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ASSESSMENT REPORT

VTEM SURVEYING, GEOCHEMICAL SAMPLING AND MAPPING, SABIN PROPERTY

Patricia Mining Division, Ontario

COMMANDER RESOURCES LTD.
1100 – 1111 Melville Street
Vancouver, British Columbia
V6E 3V6

LOCATED:
3 km north-northeast of Savant Lake, Ont
Patricia Mining Division
50º 19'02" North Lat., 90º 43'46" West Long.
Evans and Houghton Lake Townships

March 23rd, 2020

Prepared By:

WETHERUP GEOLOGICAL CONSULTING

Stephen Wetherup, B.Sc., P.Geo.

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1.0 SUMMARY

Commander Resources Ltd. ("CMD") completed a three-phase work program on its Sabin property 3 km north of the community of Savant Lake, Northwestern Ontario. The results and details of the expenditures incurred from this work constitute the basis of this Assessment Report.

A review of historical data from the Sabin area showed that the geology throughout the property contained numerous volcanogenic (or hosted) massive sulphide Cu-Zn-Ag-Pb-Au ("VMS") showings many of which had only been tested by sparse drilling and remained open. The purpose of the work program was to provide a modern geological framework for the entire property and the known showings and assess their likelihood of contain additional VMS style mineralization.

Exploration work completed on the Sabin property in 2018 and 2019 took place in three different phases. The first phase was flying airborne VTEM by Geotech Ltd. From September 15th to October 8th, 2018. A total of 374 line-km of airborne VTEM and magnetics were flown over a majority of the claims covering 70 km^2. A second phase of work was conducted by three geologists Rory Krocker, Martin Kulla and Stephen Wetherup, P.Geo. from May 22nd to May 29th, 2019. During this work, conductors identified by the VTEM survey were ground truthed, geological/structural mapping was conducted as well as rock sampling both for geochemical assay and for whole rock analysis. Finally, a third phase was carried out by geologist Rory Krocker and field assistants Alex Pleson, Brad and Kyle from September 23rd to 28th and Rory Krocker Alex Pleson, Amede Thompson and Josh Thompson from October 25th to 28th, 2019. During this last phase of exploration historical exploration/logging trails were brushed out to provide access to Golsil and the western Kash Zone and channel sampling of existing outcrops in the Kash and Golsil areas was completed. All work utilized GPS's to determine locations and the coordinate system used was NAD83 Zone 15.

Ground truthing and geological mapping as well as whole rock sampling has demonstrated that there are at least two main horizons within the intermediate to felsic volcanic rocks of the Handy Lake volcanic sequence which host VMS Cu-Zn-Ag-Ag-Pb mineralization and significant areas of aluminous footwall alteration. The most intensely altered rocks encountered during the mapping and sampling have seen very little historical work and additional mapping and more detailed whole rock sampling is recommended in areas with highly altered rocks.

Rock sampling and assays showed that the Kash and Golsil areas contain not only altered rock but also Cu-Zn-Ag-Au mineralization where moderate conductivity zones in the VTEM occur. Both areas require

additional mapping and sampling to better define drill targets.

Overall, the Sabin property contains significant VMS potential along two or more horizons which are at least 9 km in strike length. Also, no time has been spent assessing the Hadley or South Evans Lake zones which are also likely to be extensions of the Kash and Marchington horizons.

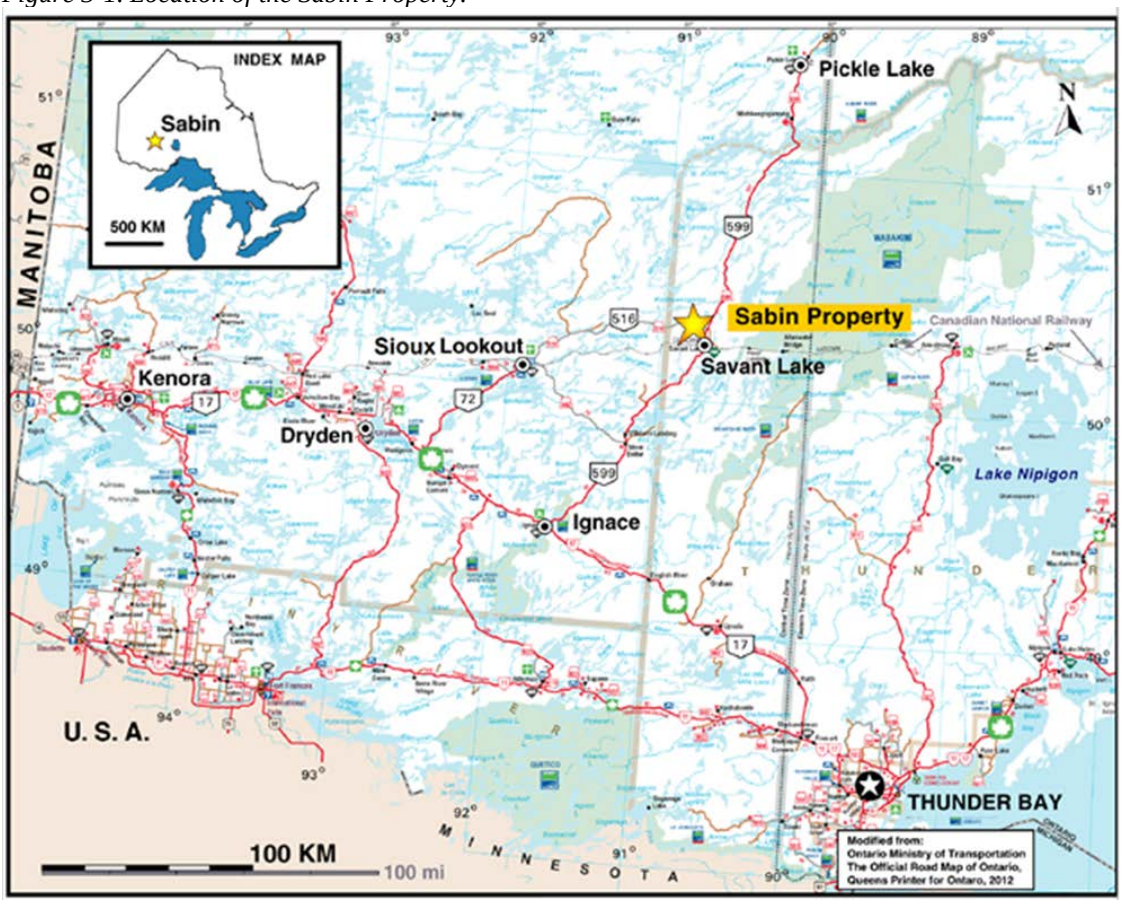
2.0 INTRODUCTION

Commander Resources Ltd. ("CMD") completed a three-phase work program on its Sabin property 3 km north of the community of Savant Lake, Northwestern Ontario. The first phase of the work program consisted of flying a helicopter borne VTEM geophysical survey over the entire property from September 15th to October 18th, 2018. Follow-up ground truthing, prospecting, geological mapping was conducted from May 22nd to May 29th, 2019 and another short trail clearing and channel sampling of existing exposures occurred in two trips between September 23rd to October 28th, 2019. The results and details of the expenditures incurred from this work constitute the basis of this Assessment Report.

3.0 LOCATION AND PROPERTY DESCRIPTION

The Sabin property is in the Patricia Mining Division approximately 3 km north of the community of Savant Lake, Northwestern Ontario (Figure 3-1).

Figure 3-1. Location of the Sabin Property.



Property co-ordinates (approximate centre of claims) are 50º 19'02" North Latitude, 90º 43'46" West Longitude or in UTM (NAD83), Zone 15N 660890E, 5576360N and it is within the Evans Lake and Houghton Lake Townships.

Access to the property is via paved, all-weather, provincial highway 599 which runs north-south on the eastern portion of the property and highway 516 which crosses east-west through the centre of the property. Highway 599 connects to the Trans-Canada Highway ~ 110 km south of the property at Ignace, Ontario and Highway 516 connects to Sioux Lookout, approximately 100 km away. A network of forestry roads and historical exploration trails occur throughout the property some of which are still active and passable by 4x4 vehicle or ATV but many have regrown with alder and spruce saplings.

The Sabin property is comprised of both patented (Mining Leases) and unpatented (Single Cell Mining Claims) mineral claims and covers a combined area of 98.70 km^2. The claims are owned 100% by Commander Resources except for Mining Lease, LEA-108226, which is jointly owned between Commander Resources (58.5%) and Glencore Canada (41.5%). Tables 3-1 and 3-2 is a summary of all the claims that comprise the Sabin property and Figure 3-2 is a map of the claims.

Table 3-1. Mineral tenure summary data for the Sabin Property (November 30, 2019).

Mining Right No.	Mining Right Type	Reserve	Pin	Client Ownership
LEA-107479	Lease	$ 196	62504-1795(LT)	(163613) COMMANDER RESOURCES LTD.
LEA-108226	Lease	$ 163	62504-2060(LT)	(130679) GLENCORE CANADA CORPORATION, (163613) COMMANDER RESOURCES LTD.
LEA-108227	Lease	$ 419	62504-1588(LT)	(163613) COMMANDER RESOURCES LTD.
LEA-108465	Lease	$ 371	62504-2044(LT)	(163613) COMMANDER RESOURCES LTD.
LEA-108514	Lease	$ 209	62504-1590(LT)	(163613) COMMANDER RESOURCES LTD.
LEA-108515	Lease		62504-1591(LT)	(163613) COMMANDER RESOURCES LTD.
LEA-108516	Lease	$ 398	62504-2286(LT)	(163613) COMMANDER RESOURCES LTD.

Table 3-2. Active Single Cell Mining Claims owned by Commander Resources and their due dates (March 23, 2020).

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
103804	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
103805	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
105440	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
105441	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
105442	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
110100	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
110407	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
110408	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
110409	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
111717	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
112313	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
114131	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
114132	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
114366	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
123639	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
123640	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
123876	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
124314	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
125279	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
128679	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
129444	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
131747	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
133197	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
135703	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
135704	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
135705	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
135706	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
137238	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
137335	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
139896	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
140662	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
140663	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
141777	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
141778	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
143216	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
143217	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
143218	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
145852	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
145955	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
146073	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
146938	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
147212	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
147213	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
147822	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
147972	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
151045	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
151760	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
151761	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
151762	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
151763	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
153242	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
153243	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
157295	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
159388	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
159389	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
160757	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
161439	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
161440	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
162014	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
162629	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
164706	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
164707	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
166762	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
166826	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
167952	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
167953	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
171937	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
175328	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
175329	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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175606	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
177109	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
180873	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
181325	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
181326	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
184427	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
187013	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
187363	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
189260	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
189261	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
189359	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
192673	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
194005	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
194006	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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195946	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
196047	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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201929	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
201930	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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214662	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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217179	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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221918	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
224703	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
225477	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
225478	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
226634	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
226635	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
229891	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
231360	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
232092	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
235194	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
236990	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
238680	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
238681	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
238682	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
239276	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
239890	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
241616	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
242055	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
243145	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
243146	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
243147	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
248598	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
248599	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
248600	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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248602	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
248619	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
248699	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
249359	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
249360	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
249620	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
254010	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
254011	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
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255638	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
255639	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
256005	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
258076	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
260060	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
260643	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
260644	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
261374	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
262053	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
263200	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
265176	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
265177	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
267125	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
268089	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
268825	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
268826	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
269916	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
272392	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
272393	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
275903	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
276544	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
276545	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
288749	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
291223	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
291224	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
292643	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
293258	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
296777	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
299836	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
299910	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
299911	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
303702	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
305389	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
305390	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
305391	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
307875	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
307876	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308483	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308748	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308749	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308750	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308751	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
308752	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
309258	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
309931	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
309932	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
309933	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
309934	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
309935	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
311053	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
312515	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
316648	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
317169	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
320327	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
321885	2018-04-10	2020-04-21	(163613) COMMANDER RESOURCES LTD.	1	2020-04-21
323874	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
325247	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
325248	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
329866	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
329959	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
329960	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
330444	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
331909	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
332001	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
332002	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
332525	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
337100	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
342804	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
344222	2018-04-10	2020-04-12	(163613) COMMANDER RESOURCES LTD.	1	2020-04-12
540274	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540275	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540276	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540277	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540278	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540279	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540280	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540281	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540282	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540283	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540284	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540285	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540286	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540287	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540288	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540289	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540290	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540291	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540292	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540293	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540294	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540295	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540296	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540297	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540298	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540299	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540300	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540301	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
540302	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540303	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540304	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540305	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540306	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540307	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540308	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540309	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540310	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540311	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540312	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540313	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540314	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540315	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540316	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540317	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540318	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540319	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540320	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540321	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540322	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540323	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540324	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540325	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540326	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540327	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540328	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540329	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540330	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540331	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540332	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540333	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540334	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540335	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540336	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540337	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540338	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540339	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540340	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540341	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540342	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540343	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540344	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540345	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540346	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540347	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540348	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540349	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540350	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540351	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540352	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540353	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540354	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540355	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
540356	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540357	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540358	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540359	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540360	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540361	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540362	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540363	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540364	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540365	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540366	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540367	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540368	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540369	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540370	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540371	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540372	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540373	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540374	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540375	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540376	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540377	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540378	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540379	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540380	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540381	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540382	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540383	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540384	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540385	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540386	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540387	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540388	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540389	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540390	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540391	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540392	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540393	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540394	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540396	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540397	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540398	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540399	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540400	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540401	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540402	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540403	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540404	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540405	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540406	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540407	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540408	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540409	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540410	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30

Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
540411	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540412	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540413	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540414	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540415	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540416	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540417	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540418	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540419	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540420	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540421	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540422	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540423	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540424	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540425	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540426	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540427	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540428	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540429	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540430	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540431	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540432	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540433	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540434	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540435	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540436	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540437	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540438	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540439	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540440	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
540441	2019-01-30	2021-01-30	(163613) COMMANDER RESOURCES LTD.	1	2021-01-30
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Claim #	Issue Date	Ann. Date	Owner Client #	Cells	Due Date
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COMMANDER RESOURCES LTD.

Date:	Dec. 21, 2019
Drafted by:	S. Wetherup
Figure:	3-2

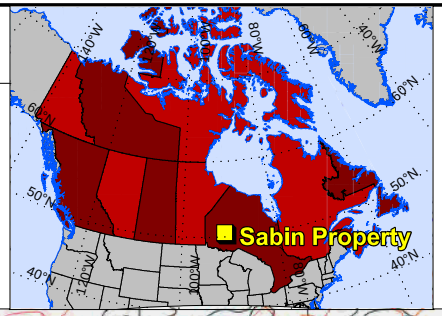
Sabin Property

Cell Claims and

Leases

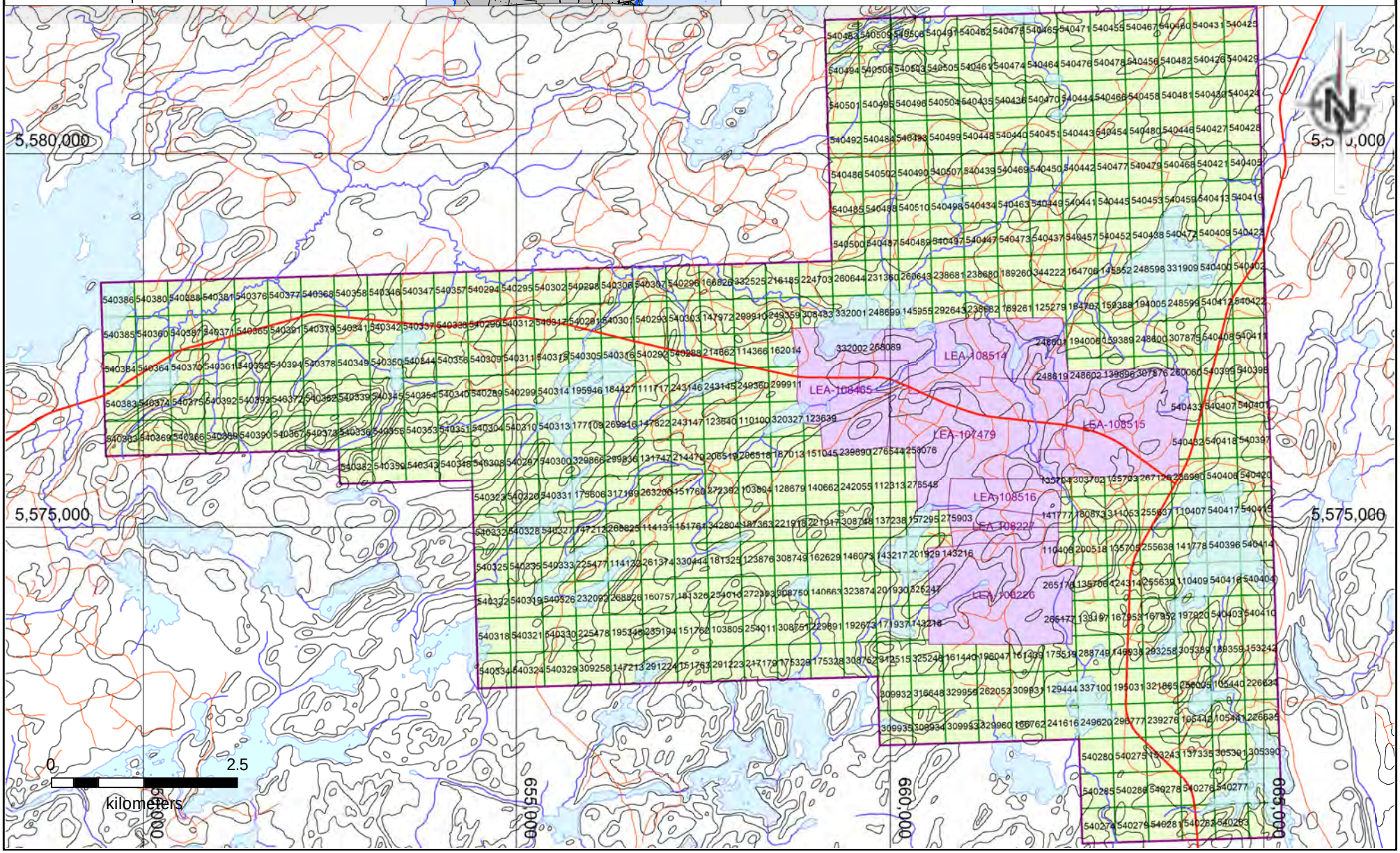
Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline
- Mineral leases
- Cell claims



4.0 EXPLORATION HISTORY

The Sabin property is a large claim block that encompasses several areas that have been the focus of exploration over the years (Table 4-1). The first recorded assessment work on the Sabin property began in 1953-1959 when Lun-Echo Gold Mines conducted ground magnetic and EM survey in the Golsil area at the south end of the property. Presumably prospecting work has occurred previous to this work which was not recorded for assessment. Additional work was completed in the Golsil area in 1963 by Golsil Mines. A hiatus of work in the area occurred until the late 1960's when airborne geophysical data prompted the drilling of a hole in the Hough Lake area by Canadian Nickel in 1968 and a hole in the Willow Lake area by Canex in 1970.

During the late 1960's and early 1970'a construction of the Pickle Lake highway (599) cut through a zone of pyritic rocks just north of the town of Savant Lake (Hadley showing) which was explored by a prospector E. Hadley and Cam Mines, during the early 1970's (Figure 4-1). Also, airborne EM conductors that run 1 to 2 km east of Hwy 599 and nearly parallel to the highway (Evans Lake area) were tested and explored by Nickel Rim Mines, Noranda, Cam Mines and Geophysical Engineering during the early 1970's. Noranda from 1974 to 1978 did sporadic work on small claim blocks it had east of Marchington and in the Golsil area.

In 1976, UMEX staked the core claims to the Sabin property (mining leases) and began a regional program of airborne magnetic and EM surveys, prospecting and drill testing conductors. In 1977, UMEX drilled reconnaissance holes in the Hadley, Houghton Lake and a weak conductor beside the Marchington Road (now Hwy 516) which intersected the Marchington VMS horizon. This early success was followed by extensive step out drilling and definition of a small inferred resource between 1978 and 1982 as well as regional minor regional exploration. Falconbridge Copper also funded drilling deeper holes inti the Marchington area in 1982. Following the 1982 program UMEX focussed most of its efforts to more reconnaissance trenching, rock sampling and mapping in around and outbound of the Marchington area as well as in the Golsil area to the south of Marchington. UMEX concluded working in the area in 1987 and sold all of its Canadian assets and data to Major General Resources (now Commander Resources) in 1989.

During the UMEX work on the Sabin claims in the late 1970's and early 1980's, Falconbridge worked on a small claim block around Willow Lake (NE of Marchington) as well as its JV and assessment of Marchington in 1982. In 1984, Cumberland Resources staked and began exploring its Evans Lake Property which covered the eastern and southern portion of the current Sabin property and east of Hwy 599. In 1986, Cumberland drilled several of its EM and geological targets and intersected VMS mineralization (0.5 m

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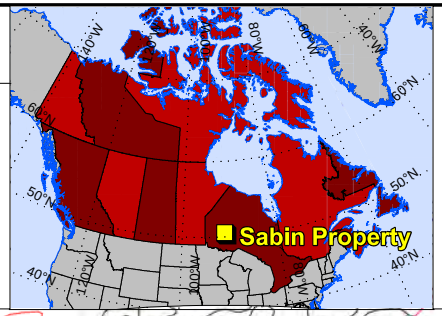
Figure: 4-1

Sabin Property

Areas of Historical Work

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline
- Historical work area
- Historical DDH

Hough Lake

Houghton Lake

Houghton Gold

Willow Lake

599

516

Marchington

Kash

Golsil

Evans Lake

Hadley

5,580,000

5,575,000

655,000

660,000

665,000

0 2.5 kilometers

@2.2% Zn, 1.7% Pb, 369.3 g/t Ag, within a larger alteration zone of anomalous Zn, Pb, Cu and Ag) at the south end of it property, south of Evans Lake and 2 km east of the original Hadley showing. Noranda in the same year partially funded the drill program and drilled below this original intercept, cutting more alteration and anomalous Zn, Pb, Cu, Ag and Au but not of sufficient grades to keep them interested.

In 1990 a small prospecting program identified a gold target just east of the core Sabin leases and now on the current Sabin property called the Houghton Creek gold occurrence. Two short exploration holes and minor channel sampling was completed by the prospector and by Noranda in 1991.

In 1992, Asarco completed 16 drill holes to test conductors in the Willow Lake area northeast of Marchington with limited results. In 1993, Granges conducted work on the Sabin property in the Golsil area, consisting of a small IP survey, trenching and sampling and a ground EM survey in the Marchington area. Noranda also compiled the data in the Marchington area in 1995 as well as conducting an IP survey over the Marchington area as well as drilling 3 drill holes to test deeper targets. Since, 1995 other than small prospecting and sampling programs no significant work has occurred on the Sabin property.

Table 4-1. Summary of exploration work completed on the Sabin property and areas directly adjacent.

Year	Company	AFRI	Area	Work
1953-1959	Lun-Echo Au Mines	52J07SE8787	Golsil	EM, MAG
1963	Golsil Mines	52J07SE8918	Golsil	8 DDH, 607.2 m
1968	Canadian Nickel	52J07SE8910	Hough Lake	1 DDH, 97.5 m
1970	Canex Aerial Expl	52J07SE9100	Willow Lake	1 DDH, 56.1 m
1971	Cam Mines	52J07SE9230	Hadley	GLCOMP
1971	Jorex	52J07SE8791	Golsil	MAG, VLF
1971	Nickel Rim Mines	52J07SE8772	SE Evans Lake	MAG, VLF
1971	Noranda	52J07SE8776	SE Evans Lake	EM, MAG
1972	Cam Mines	52J07SE8790	Evans Lake	EM, MAG
1972	E Hadley	52J07SE9101	Hadley	2 DDH. 182.9 m
1972	Mid-North Eng	52J07SE9070	Hough Lake	1 DDH, 91.4 m
1973	E Hadley	52J07SE0196	Hadley	PMECH
1974	Noranda	52J07SE0188	E Marchington	EM, MAG
1975	E Hadley	52J07SE0019	Hadley	PTRNCH
1975	Geophysical Eng	52J07SE9102	N Evans Lake	GCHEM, 1 DDH, 131.7 m
1975	Noranda	52J07SE0190	Golsil	GEOL
1975	Noranda	52J07SE0198	E Marchington	EM, MAG
1975	Noranda	52J07SE8766	Marchington	VLF
1975	Noranda	52J07SE9609	Marchington	GEOL
1976	Geophysical Eng	52J07SE9103	N Evans Lake	1 DDH, 61.6 m
1977	Umex Inc	52J07SE9104, 52J07SE9312, 52J07SW0037	Hadley, Houghton and Marchington	16 DDH, 1981.2 m; AMAG, 1392 line-km
1978	Eric Hadley	20000005283	Hadley	1 DDH, 31.7 m
1978	Geophysical Eng	52J07NE9273	North Evans Lake	1 DDH, 128.3 m; mag
1978	Noranda	52J07SE8765	Golsil	EM

Year	Company	AFRI	Area	Work
1978	Umex Inc	20000005279, 20000005279, 20000005282, 52J07SE0050, 52J07SE0185, 52J07SE9106, 52J07SE9107, 52J07SE9204, 52J07SE9303, 52J07SE9313, 52J07SE9315, 52J07SE9316, 52J07SW0027, 52J07SW0028, 52J07SW0030, 52J07SW0035, 52J07SW0040	Houghton Lake, Sabin	AMAG, AVLF, 798 line-km; 27 DDH, 4494.6 m
1979	E Hadley	52J07SE0195	S. Evans Lake	MAG, VLF, 1.9 line-km
1979	Falconbridge	52J07NE0024, 52J07SE8768	Exploration to Willow Lake	MAG, VLF 241 line-km
1979	Umex Inc	52J07SE0189, 52J07SE9299, 52J07SE9311, 52J07SW0029, 52J07SW0034	Houghton Lake to Marchington	MAG, VLF, 85.7 line-km; 5 DDH, 1522.8 m
1980	Falconbridge	52J07SE9300	Hough Lake	3 DDH, 776.6 m
1980	Preussag Canada	52J07SW0023, 52J07SW9319	N Exploration Lake	EM, MAG, 22.5 line-km; GEOL
1980	Umex Inc	52J07SE0197, 52J07SE9071, 52J07SE9205, 52J07SE9301, 52J07SE9302, 52J07SW0046	Marchington, Evans Lake, Houghton	21 DDH, 1735.5 m
1981-1982	Falconbridge	52J07NE0022, 52J07SE0199, 52J07SE9297, 52J07SE8788, 52J07SW0018, 52J07SW0019, 52J07SW0025	Houghton Lake, Marchington, Willow Lake	EM, 20 line-km, MAG 80.1 line-km, GEOL; 15 DDH, 2448.3 m
1984	Cumberland Res	52J07NE0010	Houghton, Hough and Evans Lake	AEM, AGR, AMAG, 248 line-km
1984	Umex Inc	52J07SE0036, 52J07SE0191, 52J07SE8774, 52J07SE8775, 52J07SE9271, 52J07SE9296, 52J07SW0011, 52J07SW0012, 52J07SW0014, 52J07SW0015	Golsil, Houghton Lake and Sabin	2 DDH, 252 m; EM, MAG, VLF, 5.1 line-km; 97 Whole rock, 211 GCHEM rock, 1107 GCHEM soil
1985	Cumberland Res	52J07SE8783, 52J07SE8786	Evans Lake/ Hadley	EM, MAG, 50 line-km; PROSP, GEOL
1985	Umex Inc	52J07SE9620, 52J07SW0008, 52J07SW0009	Sabin, Houghton	1 DDH. 130.1 m; GCHEM 666 rocks
1985	Umex Inc	52J07SW0008	Sabin	GCHEM, GEOL, 666 samples
1986	Cumberland Res	52J07SE0174, 52J07SE0194, 52J07SE8753, 52J07SE8779, 52J07SE8780, 52J07SE8781, 52J07SE8784, 52J07SE9280, 52J07SE9610, 52J07SE9703	Hadley, Evans Lake	EM, 20 line-km, and borehole EM; GCHEM 192 soils; 12 DDH, 2841.7 m
1986	Noranda	52J07SE9702	Hadley	GCHEM, 1 DDH, 609.4 m
1987	Cumberland Res	52J07SE0187	Hadley	GEOL
1987	Umex Inc	52J07SE8751	Willow Lake	ACOMP, AMAG, AVLF, 29 line-km
1988	Cumberland Res	52J07SE8754	Hadley	GCHEM, OTHER
1988	Noranda	52J07SE8756	Hadley	GCHEM
1989	Geocanex	52J07SW0001	Houghton Lake	AGRAD, AMAG, AVLF, 225 line-km
1989	Noranda	52J07SE8757	Hadley	16.7 line-km UTEM
1990	W Hollingsworth	52J07SW0002	Houghton gold	2 DDH, 39.3 m
1991	Asarco	52J07SE8778	S Hough	1 DDH, 119.1 m
1991	Noranda	52J07SW0003	Houghton gold	MAG, DDH, VLF

Year	Company	AFRI	Area	Work
1991	Unknown	52J07SE8627	Hadley	ASSAY, DDH, PROSP, PSTRIP
1992	Asarco	52J07SE8777, 52J07SE0001	N Willow	ASSAY, PCOMP, 6 DDH
1993	Granges Inc	52J07SE0003, 52J07SE9700	Golsil, Sabin	GCHEM, GEOL, IP, 4.3 line-km, EM, 25.6 line-km
1995	Noranda	52J07SE0004	Marchington	GCHEM, IP, 13.4 line-km MAG, 3 DDH, 1012 m
1997-1999	R. De Carle	52J07SW2001	Island Lake	GCHEM, GEOL, GRAV, MAG, PROSP, VLF
2012	Commander Res	20000008688	Houghton Lake Area	ASSAY, GCHEM 665 soils
2012	Fairmont Res	20000007512	Houghton gold	ASSAY, PROSP

5.0 GEOLOGICAL SETTING

5.1 Regional Geology

The Sabin property is located within the Savant Lake-Sturgeon Lake Greenstone Belt ("SLGB") which are in the Neoarchaen Wabigoon Subprovince of Northern Ontario. The greenstone belt is comprised of three main successions of rocks:

(1) The oldest package is comprised of the Jutten sedimentary sequence, Vanessa Lake sequence and Vista Lake sequence which are on the east and north margins of the belt. These sequences of quartz-rich siliciclastic sedimentary rocks are ~2950 Ma and are thought to be derived from a continental source and are overlain by a thin polymictic conglomerate and ultramafic schist.

(2) Overlying this older sedimentary package are Jutten Group and Fourbay Lake sequence tholeiitic basalt flows which are dated to be ~2850 Ma and appear to form the base of a volcanic island arc.

(3) The youngest rocks in this greenstone belt are the Handy Lake Group bimodal volcanic and the Beckington sequence, Six Mile Lake sequence, Central Sturgeon sequence and South Sturgeon Sequence. These are island arc affinity volcanic rocks between the ages of 2745 and 2718 Ma. Above the volcanic sequences locally are turbiditic wacke and rare oxide facies iron formations of the Quest Lake, Savant and Post Lake sedimentary sequences (Sanborne-Barrie and Skulski, 1999).

The Sabin property is completely underlain by bimodal volcanic rocks of the Four Bay Group which is tectonically and age correlative to the South Sturgeon sequence which hosts the VMS ore bodies of the Sturgeon Lake VMS deposit (Figures 5-1 and 5-2).

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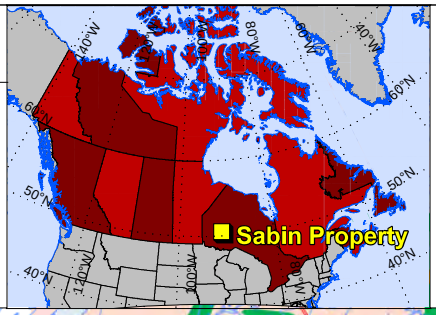
Figure: 5-1

Sabin Property

Regional Geology of the Savant-Sturgeon Lake GreenstoneBelt

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outl
- Mineral deposit

Marchington Deposit

St. Anthony Mine

Lyon Lake Zone

Sturgeon Lake Mine

Mattabi Mine

F Group

516

642

599

Rock types

- granitoid rocks
- diorite
- clastic sedimentary rocks
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks
- ultramafic rocks

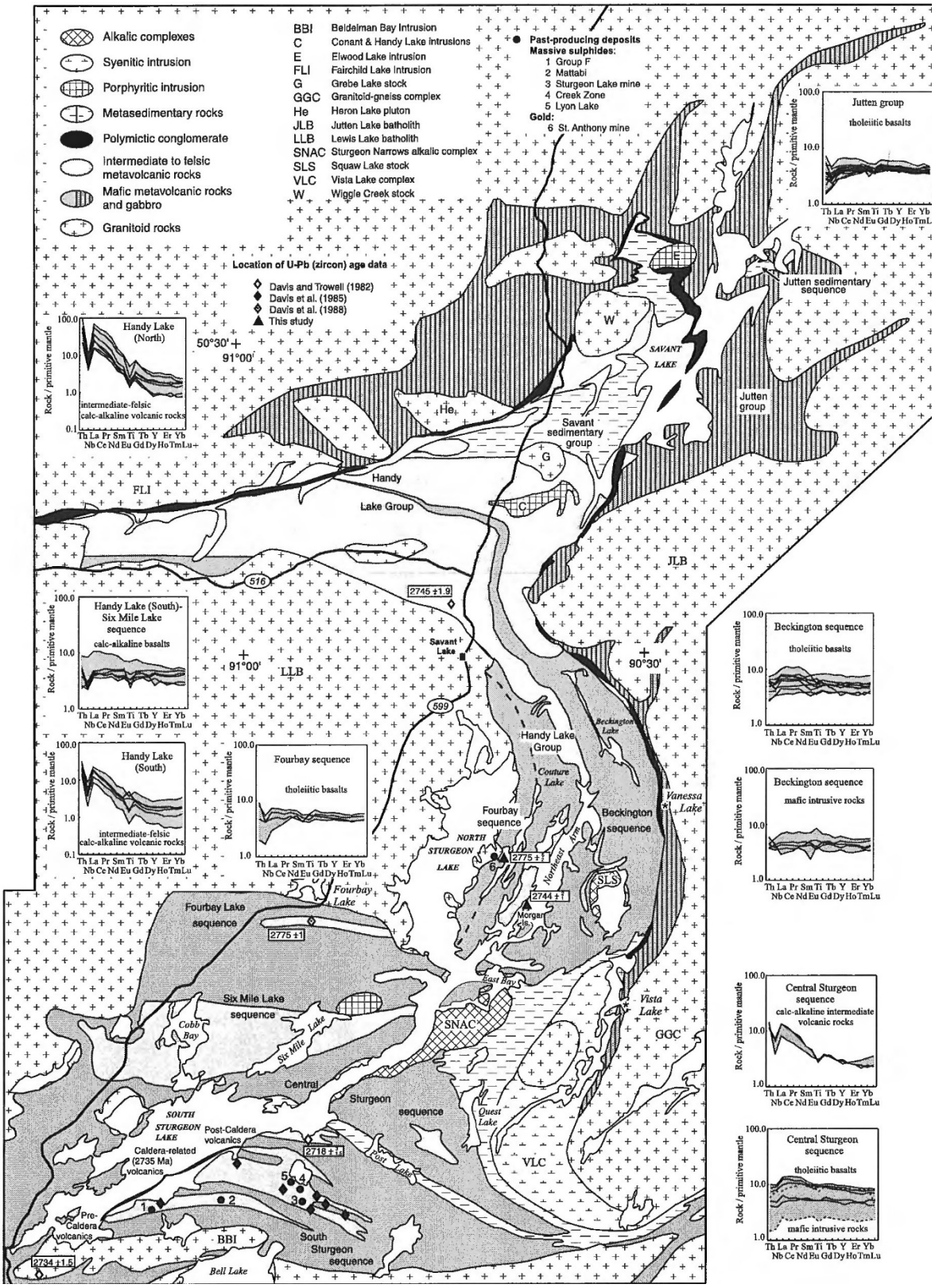


Figure 5-2. Geological groups and formations in the Savant Lake-Sturgeon Lake Greenstone Belt (after Sanborne-Barrie and Skulski, 1999).

All of the rocks in the SLGB have been poly-deformed and subjected to greenschist facies metamorphism and have be folded by at least two major deformation events. D_1 deformation results in the near layer parallel axial planar isoclinal foliation of the rocks within the belt with shallow plunges (Sanborne-Barrie and Skulski, 1998 and 1999). D_2 is defined by 050 to 070 axial planar closed folds which are strongly developed on the Sabin property which is in the centre of a large scale F_2 anticline.

5.2 Property Geology

The Sabin property is underlain by bimodal Handy Lake Group volcanic rocks which have been folded into a large anticline along a 070 axis. The lowest portion of the succession of volcanic (oldest) rocks are in the core of the anticline and at the southwest side of the property. These consist of some felsic flows and tuffs but dominantly more basalt flows and syn-volcanic diorite sills (Figures 5-3 and 5-4).

Directly overlying these basalts are a sequence of andesite, dacite and lesser rhyolite flows, tuffs and volcanic breccias (light green) which wrap around the basalt package to the north and east. These felsic volcanic rocks contain local zones of phyllite sedimentary rocks as determined by historical mapping by UMEX but mapping during this project suggests that some of these "sediments" are likely highly altered felsic tuff which have significant amounts of garnet and or staurolite porphyroblasts, such as the sedimentary body ENE of Marchington. This also appears to be the case ENE of the Kash Zone as well. Locally, there are also very fine grained diorite sills injected along flow and tuff layering within the felsic volcanic package some of which do not appear to have been hydrothermally altered but locally these too can contain significant garnet contents suggesting aluminous alteration and hence these sills at least partially were emplaced during or before VMS alteration and mineralization.

Outcrop is very poor at the northern contact of the felsic volcanic rocks but historical drilling suggests that it is conformably overlain by a mixed zone of andesite and basaltic flows as well as some coarse conglomerate and fine grained sedimentary units before transitioning into massive pillowed basalt flows at the north end of the Sabin property. The mixed transition zone folds around to the south and underlies some of the easternmost areas on the property around Evans Lake.

Late granitic stocks and plutons cut the Handy Lake Group volcanic rocks in the area of Patterson Lake (the Patterson Lake stock) and to the south of the property.

5.2.1 Structure

The most prominent structure on the property is a large anticlinal fold with a 070 oriented axial plane, D_2

as described by Sanborne-Barrie and Skulski (1998 and 1999). Throughout the property 060 to 075 foliation is common and dominant especially within sericite schists where it is the dominant foliation. There are several 070 trending lineaments in the topography and within the airborne magnetic data which defines larger scale (100's m to km scale) fold zones and these can appear to be shears. In detail, the 070 foliation is axial planar to large scale and minor scale folds which have ~50-60° closures and often occurs along discrete zones or shears within more competent rocks or partitioned preferentially into the more micaceous schists (Figure 5-3). These 070 folds plunge shallowly 5-15° ENE (Figure 5-4).

In the more competent rocks, the 070 foliation is poorly developed or along discrete zones as noted above. These rocks are also strongly foliated with a layer parallel foliation and locally isoclinal fold hinges are observed which are typically strongly attenuated and decapitated. This is interpreted to be the foliation and folding related to D_1 and is folded along 070 trending axial planes and axial planar foliation zones. On the north and west limb of the major anticline, the F_1 foliation generally strikes 110 to 080 and the isoclinal fold hinges plunge moderately to shallowly eastward. In these areas, small scale folds can be observed to have long E-W striking limbs and short ~345 or NNW striking limbs or kinks. Along Hwy 599 and in the Golsil area, F_1 foliation and layering typically strikes 330 to 350 with moderate easterly dips and here the small-scale folding shows the NNW limbs tend to be longer limb.

5.2.2 Metamorphism and Alteration

The Savant Lake Greenstone Belt is generally considered to be metamorphosed to greenschist facies and the rocks on the Sabin property are more specifically upper greenschist facies. Mafic volcanic rocks are typically chlorite+/-actinolite schists, and andesite and dacite volcanic and volcaniclastic rocks are biotite-feldspar+/-hornblende+/-quartz eye schists. Locally however these schists interpreted to be volcanic in origin contain variable amounts of garnet, sericite, staurolite, or sillimanite/andalusite. In some locales, the rocks are purely quartz-sericite+/-pyrite schists, or garnet-sericite-quartz schists. As mentioned above, where garnet contents are more than 5% some previous mapper have labelled the rocks as sedimentary (aluminous) but in many areas these have no remaining sedimentary layering or features and appear to be simply highly altered volcanic rocks. In one such location ENE of Marchington and along the Marchington trend basalt/diorite sills have injected and brecciated the felsic volcanic rocks and both rock types contain significant amounts of garnet suggesting aluminous alteration of both the basalt/diorite and felsic volcanic rocks.

5.2.3 Mineralization

Several zones of mineralization have been documented on the Sabin Property (Figure 5-4). The Marchington Zone has by far had the most work completed with ~40 drill holes testing it and zones around it. It appears to be three separate horizons, the Marchington Zone, South Zone and Zinc Zone, but this may be due to fold duplication as the zone is intensely folded. The Marchington Zone itself consists of a massive to semi-massive sulphide lens (or hinge) of sphalerite-tetrahedrite-chalcopyrite-galena which is about 2.5 to 6 m thick (true width) drilled to 40 m depth in detail with the a few deeper holes intersecting it ~ 100 m from surface. It has been detail drilled for approximately 180 m along strike but wider spaced drilling commonly with only one hole on section for 470 m along strike and it is open to E and W as well as to depth. Typical intercepts from the Marchington Zone are 3.2 m @ 4.8% Zn, 4.3% Cu, 177 g/t Ag (SA-69) from the west end of the detailed drilling and 6.0 m @ 3.5% Zn, 1.1% Cu, 1.2% pb and 63 g/t Ag from the discovery hole (SA-05). Sparse drilling has tested the other zones in the Marchington area.

Outside the Marchington area, are additional significant VMS horizons with moderate to minor amounts of drill testing, the S-23 Zone, Kash Zone, Golsil and Hadley Area. The S-23 Zone is a minimum of 300 m long (open to E and W and depth), tested by 6 short drill holes below a beaver pond with significant intercepts of 7.3 m @ 1.0% Zn, 0.8% Cu and 18 g/t Ag (SA-24) and 3.4 m @ 1.7% Zn, 0.8% Cu and 22 g/t Ag (SA-33). The Kash Zone is a 2 km long weakly conductive zone with abundant garnet-sericite-pyrite alteration on its south side tested by one drill hole which returned 0.7 m @ 4.0% Zn (SA-43). Golsil has had several campaigns of mapping, rock sampling, trenching/stripping and geophysics as well as 10 short drill holes with descriptions of 15 to 32 ft of sph-cpy-gal mineralization. The Hadley Zone itself has only been peripherally tested with drilling as a prospector has held the ground for much of its history and is described and a sph-cpy-gal showing. An area east of it was drilled by Cumberland Resources and here is grouped with the Hadley showing as the Hadley Area. Cumberland intersected 0.5 m @ 2.2% Zn, 1.7% Pb and 369 g/t Ag and several other altered and weaker mineralized zones. Another hole tested the zone to depth but returned weaker assays although both areas were within much wider alteration zones.

Finally, a showing to the NW of the Kash area, here called the Houghton Gold Area, is located along Houghton Creek and is essentially a single stripped outcrop in a gravel pit of altered felsic volcanic rocks that has returned channel samples of 0.055 oz/t Au and 0.2% Zn over 2.5 feet, and 0.7% Zn over 13 feet. This area has had very little work done on it other than channel sampling and 2 short drill holes.

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Date: Dec. 21, 2019

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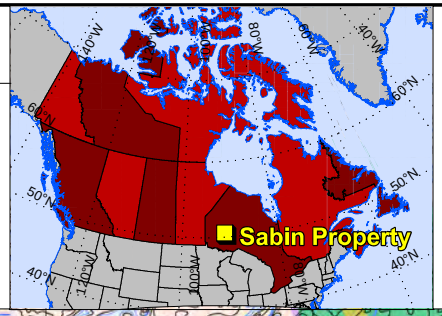
Figure: 5-3

Sabin Property

Regional Geology

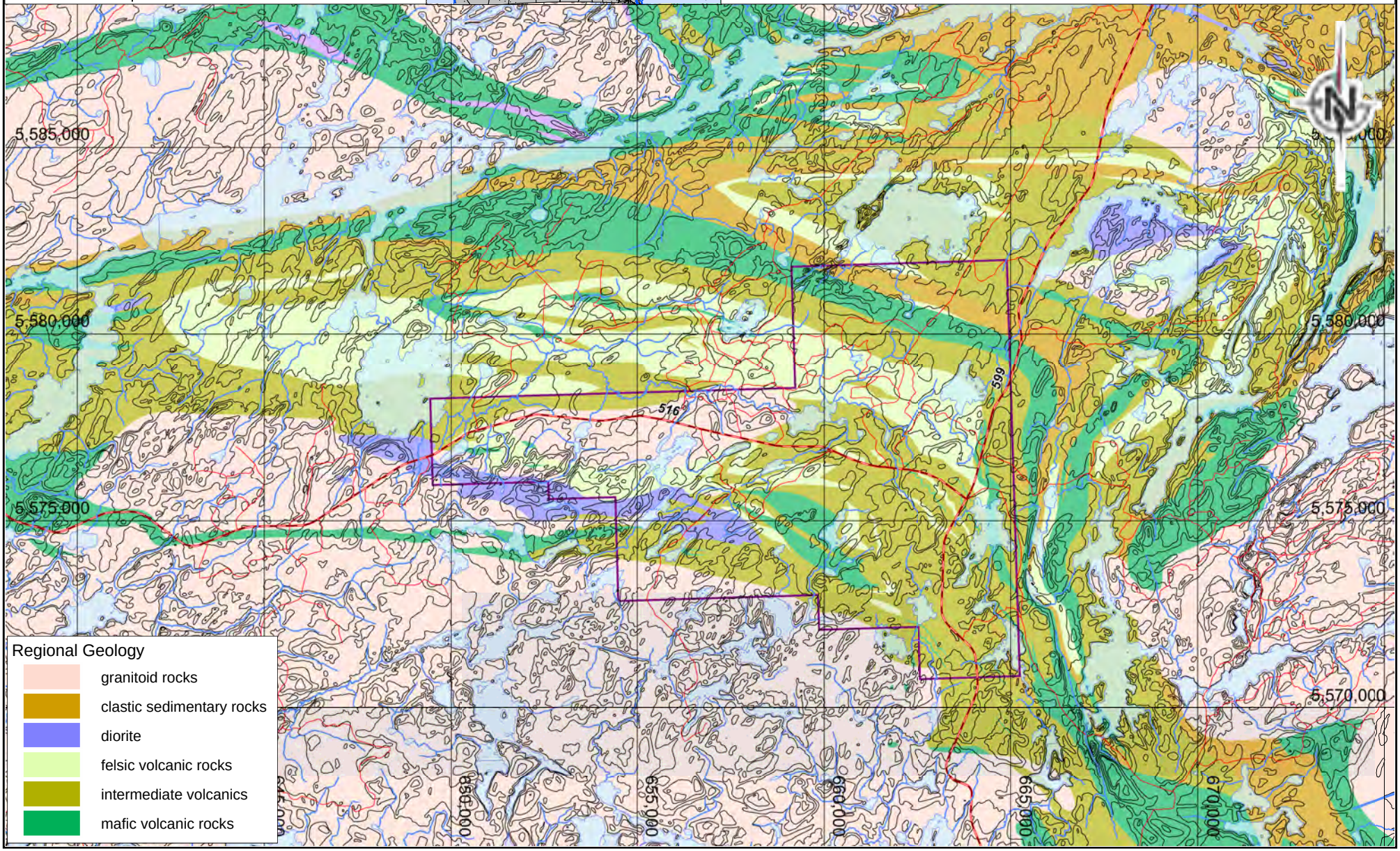
Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline
- VMS horizon
- Inferred VMS horizon
- Anticline axis



Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

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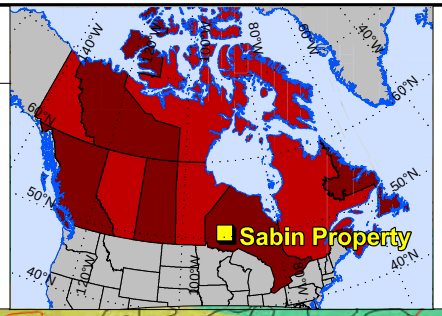
Drafted by: S. Wetherup

Figure: 5-4

Sabin Property
Property Geology and Regional Geology Mapping
Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis

5,580,000

5,575,000

516

599

LEA-108514

LEA-108515

LEA-108516

Kash

Marchington South

S-23

Goisil

Hadley

S Evans

655,000

660,000

665,000

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

0 2.5 kilometers

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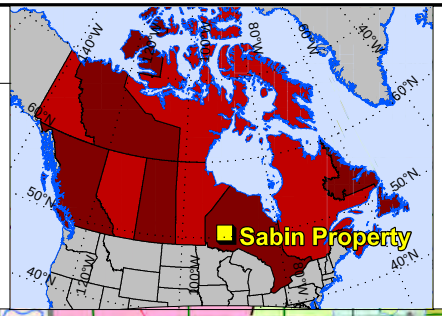
Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 5-5

Sabin Property
Property Geology and Structural Measurements
Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis

Structural Symbols

- S0 - compositional Layering
- S1 - foliation
- S2 - fold axis/foliation
- L1 - mineral lineation
- F2 - fold axis

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

Kash
Marchington
South
Golsil
Hadley
S Evans
LEA-108466
LEA-107479
LEA-108516
LEA-108227
LEA-108226
S-23
5,575,000
699,000

6.0 EXPLORATION WORK

Exploration work completed on the Sabin property in 2018 and 2019 took place in three different phases. The first phase was flying airborne VTEM by Geotech Ltd. From September 15th to October 8th, 2018. A total of 374 line-km of airborne VTEM and magnetics were flown over a majority of the claims covering 70 km^2. A second phase of work was conducted by three geologists Rory Krocker, Martin Kulla and Stephen Wetherup, P.Geo. from May 22nd to May 29th, 2019. During this work, conductors identified by the VTEM survey were ground truthed, geological/structural mapping was conducted as well as rock sampling both for geochemical assay and for whole rock analysis. Finally, a third phase was carried out by geologist Rory Krocker and field assistants Alex Pleson, Brad and Kyle from September 23rd to 28th and Rory Krocker Alex Pleson, Amede Thompson and Josh Thompson from October 25th to 28th, 2019. During this last phase of exploration historical exploration/logging trails were brushed out to provide access to Golsil and the western Kash Zone and channel sampling of existing outcrops in the Kash and Golsil areas was completed.

6.1 Airborne VTEM and Magnetics

Previous exploration work focussed on drill testing EM conductivity highs in a search for massive sulphide mineralization. As sulphide mineralization is dominated by sphalerite-tetrahedrite and galena and these minerals are not strong conductors the massive sulphide mineralization is unlikely to be highly conductive. This is borne out by the fact the Marchington mineralization was the weakest conductor drilled by UMEX in their first pass drilling and was their best mineralized intercept. Also, the Sturgeon Lake VMS ore bodies of which the mineralization on the Sabin property closely resembles are rarely detectable by EM surveys due to their low conductivity (Franklin, 2012)

The conductivity in the Marchington area is likely caused by the high disseminated pyrite in the footwall of the mineralization, hence focussing on weaker conductive zones in favourable geological horizons is likely to be a more successful exploration tool.

Therefore, the focus of the 2018-2019 exploration program was to fly a modern airborne EM-MAG survey over the property which is also deeper penetrating survey than previous surveys, to produce a conductivity map to aide in geological mapping and define areas for more detailed geological work and sampling. Figures 6-1 and 6-2 are the rho (conductivity) at 100 m depth and calculated magnetic gradient maps, respectively, from the airborne data.

6.2 Geological Mapping and Rock Sampling

The geological map in Figure 6-3 depicts the location of all geological mapping points visited and documented during the 2019 program and their interpreted rock types. Rocks with garnet/staurolite and high sericite contents were interpreted, in the field, as likely aluminous altered (argillic altered) volcanic rocks hence garnet, sericite and silica contents were estimated for each mapping station and plotted to be a proxy for an alteration map (Figure 6-4). All data was recorded onto mobile devices into a georeferenced database where UTM and lat/long coordinates were collected for each site as well as rock types, structural data, mineralogical data and general descriptions as well as photos were recorded.

The mapping confirmed much of the historical geological mapping however, in general historical mapping tended to identify volcanic rocks as more felsic than they really are. Whole rock discrimination plots using immobile elements confirmed the field mapping observations in most cases. Some of this discrepancy can be explained due to aluminous and silica alteration of intermediate (andesitic) volcanic rocks. Also, outcrops with greater than 3% garnet/staurolite were historically mapped as sedimentary rocks but most appear to be aluminous altered intermediate to felsic volcanic rocks possibly tuffaceous locally and whole rock analysis also confirmed these to be volcanic in origin as they plot on the continuum with the other volcanic rocks.

The central area of the Sabin property is dominated structurally by a large-scale anticlinal fold which has 70^{o} to 80^{o} closure and an axial plane which strikes 070 and dips approximately 75^{o} SSE. The northern portion of the property is underlain by a limb of the fold which generally strikes 090 and dips 80^{o} S. The property is dominated by volcanic rocks which have not only been poly-deformed, metamorphosed (greenschist facies) but also show complex facies variation which makes any detailed stratigraphy difficult and likely erroneous. Therefore, only a basic stratigraphy is presented here.

The lowest member of the volcanic rocks on the property is a series of mafic flows (locally pillowed) and injected fine grained to coarse grained dioritic sills at the southeastern portion of the claims. These areas were not visited in the 2019 program and descriptions are based off internal historical UMEX reports. Mapping suggests that this unit is about 1 km thick.

Directly, above the mafic units to the north and east is a complex of intermediate to felsic volcanic flows and volcaniclastic rocks (where textures are visible) which are generally biotite-feldspar+/-hornblende+/-quartz+/-sericite+/-garnet schists. This unit is at most 4.5 km thick on the northern portion of the property however, there is likely significant structural thickening of this unit and it appears to be only 2 to 2.5 km

thick on the eastern border of the property.

Within the intermediate to felsic volcanic package at least two separate major VMS horizons have been identified the Kash horizon and the Marchington horizon. The Marchington horizon appears to be the lowest in the section and is possibly duplicated structurally in the S-23 zone by isoclinal F_1 folding. There are also numerous other mineralized zones between Marchington and S-23 with accompanying aluminous alteration and possible exhalative chert zones suggesting this is either intensely deformed and repeated zones or just a complex of VMS alteration and mineralization. The Kash zone is identified by a single drill hole near Hwy 516 and a small outcrop at the edge of a ENE trending swampy creek no more than 50 m south of Hwy 516. This ENE creek/lakes chain covers a weak conductive and magnetic trend and at its west end 2.6 km from the highway is also intensely sericite and silica altered (south side, footwall). Several point source conductors occur at the west end which were observed to coincide with massive to semi-massive pyrrhotite bodies with strong silicification and sericite contents in surrounding rocks. The alteration in the footwall of the Kash zone was traced north of Hwy 516 and sparse outcrop and mapping appears to trace it around the anticlinal nose and then southward to Golsil. Within this zone and in the hangingwall are several quartz-eye rhyolite to dacite bodies and the horizon itself appears to be a more tuffaceous zone below more competent flows.

Throughout, the intermediate to felsic rocks are numerous thin (up to 1-2 m) diorite sills which locally brecciate the surrounding intermediate to felsic rocks especially around the Kash zone and down to Golsil.

Above, the intermediate to felsic volcanic package are pillowed mafic flows intercalated with intermediate volcanic rocks. Within these rocks, thin pyrrhotite lenses are relatively common and appear to be the cause of strong conductivity in these rocks.

6.3 Rock Assays

A total of 30 rocks were collected for assay during the mapping program and 24 channel samples were collected from a stripped outcrop in the Golsil area and a small outcrop in the Kash area. Rock samples were collected from outcrops where potential Cu-Pb-Zn-Ag-Au mineralization was suspected. Samples were taken directly from bedrock using rock hammers, placed into plastic sample bags with a sample tag with a unique sample number. All data was recorded into mobile devices and georeferenced with UTM coordinates along with a description of the outcrop, name of sampler and date the sample was collected. These samples were put into larger rice sacks which were palleted and shipped to Bureau Veritas' analytical laboratory in Vancouver, BC.

The channel samples were cut from the outcrops using a rock saw in areas where previous grab sampling had demonstrated significant Cu-Pb-Zn-Ag-Au mineralization. Locations for the beginning of each channel were determined with GPS and recorded along with a log of the length of each sample run and geological data for each sample. Samples were assigned unique samples numbers from samples tags and the tag and sample placed into plastic sample bags. Sample bags were placed into rice sacks and shipped directly by the sampling personnel to Dryden and ActLabs preparation facility.

All samples were digested with a 4-acid digest and analyzed by ICP-MS. A traditional gold fire-assay was performed on 30 g aliquots from the pulps of each sample as well.

The sampling verified values reported historically in the Kash area but also elevated Au grades which were not identified historically. The showing at Kash is about 1 to 2 m wide of intensely altered and silicified rock at the margin of an outcrop along a swamp. Seven samples were collected from this outcrop of which the two highest assays returned 5.1 g/t Au, 123 g/t Ag, 3.1% Cu, 0.6% Zn and 1.7 g/t Au, 159 g/t Ag, 1.6% Cu, 2.4% Zn. These show that there is significant Au values in the Kash zone and additional work needs to be done in the area.

Little historical data is available for the Golsil area even though there is a large stripped outcrop at the showing. The outcrop contains abundant garnet and staurolite in sericite-biotite-actinolite schists and several 2-4 m lenses of sulphide mineralization. Samples collected from the sulphide zones returned elevated Au values between 100 and 318 ppb gold generally and a high of 2.8 g/t Au. These zones although anomalous in Au returned significant between 1.0% and 7.2% Cu and 50 to 484 g/t Ag with weaker Zn values 0.5 to 2.3% Zn.

Other than the Kash and Golsil areas, a few rock samples from historical blast trenches and roadside outcrops in the Marchington area returned weakly anomalous Cu-Zn-Ag-Au assays.

6.4 Channel Sampling

Follow-up channel sampling of the Kash and Golsil outcrops to determine the size and consistency of the mineralization in these locations. As only a narrow strip of mineralized outcrop is available at the edge of the Kash outcrop, three separate short channels were cut to from representing about 10 m of strike and about 1.5 m width. The best sample from this sampling returned 0.6 g/t Au, 1.1% Cu, 70 g/t Ag and 2.1% Zn over 0.4 m. The outcrop is bordered by a swamp to the east and west as well as south where the mineralization is open in all three directions.

Sampling at the Golsil outcrop sought to sample gossanous zones within the outcrop more continuously than merely grab sampling.

Golsil CH-1 is a 4.4 m long channel cut. It intersected 1.1% Cu, 1.4% Zn, 87 g/t Ag, and 0.1 g/t Au over 1 m and a 3 m run of 2.0% Zn of which the aforementioned sample is the central 1m sample interval.

Golsil CH-2 is a 10.5 m long cut that returned 2.2% Cu, 0.9% Zn, 132 g/t Ag and 0.1 g/t Au over 1 m and another sample of 1.4% Cu, 0.5% Zn and 79 g/t Ag over 1 m.

Golsil CH-3 is a 2 m channel cut at the edge of the outcrop and it begins and ends in mineralization. Some stripping may be done to further this channel. The best sample returned 1.95% Cu, 1.7% Zn, 151 g/t Ag and 0.25 g/t Au. The average of the 2 m is 1.1% Cu, 1.7% Zn, 102 g/t Ag and 0.15 g/t Au.

Additional mapping needs to be conducted in both these areas to expand the extents of the mineralization. In the Kash area outcrop stripping would be too difficult in the swamp but in the Golsil area some minor moss stripping could easily expand some of the mineralized zones with little impact.

6.5 Whole Rock Sampling

The whole rock sampling was conducted primarily to identify altered volcanic rocks and secondarily to determine rock types using immobile elements. A total of 119 rocks were collected from outcrops throughout the property and analyzed by whole rock using lithium borate fusion and ICP-ES analysis. Samples were taken directly from bedrock using rock hammers, placed into plastic sample bags with a sample tag with a unique sample number. All data was recorded into mobile devices and georeferenced with UTM coordinates along with a description of the outcrop, name of sampler and date the sample was collected. These samples were put into larger rice sacks which were palleted and shipped to Bureau Veritas' analytical laboratory in Vancouver, BC.

Alteration indices show about half of the samples have undergone some seafloor alteration. The alteration in the Marchington zone was strongest about 500 m east of where most of the historical drilling has occurred. Also, alteration in the S-23 zone is strongest north of the mineralization suggesting the section in that area is overturned with respect to Marchington and supports the hypothesis that it is a folded duplication of the Marchington zone.

Alteration in the footwall rocks of the Kash zone were strongest north of Hwy 516 again ~ 500 m ENE of the showing although more sampling of the Kash zone south of the highway may be needed to confirm this observation. The most strongly altered rocks on the property occur in a N-S trend east of Marchington and

trending toward Golsil to the south. This area is tested by only one historical drill hole.

Sampling in the Golsil area was sparse as only traverse occurred during the mapping program, but many of the rocks in the area show moderate alteration as well as geological observation of strong garnet and staurolite growth in the Golsil outcrop.

As mentioned in the geology section, the whole rock data supports most of the geological discrimination of volcanic rocks from the mapping and demonstrates that about half of the “felsic” volcanic rocks mapped historically are more intermediate (andesitic) in chemistry.

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Date: Dec. 21, 2019

Drafted by: S. Wetherup

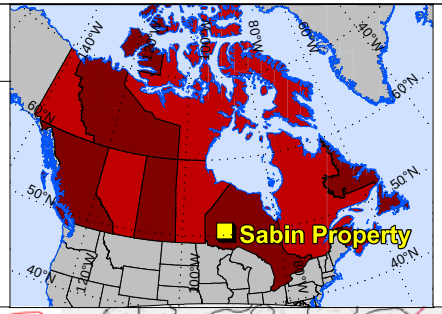
Figure: 6-1

Sabin Property

VTEM RDI: Resistivity Depth Slice at 100 m

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline
- VMS horizon
- Inferred VMS horizon
- Anticline axis

VTEM RDI (Ohm-m)

6,700
4,580
2,550
2,040
1,530
352

0 2.5 kilometers

5,580,000

5,575,000

655,000

660,000

665,000

516

599

LEA-108514

Kash

Marchington South

S-23

LEA-108515

LEA-108516

LEA-108227

Golsil

Hadley

S Evans

COMMANDER RESOURCES LTD.

Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 6-2

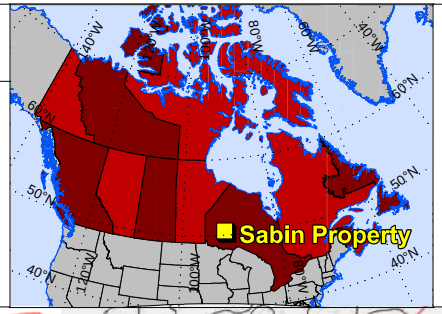
Sabin Property

VTEM

Total Magnetic Intensity

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline
- VMS horizon
- Inferred VMS horizon
- Anticline axis

TMI (nT)

	56,887.75
	56,816.6
	56,781.5
	56,761.15
	56,746.02
	56,735.36
	56,726.05
	56,718.49
	56,710.74
	56,703.56
	56,696.78
	56,689.99
	56,683.2
	56,677
	56,668.86
	56,618.25

0 2.5 kilometers

5,580,000

5,575,000

655,000

660,000

665,000

516

599

Kash

Marchington

South

S-23

Golsil

Hadley

S Evans

COMMANDER RESOURCES LTD.

Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 6-3

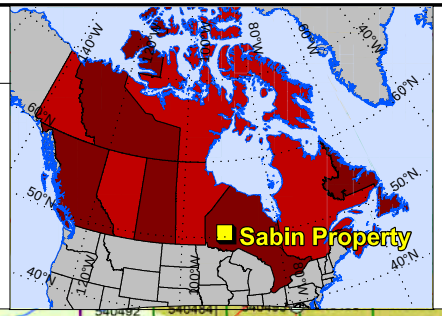
Sabin Property

Geology Mapping Stations

Interpreted Rock Types

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis

Geology Stations
Interpreted Rock Types

- Exhalite/Chert
- Felsic tuff
- Felsic volcanic
- Intermediate tuff
- Intermediate Volcanic
- Mafic volcanic

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

5,580,000

5,575,000

665,000

650,000

0 kilometers

516

Kash

Marchington South

S-23

Golsil

LEA-108514

LEA-108515

LEA-108516

LEA-108227

COMMANDER RESOURCES LTD.

Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 6-4

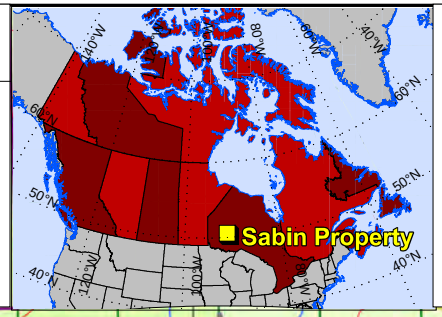
Sabin Property

Geology Mapping Stations

Interpreted Rock Types

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

Silica Alt

- Intense
- Strong
- Moderate
- Weak
- Trace

Garnet/Staurolite Alt

- Intense (>5%)
- Strong (3-5%)
- Moderate (2-3%)
- Weak (1-2%)
- Trace (>1%)

Sericite Alt

- Intense (>50%)
- Strong (10-50%)
- Moderate (5-10%)
- Weak (2-5%)
- Trace (>2%)

0 1 kilometers

5,575,000

COMMANDER RESOURCES LTD.

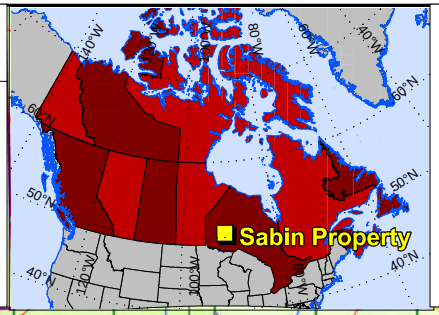
Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 6-5

Sabin Property
Rock Samples and Cu-Zn-Ag Assays
Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis
- Rock Sample

Cu in Rocks (%)

- 2.0 - 7.2
- 1.0 - 2.0
- 0.1 - 1.0

Zn in Rocks (%)

- 2.0 - 4.2
- 1.0 - 2.0
- 0.5 - 1.0

Ag in Rocks (g/t)

- 100 - 484
- 25 - 100

Kash Channel Samples

Golsil Channel Samples

LEA-108514

LEA-108465

LEA-108515

LEA-107479

LEA-108516

LEA-108227

LEA-108226

Kash

Marchington

South

S-23

Golsil

5,575,000

660,000

665,000

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

COMMANDER RESOURCES LTD.

Date: Dec. 21, 2019

Drafted by: S. Wetherup

Figure: 6-6

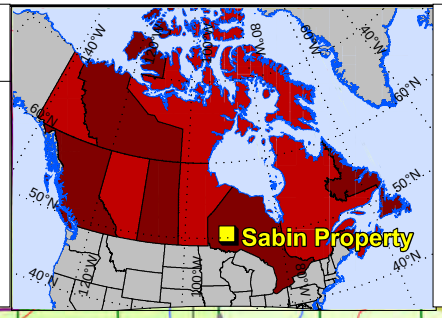
Sabin Property

Na Depletion

Whole Rock Data

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Property outline

Property Geology

- Granite
- Mafic intrusive
- Metasedimentary rocks
- Felsic volcanic rocks
- Intermediate volcanic rocks
- Mafic volcanic rocks

- VMS horizon
- Inferred VMS horizon
- Geology contact
- Mapping extents
- Anticline axis

Al/Na Alteration (Na depletion)

- 50 to 100
- 25 to 50
- 10 to 25
- 5 to 10
- 0 to 5

Regional Geology

- granitoid rocks
- clastic sedimentary rocks
- diorite
- felsic volcanic rocks
- intermediate volcanics
- mafic volcanic rocks

7.0 CONCLUSIONS AND RECOMMENDATIONS

The 2018 and 2019 exploration program on the Sabin property began with an airborne VTEM survey of most of the property which outlined several zones of elevated conductivity which have seen very little previous exploration. Ground truthing and geological mapping as well as whole rock sampling has demonstrated that there are at least two main horizons within the intermediate to felsic volcanic rocks of the Handy Lake volcanic sequence which host VMS Cu-Zn-Ag-Ag-Pb mineralization and significant areas of aluminous footwall alteration. The most intensely altered rocks encountered during the mapping and sampling have seen very little historical work and additional mapping and more detailed whole rock sampling is recommended in areas with highly altered rocks.

Rock sampling and assays showed that the Kash and Golsil areas contain not only altered rock but also Cu-Zn-Ag-Au mineralization where moderate conductivity zones in the VTEM occur. Both areas require additional mapping and sampling to better define drill targets.

Overall, the Sabin property contains significant VMS potential along two or more horizons which are at least 9 km in strike length. Also, no time has been spent assessing the Hadley or South Evans Lake zones which are also likely to be extensions of the Kash and Marchington horizons.

9.0 STATEMENTS OF AUTHORSHIP

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CERTIFICATE OF AUTHOR

I, Stephen Wetherup, do hereby certify that,

1. I am a graduate of the University of Manitoba with a B.Sc. Honours in Geology.

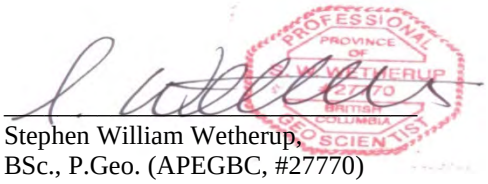
2. I am a member of the Association of Association of Professional Engineers and Geoscientists of British Columbia (APEGBC, #27770). I am a member of the Society of Economic Geologists and the Vancouver Mining Exploration Group.

3. I have been operating a business as a geological consultant under my own name since June, 2001, and under the name of Caracle Creek International Consulting Inc. since March, 2004.

4. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which makes the Report misleading.

5. I am responsible for the preparation of the Report titled "Assessment Report: Geochemical Sampling and Mapping, Savant Lake area, Patricia Mining Division, Ontario", (the "Report"), dated January 6th, 2020.

Dated this 23rd Day of March 2020.



Stephen William Wetherup,
BSc., P.Geo. (APEGBC, #27770)

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COMMANDER RESOURCES LTD.

Date: Dec. 21, 2019

Drafted by: S. Wetherup

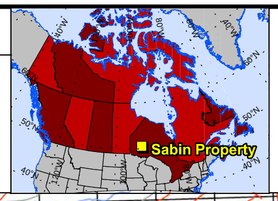
Figure: App 1b

Sabin Property

Cell Claims and Leases

Ontario, Canada

UTM NAD83 Zone 15



Legend

- Elevation contour
- Watercourse
- Waterbody
- Line
- Road
- Township boundary and name
- Mineral leases
- Cell claims
- Claims not to apply work on
- MTO claim grid
- Outline of VTEM survey area

Houghton Lake Area

CONANT

BOUCHER

LEA-107479

LEA-108515

LEA-108516

5,580,000

5,575,000

5,570,000

660000

659000

APPENDIX 1

VTEM Logistics Report and Maps

VTEM™ plus

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM™ plus) A AND HORIZONTAL MAGNETIC GRADIOMETER GEOPHYSICAL SURVEY

PROJECT:	SABIN PROPERTY
LOCATION:	SAVANT LAKE, ONTARIO
FOR:	COMMANDER RESOURCES LTD
SURVEY FLOWN:	SEPTEMBER - OCTOBER 2018
PROJECT:	GL180281

Geotech Ltd.
245 Industrial Parkway North
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Tel: +1 905 841 5004
Web: www.geotech.ca
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GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

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EXECUTIVE SUMMARY

SABIN PROPERTY
SAVANT LAKE, ONTARIO

During September 15th to October 18th 2018 Geotech Ltd. carried out a helicopter-borne geophysical survey over Sabin Property, Savant Lake, Ontario.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM™plus) system and a horizontal magnetic gradiometer with two caesium sensors. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 374 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked profiles of the B-field Z Component
- Electromagnetic stacked profiles of dB/dt Z Components
- B-Field Z Component Channel grid
- Fraser Filtered X Component Channel grid
- Total Magnetic Intensity (TMI)
- Magnetic Total Horizontal Gradient
- Magnetic Tilt-Angle Derivative
- Calculated Time Constant (Tau) with Calculated Vertical Derivative contours
- Resistivity Depth Images (RDI) sections are presented

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

The survey report describes the procedures for data acquisition, equipment used, processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 GENERAL CONSIDERATIONS

Geotech Ltd. performed a helicopter-borne geophysical survey over the Sabin Property, Savant Lake, Ontario (Figure 1 & Figure 2).

Robert Cameron represented Commander Resources Ltd. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM™) plus system with Full-Waveform processing. Measurements consisted of Vertical (Z) and In-line Horizontal (X) components of the EM fields using an induction coil and a horizontal magnetic gradiometer using two caesium magnetometers. A total of 374 line-km of geophysical data were acquired during the survey.

The crew was based out of Savant Lake camp (Figure 2) in Ontario for the acquisition phase of the survey. Survey flying started September 15th and was completed October 8th, 2018.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed. A comprehensive interpretation report and additional products were also completed from the Aurora office of Geotech Ltd. in January, 2019.

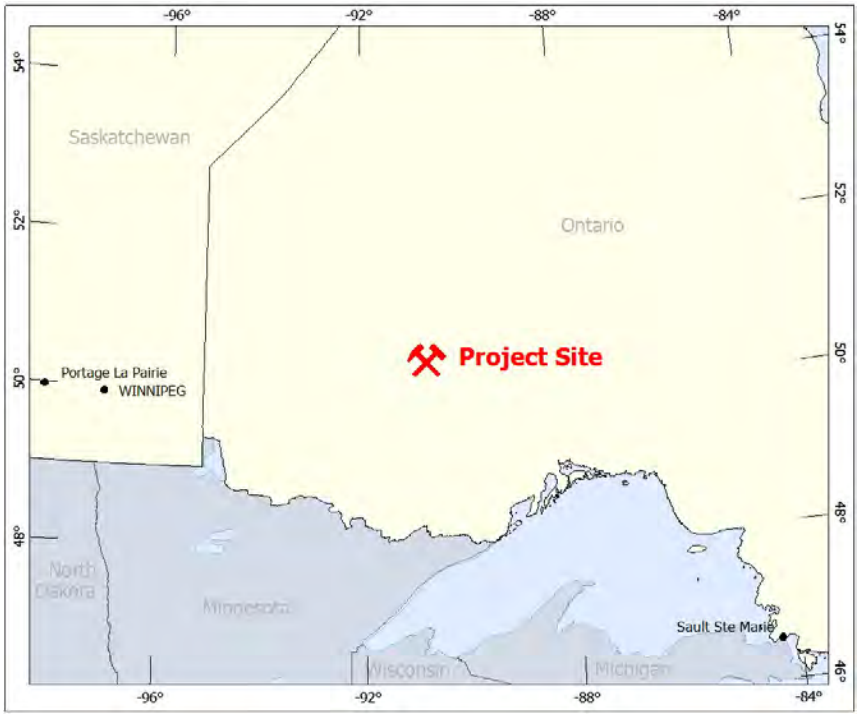

Figure 1: Survey location

1.2 SURVEY AND SYSTEM SPECIFICATIONS

The survey area is located 4 km north of Savant Lake, Ontario (Figure 2).

Figure 2: Survey area location on Google Earth.

The survey area was flown in a northwest to southeast (N 150° E azimuth) direction with traverse line spacings of 200 metres as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines. For more detailed information on the flight spacing and direction see Table 1.

1.3 TOPOGRAPHIC RELIEF AND CULTURAL FEATURES

Topographically, the survey areas exhibit elevations ranging from 421 to 493 metres over a combined area of 303 square kilometres (Figure 3).

There are some rivers and streams running through the survey area which connect some lakes and as well as small roads/trails. There are visible signs of culture such as buildings or power lines.

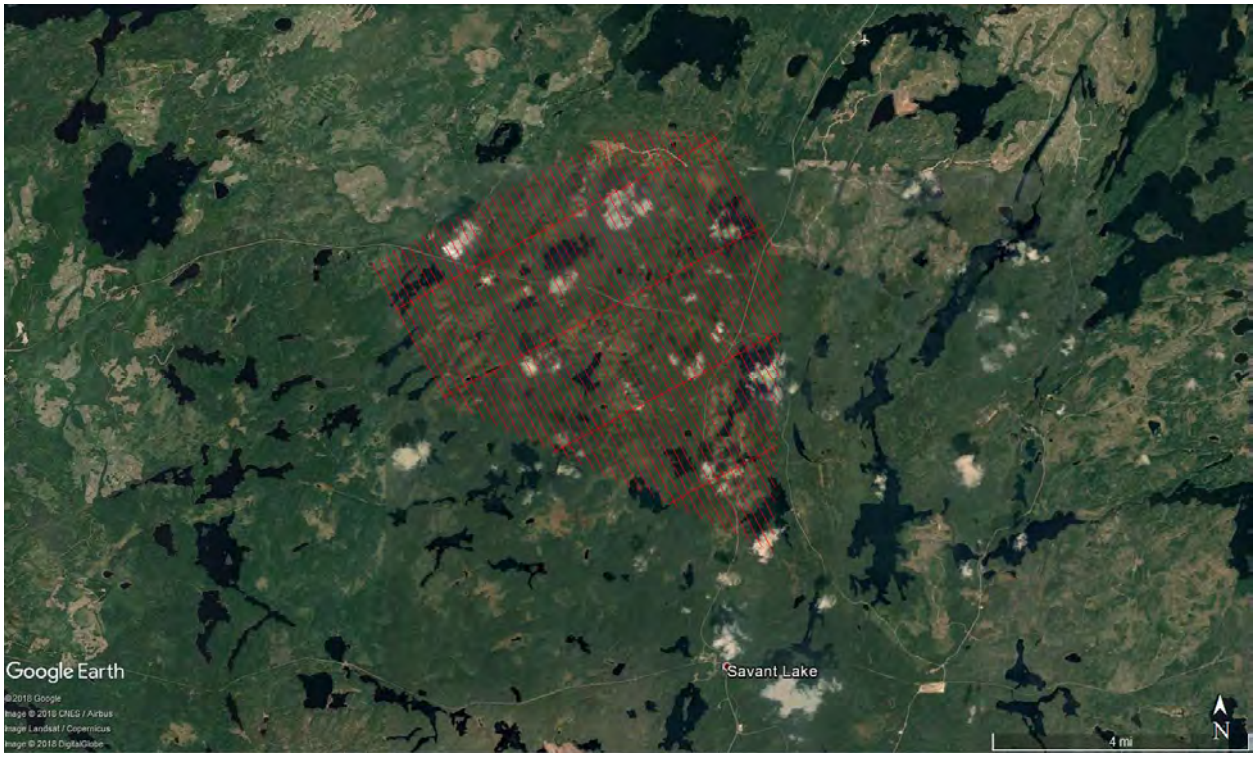

Figure 3: Flight path over a Google Earth Image.

2. DATA ACQUISITION

2.1 SURVEY AREA

The survey area (see Figure 3 and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Sabin	Traverse: 200	70	1663	374	N 150° E / N 330° E	L1000 – L1450
	Tie: 2000				N 60° E / N 240° E	T2000 – T2030
Total		70	1663	374		

Survey area boundaries co-ordinates are provided in Appendix B.

2.2 SURVEY OPERATIONS

Survey operations were based out of Savant Lake, Ontario. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Comments
2018-09-15	Crew arrived onsite.
2018-09-16	Crew unable to commence system assembly due to heavy rain and thunderstorms.
2018-09-17	Crew unable to commence system assembly due to rain periods throughout the day. Aircraft delayed due to weather.
2018-09-18	Crew commenced loop assembly, Aircraft arrived on site.
2018-09-19	Continued loop assembly.
2018-09-20	Completed system assembly. Commenced system testing.
2018-09-21	No flight due to weather, rain, low ceilings and high winds throughout the day.
2018-09-22	No flight due to weather, rain and high winds throughout the day.
2018-09-23	Completed test flights. Attempted production flight in the afternoon but was aborted due to issues with the mag.
2018-09-24	No production due to weather, rain and low ceilings throughout the day.
2018-09-25	No production due to weather, light rain and low ceilings throughout the day.
2018-09-26	No production due to weather, rain and low ceilings throughout the day.
2018-09-27	No production due to weather, rain and low ceilings throughout the day.
2018-09-28	Completed test flight in the morning, attempted production but aborted due to low ceilings. No production due low ceilings throughout the day.
2018-09-29	Attempted flight in the morning but aborted due to weather. No production due to low ceilings throughout the day.
2018-09-30	No production due to weather, snow and high winds throughout the day.
2018-10-01	Late start due to issue with mag and altimeter, 1 production flight completed, 94km flown.
2018-10-02	No production due to weather, high winds and low ceilings throughout the day.

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned Line-km, as indicated in the survey NAV files.

Date	Comments
2018-10-03	No production due to weather, high winds and low ceilings throughout the day.
2018-10-04	Late start due to ice on A/C. 2 production flights completed, 165km flown.
2018-10-05	2 short production flights completed, 68km flown. No further production due to weather, low ceilings.
2018-10-06	No production due to weather, snow and low ceiling throughout the day.
2018-10-07	34.7 line km – one short production flight to finish the block
2018-10-08	We received confirmation from Commander Resources that the acquisition phase of the project is complete.

2.3 FLIGHT SPECIFICATIONS

During the survey the helicopter was maintained at a mean altitude of 72 metres above the ground with an average survey speed of 80 km/hour. This allowed for an actual average Transmitter-receiver loop terrain clearance of 36 metres and a magnetic sensor clearance of 46 metres.

The on board operator was responsible for monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

2.4 AIRCRAFT AND EQUIPMENT

2.4.1 SURVEY AIRCRAFT

The survey was flown using a Eurocopter Aerospatiale (A-star) 350 B3 helicopter, registration EC-MRN. The helicopter is owned and operated by Geotech Aviation. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 ELECTROMAGNETIC SYSTEM

The electromagnetic system was a Geotech Time Domain EM (VTEM™plus) full receiver-waveform streamed data recorded system. The "full waveform VTEM system" uses the streamed half-cycle recording of transmitter and receiver waveforms to obtain a complete system response calibration throughout the entire survey flight. VTEM with the Serial number 31 had been used for the survey. The VTEM™ transmitter current waveform is shown diagrammatically in Figure 4.

The VTEM™ Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The receiver system for the project also included a coincident-coaxial X-direction coil to measure the in-line dB/dt and calculate B-Field responses. The Transmitter-receiver loop was towed at a mean distance of 36 metres below the aircraft as shown in Figure 5.

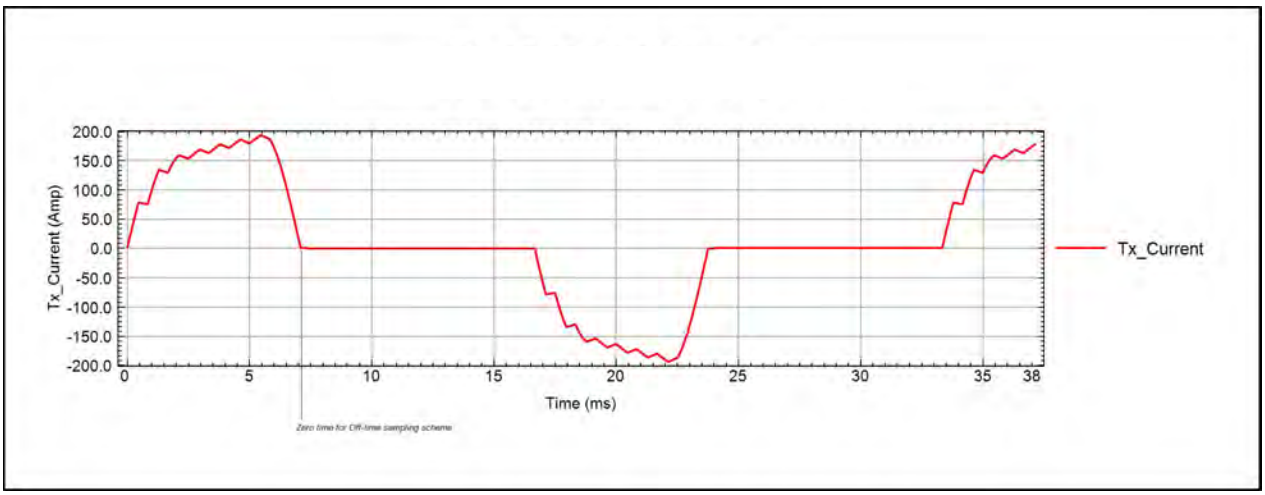

Figure 4: VTEM™ Transmitter Current Waveform

The VTEM™ decay sampling scheme is shown in Table 3 below. Forty-three time measurement gates were used for the final data processing in the range from 0.021 to 8.083 msec. Zero time for the off-time sampling scheme is equal to the current pulse width and is defined as the time near the end of the turn-off ramp where the dI/dt waveform falls to 1/2 of its peak value.

Table 3: Off-Time Decay Sampling Scheme

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
4	0.018	0.023	0.021	0.005
5	0.023	0.029	0.026	0.005
6	0.029	0.034	0.031	0.005
7	0.034	0.039	0.036	0.005
8	0.039	0.045	0.042	0.006
9	0.045	0.051	0.048	0.007
10	0.051	0.059	0.055	0.008
11	0.059	0.068	0.063	0.009
12	0.068	0.078	0.073	0.010
13	0.078	0.090	0.083	0.012
14	0.090	0.103	0.096	0.013
15	0.103	0.118	0.110	0.015
16	0.118	0.136	0.126	0.018
17	0.136	0.156	0.145	0.020
18	0.156	0.179	0.167	0.023
19	0.179	0.206	0.192	0.027
20	0.206	0.236	0.220	0.030
21	0.236	0.271	0.253	0.035
22	0.271	0.312	0.290	0.040
23	0.312	0.358	0.333	0.046
24	0.358	0.411	0.383	0.053
25	0.411	0.472	0.440	0.061
26	0.472	0.543	0.505	0.070
27	0.543	0.623	0.580	0.081
28	0.623	0.716	0.667	0.093
29	0.716	0.823	0.766	0.107
30	0.823	0.945	0.880	0.122
31	0.945	1.086	1.010	0.141
32	1.086	1.247	1.161	0.161
33	1.247	1.432	1.333	0.185
34	1.432	1.646	1.531	0.214
35	1.646	1.891	1.760	0.245
36	1.891	2.172	2.021	0.281
37	2.172	2.495	2.323	0.323

VTEM™ Decay Sampling Scheme				
Index	Start	End	Middle	Width
Milliseconds				
38	2.495	2.865	2.667	0.370
39	2.865	3.292	3.063	0.427
40	3.292	3.781	3.521	0.490
41	3.781	4.341	4.042	0.560
42	4.341	4.987	4.641	0.646
43	4.987	5.729	5.333	0.742
44	5.729	6.581	6.125	0.852
45	6.581	7.560	7.036	0.979
46	7.560	8.685	8.083	1.125

Z Component: 4 - 46 time gates
X Component: 20 - 46 time gates

VTEM™ system specifications:

Transmitter	Receiver
• Transmitter loop diameter: 26 m • Number of turns: 4 • Effective Transmitter loop area: 2123.7 m^2 • Transmitter base frequency: 25 Hz • Peak current: 193.7 A • Pulse width: 7.08 ms • Waveform shape: Bi-polar trapezoid • Peak dipole moment: 411,363 nIA • Average transmitter-receiver loop terrain clearance: 36 metres	• X Coil diameter: 0.32 m • Number of turns: 245 • Effective coil area: 19.69 m^2 • Z-Coil diameter: 1.2 m • Number of turns: 100 • Effective coil area: 113.04 m^2

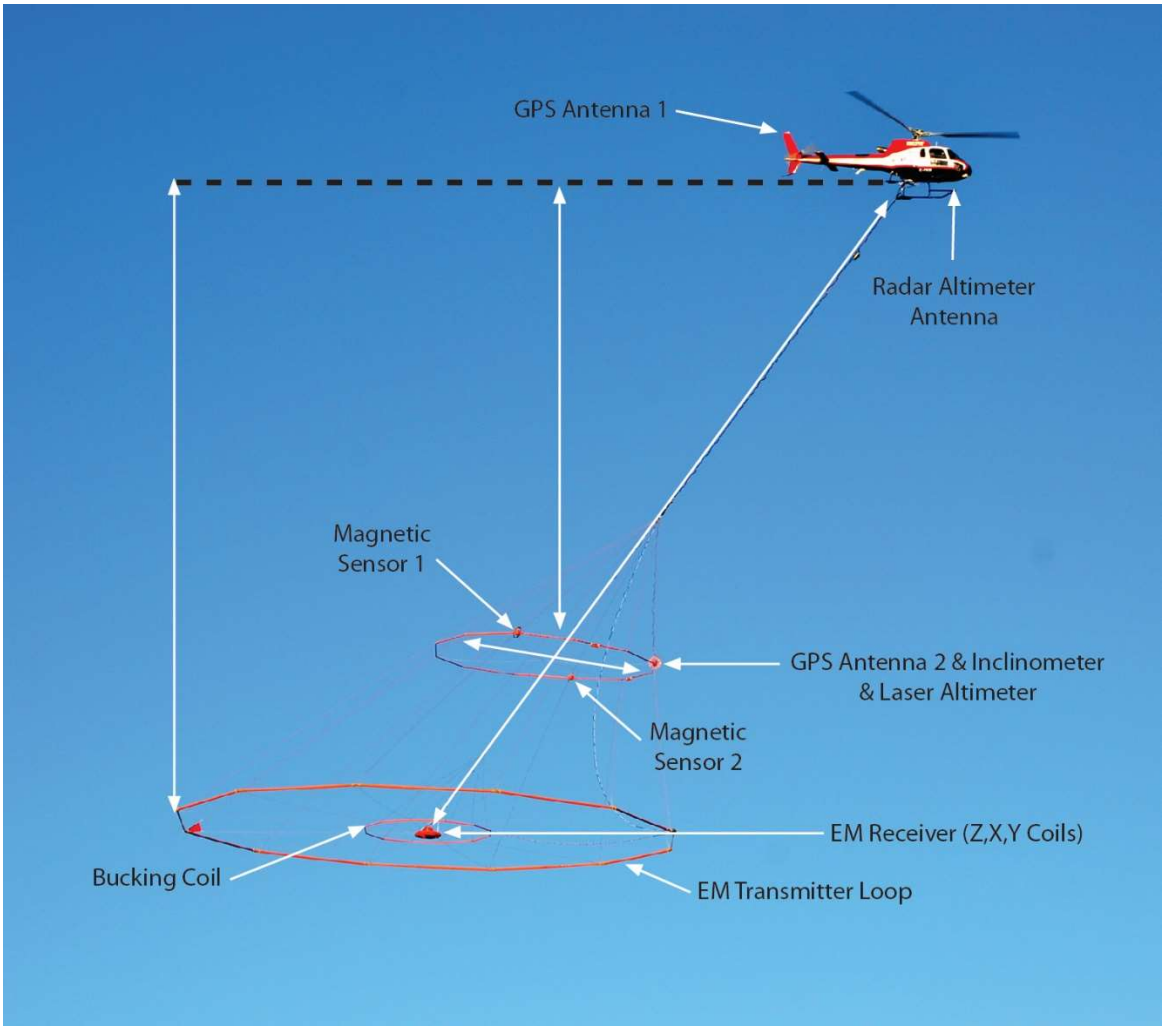

Figure 5: VTEM™plus System Configuration.

2.4.3 FULL WAVEFORM VTEM™ SENSOR CALIBRATION

The calibration is performed on the complete VTEM™ system installed in and connected to the helicopter, using special calibration equipment. This calibration takes place on the ground at the start of the project prior to surveying.

The procedure takes half-cycle files acquired and calculates a calibration file consisting of a single stacked half-cycle waveform. The purpose of the stacking is to attenuate natural and man-made magnetic signals, leaving only the response to the calibration signal.

This calibration allows the transfer function between the EM receiver and data acquisition system and also the transfer function of the current monitor and data acquisition system to be determined. These calibration results are then used in VTEM full waveform processing.

2.4.4 HORIZONTAL MAGNETIC GRADIOMETER

The horizontal magnetic gradiometer consists of two Geometrics split-beam field magnetic sensors with a sampling interval of 0.1 seconds. These sensors are mounted 12.5 metres apart on a separate loop, 10 metres above the Transmitter-receiver loop. A GPS antenna and Gyro Inclinometer is installed on the separate loop to accurately record the tilt and position of the magnetic gradiomag bird.

2.4.5 RADAR ALTIMETER

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit (Figure 5).

2.4.6 GPS NAVIGATION SYSTEM

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 5). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with WAAS active, it is 1.0 m. The co-ordinates of the survey area were set-up prior to the survey and the information was fed into the airborne navigation system. The second GPS antenna is installed on the additional magnetic loop together with Gyro Inclinometer.

2.4.7 DIGITAL ACQUISITION SYSTEM

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4

Table 4: Acquisition Sampling Rates

Data Type	Sampling
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec
Inclinometer	0.1 sec

2.5 BASE STATION

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed in a secured location away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

FIELD:

Project Manager:	Adrian Sarmasag (Office)
Data QC:	Neil Fisset
Crew chief:	Kirill Golubev
Operator:	Gary Bissonnette

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – HeliCarrier Helicopters.

Pilot:	Andrie Vandrie
Mechanical Engineer:	n/a

OFFICE:

Preliminary Data Processing:	Neil Fisset
Final Data Processing:	Dmitriy Danchenko Tai-Chyi Shei
Data QA/QC:	Kanita Khaled, P. Geo
Reporting/Mapping:	Joseli Soares

Processing and reporting phases were carried out under the supervision of Alexander Prikhodko, P.Geo, PhD, and Director of Geophysics. The customer relations were looked after by David Hitz.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

4.1 FLIGHT PATH

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the WGS84 Datum, UTM Zone 15N coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 ELECTROMAGNETIC DATA

The Full Waveform EM specific data processing operations included:

- Half cycle stacking (performed at time of acquisition);
- System response correction;
- Parasitic and drift removal.

A three stage digital filtering process was used to reject major sferic events and to reduce noise levels. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z and X components. B-field Z component time channels recorded at 0.880 milliseconds after the termination of the impulse is also presented as a colour image. Calculated Time Constant (TAU) with Calculated Vertical Derivative contours is presented in Appendix C and E. Resistivity Depth Image (RDI) is also presented in Appendix F and G.

VTEM™ has two receiver coil orientations. Z-axis coil is oriented parallel to the transmitter coil axis and both are horizontal to the ground. The X-axis coil is oriented parallel to the ground and along the line-of-flight. This combined two coil configuration provides information on the position, depth, dip and thickness of a conductor. Generalized modeling results of VTEM data, are shown in Appendix D.

In general X-component data produce cross-over type anomalies: from "+ to – "in flight direction of flight for "thin" sub vertical targets and from "- to +" in direction of flight for "thick" targets. Z component data produce double peak type anomalies for "thin" sub vertical targets and single peak for "thick" targets.

The limits and change-over of “thin-thick” depends on dimensions of a TEM system (Appendix D, Figure D-16).

Because of X component polarity is under line-of-flight, convolution Fraser Filter (Figure 6) is applied to X component data to represent axes of conductors in the form of grid map. In this case positive FF anomalies always correspond to “plus-to-minus” X data crossovers independent of the flight direction.

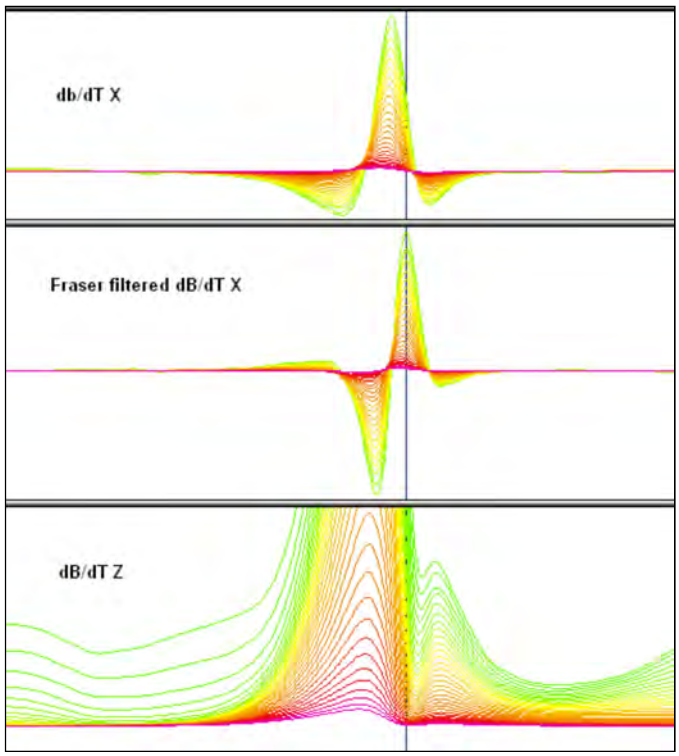

Figure 6: Z, X and Fraser filtered X (FFx) components for “thin” target.

4.3 HORIZONTAL MAGNETIC GRADIOMETER DATA

The horizontal gradients data from the VTEM™Plus are measured by two magnetometers 12.5 m apart on an independent bird mounted 10m above the VTEM™ loop. A GPS and a Gyro Inclinometer help to determine the positions and orientations of the magnetometers. The data from the two magnetometers are corrected for position and orientation variations, as well as for the diurnal variations using the base station data.

The position of the centre of the horizontal magnetic gradiometer bird is calculated form the GPS utilizing in-house processing tool in Geosoft. Following that total magnetic intensity is calculated at the center of the bird by calculating the mean values from both sensors. In addition to the total intensity advanced processing is done to calculate the in-line and cross-line (or lateral) horizontal gradient which enhance the understanding of magnetic targets. The in-line (longitudinal) horizontal gradient is calculated from the difference of two consecutive total magnetic field readings divided by the distance along the flight line direction, while the cross-line (lateral) horizontal magnetic gradient is calculated from the difference in the magnetic readings from both magnetic sensors divided by their horizontal separation.

Two advanced magnetic derivative products, the total horizontal derivative (THDR), and tilt angle derivative and are also created. The total horizontal derivative or gradient is defined as:

THDR = sqrt(Hx*Hx+Hy*Hy), where Hx and Hy are cross-line and in-line horizontal gradients.

The tilt angle derivative (TDR) is defined as:

TDR = arctan(Vz/THDR), where THDR is the total horizontal derivative, and Vz is the vertical derivative.

Measured cross-line gradients can help to enhance cross-line linear features during gridding.

5. DELIVERABLES

5.1 SURVEY REPORT

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

5.2 MAPS

Final maps were produced at scale of 1:20,000 for best representation of the survey size and line spacing. The coordinate/projection system used was WGS84 Datum, UTM Zone 15N. All maps show the flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and a colour magnetic TMI contour map.

- Maps at 1:20,000 in Geosoft MAP format, as follows:

GL180281_20k_dBdt:	dB/dt profiles Z Component, Time Gates 0.021 – 0.766 ms in linear – logarithmic scale.
GL180281_20 _BField:	B-field profiles Z Component, Time Gates 0.021 – 0.766 ms in linear – logarithmic scale.
GL180281_20k_BFz30:	B-field Z Component Channel 30, Time Gate 0.880 ms colour image.
GL180281_20k_SFz30:	VTEM dB/dt Z Component Channel 30, Time Gate 0.880 ms.
GL180281_20k_SFxFF22:	Fraser Filtered dB/dt X Component Channel 22, Time Gate 0.290 ms colour image.
GL180281_20k_TMI:	Total Magnetic Intensity (TMI) colour image and contours.
GL180281_20k TauSF:	dB/dt Calculated Time Constant (Tau) with Calculated Vertical Derivative contours
GL180281_20k TotHG:	Magnetic Total Horizontal Gradient colour image.
GL180281_20k TiltDrv:	Magnetic Tilt-Angle Derivative colour image.

- Maps are also presented in PDF format.
- The topographic data base was derived from DIVA-GIS and Geocommunities: www.geocomm.com, diva-gis.org
- A Google Earth file *GL180281_Commander.kmz* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

5.3 DIGITAL DATA

Two copies of the data and maps on DVD were prepared to accompany the report. Each DVD contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map and PDF format.

- DVD structure.

  Data contains databases, grids and maps, as described below.
  Report contains a copy of the report and appendices in PDF format.

Databases in Geosoft GDB format, containing the channels listed in Table 5.

Table 5: Geosoft GDB Data Format

Channel name	Units	Description
X:	metres	Easting WGS84 Zone 15N
Y:	metres	Northing WGS84 Zone 15N
Longitude:	Decimal Degrees	WGS84 Longitude data
Latitude:	Decimal Degrees	WGS84 Latitude data
Z:	metres	GPS antenna elevation (above Geoid)
Zb:	metres	EM bird elevation (above Geoid)
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1L:	nT	Measured Total Magnetic field data (left sensor)
Mag1R:	nT	Measured Total Magnetic field data (right sensor)
Basemag:	nT	Magnetic diurnal variation data
Mag2LZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field left mag
Mag2RZ	nT	Z corrected (w.r.t. loop center) and diurnal corrected magnetic field right mag
TMI2	nT	Calculated from diurnal corrected total magnetic field intensity of the centre of the loop
TMI3	nT	Microleveled total magnetic field intensity of the centre of the loop
Hginline		Calculated in-line gradient
Hgcxline		Measured cross-line gradient
CVG	nT/m	Calculated Magnetic Vertical Gradient
SFz[4]:	pV/(A*m4)	Z dB/dt 0.021 millisecond time channel
SFz[5]:	pV/(A*m4)	Z dB/dt 0.026 millisecond time channel
SFz[6]:	pV/(A*m^4)	Z dB/dt 0.031 millisecond time channel
SFz[7]:	pV/(A*m^4)	Z dB/dt 0.036 millisecond time channel
SFz[8]:	pV/(A*m^4)	Z dB/dt 0.042 millisecond time channel
SFz[9]:	pV/(A*m^4)	Z dB/dt 0.048 millisecond time channel
SFz[10]:	pV/(A*m^4)	Z dB/dt 0.055 millisecond time channel
SFz[11]:	pV/(A*m^4)	Z dB/dt 0.063 millisecond time channel
SFz[12]:	pV/(A*m^4)	Z dB/dt 0.073 millisecond time channel
SFz[13]:	pV/(A*m^4)	Z dB/dt 0.083 millisecond time channel
SFz[14]:	pV/(A*m^4)	Z dB/dt 0.096 millisecond time channel

Channel name	Units	Description
SFz[15]:	pV/(A*m^4)	Z dB/dt 0.110 millisecond time channel
SFz[16]:	pV/(A*m^4)	Z dB/dt 0.126 millisecond time channel
SFz[17]:	pV/(A*m^4)	Z dB/dt 0.145 millisecond time channel
SFz[18]:	pV/(A*m^4)	Z dB/dt 0.167 millisecond time channel
SFz[19]:	pV/(A*m^4)	Z dB/dt 0.192 millisecond time channel
SFz[20]:	pV/(A*m^4)	Z dB/dt 0.220 millisecond time channel
SFz[21]:	pV/(A*m^4)	Z dB/dt 0.253 millisecond time channel
SFz[22]:	pV/(A*m^4)	Z dB/dt 0.290 millisecond time channel
SFz[23]:	pV/(A*m^4)	Z dB/dt 0.333 millisecond time channel
SFz[24]:	pV/(A*m^4)	Z dB/dt 0.383 millisecond time channel
SFz[25]:	pV/(A*m^4)	Z dB/dt 0.440 millisecond time channel
SFz[26]:	pV/(A*m^4)	Z dB/dt 0.505 millisecond time channel
SFz[27]:	pV/(A*m^4)	Z dB/dt 0.580 millisecond time channel
SFz[28]:	pV/(A*m^4)	Z dB/dt 0.667 millisecond time channel
SFz[29]:	pV/(A*m^4)	Z dB/dt 0.766 millisecond time channel
SFz[30]:	pV/(A*m^4)	Z dB/dt 0.880 millisecond time channel
SFz[31]:	pV/(A*m^4)	Z dB/dt 1.010 millisecond time channel
SFz[32]:	pV/(A*m^4)	Z dB/dt 1.161 millisecond time channel
SFz[33]:	pV/(A*m^4)	Z dB/dt 1.333 millisecond time channel
SFz[34]:	pV/(A*m^4)	Z dB/dt 1.531 millisecond time channel
SFz[35]:	pV/(A*m^4)	Z dB/dt 1.760 millisecond time channel
SFz[36]:	pV/(A*m^4)	Z dB/dt 2.021 millisecond time channel
SFz[37]:	pV/(A*m^4)	Z dB/dt 2.323 millisecond time channel
SFz[38]:	pV/(A*m^4)	Z dB/dt 2.667 millisecond time channel
SFz[39]:	pV/(A*m^4)	Z dB/dt 3.063 millisecond time channel
SFz[40]:	pV/(A*m^4)	Z dB/dt 3.521 millisecond time channel
SFz[41]:	pV/(A*m^4)	Z dB/dt 4.042 millisecond time channel
SFz[42]:	pV/(A*m^4)	Z dB/dt 4.641 millisecond time channel
SFz[43]:	pV/(A*m^4)	Z dB/dt 5.333 millisecond time channel
SFz[44]:	pV/(A*m^4)	Z dB/dt 6.125 millisecond time channel
SFz[45]:	pV/(A*m^4)	Z dB/dt 7.036 millisecond time channel
SFz[46]:	pV/(A*m^4)	Z dB/dt 8.083 millisecond time channel
SFx[20]:	pV/(A*m^4)	X dB/dt 0.220 millisecond time channel
SFx[21]:	pV/(A*m^4)	X dB/dt 0.253 millisecond time channel
SFx[22]:	pV/(A*m^4)	X dB/dt 0.290 millisecond time channel
SFx[23]:	pV/(A*m^4)	X dB/dt 0.333 millisecond time channel
SFx[24]:	pV/(A*m^4)	X dB/dt 0.383 millisecond time channel
SFx[25]:	pV/(A*m^4)	X dB/dt 0.440 millisecond time channel
SFx[26]:	pV/(A*m^4)	X dB/dt 0.505 millisecond time channel
SFx[27]:	pV/(A*m^4)	X dB/dt 0.580 millisecond time channel
SFx[28]:	pV/(A*m^4)	X dB/dt 0.667 millisecond time channel
SFx[29]:	pV/(A*m^4)	X dB/dt 0.766 millisecond time channel
SFx[30]:	pV/(A*m^4)	X dB/dt 0.880 millisecond time channel
SFx[31]:	pV/(A*m^4)	X dB/dt 1.010 millisecond time channel
SFx[32]:	pV/(A*m^4)	X dB/dt 1.161 millisecond time channel
SFx[33]:	pV/(A*m^4)	X dB/dt 1.333 millisecond time channel
SFx[34]:	pV/(A*m^4)	X dB/dt 1.531 millisecond time channel
SFx[35]:	pV/(A*m^4)	X dB/dt 1.760 millisecond time channel
SFx[36]:	pV/(A*m^4)	X dB/dt 2.021 millisecond time channel
SFx[37]:	pV/(A*m^4)	X dB/dt 2.323 millisecond time channel

Channel name	Units	Description
SFx[38]:	pV/(A*m^4)	X dB/dt 2.667 millisecond time channel
SFx[39]:	pV/(A*m^4)	X dB/dt 3.063 millisecond time channel
SFx[40]:	pV/(A*m^4)	X dB/dt 3.521 millisecond time channel
SFx[41]:	pV/(A*m^4)	X dB/dt 4.042 millisecond time channel
SFx[42]:	pV/(A*m^4)	X dB/dt 4.641 millisecond time channel
SFx[43]:	pV/(A*m^4)	X dB/dt 5.333 millisecond time channel
SFx[44]:	pV/(A*m^4)	X dB/dt 6.125 millisecond time channel
SFx[45]:	pV/(A*m^4)	X dB/dt 7.036 millisecond time channel
SFx[46]:	pV/(A*m^4)	X dB/dt 8.083 millisecond time channel
BFz	(pV*ms)/(A*m^4)	Z B-Field data for time channels 4 to 46
BFx	(pV*ms)/(A*m^4)	X B-Field data for time channels 20 to 46
SFxFF	pV/(A*m^4)	Fraser Filtered X dB/dt
NchanBF		Latest time channels of TAU calculation
TauBF	ms	Time constant B-Field
NchanSF		Latest time channels of TAU calculation
TauSF	ms	Time constant dB/dt
PLM:		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 4 – 46, and X component data from 20 – 46, as described above.

- Database of the Resistivity Depth Images in Geosoft GDB format, containing the following channels:

Table 6: Geosoft Resistivity Depth Image GDB Data Format

Channel name	Units	Description
Xg	metres	Easting WGS84 Zone 15N
Yg	metres	Northing WGS84 Zone 15N
Dist:	meters	Distance from the beginning of the line
Depth:	meters	array channel, depth from the surface
Z:	meters	array channel, depth from sea level
AppRes:	Ohm-m	array channel, Apparent Resistivity
TR:	meters	EM system height from sea level
Topo:	meters	digital elevation model
Radarb:	metres	Calculated EM transmitter-receiver loop terrain clearance from radar altimeter
SF:	pV/(A*m^4)	array channel, dB/dT
MAG:	nT	TMI data
CVG:	nT/m	CVG data
DOI:	metres	Depth of Investigation: a measure of VTEM depth effectiveness
PLM:		60Hz Power Line Monitor

- Database of the VTEM Waveform "GL180281_Waveform.gdb" in Geosoft GDB format, containing the following channels:

Table 7: Geosoft database for the VTEM waveform

Channel name	Units	Description
Time:	milliseconds	Sampling rate interval, 5.2083 microseconds
Tx_Current:	amps	Output current of the transmitter

- Geosoft Resistivity Depth Image Products:

  Sections: Apparent resistivity sections along each line in .GRD and .PDF format
  Slices: Apparent resistivity slices at selected depths from 25m to depth of investigation, at an increment of 25m in .GRD and .PDF format
  Voxel: 3D Voxel imaging of apparent resistivity data clipped by digital elevation and depth of investigation

- Grids in Geosoft GRD and GeoTIFF format, as follows:

  GL180281_BFz30: B-Field Z Component Channel 30 (Time Gate 0.880ms)
  GL180281_CVG: Calculated Vertical Derivative (nT/m)
  GL180281_DEM: Digital Elevation Model (m)
  GL180281_Hgcxline: Measured Cross-Line Gradient (nT/m)
  GL180281_Hginline: Measured In-Line Gradient (nT/m)
  GL180281_SFxFF22: Fraser Filtered dB/dt X Component Channel 22 (Time Gate 0.290 ms)
  GL180281_TauBF: B-Field Z Component, Calculated Time Constant (ms)
  GL180281_TauSF: dB/dt Z Component, Calculated Time Constant (ms)
  GL180281_TMI: Total Magnetic Intensity (nT)
  GL180281_TotHG: Magnetic Total Horizontal Gradient (nT/m)
  GL180281_TiltDrv: Magnetic Tilt derivative (radians)
  GL180281_PLM: 60Hz Power Line Monitor
  GL180281_SFz6: dB/dt Z Component Channel 6 (Time Gate 0.031 ms)
  GL180281_SFz30: dB/dt Z Component Channel 30 (Time Gate 0.110 ms)
  GL180281_SFz40: dB/dt Z Component Channel 40 (Time Gate 3.521 ms)

A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 50 metres was used.

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne versatile time domain electromagnetic (VTEM™plus), horizontal magnetic gradiometer geophysical survey has been completed over Sabin Property, Savant Lake, Ontario.

The total area coverage is 33 km[2]. Total survey line coverage is 374 line kilometres. The principal sensors included a Time Domain EM system, horizontal magnetic gradiometer using two caesium magnetometers system. Results have been presented as stacked profiles, and contour colour images at a scale of 1:20,000. A formal Interpretation has not been included or requested.

Based on the geophysical results obtained, there are some anomalous zones associated with magnetic anomalies. They can be seen in the TAU profiles and the calculated vertical magnetic gradient (CVG) profiles. According to apparent resistivity depth images over all lines (reference on RDIs in Appendix C); the estimated depth of the top of the anomalous zones is approximately 50m in depth.

Together with the VTEM and magnetic results, they may contain worthwhile information in support of exploration for mineral formations. A detail interpretation/ analysis of the results would be recommended for this project.

Respectfully submitted[2],

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Geotech Ltd.

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Geotech Ltd.

Dmitriy Danchenko
Geotech Ltd.

Joseli Soares
Geotech Ltd.

Alexander Prikhodko, P.Geo, PhD
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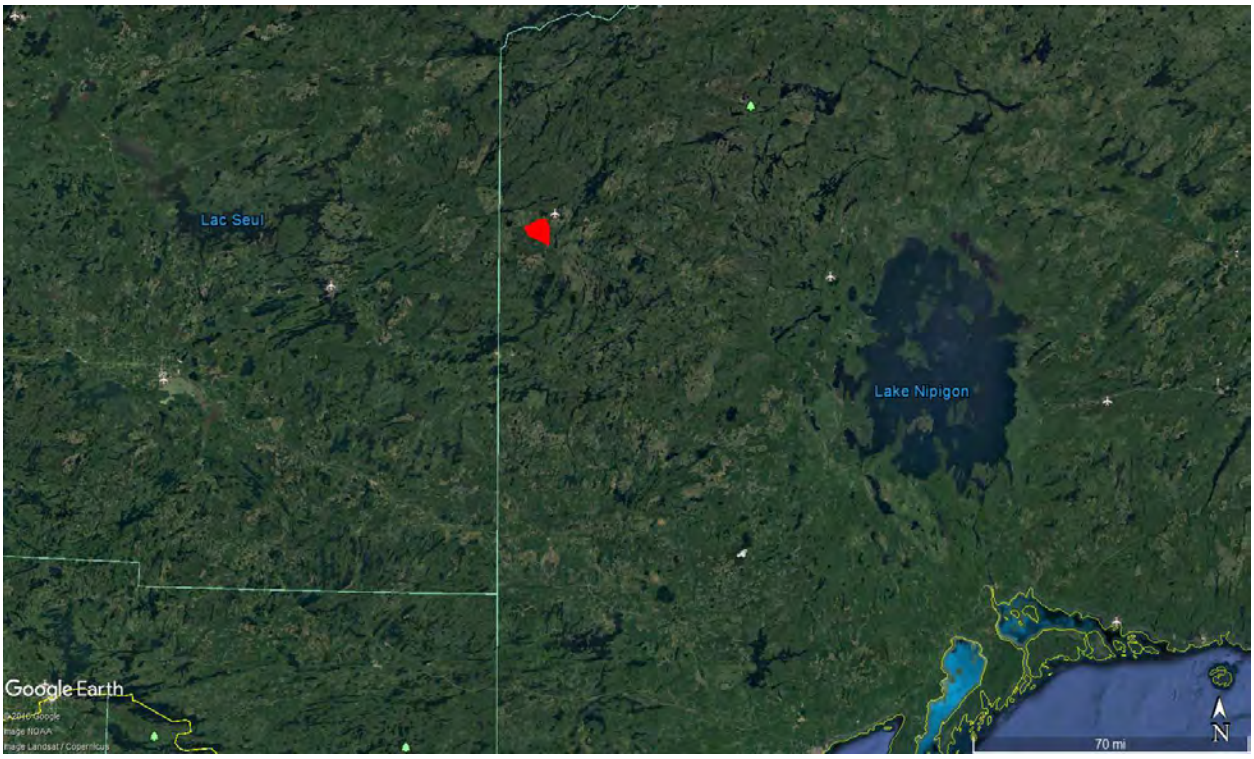
Kanita Khaled, P.Geo
Geotech Ltd.

December, 2018.

[2] Final data processing of the EM and magnetic data were carried out by Dmitriy Danchenko and Tai-chyi Shei, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo.

APPENDIX A

SURVEY AREA LOCATION MAP



Overview of the Survey Area

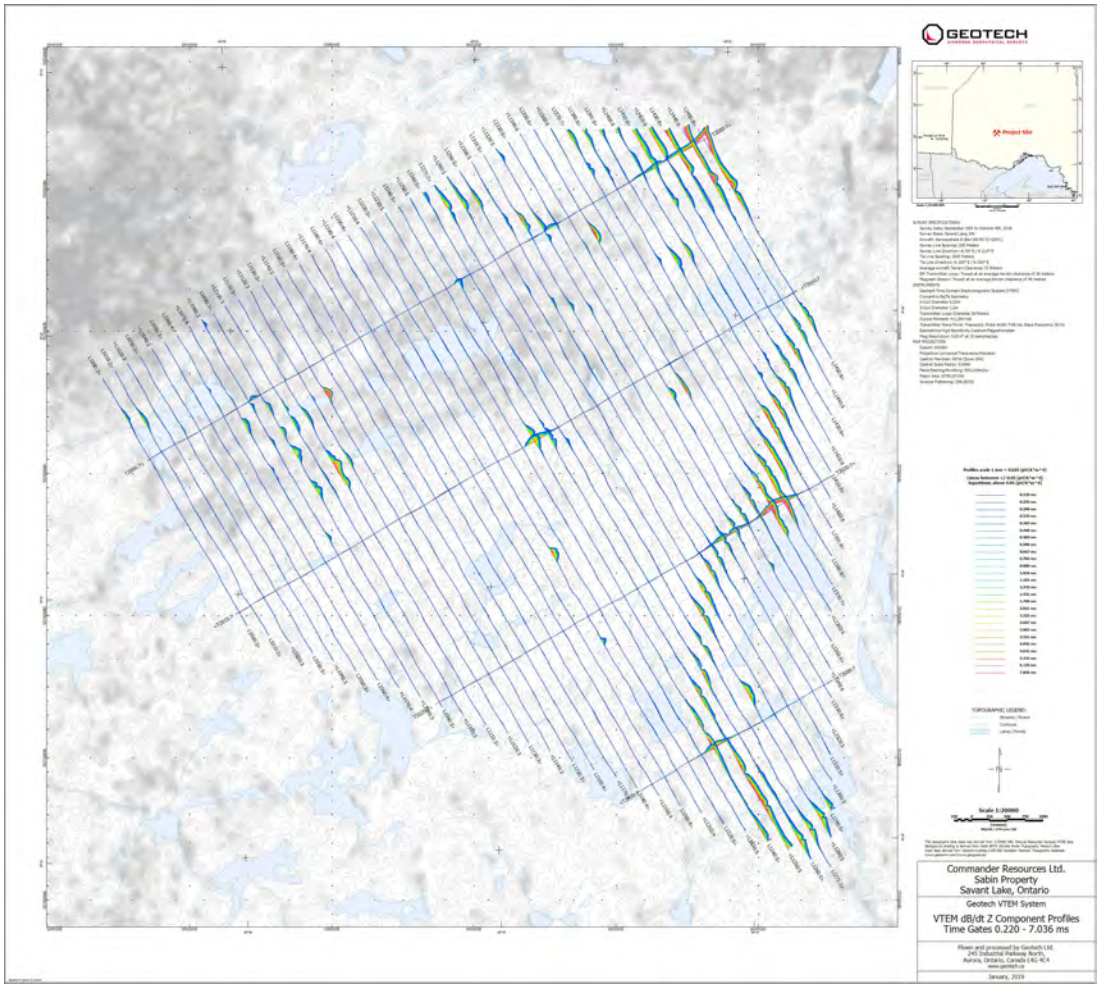
APPENDIX B

SURVEY AREA COORDINATES

(WGS84 UTM Zone 15N)

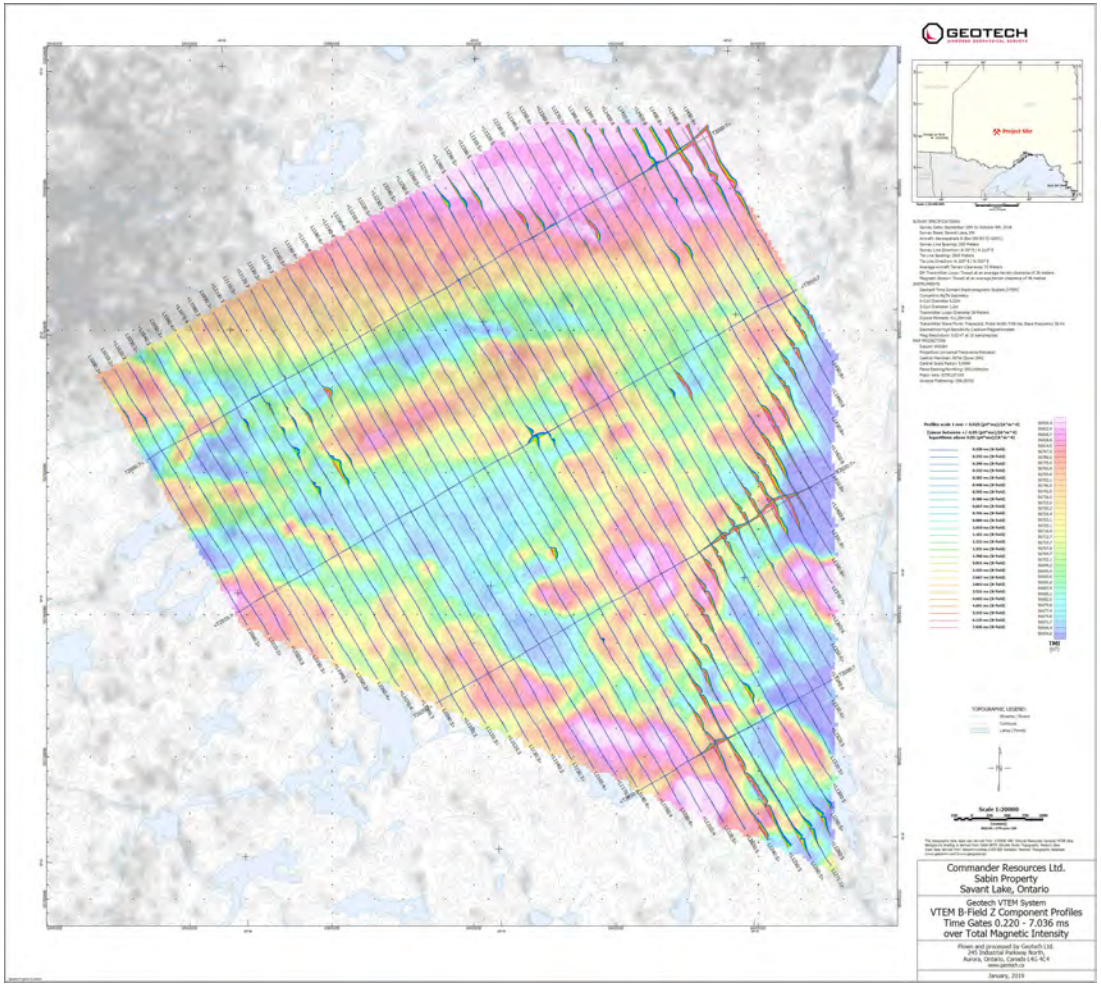
X	Y
654800	5577300
660862	5580800
663176	5580800
665000	5577669
665000	5570515
656780	5573900

APPENDIX C - GEOPHYSICAL MAPS[1]

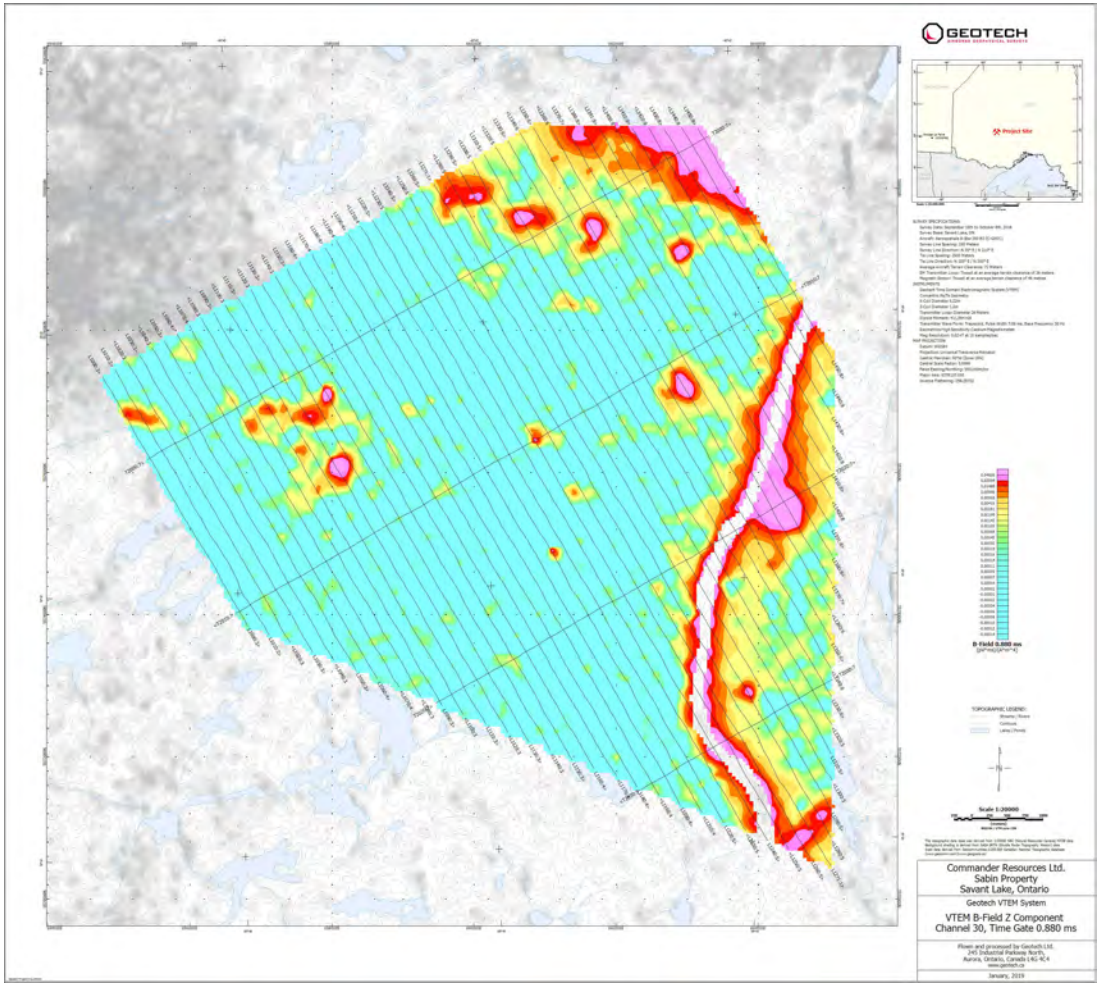


dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear

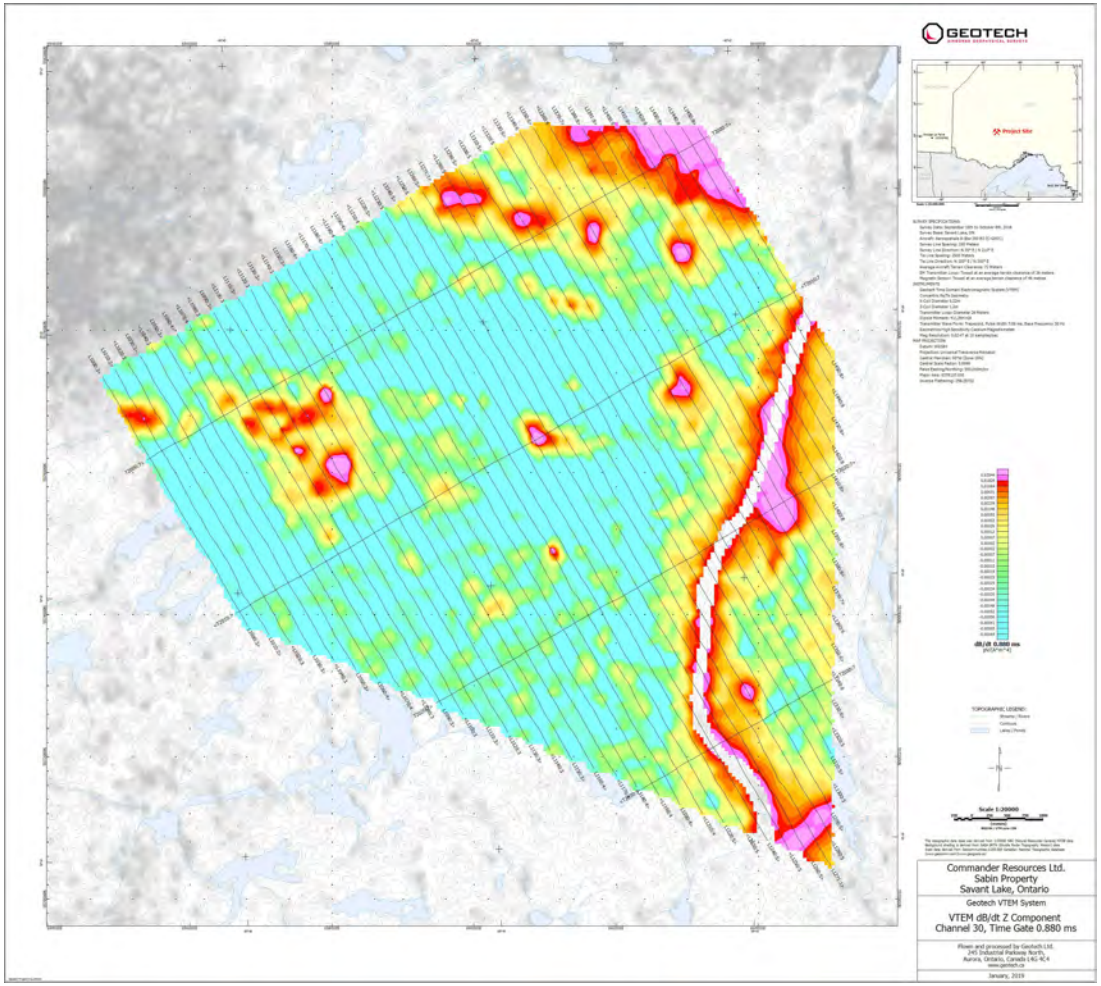
[1] Complete full size geophysical maps are also available in PDF format located in the final data maps folder



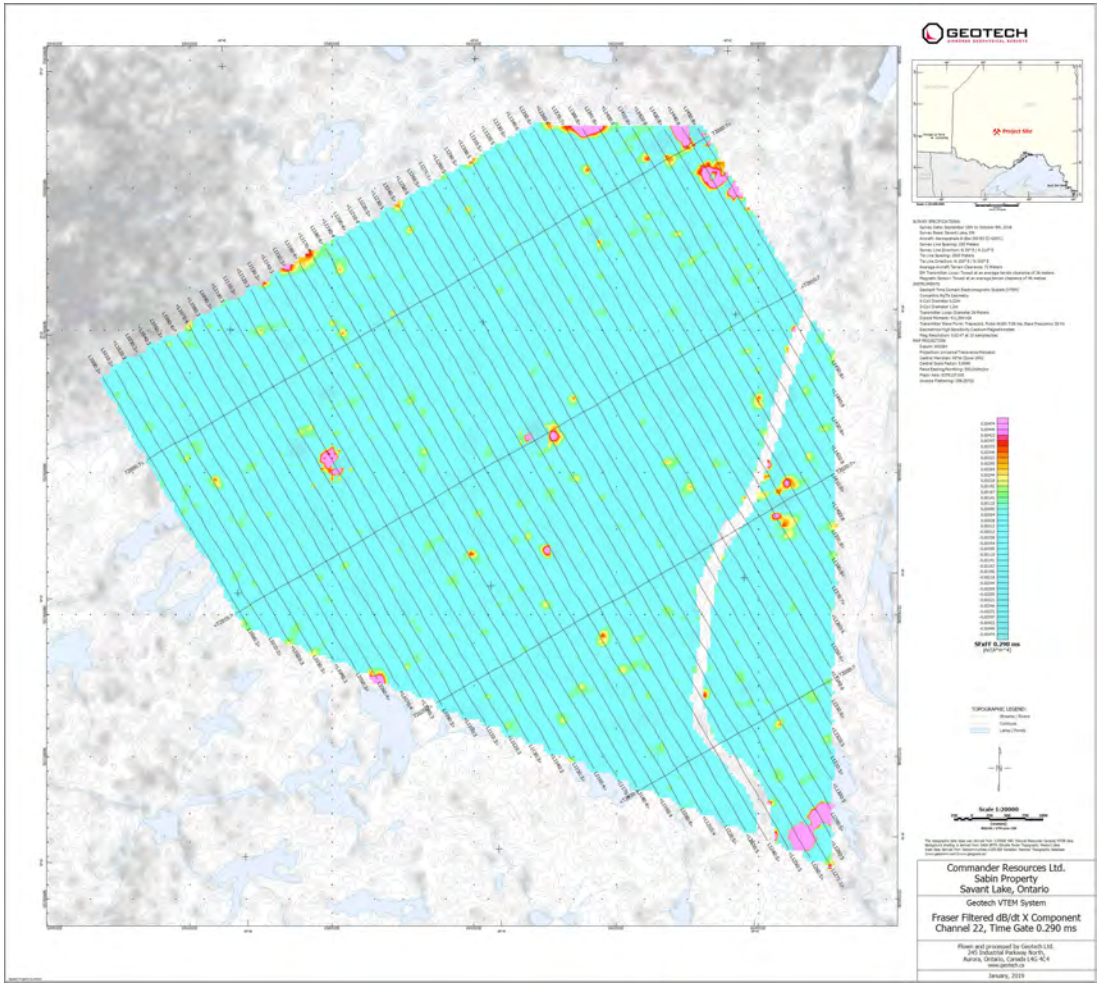
B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear



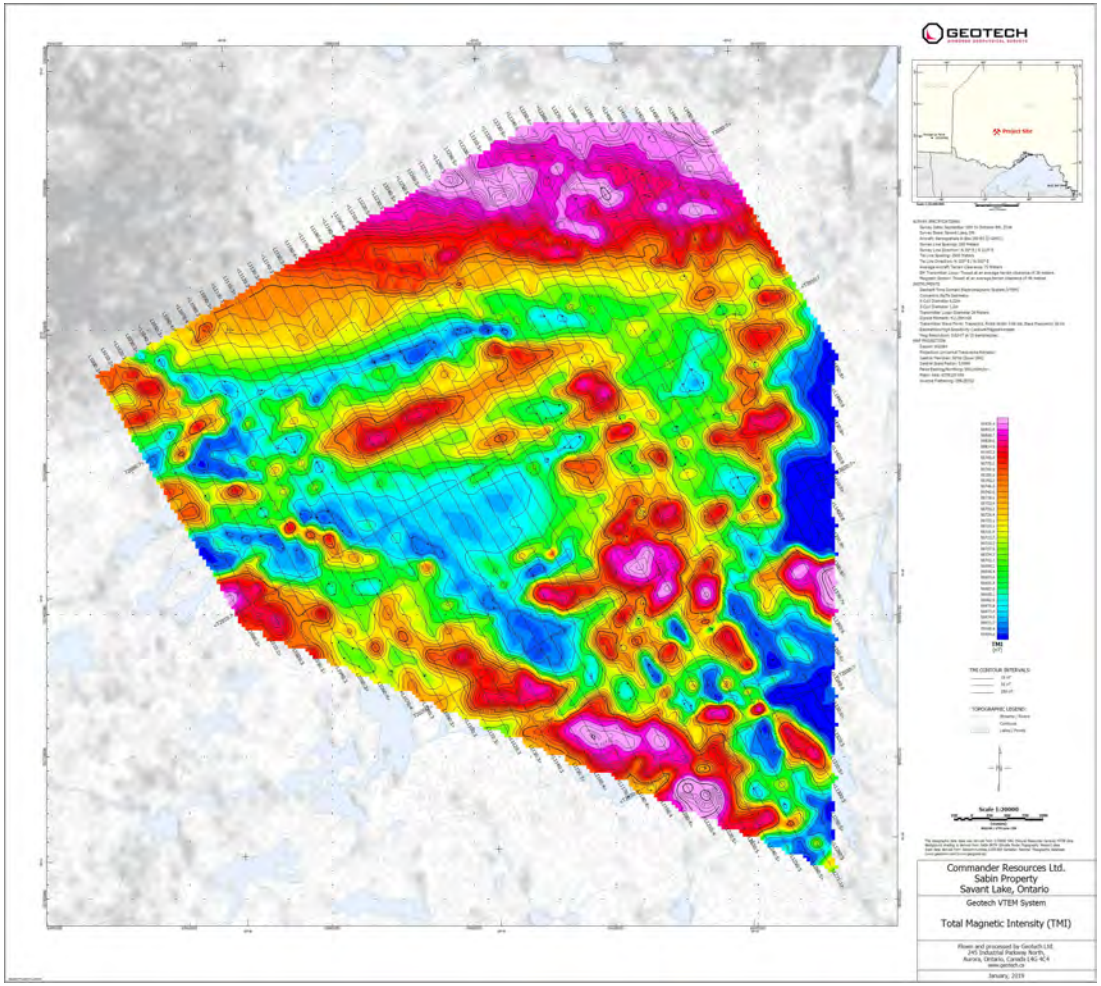
B-field Z Component Channel 30, Time Gate 0.880 ms



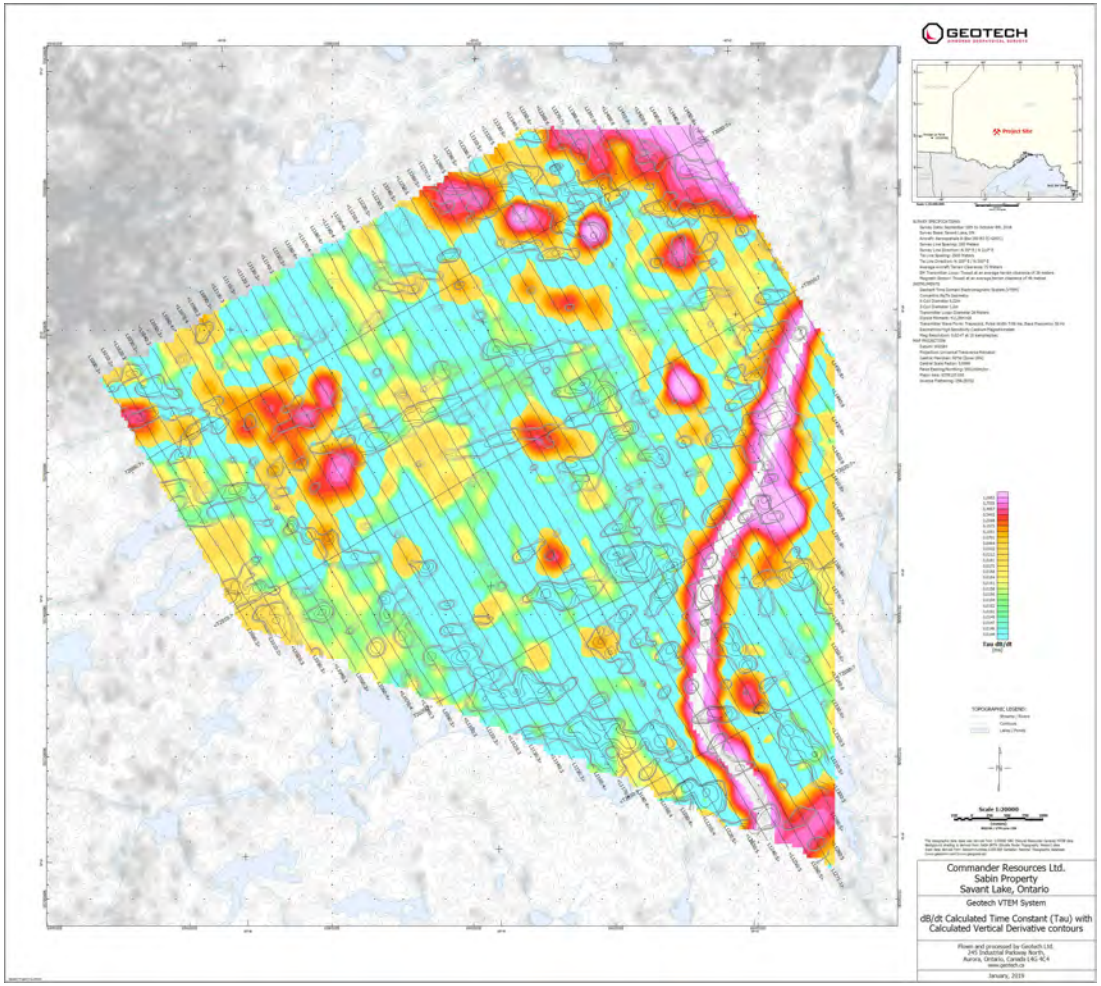
VTEM dB/dt Z Component Channel 30, Time Gate 0.880 ms



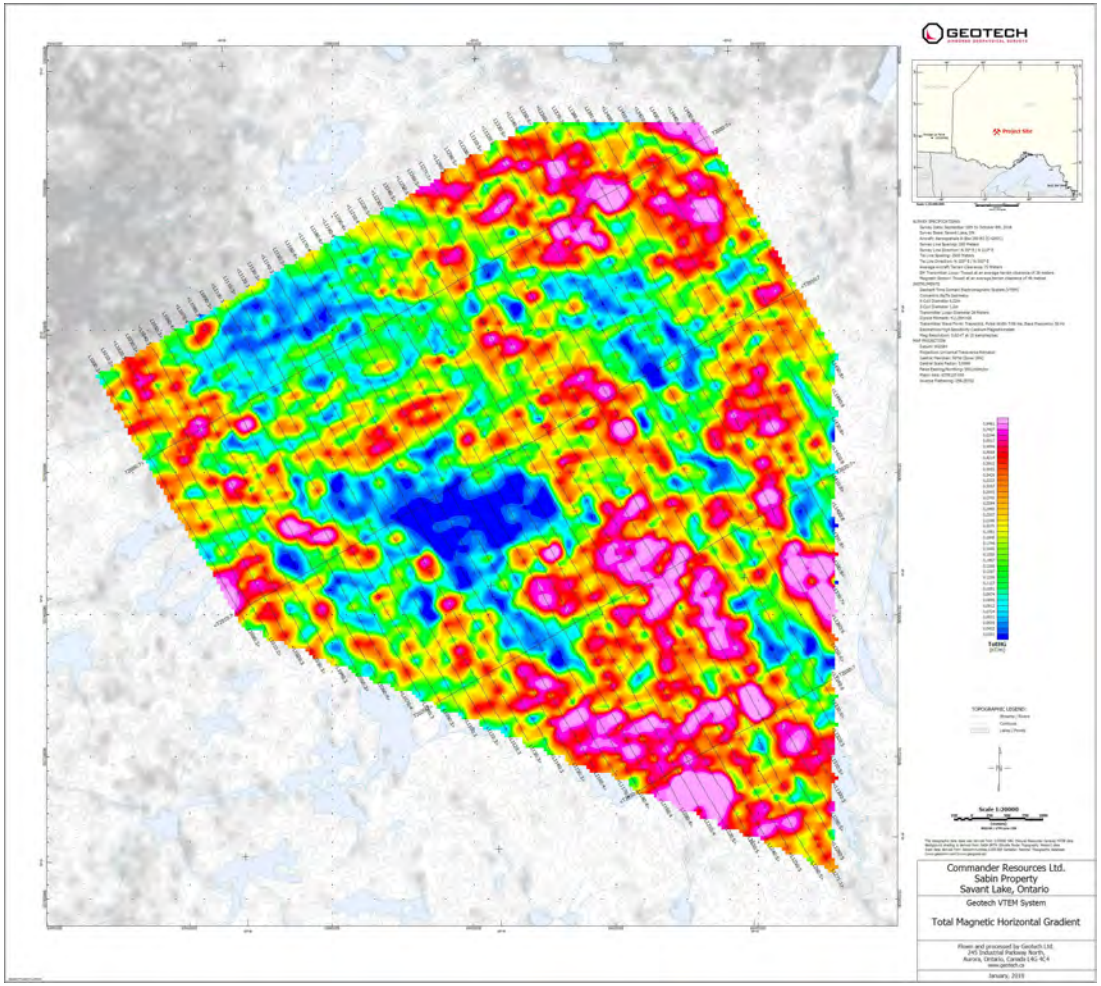
Fraser Filtered dB/dt X Component Channel 22, Time Gate 0.290 ms



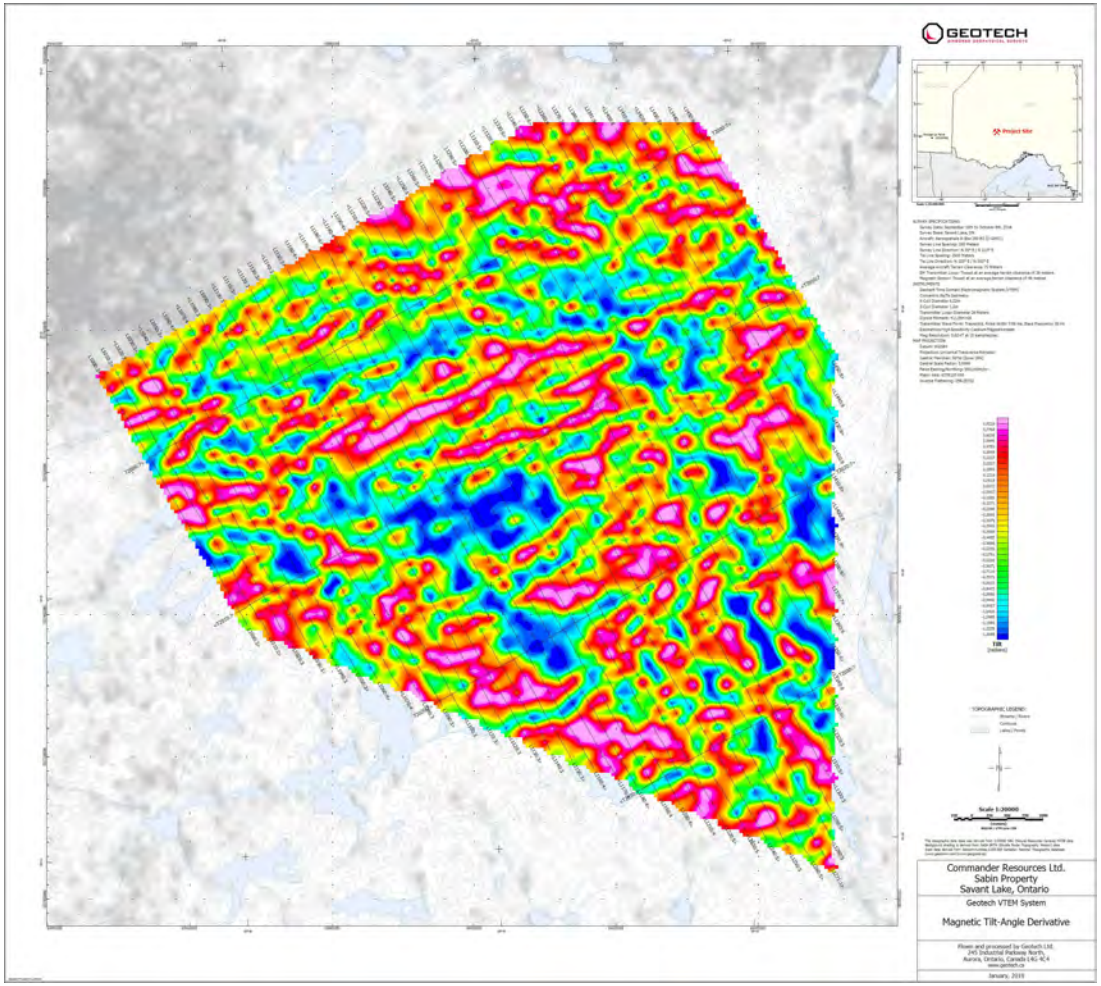
Total Magnetic Intensity (TMI)



dB/dt Calculated Time Constant (Tau)

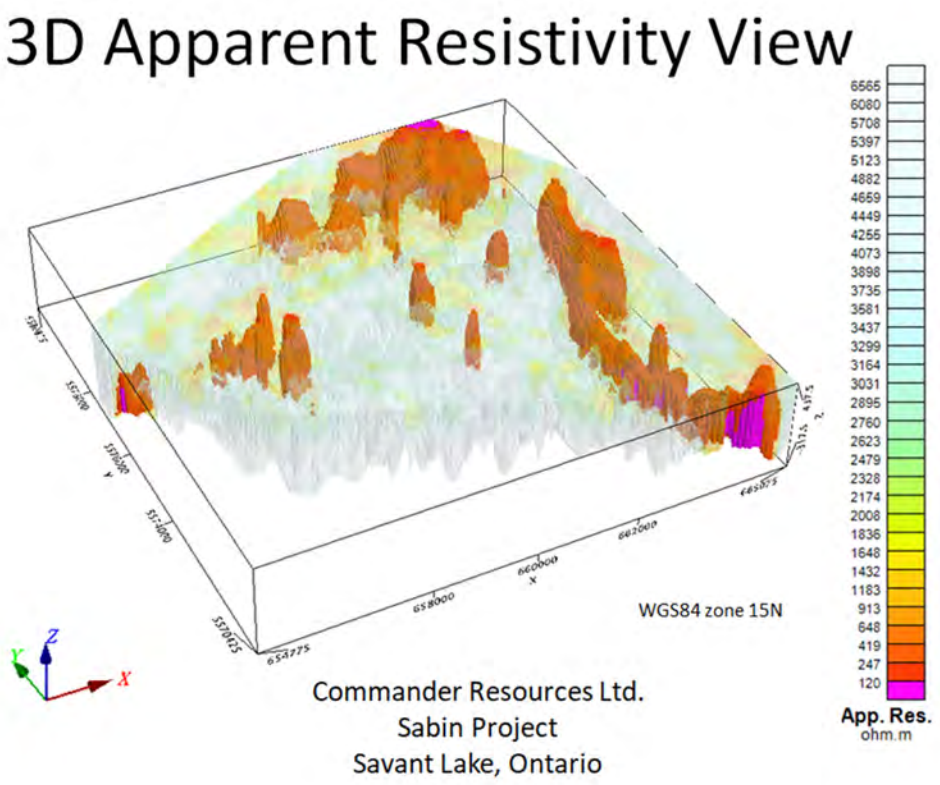


Magnetic Total Horizontal Gradient colour image



Magnetic Tilt-Angle Derivative colour image

RESISTIVITY DEPTH IMAGE (RDI) MAPS



3D Resistivity-Depth Image (RDI)

APPENDIX D

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM
INTRODUCTION

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a transmitter loop that produces a primary field. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

A set of models has been produced for the Geotech VTEM™ system dB/dT Z and X components (see models D1 to D15). The Maxwell ™ modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º.

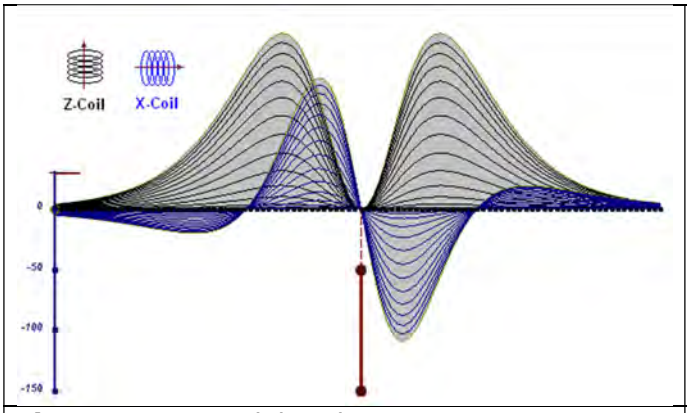


Figure D-1: vertical thin plate

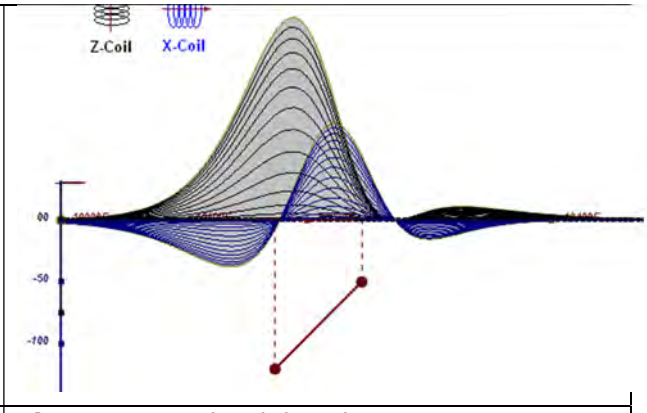


Figure D-2: inclined thin plate

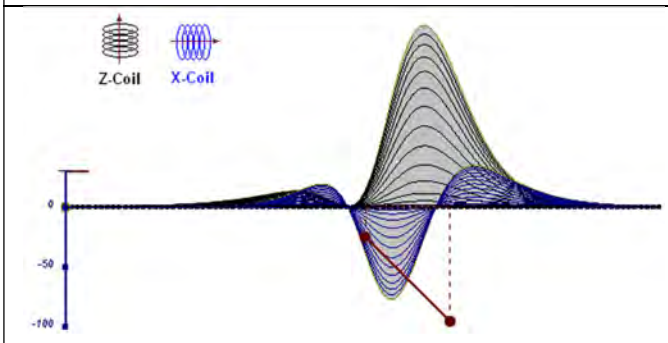


Figure D-3: inclined thin plate

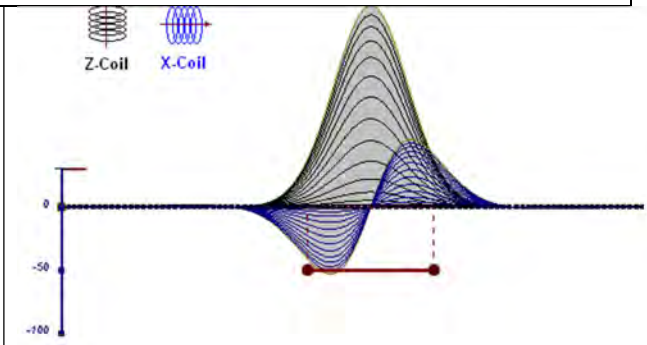


Figure D-4: horizontal thin plate

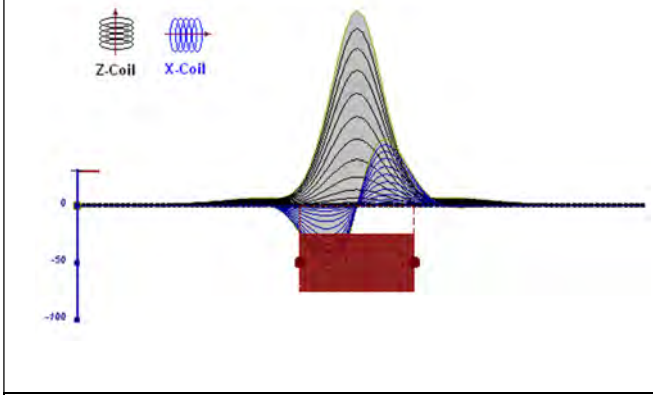


Figure D-5: horizontal thick plate (linear scale of the response)

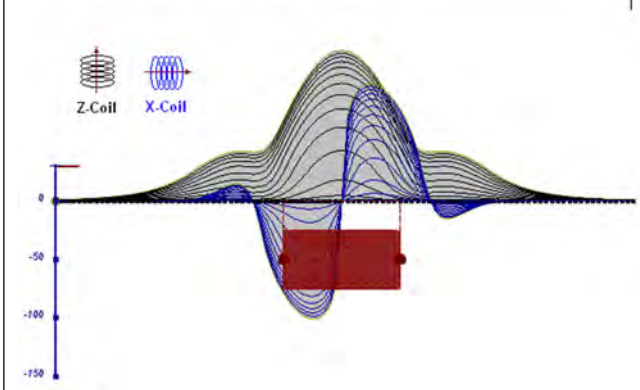


Figure D-6: horizontal thick plate (log scale of the response)

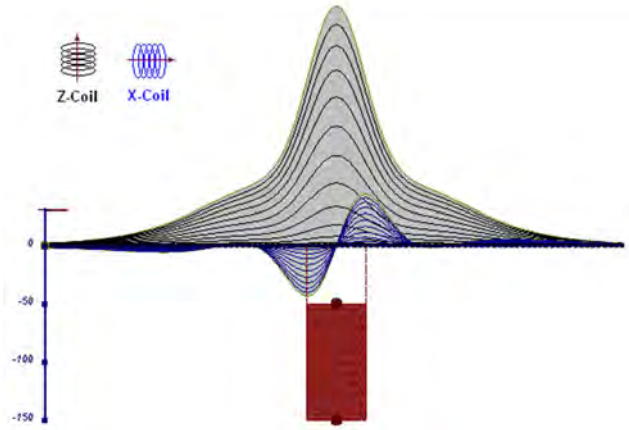


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

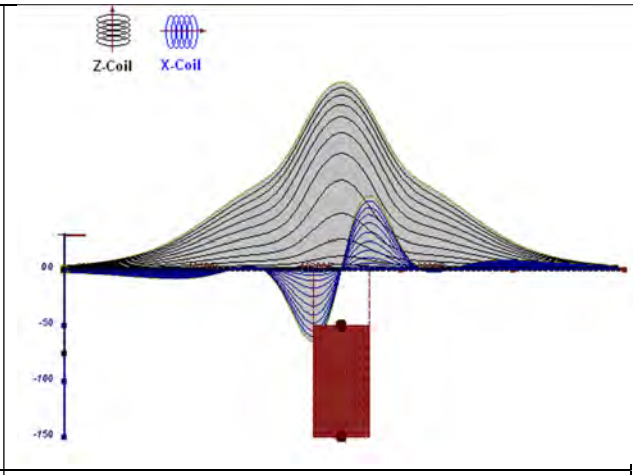


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

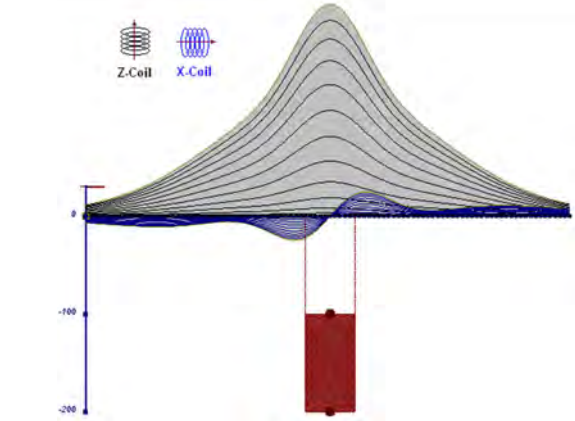


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

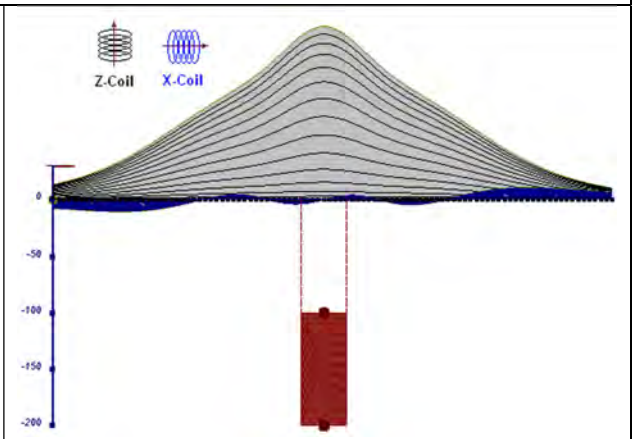


Figure D-10: vertical thick plate (linear scale of the response). Depth / horizontal thickness=2.5

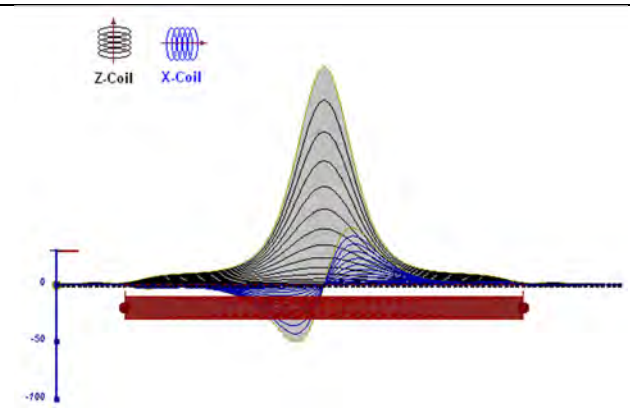


Figure D-11: horizontal thick plate (linear scale of the response)

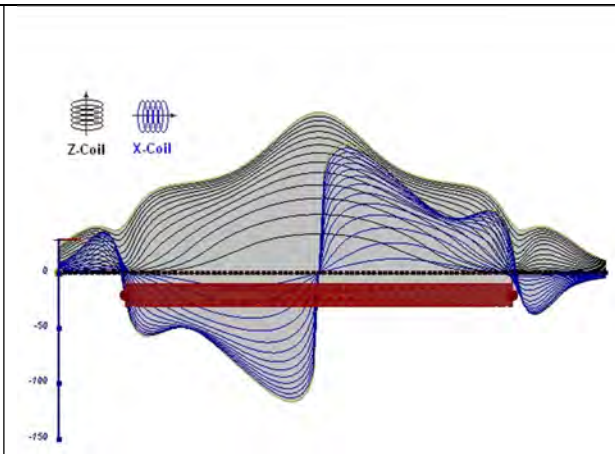


Figure D-12: horizontal thick plate (log scale of the response)

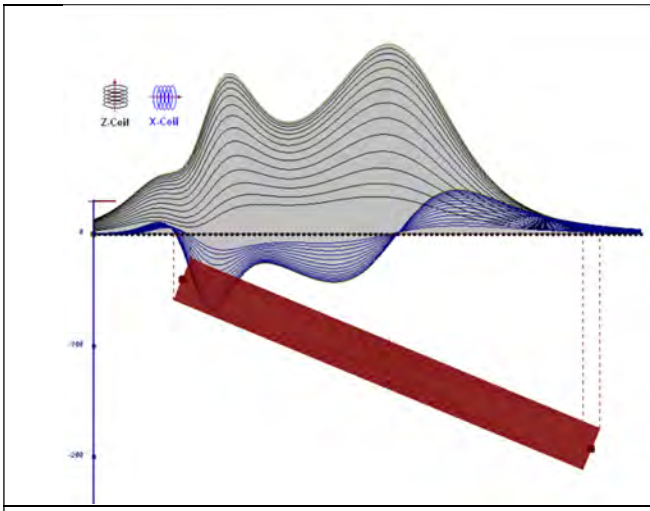


Figure D-13: inclined long thick plate

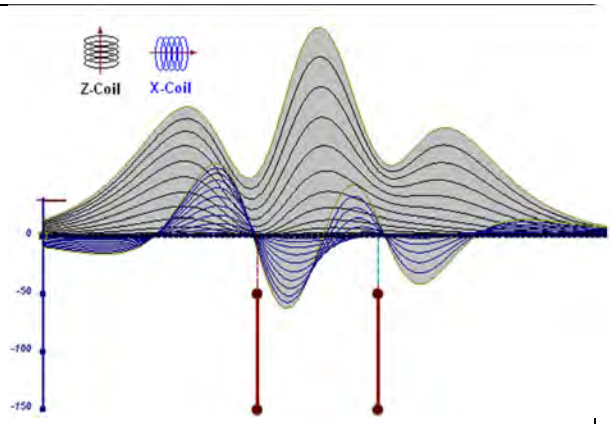


Figure D-14: two vertical thin plates

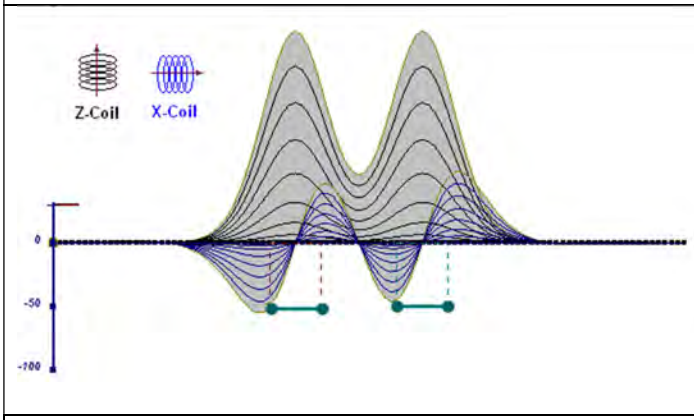


Figure D-15: two horizontal thin plates

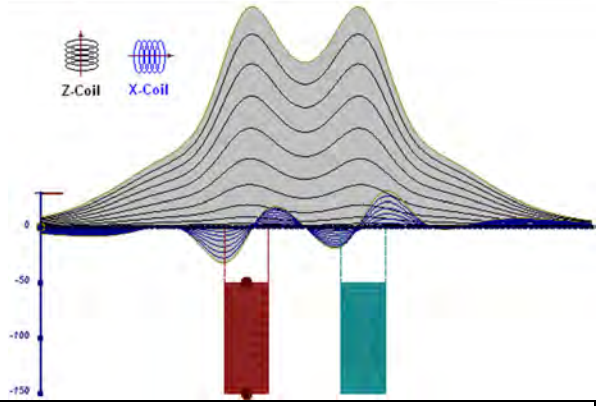


Figure D-16: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:

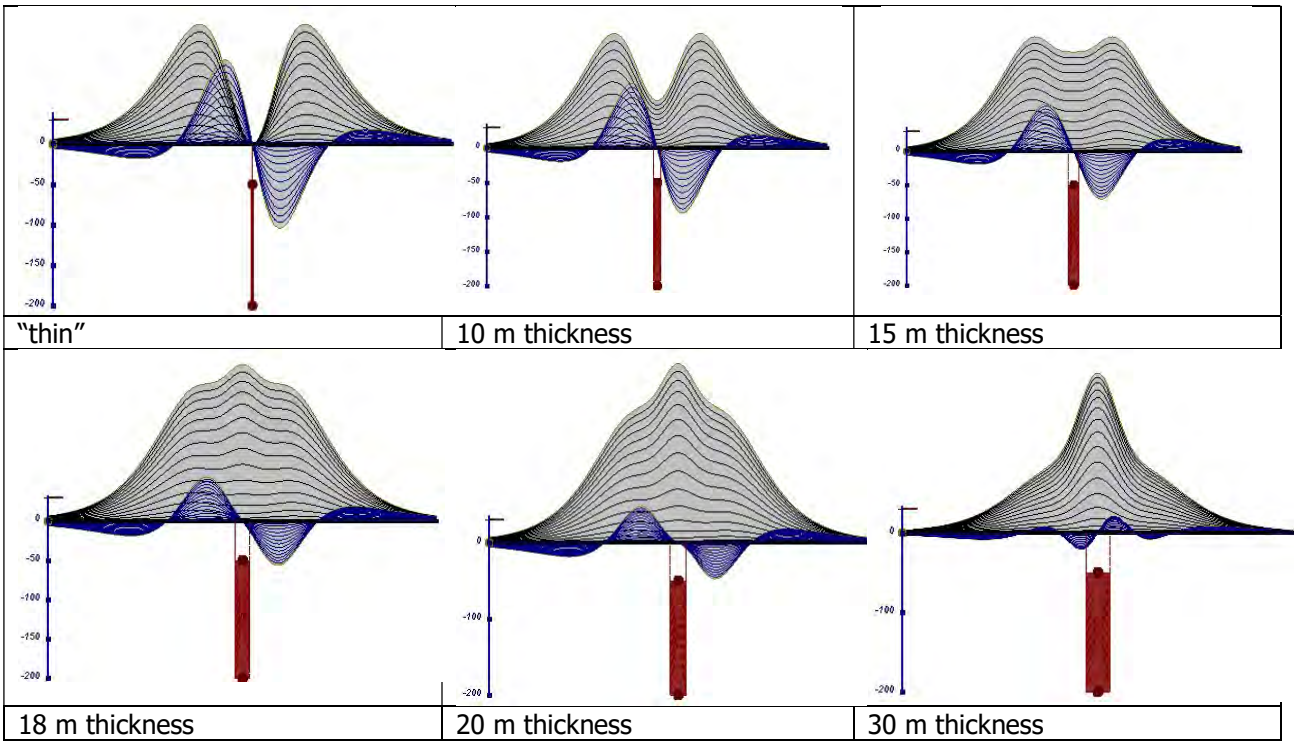


Figure D-17: Conductive vertical plate, depth 50 m, strike length 200 m, depth extends 150 m.

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APPENDIX E

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductances beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

THEORY

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage ($\mathbf{e_0}$) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \, \alpha \, (1 / \tau) \, e^{-(t/\tau)}$$

Where,
τ = L/R is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and smallτ, have high initial amplitude but decay rapidly with time[1] (Fig. E1).

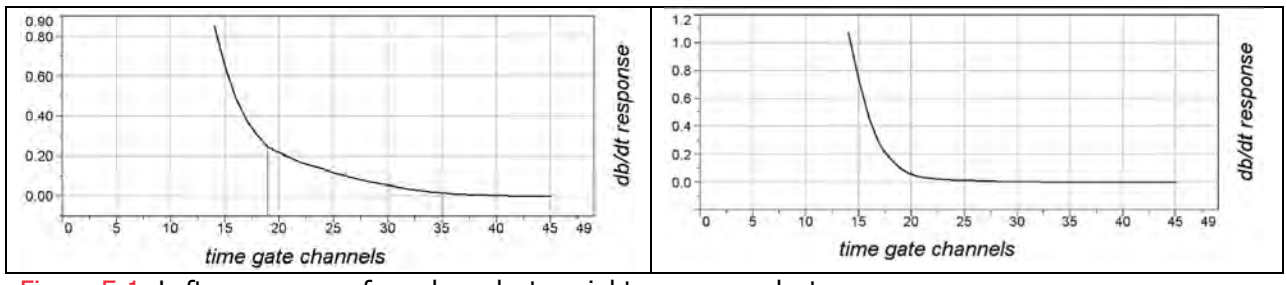

Figure E-1: Left – presence of good conductor, right – poor conductor.

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the "conductance quality" of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

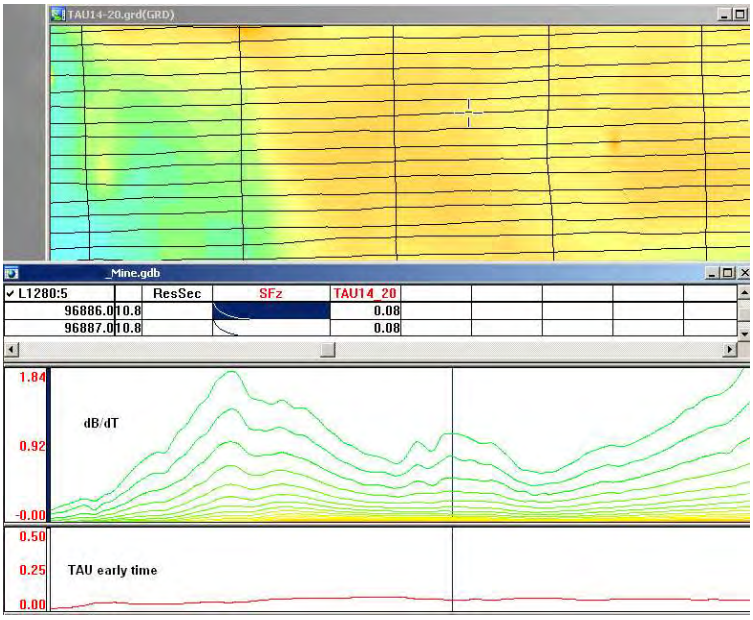

Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

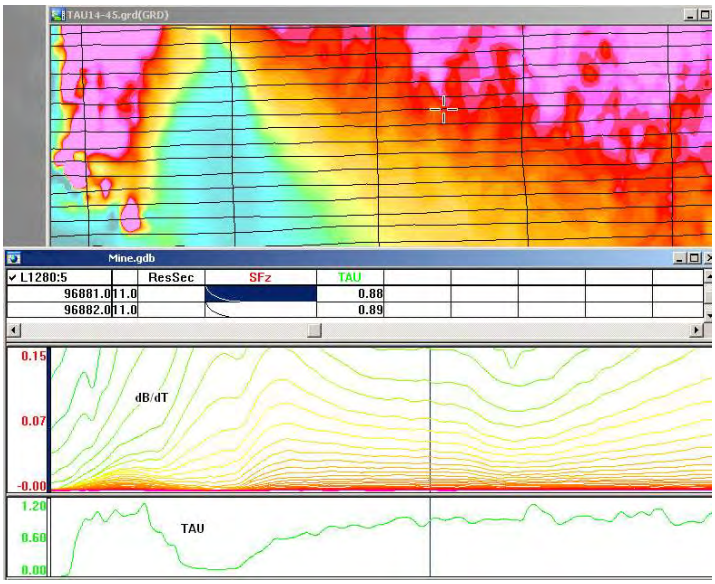

Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

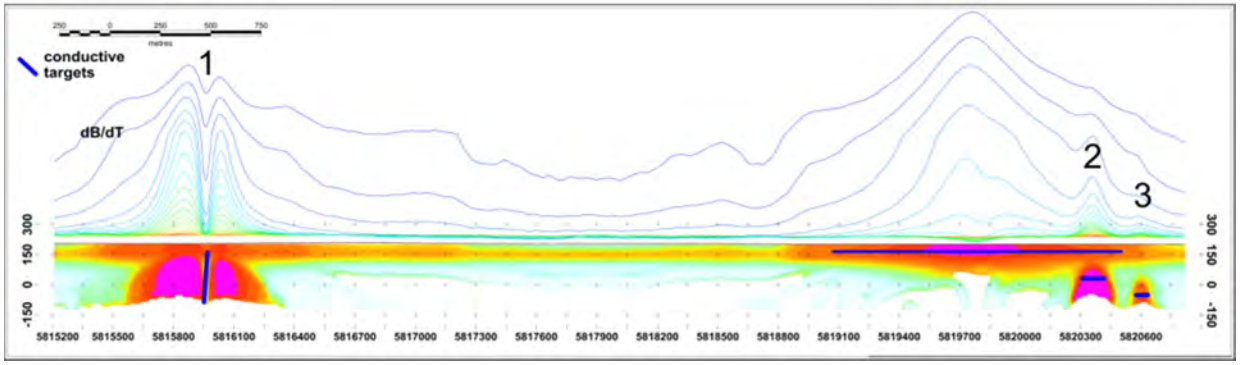

Figure E-4: dB/dt profile and RDI with different depths of targets.

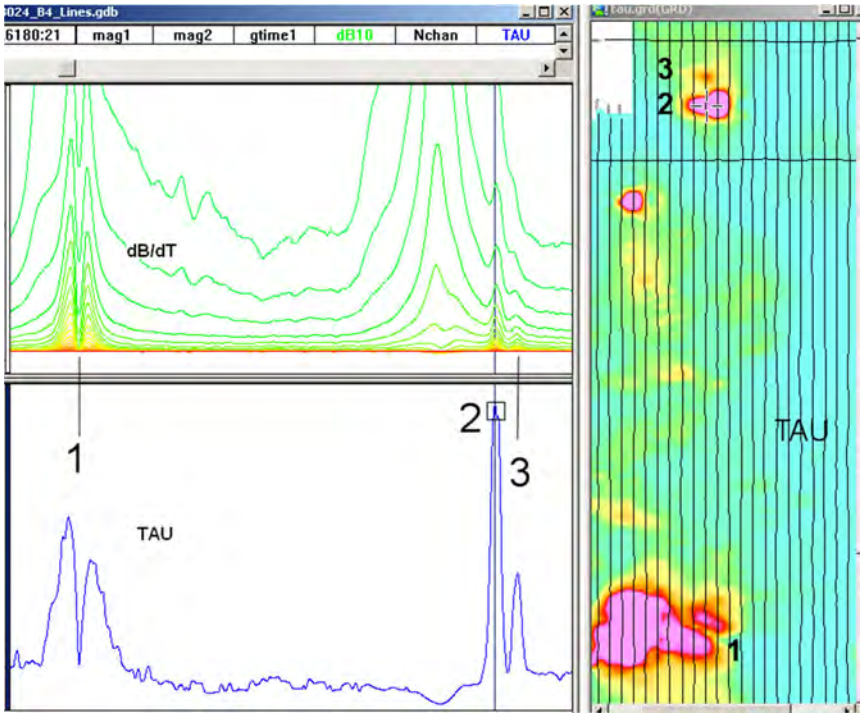

Figure E-5: Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the "sliding Tau" in-house program developed at Geotech2. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the "label" property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of "dummy" by default.

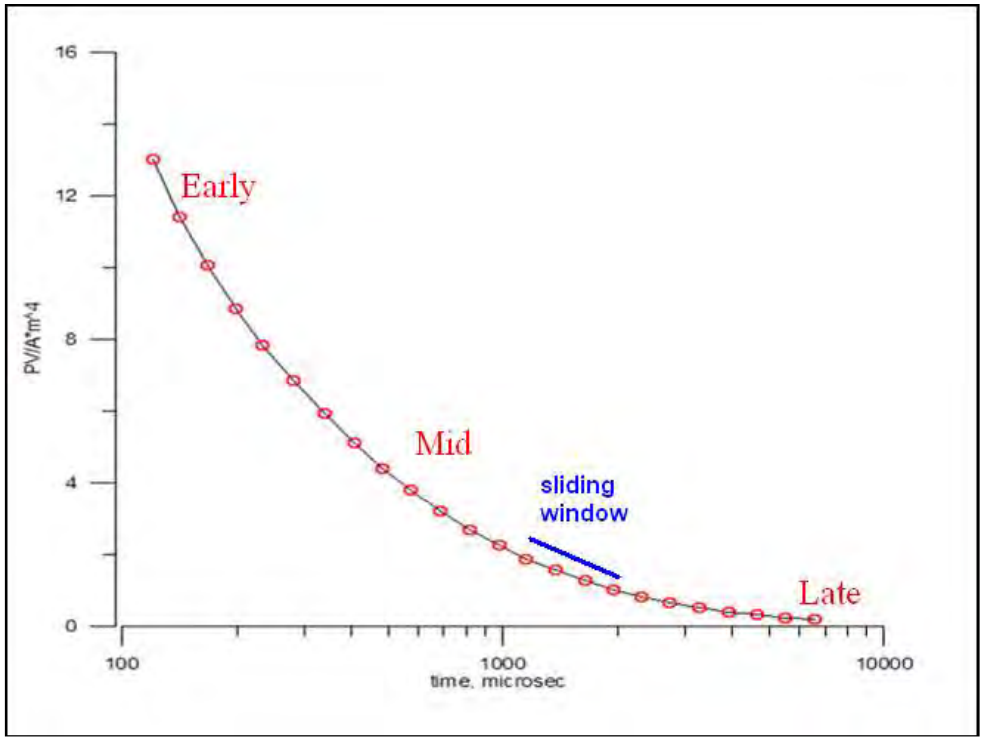

Figure E-6: Typical dB/dt decays of Vtem data

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September 2010

[2] by A.Prikhodko

APPENDIX F

TEM RESISTIVITY DEPTH IMAGING (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data.
The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system).

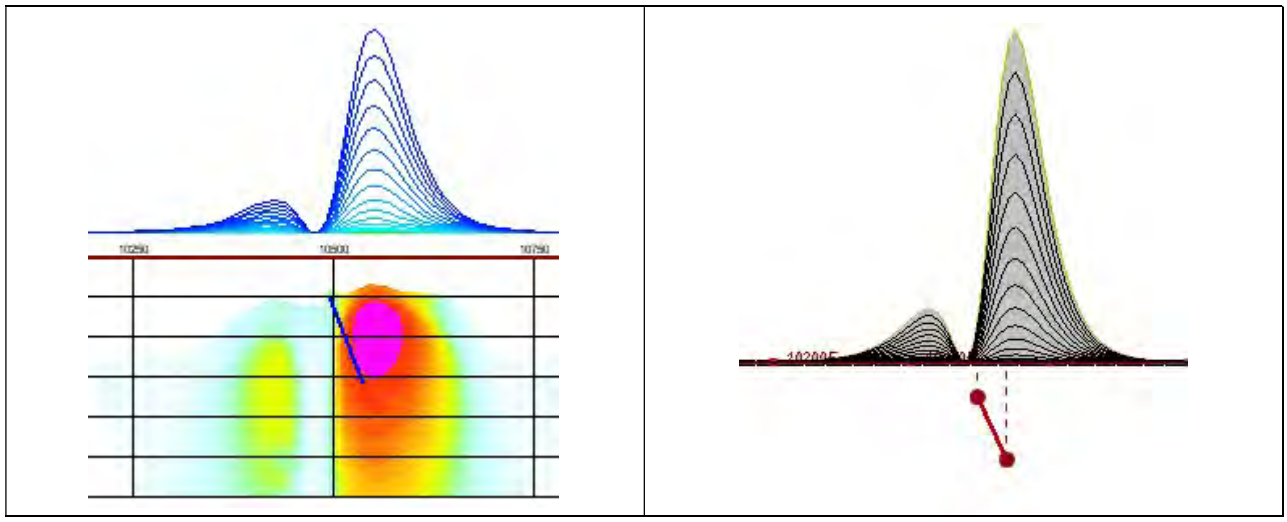


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

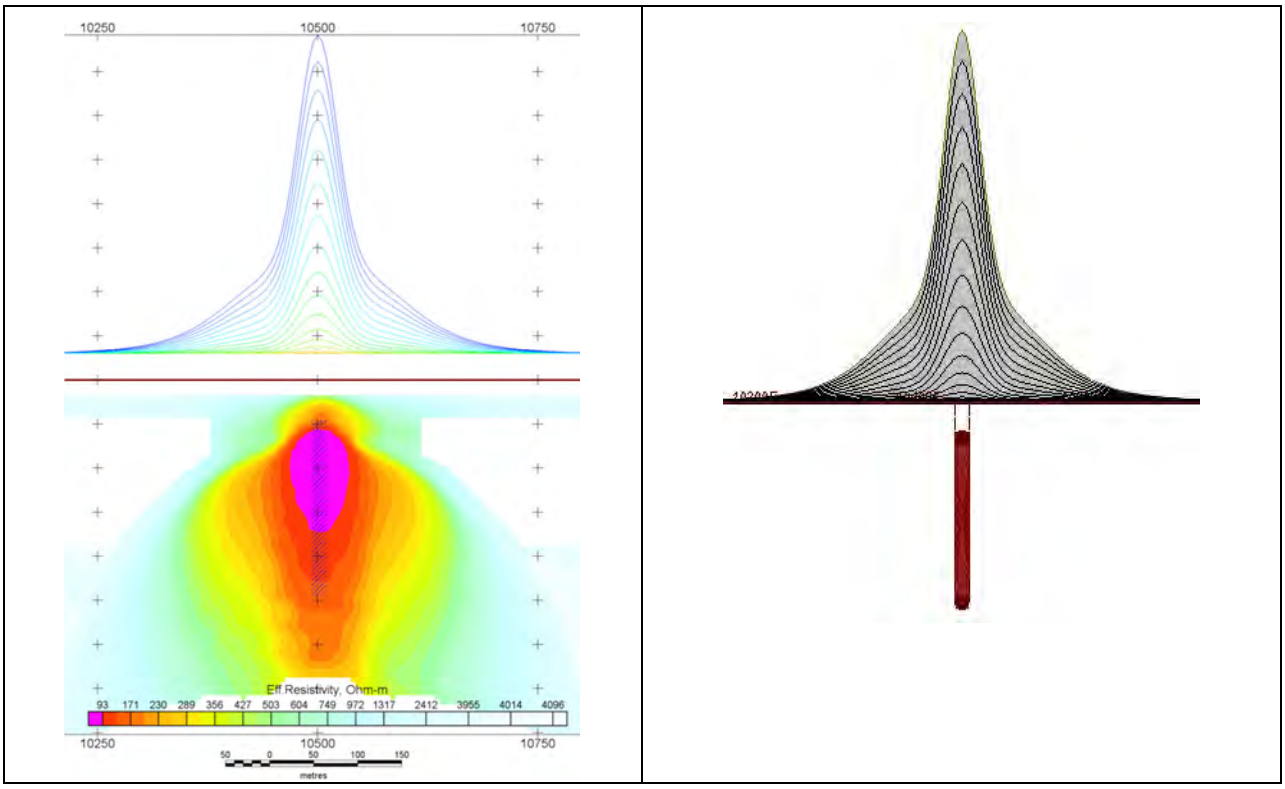


Figure F-2: Maxwell plate model and RDI from the calculated response for "thick" plate 18 m thickness, depth 50 m, depth extend 200 m).

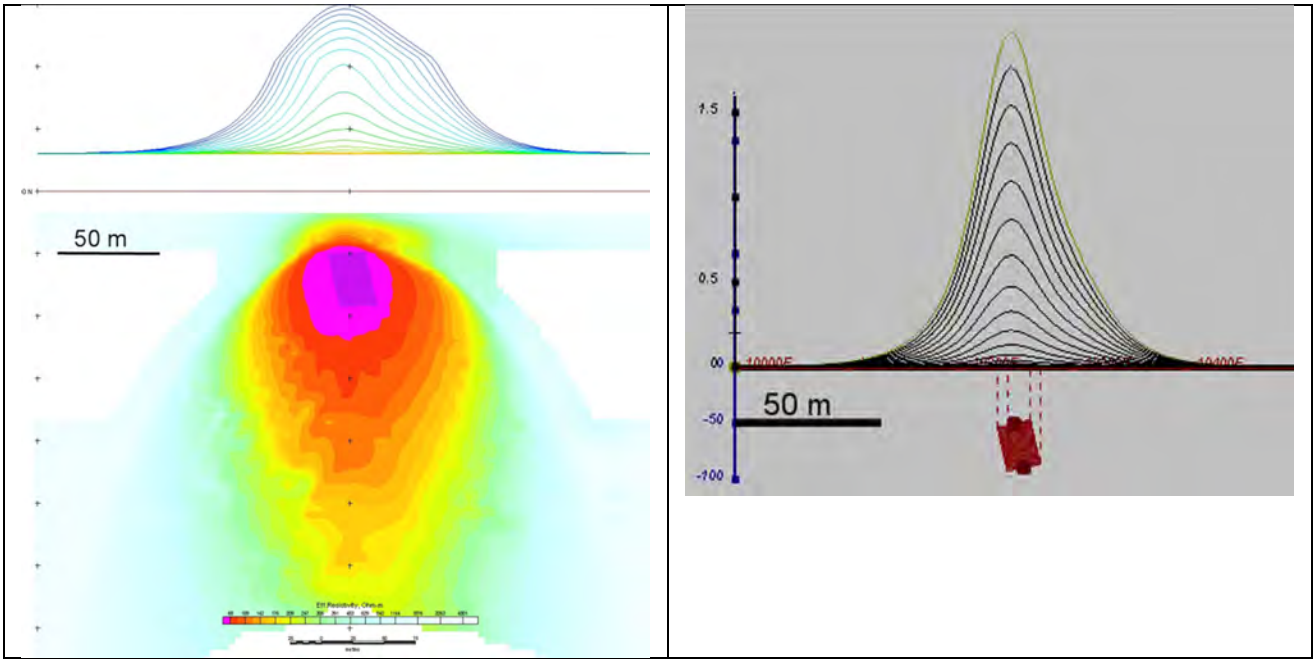


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk ("thick") 100 m length, 40 m depth extend, 30 m thickness

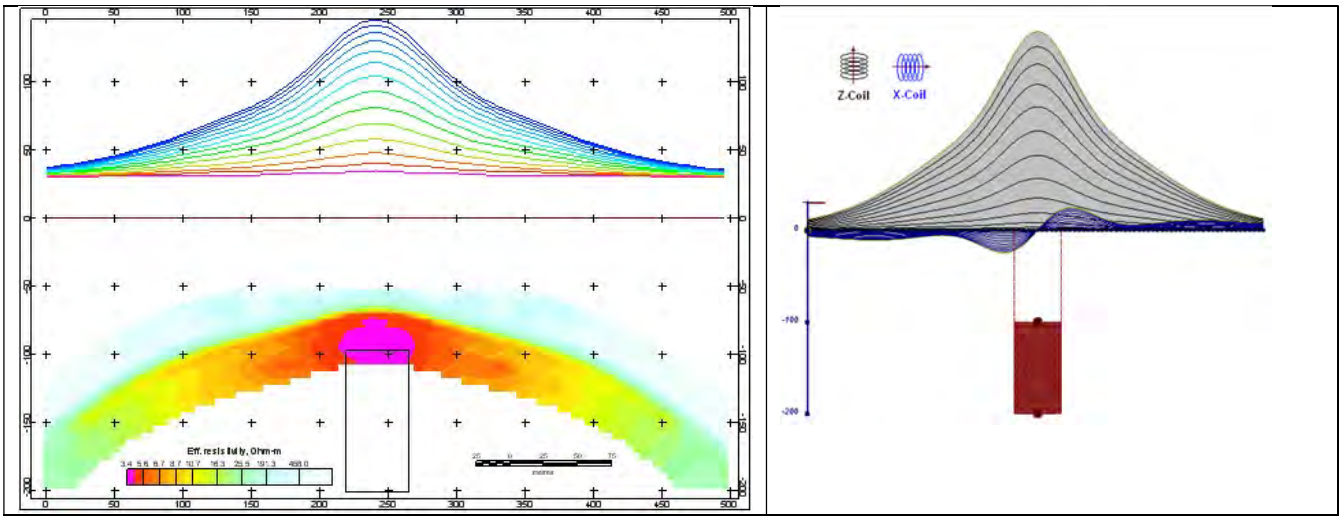


Figure F-4: Maxwell plate model and RDI from the calculated response for "thick" vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

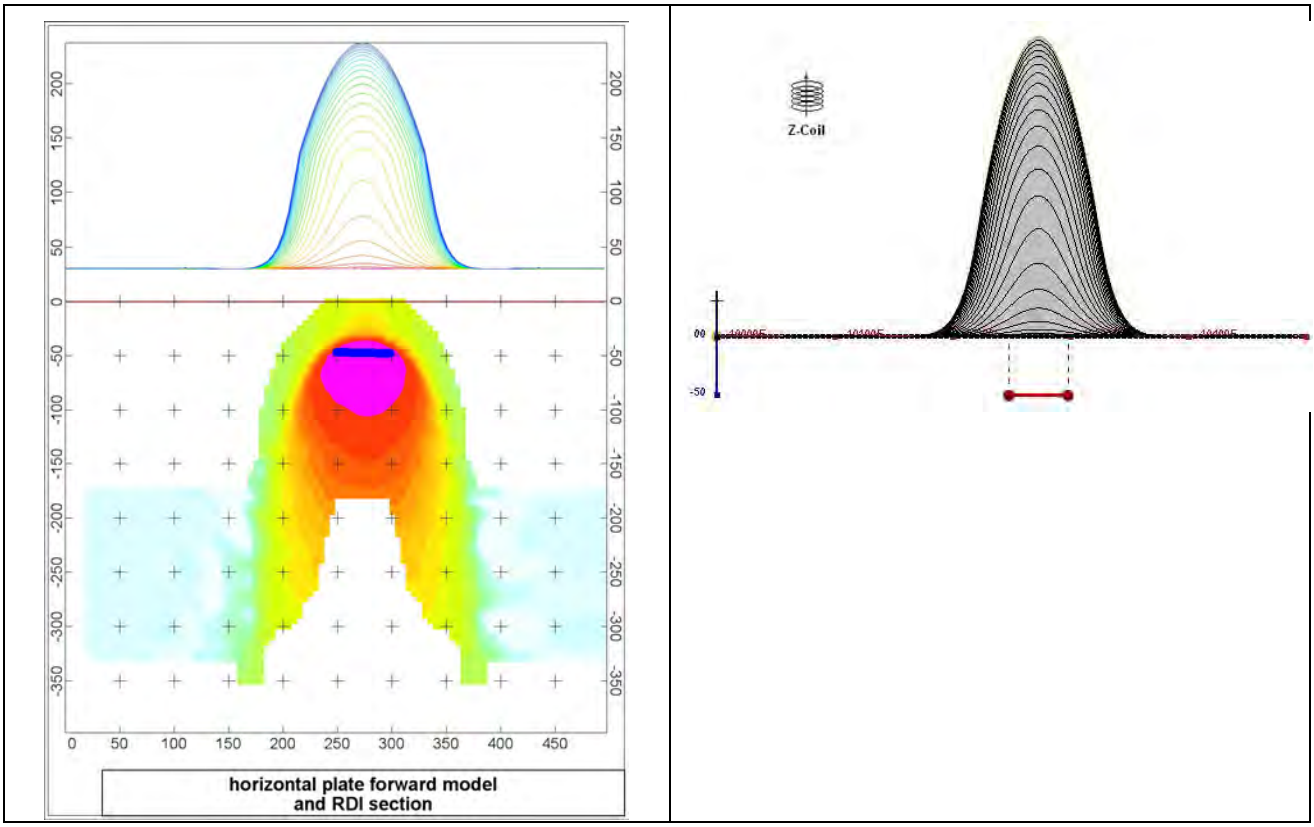


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

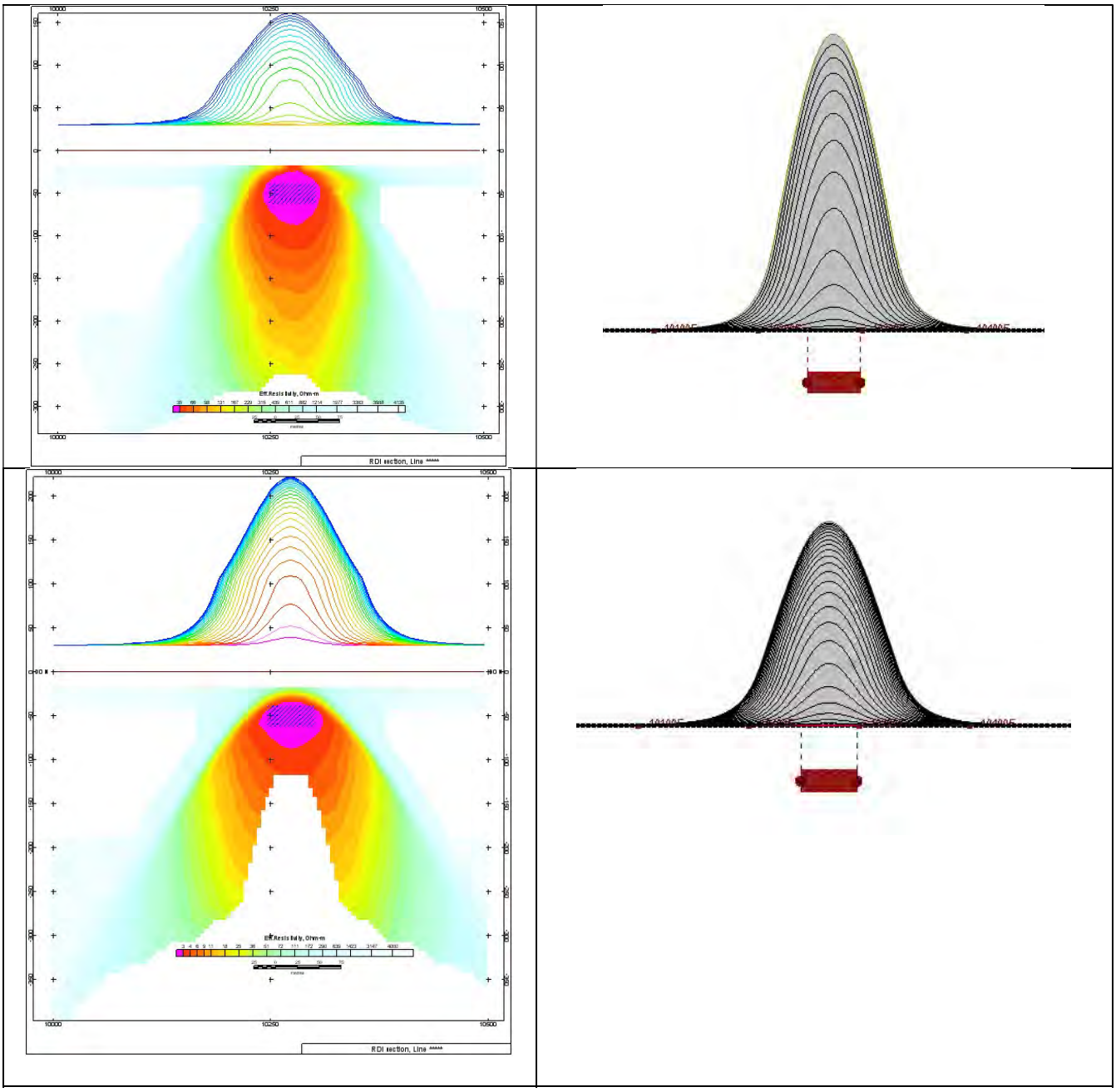


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below).

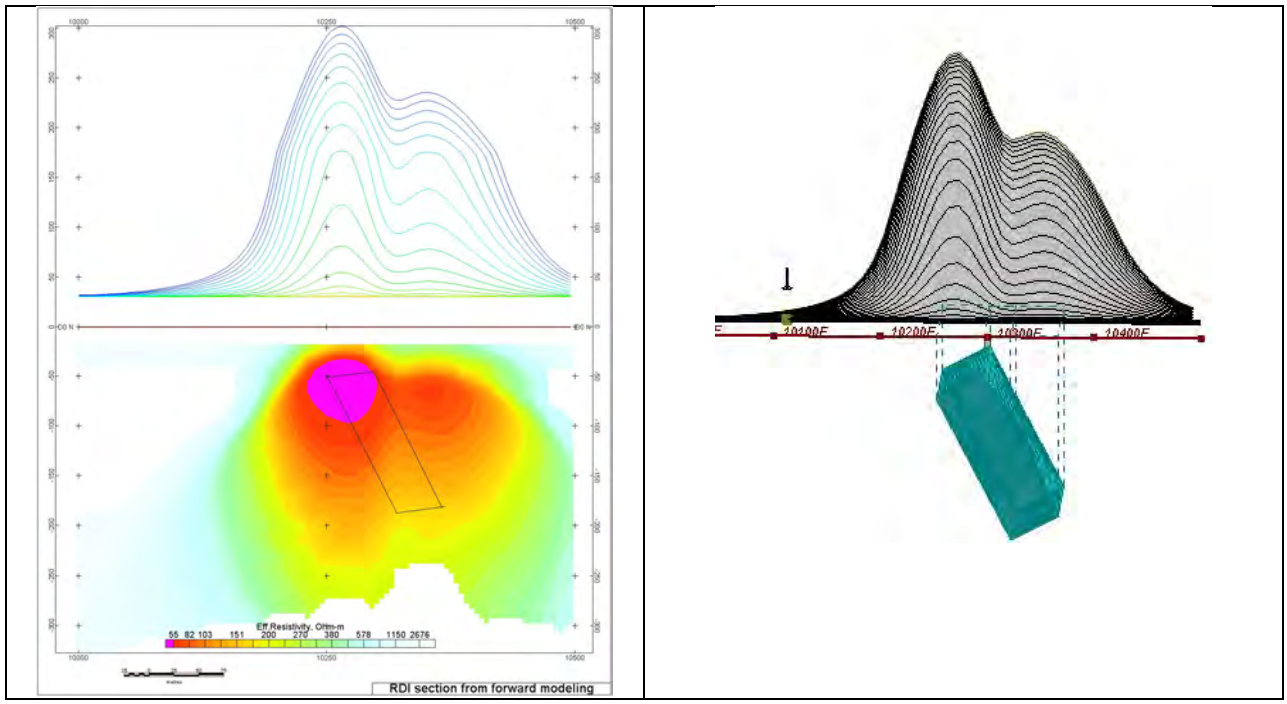


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

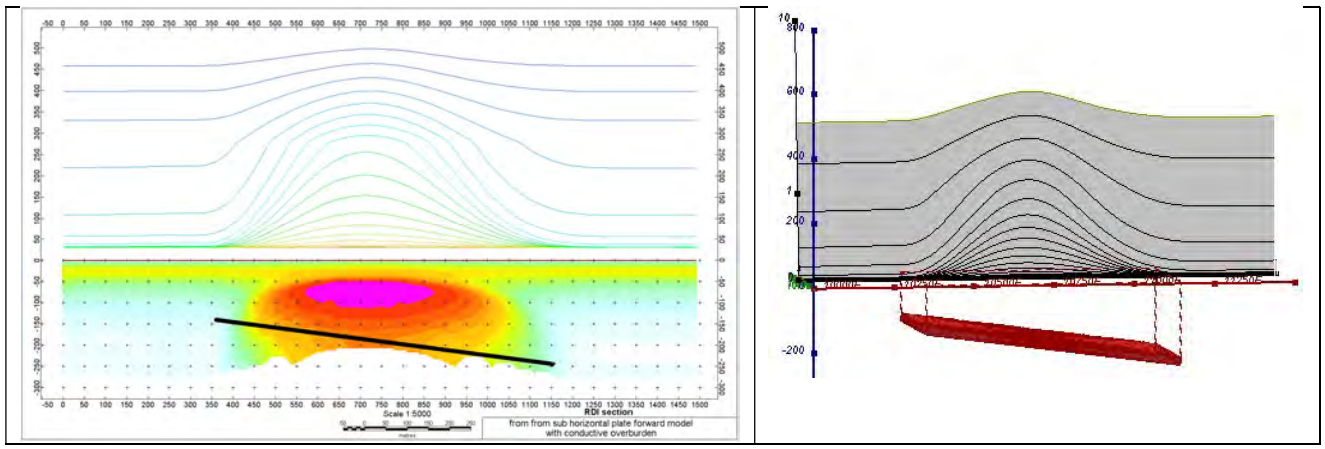


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep subhorizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

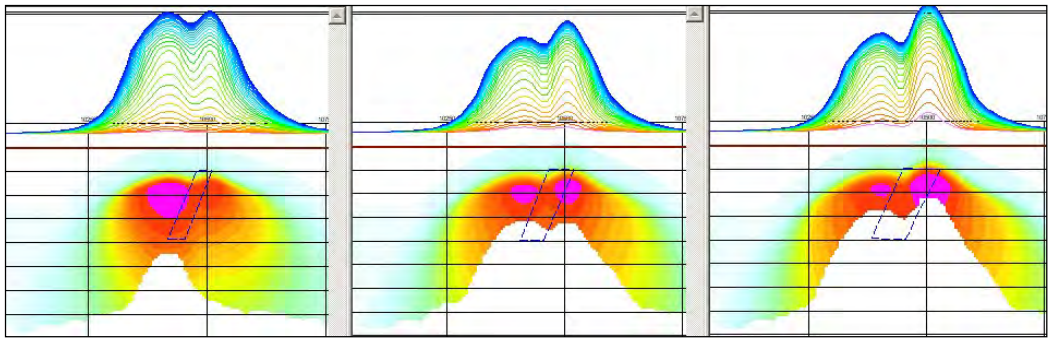


Figure F-9: Maxwell plate models and RDIs from the calculated response for "thick" dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

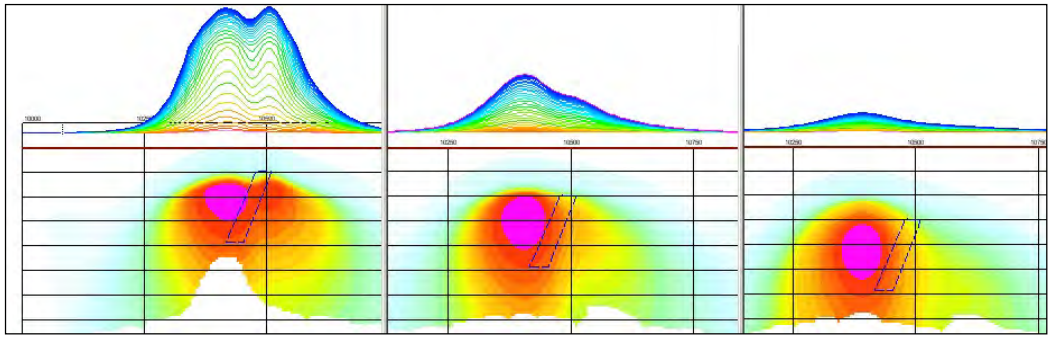


Figure F-10: Maxwell plate models and RDIs from the calculated response for "thick" (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

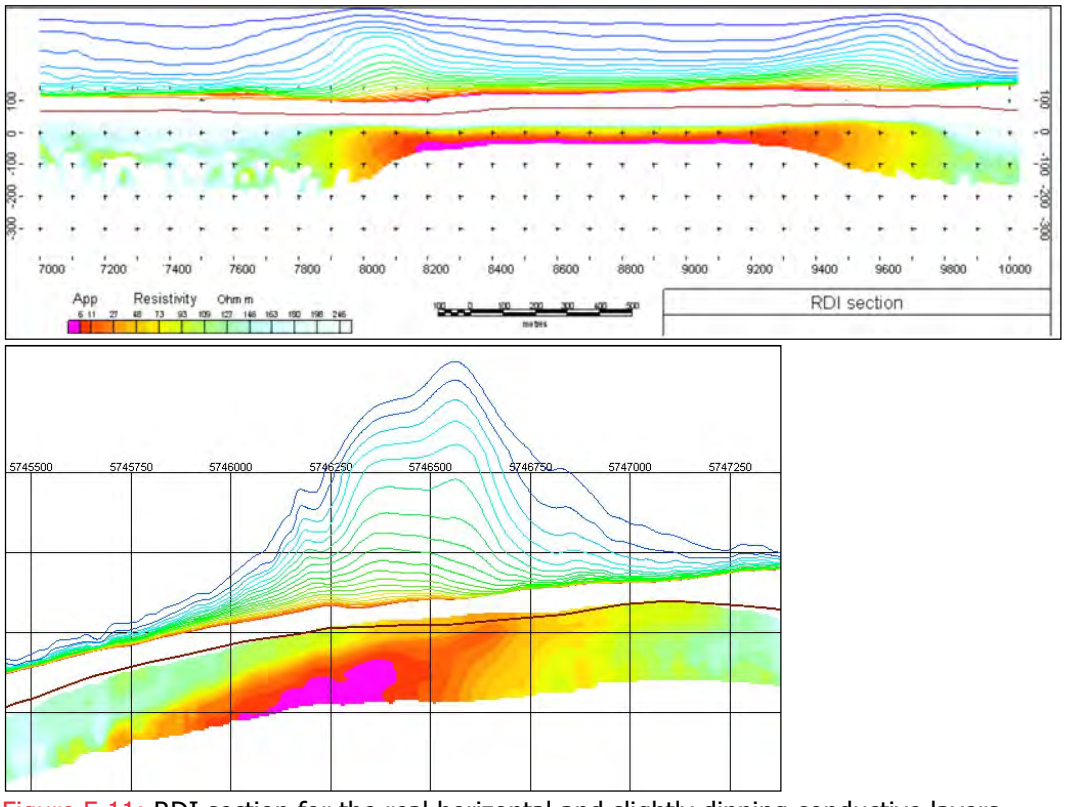
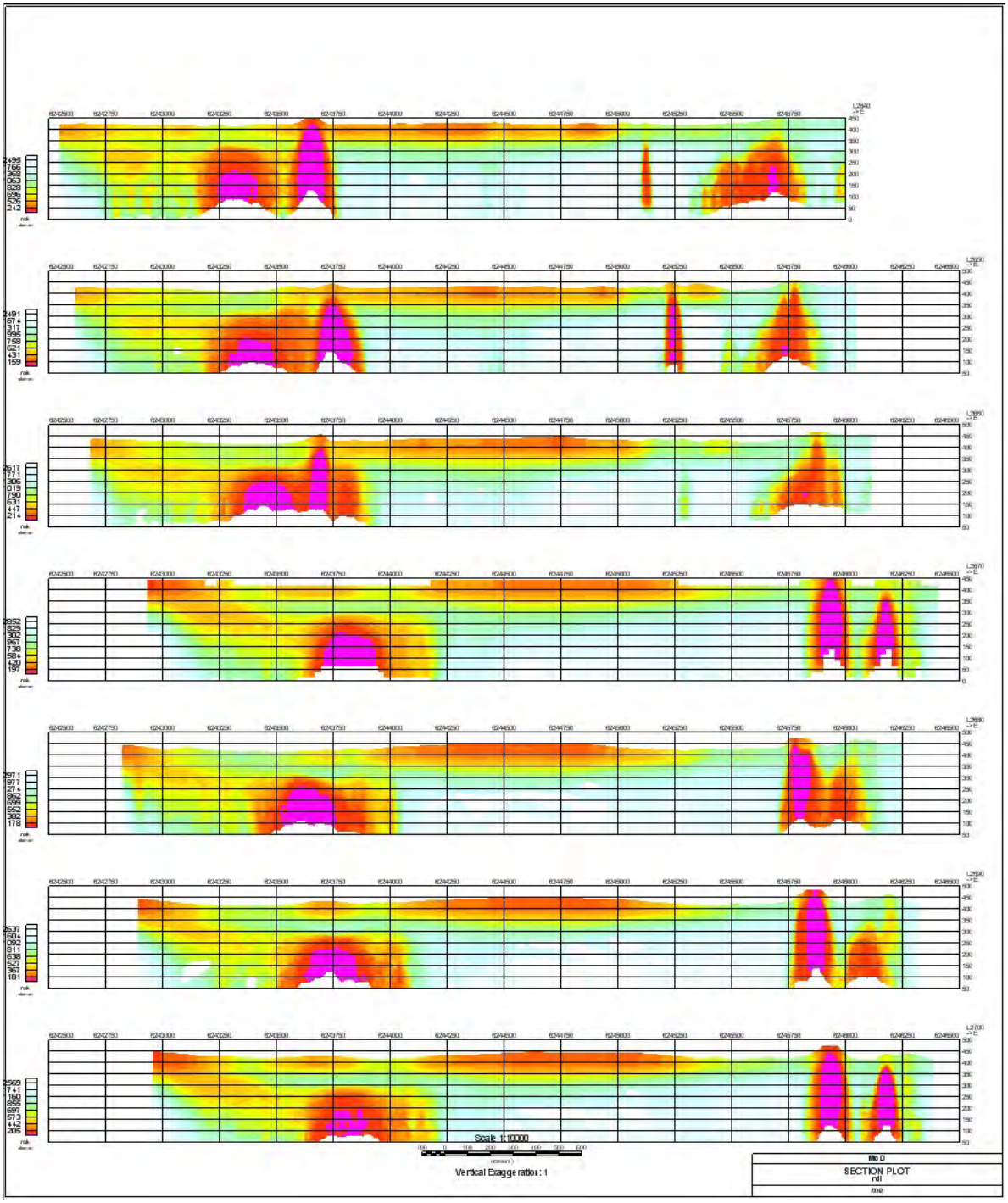


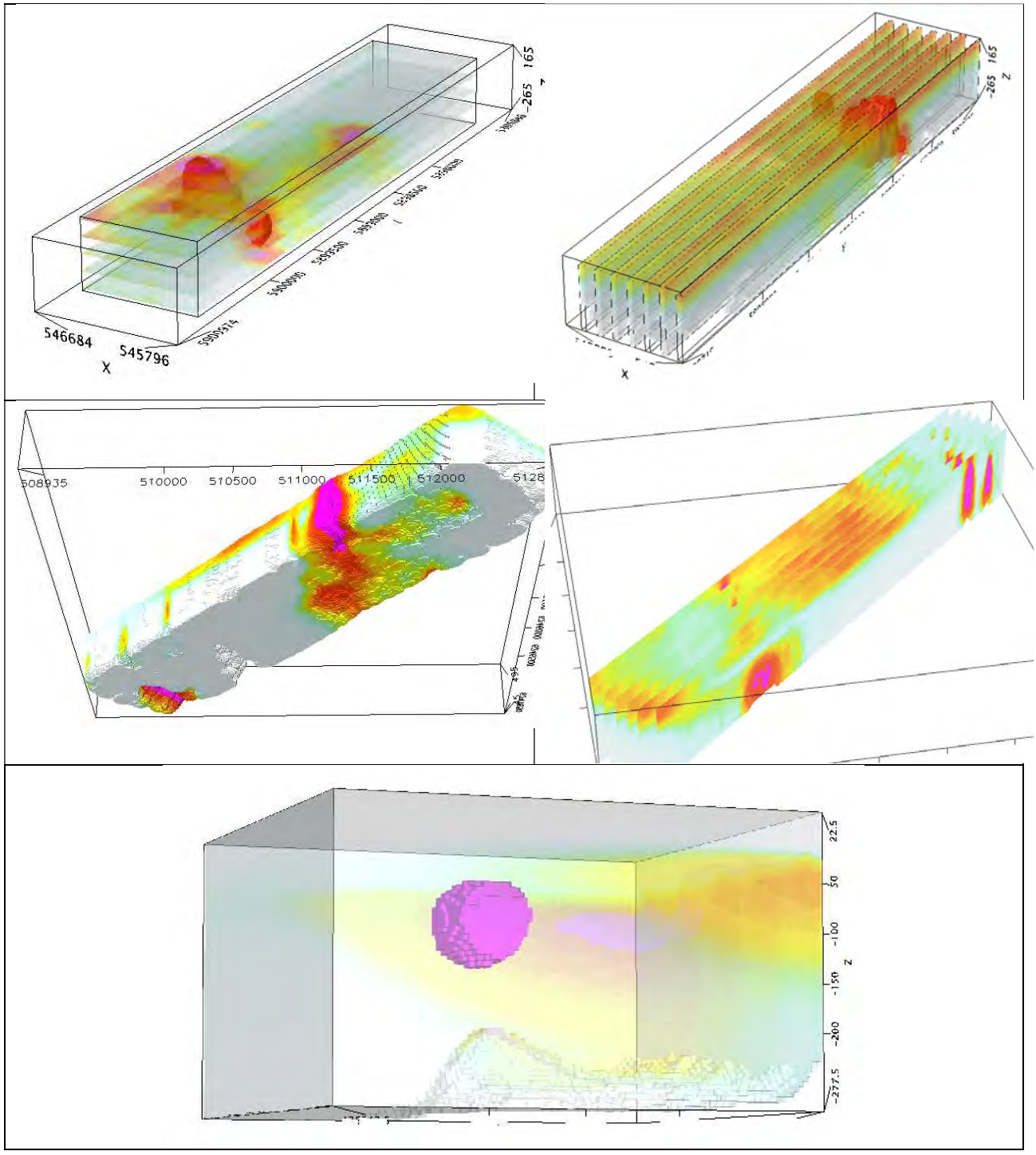
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers

FORMS OF RDI PRESENTATION

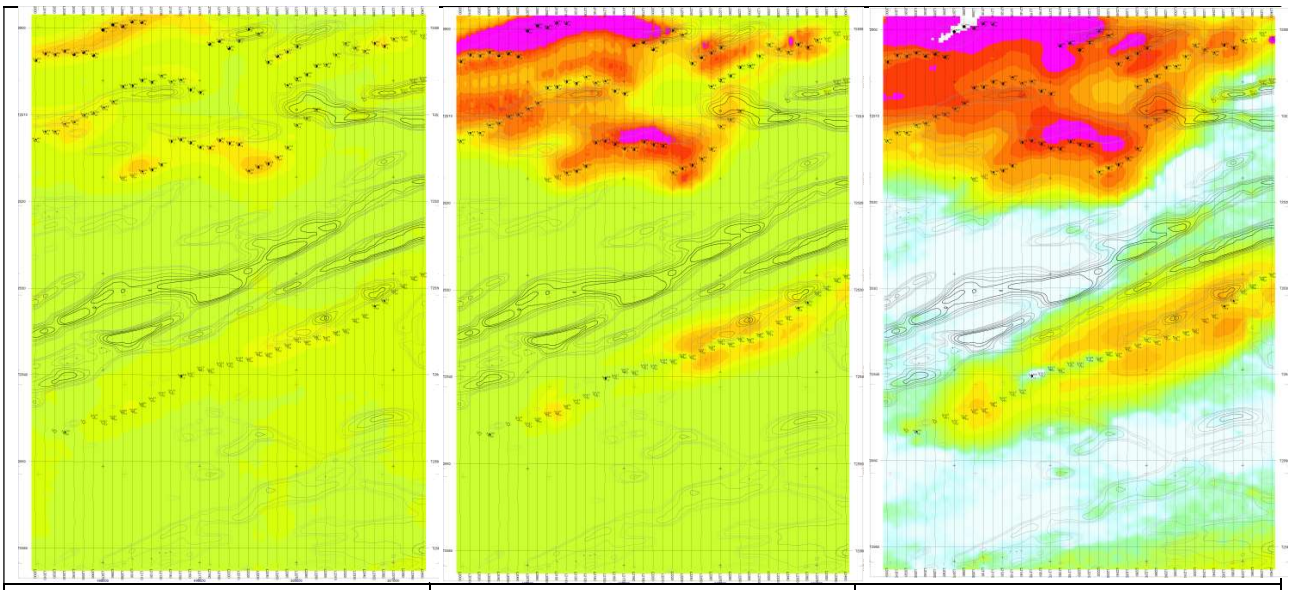
PRESENTATION OF SERIES OF LINES



3D PRESENTATION OF RDIS

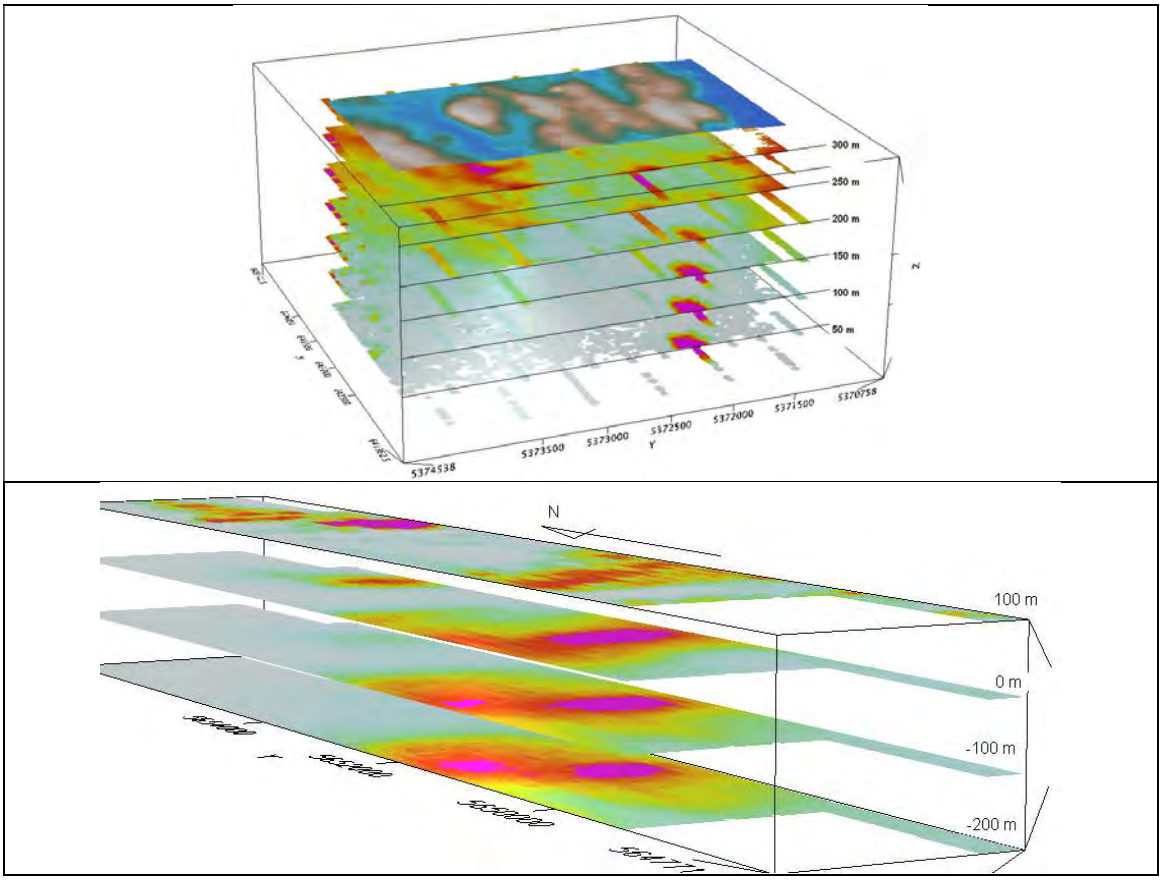


APPARENT RESISTIVITY DEPTH SLICES PLANS:



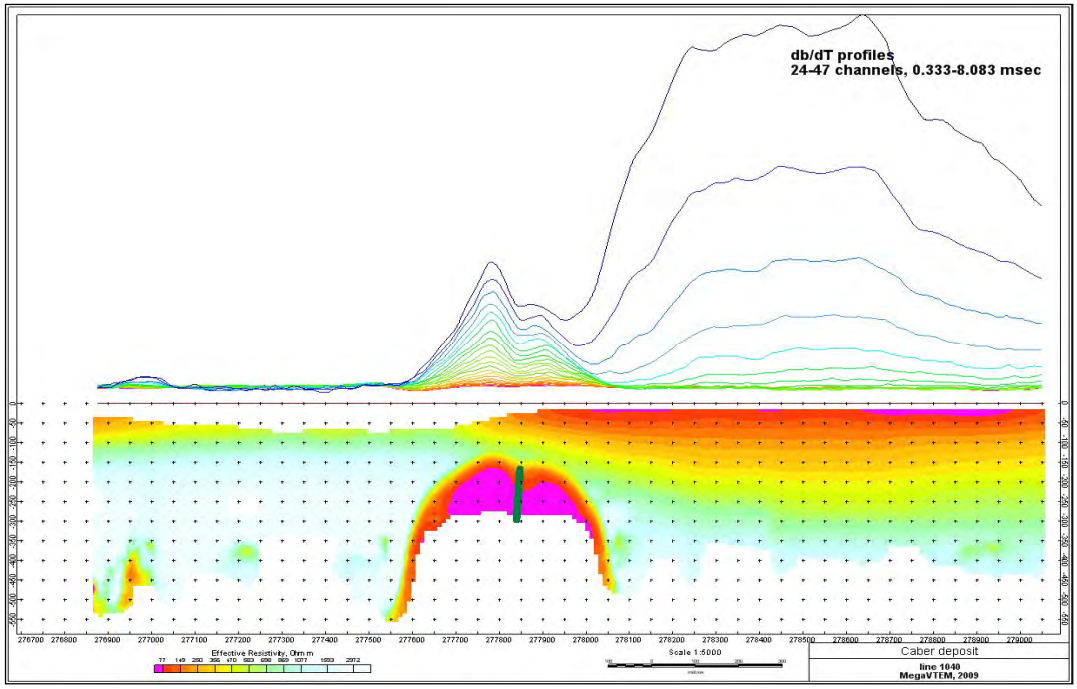
0 m (surface)	-100 m	-200 m

3D VIEWS OF APPARENT RESISTIVITY DEPTH SLICES:

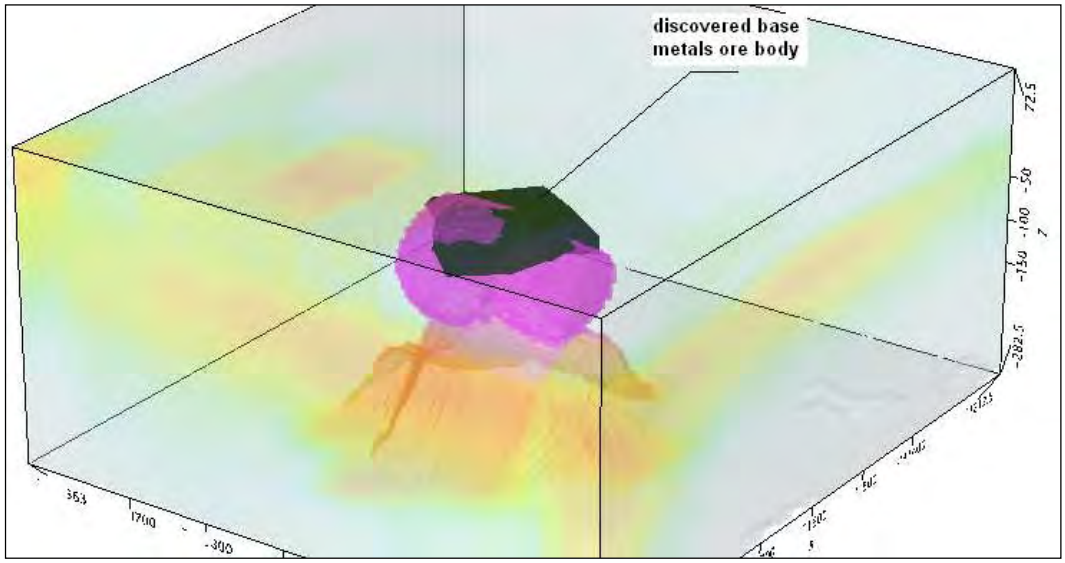


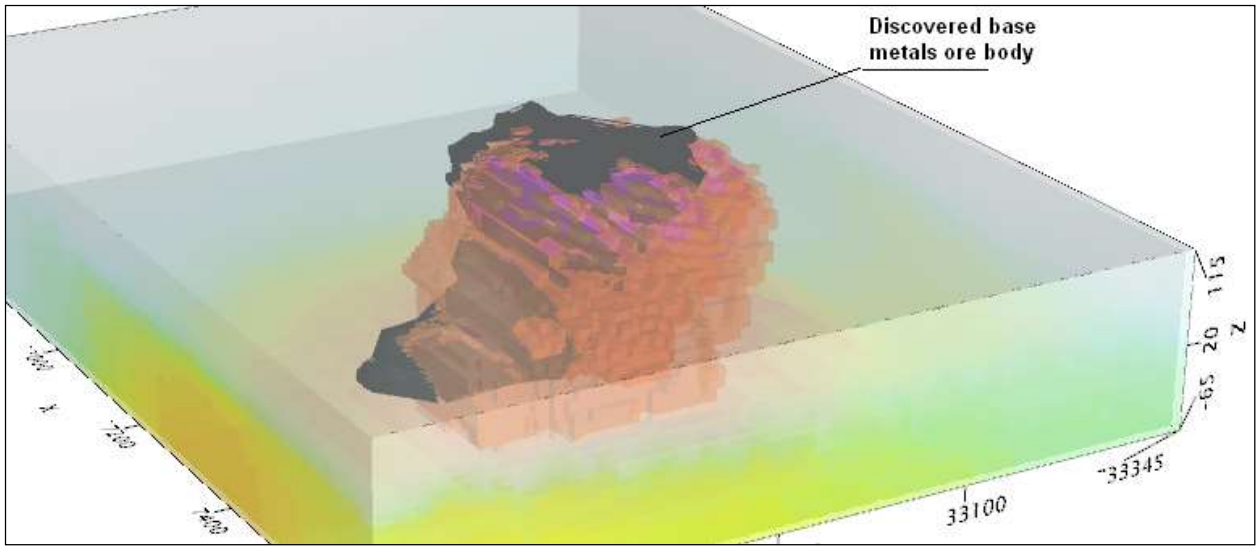
REAL BASE METAL TARGETS IN COMPARISON WITH RDIS:

RDI section of the line over Caber deposit ("thin" subvertical plate target and conductive overburden.



3D RDI VOXELS WITH BASE METALS ORE BODIES (MIDDLE EAST):





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Geotech Ltd.
April 2011

APPENDIX G

RESISTIVITY DEPTH IMAGES (RDI)

Please see RDI Folder on DVD for the PDF's

APPENDIX 2

Geological Mapping Data and Maps

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
MK19-016	5/25/2019	MK	50.29255318	-90.72834277	5573627.19	661805.2179	Intermediate Volcanic		hbl bt chl schist							
MK19-018	5/26/2019	MK	50.31852034	-90.77985471	5576403.401	658050.3559	Felsic volcanic		bt feld qtz schist							
MK19-024	5/26/2019	MK	50.31536484	-90.78124119	5576049.644	657962.1228	Massive sulphide									
MK19-030	5/27/2019	MK	50.33305619	-90.72818639	5578130.434	661678.887	Felsic volcanic		bt feld qtz schist							
MK19-031	5/27/2019	MK	50.33458197	-90.72355916	5578310.128	662002.9719	Intermediate Volcanic		bt feld schist							
MK19-032	5/27/2019	MK	50.3352984	-90.72378551	5578389.285	661984.4285	Intermediate Volcanic		bt feld schist							
MK19-035	5/27/2019	MK	50.33753023	-90.72282484	5578639.499	662045.1909	Intermediate Volcanic		bt feld schist							
MK19-038	5/27/2019	MK	50.33898269	-90.7209246	5578805.117	662175.4529	Intermediate Volcanic	tuff	bt feld schist							
MK19-046	5/28/2019	MK	50.32106569	-90.73310271	5576786.719	661369.6556	Mafic volcanic		hbl bt feld schist							
RK19-010	5/23/2019	RK	50.32025376	-90.74229278	5576676.565	660718.2595	Mafic volcanic		hbl bt feld schist							
RK19-011	5/23/2019	RK	50.31998381	-90.74150488	5576648.256	660775.2533	Mafic volcanic		hbl bt feld schist							
RK19-012	5/23/2019	RK	50.31952861	-90.73969126	5576601.569	660905.8842	Mafic volcanic		hbl bt schist							
RK19-013	5/23/2019	RK	50.31932473	-90.73871328	5576581.017	660976.1865	Mafic volcanic		hbl bt feld schist							
RK19-014	5/23/2019	RK	50.319251	-90.73877955	5576572.677	660971.7181	Mafic volcanic		hbl bt feld schist							
RK19-015	5/23/2019	RK	50.31929269	-90.73860915	5576577.681	660983.7065	Exhalite		silica							
RK19-016	5/23/2019	RK	50.31921921	-90.73842121	5576569.918	660997.333	Exhalite		silica							
RK19-017	5/23/2019	RK	50.31923939	-90.7381194	5576572.814	661018.7477	Exhalite		silica							
RK19-018	5/23/2019	RK	50.31903635	-90.73780768	5576550.916	661041.6225	Exhalite		silica							
RK19-019	5/24/2019	RK	50.31866418	-90.73671076	5576511.915	661120.9616	Intermediate Volcanic		ser bt schist							
RK19-002	5/23/2019	RK	50.3234388	-90.75694964	5576999.11	659664.3133	Intermediate Volcanic		bt feld hbl schist							
RK19-020	5/24/2019	RK	50.31830609	-90.73497012	5576475.874	661246.076	Mafic volcanic		hbl bt ser schist							
RK19-021	5/24/2019	RK	50.31807767	-90.73397242	5576452.642	661317.8678	Intermediate Volcanic		bt ser schist							

Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
MK19-016							2	10	0.5		pyrite, chalcopyrite, with minor malachite, trace galena horizon in biotite feldspar amphibole chlorite +-actinolite schist
MK19-018											biotite feldspar quartz schist from outcrop cut by numerous quartz veins up to 6cm wide
MK19-024							0.5	3		5	cobble of massive pyrrhotite, pyrite, trace chalcopyrite. biotite, quartz, minor epidote
MK19-030				1							quartz eye feldspar schist. foliation ~080°
MK19-031											biotite feldspar chlorite schist with rare (<0.1%) oxidized spec. foliation ~080°. no mineralization and very little alteration if any
MK19-032											feldspar biotite schist with weak solicification? rare quartz eye? minor biotite veinlets with well developed biotite sheets. no mineralization
MK19-035			1								feldspar biotite +-muscovite schist with weak foliation indicated by biotite. rare garnet (<1mm), trace magnetite grains in siluceous sections. quartz-biotite veins. weak to no alteration. foliation 080-090Â°
MK19-038											feldspar biotite schist with layering/laminations/flow banding? in outcrop. possibly pyroclastic. weak to no alteration. coarse biotite veins. foliation/banding 095Â°
MK19-046			3					0.1			amphibole biotite feldspar garnet schist with trace pyrite and magnetite(pyrrhotite?)
RK19-010			1					0.1			Small roadside outcrop, solidified amphibole, feldspar, quartz metavolcanic with minor local garnets.
RK19-011			2					0.5			Solidified amphibole-feldspar-quartz-garnet metavolcanic with minor pyrite.
RK19-012						3		0.1			Strongly solidified amphibole metavolcanic? Bedrock/float alongside blasted elevated road section.
RK19-013			2	2				0.1		0.1	Beginning of large heavily altered and mineralized outcrop. Strongly silicified amphibole, biotite, quartz, garnet metavolcanic. Whole rock sample taken as this is a relatively unmineralized (trace pyrite and potential trace pyrrhotite) shoulder to the large mineralized zone. Assay sample of the same rock was taken to check for gold mineralization.
RK19-014				2				0.1			Beginning of large heavily altered and mineralized outcrop. Strongly silicified amphibole, biotite, quartz, garnet metavolcanic. Same rock as PL13 Assay sample taken to check for gold mineralization. There are small yellow flecks that resemble VG but probably sericite alteration.
RK19-015						4	2	3	2	2	Strongly silicified and altered rocks, strong mineralization, 25-30% black "veins" of tetrahedrite? with possible sphalerite?, 3% pyrite, 2% pyrrhotite, 2% chalcopyrite. Sampled for gold potential, possible 2 flecks of VG.
RK19-016				5		4	2	3	3	3	Completely altered rocks, heavily mineralized, 5-7% pyrrhotite, 3% pyrite, 3% sphalerite, 3% tetrahedrite, 2% chalcopyrite, potential fleck of VG?
RK19-017				5		4	4		3	3	Strongly silicified and mineralized, 3-5% chalcopyrite, 2-3% pyrite, 3% tetrahedrite?, 2-3% episodes?, 1-2% galena?, possible VG. Assayed for potential gold.
RK19-018				5		4		3	2		Totally altered, heavy episodes, pyrite, tetrahedrite, chalco, arrayed for gold.
RK19-019			0	4				0.1			Small outcrop at the bottom of raised up road area. Silicified, sericite-biotite-feldspar schist. Trace pyrite.
RK19-002			0	0				0.1			Biotite, feldspar, quartz volcanic,fine to medium grained, road cut, local dark red weathering on surface of outcrop, local late quartz veins with epidote and tourmaline alteration, trace pyrite.
RK19-020				2		3		0.1			Outcrop off the side of the road. Silicified amphibole-biotite-sericite schist. Trace pyrite.
RK19-021			1	2		3					Solidified biotite sericite schist. potential single crystal of garnet?

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
RK19-022	5/24/2019	RK	50.31807756	-90.7321813	5576456.514	661445.3652	Mafic volcanic		hbl bt schist							
RK19-023	5/24/2019	RK	50.31793535	-90.73134691	5576442.514	661505.2414	Mafic volcanic		hbl bt schist							
RK19-024	5/24/2019	RK	50.31794525	-90.73075638	5576444.897	661547.244	Mafic volcanic		hbl bt schist							
RK19-025	5/24/2019	RK	50.31799635	-90.73024384	5576451.691	661583.5548	Mafic volcanic		hbl bt schist							
RK19-026	5/24/2019	RK	50.31804566	-90.72989988	5576457.92	661607.8713	Mafic volcanic		hbl bt schist							
RK19-027	5/24/2019	RK	50.31794952	-90.72936419	5576448.394	661646.3295	Mafic volcanic		hbl bt schist							
RK19-028	5/24/2019	RK	50.3179122	-90.72907848	5576444.867	661666.7938	Mafic volcanic		hbl bt schist							
RK19-029	5/24/2019	RK	50.31791809	-90.72856767	5576446.63	661703.1354	Mafic volcanic		hbl bt schist							
RK19-003	5/23/2019	RK	50.32343409	-90.75426466	5577004.351	659855.4323	Intermediate Volcanic		bt feld hbl schist							
RK19-030	5/24/2019	RK	50.31844186	-90.72857739	5576504.84	661700.6656	Mafic volcanic		hbl bt ser schist							
RK19-031	5/24/2019	RK	50.31879764	-90.7287587	5576544	661686.5524	Mafic volcanic		hbl bt feld schist							
RK19-032	5/24/2019	RK	50.31899167	-90.72891537	5576565.231	661674.7415	Mafic volcanic		hbl bt schist							
RK19-033	5/24/2019	RK	50.31865903	-90.72889357	5576528.297	661677.4225	Exhalite		silica							
RK19-034	5/24/2019	RK	50.31935829	-90.72944195	5576604.845	661636.0156	Exhalite		silica							
RK19-035	5/24/2019	RK	50.31999171	-90.73018599	5576673.65	661580.9057	Exhalite		silica							
RK19-036	5/24/2019	RK	50.32068166	-90.7309441	5576748.709	661524.6043	Mafic volcanic		hbl bt feld schist							
RK19-037	5/24/2019	RK	50.3208647	-90.73162889	5576767.573	661475.241	Mafic volcanic		hbl bt feld schist							
RK19-038	5/25/2019	RK	50.2933137	-90.72791337	5573712.674	661833.2196	Intermediate Volcanic		hbl bt chl schist							
RK19-039	5/25/2019	RK	50.29296087	-90.72799373	5573673.274	661828.6937	Mafic volcanic		hbl bt schist							
RK19-004	5/23/2019	RK	50.32338356	-90.7534031	5577000.584	659916.9236	Intermediate Volcanic		bt feld hbl schist							
RK19-040	5/25/2019	RK	50.29273366	-90.72831409	5573647.318	661806.6486	Mafic volcanic		hbl bt chl schist							
RK19-041	5/25/2019	RK	50.29266081	-90.72836692	5573639.104	661803.1326	Mafic volcanic		hbl bt chl schist							
RK19-042	5/26/2019	RK	50.32190907	-90.74984043	5576844.321	660175.4548	Intermediate Volcanic		bt ser schist							
RK19-043	5/26/2019	RK	50.32171771	-90.75033495	5576821.982	660140.8994	Intermediate Volcanic		bt feld schist							
RK19-044	5/26/2019	RK	50.32150464	-90.75178471	5576795.175	660038.4248	Intermediate Volcanic		bt feld schist							
RK19-045	5/26/2019	RK	50.3213791	-90.75277414	5576779.09	659968.4204	Mafic volcanic		hbl bt schist							
RK19-046	5/26/2019	RK	50.32095077	-90.753623	5576729.647	659909.4379	Mafic volcanic		hbl bt schist							
RK19-047	5/26/2019	RK	50.3207147	-90.75416145	5576702.244	659871.9036	Mafic volcanic		hbl bt feld schist							
RK19-048	5/26/2019	RK	50.32059782	-90.75518394	5576687.053	659799.516	Mafic volcanic		hbl bt schist							

Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
RK19-022				2		3		0.1			Beginning of long road side outcrop. Weathering is uneven resulting in a "bumpy" texture. Hand sample has two separate components. One is a fine grained silicified biotite sericite schist with abundant late micro-fractures unfilled with black biotite/tourmaline? The second component consists of a coarse grained black mineral in a quartz matrix, biotite/amphibole? Tetrahedrite??
RK19-023				5		4	2	1		2	Same outcrop as 22, becomes heavily altered schist. Assay sample taken.
RK19-024						4	2	3			Along same outcrop as 22/23, assay sample taken. amphibole-biotite schist with significant pyrite, chalcopyrite.
RK19-025				5				1	1		Outcrop across the road from 24, extremely altered and mineralized amphibole biotite schist.
RK19-026				5				3	1	2	Strongly altered and mineralized amphibole biotite schist, pyrite, pyrrhotite, tetrahedrite?, chalco.
RK19-027				5			2	3	2	3	Strongly altered schist. Well mineralized with pyrite, pyrrhotite, sphalerite?, chalcopyrite.
RK19-028				3			2	1	2	5	Strongly mineralized amphibole biotite schist. Pyrite, pyrrhotite, sphalerite, chalcopyrite.
RK19-029			1								End of the long mineralized outcrop at the corner of the highway and East Island Lake road. Amphibole biotite schist is no longer mineralized but does have chlorite, epidote and minor garnet alteration.
RK19-003			0	0				0.1			Similar to PL2, biotite, feldspar, quartz metavolcanic, local dark red weathering on outcrop, late quartz veins with epidote and tourmaline, trace pyrite.
RK19-030				4				0.1		0.1	Sericitized amphibole biotite schist. minor pyrite, possible minor pyrrhotite?
RK19-031			1	1							Dark blue, abundant amphibole, lesser feldspar and quartz. Minor local garnet. very weak sericite and possible chlorite.
RK19-032			1			3					Silicified amphibole biotite schist with minor garnet.
RK19-033						5					Almost pure quartz with coarse grained translucent quartz nodules in a fine grained sugary quartz matrix with abundant veinlets of reddish potassic alteration.
RK19-034				4		5					Similar to last, quartz nodules in quartz matrix with heavy sericite overprinting.
RK19-035				3		5					Same quartz rich rock as PL34 with a swamp in between.
RK19-036			2								Amphibole-feldspar-quartz schist with minor garnet.
RK19-037										1	Amphibole-feldspar-quartz schist with minor pyrrhotite.
RK19-038							4	3			Strongly weathered chlorite schist. 2-3% pyrite, 3-5% chalcopyrite and abundant malachite.
RK19-039							4	3			Extremely weathered amphibole-feldspar-biotite schist with 3% pyrite, 3-5% chalcopyrite and abundant malachite.
RK19-004			0	0				0.1			Same outcrop as PL 3 at opposite end. similar rock type with local chlorite alteration associated with late quartz veins.
RK19-040							4	3			Extremely weathered amphibole-biotite-chlorite schist. Very well mineralized with 3% pyrite, 3-5% chalcopyrite and abundant malachite and covelite.
RK19-041											Amphibole biotite chlorite schist with a vein controlled pulse of epidote.
RK19-042				1		3					Strongly silicified biotite feldspar schist with minor sericite.
RK19-043						3					Strongly silicified feldspar biotite schist.
RK19-044			1	1		3					Strongly silicified feldspar biotite schist with minor garnet, sericite and visible quartz eyes.
RK19-045						3					Moderate to strongly silicified amphibole biotite schist.
RK19-046						3		0.1			Moderately silicified amphibole feldspar biotite schist.
RK19-047			3					0.1			Amphibole biotite feldspar garnet schist.
RK19-048						3					Very strongly silicified amphibole biotite schist.

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
RK19-049	5/26/2019	RK	50.32176178	-90.75691198	5576812.748	659672.6144	Mafic volcanic		hbl bt feld schist							
RK19-005	5/23/2019	RK	50.32260204	-90.75012581	5576920.747	660152.8127	Felsic volcanic		bt feld hbl qtz schist							
RK19-050	5/26/2019	RK	50.32336707	-90.75603124	5576993.106	659729.9212	Mafic volcanic		hbl bt ser schist							
RK19-051	5/26/2019	RK	50.32239381	-90.75509512	5576886.914	659799.8139	Mafic volcanic		hbl bt ser schist							
RK19-052	5/28/2019	RK	50.32863227	-90.73732066	5577618.795	661043.8462	Mafic volcanic		hbl bt feld schist							
RK19-053	5/28/2019	RK	50.32652485	-90.73534737	5577388.776	661191.4118	Mafic volcanic		hbl bt feld schist							
RK19-054	5/28/2019	RK	50.32608174	-90.73488915	5577340.506	661225.5226	Mafic volcanic		hbl bt ser schist	fol1	80					
RK19-055	5/28/2019	RK	50.32551437	-90.73414086	5577279.05	661280.7006	Mafic volcanic		hbl bt ser schist	fol1	88					
RK19-057	5/28/2019	RK	50.32114495	-90.73285557	5576796.068	661386.9785	Felsic volcanic		ser bt feld qtz schist							
RK19-058	5/28/2019	RK	50.32118058	-90.73646984	5576792.196	661129.6005	Mafic volcanic		hbl bt feld schist							
RK19-059	5/28/2019	RK	50.32080814	-90.73688093	5576749.901	661101.5987	Mafic volcanic		hbl bt feld schist							
RK19-006	5/23/2019	RK	50.32232081	-90.74895318	5576892.006	660237.2219	Felsic volcanic		bt feld hbl qtz schist							
RK19-060	5/28/2019	RK	50.32114739	-90.73737959	5576786.537	661064.9581	Mafic volcanic		hbl bt feld schist							
RK19-061	5/28/2019	RK	50.32193197	-90.73712982	5576874.303	661080.0836	Mafic volcanic		hbl bt feld schist							
RK19-062	5/28/2019	RK	50.32272593	-90.73823118	5576960.188	660999.0089	Mafic volcanic		hbl bt schist							
RK19-063	5/28/2019	RK	50.32323319	-90.74039907	5577011.895	660842.9945	Felsic volcanic		bt feld qtz schist							
RK19-064	5/28/2019	RK	50.32342837	-90.74101294	5577032.267	660798.6433	Mafic volcanic		hbl bt schist							
RK19-065	5/28/2019	RK	50.32360537	-90.74336585	5577046.863	660630.5778	Mafic volcanic	sill	hbl bt feld schist							
RK19-066	5/28/2019	RK	50.3232053	-90.7429998	5577003.175	660657.9805	Mafic volcanic		hbl bt feld schist							
RK19-067	5/28/2019	RK	50.32308699	-90.7440823	5576987.685	660581.3325	Intermediate Volcanic		bt feld schist							
RK19-068	5/28/2019	RK	50.32237013	-90.74414415	5576907.855	660579.3468	Mafic volcanic		hbl bt feld schist							
RK19-069	5/28/2019	RK	50.32225947	-90.74341287	5576897.132	660631.7693	Intermediate Volcanic		bt feld schist							
RK19-007	5/23/2019	RK	50.3208163	-90.74418203	5576735.026	660581.8873	Mafic volcanic		hbl bt schist							
RK19-008	5/23/2019	RK	50.32078281	-90.74415203	5576731.369	660584.1354	Mafic volcanic		hbl bt schist							

Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
RK19-049			3	1				0.1			Long narrow outcrop protruding into large swamp. Accessible due to low water level. Consists of two rock types. One a moderately silicified amphibole biotite schist which comorises the majority of the outcrop. The second has flow like textures (bedding?), is also an amphibole biotite schist but much more foliated (82/75N) with abundant quartz eyes and garnet (locally very large garnet over 1 cm). Sample taken from the garnetiferous rock).
RK19-005				2				0.1			Quartz, feldspar, amphibole, biotite schist, local Kspar, mild sericite, increased quartz content, weakly schistose.
RK19-050				3		3			3		Potential zinc showing. Float "boulder" in ditch alongside Hwy. Strongly silicified and sericitized amphibole biotite schist with potential relic qtz eyes. Blebs and potential vein of black fine grained sphalerite/tetrahedrite.
RK19-051						4					Showing at the edge of swamp. Float rock. Strongly silicified and weathered schist. Strong chalcopyrite 5%
RK19-052			1					0.1			Amphibole biotite feldspar schist with local garnet and minor pyrite. Local areas of injected gabbro on the outcrop. The felsic unit was whole rock sampled.
RK19-053			2								Amphibole biotite garnet schist.
RK19-054											Similar to PL 51 with two rock types. A finer grained amphibole biotite schist and a coarser grained gabbro intrusion. The sample contains both rock types (all we could get). Foliation strikes 80.
RK19-055						2					Amphibole feldspar quartz schist. Strongly foliated (Az 88) to borderline gneissic. Moderately silicified.
RK19-057			2	3		3					Small flat outcrop in the swamp. Muscovite sericite schist with quartz eyes and garnet. Strongly schistose and moderate silicification.
RK19-058			3								Amphibole biotite feldspar schist with moderate garnets content. Outcrop was covered had to strip a small portion.
RK19-059			4	1				0.5			Amphibole biotite feldspar garnet schist with 0.5% pyrite and minor sericite.
RK19-006			0	1				0.1			Same outcrop as PL5 on opposite end.
RK19-060			2			5					Amphibole biotite feldspar schist. Heavily silicified, becoming cherty. Minor pyrite amd sericite.
RK19-061			1	1				3		0.1	Amphibole biotite feldspar quartz schist with local blue quartz eyes and minor garnet. 2-3% pyrite with possible pyrrhotite.
RK19-062			1			3		0.1			Moderately silicified amphibole biotite feldspar schist. Trace garnet. Foliation Az 85.
RK19-063				4							Quartz feldspar schist. sugary quartz matrix with poryritic feldspar. possible Rhyolite.
RK19-064								0.5			Amphibole biotite schist. Minor silicification and trace pyrite.
RK19-065			2					0.5			Coarse grained Amphibole biotite feldspar schist (Gabbro?) with minor to medorate garnet. 0.5% disseminated pyrite.
RK19-066				1							Amphibole biotite feldspar wuartz schist. Minor sericite.
RK19-067								0.5			Feldspar biotite schist with 0.5% disseminated pyrite.
RK19-068								0.1			Amphibole feldspar biotite quartz schist. Trace pyrite.
RK19-069											Large previously stripped area. Biotite feldspar quartz eyes? schist. Moderate silicification. Folding throughout the outcrop with axial planes at 75-80 degrees.
RK19-007			0	0		3			6		Road cut, strongly silicified amphibole, biotite schist with three fracture controlled bands of sphalerite? (5-7%).
RK19-008						3		0.1			Same outcrop as PL7, selected a non-mineralized sample for whole rock, solidified amphibole quartz sericite schist.

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
RK19-009	5/23/2019	RK	50.32059678	-90.74352987	5576712.029	660629.0478	Intermediate Volcanic		hbl bt feld schist							
SW19-002	5/22/2019	SW	50.31769634	-90.74356546	5576389.496	660636.2926	Intermediate Volcanic		ser bt schist							
SW19-003	5/22/2019	SW	50.31757841	-90.74397698	5576375.497	660607.3971	Mafic volcanic		hbl gt schist							
SW19-004	5/22/2019	SW	50.31767888	-90.74369133	5576387.283	660627.3916	Intermediate Volcanic		ser bt schist							
SW19-005	5/22/2019	SW	50.31773903	-90.74344976	5576394.492	660644.3845	Intermediate Volcanic		ser bt schist							
SW19-006	5/23/2019	SW	50.31515813	-90.73250019	5576131.256	661432.5559	Intermediate Volcanic		bt feld hbl ser schist	s1	90	68				
SW19-007	5/23/2019	SW	50.31546912	-90.73045166	5576170.275	661577.331	Intermediate Volcanic		bt feld hbl ser schist	s2	65	90	l1	95	25	s1
SW19-009	5/23/2019	SW	50.31535151	-90.73046563	5576157.169	661576.7353	Intermediate Volcanic	breccia	bt feld hbl ser schist							
SW19-010	5/23/2019	SW	50.31398801	-90.73102435	5576004.37	661541.5841	Felsic volcanic		ser bt feld qtz schist							
SW19-011	5/23/2019	SW	50.31390261	-90.73186531	5575993.051	661482.0058	Felsic volcanic		ser bt feld qtz schist							
SW19-013	5/23/2019	SW	50.31369939	-90.73380822	5575966.244	661344.3801	Intermediate Volcanic		bt feld schist							
SW19-014	5/23/2019	SW	50.31323358	-90.73622838	5575909.214	661173.6657	Intermediate Volcanic		bt feld schist	s1	85	75	l1	85	10	
SW19-015	5/23/2019	SW	50.31318889	-90.7351401	5575906.603	661251.2914	Intermediate Volcanic		bt feld hbl schist							
SW19-016	5/23/2019	SW	50.31418748	-90.73526141	5576017.358	661239.2768	Intermediate Volcanic		bt feld chl schist	s2	78	75	l2	78	15	
SW19-017	5/23/2019	SW	50.31466235	-90.73332947	5576074.339	661375.2014	Felsic volcanic	qfp	feld qtz bt ser schist							
SW19-018	5/23/2019	SW	50.31548588	-90.73488531	5576162.522	661261.6571	Intermediate Volcanic		bt feld chl schist							
SW19-019	5/23/2019	SW	50.31599561	-90.73471299	5576219.565	661272.1985	Intermediate Volcanic		bt feld hbl schist							
SW19-021	5/24/2019	SW	50.31782466	-90.72576562	5576442.337	661902.9111	Intermediate Volcanic		bt feld chl schist							
SW19-022	5/24/2019	SW	50.31929961	-90.72297317	5576612.392	662096.6684	Mafic volcanic	sill	amphibolite							
SW19-023	5/24/2019	SW	50.3202597	-90.72404636	5576716.793	662017.0127	Intermediate Volcanic		bt feld ser schist							
SW19-024	5/24/2019	SW	50.32375436	-90.72494815	5577103.348	661940.9446	Intermediate Volcanic		bt feld hbl schist	s1	90	80	f1	90	25	
SW19-026	5/24/2019	SW	50.32432965	-90.72239948	5577172.855	662120.3868	Intermediate tuff	xl tuff	bt feld schist	s1	98	80	l1	111	17	
SW19-028	5/24/2019	SW	50.32418847	-90.72257783	5577156.77	662108.1733	Intermediate Volcanic		ser bt schist							
SW19-031	5/24/2019	SW	50.32498597	-90.72184909	5577247.021	662157.3253	Mafic volcanic	sill	bt feld hbl schist							
SW19-032	5/24/2019	SW	50.32483507	-90.72138225	5577231.262	662191.0656	Intermediate tuff	xl tuff	bt feld hbl schist	s1	83	72				
SW19-033	5/24/2019	SW	50.32618504	-90.72074425	5577382.734	662231.8761	Felsic volcanic	qfp	feld qtz bt ser schist	s1	82	72				
SW19-035	5/24/2019	SW	50.3265648	-90.71889571	5577428.987	662362.143	Felsic volcanic	qfp	feld qtz bt ser schist							
SW19-037	5/24/2019	SW	50.32503169	-90.71163012	5577274.423	662884.4779	Mafic volcanic	qfp	amphibolite							
SW19-038	5/24/2019	SW	50.32477132	-90.71024468	5577248.51	662983.9736	Mafic volcanic		amphibolite	s1	85	85				
SW19-039	5/24/2019	SW	50.32335801	-90.7091868	5577093.703	663064.1034	Felsic volcanic		bt feld qtz schist							
SW19-040	5/24/2019	SW	50.3277967	-90.71350837	5577577.712	662741.3516	Intermediate Volcanic		bt feld hbl schist	s1	80	85				
SW19-041	5/24/2019	SW	50.32171481	-90.7264336	5576873.369	661842.1471	Intermediate Volcanic		bt feld hbl ser schist							
SW19-042	5/25/2019	SW	50.29507321	-90.71022666	5573946.885	663086.8455	Mafic volcanic		hbl bt chl schist							
SW19-043	5/25/2019	SW	50.29516183	-90.71395492	5573948.576	662821.027	Felsic volcanic		bt feld qtz schist							
SW19-044	5/25/2019	SW	50.29404538	-90.7151459	5573821.852	662740.0192	Felsic volcanic		bt feld qtz schist							
SW19-045	5/25/2019	SW	50.29463304	-90.71593115	5573885.467	662682.0904	Felsic volcanic	massive	bt feld qtz schist							
SW19-046	5/25/2019	SW	50.29441245	-90.72259069	5573846.411	662208.5626	Exhalite		silica							
SW19-049	5/25/2019	SW	50.29339048	-90.72417037	5573729.354	662099.5344	Intermediate Volcanic	polylithic breccia	bt feld chl schist	s1	355					

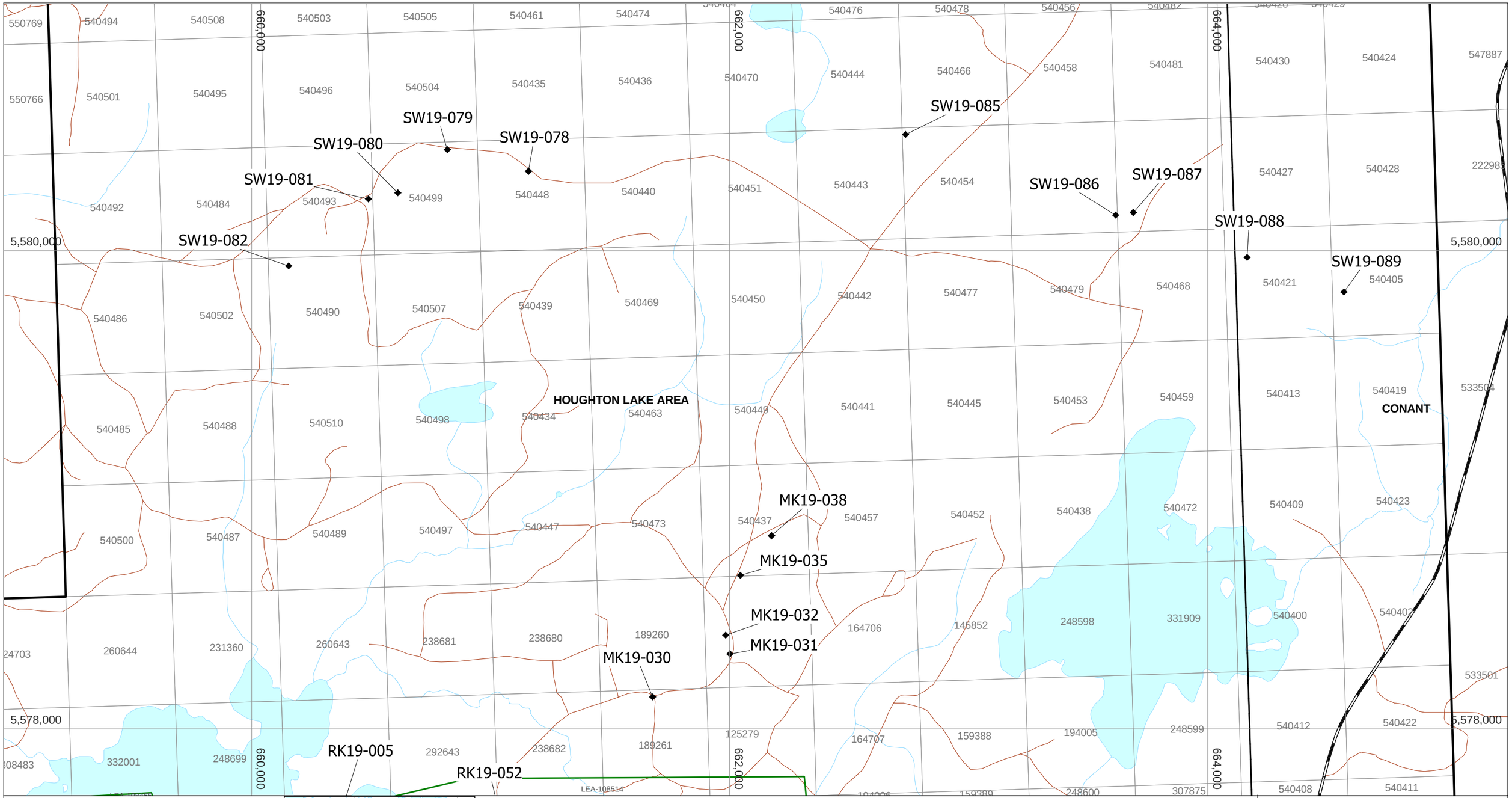
Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
RK19-009			4								Small roadside outcrop, amphibole-biotite-quartz-metavolcanic with strong garnet content.
SW19-002						3	0.5	4	0.5		samp 1, ser bt schist with silica py cpy bt zones within
SW19-003			3			3	5	10	1		samp2 hbl gt schist with 15pct py cpy
SW19-004						3		2		2	samp 3 ser bt qtz schist w py cpy lenses some po and qtz veinlets?
SW19-005						4	1	5	1		samp4, samp 5 silica alt in ser schist, samp 6 ser schist silicified w cpy sph py
SW19-006			2	2		3		0.5			wr samp of feld bt hbl ser schist int volc with siliceous and 0.5 to 1 pct py. s1 090.68 and few at 270.75
SW19-007	96	80	1	2				2			pyritic oc of bt feld ser schist, poss alt IV, s2 065.90. abundant sol zones with distended fold hinges plunging 95.25 with shears poss ap fol s1 at 096.80
SW19-009											looks to be mafic to andt matrix with felsic clasts
SW19-010				3				3			poor wr sample of qtz eye felsic v. very py and ser
SW19-011				2		2					sil felsic v with numerous folded and contorted sil rich zones
SW19-013						1		0.5			possibly siliceous locally and with minor py
SW19-014			1	1				0.25			rare gt in IV s1 085.75 l1 085.10 bt hbl feld schist w poss rare ser and sil zone
SW19-015											
SW19-016			2					0.1			bt chl feld schist with few pyritic layers and common gt s2 078.75 l2 078.15
SW19-017				1				0.1			feld qtz phenocrystic schist with 2 to 3 pct qtz eyes possibly intrusive definitely felsic
SW19-018			1								feld bt chl schist
SW19-019			1					0.1			bt hbl feld schist rare gt, IV
SW19-021				1		2	0.1	0.5			few more altered ser py sil zones with tr cpy but generally bt chl schist
SW19-022											hbl bt schist locally gabbro looking. boulder outcrop looks to have been blasted
SW19-023				1		3		0.1			talus on top of smooth oc. sil feld bt ser sch. 085.80 s1
SW19-024											int volc likely unaltered possibly mafic. s1 090.80 strong lin f1 090.25
SW19-026			3								meta seds pos calcareous although much looks like it may be rework int tuff and local boudins of poss gabbro s1 098.80 l1 111.17
SW19-028			4	3		2					intense gt in fg to mg ser gt bt schist poss sed or highly altered volc.
SW19-031			4								mafic bx with felsic tuff?? clasts and abundant gt lots of mafic intruded boudins and layers strung out in mainly int to felsic tuff?
SW19-032											int crystl tuff with local ep alt or chl altered layers with qtz interiors s1 083.70
SW19-033				1							qtz eye dacite or rhyolite tuff with local sericitic layers s1 082.72
SW19-035				1				0.25			qtz feld dacite porphyry poss intrusive
SW19-037											long needly hbl or actinolite and chl looks to be mafic v or gabbro locally
SW19-038											amphibolite with numerous qtz chl bt stringers sub ll to fol 085.85 also alt qtz ep chl veins and jts at 315.80
SW19-039								0.1			feld bt sch with local qtz eyes and tr py
SW19-040								0.1			int volc s1 080.85
SW19-041			1	1			0.1	0.1			int volc with tr gt and py. local amphibolite layering
SW19-042								0.25			
SW19-043								0.1			felsic volc with poss ser and rare qtz eyes, s1 120.85
SW19-044											locally 5 pct qtz eyes, rhyolite
SW19-045											rhyolite fairly massive with poor foliation, cannot measure although 120.70 fracturing maybe cleavage
SW19-046				1		3		0.1			cherty layers with feldspar porphyry felsic layers
SW19-049				1				2			felsic conglomerate with basaltic frags or injected sills and rounded felsic clasts within a felsic matrix, beside Golsil 1 ddh. s1 poss 355??

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
SW19-050	5/25/2019	SW	50.29338613	-90.72627448	5573724.291	661949.6951	Intermediate tuff	xl tuff	bt feld schist							
SW19-051	5/25/2019	SW	50.2927179	-90.72827219	5573645.657	661809.6862	Intermediate Volcanic		bt act gt schist	s0	36	60				
SW19-052	5/25/2019	SW	50.29271788	-90.72813416	5573645.955	661819.5166	Intermediate Volcanic		bt act gt schist	s0	344	80				
SW19-053	5/25/2019	SW	50.29356328	-90.71472763	5573769.169	662771.4537	Felsic volcanic		bt feld qtz schist							
SW19-054	5/25/2019	SW	50.29438354	-90.7108148	5573868.924	663047.3179	Intermediate Volcanic		bt feld chl schist							
SW19-055	5/26/2019	SW	50.32165406	-90.77815713	5576755.401	658160.7915	Intermediate Volcanic		bt feld hbl schist	s2	70	80				
SW19-056	5/26/2019	SW	50.32042496	-90.7796013	5576615.687	658062.076	Felsic volcanic		bt feld qtz schist	s1	96	76	f2	76	72	
SW19-057	5/26/2019	SW	50.31856513	-90.77977587	5576408.549	658055.8195	Felsic volcanic		bt feld qtz schist	s1	92	75				
SW19-058	5/26/2019	SW	50.31818763	-90.77982097	5576366.484	658053.8612	Mafic volcanic	sill	amphibolite							
SW19-059	5/26/2019	SW	50.31754316	-90.77995334	5576294.554	658046.5762	Intermediate Volcanic		bt feld hbl schist	s2	72	75				
SW19-061	5/26/2019	SW	50.31671841	-90.7809384	5576200.771	657979.19	Intermediate Volcanic		bt feld schist	s2	68	80				
SW19-062	5/26/2019	SW	50.31662241	-90.78105801	5576189.845	657970.9943	Felsic volcanic		bt feld qtz schist							
SW19-063	5/26/2019	SW	50.31678951	-90.78148871	5576207.507	657939.7809	Intermediate Volcanic		bt feld hbl schist	s2	68	70	s1	348	44	
SW19-064	5/26/2019	SW	50.31655778	-90.78170036	5576181.296	657925.4821	Intermediate Volcanic		bt feld hbl schist	s2	68	65	s1	95	80	
SW19-066	5/26/2019	SW	50.31543589	-90.78124116	5576057.544	657961.8897	Intermediate Volcanic		bt feld hbl schist	s2	68	70				
SW19-067	5/26/2019	SW	50.31543159	-90.78125567	5576057.035	657960.8705	Felsic volcanic		massive po							
SW19-068	5/26/2019	SW	50.31536891	-90.78117405	5576050.24	657966.889	Intermediate Volcanic		bt feld schist							
SW19-069	5/26/2019	SW	50.31483013	-90.7810192	5575990.669	657979.6983	Felsic volcanic		feld qtz bt ser schist	s2	60	80				
SW19-071	5/26/2019	SW	50.31325902	-90.78461146	5575808.381	657729.1718	Felsic volcanic		ser bt feld qtz schist	s1	80	78				
SW19-072	5/26/2019	SW	50.31293611	-90.78459047	5575772.526	657731.7353	Intermediate Volcanic		bt feld schist	s1	82	78				
SW19-073	5/26/2019	SW	50.31687487	-90.791291	5576196.24	657241.72	Intermediate Volcanic		bt feld schist							
SW19-074	5/26/2019	SW	50.31870964	-90.78783618	5576407.526	657481.5877	Felsic volcanic	breccia	bt feld qtz schist							
SW19-075	5/26/2019	SW	50.32080154	-90.78369524	5576648.866	657769.4232	Intermediate Volcanic		bt feld schist	s2	72	80				
SW19-076	5/26/2019	SW	50.32239422	-90.75511603	5576886.914	659798.3245	Exhalite		silica	s1	80	80				
SW19-077	5/26/2019	SW	50.32239422	-90.75511603	5576886.914	659798.3245	Intermediate Volcanic		bt feld schist	s1	80	80				
SW19-078	5/27/2019	SW	50.35296714	-90.73454972	5580330.227	661158.6505	Mafic volcanic	sill	amphibolite							
SW19-079	5/27/2019	SW	50.35387067	-90.7392803	5580420.439	660819.1077	Intermediate Volcanic	breccia	bt feld hbl schist	s1	95	85	s1	350	80	s1
SW19-080	5/27/2019	SW	50.3523095	-90.74227035	5580240.414	660611.6958	Mafic volcanic		hbl bt feld schist	s1	91	70				
SW19-081	5/27/2019	SW	50.35210097	-90.74401356	5580213.468	660488.4017	Felsic tuff		bt feld schist	s2	68	85	s1	98	80	s1
SW19-082	5/27/2019	SW	50.3496828	-90.74882337	5579934.26	660154.4068	Intermediate Volcanic		bt act ser py schist							
SW19-085	5/27/2019	SW	50.35391438	-90.71232018	5580483.938	662736.6119	Mafic volcanic		amphibolite							
SW19-086	5/27/2019	SW	50.35063625	-90.70010025	5580146.301	663617.0746	Mafic volcanic		amphibolite	s1	90	90				
SW19-087	5/27/2019	SW	50.35071933	-90.69905707	5580157.833	663690.9939	Mafic volcanic		amphibolite							
SW19-088	5/27/2019	SW	50.34889336	-90.69245856	5579969.374	664166.6692	Mafic volcanic		amphibolite							
SW19-089	5/27/2019	SW	50.34748264	-90.68682305	5579824.99	664572.4363	Mafic volcanic		amphibolite							
SW19-091	5/28/2019	SW	50.31402316	-90.70800479	5576058.499	663180.2001	Intermediate Volcanic		bt feld chl schist	s1	96	77				

Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
SW19-050								0.5			fg inter tuff with 0.5 mm feld xls and weakly laminated
SW19-051			4		4	2	0.25	2			golsil oc coincides with conductor. intense gt alt zones 5 to 20pct and local staur that are oriented 080. these layers appear to be oriented 036.60.
SW19-052			3		3		2	2			layering 334.80 highly contorted and folded along 080 f2. common fractures at high angles to s0? with accumations of gt staur or chl.act
SW19-053				1				0.1			qtz eye rhyolite
SW19-054											iv
SW19-055								0.1			feld bt hbl schist s1 070.80
SW19-056			1	1				0.1			bt feld qtz schist with rare ser and gt. also several granitoid to pegmatitic veins with minor mt, jts 345.85, s1 096.76, f2 076.72. granitic veins have ksp, ep and mt haloes and rock around magnetic
SW19-057				1							bt feld qtz schist poss ser layering and s1 092.75, strong ksp alt fractures at 182.65 and qtz veins 058.75, s2 fol 076.75. photos of folds scribe pointing N
SW19-058											mafic breccia w felsic clasts, injected mafic sill?
SW19-059											int v, s1 075.75 and a felsic bx, photo of bx
SW19-061				2				5			gossan within feld bt schist sugary and rexlized. gossan is qtz ser py zone with possibly up to 30pct py mostly weathered and commonly 5pct py in the roughly 1 m wide zone. zone and foliation oriented 068.80 s2
SW19-062								0.5			sample of py wallrock
SW19-063											s2 068.70 layering/s1 is 348.44
SW19-064											s2 068.65, layering 095.80
SW19-066				2				5			massive po and tr cpy within a ser qtz schist zone ll to 068.70 s2 fol. host is feld bt locally with hbl schist and not very altered looking.
SW19-067								50			sample massive po
SW19-068						4		10			gossanous oc with highly siliceous bt feld schist and 5 to 10pct py po and tr cpy
SW19-069								0.25			bt feld qtz ser schist, s2 060.80
SW19-071				5				50			just N of hole 37, 3 channel samples and a small blast pit, fol 080.78
SW19-072								0.25			fol 082.78 abt 40 m s of trench showing
SW19-073											
SW19-074				1				0.1			felsic bx
SW19-075			1					0.1			trace gt in feld bt sch, fol 072.80
SW19-076				2		5	1	2			chert exhalite within bt feld schist rare gt strong 080 80 fol
SW19-077			1	2		3					bt feld schist with zone 080.80 of ser py schist and chert with cpy sph and py
SW19-078											mafic volc poss gabbro locally
SW19-079	350	72									contact bn bt feld schist int volc and a diorite or mafic v fol 095.85 layeting 085.80 and 350.72, looks to be mafic to int volca iclastic bx
SW19-080								0.1			contact zone bn felsic tuff and a mixed volc pacage to mafic over a 25 m across str. fol 091.70 with numerous boudins and decap isoclinal fold noses
SW19-081	345	80									felsic to int tuff nicely tight folds and folding of s1 s2 is 068.85, s1 098.80 and 345.80
SW19-082				1				0.5			angular boulder 50 cm across of bt chl poss. actinolite ser py schist near co ductor
SW19-085											basalt
SW19-086											foliated basalt, 090.90
SW19-087											basalt
SW19-088											basalt, rare rusty laminae
SW19-089											basalt with white qtz vein lenses
SW19-091			3					0.25			gt bearing mafic v, fol s1 096.77

Station No.	Date Created	User	Latitude	Longitude	Northing	Easting	Map Unit	Modifier	Rock_type	Str_type1	az1	dip1	Str_type2	az2	dip2	Str_type3
SW19-092	5/28/2019	SW	50.31416551	-90.708856	5576072.459	663119.1161	Intermediate Volcanic		bt feld schist							
SW19-093	5/28/2019	SW	50.31449508	-90.70964919	5576107.36	663061.5224	Intermediate Volcanic		bt feld hbl schist	s1	92	80				
SW19-094	5/28/2019	SW	50.31482368	-90.71039341	5576142.261	663007.4191	Intermediate Volcanic		bt feld hbl schist	s2	70	80	s1	92	80	
SW19-095	5/28/2019	SW	50.29110961	-90.70884638	5573509.26	663198.7084	Intermediate Volcanic		bt feld hbl schist	s1	320	85	s1	332	85	
SW19-096	5/28/2019	SW	50.29643341	-90.70828912	5574102.35	663220.1757	Intermediate Volcanic		bt feld hbl schist	s1	285	87	l1	95	42	
SW19-097	5/28/2019	SW	50.30107567	-90.70698828	5574621.303	663296.9153	Intermediate Tuff		bt feld schist	s1	94	70	s1	345	87	
SW19-098	5/28/2019	SW	50.30994615	-90.69781398	5575627.636	663919.693	Intermediate Volcanic		bt feld schist	s1	352	76	f2	62	82	s1
SW19-099	5/28/2019	SW	50.31149223	-90.68812134	5575820.913	664604.417	Mafic volcanic		amphibolite							
SW19-100	5/28/2019	SW	50.31190199	-90.6910879	5575859.91	664391.8076	Mafic volcanic		amphibolite							
SW19-101	5/28/2019	SW	50.30704151	-90.69025647	5575321.389	664467.7699	Mafic volcanic		amphibolite							
SW19-102	5/28/2019	SW	50.30790069	-90.69264155	5575411.639	664294.993	Intermediate Volcanic		hbl bt feld schist	s1	90	85				
SW19-103	5/28/2019	SW	50.30860965	-90.69366998	5575488.187	664219.3286	Mafic volcanic		amphibolite							
SW19-104	5/28/2019	SW	50.31143797	-90.69412062	5575801.628	664177.5011	Mafic volcanic	polylithic breccia	hbl bt schist							
SW19-105	5/28/2019	SW	50.31168311	-90.6933158	5575830.658	664233.9538	Mafic volcanic		amphibolite							
SW19-106	5/28/2019	SW	50.31726533	-90.72207411	5576388.191	662167.588	Intermediate Volcanic		bt feld schist							
SW19-107	5/28/2019	SW	50.31710582	-90.72183325	5576370.983	662185.2765	Intermediate Volcanic		ser bt schist	s1	101	75				
SW19-108	5/28/2019	SW	50.3170822	-90.7215053	5576369.071	662208.7017	Intermediate Volcanic		bt feld ser hbl schist							
SW19-109	5/28/2019	SW	50.31702314	-90.72046716	5576364.769	662282.8021	Intermediate Volcanic		bt feld ser schist							
SW19-111	5/28/2019	SW	50.31683425	-90.71807192	5576348.995	662453.9494	Intermediate Tuff		bt ser schist	s0	345	82	s0	20	80	
SW19-112	5/28/2019	SW	50.31663467	-90.71688607	5576329.396	662539.045	Mafic volcanic		hbl gt schist	s0	345	78				
SW19-113	5/28/2019	SW	50.3167131	-90.71715766	5576337.523	662519.4441	Intermediate tuff		hbl bt schist							
SW19-114	5/29/2019	SW	50.3141037	-90.71928707	5576042.775	662376.7542	Intermediate Volcanic		bt feld hbl schist							
SW19-115	5/29/2019	SW	50.31388194	-90.71913677	5576018.45	662388.2091	Intermediate Volcanic		bt feld hbl schist	s1	355	76				
SW19-116	5/29/2019	SW	50.31216372	-90.71876656	5575828.235	662420.4203	Intermediate Volcanic		bt act gt schist							
SW19-117	5/29/2019	SW	50.31105732	-90.71912309	5575704.454	662398.8081	Intermediate Volcanic		bt feld schist	s1	104	62				
SW19-118	5/29/2019	SW	50.30890135	-90.72014173	5575462.543	662333.631	Mafic Volcanic		hbl bt feld schist							
SW19-119	5/29/2019	SW	50.30861076	-90.72039497	5575429.684	662316.5907	Mafic volcanic		amphibolite							
SW19-120	5/29/2019	SW	50.30853967	-90.72067759	5575421.165	662296.7111	Intermediate Volcanic		bt feld ser schist							
SW19-121	5/29/2019	SW	50.30680892	-90.71913066	5575232.125	662412.7455	Intermediate Tuff		bt feld chl schist	s1	86	76				
SW19-122	5/29/2019	SW	50.30641304	-90.71885329	5575188.718	662433.8429	Intermediate Volcanic		bt feld schist							
SW19-123	5/29/2019	SW	50.30454795	-90.71877625	5574981.536	662445.6841	Intermediate Volcanic		bt feld hbl schist							
SW19-124	5/29/2019	SW	50.30394221	-90.71973517	5574912.101	662379.4696	Intermediate Volcanic		bt feld hbl ser schist	s1	95	80	f2	70	70	
SW19-125	5/29/2019	SW	50.30343927	-90.72003	5574855.544	662360.1893	Intermediate Volcanic		bt feld ser schist							
SW19-126	5/29/2019	SW	50.30359406	-90.7174465	5574878.391	662543.6187	Intermediate Volcanic		bt feld ser schist	s1	75	74				

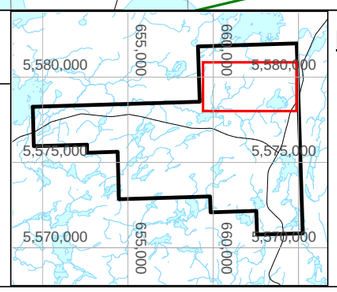
Station No.	az3	dip3	gt	ser	stau	sil	cpy	py	sph	po	Description
SW19-092											int volc
SW19-093								0.25			int v, s1 092.80
SW19-094											photo of f2 folds, f2 070.80, s1 092.80
SW19-095			1					0.25			int volc, s1 320.85 and 332.85
SW19-096								0.1			int volc s1 285.87, l1 095.42
SW19-097								0.25			int volc tuff, s1 094.70 and 345.87 with the dominant orientation 094
SW19-098	101	80						0.25			s1 352.76 generally but m folded with 101.80 and 062.82 f2 aps, injected gabbro and mg aphibolite into bt feld schist wo
SW19-099							0.1	0.25			mafic v. with qtz veins, possibly a diorite
SW19-100								0.1			mafic v
SW19-101			1					0.25			no oc at point just boulders but the angular boulders are mafic to int bx with locally slightly py and gt bearing. appears tobe br in lake and along shore of gt amphibolite
SW19-102								0.5			tree root exposure, possible large boulder, hbl bt feld schist minor py, s1 090.85 looks to be in place
SW19-103								5			small overgrown blast trench with py amphibolite
SW19-104								0.1			smp 1588663, mafic bx with some felsic clasts
SW19-105											mafic v
SW19-106			2			3		0.5			int v silicified with minor py, lpcally gt bearing up to 10pct
SW19-107			3	2		3		0.25			bt ser feld gt schist, s1 101.75
SW19-108			1	2							
SW19-109				1				0.1			
SW19-111						2					meta tuff or seds, s0 345.82 and 020.80
SW19-112			3			2		0.1			alt mafic rx flows and bx probably with sil zones and 5 to 10 pct gt, s0 s1 345.78
SW19-113						1					E to pl112 is mafic v, here and w tuff and tuff seds looks interm to mafic in origin and well layered
SW19-114			2	1		1		0.1			mafic to int volc with gt rare ser lenses and seems siliceous
SW19-115											int tuff s1 355.76
SW19-116			2	1				0.25			
SW19-117								0.25			int v s1 104.62
SW19-118			5			3		0.25			possibly mafic to int volc intensely gt silica altered, s1 078.80
SW19-119			2								amphibolite gabbro with gt, s1 082.78
SW19-120											ser bt qtz schist and mafic amphibolitevwith gt
SW19-121			1					0.1			fg int tuff finely layered s1 086.76
SW19-122				1							
SW19-123								0.1			
SW19-124				2							int v with 095.80 s1 and numerous 070.70 f2 shears poss close to hinge
SW19-125				3				0.25			intensely ser sil altered int volc s1 086.83
SW19-126			1								s1 075.74 a



COMMANDER RESOURCES

Date: Dec 30, 2019
Drafted by: M. Kulla
Appendix: 2a

Sabin
2019 Field Mapping Points
Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone



Legend

- Mapping Station
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 1
kilometres
Scale 1:15,000

HOUGHTON LAKE AREA

RK19-052
RK19-053
RK19-054
RK19-055
RK19-050
RK19-003
RK19-002
RK19-004
RK19-005
RK19-006
RK19-066
RK19-064
RK19-063
RK19-065
RK19-067
RK19-062
RK19-061
RK19-068
RK19-069
RK19-058
MK19-046
RK19-057
RK19-059
RK19-036
RK19-035
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RK19-042
RK19-049
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RK19-007
RK19-008
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RK19-010
RK19-012
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RK19-016
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SW19-039
SW19-041
SW19-023
SW19-022
SW19-106
SW19-109
SW19-108
SW19-021
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SW19-107
SW19-112
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SW19-117
SW19-076
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SW19-002
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SW19-004
SW19-019
SW19-018
SW19-006
SW19-007
SW19-009
SW19-017
SW19-016
SW19-010
SW19-014
SW19-013
SW19-011
SW19-015

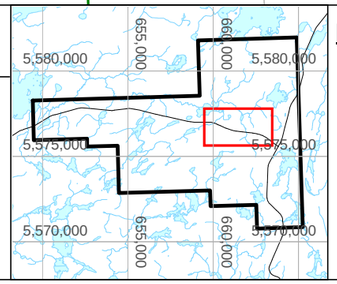
LEA-108514
LEA-108465
LEA-107479
LEA-108516
LEA-108515

332001 248699 660,000 145955 292643 238682 662,000 194006 159389 248600
332002 268089 248619 248602 139896 307876
5,576,000 239890 276544 258076 5,576,000
242055 112313 660,000 276545 135704 303702 135703 267125 662,000

COMMANDER RESOURCES

Date: Dec 30, 2019
Drafted by: M. Kulla
Appendix: 2b

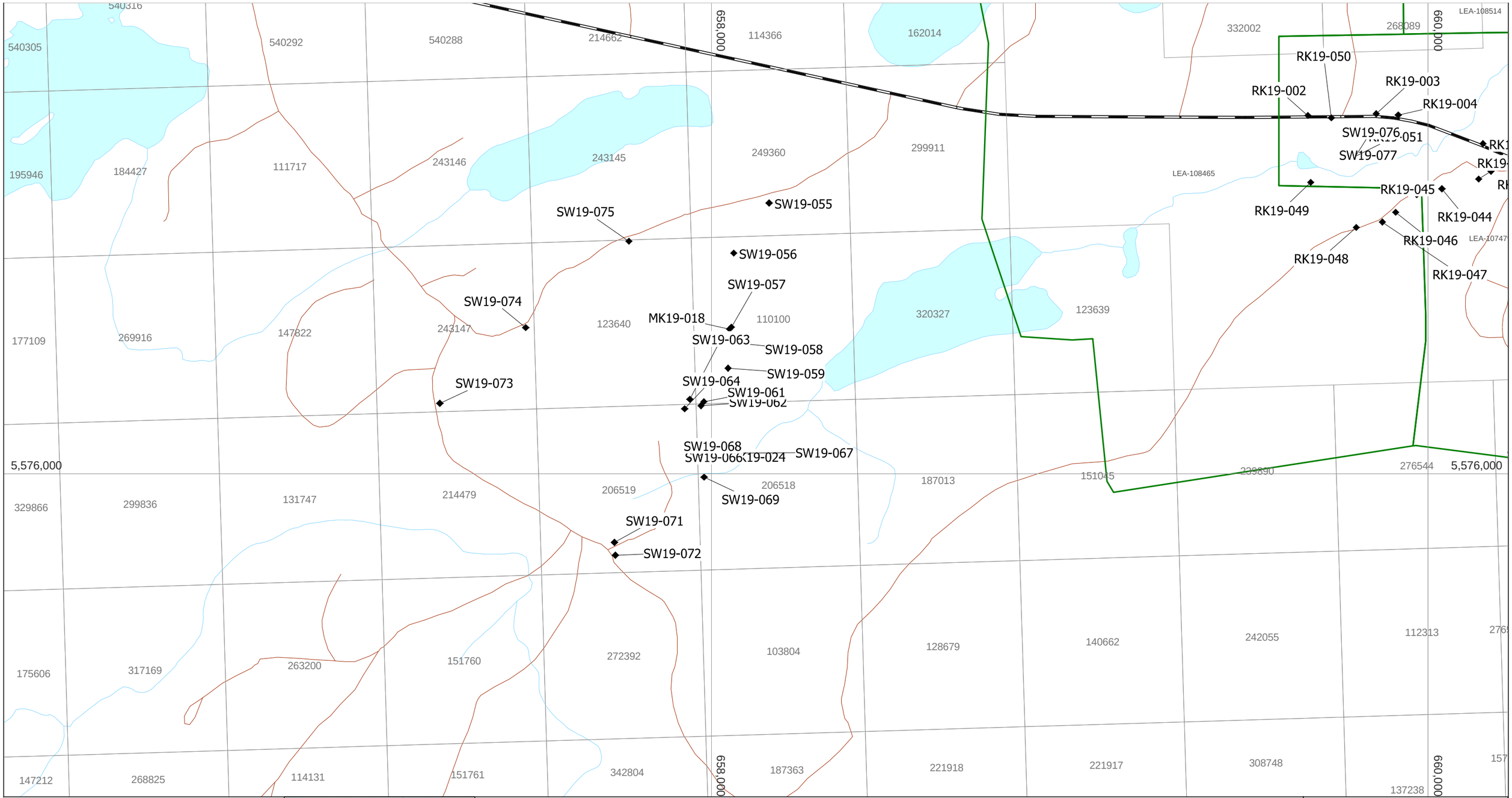
Sabin
2019 Field Mapping Points
Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone



Legend

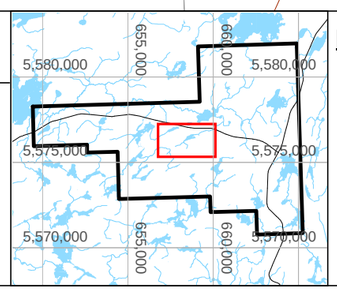
- Mapping Station
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 500
metres
Scale 1:10,000



COMMANDER RESOURCES

Date: Dec 30, 2019	**Sabin** 2019 Field Mapping Points Ontario Patricia Mining Division 052J-07 UTM NAD83 zone
Drafted by: M. Kulla	
Appendix: 2c	



Legend

- Mapping Station
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 500
metres
Scale 1:10,000

SW19-016
SW19-017
SW19-010
SW19-011
SW19-013
SW19-014
SW19-015
SW19-114
SW19-115
SW19-116
SW19-117
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SW19-045
SW19-044
SW19-053
SW19-054
SW19-046
SW19-050
SW19-049
SW19-039
SW19-040
SW19-038
SW19-041
SW19-051
SW19-052
MK19-016
SW19-095

LEA-107479
LEA-108515
LEA-108516
LEA-108227
LEA-108226

HOUGHTON LAKE AREA
BOUCHER

5,576,000
5,574,000
662000
664000
694000

275903
143216
265176
161440
196047
161439
175519
288749
146938
293258
305389
189359
153242
133197
167953
167952
197920
540403
540410
540420
533484
540406
236990
135704
303702
135703
267125
141777
180873
311053
255637
110407
540417
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110408
200518
135705
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540414
124314
255639
110409
540416
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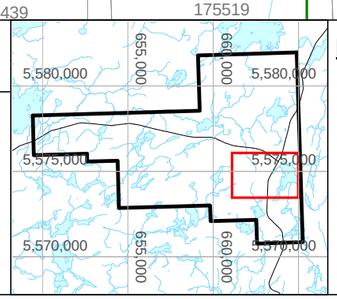
540418
540397

COMMANDER RESOURCES

Date: Dec 30, 2019
Drafted by: M. Kulla
Appendix: 2d

Sabin
2019 Field Mapping Points
Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone



Legend

- Mapping Station
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 500
metres
Scale 1:12,000

APPENDIX 3

Rock Sample Summary Data, Assays and Maps

Station No.	Date Created	User	Northing	Easting	Map Unit	Rock_type	gt	ser	stau	sil	cpy	py	sph	po	Description	Sample No.	Material	Zone	Au_ppb	Ag_ppb	Ag_ppm
SW19-002	5/22/2019	SW	5576389	660636	Intermediate Volcanic	ser bt schist				3	0.5	4	0.5		samp 1, ser bt schist with silica py cpy bt zones within	**1588501**	bedrock	Marchington	422	36864	36.86
SW19-003	5/22/2019	SW	5576375	660607	Mafic volcanic	hbl gt schist	3			3	5	10	1		samp2 hbl gt schist with 15pct py cpy	**1588502**	bedrock	Marchington	47	2815	2.82
SW19-004	5/22/2019	SW	5576387	660627	Intermediate Volcanic	ser bt schist				3		2		2	samp 3 ser bt qtz schist w py cpy lenses some po and qtz veinlets?	**1588503**	bedrock	Marchington	292	51967	51.97
SW19-008	5/23/2019	SW	5576170	661580	Intermediate Volcanic	ser bt feld schist										**1588509**	bedrock	S23	13	668	0.67
SW19-052	5/25/2019	SW	5573646	661820	Intermediate Volcanic	bt act gt schist	3		3		2	2			layering 334.80 highly contorted and folded along 080 f2. common fractures at high angles to s0? with accumations of gt staur or chl.act	**1588535**	bedrock	Golsil	121	153140	149
SW19-061	5/26/2019	SW	5576201	657979	Intermediate Volcanic	bt feld schist		2		2		5			gossan within feld bt schist sugary and rexlized. gossan is qtz ser py zone with possibly up to 30pct py mostly weathered and commonly 5pct py in the roughly 1 m wide zone. zone and foliation oriented 068.80 s2	**1588538**	talus	Kash	7	1129	1.13
SW19-062	5/26/2019	SW	5576190	657971	Felsic volcanic	bt feld qtz schist						0.5			sample of py wallrock	**1588539**	bedrock	Kash	6	1097	1.1
SW19-071	5/26/2019	SW	5575808	657729	Felsic volcanic	ser bt feld qtz schist		5		4		50			just N of hole 37, 3 channel samples and a small blast pit, fol 080.78	**1588542**	bedrock	Kash	7	2749	2.75
SW19-076	5/26/2019	SW	5576887	659798	Exhalite	silica		2		5	1	2			chert exhalite within bt feld schist rare gt strong 080 80 fol	**1588548**	bedrock	Kash	5110	121310	123
RK19-007	5/23/2019	RK	5576735	660582	Intermediate Volcanic	bt feld hbl schist	0	0		3			6		Road cut, strongly silicified amphibole, biotite schist with three fracture controlled bands of sphalerite? (5-7%).	**1588556**	bedrock	Marchington	6	240	0.24
RK19-014	5/23/2019	RK	5576573	660972	Intermediate Volcanic	bt feld hbl schist		2				0.1			Beginning of large heavily altered and mineralized outcrop. Strongly silicified amphibole, biotite, quartz, garnet metavolcanic. Same rock as PL13 Assay sample taken to check for gold mineralization. There are small yellow flecks that resemble VG but probably sericite alteration.	**1588563**	bedrock	Marchington	8	462	0.46
RK19-015	5/23/2019	RK	5576578	660984	Intermediate Volcanic	bt feld ser schist				4	2	3	2	2	Strongly silicified and altered rocks, strong mineralization, 25-30% black "veins" of tetrahedrite? with possible sphalerite?, 3% pyrite, 2% pyrrhotite, 2% chalcopyrite. Sampled for gold potential, possible 2 flecks of VG.	**1588564**	bedrock	Marchington	7	594	0.59
RK19-016	5/23/2019	RK	5576570	660997	Intermediate Volcanic	bt feld ser schist		5		4	2	3	3	3	Completely altered rocks, heavily mineralized, 5-7% pyrrhotite, 3% pyrite, 3% sphalerite, 3% tetrahedrite, 2% chalcopyrite, potential fleck of VG?	**1588565**	bedrock	Marchington	11	2816	2.82
RK19-017	5/23/2019	RK	5576573	661019	Intermediate Volcanic	bt feld ser schist		5		4	4		3	3	Strongly silicified and mineralized, 3-5% chalcopyrite, 2-3% pyrite, 3% tetrahedrite?, 2-3% episodes?, 1-2% galena?, possible VG. Assayed for potential gold.	**1588566**	bedrock	Marchington	8	277	0.28
RK19-018	5/23/2019	RK	5576551	661042	Intermediate Volcanic	bt feld ser schist		5		4		3	2		Totally altered, heavy episodes, pyrite, tetrahedrite, chalco, arrayed for gold.	**1588567**	bedrock	Marchington	32	22526	23
RK19-023	5/24/2019	RK	5576443	661505	Intermediate Volcanic	bt feld hbl schist		5		4	2	1		2	Same outcrop as 22, becomes heavily altered schist. Assay sample taken.	**1588572**	bedrock	S23	14	750	0.75
RK19-024	5/24/2019	RK	5576445	661547	Intermediate Volcanic	bt feld hbl schist				4	2	3			Along same outcrop as 22/23, assay sample taken. amphibole-biotite schist with significant pyrite, chalcopyrite.	**1588573**	bedrock	S23	8	353	0.35
RK19-025	5/24/2019	RK	5576452	661584	Intermediate Volcanic	bt feld hbl schist		5				1	1		Outcrop across the road from 24, extremely altered and mineralized amphibole biotite schist.	**1588574**	bedrock	S23	27	378	0.38
RK19-026	5/24/2019	RK	5576458	661608	Intermediate Volcanic	bt feld hbl schist		5				3	1	2	Strongly altered and mineralized amphibole biotite schist, pyrite, pyrrhotite, tetrahedrite?, chalco.	**1588575**	bedrock	S23	20	855	0.86
RK19-027	5/24/2019	RK	5576448	661646	Intermediate Volcanic	bt feld hbl schist		5			2	3	2	3	Strongly altered schist. Well mineralized with pyrite, pyrrhotite, sphalerite?, chalcopyrite.	**1588576**	bedrock	S23	18	582	0.58
RK19-028	5/24/2019	RK	5576445	661667	Intermediate Volcanic	bt feld hbl schist		3		3	2	1	2	5	Strongly mineralized amphibole biotite schist. Pyrite, pyrrhotite, sphalerite, chalcopyrite.	**1588577**	bedrock	S23	13	494	0.49
RK19-038	5/25/2019	RK	5573713	661833	Mafic volcanic	amphibolite				1	4	3			Strongly weathered chlorite schist. 2-3% pyrite, 3-5% chalcopyrite and abundant malachite.	**1588587**	bedrock	Golsil	151	200000	379

Station No.	Cu_pct	Cu_ppm	Pb_pct	Pb_ppm	Zn_pct	Zn_ppm	Cu_Pb_Zn	Al_pct	As_ppm	Au_ppb1	Ba_ppm	Be_ppm	Bi_ppm	Ca_pct	Cd_ppm	Ce_ppm	Co_ppm	Cr_ppm	Cs_ppm	Cu_pct1	Cu_ppm1	Dy_ppm	Er_ppm	Eu_ppm	Fe_pct	Ga_ppm	Gd_ppm	Hf_ppm
SW19-002	0.269	2710	0.01	53	0.02	228	0.3	3.87	0.1	422	308	0.5	2.91	1.57	2.59	19.61	6.9	9	0.9	0.269	2709.8	0.7	0.4	0.5	2.16	7.01	1.2	0.91
SW19-003	0	802	0	178	0	348	0.13	7.72	3.7	47	14	2	14.42	6.2	1.48	32.66	59.9	42	0.4	0	802	3.2	2	1.1	18.78	18.69	3.4	3.27
SW19-004	0.287	2972	0.01	54	0.02	198	0.32	6.61	0.1	292	527	0.5	2.98	0.69	2	5.73	11.3	15	1.8	0.287	2971.8	0.6	0.4	0.2	3.33	14.53	0.3	1.63
SW19-008	0	24	0	102	0	47	0.02	7.75	0.7	13	457	0.5	0.57	0.5	0.02	18.8	6.5	23	1	0	23.8	0.7	0.4	0.5	2.37	20.04	1.2	2.54
SW19-052	1.637	16370	0.36	3510	0.81	6496	2.64	7.73	0.1	121	11	0.5	93.57	3.63	8.82	13.63	17.3	14	0.5	1.637	10000	2.5	1.6	0.3	15.45	18.05	1.9	3.34
SW19-061	0	66	0	28	0	20	0.01	5.55	78.1	7	56	0.5	8.98	1.88	0.01	6.58	1.3	5	0.4	0	66.1	0.6	0.4	0.3	7.7	9.86	0.5	4.08
SW19-062	0	95	0	26	0	40	0.02	9.06	0.4	6	92	0.5	1.53	1.63	0.03	31.78	9.2	17	3.2	0	95.1	1.2	0.6	0.8	3.28	23.49	2	3.14
SW19-071	0	108	0	31	0	20	0.02	5.82	15.6	7	49	1	25.54	1.11	0.07	5.01	51.2	4	0.5	0	108	0.3	0.2	0.3	11.99	11.42	0.5	1.65
SW19-076	3.051	30510	0.01	190	0.59	5664	3.64	4.18	0.1	5110	20	1	10.57	9.44	51.19	11.16	19.2	3	0.3	3.051	10000	1.9	0.7	0.5	7.72	12.68	2.1	0.08
RK19-007	0	51	0	41	0	163	0.03	6.35	0.5	6	293	0.5	0.2	3.74	0.35	14.22	9.7	10	0.6	0	50.5	1	0.6	0.4	2.55	15.83	1.5	2.33
RK19-014	0	34	0	16	0	97	0.01	6.21	2.7	8	188	0.5	0.22	2.44	0.23	56.59	3.9	3	2.4	0	33.6	5.1	3.1	1.3	2.94	17.94	5.3	3.54
RK19-015	0	26	0	18	0	134	0.02	7.84	1.5	7	180	1	0.52	4.54	0.78	20.47	12.7	22	1.5	0	26.4	1.5	0.8	0.6	4.09	16.92	1.7	1.62
RK19-016	0	42	0	61	0	48	0.02	8.02	0.3	11	121	0.5	0.94	2.51	0.17	11.24	22.5	18	2.1	0	42.3	1	0.6	0.5	3.71	17.78	1.1	1.98
RK19-017	0	38	0	13	0	92	0.01	8.02	0.6	8	296	0.5	0.1	3.91	0.24	20.81	12.1	18	2.7	0	38.1	1.8	1	0.6	4	18.56	1.7	2.8
RK19-018	0.094	958	1.66	10000	4.2	42000	5.3	1.96	0.1	32	27	0.5	12.64	1.36	232.19	3.18	20.8	4	0.6	0.094	958.2	0.4	0.2	0.1	6.79	4.95	0.3	0.06
RK19-023	0	58	0	36	0	88	0.02	7.98	1.5	14	388	0.5	0.26	2.79	0.22	15.51	21.4	26	2.4	0	58.4	1.6	0.8	0.6	3.82	17.68	1.7	2.37
RK19-024	0	64	0	51	0	96	0.02	7.43	0.9	8	299	0.5	0.09	3.76	0.37	13.09	20.3	24	1.7	0	63.7	1.3	0.9	0.5	3.05	16.43	1.3	1.81
RK19-025	0	28	0	11	0	65	0.01	5.79	1.2	27	253	0.5	0.18	1.46	0.01	17.79	16.2	20	2.3	0	27.9	0.9	0.3	0.4	2.91	15.11	1.3	2.3
RK19-026	0	29	0	25	0	88	0.01	7.28	1.7	20	182	0.5	0.38	2.17	0.09	14.75	21.5	20	1.7	0	28.5	0.8	0.3	0.5	3.63	17.35	1	2.44
RK19-027	0	93	0	16	0	42	0.02	8.03	4.3	18	129	0.5	0.02	3.17	0.12	21.58	21.2	21	1.6	0	93	1.1	0.8	0.6	5	17.16	1.5	2.43
RK19-028	0	68	0	20	0	31	0.01	8.2	3.8	13	148	0.5	0.09	2.18	0.05	21.37	28.1	23	1.2	0	68.1	1.3	0.6	0.6	4.14	19.37	1.4	2.77
RK19-038	1.077	10770	1.52	15200	0.67	5291	3.13	6.44	0.1	151	32	0.5	429.89	3.75	3.6	18.56	15.6	13	0.5	1.077	10000	2.7	1.4	0.3	14.39	15.23	1.9	2.95

Station No.	Ho_ppm	In_ppm	K_pct	La_ppm	Li_ppm	Lu_ppm	Mg_pct	Mn_ppm	Mo_ppm	Na_pct	Nb_ppm	Nd_ppm	Ni_ppm	P_pct	Pb_pct1	Pb_ppm1	Pr_ppm	Rb_ppm	Re_ppm	S_pct	Sb_ppm	Sc_ppm	Se_ppm	Sm_ppm	Sn_ppm	Sr_ppm	Ta_ppm	Tb_ppm	Te_ppm
SW19-002	0.2	0.03	0.94	11.2	7.7	0.5	0.61	887	0.39	0.406	1.01	7.8	7.8	0.016	0.01	52.9	2.4	26.7	0.001	0.32	0.08	2.5	2.4	1.4	0.3	48	0.5	0.1	0.41
SW19-003	0.7	0.09	0.28	15.5	46.5	0.3	2.54	5990	0.92	0.902	4.89	16.5	53.6	0.07	0	178.18	4.5	4.2	0.003	1.72	0.67	14.1	1.7	3.4	3.1	59	0.4	0.5	0.55
SW19-004	0.1	0.06	2.88	3.7	17.8	0.5	0.56	509	0.24	0.507	1.87	1.7	6.8	0.024	0.01	53.73	0.6	68.6	0.001	0.47	0.03	4.3	4.2	0.3	0.3	47	0.1	0.5	0.39
SW19-008	0.1	0.02	2.34	9.6	33.4	0.5	0.4	136	1.02	0.875	1.02	8.4	4.8	0.038	0	102.11	2.3	54.8	0.001	0.41	0.19	8.1	1.6	1.6	0.5	146	0.5	0.1	0.66
SW19-052	0.6	28.18	0.09	6.8	6.5	0.3	7.31	1774	4.46	0.364	5.2	6.8	6.7	0.064	0.36	3509.82	1.8	0.7	0.001	1.46	1.59	16.8	14.8	1.7	115.4	14	0.4	0.3	4.48
SW19-061	0.1	0.03	0.26	3.6	0.8	0.5	0.03	50	5.64	2.066	3.91	2.7	0.8	0.01	0	27.89	0.8	8.7	0.001	0.88	0.08	1	1.4	0.7	0.9	112	0.3	0.5	0.11
SW19-062	0.3	0.13	4.32	17.2	37.6	0.5	0.82	329	12.85	2.864	0.95	12.9	14.4	0.035	0	25.84	3.8	101.5	0.007	1.69	0.03	7.1	0.5	2.5	1.2	176	0.5	0.2	0.16
SW19-071	0.5	0.02	0.76	3	20	0.5	0.07	59	0.76	2.547	1.31	1.9	5	0.007	0	31.06	0.5	22.3	0.001	10	0.05	2.2	1.4	0.4	0.6	158	0.1	0.5	0.07
SW19-076	0.3	0.23	0.18	5.4	5.8	0.5	3.89	4211	115.44	0.061	0.22	5.8	14.9	0.002	0.01	189.68	1.5	7.4	0.007	2.64	0.43	3.9	6	1.4	3.2	61	0.5	0.4	2.62
RK19-007	0.2	0.03	0.47	7.3	19.3	0.5	1.17	991	0.22	1.724	2.11	6.2	15	0.028	0	41.04	1.8	8.5	0.001	0.07	0.23	4.6	0.6	1.3	0.5	219	0.1	0.2	0.39
RK19-014	1	0.06	0.82	27.4	24.8	0.5	0.28	688	0.44	2.375	10.86	27.1	1.9	0.031	0	16.14	7.4	33.3	0.001	0.02	0.16	7.2	0.6	5.4	1.2	83	0.8	0.8	0.15
RK19-015	0.3	0.04	0.88	10.6	47.3	0.1	1.6	1651	1.63	2.293	2.53	10.3	30.2	0.034	0	18.14	2.6	19.6	0.004	0.54	0.17	5.8	1.7	2	1.1	134	0.2	0.3	0.7
RK19-016	0.2	0.02	2.47	5.1	21.7	0.5	0.76	470	1.41	2.423	2.03	5.8	22.3	0.04	0	61.04	1.6	55	0.001	1.66	0.11	7.3	2.2	1.2	0.6	185	0.2	0.2	0.44
RK19-017	0.3	0.07	1.91	10.7	81.3	0.1	1.84	988	0.48	0.867	3.57	9.3	28.2	0.039	0	12.92	2.5	36.8	0.001	0.96	0.08	7.9	1.4	2	0.9	223	0.2	0.3	0.49
RK19-018	0.5	0.11	0.16	2	4.7	0.5	0.71	783	5.21	0.396	0.06	1.3	25.1	0.002	1.66	10000	0.4	4.7	0.001	5.56	9.5	0.9	88.9	0.3	0.3	42	0.5	0.5	6.49
RK19-023	0.4	0.05	1.51	8.1	27.4	0.2	1.09	605	0.88	2.07	1.86	7.1	21.2	0.037	0	36.27	1.9	41.8	0.004	1.1	0.14	8.7	0.5	1.6	0.4	178	0.2	0.3	0.19
RK19-024	0.3	0.03	1	6.3	26.3	0.1	0.89	465	0.8	2.036	2.41	6.3	32.3	0.029	0	51.09	1.6	21.3	0.002	0.97	0.2	8.8	0.5	1.2	0.7	155	0.2	0.2	0.42
RK19-025	0.1	0.03	1.42	9	39.6	0.5	1.02	367	2.29	1.706	0.76	8.5	23.2	0.024	0	11.09	2	45.8	0.003	0.84	0.05	7.2	1.2	1.4	0.4	129	0.5	0.1	0.33
RK19-026	0.1	0.04	1.06	7.8	32.3	0.5	0.97	443	1.24	3.001	0.91	7.3	20.2	0.036	0	25.02	1.7	30.2	0.01	1.6	0.09	7.4	1.1	1.3	0.4	203	0.5	0.1	0.23
RK19-027	0.2	0.06	1.01	11.6	44.6	0.1	1.32	686	1.37	2.201	0.96	8.6	27.3	0.031	0	16.01	2.5	30.8	0.004	3.19	0.09	8.3	0.4	1.6	0.4	235	0.5	0.2	0.17
RK19-028	0.2	0.04	1.41	10.2	34.4	0.5	0.59	316	0.47	1.967	2.49	9.5	27.7	0.039	0	19.83	2.7	32.3	0.001	2.04	0.25	8.3	0.4	1.9	0.6	206	0.2	0.2	0.22
RK19-038	0.5	38.56	0.12	9.5	6.7	0.3	7.35	2304	1.34	0.361	4.41	7.7	6.4	0.062	1.52	10000	2.1	2.3	0.001	1.03	3.3	15.8	31.3	1.9	126.1	18	0.3	0.4	12.85

Station No.	Th_ppm	Ti_pct	Tl_ppm	Tm_ppm	U_ppm	V_ppm	W_ppm	Wgt	Y_ppm	Yb_ppm	Zn_pct1	Zn_ppm1	Zr_ppm
SW19-002	0.9	0.102	0.24	0.5	0.2	20	0.3	0.7	3.3	0.3	0.02	227.8	35
SW19-003	4.3	0.423	0.49	0.3	0.9	104	1.1	1.69	18.9	2	0	348.3	122.2
SW19-004	1.6	0.169	0.52	0.5	0.4	38	1.3	0.52	2.9	0.4	0.02	197.8	63
SW19-008	2.3	0.196	0.45	0.5	0.5	66	0.3	1.05	3.1	0.4	0	46.9	91
SW19-052	2.4	0.489	0.025	0.3	0.6	130	1.3	0.95	14.9	1.7	0.81	6496.3	129
SW19-061	1.9	0.194	0.2	0.5	0.7	7	0.2	0.61	3.1	0.5	0	20.4	138.1
SW19-062	3	0.197	0.83	0.5	0.8	50	0.4	0.65	6.8	0.6	0	40.3	115.3
SW19-071	0.8	0.093	0.14	0.5	0.5	8	0.8	0.51	1.4	0.2	0	19.5	55.8
SW19-076	0.1	0.027	0.18	0.5	0.2	34	0.5	0.49	9.5	0.4	0.59	5664	1.5
RK19-007	2	0.175	0.18	0.5	0.3	48	0.2	1.3	4.7	0.5	0	163.4	77.8
RK19-014	5.1	0.221	0.34	0.4	1.1	6	0.2	0.68	26.2	2.9	0	96.7	134.5
RK19-015	1.3	0.224	0.27	0.1	0.3	59	0.2	0.81	8.2	0.8	0	133.5	58.8
RK19-016	1.9	0.248	0.46	0.5	0.4	59	0.2	1.15	5.2	0.5	0	47.6	70.7
RK19-017	2	0.29	0.49	0.1	0.4	62	0.1	0.9	8.1	0.7	0	92.4	98.7
RK19-018	0.5	0.012	0.025	0.5	0.5	17	0.1	1.96	1.5	0.1	4.2	10000	4
RK19-023	1.9	0.246	0.32	0.1	0.5	65	0.2	0.96	7.9	0.9	0	87.5	88.6
RK19-024	1.7	0.263	0.26	0.1	0.4	68	0.3	0.53	6.9	0.8	0	96.4	73.6
RK19-025	1.7	0.153	0.35	0.5	0.4	60	0.1	1.34	2.7	0.3	0	64.8	89.9
RK19-026	1.7	0.152	0.26	0.5	0.4	64	0.1	1	2.8	0.3	0	87.5	91.7
RK19-027	2.1	0.173	0.28	0.5	0.4	61	0.1	1.2	6.4	0.7	0	41.6	99.4
RK19-028	2.1	0.253	0.23	0.5	0.4	70	0.4	1.46	5.3	0.6	0	31.1	99.8
RK19-038	2.1	0.415	0.025	0.2	0.5	117	24.1	1.06	14.3	1.5	0.67	5290.7	110.9

Station No.	Date Created	User	Northing	Easting	Map Unit	Rock_type	gt	ser	stau	sil	cpy	py	sph	po	Description	Sample No.	Material	Zone	Au_ppb	Ag_ppb	Ag_ppm
RK19-039	5/25/2019	RK	5573673	661829	Intermediate Volcanic	bt feld hbl schist					4	3			Extremely weathered amphibole-feldspar-biotite schist with 3% pyrite, 3-5% chalcopyrite and abundant malachite.	**1588588**	bedrock	Golsil	32	52454	52
RK19-040	5/25/2019	RK	5573647	661807	Intermediate Volcanic	bt feld hbl schist				1	4	3			Extremely weathered amphibole-biotite-chlorite schist. Very well mineralized with 3% pyrite, 3-5% chalcopyrite and abundant malachite and covelite.	**1588589**	bedrock	Golsil	318	200000	240
RK19-050	5/26/2019	RK	5576993	659730	Intermediate Volcanic	bt feld hbl schist		3		3			3		Potential zinc showing. Float "boulder" in ditch alongside Hwy. Strongly silicified and sericitized amphibole biotite schist with potential relic qtz eyes. Blebs and potential vein of black fine grained sphalerite/tetrahedrite.	**1588599**	float	Kash	5	412	0.41
RK19-051	5/26/2019	RK	5576887	659800	Intermediate Volcanic	bt feld ser schist									Showing at the edge of swamp. Float rock. Strongly silicified and weathered schist. Strong chalcopyrite 5%	**1588600**	float	Kash	1704	158750	153
MK19-016	5/25/2019	MK	5573627	661805	Intermediate Volcanic	bt feld hbl schist					2	10	0.5		pyrite, chalcopyrite, with minor malachite, trace galena horizon in biotite feldspar amphibole chlorite +-actinolite schist	**1588601**	Bedrock	Golsil	2870	192087	484
SW19-067	5/26/2019	SW	5576057	657961	Felsic volcanic	massive po						50			sample massive po	**1588603**	bedrock	Kash	30	3993	3.99
SW19-083	5/27/2019	SW	5579935	660155				1				0.5			assay sample	**1588652**	float		11	2033	2.03
SW19-103	5/28/2019	SW	5575488	664219	Mafic volcanic	amphibolite						5			small overgrown blast trench with py amphibolite	**1588662**	talus	Evans Lake	6	360	0.36

Station No.	Cu_pct	Cu_ppm	Pb_pct	Pb_ppm	Zn_pct	Zn_ppm	Cu_Pb_Zn	Al_pct	As_ppm	Au_ppb1	Ba_ppm	Be_ppm	Bi_ppm	Ca_pct	Cd_ppm	Ce_ppm	Co_ppm	Cr_ppm	Cs_ppm	Cu_pct1	Cu_ppm1	Dy_ppm	Er_ppm	Eu_ppm	Fe_pct	Ga_ppm	Gd_ppm	Hf_ppm
RK19-039	2.538	25380	0.17	1702	0.51	4462	3.15	5.93	0.1	32	90	0.5	25.22	0.85	22.04	33.04	13.8	28	1	2.538	10000	1.2	0.7	0.6	8.02	12.29	2.1	2.91
RK19-040	4.959	49590	0.34	3333	1.43	14300	6.72	4.48	0.1	318	55	0.5	91.69	0.77	123.51	25.07	29.2	18	0.6	4.959	10000	1.5	0.9	0.3	12.85	9.18	1.7	2.35
RK19-050	0	58	0	46	0	127	0.02	7.88	1.1	5	447	0.5	0.22	2.32	0.12	9.8	4.7	17	2	0	58	0.8	0.5	0.4	2.62	16.3	0.8	2.22
RK19-051	1.625	16250	0.42	4335	2.38	23800	4.44	1.44	0.1	1704	17	0.5	198.5	1.1	175.82	6.05	15.2	5	0.5	1.625	10000	0.6	0.3	0.2	3.28	5.67	0.6	0.27
MK19-016	7.245	72450	0.54	5348	2.41	24100	10.19	3.19	0.1	2870	47	0.5	95.36	0.05	104.56	28.21	5	18	0.5	7.245	10000	1.1	0.4	0.3	13.42	7.59	1.5	2.18
SW19-067	0	855	0	25	0	75	0.1	1.51	0.1	30	16	0.5	5.33	0.29	0.43	3.56	6.9	6	5.1	0	855.2	0.5	0.4	0.5	40.23	6.05	0.6	0.41
SW19-083	0	239	0	44	0	301	0.06	8.21	0.1	11	160	0.5	1.14	2.63	0.55	18.23	18.9	31	0.5	0	238.5	1.2	0.9	0.6	4.59	18.53	1.4	2.75
SW19-103	0	51	0	11	0	198	0.03	4.9	0.8	6	52	0.5	0.56	6.47	0.44	67.46	22	6	0.1	0	51	5.7	3.4	0.9	13.78	19.39	5.4	1.38

Station No.	Ho_ppm	In_ppm	K_pct	La_ppm	Li_ppm	Lu_ppm	Mg_pct	Mn_ppm	Mo_ppm	Na_pct	Nb_ppm	Nd_ppm	Ni_ppm	P_pct	Pb_pct1	Pb_ppm1	Pr_ppm	Rb_ppm	Re_ppm	S_pct	Sb_ppm	Sc_ppm	Se_ppm	Sm_ppm	Sn_ppm	Sr_ppm	Ta_ppm	Tb_ppm	Te_ppm
RK19-039	0.2	13.52	1.66	17.6	12.1	0.1	1.73	472	0.66	1.218	3.62	14.1	8.8	0.039	0.17	1701.57	3.9	43.2	0.001	2.13	0.84	10.6	9.9	2.7	116.7	107	0.3	0.2	0.93
RK19-040	0.3	34.69	0.67	12	12.2	0.2	2.02	1227	0.93	0.492	2.89	10.8	14.3	0.029	0.34	3333.26	3.2	22.1	0.001	3.76	1.35	7.7	35.8	1.9	188	48	0.3	0.2	6.23
RK19-050	0.2	0.07	2.14	4.6	23.9	0.5	1.21	805	0.22	2.603	2.01	4.1	22.3	0.031	0	46.18	1.3	41.1	0.001	0.02	0.09	7.1	0.15	0.9	0.9	159	0.2	0.1	0.26
RK19-051	0.1	0.43	0.13	3.2	3.7	0.5	0.43	514	60.13	0.062	0.56	2.5	10.7	0.002	0.42	4334.93	0.7	5.7	0.001	2.83	0.33	1.5	12.9	0.5	2.8	19	0.5	0.5	7
MK19-016	0.2	26.22	0.62	14	16.9	0.5	1.01	333	1.57	0.12	2.5	11.4	8	0.025	0.54	5347.86	3.5	18.3	0.001	5.35	6.88	7.1	21.3	2.2	201.9	26	0.2	0.2	5.68
SW19-067	0.1	0.03	0.37	1.7	38.2	0.5	0.43	337	31.65	0.357	3.02	1.6	103.8	0.023	0	25.45	0.4	52.1	0.008	10	0.02	1.4	2.5	0.4	0.9	12	0.4	0.5	0.23
SW19-083	0.3	0.12	0.54	9.1	44.9	0.1	1.74	836	1.01	2.187	4.21	7.9	33	0.05	0	43.51	2.2	10.9	0.001	0.4	0.12	13.4	0.6	1.8	2.4	205	0.3	0.2	0.56
SW19-103	1.2	0.21	0.53	34.2	21.7	0.5	1.82	3430	0.58	0.493	10.46	32.3	149.7	0.041	0	10.8	8.9	13.4	0.001	3.59	0.16	9.8	1.1	6.2	1.9	381	0.7	0.9	0.43

Station No.	Th_ppm	Ti_pct	Tl_ppm	Tm_ppm	U_ppm	V_ppm	W_ppm	Wgt	Y_ppm	Yb_ppm	Zn_pct1	Zn_ppm1	Zr_ppm
RK19-039	4.5	0.289	0.33	0.5	0.9	78	0.7	1.03	5.8	0.8	0.51	4462.3	105.7
RK19-040	3.5	0.234	0.18	0.2	0.8	50	1.4	0.97	7.9	0.7	1.43	10000	90.8
RK19-050	1.4	0.256	0.4	0.5	0.3	59	0.6	0.83	4.3	0.5	0	127	81.1
RK19-051	0.4	0.026	0.35	0.5	0.1	9	0.2	1.74	3.8	0.2	2.38	10000	10.6
MK19-016	3.8	0.193	0.15	0.5	0.7	45	0.8	0.97	4.2	0.6	2.41	10000	85.9
SW19-067	0.5	0.042	0.39	0.5	0.1	12	0.1	0.93	2.8	0.2	0	74.8	15.8
SW19-083	2	0.358	0.16	0.1	0.5	106	0.2	0.71	6.4	0.9	0	301.2	108.6
SW19-103	5	0.135	0.1	0.6	1.2	35	0.5	1.19	29.7	3.2	0	198.3	54

HOUGHTON LAKE AREA

CONANT

BOUCHER

656,000 658,000 660,000 662,000 664,000 666,000

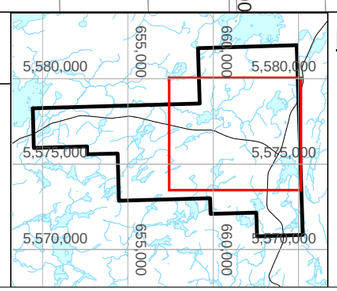
5,578,000 5,576,000 5,574,000

1,588,652 1,588,542 1,588,538 1,588,539 1,588,603 1,588,599 1,588,600 1,588,548 1,588,556 1,588,502 1,588,501 1,588,503 1,588,564 1,588,563 1,588,566 1,588,565 1,588,567 1,588,574 1,588,577 1,588,573 1,588,572 1,588,576 1,588,575 1,588,509 1,588,662 1,588,589 1,588,587 1,588,588 1,588,535 1,588,601

LEA-108514 LEA-107479 LEA-108515 LEA-108516 LEA-108227

COMMANDER RESOURCES

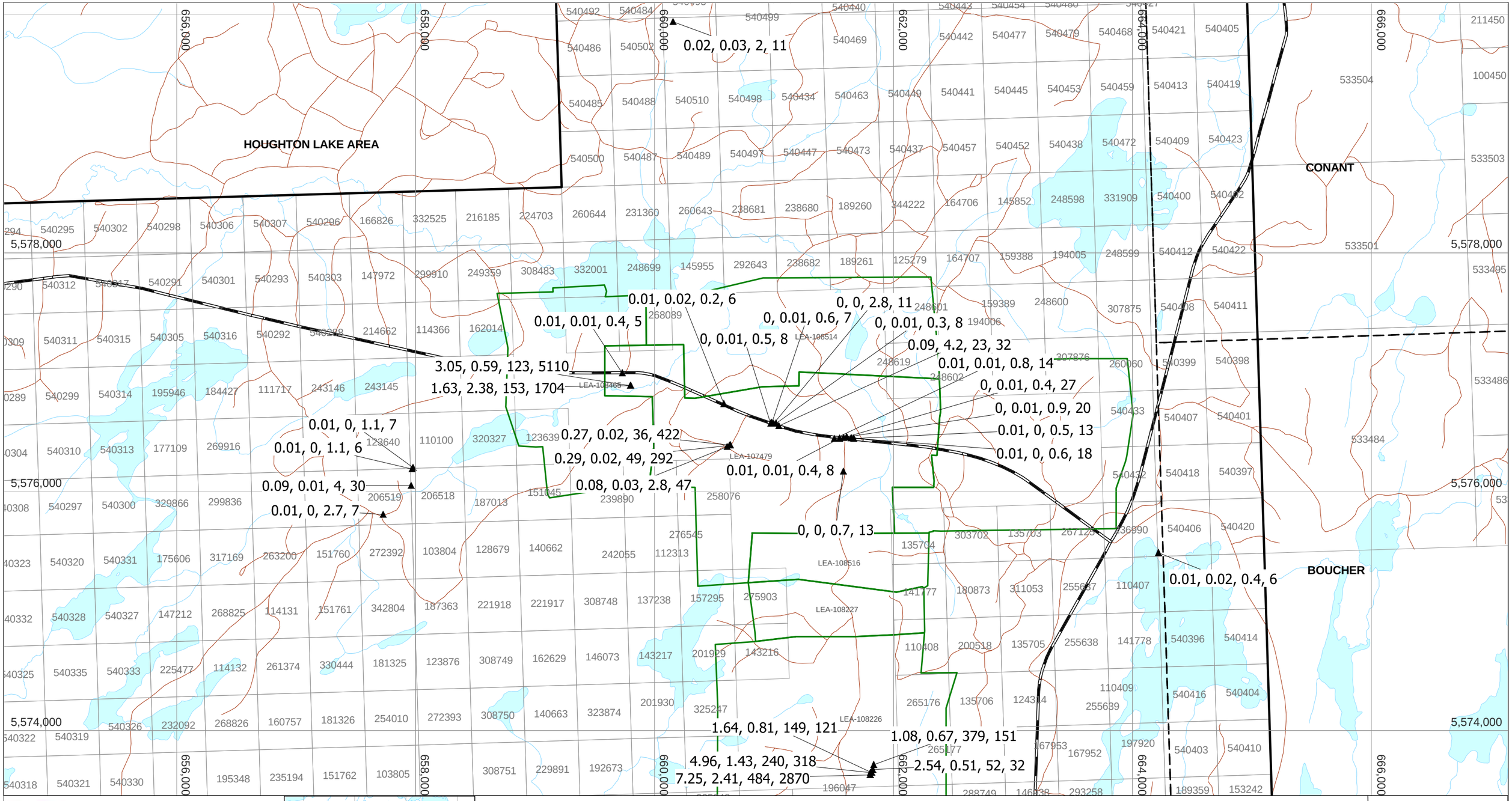
Date: Dec 30, 2019	**Sabin**
Drafted by: M. Kulla	Rock Assay Locations
Appendix: 3a	Ontario Patricia Mining Division 052J-07 UTM NAD83 zone



Legend

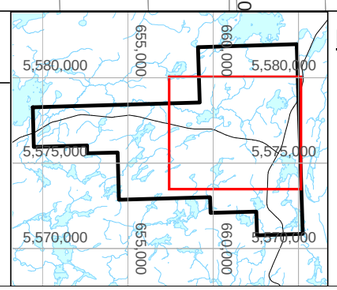
- ▲ Assayed Rock Sample
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 1
kilometres
Scale 1:30,000



COMMANDER RESOURCES

Date: Dec 30, 2019	**Sabin**
Drafted by: M. Kulla	Rock Assay Locations
Appendix: 3b	Ontario Patricia Mining Division 052J-07 UTM NAD83 zone



Legend

- ▲ Assayed Rock Sample (Cu pct, Zn pct, Ag ppm, Au ppb)
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 1
kilometres
Scale 1:30,000

APPENDIX 4

Channel Sample Logs and Maps

GEOLOGICAL CORE LOG — Channel Gosil-CH1

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 23rd, 2019

PROSPECT: Gosil | LOGGED BY: Rory Krocker | Length: 4.4 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 23rd, 2019 | Channel width: 3-5 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 140

EASTING: 661817 | NORTHING: 5573654 | ELEVATION: 472

UTM coordinates are taken from the start of the channel on the NW end and the channel reads from NW to SE | Pictures: | Samples: 887201 - 887205

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
0.00	1.00	1.00	4	Gar Chl Sch		Schist	Grn Gry		Gar	Chl			2	3		0.5	887201	Garnitiferous-chlorit schist, 3-5% garnet up to 3 mm wide, strong chlorite, 3% cpy, 1-2% py, and 0.5% sph.
1.00	2.00	1.00	4	Amp Chl Gar Sch		Schist	Bl Grn		Chl	Gar			2	1	0.5		887202	Chlorite-Amphibole-Garnet schist, 1-2% pyrite with 1% cpy and local galena.
2.00	3.00	1.00	4	Amp Chl Gar Sch		Schist	Bl Grn		Chl	Gar			2	4	1		887203	Chlorite-Amphibole-Garnet schist, 3-5% cpy with local semi-massive spots, 1-2% py with 0.5 - 1% Pb and trace sphalerite.
3.00	4.00	1.00	4	Amp Chl Gar Sch		Schist	Bl Grn		Chl	Gar			2	4	1		887204	Chlorite-Amphibole-Garnet schist, 3-5% cpy with local semi-massive spots, 1-2% py with 0.5 - 1% Pb and trace sphalerite.
4.00	4.40	0.40	4	Amp Chl Gar Sch		Schist	Bl Grn		Chl	Gar			1	2			887205	Still mineralizes but could not clear more outcrop at this time, mineralization remains open in this direction. Similar to above with decreased mineralization, 1-2% cpy and 1% py.
																		End of channel.

GEOLOGICAL CORE LOG — Channel Gosil CH-2

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 23rd, 2019

PROSPECT: Gosil | LOGGED BY: Rory Krocker | Length: 10.5 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 23rd, 2019 | Channel width: 3-5 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 130 - 160

EASTING: 661807 | NORTHING: 5573650 | ELEVATION: 462

UTM coordinates are taken from the start of the channel on the NW end and the channel reads from NW to SE | Pictures: | Samples: 997206 - 887216

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
0.00	1.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		2	4	0.5		887206	Start of channel, mineralization open to NW but couldn't be cleared at this time. Amphibole-chlorite-garnet schist. Strong 3-5% cpy, 1-2% py, local galena, local blue-purple bornite?
1.00	2.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.5	1	0.1		887207	Same as above with reduced mineralization, 1% cpy, 1% py and trace galena.
2.00	3.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.5	2			887208	Increased garnet, local strong cpy 2%, 1% py.
3.00	4.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		2				887209	High garnet content, strong 3-5% local cpy, 1-2% py, trace sph and galena.
4.00	5.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.1				887210	Reduced garnet, strong local cpy 3-5%, 1-2% py.
5.00	6.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.1				887211	Decreased garnet, no significant mineralization, trace py.
6.00	7.00	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.1				887212	Decreased garnet, no significant mineralization, trace py.
7.00	7.50	0.50	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.1				887213	Increased garnet, trace py.
7.50	8.50	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		0.1				887214	1 m offset in channel at this point, strong garnet, chl and trace py.
8.50	9.50	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		1	0.1			887215	Strong garnet and chlorite pulses, 1% py, trace - 0.5% cpy and trace local malachite.

9.5	10.5	1.00	3	Amp Chl Gar Sch		Schistose	Bl Grn		Chl	Gar	Sil		2	3			887216	Strong garnet, increased mineralizaiton, 1-3% cpy, 1-2% py, 1% Malachite. Mineralization likely continues but could not be cleared at this time. End of channel.

GEOLOGICAL CORE LOG — Channel Gosil CH-3

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 23rd, 2019

PROSPECT: Gosil | LOGGED BY: Rory Krocker | Length: 2.0 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 23rd, 2019 | Channel width: 3-5 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 110

EASTING: 661816 | NORTHING: 5573659 | ELEVATION: 466

UTM coordinates are taken from the start of the channel on the NW end and the channel reads from NW to SE | Pictures: | Samples: 997216 - 887218

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
0.00	1.00	1.00	4	Chl Sch		Schistose	Grn		Chl				2	1	0.1	0.1	887217	Heavily altered with strong chlorite. Well mineralized with 1-2% py, 1% cpy and trace galena.
1.00	2.00	1.00	4	Chl Sch		Schistose	Grn		Chl				4	4	1	0.1	887218	Heavily altered with strong chlorite. Very strongly mineralized with 3-5% py, 3-5% cpy, local blebs of galena, trace malachite and sphalerite.
																		End of channel. This is all that could be cleared at this time. Mineralization is open in both directions.

GEOLOGICAL CORE LOG — Channel Kash CH-1

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 24th, 2019

PROSPECT: Kash | LOGGED BY: Rory Krocker | Length: 1.3 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 24th, 2019 | Channel width: 4 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 322

EASTING: 659802 | NORTHING: 5576888 | ELEVATION:

UTM coordinates are taken from the start of the channel on the SE end and the channel reads from SE to NW | Pictures: | Samples: 997219 - 887220

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
																		Small trench ~10 m E of main kash showing and at the edge of large swamp. Overburden is very deep (~3 ft and gets deeper towards swamp. Could only uncover 1.3 m of solid bedrock. A small excavator would be ideal to start the clearing here.
0.00	0.70	0.70	1	Amp Sch			Bl Gry		Sil				0.1				887219	Strongly silicified amphibole schist. No significant mineralization, trace pyrite.
0.70	1.30	0.60	1	Amp Sch			Bl Gry	270	Sil	Chl			0.1				887220	Strongly silicified, strong chlorite, abundant quartz veining, foliation 270 dipping steeply south. Trace pyrite.

GEOLOGICAL CORE LOG — Channel Kash CH-2

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 24th, 2019

PROSPECT: Kash | LOGGED BY: Rory Krocker | Length: 1.1 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 24th, 2019 | Channel width: 3 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 330

EASTING: 659802 | NORTHING: 5576898 | ELEVATION:

UTM coordinates are taken from the start of the channel on the SE end and the channel reads from SE to NW | Pictures: | Samples: 997221 - 887222

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
																		Main Kash showing. Area is an old blast pit, uncovering bedrock was very difficult. Overburden up to 3 ft deep with abundant large boulders and rock fragments. This is all that could be cleared at this time. Mineralization is open in both directions. A small excavator would be ideal to clear this better.
0.00	0.50	0.50	1	Ser Sch		Schistose	Wht		Sil	Ser			0.1				887221	Completely silicified and sericitized schist adjacent to heavily mineralized zone
0.50	1.10	0.60	1	Ser Sch		Schistose	Gry Wht Bl		Sil	Ser			2	4	1	2	887222	Strongly silicified and sericitized schist. Strongly mineralized with 3-5% cpy, 2% sph, local strong galena patches, 1-2% pyrite.

GEOLOGICAL CORE LOG — Channel Kash CH-3

CLAIM NUMBER: DISTRICT: Sturgeon Lake

PROJECT: Sabin | DATE LOGGED: October 24th, 2019

PROSPECT: Kash | LOGGED BY: Rory Krocker | Length: 0.9 m

CONTRACTOR: K1 Consulting | DATE CHANNELED: October 24th, 2019 | Channel width: 3 cm

GPS COLLAR COORDINATES: UTM NAD 83 Zone 16 | AZIMUTH: 344

EASTING: 659802 | NORTHING: 5576898 | ELEVATION:

UTM coordinates are taken from the start of the channel on the SE end and the channel reads from SE to NW | Pictures: | Samples: 997223 - 887224

Depth From (m)	Depth To (m)	Int (m)	Oxidation state	Lithology	Lithology 2	Texture	Colour	Foliation TCA	Alteration 1	Alteration 2	Alteration 3	Alteration style	Pyrite (%)	Chalcopyrite (%)	Galena (%)	Sphalerite (%)	Sample	Comments
																		This channel is ~2 ft along strike from and parallel to channel 2. Main Kash showing. Area is an old blast pit, uncovering bedrock was very difficult. Overburden up to 3 ft deep with abundant large boulders and rock fragments. This is all that could be cleared at this time. Mineralization is open in both directions. A small excavator would be ideal to clear this better.
0.00	0.50	0.50	1	Ser Sch		Schistose	Wht		Sil	Ser			0.1	1			887223	Strongly silicified and sericitized schist adjacent to heavily mineralized zone. 1% local cpy.
0.50	0.90	0.30	1	Ser Sch		Schistose	Wht Bl Gry		Sil	Ser			2	4	1	0.5	887224	Strongly silicified and sericitized schist. Strongly mineralized with 3-5% cpy, 1% galena, 2% py and local sphalerite.

Channel_ID	Sample_ID	From_m	To_m	Interval_m	Ag_ppm	Al_%	As_ppm	Au_ppb_FA	Au_ppb	Ba_ppm	Be_ppm	Bi_ppm	Ca_%	Cd_ppm	Ce_ppm	Co_ppm	Cr_ppm	Cs_ppm	Cu_ppm	Fe_%	Hf_ppm	K_%	La_ppm	Li_ppm	Mg_%	Mn_ppm	Mo_ppm	Na_%	Nb_ppm	Ni_ppm	P_%	Pb_ppm
Golsil CH-1	887201	0.0	1.0	1.0	11.5	9.54	5	19	50	312	0.5	11.9	3.11	12.3	44	13.2	23	1	969	8.27	4	1.16	18.3	68.9	3.18	3470	2.2	0.845	5.7	22.2	0.081	496
Golsil CH-1	887202	1.0	2.0	1.0	16.9	7.53	3	10	50	276	0.5	5.9	0.26	44.9	42	9.2	24	1.1	1310	8.39	3.6	1.52	17.5	68.7	2.23	1230	0.6	0.512	6.1	18.2	0.08	1950
Golsil CH-1	887203	2.0	3.0	1.0	87.0	7.26	4	99	500	146	0.5	10.4	0.16	25.5	39	6.9	30	1	11100	11.5	3.3	1.18	16.3	54.4	1.81	1150	1.2	0.342	5.3	34.5	0.063	3930
Golsil CH-1	887204	3.0	4.0	1.0	38.5	7.11	6	53	50	137	0.5	3.5	0.13	132	41	16.4	41	0.9	5620	10.6	3.2	1.21	18.5	52.7	1.76	1030	0.6	0.536	4.1	37.6	0.04	781
Golsil CH-1	887205	4.0	4.4	0.4	8.2	5.84	6	2.5	50	251	0.5	4.1	0.11	14.1	20	19.4	47	0.7	1050	7.04	3.7	0.98	7.5	71.4	1.74	1070	0.4	0.344	4.6	32.4	0.044	389
Golsil CH-2	887206	0.0	1.0	1.0	132.0	5.53	2	138	100	154	0.5	61.1	0.82	42.6	20	25.6	39	0.8	21500	9.21	3.2	0.99	6.8	36.5	2.23	1240	0.6	0.647	3.9	24.1	0.036	3170
Golsil CH-2	887207	1.0	2.0	1.0	41.7	4.38	1	51	50	174	0.5	22.8	0.62	9.3	13	12.8	43	0.6	5370	6.69	3.3	0.8	4.6	43.7	2.02	1320	0.6	0.63	4.3	16.4	0.037	1570
Golsil CH-2	887208	2.0	3.0	1.0	21.1	7.47	0.5	32	50	216	0.5	14	1.01	5.2	31	15	39	0.8	2870	6.74	3.5	1.16	13	47.6	2.43	1820	0.5	0.861	4.3	27.3	0.044	911
Golsil CH-2	887209	3.0	4.0	1.0	79.0	7.88	2	36	50	222	0.5	69.5	1.94	30	37	36.7	23	0.9	13600	7.72	3.2	1.17	16	25.8	1.96	1310	0.7	1.17	4	14.5	0.07	3450
Golsil CH-2	887210	4.0	5.0	1.0	50.6	8.26	0.5	58	50	374	0.5	58.6	2.64	32.5	42	27.3	17	1.1	7320	6.99	3.3	1.56	18.2	22.3	1.89	1230	0.9	1.41	3.6	16.9	0.078	3200
Golsil CH-2	887211	5.0	6.0	1.0	0.3	8.78	1	2.5	50	520	0.5	0.2	3.84	0.5	46	21.1	6	2.6	26	5.72	1.9	1.73	19.8	21	1.71	1100	0.05	1.42	0.4	13.5	0.102	52.8
Golsil CH-2	887212	6.0	7.0	1.0	0.1	8.29	1	2.5	50	511	0.5	0.05	3.74	0.3	45	20.5	6	2.2	30.5	5.47	2.1	1.72	19.5	25.8	1.72	1190	0.05	1.04	0.3	13.3	0.097	40.1
Golsil CH-2	887213	7.0	7.5	0.5	2.2	8.58	2	6	50	437	0.5	0.1	3.36	0.5	45	19.5	6	1.7	372	5.21	2.5	1.53	19.9	24.4	1.79	1540	0.05	1.24	0.5	12.3	0.101	65.7
Golsil CH-2	887214	7.5	8.5	1.0	11.3	7.25	7	29	50	285	0.5	26.3	5.05	1.5	38	12.7	32	1.2	373	6.55	3.1	1.41	18.1	16.1	3.37	5170	0.7	0.689	3.7	27.8	0.037	128
Golsil CH-2	887215	8.5	9.5	1.0	12.3	8.15	6	35	50	319	0.5	17.9	3.3	1.8	47	12.8	37	1.5	391	6.34	3.5	1.54	21.1	43.8	2.95	3760	0.3	0.713	4.1	30.3	0.044	222
Golsil CH-2	887216	9.5	10.5	1.0	21.1	5.35	10	62	50	313	0.5	16.3	3.71	2.9	29	15.7	38	0.7	1150	7.82	3.4	0.99	10.6	32.4	3.16	5990	0.4	0.723	4.8	31.2	0.052	340
Golsil CH-3	887217	0.0	1.0	1.0	52.6	9.77	3	48	50	49	0.5	45.6	3.04	2.3	14	27.7	18	0.3	2920	15.3	3.6	0.25	6.7	15.2	7.19	2430	2.4	0.414	5.4	12	0.057	2050
Golsil CH-3	887218	1.0	2.0	1.0	151.0	9.69	2	247	200	32	0.5	87	4.39	19.9	24	39.4	16	0.05	19500	16.8	3.3	0.13	10	9.5	6.84	2410	1.8	0.454	5.1	14	0.064	4020
Kash CH-1	887219	0.0	0.7	0.7	0.6	8.54	0.5	2.5	50	361	1	0.4	2.83	0.2	23	10.7	18	3.7	65.9	2.87	2.5	1.95	11.1	22.2	1.4	614	0.3	0.758	1.7	20.3	0.035	60.8
Kash CH-1	887220	0.7	1.3	0.6	0.5	7.9	0.5	2.5	50	99	0.5	0.4	7.81	0.4	20	15.8	15	1.3	122	4.33	1.6	0.47	10.1	11	2.59	2040	0.7	0.262	2	24	0.03	24.8
Kash CH-2	887221	0.0	0.5	0.5	2.5	6.68	0.5	82	50	344	0.5	2.5	1.51	10.3	12	2.3	12	1.2	233	1.02	1.9	1.97	5.7	14.9	0.53	290	1.2	0.318	1.3	6.6	0.024	199
Kash CH-2	887222	0.5	1.1	0.6	66.1	4.03	0.5	634	500	97	0.5	86.2	4.7	307	11	20.8	9	0.4	8980	3.69	1	0.37	5.5	9.5	1.42	1340	54.8	0.099	1.5	12	0.016	1860
Kash CH-3	887223	0.0	0.5	0.5	9.4	6.33	0.5	156	50	378	0.5	5.8	0.16	1.9	8	0.8	13	0.9	167	0.94	1.8	2.42	4.1	9.4	0.19	107	1.3	0.24	1.6	3.3	0.023	552
Kash CH-3	887224	0.5	0.9	0.4	70.4	4.37	0.5	601	800	133	0.5	65.2	5.05	139	11	15.5	10	0.8	10700	4.24	0.7	0.68	5.3	7.3	1.97	2280	17	0.235	1.1	14.8	0.015	1480

Channel_ID	Rb_ppm	S_%	Sb_ppm	Sc_ppm	Sn_ppm	Sr_ppm	Ta_ppm	Th_ppm	Ti_%	Tl_ppm	U_ppm	V_ppm	W_ppm	Y_ppm	Zn_ppm	Zr_ppm
Golsil CH-1	40.5	0.5	0.2	18	38.9	85	0.4	4.1	0.443	0.32	0.8	141	1.8	14.2	6680	163
Golsil CH-1	51.6	2	1.9	15	84.5	45	0.4	3.7	0.406	0.39	0.8	124	1.7	8.1	14200	146
Golsil CH-1	47.7	4	4.8	14	86.4	49	0.4	3.8	0.371	0.43	0.8	110	2.3	7.8	13600	138
Golsil CH-1	43.1	5	1	11	69.5	45	0.3	5.2	0.282	0.38	1.1	84	2	6.7	33100	128
Golsil CH-1	14.9	0.5	0.4	10	48.7	40	0.4	2.6	0.308	0.42	1.1	94	2.2	4.2	4990	145
Golsil CH-2	11.2	3	1.3	8	98.7	40	0.3	2.3	0.272	0.39	1	79	1.5	6.1	8820	121
Golsil CH-2	6.9	0.5	0.8	7	63.1	51	0.4	1.7	0.287	0.33	0.8	87	1.1	4.2	5140	126
Golsil CH-2	31.3	0.5	0.4	11	41.9	80	0.4	5	0.287	0.27	1.3	86	1	8.7	3090	136
Golsil CH-2	37.2	2	0.7	13	68	116	0.2	4	0.405	0.29	0.8	110	0.7	10.3	4990	123
Golsil CH-2	50	1	0.6	13	42.5	130	0.1	4.1	0.413	0.38	0.8	113	0.3	11.9	5170	133
Golsil CH-2	65	0.5	0.05	15	0.3	121	0.05	3.4	0.147	0.47	0.5	50	0.05	15.1	201	79.6
Golsil CH-2	64.1	0.5	0.05	14	0.2	119	0.05	3.2	0.143	0.44	0.6	53	0.05	14.9	161	87
Golsil CH-2	55.1	0.5	0.05	13	0.2	143	0.05	3.4	0.159	0.38	0.7	66	0.05	14.8	226	104
Golsil CH-2	48.1	0.5	0.3	10	3.8	108	0.3	5.1	0.246	0.34	1	75	1.3	10.5	495	116
Golsil CH-2	53.7	0.5	0.3	11	6.4	89	0.4	5.7	0.277	0.38	1.2	84	2	11.2	663	130
Golsil CH-2	11.2	0.5	0.5	8	10.9	85	0.4	1.8	0.319	0.42	0.9	100	1.7	8.5	1150	132
Golsil CH-3	6.5	0.5	1	17	104	21	0.4	3.1	0.445	0.06	0.7	145	1.8	12.8	15700	148
Golsil CH-3	2	2	1.6	18	130	29	0.4	2.9	0.415	0.025	0.7	140	2.5	15.5	17300	133
Kash CH-1	70	0.5	0.05	6	0.7	93	0.1	2.4	0.192	0.56	0.6	46	0.4	4.9	226	91
Kash CH-1	19.6	0.5	0.1	5	0.7	92	0.2	2.1	0.177	0.19	0.5	45	0.3	7.6	295	58
Kash CH-2	50.2	0.5	0.05	5	0.7	29	0.05	1.7	0.155	0.27	0.4	41	2.1	4.3	1240	69.4
Kash CH-2	12.5	4	0.3	2	1.6	32	0.05	1	0.072	0.23	0.3	25	1.2	8.6	40400	37.2
Kash CH-3	56.8	0.5	0.2	4	1	25	0.1	1.8	0.151	0.3	0.4	39	3.3	2.9	387	66.8
Kash CH-3	17.9	3	0.3	3	2.1	42	0.05	1	0.076	0.26	0.3	27	1.2	7.1	20700	27.3

659,760

659,800

659,810

5,576,900

5,576,900

887224

887223

887222

887221

LEA-107479

5,576,890

5,576,890

887220

887219

659,790

659,800

659,810

COMMANDER RESOURCES

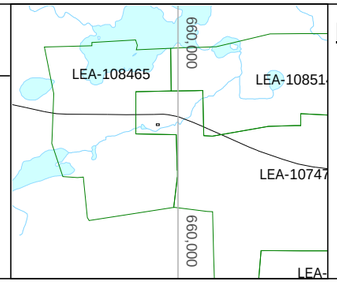
Date:
Dec 30, 2019

Drafted by:
M. Kulla

Appendix:
4a

Sabin
Kash Channel Samples

Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone



Legend

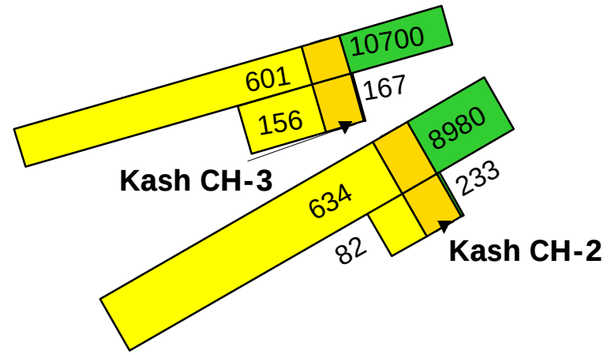
Sample (887219)

▼Channel

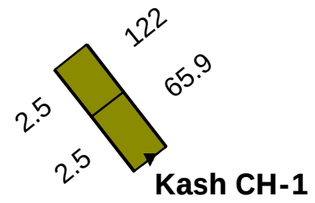
0 4

metres

Scale 1:75



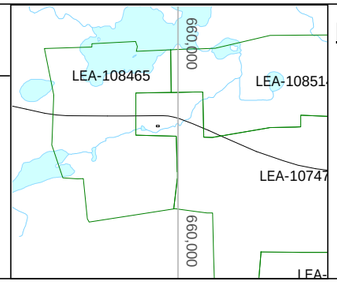
LEA-107479



COMMANDER RESOURCES

Date: Dec 30, 2019
Drafted by: M. Kulla
Appendix: 4b

Sabin
Kash Channel Geology
Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone

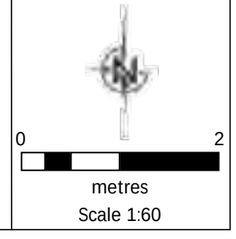


Legend

▼ Channel

Assays
- Au (ppb)
- Cu (ppm)

Geology
- Amphibole Schist
- Sericite Schist



661,800

661,825

887217
887218

887201
887202
887203
887204
887205

LEA-108226

5,573,650

5,573,650

887206
887207
887208
887209
887210
887211
887212
887213
887214
887215
887216

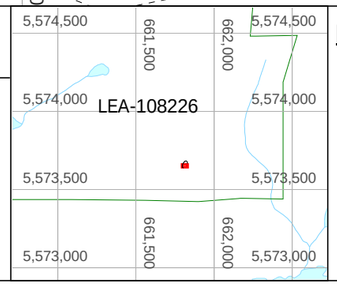
661,800

661,825

COMMANDER RESOURCES

Date:
Dec 30, 2019
Drafted by:
M. Kulla
Appendix:
4c

Sabin
Golsil Channel Samples
Ontario
Patricia Mining Division
052J-07
UTM NAD83 zone



Legend

Sample (887206)

▼ Channel

Outcrop

0 5
metres
Scale 1:100

661,800

661,825

5,573,650

5,573,650

Golsil CH-3

48 247 2920 19500

Golsil CH-1

19 969 10 1310 99 1100 53 2.5 5620 1050

LEA-108226

Golsil CH-2

138 51 32 36 58 2.5 2.5 6 29 35 62 1150 391 373 372 30.5 26 7320 13600 2870 5370 21500

661,800

661,825

COMMANDER RESOURCES

Date: Dec 30, 2019

Drafted by: M. Kulla

Appendix: 4d

Sabin

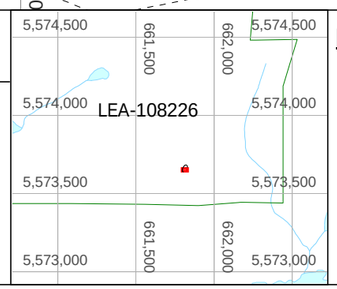
Golsil Channel Geology

Ontario

Patricia Mining Division

052J-07

UTM NAD83 zone



Legend

▼ Channel

Outcrop

Assays

Au (ppb)

Cu (ppm)

Geology

Garnet Chlorite Schist

Amphibole Chlorite Garnet Schist

Chlorite Schist

0 5

metres

Scale 1:100

APPENDIX 5

Whole Rock Data and Maps

Station No.	Date	User	Northing	Easting	Map Unit	Rock_type	gt	ser	stau	sil	cpy	py	po	Material	Sample	Wgt_kg	SiO2_pct	Al2O3_pct	Fe2O3_pct	MgO_pct	CaO_pct	Na2O_pct	K2O_pct	TiO2_pct	P2O5_pct	MnO_pct	Cr2O3_pct
SW19-006	5/23/2019	SW	5576131	661433	Intermediate Volcanic	bt feld hbl ser schist	2	2		3		0.5		bedrock	1588507	1.35	67.83	16.75	5.12	1.71	2.79	1.72	1.83	0.43	0.08	0.06	0.004
SW19-007	5/23/2019	SW	5576170	661577	Intermediate Volcanic	bt feld hbl ser schist	1	2				2.0		bedrock	1588508	1.54	69.54	18.08	3.12	0.78	0.88	1.17	3.01	0.49	0.09	0.02	0.005
SW19-013	5/23/2019	SW	5575966	661344	Intermediate Volcanic	bt feld schist				1		0.5		bedrock	1588510	1.07	63.37	16.57	6.46	1.53	3.79	2.68	1.86	0.46	0.09	0.06	0.005
SW19-015	5/23/2019	SW	5575907	661251	Intermediate Volcanic	bt feld hbl schist								bedrock	1588511	0.86	69.4	15.6	2.92	1.18	3.8	3.4	1.25	0.34	0.07	0.12	0.003
SW19-014	5/23/2019	SW	5575909	661174	Intermediate Volcanic	bt feld schist	1	1				0.3		bedrock	1588512	0.97	62.69	16.04	7.46	2.12	3.84	2.8	1.88	0.46	0.09	0.08	0.004
SW19-016	5/23/2019	SW	5576017	661239	Intermediate Volcanic	bt feld chl schist	2					0.1		bedrock	1588513	0.82	65.82	16.72	4.4	1.7	3.54	3.77	1.34	0.38	0.08	0.08	0.004
SW19-017	5/23/2019	SW	5576074	661375	Felsic volcanic	feld qtz bt ser schist		1				0.1		bedrock	1588514	1.22	71.37	16.41	1.61	0.52	4.01	4.08	0.41	0.46	0.08	0.04	0.003
SW19-018	5/23/2019	SW	5576163	661262	Intermediate Volcanic	bt feld chl schist	1							bedrock	1588515	1.21	70.99	16.94	2.13	0.53	2.2	1.69	3.06	0.42	0.08	0.03	0.004
SW19-019	5/23/2019	SW	5576220	661272	Intermediate Volcanic	bt feld hbl schist	1					0.1		bedrock	1588516	1.68	71.11	16.38	4.29	0.93	1.25	1.09	2.87	0.38	0.08	0.06	0.004
SW19-020	5/23/2019	SW	5576324	661337			1	1		1		2.0		bedrock	1588517	1.21	65.01	16.71	5.55	1.52	3.02	4.14	2.02	0.43	0.07	0.07	0.004
SW19-021	5/24/2019	SW	5576442	661903	Intermediate Volcanic	bt feld chl schist		1		2	0.1	0.5		bedrock	1588518	1.59	66.98	18.21	4.47	1.44	1.94	2.34	2.12	0.52	0.09	0.05	0.005
SW19-023	5/24/2019	SW	5576717	662017	Intermediate Volcanic	bt feld ser schist		1		3		0.1		talus	1588519	1.18	76.06	14.04	0.87	0.16	0.67	4.9	2.3	0.27	0.02	0.005	0.001
SW19-024	5/24/2019	SW	5577103	661941	Intermediate Volcanic	bt feld hbl schist								bedrock	1588520	1.28	60.33	15.55	7.59	3.41	6.69	3.72	0.58	0.71	0.16	0.12	0.008
SW19-026	5/24/2019	SW	5577173	662120	Intermediate tuff	bt feld schist	3							bedrock	1588521	1.03	64.08	14.74	7.11	2.93	6.47	0.98	1.72	0.39	0.08	0.14	0.001
SW19-032	5/24/2019	SW	5577231	662191	Intermediate tuff	bt feld hbl schist								bedrock	1588522	0.75	70.6	15.39	3.7	0.66	2.86	2.04	2.54	0.61	0.12	0.06	0.001
SW19-033	5/24/2019	SW	5577383	662232	Felsic volcanic	feld qtz bt ser schist		1		1				bedrock	1588523	1.3	77.36	12.88	1.04	0.16	0.69	3.69	3.16	0.25	0.04	0.02	0.001
SW19-035	5/24/2019	SW	5577429	662362	Felsic volcanic	feld qtz bt ser schist		1				0.3		bedrock	1588524	1.03	78.1	11.84	2.18	0.31	0.87	3.63	1.79	0.21	0.02	0.04	0.001
SW19-037	5/24/2019	SW	5577274	662884	Mafic volcanic	amphibolite								bedrock	1588525	1.17	56.22	17	8.94	4.19	5.78	3.78	0.99	0.93	0.22	0.14	0.01
SW19-038	5/24/2019	SW	5577249	662984	Mafic volcanic	amphibolite								bedrock	1588526	1.16	58.12	16.33	8.52	3.89	6	3.39	1.21	0.9	0.21	0.12	0.01
SW19-039	5/24/2019	SW	5577094	663064	Felsic volcanic	bt feld qtz schist						0.1		bedrock	1588527	1.37	71.95	12.91	5.04	0.89	2.34	3.49	1.49	0.37	0.07	0.07	0.001
SW19-040	5/24/2019	SW	5577578	662741	Intermediate Volcanic	bt feld hbl schist						0.1		bedrock	1588528	1.47	69.15	13.7	4.92	0.93	6.82	0.57	1.65	0.18	0.03	0.09	0.001
SW19-041	5/24/2019	SW	5576873	661842	Intermediate Volcanic	bt feld hbl ser schist	1	1		1	0.1	0.1		bedrock	1588529	1.62	68.93	15.04	4.72	1.06	4.41	2.76	1.15	0.44	0.09	0.1	0.001
SW19-043	5/25/2019	SW	5573949	662821	Felsic volcanic	bt feld qtz schist						0.1		bedrock	1588530	0.65	79.2	12.7	1.64	0.61	0.48	0.89	2.54	0.09	0.01	0.02	0.001
SW19-046	5/25/2019	SW	5573846	662209	Exhalite	silica		1		3		0.1		bedrock	1588531	1.19	79	12.76	1.26	0.53	0.77	0.74	3.16	0.09	0.02	0.01	0.001
SW19-049	5/25/2019	SW	5573729	662100	Intermediate Volcanic	bt feld chl schist		1				2.0		bedrock	1588532	1.05	63.38	17.09	5.37	3.03	4.04	2.5	1.82	0.82	0.16	0.07	0.019
SW19-050	5/25/2019	SW	5573724	661950	Intermediate tuff	bt feld schist						0.5		bedrock	1588533	1.24	62.52	16.88	5.75	2.68	3.94	2.11	3.05	0.79	0.17	0.09	0.002
SW19-051	5/25/2019	SW	5573646	661810	Intermediate Volcanic	bt act gt schist	4		4	2	0.25	2.0		bedrock	1588534	1.29	59.55	17.56	11.85	4.8	1.78	0.83	1.28	0.72	0.15	0.13	0.002
SW19-055	5/26/2019	SW	5576755	658161	Intermediate Volcanic	bt feld hbl schist						0.1		bedrock	1588536	0.89	64.22	16.71	4.9	2.27	4.29	4.59	1.57	0.4	0.07	0.13	0.003
SW19-056	5/26/2019	SW	5576616	658062	Felsic volcanic	bt feld qtz schist	1	1				0.1		bedrock	1588537	0.93	64.45	16.92	5.53	1.69	3.71	3.85	2.37	0.42	0.06	0.13	0.003
SW19-068	5/26/2019	SW	5576050	657967	Intermediate Volcanic	bt feld schist				4		10.0		bedrock	1588540	1.04	57.45	12.14	15.01	1.58	1.98	3.29	1.93	0.25	0.05	0.07	0.001
SW19-069	5/26/2019	SW	5575991	657980	Felsic volcanic	feld qtz bt ser schist						0.3		bedrock	1588541	1.26	71.19	14.96	2.77	1.21	1.85	2.67	3.09	0.31	0.07	0.05	0.004
SW19-072	5/26/2019	SW	5575773	657732	Intermediate Volcanic	bt feld schist						0.3		bedrock	1588543	0.9	68.47	16.63	2.93	1.09	2.99	4.62	2.12	0.28	0.07	0.05	0.001
SW19-073	5/26/2019	SW	5576196	657242	Intermediate Volcanic	bt feld schist								bedrock	1588544	0.96	67.72	15.31	5.5	1.29	3.1	4.43	1.36	0.59	0.14	0.07	0.001
SW19-074	5/26/2019	SW	5576408	657482	Felsic volcanic	bt feld qtz schist		1				0.1		bedrock	1588545	0.95	70.92	14.88	3.36	1.67	2.84	2.59	2.15	0.3	0.07	0.07	0.002
SW19-075	5/26/2019	SW	5576649	657769	Intermediate Volcanic	bt feld schist	1					0.1		bedrock	1588546	0.96	72.55	12.82	4.12	1.06	3.41	1.21	2.95	0.35	0.06	0.09	0.001
SW19-077	5/26/2019	SW	5576887	659798	Intermediate Volcanic	bt feld schist	1	2		3				bedrock	1588547	1.24	72.01	13.28	3.47	2.5	3.54	0.88	2.22	0.32	0.08	0.14	0.004
SW19-079	5/27/2019	SW	5580420	660819	Intermediate Volcanic	bt feld hbl schist								bedrock	1588549	0.68	56.77	17.6	8.48	3.14	7.43	3.7	0.32	0.85	0.19	0.14	0.009
SW19-080	5/27/2019	SW	5580240	660612	Mafic volcanic	hbl bt feld schist						0.1		bedrock	1588550	0.82	60.72	16.35	7.95	3.03	6.27	2.92	0.59	0.6	0.1	0.18	0.007
RK19-002	5/23/2019	RK	5576999	659664	Intermediate Volcanic	bt feld hbl schist	0	0				0.1		bedrock	1588551	1.05	64.25	16.86	4.9	2.14	4.15	4.07	1.62	0.41	0.07	0.11	0.004
RK19-003	5/23/2019	RK	5577004	659855	Intermediate Volcanic	bt feld hbl schist	0	0				0.1		bedrock	1588552	1.47	64.27	17.11	4.43	2.24	3.53	4.03	2.16	0.4	0.07	0.08	0.004
RK19-004	5/23/2019	RK	5577001	659917	Intermediate Volcanic	bt feld hbl schist	0	0				0.1		bedrock	1588553	1.81	66.13	17.43	3.18	1.8	4.09	3.06	2.87	0.42	0.07	0.07	0.004
RK19-005	5/23/2019	RK	5576921	660153	Felsic volcanic	bt feld hbl qtz schist		2				0.1		bedrock	1588554	0.74	67.89	16.21	3.78	1.63	3.72	3.27	1.91	0.38	0.09	0.08	0.005
RK19-006	5/23/2019	RK	5576892	660237	Felsic volcanic	bt feld hbl qtz schist	0	1				0.1		bedrock	1588555	1.26	67.8	16.17	3.66	1.43	3.24	4.26	1.76	0.37	0.08	0.06	0.005
RK19-008	5/23/2019	RK	5576731	660584	Intermediate Volcanic	bt feld hbl schist				3		0.1		bedrock	1588557	0.84	68.73	16.26	2.77	1.09	4.84	3.32	1.19	0.33	0.07	0.08	0.003
RK19-009	5/23/2019	RK	5576712	660629	Intermediate Volcanic	bt feld hbl schist	4							bedrock	1588558	0.38	68.96	16.31	3.32	1.24	1.4	5.97	1.32	0.34	0.07	0.03	0.002
RK19-010	5/23/2019	RK	5576677	660718	Intermediate Volcanic	bt feld hbl schist	1					0.1		bedrock	1588559	0.74	69.58	16.34	3.24	1.27	1.52	1.74	3.41	0.35	0.07	0.05	0.003

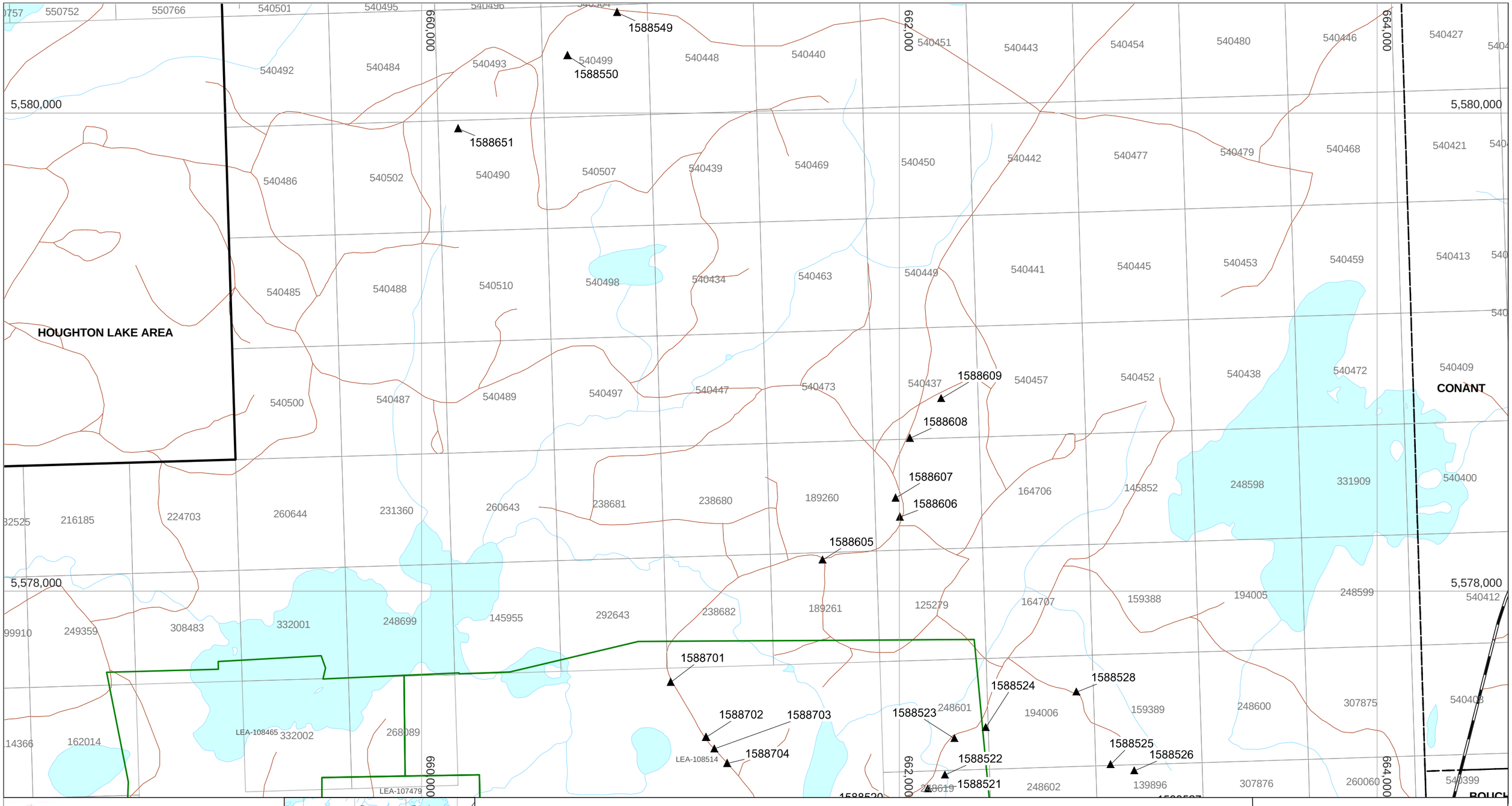
Station No.	Ba_PPM	Ni_PPM	Sr_PPM	Zr_PPM	Y_PPM	Nb_PPM	Sc_PPM	LOI_pct	Sum_pct	AltIndex	CCPI	Al_Na	ti_zr	Rocktype Ti/Zr
SW19-006	406	24	187	102	7	2.5	8	1.6	99.96	43.98	64.02	9.74	42.16	andesite
SW19-007	452	10	162	122	6	2.5	9	2.7	99.97	64.90	46.19	15.45	40.16	andesite
SW19-013	372	10	219	130	6	2.5	9	3	99.98	34.38	61.79	6.18	35.38	andesite
SW19-015	461	10	192	95	4	2.5	6	1.8	99.97	25.23	45.02	4.59	35.79	andesite
SW19-014	196	46	193	93	7	2.5	9	2.4	99.93	37.59	65.37	5.73	49.46	andesite
SW19-016	351	27	229	106	6	2.5	7	2	99.96	29.37	52.55	4.44	35.85	andesite
SW19-017	119	10	146	110	6	2.5	6	1	99.99	10.31	30.48	4.02	41.82	andesite
SW19-018	515	10	347	103	6	2.5	8	1.8	99.99	47.99	34.00	10.02	40.78	andesite
SW19-019	434	10	150	106	6	6	7	1.4	99.95	61.89	54.74	15.03	35.85	andesite
SW19-020	505	10	146	97	5	2.5	9	1.3	99.96	33.08	51.40	4.04	44.33	andesite
SW19-021	232	22	212	114	11	2.5	10	1.7	99.95	45.41	55.05	7.78	45.61	andesite
SW19-023	425	10	106	225	20	8	6	0.6	100	30.64	11.58	2.87	12.00	dacite
SW19-024	172	43	526	133	15	2.5	15	1	99.92	27.71	70.43	4.18	53.38	andesite
SW19-026	354	10	168	287	25	11	8	1.2	99.95	38.43	77.55	15.04	13.59	andesite
SW19-032	721	10	437	207	17	2.5	9	1.2	99.99	39.51	46.55	7.54	29.47	andesite
SW19-033	503	10	122	228	20	7	5	0.6	100	43.12	13.79	3.49	10.96	dacite
SW19-035	406	10	119	205	15	6	6	0.9	100.01	31.82	29.53	3.26	10.24	dacite
SW19-037	180	54	253	146	18	10	17	1.6	99.9	35.14	71.95	4.50	63.70	basalt
SW19-038	273	56	427	137	16	10	17	1.1	99.93	35.20	71.53	4.82	65.69	basalt
SW19-039	258	10	87	256	21	11	8	1.3	99.97	28.99	52.14	3.70	14.45	andesite
SW19-040	274	10	109	233	42	8	8	1.8	99.96	25.88	70.70	24.04	7.73	dacite
SW19-041	328	10	175	296	27	14	9	1.2	99.97	23.56	57.58	5.45	14.86	andesite
SW19-043	280	10	55	166	18	7	5	1.8	100	69.69	37.81	14.27	5.42	dacite
SW19-046	226	10	75	167	20	10	5	1.6	100	70.96	29.90	17.24	5.39	dacite
SW19-049	365	71	243	143	15	8	17	1.5	99.92	42.58	64.54	6.84	57.34	andesite
SW19-050	413	20	120	157	15	7	15	1.9	99.93	48.64	60.35	8.00	50.32	andesite
SW19-051	198	22	94	128	15	6	19	1.1	99.79	69.97	87.99	21.16	56.25	andesite
SW19-055	325	24	193	92	7	2.5	8	0.7	99.95	30.19	52.02	3.64	43.48	andesite
SW19-056	523	26	144	91	3	2.5	8	0.7	99.95	34.94	51.73	4.39	46.15	andesite
SW19-068	221	10	62	89	4	6	4	6.1	99.92	39.98	74.29	3.69	28.09	andesite
SW19-069	509	10	151	111	4	2.5	5	1.7	99.98	48.75	39.13	5.60	27.93	andesite
SW19-072	471	10	418	115	3	2.5	4	0.6	99.98	29.67	35.60	3.60	24.35	andesite
SW19-073	269	10	224	158	12	6	9	0.4	99.98	26.03	51.87	3.46	37.34	andesite
SW19-074	407	10	159	100	3	2.5	4	1	99.98	41.30	49.75	5.75	30.00	andesite
SW19-075	282	10	44	268	19	6	6	1.3	99.99	46.47	53.40	10.60	13.06	andesite
SW19-077	228	10	73	88	7	2.5	6	1.4	99.86	51.64	64.46	15.09	36.36	andesite
SW19-079	73	59	311	138	12	2.5	16	1.2	99.91	23.71	72.82	4.76	61.59	basalt
SW19-080	194	37	213	118	10	2.5	14	1.1	99.88	28.26	74.37	5.60	50.85	andesite
RK19-002	333	30	249	91	7	2.5	8	1.3	99.95	31.39	53.51	4.14	45.05	andesite
RK19-003	367	30	145	90	6	2.5	8	1.6	99.96	36.79	50.15	4.25	44.44	andesite
RK19-004	638	20	195	91	6	2.5	8	0.7	99.96	39.51	44.01	5.70	46.15	andesite
RK19-005	300	26	153	100	6	2.5	6	0.9	99.97	33.62	49.27	4.96	38.00	andesite
RK19-006	265	24	138	99	6	2.5	6	1.1	99.97	29.84	43.96	3.80	37.37	andesite
RK19-008	443	23	320	106	7	2.5	6	1.2	99.98	21.84	44.27	4.90	31.13	andesite
RK19-009	348	22	312	105	5	2.5	5	0.9	99.98	25.78	36.70	2.73	32.38	andesite
RK19-010	631	27	217	112	5	2.5	5	2.3	99.97	58.94	44.83	9.39	31.25	andesite

Station No.	Date	User	Northing	Easting	Map Unit	Rock_type	gt	ser	stau	sil	cpy	py	po	Material	Sample	Wgt_kg	SiO2_pct	Al2O3_pct	Fe2O3_pct	MgO_pct	CaO_pct	Na2O_pct	K2O_pct	TiO2_pct	P2O5_pct	MnO_pct	Cr2O3_pct
RK19-011	5/23/2019	RK	5576648	660775	Intermediate Volcanic	bt feld hbl schist	2					0.5		bedrock	1588560	0.52	69.65	15.77	3.54	1.37	2.65	3.73	1.37	0.35	0.07	0.12	0.003
RK19-012	5/23/2019	RK	5576602	660906	Intermediate Volcanic	bt feld hbl schist				3		0.1		bedrock	1588561	0.39	64.49	18.08	4.33	1.23	2.64	5.6	1.91	0.44	0.1	0.06	0.004
RK19-013	5/23/2019	RK	5576581	660976	Intermediate Volcanic	bt feld hbl schist	2	2				0.1	0.1	bedrock	1588562	1.05	72.83	13	4.39	0.53	3.61	3.07	1.27	0.35	0.06	0.09	0.001
RK19-019	5/24/2019	RK	5576512	661121	Intermediate Volcanic	ser bt schist	0	4		3		0.1		bedrock	1588568	0.54	71.6	13.62	4.38	0.92	3.24	2.76	1.71	0.44	0.08	0.09	0.001
RK19-020	5/24/2019	RK	5576476	661246	Intermediate Volcanic	bt feld hbl schist		2		3		0.1		bedrock	1588569	0.77	72.33	12.92	4.07	0.77	2.79	3.61	1.44	0.4	0.09	0.06	0.001
RK19-021	5/24/2019	RK	5576453	661318	Intermediate Volcanic	bt ser schist	1	2		2				bedrock	1588570	0.74	72.05	13.41	4.03	0.67	2.97	2.08	2.44	0.41	0.08	0.06	0.001
RK19-022	5/24/2019	RK	5576457	661445	Intermediate Volcanic	bt feld hbl schist		2		4		0.1		bedrock	1588571	0.71	57.2	16.6	8.04	4.14	7.74	2.38	1.44	0.74	0.17	0.13	0.015
RK19-029	5/24/2019	RK	5576447	661703	Intermediate Volcanic	bt feld hbl schist	1							bedrock	1588578	0.92	71.62	12.42	3.68	2.3	4.55	1.07	1.25	0.29	0.05	0.1	0.001
RK19-030	5/24/2019	RK	5576505	661701	Intermediate Volcanic	bt feld hbl schist		4		1		0.1	0.1	bedrock	1588579	0.32	72.12	13.66	4.31	1.02	1.96	3.38	1.72	0.43	0.09	0.05	0.001
RK19-031	5/24/2019	RK	5576544	661687	Felsic volcanic	bt feld hbl qtz schist	1	1						bedrock	1588580	0.64	69.78	12.75	5.74	2.25	5.85	0.61	1.28	0.33	0.07	0.14	0.003
RK19-032	5/24/2019	RK	5576565	661675	Mafic volcanic	bt feld hbl schist	1			3				bedrock	1588581	0.59	72.36	13.63	4.38	1.31	3.13	1.45	1.77	0.44	0.08	0.09	0.001
RK19-033	5/24/2019	RK	5576528	661677	Exhalite	silica				5				bedrock	1588582	1.54	85.27	11.28	0.46	0.01	0.09	1.64	0.38	0.17	0.005	0.005	0.001
RK19-034	5/24/2019	RK	5576605	661636	Exhalite	silica		4		5				bedrock	1588583	0.62	88.22	7.14	0.73	0.21	0.05	0.46	1.79	0.12	0.005	0.005	0.001
RK19-035	5/24/2019	RK	5576674	661581	Exhalite	silica		3		5				bedrock	1588584	0.59	84.11	10.57	0.58	0.04	0.02	0.5	2.24	0.17	0.01	0.005	0.001
RK19-036	5/24/2019	RK	5576749	661525	Felsic volcanic	bt feld hbl qtz schist	2							bedrock	1588585	0.8	60.08	18.32	9.45	1.34	4.77	3.01	1.37	0.8	0.13	0.17	0.002
RK19-037	5/24/2019	RK	5576768	661475	Felsic volcanic	bt feld hbl qtz schist							1	bedrock	1588586	0.81	73.62	12.74	4.36	0.55	2.18	3.83	0.79	0.35	0.07	0.09	0.001
RK19-041	5/25/2019	RK	5573639	661803	Intermediate Volcanic	bt feld hbl schist				1				bedrock	1588590	1.17	59.18	15.57	9.32	3.95	3.17	2.3	1.95	0.99	0.25	0.21	0.001
RK19-042	5/26/2019	RK	5576844	660175	Intermediate Volcanic	bt ser schist		1		3				bedrock	1588591	0.27	67.81	16.53	2.63	1.35	4.54	2.34	2.21	0.4	0.06	0.08	0.003
RK19-043	5/26/2019	RK	5576822	660141	Intermediate Volcanic	bt feld schist				3				bedrock	1588592	0.75	66.1	16.43	4.31	1.99	3.5	4.08	1.61	0.37	0.06	0.07	0.004
RK19-044	5/26/2019	RK	5576795	660038	Intermediate Volcanic	bt feld schist	1	1		3				bedrock	1588593	0.49	67.63	16.19	4.48	1.22	1.35	6.2	1.08	0.39	0.1	0.07	0.004
RK19-045	5/26/2019	RK	5576779	659968	Intermediate Volcanic	bt feld hbl schist				3				bedrock	1588594	1.15	67.74	16.51	4.06	0.98	2.01	5.16	1.9	0.37	0.08	0.06	0.003
RK19-046	5/26/2019	RK	5576730	659909	Intermediate Volcanic	bt feld hbl schist				3		0.1		bedrock	1588595	0.54	70.99	13.34	5.15	0.92	3.42	2.78	1.65	0.39	0.06	0.09	0.001
RK19-047	5/26/2019	RK	5576702	659872	Intermediate Volcanic	bt feld hbl schist	3			2		0.1		bedrock	1588596	0.77	69.79	15.65	4.05	1.08	1.49	4.67	1.55	0.37	0.08	0.05	0.004
RK19-048	5/26/2019	RK	5576687	659800	Intermediate Volcanic	bt feld hbl schist				3				bedrock	1588597	0.73	64.47	16.56	5.65	1.7	4.47	3.32	1.68	0.54	0.12	0.09	0.004
RK19-049	5/26/2019	RK	5576813	659673	Intermediate Volcanic	bt feld hbl schist	3	1		1		0.1		bedrock	1588598	0.66	65.89	16.1	6.66	1.37	1.67	5.05	1.9	0.53	0.09	0.11	0.005
MK19-018	5/26/2019	MK	5576403	658050	Felsic volcanic	bt feld qtz schist								bedrock	1588602	1.15	74.7	12.82	3.13	0.8	1.99	3.42	2.27	0.28	0.05	0.05	0.001
SW19-066	5/26/2019	SW	5576058	657962	Intermediate Volcanic	bt feld hbl schist		2				5.0		bedrock	1588604	0.99	69.32	15.1	3.21	1.55	2.94	2.6	3.51	0.34	0.08	0.06	0.003
MK19-030	5/27/2019	MK	5578130	661679	Felsic volcanic	bt feld qtz schist		1						bedrock	1588605	0.83	77.26	12.84	0.61	0.22	0.54	4.07	3.21	0.22	0.01	0.005	0.001
MK19-031	5/27/2019	MK	5578310	662003	Intermediate Volcanic	bt feld schist								bedrock	1588606	0.94	59.89	15.75	7.6	3.05	5.03	1.48	4.1	0.81	0.21	0.13	0.012
MK19-032	5/27/2019	MK	5578389	661984	Intermediate Volcanic	bt feld schist				1				bedrock	1588607	1.04	74.09	12.69	3.53	0.74	2.46	2.14	2.42	0.34	0.06	0.06	0.001
MK19-035	5/27/2019	MK	5578639	662045	Intermediate Volcanic	bt feld schist	1							bedrock	1588608	1.12	76.54	12.05	2.89	0.27	1.1	3.48	2.16	0.19	0.04	0.1	0.001
MK19-038	5/27/2019	MK	5578805	662175	Intermediate Volcanic	bt feld schist								bedrock	1588609	1.26	70.91	15.28	2.83	0.5	1.57	4.12	2.84	0.52	0.1	0.05	0.001
MK19-046	5/28/2019	MK	5576787	661370	Intermediate Volcanic	bt feld hbl schist	3					0.1		bedrock	1588610	1.22	62.21	17.6	7.02	1.24	8.07	1.27	0.52	0.77	0.13	0.31	0.003
SW19-082	5/27/2019	SW	5579934	660154	Intermediate Volcanic	bt act ser py schist		1		1		0.5		float	1588651	0.82	63.52	16.16	6.27	2.54	4.31	3.06	0.65	0.6	0.12	0.1	0.006
SW19-091	5/28/2019	SW	5576058	663180	Intermediate Volcanic	bt feld chl schist	3					0.3		bedrock	1588653	1.62	62.74	16.01	6.19	2.08	6.23	1.87	1.37	0.71	0.18	0.11	0.009
SW19-093	5/28/2019	SW	5576107	663062	Intermediate Volcanic	bt feld hbl schist						0.3		talus	1588654	1.18	65.96	16.6	4.82	2	2.74	3.98	1.89	0.55	0.13	0.04	0.009
SW19-095	5/28/2019	SW	5573509	663199	Intermediate Volcanic	bt feld hbl schist	1					0.3		bedrock	1588655	1.02	63.38	16.67	5.16	2.96	4.88	1.81	2.3	0.54	0.11	0.08	0.006
SW19-096	5/28/2019	SW	5574102	663220	Intermediate Volcanic	bt feld hbl schist						0.1		bedrock	1588656	0.91	70.46	14.63	3.69	1.07	3.14	1.84	3.29	0.39	0.07	0.08	0.001
SW19-097	5/28/2019	SW	5574621	663297	Intermediate Tuff	bt feld schist						0.3		bedrock	1588657	0.75	64.53	15.69	6.56	2.34	2.78	3.98	2.17	0.74	0.17	0.07	0.017
SW19-098	5/28/2019	SW	5575628	663920	Intermediate Volcanic	bt feld schist						0.3		bedrock	1588658	0.96	63.92	14.06	8.98	2.45	3.53	3.36	1.72	0.83	0.19	0.11	0.01
SW19-099	5/28/2019	SW	5575821	664604	Mafic volcanic	amphibolite					0.1	0.3		bedrock	1588659	1.02	56.82	17.7	8.16	3.69	5.17	3.82	1.31	0.99	0.25	0.14	0.016
SW19-101	5/28/2019	SW	5575321	664468	Mafic volcanic	amphibolite	1					0.3		talus	1588660	1.26	45.66	16.21	17.42	4.95	9.45	1.48	1.56	1	0.29	0.39	0.01
SW19-102	5/28/2019	SW	5575412	664295	Intermediate Volcanic	hbl bt feld schist						0.5		talus	1588661	1.1	57.39	17.05	9.1	2.38	6.26	4.5	0.3	0.97	0.27	0.18	0.009
SW19-104	5/28/2019	SW	5575802	664178	Mafic volcanic	hbl bt schist						0.1		bedrock	1588663	1.04	50.08	16.86	12.04	6.25	6.01	2.55	1.93	1.6	0.52	0.15	0.016
SW19-106	5/28/2019	SW	5576388	662168	Intermediate Volcanic	bt feld schist	2			3		0.5		bedrock	1588664	1.02	81.19	10.21	3.63	0.49	0.18	0.35	1.89	0.35	0.1	0.04	0.003
SW19-107	5/28/2019	SW	5576371	662185	Intermediate Volcanic	ser bt schist	3	2		3		0.3		bedrock	1588665	1.15	63.93	16.75	6.44	1.74	4.26	1.73	2.62	0.69	0.11	0.14	0.004

Station No.	Ba_PPM	Ni_PPM	Sr_PPM	Zr_PPM	Y_PPM	Nb_PPM	Sc_PPM	LOI_pct	Sum_pct	AltIndex	CCPI	Al_Na	ti_zr	Rocktype Ti/Zr
RK19-011	416	25	170	100	5	2.5	6	1.3	99.98	30.04	47.18	4.23	35.00	andesite
RK19-012	491	31	213	126	8	2.5	8	1	99.97	27.59	40.57	3.23	34.92	andesite
RK19-013	265	10	88	250	26	12	8	0.7	99.98	21.23	50.79	4.23	14.00	andesite
RK19-019	608	10	103	271	13	11	8	1	99.99	30.48	52.10	4.93	16.24	andesite
RK19-020	230	10	139	244	21	10	7	1.5	100	25.67	46.74	3.58	16.39	andesite
RK19-021	409	10	121	264	19	11	7	1.7	100	38.11	48.73	6.45	15.53	andesite
RK19-022	266	60	243	120	14	2.5	17	1.2	99.89	35.54	74.86	6.97	61.67	basalt
RK19-029	210	10	148	256	24	11	7	2.6	99.96	38.71	70.75	11.61	11.33	dacite
RK19-030	419	10	81	254	23	7	8	1.1	99.97	33.91	48.99	4.04	16.93	andesite
RK19-031	597	36	164	141	17	7	6	1	99.96	35.34	79.69	20.90	23.40	andesite
RK19-032	743	10	153	266	24	10	8	1.2	99.97	40.21	61.99	9.40	16.54	andesite
RK19-033	243	10	123	172	13	2.5	3	0.6	100	18.40	17.35	6.88	9.88	dacite
RK19-034	260	10	15	112	6	2.5	4	1.3	100.02	79.68	27.81	15.52	10.71	dacite
RK19-035	172	10	59	170	14	7	5	1.7	100	81.43	17.02	21.14	10.00	dacite
RK19-036	298	25	205	126	15	6	18	0.4	99.94	25.83	69.21	6.09	63.49	basalt
RK19-037	244	10	52	255	22	11	8	1.3	99.99	18.23	49.19	3.33	13.73	andesite
RK19-041	610	10	146	136	15	7	14	2.8	99.8	51.89	74.38	6.77	72.79	basalt
RK19-042	498	10	176	112	7	2.5	7	2	99.98	34.10	44.96	7.06	35.71	andesite
RK19-043	296	24	194	99	6	2.5	6	1.4	99.96	32.20	50.77	4.03	37.37	andesite
RK19-044	217	24	159	101	6	6	7	1.2	99.98	23.35	41.90	2.61	38.61	andesite
RK19-045	330	10	146	98	6	2.5	7	1	99.98	28.66	39.62	3.20	37.76	andesite
RK19-046	420	10	146	278	23	12	8	1.1	99.98	29.30	55.63	4.80	14.03	andesite
RK19-047	259	21	285	102	8	7	7	1.1	99.98	29.92	43.17	3.35	36.27	andesite
RK19-048	306	43	252	131	10	2.5	9	1.3	99.95	30.26	57.57	4.99	41.22	andesite
RK19-049	238	48	107	126	12	2.5	10	0.5	99.97	32.73	51.44	3.19	42.06	andesite
MK19-018	378	10	116	264	26	10	7	0.4	100	36.20	38.86	3.75	10.61	dacite
SW19-066	723	10	80	123	6	2.5	5	1.1	99.98	47.74	42.08	5.81	27.64	andesite
MK19-030	596	10	72	214	23	9	6	0.9	100.02	42.66	9.55	3.15	10.28	dacite
MK19-031	639	62	133	134	16	7	17	1.7	99.91	52.34	63.93	10.64	60.45	basalt
MK19-032	333	10	120	221	17	6	7	1.4	99.98	40.72	46.20	5.93	15.38	andesite
MK19-035	300	10	92	240	26	9	6	1.1	100.01	34.66	33.73	3.46	7.92	dacite
MK19-038	409	10	157	253	21	10	7	1.2	100.01	36.99	30.44	3.71	20.55	andesite
MK19-046	1478	10	249	120	16	5	16	0.6	99.93	15.86	80.85	13.86	64.17	basalt
SW19-082	162	10	225	117	6	2.5	12	2.5	99.92	30.21	68.80	5.28	51.28	andesite
SW19-091	299	52	270	134	17	5	15	2.3	99.93	29.87	70.25	8.56	52.99	andesite
SW19-093	235	41	213	144	13	2.5	13	1.2	99.95	36.66	51.91	4.17	38.19	andesite
SW19-095	205	32	132	151	14	2.5	11	2	99.94	44.02	64.91	9.21	35.76	andesite
SW19-096	542	10	183	188	17	2.5	7	1.2	99.99	46.68	46.11	7.95	20.74	andesite
SW19-097	514	53	202	166	14	5	14	0.8	99.94	40.02	57.27	3.94	44.58	andesite
SW19-098	136	55	163	116	14	8	16	0.7	99.93	37.70	67.46	4.18	71.55	basalt
SW19-099	230	76	300	136	16	6	19	1.7	99.91	35.74	68.26	4.63	72.79	basalt
SW19-101	340	69	319	117	17	9	20	1.4	99.87	37.33	87.15	10.95	85.47	basalt
SW19-102	106	48	367	115	14	2.5	18	1.4	99.92	19.94	68.77	3.79	84.35	basalt
SW19-104	584	91	452	128	19	2.5	22	1.7	99.82	48.86	79.22	6.61	125.00	basalt
SW19-106	316	146	31	107	16	2.5	8	1.5	99.98	81.79	62.64	29.17	32.71	andesite
SW19-107	390	33	112	140	14	5	15	1.4	99.94	42.13	63.40	9.68	49.29	andesite

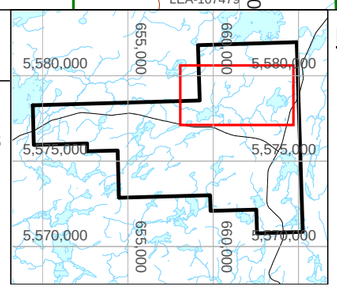
Station No.	Date	User	Northing	Easting	Map Unit	Rock_type	gt	ser	stau	sil	cpy	py	po	Material	Sample	Wgt_kg	SiO2_pct	Al2O3_pct	Fe2O3_pct	MgO_pct	CaO_pct	Na2O_pct	K2O_pct	TiO2_pct	P2O5_pct	MnO_pct	Cr2O3_pct
SW19-112	5/28/2019	SW	5576329	662539	Mafic volcanic	hbl gt schist	3			2		0.1		bedrock	1588666	1.39	59.21	15.7	9.74	3.69	7.09	1.71	0.49	0.69	0.14	0.15	0.015
SW19-114	5/29/2019	SW	5576043	662377	Intermediate Volcanic	bt feld hbl schist	2	1		1		0.1		bedrock	1588667	0.8	60.15	16.03	7.07	2.98	7.28	0.79	2.34	0.63	0.13	0.22	0.004
SW19-116	5/29/2019	SW	5575828	662420	Intermediate Volcanic	bt act gt schist	2	1				0.3		bedrock	1588668	0.97	57.66	18.88	6.83	1.79	5.88	1.16	3.23	0.79	0.14	0.24	0.016
SW19-117	5/29/2019	SW	5575704	662399	Intermediate Volcanic	bt feld schist						0.3		bedrock	1588669	0.88	73.99	12.58	3.35	1.03	1.81	3.56	1.49	0.39	0.09	0.05	0.001
SW19-118	5/29/2019	SW	5575463	662334	Mafic Volcanic	hbl bt feld schist	5			3		0.3		bedrock	1588670	0.48	70.14	16.36	7.98	1.12	0.59	0.17	1.23	0.81	0.23	0.13	0.003
SW19-121	5/29/2019	SW	5575232	662413	Intermediate Tuff	bt feld chl schist	1					0.1		bedrock	1588671	0.79	72.3	13.23	3.43	1.35	3.1	0.88	2.74	0.4	0.1	0.07	0.001
SW19-123	5/29/2019	SW	5574982	662446	Intermediate Volcanic	bt feld hbl schist						0.1		bedrock	1588672	1.1	59.51	16.06	7.53	3.46	6.2	0.68	2.19	0.79	0.23	0.16	0.002
SW19-124	5/29/2019	SW	5574912	662379	Intermediate Volcanic	bt feld hbl ser schist		2						bedrock	1588673	0.47	60.93	17.02	6.55	2.23	6.34	1.24	2.3	0.85	0.25	0.1	0.003
SW19-125	5/29/2019	SW	5574856	662360	Intermediate Volcanic	bt feld ser schist		3		4		0.3		bedrock	1588674	0.88	72.33	13.69	3.2	1.58	3.19	0.81	3.03	0.37	0.09	0.08	0.002
SW19-126	5/29/2019	SW	5574878	662544	Intermediate Volcanic	bt feld ser schist	1							bedrock	1588675	0.9	60.6	16.17	7.62	3.75	6.12	0.99	2.43	0.74	0.17	0.1	0.004
RK19-052	5/28/2019	RK	5577619	661044	Intermediate Volcanic	bt feld ser schist	1					0.1		bedrock	1588701	0.43	63.44	18.84	4.93	1.32	3.06	3.73	2.38	0.82	0.14	0.06	0.002
RK19-053	5/28/2019	RK	5577389	661191	Intermediate Volcanic	bt feld hbl schist	2			1				bedrock	1588702	1.04	55.75	15.96	11.22	3.76	9.17	0.87	0.7	0.69	0.11	0.33	0.001
RK19-054	5/28/2019	RK	5577341	661226	Intermediate Volcanic	bt feld hbl schist								bedrock	1588703	1.4	58.54	18	7.83	1.93	7.53	3.46	0.95	0.8	0.12	0.16	0.001
RK19-055	5/28/2019	RK	5577279	661281	Intermediate Volcanic	bt feld hbl schist				2				bedrock	1588704	0.84	60.25	17.37	7.58	1.61	6.56	3.31	1.24	0.79	0.13	0.12	0.001
RK19-057	5/28/2019	RK	5576796	661387	Felsic volcanic	ser bt feld qtz schist	2	3		3				bedrock	1588705	0.6	75.85	15.7	1.37	0.05	0.15	3.32	1.18	0.32	0.03	0.005	0.001
RK19-058	5/28/2019	RK	5576792	661130	Intermediate Volcanic	bt feld hbl schist	3							bedrock	1588706	0.69	75.07	13.14	3.27	0.44	2.23	1.43	2.53	0.36	0.06	0.05	0.001
RK19-059	5/28/2019	RK	5576750	661102	Intermediate Volcanic	bt feld hbl schist	4	1				0.5		bedrock	1588707	1.1	72.25	13.65	4.29	0.86	3.65	1.89	1.34	0.38	0.08	0.24	0.001
RK19-060	5/28/2019	RK	5576787	661065	Intermediate Volcanic	bt feld hbl schist	2			5				bedrock	1588708	0.73	65.72	14.86	3.04	1.68	4.37	2.7	3.79	0.36	0.06	0.07	0.003
RK19-061	5/28/2019	RK	5576874	661080	Intermediate Volcanic	bt feld hbl schist	1	1		1		3.0	0.1	bedrock	1588709	1.04	66.05	15.98	4.23	1.95	3.52	2.65	2.8	0.42	0.07	0.07	0.001
RK19-062	5/28/2019	RK	5576960	660999	Intermediate Volcanic	bt feld hbl schist	1			3		0.1		bedrock	1588710	1.15	65.66	16.82	3.64	1.69	7.17	1.38	1.58	0.46	0.08	0.14	0.005
RK19-063	5/28/2019	RK	5577012	660843	Felsic volcanic	bt feld qtz schist		4		4				bedrock	1588711	0.81	84.06	11.88	0.43	0.03	0.18	1.26	1.07	0.19	0.02	0.005	0.002
RK19-064	5/28/2019	RK	5577032	660799	Intermediate Volcanic	bt feld hbl schist				2		0.5		bedrock	1588712	0.96	60.35	17.89	6.27	3.42	5.75	1.08	2.99	0.59	0.09	0.11	0.006
RK19-065	5/28/2019	RK	5577047	660631	Mafic volcanic	hbl bt feld schist	2					0.5		bedrock	1588713	0.81	64.52	16.71	8.19	3.99	1.36	1.01	2.4	0.47	0.07	0.09	0.004
RK19-066	5/28/2019	RK	5577003	660658	Intermediate Volcanic	bt feld hbl schist		1		1				bedrock	1588714	0.71	65.48	16.18	4.8	3.38	3.89	0.92	3.21	0.45	0.08	0.09	0.005
RK19-067	5/28/2019	RK	5576988	660581	Intermediate Volcanic	bt feld schist						0.5		bedrock	1588715	0.65	69.58	16.49	2.88	0.67	2.31	5.74	1.25	0.34	0.04	0.03	0.001
RK19-068	5/28/2019	RK	5576908	660579	Intermediate Volcanic	bt feld hbl schist						0.1		bedrock	1588716	1.47	63.83	17.26	5.27	2.31	2.9	5.07	1.63	0.45	0.07	0.05	0.005
RK19-069	5/28/2019	RK	5576897	660632	Intermediate Volcanic	bt feld schist				3				bedrock	1588717	0.58	69.62	16.83	2.71	0.43	1.99	4.72	2.16	0.36	0.02	0.03	0.002

Station No.	Ba_PPM	Ni_PPM	Sr_PPM	Zr_PPM	Y_PPM	Nb_PPM	Sc_PPM	LOI_pct	Sum_pct	AltIndex	CCPI	Al_Na	ti_zr	Rocktype Ti/Zr
SW19-112	215	85	179	114	14	6	17	1.2	99.9	32.20	84.99	9.18	60.53	basalt
SW19-114	644	10	112	146	16	6	12	2.2	99.92	39.73	74.90	20.29	43.15	andesite
SW19-116	759	80	133	129	13	2.5	17	3.2	99.93	41.63	64.38	16.28	61.24	basalt
SW19-117	265	10	102	244	21	10	7	1.6	99.98	31.94	44.47	3.53	15.98	andesite
SW19-118	247	29	18	141	13	2.5	14	1.1	99.94	75.56	85.57	96.24	57.45	andesite
SW19-121	320	327	110	165	19	2.5	7	2.3	99.98	50.68	55.07	15.03	24.24	andesite
SW19-123	289	21	106	128	17	2.5	14	3	99.91	45.09	78.10	23.62	61.72	basalt
SW19-124	283	10	121	137	16	2.5	15	2.1	99.93	37.41	69.65	13.73	62.04	basalt
SW19-125	323	10	70	164	20	5	7	1.5	99.98	53.54	53.73	16.90	22.56	andesite
SW19-126	397	29	141	130	17	2.5	14	1.1	99.91	46.50	75.62	16.33	56.92	andesite
RK19-052	489	10	204	130	14	2.5	18	1.1	99.95	35.27	48.51	5.05	63.08	basalt
RK19-053	119	10	125	110	20	6	14	1.3	99.9	30.76	89.82	18.34	62.73	basalt
RK19-054	347	10	203	125	15	6	17	0.5	99.93	20.76	67.05	5.20	64.00	basalt
RK19-055	263	10	246	125	15	6	17	0.9	99.94	22.41	64.95	5.25	63.20	basalt
RK19-057	2188	10	218	229	14	10	17	1.7	99.96	26.17	22.18	4.73	13.97	andesite
RK19-058	798	10	125	280	17	9	7	1.3	100	44.80	46.07	9.19	12.86	andesite
RK19-059	822	10	202	261	20	10	8	1.2	99.98	28.42	59.37	7.22	14.56	andesite
RK19-060	626	20	117	83	6	2.5	7	3.2	99.96	43.62	40.49	5.50	43.37	andesite
RK19-061	325	20	261	87	7	2.5	8	2.1	99.96	43.50	51.37	6.03	48.28	andesite
RK19-062	593	24	190	102	11	2.5	8	1.2	99.96	27.66	62.65	12.19	45.10	andesite
RK19-063	217	10	112	194	14	10	3	0.8	99.99	43.31	15.18	9.43	9.79	dacite
RK19-064	647	31	135	125	10	2.5	9	1.3	99.92	48.41	69.01	16.56	47.20	andesite
RK19-065	363	33	64	78	6	2.5	8	1	99.92	72.95	76.91	16.54	60.26	basalt
RK19-066	324	31	80	104	7	2.5	8	1.4	99.94	57.81	65.09	17.59	43.27	andesite
RK19-067	208	10	149	106	5	2.5	5	0.6	99.99	19.26	31.81	2.87	32.08	andesite
RK19-068	272	39	279	94	8	2.5	9	1	99.95	33.08	51.28	3.40	47.87	andesite
RK19-069	480	10	325	114	4	2.5	6	1	99.99	27.85	29.42	3.57	31.58	andesite



COMMANDER RESOURCES

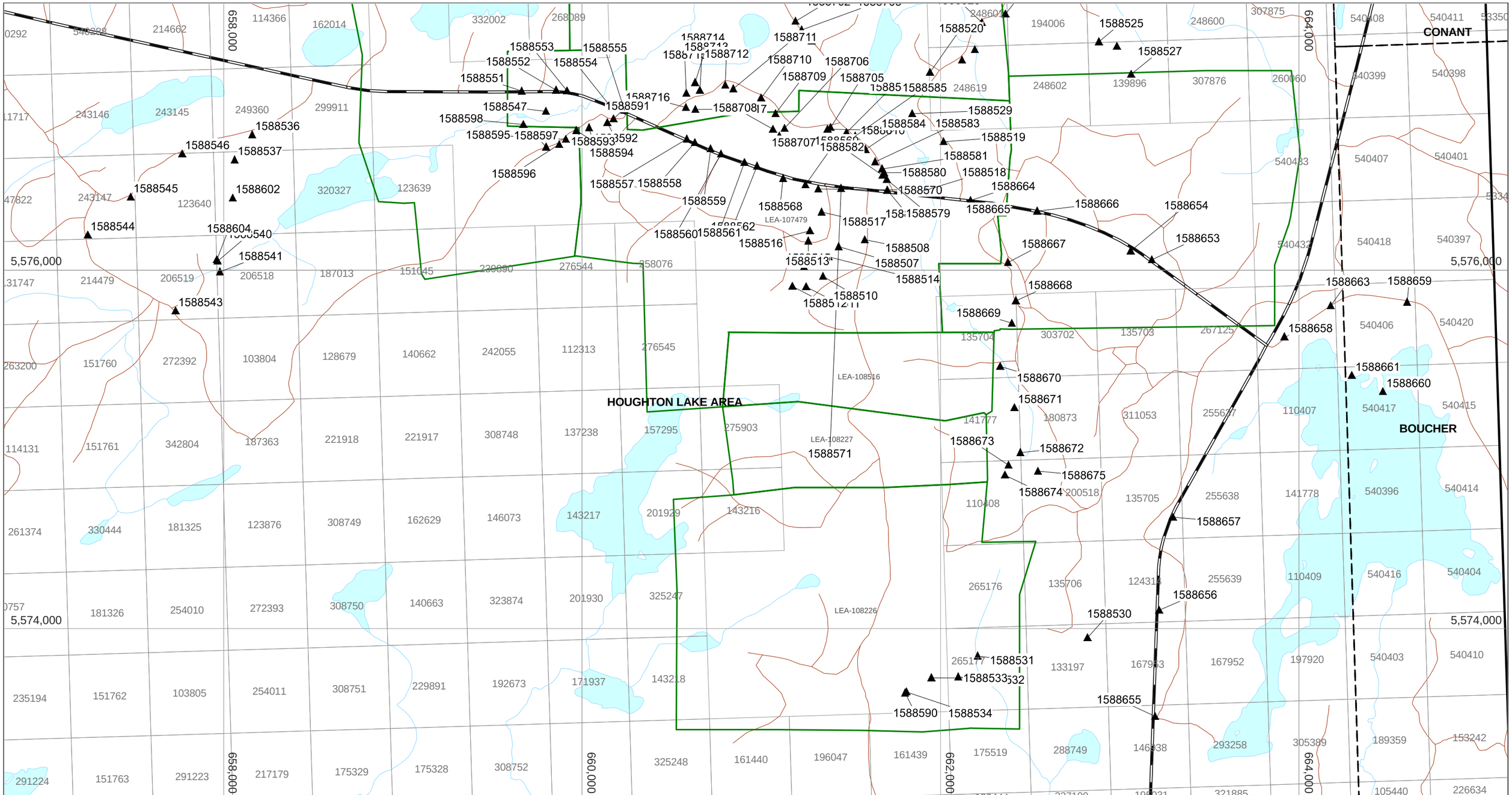
Date: Dec 30, 2019	**Sabin**
Drafted by: M. Kulla	Whole Rock Sample Locations
Appendix: 5a	Ontario Patricia Mining Division 052J-07 UTM NAD83 zone 15



Legend

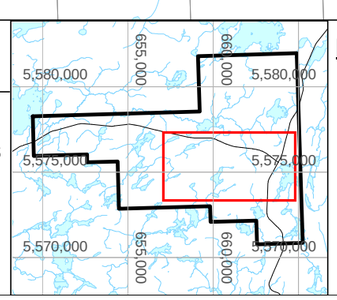
- ▲ Wholerock Sample
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 1
kilometres
Scale 1:15,000



COMMANDER RESOURCES

Date: Dec 30, 2019	**Sabin**
Drafted by: M. Kulla	Whole Rock Sample Locations
Appendix: 5b	Ontario Patricia Mining Division 052J-07 UTM NAD83 zone 15



Legend

- ▲ Wholerock Sample
- Commander Resources claim boundary
- Claim boundary
- Mining Land Tenure
- Administrative Boundary
- Highway
- Trail
- Watercourse
- Lake

0 1
kilometres
Scale 1:20,000

APPENDIX 6

Assay Certificates

Quality Analysis ... *Innovative Technologies*

Report No.: **A19-14515**
Report Date: **13-Nov-19**
Date Submitted: **25-Oct-19**
Your Reference:

Commander Resources Ltd.
11th floor 111 melville Street
Vancouver
BC
Canada

ATTN: Steve Wetherup

CERTIFICATE OF ANALYSIS

24 Core samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
UT-4M	QOP Total/QOP Ultratrace- 4acid Digest (Total Digestion ICPOES/ICPMS)	2019-11-08 15:23:21

REPORT **A19-14515**

Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

The Au from AR-MS is for information purposes, for accurate Au fire assay 1A2 should be requested.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

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

Report No.: **A19-14515**
Report Date: **13-Nov-19**
Date Submitted: **25-Oct-19**
Your Reference:

Commander Resources Ltd.
11th floor 111 melville Street
Vancouver
BC
Canada

ATTN: Steve Wetherup

CERTIFICATE OF ANALYSIS

24 Core samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1A2-Dryden	QOP AA-Au (Au - Fire Assay AA)	2019-10-31 15:23:47

REPORT **A19-14515**

Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

The Au from AR-MS is for information purposes, for accurate Au fire assay 1A2 should be requested.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
264 Government Road, Dryden, Ontario, Canada, P8N 2R3
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Al	Ag	As	Au	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Cs	Fe	Hf	K	La	Li	Na	Nb	Ni
Unit Symbol	ppb	%	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
Lower Limit	5	0.01	0.1	1	100	1	1	0.1	0.01	0.1	1	0.2	1	0.1	0.1	0.01	0.1	0.01	0.1	0.1	0.001	0.1	0.1
Method Code	FA-AA	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
887201	19	9.54	11.5	5	< 100	312	< 1	11.9	3.11	12.3	44	13.2	23	969	1.0	8.27	4.0	1.16	18.3	68.9	0.845	5.7	22.2
887202	10	7.53	16.9	3	< 100	276	< 1	5.9	0.26	44.9	42	9.2	24	1310	1.1	8.39	3.6	1.52	17.5	68.7	0.512	6.1	18.2
887203	99	7.26	87.0	4	500	146	< 1	10.4	0.16	25.5	39	6.9	30	> 10000	1.0	11.5	3.3	1.18	16.3	54.4	0.342	5.3	34.5
887204	53	7.11	38.5	6	< 100	137	< 1	3.5	0.13	132	41	16.4	41	5620	0.9	10.6	3.2	1.21	18.5	52.7	0.536	4.1	37.6
887205	< 5	5.84	8.2	6	< 100	251	< 1	4.1	0.11	14.1	20	19.4	47	1050	0.7	7.04	3.7	0.98	7.5	71.4	0.344	4.6	32.4
887206	138	5.53	> 100	2	100	154	< 1	61.1	0.82	42.6	20	25.6	39	> 10000	0.8	9.21	3.2	0.99	6.8	36.5	0.647	3.9	24.1
887207	51	4.38	41.7	1	< 100	174	< 1	22.8	0.62	9.3	13	12.8	43	5370	0.6	6.69	3.3	0.80	4.6	43.7	0.630	4.3	16.4
887208	32	7.47	21.1	< 1	< 100	216	< 1	14.0	1.01	5.2	31	15.0	39	2870	0.8	6.74	3.5	1.16	13.0	47.6	0.861	4.3	27.3
887209	36	7.88	79.0	2	< 100	222	< 1	69.5	1.94	30.0	37	36.7	23	> 10000	0.9	7.72	3.2	1.17	16.0	25.8	1.17	4.0	14.5
887210	58	8.26	50.6	< 1	< 100	374	< 1	58.6	2.64	32.5	42	27.3	17	7320	1.1	6.99	3.3	1.56	18.2	22.3	1.41	3.6	16.9
887211	< 5	8.78	0.3	1	< 100	520	< 1	0.2	3.84	0.5	46	21.1	6	26.0	2.6	5.72	1.9	1.73	19.8	21.0	1.42	0.4	13.5
887212	< 5	8.29	0.1	1	< 100	511	< 1	< 0.1	3.74	0.3	45	20.5	6	30.5	2.2	5.47	2.1	1.72	19.5	25.8	1.04	0.3	13.3
887213	6	8.58	2.2	2	< 100	437	< 1	0.1	3.36	0.5	45	19.5	6	372	1.7	5.21	2.5	1.53	19.9	24.4	1.24	0.5	12.3
887214	29	7.25	11.3	7	< 100	285	< 1	26.3	5.05	1.5	38	12.7	32	373	1.2	6.55	3.1	1.41	18.1	16.1	0.689	3.7	27.8
887215	35	8.15	12.3	6	< 100	319	< 1	17.9	3.30	1.8	47	12.8	37	391	1.5	6.34	3.5	1.54	21.1	43.8	0.713	4.1	30.3
887216	62	5.35	21.1	10	< 100	313	< 1	16.3	3.71	2.9	29	15.7	38	1150	0.7	7.82	3.4	0.99	10.6	32.4	0.723	4.8	31.2
887217	48	9.77	52.6	3	< 100	49	< 1	45.6	3.04	2.3	14	27.7	18	2920	0.3	15.3	3.6	0.25	6.7	15.2	0.414	5.4	12.0
887218	247	9.69	> 100	2	200	32	< 1	87.0	4.39	19.9	24	39.4	16	> 10000	< 0.1	16.8	3.3	0.13	10.0	9.5	0.454	5.1	14.0
887219	< 5	8.54	0.6	< 1	< 100	361	1	0.4	2.83	0.2	23	10.7	18	65.9	3.7	2.87	2.5	1.95	11.1	22.2	0.758	1.7	20.3
887220	< 5	7.90	0.5	< 1	< 100	99	< 1	0.4	7.81	0.4	20	15.8	15	122	1.3	4.33	1.6	0.47	10.1	11.0	0.262	2.0	24.0
887221	82	6.68	2.5	< 1	< 100	344	< 1	2.5	1.51	10.3	12	2.3	12	233	1.2	1.02	1.9	1.97	5.7	14.9	0.318	1.3	6.6
887222	634	4.03	66.1	< 1	500	97	< 1	86.2	4.70	307	11	20.8	9	8980	0.4	3.69	1.0	0.37	5.5	9.5	0.099	1.5	12.0
887223	156	6.33	9.4	< 1	< 100	378	< 1	5.8	0.16	1.9	8	0.8	13	167	0.9	0.94	1.8	2.42	4.1	9.4	0.240	1.6	3.3
887224	601	4.37	70.4	< 1	800	133	< 1	65.2	5.05	139	11	15.5	10	> 10000	0.8	4.24	0.7	0.68	5.3	7.3	0.235	1.1	14.8

Analyte Symbol	P	Rb	Pb	S	Mg	Mn	Mo	Sb	Sc	Sn	Sr	Ta	Th	Ti	Tl	U	V	W	Y	Zn	Zr
Unit Symbol	%	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.1	0.1	1	0.01	1	0.1	0.1	1	0.1	1	0.1	0.1	0.001	0.05	0.1	4	0.1	0.1	1	0.1
Method Code	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
887201	0.081	40.5	496	< 1	3.18	3470	2.2	0.2	18	38.9	85	0.4	4.1	0.443	0.32	0.8	141	1.8	14.2	6680	163
887202	0.080	51.6	1950	2	2.23	1230	0.6	1.9	15	84.5	45	0.4	3.7	0.406	0.39	0.8	124	1.7	8.1	> 10000	146
887203	0.063	47.7	3930	4	1.81	1150	1.2	4.8	14	86.4	49	0.4	3.8	0.371	0.43	0.8	110	2.3	7.8	> 10000	138
887204	0.040	43.1	781	5	1.76	1030	0.6	1.0	11	69.5	45	0.3	5.2	0.282	0.38	1.1	84	2.0	6.7	> 10000	128
887205	0.044	14.9	389	< 1	1.74	1070	0.4	0.4	10	48.7	40	0.4	2.6	0.308	0.42	1.1	94	2.2	4.2	4990	145
887206	0.036	11.2	3170	3	2.23	1240	0.6	1.3	8	98.7	40	0.3	2.3	0.272	0.39	1.0	79	1.5	6.1	8820	121
887207	0.037	6.9	1570	< 1	2.02	1320	0.6	0.8	7	63.1	51	0.4	1.7	0.287	0.33	0.8	87	1.1	4.2	5140	126
887208	0.044	31.3	911	< 1	2.43	1820	0.5	0.4	11	41.9	80	0.4	5.0	0.287	0.27	1.3	86	1.0	8.7	3090	136
887209	0.070	37.2	3450	2	1.96	1310	0.7	0.7	13	68.0	116	0.2	4.0	0.405	0.29	0.8	110	0.7	10.3	4990	123
887210	0.078	50.0	3200	1	1.89	1230	0.9	0.6	13	42.5	130	0.1	4.1	0.413	0.38	0.8	113	0.3	11.9	5170	133
887211	0.102	65.0	52.8	< 1	1.71	1100	< 0.1	< 0.1	15	0.3	121	< 0.1	3.4	0.147	0.47	0.5	50	< 0.1	15.1	201	79.6
887212	0.097	64.1	40.1	< 1	1.72	1190	< 0.1	< 0.1	14	0.2	119	< 0.1	3.2	0.143	0.44	0.6	53	< 0.1	14.9	161	87.0
887213	0.101	55.1	65.7	< 1	1.79	1540	< 0.1	< 0.1	13	0.2	143	< 0.1	3.4	0.159	0.38	0.7	66	< 0.1	14.8	226	104
887214	0.037	48.1	128	< 1	3.37	5170	0.7	0.3	10	3.8	108	0.3	5.1	0.246	0.34	1.0	75	1.3	10.5	495	116
887215	0.044	53.7	222	< 1	2.95	3760	0.3	0.3	11	6.4	89	0.4	5.7	0.277	0.38	1.2	84	2.0	11.2	663	130
887216	0.052	11.2	340	< 1	3.16	5990	0.4	0.5	8	10.9	85	0.4	1.8	0.319	0.42	0.9	100	1.7	8.5	1150	132
887217	0.057	6.5	2050	< 1	7.19	2430	2.4	1.0	17	104	21	0.4	3.1	0.445	0.06	0.7	145	1.8	12.8	> 10000	148
887218	0.064	2.0	4020	2	6.84	2410	1.8	1.6	18	130	29	0.4	2.9	0.415	< 0.05	0.7	140	2.5	15.5	> 10000	133
887219	0.035	70.0	60.8	< 1	1.40	614	0.3	< 0.1	6	0.7	93	0.1	2.4	0.192	0.56	0.6	46	0.4	4.9	226	91.0
887220	0.030	19.6	24.8	< 1	2.59	2040	0.7	0.1	5	0.7	92	0.2	2.1	0.177	0.19	0.5	45	0.3	7.6	295	58.0
887221	0.024	50.2	199	< 1	0.53	290	1.2	< 0.1	5	0.7	29	< 0.1	1.7	0.155	0.27	0.4	41	2.1	4.3	1240	69.4
887222	0.016	12.5	1860	4	1.42	1340	54.8	0.3	2	1.6	32	< 0.1	1.0	0.072	0.23	0.3	25	1.2	8.6	> 10000	37.2
887223	0.023	56.8	552	< 1	0.19	107	1.3	0.2	4	1.0	25	0.1	1.8	0.151	0.30	0.4	39	3.3	2.9	387	66.8
887224	0.015	17.9	1480	3	1.97	2280	17.0	0.3	3	2.1	42	< 0.1	1.0	0.076	0.26	0.3	27	1.2	7.1	> 10000	27.3

Analyte Symbol	Au	Al	Ag	As	Au	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Cs	Fe	Hf	K	La	Li	Na	Nb	Ni
Unit Symbol	ppb	%	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
Lower Limit	5	0.01	0.1	1	100	1	1	0.1	0.01	0.1	1	0.2	1	0.1	0.1	0.01	0.1	0.01	0.1	0.1	0.001	0.1	0.1
Method Code	FA-AA	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
SDC-1 Meas		8.10		< 1		594	3		0.89		87	16.8	44	28.8	4.2	4.56	1.4	2.35	39.0	30.1	1.36	9.3	31.9
SDC-1 Cert		8.34		0.220		630	3.00		1.00		93.00	18.0	64.00	30.000	4.00	4.82	8.30	2.72	42.00	34.0	1.52	21.00	38.0
Oreas 72a (4 Acid Digest) Meas				8								148	187	303		9.24							6320
Oreas 72a (4 Acid Digest) Cert				14.7								157	228	316		9.63							6930.000
OREAS 101b (4 Acid) Meas											1320	45.9		431		11.0		2.39	745				9.3
OREAS 101b (4 Acid) Cert											1325	45		412		10.7		2.36	754				8.2
OREAS 101b (4 Acid) Meas											1320	45.7		425		10.6		2.24	729				8.9
OREAS 101b (4 Acid) Cert											1325	45		412		10.7		2.36	754				8.2
OREAS 98 (4 Acid) Meas			44.6					89.7				131		> 10000									
OREAS 98 (4 Acid) Cert			45.1					97.2				121		148000									
DNC-1a Meas						103			8.32			56.2	166	106		7.07			3.6	4.6	1.44	1.5	270
DNC-1a Cert						118			8.21			57	270	100		6.97			3.6	5.2	1.40	3	247
OREAS 13b (4-Acid) Meas			0.8	53								73.5	> 10000	2110									2080
OREAS 13b (4-Acid) Cert			0.86	57								75	8650.000	2327.000									2247.000
OREAS 904 (4 ACID) Meas		7.13	0.6	93		194	9	4.1	0.05		90	86.1	56	6310	4.2	7.09	4.9	3.42	43.8	15.9	0.038		40.5
OREAS 904 (4 ACID) Cert		6.30	0.551	98.0		194	7.86	4.05	0.0460		86.0	83.0	54.0	6120	3.79	6.68	5.00	3.31	43.2	16.7	0.0340		40.1
OREAS 904 (4 ACID) Meas		6.56	0.6	93		191	9	4.0	0.05		89	83.8	48	6080	4.1	6.68	2.7	3.33	43.1	15.0	0.036		40.0
OREAS 904 (4 ACID) Cert		6.30	0.551	98.0		194	7.86	4.05	0.0460		86.0	83.0	54.0	6120	3.79	6.68	5.00	3.31	43.2	16.7	0.0340		40.1
SBC-1 Meas				26		746	3	0.7		0.3	91	22.5	103	32.6	7.8		3.4		39.7	161		15.4	85.0
SBC-1 Cert				25.7		788.0	3.20	0.70		0.40	108.0	22.7	109	31.0	8.2		3.7		52.5	163		15.3	82.8
OREAS 45d (4-Acid) Meas		8.68		9		177	< 1	0.3	0.19		38	30.1	523	390	4.1	14.6	2.4	0.40	16.5	22.5	0.099	1.5	234
OREAS 45d (4-Acid) Cert		8.150		13.8		183.0	0.79	0.31	0.185		37.20	29.50	549	371	3.910	14.5	3.830	0.412	16.9	21.5	0.101	14.50	231.0
OREAS 254 Fire Assay Meas	2530																						
OREAS 254 Fire Assay Cert	2550																						
OREAS 218 Meas	514																						
OREAS 218 Cert	531																						
OREAS 96 (4 Acid) Meas			10.7					27.6				48.6		> 10000									
OREAS 96 (4 Acid) Cert			11.5					26.3				49.9		39300									
OREAS 923 (4 Acid) Meas		7.58	2.0	8		425	2	19.5	0.47	0.4	87	24.0	77	4180	7.4	6.50	3.7	2.44	42.9	28.6	0.329	14.6	37.2
OREAS 923 (4 Acid) Cert		7.29	1.60	7.61		434	2.42	21.4	0.473	0.420	83.0	23.1	71.0	4230	6.70	6.43	3.42	2.51	42.2	31.4	0.324	14.1	35.8
OREAS 621 (4 Acid) Meas		6.20	57.2	66			2	3.8	1.85	242	47	28.5	30	3500	3.4	3.62	4.3	1.70	19.5	13.0	1.26	8.9	27.6
OREAS 621 (4 Acid) Cert		6.40	69.0	77.0			1.69	3.93	1.97	284	46.6	29.3	37.1	3630	3.28	3.70	4.41	2.20	21.6	14.2	1.31	8.61	26.2
OREAS 522 (4		3.99	1.2	409			< 1	8.5	3.79		79	549	39	8350	0.7	24.0	3.0	2.79	53.7	16.2	0.623	5.4	70.2

Analyte Symbol	Au	Al	Ag	As	Au	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Cs	Fe	Hf	K	La	Li	Na	Nb	Ni
Unit Symbol	ppb	%	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
Lower Limit	5	0.01	0.1	1	100	1	1	0.1	0.01	0.1	1	0.2	1	0.1	0.1	0.01	0.1	0.01	0.1	0.1	0.001	0.1	0.1
Method Code	FA-AA	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
Acid) Meas																							
OREAS 522 (4 Acid) Cert		3.95	1.31	490			0.700	8.72	3.65		148	550	29.6	9160	0.640	24.6	2.96	2.83	171	16.2	0.633	5.66	70.0
Oreas 77b (4 Acid Digest) Meas		2.04	1.6	1540		65	< 1	3.3	3.34	1.0	29	1610	346	3380	2.5	30.7	1.2	0.37	15.4	19.2	0.463	3.2	> 10000
Oreas 77b (4 Acid Digest) Cert		1.94	1.62	2050		118	0.470	3.44	3.06	1.20	27.7	1550	280	3430	2.32	29.9	1.15	0.361	15.8	18.8	0.434	3.26	113000
887208 Orig		7.07	21.2	1	< 100	204	< 1	14.1	1.04	5.1	28	15.0	46	2900	0.8	6.82	3.6	1.03	10.7	48.1	0.875	4.3	28.0
887208 Dup		7.87	20.9	< 1	< 100	229	< 1	13.9	0.98	5.2	34	14.9	31	2840	0.9	6.66	3.5	1.28	15.4	47.1	0.848	4.2	26.6
887216 Orig	61																						
887216 Dup	62																						
887224 Orig		4.28	69.5	< 1	1100	133	< 1	63.5	4.98	136	10	15.0	11	> 10000	0.8	4.17	0.7	0.66	5.0	7.1	0.232	1.1	14.6
887224 Dup		4.46	71.3	< 1	500	133	< 1	66.9	5.11	142	11	16.0	8	> 10000	0.9	4.30	0.8	0.69	5.5	7.5	0.238	1.1	14.9
Method Blank	< 5																						
Method Blank	< 5																						
Method Blank		< 0.01	< 0.1	< 1	< 100	< 1	< 1	< 0.1	< 0.01	< 0.1	< 1	< 0.2	6	0.3	< 0.1	< 0.01	< 0.1	< 0.01	< 0.1	< 0.1	< 0.001	< 0.1	0.2
Method Blank		< 0.01	< 0.1	< 1	< 100	< 1	< 1	< 0.1	< 0.01	< 0.1	< 1	< 0.2	6	0.7	< 0.1	< 0.01	< 0.1	< 0.01	< 0.1	< 0.1	< 0.001	< 0.1	0.1
Method Blank		< 0.01	< 0.1	< 1	< 100	< 1	< 1	< 0.1	< 0.01	< 0.1	< 1	< 0.2	7	0.7	< 0.1	< 0.01	< 0.1	< 0.01	< 0.1	< 0.1	< 0.001	< 0.1	0.5
Method Blank		< 0.01	< 0.1	< 1	< 100	< 1	< 1	< 0.1	< 0.01	< 0.1	< 1	< 0.2	4	0.4	< 0.1	< 0.01	< 0.1	< 0.01	< 0.1	< 0.1	< 0.001	< 0.1	0.2

Analyte Symbol	P	Rb	Pb	S	Mg	Mn	Mo	Sb	Sc	Sn	Sr	Ta	Th	Ti	Tl	U	V	W	Y	Zn	Zr
Unit Symbol	%	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.1	0.1	1	0.01	1	0.1	0.1	1	0.1	1	0.1	0.1	0.001	0.05	0.1	4	0.1	0.1	1	0.1
Method Code	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
SDC-1 Meas	0.059	120	23.6		0.95	815		0.3	14	2.3	159	0.3	13.2	0.433	0.62	2.8	80	0.1		99	46.3
SDC-1 Cert	0.0690	127.00	25.00		1.02	880.00		0.54	17.00	3.00	180.00	1.20	12.00	0.606	0.70	3.10	102.00	0.80		103.00	290.00
Oreas 72a (4 Acid Digest) Meas				2																	
Oreas 72a (4 Acid Digest) Cert				1.74																	
OREAS 101b (4 Acid) Meas	0.119		24.0		1.32	995	20.1						42.0	0.347		394	82		131		
OREAS 101b (4 Acid) Cert			23		1.23	927	20.1						36.4	0.35		387	77		133		
OREAS 101b (4 Acid) Meas	0.117		22.8		1.27	926	20.0						40.8	0.338		384	76		133		
OREAS 101b (4 Acid) Cert			23		1.23	927	20.1						36.4	0.35		387	77		133		
OREAS 98 (4 Acid) Meas			332	> 10.0				10.6		202										1460	
OREAS 98 (4 Acid) Cert			345	15.5				20.1		206										1360	
DNC-1a Meas		3.5	7.3					0.9	29		148			0.273			150		17.0	71	39.8
DNC-1a Cert		5	6.3					0.96	31		144			0.29			148		18.0	70	38.0
OREAS 13b (4-Acid) Meas				1			10.0													134	
OREAS 13b (4-Acid) Cert				1.2			9.0													133	
OREAS 904 (4 ACID) Meas	0.102	146	11.5	< 1	0.63	414	2.3	1.3	12	2.8	25	0.7	17.1		0.55	9.2	86	2.4	32.4	27	178
OREAS 904 (4 ACID) Cert	0.0980	130	10.6	0.0630	0.556	410	2.12	1.48	11.2	2.83	27.2	0.540	14.3		0.520	8.43	76.0	2.12	31.5	26.3	171
OREAS 904 (4 ACID) Meas	0.096	148	11.0	< 1	0.58	407	2.1	1.2	11	2.6	26	0.6	17.0		0.55	8.9	78	2.1	33.3	28	108
OREAS 904 (4 ACID) Cert	0.0980	130	10.6	0.0630	0.556	410	2.12	1.48	11.2	2.83	27.2	0.540	14.3		0.520	8.43	76.0	2.12	31.5	26.3	171
SBC-1 Meas		115	37.1				2.2	1.0	16	3.4	171	1.0	12.9	0.480	0.94	5.3	228	1.5	28.5	197	121
SBC-1 Cert		147	35.0				2.4	1.01	20.0	3.3	178.0	1.10	15.8	0.51	0.89	5.76	220.0	1.60	36.5	186	134.0
OREAS 45d (4-Acid) Meas	0.038	42.7	22.0	< 1	0.21	487	0.5	< 0.1	51	0.6	29	< 0.1	16.5	0.293	0.25	2.9	135	< 0.1	11.5	50	91.1
OREAS 45d (4-Acid) Cert	0.042	42.1	21.8	0.049	0.245	490.000	2.500	0.82	49.30	2.78	31.30	1.02	14.5	0.773	0.27	2.63	235.0	1.62	9.53	45.7	141
OREAS 254 Fire Assay Meas																					
OREAS 254 Fire Assay Cert																					
OREAS 218 Meas																					
OREAS 218 Cert																					
OREAS 96 (4 Acid) Meas			98.2	5				3.8		59.5										469	
OREAS 96 (4 Acid) Cert			101	4.19				5.09		65.6										457	
OREAS 923 (4 Acid) Meas	0.062	182	87.3	< 1	1.69	952	1.0	1.2	13	12.7	41	1.1	19.2	0.391	0.89	3.2	90	5.2	27.9	355	134
OREAS 923 (4 Acid) Cert	0.0630	166	83.0	0.691	1.69	950	0.930	1.29	13.1	13.3	43.0	1.11	16.5	0.405	0.860	3.06	91.0	4.85	26.4	345	116
OREAS 621 (4 Acid) Meas	0.034	74.3	> 5000	5	0.41	516	13.6	85.7	6	5.0	67		7.2	0.175	2.08	2.8	34	2.2	11.2	> 10000	168
OREAS 621 (4 Acid) Cert	0.0359	84.0	13600	4.48	0.507	532	13.6	139	6.24	5.25	91.0		7.48	0.149	1.96	2.83	31.8	2.35	11.1	52200	168
OREAS 522 (4	0.087	85.9	9.8	3	1.18	4030	212	3.5	11	7.6	75	0.4	3.1	0.355	0.28	42.0	169	109	18.7	31	121

Analyte Symbol	P	Rb	Pb	S	Mg	Mn	Mo	Sb	Sc	Sn	Sr	Ta	Th	Ti	Tl	U	V	W	Y	Zn	Zr
Unit Symbol	%	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.001	0.1	0.1	1	0.01	1	0.1	0.1	1	0.1	1	0.1	0.1	0.001	0.05	0.1	4	0.1	0.1	1	0.1
Method Code	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS	TD-MS
Acid) Meas																					
OREAS 522 (4 Acid) Cert	0.0890	82.0	12.5	2.50	1.12	3970	206	7.93	10.9	9.32	199	0.440	7.53	0.344	0.290	42.2	164	135	18.5	30.2	112
Oreas 77b (4 Acid Digest) Meas		20.9	58.4		2.87	724		6.3	4	1.6	33	0.3	7.1	0.061	1.39	1.8	33	2.9	6.9	237	48.4
Oreas 77b (4 Acid Digest) Cert		19.1	61.0		2.59	640		9.100	3.51	1.59	34.4	0.280	6.61	0.0640	1.37	1.71	33.6	3.07	6.55	205	37.9
887208 Orig	0.044	22.4	917	< 1	2.40	1860	0.5	0.4	11	42.4	79	0.4	4.2	0.294	0.27	1.1	87	1.1	8.2	3080	138
887208 Dup	0.044	40.2	904	< 1	2.47	1780	0.4	0.4	11	41.3	80	0.4	5.9	0.281	0.27	1.6	85	0.9	9.3	3090	134
887216 Orig																					
887216 Dup																					
887224 Orig	0.015	17.7	1460	3	1.91	2270	16.7	0.3	3	2.0	41	< 0.1	1.0	0.075	0.26	0.3	26	1.2	7.0	> 10000	26.6
887224 Dup	0.016	18.1	1500	3	2.02	2280	17.3	0.3	3	2.1	43	< 0.1	1.0	0.077	0.27	0.3	27	1.3	7.3	> 10000	28.0
Method Blank																					
Method Blank																					
Method Blank	< 0.001	< 0.1	< 0.1	< 1	< 0.01	9	< 0.1	< 0.1	< 1	0.2	< 1	< 0.1	< 0.1	< 0.001	< 0.05	< 0.1	< 4	< 0.1	< 0.1	1	< 0.1
Method Blank	< 0.001	< 0.1	< 0.1	< 1	< 0.01	2	< 0.1	< 0.1	< 1	< 0.1	< 1	< 0.1	< 0.1	< 0.001	< 0.05	< 0.1	< 4	< 0.1	< 0.1	< 1	< 0.1
Method Blank	< 0.001	< 0.1	< 0.1	< 1	< 0.01	1	0.2	< 0.1	< 1	< 0.1	< 1	< 0.1	< 0.1	< 0.001	< 0.05	< 0.1	< 4	< 0.1	< 0.1	< 1	< 0.1
Method Blank	< 0.001	< 0.1	< 0.1	< 1	< 0.01	8	< 0.1	< 0.1	< 1	< 0.1	< 1	< 0.1	< 0.1	< 0.001	< 0.05	< 0.1	< 4	< 0.1	< 0.1	1	0.2

Quality Analysis ... *Innovative Technologies*

Report No.: **A19-14515 (i)**
Report Date: **27-Nov-19**
Date Submitted: **25-Oct-19**
Your Reference:

Commander Resources Ltd.
11th floor 111 melville Street
Vancouver
BC
Canada

ATTN: Steve Wetherup

CERTIFICATE OF ANALYSIS

24 Core samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
8-4 Acid Total Digestion	QOP Total Assay (Code 8-4 Acid Total Digestion Assays)	2019-11-26 11:20:35
UT-4M	QOP Total/QOP Ultratrace- 4acid Digest (Total Digestion ICPOES/ICPMS)	

REPORT **A19-14515 (i)**

Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

The Au from AR-MS is for information purposes, for accurate Au fire assay 1A2 should be requested.

CERTIFIED BY:

Elitsa Hrischeva, Ph.D.
Quality Control Coordinator

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

Report No.: **A19-14515 (i)**
Report Date: **27-Nov-19**
Date Submitted: **25-Oct-19**
Your Reference:

Commander Resources Ltd.
11th floor 111 melville Street
Vancouver
BC
Canada

ATTN: Steve Wetherup

CERTIFICATE OF ANALYSIS

24 Core samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
1A2-Dryden	QOP AA-Au (Au - Fire Assay AA)	

REPORT **A19-14515 (i)**

Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

The Au from AR-MS is for information purposes, for accurate Au fire assay 1A2 should be requested.

CERTIFIED BY:

Elitsa Hrischeva, Ph.D.
Quality Control Coordinator

ACTIVATION LABORATORIES LTD.
264 Government Road, Dryden, Ontario, Canada, P8N 2R3
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Cu	Zn	Ag
Unit Symbol	%	%	ppm
Lower Limit	0.001	0.001	3
Method Code	4Acid ICPOES	4Acid ICPOES	4Acid ICPOES
887202		1.42	
887203	1.11	1.36	
887204		3.31	
887206	2.15		132
887209	1.36		
887217		1.57	
887218	1.95	1.73	151
887222		4.04	
887224	1.07	2.07	

Analyte Symbol	Cu	Zn	Ag
Unit Symbol	%	%	ppm
Lower Limit	0.001	0.001	3
Method Code	4Acid ICPOES	4Acid ICPOES	4Acid ICPOES
GXR-4 Meas	0.648	0.007	< 3
GXR-4 Cert	0.652	0.00730	4
PTM-1a Meas	24.7		131
PTM-1a Cert	24.96		135
GBW 07239 (NCS DC 70007) Meas	0.004	0.012	
GBW 07239 (NCS DC 70007) Cert	0.005	0.012	
MP-1b Meas	3.13	16.4	48
MP-1b Cert	3.07	16.7	47
OREAS 98 (4 Acid) Meas	14.8	0.137	45
OREAS 98 (4 Acid) Cert	14.8	0.136	45.1
OREAS 13b (4-Acid) Meas	0.237	0.013	< 3
OREAS 13b (4-Acid) Cert	0.2327		0.86
CPB-2 Meas	0.124	6.15	
CPB-2 Cert	0.1213	6.04	
CZN-4 Meas	0.413	56.3	49
CZN-4 Cert	0.403	55.07	51
PTC-1b Meas	7.58	0.211	52
PTC-1b Cert	7.97	0.2083	53
CCU-1e Meas	22.9	3.03	208
CCU-1e Cert	22.9	3.02	205
887224 Orig	1.07	2.07	
887224 Dup	1.08	2.08	
Method Blank	< 0.001	< 0.001	< 3

BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Submitted By: Stephen Wetherup & Rob Cameron
Receiving Lab: Canada-Vancouver
Received: June 03, 2019
Report Date: June 24, 2019
Page: 1 of 5

CERTIFICATE OF ANALYSIS VAN19001305.1

CLIENT JOB INFORMATION

Project: SA
Shipment ID:
P.O. Number
Number of Samples: 119

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	119	Crush, split and pulverize 250 g rock to 200 mesh			VAN
LF300	119	LiBO2/Li2B4O7 fusion ICP-ES analysis	0.2	Completed	VAN

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days
DISP-RJT Dispose of Reject After 60 days

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

ADDITIONAL COMMENTS

Invoice To: Commander Resources Ltd.
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6
Canada

CC:

CLAIRE HO
Special Projects Coordinator

BUREAU VERITAS MINERAL LABORATORIES Canada

www.bureauveritas.com/um

Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

	Method	WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1588507	Rock	1.35	67.83	16.75	5.12	1.71	2.79	1.72	1.83	0.43	0.08	0.06	0.004	406	24	187	102	7	<5	8	1.6
1588508	Rock	1.54	69.54	18.08	3.12	0.78	0.88	1.17	3.01	0.49	0.09	0.02	0.005	452	<20	162	122	6	<5	9	2.7
1588510	Rock	1.07	63.37	16.57	6.46	1.53	3.79	2.68	1.86	0.46	0.09	0.06	0.005	372	<20	219	130	6	<5	9	3.0
1588511	Rock	0.86	69.40	15.60	2.92	1.18	3.80	3.40	1.25	0.34	0.07	0.12	0.003	461	<20	192	95	4	<5	6	1.8
1588512	Rock	0.97	62.69	16.04	7.46	2.12	3.84	2.80	1.88	0.46	0.09	0.08	0.004	196	46	193	93	7	<5	9	2.4
1588513	Rock	0.82	65.82	16.72	4.40	1.70	3.54	3.77	1.34	0.38	0.08	0.08	0.004	351	27	229	106	6	<5	7	2.0
1588514	Rock	1.22	71.37	16.41	1.61	0.52	4.01	4.08	0.41	0.46	0.08	0.04	0.003	119	<20	146	110	6	<5	6	1.0
1588515	Rock	1.21	70.99	16.94	2.13	0.53	2.20	1.69	3.06	0.42	0.08	0.03	0.004	515	<20	347	103	6	<5	8	1.8
1588516	Rock	1.68	71.11	16.38	4.29	0.93	1.25	1.09	2.87	0.38	0.08	0.06	0.004	434	<20	150	106	6	6	7	1.4
1588517	Rock	1.21	65.01	16.71	5.55	1.52	3.02	4.14	2.02	0.43	0.07	0.07	0.004	505	<20	146	97	5	<5	9	1.3
1588518	Rock	1.59	66.98	18.21	4.47	1.44	1.94	2.34	2.12	0.52	0.09	0.05	0.005	232	22	212	114	11	<5	10	1.7
1588519	Rock	1.18	76.06	14.04	0.87	0.16	0.67	4.90	2.30	0.27	0.02	<0.01	<0.002	425	<20	106	225	20	8	6	0.6
1588520	Rock	1.28	60.33	15.55	7.59	3.41	6.69	3.72	0.58	0.71	0.16	0.12	0.008	172	43	526	133	15	<5	15	1.0
1588521	Rock	1.03	64.08	14.74	7.11	2.93	6.47	0.98	1.72	0.39	0.08	0.14	<0.002	354	<20	168	287	25	11	8	1.2
1588522	Rock	0.75	70.60	15.39	3.70	0.66	2.86	2.04	2.54	0.61	0.12	0.06	<0.002	721	<20	437	207	17	<5	9	1.2
1588523	Rock	1.30	77.36	12.88	1.04	0.16	0.69	3.69	3.16	0.25	0.04	0.02	<0.002	503	<20	122	228	20	7	5	0.6
1588524	Rock	1.03	78.10	11.84	2.18	0.31	0.87	3.63	1.79	0.21	0.02	0.04	<0.002	406	<20	119	205	15	6	6	0.9
1588525	Rock	1.17	56.22	17.00	8.94	4.19	5.78	3.78	0.99	0.93	0.22	0.14	0.010	180	54	253	146	18	10	17	1.6
1588526	Rock	1.16	58.12	16.33	8.52	3.89	6.00	3.39	1.21	0.90	0.21	0.12	0.010	273	56	427	137	16	10	17	1.1
1588527	Rock	1.37	71.95	12.91	5.04	0.89	2.34	3.49	1.49	0.37	0.07	0.07	<0.002	258	<20	87	256	21	11	8	1.3
1588528	Rock	1.47	69.15	13.70	4.92	0.93	6.82	0.57	1.65	0.18	0.03	0.09	<0.002	274	<20	109	233	42	8	8	1.8
1588529	Rock	1.62	68.93	15.04	4.72	1.06	4.41	2.76	1.15	0.44	0.09	0.10	<0.002	328	<20	175	296	27	14	9	1.2
1588530	Rock	0.65	79.20	12.70	1.64	0.61	0.48	0.89	2.54	0.09	0.01	0.02	<0.002	280	<20	55	166	18	7	5	1.8
1588531	Rock	1.19	79.00	12.76	1.26	0.53	0.77	0.74	3.16	0.09	0.02	0.01	<0.002	226	<20	75	167	20	10	5	1.6
1588532	Rock	1.05	63.38	17.09	5.37	3.03	4.04	2.50	1.82	0.82	0.16	0.07	0.019	365	71	243	143	15	8	17	1.5
1588533	Rock	1.24	62.52	16.88	5.75	2.68	3.94	2.11	3.05	0.79	0.17	0.09	0.002	413	20	120	157	15	7	15	1.9
1588534	Rock	1.29	59.55	17.56	11.85	4.80	1.78	0.83	1.28	0.72	0.15	0.13	0.002	198	22	94	128	15	6	19	1.1
1588536	Rock	0.89	64.22	16.71	4.90	2.27	4.29	4.59	1.57	0.40	0.07	0.13	0.003	325	24	193	92	7	<5	8	0.7
1588537	Rock	0.93	64.45	16.92	5.53	1.69	3.71	3.85	2.37	0.42	0.06	0.13	0.003	523	26	144	91	3	<5	8	0.7
1588540	Rock	1.04	57.45	12.14	15.01	1.58	1.98	3.29	1.93	0.25	0.05	0.07	<0.002	221	<20	62	89	4	6	4	6.1

BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

		Method	LF300
		Analyte	Sum
		Unit	%
		MDL	0.01
1588507	Rock		99.96
1588508	Rock		99.97
1588510	Rock		99.98
1588511	Rock		99.97
1588512	Rock		99.93
1588513	Rock		99.96
1588514	Rock		99.99
1588515	Rock		99.99
1588516	Rock		99.95
1588517	Rock		99.96
1588518	Rock		99.95
1588519	Rock		100.00
1588520	Rock		99.92
1588521	Rock		99.95
1588522	Rock		99.99
1588523	Rock		100.00
1588524	Rock		100.01
1588525	Rock		99.90
1588526	Rock		99.93
1588527	Rock		99.97
1588528	Rock		99.96
1588529	Rock		99.97
1588530	Rock		100.00
1588531	Rock		100.00
1588532	Rock		99.92
1588533	Rock		99.93
1588534	Rock		99.79
1588536	Rock		99.95
1588537	Rock		99.95
1588540	Rock		99.92

BUREAU VERITAS MINERAL LABORATORIES Canada

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PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

	Method	WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1588541	Rock	1.26	71.19	14.96	2.77	1.21	1.85	2.67	3.09	0.31	0.07	0.05	0.004	509	<20	151	111	4	<5	5	1.7
1588543	Rock	0.90	68.47	16.63	2.93	1.09	2.99	4.62	2.12	0.28	0.07	0.05	<0.002	471	<20	418	115	3	<5	4	0.6
1588544	Rock	0.96	67.72	15.31	5.50	1.29	3.10	4.43	1.36	0.59	0.14	0.07	<0.002	269	<20	224	158	12	6	9	0.4
1588545	Rock	0.95	70.92	14.88	3.36	1.67	2.84	2.59	2.15	0.30	0.07	0.07	0.002	407	<20	159	100	3	<5	4	1.0
1588546	Rock	0.96	72.55	12.82	4.12	1.06	3.41	1.21	2.95	0.35	0.06	0.09	<0.002	282	<20	44	268	19	6	6	1.3
1588547	Rock	1.24	72.01	13.28	3.47	2.50	3.54	0.88	2.22	0.32	0.08	0.14	0.004	228	<20	73	88	7	<5	6	1.4
1588549	Rock	0.68	56.77	17.60	8.48	3.14	7.43	3.70	0.32	0.85	0.19	0.14	0.009	73	59	311	138	12	<5	16	1.2
1588550	Rock	0.82	60.72	16.35	7.95	3.03	6.27	2.92	0.59	0.60	0.10	0.18	0.007	194	37	213	118	10	<5	14	1.1
1588551	Rock	1.05	64.25	16.86	4.90	2.14	4.15	4.07	1.62	0.41	0.07	0.11	0.004	333	30	249	91	7	<5	8	1.3
1588552	Rock	1.47	64.27	17.11	4.43	2.24	3.53	4.03	2.16	0.40	0.07	0.08	0.004	367	30	145	90	6	<5	8	1.6
1588553	Rock	1.81	66.13	17.43	3.18	1.80	4.09	3.06	2.87	0.42	0.07	0.07	0.004	638	20	195	91	6	<5	8	0.7
1588554	Rock	0.74	67.89	16.21	3.78	1.63	3.72	3.27	1.91	0.38	0.09	0.08	0.005	300	26	153	100	6	<5	6	0.9
1588555	Rock	1.26	67.80	16.17	3.66	1.43	3.24	4.26	1.76	0.37	0.08	0.06	0.005	265	24	138	99	6	<5	6	1.1
1588557	Rock	0.84	68.73	16.26	2.77	1.09	4.84	3.32	1.19	0.33	0.07	0.08	0.003	443	23	320	106	7	<5	6	1.2
1588558	Rock	0.38	68.96	16.31	3.32	1.24	1.40	5.97	1.32	0.34	0.07	0.03	0.002	348	22	312	105	5	<5	5	0.9
1588559	Rock	0.74	69.58	16.34	3.24	1.27	1.52	1.74	3.41	0.35	0.07	0.05	0.003	631	27	217	112	5	<5	5	2.3
1588560	Rock	0.52	69.65	15.77	3.54	1.37	2.65	3.73	1.37	0.35	0.07	0.12	0.003	416	25	170	100	5	<5	6	1.3
1588561	Rock	0.39	64.49	18.08	4.33	1.23	2.64	5.60	1.91	0.44	0.10	0.06	0.004	491	31	213	126	8	<5	8	1.0
1588562	Rock	1.05	72.83	13.00	4.39	0.53	3.61	3.07	1.27	0.35	0.06	0.09	<0.002	265	<20	88	250	26	12	8	0.7
1588568	Rock	0.54	71.60	13.62	4.38	0.92	3.24	2.76	1.71	0.44	0.08	0.09	<0.002	608	<20	103	271	13	11	8	1.0
1588569	Rock	0.77	72.33	12.92	4.07	0.77	2.79	3.61	1.44	0.40	0.09	0.06	<0.002	230	<20	139	244	21	10	7	1.5
1588570	Rock	0.74	72.05	13.41	4.03	0.67	2.97	2.08	2.44	0.41	0.08	0.06	<0.002	409	<20	121	264	19	11	7	1.7
1588571	Rock	0.71	57.20	16.60	8.04	4.14	7.74	2.38	1.44	0.74	0.17	0.13	0.015	266	60	243	120	14	<5	17	1.2
1588578	Rock	0.92	71.62	12.42	3.68	2.30	4.55	1.07	1.25	0.29	0.05	0.10	<0.002	210	<20	148	256	24	11	7	2.6
1588579	Rock	0.32	72.12	13.66	4.31	1.02	1.96	3.38	1.72	0.43	0.09	0.05	<0.002	419	<20	81	254	23	7	8	1.1
1588580	Rock	0.64	69.78	12.75	5.74	2.25	5.85	0.61	1.28	0.33	0.07	0.14	0.003	597	36	164	141	17	7	6	1.0
1588581	Rock	0.59	72.36	13.63	4.38	1.31	3.13	1.45	1.77	0.44	0.08	0.09	<0.002	743	<20	153	266	24	10	8	1.2
1588582	Rock	1.54	85.27	11.28	0.46	0.01	0.09	1.64	0.38	0.17	<0.01	<0.01	<0.002	243	<20	123	172	13	<5	3	0.6
1588583	Rock	0.62	88.22	7.14	0.73	0.21	0.05	0.46	1.79	0.12	<0.01	<0.01	<0.002	260	<20	15	112	6	<5	4	1.3
1588584	Rock	0.59	84.11	10.57	0.58	0.04	0.02	0.50	2.24	0.17	0.01	<0.01	<0.002	172	<20	59	170	14	7	5	1.7

BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

		Method	LF300
		Analyte	Sum
		Unit	%
		MDL	0.01
1588541	Rock		99.98
1588543	Rock		99.98
1588544	Rock		99.98
1588545	Rock		99.98
1588546	Rock		99.99
1588547	Rock		99.86
1588549	Rock		99.91
1588550	Rock		99.88
1588551	Rock		99.95
1588552	Rock		99.96
1588553	Rock		99.96
1588554	Rock		99.97
1588555	Rock		99.97
1588557	Rock		99.98
1588558	Rock		99.98
1588559	Rock		99.97
1588560	Rock		99.98
1588561	Rock		99.97
1588562	Rock		99.98
1588568	Rock		99.99
1588569	Rock		100.00
1588570	Rock		100.00
1588571	Rock		99.89
1588578	Rock		99.96
1588579	Rock		99.97
1588580	Rock		99.96
1588581	Rock		99.97
1588582	Rock		100.00
1588583	Rock		100.02
1588584	Rock		100.00

BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

	Method	WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1588585	Rock	0.80	60.08	18.32	9.45	1.34	4.77	3.01	1.37	0.80	0.13	0.17	0.002	298	25	205	126	15	6	18	0.4
1588586	Rock	0.81	73.62	12.74	4.36	0.55	2.18	3.83	0.79	0.35	0.07	0.09	<0.002	244	<20	52	255	22	11	8	1.3
1588590	Rock	1.17	59.18	15.57	9.32	3.95	3.17	2.30	1.95	0.99	0.25	0.21	<0.002	610	<20	146	136	15	7	14	2.8
1588591	Rock	0.27	67.81	16.53	2.63	1.35	4.54	2.34	2.21	0.40	0.06	0.08	0.003	498	<20	176	112	7	<5	7	2.0
1588592	Rock	0.75	66.10	16.43	4.31	1.99	3.50	4.08	1.61	0.37	0.06	0.07	0.004	296	24	194	99	6	<5	6	1.4
1588593	Rock	0.49	67.63	16.19	4.48	1.22	1.35	6.20	1.08	0.39	0.10	0.07	0.004	217	24	159	101	6	6	7	1.2
1588594	Rock	1.15	67.74	16.51	4.06	0.98	2.01	5.16	1.90	0.37	0.08	0.06	0.003	330	<20	146	98	6	<5	7	1.0
1588595	Rock	0.54	70.99	13.34	5.15	0.92	3.42	2.78	1.65	0.39	0.06	0.09	<0.002	420	<20	146	278	23	12	8	1.1
1588596	Rock	0.77	69.79	15.65	4.05	1.08	1.49	4.67	1.55	0.37	0.08	0.05	0.004	259	21	285	102	8	7	7	1.1
1588597	Rock	0.73	64.47	16.56	5.65	1.70	4.47	3.32	1.68	0.54	0.12	0.09	0.004	306	43	252	131	10	<5	9	1.3
1588598	Rock	0.66	65.89	16.10	6.66	1.37	1.67	5.05	1.90	0.53	0.09	0.11	0.005	238	48	107	126	12	<5	10	0.5
1588602	Rock	1.15	74.70	12.82	3.13	0.80	1.99	3.42	2.27	0.28	0.05	0.05	<0.002	378	<20	116	264	26	10	7	0.4
1588604	Rock	0.99	69.32	15.10	3.21	1.55	2.94	2.60	3.51	0.34	0.08	0.06	0.003	723	<20	80	123	6	<5	5	1.1
1588605	Rock	0.83	77.26	12.84	0.61	0.22	0.54	4.07	3.21	0.22	0.01	<0.01	<0.002	596	<20	72	214	23	9	6	0.9
1588606	Rock	0.94	59.89	15.75	7.60	3.05	5.03	1.48	4.10	0.81	0.21	0.13	0.012	639	62	133	134	16	7	17	1.7
1588607	Rock	1.04	74.09	12.69	3.53	0.74	2.46	2.14	2.42	0.34	0.06	0.06	<0.002	333	<20	120	221	17	6	7	1.4
1588608	Rock	1.12	76.54	12.05	2.89	0.27	1.10	3.48	2.16	0.19	0.04	0.10	<0.002	300	<20	92	240	26	9	6	1.1
1588609	Rock	1.26	70.91	15.28	2.83	0.50	1.57	4.12	2.84	0.52	0.10	0.05	<0.002	409	<20	157	253	21	10	7	1.2
1588610	Rock	1.22	62.21	17.60	7.02	1.24	8.07	1.27	0.52	0.77	0.13	0.31	0.003	1478	<20	249	120	16	5	16	0.6
1588651	Rock	0.82	63.52	16.16	6.27	2.54	4.31	3.06	0.65	0.60	0.12	0.10	0.006	162	<20	225	117	6	<5	12	2.5
1588653	Rock	1.62	62.74	16.01	6.19	2.08	6.23	1.87	1.37	0.71	0.18	0.11	0.009	299	52	270	134	17	5	15	2.3
1588654	Rock	1.18	65.96	16.60	4.82	2.00	2.74	3.98	1.89	0.55	0.13	0.04	0.009	235	41	213	144	13	<5	13	1.2
1588655	Rock	1.02	63.38	16.67	5.16	2.96	4.88	1.81	2.30	0.54	0.11	0.08	0.006	205	32	132	151	14	<5	11	2.0
1588656	Rock	0.91	70.46	14.63	3.69	1.07	3.14	1.84	3.29	0.39	0.07	0.08	<0.002	542	<20	183	188	17	<5	7	1.2
1588657	Rock	0.75	64.53	15.69	6.56	2.34	2.78	3.98	2.17	0.74	0.17	0.07	0.017	514	53	202	166	14	5	14	0.8
1588658	Rock	0.96	63.92	14.06	8.98	2.45	3.53	3.36	1.72	0.83	0.19	0.11	0.010	136	55	163	116	14	8	16	0.7
1588659	Rock	1.02	56.82	17.70	8.16	3.69	5.17	3.82	1.31	0.99	0.25	0.14	0.016	230	76	300	136	16	6	19	1.7
1588660	Rock	1.26	45.66	16.21	17.42	4.95	9.45	1.48	1.56	1.00	0.29	0.39	0.010	340	69	319	117	17	9	20	1.4
1588661	Rock	1.10	57.39	17.05	9.10	2.38	6.26	4.50	0.30	0.97	0.27	0.18	0.009	106	48	367	115	14	<5	18	1.4
1588663	Rock	1.04	50.08	16.86	12.04	6.25	6.01	2.55	1.93	1.60	0.52	0.15	0.016	584	91	452	128	19	<5	22	1.7

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Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

		Method	LF300
		Analyte	Sum
		Unit	%
		MDL	0.01
1588585	Rock		99.94
1588586	Rock		99.99
1588590	Rock		99.80
1588591	Rock		99.98
1588592	Rock		99.96
1588593	Rock		99.98
1588594	Rock		99.98
1588595	Rock		99.98
1588596	Rock		99.98
1588597	Rock		99.95
1588598	Rock		99.97
1588602	Rock		100.00
1588604	Rock		99.98
1588605	Rock		100.02
1588606	Rock		99.91
1588607	Rock		99.98
1588608	Rock		100.01
1588609	Rock		100.01
1588610	Rock		99.93
1588651	Rock		99.92
1588653	Rock		99.93
1588654	Rock		99.95
1588655	Rock		99.94
1588656	Rock		99.99
1588657	Rock		99.94
1588658	Rock		99.93
1588659	Rock		99.91
1588660	Rock		99.87
1588661	Rock		99.92
1588663	Rock		99.82

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1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

	Method	WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1588664	Rock	1.02	81.19	10.21	3.63	0.49	0.18	0.35	1.89	0.35	0.10	0.04	0.003	316	146	31	107	16	<5	8	1.5
1588665	Rock	1.15	63.93	16.75	6.44	1.74	4.26	1.73	2.62	0.69	0.11	0.14	0.004	390	33	112	140	14	5	15	1.4
1588666	Rock	1.39	59.21	15.70	9.74	3.69	7.09	1.71	0.49	0.69	0.14	0.15	0.015	215	85	179	114	14	6	17	1.2
1588667	Rock	0.80	60.15	16.03	7.07	2.98	7.28	0.79	2.34	0.63	0.13	0.22	0.004	644	<20	112	146	16	6	12	2.2
1588668	Rock	0.97	57.66	18.88	6.83	1.79	5.88	1.16	3.23	0.79	0.14	0.24	0.016	759	80	133	129	13	<5	17	3.2
1588669	Rock	0.88	73.99	12.58	3.35	1.03	1.81	3.56	1.49	0.39	0.09	0.05	<0.002	265	<20	102	244	21	10	7	1.6
1588670	Rock	0.48	70.14	16.36	7.98	1.12	0.59	0.17	1.23	0.81	0.23	0.13	0.003	247	29	18	141	13	<5	14	1.1
1588671	Rock	0.79	72.30	13.23	3.43	1.35	3.10	0.88	2.74	0.40	0.10	0.07	<0.002	320	327	110	165	19	<5	7	2.3
1588672	Rock	1.10	59.51	16.06	7.53	3.46	6.20	0.68	2.19	0.79	0.23	0.16	0.002	289	21	106	128	17	<5	14	3.0
1588673	Rock	0.47	60.93	17.02	6.55	2.23	6.34	1.24	2.30	0.85	0.25	0.10	0.003	283	<20	121	137	16	<5	15	2.1
1588674	Rock	0.88	72.33	13.69	3.20	1.58	3.19	0.81	3.03	0.37	0.09	0.08	0.002	323	<20	70	164	20	5	7	1.5
1588675	Rock	0.90	60.60	16.17	7.62	3.75	6.12	0.99	2.43	0.74	0.17	0.10	0.004	397	29	141	130	17	<5	14	1.1
1588701	Rock	0.43	63.44	18.84	4.93	1.32	3.06	3.73	2.38	0.82	0.14	0.06	0.002	489	<20	204	130	14	<5	18	1.1
1588702	Rock	1.04	55.75	15.96	11.22	3.76	9.17	0.87	0.70	0.69	0.11	0.33	<0.002	119	<20	125	110	20	6	14	1.3
1588703	Rock	1.40	58.54	18.00	7.83	1.93	7.53	3.46	0.95	0.80	0.12	0.16	<0.002	347	<20	203	125	15	6	17	0.5
1588704	Rock	0.84	60.25	17.37	7.58	1.61	6.56	3.31	1.24	0.79	0.13	0.12	<0.002	263	<20	246	125	15	6	17	0.9
1588705	Rock	0.60	75.85	15.70	1.37	0.05	0.15	3.32	1.18	0.32	0.03	<0.01	<0.002	2188	<20	218	229	14	10	17	1.7
1588706	Rock	0.69	75.07	13.14	3.27	0.44	2.23	1.43	2.53	0.36	0.06	0.05	<0.002	798	<20	125	280	17	9	7	1.3
1588707	Rock	1.10	72.25	13.65	4.29	0.86	3.65	1.89	1.34	0.38	0.08	0.24	<0.002	822	<20	202	261	20	10	8	1.2
1588708	Rock	0.73	65.72	14.86	3.04	1.68	4.37	2.70	3.79	0.36	0.06	0.07	0.003	626	20	117	83	6	<5	7	3.2
1588709	Rock	1.04	66.05	15.98	4.23	1.95	3.52	2.65	2.80	0.42	0.07	0.07	<0.002	325	20	261	87	7	<5	8	2.1
1588710	Rock	1.15	65.66	16.82	3.64	1.69	7.17	1.38	1.58	0.46	0.08	0.14	0.005	593	24	190	102	11	<5	8	1.2
1588711	Rock	0.81	84.06	11.88	0.43	0.03	0.18	1.26	1.07	0.19	0.02	<0.01	0.002	217	<20	112	194	14	10	3	0.8
1588712	Rock	0.96	60.35	17.89	6.27	3.42	5.75	1.08	2.99	0.59	0.09	0.11	0.006	647	31	135	125	10	<5	9	1.3
1588713	Rock	0.81	64.52	16.71	8.19	3.99	1.36	1.01	2.40	0.47	0.07	0.09	0.004	363	33	64	78	6	<5	8	1.0
1588714	Rock	0.71	65.48	16.18	4.80	3.38	3.89	0.92	3.21	0.45	0.08	0.09	0.005	324	31	80	104	7	<5	8	1.4
1588715	Rock	0.65	69.58	16.49	2.88	0.67	2.31	5.74	1.25	0.34	0.04	0.03	<0.002	208	<20	149	106	5	<5	5	0.6
1588716	Rock	1.47	63.83	17.26	5.27	2.31	2.90	5.07	1.63	0.45	0.07	0.05	0.005	272	39	279	94	8	<5	9	1.0
1588717	Rock	0.58	69.62	16.83	2.71	0.43	1.99	4.72	2.16	0.36	0.02	0.03	0.002	480	<20	325	114	4	<5	6	1.0

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1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

CERTIFICATE OF ANALYSIS VAN19001305.1

		Method	LF300
		Analyte	Sum
		Unit	%
		MDL	0.01
1588664	Rock		99.98
1588665	Rock		99.94
1588666	Rock		99.90
1588667	Rock		99.92
1588668	Rock		99.93
1588669	Rock		99.98
1588670	Rock		99.94
1588671	Rock		99.98
1588672	Rock		99.91
1588673	Rock		99.93
1588674	Rock		99.98
1588675	Rock		99.91
1588701	Rock		99.95
1588702	Rock		99.90
1588703	Rock		99.93
1588704	Rock		99.94
1588705	Rock		99.96
1588706	Rock		100.00
1588707	Rock		99.98
1588708	Rock		99.96
1588709	Rock		99.96
1588710	Rock		99.96
1588711	Rock		99.99
1588712	Rock		99.92
1588713	Rock		99.92
1588714	Rock		99.94
1588715	Rock		99.99
1588716	Rock		99.95
1588717	Rock		99.99

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Project: SA
Report Date: June 24, 2019

QUALITY CONTROL REPORT VAN19001305.1

	Method	WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1588510	Rock	1.07	63.37	16.57	6.46	1.53	3.79	2.68	1.86	0.46	0.09	0.06	0.005	372	<20	219	130	6	<5	9	3.0
1588550	Rock	0.82	60.72	16.35	7.95	3.03	6.27	2.92	0.59	0.60	0.10	0.18	0.007	194	37	213	118	10	<5	14	1.1
1588606	Rock	0.94	59.89	15.75	7.60	3.05	5.03	1.48	4.10	0.81	0.21	0.13	0.012	639	62	133	134	16	7	17	1.7
1588708	Rock	0.73	65.72	14.86	3.04	1.68	4.37	2.70	3.79	0.36	0.06	0.07	0.003	626	20	117	83	6	<5	7	3.2
Pulp Duplicates																					
1588517	Rock	1.21	65.01	16.71	5.55	1.52	3.02	4.14	2.02	0.43	0.07	0.07	0.004	505	<20	146	97	5	<5	9	1.3
REP 1588517	QC		65.29	16.66	5.46	1.50	3.01	4.09	1.99	0.43	0.06	0.07	0.003	495	<20	145	92	5	<5	9	1.3
1588557	Rock	0.84	68.73	16.26	2.77	1.09	4.84	3.32	1.19	0.33	0.07	0.08	0.003	443	23	320	106	7	<5	6	1.2
REP 1588557	QC		68.78	16.24	2.78	1.09	4.82	3.31	1.17	0.33	0.06	0.08	0.003	444	23	319	105	6	<5	6	1.2
1588610	Rock	1.22	62.21	17.60	7.02	1.24	8.07	1.27	0.52	0.77	0.13	0.31	0.003	1478	<20	249	120	16	5	16	0.6
REP 1588610	QC		62.19	17.52	7.06	1.25	8.09	1.28	0.53	0.77	0.13	0.32	0.002	1485	<20	251	121	16	<5	16	0.6
1588706	Rock	0.69	75.07	13.14	3.27	0.44	2.23	1.43	2.53	0.36	0.06	0.05	<0.002	798	<20	125	280	17	9	7	1.3
REP 1588706	QC		75.10	13.13	3.33	0.44	2.21	1.41	2.49	0.36	0.05	0.05	<0.002	792	<20	124	270	17	10	7	1.3
1588711	Rock	0.81	84.06	11.88	0.43	0.03	0.18	1.26	1.07	0.19	0.02	<0.01	0.002	217	<20	112	194	14	10	3	0.8
REP 1588711	QC		84.08	11.82	0.45	0.02	0.19	1.26	1.08	0.19	0.03	<0.01	0.003	216	<20	112	201	14	5	2	0.8
Core Reject Duplicates																					
1588536	Rock	0.89	64.22	16.71	4.90	2.27	4.29	4.59	1.57	0.40	0.07	0.13	0.003	325	24	193	92	7	<5	8	0.7
DUP 1588536	QC		64.13	16.77	4.89	2.27	4.34	4.58	1.57	0.41	0.07	0.13	0.003	333	25	194	90	6	<5	8	0.7
1588586	Rock	0.81	73.62	12.74	4.36	0.55	2.18	3.83	0.79	0.35	0.07	0.09	<0.002	244	<20	52	255	22	11	8	1.3
DUP 1588586	QC		73.54	12.91	4.30	0.56	2.19	3.78	0.80	0.36	0.07	0.09	<0.002	244	<20	52	263	22	10	8	1.3
1588669	Rock	0.88	73.99	12.58	3.35	1.03	1.81	3.56	1.49	0.39	0.09	0.05	<0.002	265	<20	102	244	21	10	7	1.6
DUP 1588669	QC		73.95	12.55	3.40	1.03	1.81	3.57	1.49	0.39	0.09	0.05	0.002	265	<20	102	248	21	8	7	1.6
Reference Materials																					
STD SO-19	Standard		60.65	13.91	7.43	2.92	5.91	4.02	1.27	0.69	0.33	0.13	0.500	469	471	317	115	35	68	27	1.9
STD SO-19	Standard		60.60	13.89	7.50	2.92	5.90	4.02	1.27	0.70	0.32	0.13	0.506	474	480	317	116	35	68	27	1.9
STD SO-19	Standard		60.23	14.11	7.57	2.94	5.96	4.01	1.28	0.70	0.31	0.13	0.493	464	469	319	118	34	75	26	1.9
STD SO-19	Standard		60.21	14.09	7.58	2.95	5.97	4.02	1.28	0.70	0.32	0.13	0.495	464	470	319	114	34	73	26	1.9
STD SO-19	Standard		60.66	13.91	7.40	2.92	5.96	4.02	1.25	0.70	0.32	0.13	0.489	468	471	315	115	34	69	26	1.9
STD SO-19	Standard		60.65	13.88	7.44	2.89	5.96	4.05	1.28	0.70	0.31	0.13	0.494	466	466	316	116	35	70	26	1.9

BUREAU VERITAS MINERAL LABORATORIES Canada

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

QUALITY CONTROL REPORT VAN19001305.1

	Method	LF300
	Analyte	Sum
	Unit	%
	MDL	0.01
1588510	Rock	99.98
1588550	Rock	99.88
1588606	Rock	99.91
1588708	Rock	99.96
Pulp Duplicates		
1588517	Rock	99.96
REP 1588517	QC	99.96
1588557	Rock	99.98
REP 1588557	QC	99.97
1588610	Rock	99.93
REP 1588610	QC	99.93
1588706	Rock	100.00
REP 1588706	QC	99.99
1588711	Rock	99.99
REP 1588711	QC	99.98
Core Reject Duplicates		
1588536	Rock	99.95
DUP 1588536	QC	99.96
1588586	Rock	99.99
DUP 1588586	QC	100.00
1588669	Rock	99.98
DUP 1588669	QC	99.98
Reference Materials		
STD SO-19	Standard	99.88
STD SO-19	Standard	99.88
STD SO-19	Standard	99.87
STD SO-19	Standard	99.86
STD SO-19	Standard	99.88
STD SO-19	Standard	99.88

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Project: SA
Report Date: June 24, 2019

QUALITY CONTROL REPORT VAN19001305.1

		WGHT	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
		Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
		kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
STD SO-19	Standard		60.21	14.08	7.46	2.94	6.03	4.07	1.28	0.72	0.33	0.13	0.497	472	476	323	118	35	73	27	1.9
STD SO-19	Standard		60.73	13.83	7.51	2.89	5.91	3.99	1.29	0.70	0.32	0.13	0.489	465	469	315	115	34	72	26	1.9
STD SO-19	Standard		60.47	13.99	7.47	2.91	5.94	4.04	1.30	0.69	0.31	0.13	0.497	462	466	315	114	34	72	26	1.9
STD SO-19	Standard		60.68	13.93	7.43	2.90	5.91	4.01	1.27	0.69	0.30	0.13	0.495	458	467	314	114	34	71	26	1.9
STD SO-19 Expected			61.13	13.95	7.47	2.88	6	4.11	1.29	0.69	0.32	0.13	0.5	486	470	317.1	112	35.5	68.5	27	
BLK	Blank		0.04	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.002	<5	<20	<2	<5	<3	<5	<1	0.0
BLK	Blank		<0.01	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<5	<20	<2	<5	<3	6	<1	0.0
BLK	Blank		<0.01	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<5	<20	<2	<5	<3	<5	<1	0.0
BLK	Blank		0.03	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<5	<20	<2	<5	<3	<5	<1	0.0
BLK	Blank		<0.01	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.002	<5	<20	<2	<5	<3	<5	<1	0.0
Prep Wash																					
ROCK-VAN	Prep Blank		70.42	14.22	3.24	0.98	2.23	4.67	1.88	0.37	0.11	0.09	<0.002	833	<20	201	147	18	9	7	1.6
ROCK-VAN	Prep Blank		70.42	14.29	3.25	0.97	2.23	4.73	1.89	0.37	0.10	0.09	<0.002	830	<20	202	142	18	9	7	1.5

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: June 24, 2019

QUALITY CONTROL REPORT VAN19001305.1

		LF300 Sum % 0.01
STD SO-19	Standard	99.87
STD SO-19	Standard	99.88
STD SO-19	Standard	99.87
STD SO-19	Standard	99.87
STD SO-19 Expected		
BLK	Blank	0.06
BLK	Blank	<0.01
BLK	Blank	<0.01
BLK	Blank	0.05
BLK	Blank	<0.01
Prep Wash		
ROCK-VAN	Prep Blank	99.98
ROCK-VAN	Prep Blank	99.99

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9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Submitted By: Stephen Wetherup & Rob Cameron
Receiving Lab: Canada-Vancouver
Received: June 03, 2019
Report Date: July 08, 2019
Page: 1 of 2

CERTIFICATE OF ANALYSIS VAN19001306.2

CLIENT JOB INFORMATION

Project: SA
Shipment ID:
P.O. Number
Number of Samples: 30

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days
DISP-RJT Dispose of Reject After 60 days

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	30	Crush, split and pulverize 250 g rock to 200 mesh			VAN
FA330-Au	30	Fire assay fusion Au by ICP-ES	30	Completed	VAN
EN002	30	Environmental disposal charge-Fire assay lead waste			VAN
MA250	30	4 Acid digestion Ultratrace ICP-MS analysis	0.25	Completed	VAN
EN001-MA	30	Environmental disposal fee - Multi-acid neutralization			VAN
MA370	10	4-Acid Digestion ICP-ES Finish	0.5	Completed	VAN

ADDITIONAL COMMENTS

Version 2 : MA370 included.

Invoice To: Commander Resources Ltd.
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6
Canada

CC:

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Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: July 08, 2019

CERTIFICATE OF ANALYSIS VAN19001306.2

	Method	WGHT	FA330	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
	Analyte	Wgt	Au	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca
	Unit	kg	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	2	0.05	0.1	0.02	0.2	20	0.1	0.2	1	0.01	0.2	0.1	0.1	1	0.02	0.02	0.04	1	0.01
1588501	Rock	0.70	422	0.39	2709.8	52.90	227.8	36864	7.8	6.9	887	2.16	<0.2	0.2	0.9	48	2.59	0.08	2.91	20	1.57
1588502	Rock	1.69	47	0.92	802.0	178.18	348.3	2815	53.6	59.9	5990	18.78	3.7	0.9	4.3	59	1.48	0.67	14.42	104	6.20
1588503	Rock	0.52	292	0.24	2971.8	53.73	197.8	51967	6.8	11.3	509	3.33	<0.2	0.4	1.6	47	2.00	0.03	2.98	38	0.69
1588509	Rock	1.05	13	1.02	23.8	102.11	46.9	668	4.8	6.5	136	2.37	0.7	0.5	2.3	146	0.02	0.19	0.57	66	0.50
1588535	Rock	0.95	121	4.46	>10000	3509.82	6496.3	153140	6.7	17.3	1774	15.45	<0.2	0.6	2.4	14	8.82	1.59	93.57	130	3.63
1588538	Rock	0.61	7	5.64	66.1	27.89	20.4	1129	0.8	1.3	50	7.70	78.1	0.7	1.9	112	<0.02	0.08	8.98	7	1.88
1588539	Rock	0.65	6	12.85	95.1	25.84	40.3	1097	14.4	9.2	329	3.28	0.4	0.8	3.0	176	0.03	0.03	1.53	50	1.63
1588542	Rock	0.51	7	0.76	108.0	31.06	19.5	2749	5.0	51.2	59	11.99	15.6	0.5	0.8	158	0.07	0.05	25.54	8	1.11
1588548	Rock	0.49	5110	115.44	>10000	189.68	5664.0	121310	14.9	19.2	4211	7.72	<0.2	0.2	0.1	61	51.19	0.43	10.57	34	9.44
1588556	Rock	1.30	6	0.22	50.5	41.04	163.4	240	15.0	9.7	991	2.55	0.5	0.3	2.0	219	0.35	0.23	0.20	48	3.74
1588563	Rock	0.68	8	0.44	33.6	16.14	96.7	462	1.9	3.9	688	2.94	2.7	1.1	5.1	83	0.23	0.16	0.22	6	2.44
1588564	Rock	0.81	7	1.63	26.4	18.14	133.5	594	30.2	12.7	1651	4.09	1.5	0.3	1.3	134	0.78	0.17	0.52	59	4.54
1588565	Rock	1.15	11	1.41	42.3	61.04	47.6	2816	22.3	22.5	470	3.71	0.3	0.4	1.9	185	0.17	0.11	0.94	59	2.51
1588566	Rock	0.90	8	0.48	38.1	12.92	92.4	277	28.2	12.1	988	4.00	0.6	0.4	2.0	223	0.24	0.08	0.10	62	3.91
1588567	Rock	1.96	32	5.21	958.2	>10000	>10000	22526	25.1	20.8	783	6.79	<0.2	<0.1	<0.1	42	232.19	9.50	12.64	17	1.36
1588572	Rock	0.96	14	0.88	58.4	36.27	87.5	750	21.2	21.4	605	3.82	1.5	0.5	1.9	178	0.22	0.14	0.26	65	2.79
1588573	Rock	0.53	8	0.80	63.7	51.09	96.4	353	32.3	20.3	465	3.05	0.9	0.4	1.7	155	0.37	0.20	0.09	68	3.76
1588574	Rock	1.34	27	2.29	27.9	11.09	64.8	378	23.2	16.2	367	2.91	1.2	0.4	1.7	129	<0.02	0.05	0.18	60	1.46
1588575	Rock	1.00	20	1.24	28.5	25.02	87.5	855	20.2	21.5	443	3.63	1.7	0.4	1.7	203	0.09	0.09	0.38	64	2.17
1588576	Rock	1.20	18	1.37	93.0	16.01	41.6	582	27.3	21.2	686	5.00	4.3	0.4	2.1	235	0.12	0.09	<0.04	61	3.17
1588577	Rock	1.46	13	0.47	68.1	19.83	31.1	494	27.7	28.1	316	4.14	3.8	0.4	2.1	206	0.05	0.25	0.09	70	2.18
1588587	Rock	1.06	151	1.34	>10000	>10000	5290.7	>200000	6.4	15.6	2304	14.39	<0.2	0.5	2.1	18	3.60	3.30	429.89	117	3.75
1588588	Rock	1.03	32	0.66	>10000	1701.57	4462.3	52454	8.8	13.8	472	8.02	<0.2	0.9	4.5	107	22.04	0.84	25.22	78	0.85
1588589	Rock	0.97	318	0.93	>10000	3333.26	>10000	>200000	14.3	29.2	1227	12.85	<0.2	0.8	3.5	48	123.51	1.35	91.69	50	0.77
1588599	Rock	0.83	5	0.22	58.0	46.18	127.0	412	22.3	4.7	805	2.62	1.1	0.3	1.4	159	0.12	0.09	0.22	59	2.32
1588600	Rock	1.74	1704	60.13	>10000	4334.93	>10000	158750	10.7	15.2	514	3.28	<0.2	0.1	0.4	19	175.82	0.33	198.50	9	1.10
1588601	Rock	0.97	2870	1.57	>10000	5347.86	>10000	192087	8.0	5.0	333	13.42	<0.2	0.7	3.8	26	104.56	6.88	95.36	45	0.05
1588603	Rock	0.93	30	31.65	855.2	25.45	74.8	3993	103.8	6.9	337	40.23	<0.2	0.1	0.5	12	0.43	0.02	5.33	12	0.29
1588652	Rock	0.71	11	1.01	238.5	43.51	301.2	2033	33.0	18.9	836	4.59	<0.2	0.5	2.0	205	0.55	0.12	1.14	106	2.63
1588662	Rock	1.19	6	0.58	51.0	10.80	198.3	360	149.7	22.0	3430	13.78	0.8	1.2	5.0	381	0.44	0.16	0.56	35	6.47

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Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: July 08, 2019

CERTIFICATE OF ANALYSIS VAN19001306.2

		Method	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
		Analyte	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Sn	Be	Sc	S	Y	Ce	Pr	Nd	Sm
		Unit	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
		MDL	0.001	0.1	1	0.01	1	0.001	0.01	0.001	0.01	0.1	0.2	0.1	1	0.1	0.04	0.1	0.02	0.1	0.1	0.1
1588501	Rock		0.016	11.2	9	0.61	308	0.102	3.87	0.406	0.94	0.3	35.0	0.3	<1	2.5	0.32	3.3	19.61	2.4	7.8	1.4
1588502	Rock		0.070	15.5	42	2.54	14	0.423	7.72	0.902	0.28	1.1	122.2	3.1	2	14.1	1.72	18.9	32.66	4.5	16.5	3.4
1588503	Rock		0.024	3.7	15	0.56	527	0.169	6.61	0.507	2.88	1.3	63.0	0.3	<1	4.3	0.47	2.9	5.73	0.6	1.7	0.3
1588509	Rock		0.038	9.6	23	0.40	457	0.196	7.75	0.875	2.34	0.3	91.0	0.5	<1	8.1	0.41	3.1	18.80	2.3	8.4	1.6
1588535	Rock		0.064	6.8	14	7.31	11	0.489	7.73	0.364	0.09	1.3	129.0	115.4	<1	16.8	1.46	14.9	13.63	1.8	6.8	1.7
1588538	Rock		0.010	3.6	5	0.03	56	0.194	5.55	2.066	0.26	0.2	138.1	0.9	<1	1.0	0.88	3.1	6.58	0.8	2.7	0.7
1588539	Rock		0.035	17.2	17	0.82	92	0.197	9.06	2.864	4.32	0.4	115.3	1.2	<1	7.1	1.69	6.8	31.78	3.8	12.9	2.5
1588542	Rock		0.007	3.0	4	0.07	49	0.093	5.82	2.547	0.76	0.8	55.8	0.6	1	2.2	>10	1.4	5.01	0.5	1.9	0.4
1588548	Rock		0.002	5.4	3	3.89	20	0.027	4.18	0.061	0.18	0.5	1.5	3.2	1	3.9	2.64	9.5	11.16	1.5	5.8	1.4
1588556	Rock		0.028	7.3	10	1.17	293	0.175	6.35	1.724	0.47	0.2	77.8	0.5	<1	4.6	0.07	4.7	14.22	1.8	6.2	1.3
1588563	Rock		0.031	27.4	3	0.28	188	0.221	6.21	2.375	0.82	0.2	134.5	1.2	<1	7.2	<0.04	26.2	56.59	7.4	27.1	5.4
1588564	Rock		0.034	10.6	22	1.60	180	0.224	7.84	2.293	0.88	0.2	58.8	1.1	1	5.8	0.54	8.2	20.47	2.6	10.3	2.0
1588565	Rock		0.040	5.1	18	0.76	121	0.248	8.02	2.423	2.47	0.2	70.7	0.6	<1	7.3	1.66	5.2	11.24	1.6	5.8	1.2
1588566	Rock		0.039	10.7	18	1.84	296	0.290	8.02	0.867	1.91	0.1	98.7	0.9	<1	7.9	0.96	8.1	20.81	2.5	9.3	2.0
1588567	Rock		0.002	2.0	4	0.71	27	0.012	1.96	0.396	0.16	0.1	4.0	0.3	<1	0.9	5.56	1.5	3.18	0.4	1.3	0.3
1588572	Rock		0.037	8.1	26	1.09	388	0.246	7.98	2.070	1.51	0.2	88.6	0.4	<1	8.7	1.10	7.9	15.51	1.9	7.1	1.6
1588573	Rock		0.029	6.3	24	0.89	299	0.263	7.43	2.036	1.00	0.3	73.6	0.7	<1	8.8	0.97	6.9	13.09	1.6	6.3	1.2
1588574	Rock		0.024	9.0	20	1.02	253	0.153	5.79	1.706	1.42	0.1	89.9	0.4	<1	7.2	0.84	2.7	17.79	2.0	8.5	1.4
1588575	Rock		0.036	7.8	20	0.97	182	0.152	7.28	3.001	1.06	0.1	91.7	0.4	<1	7.4	1.60	2.8	14.75	1.7	7.3	1.3
1588576	Rock		0.031	11.6	21	1.32	129	0.173	8.03	2.201	1.01	0.1	99.4	0.4	<1	8.3	3.19	6.4	21.58	2.5	8.6	1.6
1588577	Rock		0.039	10.2	23	0.59	148	0.253	8.20	1.967	1.41	0.4	99.8	0.6	<1	8.3	2.04	5.3	21.37	2.7	9.5	1.9
1588587	Rock		0.062	9.5	13	7.35	32	0.415	6.44	0.361	0.12	24.1	110.9	126.1	<1	15.8	1.03	14.3	18.56	2.1	7.7	1.9
1588588	Rock		0.039	17.6	28	1.73	90	0.289	5.93	1.218	1.66	0.7	105.7	116.7	<1	10.6	2.13	5.8	33.04	3.9	14.1	2.7
1588589	Rock		0.029	12.0	18	2.02	55	0.234	4.48	0.492	0.67	1.4	90.8	188.0	<1	7.7	3.76	7.9	25.07	3.2	10.8	1.9
1588599	Rock		0.031	4.6	17	1.21	447	0.256	7.88	2.603	2.14	0.6	81.1	0.9	<1	7.1	<0.04	4.3	9.80	1.3	4.1	0.9
1588600	Rock		0.002	3.2	5	0.43	17	0.026	1.44	0.062	0.13	0.2	10.6	2.8	<1	1.5	2.83	3.8	6.05	0.7	2.5	0.5
1588601	Rock		0.025	14.0	18	1.01	47	0.193	3.19	0.120	0.62	0.8	85.9	201.9	<1	7.1	5.35	4.2	28.21	3.5	11.4	2.2
1588603	Rock		0.023	1.7	6	0.43	16	0.042	1.51	0.357	0.37	0.1	15.8	0.9	<1	1.4	>10	2.8	3.56	0.4	1.6	0.4
1588652	Rock		0.050	9.1	31	1.74	160	0.358	8.21	2.187	0.54	0.2	108.6	2.4	<1	13.4	0.40	6.4	18.23	2.2	7.9	1.8
1588662	Rock		0.041	34.2	6	1.82	52	0.135	4.90	0.493	0.53	<0.1	54.0	1.9	<1	9.8	3.59	29.7	67.46	8.9	32.3	6.2

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Project: SA
Report Date: July 08, 2019

CERTIFICATE OF ANALYSIS VAN19001306.2

	Method	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
	Analyte	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Li	Rb	Ta	Nb	Cs	Ga	In	Re	Se	Te
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.02	0.1	0.1	0.1	0.04	0.1	0.02	0.01	0.002	0.3	0.05
1588501	Rock	0.5	1.2	0.1	0.7	0.2	0.4	<0.1	0.3	<0.1	0.91	7.7	26.7	<0.1	1.01	0.9	7.01	0.03	<0.002	2.4	0.41
1588502	Rock	1.1	3.4	0.5	3.2	0.7	2.0	0.3	2.0	0.3	3.27	46.5	4.2	0.4	4.89	0.4	18.69	0.09	0.003	1.7	0.55
1588503	Rock	0.2	0.3	<0.1	0.6	0.1	0.4	<0.1	0.4	<0.1	1.63	17.8	68.6	0.1	1.87	1.8	14.53	0.06	<0.002	4.2	0.39
1588509	Rock	0.5	1.2	0.1	0.7	0.1	0.4	<0.1	0.4	<0.1	2.54	33.4	54.8	<0.1	1.02	1.0	20.04	0.02	<0.002	1.6	0.66
1588535	Rock	0.3	1.9	0.3	2.5	0.6	1.6	0.3	1.7	0.3	3.34	6.5	0.7	0.4	5.20	<0.1	18.05	28.18	<0.002	14.8	4.48
1588538	Rock	0.3	0.5	<0.1	0.6	0.1	0.4	<0.1	0.5	<0.1	4.08	0.8	8.7	0.3	3.91	0.4	9.86	0.03	<0.002	1.4	0.11
1588539	Rock	0.8	2.0	0.2	1.2	0.3	0.6	<0.1	0.6	<0.1	3.14	37.6	101.5	<0.1	0.95	3.2	23.49	0.13	0.007	0.5	0.16
1588542	Rock	0.3	0.5	<0.1	0.3	<0.1	0.2	<0.1	0.2	<0.1	1.65	20.0	22.3	0.1	1.31	0.5	11.42	0.02	<0.002	1.4	0.07
1588548	Rock	0.5	2.1	0.4	1.9	0.3	0.7	<0.1	0.4	<0.1	0.08	5.8	7.4	<0.1	0.22	0.3	12.68	0.23	0.007	6.0	2.62
1588556	Rock	0.4	1.5	0.2	1.0	0.2	0.6	<0.1	0.5	<0.1	2.33	19.3	8.5	0.1	2.11	0.6	15.83	0.03	<0.002	0.6	0.39
1588563	Rock	1.3	5.3	0.8	5.1	1.0	3.1	0.4	2.9	0.5	3.54	24.8	33.3	0.8	10.86	2.4	17.94	0.06	<0.002	0.6	0.15
1588564	Rock	0.6	1.7	0.3	1.5	0.3	0.8	0.1	0.8	0.1	1.62	47.3	19.6	0.2	2.53	1.5	16.92	0.04	0.004	1.7	0.70
1588565	Rock	0.5	1.1	0.2	1.0	0.2	0.6	<0.1	0.5	<0.1	1.98	21.7	55.0	0.2	2.03	2.1	17.78	0.02	<0.002	2.2	0.44
1588566	Rock	0.6	1.7	0.3	1.8	0.3	1.0	0.1	0.7	0.1	2.80	81.3	36.8	0.2	3.57	2.7	18.56	0.07	<0.002	1.4	0.49
1588567	Rock	0.1	0.3	<0.1	0.4	<0.1	0.2	<0.1	0.1	<0.1	0.06	4.7	4.7	<0.1	0.06	0.6	4.95	0.11	<0.002	88.9	6.49
1588572	Rock	0.6	1.7	0.3	1.6	0.4	0.8	0.1	0.9	0.2	2.37	27.4	41.8	0.2	1.86	2.4	17.68	0.05	0.004	0.5	0.19
1588573	Rock	0.5	1.3	0.2	1.3	0.3	0.9	0.1	0.8	0.1	1.81	26.3	21.3	0.2	2.41	1.7	16.43	0.03	0.002	0.5	0.42
1588574	Rock	0.4	1.3	0.1	0.9	0.1	0.3	<0.1	0.3	<0.1	2.30	39.6	45.8	<0.1	0.76	2.3	15.11	0.03	0.003	1.2	0.33
1588575	Rock	0.5	1.0	0.1	0.8	0.1	0.3	<0.1	0.3	<0.1	2.44	32.3	30.2	<0.1	0.91	1.7	17.35	0.04	0.010	1.1	0.23
1588576	Rock	0.6	1.5	0.2	1.1	0.2	0.8	<0.1	0.7	0.1	2.43	44.6	30.8	<0.1	0.96	1.6	17.16	0.06	0.004	0.4	0.17
1588577	Rock	0.6	1.4	0.2	1.3	0.2	0.6	<0.1	0.6	<0.1	2.77	34.4	32.3	0.2	2.49	1.2	19.37	0.04	<0.002	0.4	0.22
1588587	Rock	0.3	1.9	0.4	2.7	0.5	1.4	0.2	1.5	0.3	2.95	6.7	2.3	0.3	4.41	<0.1	15.23	38.56	<0.002	31.3	12.85
1588588	Rock	0.6	2.1	0.2	1.2	0.2	0.7	<0.1	0.8	0.1	2.91	12.1	43.2	0.3	3.62	1.0	12.29	13.52	<0.002	9.9	0.93
1588589	Rock	0.3	1.7	0.2	1.5	0.3	0.9	0.2	0.7	0.2	2.35	12.2	22.1	0.3	2.89	0.6	9.18	34.69	<0.002	35.8	6.23
1588599	Rock	0.4	0.8	0.1	0.8	0.2	0.5	<0.1	0.5	<0.1	2.22	23.9	41.1	0.2	2.01	2.0	16.30	0.07	<0.002	<0.3	0.26
1588600	Rock	0.2	0.6	<0.1	0.6	0.1	0.3	<0.1	0.2	<0.1	0.27	3.7	5.7	<0.1	0.56	0.5	5.67	0.43	<0.002	12.9	7.00
1588601	Rock	0.3	1.5	0.2	1.1	0.2	0.4	<0.1	0.6	<0.1	2.18	16.9	18.3	0.2	2.50	0.5	7.59	26.22	<0.002	21.3	5.68
1588603	Rock	<0.1	0.6	<0.1	0.5	0.1	0.4	<0.1	0.2	<0.1	0.41	38.2	52.1	0.4	3.02	5.1	6.05	0.03	0.008	2.5	0.23
1588652	Rock	0.6	1.4	0.2	1.2	0.3	0.9	0.1	0.9	0.1	2.75	44.9	10.9	0.3	4.21	0.5	18.53	0.12	<0.002	0.6	0.56
1588662	Rock	0.9	5.4	0.9	5.7	1.2	3.4	0.6	3.2	0.5	1.38	21.7	13.4	0.7	10.46	0.1	19.39	0.21	<0.002	1.1	0.43

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Project: SA
Report Date: July 08, 2019

CERTIFICATE OF ANALYSIS VAN19001306.2

	Method	MA250	MA370	MA370	MA370	MA370
	Analyte	Tl	Cu	Pb	Zn	Ag
	Unit	ppm	%	%	%	ppm
	MDL	0.05	0.001	0.02	0.01	2
1588501	Rock	0.24	0.269	<0.02	0.02	36
1588502	Rock	0.49				
1588503	Rock	0.52	0.287	<0.02	0.02	49
1588509	Rock	0.45				
1588535	Rock	<0.05	1.637	0.36	0.81	149
1588538	Rock	0.20				
1588539	Rock	0.83				
1588542	Rock	0.14				
1588548	Rock	0.18	3.051	<0.02	0.59	123
1588556	Rock	0.18				
1588563	Rock	0.34				
1588564	Rock	0.27				
1588565	Rock	0.46				
1588566	Rock	0.49				
1588567	Rock	<0.05	0.094	1.66	4.20	23
1588572	Rock	0.32				
1588573	Rock	0.26				
1588574	Rock	0.35				
1588575	Rock	0.26				
1588576	Rock	0.28				
1588577	Rock	0.23				
1588587	Rock	<0.05	1.077	1.52	0.67	379
1588588	Rock	0.33	2.538	0.17	0.51	52
1588589	Rock	0.18	4.959	0.34	1.43	240
1588599	Rock	0.40				
1588600	Rock	0.35	1.625	0.42	2.38	153
1588601	Rock	0.15	7.245	0.54	2.41	484
1588603	Rock	0.39				
1588652	Rock	0.16				
1588662	Rock	0.10				

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Project: SA
Report Date: July 08, 2019

QUALITY CONTROL REPORT VAN19001306.2

	Method	WGHT	FA330	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
	Analyte	Wgt	Au	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca
	Unit	kg	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	2	0.05	0.1	0.02	0.2	20	0.1	0.2	1	0.01	0.2	0.1	0.1	1	0.02	0.02	0.04	1	0.01
Pulp Duplicates																					
1588574	Rock	1.34	27	2.29	27.9	11.09	64.8	378	23.2	16.2	367	2.91	1.2	0.4	1.7	129	<0.02	0.05	0.18	60	1.46
REP 1588574	QC			2.20	27.5	11.32	69.9	400	24.3	17.4	371	2.93	1.4	0.4	1.7	127	0.03	0.06	0.19	61	1.48
1588588	Rock	1.03	32	0.66	>10000	1701.57	4462.3	52454	8.8	13.8	472	8.02	<0.2	0.9	4.5	107	22.04	0.84	25.22	78	0.85
REP 1588588	QC		37																		
1588601	Rock	0.97	2870	1.57	>10000	5347.86	>10000	192087	8.0	5.0	333	13.42	<0.2	0.7	3.8	26	104.56	6.88	95.36	45	0.05
REP 1588601	QC			1.21	>10000	5441.07	>10000	>200000	7.7	4.9	335	13.28	0.3	0.7	3.6	28	108.11	7.08	98.33	44	0.05
Core Reject Duplicates																					
1588502	Rock	1.69	47	0.92	802.0	178.18	348.3	2815	53.6	59.9	5990	18.78	3.7	0.9	4.3	59	1.48	0.67	14.42	104	6.20
DUP 1588502	QC		47	1.02	807.0	182.10	335.9	2950	52.8	62.0	5981	18.90	3.8	1.0	4.4	59	1.43	0.72	14.38	104	6.14
Reference Materials																					
STD CDN-ME-14	Standard																				
STD CDN-ME-9	Standard																				
STD OREAS25A-4A	Standard			2.59	38.9	26.08	44.6	<20	46.5	8.2	503	6.71	9.8	3.1	17.2	48	<0.02	0.63	0.35	168	0.30
STD OREAS25A-4A	Standard			2.61	36.8	26.08	53.3	<20	51.2	8.3	485	6.54	10.3	3.1	15.8	46	<0.02	0.63	0.36	160	0.29
STD OREAS45E	Standard			2.25	772.3	19.21	44.9	323	478.2	63.2	553	24.08	15.4	2.6	13.4	17	<0.02	1.02	0.29	341	0.08
STD OREAS45E	Standard			2.32	750.6	19.53	49.9	302	460.9	62.2	565	24.19	16.6	2.5	13.3	15	<0.02	1.05	0.32	317	0.06
STD OXC145	Standard		211																		
STD OXH139	Standard		1246																		
STD OXC145 Expected			212																		
STD OXH139 Expected			1312																		
STD OREAS45E Expected				2.4	780	18.2	46.7	311	454	57	570	24.12	16.3	2.41	12.9	15.9	0.06	1	0.28	322	0.065
STD OREAS25A-4A Expected				2.41	33.9	25.2	44.4		45.8	7.7	480	6.6	9.94	2.94	15.8	48.5		0.65	0.37	157	0.301
STD CDN-ME-14 Expected																					
STD CDN-ME-9 Expected																					
BLK	Blank		5																		
BLK	Blank			<0.05	<0.1	0.04	0.8	<20	<0.1	<0.2	<1	<0.01	0.7	<0.1	<0.1	<1	<0.02	<0.02	<0.04	<1	<0.01
BLK	Blank																				
Prep Wash																					

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Project: SA
Report Date: July 08, 2019

QUALITY CONTROL REPORT VAN19001306.2

		Method	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
		Analyte	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Sn	Be	Sc	S	Y	Ce	Pr	Nd	Sm
		Unit	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
		MDL	0.001	0.1	1	0.01	1	0.001	0.01	0.001	0.01	0.1	0.2	0.1	1	0.1	0.04	0.1	0.02	0.1	0.1	0.1
Pulp Duplicates																						
1588574	Rock		0.024	9.0	20	1.02	253	0.153	5.79	1.706	1.42	0.1	89.9	0.4	<1	7.2	0.84	2.7	17.79	2.0	8.5	1.4
REP 1588574	QC		0.027	9.9	21	1.03	261	0.153	5.83	1.717	1.46	<0.1	91.8	0.5	<1	7.2	0.86	2.8	19.05	2.2	9.0	1.6
1588588	Rock		0.039	17.6	28	1.73	90	0.289	5.93	1.218	1.66	0.7	105.7	116.7	<1	10.6	2.13	5.8	33.04	3.9	14.1	2.7
REP 1588588	QC																					
1588601	Rock		0.025	14.0	18	1.01	47	0.193	3.19	0.120	0.62	0.8	85.9	201.9	<1	7.1	5.35	4.2	28.21	3.5	11.4	2.2
REP 1588601	QC		0.025	14.4	17	1.03	52	0.200	3.07	0.119	0.62	0.9	85.2	221.7	<1	7.5	5.31	4.2	29.32	3.4	13.1	2.1
Core Reject Duplicates																						
1588502	Rock		0.070	15.5	42	2.54	14	0.423	7.72	0.902	0.28	1.1	122.2	3.1	2	14.1	1.72	18.9	32.66	4.5	16.5	3.4
DUP 1588502	QC		0.067	16.7	43	2.52	14	0.429	7.61	0.832	0.26	1.4	120.1	3.5	3	14.0	1.82	19.2	34.42	4.7	17.1	3.8
Reference Materials																						
STD CDN-ME-14	Standard																					
STD CDN-ME-9	Standard																					
STD OREAS25A-4A	Standard		0.049	24.6	117	0.36	144	0.949	9.73	0.142	0.53	1.9	154.9	4.3	<1	13.7	<0.04	11.0	50.16	5.7	18.7	3.5
STD OREAS25A-4A	Standard		0.048	23.9	108	0.32	153	0.966	9.04	0.132	0.51	2.1	159.6	3.9	<1	12.3	0.05	11.1	49.78	5.7	20.7	4.0
STD OREAS45E	Standard		0.034	12.4	960	0.16	247	0.523	7.25	0.056	0.33	1.0	92.7	1.1	<1	87.3	<0.04	8.4	23.89	2.6	9.1	2.1
STD OREAS45E	Standard		0.030	11.9	920	0.15	262	0.534	6.73	0.051	0.35	1.2	97.4	1.3	<1	86.2	0.05	8.0	24.14	2.8	10.2	2.2
STD OXC145	Standard																					
STD OXH139	Standard																					
STD OXC145 Expected																						
STD OXH139 Expected																						
STD OREAS45E Expected			0.034	11	979	0.156	252	0.559	6.78	0.059	0.324	1.07	97	1.32		93	0.046	8.28	23.5	2.47	9.57	2.28
STD OREAS25A-4A Expected			0.048	21.8	115	0.327	147	0.93	8.87	0.131	0.482	2	155	4.06	0.93	13.7	0.047	10.5	47.3	5.11	18.2	3.55
STD CDN-ME-14 Expected																						
STD CDN-ME-9 Expected																						
BLK	Blank																					
BLK	Blank		<0.001	<0.1	<1	<0.01	<1	<0.001	<0.01	0.002	<0.01	<0.1	<0.2	<0.1	<1	0.2	<0.04	<0.1	<0.02	<0.1	<0.1	<0.1
BLK	Blank																					
Prep Wash																						

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9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Commander Resources Ltd.**
1100 - 1111 Melville Street
Vancouver British Columbia V6E 3V6 Canada

Project: SA
Report Date: July 08, 2019

QUALITY CONTROL REPORT VAN19001306.2

		Method	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
		Analyte	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Li	Rb	Ta	Nb	Cs	Ga	In	Re	Se	Te
		Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		MDL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.02	0.1	0.1	0.1	0.04	0.1	0.02	0.01	0.002	0.3	0.05
Pulp Duplicates																						
1588574	Rock		0.4	1.3	0.1	0.9	0.1	0.3	<0.1	0.3	<0.1	2.30	39.6	45.8	<0.1	0.76	2.3	15.11	0.03	0.003	1.2	0.33
REP 1588574	QC		0.4	1.4	0.1	0.8	0.1	0.3	<0.1	0.4	<0.1	2.32	40.5	48.0	<0.1	0.76	2.3	15.07	0.05	<0.002	1.2	0.27
1588588	Rock		0.6	2.1	0.2	1.2	0.2	0.7	<0.1	0.8	0.1	2.91	12.1	43.2	0.3	3.62	1.0	12.29	13.52	<0.002	9.9	0.93
REP 1588588	QC																					
1588601	Rock		0.3	1.5	0.2	1.1	0.2	0.4	<0.1	0.6	<0.1	2.18	16.9	18.3	0.2	2.50	0.5	7.59	26.22	<0.002	21.3	5.68
REP 1588601	QC		0.3	1.7	0.2	1.2	0.2	0.5	<0.1	0.5	<0.1	2.39	15.5	18.5	0.2	2.46	0.5	6.60	27.13	<0.002	21.7	5.82
Core Reject Duplicates																						
1588502	Rock		1.1	3.4	0.5	3.2	0.7	2.0	0.3	2.0	0.3	3.27	46.5	4.2	0.4	4.89	0.4	18.69	0.09	0.003	1.7	0.55
DUP 1588502	QC		1.2	3.1	0.5	3.5	0.8	2.1	0.3	1.9	0.4	3.07	50.6	4.3	0.4	4.79	0.4	17.57	0.12	<0.002	1.9	0.58
Reference Materials																						
STD CDN-ME-14	Standard																					
STD CDN-ME-9	Standard																					
STD OREAS25A-4A	Standard		0.7	2.9	0.4	2.6	0.5	1.2	0.2	1.4	0.2	4.50	37.3	63.9	1.4	20.82	6.2	26.18	0.10	<0.002	2.6	0.06
STD OREAS25A-4A	Standard		0.7	2.8	0.4	2.4	0.4	1.5	0.2	1.5	0.2	4.55	38.1	64.7	1.5	21.67	6.5	26.80	0.12	<0.002	3.1	0.06
STD OREAS45E	Standard		0.6	2.1	0.3	2.1	0.4	1.2	0.2	1.2	0.2	2.72	6.3	22.9	0.5	5.83	1.2	17.17	0.09	<0.002	2.7	0.18
STD OREAS45E	Standard		0.6	2.0	0.3	2.4	0.4	1.2	0.2	1.3	0.2	2.93	6.8	22.1	0.6	6.44	1.3	16.99	0.10	<0.002	2.6	0.14
STD OXC145	Standard																					
STD OXH139	Standard																					
STD OXC145 Expected																						
STD OXH139 Expected																						
STD OREAS45E Expected			0.52	1.99	0.33	2.05	0.38	1.2	0.17	1.19	0.175	3.11	6.58	21.2	0.54	6.8	1.26	16.5	0.099		2.97	0.1
STD OREAS25A-4A Expected			0.69	2.68	0.36	2.25	0.43	1.23	0.19	1.3	0.2	4.14	36.7	61	1.4	20.9	6	25.9	0.09		2.4	
STD CDN-ME-14 Expected																						
STD CDN-ME-9 Expected																						
BLK	Blank																					
BLK	Blank		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	0.1	0.1	<0.1	<0.04	<0.1	<0.02	<0.01	<0.002	1.1	<0.05
BLK	Blank																					
Prep Wash																						

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	Method	MA250	MA370	MA370	MA370	MA370
	Analyte	Tl	Cu	Pb	Zn	Ag
	Unit	ppm	%	%	%	ppm
	MDL	0.05	0.001	0.02	0.01	2
Pulp Duplicates						
1588574	Rock	0.35				
REP 1588574	QC	0.35				
1588588	Rock	0.33	2.538	0.17	0.51	52
REP 1588588	QC					
1588601	Rock	0.15	7.245	0.54	2.41	484
REP 1588601	QC	0.15				
Core Reject Duplicates						
1588502	Rock	0.49				
DUP 1588502	QC	0.51				
Reference Materials						
STD CDN-ME-14	Standard		1.250	0.50	3.16	45
STD CDN-ME-9	Standard		0.652	<0.02	0.01	4
STD OREAS25A-4A	Standard	0.37				
STD OREAS25A-4A	Standard	0.37				
STD OREAS45E	Standard	0.15				
STD OREAS45E	Standard	0.17				
STD OXC145	Standard					
STD OXH139	Standard					
STD OXC145 Expected						
STD OXH139 Expected						
STD OREAS45E Expected		0.15				
STD OREAS25A-4A Expected		0.35				
STD CDN-ME-14 Expected			1.221	0.495	3.17	43.5
STD CDN-ME-9 Expected			0.654		0.012	
BLK	Blank					
BLK	Blank	<0.05				
BLK	Blank		<0.001	<0.02	<0.01	<2
Prep Wash						

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		WGHT	FA330	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250	MA250
		Wgt	Au	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca
		kg	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		0.01	2	0.05	0.1	0.02	0.2	20	0.1	0.2	1	0.01	0.2	0.1	0.1	1	0.02	0.02	0.04	1	0.01
ROCK-VAN	Prep Blank		7	1.08	4.8	4.36	43.8	<20	1.0	4.8	828	2.57	1.3	1.5	3.7	225	0.02	0.14	<0.04	39	1.65
ROCK-VAN	Prep Blank		6	1.01	4.3	3.89	39.0	<20	1.1	4.5	678	2.29	1.7	1.4	3.3	202	<0.02	0.09	<0.04	34	1.46

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		MA250 P % 0.001	MA250 La ppm 0.1	MA250 Cr ppm 1	MA250 Mg % 0.01	MA250 Ba ppm 1	MA250 Ti % 0.001	MA250 Al % 0.01	MA250 Na % 0.001	MA250 K % 0.01	MA250 W ppm 0.1	MA250 Zr ppm 0.2	MA250 Sn ppm 0.1	MA250 Be ppm 1	MA250 Sc ppm 0.1	MA250 S % 0.04	MA250 Y ppm 0.1	MA250 Ce ppm 0.02	MA250 Pr ppm 0.1	MA250 Nd ppm 0.1	MA250 Sm ppm 0.1
ROCK-VAN	Prep Blank	0.054	17.7	4	0.65	952	0.266	8.34	4.026	1.77	0.3	65.1	0.9	1	7.8	<0.04	21.1	31.20	4.1	15.1	3.3
ROCK-VAN	Prep Blank	0.044	14.9	3	0.56	857	0.228	7.53	3.613	1.62	0.3	57.2	0.8	1	6.9	<0.04	18.3	26.41	3.4	12.4	2.9

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		MA250 Eu ppm 0.1	MA250 Gd ppm 0.1	MA250 Tb ppm 0.1	MA250 Dy ppm 0.1	MA250 Ho ppm 0.1	MA250 Er ppm 0.1	MA250 Tm ppm 0.1	MA250 Yb ppm 0.1	MA250 Lu ppm 0.1	MA250 Hf ppm 0.02	MA250 Li ppm 0.1	MA250 Rb ppm 0.1	MA250 Ta ppm 0.1	MA250 Nb ppm 0.04	MA250 Cs ppm 0.1	MA250 Ga ppm 0.02	MA250 In ppm 0.01	MA250 Re ppm 0.002	MA250 Se ppm 0.3	MA250 Te ppm 0.05
ROCK-VAN	Prep Blank	1.1	3.3	0.6	3.5	0.8	2.3	0.4	2.5	0.4	2.12	2.0	33.1	0.5	6.73	0.2	15.21	0.04	0.003	<0.3	0.08
ROCK-VAN	Prep Blank	0.9	3.1	0.5	3.1	0.7	2.3	0.4	2.2	0.4	1.93	1.5	30.2	0.4	5.84	0.1	13.18	0.03	<0.002	<0.3	0.16

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		MA250 Tl ppm 0.05	MA370 Cu % 0.001	MA370 Pb % 0.02	MA370 Zn % 0.01	MA370 Ag ppm 2
ROCK-VAN	Prep Blank	0.18				
ROCK-VAN	Prep Blank	0.16				