.

One example of an east-trending fault is located between Silver Bluff and Divide Ridge, in which the north side appears to have moved down about 30 m relative to the south side. Another example is the fault southeast of Mink Mountain, where the south side has moved down about 75 m.

The north-trending system is illustrated by the two faults, one on either side of the North River, that together have formed a down-faulted block, or graben. Movement has been about 60 m.

A fault is indicated between Silver Bluff and Silver Mountain. The diabase capping rocks at both localities are at the same elevation, but whereas the capping rock at Silver Bluff is underlain by iron-bearing rocks of the Gunflint formation, there is 60 m of Rove argillite beneath the capping rock of Silver Mountain. There are probably many other faults in the area but with such limited vertical movement that they are not readily discernible.

### **6.3 Property Geology**

The Jean Property is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill which covers the entire south slope of the hill north of Whitefish Lake (Figure 4).

The basal conglomerate member of Gunflint Iron formation is well exposed along the north fringe of the iron formation, where it forms a thin skin on top of the basement complex. The thickness of the conglomerate is seldom more than 30 centimetres, even where completely preserved, and is usually only a few centimetres. The conglomerate was found to be completely missing in trench TR15-05 where Algal Chert member is directly overlying the basement granite. There are excellent exposures north of Burnt Bridge on the Whitefish River. The total thickness of the member ranges from 0.6 to 4.5 metres.

The algal chert member is commonly in the form of reef-like mounds, which are roughly elliptical in plan view and average 3 m long, 1.2 m wide, and 0.6 m thick. The chert forming the mounds is finely contorted in the manner typical of algal structures. Small brown, white, and red granules are often closely associated. The algal chert typically grades upwards into green and white banded chert with massive texture. The algal chert member was intersected in trenches TR 15-03 and TR 15-05.

Rocks of the Lower Taconite member are exposed along the north slope of Mink Mountain, on the banks of the Whitefish River, and on numerous small hills and ridges north of this river. Lower Taconite member was intersected in trenches TR 15-03 and TR 15-05.

Rocks of the Upper Algal chert member are exposed on the west and east flanks of Mink Mountain, beneath the diabase sill of Divide Ridge, along the banks of the Whitefish River, and within the North River down-faulted block. The thickness of the member ranges from 2.5 to 7 metres. There is a scattering of large boulders containing considerable amounts of hematite and magnetite, distributed over the area that is apparently underlain by flow rock. The boulders are up to 2 metres in diameter, and typically contain hematite and magnetite in the form of large granules up to 0.5 cm in diameter, and lenticles as much as 5 cm long (Goodwin 1961). Under the microscope, the granules and lenticles are seen to consist of an intimate intergrowth of specular hematite and magnetite.

Beds of Upper Jasper Member are exposed the east and west sides of Mink Mountain. There are also good exposures beneath the capping sill of Divide Ridge. The member ranges in thickness from 12 m to 20 m.

The Upper Shale member is exposed in the same localities as the underlying Jasper member. It ranges in thickness from 1.5m to 5m and is persistent throughout the Property area. This member was intersected in trenches TR 15-01, TR 15-02, and TR 15-04.

Upper Taconite beds are exposed beneath the capping sills of the hills and ridges of the area. There are particularly good exposures on the north face of Silver Bluff. The member is 45-55 metres thick. The Upper Limestone member is exposed immediately north of the abandoned railway on the south slope of Sun Mountain; the thickness is estimated to range from 1.3 to 6 m.

### **Drill Hole Geology**

Geology obtained from the diamond drill program of 2012 verified known surface geology with additional detailed stratigraphic information.

The drill area is underlain by northeast trending (approximately 055° azimuth) gently 4-5° southeast dipping Lower Gunflint Formation. Lower Taconite Member of Lower Gunflint Formation was the main economically-interested stratigraphic horizon investigated in this program.

The summary drill logs of 2012 diamond drilling program is provided as follows:

#### **JN12-01**

0.00-3.00m: Casing/Overburden

**3.00-59.40m: Lower Gunflint Formation (56.40m)**

3.00-52.68m: Lower Taconite Member  
52.68-55.60m: Lower Shale Member  
55.60-58.26m: Lower Algae Chert Member  
58.26-59.40m: Basal Conglomerate  
**59.40-102.00m: Archean Basement**  
**102.00m- End of Hole (EOH)**

#### **JN12-02**

0.00-3.00m: Casing/Overburden  
**3.00-19.25m: Lower Gunflint Formation (16.5m)**  
3.00-13.50m: Lower Taconite Member  
13.50-15.75m: Lower Shale Member  
15.75-19.25m: Lower Algae Chert Member  
**19.25-19.50m: Diorite Sill**  
**19.50-30.00m: Archean Basement**  
**30.00m-EOH**

#### **JN12-03**

0.00-10.00m: Casing/Overburden  
**10.00-31.89m: Upper Gunflint Formation (21.89m)**  
10.00-15.50m: Upper Shale Member  
15.50-29.48m: Upper Jasper Member  
29.48-31.89m: Upper Algae Chert Member  
**31.89-95.20m: Lower Gunflint Formation (63.31m)**  
31.89-88.70m: Lower Taconite Member  
88.70-90.77m: Lower Shale Member  
90.77-95.00m: Lower Algae Chert Member  
95.00-95.20m: Basal Conglomerate  
**95.20-96.00m: Archean Basement**  
**96.00m-EOH**

#### **JN12-04**

0.00-3.00m: Casing/Overburden  
**3.00-36.00m: Lower Gunflint Formation (33.0m)**  
3.00-32.62m: Lower Taconite Member  
32.62-35.70m: Lower Shale Member  
35.70-36.00m: Lower Algae Chert Member  
**36.00-36.88m: Diorite Sill**  
**36.88m-EOH**

#### **JN12-05**

0.00-21.00m: Casing/Overburden  
**21.00-23.12m: Upper Gunflint Formation (2.12m)**  
21.00-23.12m: Upper Algae Chert Member

**23.12-86.87m: Lower Gunflint Formation (63.75m)**

23.12-80.90m: Lower Taconite Member

80.90-82.82m: Lower Shale Member

82.82-86.87m: Lower Algae Chert Member

**86.87-87.00m: Archean Basement****87.00m-EOH****JN12-06**

0.00-1.50m: Casing/Overburden

**1.50-36.67m: Lower Gunflint Formation (35.17m)**

1.50-31.17m: Lower Taconite Member

31.17-33.45m: Lower Shale Member

33.45-36.32m: Lower Algae Chert Member

36.32-36.67m: Basal Conglomerate

**36.67-39.00m: Archean Basement****39.00m-EOH****JN12-07**

0.00-3.00m: Casing/Overburden

**1.50-57.20m: Lower Gunflint Formation (55.7m)**

5.00-52.05m: Lower Taconite Member

52.05-53.40m: Lower Shale Member

53.40-57.05m: Lower Algae Chert Member

57.05-57.20m: Basal Conglomerate

**57.20-60.00m: Archean Basement****60.00m-EOH****JN12-08**

0.00-3.00m: Casing/Overburden

**1.50-40.90m: Lower Gunflint Formation (39.4m)**

3.00-35.70m: Lower Taconite Member

35.70-36.88m: Lower Shale Member

36.88-40.90m: Lower Algae Chert Member

**40.90-42.00m: Archean Basement****42.00m-EOH**

## 6.4 Mineralization

Partial analyses are available to determine the average composition of mineralized beds of the Gunflint iron formation. The members considered in this respect are the Lower Taconite member, Upper Jasper member, and the Upper Taconite member. The other members of the formation are relatively thin and contain less iron.

**Table 6: Average Iron and Silica Content of Mineralized Members in Gunflint Iron Formation**

Member	Number of Historical Assays	Iron (Fe) (Percent)	Silica (SiO <sub>2</sub> ) (Percent)
Lower Taconite	18	25.71	46.44
Upper Jasper	20	25.50	46.36
Upper Taconite	20	30.70	43.16

*Source: Goodwin 1961*

## **7.0 EXPLORATION WORK**

The present exploration work included prospecting, mapping, surface sampling, and ground magnetic surveys. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. Aboriginal communities potentially affected by the exploration permit activities were consulted during the exploration permit application process and at the beginning of the work program. Details of the exploration work are provided in the following sections; the results are discussed in Section 8.

### **7.1 First Nations Consultations**

The Jean Iron property is located in traditional area of interest of the following three First Nations.

- Metis Nation of Ontario (MNO)
- Red Sky Métis Independent Nation
- Fort William First Nation

Several emails regarding work program details were sent to all three First Nations groups. A brief outline of scope of current exploration work, general market consideration for iron ore depressed prices, and struggle of junior mining industry was provided by the author. The group indicated their support of the project and it was agreed to keep touch if the project moves forward.

### **7.2 Prospecting and Outcrop Mapping**

Fieldwork portion of the prospecting and mapping work commenced from October 24-31, 2017 and its purpose was to map Gunflint Iron Formation outcrops for trenching and channel sampling, and to collect representative samples for iron analysis. A total of 26 grab rock samples were collected during this work from different outcrops or subcrops as listed in Table 7.

Majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial overburden with the exception of diabase sill rocks which are more resistant to weathering. The overburden is especially thick in the southeastern part of the property, where a gravel pit operation has exposed approximately 50-meter-thick layer of overburden. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, ground magnetic survey was helpful in locating Taconite and shale outcrops. Several Gunflint Iron Formation outcrops were mapped, out of which five outcrops were selected for stripping and channel sampling work on the property. Iron content of shales were observed to be generally low with rusty brown surface weathering due to

disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas. Basal conglomerate at the base of Lower Gunflint Iron Formation is thin and not well exposed. Similarly, upper contact with diabase sills is well marked in the southern part of the property and adjoining areas.

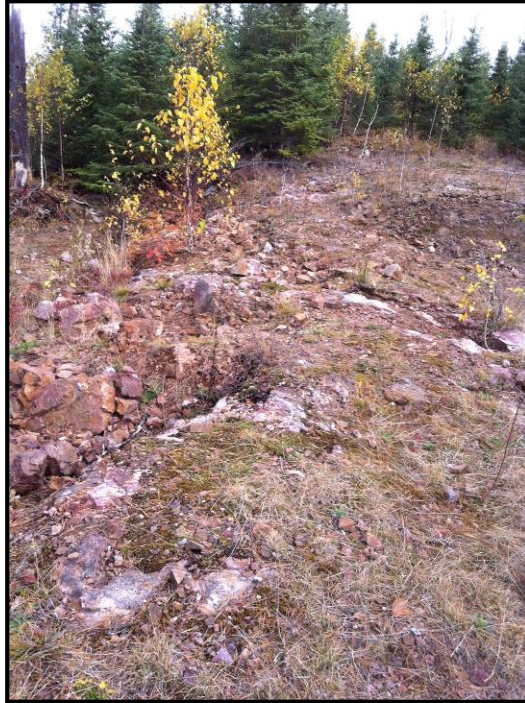


Photo 1: Taconite outcrop



**Table 7: List of Grab Rock Samples**

Sample Number	Location NAD 83 Zone 15		Elevation m	Date Sampled	Sample Type	Description
	Easting	Northing				
JN-17-01	714435	5348512	508	25-Oct-17	Grab rock sample from a subcrop	Taconite: Dark grey, weathers brown, thin to med bedded and massive, ferruginous, siliceous, fractures filled with haematite.
JN-17-02	712897	5349570	517	26-Oct-17	Grab rock sample from an outcrop	Taconite: Dark grey, weathers brown, thin to med bedded, ferruginous, fractures and bedding planes filled with haematite, thin green bands, shingly top, occasional shaly partings.
JN-17-03	712922	5349559	516	26-Oct-17	Grab rock sample from an outcrop	Taconite: Dark grey, weathers brown, med bedded, ferruginous, pisolitic at places, rare iron nodules, fractures and bedding planes filled with haematite.
JN-17-04	713482	5349314	498	26-Oct-17	Grab rock sample from a subcrop	Taconite: brownish grey, thin bedded, ferruginous, haematized, shingly, shaly partings, pellet size castings.
JN-17-05	714379	5348562	505	27-Oct-17	Grab rock sample from a subcrop	Taconite: Dark grey, weathers brown, blocky, ferruginous, siliceous, haematitic along joint surfaces.

Sample Number	Location NAD 83 Zone 15		Elevation	Date Sampled	Sample Type	Description
JN-17-06	714409	5348528	505	27-Oct-17	Grab rock sample from a subcrop	Taconite: Dark grey, weathers brown, blocky, ferruginous, siliceous, haematitic along joint surfaces, breaks with sharp edges.
JN-17-07	714095	5348043		28-Oct-17	Composite grab sample from a small outcrop exposed on the side of an old trech: 16+6+12 inches	16 inch: Taconite; Dark grey, weathers brown, ferruginous, magnetic, haematitic along joint surfaces, fractured.
						6 inch: Taconite; Reddish, very fine grained, speckled, non-ferruginous, haematized at places.
						12 inch: Taconite; Dark grey, dark brownish grey, ferruginous, highly magnetic, siliceous, haematitic.
JN-17-08	714095	5348043		28-Oct-17	Grab sample from lowest 12 inch of a small outcrop exposed on the side of an old trech.	Taconite; Dark grey, dark brownish grey, ferruginous, highly magnetic, siliceous, haematitic.

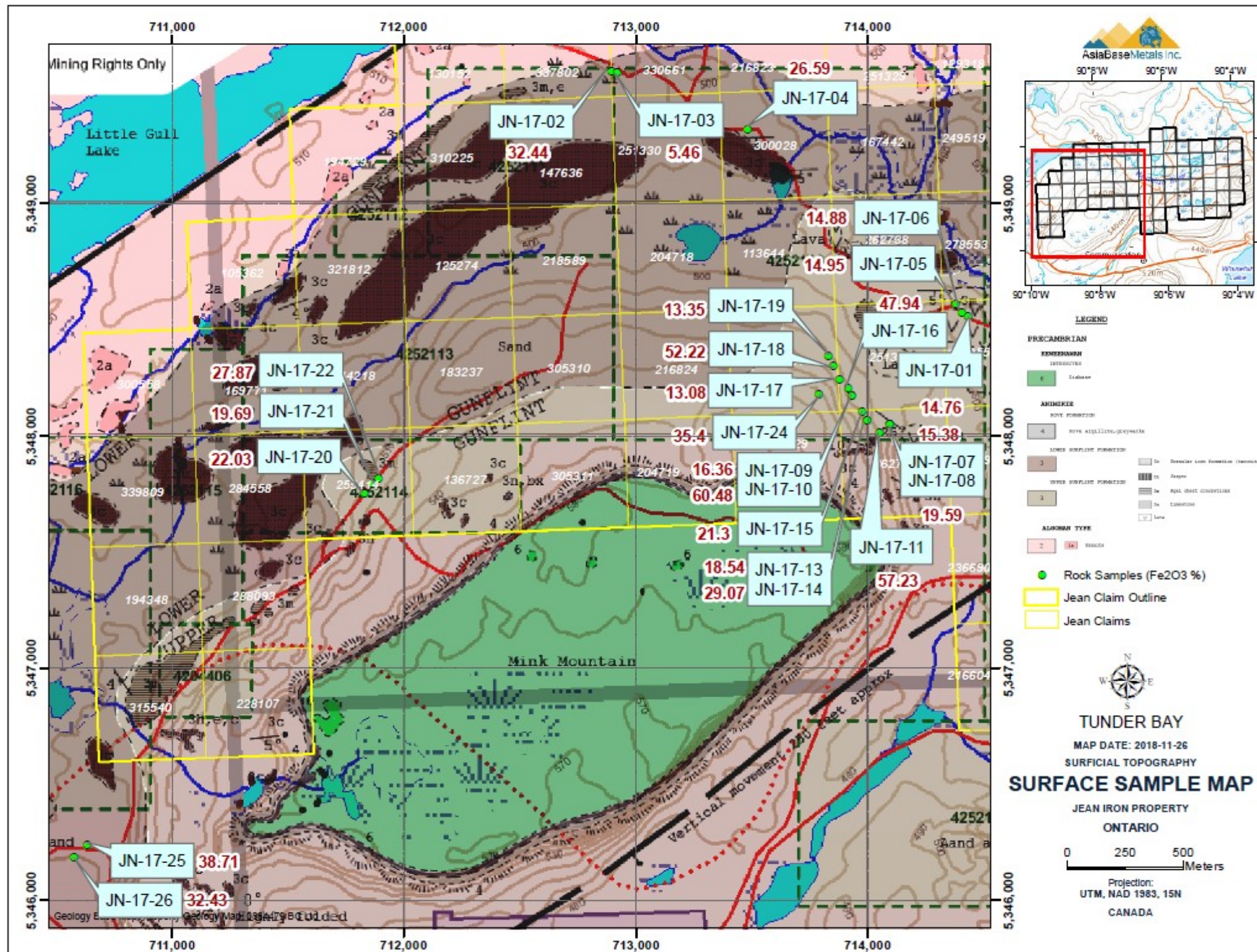
Sample Number	Location NAD 83 Zone 15		Elevation	Date Sampled	Sample Type	Description
JN-17-09	713932	5348170	525	28-Oct-17	Grab rock sample from an outcrop along a Taconite ridge. Upper part	32 inch: Taconite; Dark brownish grey, thin to med bedded, ferruginous, magnetic, siliceous, haematitic, pebble size castings, ridge forming.
JN-17-10	713932	5348170	525	28-Oct-17	Grab rock sample from an outcrop along a Taconite ridge. Lower part	22 inch: Taconite; Dark grey, weathers to dark brownish grey, thin to med bedded, ferruginous, magnetic, siliceous, haematitic.
JN-17-11	714052	5348010	532	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge. southern end of the claim.	Taconite; Dark grey, weathers to dark brownish grey, thin to med bedded, ferruginous, magnetic, siliceous.
JN-17-12	714052	5348010	532	29-Oct-17	Duplicate of JN-17-11	Taconite; Dark grey, weathers to dark brownish grey, thin to med bedded, ferruginous, magnetic, siliceous.
JN-17-13	713999	5348060	526	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	24 inch: Taconite; Dark grey, weathers to dark brownish grey, thin to thick bedded, ferruginous, magnetic, siliceous.
						24 inch: covered

Sample Number	Location NAD 83 Zone 15		Elevation	Date Sampled	Sample Type	Description
JN-17-14	713999	5348060	526	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	14 inch: Taconite; Dark grey, weathers to dark brownish grey, medium bedded, ferruginous, magnetic, siliceous, haematitic.
JN-17-15	713978	5348098	532	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	48 inch: Taconite; Dark grey, weathers to dark brownish grey, thin to medium bedded, predominantly thin bedded, ferruginous, magnetic, siliceous, haematitic, rige forming.
JN-17-16	713915	5348204	531	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	Taconite; Dark grey, weathers to dark brownish grey, thin to medium bedded, ferruginous, magnetic, siliceous, haematitic
JN-17-17	713880	5348240	533	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	Taconite; Dark grey, weathers to dark brownish grey, thin to medium bedded, ferruginous, magnetic, siliceous, haematitic
JN-17-18	713851	5348296	529	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	Taconite; med to dark grey, dark brownish grey, medium bedded, ferruginous, highly magnetic, siliceous.
JN-17-19	713831	5348339	530	29-Oct-17	Grab rock sample from an outcrop along the Taconite ridge.	Taconite; dark brownish grey, thin to medium bedded, weathered, ferruginous, not as magnetic, siliceous.

Sample Number	Location NAD 83 Zone 15		Elevation	Date Sampled	Sample Type	Description
JN-17-20	711831	5347751	520	30-Oct-17	Grab rock sample from an outcrop.	Taconite with interbedded shale. Taconite: dark grey to reddish, thin to medium bedded, jasper interbeds, splintery, ferruginous, magnetic.
JN-17-21	711865	5347794	515	30-Oct-17	Grab rock sample from an outcrop.	Taconite: dark brownish grey, medium bedded, occasional jasper interbeds, ferruginous, magnetic. haematitic, shale interbeds at places.
JN-17-22	711893	5347815	517	30-Oct-17	Grab rock sample from an outcrop.	Taconite: dark brownish grey, medium bedded, 2 thin shale intervals in the lower half.
JN-17-23	711893	5347815	517	30-Oct-17	Duplicate of JN-17-22	Taconite: dark brownish grey, medium bedded, 3 thin shale intervals in the lower half.
JN-17-24	713791	5348177	564	30-Oct-17	Grab rock sample from an outcrop.	Taconite; Dark grey, thin to medium bedded, ferruginous, magnetic.
JN-17-25	710636	5346233	477	31-Oct-17	Grab rock sample from an outcrop.	Taconite: Grey, weathers brown, fine to med grained, thick bedded to massive, ferruginous, magnetic, siliceous, haematitic weathering, honeycomb texture due to possible iron pellets removal.

Sample Number	Location NAD 83 Zone 15		Elevation	Date Sampled	Sample Type	Description
JN-17-26	710578	5346182		31-Oct-17	Grab rock sample from an outcrop.	Taconite: Greenish grey, weathers brown, thin to medium bedded, ferruginous pisolites along the bedding, magnetic, siliceous.

Figure 7: Location of Surface Samples with Iron Oxide Results

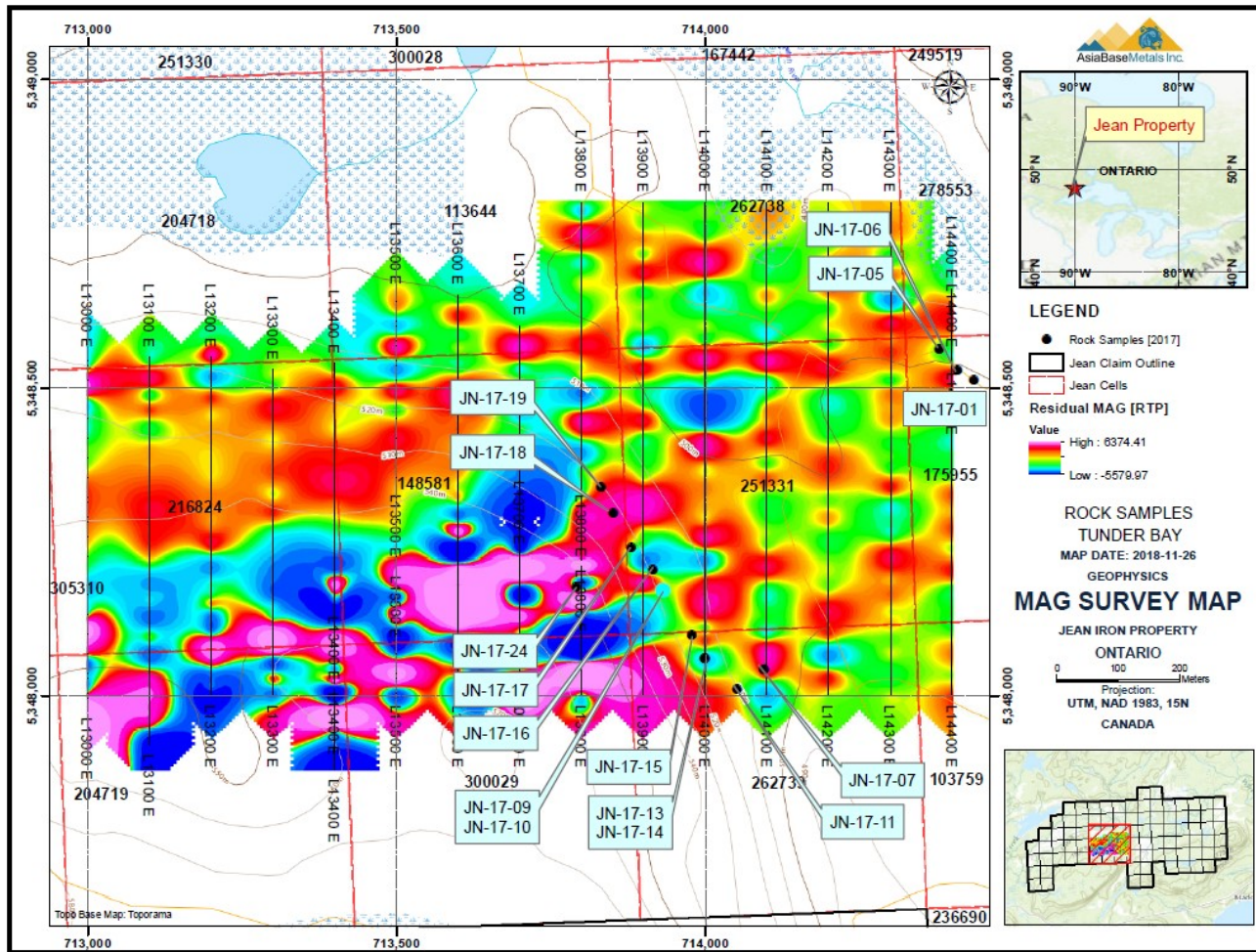


### **7.3 Ground Magnetic Survey**

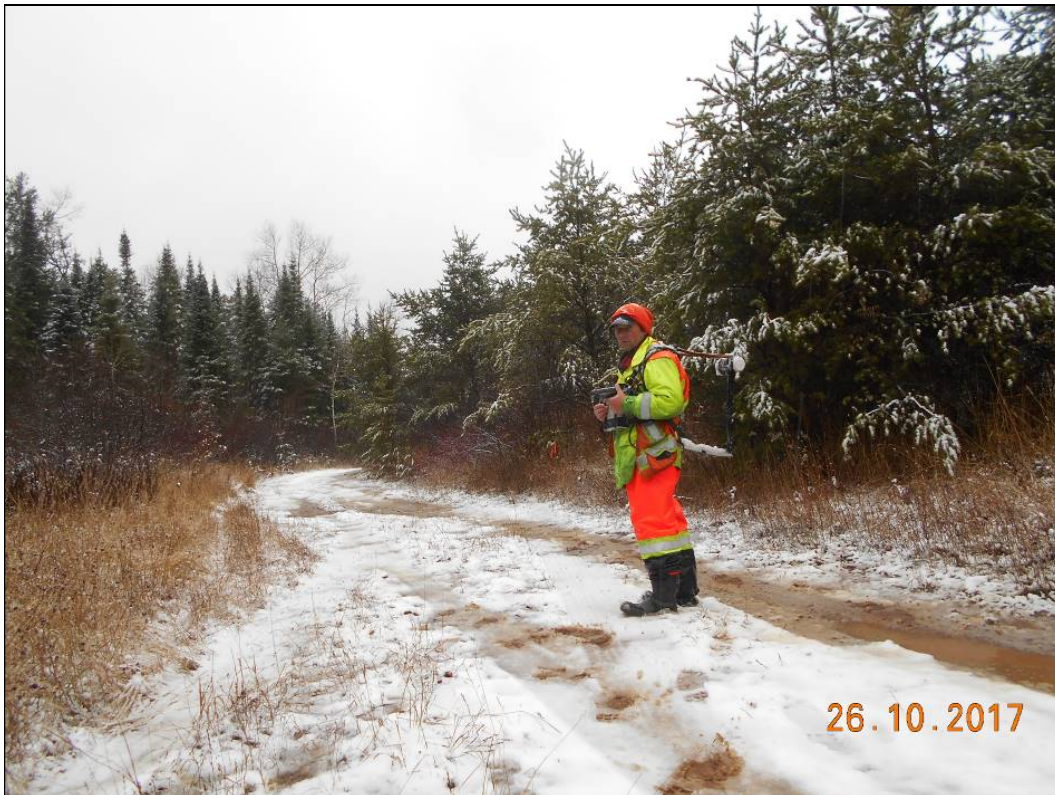
Total Field Magnetometer survey was carried out over a GPS laid grid survey lines covering an area of 1400 m x 700 m. Magnetometer used for this work is a GEM GSMT-19 v 7.011 XI 2006. The vertical component of total field strength was measured. Diurnal corrections corrected by looping and comparing corrections to NRC magnetic observatory data. Magnetic measurements were collected along the grid lines (Figures 7, and Appendix C) at 100 metres spacing. A total of 9.8- line -kilometer of ground magnetic survey was completed on claims 103759, 113544, 148581, 175955, 204718, 204719, 216824, 251331, 262738, 262739, 278553, and 300029.



Figure 8: Magnetometer Survey Map with surface samples location



**Magnetometer Survey Photos**





## **8.0 EXPLORATION RESULTS**

Results of 26 grab rock samples for XRF, two grab rock samples for Davis Tube Testing, and magnetic survey results are discussed in the following sections.

### **8.1 Surface Samples Results**

Surface samples assay results indicate total iron is in the range of 5.46% to 60.48% Fe<sub>2</sub>O<sub>3</sub> (Table 9). Of particular interest is the sampling trend associated with a magnetic anomaly and structure identified as a result of ground magnetic survey. This northwest-southeast trend sampling indicated up to 60.48% Fe<sub>2</sub>O<sub>3</sub>.

### **8.2 Davis Tube Testing Results**

The results of two samples (JN-17-11 and JN-17-18) selected for Davis Tube Testing (DTT) indicate consistent values of iron (52.22 to 57.23 Fe<sub>2</sub>O<sub>3</sub>), silica (34.59 to 41.63% SiO<sub>2</sub>) and other oxides. Magnetic fraction also ranges from 44.8 to 46.1%.

### **8.3 Magnetic Survey Results**

The results of magnetic survey indicate high magnetic trend in the southwest side of the survey area (Figure 8). Grab samples collected from this area also show high iron values. The high magnetic trend continues further to the south off the property area.

**Table 8: Grab Samples Assay Results – XRF**

Analyte Symbol	SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis Method	FUS-XRF													
JN-17-01	48.37	1.64	13.58	14.76	0.17	5.24	3.52	0.08	6.58	0.19	< 0.01	6.61	0.066	100.8
JN-17-02	56.64	0.01	0.17	32.44	0.18	1.07	0.8	0.03	0.02	0.01	< 0.01	7.21	0.005	98.59
JN-17-03	92.33	0.01	0.68	5.46	0.05	0.04	0.03	0.02	0.01	0.01	0.01	1.7	0.003	100.4
JN-17-04	63.86	0.02	0.34	26.59	0.21	0.13	4.69	0.04	0.07	0.04	0.01	4.43	0.003	100.4
JN-17-05	50.42	1.58	13.5	14.95	0.35	4.95	6.53	1.79	1.42	0.18	< 0.01	4.36	0.065	100.1
JN-17-06	52.47	1.54	13.42	14.88	0.28	4.61	6.18	1.74	1.72	0.18	0.01	3.57	0.065	100.7
JN-17-07	71.62	0.61	5	15.38	0.09	1.19	0.34	0.06	2.99	0.07	< 0.01	2.6	0.019	99.97
JN-17-08	76.9	0.01	0.21	19.59	0.05	0.1	0.07	0.04	0.01	0.02	< 0.01	1.99	0.003	< 99
JN-17-09	81.59	0.02	0.14	16.36	0.09	0.07	0.06	0.04	0.07	0.03	0.01	1.37	0.003	99.83
JN-17-10	34.7	0.04	0.89	60.48	0.09	0.42	0.1	0.01	0.27	0.06	< 0.01	2.23	0.003	99.3
JN-17-11	34.59	0.05	1.44	57.23	0.1	0.73	2.16	0.01	0.39	0.07	< 0.01	4.06	0.006	100.8
JN-17-12	31	0.05	1.38	58.27	0.11	0.71	2.98	0.01	0.39	0.08	< 0.01	4.66	0.006	99.65
JN-17-13	78.94	0.01	0.21	18.54	0.12	0.06	0.82	0.01	0.05	0.02	< 0.01	1.27	0.003	100.1
JN-17-14	67.61	0.03	0.71	29.07	0.1	0.28	0.13	0.02	0.16	0.04	0.01	1.53	0.003	< 99.69
JN-17-15	76.84	0.02	0.53	21.3	0.06	0.22	0.15	0.01	0.18	0.04	< 0.01	1.37	0.003	< 100.7
JN-17-16	48	0.03	0.88	47.94	0.03	0.4	0.09	0.02	0.19	0.05	< 0.01	1.76	0.003	99.39
JN-17-17	84.5	0.02	0.14	13.08	0.04	0.05	0.16	0.01	0.05	0.02	0.01	0.89	0.003	< 98.97
JN-17-18	41.63	0.04	0.73	52.22	0.31	0.63	0.24	0.02	0.02	0.04	0.01	3.2	0.004	99.12
JN-17-19	82.09	0.01	0.28	13.35	0.46	0.07	1.21	0.02	0.04	0.03	0.01	3.28	0.003	100.8
JN-17-20	74.87	0.02	0.24	22.03	0.07	0.18	0.09	0.03	0.05	0.02	0.01	2.06	0.003	99.65

Analyte Symbol	SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis Method	FUS-XRF													
JN-17-21	76.2	0.02	0.23	19.69	0.05	0.11	1.16	0.01	0.03	0.02	0.01	1.68	< 0.003	99.2
JN-17-22	67.67	0.03	0.48	27.87	0.15	0.26	0.92	0.02	0.04	0.03	< 0.01	2.72	0.004	100.2
JN-17-23	65.45	0.04	0.58	30.89	0.1	0.33	0.4	0.02	0.04	0.04	< 0.01	2.36	0.003	100.3
JN-17-24	55.87	0.02	0.35	35.4	0.25	2.99	2.75	0.1	0.07	0.24	< 0.01	1.2	< 0.003	99.25
JN-17-25	41.03	0.01	0.14	38.71	0.22	0.75	8.76	0.01	< 0.01	0.02	< 0.01	10.76	0.003	100.4
JN-17-26	56.31	0.01	0.05	32.43	0.17	0.99	3.16	0.01	< 0.01	0.01	< 0.01	5.78	< 0.003	98.93

Notes: Duplicate and original samples are highlighted yellow and green respectively.

**Table 9: Davis Tube Testing**

<b>Analyte Symbol</b>	<b>Start Mass</b>	<b>Magnetic Fraction</b>	<b>Non-Mag Fraction</b>	<b>Weight % Magnetics</b>	<b>Calculated Start Mass</b>	<b>% Loss Mass</b>
<b>Unit Symbol</b>	<b>g</b>	<b>g</b>	<b>g</b>	<b>%</b>	<b>g</b>	<b>%</b>
Analysis Method	DT	DT	DT	DT	DT	DT
JN-17-11	30	13.828	16.166	46.1	29.994	0.04
JN-17-18	30	13.459	16.491	44.8	29.95	0.2

## 9.0 SAMPLE PREPARATION, AND QA/QC

All the rock samples collected for the present study work were prepared and analyzed by Activation laboratories (Actlabs) in Thunder Bay and Toronto. Actlabs is ISO 17025 accredited and/or certified to 9001: 2008, and is independent of ABZ. All rock samples were crushed to -10 mesh followed by pulverizing a 250-gram split to -150 mesh (95%). Each sample was analyzed for Iron Ore Analysis or XRF, and several composite samples were tested for Davis Tube Magnetic Separation at -200 mesh fraction. All of the samples are recorded in Excel spreadsheets.

For the present study, the sample preparation, security and analytical procedures used by the laboratories are considered adequate. No officer, director, employee or associate of ABZ was involved in sample preparation and analysis.

Activation Laboratories has its own quality assurance and quality control program on sample preparation, analysis and security. Five field duplicate samples were collected from channel sampling work as part of field QA/QC program. The results of sample and its field duplicate are shown in Table 9.

For the present study, field and laboratories QA/QC procedures are considered adequate. Historical grades and assay data used for the present study are taken from MNM assessment reports and OGS geological reports which are deemed reliable. Historical geological descriptions taken from the above-mentioned sources were prepared and approved by the professional geologists or engineers and are deemed reliable.

## 10.0 DEPOSIT TYPES

### 10.1 Deposit Types

There are four major types of iron deposits around the world being worked currently, depending on the mineralogy and geology of the deposits. These are magnetite, titan magnetite, massive hematite and pissolitic ironstone deposits. Banded Iron Formation (BIF) also known as taconite in North America are metamorphosed sedimentary rocks composed predominantly of thinly bedded iron minerals and silica (as quartz). Jean Property is mainly underlain by Gunflint Iron Formation, a BIF which is mainly comprised of taconite rocks. The formation is similar to the taconite deposits of the Mesabi Iron Range in northern Minnesota, where iron mining occurred for over 100 years and continues to expand into the future.

The key economic parameters for magnetite ore being economic in BIF are the crystallinity of the magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. Non-economic rock types interbedded with the iron formation must be sufficiently segregated from the economic iron-bearing areas. At the Jean Property, however, hematite appears to be the dominant iron species rather than magnetite. The thin magnetite bands are mixed with chert, limestone and shale.

The typical grade of iron (Fe) at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% Fe by weight. The typical magnetite iron ore concentrate has less than 0.1% phosphorus, 3–7% silica and less than 3% aluminum. Generally, most magnetite BIF deposits must be ground to between 32 and 45 micrometers in order to provide a low-silica magnetite concentrate. Magnetite concentrate grades are generally in excess of 63% Fe by weight and usually are low phosphorus, low aluminum, low titanium and low silica and demand a premium price (USGS 2010).

### 10.2 Deposit Models

Stratigraphically, to the southwest, the Gunflint Iron formation of Jean Property strikes into Minnesota where it is known as the Biwabik formation. In Canada the formation is relatively undeformed, but in Minnesota it was folded during the Penokean Orogeny (1.85 Ga). In this deformed part of the belt the cherty iron formation was sporadically oxidized and leached creating zones of enrichment containing between 50% and 70% iron. It is a similar setting and age to the iron deposits in the Labrador trough. These high-grade ore deposits in Minnesota were known as the Iron Range, the largest of which was the Mesabi Iron Range. Since their discovery in 1890, they have produced in excess of 3.6 billion tonnes of iron ore, 2.3 billion of which was from the high grade lenses. It is the largest iron



resource in the United States and still produces significant portion of the nation's iron output. Shortly after the Second World War the high grade resource was largely exhausted. There was still, however, a huge resource of what was called "taconite" ore. Taconite was a term given to the unoxidized (unweathered) cherty iron formation (as occurs in the Gunflint formation on Jean Property) grading in excess of 25% iron. This taconite ore became economic with the development of a beneficiation process. The ore is ground, concentrated with magnetic separators, mixed with clay and dolomite, and roasted into pellets. The final grade of these pellets is typically 60-65% iron.

The taconite ore in the Biwabik formation in Minnesota appears texturally to be of fine-grained cherty fragmental or sandstone. Although it appears to be clastic sediment, it is felt that 95% of this material was deposited as a chemical precipitate. Iron was probably precipitated as an "oxy-hydroxyl carbonate gel" with minimal clastic component. The clastic textures observed are probably due to reworking of the precipitate; possibly by wave or current action, or by slumping (turbidity currents). Magnetite distribution appears in some cases to be related to porosity and permeability of the host rocks. Fine-grained, silty, and presumably less permeable, horizons are typically barren.

To be of value as concentrating material, the iron-bearing rock must be of appropriate chemical and textural composition and readily available in large quantities. The iron-bearing rocks of the Lower and Upper Taconite members on the Jean Property are considered with this in mind. There are widespread exposures of Lower Taconite rocks in the general area north of Mink Mountain and Whitefish River. Thicknesses in the range of 15 m to 70 m have been encountered in drill holes. Furthermore, the material is relatively soft and friable, and is exposed over a large area without capping rock to hinder extraction.

The analyses of Upper Taconite rocks indicate that they contain more iron and less silica than the Lower Taconite rocks, and the magnetite content in proximity to diabase sills is considerably higher.

**Exploration Criteria:**

Since the average composition of the iron-bearing rock contains too much silica for its use as ore material, good exploration criteria is to search for parts of the iron-bearing rock that have been concentrated by natural processes, or are amenable to commercial beneficiating methods.

There is no direct evidence that natural concentrations of iron have formed within the Jean Property area. However, the iron bearing rocks show oxidation of magnetite to hematite, and there is secondary concentration of iron in micro-fractures and bedding planes. Rocks of the Lower Taconite member appear to have been weathered more than other parts of the formation, particularly in the ridges and mounds north of the Whitefish River. However, close inspection of the outcrops reveals that alteration is restricted to a

rim 2-5 cm thick. The chemical analyses demonstrate that there has been little, if any, removal of silica and other impurities.

Outcrops, trenches and drill core of Upper Jasper rocks apparently give indication of surface alteration, and hold little promise of large scale, natural concentrations. A 30 cm bed of soft hematite ore, assaying 52 percent iron and 3-8 percent silica, was reported to have been encountered at a depth of 250 feet, in the region south of Mink Mountain, by Gunflint Iron Mines Limited, in 1943 (Goodwin 1961).

It is possible that rocks of the Upper Taconite member that formerly overlay the diabase sill underwent oxidation and leaching of impurities before removal. Such iron-enriched material might have been concentrated in low-lying areas, such as Whitefish Lake and vicinity, and thus protected from erosion. However, there is no direct evidence that such a concentration exists.

Concentrations of iron-rich material can also occur along fault planes. Fault zones that might repay investigation lie between Silver Bluff and Divide Ridge, between Silver Bluff and Silver Mountain east of North River where the iron-bearing rocks abut on granite, and southeast of Mink and Sun mountains.

In conclusion, the economic future of the iron-bearing rocks appears to depend upon a process that can produce a commercial concentrate. More detailed experimental investigation might reveal such a process.

## **11.0 INTERPRETATION AND CONCLUSIONS**

The Jean Property consists of 88 mineral claims (single cell and boundary claims) covering 1,840 hectares' land located in Thunder Bay Mining District of Northwestern Ontario, Canada. The Property is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. It can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

AsiaBaseMetals Inc. ("ABZ" or "the Company") (Client Number: 412660) owns 100% of the Mineral Claims. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. Fieldwork portion of the current exploration work commenced from October 24-31, 2017 and its purpose was to map Gunflint Iron Formation outcrops for trenching and channel sampling, and to collect representative samples for iron analysis. A total of 26 grab rock samples were collected during this work from different outcrops or subcrops.

This assessment work report summarizes the exploration work and its findings with recommendations regarding a follow up exploration program.

The Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low-lying parts of the area.

Gunflint Iron formation of Animikie Group is part of extensive Lake Superior-type iron formation (LSTIF) ranges developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga. It is banded iron formation (BIF) mainly comprised of taconite rocks, and is characterized by unusually high iron content, as well as by a variety of textures, of which the granular texture of the taconite rock being most distinctive. The Gunflint formation, approximately 145 m thick, is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost member, a limestone bed, is unique to the formation and marks the top of the iron-bearing rocks. The key economic parameters for magnetite iron being economic in BIF are the crystallinity of magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. The typical grade of iron at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% iron by weight.

The historical exploration data available for the Property area includes geophysical surveys, geological mapping, diamond drilling, bulk surface sampling, and magnetic tube testing of core and surface samples. This work was carried out during the period from 1943 to 1962. The total Fe% obtained through magnetic tube separation and acid roasting with magnetic concentration range from 23.95% to 39.85% for feed, from 38.66% to 54.21% for minus 100-mesh and from 43.42% to 56.77% for minus 200-mesh.

In 2011-12, Great Lakes Resources Ltd. (GLR) re-activated exploration work on a portion of the current Property which included surface sampling, bulk sampling, diamond drilling, and assaying samples for iron content, Davis Tube Testing (DTT) and Mineral Liberation Analysis (MLA) test. All eight holes intersected iron bearing Lower Taconite Member, whereas two complete Lower Taconite Member vertical intersections were delineated in holes JN12-03 (56.81m) and JN12-05 (57.75m). The average true thickness is estimated to be 57.06m.

During the current exploration work, a total 26 rock samples were collected for XRF analysis and 2 for Davis Tube Testing, and 2 field duplicate samples for XRF as part of field QA/QC program.

Prospecting and mapping work indicated that the majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial overburden with the exception of diabase sill rocks which are more resistant to

weathering. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, ground magnetic survey was helpful in locating Taconite. Iron content of shales were observed to be generally low with rusty brown surface weathering due to disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas.

Total Field Magnetometer survey was carried out over a GPS laid grid survey lines covering an area of 1400 m x 700 m. Magnetometer used for this work is a GEM GSMT-19 v 7.011 XI 2006. The vertical component of total field strength was measured. Diurnal corrections corrected by looping and comparing corrections to NRC magnetic observatory data. Magnetic measurements were collected along the grid lines at 100 metres spacing. A total of 9.8-line- kilometer of ground magnetic survey was completed. The results of magnetic survey indicate high magnetic trend in the southwestern side of the survey area. Grab samples collected from this area also show high iron values. The high magnetic trend continues further to the south.

The results of 26 grab rock samples indicate that total iron is in the range of 5.46% to 60.48%. The results of two samples (JN-17-11 and JN-17-18) selected for Davis Tube Testing (DTT) indicate consistent values of iron (52.22 to 57.23 Fe<sub>2</sub>O<sub>3</sub>), silica (34.59 to 41.63% SiO<sub>2</sub>) and other oxides. Magnetic fraction also ranges from 44.8 to 46.1%. Of particular interest is the sampling trend associated with a magnetic anomaly and structure identified as a result of ground magnetic survey. This northwest-southeast trend sampling indicated up to 60.48% Fe<sub>2</sub>O<sub>3</sub>.

Based on its favorable geological setting indicating surface and subsurface presence of Gunflint Iron formation (GIF), and the results of present study, it is concluded that the Property is a property of merit and possess a good potential for discovery of economic concentration of iron bearing rocks through further exploration and improvement of beneficiation processes. Good road access, availability of exploration and mining services in the vicinity makes it a worthy mineral exploration target.

## **12.0 RECOMMENDATIONS**

In the author's opinion the character of the Jean Property is sufficient to merit the following work program.

### ***Geological Mapping, Ground Geophysical Survey, Sampling, and Diamond Drilling***

The present work was successful in mapping high iron percentage rock outcrops based on ground magnetic survey. Although the weather was not very supportive but the

combination of ground magnetics with mapping and prospecting worked very well. It is recommended that this work should be continued in other areas of the property where the outcrops are covered with overburden.

## 13.0 REFERENCES

- 1.0 Aung Myint Thein, 2011; Assessment Report on the Jean Iron Property, Jean Township, Thunder Bay South Mining Division, Ontario, Claims 4252101, 4252102, 4252103, 4252104, 4252105, 4252106, 4252107, 4252108, 4252109, 4252110, 4252111, 4252112, 4252113, 4252114, 4252115, 4252116 and 4252117, October 26, 2011.
- 2.0 Aung Myint Thein, 2012; Assessment Report on the Jean Iron Property, Jean Township, Thunder Bay South Mining Division, Ontario, Claims 4252101, 4252102, 4252103, 4252104, 4252105, 4252106, 4252107, 4252108, 4252109, 4252110, 4252111, 4252112, 4252113, 4252114, 4252115, 4252116 and 4252117, August 30, 2012.
- 3.0 Flint Rock Mines Limited, 1962; Drill Hole Logs Whitefish Lake Property; Port Arthur Mining Division, May 07, 1962.
- 4.0 G.A. Gross, 2009; Iron Formation in Canada, Genesis and Geochemistry; Geological Survey of Canada Open File 5987.
- 5.0 Goodwin, A.M. (1961), Gunflint Iron Formation of the Whitefish Lake Area, District of Thunder Bay, Ontario, Ontario Department of Mines report ORV 69.
- 6.0 Gordon J. Allen, 2008; Assessment Report on Geological Mapping, Rock Sampling, and Radiometric Survey on Gunflint (Mt. Edna) Property, Thunder Bay Mining Division, Ontario; for Raytec Metals Corp., Dec 31, 2008.
- 7.0 Gunter Faure and Jack Kovach, 1969; Age of Gunflint Iron Formation of Animikie Series in Ontario, Canada; PP Geological Society of America.
- 8.0 J.F. Wright, 1952; Concentration Tests on Cores from Gunflint Range Exploration Drilling, November 27, 1952.
- 9.0 Kelly, T.J., 1961; Statistical review of mineral industry 1959, Annual report of the Department of Mines, Ontario, published 1961 (ORV 69).
- 10.0 Pier Kenneth Pufahl, 1996; Stratigraphic Architecture of a Paleoproterozoic Iron Formation Depositional System: The Gunflint, Mesabi and Cuyuna Iron Ranges; Master of Science Thesis, Lakehead University, Thunder Bay, Ontario.
- 11.0 Roman Shklanka, 1968; Iron Deposits of Ontario; Department of Mines, Mineral Circular No. 11, 1968.
- 12.0 Sharpe George C., 2011; Technical report on Gunflint Property, Thunder Bay Mining District, Ontario; prepared for Canada Iron Inc., dated August 10, 2011.

13.0 Zago Neal, and Gutta Blair, 2012; Whitefish River assessment report, prepared for Lakehead Region Conservation Authority; August 2012.

14.0 Websites:

<http://www.canadaironinc.com/66901/67301.html>

<http://gsabulletin.gsapubs.org/content/80/9/1725.short#>

[http://www.thunderbaydirect.info/about\\_thunder\\_bay](http://www.thunderbaydirect.info/about_thunder_bay)

[http://www.thunderbay.ca/Doing\\_Business/About\\_Thunder\\_Bay.htm](http://www.thunderbay.ca/Doing_Business/About_Thunder_Bay.htm)

<http://www.mnsu.edu/urc/journal/URC2007journal/Drommerhausen.pdf>

<http://www.thunder-bay.climatemps.com/graph.php>

<http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/exploration-permits>

[http://minerals.usgs.gov/minerals/pubs/commodity/iron\\_ore/mcs-2010-feore.pdf](http://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/mcs-2010-feore.pdf)

## 14.0 CERTIFICATE OF AUTHOR

I, Afzaal Pirzada, P.Geo., as an author of this report entitled, “Assessment Report on Prospecting, Mapping, and Ground magnetic Surveying of the Jean Iron Property, Thunder Bay Mining District, Northwestern Ontario, Canada; Dated November 23, 2018”, do hereby certify that:

1. I am a consulting geologist of: GEOMAP EXPLORATION INC. Unit 113 – 5983 Gray Avenue, Vancouver, British Columbia, Canada, V6S 0G8.
2. I have M.Sc. degree in Geology from Punjab University, Lahore, Pakistan in 1979.
3. This certificate applies to the report entitled “Assessment Report on Prospecting, Mapping, and Ground Magnetic Surveying of the Jean Iron Property, Thunder Bay Mining District, Northwestern Ontario, Canada; Dated November 23, 2018”.
4. I am registered as a Professional Geologist in British Columbia (License #: 28657) Canada.
5. I have been practicing my profession continuously since 1979, and have over twenty years of experience in mineral exploration for uranium, iron, titanium, lithium, rare metals, base metals, coal, PGE, and gold.
6. The exploration work was carried out under my supervision. I visited the property in October 2017, and I am the Author of the report. I am responsible for all items of this report.
7. I have no interest, direct or indirect in the Jean Property, nor do I have any interest in any other properties of ABZ, nor do I own directly or indirectly any of the securities of neither ABZ, nor do I expect to receive any such interest or securities in the future.



Dated: December 12, 2017



Signed and Sealed

Afzaal Pirzada, P.Geol.

**APPENDIX A**  
**LIST OF PERSONNEL WORKED ON EXPLORATION WORK**

## **List of Personnel / Contractors Worked on the Project**

- 1. Afzaal Pirzada, P.Geo., - Geologist / Project Manager of Surrey,  
British Columbia (Geomap Exploration Inc.)**
- 2. Shahid Janjua – Geologist From Alberta**
- 3. Daniel St- Pierre – Prospector and Geophysics Technician from  
Amos,Quebec**

**APPENDIX B**  
**STATEMENT OF EXPENDITURES**

**Cost Table: PROSPECTING, GEOPHYSICS, SAMPLING MAPPING**

From Date	To Date	Work Type	Unit of Work	No. of units	Cost Per Unit of Work (\$)	Actual Cost
<b>Prospecting, Mapping, Sampling Work</b>						
10-Oct-17	15-Oct-17	Fieldwork preparation and work scheduling (Afzaal)	Day	1	\$650.00	\$650.00
30-Oct-17	31-Oct-17	Fieldwork time Afzaal	Day	2	\$650.00	\$1,300.00
24-Oct-17	31-Oct-17	Fieldwork time Shahid	Day	8	\$600.00	\$4,800.00
24-Oct-17	31-Oct-17	Travel Time Shahid (0.5 d/day)	Day	1	\$600.00	\$600.00
24-Oct-17	31-Oct-17	Travel Time daniel (0.5 d/day)	Day	1	\$450.00	\$450.00
24-Oct-17	31-Oct-17	Geophysics / Prospecting time Daniel St Pierre	Day	8	\$450.00	\$3,600.00
24-Oct-17	31-Oct-17	Accommodation and Meals 8 days	Lump sum	1	\$2,712.77	\$2,712.77
24-Oct-17	31-Oct-17	Transportation and supplies field crew	Lump sum	1	\$1,657.21	\$1,657.21
28-Nov-17	28-Nov-17	Sample assay	Lump sum	1	\$1,528.70	\$1,528.70
01-Nov-15	15-Oct-17	Data compilation Afzaal	Day	2	\$650.00	\$1,300.00
01-Nov-15	15-Oct-17	GIS Work	hrs.	8	\$60.00	\$480.00
01-Nov-15	15-Oct-17	Assessment report Afzaal	Day	4	\$650.00	\$2,600.00
01-Oct-15	15-Oct-17	<b>TOTAL COST PROSPECTING, GEOPHYSICS, SAMPLING MAPPING</b>				<b>\$21,678.68</b>

**Cost Allocation Table**

Claim Number	Mining Claim Type	Legacy Claim Number	Total Work Performed	Amount of Credit Applied to this Claim (\$)	Amount of Credits Assigned to Other Mining Claims (\$)	Amount of work drwan from other claims
			21,678.68			
337802	Single Cell Mining Claim	4252110, 4252111	625.88	400	225.88	
340689	Single Cell Mining Claim	4252104, 4252105	0.00			
340690	Single Cell Mining Claim	4252104, 4252105	0.00			
339809	Single Cell Mining Claim	4252115	0.00	400		400
101515	Single Cell Mining Claim	4252105	0.00			
101516	Boundary Cell Mining Claim	4252105	0.00			
103759	Boundary Cell Mining Claim	4252107, 4252108, 4252110	330.26	200.00	130.26	
107031	Single Cell Mining Claim	4252108	0.00	400		400
107332	Single Cell Mining Claim	4252104	0.00			
107333	Single Cell Mining Claim	4252104	0.00			
107334	Single Cell Mining Claim	4252104	0.00			
105362	Single Cell Mining Claim	4252113	0.00			
113644	Single Cell Mining Claim	4252110	574.87	400	174.87	
116847	Single Cell Mining Claim	4252105, 4252108	0.00			
125274	Single Cell Mining Claim	4252111, 4252112, 4252113	0.00	400		400
123324	Single Cell Mining Claim	4252107, 4252108	0.00	400		400
123325	Boundary Cell Mining Claim	4252107	0.00	400		400
129318	Single Cell Mining Claim	4252108, 4252110	0.00	400		400
130152	Single Cell Mining Claim	4252111	0.00	400		400
136727	Boundary Cell Mining Claim	4252113, 4252114	0.00	200		200
140801	Single Cell Mining Claim	4252108	0.00	400		400
139471	Boundary Cell Mining Claim	4252104	0.00			
147636	Single Cell Mining Claim	4252110,	0.00	400		400

Claim Number	Mining Claim Type	Legacy Claim Number	Total Work Performed	Amount of Credit Applied to this Claim (\$)	Amount of Credits Assigned to Other Mining Claims (\$)	Amount of work drwan from other claims
		4252111				
148581	Single Cell Mining Claim	4252110	2892.74	400	2492.74	
163268	Single Cell Mining Claim	4252108	0.00	400		400
166293	Boundary Cell Mining Claim	4252105	0.00			
167442	Single Cell Mining Claim	4252110	0.00	400		400
167818	Single Cell Mining Claim	4252107	0.00	400		400
169771	Single Cell Mining Claim	4252113, 4252115	0.00	400		400
175955	Single Cell Mining Claim	4252108, 4252110	1496.38	400	1096.38	
183237	Single Cell Mining Claim	4252113	0.00	400		400
188007	Single Cell Mining Claim	4252108, 4252109	0.00	400		400
194348	Single Cell Mining Claim	4252115, 4289790	0.00	400		400
195556	Single Cell Mining Claim	4252104, 4252105, 4252108	0.00	400		400
195557	Boundary Cell Mining Claim	4252105	0.00	200		200
194729	Single Cell Mining Claim	4252112	0.00			
204718	Single Cell Mining Claim	4252110	330.26	330.26		69.74
204719	Boundary Cell Mining Claim	4252110	452.56	400	52.56	
214992	Single Cell Mining Claim	4252104, 4252105	0.00			
217313	Single Cell Mining Claim	4252109	0.00	400		
217314	Single Cell Mining Claim	4252104, 4252108, 4252109	0.00			
216604	Boundary Cell Mining Claim	4252107	0.00	200		
216823	Single Cell Mining Claim	4252110	0.00	400		
216824	Single Cell Mining Claim	4252110	1430.99	400	1030.99	
218589	Single Cell Mining Claim	4252110, 4252111, 4252113	0.00	400		
228779	Single Cell Mining Claim	4252104	0.00			
228107	Boundary Cell Mining Claim	4289790	625.88	400	225.88	
232994	Boundary Cell Mining Claim	4252105	0.00	200		

Claim Number	Mining Claim Type	Legacy Claim Number	Total Work Performed	Amount of Credit Applied to this Claim (\$)	Amount of Credits Assigned to Other Mining Claims (\$)	Amount of work drwan from other claims
232995	Boundary Cell Mining Claim	4252105	0.00			
236690	Boundary Cell Mining Claim	4252107	0.00	200		
242686	Single Cell Mining Claim	4252108	0.00	400		
249519	Single Cell Mining Claim	4252108, 4252110	0.00	400		
249520	Single Cell Mining Claim	4252108	0.00	400		
251329	Single Cell Mining Claim	4252110	0.00	400		
251330	Single Cell Mining Claim	4252110	0.00	400		
251331	Single Cell Mining Claim	4252110	3310.67	400	2910.67	
247621	Single Cell Mining Claim	4252104	0.00			
247622	Single Cell Mining Claim	4252104	0.00			
247623	Boundary Cell Mining Claim	4252104	0.00			
255414	Boundary Cell Mining Claim	4252113, 4252114, 4283669	1879.68	200	1679.68	
262182	Boundary Cell Mining Claim	4252104, 4252105	0.00			
262738	Single Cell Mining Claim	4252110	941.78	400	541.78	
262739	Boundary Cell Mining Claim	4252110	4003.96	200	3803.96	
278552	Single Cell Mining Claim	4252104, 4252108	0.00			
278553	Single Cell Mining Claim	4252108, 4252110	452.56	400	52.56	
282251	Single Cell Mining Claim	4252105	0.00			
284558	Single Cell Mining Claim	4252113, 4252114, 4252115, 4283669	0.00	400		
288093	Boundary Cell Mining Claim	4252115, 4283669	0.00	200		
286764	Single Cell Mining Claim	4252104	0.00			
291876	Single Cell Mining Claim	4252109	0.00	400		
294781	Single Cell Mining Claim	4252104	0.00			
294782	Single Cell Mining Claim	4252104	0.00			
300028	Single Cell Mining Claim	4252110	625.88	400	225.88	
300029	Boundary Cell Mining Claim	4252110	452.56	200	252.56	



Claim Number	Mining Claim Type	Legacy Claim Number	Total Work Performed	Amount of Credit Applied to this Claim (\$)	Amount of Credits Assigned to Other Mining Claims (\$)	Amount of work drwan from other claims
300558	Single Cell Mining Claim	4252115	0.00			
305310	Single Cell Mining Claim	4252110, 4252113	0.00	400		
305311	Boundary Cell Mining Claim	4252110, 4252113	0.00	200		
310225	Single Cell Mining Claim	4252111, 4252112	0.00	400		
314172	Single Cell Mining Claim	4252104	0.00			
315431	Single Cell Mining Claim	4252104, 4252108	0.00	400		
315432	Single Cell Mining Claim	4252108	0.00	400		
315540	Boundary Cell Mining Claim	4289790	625.88	200	425.88	
321812	Single Cell Mining Claim	4252112, 4252113	0.00	400		
336993	Single Cell Mining Claim	4252108	0.00	400		
328823	Boundary Cell Mining Claim	4252105	0.00			
344218	Single Cell Mining Claim	4252113	0.00	400		
343437	Single Cell Mining Claim	4252108, 4252109	0.00	400		
330661	Single Cell Mining Claim	4252110	625.88	400	225.88	
				21530.26		

**APPENDIX C**  
**GROUND GEOPHYSICAL SURVEY DATA**

**OCTOBER 25, 2017 DATA**

/Gem Systems GSM-19 7022235 v7.0 11 XI 2006 M e2.v7

/ID 1 file 01survey.m 25 X 17

/

/time X Y nT cor-nT sq

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152029.5	14400E	0008540 E	56253.65	056252.50	99
152123.6	14400E	0008530 E	56494.41	056493.51	99
152237.6	14400E	0008520 E	56807.73	056807.20	99
160646.9	14400E	0008510 N	56829.52	056821.43	99
160732.9	14400E	0008500 N	56823.61	056815.33	79
160807.6	14400E	0008490 N	56582.35	056573.68	49
160828.9	14400E	0008480 N	56546.70	056538.25	99
160855.3	14400E	0008470 N	56394.54	056386.08	99
160911.4	14400E	0008460 N	56619.57	056611.10	99
160958.7	14400E	0008450 N	56643.38	056634.77	99
161215.8	14400E	0008440 N	56415.09	056406.84	99
161236.9	14400E	0008430 N	56512.87	056504.38	99
161250.6	14400E	0008420 N	56353.88	056345.53	99
161315.2	14400E	0008410 N	56145.73	056137.72	99
161503.7	14400E	0008400 N	56203.65	056194.88	99
161536.1	14400E	0008390 N	56260.91	056252.84	79
161600.6	14400E	0008380 N	56227.78	056218.75	99
161629.9	14400E	0008370 N	56208.37	056200.08	99
161645.1	14400E	0008360 N	56239.95	056231.93	99
161705.1	14400E	0008350 N	56142.96	056135.25	99
161752.9	14400E	0008340 N	56281.05	056273.58	99
161804.5	14400E	0008330 N	56385.90	056378.31	99
161832.8	14400E	0008320 N	56438.77	056430.97	99
161854.5	14400E	0008310 N	56493.82	056485.78	99
161948.5	14400E	0008300 N	56307.89	056299.44	99
162027.1	14400E	0008290 N	56270.16	056261.48	99
162041.9	14400E	0008280 N	56481.97	056473.34	99
162129.8	14400E	0008270 N	56435.65	056426.61	99
162144.9	14400E	0008260 N	56476.92	056467.37	99
162245.2	14400E	0008250 N	56350.21	056339.62	99
162425.1	14400E	0008240 N	56326.17	056314.83	99
162448.2	14400E	0008230 N	56258.09	056246.62	99
162524.6	14400E	0008220 N	56298.23	056287.06	99
162637.1	14400E	0008210 N	56325.12	056313.77	99
162651.4	14400E	0008200 N	56643.82	056633.06	99
162732.9	14400E	0008190 N	56442.72	056431.77	99
162759.5	14400E	0008180 N	56378.09	056367.31	99

162822.9 14400E 0008170 N 56083.89 056072.49 99  
162839.5 14400E 0008160 N 56160.84 056149.15 99  
162901.3 14400E 0008150 N 56151.94 056140.24 99  
163010.4 14400E 0008140 N 56110.87 056098.98 99  
163031.8 14400E 0008130 N 56163.45 056151.27 99  
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163107.1 14400E 0008110 N 55989.62 055977.58 99  
163230.7 14400E 0008100 N 56147.31 056134.38 99  
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101442.9 14000E 0008100 N 55829.83 055818.15 99  
101610.9 14000E 0008090 N 56038.11 056026.72 99  
101703.3 14000E 0008080 N 57389.87 057378.64 99

101837.2 14000E 0008070 N 54607.45 054596.91 99  
101938.7 14000E 0008060 N 55918.98 055907.49 99  
102021.8 14000E 0008050 N 55218.95 055207.75 99  
102210.2 14000E 0008040 N 55843.37 055832.22 99  
102351.0 14000E 0008030 N 55356.48 055345.49 99  
102431.7 14000E 0008020 N 55636.79 055626.20 99  
102516.1 14000E 0008010 N 55979.57 055968.42 99  
102551.9 14000E 0008000 N 55772.66 055762.39 99

110507.5 13900E 0008000 N 56637.63 056628.15 69  
110551.3 13900E 0008010 N 56776.47 056767.14 19  
110632.9 13900E 0008020 N 56690.29 056681.12 99  
110700.2 13900E 0008030 N 55823.45 055814.65 79  
110753.4 13900E 0008040 N 56058.78 056049.50 29  
110949.6 13900E 0008050 N 56510.30 056501.71 29  
111051.5 13900E 0008060 N 56016.59 056007.39 09  
111136.2 13900E 0008070 N 56452.64 056444.92 59  
111209.9 13900E 0008080 N 55577.23 055568.53 99  
111259.9 13900E 0008090 N 54129.38 054119.89 79  
111403.9 13900E 0008100 N 57905.54 057897.50 39  
111435.9 13900E 0008110 N 56059.62 056051.56 79  
111512.1 13900E 0008120 N 54973.15 054964.64 99  
111618.3 13900E 0008130 N 55930.66 055922.63 69  
111645.5 13900E 0008140 N 55986.11 055978.19 99  
111717.4 13900E 0008150 N 55360.35 055352.44 99  
111819.5 13900E 0008160 N 56257.56 056249.54 99  
111947.8 13900E 0008170 N 56157.00 056148.80 99  
112104.2 13900E 0008180 N 56665.49 056657.81 49  
112209.0 13900E 0008190 N 56409.33 056401.78 99  
112347.2 13900E 0008200 N 55677.20 055670.22 99  
112553.9 13900E 0008210 N 54296.35 054288.67 49  
112646.5 13900E 0008220 N 55842.96 055836.21 99  
112812.1 13900E 0008230 N 56151.46 056144.13 99  
112900.5 13900E 0008240 N 55700.67 055694.17 99  
112947.5 13900E 0008250 N 56079.07 056072.00 29  
113058.2 13900E 0008260 N 56345.43 056338.43 99  
113409.7 13900E 0008270 N 56133.49 056127.04 99  
113445.2 13900E 0008280 N 56394.47 056388.40 99  
113501.6 13900E 0008290 N 57323.76 057317.82 99  
113716.2 13900E 0008300 N 56963.11 056957.32 99  
113744.2 13900E 0008310 N 48798.70 048792.47 09  
113804.9 13900E 0008320 N 55880.93 055874.36 99  
113824.5 13900E 0008330 N 56385.88 056379.32 99

113848.9	13900E	0008340	N	56133.86	056127.55	79
113911.3	13900E	0008350	N	55522.00	055516.10	99
114002.4	13900E	0008360	N	55605.23	055599.00	69
114029.1	13900E	0008370	N	61883.23	061876.73	06
114121.8	13900E	0008380	N	53053.38	053047.81	29
114156.4	13900E	0008390	N	56381.35	056375.74	99
114258.4	13900E	0008400	N	55759.28	055753.71	99
114333.7	13900E	0008410	N	55711.96	055707.26	99
114402.1	13900E	0008420	N	56044.22	056038.42	99
114425.6	13900E	0008430	N	56132.81	056126.77	99
114456.9	13900E	0008440	N	56762.96	056757.19	69
114539.3	13900E	0008450	N	55863.44	055858.34	99
114608.7	13900E	0008460	N	55906.82	055902.30	99
114630.4	13900E	0008470	N	55952.47	055947.00	99
114704.6	13900E	0008480	N	55913.92	055907.73	99
114734.5	13900E	0008490	N	56058.87	056053.88	99
114758.2	13900E	0008500	N	55887.35	055882.58	99
114832.9	13900E	0008510	N	56201.84	056197.09	99
114900.3	13900E	0008520	N	56411.00	056405.86	99
114937.5	13900E	0008530	N	56076.81	056070.86	99
115041.7	13900E	0008540	N	56437.14	056433.10	99
115119.9	13900E	0008550	N	55925.17	055919.68	99
115230.7	13900E	0008560	N	55092.63	055087.84	99
115322.2	13900E	0008570	N	56008.43	056003.67	89
115359.3	13900E	0008580	N	56040.08	056035.10	99
115430.3	13900E	0008590	N	56048.07	056043.45	99
115513.8	13900E	0008600	N	56219.52	056214.52	99
115614.9	13900E	0008610	N	55955.65	055951.66	99
115638.5	13900E	0008620	N	56138.81	056134.83	99
115651.2	13900E	0008630	N	56154.94	056150.66	99
115713.5	13900E	0008640	N	56139.52	056134.84	99
115741.1	13900E	0008650	N	56367.02	056362.04	99
115830.6	13900E	0008660	N	55655.81	055651.89	49
115859.5	13900E	0008670	N	56529.92	056526.22	99
115922.3	13900E	0008680	N	56795.53	056791.59	99
115943.9	13900E	0008690	N	56296.68	056292.47	99
120737.3	13900E	0008700	N	56244.44	056241.99	99
120842.4	13900E	0008710	N	55967.61	055963.99	99
121021.6	13900E	0008720	N	56297.19	056294.16	99
121057.9	13900E	0008730	N	56243.45	056239.07	99
121151.3	13900E	0008740	N	56281.26	056278.78	99
121219.7	13900E	0008750	N	56214.78	056212.17	99
121301.8	13900E	0008760	N	56086.59	056082.14	99
121329.3	13900E	0008770	N	56045.82	056042.71	99

121443.4 13900E 0008780 N 56390.80 056388.05 99  
121535.4 13900E 0008790 N 56163.09 056159.57 99  
121633.9 13900E 0008800 N 56152.83 056151.31 99

122138.7 13800E 0008800 N 56403.00 056400.30 99  
122207.8 13800E 0008790 N 56103.39 056101.38 99  
122219.1 13800E 0008780 N 56018.89 056017.01 99  
122232.9 13800E 0008770 N 55747.00 055745.25 99  
122247.6 13800E 0008760 N 56402.04 056399.94 99  
122301.8 13800E 0008750 N 57194.93 057192.48 99  
122349.5 13800E 0008740 N 56427.47 056424.94 99  
122457.3 13800E 0008730 N 57177.61 057174.99 49  
122556.3 13800E 0008720 N 56626.81 056624.15 99  
122648.0 13800E 0008710 N 56135.32 056133.32 99  
122739.7 13800E 0008700 N 56128.83 056125.78 99  
122915.7 13800E 0008690 N 56144.40 056142.97 99  
122946.2 13800E 0008680 N 56131.95 056129.81 99  
123033.2 13800E 0008670 N 56231.76 056229.65 99  
123106.4 13800E 0008660 N 56203.84 056202.58 99  
123219.7 13800E 0008650 N 56161.06 056159.52 99  
123322.0 13800E 0008640 N 55995.29 055994.32 99  
123348.7 13800E 0008630 N 55963.14 055962.14 99  
123433.3 13800E 0008620 N 55993.17 055992.13 99  
123512.7 13800E 0008610 N 55940.91 055940.46 99  
123542.6 13800E 0008600 N 55915.00 055914.58 99  
123607.8 13800E 0008590 N 55980.80 055980.06 99  
123925.1 13800E 0008580 N 56146.01 056144.86 99  
124230.6 13800E 0008570 N 56317.39 056315.65 99  
124501.0 13800E 0008560 N 56298.28 056296.48 99  
124549.5 13800E 0008550 N 56256.30 056254.88 99  
124614.6 13800E 0008540 N 56103.36 056102.73 99  
124636.7 13800E 0008530 N 56043.03 056042.76 99  
124703.7 13800E 0008520 N 56022.99 056022.10 99  
124744.5 13800E 0008510 N 55962.11 055960.64 99  
124811.2 13800E 0008500 N 55940.74 055939.50 99  
124856.3 13800E 0008490 N 55787.11 055786.46 99  
125010.5 13800E 0008480 N 53926.34 053924.94 99  
125143.7 13800E 0008470 N 57040.23 057039.06 09  
125216.1 13800E 0008460 N 56148.34 056147.01 99  
125240.2 13800E 0008450 N 56525.42 056523.91 99  
125317.5 13800E 0008440 N 55879.51 055878.46 99  
125347.3 13800E 0008430 N 56371.78 056370.60 99  
125411.9 13800E 0008420 N 56233.53 056232.04 99  
125505.3 13800E 0008410 N 55713.14 055712.00 99

125538.2 13800E 0008400 N 55951.72 055951.33 99  
125721.9 13800E 0008390 N 55389.77 055388.61 99  
125805.8 13800E 0008380 N 54653.51 054652.06 99  
125822.1 13800E 0008370 N 55435.85 055434.49 89  
125907.1 13800E 0008360 N 56587.88 056586.68 69  
130000.0 13800E 0008350 N 56521.78 056520.66 39  
130117.7 13800E 0008340 N 55038.44 055037.12 99  
130214.4 13800E 0008330 N 59692.25 059691.41 19  
130248.8 13800E 0008320 N 54955.63 054954.38 99  
130331.1 13800E 0008310 N 55796.55 055795.23 99  
130404.9 13800E 0008300 N 56236.91 056235.06 49  
130447.8 13800E 0008290 N 55953.82 055952.64 99  
130522.1 13800E 0008280 N 55856.40 055855.80 99  
130553.6 13800E 0008270 N 56039.35 056038.21 99  
130641.2 13800E 0008260 N 56108.31 056107.18 99  
130721.1 13800E 0008250 N 55987.25 055986.22 99  
130852.6 13800E 0008240 N 55607.17 055605.71 99  
130916.5 13800E 0008230 N 55690.45 055688.82 29  
130956.8 13800E 0008220 N 55611.92 055610.65 99

134342.3 13700E 0008000 N 60280.01 060278.75 67  
134440.3 13700E 0008010 N 61265.45 061263.50 69  
134507.1 13700E 0008020 N 60933.27 060931.61 69  
134609.1 13700E 0008030 N 62935.73 062934.69 19  
134710.4 13700E 0008040 N 54996.91 054995.00 58  
134808.6 13700E 0008050 N 53950.65 053948.68 49  
134906.6 13700E 0008060 N 56434.86 056433.09 99

141248.6 13700E 0008330 N 56189.45 056186.54 99  
141317.4 13700E 0008340 N 56205.01 056202.02 99  
141336.5 13700E 0008350 N 56220.40 056217.39 99  
141454.9 13700E 0008360 N 56284.90 056281.40 99  
141524.9 13700E 0008370 N 56264.96 056261.52 99  
141557.1 13700E 0008380 N 56214.43 056211.48 99  
141655.2 13700E 0008390 N 56143.14 056140.30 99  
141738.6 13700E 0008400 N 56106.07 056102.88 99  
141836.3 13700E 0008410 N 55872.19 055869.09 79  
141915.5 13700E 0008420 N 56436.99 056434.19 99  
141939.2 13700E 0008430 N 56298.84 056295.99 99  
142012.2 13700E 0008440 N 55888.03 055884.80 49  
142106.7 13700E 0008450 N 55670.37 055666.88 99  
142135.8 13700E 0008460 N 55774.27 055771.06 99  
142233.6 13700E 0008470 N 56188.82 056185.58 99  
142306.1 13700E 0008480 N 56223.88 056220.90 89

142317.8	13700E	0008490	N	56068.71	056065.65	99
142333.9	13700E	0008500	N	55809.97	055806.80	99
142406.3	13700E	0008510	N	56053.60	056050.28	99
142453.5	13700E	0008520	N	56191.24	056188.33	99
142527.7	13700E	0008530	N	55928.78	055925.65	49
142620.3	13700E	0008540	N	55422.56	055419.12	79
142701.9	13700E	0008550	N	56531.81	056528.17	29
142731.8	13700E	0008560	N	58099.35	058095.76	59
142803.9	13700E	0008570	N	55658.84	055655.22	99
142830.2	13700E	0008580	N	55590.59	055587.39	99
142914.5	13700E	0008590	N	56359.69	056356.21	99
143007.3	13700E	0008600	N	55735.11	055731.30	99

**OCTOBER 28, 2017 DATA**

Gem Systems GSM-19 v4.0 28 II 95 ID 000000010 file 01 .m 28 X 17  
corrected

time	line	station	field	nT	field	nT
103537.1	14400E	0008540	N	56246.69	56248.41	
103636.6	14400E	0008550	N	56273.88	56275.47	
103706.8	14400E	0008560	N	56276.76	56278.41	
103753.6	14400E	0008570	N	56362.40	56364.13	
103826.4	14400E	0008580	N	56533.01	56534.56	
103847.8	14400E	0008590	N	56708.83	56710.26	
103930.6	14400E	0008600	N	56705.55	56707.51	
103957.8	14400E	0008610	N	56694.46	56696.57	
104026.1	14400E	0008620	N	56690.16	56692.00	
104100.5	14400E	0008630	N	56541.38	56543.50	
104127.4	14400E	0008640	N	56527.03	56529.47	
104149.3	14400E	0008650	N	56368.57	56371.02	
104251.9	14400E	0008660	N	56399.59	56402.23	

**OCTOBER 30, 2017 DATA**

Gem Systems GSM-19 v4.0 28 II 95 ID 000000010 file 02 .m 30 X 17  
corrected

time	line	station	field	nT	field	nT
140952.4	13800E	0008210	N	55550.87	55549.20	
141228.1	13800E	0008200	N	55472.76	55471.08	
141324.6	13800E	0008190	N	55247.27	55245.41	
141428.5	13800E	0008180	N	50192.66	50190.58	
142055.1	13800E	0008170	N	53258.05	53255.61	
143026.7	13800E	0008160	N	54415.31	54412.62	



143056.6 13800E 0008150 N 56039.27 56036.64  
143148.2 13800E 0008140 N 60775.41 60772.69  
143232.0 13800E 0008130 N 48283.97 48281.15  
143439.3 13800E 0008120 N 10521.46 10518.58  
143539.5 13800E 0008110 N 37588.56 37585.86  
143700.8 13800E 0008100 N 54197.49 54194.47  
144011.9 13800E 0008090 N 48603.14 48599.97  
144036.3 13800E 0008080 N 51474.35 51471.12  
144057.5 13800E 0008070 N 46887.20 46884.01  
144146.3 13800E 0008060 N 48285.88 48282.57  
144254.5 13800E 0008050 N 52224.59 52221.48  
144341.3 13800E 0008040 N 59874.61 59871.35  
144414.2 13800E 0008030 N 61542.91 61539.60  
144442.1 13800E 0008020 N 58156.36 58153.14  
144459.3 13800E 0008010 N 57849.76 57846.58  
144522.6 13800E 0008000 N 57034.75 57031.63

145231.2 13700E 0008050 N 54443.25 54439.82  
145338.7 13700E 0008060 N 56758.59 56754.95  
145447.5 13700E 0008070 N 57962.17 57958.77  
145546.1 13700E 0008080 N 60575.98 60572.68  
145751.9 13700E 0008090 N 23286.35 23282.77  
145921.8 13700E 0008100 N 52552.09 52548.26  
150144.3 13700E 0008110 N 57079.31 57075.29  
150216.3 13700E 0008120 N 62353.58 62349.49  
150245.2 13700E 0008130 N 54237.70 54233.64  
150338.1 13700E 0008140 N 57908.24 57904.05  
150413.2 13700E 0008150 N 54614.05 54610.00  
150441.6 13700E 0008160 N 53634.42 53630.43  
150514.4 13700E 0008170 N 55728.05 55723.93  
150534.9 13700E 0008180 N 56482.42 56478.17  
150607.3 13700E 0008190 N 60013.43 60009.16  
150647.8 13700E 0008200 N 59291.20 59287.05  
150730.5 13700E 0008210 N 24900.86 24896.53  
150859.8 13700E 0008220 N 56096.38 56092.11  
150935.7 13700E 0008230 N 52857.13 52852.76

153147.3 13600E 0008000 N 57028.66 57023.50  
153230.6 13600E 0008010 N 56982.77 56977.51  
153258.5 13600E 0008020 N 56509.48 56504.00  
153320.9 13600E 0008030 N 57016.40 57010.75  
153358.4 13600E 0008040 N 59758.54 59752.69  
153417.6 13600E 0008050 N 56282.18 56276.33  
153451.3 13600E 0008060 N 39010.49 39004.69

153511.2	13600E	0008070	N	55632.68	55626.94
153526.5	13600E	0008080	N	56610.34	56604.69
153548.8	13600E	0008090	N	57374.84	57369.36
153617.9	13600E	0008100	N	58073.23	58067.95
153638.8	13600E	0008110	N	60691.41	60686.19
153700.3	13600E	0008120	N	61714.08	61708.78
153719.3	13600E	0008130	N	10218.34	10212.86
153744.2	13600E	0008140	N	32276.20	32270.52
153806.8	13600E	0008150	N	42951.46	42945.67
153846.7	13600E	0008160	N	58855.16	58849.33
153909.9	13600E	0008170	N	58399.64	58393.80
153927.5	13600E	0008180	N	56431.30	56425.44
153955.2	13600E	0008190	N	57513.33	57507.49
154043.8	13600E	0008200	N	57793.01	57787.18
154119.8	13600E	0008210	N	59719.08	59713.21
154156.3	13600E	0008220	N	48831.69	48825.78
154227.3	13600E	0008230	N	48540.05	48534.01
154314.0	13600E	0008240	N	56204.54	56198.44
154336.6	13600E	0008250	N	56566.12	56560.05
154417.3	13600E	0008260	N	59867.33	59861.30
154436.3	13600E	0008270	N	54199.47	54193.40
154500.6	13600E	0008280	N	55189.76	55183.62
154537.7	13600E	0008290	N	55853.27	55846.93
154602.7	13600E	0008300	N	56011.27	56004.79
154637.0	13600E	0008310	N	56025.75	56019.16
154653.0	13600E	0008320	N	56077.81	56071.25
154710.9	13600E	0008330	N	56103.55	56097.01
154803.3	13600E	0008340	N	56153.42	56146.93
154836.2	13600E	0008350	N	56187.06	56180.63
154911.3	13600E	0008360	N	56168.04	56161.74
155223.6	13600E	0008370	N	56201.60	56194.80
155251.8	13600E	0008380	N	56294.25	56287.53
155427.5	13600E	0008390	N	56137.36	56130.69
155434.2	13600E	0008400	N	56137.13	56130.45
155554.1	13600E	0008410	N	56251.22	56244.30
155638.8	13600E	0008420	N	56309.62	56302.61
155728.5	13600E	0008430	N	56361.40	56354.40
155816.1	13600E	0008440	N	56367.03	56359.89
155851.6	13600E	0008450	N	56157.59	56150.41
155943.5	13600E	0008460	N	56591.30	56584.18
160017.1	13600E	0008470	N	56557.75	56550.58
160036.5	13600E	0008480	N	56679.44	56672.23
160047.7	13600E	0008490	N	56588.92	56581.66
160125.0	13600E	0008500	N	56385.57	56378.18

160530.9 13600E 0008510 N 56056.80 56048.85  
160607.8 13600E 0008520 N 55951.79 55943.84  
160626.1 13600E 0008530 N 55894.50 55886.60  
160658.5 13600E 0008540 N 55953.04 55945.16  
160727.3 13600E 0008550 N 55711.58 55703.69

### OCTOBER 31, 2017 DATA

Gem Systems GSM-19 v4.0 28 II 95 ID 000000010 file 03 .m 31 X 17

corrected

time	line	station	field nT	field nT
090558.0	13600E	0008560 N	56256.27	56253.16
090634.0	13600E	0008570 N	56071.43	56068.31
090738.0	13600E	0008580 N	55838.39	55835.69
090838.0	13600E	0008590 N	55991.75	55989.08
090906.0	13600E	0008600 N	55505.41	55502.61
091046.0	13600E	0008610 N	57185.72	57183.17
091138.0	13600E	0008620 N	55798.56	55796.03
091210.0	13600E	0008630 N	55512.09	55509.53
091254.0	13600E	0008640 N	56056.60	56054.19
091334.0	13600E	0008650 N	55741.93	55739.49
091942.0	13500E	0008650 N	55699.35	55697.56
092126.0	13500E	0008640 N	55800.20	55798.63
092214.0	13500E	0008630 N	55956.09	55954.39
092306.0	13500E	0008620 N	55473.74	55471.74
092458.0	13500E	0008610 N	55874.92	55873.43
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144511.1	13000N	0008140 N	55801.61	55796.53
144542.4	13000N	0008150 N	55269.38	55264.26
144554.7	13000N	0008160 N	55355.96	55350.82
144609.9	13000N	0008170 N	55309.29	55304.14
144638.4	13000N	0008180 N	55655.59	55650.43
144744.8	13000N	0008190 N	55736.62	55731.54
144807.1	13000N	0008200 N	55883.14	55878.11
144841.5	13000N	0008210 N	55901.46	55896.48
144922.5	13000N	0008220 N	55939.16	55934.15
145013.5	13000N	0008230 N	56120.93	56115.86
145049.2	13000N	0008240 N	56050.84	56045.75
145113.2	13000N	0008250 N	56149.22	56144.09
145136.3	13000N	0008260 N	56131.47	56126.30
145209.8	13000N	0008270 N	56212.63	56207.44
145232.5	13000N	0008280 N	56205.49	56200.24
145315.9	13000N	0008290 N	56229.59	56224.34
145342.8	13000N	0008300 N	56262.25	56256.95
145400.2	13000N	0008310 N	56247.55	56242.24
145418.8	13000N	0008320 N	56248.46	56243.18
145455.1	13000N	0008330 N	56264.96	56259.78
145540.5	13000N	0008340 N	56233.22	56228.09
145546.9	13000N	0008350 N	56232.33	56227.18
145631.5	13000N	0008360 N	56161.15	56155.82
145709.0	13000N	0008370 N	56133.71	56128.35
145755.6	13000N	0008380 N	56175.91	56170.58
145816.8	13000N	0008390 N	56244.92	56239.58
145835.6	13000N	0008400 N	56230.65	56225.33
145913.9	13000N	0008410 N	56260.33	56255.04
145939.3	13000N	0008420 N	56195.02	56189.75
150006.1	13000N	0008430 N	56280.75	56275.55
150031.6	13000N	0008440 N	56246.72	56241.64
150105.6	13000N	0008450 N	56455.47	56450.40
150127.2	13000N	0008460 N	56522.11	56517.04
150152.2	13000N	0008470 N	56615.83	56610.73
150211.6	13000N	0008480 N	56525.75	56520.63
150229.3	13000N	0008490 N	57414.34	57409.20
150239.3	13000N	0008500 N	58642.89	58637.74
150349.6	13000N	0008510 N	56851.60	56846.48
150448.4	13000N	0008520 N	56472.35	56467.28
150515.0	13000N	0008530 N	56402.68	56397.60
150546.9	13000N	0008540 N	56568.11	56563.02

150607.8 13000N 0008550 N 56479.58 56474.49

**APPENDIX D**  
**FIELD ACTIVITY LOGS**

## Daily Diary Jean Project

### Shahid Janjua, Geologist

Date	Description
Oct 24, 2017	Traveled to Thunder Bay.
Oct 25, 2017	Rented a vehicle from Thunder Bay, drove to the field area, met with prospector Monsieur Daniel Pierre and discussed with him the future plan of work, did reconnaissance of the north and middle part of the property, did some prospecting.
Oct 26, 2017	Prospecting and sampling on the road traversing the property East-West in the middle part. Difficulty in accessing the property due to snow.
Oct 27, 2017	Prospecting and sampling on the road traversing the property East-West in the middle part. Difficulty in accessing the property due to snow.
Oct 28, 2017	Followed up on the anomalies picked up on the Mag survey by Daniel and collected grab rock samples. Collected samples from an old trench as well. Difficulty in accessing the property due to snow.
Oct 29, 2017	Did grab sample collection, together with Daniel, from the high mag ridge forming outcrop. Difficulty in accessing the property due to snow.
Oct 30, 2017	Worked together with Daniel in the southern part of the property. Did grab rock sampling with the help of Mag survey. Came back to the middle part of the property, helped Daniel do a mag line, collected samples. Difficulty in accessing the property due to snow.
Oct 31, 2017	Worked together with Afzaal Pirzada, showed him the work done, did some prospecting and sampling. Difficulty in accessing the property due to snow.



**DANIEL ST PIERRE  
FIELD REPORT**

Wednesday

25-10-2017

Today, I drove from Longlac to White fish lake ( Ontario )  
I rented a cabin at the Rocky's Resort on the shore of this lake.

I installed a base station. This base station will make the magnetic field correction on the magnetometer data.



Base station at GPS nad83 15 U 714374 E 5348571 N

After, I started the survey. I take a magnetic field reading every 10 meters.

Each reading correspond at a UTM coordonnate X & Y

Exemple: Line 4400 E = 714400 E

station 48800 N = 5348800 N



I am using two Digital GSM-19 overhauser magnetometer to do the survey



Unit Mobile= Gem Systems GSM-19 7022235 v7.0 11 XI 2006 M e2.v7

Unit Base = Gem Systems GSM-19 v4.0 28 II 95 ID 000000010

The access to the job is an old road which can be use by a pick up truck.

**APPENDIX E**  
**LABORATORY CERTIFICATE OF ANALYSIS**



**Date Submitted:** 31-Oct-17  
**Invoice No.:** A17-12213  
**Invoice Date:** 24-Nov-17  
**Your Reference:**

**GEOMAP EXPLORATION INC.**  
**12430-7G AVENUE**  
**SURRY BC V3W 2T5**  
**Canada**

**ATTN: Afzaal Pirzada**

## CERTIFICATE OF ANALYSIS

30 Ore samples were submitted for analysis.

The following analytical package(s) were requested:

Code 8-Davis Tube Magnetic Separation Davis Tube

Code 8-Iron Ore Analysis XRF Fusion-XRF

REPORT      **A17-12213**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written in a cursive style with some loops and flourishes.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5  
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

## Results

## Activation Laboratories Ltd.

## Report: A17-12213

Analyte Symbol	Start Mass	Magnetic Fraction	Non-Mag Fraction	Weight % Magnetics	Calculated Start Mass	% Loss Mass	SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total	
Unit Symbol	g	g	g	%	g	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01	
Method Code	DT	DT	DT	DT	DT	DT	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF
JN-17-01							48.37	1.64	13.58	14.76	0.17	5.24	3.52	0.08	6.58	0.19	< 0.01	6.61	0.066	100.8	
JN-17-02							56.64	0.01	0.17	32.44	0.18	1.07	0.80	0.03	0.02	0.01	< 0.01	7.21	0.005	98.59	
JN-17-03							92.33	0.01	0.68	5.46	0.05	0.04	0.03	0.02	0.01	0.01	0.01	1.70	0.003	100.4	
JN-17-04							63.86	0.02	0.34	26.59	0.21	0.13	4.69	0.04	0.07	0.04	0.01	4.43	0.003	100.4	
JN-17-05							50.42	1.58	13.50	14.95	0.35	4.95	6.53	1.79	1.42	0.18	< 0.01	4.36	0.065	100.1	
JN-17-06							52.47	1.54	13.42	14.88	0.28	4.61	6.18	1.74	1.72	0.18	0.01	3.57	0.065	100.7	
JN-17-07							71.62	0.61	5.00	15.38	0.09	1.19	0.34	0.06	2.99	0.07	< 0.01	2.60	0.019	99.97	
JN-17-08							76.90	0.01	0.21	19.59	0.05	0.10	0.07	0.04	0.01	0.02	< 0.01	1.99	< 0.003	99.00	
JN-17-09							81.59	0.02	0.14	16.36	0.09	0.07	0.06	0.04	0.07	0.03	0.01	1.37	0.003	99.83	
JN-17-10							34.70	0.04	0.89	60.48	0.09	0.42	0.10	0.01	0.27	0.06	< 0.01	2.23	0.003	99.30	
JN-17-11	30.0	13.828	16.166	46.1	29.994	0.04	34.59	0.05	1.44	57.23	0.10	0.73	2.16	0.01	0.39	0.07	< 0.01	4.06	0.006	100.8	
JN-17-12							31.00	0.05	1.38	58.27	0.11	0.71	2.98	0.01	0.39	0.08	< 0.01	4.66	0.006	99.65	
JN-17-13							78.94	0.01	0.21	18.54	0.12	0.06	0.82	0.01	0.05	0.02	< 0.01	1.27	0.003	100.1	
JN-17-14							67.61	0.03	0.71	29.07	0.10	0.28	0.13	0.02	0.16	0.04	0.01	1.53	< 0.003	99.69	
JN-17-15							76.84	0.02	0.53	21.30	0.06	0.22	0.15	0.01	0.18	0.04	< 0.01	1.37	< 0.003	100.7	
JN-17-16							48.00	0.03	0.88	47.94	0.03	0.40	0.09	0.02	0.19	0.05	< 0.01	1.76	0.003	99.39	
JN-17-17							84.50	0.02	0.14	13.08	0.04	0.05	0.16	0.01	0.05	0.02	0.01	0.89	< 0.003	98.97	
JN-17-18	30.0	13.459	16.491	44.8	29.950	0.20	41.63	0.04	0.73	52.22	0.31	0.63	0.24	0.02	0.02	0.04	0.01	3.20	0.004	99.12	
JN-17-19							82.09	0.01	0.28	13.35	0.46	0.07	1.21	0.02	0.04	0.03	0.01	3.28	0.003	100.8	
JN-17-20							74.87	0.02	0.24	22.03	0.07	0.18	0.09	0.03	0.05	0.02	0.01	2.06	0.003	99.65	
JN-17-21							76.20	0.02	0.23	19.69	0.05	0.11	1.16	0.01	0.03	0.02	0.01	1.68	< 0.003	99.20	
JN-17-22							67.67	0.03	0.48	27.87	0.15	0.26	0.92	0.02	0.04	0.03	< 0.01	2.72	0.004	100.2	
JN-17-23							65.45	0.04	0.58	30.89	0.10	0.33	0.40	0.02	0.04	0.04	< 0.01	2.36	< 0.003	100.3	
JN-17-24							55.87	0.02	0.35	35.40	0.25	2.99	2.75	0.10	0.07	0.24	< 0.01	1.20	< 0.003	99.25	
JN-17-25							41.03	0.01	0.14	38.71	0.22	0.75	8.76	0.01	< 0.01	0.02	< 0.01	10.76	0.003	100.4	
JN-17-26							56.31	0.01	0.05	32.43	0.17	0.99	3.16	0.01	< 0.01	0.01	< 0.01	5.78	< 0.003	98.93	

Analyte Symbol	Start Mass	Magnetic Fraction	Non-Mag Fraction	Weight % Magnetics	Calculated Start Mass	% Loss Mass	SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total	
Unit Symbol	g	g	g	%	g	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01	
Method Code	DT	DT	DT	DT	DT	DT	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF
IF-G Meas							40.10	0.01	0.15	55.27	0.02	1.78	1.57	0.06	0.02	0.06					
IF-G Cert							41.2	0.0140	0.150	55.8	0.0420	1.89	1.55	0.0320	0.0120	0.0630					
BE-N Meas							38.66	2.69	10.09	13.18	0.20	13.16	14.15	3.07	1.37	1.05	0.05			0.041	
BE-N Cert							38.2	2.61	10.1	12.8	0.200	13.1	13.9	3.18	1.39	1.05	0.0500			0.042	
AC-E Meas							71.60	0.11	14.96	2.58	0.06	0.02	0.38	6.73	4.62						
AC-E Cert							70.35	0.11	14.70	2.56	0.058	0.03	0.34	6.54	4.49						
Silicon (IV) Oxide 99.8% Meas							99.66														
Silicon (IV) Oxide 99.8% Cert							99.8														
NCS DC73304 (GBW 07106) Meas							91.14		3.54	3.25		0.05	0.27	0.08	0.65	0.22					
NCS DC73304 (GBW 07106) Cert							90.36		3.52	3.22		0.082	0.30	0.061	0.65	0.222					
AMIS 0129 Meas							9.43	22.61	2.71	62.15	0.33	2.01	0.81								0.478
AMIS 0129 Cert							9.57	22.94	2.75	62.31	0.36	2.07	0.80								0.48
JN-17-26 Orig							56.12	0.01	0.04	32.50	0.17	0.99	3.18	0.01	< 0.01	0.01	< 0.01	5.78	< 0.003		98.81
JN-17-26 Dup							56.49	0.01	0.05	32.37	0.17	0.98	3.15	0.02	< 0.01	0.01	< 0.01	5.77	< 0.003		99.04
Method Blank							< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.003	