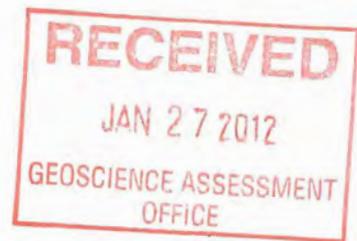


## **PACIFIC IRON ORE CORPORATION**

Suite 1 – 1546 Pine Portage Road

Kenora, Ontario P9N 2K2



## **WITCH BAY PROPERTY GEOLOGY REPORT**

**CODE TOWNSHIP (G-1326)**

**Kenora Mining Division – 10 – Ontario**

**NAD 83, Zone 15**

**Map Reference: 52 E/09SE**

**Prepared By**

2.50579

**Alasdair J. M. Mowat, C.E.T.**

**January 21, 2012**

(---1---)

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PACIFIC IRON ORE CORPORATION

-WITCH BAY PROPERTY-

## GEOLOGY REPORT

**Code Township (G.1326)**

**NTS 52 E/09 SE**

**NAD 83, Zone 15**

**414000m E, 5496000m N**

**Kenora Mining Division – 10 – Ontario**

**Project/Property:** Witch Bay (Code)

**Mineral Commodities:** Gold, Copper, PGE

**Mining Claim Surveyed:** 4224478 (16 claim units – 256 hectares) – recorded January 24, 2008

**Claim Ownership Status:** 100% Pacific Iron Ore Corporation

**Date of Field Surveys:** September 4, 2011, and January 20 and 21, 2012

## INTRODUCTION

The 256 hectare (1 block claim – 16 units) property is located in Code Township (G-1326) in Ontario's Kenora Mining Division – 10 (fig. 1 & 2).

The claim is located about 20km southeast of the City of Kenora in the northwest quarter of Code Township south of Le May. Access to the property is by Hwy's # 17 and # 71 to the signed Witch Bay (Wendigo Mine) Road turn off. A road/trail takes one west to the historical Witch Bay Mine site lying just south of Kite lake.

(- - - 3 - - -)

The vegetation is quite mixed from jack pine, spruce, hemlock, poplar, white birch and low bush juniper, alder and Manitoba maple. The area has been logged and the re-growth does not look healthy.

#### **Highlights –**

- 1/. The property contains the old *Witch Bay Mine* which lies about 2.5km northeast of the past producing *Wendigo Gold-Copper Mine*, the second largest gold producer in the region next to the *St. Anthony Gold Mine*. The Wendigo Mine was in operation from 1899 to 1943 producing 67,000 oz of gold, 14,760 oz of silver and 1,866,246 lb of copper from 206,504 tons milled. The average grade of the ore milled was 0.33 oz gold/ton.
- 2/. The *Witch Bay Mine* was discovered in the early 1930's. A Government report's assays from the quartz vein from 8.2 to 29.5 g/mt across 0.33m (1.1 ft) over a known length of 240m (787 ft). No production recorded. Chalcopyrite is present in the quartz vein at the No. 2 Shaft.

## **AREA GEOLOGY**

The Witch Bay property lies in the *GIBI LAKE AREA* which comprises the eastern part of the Lake of the Woods Metavolcanic-Metasedimentary Belt within the western part of the Wabigoon Subprovince of the Superior Province.

The belt consists generally of easterly to north-easterly isoclinally folded meta-volcanics and – sediments intruded by mafic to ultramafic and intermediate to felsic intrusions. An example is the gold-copper mineralization at the Wendigo Mine which is associated with folded, differentiated and ultramafic to mafic intrusions/extrusions. The Mine development lies on the outside of the south limb of a large "S" fold structure.

The vast majority of the various rock units have been metamorphosed from the greenschist to lower amphibolite.

These ultramafic to mafic units were later intruded by granites; example, the Dryberry Batholith which deformed and re-oriented the earlier developed isoclinal and anticlinal folds.

The area's major shearing/faulting is east and north-easterly with minor sets striking north-westerly.

## **AREA's EXPLORATION HISTORY**

Historically, the area was prospected for gold during the late 1800's continuing into the early 1930's. This resulted in 4 gold discoveries; the Stella, Trigs, Wendigo and Witch Bay mines. Considerable trenching and underground work was performed at all the above sites. The Wendigo Mine (1899 to 1943) was the only gold-copper producer in the area.

After the former years of prospecting and mine development; exploration activities in the area has been sporadic to none existent up to the present. Work consisted of additional pitting, trenching, geological mapping, drilling and geophysics. The primary areas of geological interested being held in old mining claim patents and leases.

## **WITCH BAY MINE**

The Witch Bay Gold Mine (1934) is situated about 30m south of Kite Lake. The main showing consists of lenticular masses of white quartz occupying a shear zone in basalts. The exposed zone had a length of 280 feet striking N 85 degrees E and dipping 45 to 70 degrees south. The surface width of the quartz is +/- 0.5m. Three shafts were sunk on this vein starting with No.1 on the west, No. 2 and No. 3 on the east. The No. 2 had the best gold encouragement and was deepened. A mill plant was installed but work was discontinued in the winter of 1935.

South of this quartz bearing fault zone is a well pronounced rusty shear zone in basalt striking N 60 degrees E dipping 57 to 80 degrees NW. The No.4 shaft was developed at the south end.

Between 1950 and '53, Rexora Mining Corp. Ltd. conducted geological mapping, diamond drilling and trenching. In 1985, Mistango Consolidated and Goldstreet Resources Ltd carried out additional geological mapping and drilling. Canadian Nickel Company Ltd. (Fort Knox Resources) in 1987 performed geological mapping, rock assaying and geophysical work north of the Witch Bay Mine.

## **DISCUSSION**

The author with assistance spent September 4<sup>th</sup>, 2011 in the field reviewing the geological environment both west and east of the Witch Bay mine site.

(---5---)

The author's focus is the layered ultramafic unit located to the west. The eastern flank of this unit strikes more or less north-easterly starting south of the Wendigo Mine passing west of the Witch Bay Mine site. These 2 mine sites lying just west of the ultramafic body as does the Stella prospector to the west on the western flank of this stated body.

The property is dominated by 3 geological rock units. The northern portion of the property is dominated by the intrusive Dryberry Batholith. This intrusive body is biotitic, medium grained, equigranular and pink to red in colour.

South of the interfingering Dryberry Batholith Occupying is a north-easterly striking gabbroic unit with a narrow veneer of peridotite underlying the gabbro's eastern flank. The gabbro is massive, equigranular, medium to coarse grained and green to dark green in colour.

Underlying the peridotite are basalts. These basalts consist of massive and porphyritic (plagioclase crystals) flows and pillows. They are dark green to green and fine grained. These volcanic rocks comprise about 60% of the south-east end of the property.

The bedding contacts strike +/- 51 degrees dipping about 70 to 80 degrees facing south-easterly. In most cases, the individual contacts are marked by an escarpment.

On examining the Witch Bay Mine # 2 shaft, the east trending shear zone is about 1.5m wide in basalt. The quartz-calcite vein lenses are fractured and annealed with sulphides of chalcopyrite and pyrite.

During the course of the ground survey, eight rock samples were removed and their location GPS. Previous diamond drill hole # WB-01 (2009) was logged and sampled (4 samples) on July 17, 2011. All these samples were submitted on July 17 to ALS Chemex, Thunder Bay, Ontario for PGM-ICP23, ME-MS61 and ME-MS81d analysis. The 12 samples were shipped by Greyhound Bus courier from Kenora to Thunder Bay for analytical preparation.

Between September 18 and 19, 2009 Jim Resky of Kenora, Ontario drilled hole #WB-01 (2009). Unfortunately, as a result of mechanical problems he had to abandon the drill hole at 3.75m. The drill hole is located 4 m east and 5 m south of the Witch Bay # 2 shaft facing 360 degrees (north), set at -45 degrees. The hole was planned for 20m to cut the 45 south dipping Au, cp bearing zone and obtain fresh material for examination and analysis.

The core was logged on July 17, 2011 after photographing. Due to the size of the drill core – 20mm – all 100% of the material was submitted for analysis (4 assays). The material was fine grained, green to green-grey basalt, silicified with erratic wispy veinlets of quartz-calcite.

(- - - 6 - - -)

Visible sulphides of chalcopyrite and pyrrhotite are limited to about 0.5% of the rock mass in the disseminated form of fine grain specks. Limonite gossan occupies the fracture seams of this brittle rock at 30-45 and 60 degrees to the core axis (c.a.). The 30-45 degree set proceeds the 60 degree 2<sup>nd</sup> set. Except for a 30 mm visible barren quartz-carbonate veinlet at 1.39 m (60 degree c.a., the core was boring in this early stage.

## **CONCLUSION and RECOMMENDMENTS**

Eight surface and 4 core samples were submitted to ALS Chemex (ALS Canada Ltd) in Thunder Bay, Ontario. The samples were assay using the following analytical packages:

ME-MS81D, ME-MS61, GEO-4A01 and PGM-ICP23 including detail follow-ups to ore grade (refer to attached Certificate # TB11137446, pages 11).

The best results came from the Witch Bay Mine Shaft #2 – sample # 57906 (Geochemistry Plan “B-2”) – reporting 1.260% Cu, 11.55 ppm Au and 20.1 ppm Ag. The next best assay was sample # 57903 (Geochemistry Plan “A-2”) reporting 1.375 ppm Au and 0.23. As for Ni, the highest value reported was 125.5 ppm from sample #57907 (Geochemistry Plan “A-2”). Platinum and palladium were more or less nil.

Although, eight field samples were removed with limited results, the northwestern corner of the property is still very mineralogically favourable.

A \$10,000 follow-up work program consisting of detail geological mapping and sampling will be carried out during the spring of 2012.

Alasdair J.M. Mowat, C.E.T.

January 21, 2012

Kenora, Ontario

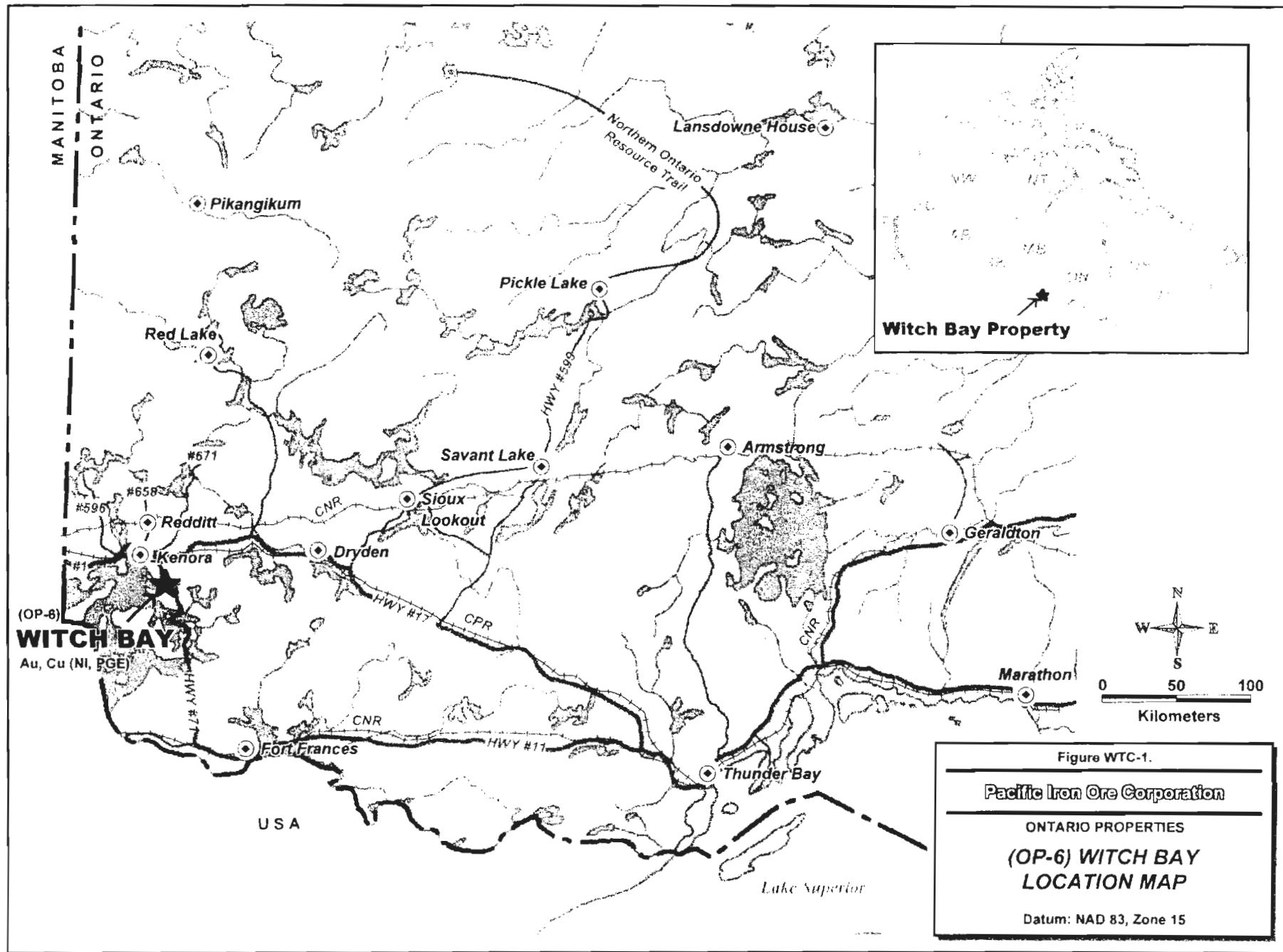
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## SURVEY INFORMATION

Station	UTM 15 Co-Ordinates		Description
	#	Easting	Northing
1	413002m	5496039m	- western claim boundary of 4224478 and #1 post of 3014900 and #2 post of 1178196
2	413007m	5496008m	-gabbro outcrop (sample #57901)
3	413046m	5495970m	-set-up control grid line @ 130 degrees
4	412992m	5495959m	-gabbro outcrop (sample #57902)
5	412998m	5495992m	-4x3x3m deep prospecting pit on 90 degree narrow shear zone, dipping 75 degrees south - 20 to 30mm qtz-calcite veinlets, 2-3% py, po and cp (sample #57903)
6	413045m	5495981m	-gabbro outcrop
7	413055m	5495970m	-gabbro outcrop (sample #57904)
8	413149m	5496000m	-gabbro outcrop (sample #57905)
9	413345m	5496006m	-Witch Bay Mine #2 shaft east side quartz-calcite vein With py, cp and po (sample #57906)
10	413451m	5495943m	-basalt at top of fault escarpment striking 95 degrees, dipping 60 degrees south (sample #57907)
11	413753m	5495969m	-basalt, 15m wide shear zone striking 72 degrees (sample #57908)

### OTHER

WB-01	413349m	5496001m	-2009 drill hole east and south of Mine Shaft #2 (sample #57909 to #57912)  (- - - 8 - - -)
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(--- 9 ---)

Date / Time of Issue: Sun Jan 22 15:21:18 EST 2012

TOWNSHIP / AREA PLAN  
CODE G-1326

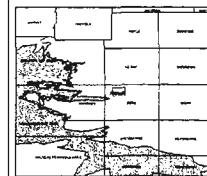
## **ADMINISTRATIVE DISTRICTS / DIVISIONS**

Mining Division Kenora  
Land Titles/Registry Division KENORA  
Ministry of Natural Resources District KENORA

## TOPOGRAPHIC

- |   |                     |
|---|---------------------|
|   | Administrative Site |
|   | Threading           |
|   | Description List    |
|   | Protocol Path       |
|   | Setup Path Name     |
|   | Call Path Tree      |
|   | Content             |
| P | Min Sheds           |
| A | Max Holdtimes       |
|   | Priority            |
|   | Read                |
|   | Test                |
|   | Natural Gas Pipe    |
|   | Users               |

## Land Tenure



## LAND TENURE WITHDRAWALS

## IMPORTANT NOTICES

**LAND TENURE WITHDRAWAL DESCRIPTIONS**

Pacific Iron Ore Corp.  
— Claim Map —

A detailed map of a mining claim area in Kenora, Ontario, showing roads, lakes, and property boundaries. The map includes a north arrow, UTM coordinates, and a mine plan.

The map features several labeled areas and features:

- Lake**: Kite Lake is located in the upper left quadrant.
- Roads**: Mine Road runs horizontally across the center, Witch Bay Road runs diagonally from bottom-left to top-right, and a road labeled "To Lefor" leads towards the top right.
- Claim Information**: A large rectangular area is outlined and labeled "Pacific Iron Mining Claim # 4224478".
- Towns**: Kenora CODE is marked near the center, and Lefor is marked at the top right.
- Coordinates**: UTM coordinates are provided along the edges of the map, including 413000E, 414000E, 415000E, 548500N, 549000N, 549500N, and 550000N.
- Grid**: A dashed grid system is used to mark the boundaries of the property claim.

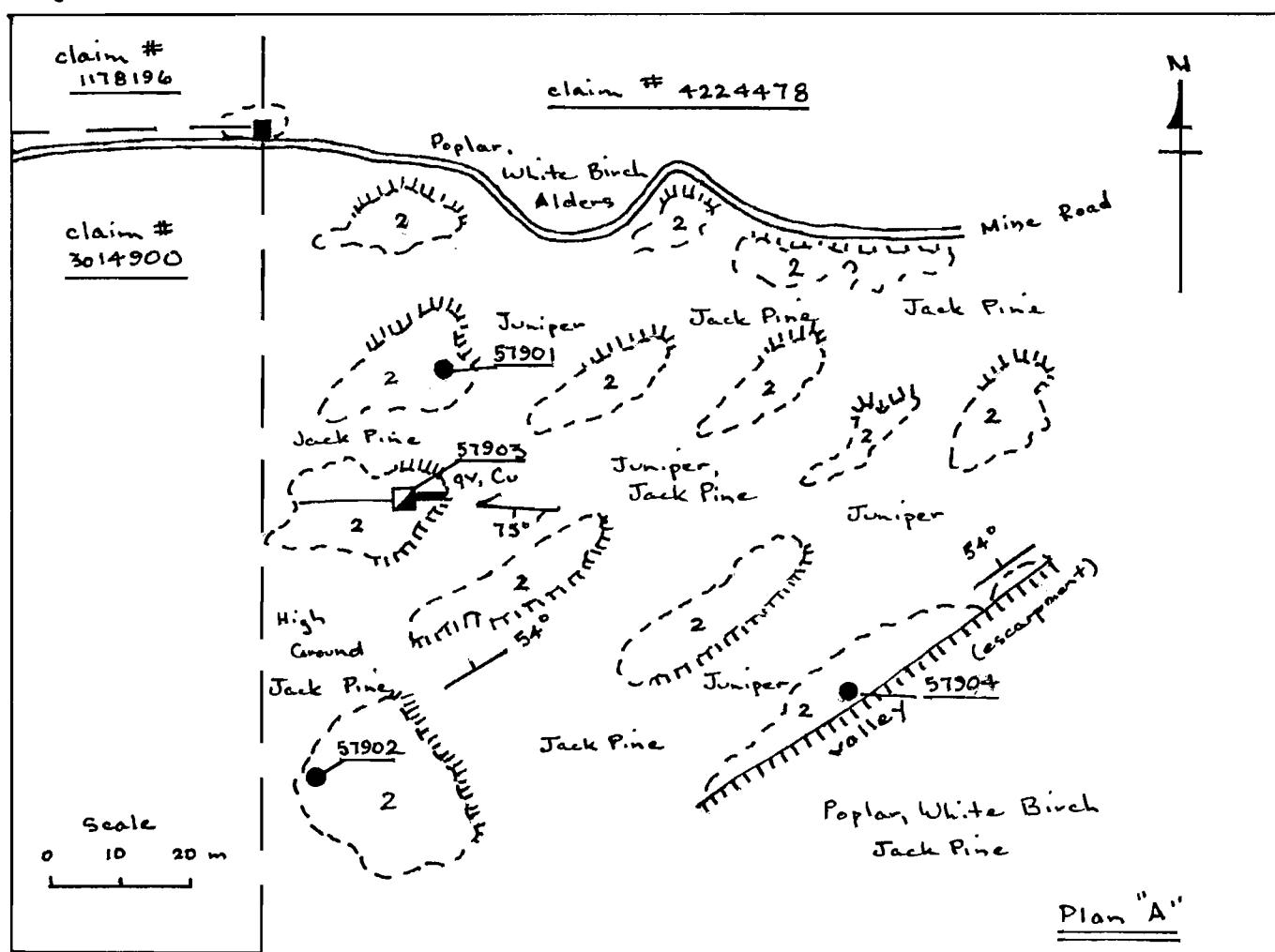
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...and they are not given any guidance and have no real motivation to learn, including no intrinsic motivation to learn, which is right at the beginning. Learning needs, however, are other form of expression of higher and more complex needs, after certain basic lower and first-level needs that others of about five years old, usually interests, curiosity, etc.

(-- 10 --)

Fig. 2.

Figure 3:



Pacific Iron Ore Corporation  
Witch Bay Property, ON  
Geology Plan "A-1"

LEGEND

SYMBOLS		PHANEROZOIC	
	outcrop		geological contact
	fault		shaft
	road		trail
	stream		marsh
	corner post		line post
	claim line		topographical contour
	traverse		assay site

CENOZOIC	
RECENT	Swamp, lake and stream deposits
PLEISTOCENE	Sand, gravel and clay

QUATERNARY	
RECENT	Swamp, lake and stream deposits

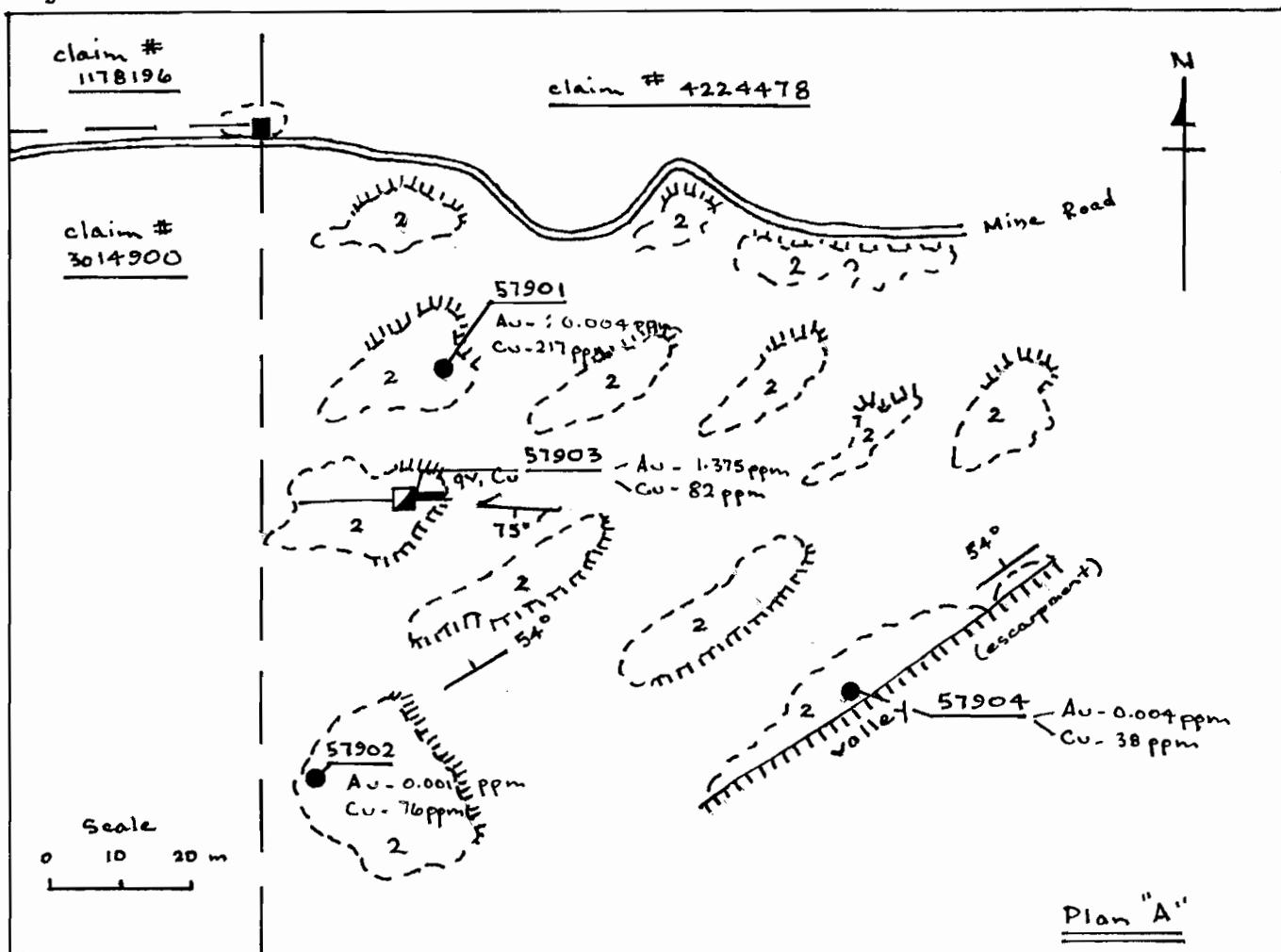
PRECAMBRIAN - ARCHEAN	
	Granitic intrusive rocks
	Ultramafic to Intermediate intrusive/extrusive rocks (gabbro, pyroxidite)
	Mafic volcanic rocks (basalt - massive and pillowied)

ABBREVIATIONS	
Au.....	Gold
Cu.....	Copper
qv.....	Quartz Vein

( --- 11 --- )

Figure 4:



Pacific Iron Ore Corporation  
Witch Bay Property, ON  
Geochemistry Plan "A-2"

LEGEND

SYMBOLS		PHANEROZOIC						
	outcrop							
	fault							
	road							
	stream							
	corner post							
	claim line							
	traverse							
		RECENT						
		Swamp, lake and stream deposits						
		PLEISTOCENE						
		Sand, gravel and clay						
PRECAMBRIAN - ARCHEAN								
<table border="1"> <tr> <td>3</td><td>Granitic intrusive rocks</td></tr> <tr> <td>2</td><td>Ultramafic to Intermediate intrusive/extrusive rocks (gabbro, pyroxenite)</td></tr> <tr> <td>1</td><td>Mafic volcanic Rocks (basalt - massive and pillowied)</td></tr> </table>			3	Granitic intrusive rocks	2	Ultramafic to Intermediate intrusive/extrusive rocks (gabbro, pyroxenite)	1	Mafic volcanic Rocks (basalt - massive and pillowied)
3	Granitic intrusive rocks							
2	Ultramafic to Intermediate intrusive/extrusive rocks (gabbro, pyroxenite)							
1	Mafic volcanic Rocks (basalt - massive and pillowied)							
ABBREVIATIONS								
Au..... Gold Cu..... Copper qv..... Quartz Vein								

Figure 5:

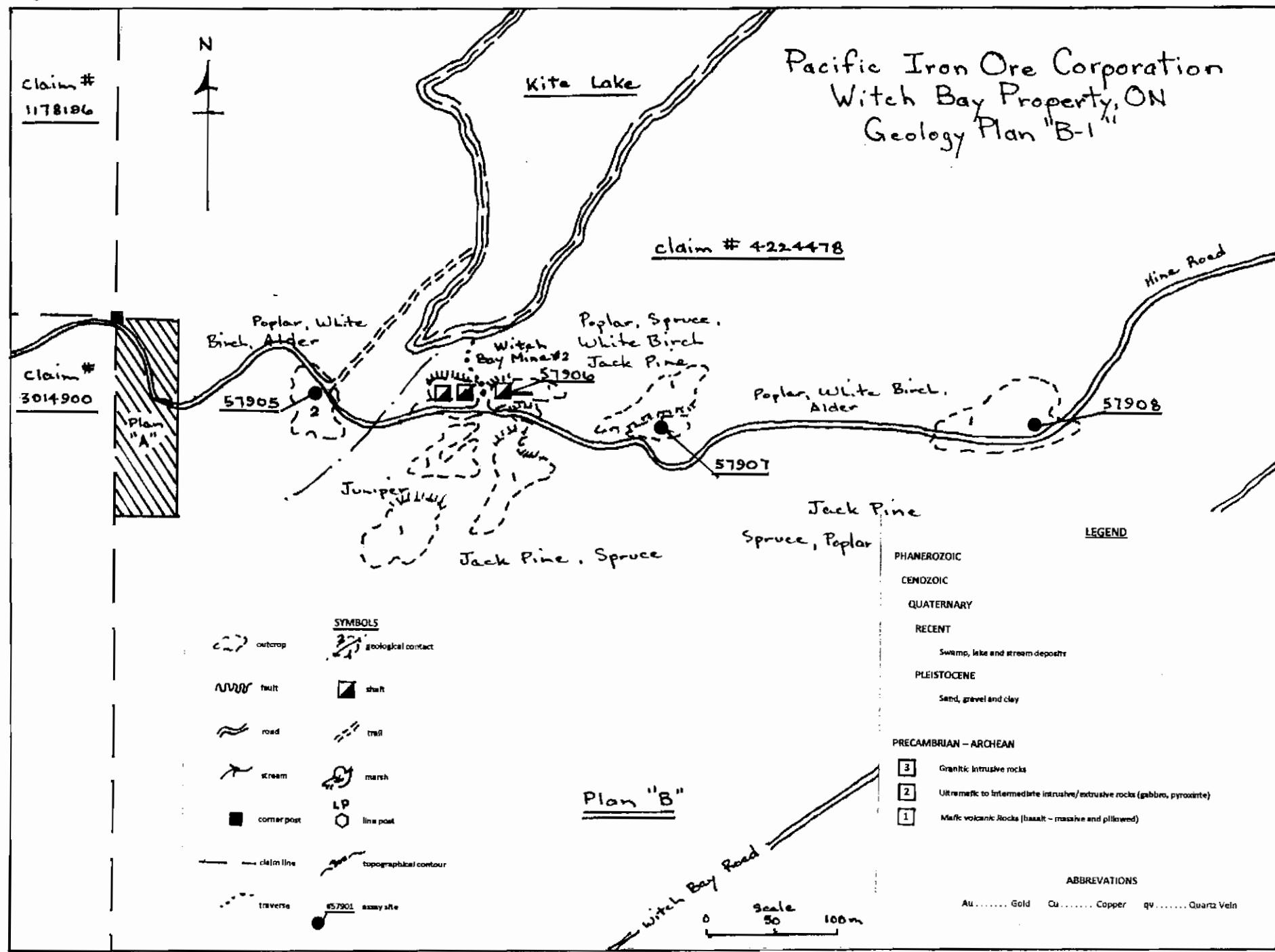
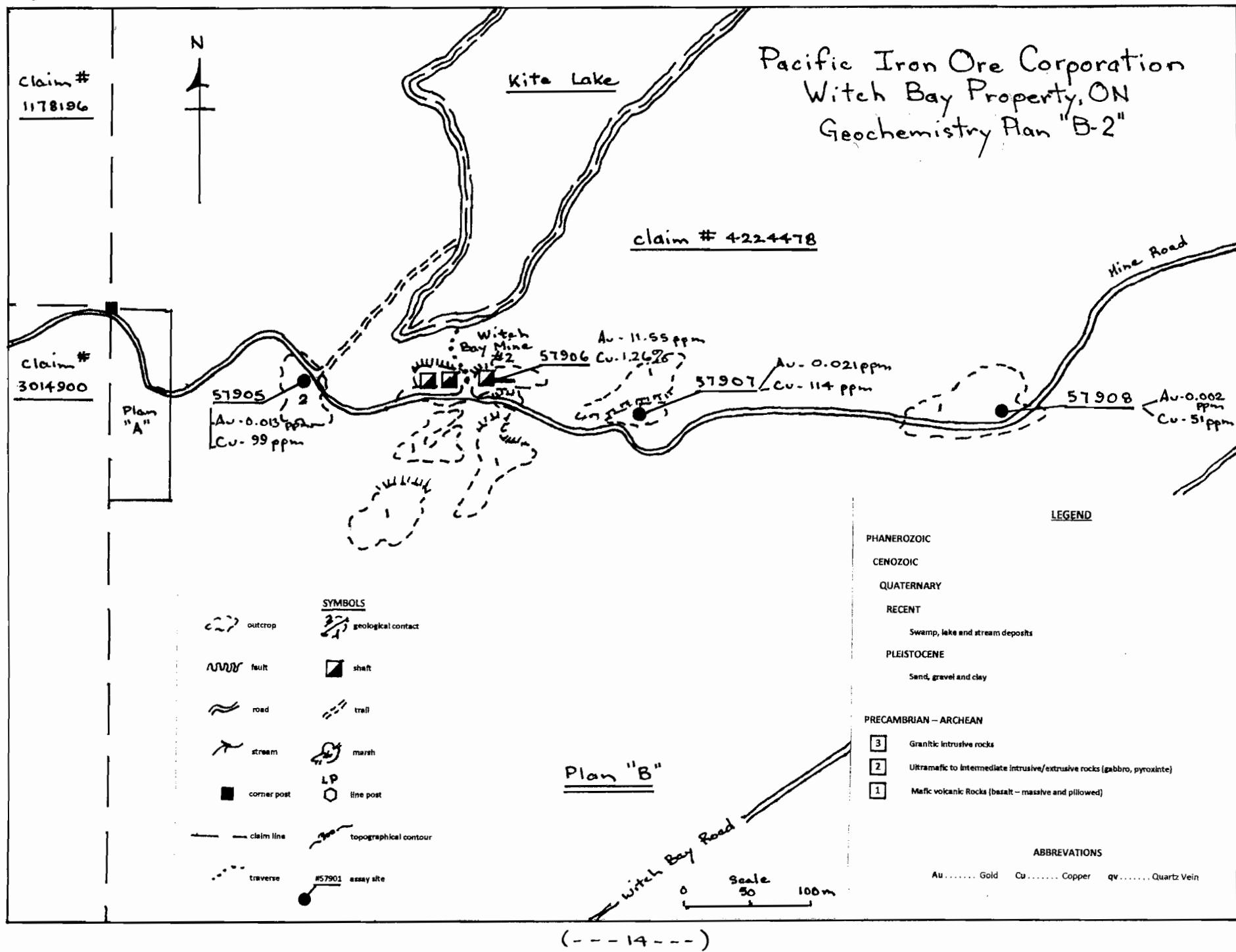


Figure 6:



**Figure 7: Geological Legend and Abbreviations**

**LEGEND**

**PHANEROZOIC**

**CENOZOIC**

**QUATERNARY**

**RECENT**

Swamp, lake and stream deposits

**PLEISTOCENE**

Sand, gravel and clay

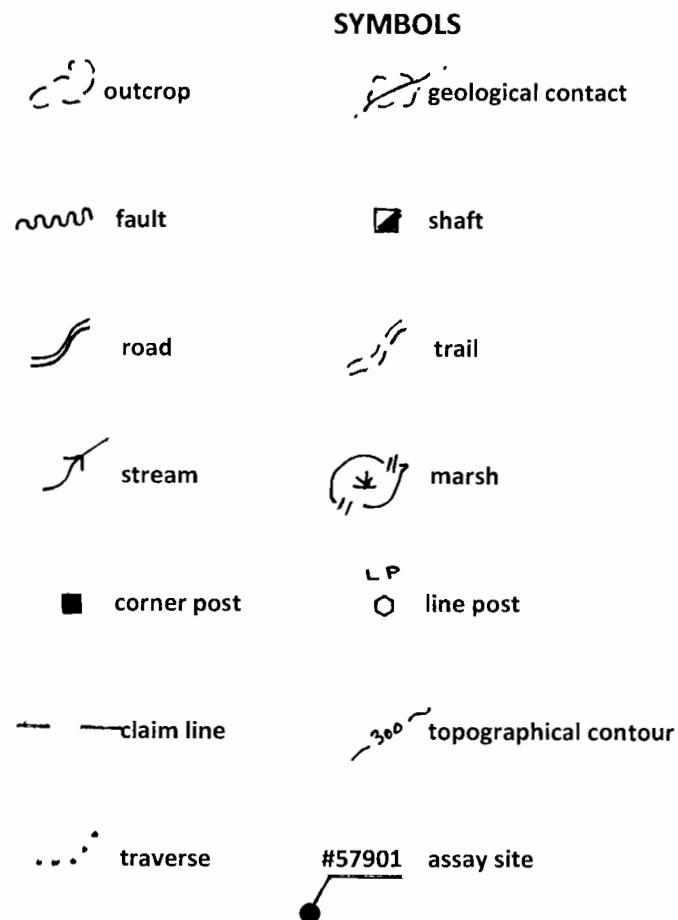
**PRECAMBRIAN – ARCHEAN**

- [3] Granitic intrusive rocks**
- [2] Ultramafic to intermediate intrusive/extrusive rocks (gabbro, pyroxinte)**
- [1] Mafic volcanic Rocks (basalt – massive and pillowied)**

**ABBREVIATIONS**

Au ..... Gold      Cu ..... Copper      qv ..... Quartz Vein

Figure 8: Geological Symbols





ALS Canada Ltd.  
2103 Dollarton Hwy  
North Vancouver BC V7H 0A7  
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CALGARY AB T2P 4H2

- P. 17 -  
Page: 1  
Finalized Date: 14-AUG-2011  
Account: PJV

## CERTIFICATE TB11137446

Project: WITCH BAY

P.O. No.:

This report is for 12 Drill Core samples submitted to our lab in Thunder Bay, ON, Canada on 19-JUL-2011.

The following have access to data associated with this certificate:

GRAEME EVANS  
ACCOUNTS PAYABLE

PERRY HEATHERINGTON

ALASDAIR MOWAT

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-21	Sample logging - ClientBarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Cu-OG62	Ore Grade Cu ~ Four Acid	VARIABLE
ME-ICP06	Whole Rock Package - ICP-AES	ICP-AES
OA-GRA05	Loss on Ignition at 1000C	WST-SEQ
ME-MS81	38 element fusion ICP-MS	ICP-MS
TOT-ICP06	Total Calculation for ICP06	ICP-AES
ME-MS61	48 element four acid ICP-MS	
PGM-ICP23	Pt, Pd, Au 30g FA ICP	ICP-AES
Au-GRA21	Au 30g FA-GRAV finish	WST-SIM
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES

To: PACIFIC IRON ORE CORPORATION  
ATTN: ALASDAIR MOWAT  
1546 PINE PORTAGE ROAD  
KENORA ON P9N 2K2

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature:

  
Colin Ramshaw, Vancouver Laboratory Manager



ALS Canada Ltd.

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- P. 18 -  
Page 1 of 1

INVOICE NUMBER 2352188

BILLING INFORMATION	
Certificate:	<b>TB11137446</b>
Sample Type:	<b>Drill Core</b>
Account:	<b>PJV</b>
Date:	<b>14-AUG-2011</b>
Project:	WITCH BAY
P.O. No.:	
Quote:	ALSM-CE11-055-PJV
Terms:	<b>Net 30 Days</b>
Comments:	C1

QUANTITY	CODE	DESCRIPTION	UNIT	PRICE	TOTAL
12	PREP-31A	Crush, Split, Pulverize		6.50	78.00
12	ME-MS81D	ME-MS81 plus whole rock		35.06	420.72
15.44	PREP-31A	Weight Charge (kg) - Crush, Split, Pulverize		0.65	10.04
1	ME-OG62	Ore Grade Elements - Four Acid		2.35	2.35
1	Cu-OG62	Ore Grade Cu - Four Acid		2.35	2.35
1	ASY-4A01	Four acid digestion for OG62		8.30	8.30
12	ME-MS61	48 element four acid ICP-MS		17.55	210.60
12	GEO-4A01	Four Acid Dig - ME-MS61		5.02	60.24
12	PGM-ICP23	Pt, Pd, Au 30g FA ICP		18.00	216.00
1	Au-GRA21	Au 30g FA-GRAV finish		20.05	20.05

SUBTOTAL (CAD) \$ 1,028.65

R100938885 GST \$ 51.43

TOTAL PAYABLE (CAD) \$ 1,080.08

To: **PACIFIC IRON ORE CORPORATION**  
ATTN: ALASDAIR MOWAT  
1546 PINE PORTAGE ROAD  
KENORA ON P9N 2K2

Payment may be made by: Cheque or Bank Transfer

Beneficiary Name: ALS Canada Ltd.  
 Bank: Royal Bank of Canada  
 SWIFT: ROYCCAT2  
 Address: Vancouver, BC, CAN  
 Account: 003-00010-1001098  
 Please send payment info to accounting.canusa@alsglobal.com

Please Remit Payments To :  
**ALS Canada Ltd.**

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- P. 19 -

Page: 2 - A

Total # Pages: 2 (A - H)

Plus Appendix Pages

Finalized Date: 14-AUG-2011

Account: PJV

Project: WITCH BAY

**CERTIFICATE OF ANALYSIS TB11137446**

Sample Description	Method Analyte Units LOR	WEI-21	Cu-OG62	ME-MS81												
		Recv'd Wt.	Cu	Ag	8a	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Hf
		kg	%	ppm	ppm											
57901		0.98	<1	64.5	18.0	36.3	100	0.10	217	5.93	3.96	1.32	22.0	5.46	3.0	
57902		1.10	<1	106.5	11.9	48.5	120	0.12	76	5.90	3.91	1.11	19.4	5.09	3.2	
57903		1.67	<1	15.3	29.7	31.1	80	0.16	82	4.18	2.73	1.06	14.1	3.73	2.6	
57904		0.86	<1	100.5	13.7	61.6	120	0.15	38	5.62	3.38	0.96	15.9	4.95	3.0	
57905		1.23	<1	59.9	16.7	33.6	90	0.32	99	5.96	4.10	1.12	18.7	4.78	3.1	
57906		2.51	1.260	10	16.2	1.7	29.0	30	0.06	6710	0.63	0.27	0.12	1.0	0.67	<0.2
57907		1.43	<1	54.9	8.9	60.9	320	0.21	114	3.42	2.23	0.83	16.0	2.90	1.5	
57908		1.45	<1	57.8	12.1	42.4	260	0.22	51	4.28	2.66	1.14	18.3	3.66	2.1	
57909		1.01	<1	48.0	20.0	37.7	120	0.10	70	6.39	4.02	1.54	21.1	5.58	3.1	
57910		1.18	<1	75.2	16.2	39.4	110	0.14	41	5.71	3.71	1.44	18.8	5.13	2.8	
57911		1.17	<1	61.6	16.8	40.1	110	0.11	25	5.84	3.85	1.40	18.9	5.38	2.9	
57912		0.85	<1	53.4	17.4	44.0	120	0.12	58	6.26	4.07	1.51	20.3	5.43	3.1	



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Page: 2 - B  
 Total # Pages: 2 (A - H)  
 Plus Appendix Pages  
 Finalized Date: 14-AUG-2011  
 Account: PJV

Project: WITCH BAY

## CERTIFICATE OF ANALYSIS TB11137446

Sample Description	Method Analyte Units LOR	ME-MS81														
		Ho ppm	La ppm	Lu ppm	Mo ppm	Nb ppm	Nd ppm	Ni ppm	Pb ppm	Pr ppm	Rb ppm	Sm ppm	Sn ppm	Sr ppm	Ta ppm	Tb ppm
57901		1.25	6.7	0.58	<2	4.7	13.6	52	<5	2.72	5.4	4.21	1	149.0	0.3	0.88
57902		1.26	4.2	0.59	<2	4.9	10.2	58	6	1.87	14.7	3.72	1	102.0	0.3	0.84
57903		0.91	11.9	0.40	<2	4.0	15.7	34	<5	3.52	1.6	3.66	1	69.7	0.3	0.61
57904		1.18	5.3	0.53	<2	5.0	11.3	153	<5	2.16	12.8	3.90	1	115.0	0.3	0.86
57905		1.33	6.5	0.62	<2	4.9	11.4	34	<5	2.31	6.3	3.59	1	85.6	0.3	0.86
57906		0.11	0.7	0.02	<2	0.2	1.4	54	5	0.27	1.2	0.49	1	4.5	<0.1	0.11
57907		0.73	3.4	0.33	<2	2.4	6.8	139	<5	1.30	8.3	2.20	1	104.5	0.2	0.50
57908		0.92	4.6	0.40	<2	3.9	9.0	92	<5	1.77	10.7	2.91	1	142.5	0.2	0.66
57909		1.36	8.1	0.59	5	4.9	14.0	62	<5	2.83	3.0	4.32	2	207	0.3	0.94
57910		1.26	6.0	0.58	2	4.5	11.8	61	<5	2.36	6.7	3.87	1	179.5	0.3	0.85
57911		1.27	6.3	0.58	<2	4.6	12.4	61	<5	2.43	5.4	3.97	1	164.0	0.3	0.90
57912		1.37	6.4	0.63	2	4.9	13.1	66	<5	2.58	3.8	4.34	1	158.0	0.3	0.93



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## CERTIFICATE OF ANALYSIS TB11137446

Sample Description	Method Analyte Units LOR	ME-MS81	ME-ICP06	ME-ICP06	ME-ICP06	ME-ICP06								
		Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	SiO2	Al2O3	Fe2O3
		ppm	%	%	%									
57901		0.81	<0.5	0.55	0.28	400	<1	34.6	3.82	78	101	48.6	13.20	16.90
57902		0.66	<0.5	0.55	0.22	419	1	33.0	3.80	116	107	48.3	13.25	17.10
57903		1.66	<0.5	0.41	0.38	301	5	23.7	2.74	68	93	60.1	10.05	10.80
57904		0.68	<0.5	0.52	0.26	420	3	30.6	3.39	111	112	49.0	14.25	16.45
57905		0.69	<0.5	0.62	0.44	419	4	36.3	3.98	107	113	48.6	12.40	14.30
57906		<0.05	<0.5	0.03	<0.05	13	3	2.6	0.18	50	3	91.4	0.39	5.07
57907		0.28	<0.5	0.34	0.12	308	2	20.1	2.20	92	53	44.3	16.00	14.95
57908		0.42	<0.5	0.40	0.21	350	2	25.0	2.62	72	73	47.3	14.60	14.00
57909		0.68	<0.5	0.60	0.66	423	2	37.7	4.01	100	111	48.0	14.65	14.70
57910		0.63	<0.5	0.55	0.21	393	2	34.3	3.68	99	102	49.6	13.70	15.00
57911		0.65	<0.5	0.59	0.18	420	4	35.4	3.83	100	104	49.4	13.90	15.65
57912		0.68	<0.5	0.62	0.37	425	3	37.0	3.98	108	110	47.2	14.35	15.50



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Sample Description	Method Analyte Units LOR	ME-ICP06	OA-GRA05	TOT-ICP06	ME-MS61	ME-MS61	ME-MS61	ME-MS61						
		Na2O	K2O	Cr2O3	TiO2	MnO	P2O5	SrO	BaO	LOI	Total	Ag	Al	As
		%	%	%	%	%	%	%	%	%	%	ppm	%	ppm
		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
57901		2.77	0.41	0.01	1.72	0.18	0.11	0.02	0.01	1.39	99.5	0.15	7.09	<0.2
57902		2.72	0.45	0.02	1.81	0.28	0.15	0.01	0.01	3.08	99.5	0.06	7.05	1.4
57903		2.48	0.07	0.01	1.19	0.15	0.13	0.01	<0.01	5.18	98.7	0.23	4.94	31.7
57904		3.32	0.47	0.01	1.63	0.19	0.15	0.01	0.01	3.47	101.5	0.05	6.68	1.2
57905		2.42	0.55	0.01	1.69	0.19	0.17	0.01	0.01	7.39	99.0	0.07	6.35	2.0
57906		0.05	0.09	<0.01	0.04	0.01	<0.01	<0.01	<0.01	2.49	99.7	20.1	0.19	1.3
57907		1.54	0.30	0.04	0.95	0.24	0.02	0.01	0.01	3.74	100.0	0.07	8.16	9.2
57908		2.14	0.37	0.03	1.23	0.18	0.10	0.02	0.01	1.19	97.9	0.07	7.08	0.7
57909		1.46	0.24	0.02	1.72	0.23	0.14	0.02	0.01	1.70	99.7	0.10	7.40	0.8
57910		1.95	0.40	0.01	1.61	0.23	0.14	0.02	0.01	2.48	101.5	0.14	6.82	<0.2
57911		2.09	0.35	0.01	1.69	0.24	0.12	0.02	0.01	1.90	101.0	0.06	7.18	1.9
57912		2.01	0.31	0.02	1.67	0.23	0.15	0.02	0.01	1.59	98.4	0.09	7.49	<0.2



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Sample Description	Method Analyte Units LOR	ME-MS61													
		Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	In	K
		ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
57901		0.04	6.60	0.05	22.2	35.8	85	0.13	251	11.25	25.1	0.23	2.2	0.123	0.34
57902		0.01	4.30	0.09	13.85	43.6	89	0.16	92.5	11.40	20.4	0.24	2.6	0.094	0.40
57903		0.40	3.47	<0.02	27.8	26.1	54	0.12	78.4	7.10	14.60	0.14	2.1	0.049	0.06
57904		0.04	3.39	0.06	11.85	48.1	78	0.11	33.1	10.10	15.65	0.24	1.8	0.050	0.36
57905		0.11	5.51	0.03	15.65	28.8	68	0.29	99.2	9.05	20.2	0.22	1.9	0.076	0.41
57906		1285	0.05	0.71	1.89	25.7	25	<0.05	>10000	3.78	0.70	0.11	0.1	0.830	0.05
57907		1.22	6.35	0.07	8.88	53.8	221	0.17	98.8	9.60	15.95	0.16	0.8	0.068	0.24
57908		0.61	7.00	0.05	11.40	34.9	180	0.20	49.2	8.87	19.70	0.21	1.2	0.088	0.30
57909		0.87	8.77	0.04	18.80	32.8	80	0.07	61.3	9.56	23.2	0.24	1.5	0.130	0.20
57910		0.12	7.43	0.07	15.25	32.2	63	0.12	40.6	9.09	19.65	0.23	1.6	0.081	0.30
57911		0.27	7.01	0.07	20.0	38.3	67	0.10	24.7	9.83	19.15	0.14	1.8	0.106	0.28
57912		0.09	7.38	0.08	20.9	40.3	76	0.10	52.5	10.25	19.75	0.16	1.9	0.111	0.26



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Sample Description	Method Analyte Units LOR	ME-MS61														
		Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P	Pb ppm	Rb ppm	Re ppm	S %	Sb ppm	Sc ppm	Se ppm
57901		4.2	2.94	1350	0.42	2.09	5.7	56.5	710	1.2	6.0	0.002	0.06	0.36	43.7	3
57902		10.8	3.88	2080	0.40	2.06	5.6	58.3	690	1.0	15.8	<0.002	0.03	0.17	44.9	3
57903		6.0	1.98	1030	0.71	1.70	4.0	27.7	640	0.9	1.6	<0.002	0.96	0.08	29.0	1
57904		15.7	3.84	1400	0.28	2.29	4.7	118.0	600	0.7	10.5	<0.002	0.04	0.07	37.2	2
57905		17.2	2.69	1360	1.15	1.70	5.0	28.9	640	1.2	6.7	0.002	0.16	0.07	42.1	2
57906		1.1	0.04	79	0.51	0.04	0.2	49.9	10	9.0	1.3	<0.002	2.67	0.38	1.1	7
57907		9.6	4.79	1760	0.17	1.13	2.2	125.5	250	0.6	6.1	0.002	0.02	0.07	39.2	1
57908		4.2	3.45	1240	0.34	1.51	4.0	75.4	410	1.0	11.5	<0.002	0.05	0.11	36.2	2
57909		4.1	2.04	1600	3.71	1.04	5.2	52.8	630	1.6	3.3	0.004	0.05	0.10	40.6	2
57910		5.3	2.47	1600	1.27	1.32	4.6	49.2	580	1.0	7.0	0.002	0.05	0.07	36.5	2
57911		5.6	2.66	1660	0.69	1.47	4.9	50.0	620	1.4	5.4	0.003	0.03	0.10	46.3	1
57912		5.2	2.65	1650	2.32	1.49	5.0	54.3	650	1.6	3.7	0.004	0.08	0.07	45.5	2



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Sample Description	Method Analyte Units LOR	ME-MS61	PGM-ICP23	PGM-ICP23												
		Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	Au	Pt
		ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm						
57901		1.3	176.5	0.36	<0.05	0.9	1.035	0.04	0.2	382	0.2	39.1	67	80.9	0.004	<0.005
57902		0.8	111.5	0.36	<0.05	0.8	1.060	0.04	0.2	371	0.3	35.1	103	99.6	0.001	<0.005
57903		0.5	63.5	0.25	0.18	1.6	0.657	<0.02	0.4	224	3.8	20.6	52	78.6	1.375	<0.005
57904		0.5	98.0	0.29	<0.05	0.6	0.876	0.04	0.2	300	0.7	24.3	87	63.1	0.004	<0.005
57905		0.6	79.7	0.31	<0.05	0.7	0.958	0.03	0.4	338	2.2	31.8	97	70.6	0.013	<0.005
57906		0.9	4.5	<0.05	26.6	<0.2	0.022	0.02	<0.1	9	1.1	2.4	60	2.5	>10.0	<0.005
57907		0.5	101.0	0.14	0.08	0.3	0.540	0.03	0.1	263	0.2	18.9	96	18.5	0.021	<0.005
57908		1.0	132.5	0.25	0.08	0.4	0.687	0.05	0.2	271	0.8	22.0	61	40.3	0.002	<0.005
57909		1.2	200	0.32	0.06	0.7	0.963	0.03	0.6	337	0.4	33.3	81	46.3	0.003	<0.005
57910		0.9	172.0	0.27	<0.05	0.6	0.869	0.04	0.2	314	0.6	29.5	86	55.6	0.002	<0.005
57911		1.1	164.0	0.33	<0.05	0.7	0.936	0.03	0.2	338	0.5	36.9	92	61.4	0.006	<0.005
57912		1.2	155.0	0.34	<0.05	0.7	0.962	0.02	0.4	344	0.6	37.7	96	65.9	0.002	<0.005



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Sample Description	Method Analyte Units LOR	PGM-ICP23	Au-GRA21
57901		Pd	Au
57902		ppm	ppm
57903		0.001	0.05
57904		<0.001	
57905		<0.001	
57906		0.001	11.55
57907		0.002	
57908		0.001	
57909		0.001	
57910		<0.001	
57911		<0.001	
57912		<0.001	



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Method	CERTIFICATE COMMENTS
ME-MS61	REE's may not be totally soluble in this method.