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**Assessment Report on the Manitouwadge Graphite Project,
Thunder Bay Mining Division**

Drilling on a Graphite Prospect, Olie Lake Area

NTS 42F 06

December, 2016 - April, 2017

By Ardiden Ltd.

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June 30, 2017

SUMMARY

Ardiden Ltd. completed a drilling program on the Manitouwadge Graphite Property. The claims are located 25 km northeast of Manitouwadge. Diamond drilling was carried out during December 2016 and January – February, 2017 with the target being graphitic shear zones in granite gneiss. Thirty holes totalling 2656 meters were completed over the Silver Star North claim group.

Analytical results indicate a very high grade graphite product can be expected from the jumbo flake graphite occurrence.

INTRODUCTION

Location, Access and Physiology

The Ardiden Ltd. property is located northeast of the town of Manitouwadge which is situated at the north end of Highway 614, 330 km east of Thunder Bay on Highway 17 or 375 km west of Sault Ste. Marie. Good logging roads lead north from Manitouwadge to the claims 25 km away. The property is in Olie Lake Area within the Thunder Bay Mining Division, NTS map sheet 42F06. The location of the property is shown on Figure 1.

There is little topographical relief in the area with only a few creeks and streams which generally flow north-south constrained by eskers trending northeast. The forest cover has either been logged over or burned in recent times with younger growth of softwoods and aspen. Lower swampy terrain supports cedars and alders.

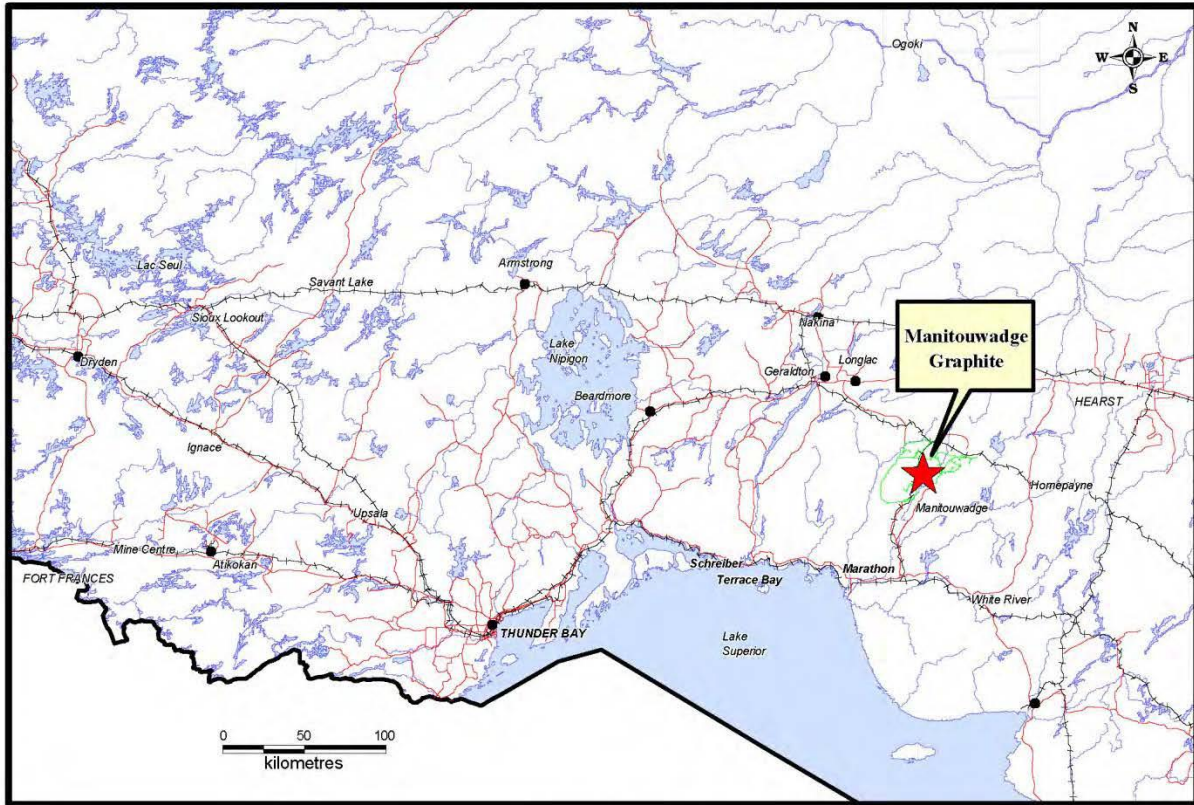


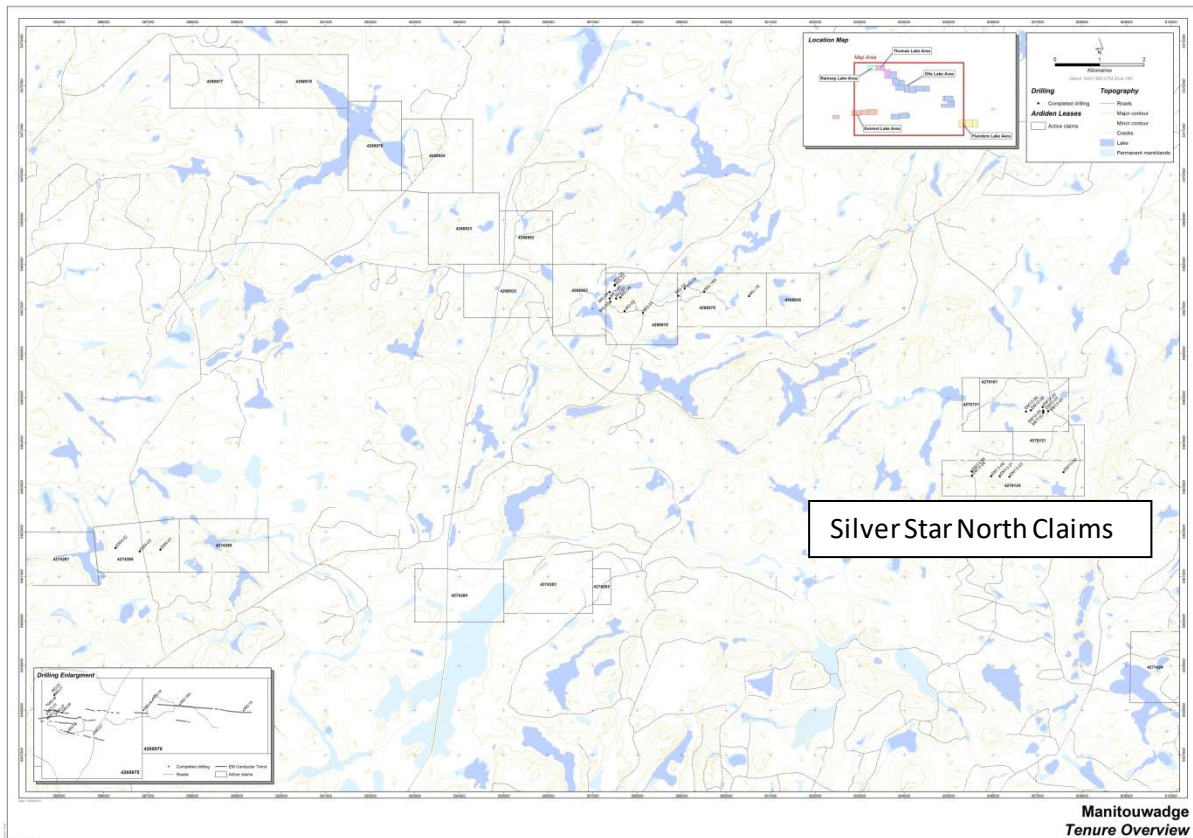
Figure 1
General Location Map

PROPERTY

The Silver Star North Property is comprised of 4 claims totalling 41 contiguous units encompassing 664 ha approximately in the Olie Lake Area. The project also includes other claim blocks which are not part of this assessment report. The property was optioned from Rare Earth Metals in 2015 who had staked the original claims in 2012. The submission of this Assessment Report will satisfy requirements to keep the claims in good standing beyond the current due dates of July 13 and Dec. 22, 2017. Claim data are summarized in Table 1 and illustrated on Figure 2.

Table 1: Claim Data (prior to Assessment Report submission)

Area	claim #	Rec'd	Due	Amt	Applied	Reserve	ha
OLIE LAKE AREA	4279101	13. Jul. 2015	13. Jul. 2017	\$6,000.00	\$0.00	\$0.00	243
OLIE LAKE AREA	4279121	13. Jul. 2015	13. Jul. 2017	\$2,800.00	\$0.00	\$0.00	113
OLIE LAKE AREA	4279124	13. Jul. 2015	13. Jul. 2017	\$6,400.00	\$0.00	\$0.00	259
OLIE LAKE AREA	4275721	22. Dec. 2015	22. Dec. 2017	\$1,200.00	\$0.00	\$0.00	49



PREVIOUS WORK

Previous exploration carried out in the Manitouwadge Graphite project area has been for base metals, precious metals and graphite . A brief summary of exploration programs is presented below, for a more comprehensive summary refer to the Assessment Report by R. Felix, 2012 written for Rare Earth Metals on the Manitouwadge Graphite Project.

1960: A reconnaissance geological survey of the Flanders Lake area (eastern region of the Manitouwadge Graphite project area) was carried out during the summer of 1960 by V.G.Milne, Ontario Department of Mines.

1989: Geophysical survey completed by Dighem Surveys for Noranda Exploration Services conducted over the area. A number of airborne electromagnetic (AEM) anomalies were identified in the Manitouwadge Graphite property area; one AEM anomaly trend is 4 km long coincident with a magnetic low.

1992: A new graphite occurrence, Thomas Lake Road Graphite was located nearby the subject claims by L. Brinklow and P. Nivens. Claims were staked and stripping and trenching conducted. Samples were sent out by the prospectors to evaluate the potential for base metal mineralization. Results were not encouraging. Phantom Exploration Services Ltd. of Thunder Bay, Ontario were contracted to establish a 10 km.grid, and to conduct magnetic (Scintex Omni IV) and VLF (Geonics EM-16) and HLEM (Apex Parametrics MaxMin II) electromagnetic surveys. Phantom stated that the lack of associated magnetic features with most of the main conductive trend suggests that this anomaly is due mainly to graphite.

2012: Rare Element Metals completed detailed prospecting, trenching and line-cutting activities. HLEM geophysical and geology surveys and particle size analyses, mineralogy study and metallurgical testing between March 30th and Sept 7th, 2012 on nearby Thomas Road claims.

2015: Rare Earth Metals completed a drill program on the Silver Star claims. Results indicated a graphitic zone of potential economic interest.

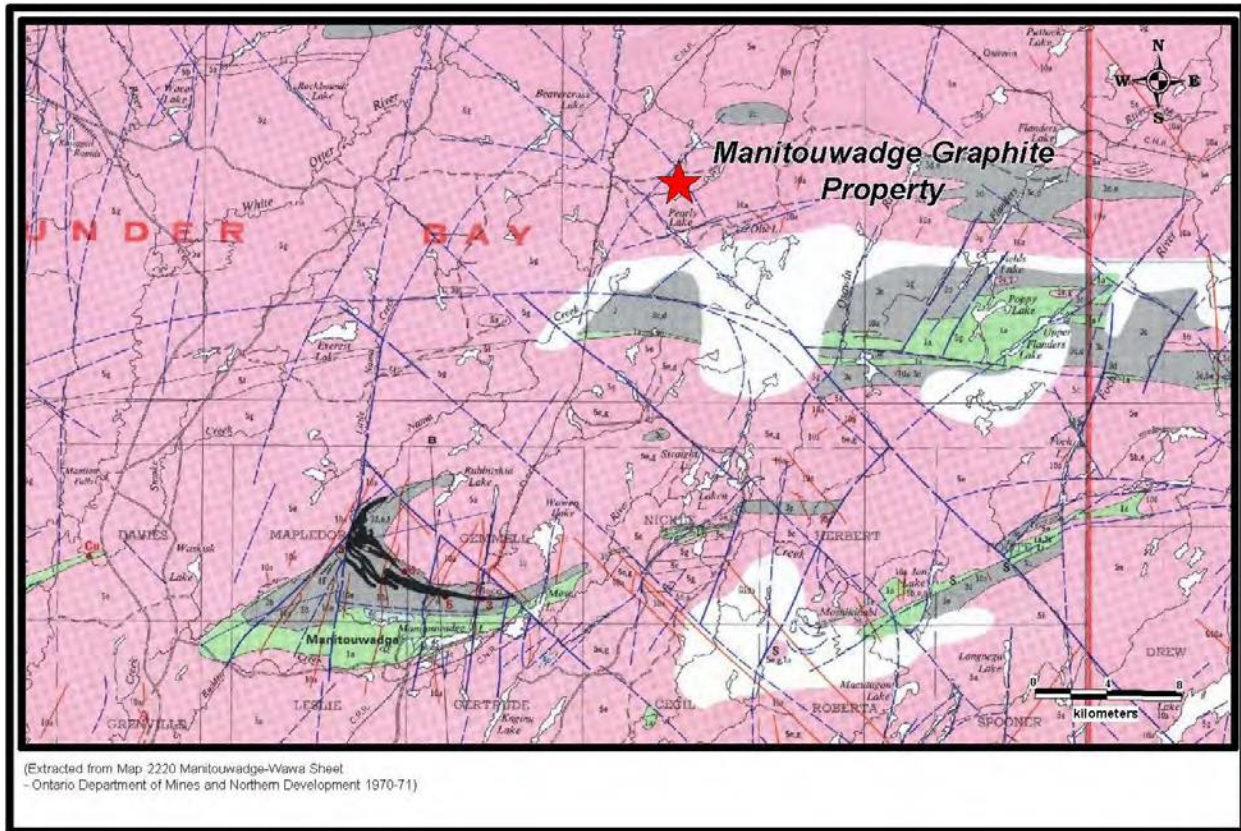
REGIONAL GEOLOGY

The Manitouwadge Graphite property is located within the Quetico Metasedimentary Subprovince of the Archean Superior Province of the Canadian Shield (Figure 3). Previous regional mapping in the area was carried out at various scales by Pye (1960), Milne (1964), Coates (1968), Giguere (1972), and Williams and Breaks (1989, 1990). A description of the Quetico Subprovince is summarized from Williams (Geological Survey of Canada, Open File 3138- Beakhouse, Blackburn, Breaks, Ayer, Stone, Scott, 94 pp, 1991):

The Quetico subprovince is a linear belt at least 800 kilometers long. Variously migmatized metasedimentary rocks, originally consisting of wacke and siltstone, predominate. The compositions and sedimentary structures have been interpreted to indicate that the supracrustal assemblage represents deposition of immature detritus from turbidity flows in a submarine basin of great lateral extent. Granitoid rocks include late, massive to foliated granodiorite to granite and minor, earlier, foliated to gneissic tonalite. The earliest tectonic deformation consists of layer-parallel shearing and associated folding which is related to regional scale fabric formation. This fabric, as well as migmatitic layering, is subsequently deformed in a second phase of more upright folding. Later structures include small-scale shear zones as well as major faults. The major faults include those which are oriented parallel to, and lie near, the subprovince boundary (Quetico, Seine River) as well as others which transect the subprovince (Gravel River, Kapuskasing Structural Zone).

Regional metamorphism occurred synchronously with the waning stages of deformation and was accompanied by partial melting in higher grade portions of the subprovince. In general, there is a progression from lower grades near the margins to higher grades in the central portions of the subprovince.

FIGURE 3: REGIONAL GEOLOGY



The general LEGEND for Figure 3 is as follows: Metasedimentary Gneiss, pink;
Metasediments, grey
Metavolcanics, green.

The Graphitic Schist Zones being targeted are found in the metasedimentary gneiss unit trending approximately east-west.

The Manitowadge property is underlain by a sequence of gneissic and migmatized meta-sedimentary rocks. Four main lithology types are:

1. Biotite Quartz Feldspar Gneiss (Migmatite):

This unit is comprised of very strongly deformed 1mm scale laminations of Biotite (10–40%), Quartz (30–40%), and (Feldspar 20–50%).

Compositional segregations of Quartz and Feldspar up to 50 cm long by 3cm wide attenuated horizons are common.

2. Garnet Biotite Quartz Feldspar Gneiss (Migmatite):

This unit is essentially the same mode and morphology as the Biotite Quartz Feldspar Gneiss, however this unit contains up to 20% fine to medium grained red-pink Garnet, occurring as sub-euhedral – euhedral porphyroblasts disseminated throughout the Biotite

Quartz Feldspar Gneiss and not affected by deformation (Garnet porphyroblasts grow across compositional banding and are not preferentially concentrated or aligned).

3. Pegmatite:

Pegmatite comprises of very coarse grained, massive Biotite (5%), Quartz (40 – 50%), and Feldspar (50 – 60%). The Pegmatite is generally discordant with the host gneisses and may represent very late stage partial melting of the arkosic, semi-arkosic sedimentary protolith.

4. Graphitic Schist

The graphitic schist is a distinctive weathering unit (1-12 meters wide), commonly exposed by the stripping and trenching by Brinklow (1992) and REM (2012) of mineralized biotite quartz-feldspathic gneiss (generally a gossanous purple-red brown to pale yellow-brown color). Graphite, pyrite and pyrrhotite occur throughout. The dominant gneissosity is generally east – west (085– 090) and steeply dipping.

ASSESSMENT WORK AND RESULTS FROM 2016-17

The work being reported in this assessment report pertains to the 2016-17 drill program carried out by Ardiden Ltd. The drilling followed up the 2015 drill results with the objective to calculate a resource.

The diamond drill program began on December 17 with Hole MW-16-01 and ended on February 24, 2017 with Hole MW-16-30. A total of 2656 meters of BQ Thin wall industry standard rods and core barrel were used with a skid-mounted drill moved between drill pads with a D-6 tractor. The downhole surveys utilized a Reflex Single shot instrument the results recorded on each drill log form. All holes were located by GPS on Claim # 4279101. The drill core is stored at 920 Poleline Road, Murillo, On.

The graphite mineralized sections were marked up during the core logging process and samples of 1 meter in length were cut with a diamond tipped saw blade. A total of 1202 samples, which includes QA/QC samples, were bagged and tagged by company personnel and delivered to ActLabs in Thunder Bay by secure transport.

The analytical package used for analysis was Code 4F-C-Graphitic Infrared. Sample blanks, duplicates and standards were inserted into the sample stream in a regular manner in addition to the laboratory's quality control procedures. Results were reported in Total Carbon Graphite % (see drill logs for results), Total Sulphur %, Carbon Total and Specific Gravity values at regular intervals (see Appendix 4 for Certificate of Analyses).

The location details of the 30 drill holes on Claim # 4279101 are detailed in Table 2.

Hole_id	x (NAD 1983 UTM Zone 16N)	y (NAD 1983 UTM Zone 16N)	max_depth	Dip	Azimuth
MW-16-01	607300	5464650	108	-45	180
MW-16-02	607240	5464650	96	-45	180

MW-16-03	607300	5464590	60	-45	180
MW-16-04	607300	5464620	78	-45	180
MW-16-05	607240	5464620	69	-45	180
MW-16-06	607240	5464680	120	-45	180
MW-16-07	607240	5464590	60	-45	180
MW-16-08	607180	5464590	61	-45	180
MW-16-09	607180	5464620	60	-45	180
MW-16-10	607180	5464650	90	-45	180
MW-16-11	607180	5464680	120	-45	180
MW-16-12	607180	5464710	139	-45	180
MW-16-13	607120	5464770	45	-45	180
MW-16-14	607120	5464740	120	-45	180
MW-16-15	607120	5464650	60	-45	180
MW-16-16	607000	5464650	60	-45	180
MW-16-17	606850	5464710	92	-45	180
MW-16-18	606850	5464680	60	-45	180
MW-16-19	607360	5464590	85	-45	180
MW-16-20	607420	5464620	138	-45	180
MW-16-21	607420	5464638	138	-45	180
MW-16-22	607420	5464590	73	-45	180
MW-16-23	607360	5464620	80	-45	180
MW-16-24	607360	5464650	84	-45	180
MW-16-25	607000	5464710	69	-45	180
MW-16-26	607000	5464680	62	-45	180
MW-16-27	607060	5464770	119	-45	180
MW-16-28	607060	5464740	150	-45	180
MW-16-29	606710	5464740	89	-45	180
MW-16-30	607060	5464800	71	-45	180
			TOTAL	2,656	

Table 2: Drill hole coordinates, depth, dip and azimuth.

The lithologies intersected in the drill holes are very similar in all holes. Overburden depths were less than 20 meters with the host country rocks being the paragneiss with biotite and/or garnet-rich varieties. It is fine to medium grained, well banded and may have pegmatite sections. The graphite mineralization is hosted within a graphitic-rich paragneiss. Drilled widths of up to 70+ meters were encountered.

Table 3 presents the significant intersections which contain graphite mineralisation that reported above the average cut-off grade of 1.0% TGC and the average grade for each significant intersection is displayed.

Hole ID	East	North	Total Depth (m)	Dip	From (m)	To (m)	Interval (m)	TGC%
MW-16-01	607300	5464650	108	-45	56.00	62.85	6.85	1.5
MW-16-02	607240	5464650	96	-45	52.00	77.00	25.00	3.1
MW-16-03	607300	5464590	60	-45	40.00	50.00	10.00	1.8
MW-16-04	607300	5464620	78	-45	34.00	74.00	40.00	1.8
MW-16-05	607240	5464620	69	-45	41.05	63.60	22.55	2.2
MW-16-06	607240	5464680	120	-45	56.00	65.00	9.0	1.4
MW-16-10	607180	5464650	90	-45	40.9	61.16	20.26	1.6
MW-16-11	607180	5464680	120	-45	34.00	111.00	77.00	2.2
MW-16-12	607180	5464710	139	-45	108.5	134.75	26.75	1.9
MW-16-14	607120	5464740	120	-45	67.3	113.00	45.70	2.5
MW-16-15	607120	5465650	60	-45	34.80	39.20	4.40	1.42
MW-16-17	606850	5464710	92	-45	30.50	66.50	36.00	2.33
MW-16-19	607360	5464590	85	-45	38.00	44.00	6.00	2.63
MW-16-20	607420	5464620	138	-45	16.70	19.00	2.30	2.53
MW-16-20	607420	5464620	138	-45	66.00	70.00	4.00	2.28
MW-16-21	607420	5464638	138	-45	31.50	35.60	4.10	1.36
MW-16-21	607420	5464638	138	-45	82.35	90.00	7.65	1.80
MW-16-23	607360	5464620	80	-45	14.00	27.00	13.00	2.30
MW-16-23	607360	5464620	80	-45	32.00	37.60	5.60	1.56
MW-16-23	607360	5464620	80	-45	63.20	71.10	7.90	1.95
MW-16-24	607360	5464650	84	-45	60.00	74.25	14.25	1.36
MW-16-25	607000	5464710	69	-45	39.30	49.00	9.70	2.31
MW-16-25	607000	5464710	69	-45	55.25	59.55	4.30	1.83
MW-16-26	607000	5464680	62	-45	35.70	37.85	2.15	2.68

MW-16-28	607060	5464740	150	-45	78.60	144.00	65.40	1.73
MW-16-29	606710	5464740	89	-45	61.90	77.20	15.30	2.72
MW-16-30	607060	5464800	71	-45	27.50	44.00	16.50	1.48

Table 3. Average Grade results for drill holes MW-16-01 to MW-16-30 at Manitouwadge Graphite Project, using an average cut-off grade of 1% TGC. Holes not included do not meet the average cut-off grade of 1 %. True widths of the intervals is not available at this time.

NB: The mining land boundaries are absent from the drill plan due to scale restrictions for the presentation of the DDH collars. Drilling was on Claim 4279101.

NB: Drill Holes MW-16-4 to 30 are alternately labelled MW-17-4 to 30 in the logs as they were drilled in 2017.

The results included several thick zones of strong graphite mineralization as well as several narrow higher grades within the overall mineralized envelope on the Silver Star North Property. The vertical drill sections illustrate the vertical and along-strike continuity of the anomalous graphite zone.

CONCLUSIONS AND RECOMMENDATION

The drill program was successful in delineating a potential economic flake graphite zone that is open along strike and to depth.

More drilling is warranted to expand the size of the graphite zone.

REFERENCES

Gionet, G. 1998. Beaver cross Area Technical Report; Ontario MNDM AFRI File: 42F05NE2001

Hines, P. and Landry, R.M. 1994. Industrial Mineral Occurrences and Deposits in Northwestern Ontario; Ontario Geological Survey, Open File Report 5889, p 128 -131.

Jagodits, F.L. 1994. Report on Ground Geophysical Surveys, Foch 4 Project, Foch Township, Hornepayne Area, Ontario, Project 209, NTS 42F/3. MNDM Assessment File W9460.0202

McConnell, D.L., 1989. Dighem IV Survey for Noranda Exploration Company, Limited, Geco Manitouwadge Airborne GAEM JV, Manitouwadge, Ontario, NTS Sheets 42 C,D,E,F., Assessment Report Number W9004.97

McKay, D.B., 1994. Mineral Occurrences of the Manitouwadge Area; Ontario Geological Survey, Open File Report 5906.

Milne, V.G.1964. Geology of the Flanders Lake area, Thunder Bay and Algoma Districts; Ontario Department of Mines, Geological Report, 21, 18 p.

Ontario Geological Survey 2002. Ontario airborne geophysical surveys, magnetic and electromagnetic data, Manitouwadge area; Ontario Geological Survey, Geophysical Data Set 1205 - Revised.

Pye, E.G. 1960. Geology of the Manitouwadge area; Ontario Department of Mines, Annual Report, Volume LXVI, part 8, (1957), 1-114.

Schnieders, B. and Smyk, M. 1997. Newsome, J.W. and Laderoute, D. (Editors). Report of activities 1996, Resident Geologists; Ontario Geological Survey, Open File Report 5958, 465p.

Zaleski, E. and Peterson, V.L. and H. Lockwood and van Breernen, O. 1995. Geology, Structure and Age Relationships of the Manitouwadge Greenstone Belt and the Wawa- Quetico Subprovince Boundary, North western Ontario on Lake Superior Geology 41st Annual Meeting, May 13-18, 1995, Marathon, Ontario Proceedings Volume 41: Part 2b Field Trip Guidebook

APPENDICES

Appendix 1 - Drill Logs (MW16 – 1 to 3 and MW17 – 4 to 30)

Appendix 2 - Drill Sections

Appendix 3 - Drill Collar Plan

Appendix 4 - Certificate of Analysis

Appendix 1 – Drill Logs (MW16 – 1 to 30)

Please refer to Separate File for logs in excel spreadsheet format.

(2016-17 Manitouwadge Graphite Project)

Geological Logging Codes



OXIDATION	
WOX	weakly oxidised
MOX	moderately oxidised
SOX	strongly oxidised
FRS	bedrock fresh

LITHOLOGY

Volcanic Rocks	
NVO	Volcanic nondescript
VDA	dacite
VAN	andesite
VRH	rhyolite
VTU	tuff
VTP	lapilli tuff
VTX	crystal tuff
VTK	lapilli crystal tuff
VTL	lithic tuff
VTG	ignimbrite
VBA	basalt
VRD	rhyodacite
VTR	trachyte
VAG	agglomerate
VXY	pyroclastic breccia
VXV	volcanic breccia
VCV	volcanic conglomerate

Intrusive Rocks

IGN	Igneous nondescript
GDI	diorite
GAB	gabbro
GGT	granite
GGD	granodiorite
GSY	syenite
GMD	monzodiorite
GMO	monzonite
GTO	tonalite
GAN	anorthosite
GNO	norite
GGN	gabbronorite
GTC	troctolite
GOG	olivine gabbronorite
GPO	porphyry
GPE	pegmatite
GDB	diabase/dolerite

Ultramafic Rocks

LPE	peridotite
UDU	dunite
UPX	pyroxenite
UPO	orthopyroxenite
UPC	websterite
UHZ	harzburgite
UWR	wehrlite
UOW	olivine websterite
USP	serpentinite
UMU	ultramafic rock

Sedimentary Rocks

NSE	Sedimentary nondescript
SSS	sandstone
SCO	conglomerate
SCY	clay
SSL	lithic sandstone
SST	tuffaceous sandstone
SSQ	quartz sandstone
SED	undifferentiated sediment
SSH	shale
SSI	siltstone
SCP	polymictic conglomerate
SCM	monomictic conglomerate
SLS	limestone
SLD	dolomite
SLM	calcareous mudstone
SMU	mudstone
SXP	polymictic breccio-conglomerate
SXM	monomictic breccio-conglomerate

Metamorphic rocks

NME	Metamorphic nondescript
MAM	amphibolite
MCS	calc-schist
MGN	gneiss
MGM	migmatite
MSC	Schist
MMY	mylonite
MLS	Marble
MQZ	Quartzite

Breccias

XPO	polymictic breccia
XMO	monomictic breccia
XCO	composite breccia
XXB	undifferentiated breccia

Other

NND	nondescript
FAG	fault gouge
OBO	overburden / scree
WST	waste
OID	void
OIF	void fill
OIS	insufficient
ARM	ground support
VEN	vein
VQZ	quartz vein

Regolith	
RSO	soil
RAV	alluvium
RCV	colluvium
RSD	sand
RSI	silcrete
RCA	calcrete
RSA	saprolite
RSP	saprock

GRAINSIZE

FG	fine grained
IMG	medium grained
CG	coarse grained
VC	very coarse grained
PE	pegmatitic
CL	clay
SI	silt
RS	very fine sand
FS	fine sand
MS	medium sand
CS	coarse sand
VS	very coarse sand
GR	granule
PB	pebble
CO	cobble
BO	boulder

LITHOLOGY TEXTURE

MA	massive
PO	porphyritic
AM	amygdoidal
VE	vesicular
BX	brecciated
LM	laminated
BN	banded
BD	bedded
BT	thick bedded
XS	matrix supported
CS	clast supported
PI	pillowed
AP	aphanitic
HM	hypidomorphic
HA	allotriomorphic
PS	poorly sorted
MS	moderately sorted
WS	well sorted
OP	ophitic
OS	sub-ophitic
GR	granular
HO	holocrystalline
GP	graphic
MG	micrographic
MK	myrmekitic
CR	carbonate replacement

COLOUR

BK	black
BL	blue
BN	brown
CR	cream
GN	green
GO	gold
GY	grey
LM	lime
MV	mauve
OL	olive
OR	orange
PK	pink
PP	purple
RD	red
WH	white
YW	yellow

Colour intensity

W	weak
M	medium
S	strong

STRUCTURE

SH	shear
FR	fracture
JT	joint
FO	foliation
SL	slikenside
BU	boudinage
FA	fault
CO	contact
BM	blastomylonitic
BX	brecciated
MY	mylonitic
XE	xenolithic
PO	porphyritic
LI	lineation
CL	cleavage
CR	crenulation
FH	fold hinge
VN	vein
BD	bedding

ALTERATION

Alteration style	
PA	Patchy
VN	veined
SV	selvedge
PE	pervasive
DI	disseminated
MO	mottled

Alteration intensity

TR	trace
WE	weak
MO	moderate
ST	strong
IN	intense

Alteration type

AA	advanced argillic
AR	argillic
PR	propylitic
PH	phyllitic
CA	carbonate
SI	silicic
PO	potassic
SE	sericitic
ZE	zeolitic
CH	chlorite
GR	graphite

Alteration location

MTX	matrix
CLS	clast
WHO	whole rock

VEIN

Vein style

MA	massive
NW	network
SH	sheeted
ST	stockwork
TE	tensional

Vein texture

CC	coarse crystalline
CO	colloform
CR	crustiform
BL	bladed
LM	laminated
BA	banded
MA	massive
SA	sacchroidal
CB	comb
ZO	zonal
SH	sheared
VU	vughy
BX	brecciated

MINERALS

Non sulphides

AC	actinolite
AD	adularia
ALA	alabandina
FB	albite
AL	alunite
QA	amethyst
AM	amphibole
AN	andalusite
AY	anhydrite
PA	augite
BA	barite
BT	biotite
CL	calcite
CA	carbonate
SC	chalcedony
CH	chlorite
CY	clay
CR	crystallite
DI	dickite
PD	diopside
CD	dolomite
PE	enstatite
EP	epidote
FL	Fluorite
MF	fuchsite
GN	garnet
GO	goethite
GR	graphite
GY	gypsum
HM	hematite
IT	illite
IM	ilmenite
JA	jarosite
KA	kaolinite
KF	k-feldspar
LE	leucoxene
LI	limonite
MG	magnesite
MT	magnetite
MA	malachite
MN	manganese oxide
ME	melanterite
MI	mica
MU	muscovite
CU	native copper
FL AP	Flour apatite

AU	native gold
AG	native silver
OL	olivine
OP	orthopyroxene
PL	plagioclase
PM	plumosite
PO	pyrolusite
PX	pyroxene
QZ	quartz
RH	rhodocrosite
RU	rutile
SE	sericite
SD	siderite
SI	silica
SM	smectite
SN	sphene
TA	talc
TO	tourmaline
TR	tremolite
ZE	zeolite

Sulphides

AGS	Ag sulphide/sulphate
APY	arsenopyrite
BN	bornite
CPY	chalcocopyrite
CZ	chalcocite
CV	covellite
GA	galena
IMC	marcasite
MO	molybdenite
PY	pyrite
PR	pyrrhotite
SP	sphalerite
SPM	sphalerite-metallic
SPR	sphalerite-red
SPY	sphalerite-yellow/brown
SB	stibnite
SU	sulphides
TE	Telluride

Sulphide location

MTX	matrix
CLS	clast
WHO	whole rock

Sulphide style

DI	disseminated
MA	massive
MO	mottled
PE	pervasive
SV	selvedge
VN	veined

Sulphide oxidation

OX	oxidised
SU	supergene
TN	tarnished
FR	fresh

Sulphide and non sulphide texture

PH	phenocryst
MX	matrix
MA	massive
ME	mesostasis
IN	infill
VE	vesicle fill
AV	very angular
AG	angular
AS	sub angular
RS	sub rounded
RD	rounded
RW	well rounded
EH	euhedral
SH	subhedral
AH	anhedral
BL	bladed
BB	bladed in rounded voids
MB	massive in rounded voids

GEOLOGICAL CORE LOG

MW-17-01

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: December 19-20, 2016	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: 24/10/2016	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607300	NORTHING: 5464650	ELEVATION: 372m	DIP: -45°



ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	26.55																	overburden, no recovery, swamp organics mostly
26.55	30.15																	overburden, clay with 10% heterolithic subangular pebbles
30.15	57.00			FRS	MGN	MA BN	GY-BL BLK	45						PY	BI	57		Biotitic Paragneiss; crudely banded or locally massive. Strong shiny blk Biotite 25-40%. Dominantly blue-gry mgr to cgr qtz with pk to white Fsp. Moderately to strongly fractured often with chlorite or carb coatings (+ local clay infill). Traces of FC Py. Biotite can be very blk, somewhat shiny and scratch to powder, ie resembles graphite, however is non-conductive. Lower contact sharp with dykelet -no ori line.
		39.70	40.50	FRS														75% very blk amorphous soft Biotite -possibly ?graphite but lacks greasy feel and lustre. (Sampled)
		56.80	57.00	FRS	IGN	MA	GY PK											Fgr felsic to intermediate dykelet; qtz/fsp rich -flecked with 1-2% Py throughout. Lower contact to graphite unit is ground by drill.
57.00	58.45			FRS	FLT	BX	BK WH PK										25	Graphitic fault; Massive fgr blk garph from 57.0 to 57.3 (broken to fine rubble) then rock becomes brecciated with a graphitic matrix. Grph is very fgr and not flaky -likely ground by fault . Sections contains 10cm sections of intact gneiss with qtz and pk fsp. Estimated 25% graphite overall for section.
58.45	61.85			FRS	MGN	MA BN	GY-BL BK	48						PY	BI		1.5	Biotitic Paragneiss; crudely banded or locally massive. 1-3% fgr-mgr flaky graphite as fine bands or interstitial to qtz/fsp. Biotite 25-40%. Dominantly blue-gry mgr to cgr qtz with pk and white Fsp. Generally weakly fractured. Traces of FC Py.
61.85	70.12			FRS	MGN	MA BN	PK GY BK							PY	BI			Biotitic Paragneiss; very crudely banded. Biotite rich (up to 35%) dominantly pink Kspar + lesser blue-gry qtz. Kspar can be very cgr. Locally specked with subhedral slightly reddish garnet. Biot can have a silvery metallic lustre. 69.0-69.3 contains 1-2% flaky (mm scale) graphite
70.12	77.10			FRS	MGN	MA BN	GY-BL BK							PY	BI		12	Graphitic Paragneiss; Graphite componenet is highly variable, typically mettalic gry/blk interstices except seams of intense graph noted below. Host gneiss is dominantly biotite, pk to slightly orangish Fsp and gry qtz. Local interstitial and FC Py up to 1-2%. Section averages some 12-15% Graphite -flakes can locally reach up to 5mm
		70.12	70.63	FRS		MA	BK							PY			60	Intense coarse flaky (up to 5 or 6mm) graphite randomly oriented xtals. Approx 60-65% Graphite. 2-3% fgr anhedral Py
		75.20	75.57	FRS	GPE	MA	GY OR											Pegmatite dykelet; Cgr gry qtz and orangish Fsp, traces of graph. Sharp contacts aat 45 and 55deg -no ori line.
		75.83	77.10														60	Intense coarse flaky (up to 5 or 6mm) graphite -typically banded. Approx 60-65% Graphite. Contains a Fgr inermediate massive dylelet from 76.78 to 76.93m. Traces of Py <1%
77.10	91.12			FRS	MGN	MA BN	PK GY BLK	60					PY	BI			2	Biotitic Paragneiss; very crudely banded as well as well developed fine banding with fgr sections. Biotite rich (up to 35%) dominantly pink or orangish Kspar & gry qtz. Cgr gneiss alternates with multi-cm sections of fgr material. 1 to locally 5% flake graphite , <1 to 2mm. Graph as interstitial-disseminated grains/flakes or as wispy fine bands with host fabric. Localized Py <1%.
		82.00	82.40	FRS	GGT	MA	PK OR											Fgr granitic dyke. Pk-orangish vgr Fsp groundmass intimate with much lesser qtz and flecked with minor biotite. Distinct contacts at 35deg TCA
91.12	94.94			FRS	GPE	M	PK OR GY											Pegmatite dyke; Dominantly pink to slightly orangish vcgr Kspar with much lessr gry qtz and 2-3% blk biotite. Somewhat diffuse-irregular contacts.

GEOLOGICAL CORE LOG

MW-17-06



ARDIDEN

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: January 11-12, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		DEPTH: 120	
EASTING: 607240		Core Size BTW	
NORTHING: 5464680		AZIMUTH: 180°	
ELEVATION: 372m		DIP: -45°	

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	12.90																	Overburden, a few ground cobbles recovered
12.90	53.80			FRS	MGN	MA BN	BE GY BK	45					GN	PY	BI			Felsic gneiss; mostly massive with fgr biotite rich sections yeilding well developed gneissic banding @ 45 TCA. Rock is relatively felsic and hard -dominantly cgr beige -pink fsp and gry qtz. Ave of only 8-10% biotite here; fgr-cgr, can be concentrated in fine bands or coarse 'clots'. Common pk subhedral vfgr to 5mm garnet. Ave of approx 0.5% fgr disseminated brassy Py +/- CPY?. Weak to mod fracturing often with carb/chl/MnO coatings.
		37.80	40.20	FRS	GPE	MA	GY BE							PY				Pegmatite dyke; Massive mostly vcgr be-pk Fsp (Kspar) with gry qtz and 5-8% fgr-mgr Biot. Traces of Py. Hard and competent. Distinct contacts at 40 & 50 deg TCA
		50.10	50.75	FRS	GPE	MA	GY BE											Pegmatite dyke, as above in 37.8-40.2. Contacts are x-cutting gneissic banding at 38deg TCA
53.80	66.10			FRS	MGN	MA BN	BE GY BK	65						PY	BI		0.5	Biotitic paragneiss; Similar material to 12.9-53.8 only with the appearance of vfgr interstitial -disseminated (but flaky) graphite. Generally less than 1% graph with higher grade sections noted below. Graph can very locally be along fractures, patchy-sporadic distribution. Gneiss contains sections up to 2m of fgr relatively homogenous to faintly banded material. Local anhedral Py up to 2-3%. mgr to vcgr beige/pink fsp with gry qtz, however biot from 25-40%. gneissic banding dominantly @ 65deg TCA
		56.65	57.65															3 As above with 2-4% flake graphite. Disseminated and faintly banded
		60.80	61.00															25 >25% fgr-mgr flaky graphite. Banded @ 60 TCA
66.10	82.65			FRS	MGN	MA BN	BL GY BK	65					GN	PY	BI			Biotitic gneiss; Relatively felsic mgr to vcgr beige, yell, white & pk Fsp with blue-grey qtz and approx 25-35% finer grained biot. Cgr sections are intercalated with multi-cm sections of darker fgr material. Crude banding ranges from 45-70deg TCA. Local subhedral pk garnet. Unit is strongly fractured locally introducing weak oxid'n. Trace to locally 1% brassy anhedral interstitial Py. 69.0-71.0 is massive fgr and homogenous (possible dyke ?)
82.65	86.00			FRS	MGN	MA BN	BL GY BK	50						PY	BI		3	Biotitic paragneiss; 1-5% fgr-locally mgr flake graph -disseminated/interstial. One higher grade section of graphite noted below. Blotchy appearance with crude banding @ 50deg TCA. gen cgr-vcgr beige & pk fsp with blue-grey qtz and 35-45% blk mostly fgr biot. Brassy anhedral Py up to 2-4%. Gneissic banding dominantly @ 50deg TCA
		87.25	87.90														10	10-15% fine flaky graphite. Core broken to angular rubble
86.00	110.80																0.5	Biotitic gneiss; Relatively felsic, blotchy mgr to vcgr beige & pk Fsp with blue-grey qtz and approx 25-35% finer grained biot. crude gneissic banding dominantly at 50deg . Trace to locally 2% brassy anhedral interstitial Py. Unit contains 0.2-1% fgr graphite disseminated/interstitial. Somewhat patchy distribution but nearly ubiquitous. Local higher grade concentrations noted below.
		94.70	95.30											PY			3	2-5% disseminated fgr flaky graphite, with 2% Py
		97.00	105.00														0.1	As above but with only traces to 0.2% fgr graphite -patchy distribution
		108.15	109.40	FRS	GPE	MA	PK								PY			Massive pegmatite dyke; Vcgr and very pink Kspar and gry qtz. Trace Py,

GEOLOGICAL CORE LOG

MW-17-11

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: January 17-18, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607180	NORTHING: 5464680	ELEVATION: 372m	DIP: -45°



ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	31.80				OVBN													no recovery except 55cm of ground cobbles
31.80	34.00				OVBN													cored intact clay/silt and rounded pebbles
34.00	58.40	34.00	37.00		MGN	BA	GY BK BE	50					PY					Graphitic paragneiss; 20-45% blk mostly fgr (locally cgr 'spots') of biotite. Beige/cream Fsp with gry Qtz can be vcgr in select bands and sections. Generally mod to well developed banding throughout. Banding varies from 40 to 70deg TCA, but dominantly @ 50deg TCA. Generally 0.5-1.5% vfgr disseminated graphite in host rock but sporadic or patchy distribution. Numerous multi-cm sections and bands of concentrated graphite pushes overall ave up considerably. Approx ave 3% for unit with high grade sections noted below. Graph becomes coarser grained and flaky where concentrated and has a strong affinity for brassy anhedral Py (+ CPY??) which can reach 3%. Moderate to strong fract'g commonly with chl, clay and Mno coatings.
		37.00	37.08										PY				80	Band of intense graphite, Approx 80% cgr flaky @ 60 TCA, 3% anhedral vfgr Py
		37.08	38.92														2.5	as above in 34.0-58.4
		38.92	39.17										PY				40	interval has two 7cm bands of intense mgr-cgr flky graphite. 1-2% Py
		39.17	40.70														2.5	as above in 34.0-58.4
		40.70	41.25										PY				25	sections contains > 25% flaky graphite concentrated in bands @ 55deg TCA
		41.25	4.13														2.5	as above in 34.0-58.4
		46.13	46.60										PY				20	sections contains > 20% flaky graphite disseminated and banded -7cm of core loss here. 1-2% PY
		46.60	50.30														2.5	as above in 34.0-58.4
		50.30	51.05										PY				12	sections contains 12-15% flaky graphite disseminated -interstitial and banded. 1%
		51.05	54.00														2.5	as above in 34.0-58.4
		54.00	54.50														0	Pegmatite dykelet; Vcgr pinkish Kspar and gry Qtz with minor biot. Irregular contacts
		54.50	54.86										PY	CPY			45	>45% graphite mostly as irreg or wavy bands. With 3-4% anhedral Py + CPY
		54.86	58.20														2.5	as above in 34.0-58.4
		58.20	58.40														15	15-20% finely banded mgr graphite.
		58.40	61.25										PY				0.1	Biotitic gneiss; As above but with only traces of vfgr disseminated graphite, 1-2% diss Py throughout. Section is mostly fgr dark, faintly banded and rel homogenous.
61.25	77.50	61.25	70.30		MGN	BA	GY BK BE	50					PY				5	Graphitic paragneiss; Coarse textured '-blotchy' appearance with mostly coarse very poorly defined banding. Fsp is beige/cream & locally white, mgr-cgr. Locally brecciated with chl, graph, Py matrix. Overall average of at least 5% graphite. Patchy -sporadic distribution. Local bands and sections of intense graphite noted below. Core is gen highly fractured commonly broken to angular rubble with graph or chl/carb fracture coatings. 0.5-1% diss anh Py.
		70.30	72.25										PY				60	Intense near massive vcgr flaky graphite. 2% anhedral Py
		72.25	74.30														5	as above in 61.25-77.5
		74.30	75.00										PY				65	Intense near massive vcgr flaky graphite, > 65%. 2% anhedral Py, Brecciated

GEOLOGICAL CORE LOG

MW-17-12

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: January 19-20, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607180	NORTHING: 5464710	ELEVATION: 372m	DIP: -45°



ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	3.60				OVBN													overburden, a few ground pebbles/cobbles recovered
3.60	60.24	3.60	31.45	FRS	MGN	MA BN	GY BK BE	60					PY	GN				Biotitic Gneiss; relatively massive and leucocratic, very poorly developed gneissic banding, mostly at 60deg TCA. Dominantly cgr-vcgr beige Fsp with xtals up to 2.5cm and gry qtz. 12-25% biotite -mgr to cgr. Very local minor pink subhedral garnet. Trace to locally 1% shiny or brassy anhedral Py, nearly ubiquitous. Very competent and only weakly fractured. Fract'g commonly with MnO coatings. NO graphite observed.
		31.45	34.00	FRS	MGN	MA	GY BE											Section is Very felsic. Predominantly fgr-mgr beige fsp and gry qtz with only 5-8% spotted blk biotite. Diffuse contacts - massive.
		34.00	35.40															As above in 3.6-60.24
		35.40	36.07	FRS	GPE	MA	GY BE									57		Pegmatite dykelet; Vcgr -pegmatitic beige-orangish Kspar and gry qtz with 2-3% biotite. Upper contact diffuse, upper contact at 57deg TCA
		36.07	40.86															As above in 3.6-60.24
		40.86	41.46	FRS	IGN	MA	GY BE									38		Granitic -aplitic dykelet; Fgr massive and homogenous. Gry qtz and fgr fsp with some 15% fgr biotite flecked throughout. Sharp distinct contacts but no ori line due to broken core.
		41.46	41.70	FRS	FLT		GY BK									38		Late brittle fault; blk and gry biot + qtz sand and rubble.
		41.70	60.24										GN	PY	CPY			As above in 3.6-60.24 with local traces of CPY
60.24	61.74				MGN	MA BN	BL-GY BK BE	45					PY				0.3	Graphitic paragneiss; Similar gneiss to above but with the appearance of approx 0.3% fgr interstitial graphite and absence of garnet (garnet and graph appear to be mutually exclusive). Crudely banded at 45deg TCA. Local 'blotchy' appearance with clots of cgr biotite. Trace to 0.5% Diss and FC Py.
61.74	64.08				MGN	MA BN	BK GY BE	45					PY				25	Graphite horizon; 15-75% coarse flaky graphite as wispy fine laminae. Semi-massive and interstitial to qtz/fsp & minor biotite gangue. 1-3% vfgr anh brassy Py often intimate with graph.
64.08	65.60												PY				3.5	As above but rich in beige-orangish Fsp and gry qtz with only 3-5% mostly interstitial flake graphite .
65.60	68.95				MGN	MA BN	BK GY BE	60					PY				1	Graphitic paragneiss; Mostly fgr homogenous with faint fine gneissic banding @ 60TCA, with local multi-cm quasi bands of Vcgr Be-or Fsp and gry qtz. 0.5-1% Fgr interstitial graphite + one 15cm band of intense (50-75%) coarse flaky graph at 68.4m . 1-3% anhedral diss Py
68.95	69.95				MGN	MA BN	BK GY BE	65					PY				35	Graphite horizon; 25-55% flaky graphite as wispy fine laminae. Semi-massive and interstitial to qtz/fsp & minor biotite gangue. 1-3% vfgr anh brassy Py often intimate with graph. Poorly defined banding at 65-85deg TCA.
69.95	75.90				MGN	MA BN	BK GY BE	60					PY				0.5	Graphitic paragneiss; Mostly fgr homogenous with faint fine gneissic banding @ 60TCA, with local multi-cm quasi bands of Vcgr Be-or Fsp and gry qtz. 0.5-1% Fgr interstitial graphite . 1-3% anhedral disseminated/interstitial Py
75.90	78.20				MGN	MA BN	BK GY	65					PY				5	graphitic paragneiss; mostly vfgr dk blu-gry to blk, homogenous but with fine, well developed banding @ 60-70deg TCA. Fine interstitial or wispy fine mm bands of flake graph -can be vfgr to mgr. 2-3% vfgr diss anhedral Py.

GEOLOGICAL CORE LOG MW-17-14

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: January 24-25, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607120	NORTHING: 5465740	ELEVATION: 372m	DIP: -45°



Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	12.60				OVBN													1m of ground cobbles, boulder
12.60	67.30			FRS	MGN	MA BN	BL GY BK						GN	PY				Biotitic Paragneiss; Gen quite felsic rich in cloudy beige or creamy white Fsp + gry Qtz and spotted with bk biot, but with multi-cm to meter scale sections of blk biotite rich material. Banding is mostly coarse and poorly developed. Banding dominantly at 60deg TCA but varies. Mod to strong fracturing commonly with Carb, chl or MnO. Local yell Lim staining of fsp penetrative about select fractures. trace diss & FC Py. NO Graphite observed. 1-3mm subhedral pk garnets appear at 56m. Material becomes considerably more mafic at 53.7m with 35-60% biotite.
67.30	80.00	67.30	69.90	FRS	MGN	MA BN	BL GY BK	55					PY				2.5	Graphitic Paragneiss; Similar to above but with more mafic with 35-55% blk biotite and graphite. Gen 1-3% fgr interstitial flake graphite variable or patchy distribution but gen throughout with higher grade sections and bands noted below. Banding is rel well developed dominantly @ 45-60deg TCA. 1-2% diss or FC fgr Py throughout. 2-3% Py with higher grade graph. Mod to strong fracturing commonly with chl/carb or graph coatings-slips.
		69.90	69.97										PY				65	Banded graphite >65% mgr flaky graph. 2-3% anhed Py
		69.97	74.00										PY				2.5	As above in 67.3 to 80.0
		74.00	74.20										PY				50	Banded graphite >50% mgr flaky graph. 2-3% anhed Py
		74.20	80.00										PY				2.5	As above in 67.3 to 80.0
80.00	84.50			FRS	MGN	MA BN	GY BK	50					PY	CPY			12	Graphitic Paragneiss; Approx average of 12-15% interstitial, banded and near pervasive graphite, vfgr to cgr flake. Host rock is quite homogenous mgr and massive except graph banding. 1-2% diss or FC fgr Py +/- CPY? throughout. 2-3% Py with higher grade graph.
84.50	94.60	84.50	86.20	FRS	MGN	MA BN	GY BK	55					PY	CPY			3.5	Graphitic Paragneiss; Averages at least 3.5% Interstitial and banded flake graph. Vfgr to coarse flake where concentrated. Rel biot rich 35-55% -fgr-mgr with 'blotches' and coarse poorly developed gneissic banding with cgr gry Fsp + gry Qtz. Banding dominantly @ 55 TCA. 1-2% diss and locally clotted anhed brassy Py with very local CPY. Sulphides have an affinity to graphite.
		86.20	86.30										PY				25	Banded graphite >25% mgr flaky graph. 1% anhed Py
		86.30	88.60										PY				3.5	As above in 84.5-94.6
		88.60	88.95										PY				25	Banded graphite >25% mgr flaky graph. 2% anhed Py
		88.95	92.55										PY				3.5	As above in 84.5-94.6
		92.55	92.95										PY				20	Irregularly banded graphite >20% mgr flaky graph. 2% anhed Py
		92.65	94.20										PY				3.5	As above in 84.5-94.6
		94.20	94.60										PY				25	Irregularly banded graphite >25% mgr flaky graph. 2% anhed Py, intimate with graph
94.60	105.20			FRS	MGN	MA BN	GY BK	55					PY				1	Graphitic Paragneiss; Averages approx 1% graphite , Interstitial + local banded flaky, can be vfgr except where concentrated. 15-35% -fgr-mgr with 'blotches' and coarse poorly developed gneissic banding with cgr gry Fsp + gry Qtz, with fgr-mgr homogenous sections. Banding dominantly @ 55 TCA. 1-2% diss anhed brassy Py throughout.
		102.40	102.50										PY				20	Irregularly banded graphite >20% mgr flaky graph. 2% anhed Py

GEOLOGICAL CORE LOG MW-17-17




ARDIDEN

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: January 27-28, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 606850	NORTHING: 5464710	ELEVATION: 372m	DIP: -45°

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	30.50				OVBN													overburden; 1.2m of ground cobbles + minor sand recovered
30.50	42.15			FRS	MGN	BN MA	BL GY BK	55					PY					1.5 Graphitic Paragneiss; Banding both as fine and well developed as well as coarse poorly developed 'blotchy' cgr gry-beige fsp and gry qtz. Also vfgr relatively homogenous sections (mostly fgr dark homogenous gneiss from 30.5-38.2m) Average of at least 1.5% fgr- locally cgr flake graphite. higher grade sections and bands noted below. 1-2% fgr anhedral Py displays an affinity for graph rich sections. Rock is commonly strongly fractured and locally broken to angular rubble. Fract's can be coated with chl, carb local Mno and local graph.
		30.50	31.60										PY					5 As above but averages some 5% interstitial and wispy irreg banded fgr to mgr graphite.
		31.60	32.15										PY					1.5 As above in 30.5 to
		32.15	32.22															35 7cm of very strong banded graphite, >35%
		32.22	36.80										PY					1.5 As above in 30.5 to
		36.80	37.03										PY					12 As above but averages some 10-15% interstitial + banded fgr to mgr graphite. 1-2% anhed Py
		37.03	41.08										PY					1.5 As above in 30.5 to
		41.08	41.15										PY					65 Banded intense cgr flake graphite, >65%, 2% Diss Py
		41.15	41.92										PY					1.5 As above in 30.5 to
		41.92	42.15										PY					65 Banded intense cgr flake graphite, >65%, 2% Diss Py
42.15	49.50	42.15	49.50	FRS	MGN	BN MA	BL GY BK	55					PY	GN				0.3 Paragneiss as above but graphite wanes to 0-0.5% and local mm pk garnets appear. Very coarse textured mostly poorly defined banding dominantly at 55deg TCA. Tr-1% Diss Py. Moderate to strong fracturing.
49.50	66.50	49.50	62.95	FRS	MGN	BN MA	BL GY BK	55					PY					2 Graphitic Paragneiss; Banding both as fine and well developed as well as coarse poorly developed 'blotchy' cgr gry-beige fsp and gry qtz. 1-3% vfgr- locally vcgr flake graphite. graph grades vary considerably however interstitial vfgr graphite is near ubiquitous. 1-2% fgr anhedral Py displays an affinity for graph rich sections. Rock is commonly strongly fractured and locally broken to angular rubble. 50.9-54.2 is highly fractured and broken to rubble -commonly on graphitic planes. Gradational lower contact with waning of graphite.
		62.95	63.05										PY					25 >25% coarse flaky graphite; irregular banding. 1% Diss anhed PY
		63.05	64.80										PY					2 As above in 49.5-65.5
		64.80	65.00										PY					30 >30% coarse flaky graphite; irregular banding. 1% Diss anhed PY
		65.00	66.50										PY					1 As above in 49.5-66.5
66.50	92.00	66.50	74.63	FRS	MGN	BN	GY BK	60					PY	GN				biotitic paragneiss; Similar to above but NO graphite. Relatively leucocratic-felsic, 1235% fgr-mgr biotite. Cloudy beige FSP and gry qtz. Banding is mostly well developed dominantly at 60 deg TCA but variable. Trace diss and FC Py. Generally weakly fractured and competent. Fract'g commonly with MnO coatings. Appearance of very localized pk garnet near 74.9m -up to 5mm, minor amounts becoming more common downhole. Local cm scale bands or possible intercalated small pegmatite dykelets with rock fabric -banding.
		74.63	74.90	FRS	GPE	MA	BE PK											pegmatite dykelet; Mostly cgr diffuse pk-beige Fsp with gry qtz upper contact irregular, LC sharp at 55deg TCA
		74.90	80.80	FRS	MGN	BN	GY BK	60										As above in 66.5 to 92.0
		80.80	81.53	FRS	IGN	MA	WH											Granitic dykelet; creamy white vfgr fsp + qtz flecked with fgr-mgr blk biotite. Sharp contacts at 45 and 40deg TCA

GEOLOGICAL CORE LOG

MW-17-18

GEOLOGICAL CORE LOG															MW-17-18				
CLAIM NUMBER: 4279101										DISTRICT of THUNDER BAY					 ARDIDEN				
PROJECT: MANITOUWADGE					DATE LOGGED: February 6, 2017					DEPTH: 60									
PROSPECT: Silver Star North					LOGGED BY: Dan Courtney					Core Size BTW									
DRILL CONTRACTOR: Rugged Aviation					DATE DRILLED: /2017					AZIMUTH: 180°									
GPS COLLAR COORDINATES: UTM										ELEVATION: 372m									
EASTING: 606850			NORTHING: 5464680																
Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments	
0.00	23.08				OVBN													overburden, approx 4m of ground cobbles, pebbles and some sand recovered	
23.08	27.27			FRS	MGN	MA BN	BL GY BK	55					PY	GN				Graphitic Paragneiss; Mostly fgr-mgr blue-grey when dry. Beige -cloudy mgr fsp with gry Qtz with diffuse xtal margins. Siliceous and hard. Gneissic banding is poorly developed generally but locally well developed at dominantly 55deg TCA. Local mottled or 'blotchy' texture. Unit contains fgr disseminated or interstitial graphite in minor quantities. Ave approx 0.1-locally 0.5% fgr graphite. 15-40% fgr biotite. Traces to 0.5% Diss Py. Weak fgr pk garnet near 27m. Mod to strong fracturing with MnO, carb or locally chl coatings.	
27.27	60.00	27.27	31.20	FRS	MGN	MA BN	BL GY BK	55					PY	GN				Paragneiss as above but NO graphite observed (except a minor amount in one interval noted below). 0.5% Diss Py. Mod- locally strong fracturing with chl/carb infill. Subhedral pk garnet mostly throughout, vfg-5mm and 2-3%.	
		31.20	31.70										PY					As above in 27.27 to 60.0 but with some 0.2% fgr diss -interstitial graphite.	
60.00	EOH	31.70	60.00															as above in 27.27 to 60.0, weak to moderate fracturing	

GEOLOGICAL CORE LOG

MW-17-20

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: February 10, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM			AZIMUTH: 180°
EASTING: 607420	NORTHING: 5464620	ELEVATION: 372m	DIP: -45°



ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	16.70				OVBN													overburden; 70cm of ground cobbles recovered.
16.70	19.00			FRS	MGN	BA MA	BL GY BK	65					PY					1 Graphitic Paragneiss; Fgr-mgr gneiss diffuse and well developed banding dominantly @ 65 TCA. Gry creamy white Fsp is only locally cgr. Core is mostly badly broken to rubble. Incipient oxid'n about select fracturing. Ave of at least 1% interstitial and wispy or crudely banded graphite. Can be very fine grained. Trace -0.5% diss Py. Fractures commonly coated with chl or locally graphite. Local late brittle crackle breccia. Gradational lower contact with waning of graph.
19.00	66.00	19.00	46.00	FRS	MGN	BA MA	BL GY BK BE	65					PY	GN				Biotitic Paragneiss; Similar to above unit only NO graph observed. 15-40% fgr-mgr biotite. Beige Fsp and gry Qtz can be cgr as blotchy sections or coarse bands. Banding is mostly at 65deg TCA, but locally wavy and irregular. Fsp and Qtz typically cloudy -diffuse. Garnetiferous with local patchy mm-scale subhed pink garnet. Rock is moderately to strongly fractured commonly infilled with chl, MnO or carb. Trace to locally 0.5% diss and F.C. anhedral brassy Py. Local calc infill of tensional fractures or as veinlets. Gradational lower contact with introduction of weak diss graphite.
		46.00	47.50	FRS	MGN	MA	BL GY BE											Pegmatitic phase; vcgr to pegmatitic sized beige or creamy white Fsp and gry Qtz -cloudy or diffuse xtal margins. Minor accessory biotite. No distinct contacts
		47.50	66.00	FRS	MGN	BA MA	BL GY BK BE	65					PY	GN				As above in 19.0-66.0
66.00	70.00	66.00	70.00	FRS	MGN	BA MA	BL GY BK BE	70					PY					2.5 Graphitic Paragneiss; Fgr-mgr gneiss poorly developed banding @ 65-85deg TCA. Gry creamy white Fsp is only locally cgr. Core is mostly badly broken to rubble. Incipient oxid'n about select fracturing. Ave of approx 2.5% interstitial, spotted and crudely banded graphite. Vfgr to mgr flaky. Core is very broken and blocky -commonly as fine angular rubble due to chloritic slips parallel to rock fabric as well as local crackle brecciation. Makes grade estimation difficult. 0.5% diss & F.C. anhedral Py
		67.95	68.35										PY					15 At least 15% mgr-cgr flaky graphite. Brecciated and broken to rubble. 1-2% diss anhedral Py
		68.35	69.40										PY					2.5 As above in 66.0 to 70.0
		69.40	69.70										PY					10 At least 10% mgr-cgr flaky graphite. Brecciated and broken to rubble. 1-2% diss anhedral Py
		69.70	70.00										PY					2.5 As above in 66.0 to 70.0
70.00	95.70	70.00	95.70	FRS	MGN	BA MA	BL GY BK BE	65					PY	GN				Biotitic Paragneiss; Similar to above unit only NO graph observed. 15-40% fgr-mgr biotite. Beige Fsp and gry Qtz can be cgr as blotchy sections or coarse bands. Banding is mostly at 45-70deg TCA, but locally wavy and irregular. Fsp and Qtz typically cloudy -diffuse. Intercalated with cm-scale felsic pegmatitic bands and sections. Garnetiferous with local patchy mm-scale subhed pink garnet. Rock is commonly strongly fractured commonly infilled with chl, MnO or carb. Trace to locally 0.5% diss and F.C. anhedral brassy Py. Sharp lower contact in broken core at 20deg TCA
95.70	103.25	95.70	102.25	FRS	GDB	MA	GY BK											Diabase dyke; Vfgr aphanitic, homogenous, massive and featureless except being well fractured often with hairline calcite infill. Lower contact in broken core but at 20deg TCA. Mod-strong fracturing, commonly with chl coat'gs.

GEOLOGICAL CORE LOG

MW-17-21

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: February 12, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607420	NORTHING: 5464638	ELEVATION: 372m	DIP: -45°




ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	6.96				OVCN													overburden a few ground cobbles recovered
6.96	11.50			SOX	MGN		OR YL		CY									rock is pervasively strongly oxidized and clay altered. Orange, yell, rusty brown. Mostly broken to gravel-sand sized fragments. Includes 50cm of intact fresh gneiss from 6.96 to 7.46m
11.50	31.50			FRS	MGN	BN MA	BL GY BK	60					GN	PY				Paragneiss; typical. Cgr cloudy beige Fsp + fgry qtz with mostly diffuse xtal margins as bands or mottled within fgr biotitic gneiss. Banding can be well developed, dominantly @ 60deg TCA. Intercalated sections of vcgr to pegmatitic felsic (Fsp/qtz). Patchy (nearly throughout) mm pk garnet up to 3 or 4%. Trace to 0.5% diss and F.C. Py. Weak to moderate fracturing -locally introducing oxid'n down to 23m. NO graphite observed.
31.50	35.60	31.50	33.32	FRS	MGN	BN MA	BL GY BK	65					PY					Graphitic paragneiss; Similar to above unit only graphitic. Also mostly fgr with well developed often fine banding - compositional layering which can resemble bedding. Banding dominantly at 60-70deg TCA -locally wavy. Ave of approx 2% graphite. Sporadic -patchy distribution, as fgr to vfgr interstices or as wispy 'bands' where it is mgr-cgr flaky. 1-2% anhed Py shows some affinity to graph but gen throughout. Locally strongly fractured with sheeted chl/c slips along foliation. Gradational contacts with appearance and disappearance of weak interstitial graphite.
		33.32	33.50															12 Approx 12% wispy cgr flake graphite
		33.50	34.92															2 As above in 31.5 to 35.6
		34.92	35.15	MOX	FLT	SH	GY BK	75										8 >8% graphite in chloritic shear -rock is soft and friable and sheared with chl/graph
		35.15	35.60															2 As above in 31.5 to 35.6
35.60	82.35			FRS	MGN	BN MA	BL GY BK	55					GN	PY	CPY			Paragneiss; Cgr cloudy beige to slightly red Fsp + fgry qtz with mostly diffuse xtal margins as bands or mottled within fgr biotitic gneiss. 15-30% fgmgrr bk metallic biotite. Banding gen poorly developed, dominantly @ 55deg TCA. Intercalated sections of vcgr to pegmatitic felsic (Fsp/qtz). Patchy pk subhed garnet up to 1cm and locally up to 5%. 0.5% diss Py (+/- F.C.), Rare trace CPY. Mod to strong fract'g commonly with chlorite + MnO coatings. Fract'g very locally introduces weak oxid'n.
82.35	89.90			FRS	MGN	BN MA	BL GY BK	55					PY					Graphitic paragneiss; Similar to above unit only graphitic. Also mostly fgr with well developed often fine banding - compositional layering which can resemble bedding. Banding dominantly at 55deg TCA. Ave of approx 2.5% graphite. Graph as vfgr interstices or concentrated in quasi banding -sporadic distribution. Higher grade sections noted below.
		84.80	84.90		FLT													1 10cm of clay gouge + weak graphite, some core loss
		84.90	85.10										PY					1 As above in 82.35 to 89.9
		85.10	85.26		FLT													40 Graphite + chlorite/cy gouge @ 65deg TCA
		85.26	85.30										PY					25 Strong graphite >25% mostly wispy bands of flaky graph + 3-4% Diss anhed Py.
		85.30	88.60										PY					2.5 As above in 82.35 to 89.9
		88.60	88.95															12 >12 mgr flaky wispy graphite
		88.95	89.90															0.5 As above in 82.35 to 89.9, weak interstitial graph

GEOLOGICAL CORE LOG

MW-17-23

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY		 ARDIDEN			
PROJECT: MANITOUWADGE		DATE LOGGED: February 17, 2017					
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney					
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017					
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°					
EASTING: 607360		NORTHING: 5464620		ELEVATION: 372m		DIP: -45°	

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	14.00				OVBN													1.5m of ground pebbles and cobbles + minor sand recovered
14.00	26.45	14.00	15.00	FRS	MGN	BN MA	BL GY BK	60					GN	PY			0.5	Graphitic Paragneiss; Weakly graphite mineralized -very sporadic, patchy distribution. Section averages approx 0.5% mostly interstitial + local banded fgr-mgr graphite. Locally up to 5 to 10% graph -unit also contains local multi-cm sections with 3-4% Pk garnet and void of graph. Generally well developed gneissic banding dominantly @ 60deg TCA. 10-25% biotite, vcgr beige or creamy white Fsp with gry qtz as bands, blasts or 'blotchy' sections. 1-2% diss anhed Py. Rock is moderately to strongly fractured commonly coated with chl/MnO and calc -very locally with graph. Fract'g can locally introduce oxid'n (Lim, Goeth). broken to rubble from 14.0-17.0m
		15.00	15.30	WOX													10	>10% mgr-cgr flaky graphite, very irregularly banded, section is vuggy and weakly oxidized.
		15.30	15.36	MOX	FLT			58									10	graphitic fault gouge at 58deg TCA; graph has been ground to vfgr and is blk
		15.36	16.60	FRS													0.5	As above in 14.0 to 26.45
		16.60	16.70	FRS													10	>10% mgr-cgr flaky graphite, crudely banded
		16.70	25.15	FRS													0.5	As above in 14.0 to 26.45
		25.15	25.30	MOX													7	Approx 7-8% cgr flaky graph. Wispy-spotted, weakly oxidized host
		25.30	26.45	FRS													0.5	As above in 14.0 to 26.45
26.45	32.00	26.45	32.00	FRS	MGN	BN MA	BL GY BK	55					GN	PY				Paragneiss similar to above but relatively massive. Unit has 1-2% patchy pk garnet and NO Graphite observed. Weakly fractured. Trace diss Py
32.00	37.60			FRS	MGN	BN MA	BL GY BK	65					PY				0.5	Graphitic Paragneiss; Weakly graphite mineralized -sporadic, patchy distribution. Section averages approx 0.5% mostly interstitial graphite. Locally up to 3% graph. Generally poorly developed gneissic banding dominantly @ 60deg TCA. 15-35% biotite, vcgr beige Fsp with gry qtz as local bands, or mottled sections. 0.5-1% diss anhed Py. Rock is generally weakly fractured, competent.
37.60	63.20			FRS	MGN	BN MA	BL GY BK	65					GN	PY				Paragneiss; Mottled or crudely banded throughout with cgr, cloudy-diffuse beige Fsp and gry qtz. 15-45% fgr biotite. Localized minor pk subhedral garnet. Banding at 65deg TCA. Weak to mod fracturing coated with chl/Mno and locally clay infilled. Trace to 0.5% Py. 58.8 to 63.2 is very strongly fractured blocky and locally broken to rubble. Fractures can be infilled with clay-gouge here. NO Graphite observed.
63.20	67.55	63.20	64.00	FRS	MGN	BN MA	BL GY BK						PY				3.5	Graphitic Paragneiss; mostly fgr-mgr and relatively mafic -biotite rich. Very poorly developed gneissic banding. Approx ave of 3.5% irregularly banded or interstitial graphite. Generally poorly developed gneissic banding. Cgr beige to orangish Fsp with gry qtz as mottled sections. 1-2% diss anhed Py. Rock is strongly fractured, local rubble. higher grade sections noted below
		64.00	64.40														6	As above in 63.2-67.55 but with 5-7% wispy coarse flaky graphite
		64.40	66.70														3.5	As above in 63.2 to 67.55
		66.70	66.95														20	Approx 20% wispy coarse flaky graphite
		66.95	67.30														3.5	As above in 63.2 to 67.55
		67.30	67.55														20	Approx 20% wispy coarse flaky graphite

GEOLOGICAL CORE LOG

MW-17-24

CLAIM NUMBER : 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: February 24, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM			AZIMUTH: 180°
EASTING: 607360	NORTHING: 5464650	ELEVATION: 372m	DIP: -45°



ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	12.00																	60cm of ground cobbles recovered
12.00	40.10	12.00	16.76	FRS	MGN	BN MA	BL GY BK BE	55					GN	PY				Paragneiss; Mottled or very crudely or faintly banded with cgr, cloudy-diffuse beige Fsp and gry Qtz. Also sections - very felsic and vcgr to pegmatitic sized Fsp/Qtz spotted with bk biotite. 15-35% fgr biotite. Localized minor pk subhedral garnet. Banding dominantly at 55deg TCA, but can vary from 45-75deg. Weak to mod fracturing coated with chl + MnO. Trace to 0.5% Py. NO graphite observed.
		16.76	21.33	FRS	GPE									CY				Pegmatite phase or dyke. 5-8% spotted biotite in very cloudy-diffuse beige/gry Fsp, Qtz. Cgr to vcgr, distinct irregular contacts. Local faint foliation. Weakly oxidized and clayb alt'd Fsp from 17.75 to 18.0m
		21.33	40.10															As above in 12.0 to 40.1
40.10	45.75			FRS	MGN	BN MA	BL GY BK BE	55									0.5	Graphitic Paragneiss; Gen very poorly developed gneissic banding at 55deg TCA. Texture varies considerably. Cgr beige Fsp with gry Qtz mottled, quasi banded or as sections. Fsp can be yell-or with weak oxid'n likely. Biotite is mostly fgr with local cgr psuedo blasts. Ave of 0.5% Graphite -interstitial and fgr or very locally with fracturing. 0.5-15 diss anhedral Py.
45.75	51.20			FRS	MGN	BN MA	BL GY BK BE							PY			1.5	Graphitic Paragneiss; Gen very poorly developed gneissic banding at 55deg TCA. Texture varies considerably. Cgr beige Fsp with gry Qtz mottled, quasi banded or as sections. Fsp can be yell-or with weak oxid'n likely. Rock is tectonically brecciated from 47.0m to 48.3m commonly broken to rubble and contains fine discontinuous Qtz/carb tension gash infill. Ave of 1.5-2% graphite -interstitial, clusters, as irregular bands. 1-3% Diss Py
		48.90	49.80														0.1	Material is fgr and homogenous, dyke-like but with faint fine banding @ 55° TCA. 2% fgr diss Py and trace interstitial graphite
51.20	60.00			FRS	MGN	BN MA	BL GY BK BE						GN	PY				Paragneiss; Mottled or very crudely or faintly banded with cgr, cloudy-diffuse beige Fsp and gry Qtz. Also sections - very felsic and vcgr to pegmatitic sized Fsp/Qtz spotted with bk biotite. Fsp is locally oxidized yell. 15-35% fgr biotite. Patchy pk subhedral -euhedral garnet. 1-3% diss interstitial anhedral Py
60.00	74.25			FRS	MGN	BN MA	BL GY BK BE	55						PY			0.5	Graphitic Paragneiss; Poorly developed gneissic banding alternates with well developed banding, variable but dominantly at 55deg TCA. Texture varies considerably. Cgr beige Fsp with gry Qtz mottled, quasi banded or as sections. Fsp can be yell-or with weak oxid'n. Ave of 0.5% graphite -interstitial, with higher grade sections as irregular bands noted below. 1-3% Diss Py
		60.75	60.92											PY			20	At least 20% irregularly banded graphite intimate with 5-7% anhedral brassy Py.
		60.92	61.20											PY			0.5	As above in 60.0 to 65.6
		61.20	61.20											PY			15	At least 15% irregularly banded graphite with 5-7% anhedral brassy Py.
		61.20	71.20											PY			0.1	As above but graphite grade is generally very weak Ave of approx 0.1-0.2% (except where noted below)
		71.20	73.25											PY			0.5	As above but 0.5 to 1% fgr-mgr graphite with banded host fabric
		73.25	74.25											PY			0.1	As above but graphite grade is generally very weak Ave of approx 0.1-0.2%

GEOLOGICAL CORE LOG MW-17-28



ARDIDEN

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: February 28, 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 607060	NORTHING: 5464740	ELEVATION: 372m	DIP: -45°

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Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	10.80				OVBN													30cm of ground pebbles and cobbles recovered
10.80	78.60			FRS	MGN	BA MA	BL-GY BK BE	65					GN	PY				Paragneiss; Blue grey and blk when dry. Typical banded gneiss with mostly crude -poorly developed banding dominantly @ 65deg TCA but quite variable. Beige to creamy white or reddish cgr Fsp with gry qtz as bands or sections up to 2m alternating with biotite rich mafic sections. Often massive and homogenous (both felsi and mafic sections) Very local incipient clay alt'd fsp to 21.5m. Patchy rare or very localized mm pk subhedral garnet. Weakly fractured after 14.5m with common chl +/- Mno or carb infill. Trace diss or F.C. Py. After 33m intermediate composition becomes more consistent or more typical.
		14.03	14.09		FLT													6cm or rusty brown clay rich gouge -fault?
		14.09	78.60															As above in 10.8-78.6
78.60	144.00	78.60	79.15	FRS	MGN	BA MA	BL-GY BK BE	65						PY	CPY		2	Graphitic Paragneiss; Relatively dark and mafic with 15-45% vfgr-mgr biotite. Mostly well developed fine gneissic banding dominantly @ 65° TCA. Cgr cloudy beige fsp with gry qtz is relatively localized and blotchy in texture. Graphite is patchy and sporadic in distribution but section likely averages approx 2%. Individual samples may be higher. Ranges from vfgr interstitial to mgr flaky when concentrated in bands. Higher grade sections noted below. Moderate to strong fracturing commonly with chl infill, very local graph infill. 1 to locally 4% diss. and F.C. anhedral brassy Py + local minor CPY.
		79.15	79.60											PY			7	As above but with > 7-8% wispy or clustered mgr flaky graphite
		79.60	81.55											PY			2	As above in 78.6 to 144.0
		81.55	81.70											PY			12	As above but with > 12% clustered or irregulol banded mgr flaky graphite
		81.70	84.22											PY			2	As above in 78.6 to 144.0
		84.22	84.40											PY			40	As above but with > 40% clustered or irregulol banded mgr flaky graphite
		84.40	90.72											PY			2	As above in 78.6 to 144.0
		90.72	90.79											PY			35	Approx 35% mgr flaky graphite banded with rock foliation @ 60deg
		90.79	91.46											PY			2	As above in 78.6 to 144.0
		91.46	91.50											PY			25	Approx 25% mgr flaky graphite banded with rock foliation @ 60deg
		91.50	91.60											PY			2	As above in 78.6 to 144.0
		91.60	91.65											PY			35	Approx 35% mgr flaky graphite banded with rock foliation @ 55deg
		91.65	92.02											PY			2	As above in 78.6 to 144.0
		92.02	92.08											PY			55	Approx 55% mgr flaky graphite banded with rock foliation @ 60deg
		92.08	92.32											PY			2	As above in 78.6 to 144.0
		92.32	92.38											PY			35	Approx 35% mgr flaky graphite banded with rock foliation @ 60deg
		92.38	101.30											PY			0.5	As above in 78.6 to 144.0 but averages only approx 0.5% fgr interstitial graphite
		101.30	103.38	WOX	BX									PY			0.5	Brecciated; tectonic and crackle breccia with chl, qtz/carb matrix infill. Clasts are weakly oxidized. Includes 8cm of fault gouge at 103.3m, gouge is at 45deg and conformable to rock fabric.
		103.38	109.40											PY	CPY		0.5	As above in 78.6 to 144.0 but averages only approx 0.5% fgr interstitial graphite, 8% coarse clotted anhedral CPY at 106.4

GEOLOGICAL CORE LOG

MW-17-29

CLAIM NUMBER: 4279101		DISTRICT of THUNDER BAY	
PROJECT: MANITOUWADGE		DATE LOGGED: , 2017	
PROSPECT: Silver Star North		LOGGED BY: Dan Courtney	
DRILL CONTRACTOR: Rugged Aviation		DATE DRILLED: /2017	
GPS COLLAR COORDINATES: UTM		AZIMUTH: 180°	
EASTING: 606710	NORTHING: 5464740	ELEVATION: 372m	DIP: -45°

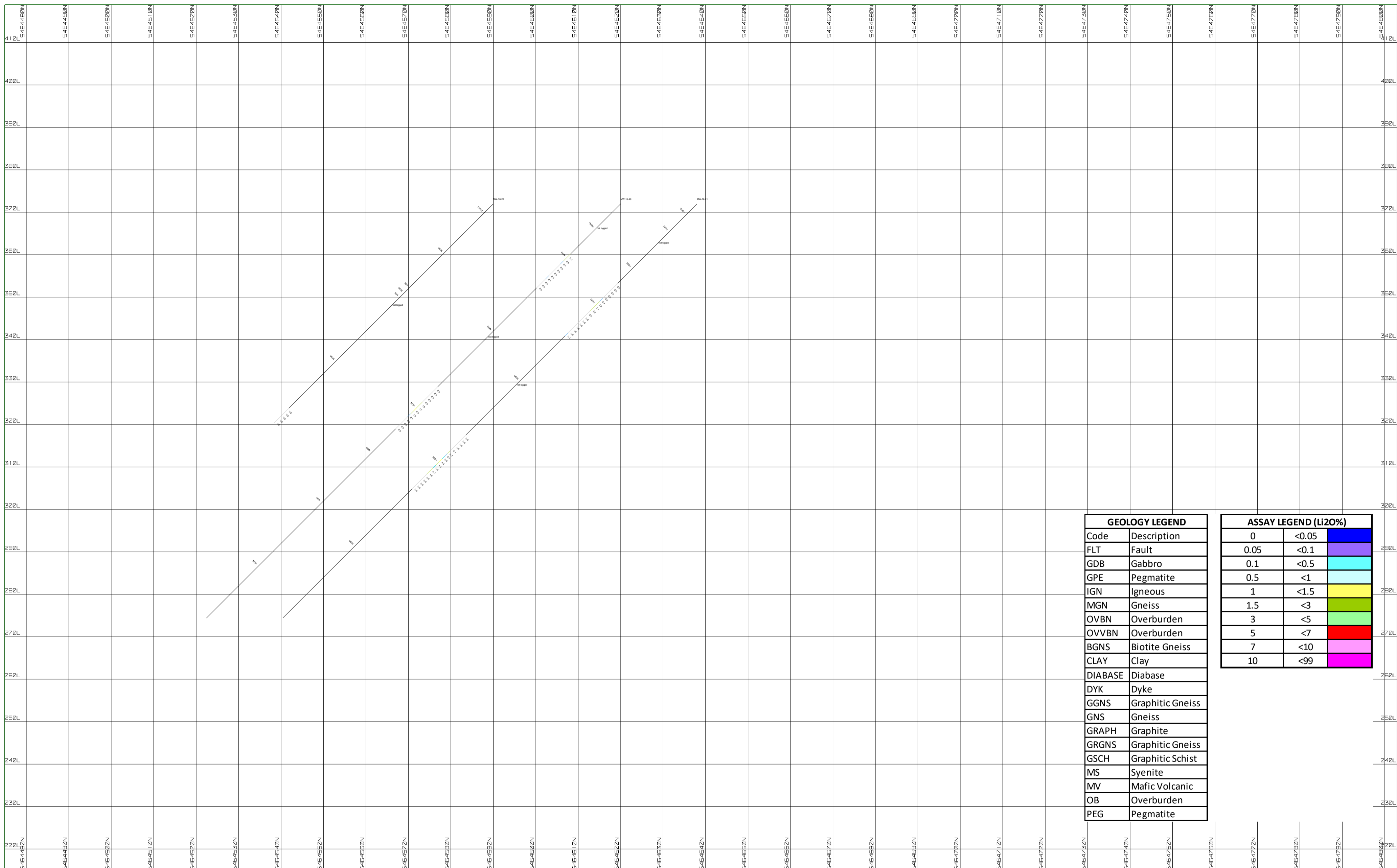


ARDIDEN

Depth From (m)	Depth To (m)	Nested From (m)	Nested To (m)	Oxidation state	Lithology	Lithology texture	Colour	Foliation - Banding	Alteration 1	Alteration 2	Alteration 3	Alteration style	Mineral 1	Mineral 2	Mineral 3	Contact TCA	% Graphite	Comments
0.00	19.00				OVBN													A few ground cobbles recovered
19.00	61.90			FRS	MGN	BA MA	BL-GY BK BE	55					GN	PY				Paragneiss; Intermediate to felsic composition with 10-30% fgr to cgr biotite. Gneissic banding varies from 40-70° but is most commonly at 55° TCA. Vcgr beige fsp and gry qtz as gneissic bands or sections up to 2m wide. Fgr pink garnet associated with mafic or biotite rich bands and sections. 50-60% of unit are very felsic phases; massive, homogenous and vcgr (to pegmatitic) with only minor biotite. Trace Py only. Generally weakly to moderately fractured with chl, lesser carb and local Mno infill. Competent, No graphite observed
		32.50	33.45															Paragneiss, massive, homogenous and mafic. Biotite rich
61.90	66.50			FRS	MGN	BA MA	BL-GY BK BE	60						PY	CPY		1	Graphitic Paragneiss; Relatively dark and mafic with 15-45% vfgr-mgr biotite. Mostly well developed fine gneissic banding dominantly @ 60° TCA. Cgr cloudy beige (locally orangish) fsp with gry qtz is relatively localized and blotchy in texture. Graphite averages approx 1% -somewhat sporadic distribution. Ranges from vfgr interstitial to mgr flaky when concentrated in bands. Highly fractured commonly with chl infill, very local graph infill. 1 to locally 4% diss. and F.C. anhedral brassy Py + local diss and F.C. CPY.
		65.85	65.95		FLT			45										Sheared at 45° TCA. Healed with chl and finely ground graphite.
		65.95	66.50														1	As above in 61.9 to 66.5m
66.50	77.20													PY			3.5	Similar graphitic gneiss to above but grade is much higher mostly due to numerous bands of high grade mgr flaky graphite. Distribution remains highly variable and higher grade sections are noted below. Individual samples will vary from the average estimate.
		66.35	66.50											CPY			35	>35% mgr flaky graphite banded with host fabric. 3-4% anhedral CPY
		66.50	67.45											PY			3.5	As above in 66.5 to 77.2m
		67.45	67.50		FLT			25										5cm graph, chl fault gouge @ 25° TCA
		67.50	69.30											PY			2.5	As above in 66.5 to 77.2m. Approx 2.5% mostly fgr-mgr interstitial graphite
		69.30	69.90											PY	CPY		7	Average of approx 7% mgr flaky graphite,
		67.50	69.30											PY			1.5	As above in 66.5 to 77.2m. Approx 1.5% mostly fgr-mgr interstitial graphite
		70.30	71.00											PY			15	Average of approx 15% mgr flaky graphite, crudely banded
		71.00	71.80											PY			1.5	As above in 66.5 to 77.2m. Approx 1.5% mostly fgr-mgr interstitial graphite
		71.80	71.86											PY				
		71.86	77.20											PY			0.5	As above in 66.5 to 77.2m. Approx 0.5% mostly fgr-mgr interstitial graphite. Grade varies from nearly 0% to locally 1.5%
77.20	89.00												GN	PY				Paragneiss; Intermediate to felsic composition with 10-30% fgr to cgr biotite. Poorly developed gneissic banding varies from 40-70° but is most commonly at 55° TCA. Vcgr beige locally yellowish (with possible weak oxid'n) fsp and gry qtz as gneissic bands or sections up to 1m wide. Fgr pink garnet associated. 30-40% of unit are very felsic phases; massive, homogenous and vcgr (to pegmatitic) with only minor biotite. Trace Py only. Generally weakly to moderately fractured with chl, lesser carb infill.

Appendix 2 – Drill Sections

(2016-17 Manitouwadge Graphite Project)

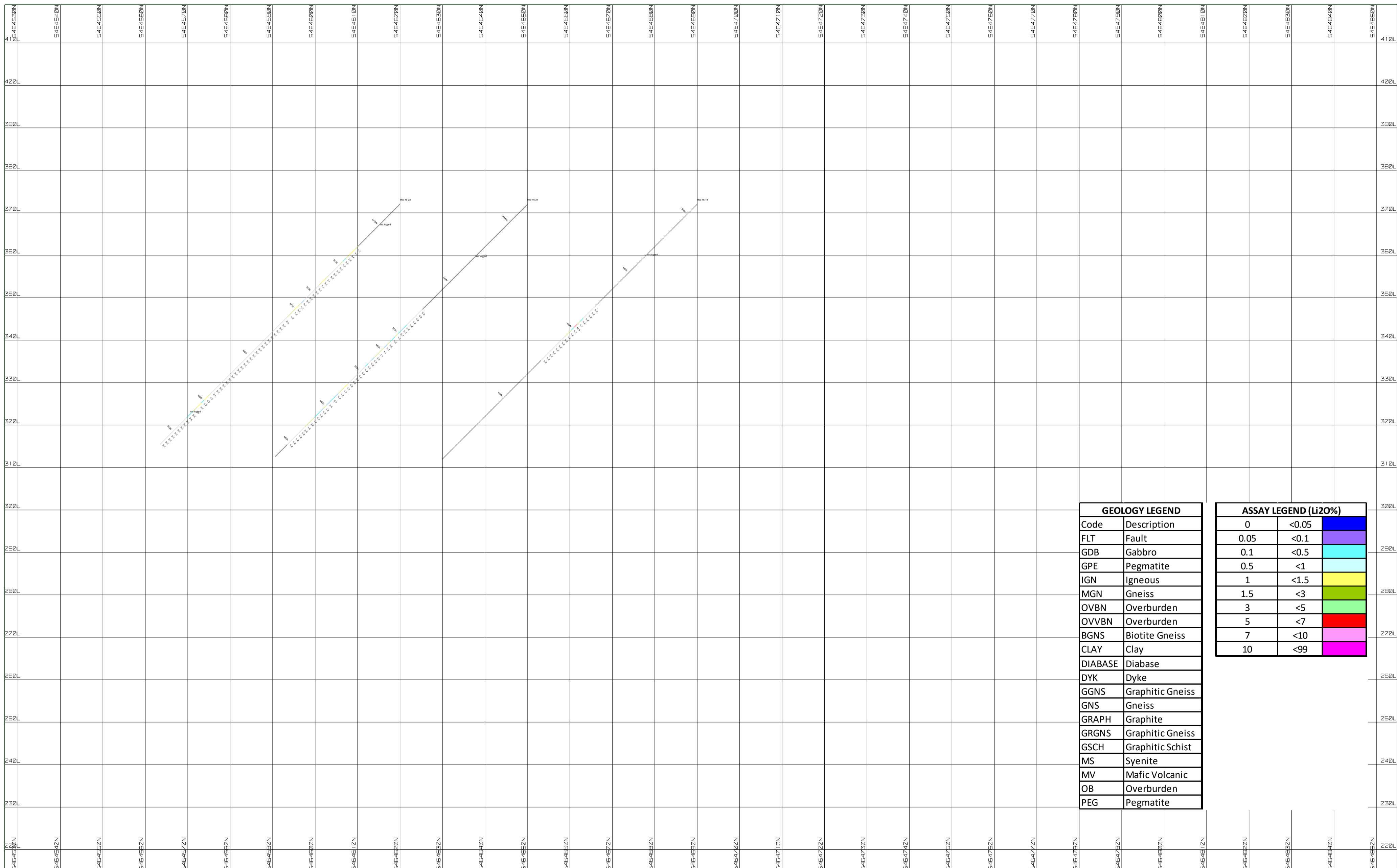


GEOLOGY LEGEND	
Code	Description
FLT	Fault
GDB	Gabbro
GPE	Pegmatite
IGN	Igneous
MGN	Gneiss
OVBN	Overburden
OVVBN	Overburden
BGNS	Biotite Gneiss
CLAY	Clay
DIABASE	Diabase
DYK	Dyke
GGNS	Graphitic Gneiss
GNS	Gneiss
GRAPH	Graphite
GRGNS	Graphitic Gneiss
GSCH	Graphitic Schist
MS	Syenite
MV	Mafic Volcanic
OB	Overburden
PEG	Pegmatite

ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	

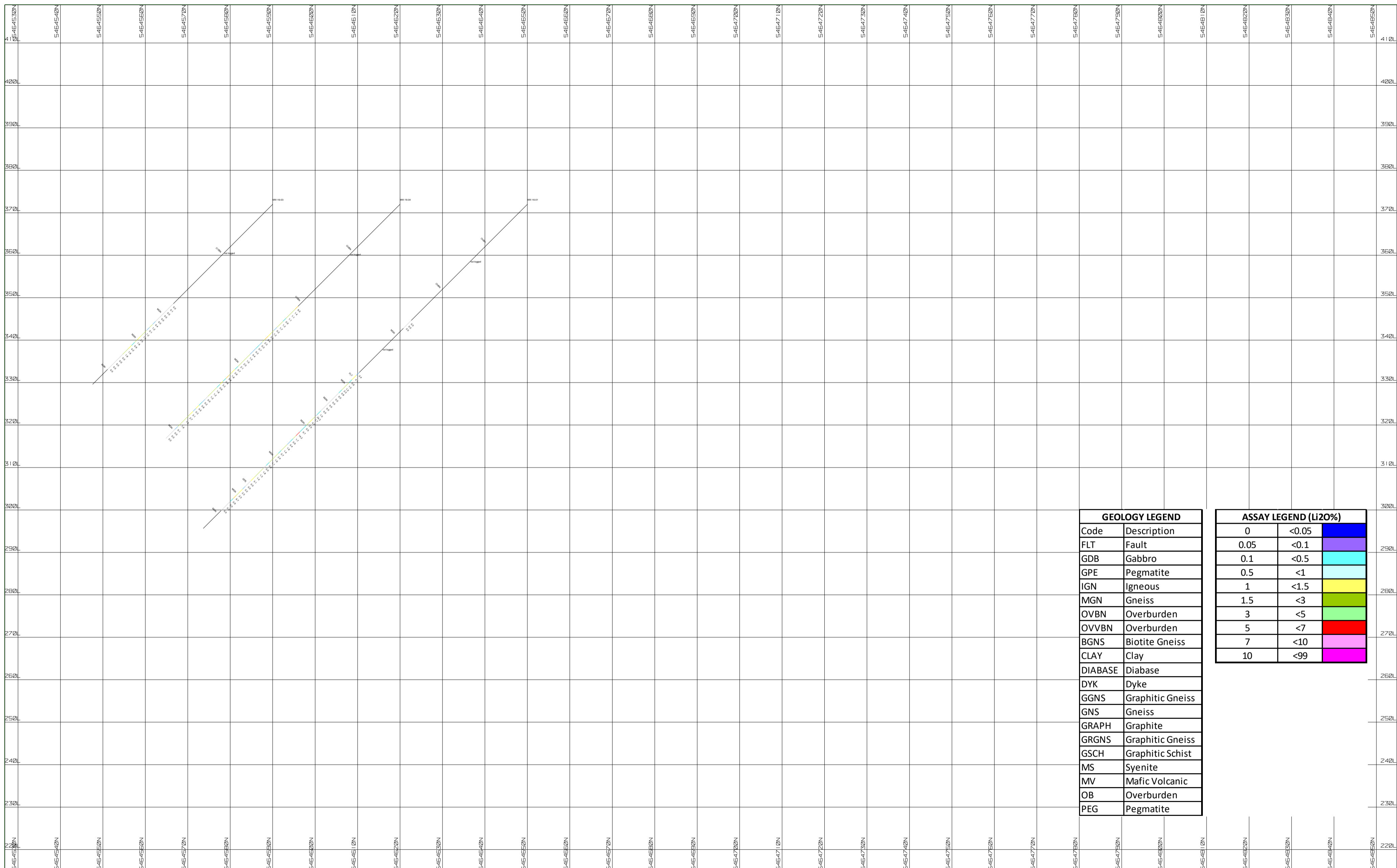
Mani Louwadge
 B07420mE
 Scale: 1:400
 Date: 9th July 2017





GEOLOGY LEGEND	
Code	Description
FLT	Fault
GDB	Gabbro
GPE	Pegmatite
IGN	Igneous
MGN	Gneiss
OVBN	Overburden
OVVBN	Overburden
BGNS	Biotite Gneiss
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PEG	Pegmatite

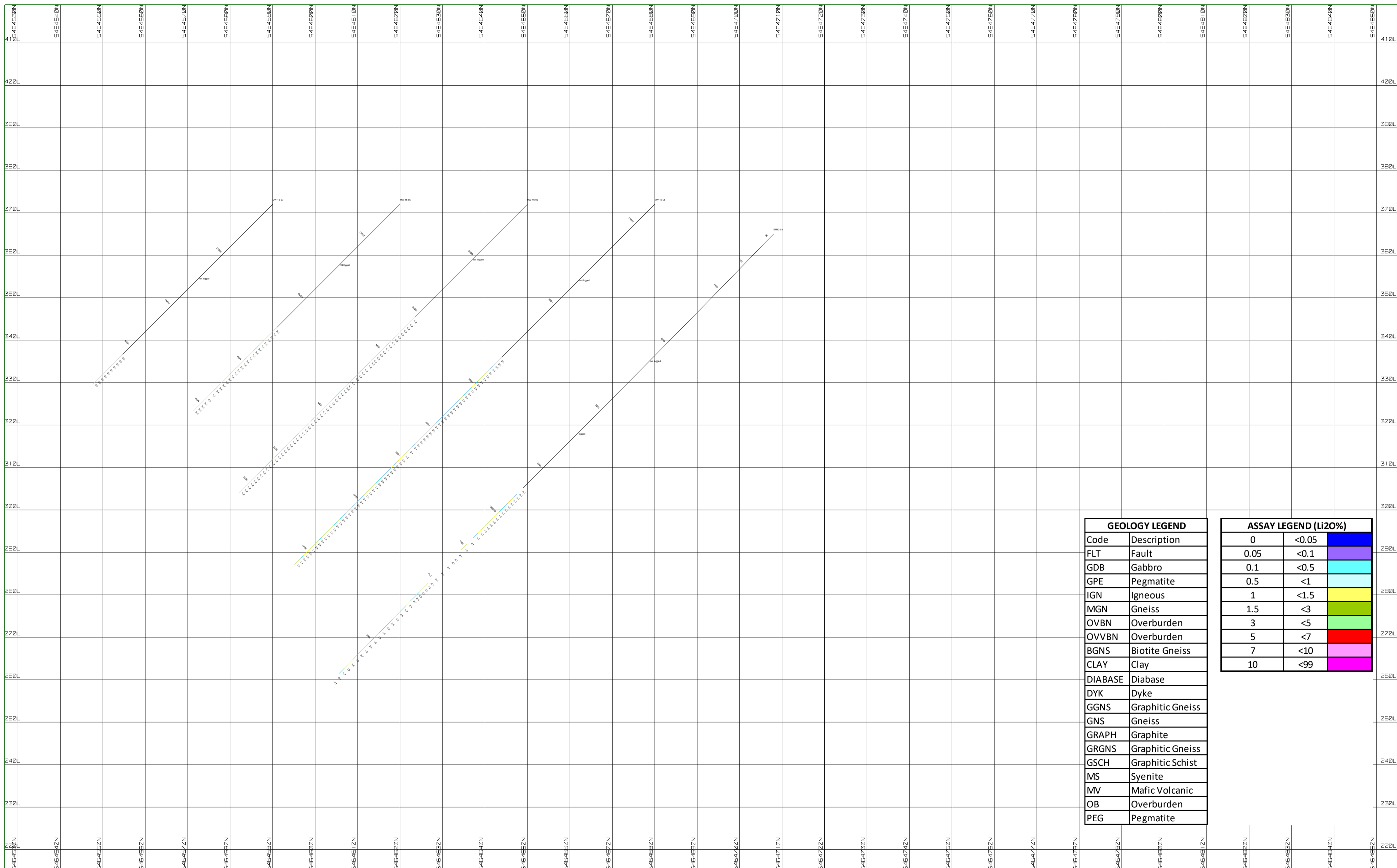
ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	



GEOLOGY LEGEND	
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ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	

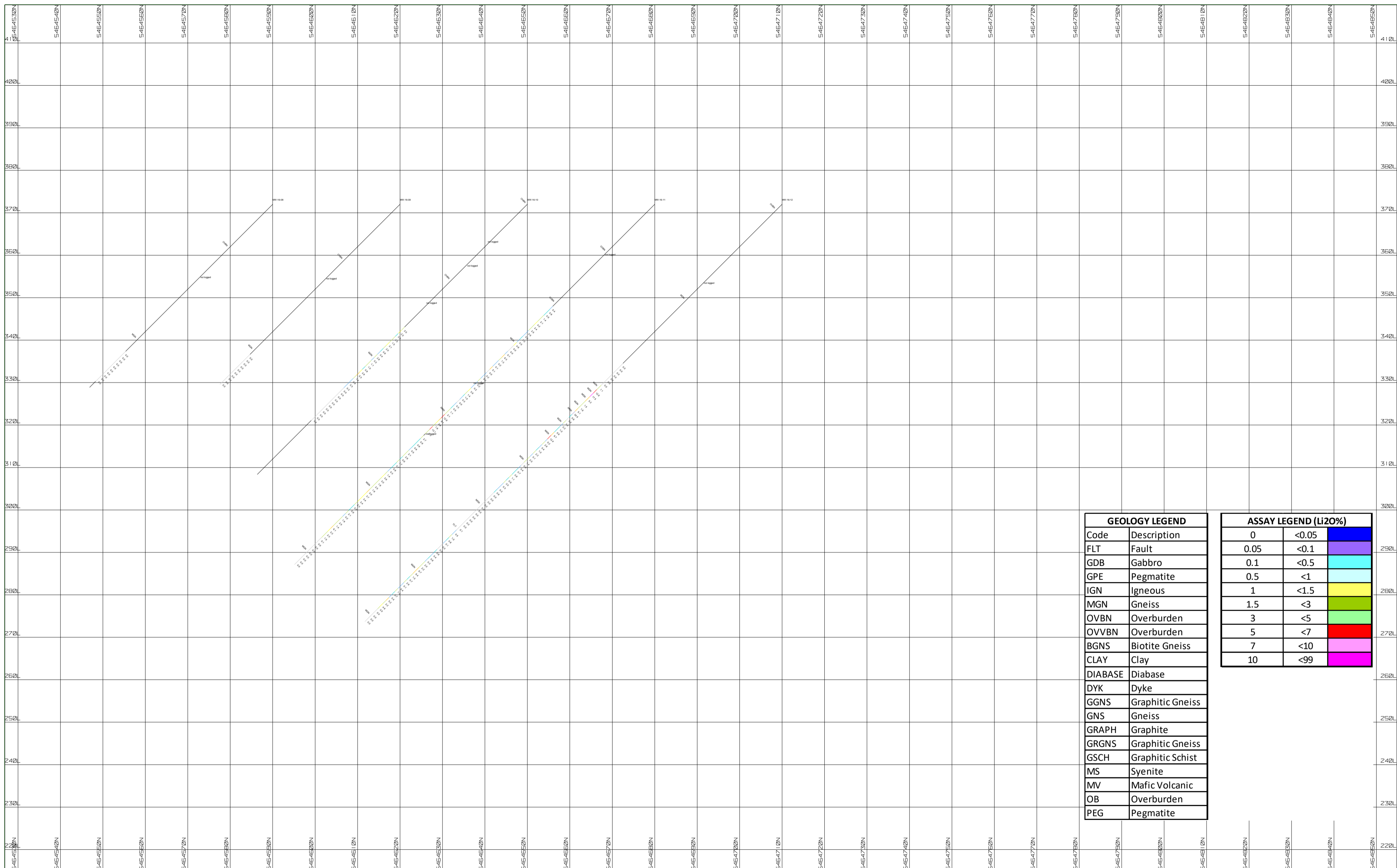




GEOLOGY LEGEND	
Code	Description
FLT	Fault
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ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	

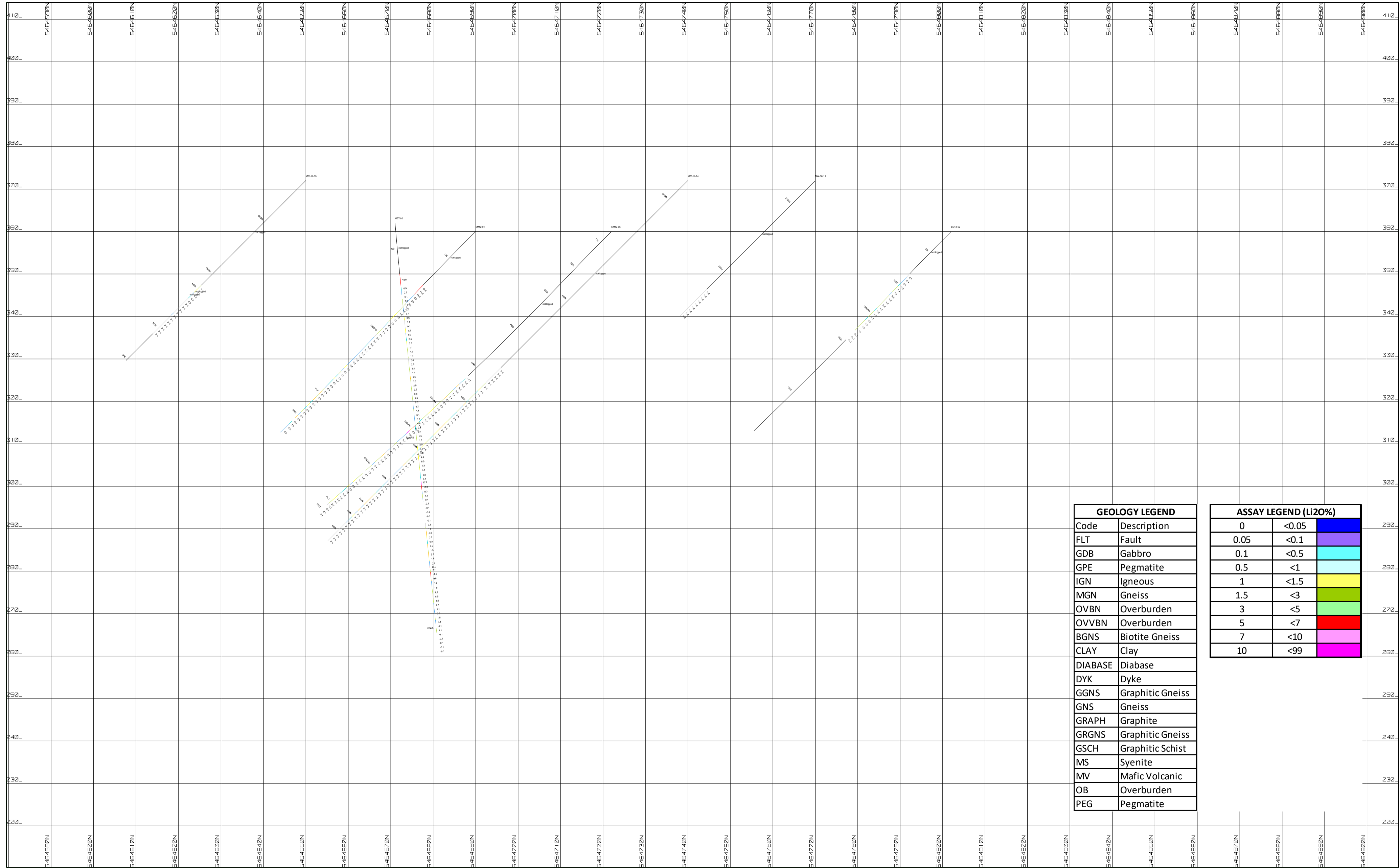




GEOLOGY LEGEND	
Code	Description
FLT	Fault
GDB	Gabbro
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ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	

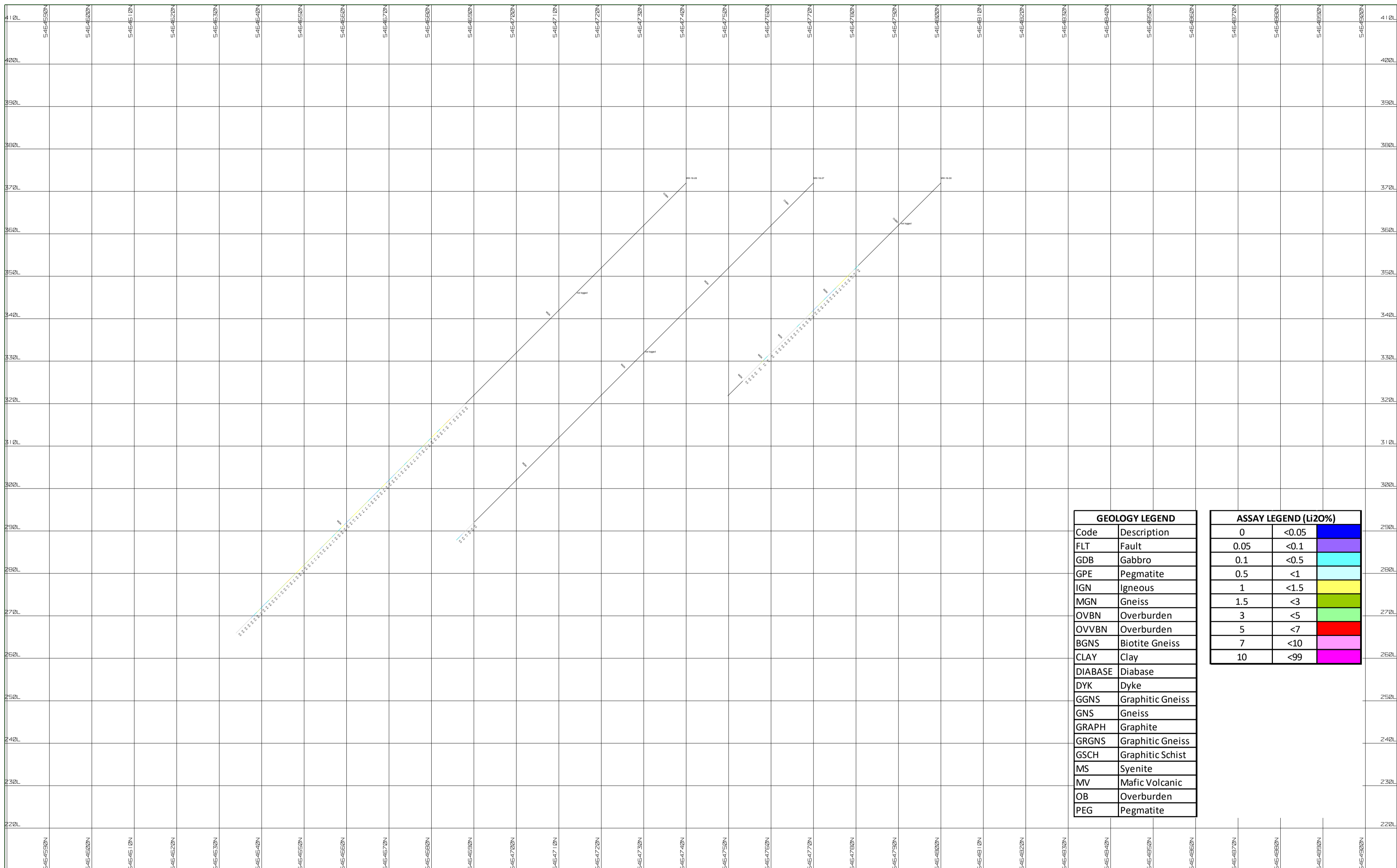




GEOLOGY LEGEND	
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FLT	Fault
GDB	Gabbro
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0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	

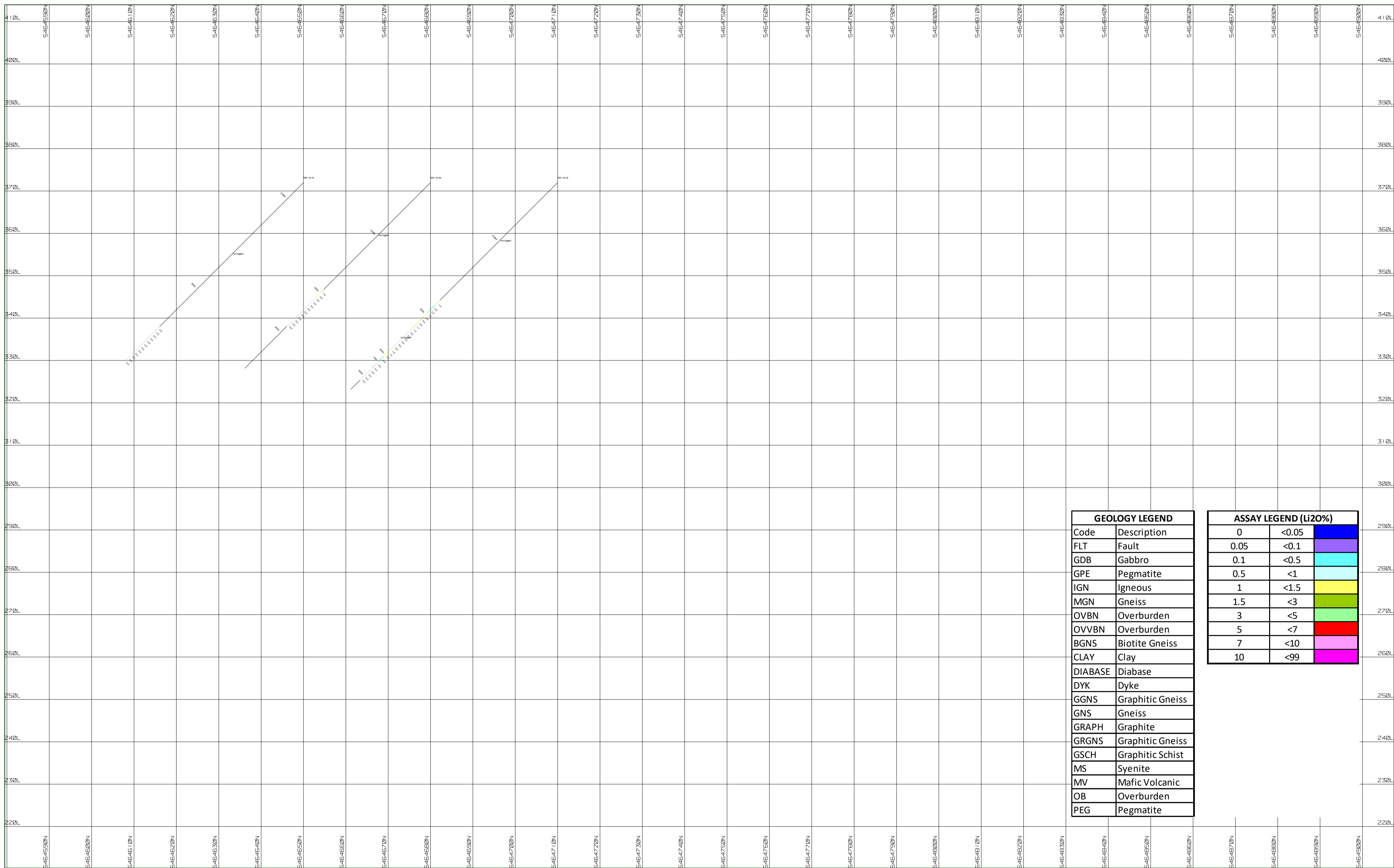




GEOLOGY LEGEND	
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GNS	Gneiss
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GRGNS	Graphitic Gneiss
GSCH	Graphitic Schist
MS	Syenite
MV	Mafic Volcanic
OB	Overburden
PEG	Pegmatite

ASSAY LEGEND (Li2O%)		
0	<0.05	Blue
0.05	<0.1	Purple
0.1	<0.5	Cyan
0.5	<1	Light Blue
1	<1.5	Yellow
1.5	<3	Light Green
3	<5	Green
5	<7	Red
7	<10	Pink
10	<99	Magenta

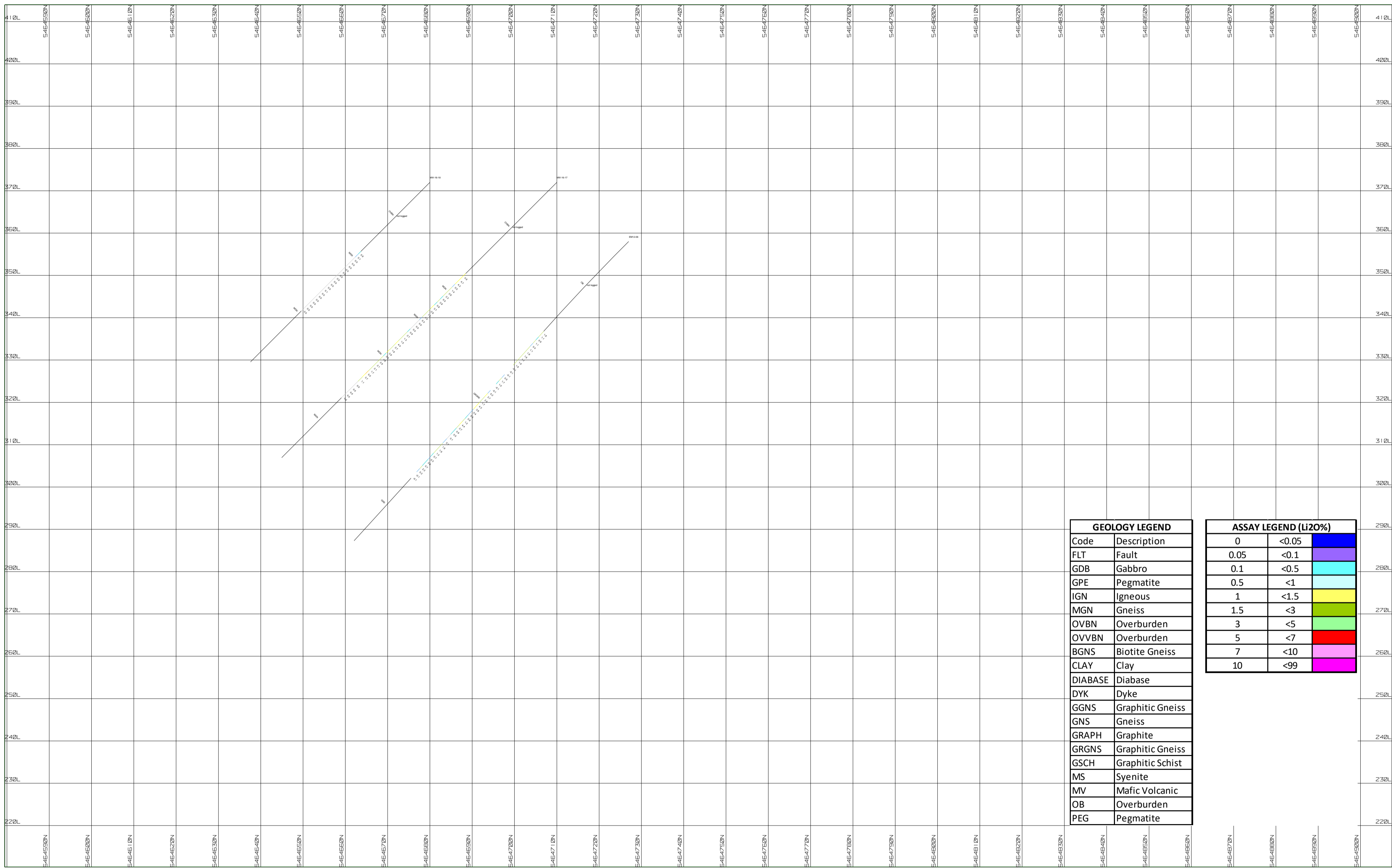




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PEG	Pegmatite

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0.05	<0.1	Purple
0.1	<0.5	Cyan
0.5	<1	Light Blue
1	<1.5	Yellow
1.5	<3	Light Green
3	<5	Green
5	<7	Red
7	<10	Pink
10	<99	Magenta

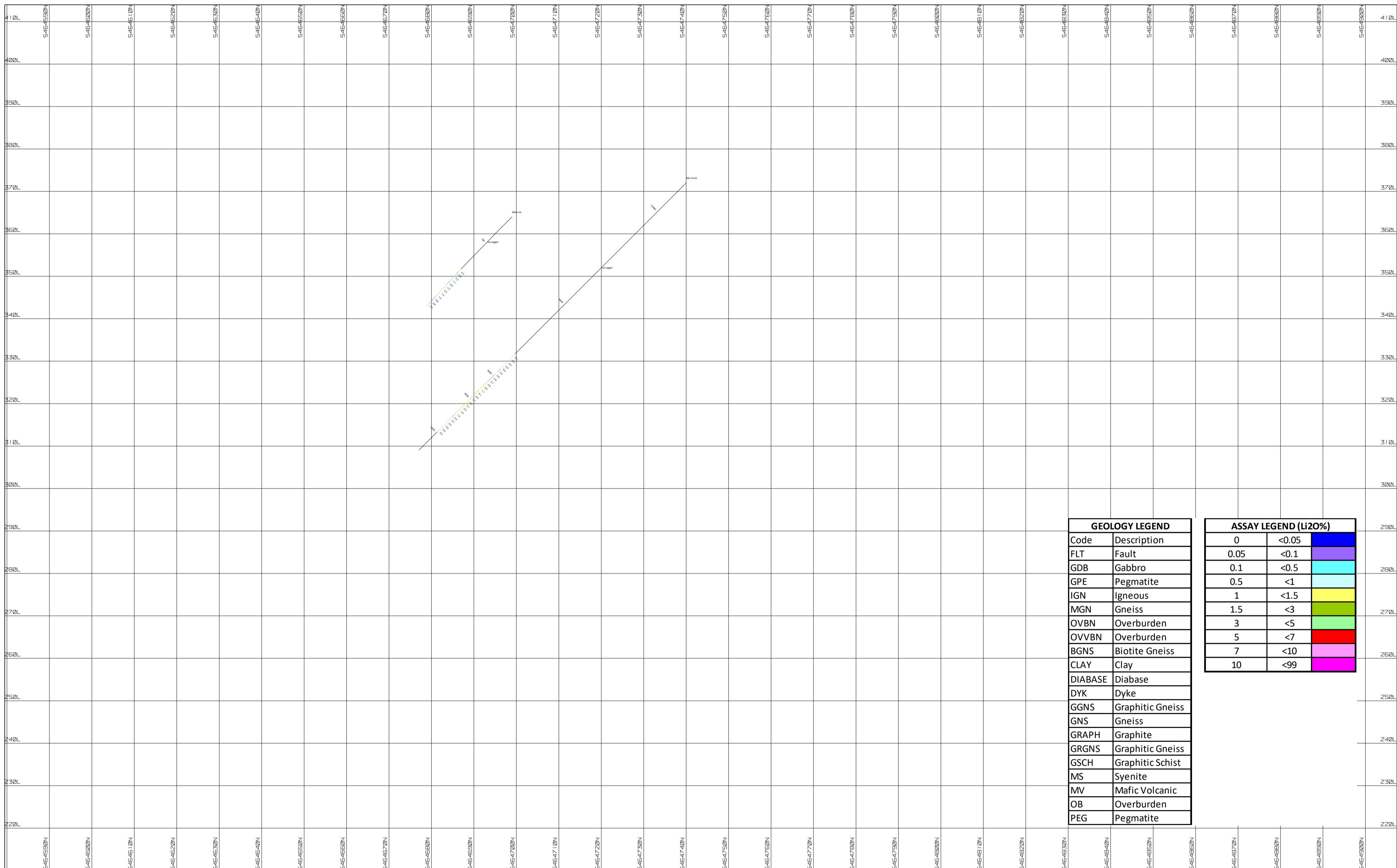




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Code	Description
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0.05	<0.1	Purple
0.1	<0.5	Cyan
0.5	<1	Light Blue
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1.5	<3	Light Green
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ASSAY LEGEND (Li2O%)		
0	<0.05	
0.05	<0.1	
0.1	<0.5	
0.5	<1	
1	<1.5	
1.5	<3	
3	<5	
5	<7	
7	<10	
10	<99	



Appendix 3 – Drill Collar Plan

(2016-17 Manitouwadge Graphite Project)

Appendix – 4 CERTIFICATE OF ANALYSIS

Please refer to Separate File for Digital Version

(2016-17 Manitouwadge Graphite Project)



Date Submitted: 08-Mar-17
Invoice No.: A17-02218 (i)
Invoice Date: 07-Apr-17
Your Reference: Manitouwadge Graphite

Ardiden Ltd.
Suite 6, 295 Rokeby Rd
Subiaco WA 6008
Australia

ATTN: Brad Boyle (inv/res)

CERTIFICATE OF ANALYSIS

282 Rock samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4F-C, S Infrared

Code 4F-C-Graphitic Infrared

Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer

REPORT **A17-02218 (i)**

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 read "Emmanuel Esemé". The signature is stylized with loops and is positioned above a horizontal line.

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

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381421	1.50	1.96	1.35	
381422	4.47	4.05	4.28	
381423	0.96	1.70	0.90	
381424	4.95	2.51	4.68	
381425	1.41	2.12	1.31	
381426	0.72	1.83	0.60	
381427	0.56	1.00	0.54	
381428	0.06	0.28	< 0.05	
381429	0.14	0.21	< 0.05	
381430	0.09	0.13	< 0.05	
381431	0.12	0.33	< 0.05	2.82
381432	0.09	0.27	< 0.05	
381433	0.06	0.20	< 0.05	
381434	0.06	0.31	< 0.05	
381435	0.08	0.28	< 0.05	
381436	0.08	0.27	< 0.05	
381437	0.13	0.43	< 0.05	
381438	0.09	0.25	< 0.05	
381439	0.15	0.29	< 0.05	
381440	0.98	1.60	0.42	
381441	0.06	0.19	< 0.05	2.78
381442	0.05	0.23	< 0.05	
381443	0.10	0.10	< 0.05	
381444	0.08	0.26	< 0.05	
381445	0.81	3.09	0.75	
381446	0.36	0.84	0.28	
381447	0.77	2.81	0.69	
381448	1.34	1.63	1.23	
381449	0.57	0.88	0.51	
381450	0.10	0.11	< 0.05	
381451	2.50	3.50	2.42	2.84
381452	0.69	2.03	0.18	
381453	1.97	1.60	1.26	
381454	1.20	2.76	1.12	
381455	2.50	2.11	2.52	
381456	2.73	2.24	2.72	
381457	0.41	0.96	0.33	
381458	0.14	0.34	< 0.05	
381459	0.12	0.25	0.51	
381460	2.93	4.62	2.67	
381461	0.13	0.31	< 0.05	2.87

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381462	0.11	0.25	< 0.05	
381463	0.12	0.18	< 0.05	
381464	0.15	0.36	< 0.05	
381465	0.08	0.24	< 0.05	
381466	0.10	0.34	< 0.05	
381467	3.83	2.83	3.65	
381468	1.83	1.78	1.74	
381469	1.97	2.32	1.85	
381470	0.06	0.12	< 0.05	
381471	0.53	1.53	0.45	2.82
381472	0.77	1.70	0.74	
381473	0.56	1.92	0.48	
381474	1.36	2.18	1.23	
381475	0.35	1.31	0.29	
381476	0.42	1.39	0.38	
381477	0.61	1.61	0.58	
381478	0.75	1.85	0.72	
381479	1.38	2.18	1.38	
381480	1.01	1.60	0.43	
381481	2.77	2.48	2.77	2.80
381482	2.01	2.13	1.75	
381483	0.13	0.37	< 0.05	
381484	0.04	0.24	< 0.05	
381485	0.14	0.21	< 0.05	
381486	0.21	0.24	< 0.05	
381487	0.17	0.34	< 0.05	
381488	0.14	0.29	< 0.05	
381489	1.68	3.17	1.53	
381490	0.06	0.04	< 0.05	
381491	0.70	2.37	0.64	2.79
381492	0.54	1.92	0.50	
381493	1.81	2.68	1.78	
381494	3.26	3.15	3.15	
381495	7.07	3.86	6.38	
381496	7.50	4.57	6.80	
381497	4.17	2.83	3.95	
381498	1.80	1.84	1.71	
381499	1.22	1.56	1.16	
381500	8.52	0.05	7.99	
381501	0.15	0.33	< 0.05	2.80
381502	0.12	0.33	< 0.05	
381503	0.13	0.26	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381504	0.15	0.39	< 0.05	
381505	0.24	0.84	< 0.05	
381506	0.16	0.43	< 0.05	
381507	2.49	1.60	1.85	
381508	1.45	1.90	1.37	
381509	3.38	2.61	3.22	
381510	0.05	< 0.01	< 0.05	
381511	0.96	2.28	0.89	2.81
381512	0.11	1.00	< 0.05	
381513	0.39	1.55	0.31	
381514	0.11	0.34	< 0.05	
381515	0.06	0.20	< 0.05	
381516	0.06	0.18	< 0.05	
381517	0.09	0.14	< 0.05	
381518	0.07	0.26	< 0.05	
381519	1.68	1.93	1.61	
381520	2.89	4.61	2.61	
381521	3.89	2.13	3.75	2.96
381522	0.12	0.27	< 0.05	
381523	0.10	0.27	< 0.05	
381524	0.13	0.25	< 0.05	
381525	0.04	0.39	< 0.05	
381526	0.10	0.25	< 0.05	
381527	0.06	0.18	< 0.05	
381528	0.04	0.14	< 0.05	
381529	0.08	0.21	< 0.05	
381530	0.02	< 0.01	< 0.05	
381531	0.13	0.25	< 0.05	3.11
381532	0.11	0.25	< 0.05	
381533	0.07	0.28	< 0.05	
381534	0.09	0.22	< 0.05	
381535	0.14	0.39	< 0.05	
381536	0.14	0.39	< 0.05	
381537	0.20	0.37	0.09	
381538	0.25	0.37	0.22	
381539	0.57	1.11	0.53	
381540	8.55	0.05	7.64	
381541	0.17	0.66	< 0.05	2.89
381542	0.10	0.28	< 0.05	
381543	0.08	0.25	< 0.05	
381544	0.07	0.27	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381545	0.09	0.55	< 0.05	
381546	5.39	3.16	5.12	
381547	2.68	2.45	2.58	
381548	3.62	2.13	3.09	
381549	0.85	1.99	0.78	
381550	0.04	< 0.01	< 0.05	
381551	3.60	2.89	3.49	2.81
381552	3.47	2.74	3.23	
381553	1.05	2.09	0.92	
381554	1.69	2.17	1.63	
381555	1.25	1.86	1.21	
381556	1.08	1.94	1.07	
381557	0.66	1.24	0.58	
381558	0.20	1.21	0.11	
381559	1.10	1.15	1.00	
381560	1.00	1.58	0.42	
381561	1.42	2.46	1.32	2.88
381562	2.03	2.32	1.91	
381563	0.63	1.65	0.58	
381564	1.20	1.62	1.01	
381565	0.52	1.46	0.45	
381566	1.86	2.22	1.69	
381567	0.41	1.11	0.32	
381568	1.04	1.89	0.93	
381569	0.39	0.72	0.33	
381570	< 0.01	< 0.01	< 0.05	
381571	4.97	2.74	4.63	2.84
381572	2.71	2.39	1.38	
381573	2.04	0.90	0.54	
381574	1.36	1.34	0.42	
381575	0.44	1.72	0.31	
381576	0.48	1.84	0.33	
381577	1.08	1.74	0.79	
381578	1.90	3.00	1.71	
381579	1.53	1.97	1.43	
381580	2.88	4.54	2.41	
381581	1.47	1.60	1.35	3.00
381582	3.42	3.07	3.41	
381583	4.55	3.25	4.43	
381584	2.15	1.87	2.09	
381585	0.52	2.05	0.44	
381586	0.31	1.38	0.19	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381587	3.51	3.15	3.53	
381588	0.85	1.42	0.82	
381589	2.56	2.44	2.51	
381590	0.03	< 0.01	< 0.05	
381591	0.96	2.09	0.93	2.82
381592	1.18	1.98	1.15	
381593	1.77	2.50	1.75	
381594	1.60	1.76	1.56	
381595	0.28	1.66	0.21	
381596	0.24	1.51	0.14	
381597	2.76	3.32	2.66	
381598	1.90	1.97	1.75	
381599	1.12	1.77	1.11	
381600	8.39	0.05	7.86	
381601	1.04	1.50	1.02	2.76
381602	1.99	2.02	1.95	
381603	2.90	2.81	2.85	
381604	4.43	3.29	4.29	
381605	3.92	3.14	3.81	
381606	1.96	1.96	1.95	
381607	1.45	2.15	1.45	
381608	5.79	3.36	5.59	
381609	2.12	2.91	2.11	
381610	0.06	< 0.01	< 0.05	
381611	2.48	2.42	2.47	2.80
381612	2.30	2.16	2.29	
381613	1.16	1.71	1.11	
381614	1.96	1.80	1.96	
381615	2.32	2.43	2.23	
381616	2.09	2.36	1.97	
381617	0.94	2.22	0.92	
381618	0.50	1.96	0.45	
381619	0.61	1.44	0.53	
381620	0.56	0.56	0.14	
381621	1.42	1.85	1.40	2.80
381622	0.89	1.47	0.87	
381623	0.28	0.61	0.24	
381624	0.09	0.25	< 0.05	
381625	0.12	0.22	< 0.05	
381626	0.12	0.21	< 0.05	
381627	0.12	0.18	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381628	0.10	0.25	< 0.05	
381629	0.22	0.61	< 0.05	
381630	0.01	< 0.01	< 0.05	
381631	0.15	0.48	< 0.05	3.16
381632	0.20	0.34	< 0.05	
381633	0.22	0.35	< 0.05	
381634	0.35	0.85	< 0.05	
381635	0.63	1.65	0.32	
381636	0.63	1.43	0.33	
381637	4.19	3.14	3.83	
381638	1.00	1.66	0.88	
381639	0.93	0.53	0.12	
381640	8.39	0.04	7.78	
381641	3.46	2.80	2.84	2.81
381642	6.96	2.50	5.98	
381643	1.30	1.96	1.06	
381644	6.43	3.45	6.11	
381645	7.00	3.75	6.54	
381646	2.83	2.55	2.71	
381647	2.38	2.24	2.25	
381648	3.37	2.36	3.08	
381649	2.14	2.49	2.00	
381650	0.03	< 0.01	< 0.05	
381651	2.42	4.44	1.75	3.01
381652	1.38	3.09	1.28	
381653	0.61	0.62	0.32	
381654	0.23	0.51	0.05	
381655	0.14	0.17	< 0.05	
381656	0.13	0.22	< 0.05	
381657	0.19	0.19	< 0.05	
381658	0.33	0.45	< 0.05	
381659	0.14	0.30	< 0.05	
381660	2.91	4.53	2.67	
381661	0.95	2.11	0.94	2.97
381662	0.15	0.46	0.07	
381663	2.79	1.71	2.68	
381664	3.69	2.99	3.54	
381665	3.33	2.29	3.30	
381666	3.92	2.03	3.70	
381667	2.00	1.92	1.86	
381668	0.91	2.20	0.82	
381669	0.41	1.87	0.37	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381670	0.03	0.03	< 0.05	
381671	0.31	1.03	0.21	2.89
381672	0.64	1.30	0.60	
381673	1.40	1.76	1.39	
381674	2.80	2.99	2.77	
381675	0.17	1.29	0.15	
381676	0.27	1.29	0.24	
381677	0.35	1.32	0.34	
381678	1.05	1.72	1.01	
381679	0.14	2.78	< 0.05	
381680	0.99	1.65	0.43	
381681	0.10	1.20	< 0.05	2.86
381682	0.12	1.10	< 0.05	
381683	0.60	0.79	0.52	
381684	0.15	0.46	0.09	
381685	0.07	0.10	< 0.05	
381686	0.12	0.19	< 0.05	
381687	0.07	0.27	< 0.05	
381688	0.05	0.29	< 0.05	
381689	0.24	0.19	< 0.05	
381690	0.01	< 0.01	< 0.05	
381691	0.06	0.36	< 0.05	2.80
381692	0.11	0.34	< 0.05	
381693	0.11	0.60	< 0.05	
381694	0.72	2.43	0.66	
381695	2.18	2.96	2.16	
381696	2.26	2.79	2.23	
381697	0.11	0.54	< 0.05	
381698	0.06	0.30	< 0.05	
381699	0.03	0.21	< 0.05	
381700	0.57	0.55	0.12	
381701	0.04	0.24	< 0.05	3.24
381702	0.06	0.20	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
BaSO4 Meas		14.5		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.2		
BaSO4 Cert		14.0		
BaSO4 Meas		14.5		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.2		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.2		
BaSO4 Cert		14.0		
SGR-1b Meas	27.4	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.9	1.59		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.2	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	26.9	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.57		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.1	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.0	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.53		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.1	1.55		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.57		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.56		
GS311-4 Meas	1.10	0.53		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.12	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.06	0.51		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.53		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.56		
GS311-4 Cert	1.11	0.54		
GS900-5 Meas	0.64	0.32		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.36		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.60	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.65	0.35		
GS900-5 Cert	0.65	0.34		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.61	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.35		
GS900-5 Cert	0.65	0.34		
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.04	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.02	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.02	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.06	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.06	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.03	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.04	
Graphite 4A Cert			4.18	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Graphite 4A Meas			3.87	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.04	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.5	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.4	
Graphite 14 Cert			14.55	
Graphite 14 Meas			13.9	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
381430 Orig	0.09	0.13	< 0.05	
381430 Dup	0.09	0.13	< 0.05	
381440 Orig	0.99	1.62	0.43	
381440 Dup	0.98	1.59	0.41	
381450 Orig			< 0.05	
381450 Dup			< 0.05	
381451 Orig	2.53	3.53		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381451 Dup	2.48	3.46		
381460 Orig			2.66	
381460 Dup			2.68	
381461 Orig	0.14	0.32		
381461 Dup	0.12	0.31		
381470 Orig			< 0.05	
381470 Dup			< 0.05	
381471 Orig	0.53	1.53	0.45	2.82
381471 Split PREP DUP	0.52	1.50	0.44	2.81
381473 Orig	0.55	1.90		
381473 Dup	0.56	1.94		
381479 Orig			1.38	
381479 Dup			1.39	
381481 Orig	2.75	2.44		
381481 Dup	2.79	2.51		
381489 Orig			1.52	
381489 Dup			1.53	
381492 Orig	0.52	1.88		
381492 Dup	0.56	1.96		
381499 Orig			1.16	
381499 Dup			1.16	
381502 Orig	0.12	0.33		
381502 Dup	0.12	0.33		
381511 Orig				2.82
381511 Dup				2.81
381513 Orig	0.39	1.57	0.31	
381513 Dup	0.39	1.53	0.31	
381521 Orig	3.89	2.13	3.75	2.96
381521 Split PREP DUP	3.62	2.11	3.55	2.99
381522 Orig	0.11	0.27	< 0.05	
381522 Dup	0.12	0.27	< 0.05	
381533 Orig	0.07	0.28		
381533 Dup	0.07	0.28		
381543 Orig	0.07	0.24		
381543 Dup	0.08	0.25		
381552 Orig			3.23	
381552 Dup			3.24	
381554 Orig	1.69	2.18		
381554 Dup	1.69	2.16		
381562 Orig			1.89	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381562 Dup			1.93	
381564 Orig	1.19	1.61		
381564 Dup	1.21	1.64		
381571 Orig	4.97	2.74	4.63	2.84
381571 Split PREP DUP	5.22	2.82	4.77	2.84
381574 Orig	1.37	1.35		
381574 Dup	1.34	1.32		
381576 Orig			0.33	
381576 Dup			0.33	
381581 Orig			1.35	
381581 Dup			1.34	
381584 Orig	2.14	1.84		
381584 Dup	2.16	1.89		
381591 Orig				2.83
381591 Dup				2.82
381595 Orig	0.28	1.64	0.21	
381595 Dup	0.29	1.67	0.21	
381605 Orig	3.91	3.14	3.82	
381605 Dup	3.93	3.14	3.80	
381605 Orig	3.86	3.08	3.87	
381605 Dup	3.78	3.04	3.90	
381615 Orig			2.22	
381615 Dup			2.24	
381616 Orig	2.09	2.34		
381616 Dup	2.09	2.38		
381621 Orig	1.42	1.85	1.40	2.80
381621 Split PREP DUP	1.49	1.83	1.48	2.77
381624 Orig			< 0.05	
381624 Dup			< 0.05	
381625 Orig	0.12	0.22		
381625 Dup	0.12	0.22		
381634 Orig			< 0.05	
381634 Dup			< 0.05	
381636 Orig	0.63	1.45		
381636 Dup	0.63	1.41		
381644 Orig			6.09	
381644 Dup			6.13	
381646 Orig	2.84	2.54		
381646 Dup	2.82	2.55		
381654 Orig			0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381654 Dup			0.06	
381657 Orig	0.18	0.19		
381657 Dup	0.19	0.18		
381664 Orig			3.54	
381664 Dup			3.54	
381667 Orig	2.01	1.92		
381667 Dup	1.99	1.92		
381678 Orig	1.06	1.74	1.01	
381678 Dup	1.04	1.70	1.01	
381681 Orig				2.87
381681 Dup				2.84
381688 Orig			< 0.05	
381688 Dup			< 0.05	
381698 Orig			< 0.05	
381698 Dup			< 0.05	
381699 Orig	0.03	0.21		
381699 Dup	0.03	0.20		
381702 Orig	0.06	0.20	< 0.05	
381702 Split PREP DUP	0.05	0.21	< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			0.80	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank			< 0.05	



Date Submitted: 22-Feb-17
Invoice No.: A17-01585
Invoice Date: 07-Mar-17
Your Reference: Manitouwadge Graphite

Ardiden Ltd.
Suite 6, 295 Rokeby Rd
Subiaco WA 6008
Australia

ATTN: Brad Boyle (inv/res)

CERTIFICATE OF ANALYSIS

230 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4F-C, S Infrared

Code 4F-C-Graphitic Infrared

Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer

REPORT **A17-01585**

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 stylized with a large, looped 'E' and a long, sweeping tail.

Emmanuel Esemé , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
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Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381191	0.12	0.28	< 0.05	2.85
381192	0.10	0.35	< 0.05	
381193	0.11	0.27	< 0.05	
381194	0.10	0.22	< 0.05	
381195	5.19	3.08	4.90	
381196	5.12	3.09	4.88	
381197	5.12	2.45	4.72	
381198	4.66	2.45	4.34	
381199	0.69	2.21	0.48	
381200	2.87	4.49	2.57	
381201	1.55	1.65	1.35	2.78
381202	2.74	2.96	2.61	
381203	2.46	2.48	2.30	
381204	0.64	2.34	0.53	
381205	2.93	2.63	2.77	
381206	0.83	2.17	0.82	
381207	3.83	2.62	3.73	
381208	3.03	2.64	2.82	
381209	1.56	2.32	1.46	
381210	0.06	0.14	< 0.05	
381211	1.50	2.03	1.40	2.78
381212	0.44	0.71	0.31	
381213	0.17	0.27	< 0.05	
381214	0.11	0.27	< 0.05	
381215	0.15	0.28	< 0.05	
381216	0.18	0.26	< 0.05	
381217	0.96	1.00	0.86	
381218	2.77	1.85	2.71	
381219	1.57	2.07	1.32	
381220	8.53	0.05	7.72	
381221	1.59	2.10	1.48	2.79
381222	4.49	2.74	4.42	
381223	2.82	2.50	2.67	
381224	1.85	2.05	1.65	
381225	3.99	2.44	3.89	
381226	0.93	1.80	0.88	
381227	1.70	2.25	1.64	
381228	3.02	2.06	2.87	
381229	2.24	2.27	2.10	
381230	0.06	0.14	< 0.05	
381231	2.16	1.90	2.07	2.81

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381232	1.78	1.45	1.73	
381233	5.39	3.33	5.00	
381234	4.07	2.53	3.66	
381235	1.19	1.67	1.07	
381236	1.52	1.82	1.37	
381237	0.13	0.38	< 0.05	
381238	0.10	0.26	< 0.05	
381239	0.09	0.26	< 0.05	
381240	1.00	1.61	0.44	
381241	0.07	0.25	< 0.05	2.79
381242	0.07	0.26	< 0.05	
381243	0.99	1.40	0.89	
381244	0.28	0.49	0.10	
381245	0.11	0.27	< 0.05	
381246	0.12	0.29	< 0.05	
381247	0.15	0.27	< 0.05	
381248	0.15	0.21	< 0.05	
381249	0.10	0.25	< 0.05	
381250	0.08	0.16	< 0.05	
381251	0.10	0.27	< 0.05	2.79
381252	0.10	0.32	< 0.05	
381253	0.09	0.27	< 0.05	
381254	0.10	0.28	< 0.05	
381255	0.16	0.42	< 0.05	
381256	0.18	0.34	< 0.05	
381257	0.17	0.44	0.07	
381258	0.11	0.14	< 0.05	
381259	0.08	0.26	< 0.05	
381260	0.55	0.55	0.12	
381261	0.06	0.21	< 0.05	2.86
381262	0.07	0.30	< 0.05	
381263	0.04	0.25	< 0.05	
381264	0.11	0.26	< 0.05	
381265	0.11	0.23	< 0.05	
381266	0.20	0.28	< 0.05	
381267	0.13	0.46	< 0.05	
381268	0.12	0.32	< 0.05	
381269	0.11	0.30	< 0.05	
381270	0.06	0.15	< 0.05	
381271	0.64	1.80	0.59	2.82
381272	1.15	1.55	1.09	
381273	11.2	3.47	10.8	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381274	0.56	1.49	0.51	
381275	1.40	1.93	1.37	
381276	2.48	1.99	2.46	
381277	1.42	1.47	1.40	
381278	0.07	0.25	< 0.05	
381279	0.08	0.35	< 0.05	
381280	8.50	0.04	7.57	
381281	0.09	0.23	< 0.05	2.84
381282	0.09	0.24	< 0.05	
381283	0.10	0.47	< 0.05	
381284	0.08	0.24	< 0.05	
381285	0.09	0.29	< 0.05	
381286	0.08	0.34	< 0.05	
381287	2.62	2.05	2.55	
381288	3.33	2.00	2.51	
381289	0.17	0.54	0.10	
381290	0.08	0.13	< 0.05	
381291	0.13	0.39	< 0.05	2.81
381292	0.08	0.22	< 0.05	
381293	0.08	0.27	< 0.05	
381294	0.07	0.26	< 0.05	
381295	0.18	0.25	0.11	
381296	0.15	0.24	0.08	
381297	0.08	0.28	< 0.05	
381298	0.10	0.22	< 0.05	
381299	0.10	0.26	< 0.05	
381300	0.98	1.57	0.43	
381301	0.09	0.21	< 0.05	2.75
381302	0.10	0.33	< 0.05	
381303	0.10	0.40	< 0.05	
381304	0.10	0.21	< 0.05	
381305	0.09	0.32	< 0.05	
381306	1.89	2.15	1.80	
381307	1.96	2.00	1.72	
381308	4.07	2.80	3.95	
381309	1.67	1.82	1.65	
381310	0.04	0.11	< 0.05	
381311	0.22	0.69	0.14	2.78
381312	0.10	0.24	< 0.05	
381313	0.07	0.26	< 0.05	
381314	0.14	0.28	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381315	0.10	0.25	< 0.05	
381316	0.10	0.20	< 0.05	
381317	0.05	0.23	< 0.05	
381318	0.06	0.19	< 0.05	
381319	0.07	0.19	< 0.05	
381320	2.94	4.61	2.63	
381321	0.07	0.25	< 0.05	2.87
381322	0.09	0.23	< 0.05	
381323	0.46	2.24	0.38	
381324	1.95	2.81	1.75	
381325	1.17	1.93	1.06	
381326	2.28	2.29	2.23	
381327	0.10	0.33	< 0.05	
381328	0.17	0.29	< 0.05	
381329	0.08	0.21	< 0.05	
381330	0.05	0.10	< 0.05	
381331	0.13	0.42	< 0.05	2.84
381332	0.18	0.23	< 0.05	
381333	0.11	0.25	< 0.05	
381334	0.10	0.26	< 0.05	
381335	0.22	0.33	0.12	
381336	0.20	0.31	0.11	
381337	0.09	0.21	< 0.05	
381338	0.08	0.32	< 0.05	
381339	0.08	0.21	< 0.05	
381340	2.92	4.57	2.64	
381341	0.12	0.23	< 0.05	2.82
381342	0.39	0.43	0.06	
381343	2.78	3.03	2.69	
381344	0.37	1.43	0.13	
381345	1.04	2.29	0.95	
381346	4.51	2.67	4.37	
381347	1.21	1.66	1.18	
381348	0.82	1.89	0.76	
381349	2.72	2.03	2.68	
381350	0.03	0.12	< 0.05	
381351	1.71	2.21	1.65	2.80
381352	0.05	0.28	< 0.05	
381353	0.10	0.24	< 0.05	
381354	0.14	0.27	< 0.05	
381355	0.08	0.33	< 0.05	
381356	0.09	0.35	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381357	0.09	0.25	< 0.05	
381358	0.11	0.28	< 0.05	
381359	0.07	0.12	< 0.05	
381360	0.55	0.55	0.13	
381361	0.08	0.09	< 0.05	2.75
381362	0.06	0.23	< 0.05	
381363	0.11	0.30	< 0.05	
381364	1.65	1.52	1.55	
381365	6.36	1.64	4.47	
381366	3.88	2.13	3.39	
381367	2.71	2.01	2.24	
381368	0.65	1.41	0.57	
381369	1.88	1.69	1.72	
381370	0.06	0.13	< 0.05	
381371	0.17	0.63	< 0.05	2.85
381372	0.10	0.33	< 0.05	
381373	0.09	0.27	< 0.05	
381374	0.08	0.22	< 0.05	
381375	2.18	1.81	2.09	
381376	1.96	1.76	1.84	
381377	3.80	2.55	3.55	
381378	1.31	0.88	1.12	
381379	0.10	0.31	< 0.05	
381380	1.00	1.61	0.42	
381381	0.14	0.31	< 0.05	2.85
381382	0.09	0.28	< 0.05	
381383	0.09	0.28	< 0.05	
381384	0.10	0.30	< 0.05	
381385	0.57	0.97	0.49	
381386	1.39	1.42	1.30	
381387	3.37	2.82	3.23	
381388	1.90	1.37	1.77	
381389	1.11	1.40	1.01	
381390	0.03	0.14	< 0.05	
381391	0.13	0.30	< 0.05	2.77
381392	0.12	0.25	< 0.05	
381393	0.07	0.22	< 0.05	
381394	0.08	0.18	< 0.05	
381395	0.12	0.23	< 0.05	
381396	0.11	0.23	< 0.05	
381397	0.09	0.28	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381398	0.06	0.25	< 0.05	
381399	0.07	0.12	< 0.05	
381400	0.55	0.55	0.13	
381401	0.11	0.14	< 0.05	2.73
381402	0.02	0.18	< 0.05	
381403	0.09	0.24	< 0.05	
381404	0.08	0.20	< 0.05	
381405	0.03	0.28	< 0.05	
381406	0.04	0.24	< 0.05	
381407	< 0.01	0.32	< 0.05	
381408	0.07	0.26	< 0.05	
381409	0.06	0.16	< 0.05	
381410	0.05	0.11	< 0.05	
381411	0.07	0.19	< 0.05	2.76
381412	0.07	0.19	< 0.05	
381413	0.11	0.31	< 0.05	
381414	0.21	0.33	< 0.05	
381415	0.04	0.25	< 0.05	
381416	0.05	0.24	< 0.05	
381417	0.02	0.25	< 0.05	
381418	0.05	0.24	< 0.05	
381419	0.12	0.33	0.05	
381420	2.92	4.69	2.52	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		13.8		
BaSO4 Cert		14.0		
BaSO4 Meas		13.7		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		13.6		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
BaSO4 Meas		14.0		
BaSO4 Cert		14.0		
SGR-1b Meas	27.9	1.57		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.9	1.55		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.55		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.51		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.50		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.8	1.57		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.56		
SGR-1b Cert	28	1.53		
GS311-4 Meas	1.11	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.53		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.07	0.54		
GS311-4 Cert	1.11	0.54		
GS900-5 Meas	0.65	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
Graphite 4A Meas			4.03	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.04	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.97	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Graphite 14 Meas			13.9	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.3	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
381200 Orig	2.85	4.48	2.57	
381200 Dup	2.89	4.50	2.58	
381211 Orig	1.49	2.04	1.40	
381211 Dup	1.50	2.03	1.40	
381220 Orig			7.65	
381220 Dup			7.79	
381221 Orig	1.57	2.09		
381221 Dup	1.60	2.11		
381231 Orig	2.17	1.87	2.07	
381231 Dup	2.16	1.92	2.07	
381240 Orig	1.00	1.59	0.44	
381240 Dup	1.01	1.62	0.43	
381241 Orig	0.07	0.25	< 0.05	
381241 Split PREP DUP	0.07	0.25	< 0.05	
381249 Orig			< 0.05	
381249 Dup			< 0.05	
381251 Orig	0.10	0.27		
381251 Dup	0.10	0.26		
381259 Orig			< 0.05	
381259 Dup			< 0.05	
381262 Orig	0.08	0.30		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381262 Dup	0.07	0.30		
381269 Orig			< 0.05	
381269 Dup			< 0.05	
381272 Orig	1.15	1.60		
381272 Dup	1.15	1.51		
381281 Orig				2.85
381281 Dup				2.83
381283 Orig	0.09	0.47	< 0.05	
381283 Dup	0.10	0.47	< 0.05	
381291 Orig	0.13	0.39	< 0.05	
381291 Split PREP DUP	0.14	0.40	< 0.05	
381292 Orig	0.08	0.21	< 0.05	
381292 Dup	0.08	0.22	< 0.05	
381302 Orig			< 0.05	
381302 Dup			< 0.05	
381303 Orig	0.10	0.41		
381303 Dup	0.10	0.39		
381312 Orig			< 0.05	
381312 Dup			< 0.05	
381313 Orig	0.07	0.26		
381313 Dup	0.07	0.26		
381322 Orig			< 0.05	
381322 Dup			< 0.05	
381324 Orig	1.95	2.81		
381324 Dup	1.95	2.81		
381332 Orig			< 0.05	
381332 Dup			< 0.05	
381334 Orig	0.10	0.26		
381334 Dup	0.10	0.26		
381341 Orig	0.12	0.23	< 0.05	
381341 Split PREP DUP	0.11	0.23	< 0.05	
381343 Orig				2.67
381343 Dup				2.70
381344 Orig	0.37	1.44		
381344 Dup	0.36	1.43		
381351 Orig				1.65
381351 Dup				1.64
381354 Orig	0.14	0.28		
381354 Dup	0.14	0.27		
381365 Orig	6.34	1.64	4.48	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381365 Dup	6.37	1.64	4.47	
381375 Orig	2.17	1.82	2.09	
381375 Dup	2.19	1.80	2.09	
381381 Orig				2.85
381381 Dup				2.84
381385 Orig			0.48	
381385 Dup			0.50	
381386 Orig	1.38	1.41		
381386 Dup	1.39	1.44		
381391 Orig	0.13	0.30	< 0.05	
381391 Split PREP DUP	0.13	0.30	< 0.05	
381394 Orig			< 0.05	
381394 Dup			< 0.05	
381395 Orig	0.12	0.23		
381395 Dup	0.13	0.23		
381404 Orig			< 0.05	
381404 Dup			< 0.05	
381406 Orig	0.04	0.25		
381406 Dup	0.04	0.24		
381414 Orig			< 0.05	
381414 Dup			< 0.05	
381416 Orig	0.05	0.24		
381416 Dup	0.05	0.24		
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank				< 0.01
Method Blank				< 0.01



Date Submitted: 01-Feb-17
Invoice No.: A17-00968
Invoice Date: 02-Mar-17
Your Reference: Manitouwadge Graphite

Ardiden Ltd.
Suite 6, 295 Rokeby Rd
Subiaco WA 6008
Australia

ATTN: Brad Boyle (inv/res)

CERTIFICATE OF ANALYSIS

240 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4F-C, S Infrared

Code 4F-C-Graphitic Infrared

Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer

REPORT **A17-00968**

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 is positioned above a horizontal line.

Emmanuel Esemé , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
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Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128451	1.52	1.88	1.38	
1128452	3.83	2.78	3.63	
1128453	3.00	2.50	2.99	
1128454	1.90	2.61	1.79	
1128455	2.51	2.75	2.46	
1128456	2.25	2.49	2.20	
1128457	1.93	1.80	1.88	
1128458	5.41	3.29	5.04	
1128459	4.00	2.16	3.72	
1128460	8.62	0.05	7.67	
1128461	3.54	2.35	3.42	2.74
1128462	3.59	2.38	3.36	
1128463	2.39	2.04	2.26	
1128464	0.92	1.76	0.85	
1128465	0.93	1.30	0.90	
1128466	2.21	4.71	2.14	
1128467	0.37	4.96	0.21	
1128468	1.98	2.37	1.92	
1128469	2.48	2.59	2.48	
1128470	0.16	0.13	< 0.05	
1128471	1.54	1.97	1.44	2.81
1128472	6.53	4.39	6.07	
1128473	3.40	2.65	3.28	
1128474	2.36	1.98	2.33	
1128475	1.52	1.52	1.48	
1128476	1.21	1.63	1.15	
1128477	0.17	0.38	0.08	
1128478	0.07	0.14	< 0.05	
1128479	0.12	0.26	< 0.05	
1128480	8.67	0.05	7.51	
1128481	0.11	0.18	< 0.05	2.80
1128482	0.05	0.19	< 0.05	
1128483	0.11	0.30	< 0.05	
1128484	0.14	0.30	< 0.05	
1128485	0.12	0.24	< 0.05	
1128486	0.13	0.28	< 0.05	
1128487	0.07	0.18	< 0.05	
1128488	0.06	0.38	< 0.05	
1128489	0.13	0.13	< 0.05	
1128490	0.13	0.15	< 0.05	
1128491	0.09	0.25	< 0.05	2.77

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128492	0.05	0.31	< 0.05	
1128493	0.11	0.26	< 0.05	
1128494	0.14	0.41	< 0.05	
1128495	1.17	2.87	1.14	
1128496	1.16	3.14	1.11	
1128497	8.44	2.33	12.8	
1128498	17.8	5.55	17.5	
1128499	5.65	2.99	5.35	
1128500	18.3	0.05	16.9	
381001	1.63	2.65	1.50	2.80
381002	1.71	2.61	1.60	
381003	5.50	2.60	5.10	
381004	25.4	5.79	24.5	
381005	0.62	2.71	0.58	
381006	0.20	3.00	< 0.05	
381007	1.18	1.94	1.02	
381008	0.38	2.00	0.31	
381009	1.10	3.48	0.96	
381010	0.07	0.13	< 0.05	
381011	0.62	2.14	0.55	2.77
381012	10.8	3.01	9.70	
381013	12.5	3.46	12.4	
381014	0.37	2.93	0.22	
381015	2.59	2.27	2.56	
381016	3.60	2.42	3.50	
381017	0.51	2.60	0.42	
381018	1.01	2.44	0.96	
381019	2.37	2.34	2.34	
381020	2.88	4.61	2.67	
381021	0.23	0.44	0.14	2.80
381022	2.53	3.04	2.50	
381023	1.61	2.99	1.44	
381024	0.27	1.55	< 0.05	
381025	0.47	0.97	0.40	
381026	0.79	1.67	0.71	
381027	0.87	1.63	0.76	
381028	1.26	2.21	1.13	
381029	0.93	1.36	0.88	
381030	0.04	0.13	< 0.05	
381031	3.10	2.31	2.95	2.79
381032	0.46	2.15	0.33	
381033	0.50	1.24	0.34	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381034	1.09	2.00	0.58	
381035	0.19	0.33	< 0.05	
381036	0.20	0.91	< 0.05	
381037	0.18	0.19	< 0.05	
381038	0.11	0.25	< 0.05	
381039	0.14	0.16	< 0.05	
381040	0.55	0.55	0.12	
381041	0.27	0.20	< 0.05	2.77
381042	0.31	0.11	< 0.05	
381043	0.24	0.05	< 0.05	
381044	0.12	0.12	< 0.05	
381045	0.12	0.20	< 0.05	
381046	0.17	0.06	< 0.05	
381047	0.18	0.03	< 0.05	
381048	0.63	0.29	0.06	
381049	0.77	1.92	0.49	
381050	0.04	0.11	< 0.05	
381051	1.18	2.62	1.03	2.79
381052	0.85	1.54	0.77	
381053	0.31	1.49	0.10	
381054	0.21	0.76	< 0.05	
381055	0.23	0.65	< 0.05	
381056	0.26	0.74	< 0.05	
381057	0.73	1.75	0.65	
381058	0.43	1.08	0.39	
381059	0.81	1.84	0.76	
381060	1.01	1.64	0.42	
381061	0.38	1.53	0.33	2.75
381062	2.11	2.80	2.03	
381063	2.24	2.32	2.21	
381064	7.19	3.08	6.69	
381065	6.87	3.30	6.45	
381066	1.60	2.39	1.52	
381067	0.77	2.23	0.70	
381068	2.99	2.60	2.94	
381069	0.29	2.23	0.12	
381070	0.05	0.15	< 0.05	
381071	0.49	1.64	0.40	2.74
381072	1.34	2.00	1.29	
381073	0.77	2.35	0.66	
381074	0.54	1.69	0.45	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381075	5.52	3.09	5.17	
381076	5.78	3.03	5.45	
381077	2.27	2.36	2.20	
381078	5.22	3.07	4.91	
381079	2.95	2.38	2.96	
381080	1.00	1.67	0.43	
381081	0.13	0.47	< 0.05	2.78
381082	0.12	0.30	< 0.05	
381083	0.06	0.21	< 0.05	
381084	0.06	0.17	< 0.05	
381085	0.04	0.13	< 0.05	
381086	0.04	0.14	< 0.05	
381087	0.03	0.12	< 0.05	
381088	0.06	0.37	< 0.05	
381089	< 0.01	0.28	< 0.05	
381090	0.11	0.12	< 0.05	
381091	0.06	0.13	< 0.05	2.71
381092	0.07	0.11	< 0.05	
381093	0.06	0.31	< 0.05	
381094	0.14	0.23	< 0.05	
381095	0.15	0.24	< 0.05	
381096	0.14	0.24	< 0.05	
381097	0.09	0.25	< 0.05	
381098	0.07	0.34	< 0.05	
381099	0.11	0.32	< 0.05	
381100	2.89	4.56	2.67	
381101	0.14	0.48	0.06	2.76
381102	2.22	2.65	2.18	
381103	4.17	2.84	4.03	
381104	1.02	3.03	0.98	
381105	1.31	2.34	1.30	
381106	1.14	2.28	1.11	
381107	1.00	2.15	0.85	
381108	5.77	3.57	5.18	
381109	0.48	2.21	0.37	
381110	0.04	0.14	< 0.05	
381111	1.12	2.17	1.06	2.77
381112	0.87	1.36	0.81	
381113	0.88	2.20	0.81	
381114	1.15	2.33	1.03	
381115	5.24	4.27	4.97	
381116	5.30	3.43	5.02	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381117	9.62	5.15	9.02	
381118	6.96	3.56	6.47	
381119	5.10	2.61	4.88	
381120	14.5	0.08	13.2	
381121	1.62	2.46	1.56	2.78
381122	0.65	2.85	0.64	
381123	1.64	2.34	1.63	
381124	4.26	2.98	4.10	
381125	4.82	2.50	4.60	
381126	0.66	2.37	0.64	
381127	2.28	3.09	2.20	
381128	1.01	2.39	0.96	
381129	2.55	2.63	2.52	
381130	0.06	0.11	< 0.05	
381131	2.68	1.47	2.63	2.74
381132	6.02	2.65	5.65	
381133	0.23	1.44	0.12	
381134	0.27	1.36	0.19	
381135	0.51	1.31	0.43	
381136	0.44	1.38	0.36	
381137	0.19	2.25	< 0.05	
381138	0.16	1.59	< 0.05	
381139	0.20	1.17	0.11	
381140	2.87	4.54	2.65	
381141	1.06	1.84	0.99	2.79
381142	0.44	1.29	0.39	
381143	0.59	3.58	0.57	
381144	1.52	2.50	1.49	
381145	5.81	2.72	5.52	
381146	5.61	3.54	5.26	
381147	10.4	5.27	8.77	
381148	0.44	2.05	0.20	
381149	7.49	3.18	7.06	
381150	0.12	0.11	< 0.05	
381151	0.34	1.66	0.29	2.79
381152	4.18	3.92	3.65	
381153	1.57	1.62	0.86	
381154	0.52	0.37	0.33	
381155	0.15	0.34	0.06	
381156	0.15	0.31	0.06	
381157	0.16	0.29	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381158	0.33	0.07	< 0.05	
381159	0.37	0.09	< 0.05	
381160	0.98	1.59	0.43	
381161	0.24	0.07	< 0.05	2.76
381162	0.18	0.12	< 0.05	
381163	1.15	1.23	1.08	
381164	3.86	2.93	3.72	
381165	0.40	0.87	0.33	
381166	0.63	1.42	0.57	
381167	0.06	0.25	< 0.05	
381168	0.08	0.18	< 0.05	
381169	0.06	0.15	< 0.05	
381170	0.08	0.12	< 0.05	
381171	0.10	0.62	< 0.05	2.76
381172	0.17	0.47	0.07	
381173	0.54	1.11	0.44	
381174	0.21	0.43	0.08	
381175	0.13	0.32	< 0.05	
381176	0.13	0.26	< 0.05	
381177	0.06	0.23	< 0.05	
381178	0.07	0.22	< 0.05	
381179	0.05	0.20	< 0.05	
381180	0.55	0.54	0.12	
381181	0.07	0.27	< 0.05	2.84
381182	0.09	0.18	< 0.05	
381183	0.04	0.23	< 0.05	
381184	0.05	0.28	< 0.05	
381185	0.04	0.30	< 0.05	
381186	0.11	0.39	< 0.05	
381187	0.10	0.26	< 0.05	
381188	0.19	0.37	< 0.05	
381189	0.24	0.28	< 0.05	
381190	0.24	0.18	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		13.9		
BaSO4 Cert		14.0		
BaSO4 Meas		13.8		
BaSO4 Cert		14.0		
BaSO4 Meas		14.3		
BaSO4 Cert		14.0		
BaSO4 Meas		14.4		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		13.8		
BaSO4 Cert		14.0		
BaSO4 Meas		14.4		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
BaSO4 Meas		14.1		
BaSO4 Cert		14.0		
SGR-1b Meas	27.3	1.53		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.55		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.6	1.46		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.8	1.44		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.9	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.2	1.60		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.5	1.62		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.59		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.5	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.54		
SGR-1b Cert	28	1.53		
GS311-4 Meas	1.08	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.50		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.11	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.57		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.56		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.06	0.52		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.08	0.55		
GS311-4 Cert	1.11	0.54		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.61	0.34		
GS900-5 Cert	0.65	0.34		
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.01	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.95	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			13.9	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			13.9	
Graphite 14 Cert			14.55	
1128460 Orig	8.66	0.06	7.76	
1128460 Dup	8.59	0.05	7.57	
1128470 Orig	0.15	0.13	< 0.05	
1128470 Dup	0.16	0.13	< 0.05	
1128480 Orig			7.37	
1128480 Dup			7.65	
1128481 Orig	0.11	0.19		
1128481 Dup	0.11	0.18		
1128490 Orig			< 0.05	
1128490 Dup			< 0.05	
1128491 Orig	0.09	0.24		
1128491 Dup	0.09	0.25		
1128500 Orig	18.2	0.05	17.1	
1128500 Dup	18.5	0.05	16.7	
381001 Orig	1.63	2.65	1.50	
381001 Split PREP DUP	1.62	2.66	1.49	
381009 Orig			0.95	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381009 Dup			0.97	
381011 Orig	0.62	2.14		
381011 Dup	0.62	2.15		
381019 Orig			2.33	
381019 Dup			2.35	
381022 Orig	2.52	3.05		
381022 Dup	2.54	3.04		
381029 Orig			0.88	
381029 Dup			0.87	
381032 Orig	0.46	2.13		
381032 Dup	0.47	2.16		
381043 Orig	0.24	0.05	< 0.05	
381043 Dup	0.25	0.04	< 0.05	
381051 Orig	1.18	2.62	1.03	
381051 Split PREP DUP	1.17	2.57	1.02	
381051 Orig				2.79
381051 Dup				2.78
381052 Orig	0.85	1.51	0.78	
381052 Dup	0.86	1.57	0.77	
381062 Orig			2.01	
381062 Dup			2.05	
381063 Orig	2.22	2.28		
381063 Dup	2.27	2.37		
381072 Orig			1.28	
381072 Dup			1.29	
381073 Orig	0.78	2.37		
381073 Dup	0.76	2.32		
381082 Orig			< 0.05	
381082 Dup			< 0.05	
381084 Orig	0.06	0.17		
381084 Dup	0.06	0.17		
381092 Orig			< 0.05	
381092 Dup			< 0.05	
381094 Orig	0.14	0.24		
381094 Dup	0.14	0.23		
381100 Orig			2.66	
381100 Dup			2.67	
381101 Orig	0.14	0.48	0.06	
381101 Split PREP DUP	0.14	0.47	0.06	
381104 Orig	1.02	3.03		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
381104 Dup	1.02	3.03		
381111 Orig			1.06	
381111 Dup			1.06	
381114 Orig	1.16	2.31		
381114 Dup	1.15	2.35		
381125 Orig	4.84	2.51	4.61	
381125 Dup	4.81	2.49	4.59	
381135 Orig	0.50	1.29	0.43	
381135 Dup	0.51	1.33	0.43	
381145 Orig			5.53	
381145 Dup			5.52	
381146 Orig	5.60	3.53		
381146 Dup	5.61	3.55		
381151 Orig	0.34	1.66	0.29	
381151 Split PREP DUP	0.33	1.68	0.29	
381151 Orig				2.79
381151 Dup				2.79
381154 Orig			0.33	
381154 Dup			0.33	
381155 Orig	0.15	0.34		
381155 Dup	0.15	0.33		
381164 Orig			3.73	
381164 Dup			3.71	
381166 Orig	0.64	1.43		
381166 Dup	0.62	1.41		
381173 Orig			0.44	
381173 Dup			0.45	
381174 Orig			0.08	
381174 Dup			0.08	
381176 Orig	0.13	0.26		
381176 Dup	0.13	0.26		
381184 Orig			< 0.05	
381184 Dup			< 0.05	
381187 Orig	0.09	0.25		
381187 Dup	0.10	0.26		
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank				< 0.01



Date Submitted: 20-Jan-17
Invoice No.: A17-00599
Invoice Date: 15-Feb-17
Your Reference: Manitouwadge Graphite

Ardiden Ltd.
Suite 6, 295 Rokeby Rd
Subiaco WA 6008
Australia

ATTN: Brad Boyle (inv/res)

CERTIFICATE OF ANALYSIS

400 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4F-C, S Infrared

Code 4F-C-Graphitic Infrared

Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer

REPORT **A17-00599**

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.
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Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128051	2.39	2.02	2.34	
1128052	7.40	2.66	6.70	
1128053	0.93	1.75	0.89	
1128054	0.08	0.37	< 0.05	
1128055	0.09	0.24	< 0.05	
1128056	0.09	0.29	< 0.05	
1128057	0.09	0.34	< 0.05	
1128058	0.08	0.22	< 0.05	
1128059	0.08	0.25	< 0.05	2.91
1128060	0.54	0.52	0.12	
1128061	0.08	0.38	< 0.05	
1128062	0.09	0.25	< 0.05	
1128063	0.05	0.25	< 0.05	
1128064	0.09	0.17	< 0.05	
1128065	0.24	0.21	0.16	
1128066	0.38	0.39	0.06	
1128067	0.46	0.49	0.26	
1128068	0.17	0.26	0.07	
1128069	0.15	0.24	< 0.05	2.79
1128070	0.08	0.14	< 0.05	
1128071	0.32	0.62	0.27	
1128072	0.31	0.61	0.27	
1128073	0.41	0.60	0.38	
1128074	3.72	2.85	3.47	
1128075	0.54	1.23	0.55	
1128076	0.65	1.58	0.63	
1128077	0.63	1.25	0.35	
1128078	0.47	1.04	0.40	
1128079	2.11	1.61	1.96	2.76
1128080	2.93	4.56	2.65	
1128081	0.99	2.23	0.92	
1128082	0.46	2.03	0.42	
1128083	8.94	6.41	8.14	
1128084	2.86	3.26	2.77	
1128085	0.46	1.36	0.44	
1128086	0.64	1.21	0.61	
1128087	0.40	1.96	0.32	
1128088	0.57	1.58	0.47	
1128089	7.65	3.52	6.99	2.80
1128090	0.08	0.15	< 0.05	
1128091	1.53	1.98	1.41	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128092	1.86	2.65	1.76	
1128093	0.11	1.65	0.07	
1128094	0.43	1.91	0.40	
1128095	1.96	2.43	1.98	
1128096	2.56	3.20	2.51	
1128097	0.40	2.34	0.35	
1128098	3.68	3.23	3.36	
1128099	2.24	2.61	2.20	2.82
1128100	0.98	1.60	0.41	
1128101	1.36	1.90	1.31	
1128102	3.42	1.96	3.14	
1128103	0.93	1.71	0.89	
1128104	0.65	1.19	0.60	
1128105	0.04	1.44	< 0.05	
1128106	0.15	1.85	< 0.05	
1128107	0.27	1.71	0.23	
1128108	0.63	1.85	0.61	
1128109	0.45	1.14	0.42	2.77
1128110	0.08	0.10	< 0.05	
1128111	0.75	1.52	0.74	
1128112	3.49	3.17	3.18	
1128113	1.00	2.11	0.94	
1128114	0.63	1.37	0.57	
1128115	0.17	1.18	0.11	
1128116	0.23	1.17	0.17	
1128117	0.29	0.98	0.24	
1128118	0.20	0.60	0.12	
1128119	0.07	0.41	< 0.05	2.80
1128120	0.55	0.55	0.11	
1128121	0.07	0.44	< 0.05	
1128122	0.12	0.41	< 0.05	
1128123	0.19	0.34	< 0.05	
1128124	0.12	0.36	< 0.05	
1128125	0.08	0.21	< 0.05	
1128126	0.44	0.20	< 0.05	
1128127	0.11	0.19	0.07	
1128128	0.02	0.34	< 0.05	
1128129	0.05	0.27	< 0.05	2.79
1128130	0.05	0.12	< 0.05	
1128131	0.08	0.26	< 0.05	
1128132	0.13	0.32	< 0.05	
1128133	0.53	1.28	0.41	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128134	1.33	4.37	1.23	
1128135	0.19	0.32	0.11	
1128136	0.25	0.44	0.18	
1128137	1.22	2.11	1.22	
1128138	1.36	2.36	1.26	
1128139	3.70	2.28	3.52	2.79
1128140	2.90	4.62	2.64	
1128141	1.92	2.31	1.83	
1128142	0.95	2.13	0.88	
1128143	4.46	2.65	4.22	
1128144	1.86	2.24	1.78	
1128145	1.93	2.00	1.84	
1128146	0.11	0.28	< 0.05	
1128147	0.07	0.32	< 0.05	
1128148	0.10	0.35	< 0.05	
1128149	0.10	0.23	< 0.05	2.77
1128150	0.12	0.16	< 0.05	
1128151	0.10	0.25	< 0.05	
1128152	6.51	2.98	6.02	
1128153	1.44	1.78	1.44	
1128154	1.13	1.87	1.08	
1128155	1.10	1.91	1.07	
1128156	1.18	1.89	1.13	
1128157	0.91	1.21	0.87	
1128158	1.40	2.04	1.33	
1128159	1.75	2.54	1.67	2.80
1128160	8.47	0.05	7.66	
1128161	0.28	1.41	0.24	
1128162	1.24	2.40	1.21	
1128163	3.32	2.62	3.21	
1128164	5.58	2.96	5.42	
1128165	2.44	2.46	2.34	
1128166	0.40	1.26	0.31	
1128167	0.85	1.69	0.73	
1128168	0.37	1.17	0.32	
1128169	0.44	1.18	0.36	2.79
1128170	0.07	0.14	< 0.05	
1128171	1.46	2.37	1.34	
1128172	1.09	2.39	1.05	
1128173	2.02	2.93	1.96	
1128174	2.48	2.11	2.06	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128175	0.76	1.35	0.73	
1128176	0.99	1.22	0.93	
1128177	4.09	2.02	3.89	
1128178	1.97	1.96	1.82	
1128179	6.42	4.06	5.93	2.83
1128180	14.7	0.06	12.7	
1128181	0.89	1.61	0.81	
1128182	3.70	2.08	3.30	
1128183	0.77	2.61	0.63	
1128184	1.96	2.83	1.82	
1128185	1.42	1.91	1.22	
1128186	1.22	1.33	1.17	
1128187	0.13	0.45	< 0.05	
1128188	0.22	0.75	0.16	
1128189	0.73	2.52	0.65	2.81
1128190	0.39	0.12	< 0.05	
1128191	5.04	2.97	4.52	
1128192	0.38	2.32	0.29	
1128193	3.20	2.45	3.09	
1128194	2.72	2.99	2.71	
1128195	1.94	2.05	1.83	
1128196	1.69	2.02	1.65	
1128197	0.18	0.43	0.11	
1128198	0.09	0.28	< 0.05	
1128199	0.10	0.28	< 0.05	2.80
1128200	0.86	1.35	0.42	
1128201	0.07	0.26	< 0.05	
1128202	0.32	0.54	0.24	
1128203	0.38	1.54	0.26	
1128204	1.12	2.41	1.07	
1128205	2.04	2.26	1.95	
1128206	1.83	2.64	1.74	
1128207	2.62	2.58	2.50	
1128208	1.14	1.60	1.10	
1128209	0.72	1.05	0.67	2.78
1128210	0.13	0.16	< 0.05	
1128211	0.32	0.85	0.24	
1128212	1.40	1.46	1.32	
1128213	1.15	2.03	1.11	
1128214	0.39	2.00	0.38	
1128215	2.02	2.00	1.91	
1128216	2.37	1.87	2.39	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128217	2.08	2.15	1.98	
1128218	7.47	3.15	7.10	
1128219	1.28	1.60	1.25	2.77
1128220	18.0	0.04	15.0	
1128221	1.33	1.94	1.35	
1128222	9.80	5.44	8.74	
1128223	1.73	2.25	1.68	
1128224	3.86	2.70	3.67	
1128225	6.75	2.33	6.43	
1128226	0.45	1.02	0.42	
1128227	1.56	1.70	1.50	
1128228	0.10	0.32	< 0.05	
1128229	0.12	0.22	< 0.05	2.79
1128230	0.08	0.14	< 0.05	
1128231	0.07	0.35	< 0.05	
1128232	0.11	0.31	< 0.05	
1128233	0.07	0.23	< 0.05	
1128234	0.13	0.29	< 0.05	
1128235	0.11	0.27	< 0.05	
1128236	0.10	0.21	< 0.05	
1128237	0.10	0.49	< 0.05	
1128238	0.25	3.44	0.12	
1128239	0.14	3.76	< 0.05	2.86
1128240	0.49	0.55	0.12	
1128241	1.42	2.15	1.20	
1128242	1.56	2.14	1.48	
1128243	2.14	1.97	2.11	
1128244	0.60	2.12	0.57	
1128245	4.34	3.41	3.78	
1128246	1.38	1.83	0.97	
1128247	0.21	2.30	0.13	
1128248	0.60	1.88	0.56	
1128249	2.05	1.84	1.92	2.82
1128250	0.07	0.21	< 0.05	
1128251	0.40	0.62	0.34	
1128252	0.24	0.59	0.34	
1128253	0.21	0.91	0.13	
1128254	0.36	1.68	0.30	
1128255	0.35	2.04	0.19	
1128256	0.30	1.73	0.22	
1128257	0.29	2.23	0.23	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128258	0.28	1.74	0.23	
1128259	0.21	1.59	0.13	2.81
1128260	0.97	1.59	0.42	
1128261	0.12	0.60	0.09	
1128262	0.05	0.21	< 0.05	
1128263	0.05	0.20	< 0.05	
1128264	< 0.01	0.14	< 0.05	
1128265	0.12	0.16	< 0.05	
1128266	0.16	0.21	< 0.05	
1128267	0.20	0.25	< 0.05	
1128268	0.24	0.87	0.11	
1128269	0.26	1.42	0.06	2.82
1128270	0.08	0.17	< 0.05	
1128271	2.61	2.74	2.54	
1128272	4.50	3.79	4.59	
1128273	6.12	5.18	5.53	
1128274	0.51	1.93	0.32	
1128275	4.03	3.25	3.19	
1128276	5.30	3.64	4.53	
1128277	0.53	2.61	0.47	
1128278	0.41	3.18	0.36	
1128279	0.38	2.25	0.34	2.85
1128280	2.86	4.61	2.65	
1128281	0.76	2.38	0.75	
1128282	0.82	1.93	0.80	
1128283	1.53	2.18	1.39	
1128284	2.22	3.49	2.12	
1128285	1.64	2.44	1.48	
1128286	1.12	1.53	1.02	
1128287	0.54	1.15	0.10	
1128288	0.90	1.13	0.10	
1128289	0.30	1.48	< 0.05	2.77
1128290	0.05	0.13	< 0.05	
1128291	0.29	0.98	0.12	
1128292	0.45	1.10	< 0.05	
1128293	0.35	0.79	0.08	
1128294	0.37	1.44	0.25	
1128295	0.78	1.51	0.66	
1128296	0.79	1.52	0.66	
1128297	1.35	1.57	1.25	
1128298	0.86	1.97	0.71	
1128299	1.46	1.52	1.32	2.80

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128300	8.52	0.05	7.58	
1128301	1.11	0.97	1.00	
1128302	1.67	1.93	1.47	
1128303	1.58	1.40	1.54	
1128304	0.70	1.49	0.63	
1128305	2.50	2.74	2.46	
1128306	2.85	2.99	2.77	
1128307	1.32	2.09	1.15	
1128308	3.21	2.81	3.01	
1128309	4.44	3.24	4.27	2.81
1128310	0.07	0.15	< 0.05	
1128311	0.75	1.81	0.65	
1128312	1.32	1.93	1.08	
1128313	2.02	1.62	1.93	
1128314	0.07	0.29	< 0.05	
1128315	0.04	0.20	< 0.05	
1128316	0.06	0.24	< 0.05	
1128317	0.16	0.26	< 0.05	
1128318	0.08	0.30	< 0.05	
1128319	0.06	0.20	< 0.05	2.79
1128320	0.55	0.55	0.12	
1128321	0.14	0.28	< 0.05	
1128322	0.05	0.25	< 0.05	
1128323	0.05	0.28	< 0.05	
1128324	0.05	0.26	< 0.05	
1128325	0.05	0.32	< 0.05	
1128326	0.09	0.25	< 0.05	
1128327	0.05	0.18	< 0.05	
1128328	0.08	0.16	< 0.05	
1128329	0.09	0.12	< 0.05	2.81
1128330	0.05	0.12	< 0.05	
1128331	0.03	0.03	< 0.05	
1128332	0.12	0.22	< 0.05	
1128333	0.13	0.28	< 0.05	
1128334	0.09	0.30	< 0.05	
1128335	0.07	0.18	< 0.05	
1128336	0.05	0.16	< 0.05	
1128337	0.06	0.24	< 0.05	
1128338	0.03	0.14	< 0.05	
1128339	0.06	0.17	< 0.05	2.80
1128340	0.56	0.55	0.12	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128341	0.04	0.25	< 0.05	
1128342	0.04	0.24	< 0.05	
1128343	0.14	0.30	< 0.05	
1128344	0.23	3.48	< 0.05	
1128345	0.11	0.37	< 0.05	
1128346	0.09	0.43	< 0.05	
1128347	0.08	0.34	< 0.05	
1128348	0.07	0.33	< 0.05	
1128349	2.10	2.33	2.04	2.83
1128350	0.04	0.13	< 0.05	
1128351	3.28	2.53	3.18	
1128352	0.99	2.17	0.94	
1128353	1.48	2.14	1.50	
1128354	1.49	2.65	1.45	
1128355	3.29	2.07	3.11	
1128356	3.59	2.12	3.41	
1128357	2.10	2.64	2.03	
1128358	0.62	1.13	0.62	
1128359	0.50	1.02	0.41	2.81
1128360	18.0	0.05	15.8	
1128361	2.77	1.85	2.77	
1128362	0.27	2.09	0.20	
1128363	1.16	1.87	1.07	
1128364	1.04	2.24	1.00	
1128365	0.89	2.51	0.76	
1128366	4.12	2.53	3.90	
1128367	5.85	2.50	5.33	
1128368	1.53	1.08	1.37	
1128369	0.54	0.87	0.45	2.81
1128370	0.01	0.14	< 0.05	
1128371	0.32	0.51	0.25	
1128372	0.36	0.52	0.32	
1128373	0.10	0.31	< 0.05	
1128374	0.10	0.26	< 0.05	
1128375	0.10	0.24	< 0.05	
1128376	0.10	0.28	< 0.05	
1128377	0.09	0.33	< 0.05	
1128378	0.07	0.21	< 0.05	
1128379	0.07	0.23	< 0.05	2.82
1128380	1.00	1.59	0.44	
1128381	0.06	0.31	< 0.05	
1128382	0.04	0.25	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128383	0.06	0.32	< 0.05	
1128384	0.04	0.32	< 0.05	
1128385	0.09	0.20	< 0.05	
1128386	0.50	2.41	0.44	
1128387	1.05	2.98	0.82	
1128388	0.95	2.58	0.87	
1128389	1.51	3.47	1.37	2.86
1128390	< 0.01	0.13	< 0.05	
1128391	2.13	3.28	2.07	
1128392	4.46	3.94	4.16	
1128393	2.63	3.41	2.39	
1128394	2.73	1.90	2.52	
1128395	0.61	1.77	0.47	
1128396	0.54	1.42	0.40	
1128397	0.27	2.61	0.16	
1128398	1.10	2.31	0.96	
1128399	0.59	2.78	0.46	2.84
1128400	14.6	0.05	13.1	
1128401	5.44	5.67	4.83	
1128402	0.14	2.34	< 0.05	
1128403	0.14	2.16	< 0.05	
1128404	0.22	1.34	0.10	
1128405	6.80	5.75	6.25	
1128406	1.54	2.30	1.33	
1128407	0.24	1.05	0.20	
1128408	0.19	2.23	0.10	
1128409	5.43	4.37	5.11	2.88
1128410	0.04	0.21	< 0.05	
1128411	0.12	1.29	< 0.05	
1128412	0.26	1.74	0.15	
1128413	0.19	0.82	0.15	
1128414	1.60	2.37	1.46	
1128415	0.22	2.32	0.18	
1128416	0.27	2.68	0.24	
1128417	0.30	2.60	0.24	
1128418	4.08	2.70	3.91	
1128419	1.41	3.10	1.36	2.84
1128420	1.00	1.62	0.42	
1128421	1.02	1.76	0.97	
1128422	0.49	0.98	0.34	
1128423	0.25	0.36	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128424	0.47	2.98	0.30	
1128425	0.60	1.86	0.54	
1128426	2.24	1.10	1.14	
1128427	2.55	2.60	2.08	
1128428	13.6	3.87	12.9	
1128429	7.04	2.71	6.10	2.86
1128430	0.02	0.11	< 0.05	
1128431	4.58	2.68	3.82	
1128432	2.49	2.76	1.65	
1128433	14.1	5.42	13.1	
1128434	3.17	1.82	2.32	
1128435	3.25	1.94	1.82	
1128436	3.01	1.67	1.42	
1128437	3.96	2.16	2.66	
1128438	1.24	2.01	0.88	
1128439	0.72	2.02	0.65	2.83
1128440	14.6	0.06	13.1	
1128441	0.60	2.10	0.56	
1128442	0.53	2.38	0.48	
1128443	2.14	2.01	2.11	
1128444	2.93	2.65	2.90	
1128445	0.70	1.94	0.65	
1128446	1.79	2.15	1.68	
1128447	0.77	1.29	0.72	
1128448	0.94	2.07	0.88	
1128449	0.38	1.49	0.33	2.77
1128450	0.09	0.12	< 0.05	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.2	1.57		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.55		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.1	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.5	1.53		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.0	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.3	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.2	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.52		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.2	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.3	1.60		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.2	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	28.3	1.58		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.56		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.4	1.59		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.9	1.54		
SGR-1b Cert	28	1.53		
SGR-1b Meas	27.7	1.52		
SGR-1b Cert	28	1.53		
GS311-4 Meas	1.10	0.54		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.10	0.55		
GS311-4 Cert	1.11	0.54		
GS311-4 Meas	1.09	0.54		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.64	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.35		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.60	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.34		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.63	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.33		
GS900-5 Cert	0.65	0.34		
GS900-5 Meas	0.62	0.31		
GS900-5 Cert	0.65	0.34		
Graphite 4A Meas			4.03	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.04	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.02	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Graphite 4A Meas			4.03	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.99	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.00	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.98	
Graphite 4A Cert			4.18	
Graphite 4A Meas			4.18	
Graphite 4A Cert			4.18	
Graphite 4A Meas			3.97	
Graphite 4A Cert			4.18	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			13.9	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.2	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.1	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
Graphite 14 Meas			13.8	
Graphite 14 Cert			14.55	
Graphite 14 Meas			14.0	
Graphite 14 Cert			14.55	
1128060 Orig	0.54	0.52	0.12	
1128060 Dup	0.53	0.53	0.12	
1128070 Orig	0.08	0.14	< 0.05	
1128070 Dup	0.08	0.13	< 0.05	
1128080 Orig			2.64	
1128080 Dup			2.65	
1128081 Orig	0.99	2.24		
1128081 Dup	0.99	2.21		
1128090 Orig			< 0.05	
1128090 Dup			< 0.05	
1128091 Orig	1.53	1.97		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128091 Dup	1.54	2.00		
1128099 Orig	2.23	2.61		
1128099 Dup	2.25	2.60		
1128100 Orig			0.41	
1128100 Dup			0.41	
1128101 Orig	1.36	1.90	1.31	
1128101 Split PREP DUP	1.35	1.87	1.31	
1128109 Orig			0.42	
1128109 Dup			0.42	
1128111 Orig	0.76	1.52		
1128111 Dup	0.73	1.52		
1128119 Orig			< 0.05	
1128119 Dup			< 0.05	
1128122 Orig	0.12	0.41		
1128122 Dup	0.12	0.40		
1128129 Orig			< 0.05	
1128129 Dup			< 0.05	
1128132 Orig	0.13	0.32		
1128132 Dup	0.13	0.33		
1128143 Orig	4.46	2.67	4.22	
1128143 Dup	4.46	2.63	4.22	
1128149 Orig				2.77
1128149 Dup				2.77
1128151 Orig	0.10	0.25	< 0.05	
1128151 Split PREP DUP	0.12	0.25	< 0.05	
1128152 Orig	6.49	2.98	6.04	
1128152 Dup	6.52	2.98	5.99	
1128162 Orig			1.21	
1128162 Dup			1.21	
1128163 Orig	3.32	2.62		
1128163 Dup	3.32	2.61		
1128172 Orig			1.04	
1128172 Dup			1.05	
1128173 Orig	2.02	2.93		
1128173 Dup	2.02	2.93		
1128182 Orig			3.29	
1128182 Dup			3.31	
1128184 Orig	1.97	2.84		
1128184 Dup	1.94	2.82		
1128192 Orig			0.29	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128192 Dup			0.29	
1128194 Orig	2.73	3.00		
1128194 Dup	2.72	2.99		
1128200 Orig			0.42	
1128200 Dup			0.42	
1128201 Orig	0.07	0.26	< 0.05	
1128201 Split PREP DUP	0.07	0.26	< 0.05	
1128204 Orig	1.12	2.40		
1128204 Dup	1.11	2.43		
1128211 Orig			0.24	
1128211 Dup			0.24	
1128214 Orig	0.40	2.00		
1128214 Dup	0.38	2.00		
1128225 Orig	6.71	2.31	6.46	
1128225 Dup	6.78	2.36	6.40	
1128235 Orig	0.12	0.27	< 0.05	
1128235 Dup	0.10	0.27	< 0.05	
1128245 Orig			3.79	
1128245 Dup			3.78	
1128246 Orig	1.39	1.84		
1128246 Dup	1.37	1.82		
1128249 Orig				2.81
1128249 Dup				2.83
1128251 Orig	0.40	0.62	0.34	
1128251 Split PREP DUP	0.40	0.62	0.34	
1128254 Orig			0.30	
1128254 Dup			0.31	
1128255 Orig	0.35	2.04		
1128255 Dup	0.35	2.04		
1128264 Orig			< 0.05	
1128264 Dup			< 0.05	
1128266 Orig	0.16	0.21		
1128266 Dup	0.16	0.21		
1128274 Orig			0.33	
1128274 Dup			0.32	
1128276 Orig	5.24	3.58		
1128276 Dup	5.36	3.71		
1128284 Orig			2.12	
1128284 Dup			2.11	
1128287 Orig	0.54	1.14		

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128287 Dup	0.55	1.16		
1128294 Orig			0.26	
1128294 Dup			0.25	
1128297 Orig	1.35	1.56		
1128297 Dup	1.35	1.58		
1128301 Orig	1.11	0.97	1.00	
1128301 Split PREP DUP	1.11	0.99	0.99	
1128307 Orig	1.32	2.08	1.15	
1128307 Dup	1.31	2.09	1.15	
1128317 Orig	0.16	0.26	< 0.05	
1128317 Dup	0.16	0.26	< 0.05	
1128327 Orig			< 0.05	
1128327 Dup			< 0.05	
1128328 Orig	0.07	0.16		
1128328 Dup	0.08	0.16		
1128337 Orig			< 0.05	
1128337 Dup			< 0.05	
1128338 Orig	0.03	0.14		
1128338 Dup	0.02	0.14		
1128347 Orig			< 0.05	
1128347 Dup			< 0.05	
1128349 Orig	2.11	2.33		2.82
1128349 Dup	2.10	2.33		2.83
1128351 Orig	3.28	2.53	3.18	
1128351 Split PREP DUP	3.26	2.56	3.24	
1128356 Orig			3.39	
1128356 Dup			3.42	
1128358 Orig	0.62	1.13		
1128358 Dup	0.63	1.14		
1128366 Orig			3.90	
1128366 Dup			3.89	
1128369 Orig	0.53	0.88		
1128369 Dup	0.54	0.87		
1128376 Orig			< 0.05	
1128376 Dup			< 0.05	
1128379 Orig	0.07	0.23		
1128379 Dup	0.07	0.23		
1128390 Orig	< 0.01	0.14	< 0.05	
1128390 Dup	< 0.01	0.12	< 0.05	
1128400 Orig	14.6	0.06	13.8	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
1128400 Dup	14.5	0.04	12.5	
1128401 Orig	5.44	5.67	4.83	
1128401 Split PREP DUP	5.41	5.57	4.80	
1128409 Orig			5.11	
1128409 Dup			5.10	
1128410 Orig	0.03	0.21		
1128410 Dup	0.04	0.21		
1128419 Orig			1.35	
1128419 Dup			1.36	
1128420 Orig	1.00	1.63		
1128420 Dup	0.99	1.61		
1128429 Orig			6.03	
1128429 Dup			6.16	
1128431 Orig	4.59	2.65		
1128431 Dup	4.58	2.72		
1128439 Orig			0.64	
1128439 Dup			0.65	
1128441 Orig	0.60	2.08		
1128441 Dup	0.60	2.12		
1128448 Orig	0.94	2.07	0.88	
1128448 Split PREP DUP	0.95	2.11	0.89	
1128449 Orig				2.78
1128449 Dup				2.77
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
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Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			0.10	

Analyte Symbol	C-Total	Total S	C-Graph	Spec Grav
Unit Symbol	%	%	%	-
Lower Limit	0.01	0.01	0.05	0.01
Method Code	CS	CS	IR	GRAV
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank			< 0.05	
Method Blank				< 0.01
Method Blank				< 0.01
Method Blank				< 0.01



Date Submitted: 20-Jan-17
Invoice No.: A17-00568-ReAssay
Invoice Date: 28-Feb-17
Your Reference: Manitouwadge Graphite

Ardiden Ltd.
Suite 6, 295 Rokeby Rd
Subiaco WA 6008
Australia

ATTN: Brad Boyle (inv/res)

CERTIFICATE OF ANALYSIS

50 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 4F-C, S Infrared

Code 4F-C-Graphitic Infrared

Code Specific Gravity-Pycnometer (Nitrogen) Pulp by Nitrogen Pycnometer

REPORT **A17-00568-ReAssay**

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 a large, stylized 'E' and 'S'.

Emmanuel Esemé , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
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E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Total S
Unit Symbol	%
Lower Limit	0.01
Method Code	CS
1128001	0.25
1128002	0.16
1128003	0.14
1128004	1.19
1128005	3.25
1128006	1.54
1128007	2.11
1128008	2.61
1128009	2.60
1128010	0.14
1128011	1.37
1128012	0.24
1128013	0.21
1128014	0.24
1128015	0.23
1128016	0.25
1128017	0.24
1128018	0.28
1128019	1.96
1128020	0.03
1128021	8.80
1128022	3.21
1128023	3.18
1128024	3.30
1128025	3.15
1128026	2.03
1128027	5.12
1128028	2.48
1128029	1.63
1128030	0.13
1128031	1.86
1128032	1.88
1128033	2.37
1128034	1.52
1128035	2.72
1128036	2.71
1128037	2.22
1128038	1.53
1128039	1.37
1128040	4.60
1128041	1.05
1128042	1.96

Analyte Symbol	Total S
Unit Symbol	%
Lower Limit	0.01
Method Code	CS
1128043	1.51
1128044	1.20
1128045	2.25
1128046	0.02
1128047	0.01
1128048	0.08
1128049	2.64
1128050	0.17

Analyte Symbol	Total S
Unit Symbol	%
Lower Limit	0.01
Method Code	CS
BaSO4 Meas	13.9
BaSO4 Cert	14.0
BaSO4 Meas	14.2
BaSO4 Cert	14.0
BaSO4 Meas	14.2
BaSO4 Cert	14.0
SGR-1b Meas	1.55
SGR-1b Cert	1.53
SGR-1b Meas	1.62
SGR-1b Cert	1.53
GS311-4 Meas	0.55
GS311-4 Cert	0.54
GS311-4 Meas	0.56
GS311-4 Cert	0.54
GS311-4 Meas	0.54
GS311-4 Cert	0.54
GS900-5 Meas	0.33
GS900-5 Cert	0.34
GS900-5 Meas	0.34
GS900-5 Cert	0.34
GS900-5 Meas	0.34
GS900-5 Cert	0.34
1128010 Orig	0.14
1128010 Dup	0.14
1128020 Orig	0.04
1128020 Dup	0.03
1128031 Orig	1.86
1128031 Dup	1.85
1128041 Orig	1.03
1128041 Dup	1.06
1128046 Orig	0.02
1128046 Dup	0.02
1128049 Orig	2.64
1128049 Split PREP DUP	2.63