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REPORT ON EXPLORATION ACTIVITIES

MARCH 2017 – MARCH 2019

BENNY WEST PROJECT

GEOGRAPHIC TOWNSHIPS OF
GILBERT, STRALAK, OULLETTE & CRAIG
SUDBURY MINING DIVISION
DISTRICT OF SUDBURY
PROVINCE OF ONTARIO

BRYAN DORLAND

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EXECUTIVE SUMMARY

The Benny West project covers a portion of the under explored westerly extension of the Benny Greenstone Belt located in northern Ontario. The property was acquired by the writer via ground staking and map staking between March 2017 and November 2018 to evaluate the potential for base and precious metal deposits. Previous airborne geophysical surveys have outlined numerous anomalies that appear to have never been investigated and remain unexplained. To date, a high level reconnaissance exploration program consisting of historical data compilation, prospecting and rock sampling has been carried out and forms the basis of this report. Although work carried out to date has failed to identify any mineralization of economic potential, the program has been successful in evaluating the currently available exploration data and has provided valuable insight on how and where to focus future exploration activities.

1.0 PROJECT INFORMATION

1.1 LOCATION AND ACCESS

The Benny West Project is located in the unsubdivided or annulled Geographic Townships of Gilbert, Stralak, Ouellette and Craig in the District of Sudbury (Sudbury Mining Division) in the Province of Ontario. 1:50 000 scale NTS map sheet 041I43 encompasses the entirety of the project. The property is located in a remote area approximately 73 kilometres north west of the City of Greater Sudbury downtown core. Travel time to the property is approximately 3.5 hours from the Sudbury area depending on road conditions.

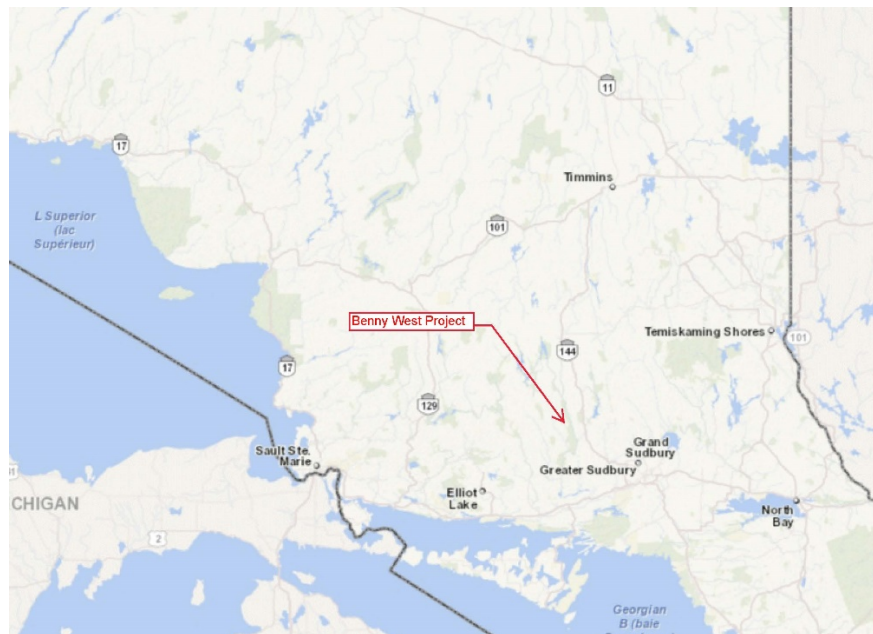


Figure 1 – Project Location

Access to the subject claims is excellent. The project can be accessed by truck from the network of well maintained forest access roads which branch off of the KVP West Branch Road that originates north of the Town of Webbwood, located approximately 80 kilometres south west of Sudbury along Highway No.

17, and terminates along the Sultan Industrial Road approximately 30 kilometres west of the Highway 144 – 560 junction near the former village of Ramsay.

A secondary forest access road, known as the Charcoal Road, branches off the KVP at approximately mile marker 38 (km) and continues in a north easterly direction for about 32 kilometres to a bridge which crosses the Agnes River. From this point, a tertiary road known as the Craig Road, continues north and west through the centre of the claim group and beyond. Forestry operations are currently active in and around the project therefore, the roads are being maintained year around up to and beyond the property.

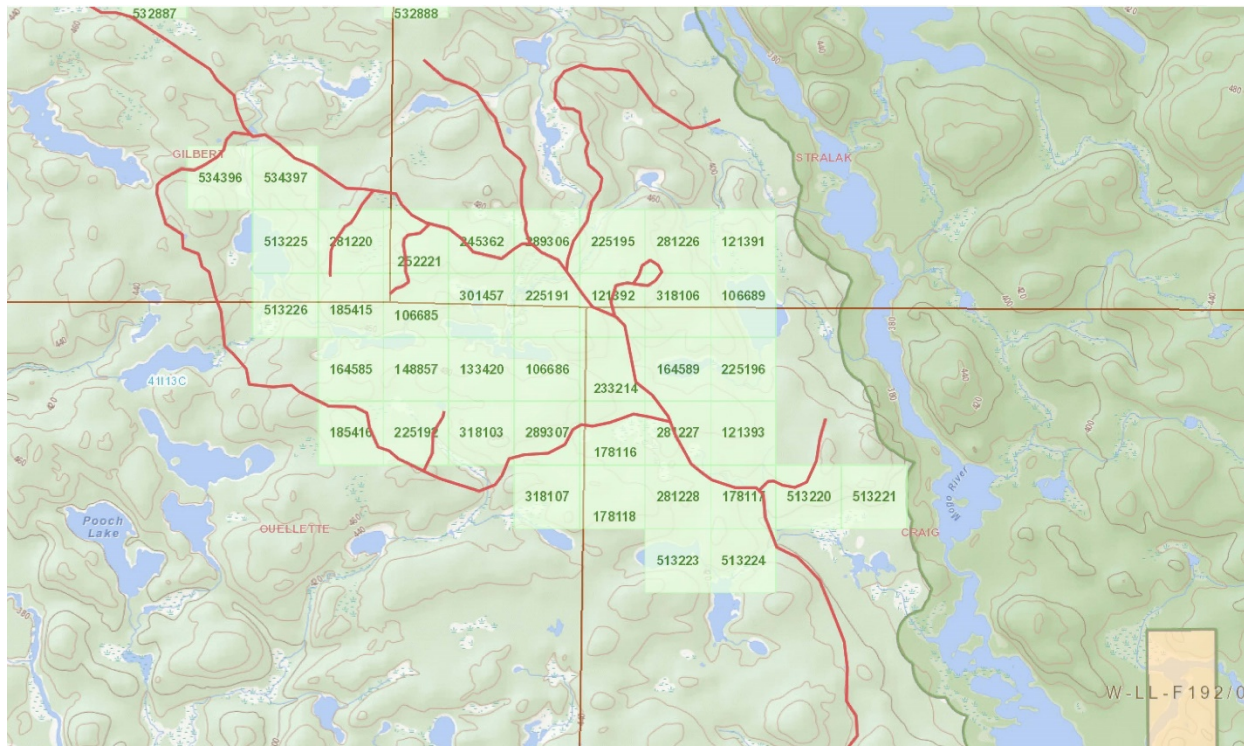


Figure 2 – Claim Map

It should be noted that special permission was the required from the Ministry of Natural Resources and Forestry’s Sudbury District Manager to access the Craig Road beyond the Agnes River bridge as the road is currently considered to be “closed to the public for vehicular use”.

Numerous former logging roads that branch off the Craig Road, which are starting the become very narrow and require some maintenance and occasional tree clearing, provide good ATV access to the remainder of the property.

The Craig Road and numerous ATV accessible former logging roads provide access to the claim block so that any point is within about 500 metre walking distance.

1.2 TOPOGRAPHY AND VEGETATION

The Benny West Project is located in the boreal forest of northern Ontario in the Canadian shield. Topography generally consist of rugged and rolling bedrock hills with little to no overburden interlaced

with lowland swamps and lakes as well as valleys filled with glacial debris. The average elevation in and around the project area is approximately 450 metres and relief about 30 metres.

Fault systems are commonly expressed by prominent topographic lineaments and scarps. The major north west trending faults strongly control the drainage patterns. Major lake and stream systems such as Bluewater Lake, Kennedy Lake and the Spanish River occupy fault valleys (Card/Innes 1981). The project area lies within the Great Lakes drainage basin and is subsequently drained south by the Spanish River and its tributaries.

The Project area has seen likely three generations of logging campaigns. Timber generally consists of stands of red and jack pine, the result of re-forestation, with some old growth white pine interlaced with stands of white birch, poplar, spruce and black spruce in the low lying, poorly drained areas.

1.3 TENURE DETAILS

The Benny West Project consists of 40 unpatented 1 unit mining claims with a total area of approximately 885 hectares. The majority of the property was acquired by ground staking in March 2017 with the remaining claims staked in April and November 2018 after the conversion to map staking.

The claims are registered in the name of the writer, Bryan Dorland and require \$8,000 of annual assessment work to keep in good standing. See Table 1 for specific claim numbers and details.

2.0 PREVIOUS WORK

Based on publicly available sources of information, limited historic exploration activity and virtually no ground based exploration programs have been carried on the ground covered by the Benny West Project. The Ministry of Energy, Northern Development and Mines historic paper mining claim maps indicate that only part of the current claim group, being the easterly portion, have ever been staked. The portion that was previously staked appears to have only been covered by a single generation of mining claims in and around the early 1990's. It would not appear that assessment work was filed on these claims and any efforts were focused on the easterly portion of the Belt.

Below is a summary of previous assessment work or other work carried out over the Benny West Project on file at the Geoscience Assessment Office and AFRI database.

1972 – Tex-Sol Exploration Ltd. – Airborne Electromagnetic Survey and interpretation (survey by Questor Surveys Limited) (AFRI No. 41113SE0014)

1973 – Jean Descarreaux & Associates – Airborne Electromagnetic Survey map compilation (using 1792 Questor Surveys?) (AFRI No. 41113SE0083)

1981 – Rio Tinto Exploration Ltd. – Airborne Electromagnetic and Magnetometer survey (AFRI 41114SW0018)

1981 – Ontario Geological Survey (Card, K.D. and Innes, D.G.)– Report 206 and accompanying maps (see map 2434)

1991 (published in 2003) - Ontario Geological Survey – Airborne Total Intensity Magnetic Survey and Electromagnetic Survey (Geophysical Data Set 1017) (see maps 81539 and 81540)

2019 – Ontario Geological Survey – Ramsey – Algoma Airborne Magnetic Gradiometer and Gamma-Ray Spectrometer Survey (Geophysical Data Set 1086a and 1086b) (see maps 82958, 82973 and 82988)

Report on Exploration Activities -March 2017 to March 2019 – Benny West Project

Table 1 – Mining Claim details

CLAIM No.	HOLDER	UNITS	AREA (ha)	EMCUMBERED	WORK REQD.	DUE DATE	WORK APPLIED	RESERVE
106685	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
106686	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
106689	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
121391	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
121392	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
121393	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
133420	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
148857	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
164585	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
164589	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
178116	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
178117	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
178118	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
185415	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
185416	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
225191	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
225192	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
225195	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
225196	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
233214	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
245362	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
252221	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
281220	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
281226	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
281227	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
281228	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
289306	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
289307	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
301457	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
318103	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
318106	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
318107	Bryan Dorland	1	22.12	no	\$400.00	April 12, 2019	\$0.00	\$0.00
513220	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
513221	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
513223	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
513224	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
513225	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
513226	Bryan Dorland	1	22.12	no	\$400.00	April 10, 2020	\$0.00	\$0.00
534396	Bryan Dorland	1	22.12	no	\$400.00	November 9, 2020	\$0.00	\$0.00
534397	Bryan Dorland	1	22.12	no	\$400.00	November 9, 2020	\$0.00	\$0.00

TOTAL 40 884.8 \$16,000.00 \$0.00 \$0.00

It is interesting to note that numerous airborne geophysical surveys have outlined several magnetic and electromagnetic anomalies on the subject claims which have not received any documented follow up. It would appear that the bulk of recorded exploration effort was focused on the easterly portion of the Benny Greenstone Belt in and around the past producing Geneva Lake Mine and the Stralak prospects.

3.0 GEOLOGY

3.1 REGIONAL GEOLOGY

The Benny West Project is located in the Benny Greenstone Belt which lies in the southern part of the Superior Province of the Canadian shield north of the main contact between the Early Precambrian rocks of the Superior Province and the Middle Precambrian rocks of the Southern Province (Card/Innes, 1981).

The Benny Greenstone Belt is considered to be a preserved remnant of a formerly much larger supracrustal sequence of metavolcanics and metasediments. The Belt strikes east west and dips strongly to the south with an average width of approximately 2 km, a maximum width of approximately 4.8 km and is over 38 km long.

The Benny Greenstone Belt is bordered on the north and south by early Precambrian granitic rocks, older foliated magmatic gneissic and plutonic rocks and younger massive quartz monzonite plutons. The younger granitic plutons clearly intrude the metavolcanics and metasediments (Card/Innes, 1981).

The rocks of the Belt and surrounding area record a series of igneous, intrusive, deformational and metamorphic events ranging in age from Early to Late Precambrian. After deposition of the Early Precambrian Metavolcanics and metasediments, probably on a basement of older sialic rocks, there was deformation, regional metamorphism and emplacement of granitic plutons during the Kenoran Orogeny some 2500 million years or so ago (Stockwell et al., 1970). This was followed, in the latter part of the Early Precambrian and the early part of the Middle Precambrian, by a period of tensional tectonics with emplacement of mafic dike swarms, faulting and foundering of Early Precambrian crustal blocks and deposition of Huronian clastic sedimentary rocks in a series of shallow epicratonic basins (Card/Innes, 1981).

Rocks of the Benny Belt have been metamorphosed under conditions corresponding to the greenschist and amphibolite facies.

3.2 PROPERTY GEOLOGY

The Benny West Project is located in the western portion of the Benny Greenstone Belt. The property is centered on a sequence of east west striking mafic, intermediate and felsic metavolcanics flows and associated metasediments. Numerous narrow felsic intrusive granitic dykes as well as early and late mafic intrusive dykes cut the metavolcanics/metasedimentary sequence. A large early mafic intrusive pluton straddles a good portion of the northerly property boundary. The southerly boundary generally follows the contact between the metavolcanic rocks of the Benny Greenstone Belt and the younger felsic intrusive/plutonic and migmatic rocks.

The mafic metavolcanics generally consist fine grained grey, greenish black and black basalt, deformed pillow basalt, andesite and mafic tuff. Felsic volcanic rocks are commonly interstratified throughout.



Photo 1 – Deformed pillow basalt

Intermediate metavolcanics rocks include tuff breccia, lapilli tuff and andesitic tuff. The tuffs are commonly layered, thinly bedded and range in color from grey to white. The tuff variations are difficult to distinguish from the metasediments.



Photo 2 – Layered tuff cut by felsic intrusive rocks

Felsic metavolcanic rock assemblages include rhyolite, dacite and their porphyritic equivalents. The majority of the felsic metavolcanics rocks found throughout the property are intercalated with the mafic and intermediate volcanic rocks and were rarely observed forming large outcrops.

Metasedimentary rocks are common throughout the project and include metamorphosed wacke, schistose micaceous sediments, graphitic siltstones and schists, cherty siliceous sediments and sulphide bearing siliceous metasediments. The metasedimentary units are generally narrow, often folded vertically and often contain stratiform disseminations and sulphide staining.



Photo 3 – Sulphide bearing metasedimentary unit – Sample BW-02 location

3.3 EXPLORATION TARGETS

The primary exploration target for the Benny West project is base metal VMS style deposits containing copper, lead, zinc with gold and silver mineralization. Two significant mineral occurrences, being the former producing Geneva Lake Mines and the Stralak deposits, that fit the current exploration model are located in similar type geology to the east of Benny West Project in the central and eastern portions of the Benny Greenstone Belt.

The Geneva Lake Mine (MDI 41I13SE00002), located in north central Hess Township and approximately 23 km east of the Benny West project, was discovered in 1924 by John Collins. The mine was in production between 1941 and 1944. During this period, 80,588 tons of zinc-lead-silver ore was mined at an average grade of 3.34% Pb, 9.21% Zn with appreciable amounts of silver. The deposit is a sheet like body some 210 metres long and 0.6 to 6 metres thick. The mineralization occurs in a thin unit of siliceous, micaceous metasediments and felsic tuffs at the contact between the mafic and felsic metavolcanics. The deposit is said to be of volcanic origin formed primarily by volcanic exhalative processes (Card/Innes, 1981). A 1989 report by Geneva Lake Minerals Corp (AFRI No. 41I13SE0051) indicated underground reserves of 114,000 tons grading 10% Zn and 3% Pb across an average width of 5.3 feet plus 24,000 tons with 8% combined Pb-Zn content across 4 feet and 32,000 tons with a 6% combined Pb-Zn content across 3 feet. This is a historical non NI 43-101 compliant resource.

The Stralak deposit, consisting of the Stralak West showing (MDI 41I13SW00004) and Stralak East showing (MDI 41I13SE00044), is located in north eastern Craig Township approximately 6 km east of the Benny West project. The deposit was originally discovered shortly after the construction of the Canadian Pacific Railway in and around 1886. Over the years, exploration work and drilling have outlined two zones of significant mineralization. The zones are reported to be approximately 150 to 200 metres in length and 0.2 to 3 metres thick with mineralization containing 0.5 to 22% Zn, 0.05 to 1.3% Pb, 0 to 2.3% Cu and 1.8 to 4.94 oz/ton Ag. Historic non NI 43-101 reserves for part of the deposit reported by Preston East Dome Mines Limited were estimated at 363,680 tons grading 3.18% Zn, 0.32% Cu and 0.68 oz/ton Ag over an average width of 2.5 metres to a depth of 47 metres. The sulphide

mineralization occurs in a thin stratigraphic unit of chloritic, micaceous and quartz rich schistose rocks which probably represent sheared, metamorphosed tuffs and sedimentary rocks (Card/Innes, 1981).

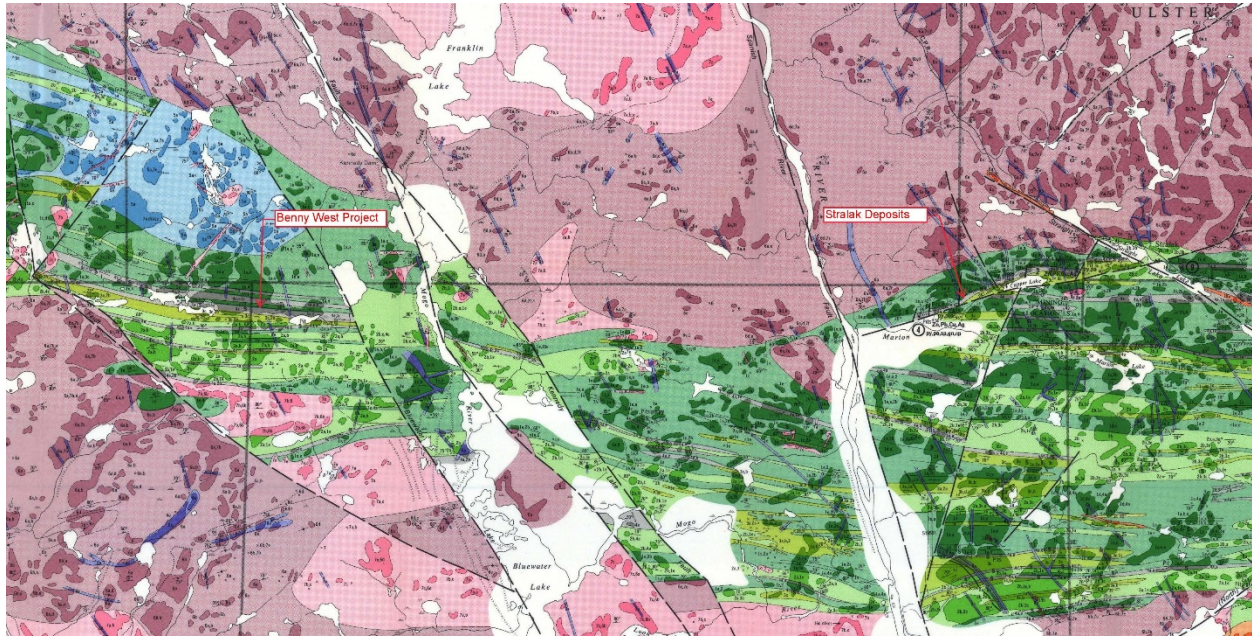


Figure 3 – Local Geology

A secondary exploration target for the Benny West Project is for Ni-Cu-PGM style mineralization in the early and late mafic intrusions within the metavolcanics/metasedimentary rocks of the Benny Greenstone Belt (OGS, 2014). The large mafic intrusive pluton bordering the northerly property boundary would be the target of this style of mineralization.

4.0 ADJACENT PROPERTIES

There are currently no other mining claims directly abutting the Benny West Project. Two 1 unit claims located to the north of the property are held by Gabriel Roy. Four 1 unit claims located to the south east of the property are held by Marc Lefebvre and Sterling Fillier. A large claim group covering the Stralak deposits described in section 3.3 are currently held by Energold Resources. A large claim group covering the past producing Geneva Lake mine as described in section 4.0 are currently held by CBLT Inc. Battery Mineral Resources has recently acquired an extensive land package covering the rocks of the Benny Greenstone Belt to the south of the Stralak deposits.

5.0 CURRENT EXPLORATION ACTIVITIES COVERED BY REPORT

5.1 DETAILS

Exploration activities carried out between March 2017 and March 2019 form the basis of this report. These activities include research and compilation of all previous exploration activities carried out on or in the immediate project area, prospecting and rock sampling. Appendix 3 provides a detailed breakdown of the work performed and associated costs.

The research and data compilation was carried out in order to assess the potential for economic mineralization and to generate targets to focus the preliminary field activities. All currently available geological maps and reports, aerial photography and topo maps, geophysical surveys and assessment files were reviewed in detail. A compilation map was prepared to illustrate the property geology and targets generated by previous geophysical surveys. See Appendix 1.

A total of 11 days including travel was spent in the field. A camper was used as overnight accommodations to cut down on travel time given the remote location of the project. Fieldwork included reconnaissance of road access and bedrock geology along roads, trail maintenance, ground follow up of MDI's and geophysical anomalies, general prospecting and bedrock sampling. The majority of the work program was focussed on the metasedimentary sequence located in the centre of the claim group which is shown to be underlain by EM anomalies on numerous airborne geophysical surveys. Appendix 2 illustrates the location of areas covered by the current fieldwork and rock sample locations.

Rock samples were taken at select locations. Samples were described in the field with geodetic positions noted then bagged and shipped to AGAT Laboratories in Sudbury for further analysis. See Appendix 4 for sample details.

5.2 RESULTS

Research and data compilation completed to date would indicate that the location of base metal mineralization will likely be located in the metasedimentary sequence. As shown on Appendix 1, the majority of previously identified EM conductors tend to follow the east west trending sequence of metasedimentary rocks located in the central part of the claim block. Research by the writer failed to uncover any documented follow up on any of these conductors. It was also very interesting to discover that some of these EM anomalies are much more conductive than anomalies associated with known base metal mineralization at the Stralak and Geneva Lake Mine properties.

The fieldwork program failed to uncover any significant new mineralized showings of economic interest. However, some mineralization was found at or in close proximity of EM conductors within the metasedimentary rock sequences.

Numerous geophysical anomalies were visited as shown on Appendix 2. The remaining anomalies were not inspected.



Photo 4 – Sample BW-01

The EM-conductors located around sample BW-01 can be explained as this location coincides with a showing of graphitic metasediment containing sulphide mineralization. An old blasted pit (through overburden) approximately 2 metres wide by 2 metres long and 1.5 metres deep was located very close to where the MDI and several conductors were plotted. Sample BW-01 was taken from the pit dump. The sulphide bearing graphitic metasediment unit is likely much more extensive. Some time was spent prospecting around this location to try to locate the source of the other strong EM anomalies in the area. Little to no outcrop was observed in the immediate vicinity and the remaining conductors continue to be unexplained at this time.

The EM conductors located near samples BW-04 and BW-05 are likely attributed to a wide sequence of sulphide bearing metasedimentary rocks.

No outcrop was located at the EM conductors to the east and west of sample BW-02.

No outcrop or no indication of mineralization in surface exposures was noted around the clustering of EM conductors located on the most easterly claims in Craig Twp.

6.0 RECOMMENDATIONS

Given the very high-level nature of the current field program, more time should be spent investigating the existing EM and magnetic anomalies defined by previous geophysical surveys. A beep mat survey is proposed as a cost effective method in locating any slightly buried conductors. This should be followed up by trenching and pitting to uncover any sulphide mineralisation.

The clustering of anomalies located south of the small unnamed lake in the north west corner of Craig Township should be thoroughly investigated. The graphitic metasedimentary horizon that has been uncovered in this area could represent an overlying sequence to a more economic Zn-Pb-Cu sulphide rich zone. Graphite material has been commonly observed within or near the upper portions of the

sulphide layer in previously discovered Zn-Cu VMS deposits in the Abitibi Greenstone Belt (Guilbert, 1986)

The large magnetic anomalies crossing the north easterly portion of the claim group should be investigated.

Additionally, prospecting is warranted in areas of the claim group that have not yet been visited.

7.0 REFERENCES

Card, K.D., & Innes, D.G., 1981: Geology of the Benny Area, District of Sudbury; Ontario Geological Survey Report 206, 117p Accompanied by Maps 2434 & 2435, scale 1:31 680 and 4 Charts

Guilbert, J.M., 1986: The Geology of Ore Deposits, p. 579-589

OGS, 2014: Ontario Geological Survey, Recommendations for Exploration 2014 -2015, p.29

Sangster, D.F., 1972: Precambrian Volcanogenic Massive Sulphides Deposits in Canada, a Review; Geological Survey of Canada Paper 72-22, 44p.

8.0 CERTIFICATE

I, Bryan Dorland certify that:

I graduated with a Mining Engineering Technician diploma from Cambrian College in 2008.

I have held a valid Ontario Prospector's License since 2006 (License No. 1012035)

I have been actively participating in the mining and exploration industry since 2006.

I personally completed the work described in this report.

I hold a 100% interest the property described in this report.

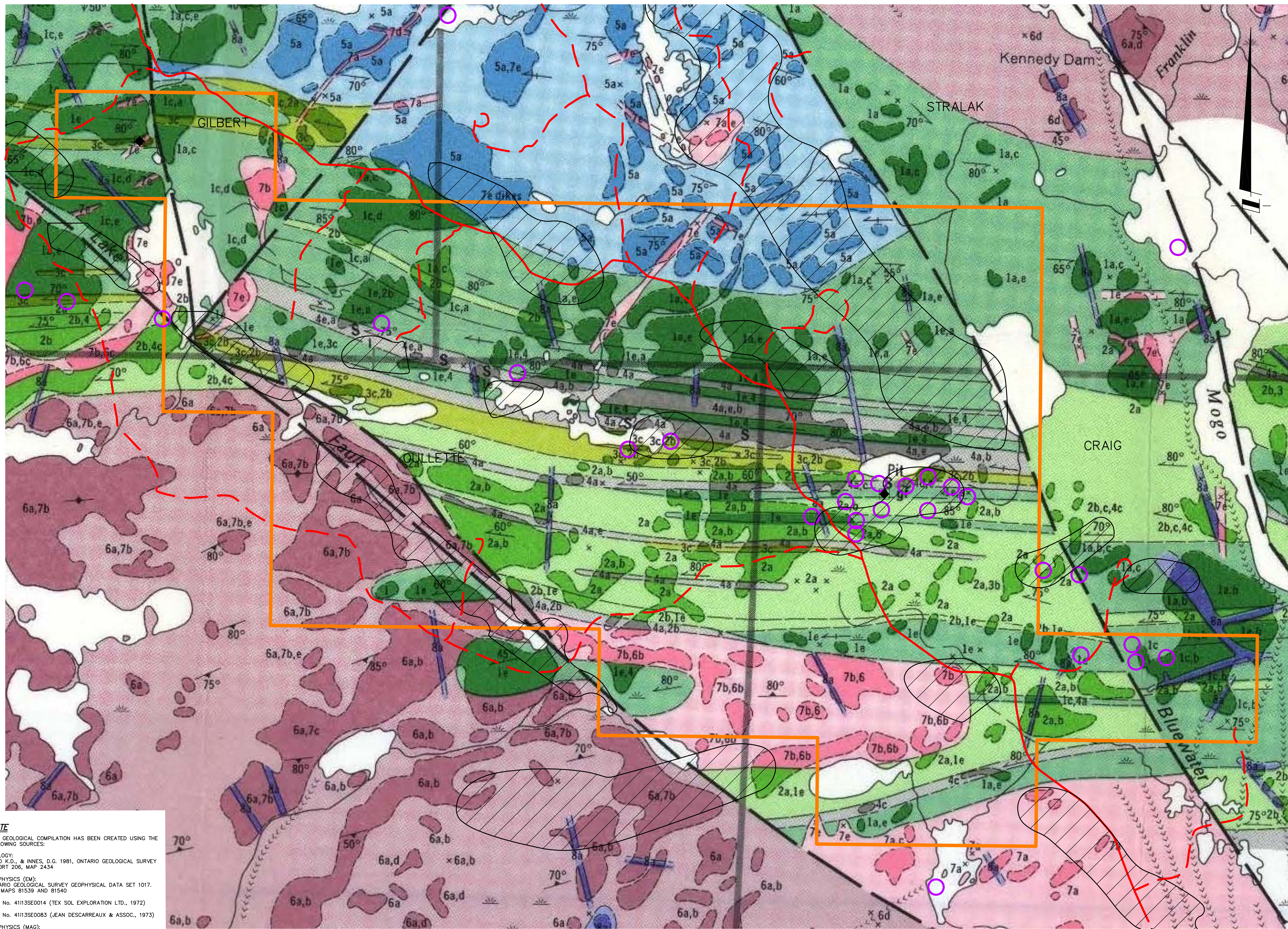


Bryan Dorland

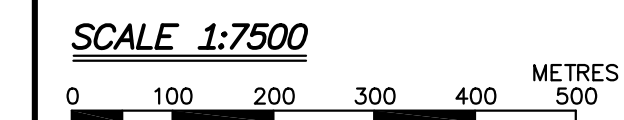
Dated April 10, 2019

Sudbury, Ontario

APPENDIX 1



PLAN OF
BENNY WEST PROJECT
GEOLOGICAL COMPILATION
GEOGRAPHIC TOWNSHIPS OF
GILBERT, OULLETTE, CRAIG & STRALAK
SUDBURY MINING DIVISION
DISTRICT OF SUDBURY



- LEGEND**
- ◆ DENOTES MDI LOCATION
 - DENOTES EM ANOMALY
 - ▨ DENOTES MAGNETIC HIGH
 - DENOTES ROAD
 - - - DENOTES FORMER ROAD/TRAIL

- LITHOLOGY**
- EARLY PRECAMBRIAN**
- LATE MAFIC INTRUSIVE ROCKS^a**
- 8 Unsubdivided, Metagabbro.
 - 8a Porphyritic metagabbro.
 - 8b Granophyric metagabbro.
 - 8c Composite intrusions—granodiorite, syenodiorite, gabbro, feldspathic pyroxenite.
- INTRUSIVE CONTACT**
- FELSIC INTRUSIVE AND METAMORPHIC ROCKS**
- MASSIVE FELSIC INTRUSIVE ROCKS**
- 7 Unsubdivided.
 - 7a Fine- to medium-grained quartz monzonite.
 - 7b Coarse-grained quartz monzonite.
 - 7c Porphyritic, leucocratic quartz monzonite.
 - 7d Porphyritic, biotitic quartz monzonite, monzonite.
 - 7e Pegmatite.
 - 7f Aplitite.
- INTRUSIVE CONTACT**
- FOLIATED FELSIC PLUTONIC AND MIGMATITIC ROCKS**
- 6 Unsubdivided.
 - 6a Gneiss and foliated trondhjemite, granodiorite.
 - 6b Augen gneiss.
 - 6c Xenolithic, agmatitic trondhjemite, granodiorite.
 - 6d Leucocratic migmatitic orthogneiss, paragneiss.
 - 6e Mafic migmatitic orthogneiss.
- INTRUSIVE CONTACT**
- MAFIC INTRUSIVE ROCKS**
- 5 Unsubdivided.
 - 5a Gneissic metagabbro.
- INTRUSIVE CONTACT**
- METAVOLCANICS AND METASEDIMENTS**
- METASEDIMENTS^d**
- 4 Unsubdivided.
 - 4a Tuffaceous wacke, siltstone.
 - 4b Quartz-feldspar sandstone.
 - 4c Schistose, micaceous, chloritic metasediments, tuff.
 - 4d Graphitic siltstone, graphitic schist.
 - 4e Chert, siliceous metasediments.
 - 4f Sulphide-bearing micaceous, chloritic, siliceous metasediments, tuff.
- IF Oxide-facies iron formation.
- METAVOLCANICS**
- FELSIC METAVOLCANICS**
- 3 Unsubdivided.
 - 3a Rhyolite, porphyritic rhyolite.
 - 3b Dacite, porphyritic dacite.
 - 3c Tuff, lapilli-tuff, crystal tuff.
- INTERMEDIATE METAVOLCANICS**
- 2 Unsubdivided.
 - 2a Tuff-breccia.
 - 2b Lapilli-tuff.
 - 2c Tuff.
- MAFIC METAVOLCANICS**
- 1 Unsubdivided.
 - 1a Basalt.
 - 1b Andesite.
 - 1c Pillowed basalt, andesite.
 - 1d Amygdaloidal basalt, andesite.
 - 1e Mafic tuff.

NOTE
THIS GEOLOGICAL COMPILATION HAS BEEN CREATED USING THE FOLLOWING SOURCES:

GEOLOGY:
CARD K.D., & INNES, D.G. 1981, ONTARIO GEOLOGICAL SURVEY REPORT 206, MAP 2434

GEOPHYSICS (EM):
ONTARIO GEOLOGICAL SURVEY GEOPHYSICAL DATA SET 1017. SEE MAPS 81539 AND 81540

AFRI No. 41113SE0014 (TEX SOL EXPLORATION LTD., 1972)

AFRI No. 41113SE0083 (JEAN DESCARREUX & ASSOC., 1973)

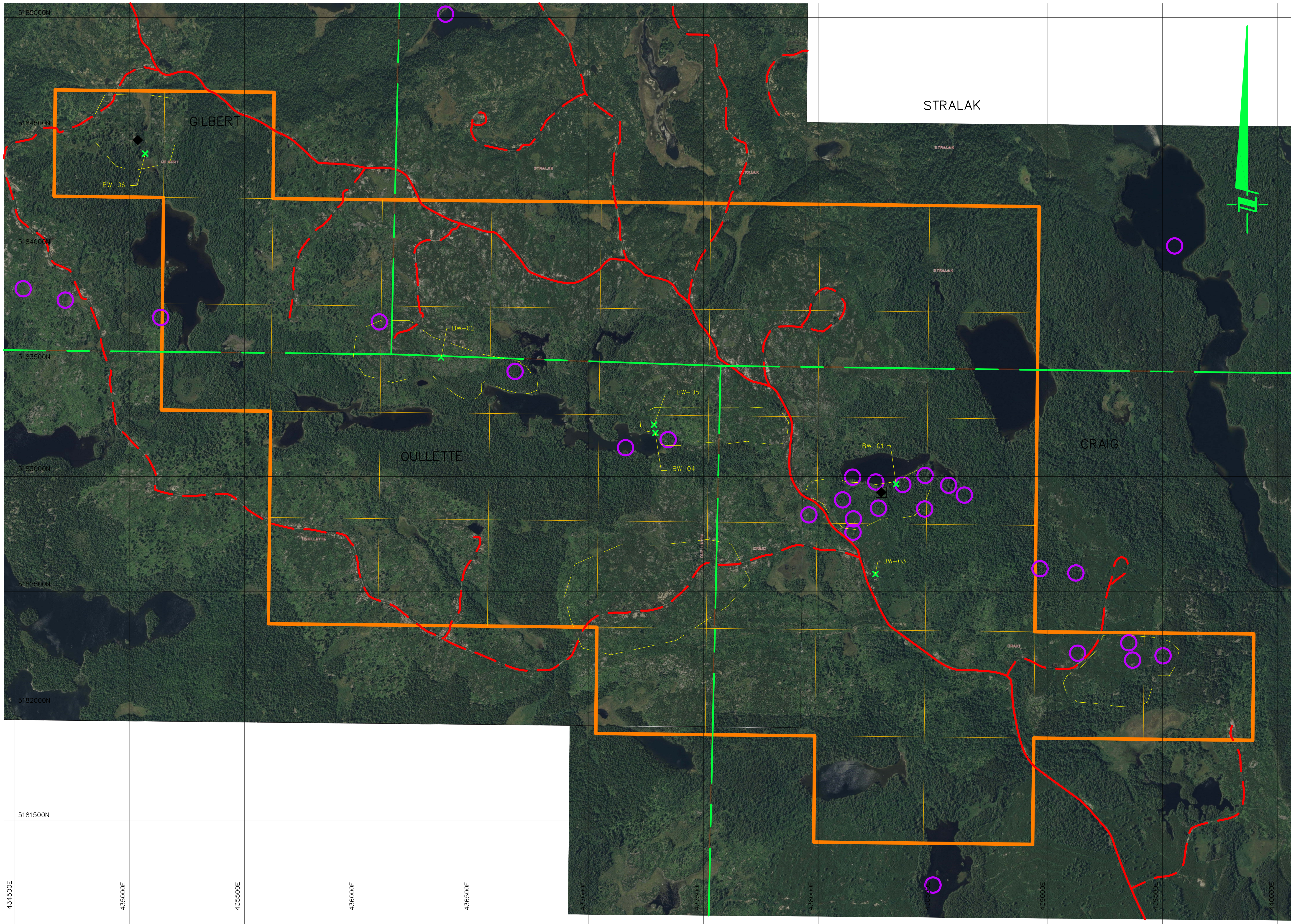
GEOPHYSICS (MAG):
ONTARIO GEOLOGICAL SURVEY GEOPHYSICAL DATA SET 1086a AND 1086b. SEE MAPS 82958 AND 82988

CREDIT IS GIVEN TO THE ABOVE.

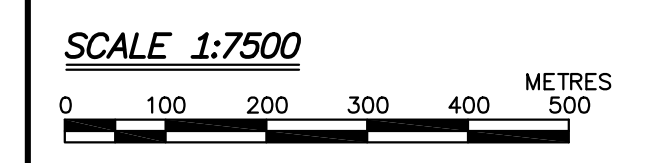
BENNY WEST PROJECT

PREPARED BY: BCD SCALE: 1:7500 METRIC
CHECKED: BCD CAD FILE: BENNY WEST_MASTER.dwg
DATE: MARCH 31, 2019 P. SPACE TAB: 1-GEO COMPILATION

APPENDIX 2



PLAN OF
BENNY WEST PROJECT
 2017 – 2019 WORK AREAS
 GEOGRAPHIC TOWNSHIPS OF
 GILBERT, OULLETTE, CRAIG & STRALAK
 SUDBURY MINING DIVISION
 DISTRICT OF SUDBURY



- LEGEND**
- ◆ DENOTES MDI LOCATION
 - DENOTES AREAS PROSPECTED
 - DENOTES ROAD
 - - - DENOTES FORMER ROAD/TRAIL
 - DENOTES EM ANOMALY

NOTE
 SEE APPENDIX 3 IN ACCOMPANYING REPORT FOR EXPLORATION ACTIVITY DETAILS.
 IN ADDITION TO THE PROSPECTED AREAS SHOWN HEREON, ALL ROADS WERE TRAVELED TO INSPECT ACCESS, OUTCROPS AND GEOLOGY.
 SEE FIGURE 2 AND TABLE 1 IN THE ACCOMPANYING REPORT FOR CLAIM NUMBERS
 PROJECTION: UTM ZONE 17
 DATUM: NAD83
 UNITS: METRES

NOTE
 IMAGERY COURTESY OF MLAS
 © QUEEN'S PRINTER FOR ONTARIO, 2019

BENNY WEST PROJECT	
PREPARED BY : BCD	SCALE : 1:7500 METRIC
CHECKED : BCD	CAD FILE : BENNY WEST_MASTER.dwg
DATE : MARCH 31, 2019	P. SPACE TAB : 2 2017-2019 WORK AREA

APPENDIX 3

DAILY ACTIVITY LOG																	
PROJECT:	BENNY WEST																
DATE	PERSONEL	TIME (\$40/hour)	ACTIVITY	VEHICLES	MILEAGE (km) (\$0.55/km)	ATV \$100/day	SNOWMOBILE \$100/day	UTV \$150/day	CHAINSAW \$30/day	ACCOMODATIONS Camper \$50/day Trailer \$75/day Others as incur.	FOOD \$40/day	CHANNEL SAW \$30/day	DGPS \$100/day	MINI EXCAVATOR \$500/day	ASSAYS (as incur.)	MISC. (field supplies, printing,etc)	ASSESSMENT VALUE
February 5, 2017	B.Dorland	8	Research/Geo interpretation														\$320.00
February 6, 2017	B.Dorland	8	Research/Geo. Targeting														\$320.00
February 15, 2017	B.Dorland	8	Research/Data Compilation													\$ 10.00	\$330.00
February 16, 2017	B.Dorland	8	Research/Data Compilation													\$ 10.00	\$330.00
March 17, 2017	B.Dorland	10	Travel/Prospecting/Trail Maint.	Truck	250		1		1	\$50.00	1					\$ 25.00	\$782.50
March 18, 2017	B.Dorland	4	Prospecting				1			\$50.00	1					\$ 15.00	\$365.00
March 19, 2017	B.Dorland	6	Prospecting/Travel	Truck	250		1			\$50.00	1					\$ 15.00	\$582.50
March 20, 2017	B.Dorland	4	Data Entry														\$160.00
July 10, 2018	B.Dorland	8	Research/Geo. Interpretation													\$ 10.00	\$330.00
July 14, 2017	B.Dorland	8	Travel/Trail Maint.	Truck	250			1	1	\$50.00	1					\$ 15.00	\$742.50
July 15, 2017	B.Dorland	12	Prospecting					1		\$50.00	1					\$ 20.00	\$740.00
July 16, 2017	B.Dorland	12	Prospecting					1		\$50.00	1					\$ 20.00	\$740.00
July 17, 2017	B.Dorland	14	Prospecting/Travel	Truck	250			1		\$50.00	1					\$ 15.00	\$952.50
July 21, 2017	B.Dorland	6	Data Entry														\$240.00
August 1, 2017	B.Dorland	1	Drop off samples for assay	Truck	30										\$66.67		\$123.17
October 13, 2018	B.Dorland	8	Research/Geo interpretation														\$320.00
October 14, 2018	B.Dorland	8	Research/geo targeting														\$320.00
November 2, 2018	B.Dorland	10	Mob/Travel/Prospecting	Truck	250			1		\$50.00	1					\$ 10.00	\$787.50
November 3, 2018	B.Dorland	10	Prospecting					1		\$50.00	1					\$ 20.00	\$660.00
November 4, 2018	B.Dorland	10	Prospecting					1		\$50.00	1					\$ 20.00	\$660.00
November 5, 2018	B.Dorland	14	Prospecting/Travel	Truck	250			1		\$50.00	1					\$ 10.00	\$947.50
November 30, 2018	B.Dorland	1	Drop off samples for assay	Truck	30										\$433.24		\$489.74
March 18, 2019	B.Dorland	8	Data Entry/Report Prep														\$320.00
March 19, 2019	B.Dorland	8	Report Prep														\$320.00
March 20, 2019	B.Dorland	8	Report Prep														\$320.00
March 21, 2019	B.Dorland	8	Report Prep														\$320.00
March 22, 2019	B.Dorland	8	Report Prep													\$ 10.00	\$330.00
March 23, 2019	B.Dorland	8	Report/Map Prep													\$ 10.00	\$330.00
March 31, 2019	B.Dorland	8	Report/Map Prep													\$ 10.00	\$330.00
TOTALS		234			1,560	0	3	8	2	\$550.00	11				\$499.91	\$245.00	\$13,512.91

APPENDIX 4

PROJECT: BENNY WEST		ROCK SAMPLES									UTM ZONE 17, NAD83
SAMPLE No.	TYPE	POINT No.	NORTHING	EASTING	ELEVATION	DESCRIPTION/NOTES	SAMPLE DATE	ASSAYED	ASSAY DATE	NOTABLE ASSAYS	PHOTO
BW-01	Grab	851	5182967	438339	430	Grab from old blasted pit dump (approx. 30 years old), Maffic graphitic metasediment, fined grained, +/-10% sulphides (Py,Po, some Cp), matches location of Pit and Sulphide occurrence shown on OGS map 2434 and MDI	07-15-2017	yes	08-25-2017		pictures\rock samples\BW-01.JPG pictures\rock samples\BW-01b.JPG
BW-02	Chip	854	5183519	436357	457	Chip sample from narrow (+/- 1m wide) band of fine grained, cherty, maffic metasediments. Heavily oxidised (disseminated Py, Po), brittle, laminated. Possible location of "Sulphide" occurrence shown on OGS map 2343,	07-16-2017	yes	01-08-2019		pictures\rock samples\BW-02.JPG
BW-03	Grab		5182575	438249	443	Grab from outcrop +/-20m east of access road. Maffic volcanic metasediment. Heavily oxidised (disseminate Py, Po). Similar to BW-02, not as brittle.	07-17-2017	yes	01-08-2019		pictures\rock samples\BW-03.JPG
BW-04	Chip	907	5183190	437290	469	Chip sample across +/- 1m of heavily oxidised (disseminate Py, Po) cherty, brittle, siliceous, maffic metasediments. Zone +/-30m wide, bedding tilted vertically, Outcrops on east shore of unnamed lake.	11-04-2018	yes	01-08-2019		pictures\rock samples\BW-04.JPG
BW-05	Grab	908	5183226	437285	473	grab sample at northerly end of mineralised zone (+/-30m N of BW-04). Dark maffic volcanic, Disseminated sulphides throughout (+/- 5% Py, Po, Sp?)	11-04-2018	yes	01-08-2019		
BW-06	Grab	909	5184407	435068	447	grab sample near "sulphide" occurrence shown on OGS map 2434 north of unnamed lake. Intermediate to felsic volcanic flow with disseminated sulphides throughout (+/-1% Py, Po).	11-05-2018	yes	01-08-2019		pictures\rock samples\BW-06.JPG
BW-07	Grab	910	5185791	433600	444	grab sample from heavily oxidised outcrop +/-10m south of logging road. Disseminated sulphides (+/- 5% Py, Po, minor Cp) in intermediate volcanic flow.	11-05-2018	yes	01-08-2019		pictures\rock samples\BW-07c.JPG



CLIENT NAME: MISC AGAT CLIENT ON, ON

ATTENTION TO: Bryan Carrier Dorland

PROJECT: Bryan Carrier Dorland

AGAT WORK ORDER: 17T247036

SOLID ANALYSIS REVIEWED BY: Kevin Motomura, Data Review Supervisor

DATE REPORTED: Aug 25, 2017

PAGES (INCLUDING COVER): 9

Should you require any information regarding this analysis please contact your client services representative at (905) 501-9998

*NOTES

All samples are stored at no charge for 90 days. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 17T247036

PROJECT: Bryan Carrier Dorland

5623 McADAM ROAD
 MISSISSAUGA, ONTARIO
 CANADA L4Z 1N9
 TEL (905)501-9998
 FAX (905)501-0589
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

DATE SAMPLED: Aug 08, 2017		DATE RECEIVED: Aug 09, 2017					DATE REPORTED: Aug 25, 2017					SAMPLE TYPE: Other				
	Analyte:	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	
Sample ID (AGAT ID)	RDL:	1	0.01	30	20	0.5	5	0.1	0.05	0.2	0.1	0.5	0.005	0.1	5	
BW-001 (8622986)		<1	6.16	107	<20	505	<5	3.1	0.27	<0.2	45.1	103	0.005	1.8	354	
	Analyte:	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Ho	In	K	La	Li	Lu	
	Unit:	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	
Sample ID (AGAT ID)	RDL:	0.05	0.05	0.05	0.01	0.01	0.05	1	1	0.05	0.2	0.05	0.1	10	0.05	
BW-001 (8622986)		3.59	2.10	0.78	4.72	17.4	3.47	1	3	0.72	<0.2	1.30	20.5	18	0.37	
	Analyte:	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	S	Sb	Sc	Si	
	Unit:	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	
Sample ID (AGAT ID)	RDL:	0.01	10	2	1	0.1	5	0.01	5	0.05	0.2	0.01	0.1	5	0.01	
BW-001 (8622986)		0.52	82	10	5	20.2	205	0.05	21	5.34	65.3	4.60	<0.1	16	26.5	
	Analyte:	Sm	Sn	Sr	Ta	Tb	Th	Ti	Tl	Tm	U	V	W	Y	Yb	
	Unit:	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
Sample ID (AGAT ID)	RDL:	0.1	1	0.1	0.5	0.05	0.1	0.01	0.5	0.05	0.05	5	1	0.5	0.1	
BW-001 (8622986)		3.7	2	63.2	<0.5	0.55	4.9	0.25	0.7	0.34	1.40	72	3	20.3	2.5	
	Analyte:	Zn	Zr													
	Unit:	ppm	ppm													
Sample ID (AGAT ID)	RDL:	5	0.5													
BW-001 (8622986)		45	142													

Comments: RDL - Reported Detection Limit

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 17T247036

PROJECT: Bryan Carrier Dorland

5623 McADAM ROAD
MISSISSAUGA, ONTARIO
CANADA L4Z 1N9
TEL (905)501-9998
FAX (905)501-0589
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

DATE SAMPLED: Aug 08, 2017

DATE RECEIVED: Aug 09, 2017

DATE REPORTED: Aug 25, 2017

SAMPLE TYPE: Other

Analyte:	Au	Pd	Pt
Unit:	ppm	ppm	ppm
RDL:	0.001	0.001	0.005
Sample ID (AGAT ID)			
BW-001 (8622986)	0.010	0.002	<0.005

Comments: RDL - Reported Detection Limit

Certified By:



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

Parameter	REPLICATE #1				RPD													
	Sample ID	Original	Replicate	RPD														
Ag	8622986	< 1	< 1	0.0%														
Al	8622986	6.16	6.08	1.3%														
As	8622986	107	101	5.8%														
B	8622986	< 20	< 20	0.0%														
Ba	8622986	505	504	0.2%														
Be	8622986	< 5	< 5	0.0%														
Bi	8622986	3.1	3.2	3.2%														
Ca	8622986	0.268	0.264	1.5%														
Cd	8622986	< 0.2	< 0.2	0.0%														
Ce	8622986	45.1	40.5	10.7%														
Co	8622986	103	105	1.9%														
Cr	8622986	0.005	0.005	0.0%														
Cs	8622986	1.85	1.88	1.6%														
Cu	8622986	354	349	1.4%														
Dy	8622986	3.59	3.43	4.6%														
Er	8622986	2.10	2.26	7.3%														
Eu	8622986	0.782	0.724	7.7%														
Fe	8622986	4.72	4.70	0.4%														
Ga	8622986	17.4	18.2	4.5%														
Gd	8622986	3.47	3.38	2.6%														
Ge	8622986	1	< 1															
Hf	8622986	3	3	0.0%														
Ho	8622986	0.72	0.71	1.4%														
In	8622986	0.2	0.2	0.0%														
K	8622986	1.30	1.28	1.6%														
La	8622986	20.5	18.9	8.1%														
Li	8622986	18	16	11.8%														
Lu	8622986	0.37	0.41	10.3%														
Mg	8622986	0.52	0.53	1.9%														
Mn	8622986	82	98	17.8%														
Mo	8622986	10	11	9.5%														



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

Nb	8622986	5	5	0.0%															
Nd	8622986	20.2	18.2	10.4%															
Ni	8622986	205	208	1.5%															
P	8622986	0.05	0.05	0.0%															
Pb	8622986	21	22	4.7%															
Pr	8622986	5.34	4.90	8.6%															
Rb	8622986	65.3	66.6	2.0%															
S	8622986	4.60	4.51	2.0%															
Sb	8622986	< 0.1	< 0.1	0.0%															
Sc	8622986	16	15	6.5%															
Si	8622986	26.5	26.2	1.1%															
Sm	8622986	3.66	3.29	10.6%															
Sn	8622986	2	2	0.0%															
Sr	8622986	63.2	61.4	2.9%															
Ta	8622986	< 0.5	< 0.5	0.0%															
Tb	8622986	0.55	0.52	5.6%															
Th	8622986	4.94	5.07	2.6%															
Ti	8622986	0.25	0.25	0.0%															
Tl	8622986	0.74	0.76	2.7%															
Tm	8622986	0.34	0.34	0.0%															
U	8622986	1.40	1.45	3.5%															
V	8622986	72	72	0.0%															
W	8622986	3	3	0.0%															
Y	8622986	20.3	20.8	2.4%															
Yb	8622986	2.5	2.5	0.0%															
Zn	8622986	45	44	2.2%															
Zr	8622986	142	140	1.4%															

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

Parameter	REPLICATE #1				RPD															
	Sample ID	Original	Replicate	RPD																
Au	8622986	0.010	0.009	10.5%																
Pd	8622986	0.002	0.002	0.0%																
Pt	8622986	< 0.005	< 0.005	0.0%																



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

Parameter	CRM #1 (ref.SY-4)																	
	Expect	Actual	Recovery	Limits														
Al	10.95	10.81	99%	90% - 110%														
Ba	340	337	99%	90% - 110%														
Ca	5.72	5.74	100%	90% - 110%														
Ce	122	122	100%	90% - 110%														
Co	2.8	2.6	93%	90% - 110%														
Cs	1.5	1.7	113%	90% - 110%														
Cu	7	7	100%	90% - 110%														
Dy	18.2	18.9	104%	90% - 110%														
Er	14.2	14.7	103%	90% - 110%														
Eu	2.0	1.9	97%	90% - 110%														
Fe	4.34	4.33	100%	90% - 110%														
Ga	35	38	109%	90% - 110%														
Gd	14	15	104%	90% - 110%														
Hf	10.6	11.4	108%	90% - 110%														
Ho	4.3	4.3	100%	90% - 110%														
K	1.37	1.36	99%	90% - 110%														
La	58	59	102%	90% - 110%														
Li	37	34	93%	90% - 110%														
Lu	2.1	2.1	99%	90% - 110%														
Mg	0.325	0.303	93%	90% - 110%														
Mn	836	830	99%	90% - 110%														
Nb	13	14	108%	90% - 110%														
Nd	57	58	101%	90% - 110%														
Pb	10	10	99%	90% - 110%														
Pr	15.0	15.2	101%	90% - 110%														
Rb	55	60	110%	90% - 110%														
Si	23.3	22.8	98%	90% - 110%														
Sm	12.7	12.4	98%	90% - 110%														
Sn	7.1	8.0	112%	90% - 110%														
Sr	1191	1228	103%	90% - 110%														
Ta	0.9	0.9	98%	90% - 110%														



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Carrier Dorland

Tb	2.6	2.7	104%	90% - 110%													
Th	1.4	1.2	88%	90% - 110%													
Ti	0.172	0.174	101%	90% - 110%													
Tm	2.3	2.2	98%	90% - 110%													
U	0.8	0.9	107%	90% - 110%													
Yb	14.8	15.2	103%	90% - 110%													
Zn	93	94	101%	90% - 110%													
Zr	517	565	109%	90% - 110%													

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

CRM #1 (ref.PG129)																	
Parameter	Expect	Actual	Recovery	Limits													
Au	1.1	1.1	97%	90% - 110%													
Pd	0.115	0.111	96%	90% - 110%													
Pt	0.239	0.225	94%	90% - 110%													

Method Summary

CLIENT NAME: MISC AGAT CLIENT ON

AGAT WORK ORDER: 17T247036

PROJECT: Bryan Carrier Dorland

ATTENTION TO: Bryan Carrier Dorland

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Solid Analysis			
Ag			ICP/MS
Al	MIN-200-12001		ICP/OES
As	MIN-200-12001		ICP/MS
B	MIN-200-12001		ICP/OES
Ba	MIN-200-12001		ICP/OES
Be	MIN-200-12001		ICP/OES
Bi	MIN-200-12001		ICP-MS
Ca	MIN-200-12001		ICP/OES
Cd	MIN-200-12001		ICP-MS
Ce	MIN-200-12001		ICP-MS
Co	MIN-200-12001		ICP/MS
Cr	MIN-200-12001		ICP/OES
Cs	MIN-200-12001		ICP-MS
Cu	MIN-200-12001		ICP/OES
Dy	MIN-200-12001		ICP-MS
Er	MIN-200-12001		ICP-MS
Eu	MIN-200-12001		ICP-MS
Fe	MIN-200-12001		ICP/OES
Ga	MIN-200-12001		ICP-MS
Gd	MIN-200-12001		ICP-MS
Ge	MIN-200-12001		ICP-MS
Hf	MIN-200-12001		ICP-MS
Ho	MIN-200-12001		ICP-MS
In	MIN-200-12001		ICP-MS
K	MIN-200-12001		ICP/OES
La	MIN-200-12001		ICP-MS
Li	MIN-200-12001		ICP/OES
Lu	MIN-200-12001		ICP-MS
Mg	MIN-200-12001		ICP/OES
Mn	MIN-200-12001		ICP/OES
Mo	MIN-200-12001		ICP/MS
Nb	MIN-200-12001		ICP-MS
Nd	MIN-200-12001		ICP-MS
Ni	MIN-200-12001		ICP/OES
P			ICP/OES
Pb	MIN-200-12001		ICP/MS
Pr	MIN-200-12001		ICP-MS
Rb	MIN-200-12001		ICP/MS
S	MIN-200-12001		ICP/OES
Sb	MIN-200-12001		ICP-MS
Sc	MIN-200-12001		ICP/OES
Si	MIN-200-12001		ICP/OES
Sm	MIN-200-12001		ICP-MS
Sn	MIN-200-12001		ICP/MS
Sr	MIN-200-12001		ICP-OES
Ta	MIN-200-12001		ICP-MS
Tb	MIN-200-12001		ICP-MS
Th	MIN-200-12001		ICP-MS
Ti	MIN-200-12001		ICP/OES

Method Summary

CLIENT NAME: MISC AGAT CLIENT ON

AGAT WORK ORDER: 17T247036

PROJECT: Bryan Carrier Dorland

ATTENTION TO: Bryan Carrier Dorland

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tl	MIN-200-12001		ICP-MS
Tm	MIN-200-12001		ICP-MS
U	MIN-200-12001		ICP-MS
V	MIN-200-12001		ICP/OES
W	MIN-200-12001		ICP-MS
Y	MIN-200-12001		ICP-MS
Yb	MIN-200-12001		ICP-MS
Zn	MIN-200-12001		ICP/OES
Zr	MIN-200-12001		ICP-MS
Au	MIN-200-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES
Pd	MIN-200-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES
Pt	MIN-200-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES



CLIENT NAME: MISC AGAT CLIENT ON, ON

ATTENTION TO: Bryan Dorland

PROJECT: Bryan Dorland

AGAT WORK ORDER: 18T415871

SOLID ANALYSIS REVIEWED BY: Sherin Moussa, Senior Technician

DATE REPORTED: Jan 08, 2019

PAGES (INCLUDING COVER): 11

Should you require any information regarding this analysis please contact your client services representative at (905) 501-9998

*NOTES

All samples are stored at no charge for 90 days. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T415871

PROJECT: Bryan Dorland

5623 McADAM ROAD
MISSISSAUGA, ONTARIO
CANADA L4Z 1N9
TEL (905)501-9998
FAX (905)501-0589
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(200-) Sample Login Weight

DATE SAMPLED: Dec 02, 2018

DATE RECEIVED: Nov 30, 2018

DATE REPORTED: Jan 08, 2019

SAMPLE TYPE: Other

Sample ID (AGAT ID)	Analyte:	Sample Login Weight
	Unit:	kg
	RDL:	0.01
BW-02 (9752830)		1.547
BW-03 (9752831)		2.827
BW-04 (9752832)		1.917
BW-05 (9752833)		1.109
BW-06 (9752834)		3.367
BW-07 (9752835)		2.129

Comments: RDL - Reported Detection Limit

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T415871

PROJECT: Bryan Dorland

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CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

DATE SAMPLED: Dec 02, 2018		DATE RECEIVED: Nov 30, 2018					DATE REPORTED: Jan 08, 2019					SAMPLE TYPE: Other				
	Analyte:	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	
Sample ID (AGAT ID)	RDL:	1	0.01	5	20	0.5	5	0.1	0.05	0.2	0.1	0.5	0.005	0.1	5	
BW-02 (9752830)		<1	8.51	<5	<20	201	<5	0.8	6.37	<0.2	30.6	14.0	0.021	8.6	70	
BW-03 (9752831)		<1	9.59	30	48	621	<5	0.1	1.71	0.6	37.7	35.3	0.027	4.0	110	
BW-04 (9752832)		<1	7.26	<5	<20	481	<5	0.5	2.37	<0.2	3.5	1.2	<0.005	3.1	31	
BW-05 (9752833)		<1	6.13	<5	<20	720	<5	<0.1	6.10	<0.2	38.4	31.1	0.106	9.4	30	
BW-06 (9752834)		<1	8.44	<5	28	313	14	0.7	9.70	0.5	16.2	38.9	0.029	1.3	278	
BW-07 (9752835)		<1	7.98	<5	<20	387	<5	0.5	4.10	2.8	16.7	30.9	0.009	11.4	289	
	Analyte:	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Ho	In	K	La	Li	Lu	
	Unit:	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	
Sample ID (AGAT ID)	RDL:	0.05	0.05	0.05	0.01	0.01	0.05	1	1	0.05	0.2	0.05	0.1	10	0.05	
BW-02 (9752830)		4.05	2.39	1.08	5.84	21.6	4.00	2	3	0.84	<0.2	0.77	13.8	53	0.34	
BW-03 (9752831)		4.96	2.96	1.19	9.91	22.6	4.78	2	4	1.02	<0.2	1.67	17.6	76	0.46	
BW-04 (9752832)		0.35	0.23	0.20	11.8	17.7	0.38	1	3	0.07	<0.2	1.83	2.1	18	<0.05	
BW-05 (9752833)		3.19	1.74	1.55	6.62	15.7	4.77	2	2	0.59	<0.2	1.21	15.9	85	0.23	
BW-06 (9752834)		4.13	2.60	1.07	8.56	20.2	3.84	2	2	0.86	<0.2	0.97	6.9	33	0.38	
BW-07 (9752835)		5.31	3.33	1.21	10.6	22.1	4.50	2	3	1.12	0.3	0.71	6.3	35	0.50	
	Analyte:	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	S	Sb	Sc	Si	
	Unit:	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	
Sample ID (AGAT ID)	RDL:	0.01	10	2	1	0.1	5	0.01	5	0.05	0.2	0.01	0.1	5	0.01	
BW-02 (9752830)		1.64	1360	11	<1	15.6	38	0.09	6	3.82	76.8	0.07	<0.1	22	27.7	
BW-03 (9752831)		1.30	2570	5	<1	18.6	52	0.04	55	4.48	75.7	0.70	<0.1	40	25.0	
BW-04 (9752832)		1.42	618	2	<1	1.6	<5	0.04	10	0.38	62.3	0.40	<0.1	16	24.4	
BW-05 (9752833)		7.46	1410	3	<1	22.1	219	0.14	7	4.95	94.5	0.06	<0.1	25	24.5	
BW-06 (9752834)		2.84	2370	6	<1	11.0	110	0.06	6	2.27	156	0.18	<0.1	29	23.1	
BW-07 (9752835)		1.70	1660	5	<1	11.4	18	0.07	9	2.33	83.7	0.36	<0.1	31	25.0	

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T415871

PROJECT: Bryan Dorland

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CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

DATE SAMPLED: Dec 02, 2018		DATE RECEIVED: Nov 30, 2018					DATE REPORTED: Jan 08, 2019					SAMPLE TYPE: Other			
Sample ID (AGAT ID)	Analyte:	Sm	Sn	Sr	Ta	Tb	Th	Ti	Tl	Tm	U	V	W	Y	Yb
	Unit:	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	RDL:	0.1	1	0.1	0.5	0.05	0.1	0.01	0.5	0.05	0.05	5	1	0.5	0.1
BW-02 (9752830)		3.4	1	347	<0.5	0.62	3.9	0.52	<0.5	0.33	0.43	169	4	22.0	2.3
BW-03 (9752831)		4.2	<1	143	<0.5	0.78	5.0	0.64	0.7	0.44	1.17	268	<1	28.6	3.2
BW-04 (9752832)		0.3	<1	232	<0.5	0.06	3.4	0.40	0.7	<0.05	0.46	138	<1	1.9	0.3
BW-05 (9752833)		5.1	2	469	<0.5	0.60	3.5	0.40	0.5	0.23	0.94	184	<1	15.5	1.6
BW-06 (9752834)		3.0	5	260	<0.5	0.64	1.7	0.65	<0.5	0.37	0.52	221	29	24.1	2.6
BW-07 (9752835)		3.4	6	103	<0.5	0.80	2.1	1.09	<0.5	0.49	0.47	264	<1	28.8	3.3
Sample ID (AGAT ID)	Analyte:	Zn	Zr												
	Unit:	ppm	ppm												
	RDL:	5	0.5												
BW-02 (9752830)		69	144												
BW-03 (9752831)		250	136												
BW-04 (9752832)		67	138												
BW-05 (9752833)		104	98.9												
BW-06 (9752834)		115	82.8												
BW-07 (9752835)		422	120												

Comments: RDL - Reported Detection Limit

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T415871

PROJECT: Bryan Dorland

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CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

DATE SAMPLED: Dec 02, 2018	DATE RECEIVED: Nov 30, 2018	DATE REPORTED: Jan 08, 2019	SAMPLE TYPE: Other
Analyte:	Au	Pd	Pt
Unit:	ppm	ppm	ppm
RDL:	0.001	0.001	0.005
Sample ID (AGAT ID)			
BW-02 (9752830)	0.037	0.003	<0.005
BW-03 (9752831)	0.006	0.003	<0.005
BW-04 (9752832)	0.024	0.002	<0.005
BW-05 (9752833)	0.021	0.004	<0.005
BW-06 (9752834)	0.043	0.013	0.014
BW-07 (9752835)	0.018	0.002	<0.005

Comments: RDL - Reported Detection Limit

Certified By:



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

Parameter	REPLICATE #1				REPLICATE #2											
	Sample ID	Original	Replicate	RPD	Sample ID	Original	Replicate	RPD								
Ag	9752830	< 1	< 1	0.0%	9752835	< 1	< 1	0.0%								
Al	9752830	8.51	8.42	1.1%	9752835	7.98	7.86	1.5%								
As	9752830	< 5	< 5	0.0%	9752835	< 5	< 5	0.0%								
B	9752830	< 20	< 20	0.0%	9752835	< 20	< 20	0.0%								
Ba	9752830	201	203	1.0%	9752835	387	387	0.0%								
Be	9752830	< 5	< 5	0.0%	9752835	< 5	< 5	0.0%								
Bi	9752830	0.77	0.86	11.0%	9752835	0.45	0.43	4.5%								
Ca	9752830	6.37	6.30	1.1%	9752835	4.10	4.04	1.5%								
Cd	9752830	< 0.2	< 0.2	0.0%	9752835	2.8	2.8	0.0%								
Ce	9752830	30.6	29.5	3.7%	9752835	16.7	16.8	0.6%								
Co	9752830	14.0	13.4	4.4%	9752835	30.9	30.8	0.3%								
Cr	9752830	0.021	0.022	4.7%	9752835	0.009	0.009	0.0%								
Cs	9752830	8.6	8.4	2.4%	9752835	11.4	11.3	0.9%								
Cu	9752830	70	75	6.9%	9752835	289	283	2.1%								
Dy	9752830	4.05	3.74	8.0%	9752835	5.31	5.43	2.2%								
Er	9752830	2.39	2.42	1.2%	9752835	3.33	3.43	3.0%								
Eu	9752830	1.08	1.06	1.9%	9752835	1.21	1.19	1.7%								
Fe	9752830	5.84	5.96	2.0%	9752835	10.6	10.1	4.8%								
Ga	9752830	21.6	20.1	7.2%	9752835	22.1	21.7	1.8%								
Gd	9752830	4.00	3.97	0.8%	9752835	4.50	4.66	3.5%								
Ge	9752830	2	2	0.0%	9752835	2	2	0.0%								
Hf	9752830	3	3	0.0%	9752835	3	3	0.0%								
Ho	9752830	0.84	0.77	8.7%	9752835	1.12	1.12	0.0%								
In	9752830	< 0.2	< 0.2	0.0%	9752835	0.3	0.3	0.0%								
K	9752830	0.77	0.75	2.6%	9752835	0.707	0.703	0.6%								
La	9752830	13.8	13.2	4.4%	9752835	6.34	6.53	3.0%								
Li	9752830	53	57	7.3%	9752835	35	30	15.4%								
Lu	9752830	0.34	0.32	6.1%	9752835	0.502	0.521	3.7%								
Mg	9752830	1.64	1.67	1.8%	9752835	1.70	1.70	0.0%								
Mn	9752830	1360	1370	0.7%	9752835	1660	1630	1.8%								
Mo	9752830	11	11	0.0%	9752835	5	5	0.0%								



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

Nb	9752830	< 1	< 1	0.0%	9752835	< 1	< 1	0.0%								
Nd	9752830	15.6	15.2	2.6%	9752835	11.4	11.3	0.9%								
Ni	9752830	38	38	0.0%	9752835	18	18	0.0%								
P	9752830	0.09	0.09	0.0%	9752835	0.07	0.07	0.0%								
Pb	9752830	6	6	0.0%	9752835	9	9	0.0%								
Pr	9752830	3.82	3.55	7.3%	9752835	2.33	2.38	2.1%								
Rb	9752830	76.8	73.6	4.3%	9752835	83.7	82.9	1.0%								
S	9752830	0.074	0.081	9.0%	9752835	0.36	0.37	2.7%								
Sb	9752830	< 0.1	< 0.1	0.0%	9752835	< 0.1	< 0.1	0.0%								
Sc	9752830	22	22	0.0%	9752835	31	31	0.0%								
Si	9752830	27.7	27.5	0.7%	9752835	25.0	24.7	1.2%								
Sm	9752830	3.4	3.4	0.0%	9752835	3.4	3.4	0.0%								
Sn	9752830	1	1	0.0%	9752835	6	5	18.2%								
Sr	9752830	347	333	4.1%	9752835	103	102	1.0%								
Ta	9752830	< 0.5	< 0.5	0.0%	9752835	< 0.5	< 0.5	0.0%								
Tb	9752830	0.62	0.62	0.0%	9752835	0.80	0.80	0.0%								
Th	9752830	3.9	3.4	13.7%	9752835	2.07	1.90	8.6%								
Ti	9752830	0.52	0.52	0.0%	9752835	1.09	1.07	1.9%								
Tl	9752830	< 0.5	< 0.5	0.0%	9752835	< 0.5	< 0.5	0.0%								
Tm	9752830	0.33	0.32	3.1%	9752835	0.49	0.49	0.0%								
U	9752830	0.43	0.38	12.3%	9752835	0.471	0.500	6.0%								
V	9752830	169	170	0.6%	9752835	264	259	1.9%								
W	9752830	4	5	22.2%	9752835	< 1	< 1	0.0%								
Y	9752830	22.0	20.4	7.5%	9752835	28.8	29.8	3.4%								
Yb	9752830	2.3	2.2	4.4%	9752835	3.3	3.3	0.0%								
Zn	9752830	69	68	1.5%	9752835	422	416	1.4%								
Zr	9752830	144	132	8.7%	9752835	120	122	1.7%								

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

Parameter	REPLICATE #1				REPLICATE #2											
	Sample ID	Original	Replicate	RPD	Sample ID	Original	Replicate	RPD								
Au	9752830	0.037	0.026		9752835	0.018	0.015	18.2%								
Pd	9752830	0.003	0.002		9752835	0.002	0.001									
Pt	9752830	< 0.005	< 0.005	0.0%	9752835	< 0.005	< 0.005	0.0%								



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

(201-378) Sodium Peroxide Fusion - ICP-OES/ICP-MS Finish

Parameter	CRM #1 (ref.SY-4)																	
	Expect	Actual	Recovery	Limits														
Al	10.95	10.79	99%	90% - 110%														
Ba	340	329	97%	90% - 110%														
Be	2.6	3	117%	90% - 110%														
Ca	5.72	5.76	101%	90% - 110%														
Ce	122	126	103%	90% - 110%														
Co	2.8	2.5	91%	90% - 110%														
Cs	1.5	1.5	97%	90% - 110%														
Dy	18.2	19.4	107%	90% - 110%														
Er	14.2	15.2	107%	90% - 110%														
Eu	2.0	2	100%	90% - 110%														
Fe	4.34	4.39	101%	90% - 110%														
Ga	35	36	102%	90% - 110%														
Gd	14	15	109%	90% - 110%														
Hf	10.6	10.6	100%	90% - 110%														
Ho	4.3	4.5	105%	90% - 110%														
K	1.37	1.47	108%	90% - 110%														
La	58	59	102%	90% - 110%														
Li	37	39	104%	90% - 110%														
Lu	2.1	2.2	104%	90% - 110%														
Mg	0.325	0.311	96%	90% - 110%														
Mn	836	821	98%	90% - 110%														
Nd	57	60	105%	90% - 110%														
Ni	9	10	114%	90% - 110%														
Pb	10	10	100%	90% - 110%														
Pr	15.0	15.2	102%	90% - 110%														
Rb	55	55	100%	90% - 110%														
Si	23.3	23.9	103%	90% - 110%														
Sm	12.7	13.2	104%	90% - 110%														
Sn	7.1	6.7	94%	90% - 110%														
Sr	1191	1172	98%	90% - 110%														
Tb	2.6	2.9	110%	90% - 110%														



CLIENT NAME: MISC AGAT CLIENT ON

ATTENTION TO: Bryan Dorland

Ti	0.172	0.166	97%	90% - 110%												
Tm	2.3	2.4	103%	90% - 110%												
U	0.8	0.8	104%	90% - 110%												
Y	119	120	101%	90% - 110%												
Yb	14.8	15.7	106%	90% - 110%												
Zn	93	93	101%	90% - 110%												
Zr	517	525	102%	90% - 110%												

(202-055) Fire Assay - Au, Pt, Pd Trace Levels, ICP-OES finish

Parameter	CRM #1 (ref.PG129)															
	Expect	Actual	Recovery	Limits												
Au	1.1	1.2	108%	90% - 110%												
Pd	0.115	0.128	111%	90% - 110%												
Pt	0.239	0.262	110%	90% - 110%												



Method Summary

CLIENT NAME: MISC AGAT CLIENT ON
 PROJECT: Bryan Dorland
 SAMPLING SITE:

AGAT WORK ORDER: 18T415871
 ATTENTION TO: Bryan Dorland
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Solid Analysis			
Sample Login Weight	MIN-12009		BALANCE
Ag			ICP/MS
Al	MIN-200-12001		ICP/OES
As	MIN-200-12001		ICP/MS
B	MIN-200-12001		ICP/OES
Ba	MIN-200-12001		ICP/OES
Be	MIN-200-12001		ICP/OES
Bi	MIN-200-12001		ICP-MS
Ca	MIN-200-12001		ICP/OES
Cd	MIN-200-12001		ICP-MS
Ce	MIN-200-12001		ICP-MS
Co	MIN-200-12001		ICP/MS
Cr	MIN-200-12001		ICP/OES
Cs	MIN-200-12001		ICP-MS
Cu	MIN-200-12001		ICP/OES
Dy	MIN-200-12001		ICP-MS
Er	MIN-200-12001		ICP-MS
Eu	MIN-200-12001		ICP-MS
Fe	MIN-200-12001		ICP/OES
Ga	MIN-200-12001		ICP-MS
Gd	MIN-200-12001		ICP-MS
Ge	MIN-200-12001		ICP-MS
Hf	MIN-200-12001		ICP-MS
Ho	MIN-200-12001		ICP-MS
In	MIN-200-12001		ICP-MS
K	MIN-200-12001		ICP/OES
La	MIN-200-12001		ICP-MS
Li	MIN-200-12001		ICP/OES
Lu	MIN-200-12001		ICP-MS
Mg	MIN-200-12001		ICP/OES
Mn	MIN-200-12001		ICP/OES
Mo	MIN-200-12001		ICP/MS
Nb	MIN-200-12001		ICP-MS
Nd	MIN-200-12001		ICP-MS
Ni	MIN-200-12001		ICP/OES
P			ICP/OES
Pb	MIN-200-12001		ICP/MS
Pr	MIN-200-12001		ICP-MS
Rb	MIN-200-12001		ICP/MS
S	MIN-200-12001		ICP/OES
Sb	MIN-200-12001		ICP-MS
Sc	MIN-200-12001		ICP/OES
Si	MIN-200-12001		ICP/OES
Sm	MIN-200-12001		ICP-MS
Sn	MIN-200-12001		ICP/MS
Sr	MIN-200-12001		ICP-OES
Ta	MIN-200-12001		ICP-MS
Tb	MIN-200-12001		ICP-MS
Th	MIN-200-12001		ICP-MS



Method Summary

CLIENT NAME: MISC AGAT CLIENT ON
PROJECT: Bryan Dorland
SAMPLING SITE:

AGAT WORK ORDER: 18T415871
ATTENTION TO: Bryan Dorland
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Ti	MIN-200-12001		ICP/OES
Tl	MIN-200-12001		ICP-MS
Tm	MIN-200-12001		ICP-MS
U	MIN-200-12001		ICP-MS
V	MIN-200-12001		ICP/OES
W	MIN-200-12001		ICP-MS
Y	MIN-200-12001		ICP-MS
Yb	MIN-200-12001		ICP-MS
Zn	MIN-200-12001		ICP/OES
Zr	MIN-200-12001		ICP-MS
Au	MIN-200-12006 or MIN-221-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES
Pd	MIN-200-12006 or MIN-221-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES
Pt	MIN-200-12006 or MIN-221-12006	BUGBEE, E: A Textbook of Fire Assaying	ICP/OES