

# NI 43-101 TECHNICAL REPORT ON THE HECTOR PROPERTY

NTS Sheet 031M05  
Larker Lake Mining Division  
Ontario, Canada

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## 1 Summary

This Technical Report (“the Report”) on the Hector Property (the “Property”) has been prepared for Cruz Cobalt Corp. (“Cruz Cobalt”, or “the issuer”), an existing Canadian issuer currently listed on the TSX Venture Exchange (TSXV), by APEX Geoscience Ltd. (“APEX”). The Hector Property consists of 126 contiguous unpatented mining claims totalling 2,243 ha and is located within the Coleman and Gillies Limit Townships, Larder Lake Mining Division, Timiskaming District, Ontario, Canada. The Property is approximately 500 kilometres (km) north of Toronto, 150 km north of North Bay, and 10 km southwest of the town of Cobalt, Ontario. Cruz holds 100% ownership of the 126 mining claims, which are active and in good standing.

During 2018, Cruz Cobalt retained APEX Geoscience Ltd. (“APEX”) to complete an independent National Instrument (NI) 43-101 Technical Report specific to the Hector Property in anticipation of a transfer of listing from the TSXV to the Canadian Securities Exchange (CSE). In addition, APEX was retained to complete a compilation and review of the results of historic and recent exploration completed within the Property by Cruz Cobalt, and to execute a surface exploration and diamond drill program designed to test exploration targets previously identified by Cruz Cobalt. The author of the Report, Mr. Kristopher J. Raffle, P.Geo., Principal of APEX and an independent qualified person as defined by the NI 43-101, conducted a property visit on October 2-3, 2018.

The Cobalt Camp of Ontario was once the largest silver-producing area in Canada. In addition to silver, the Camp produced significant cobalt, copper, nickel, arsenic and bismuth. It was the largest silver producing area in Canada for a time. Production reached its peak during 1911, and from 1904 until 1989 the Cobalt mining camp produced over 400 million ounces silver, 19 million pounds cobalt, 3.4 million pounds nickel and 1.9 million pounds copper. The author has been unable to verify the Cobalt area historic production records, and the historic production is not necessarily indicative of mineralization within the present day Hector Property that is the subject of the Technical Report.

The Cobalt-Gowganda silver-cobalt mining camps of northeastern Ontario occur within the Cobalt Embayment, part of the Proterozoic Huronian Supergroup. Within the Hector Property, steeply dipping Archean basement metavolcanics and metasedimentary rocks are unconformably overlain by relatively flat-lying Proterozoic sedimentary rocks of the Huronian Supergroup. The Archean and Proterozoic rocks were intruded by undulating sill-like sheets of the regionally distributed Proterozoic Nipissing diabase. All of the past producing silver-cobalt deposits of the Cobalt Embayment are hosted within or adjacent to the diabase sills, near the Huronian-Archean unconformity.

The principal deposit type of interest within the Hector Property is arsenide silver-cobalt vein deposits, which are epigenetic vein deposits. Metallic minerals occur in fracture filling lenses or veinlets, or as disseminations within wall rocks in association with carbonate and/or quartz gangue. Wall rocks adjacent to the veins are commonly hydrothermally altered. The majority of mineral occurrences with the Hector Property

consist of narrow fracture controlled northwest-southeast, or northeast-southwest striking, sub-vertical to steeply dipping, quartz-carbonate-potassium feldspar veins containing variable percentages of disseminated to clotty pyrite, chalcopyrite, pyrrhotite, and erythrite (hydrous cobalt arsenate) mineralization. Veins range in width from less than 5 cm up to 25 cm in width. The majority of historically reported mineral occurrences are represented by one or more shallow prospect pits and trenches, or water-filled shafts.

During 2017 and 2018, Cruz Cobalt conducted early exploration activities at the Hector Property. They comprised a 522.9 line-km airborne magnetic and very low frequency electromagnetic (VLF-EM) geophysical survey, ground magnetic geophysical surveys, 43 rock grab rock and 631 grid soil geochemical samples, and diamond drilling of 10 NQ diameter holes, totalling 843 m.

Airborne and ground geophysical surveys show the distribution of historic mineral occurrences is coincident with interpreted structural lineaments within, and a more magnetic phase of, the Nipissing Diabase. Soil geochemical results define north-northwest trending combined cobalt-silver-copper-arsenic anomalies at Gillies West, Gillies East and Hector. The Hector anomaly returned 4 samples greater than 25 ppm cobalt. The Gillies East anomaly returned 6 samples with values greater than 25 ppm cobalt. The Gillies West Anomaly returned the highest cobalt in soil value of 98 ppm. Seven rock grab samples returned values greater than 0.1% cobalt and up to 2.02% cobalt from the Gillies East, Gillies West and Hector anomalies. Diamond drill results returned broad zones of anomalous copper and cobalt beneath the vertical projection of the historic trenches comprising disseminated to clotty pyrite-chalcopyrite mineralization associated with moderate to intense chlorite-silica and potassic alteration of diabase host-rocks and narrow carbonate-quartz-potassium feldspar vein zones.

Surface soil and rock geochemical anomalies and cobalt in diamond drill intercepts returned from the Bass Lake area are interpreted to represent high-level expressions of potential Archean unconformity-associated silver-cobalt vein mineralization; the geologic setting from which the majority of historic Cobalt Camp silver production occurred. The majority of historic silver-cobalt vein showings within the Hector Property occur within the Nipissing Diabase, and are spatially related to one of two parallel northwest trending structural lineaments coincident with the trace of the Kelvin Lake fault, and an interpreted Archean basement fold axis subparallel to the Montreal River fault. In the area east of the Montreal River there is a close spatial relationship between Archean volcanic, basal Coleman Member sediments and diabase rocks, which is considered highly prospective within the context of the silver-cobalt arsenide vein deposit model.

The Property is subject to the typical external risks that apply to all mining projects, such as changes in metal prices, availability of investment capital, changes in government regulations, community engagement and general environmental concerns. There is no guarantee that further diamond drilling of soil, rock, and geophysical anomalies will result in the discovery of additional silver-cobalt mineralization, definition of a mineral

resource, or an economic mineral deposit. However, in the Author's opinion there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the presently available exploration information with respect to the Hector Property.

Based on the presence of silver-cobalt arsenide vein intersects in drill core and numerous historic occurrences, airborne and ground magnetic geophysical anomalies, cobalt and silver in rock and soil geochemical anomalies, and favourable geology; the Hector Property is of a high priority for follow-up exploration.

The 2019 exploration program should include but not be limited to: Phase 1: A surface exploration program of rock and soil geochemical sampling, ground magnetic surveys, and geologic mapping designed to evaluate the silver-cobalt arsenide vein potential of the Kelvin Lake and Montreal River fault zones. Geologic mapping should focus on defining the geometry of the Nipissing Diabase sills, and on identifying areas with the potential to host Coleman Member sediments overlain by diabase; in particular in proximity to exposed Archean basement and the Huronian unconformity in the Montreal River area. The results of geologic mapping should be used to prioritize rock, soil and ground magnetic surveys over geologically perspective targets. Phase 2: The Phase 2 exploration is contingent on the results of the Phase 1 exploration. Diamond drilling of approximately 10 holes totaling 2,000 m designed to test priority targets defined by the Phase 1 exploration. The estimated cost to complete the Phase 2 exploration is \$500,000.00



## 2 Introduction

### 2.1 Issuer and Purpose

This Technical Report (the "Report") is written on the Hector Property (the "Property") for Cruz Cobalt Corp. ("Cruz Cobalt"), an existing Canadian issuer currently listed on the TSX Venture Exchange (TSXV). The Hector Property consists of 126 contiguous unpatented mining claims totalling 2,243 ha and is located within the Coleman and Gillies Limit Townships, Larder Lake Mining Division, Timiskaming District, Ontario, Canada, approximately 500 kilometres (km) north of Toronto, and 10 km southwest of Cobalt, Ontario (Figure 2.1). Cruz Cobalt holds 100% ownership of the 126 mining claims, which are active and in good standing.

During 2018, Cruz Cobalt retained APEX Geoscience Ltd. ("APEX") to complete an independent National Instrument (NI) 43-101 Technical Report specific to the Hector Property in anticipation of a transfer of listing from the TSXV to the Canadian Securities Exchange (CSE). In addition, APEX was retained to complete a compilation and review of historic and recent exploration completed within the Property by Cruz Cobalt, and to execute a surface exploration and diamond drill program designed to test exploration targets previously identified by Cruz Cobalt. The author of the Report, Mr. Kristopher J. Raffle, P.Geol., Principal of APEX and an independent qualified person as defined by the NI 43-101, conducted a property visit on October 2-3, 2018.

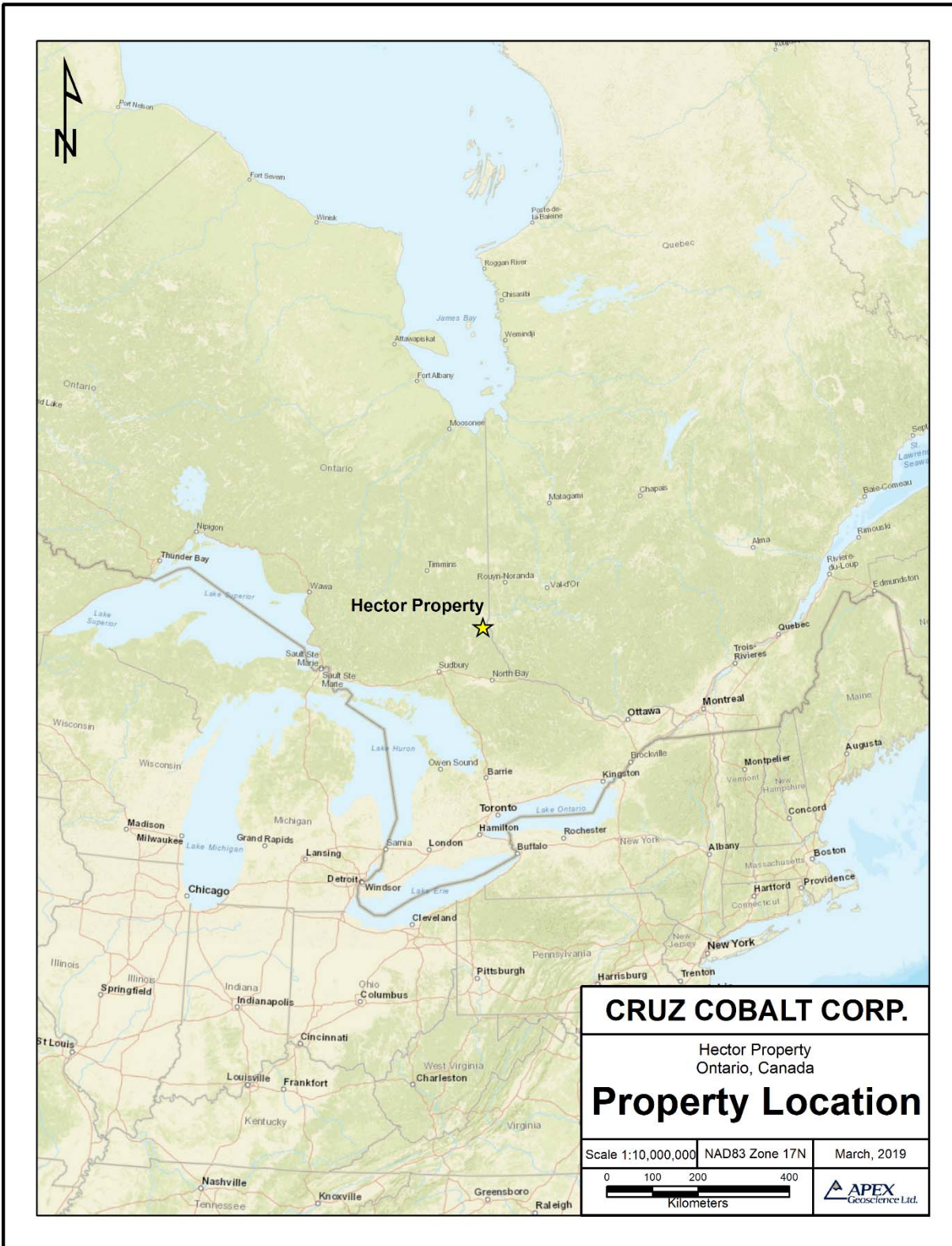
This Report is written in accordance with the standards set out in National Instrument (NI) 43-101 developed by the Canadian Securities Administration (CSA), and is a technical summary of available geologic, geophysical, geochemical and diamond drill hole information.

### 2.2 Authors and Site Inspection

The qualified person, as defined by NI 43-101, responsible for the preparation of this report is Mr. Kristopher J. Raffle, P.Geol., and Principal of APEX. Under the supervision of the Mr. Raffle, Ms. Yuliana Proenza, P.Geol., and Ms. Shannon Frey, M.Sc. assisted in the preparation of the Technical Report.

A site visit to the Property was completed by Mr. Raffle during October 2-3, 2018. During the site visit Mr. Raffle completed traverses within the Hector Property, and visited historically documented silver-cobalt mineral occurrences throughout the Bass Lake area, collected surface rock grab samples designed confirm the historically reported mineralization, completed ground checks of significant 2018 cobalt in soil geochemical anomalies, and reviewed and observed the proposed diamond drill sites.

**Figure 2.1. General location of Cruz Cobalt's Hector Property**



## 2.3 Sources of Information

This report is a compilation of proprietary and publicly available information. In writing this report, the authors used as sources of information those publications listed in the references section. In the opinion of the author, the compiled information is held to be accurate based on the data review conducted by the author and the Property visit performed by Mr. Raffle, although it is not the sole basis for this report.

## 2.4 Units of Measure

With respect to units of measure, unless otherwise stated, this Technical Report uses:

- Abbreviated shorthand consistent with the International System of Units (International Bureau of Weights and Measures, 2006);
- 'Bulk' weight is presented in both United States short tons ("tons"; 2,000 lbs or 907.2 kg) and metric tonnes ("tonnes"; 1,000 kg or 2,204.6 lbs.);
- Geographic coordinates are projected in the Universal Transverse Mercator ("UTM") system relative to Zone 17 of the North American Datum ("NAD") 1983; and,
- Currency in Canadian dollars (CDN\$), unless otherwise specified

## 3 Reliance on Other Experts

With respect to the legal title of the Hector unpatented mining claims, the author has relied on information provided by Cruz Cobalt. APEX has verified the information provided using the Ontario Ministry of Energy, Northern Development and Mines (MNDM), Mining Lands Administration System (MLAS) website (<https://www.mndm.gov.on.ca/en/mines-and-minerals/applications/mlas-map-viewer>), where as of March 1<sup>st</sup>, 2019 the claims comprising the Hector Property were shown to be in good standing and held 100% by Cruz Cobalt.

## 4 Property Description and Location

### 4.1 Description and Location

The Hector Property is located approximately 500 km north of Toronto, 150 km north of North Bay and 10 km southwest of the town of Cobalt, located southeast of the intersection between local highways 11 and 11B (Figure 4.1). The town of Cobalt is in northeastern Ontario, Canada, approximately 10 km and a 15 minute drive south of Temiskaming Shores, immediately west of the Ontario-Quebec border. The approximate location in UTM coordinates is 595,000 Easting, 5,245,000 Northing, NAD 1983, Zone 17.

The Property is comprised of 126 unpatented mining claims totaling 2,243 ha (Figure 4.2). The Hector Property mining claims are located within the Coleman and Gillies Limit townships, Larder Lake Mining Division, Timiskaming District, northeastern Ontario, covering 1:50,000 NTS Sheet 031M05.

Prior to February 26, 2018, the 126 mining claims were previously held under a series of 12 legacy claims (Table 1). On February 26, 2018, the Ontario Ministry of Northern Development and Mines (MNDM) converted all previously existing recorded ground or map staked mining claims (legacy claims) and transformed them into one or more cell claims or boundary claims on the provincial grid. Mineral claims in Ontario are now acquired and managed within the online Mining Lands Administration System (MLAS). Individual unpatented mining claims are now referred to as a Boundary Cell Mining Claim or a Single Cell Mining Claim (referred to collectively as "mining claims" within this report). Annual assessment work requirements for Boundary Cell and Single Cell mining claims are \$200 and \$400 per claim, respectively. The Hector Property comprised 82 single cell and 44 boundary cell mining claims, and is subject to annual assessment work requirements of \$41,600.00.

Ontario's *Mining Act* (R.S.O. 1990, Chapter M. 14) is the provincial legislation that governs and regulates prospecting, mineral exploration, mine development and rehabilitation. The purpose of the Act is to encourage prospecting, online mining claim registration and exploration for the development of mineral resources, in a manner consistent with the recognition and affirmation of existing Aboriginal and treaty rights in Section 35 of the *Constitution Act*, 1982.

Figure 4.1. Hector Property Regional Location

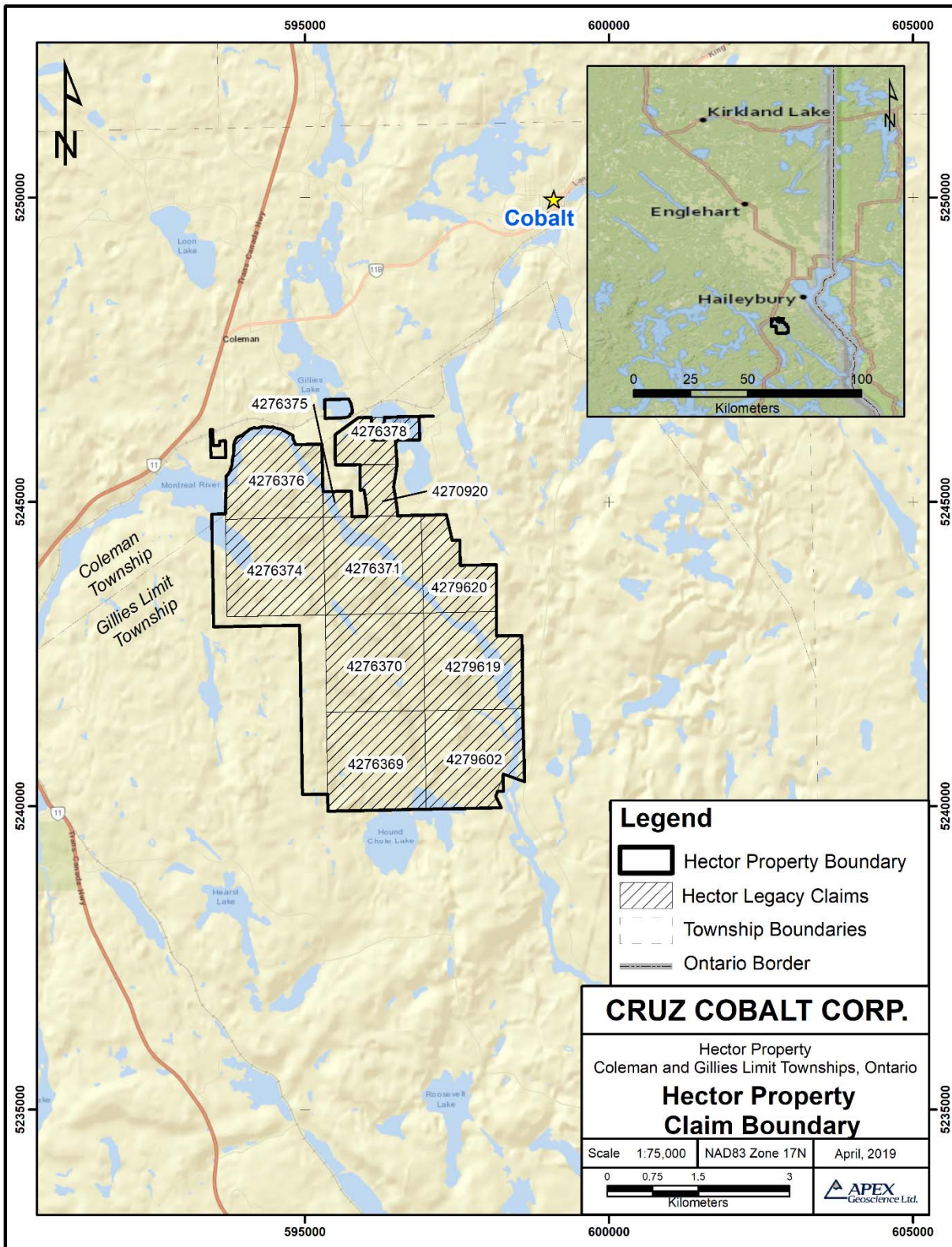
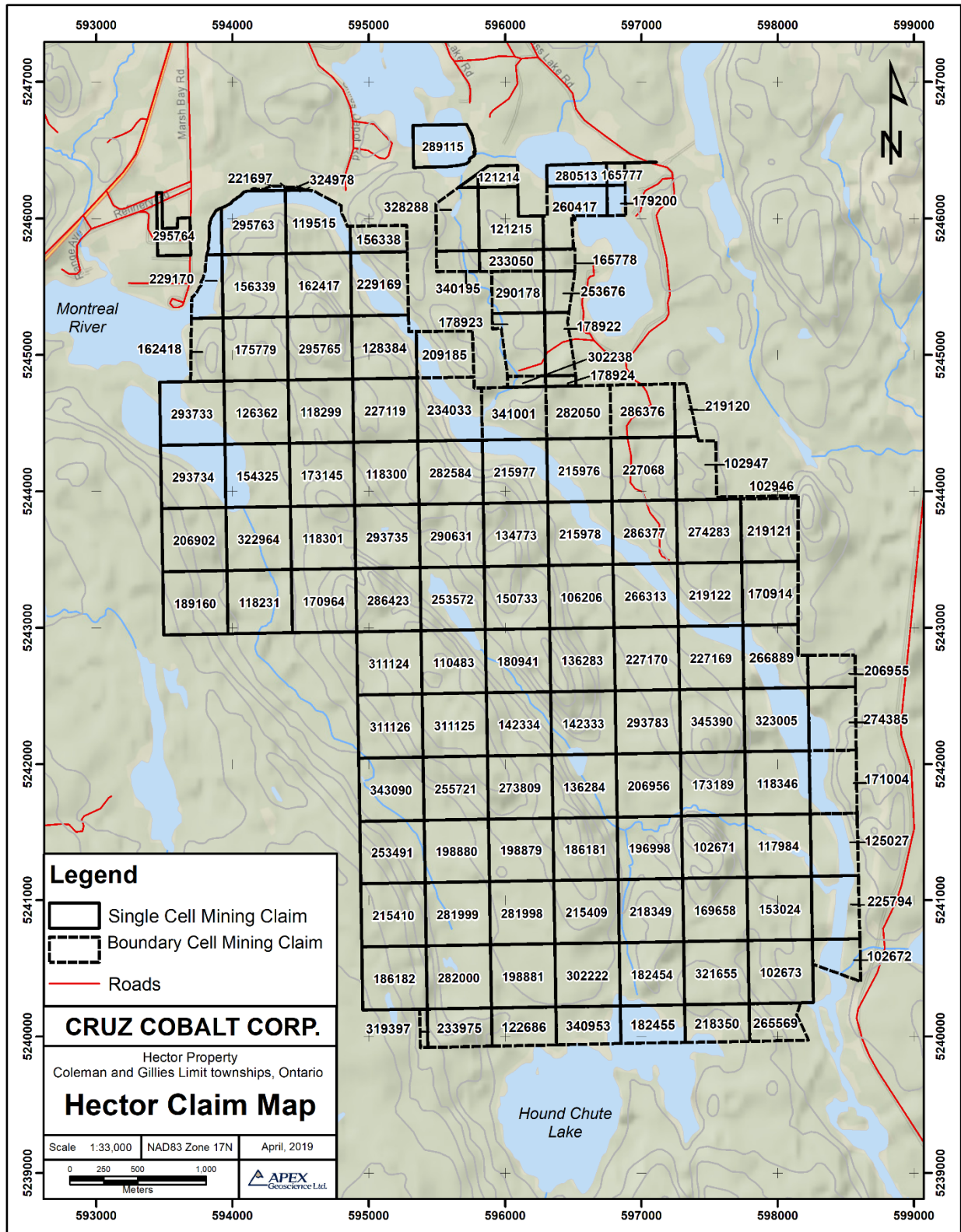


Figure 4.2. Hector Property Mineral Claims



Before undertaking certain early exploration activities, an exploration plan or permit must be submitted, and notification provided to any surface rights owner(s). Information on surface rights owners is on file as paper copies, with data obtained from the regional Land Registry Office in Haileybury.

Aboriginal communities potentially affected by activities proposed in an exploration plan are notified by the Ministry of Energy, Northern Development and Mines (ENDM) and have an opportunity to provide feedback before the proposed activities can be carried out. No issues have been raised by nearby aboriginal communities.

Cruz currently has an exploration permit in place issued on September 5, 2017 and valid until September 5, 2020. The permit allows for the completion of limited electrical geophysical surveys, line cutting, mechanized striping, and construction of 6 to 10 diamond drill pads. Planned activities detailed in the approved permit application cover the majority of prospective areas on the Property including Bass Lake, Kelvin Lake, and South Keora shaft areas. Notice of Intent for exploration was provided to the surface rights owners associated with the Hector Property; including two separate Property owners in the Bass Lake area, and a single owner in the Gilles Depot area of the Montreal River. This notification included a complete Notice of Intent to Submit an Exploration Permit Application (Notice of Intent), a copy of a proposed Exploration Permit Application, and a map showing the location of the proposed exploration activities. No exploration work has been completed or planned for any of these areas. As of the effective date of the Report, the only work requiring a permit that has been completed on the Property was the 2018 diamond drilling of 10 drill holes in the Bass Lake area.

#### 4.2 Royalties and Agreements

The Property is not currently subject to terms of any royalties, back-in rights, payments, or other agreements and encumbrances.

#### 4.3 Environmental Liabilities, Permitting and Significant Factors

The author is not aware of any environmental liabilities to which the Property is subject. MNDM maintains the Abandoned Mines Information System (AMIS), which includes information on abandoned and inactive mines throughout Ontario. The sites associated with the Hector Property are summarized below in Section 6, History. Cruz Cobalt is not liable for any pre-existing environmental issues associated with the Property related to these historic mine features.

At the time of this Report, the author is not aware of any significant factors or risks that may affect access, title, the right or ability to perform work on the Property.

**Table 4.1. Mining claim descriptions and status for Cruz Cobalt's Hector Property (126 claims; 2,243 ha)**

Mining Claim	Legacy Claim ID	Township	Tenure Type	Anniversary Date	Tenure Percentage
102671	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
102672	4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
102673	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
102946	4279620	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
102947	4279620	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
106206	4276370, 4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
110483	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
117984	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
118231	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
118299	4276374, 4276376	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
118300	4276371, 4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
118301	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
118346	4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
119515	4276376	COLEMAN	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
121214	4276378	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
121215	4276378	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
122686	4276369	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
125027	4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
126362	4276374, 4276376	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
128384	4276375, 4276376	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
134773	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
136283	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
136284	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
142333	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
142334	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
150733	4276370, 4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
153024	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
154325	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
156338	4276376	COLEMAN, GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
156339	4276376	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
162417	4276376	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
162418	4276376	COLEMAN, GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
165777	4276378	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
165778	4276378	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
169658	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
170914	4279619, 4279620	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
170964	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
171004	4279619	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
173145	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.



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173189	4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
175779	4276376	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
178922	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
178923	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
178924	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
179200	4276378	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
180941	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
182454	4276369, 4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
182455	4276369, 4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
186181	4276369, 4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
186182	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
189160	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
196998	4276369, 4276370, 4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
198879	4276369, 4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
198880	4276369, 4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
198881	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
206902	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
206955	4279619	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
206956	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
209185	4276375	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
215409	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
215410	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
215976	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
215977	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
215978	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
218349	4276369, 4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
218350	4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
219120	4279620	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
219121	4279620	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
219122	4279619, 4279620	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
221697	4276376	COLEMAN	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
225794	4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
227068	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
227119	4276371, 4276374, 4276375, 4276376	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
227169	4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
227170	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
229169	4276376	COLEMAN, GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
229170	4276376	COLEMAN	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
233050	4276378	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
233975	4276369	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
234033	4276371, 4276375	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
253491	4276369, 4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
253572	4276370, 4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.

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253676	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
255721	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
260417	4276378	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
265569	4279602	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
266313	4276370, 4276371, 4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
266889	4279619	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
273809	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
274283	4279620	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
274385	4279619	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
280513	4276378	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
281998	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
281999	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
282000	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
282050	4276371	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
282584	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
286376	4276371	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
286377	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
286423	4276370, 4276371, 4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
289115	4276378	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
290178	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
290631	4276371	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
293733	4276374, 4276376	COLEMAN, GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
293734	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
293735	4276371, 4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
293783	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
295763	4276376	COLEMAN	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
295764	4276376	COLEMAN	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
295765	4276376	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
302222	4276369	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
302238	4270920	GILLIES LIMIT	Boundary Cell Mining Claim	2020-07-19	(100) Cruz Cobalt Corp.
311124	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
311125	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
311126	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
319397	4276369	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
321655	4279602	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
322964	4276374	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
323005	4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
324978	4276376	COLEMAN	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
328288	4276378	COLEMAN, GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
340195	4276378	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
340953	4276369	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
341001	4276371	GILLIES LIMIT	Boundary Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
343090	4276370	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.

345390	4279619	GILLIES LIMIT	Single Cell Mining Claim	2020-09-26	(100) Cruz Cobalt Corp.
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## 5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

### 5.1 Accessibility

The Property mining claims are located within the Coleman and Gillies Limit townships, Larder Lake Mining Division, Timiskaming District, northeastern Ontario. The claims are located southwest of Lake Timiskaming, immediately west of the Ontario-Quebec provincial border. Access to the Hector property can be achieved from multiple points. From the north, the Property can be accessed via Bass Lake Road off Highway 11B. From the east, access is gained via Silverfields Road, and from the south on Roosevelt Forest Road, south of Latchford.

The town of Cobalt (population ~1,100) is located approximately 5 to 10 km to the northeast of the Hector property. The closest major centre, Temiskaming Shores (population 9,900), is located 15 minutes north along the Trans-Canada Highway. Temiskaming Shores was created by the amalgamation of the town of New Liskeard, Haileybury and Dymond in 2004, towns that are still often referred to interchangeably.

### 5.2 Site Topography, Elevation and Vegetation

The physiography is typical of the Precambrian Shield in northeastern Ontario, with rocky rolling bedrock hills, locally steep ledges and cliffs, separated by valleys filled with clay, glacial materials, swamps, streams, small kettle lakes and larger bodies of water. These features support a diversity of animal and bird species such as moose, beaver, black bear, wolf, heron, duck, geese and the common loon.

The topography of the Property varies from 300 to 360 metres above sea level, and notable landmarks within the Property include the Montreal River running southeast through the Property, Bass Lake at the northeastern corner of the Property and Hound Chute Lake at the southern end of the Property.

Vegetation includes trees such as black and white spruce, jack pine, balsam poplar, white birch and balsam fir.

### 5.3 Climate

The area experiences four distinct seasons. Spring and autumn comprise a mix of warm sunny days and cool nights. Summers are warm, with dry air and average temperatures from 10 into the mid-20 degree Celsius (C) range. Winter temperatures average temperatures from -25 to -5 degrees C, but high winds and high humidity are rare. Average annual snowfall totals 294 cm, and average total rainfall 590 mm.

The operating season can continue year-round but typical periods to avoid are the spring melt and the establishment of ice during the early winter months.

## 5.4 Local Resources and Infrastructure

Temiskaming Shores provides a variety of necessary amenities, such as bus and rail access, service contractors, large retailers, power and water infrastructure, and hospital services. The major regional mining centres of Sudbury and Timmins, Ontario lie 200 km to the north and southwest of the Property, respectively, and offer a host of exploration and mining related services including analytical laboratories and numerous diamond drill contractors.

## 6 History

Silver was first discovered at Cobalt in 1903 by J. McKinley, E. Darragh and F. Larose during the construction of the Temiskaming and Northern Ontario Railway. In 1904, a load of silver mineralized rock was shipped by rail, marking the beginning of the mining boom in Cobalt. It was the largest silver producing area in Canada for a time (Ruzicka and Thorpe, 1996). Production of silver from the Cobalt camp reached its peak in 1911 when 31,507,792 ounces of silver were shipped (Goodwin, 1988). From 1904 and until 1989, the Cobalt mining camp produced 458,830,085 ounces silver, 19,392,037 pounds cobalt, 3,407,495 pounds nickel and 1,964,728 pounds copper (Guindon et al., 2016). The author has been unable to verify the Cobalt area historic production records, and the historic production is not necessarily indicative of mineralization within the present day Hector Property that is the subject of the Technical Report.

Mineralization was later discovered in additional areas with similar geology within the Cobalt Embayment of the Southern Province, from Gowganda in the west to southeast of Cobalt. In the early 1920s, a decrease in the price of silver and exhaustion of the high grade veins caused most of the mines to close. Between 1929 and 1950, small operations were undertaken in a number of mines. In the mid-1950s, the demand for cobalt increased and many mines reopened for a short time. An increase in the price of silver in 1960 brought new interest to the camp and 10 mines continued operation (Goodwin, 1988).

Renewed interest in the area in the 1980s-1990s resulted in further early exploration activities. Sporadic exploration in the form of geological, geochemical, and geophysical surveys were completed during the 2000's.

### 6.1 Exploration and Development Work Conducted by Previous Owners

Historic exploration within the Hector Property is summarized in the tables below including: documented mineral occurrences within the Ontario Mineral Deposit Inventory (MDI), a summary of known historic shafts, trenches, and prospect pits within the Ontario Abandoned Mines Information System (AMIS), historic assessment work reports from 1955 to present, available from the Ontario Assessment Files Database (OAFD). The spatial location of relevant historic exploration conducted in the Property referred to in Tables 6.1 to 6.3 is presented in Figure 6.1 below.

The exploration history of the present day Hector Property is divided below geographically between mineral occurrences located in the Bass Lake and Marsh Bay area in the north; and prospects located within the southern and eastern parts of the Property near the Montreal River and extending west to Kelvin Lake.

### *6.1.1 Bass Lake and Marsh Bay Areas*

Waldman Silver Mines Ltd. was active between 1909 and 1920 near Marsh Bay at what later became known as Brewster Silver and Lead Syndicate Ltd. occurrence. At the Brewster occurrence, a northeast striking subvertical chalcopyrite-cobalt mineralized calcite ( $\pm$ quartz) vein occurs upon which a 30 foot (9 m) shaft was sunk. During 1947 three diamond drill holes totalling 344 m were completed by the Brewster Syndicate near the shaft but did not intersect significant mineralization (Thomson, 1960). AMIS data indicates the presence of four shafts, two surface trenches, and a waste rock pile distributed over an approximately 400 m northeast trend (Table 6.2). A distance of 800 m to the south at Marsh Bay shallowly south dipping 15 cm wide quartz veins containing pyrite-chalcopyrite mineralization exposed in a small shaft are documented (Thomson, 1960).

The historic Hector Silver Mines Ltd. shaft occurs approximately 30 m east outside the Hector Property claims boundary on private patent mineral claim at the southwest end of Bass Lake. The surrounding area was explored for silver-cobalt veins prior to 1924 the year shaft sinking began, however silver-cobalt veins were reportedly worked only on the C-1243 and C-1101 claims covering the Hector Shaft and James Dolan occurrence 300 m to the northwest within the present day Hector Property.

At the Hector Shaft, a diabase-hosted, locally high grade silver-cobalt vein is exposed at surface. The vein strikes approximately east, dips to the south; and is thought not to persist below the 60 foot (18 m) level of the mine. It is not known if mineralization continued below the base of the diabase sill intersected at a vertical depth of 480 feet (146 m), below which occurs a 50 to 90 foot (15 to 27 m) thick succession of Coleman conglomerate. The Hector shaft was developed to a depth of 500 feet (152 m) with levels at 60, 150, 250 and 490 feet (18, 46, 76, and 149 m). Based on historic plan maps it is likely that the western portions of the 18 m level extend into the present day Hector Property claims (Thomson, 1960).

During the 1930's, James Dolan reportedly mined approximately 5 tons (4.5 tonnes) of cobalt mineralized rock from the James Dolan occurrence via a 15 foot (4.5 m) deep open cut (Thomson, 1960). Grab samples are reported to have returned assays of "up to" 1.7% cobalt (Table 6.1, Wilson, 2017a). The near vertical vein reportedly strikes northeast and contained niccolite, native bismuth, in addition to cobalt-bearing minerals. Sterling Engineering later tested the James Dolan occurrence with a single 38 m inclined drill hole on a 310° azimuth. The drill hole intersected narrow clay gouge zones, calcite veining, and minor chalcopyrite mineralization; however no assays were reported (Plaskett, 1961).

Prior to 1948, James Dolan put down several test pits west of Bass Lake. The trenched area corresponds to the area tested by 2018 Cruz drill holes 18HC08, 09 and 10. They were described as cobalt mineralized calcite ( $\pm$ quartz) veins associated with aplite dykes, in addition to some silver mineralization at the southeast end of the vein trend; likely in close proximity to 2018 Cruz drill holes 18HC05, 06 and 07. On the west side of Gillies Creek west-northwest striking, steeply north dipping cobalt mineralized vein was traced over 60 m by in shallow trenches (Thomson, 1960). The trenched areas correspond to what are presently referred to as the Gillies West and East occurrences.

Before 1960, a 60 foot (18 m) adit was driven along a northwest trending, steeply south dipping aplite-dyke hosted cobalt mineralized vein on the west side of Gillies Creek within claim C-1107 located just outside the present day Hector Property (Thomson, 1960; Figure 6.1). The earliest records of claim C-1107 go back to 1924, with the most recent reference being to the Gilbert Interests Limited during 1968 (Wilson, 2017b).

During 1961, St Mary's Exploration Ltd. completed ground resistivity and magnetic geophysical surveys immediately south of the Gilbert Interests occurrence and Hector Shaft. The surveys outlined a number of north-northwest trending short strike length conductive anomalies (Burton, 1962).

J. Neilson, on behalf of the Nial Mining Syndicate drilled 3 short diamond drill holes along west and northwest azimuths located approximately 150 m west of the Hector Shaft and within the present day Hector Property. Drill holes 1, 2 and 3 each intersected 7.6 cm (3 inch) pink aplite veins containing silver-bismuth-nickel mineralization that assayed 5.8, 7.8, and 0.4 ounces/ton (oz/t) silver, or 199, 267, and 14 grams-per-tonne (g/t) silver, respectively (Neilson, 1970).

#### *6.1.2 Montreal River, and Kelvin Lake Areas*

South Keora Mines Ltd. acquired the C-1220 claim in 1924 located along the eastern claim boundary of the Hector Property. The company commenced shaft sinking on a cobalt-bearing vein that was originally discovered in 1913 however disappointing results led to suspension of activities by 1928. The shaft was driven to a depth of 33, and 43 m of drifting was completed to the northeast from the 30 m level. The northeast striking steeply northwest dipping 10 cm vein was mapped over a 100 m strike length on surface, and returned select assays of 12 to 15% cobalt and 1,000 oz/t silver. The vein was tested via four shallow diamond drill holes (A-1 through 4) in 1951 by Audley Gold Mines Ltd. did not return encouraging results.

K. Home completed a single 60 m drill hole targeting a 13 cm chalcopyrite mineralized aplite-calcite vein exposed in a shallow prospect pit located 550 m southeast of the South Keora shaft. The drill hole intersected a narrow aplite-calcite vein similar to the surface zone however no assays were reported (Home, 1979).

A distance of 1 km northwest from the South Keora occurrence, just outside the present day Hector Property lies the T.J. Newton prospect. Shaft sinking occurred during 1927

by the Newton Limit Syndicate targeting a northwest striking subvertical vein traced by surface trenching over a distance of 30 m southeast of the shaft. The vein is up to 18 cm in width on surface and contains a small amount of cobalt mineralization within a quartz-calcite gangue. The vein reportedly left the shaft at a depth of 15 m where it had pinched to less than 1 cm in width. A second sub-parallel vein lies 75 m to the northeast. The shaft reportedly extends to a depth of 48 m, with 43 m of crosscut development on the 46 m level; in addition to 11 m of crosscuts on the 15 m level completed later in 1956. A total of 9 diamond drill holes were completed in 1953 and 1955 by Quebec Metallurgical Industries Ltd. (QM-1 through 9) with holes 1 through 7 targeting the shaft vein, and 8 and 9 targeting a second occurrence 150 m northwest of the shaft. Drill hole QM-6 collared adjacent to the shaft reportedly intersected high grade silver which led to 1956 shaft dewatering and development on the 15 m level, though it was abandoned before reaching the drilled intercept (Thomson, 1960). No drill hole assays were reported.

Partridge Canadian Explorations Ltd. completed 8 diamond drill holes (P-1 through 8) along the Montreal River within their JS-32 claim located 600 m west of the South Keora shaft. The drilling targeted a northwest striking, steeply northeast dipping 1 m wide pyrite "band" originally discovered in 1907. The drilling intersected the pyrite band over a strike of 140 m and to a maximum vertical depth of 240 m. Assays for gold and silver returned only trace values (Thomson, 1960).

A distance of 1.5 km to the west of the JS-32 occurrence, three north-northeast trending cobalt mineralized veins in aplite occurring on the east shore of Kelvin Lake were tested by several small surface pits (Thomson, 1960).

At the Williamson occurrence, located 2 km southeast of Kelvin Lake, a 28 m vertical shaft and 5 m pit was put down on a narrow 18 cm southeast striking calcite vein, in addition to a pit 45 m to the northwest centred on a narrow 2.5 cm chalcopryrite mineralized vein (Thomson, 1960). Approximately 550 m to the southwest occur north-northwest striking, steeply west dipping, 5 to 10 cm quartz-calcite-aplite veins, one containing cobalt-niccolite mineralization, exposed in surface pits. During 1965, L.J. Cunningham tested the Williamson occurrences via 465 m of diamond drilling in 5 holes. Drill hole W65-1 targeting the northeast showing returned 10 g/t silver over 0.60 m from a downhole depth of 61 m hosted within sheared calcite veined Archean volcanic rocks that were intersected beneath diabase. Drill hole W65-3 drilled under the southwest showing, intersected a 8.6 g/t Ag over 0.6 m in diabase from a downhole depth of 34 m (Cunningham, 1966).

Ragged Chutes Silver Mines Ltd. completed geologic mapping and a small 44 sample humus soil survey on the claims immediately to the south of the Williamson occurrence during 1967; however the soils, analyzed for silver, cobalt or nickel, did not return anomalous values and no mineral occurrences were located (Fowler, 1967).

During 1971, Silverfields Mining Corp. Ltd., then owned by Teck Corporation Ltd. (Teck), completed a large humus soil geochemical survey at their Gillies Limit Property

over a 2 x 2 km area east and south of Bass Lake. Samples were collected along a series of 60 m spaced north-south oriented gridlines at 30 m sample spacing. The majority of the grid occurred east of the present day Hector Property. However, samples collected within the Property returned anomalous cobalt values of 35, 45 and 180 parts-per-million (ppm) over a 200 m distance 600 m south from the T.J Newton shaft, and 55 ppm cobalt along the westernmost survey line directly south of Bass Lake (Moore, 1971).

The following year Teck completed infill sampling of anomalies and surveying of newly acquired claims along the Montreal River immediately south of the Gilbert Interests occurrence, and 800 m south of the T.J. Newton prospect. Significant silver anomalies, with a peak value of 25 ppm silver, occur in the area south of the Gilbert Interests occurrence. Infill sampling south of the T.J. Newton shaft defined an approximately 100 x 100 m greater than 10 ppm silver anomaly. The "Teck Block 9" anomaly was subsequently tested via 4 inclined diamond core holes totalling 387 m drilled along southwest and northeast azimuths (GL-6 through GL-9). All holes reportedly intersected carbonate stringers and veinlets, locally containing pyrite, chalcopyrite and galena mineralization. GL-7 returned the highest silver values of 9.51 oz/t (326 g/t) silver over 10 cm from 43 m downhole, results which were not replicated within flanking drill holes GL8 and GL-9 (Blecha, 1972).

During 1974 Teck acquired claims west of the Montreal River and completed geologic mapping, ground magnetic, electromagnetic (EM) and self-potential surveys (SP). The claims were found to be underlain by Archean volcanic rocks, similar to the Gillies Limit claims east of the river. Magnetic surveys identified northwest trending lineaments; however EM and SP surveys did not return significant anomalies (Lalonde and Neelands, 1974). The work was followed up in 1976 by a 360 B-horizon soil sample survey. Survey lines were oriented northeast-southwest at 100 m spacing, with samples collected at 15 and 30 m intervals depending on the terrain. Soils were analyzed for copper, lead, zinc, nickel, manganese, silver and gold. The results define and approximately 500 x 200 m northwest oriented copper-lead-zinc (defined as greater than 35 ppm copper and lead, and 75 ppm zinc) geochemical anomaly centred 500 m southwest of the JS-32 occurrence (Neel and McLeod, 1976).

During 1997, Wabana Explorations Inc. completed a total of 26 line-km of magnetic and Very Low Frequency (VLF) EM surveys on their Montreal River claims covering much of the historic Teck Gillies Limit and Montreal River claim groups south of the T.J. Newton shaft and west of the Montreal River. The survey outlined, similar to the previous Teck surveys, northwest trending magnetic and VLF anomalies on the west side of the Montreal River, in addition to east-west trending magnetic and VLF anomalies in area south of the T.J. Newton shaft drilled by Teck. Outcrop stripping of the historic JS-32 pyrite occurrence was also completed however no assay results were reported (Laronde, 1997).

During 2004, Cabo Mining Enterprises Corp. completed a 26 soil sample reconnaissance of a weak 1999 Ontario Geological Survey (OGS) airborne EM anomaly



located on the south side of the Montreal River, opposite Gillies Creek via two parallel north-south oriented survey lines. Gold values up to 12 parts-per-billion (ppb) were associated with the anomaly, in addition to weak nickel and copper values. No further follow-up was recommended (Sears, 2004). The results are not considered significant.

Outcrop Explorations Ltd. completed 2012 ground magnetic and VLF-EM surveys again over the area of the historic Teck Gillies Limit claims covering the T.J Newton and South Keora shaft areas. Surveys were conducted along 100 m spaced east-west oriented lines at 12.5 m station spacing and revealed several north-northwest magnetic lineaments, in addition to an east-west magnetic low anomaly in the area of the 1972 Teck. The VLF-EM data returned predominantly cultural anomalies (Ploeger, 2012).

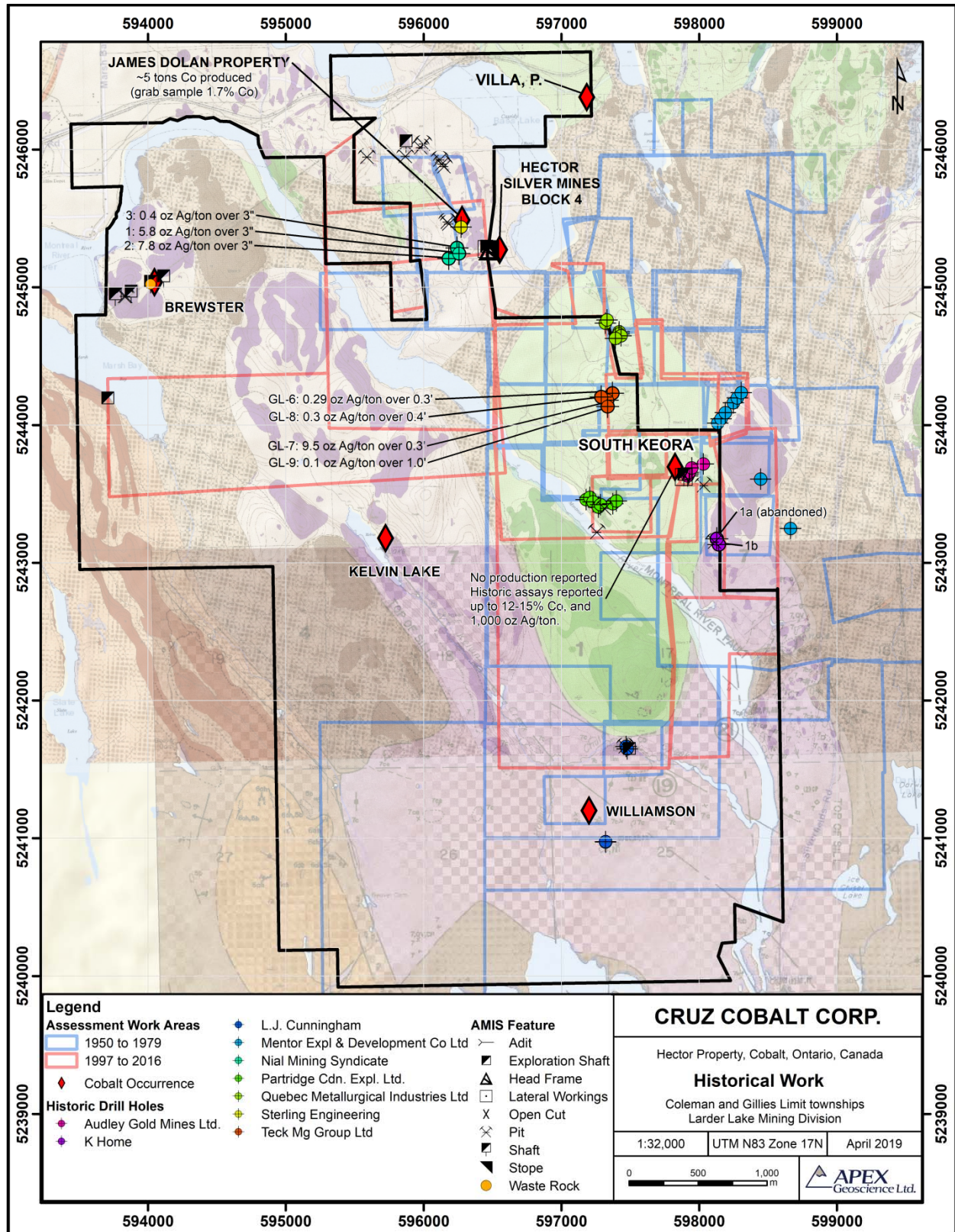
The following year the magnetic survey grid was extended by Outcrop Explorations Ltd. northwest to Gillies Creek in the area south of the Bass Lake and east to the T.J. Newton shaft. While magnetic data does not appear to have been diurnally corrected, the results show a northwest trending magnetic lineament extension to a similar that that occurring within the 2012 grid to the south likely reflective of the underlying Archean volcanic sequence (Kon, 2013a). In addition, 13 rock grab samples from the historic T.J. Newton, South Keora, and JS-32 areas were collected. Sample BL-03 from South Keora returned 13 g/t silver, 0.15% copper, and 0.10% lead. Samples BL-06, 08, and BL-10 through BL-13 were collected from base metal mineralized Archean volcanic rocks located about 350 m southwest of the 1972 Teck drilled area. The samples returned anomalous values ranging from 0.028% to 0.35% lead, and 0.14% to 1.04% zinc. Soil samples collected at the same time, included 10 samples from overburden-filled prospect pits in the area of Teck's Gillies Creek silver-cobalt soil anomalies; and 10 samples collected at 25 m spacing over a 2012 magnetic low anomaly 400 m west of the Teck drilled area. The Gillies Creek base of prospect pit soils returned elevated (>10 ppm) copper-cobalt-lead-zinc values, while the magnetic low target soils were locally elevated with respect to lead and zinc (Kon, 2013b).

Additional rock sampling of the historic JS-32 occurrence totalling 19 samples was completed by Outcrop Explorations Ltd. during 2014. Samples BL-14-05, 11, and 16 collected over an approximate 200 m northwest trend were described as sheared and pyrite bearing, or quartz-pyrite vein material; and returned assays ranging from 1.0 to 5.5 g/t silver, 0.20% lead, and 0.0045 to 1.39% zinc (Kon, 2014).

**Table 6.1. Mineral occurrences identifying Cobalt and Silver as a primary commodity at Cruz Cobalt's Hector Property (MDI dataset).**

Mineral Occurrence	Status	Mineral Deposit Inventory ID (URL)	Work History
James Dolan Property	Developed Prospect without Reserves	<a href="#">MDI31M05SE00127</a>	1935: J. Dolan - approximately 5 tons of cobalt mineralized rock was mined from vein, grab samples returned up to 1.7% Co; 1961: Sterling Engineering – 1 drill hole, 125 ft.
Williamson	Occurrence	<a href="#">MDI31M05SE00113</a>	1966: 93 ft shaft sunk on a calcite vein; 16 ft pit sunk on a 2 <sup>nd</sup> vein; 2005-06: Cabo Mining Enterprises Corp drilled 5 holes, 1316ft, stripping; 2011: Outcrop Exploration Ltd, sampling, assays, magnetometer survey. Calcite vein is 7 inches wide, strikes SE; 2 <sup>nd</sup> vein strikes N10W, dips 80E; both veins occur in Nipissing diabase.
Kelvin Lake	Past producing mine without reserves	<a href="#">MDI31M05SE00125</a>	1909-1910: Waldman Silver Mines – 85 ft shaft; 1963: J Burke – a small pit 180 ft east of southwest corner of claim, cobalt-bearing aplitic vein striking N20E, 3 pits sunk on 3 aplite veins; 2006: Sears, Barry and Associates – 2 drill holes, 301 metres.
Brewster	Occurrence	<a href="#">MDI31M05SW00013</a>	1909-1920: Waldman Silver mines – in production (no production data listed); 1947: Brewster Silver & Lead Syndicated Ltd – 30 ft shaft put down on calcite vein, 3 drill holes, 1129 ft. The calcite vein strikes N22E and dips vertically in Nipissing diabase.
South Keora	Past producing mine without reserves	<a href="#">MDI31M05SE00131</a>	1927-1928: South Keora Mines Ltd – a shaft put down 109' and 13' of drifting done on the 100' level, an open cut 30' deep was made northeast of shaft;  The South Keora Shaft-vein is 300' long and 4 inches wide, strikes N25E, dips 70W. A 2 <sup>nd</sup> vein 100' long occurs east and parallel to shaft vein. Individual assays were reported up to 12-15% Cobalt, and >1,000 oz/ton Silver.
Hector Silver Mines, Block 4 (Occurs Outside Present Day Hector Property)	Developed Prospect without Reserves	<a href="#">MDI31M05SE00129</a>	Pre-1924-29: Hector Silver Mines – prospecting, shaft sinking, underground development. The shaft was sunk 500 ft. with 3 developed levels. About 5 tons of cobalt ore of unknown grade was produced from claim C-1101 (James Dolan), reported in 1924. (Sergiades, 1968) Circa 1930: J. Dolan – owner. 1962: St. Mary's Explorations Limited -magnetic and resistivity surveys. 1968: W. Gutzman – owner. 1969: EM survey. 2013: Outcrop Explorations Ltd. – ground magnetometer survey, beep mat survey.
Villa, P.	Occurrence	<a href="#">MDI31M05SE00115</a>	1960: P. Villa – pits and trenches put down on a calcite vein that strikes NW.

Figure 6.1. Historic Exploration at Cruz Cobalt's Hector Property



**Table 6.2. Abandoned Mines Information System (AMIS) dataset for Cruz Cobalt's Hector Property outlining historic work sites and features.**

Feature Description	UTM Zone	Northing	Easting	Official Name	Feature Condition
EXPLORATION SHAFT - INCLINED SHAFT	17	5244198	593708	MARSH BAY	1993 ASSESSMENT; ONE COMPARTMENT INCLINED SHAFT IN BEDROCK WITH A TIMBERED COLLAR. NO PROTECTION IS PRESENT. FEATURE IS CLEARLY VISIBLE.
EXPLORATION SHAFT - VERTICAL SHAFT	17	5241653	597493	WILLIAMSON	1993 ASSESSMENT; ONE COMPARTMENT SHAFT WITH VERTICAL SIDES IN OVERBURDEN WITH A TIMBER CRIBBED COLLAR. NO PROTECTION IS PRESENT. FEATURE IS CLEARLY VISIBLE.
TRENCH	17	5241672	597463	WILLIAMSON	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION IS PRESENT. FEATURE IS PARTIALLY HIDDEN.
SHAFT - 2 COMPARTMENT - VERTICAL SHAFT	17	5245023	594018	BREWSTER	1993 ASSESSMENT; ONE COMPARTMENT SHAFT WITH VERTICAL SIDES IN OVERBURDEN WITH A TIMBER CRIBBED COLLAR. NO PROTECTION PRESENT. FEATURE IS PARTIALLY HIDDEN. REPORTED BY 1993 ASSESSMENT TO BE 8M DEEP.
SHAFT - 1 COMPARTMENT - VERTICAL SHAFT	17	5245062	594113	BREWSTER	1993 ASSESSMENT; ONE COMPARTMENT SHAFT WITH VERTICAL SIDES IN BEDROCK WITH A TIMBERED COLLAR. NO PROTECTION PRESENT. FEATURE IS PARTIALLY HIDDEN.
WASTE ROCK DUMP	17	5245023	594018	BREWSTER	THIS FEATURE WAS NOT REPORTED BY THE YEAR 1993 SURVEY TEAM.
SHAFT - 2 COMPARTMENT - VERTICAL SHAFT	17	5245278	596458	HECTOR	1993 ASSESSMENT; TWO COMPARTMENT SHAFT WITH VERTICAL SIDES IN BEDROCK WITH TIMBERED COLLAR. SURROUNDED BY A LUNDY TYPE FENCE TOPPED WITH THREE BARBED WIRE STRANDS IN GOOD CONDITION.
LATERAL WORKINGS	17	5245278	596458	HECTOR	PLANS INDICATE WORKINGS ON 18M, 46M, 76M AND 137M LEVELS.
STOPE TO SURFACE	17	5245278	596483	HECTOR	1993 ASSESSMENT; STOPE, OPEN TO SURFACE WHICH IS UNSUPPORTED. SURROUNDED BY LUNDY TYPE FENCE TOPPED WITH THREE BARBED WIRE STANDS IN GOOD CONDITION.
HEAD FRAME	17	5245277	596058	HECTOR	1993 ASSESSMENT; HEADFRAME CONSTRUCTED WITH A TIMBER FRAME AND WOOD CLADDING. FEATURE IS SCHEDULED TO BE REMOVED IN NOVEMBER 1993.  2000 NOTIFICATION; NOTICE TO PROPONENT STATING THE MINE HAZARDS LOCATED ON THIS SITE ARE A SHAFT AND OPEN STOPE. THIS FE...
SHAFT - 2 COMPARTMENT - VERTICAL SHAFT	17	5243623	597888	SOUTH KEORA	1993 ASSESSMENT; TWO COMPARTMENT SHAFT WITH VERTICAL SIDES IN BEDROCK WITH A TIMBERED COLLAR. SURROUNDED BY A LUNDY TYPE FENCE TOPPED WITH THREE BARBED WIRE STRANDS IN GOOD CONDITION.
OPEN CUT	17	5243632	597898	SOUTH KEORA	1993 ASSESSMENT; OPEN CUT WHICH IS UNSUPPORTED. SURROUNDED BY A LUNDY TYPE FENCE TOPPED WITH THREE BARBED WIRE STRANDS IN GOOD CONDITION.
LATERAL WORKINGS	17	5243623	597888	SOUTH KEORA	THIS FEATURE WAS NOT REPORTED BY THE YEAR 1993 SURVEY TEAM.
TRENCH	17	5243228	597258	G. L. CLAIM JS32	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION PRESENT. FEATURE IS PARTIALLY HIDDEN.
TRENCH	17	5243402	597313	G. L. CLAIM JS32	1993 ASSESSMENT; PIT IN OVERBURDEN WITH SLOPED SIDES.
TRENCH	17	5245468	596183	G. L. CLAIM L105813	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION PRESENT. FEATURE IS PARTIALLY HIDDEN.
TRENCH	17	5245482	596173	G. L. CLAIM L105813	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS.
EXPLORATION SHAFT - VERTICAL SHAFT	17	5246043	595873	DOLAN	1993 ASSESSMENT; PROSPECT SHAFT WITH VERTICAL SIDES, IN BEDROCK WITH A TIMBERED COLLAR. SHAFT POSSIBLY CRIBBED WITH CONING/SLUMPING SHAFT COLLAR. WATER LEVEL 3M BELOW GRADE. NO PROTECTION IS PRESENT. FEATURE IS PARTIALLY HIDDEN.
TRENCH	17	5246022	595978	G. L. CLAIM A69	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION IS PRESENT. FEATURE IS CLEARLY VISIBLE.
TRENCH	17	5246048	595998	G. L. CLAIM	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS.

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Feature Description	UTM Zone	Northing	Easting	Official Name	Feature Condition
				A69	
TRENCH	17	5245953	595588	G. L. LEASE 728245	1993 ASSESSMENT; PIT IN BEDROCK WITH SLOPED SIDES.
TRENCH	17	5245933	596118	G. L. CLAIM A76	1993 ASSESSMENT; PIT IN OVERBURDEN WITH SLOPED SIDES. FEATURE IS PARTIALLY HIDDEN.
TRENCH	17	5245902	596133	G. L. CLAIM A77	1993 ASSESSMENT; PIT IN OVERBURDEN WITH SLOPED SIDES.
TRENCH	17	5245883	596148	G. L. CLAIM A77	1993 ASSESSMENT; PIT IN BEDROCK WITH SLOPED SIDES. NO PROTECTION PRESENT. FEATURE IS CLEARLY VISIBLE.
TRENCH	17	5243568	598033	AUDLEY GOLD MINES	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION PRESENT. FEATURE IS CLEARLY VISIBLE.
TRENCH	17	5244942	593828	BREWSTER	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS.
TRENCH	17	5244942	593838	BREWSTER	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS.
SHAFT - 1 COMPARTMENT - VERTICAL SHAFT	17	5244933	593763	BREWSTER	1993 ASSESSMENT; ONE COMPARTMENT SHAFT WITH VERTICAL SIDES IN OVERBURDEN WITH A TIMBER CRIBBED COLLAR. NO PROTECTION PRESENT. FEATURE IS CLEARLY VISIBLE. WASTE ROCK PILE SUGGESTS A DEPTH OF <30M.
SHAFT - 2 COMPARTMENT - VERTICAL SHAFT	17	5244952	593878	BREWSTER	1993 ASSESSMENT; TWO COMPARTMENT SHAFT WITH VERTICAL SIDES IN BEDROCK WITH A TIMBERED COLLAR. NO PROTECTION PRESENT. FEATURE IS CLEARLY VISIBLE. VERY LARGE MUCK PILE SUGGESTS A DEPTH IN EXCESS OF 50M OF UNDERGROUND WORKINGS.
TRENCH	17	5243158	598113	G. L. CLAIM T47559	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION IS PRESENT. FEATURE IS PARTIALLY HIDDEN.
TRENCH	17	5245958	595868	G. L. CLAIM A75	1993 ASSESSMENT; PIT IN BEDROCK WITH VERTICAL WALLS. NO PROTECTION PRESENT. FEATURE IS CLEARLY VISIBLE.

**Table 6.3. MNDM Assessment work summary from Ontario Assessment Files Database (OAFD dataset) for Cruz Cobalt's Hector Property**

Assessment Report ID	Year	Performed For	Work Description	Work Performed
<a href="#">31M05SE0061</a>	1955	Quebec Metallurgical Industries Ltd	Diamond Drilling	2 DDH: WN-8, N-9; 360', no assays reported
<a href="#">31M05SE0057</a>	1956	Partridge Cdn Expl Ltd	Diamond Drilling	3 DDH: 525' total, no assays reported, drill hole locations not in Ontario Drill Hole Database, only geological logs available in assessment report.
<a href="#">31M05SE0085</a>	1960	R Gareau	Geological Survey / Mapping	Regional and Detail Bedrock Mapping, 189 man-days, no samples reported. East of the Montreal River in the vicinity of the South Keora and Newton prospects.
<a href="#">31M05SE0062</a>	1961	Sterling Engineering	Diamond Drilling	1 DDH: 125', no assays reported; drill hole location not in Ontario Drill Hole Database, Assessment Report outline is in the vicinity of the James Dolan occurrence; geological log available.
<a href="#">31M05SE0084</a>	1962	St Marys Expl Ltd	Compilation and Interpretation - Geology, Magnetic / Magnetometer Survey, Resistivity	Ground Resistivity survey (5.98 line-miles); Magnetic/Magnetometer Survey (6.82 line-miles). North of the Montreal River, immediately south of the Gilbert mineral occurrence. Three conductive zones were identified within magnetic lows.
<a href="#">31M05SE0092</a>	1965	Silver Tower Mines Ltd	Geological Survey / Mapping	Detail Bedrock Mapping, 13 man-days, no samples reported. Southwestern corner of the current property outlie, immediately northwest of Hound Chute Lake (southwest of the Williamson occurrence).
<a href="#">31M05SE0050</a>	1966	Unknown	Diamond Drilling	5 DDH, 1525', assays reported s; drill hole locations not in Ontario Drill Hole Database, Assessment Report outline is in the vicinity of the Williamson mineral occurrence; only geological logs available in assessment report.
<a href="#">31M05SE0093</a>	1967	Ragged Chutes	Geochemical, Geological Survey /	Bedrock Mapping, 89 sample Soil Survey (Ni, Co)

## Technical Report on Cruz Cobalt's Hector Property

		Silver Mines Ltd	Mapping	southeast of the Williamson mineral occurrence; up to 24ppm Co, up to 32ppm Ni.
<a href="#">31M05SE0091</a>	1969	T Brown	Electromagnetic Very Low Frequency	Ground EM-VLF survey (5.44 line-miles), located north of the Montreal River and south of the Gilbert and Hector occurrences.
<a href="#">31M05SE0027</a>	1970	J Neilson	Assaying and Analyses, Diamond Drilling	3 DDH, 116' total; 1: 5.8 oz Ag/ton over 3"; 2: 7.8 oz Ag/ton over 3"; 3: 0.4 oz Ag/ton over 3"
<a href="#">31M05SE0033</a>	1970	W Niemi	Diamond Drilling	1 DDH: G-17-1, 338', no assays reported. Southeast of the South Keora occurrence.
<a href="#">31M05SE0077</a>	1971	Keevil Mining Group, Silverfields Mining Corp	Geochemical	Soil Survey (1130 samples), Co, Ag; up to 20ppm Co
<a href="#">31M05SE0075</a>	1972	A Johnson	Geochemical, Diamond Drilling	4 DDH: GL-6 to GL-9; 1,271' total; GL-6: 0.29 oz Ag/ton over 0.3'; GL-7: 9.5 oz Ag/ton over 0.3'; GL-8: 0.3 oz Ag/ton over 0.4'; GL-9: 0.1 oz Ag/ton over 1.0'; Soil Survey (367 Humus), Ag, Co, Mn;
<a href="#">31M05SE0076</a>	1974	Teck Corporation Ltd	Electromagnetic, Geological Survey / Mapping, Magnetic / Magnetometer Survey, Self-Potential	Ground EM (4.3 line-mi), Mag (10.2 line-mi), Self Potential (8.7 line-mi) and Geological Mapping
<a href="#">31M05SE0074</a>	1976	Teck Mining Group Ltd	Geochemical	Soil Survey (361 samples); Cu, Pb, Zn, Ni, Mn, Ag, Au
<a href="#">31M05SE0070</a>	1979	K Home	Diamond Drilling	1 DDH, 199'
<a href="#">31M05SE0072</a>	1997	Wabana Expl Inc	Assaying and Analyses, Electromagnetic Very Low Frequency, Gradiometric, Magnetic / Magnetometer Survey, Open Cutting, Overburden Stripping, Prospecting By Licence Holder	Rock samples (45 samples), Ground Mag/Magnetometer/EM-VLF survey (26 line-km), Stripping (50 hrs), Prospecting (6 days)
<a href="#">31M05SE2073</a>	2004	Cabo Mining Enterprises Corp	Geochemical, Geological Survey / Mapping, Manual Labour	Soil Survey (26 samples, no anomalous values reported); Geological Mapping. South of the Montreal River, north of the Kelvin Lake occurrence.
<a href="#">20000007349</a>	2012	Outcrop Explorations Ltd	Electromagnetic Very Low Frequency, Magnetic / Magnetometer Survey	VLF and Mag Survey (31.1 line km). Three distinct magnetic responses recorded. Area covers the South Keora occurrence.
<a href="#">20000008012</a>	2013	Outcrop Explorations Ltd	Assaying and Analyses, Geochemical, Prospecting By Licence Holder	Rock and Soil samples (20 man days and 33 samples total)
<a href="#">20000008004</a>	2013	Outcrop Explorations Ltd	Magnetic / Magnetometer Survey	Mag Survey (13 man days), non-grid, 427 readings, 100m lines, 12.5m point intervals. South of Bass Lake, north of the Montreal River in vicinity of historic Hector and Newton prospects. Two magnetic low anomalies identified.
<a href="#">20000007892</a>	2013	Outcrop Exploration Ltd	Magnetic / Magnetometer Survey, Prospecting By Licence Holder	Prospecting and Mag Survey (2 man days)
<a href="#">20000008176</a>	2014	Outcrop Exploration Ltd	Magnetic / Magnetometer Survey	Mag Survey, 288 readings, 50m line spacing, 12.5m stations
<a href="#">20000008304</a>	2014	Outcrop Exploration Ltd	Assaying and Analyses, Prospecting By Licence Holder	19 grab samples (up to 74ppm Co). East of the Montreal River, south of Bass Lake in the vicinity of the Newton and South Keora occurrences.

### 6.2 Historical Resources at the Hector Property

No historical mineral resource or mineral reserve estimates have been reported on the Property.

### 6.3 Historical Production at the Hector Property

Approximately 4.5 tonnes of cobalt mineralized rock was reportedly produced from the James Dolan occurrence circa 1935. Grab samples are reported to have returned assays of “up to” 1.7% cobalt (Table 6.1 and Figure 6.1). During 2018, the James Dolan occurrence was subject to surface rock sampling and subsequent diamond drill testing by Cruz Cobalt and is described in Section 9 Exploration, and Section 10 Drilling.

## 7 Geological Setting and Mineralization

### 7.1 Regional Geology

The Cobalt-Gowganda silver-cobalt mining camps of northeastern Ontario occur within the Cobalt Embayment, part of the Proterozoic Huronian Supergroup. The historic mining area occurs within the northeastern part of the Southern geological province, close to the boundary of the Superior and Grenville provinces. Extending for approximately 200 km from Gowganda to the area southeast of Cobalt, an arc of mineral occurrences are present along the northern and eastern boundaries of the Cobalt Embayment and the boundary with the Superior geological province (Figure 7.1).

Steeply dipping Archean basement metavolcanics and metasedimentary rocks are unconformably overlain by relatively flat-lying Proterozoic sedimentary rocks of the Huronian Supergroup. The Archean and Proterozoic rocks were intruded by undulating sill-like sheets of the regionally distributed Proterozoic Nipissing diabase. All of the past producing silver-cobalt deposits of the Cobalt Embayment are hosted within or adjacent to the diabase sills, near the Huronian-Archean unconformity. In the northeastern corner of the embayment, outliers of Paleozoic limestones, dolostones and sandstones unconformably overlie the Huronian sedimentary rocks followed by Pleistocene and Recent sediments (Jambor, 1971a).

#### 7.1.1 Archean Basement

The oldest rocks are found in the Archean basement and are exposed in parts of the north and northeastern margin of the Cobalt Embayment. The Archean basement in this area is primarily made up of metavolcanic rocks and associated interflow sedimentary rocks of the Abitibi Sub-province, felsic intrusive and metamorphic rock types predominate along the western margin. Unconformably overlying the volcanic rocks are syn-orogenic Timiskaming-type lithic and feldspathic arenites, wackes and conglomerates (Jambor, 1971a).

These rocks were intruded by Archean granites followed by mafic, ultramafic and lamprophyric dikes and sills. Subsequently, metamorphism to greenschist facies and isoclinal folding deformation occurred during the Kenoran Orogeny (ca 2,676-2,660 Ma).

#### 7.1.2 Proterozoic Huronian Supergroup

The Cobalt Embayment is a large (~10,000 km<sup>2</sup>), somewhat circular, 120-km diameter north-trending graben within which a flat-lying, or gently undulating succession of

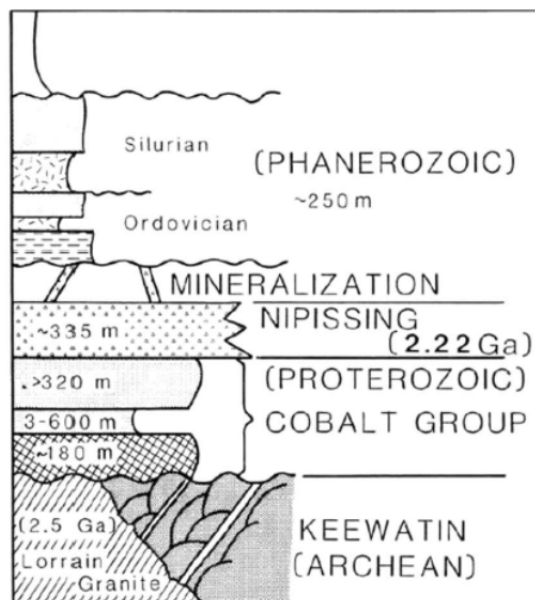
dominantly siliciclastic sedimentary rocks belonging to the Huronian Supergroup was deposited. In the Property area, the Cobalt Embayment is mostly comprised of the Cobalt Group.

The Cobalt group includes the Gowganda, Lorrain, and the Gordon Lake Formations (Sims et al. 1981). The Gowganda Formation is divided into the Firstbrook and Coleman Members. The overall tectonic setting of the Cobalt Embayment is that of a continental rift system, reflecting the original configuration of the sedimentary basin. The Proterozoic succession unconformably overlies steeply dipping Archean rocks of the Abitibi greenstone belt. The embayment is bound in most directions by Archean rocks, and is interpreted as a continental rift system reflecting the original configuration of a paleo basin. To the south, the basin is truncated by the Grenville Front tectonic zone; the remnants of a mountain building event that terminated at ca. 1.0 Ga.

### 7.1.3 Proterozoic Nipissing Diabase sills

Both Archean and Proterozoic rocks have been largely intruded by gabbroic rocks of the Nipissing Intrusive event (2219 Ma), forming regionally-distributed sills, dykes and sheets up to a few hundred meters thick (Bennett et al. 1991). The diabase is the most abundant and widespread igneous rocks intruding the Archean metavolcanics and Huronian sedimentary rocks and comprise a range of rock types from fine-grained border facies to coarser-grained inner-facies; the most common is pyroxene gabbro but olivine gabbro, hornblende gabbro, leucogabbro, granophyric gabbro, feldspathic pyroxenite, and late-stage granophyres are also common.

**Figure 7.1. Stratigraphic Column of the Cobalt Area (Kerrich et al. 1986)**





These are interpreted to originate from a radiating dike swarm related to a magmatic event located under the Labrador Trough (Ernst, 2007), which locally appears to be controlled by Archean and Huronian structures. In general, the sills are horizontal to shallowly dipping and form regional basin and dome like undulations, which often mirror pre-existing basement topography. The sills maintain a relatively uniform thickness of 300-350 m (Jambor, 1971b). The contact with the intruded country rocks is marked by a narrow chill margin. A simplified stratigraphic column for the Cobalt area is presented in Figure 7.1, above.

#### *7.1.4 Regional Structural Geology*

Deformation within the Cobalt Embayment is dominated by three separate fault sets (Figure 7.2).

A major southeast-trending fault system is manifested by the Montreal River, Cross Lake, and Timiskaming Fault (from west to east). This regional-scale fault system is part of the Lake Timiskaming Structural Zone, a northwest-southeast trending graben structure that trends from the Grenville Front at the southern extent of the embayment northward well beyond the Cobalt area. Geological and geophysical evidence indicates that these major fault systems were probably initiated in the late Archean, prior to Huronian sedimentation, and were reactivated during and after Huronian sedimentation and intrusion of the Nipissing diabase (Andrews et al. 1986).

A second fault set trends northeast, resulting in offsets of the Nipissing diabase prior to silver mineralization (Thomson, 1964). These faults and the southeast-trending system are generally veined with carbonate and silicate minerals and exhibit no apparent control over the occurrence of the silver veins, as most are barren (Jambor, 1971a).

The third set of faults, trending east-southeast, are generally smaller, subvertical normal faults that show displacements of up to 7.5 m, and locally host silver veins (Wilson, 1986).

## 7.2 Property Geology

The Property area and surrounding was mapped over the course of several decades by various government geologists. The property geology is best represented by ODM Map 2051 covering the northern two-thirds of the Property (Thomson, 1964b); and ODM Map 2551 covering the southern third of the Property (Born et al., 1990) Figure 7.4 below.

The northernmost claims on the Property are underlain by Nipissing diabase that intrudes the Archean volcanic sequence in the east, and Coleman Member sediments in the west. In the western section of claims, the diabase has a moderate to steep dip to the west along with Coleman Member sediments. In the southeast and east, Archean volcanics and Cobalt Member sediments underlie the sill, where it is interpreted to be more eroded than in the centre-western and northern areas. The thickness of the Nipissing diabase is variable over the Property, from 150 to 300 m.

Figure 7.2. Regional Geology of Cruz Cobalt's Hector Property

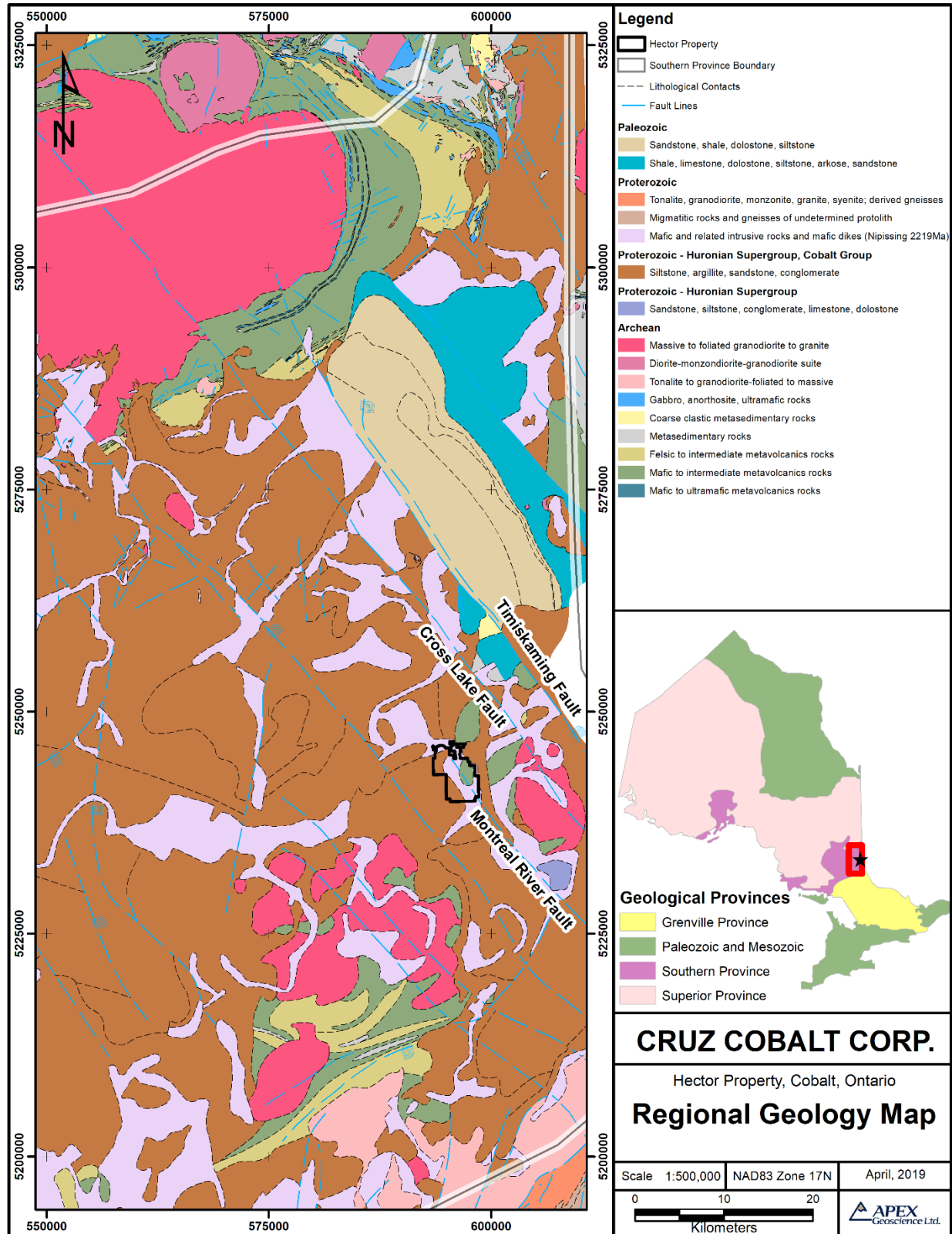
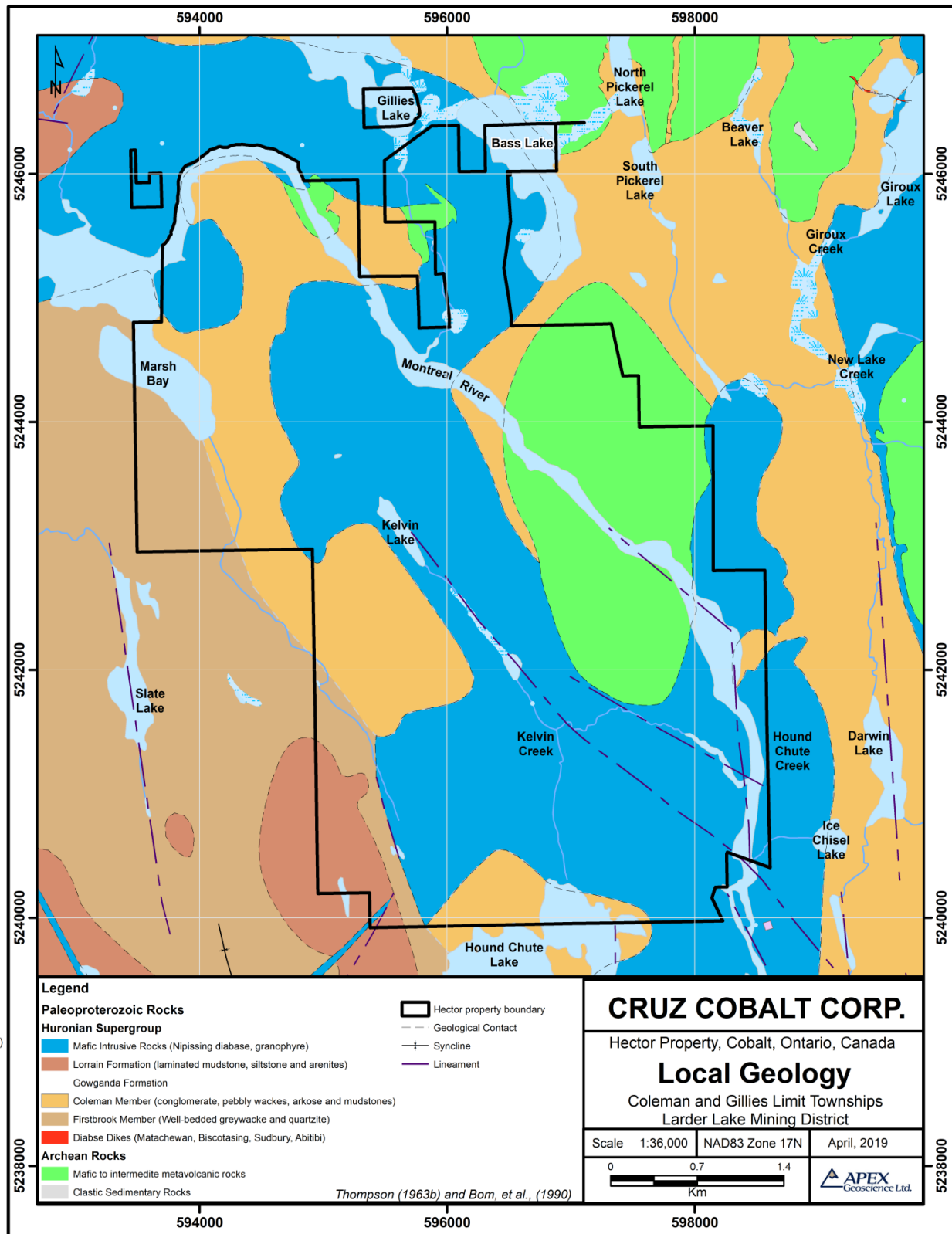


Figure 7.3. Property Geology of Cruz Cobalt's Hector Property



Archean basement rocks area exposed on both sides of the Montrell River within the central portion of the Property, extending south to the Williamson occurrence along what was likely a paleo-topographic high where Archean rocks occur in direct contact with overlying diabase. West of the Montreal River, the sediments have a gentle dip to the west and considerable thickening towards Highway 11, where they are unconformably overlain by Firstbrook and Lorrain formation strata (Thomson, 1964b; Hughes, 2017).

### 7.3 Mineralization

Mineralization present within the Hector Property displays characteristics of the silver-cobalt arsenide subtype of epigenetic vein deposits, described in detail in Section 8 'Deposit Types' below. In general the metallic minerals occur in fracture filling lenses or veinlets, or as disseminations within wall rocks in association with carbonate and/or quartz gangue. Wall rocks adjacent to the veins are commonly hydrothermally altered.

Regionally, veins of the Cobalt Camp are commonly steeply dipping to vertical. Individual veins occur over strike lengths of up to 1 km and 100 m vertical extent, and pinch and swell from hair-line thickness and up to approximately 1 m in width. They may occur as single or multiple veins that branch and join, which are may be grouped into vein networks separated by zones of barren rock (Petruk, 1971a). Simple dilatant, shear-hosted, and less common replacement-type veins are recognized. Mineralization is typically discontinuous along any given vein structure, with the highest grade zones generally occurring near vein intersection, lithological contacts, and abrupt changes in Archean basement topography (Andrews et al., 1986). Metallic mineralogy comprises arsenides and sulph-arsenides of cobalt, nickel, iron, native silver and bismuth, and lesser antimonides, and sulphides of lead, zinc and copper (Petruk, 1971b).

The majority of mineral occurrences with the Hector Property consist of narrow fracture controlled northwest-southeast, or northeast-southwest striking, sub-vertical to steeply dipping, quartz-carbonate-potassium feldspar veins containing variable percentages of disseminated to clotty pyrite, chalcopyrite, pyrrhotite, and erythrite (hydrous cobalt arsenate) mineralization. Veins range in width from less than 5 cm up to 25 cm in width. The majority of historically reported mineral occurrences are represented by one or more shallow prospect pits and trenches, or water-filled shafts. Due to presence of limited outcrop, and overburden cover, the approximately strike length of historic mineral occurrences was determined largely based on the detailed geologic mapping of Thomson (1960); in addition to the spatial distribution of historic AMIS excavations recorded on the ground. At the Gillies East occurrence the Author observed a northwest trending, sub-vertical potassium feldspar-quartz-carbonate vein zone intermittently exposed on surface over a 100 m strike length. Details of the historically reported mineralization within the Hector Property are presented in sub-sections 7.3.1 and 7.3.2 below.

Rock grab sampling of the historic James Dolan occurrences at Bass Lake (now referred to as the Gillies East, West and Hector anomalies) by Cruz Cobalt returned

cobalt values in excess of 0.1% and up to 2.02% cobalt from outcrop and historic prospect pit float. Subsequent diamond drilling completed by Cruz intersected mineralization comprising disseminated to clotty pyrite-chalcopyrite at the Hector anomaly associated with moderate to intense chlorite-silica and potassic alteration of diabase host-rocks and narrow quartz-carbonate-potassium feldspar veins zones. Diamond drill intersected mineralization at the Gillies East occurrence is characterized by moderate chlorite-potassic alteration and disseminated pyrite-chalcopyrite mineralization.

The distribution of mineral occurrences throughout the Hector Property is coincident with interpreted structural lineaments within the Nipissing Diabase sill, for example between the Williamson to Brewster occurrences, and in the case of the Bass Lake area showings they appear to be spatially associated with the margins of a relatively more magnetic phase of the diabase. Archean basement hosted mineral occurrences on the east side of the Montreal River are generally coincident with relative magnetic low regions. The majority of documented mineral showings occur within the Nipissing Diabase, however within Bass Lake, and east of the Montreal River there is a close spatial association of Archean volcanic, basal Coleman Member sediments and diabase rocks, which is considered highly prospective within the context of the silver-cobalt arsenide vein deposit model.

### *7.3.1 Bass Lake and Marsh Bay Areas*

At the Brewster occurrence, a northeast striking subvertical chalcopyrite-cobalt mineralized calcite ( $\pm$ quartz) vein occurs. During 1947 three diamond drill holes totalling 344 m were completed by the Brewster Syndicate near the shaft but did not intersect significant mineralization (Thomson, 1960). AMIS data indicates the presence of four shafts, two surface trenches, and a waste rock pile distributed over an approximately 400 m northeast trend (Table 6.2). A distance of 800 m to the south at Marsh Bay shallowly south dipping 15 cm wide quartz veins containing pyrite-chalcopyrite mineralization exposed in a small shaft are documented (Thomson, 1960).

During the 1930's, James Dolan reportedly mined approximately 5 tons (4.5 tonnes) of cobalt mineralized rock from the James Dolan occurrence (Thomson, 1960). Grab samples are reported to have returned assays of "up to" 1.7% cobalt (Table 6.1, Wilson, 2017a). The near vertical vein reportedly strikes northeast and contained niccolite, native bismuth, in addition to cobalt-bearing minerals. Sterling Engineering later tested the James Dolan occurrence with a single 38 m inclined drill hole on a 310° azimuth. The drill hole intersected narrow clay gouge zones, calcite veining, and minor chalcopyrite mineralization; however no assays were reported (Plaskett, 1961).

Prior to 1948, James Dolan put down several test pits west of Bass Lake. The trenched area corresponds to the area tested by 2018 Cruz drill holes 18HC08, 09 and 10. They were described as cobalt mineralized calcite ( $\pm$ quartz) veins associated with aplite dykes, in addition to some silver mineralization at the southeast end of the vein trend; likely in close proximity to 2018 Cruz drill holes 18HC05, 06 and 07. On the west

side of Gillies Creek west-northwest striking, steeply north dipping cobalt mineralized vein was traced over 60 m by in shallow trenches (Thomson, 1960). The trenched areas correspond to what are presently referred to as the Gillies West and East occurrences.

Nial Mining Syndicate drilled 3 short diamond drill holes approximately 150 m west of the Hector Shaft and within the present day Hector Property. Drill holes 1, 2 and 3 each intersected 7.6 cm (3 inch) pink aplite (potassium feldspar) veins containing silver-bismuth-nickel mineralization that assayed 5.8, 7.8, and 0.4 ounces/ton (oz/t) silver, or 199, 267, and 14 grams-per-tonne (g/t) silver, respectively (Neilson, 1970).

### *7.3.2 Montreal River, and Kelvin Lake Areas*

The northeast striking steeply northwest dipping 10 cm South Keroa shaft vein was mapped over a 100 m strike length on surface, and returned select assays of 12 to 15% cobalt and 1,000 oz/t silver. More recent rock grab sampling by Outcrop Explorations Ltd. returned 13 g/t silver, 0.15% copper, and 0.10% lead (Sample BL-03, Kon, 2013b).

The JS-32 occurrence comprises a northwest striking, steeply northeast dipping 1 m wide pyrite "band" that has been intersected by diamond drilling over a strike of 140 m and to a maximum vertical depth of 240 m, which did not return significant gold or silver values. More recent rock grab sampling of the JS-32 occurrence was completed by Outcrop Explorations Ltd. Samples BL-14-05, 11, and 16 collected over an approximate 200 m northwest trend were described as sheared and pyrite bearing, or quartz-pyrite vein material; and returned assays ranging from 1.0 to 5.5 g/t silver, 0.20% lead, and 0.0045 to 1.39% zinc (Kon, 2014)

The Williamson occurrences comprise two individual showings separated by 550 m. The northeast occurrence comprises an 18 cm southeast striking calcite vein, and narrow 2.5 cm chalcopryrite mineralized vein. At the southwest showing there occurs north-northwest striking, steeply west dipping, 5 to 10 cm quartz-calcite-aplite veins, and one containing cobalt-niccolite mineralization. Drill hole W65-1 targeting the northeast showing returned 10 g/t silver over 0.60 m from a downhole depth of 61 m hosted within sheared calcite veined Archean volcanic rocks that were intersected beneath diabase. Drill hole W65-3 drilled under the southwest showing, intersected a 8.6 g/t Ag over 0.6 m in diabase from a downhole depth of 34 m (Cunningham, 1966).

The "Teck Block 9" anomaly was tested via 4 inclined diamond core holes totalling 387 m drilled along southwest and northeast azimuths (GL-6 through GL-9). All holes reportedly intersected carbonate stringers and veinlets, locally containing pyrite, chalcopryrite and galena mineralization. GL-7 returned the highest silver values of 9.51 oz/t (326 g/t) silver over 10 cm from 43 m downhole, results which were not replicated within flanking drill holes GL8 and GL-9 (Blecha, 1972).

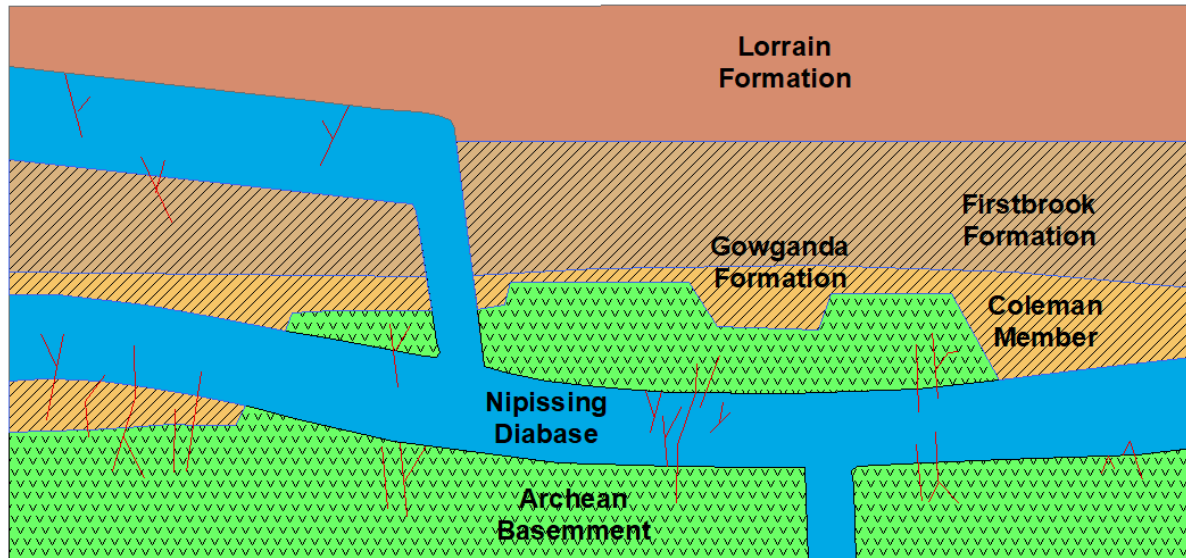
## 8 Deposit Types

The principal deposit type of interest within the Hector Property is arsenide silver-cobalt vein deposits. The Cobalt Camp of Ontario was once the largest silver-producing area in Canada. In addition to silver, the Camp produced significant cobalt, copper, nickel, arsenic and bismuth (see Section 6 "History"). The following arsenide silver-cobalt vein deposit model description was extracted and modified from Ruzicka and Thorpe (1996), unless specified otherwise.

### 8.1 Geologic Characteristics - Arsenide Silver-Cobalt Vein Deposits

The arsenide silver-cobalt subtype are epigenetic vein deposits. Metallic minerals occur in fracture filling lenses or veinlets, or as disseminations within wall rocks in association with carbonate and/or quartz gangue. Wall rocks adjacent to the veins are commonly hydrothermally altered. Arsenide silver-cobalt deposits are concentrated in areas affected by basinal subsidence and rifting and are generally spatially related to regional fault systems and intrusions of mafic rocks.

The deposits in the Cobalt Camp are associated with Paleoproterozoic conglomerate, quartzite, and greywacke rocks of the Cobalt Member, as well as the major sill-like bodies of the Nipissing Diabase and the Archean mafic and intermediate lavas, and intercalated pyroclastic and sedimentary rocks. The majority of historic past producing deposits occur in close proximity to the Archean-Huronian unconformity, at or near the contacts between the Nipissing Diabase and the sedimentary rocks of the Cobalt Group, and to a lesser extent along contacts between the diabase and the Archean rocks. All three major lithologies are present within Hector Property. No economically significant deposits occur above and remote from the Archean-Huronian unconformity, and irrespective of host lithology all known deposits of economic grade are spatially associated with Nipissing diabase; either within the diabase itself, or within 200 m of its upper and lower contacts. Where diabase sills cut Coleman Member sediments just above the Archean unconformity vein systems typically occur as strong, relatively continuous structures with mineralization of potential economic significance generally concentrated within the Coleman sediments. When Nipissing Diabase has intruded Archean volcanic rocks vein systems tend to be discontinuous with mineralization of potential economic significance generally occurring near the upper and lower contacts of the diabase. Approximately two-thirds of early Cobalt Camp historic production was from Coleman Member-hosted vein deposits; with a transition to dominantly Archean associated deposits in later years (Figure 8.1; Andrews et. al. 1986).



**Figure 8.1. Simplified Geological Section Showing the Relationship Between Silver – Cobalt Mineralization and Major Lithological Units. Modified after Andrew et al. (1986)**

The veins are commonly steeply dipping to vertical. Individual veins occur over strike lengths of up to 1 km and 100 m vertical extent, and pinch and swell from hair-line thickness and up to approximately 1 m in width. They may occur as single or multiple veins that branch and join, which are may be grouped into vein networks separated by zones of barren rock (Petruk, 1971a). Simple dilatant, shear-hosted, and less common replacement-type veins are recognized. Mineralization is typically discontinuous along any given vein structure, with the highest grade zones generally occurring near vein intersection, lithological contacts, and abrupt changes in Archean basement topography (Andrews et al., 1986). Metallic mineralogy comprises arsenides and sulph-arsenides of cobalt, nickel, iron, native silver and bismuth, and lesser antimonides, and sulphides of lead, zinc and copper (Petruk, 1971b).

The approximate age of the arsenide silver-cobalt veins has been established from dating of the diabase sheets and geological evidence. The arsenide silver-cobalt veins cut the Nipissing Diabase but are displaced by post-mineralization reverse faults, which are contemporaneous with the intrusion of the quartz diabase dykes. This places mineralization between 2.22 Ga and 1.45 Ga, however it is believed that the bulk of mineralization formed shortly after intrusion of the Nipissing Diabase (2.22 Ga; Jambor, 1971a).

Intrusion of the diabase sheets was accompanied by contact metasomatic alteration of the country rocks and by deuteritic alteration of the diabase itself. Certain areas display spotted chloritic contact alteration, which developed near the Nipissing Diabase prior to mineralization. Propylitic alteration associated with the silver-cobalt veins is more intense, though typically only developed within narrow zones along the veins a few centimetres in width, and comprises chlorite replacement of mafic minerals, and



retrogression of plagioclase to and assemblage of muscovite, epidote, and albite (Jambor, 1971b; Andrews et al., 1986).

## 8.2 Genetic Model – Arsenide Silver-Cobalt Vein Deposits

Various genetic models for the origin of the Cobalt Camp deposits have been proposed that vary with respect to the theorized origin of metal depositing hydrothermal fluids; specifically if metal-rich hydrothermal fluids were derived during: i.) late-stage differentiation during intrusion of the Nipissing Diabase sills; ii.) Convectively circulating fluids mobilized from country rocks during cooling of the diabase; or iii.) Hydrothermal fluids originating from an unidentified external source (Andrews et al., 1986).

Studies indicate solutions that deposited silver-cobalt arsenide mineralization were initially as hot as 400°C, although a wide range of fluid inclusion temperatures and salinities have been reported (Kerrick et al., 1986; Kissin, 1992). The fluids may have been variable mixtures of basinal brines and meteoric waters, and Kissin (1992) suggests that the deposits were formed in an environment characterized by incipient rifting of continental crust.

The generally accepted genetic model for the silver-cobalt arsenide veins involve derivation of the silver, nickel, cobalt, arsenic, antimony, bismuth, copper, and mercury from either the Archean sedimentary beds (Boyle and Dass, 1971) or the formational brines of the Archean carbonaceous, pyritic tuffs or their clastic derivatives in the Proterozoic sedimentary sequence (Watkinson, 1986). The latter hypothesis is supported by fluid inclusion and oxygen isotopic data.

More recently, Potter and Taylor (2010) proposed a genetic model for the silver-cobalt arsenide veins and the other polymetallic (iron, copper, nickel, cobalt, arsenic, gold, silver, and bismuth, ± uranium) calcite-quartz vein systems in the Cobalt Embayment. The model proposes regional flow of oxidized, hydrothermal fluids focused along the Huronian-Archean unconformity, driven by sedimentary loading and heat released by the Nipissing Diabase intrusive event ca. 2.2 Ga; followed by genesis of regionally-distributed, discordant, polymetallic vein mineralization through the interaction of the oxidized basin fluids with both fluid- and solid-reducing components of the basement, facilitated by localized displacement of the Huronian-Archean unconformity along reactivated faults; and finally hydrothermal remobilization of at least some of the vein components, notably Pb, in association with regional Na- and K- metasomatic events ca. 1.7 Ga.

## 9 Exploration

During 2017 and 2018, Cruz Cobalt conducted early exploration activities at the Hector Property. The work completed comprised data compilation and review, an airborne geophysical survey, ground magnetic geophysical surveys, prospecting, rock and soil geochemical surveys, and diamond drilling. This section summarizes results from the

geophysical surveys and surface exploration completed by Cruz Cobalt. The diamond drilling is discussed in Section 10 of this Report.

During June 2017, Antediluvial Consulting Inc. ("Antediluvial") was engaged by Cruz Cobalt to compile and review historical data, and carry out prospecting and site visits at the Property ahead of the airborne geophysical survey. Eagle Geophysics Ltd. ("Eagle") was retained by Cruz Cobalt to complete the 522.9 line-km helicopter-borne geophysical magnetometer and very low frequency electromagnetic (VLF-EM) survey over the Hector Property during August 2017. Simcoe Geoscience Limited ("Simcoe") processed, compiled, levelled, inverted and summarized the airborne geophysical survey results in September 2017. In addition, Campbell & Walker Geophysics Limited carried out additional geophysical inversion modelling on the dataset in September 2017. Antediluvial compiled and summarized the 2017 exploration results for the Property during October 2017.

Following the 2017 airborne survey, Cruz Cobalt retained Jean Marc Gaudreau to complete a soil geochemical survey in the northeast corner of the Property. A total of 428 soil samples were collected between October 25<sup>th</sup> and November 3<sup>rd</sup>, 2017.

In 2018, APEX Geoscience Ltd. ("APEX") was retained by Cruz Cobalt to further compile and review historical data, complete a soil and rock geochemical survey, a ground geophysical survey, and an exploration diamond drilling program at the Hector Property. The 2018 exploration program was designed to evaluate and follow up on 2017 and historical results, and to generate targets for future exploration. The 2018 exploration program was completed in three phases: (Phase 1) a soil (203 samples) and rock (31 samples) geochemical survey from July 31<sup>st</sup> to August 10<sup>th</sup>, 2018, and a 23 line-km ground magnetometer geophysical survey from July 25<sup>th</sup> to August 2<sup>nd</sup>; (Phase 2) follow up rock sampling (12 samples) on October 2<sup>nd</sup> and 3<sup>rd</sup>, 2018; and (Phase 3) a 10 hole (843 m) diamond drilling program from October 29<sup>th</sup> to December 19<sup>th</sup>, 2018.

## 9.1 2017 Airborne Geophysical Survey

A helicopter-borne magnetometric and very low frequency electromagnetic (VLF-EM) survey was completed over the Hector Property during August 2017. A total of 522.9 line kilometres (line-km) were completed at the Hector Property.

### 9.1.1 Survey Parameters and Instrumentation

Total field and measured gradient data was collected along 50 m spaced east-west oriented traverse lines, and 500 m spaced north-south oriented control lines at an approximate 40 m sensor height. Table 9.1 summarizes the instrumentation and parameters used for the survey.

**Table 9.1. 2017 Helicopter-borne Geophysical Survey Instruments, Sensors and Parameters Used**

Tow Cable	30 meters long with spectra cable
Bird Dimension	10 meter wide, 3m high and 12m long
AFMAG	Detection Frequencies: 90 Hz, 390 Hz, Bandwidths: 2.5 Hz, 10 Hz
VLF-EM	Bi-station, 15 to 30 khz programmable, 0.1% of the total field (when stations are working)
Magnetometer	High sensitivity GSMP-35A optically pumped potassium-vapor, sampled at 10 Hz, with a maximum sensitivity of 00003 nT, resolution of 0.0001 nT, absolute accuracy +/- 0.1 nT, gradient tolerance > 50,000 nT/m
GPS System	CDGPS Novatel OEM-V1 receiver with <2m accuracy
Digital acquisition	Fully rugged laptop HD and internal MUX memory with Gem System software
Radar altimeter	Free Flight TRA-3500 Terra Corporation with +/- 5 ft accuracy from 0-100 ft, and +/- 5% from 100-500 ft
Laser altimeter	LT1ULS, Resolution 1mm, Range 0.15m to 500 m
Base magnetometer	Total field base station magnetometer G823A or High sensitivity GSMP-35A optically pumped potassium-vapor; sampled at 10 Hz, with a maximum sensitivity of 0.0003 nT, resolution of 0.0001 nT, absolute accuracy +/- nT, gradient tolerance >50,000 nT/m
Helicopter	As 350 BA or Equivalent with an experienced survey flying pilot

### 9.1.2 Survey Results

Geophysical data was provided in a Geosoft Geodatabase (GDB) format. Digital grid and map products included Total Magnetic Intensity and associated derivatives including measured vertical magnetic gradient (VGRAD), measured cross-line magnetic gradient (CGRAD), calculated in-line magnetic gradient (IGRAD), magnetic tilt derivative (TDR), horizontal magnetic gradient (HGRAD). Very Low Frequency products associated with the Magnetic Analytical Signal (ASIG), which serve to enhance trends within the gridded data. Figures 9.1 and 9.2 show the Total Magnetic Intensity (TMI), Tilt Derivative (TDR).

The TMI results and to a greater extent the tilt derivative and vertical gradient products reveal dominantly northwest trending magnetic high domains and magnetic low lineaments across the survey area. A major magnetic low lineament coincident is coincident with a narrow topographic depression trending northwest through the Williamson, Kelvin Lake, and Brewster occurrences, with a second less prominent magnetic low lineament paralleling the trace of the Montreal River.

The magnetic response of diabase, Coleman Member sediments, and Archean volcanics is difficult to resolve, as it is often unclear the extent to which the observed magnetic response is representative diabase or Archean basement. However, a correlation of mapped diabase, which generally forms topographic high regions, reveals relatively stronger and subparallel linear and sinuous positive magnetic anomalies suggesting that the wide diabase sill trending northwest through the claims is a multi-phase composite intrusion. The mapped region of Archean basement interpreted to form the core of a broad southeast trending anticline, or basement uplift zone, exhibits a

relatively subdued magnetic response compared to the diabase, and little indication of a dominant structural lineament trend.

The Total Magnetic Intensity (TMI), inverted Very Low Frequency (VLF) and MVI inversion products were used by Simcoe to establish five geologic domains defined by their variable geophysical response (zones A to E) at the Property (Figure 9.3). The interpretation by Simcoe reinforces dominantly northwest trending, and locally late northeast trending, structural style of the Hector Property.

The distribution of historic mineral occurrences throughout the Hector Property is coincident with interpreted structural lineaments within the Nipissing Diabase sill, for example between the Williamson to Brewster occurrences, and in the case of the Bass Lake area showings they appear to be spatially associated with the margins of a relatively more magnetic phase of the diabase. Archean basement hosted mineral occurrences on the east side of the Montreal River are generally coincident with relative magnetic low regions.

Figure 9.1. 2017 Airborne Geophysics Total Magnetic Intensity (TMI)

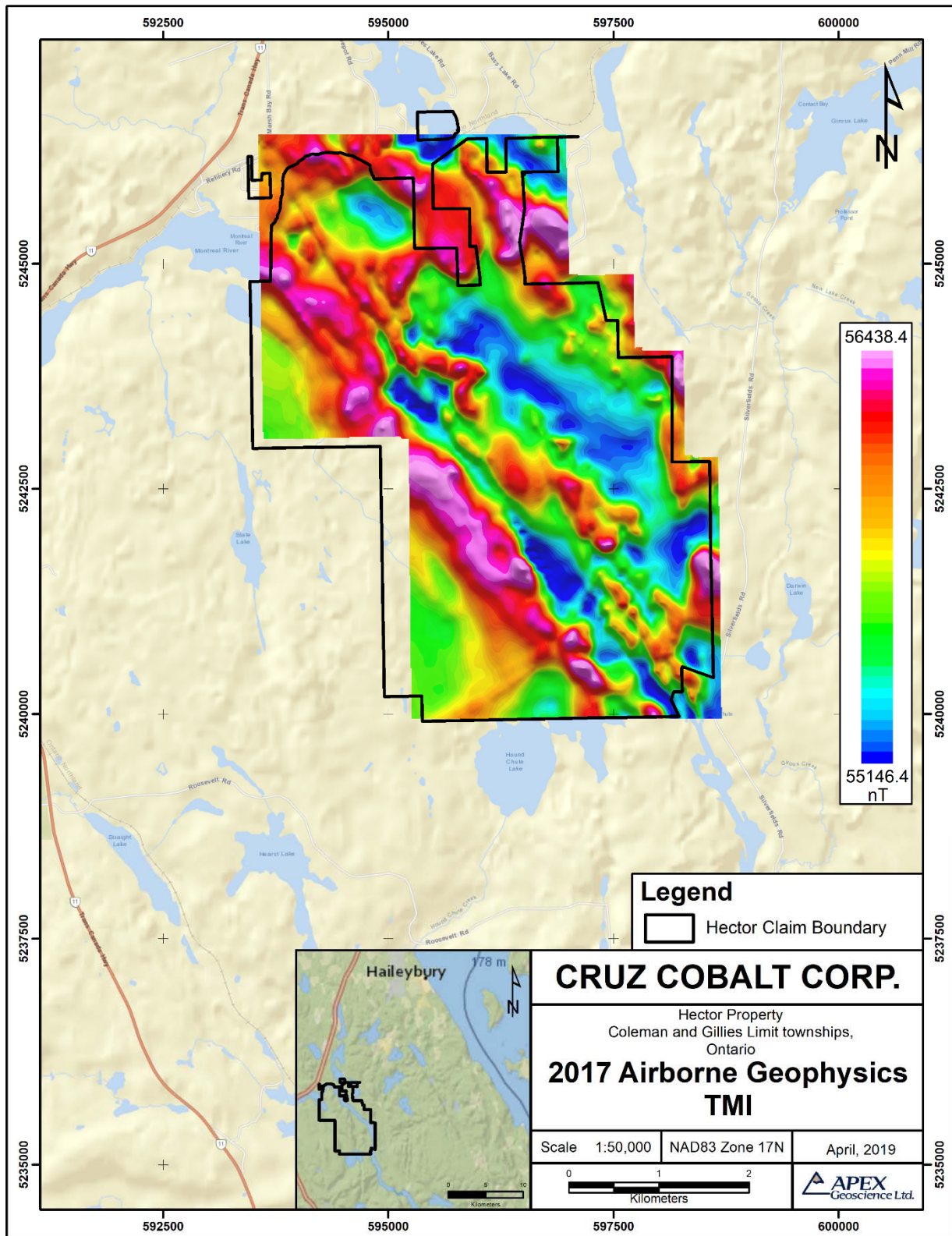


Figure 9.2. 2017 Airborne Geophysics Tilt Derivative (TDR)

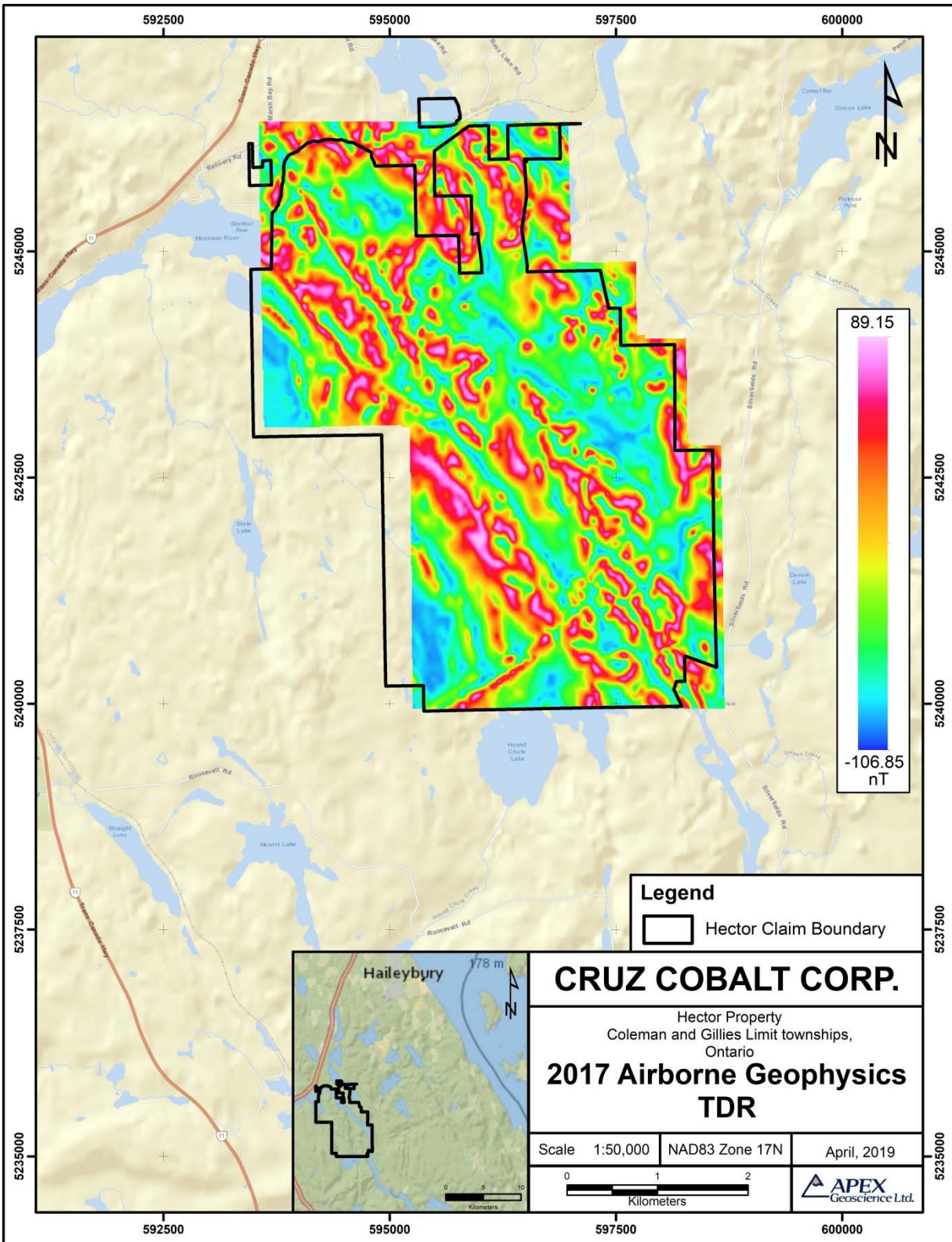
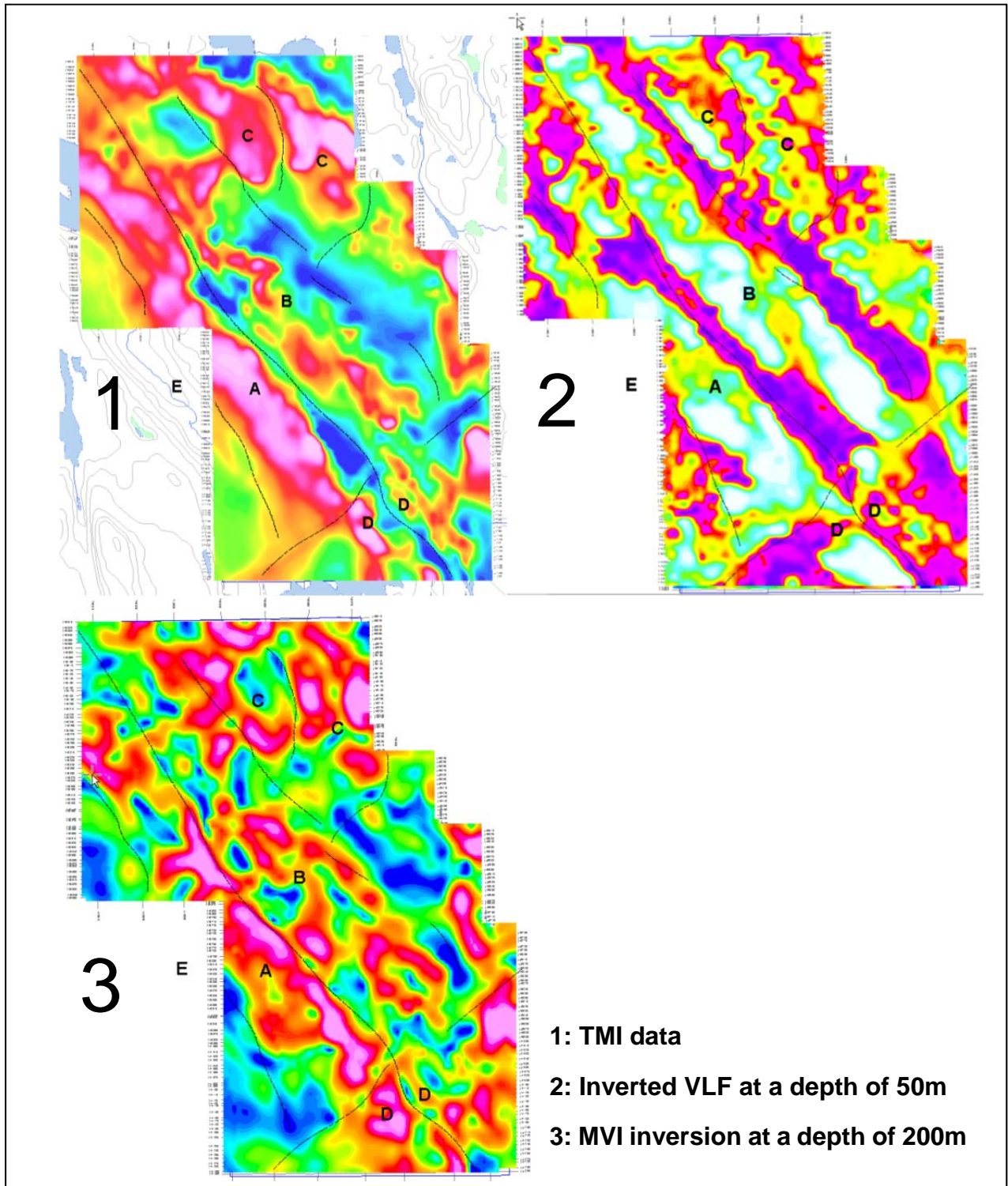


Figure 9.3. 2017 Airborne Geophysics Simcoe Geoscience Litho-geophysical Domains



## 9.2 2017 and 2018 Soil Geochemical Surveys

The 2017 soil geochemical survey was completed west of Bass Lake, covering an area containing historical shafts and pits. The survey grid covered an area of approximately 1.14 ha. Samples were collected along east-west or north-south oriented lines with a line spacing of 100 m and a sample spacing of 25 m. A total of 428 samples were collected from B horizon soils. Summary statistics for cobalt (Co), copper (Cu), silver (Ag), arsenic (As) and nickel (Ni) are presented in Table 9.2. A plan maps showing the 2017 analytical results for cobalt (Co) is presented in Figure 9.4.

The 2018 survey was also west of Bass Lake, covering an area of approximately 1.6 ha. Samples were collected along east-west or north-south oriented lines with a line spacing of 100 m and a sample spacing of 50 m. Some samples could not be collected due to surface disturbance (logging activities, trails, swampy areas, ponds, undeveloped soil profile). A total of 203 samples were collected from Ah horizon soils (humus). Summary statistics for cobalt (Co), copper (Cu), silver (Ag), arsenic (As), nickel (Ni) and lead (Pb) are presented in Table 9.3. Plan maps showing the 2018 analytical results for cobalt (Co) copper (Cu), and silver (Ag) are presented in Figures 9.5 to 9.7.

**Table 9.2. 2017 Soil Sample Geochemistry Summary Statistics**

Statistics	Co (ppm)	Cu (ppm)	Ag (ppm)	As (ppm)	Ni (ppm)
Mean	13.61	15.06	0.27	4.02	32.00
Median	12.25	10.05	0.24	3.10	30.50
Minimum	4.28	0.90	0.09	0.40	10.90
Maximum	43.10	180.00	2.23	78.20	95.90
70 <sup>th</sup> Percentile	14.90	16.18	0.29	4.20	35.29
90 <sup>th</sup> Percentile	20.29	30.65	0.39	6.80	44.49
95 <sup>th</sup> percentile	23.47	43.93	0.48	8.60	50.26

**Table 9.3. 2018 Soil Sample Geochemistry Summary Statistics**

Statistics	Co (ppm)	Cu (ppm)	Ag (ppm)	As (ppm)	Ni (ppm)	Pb (ppm)
Mean	6.24	36.44	1.17	18.05	25.50	63.00
Median	4.40	32.10	0.93	13.40	23.20	59.80
Minimum	1.40	4.40	0.06	1.30	6.40	6.00
Maximum	98.20	240.00	5.48	290.00	88.70	199.00
70 <sup>th</sup> Percentile	5.70	42.58	1.48	18.68	29.46	82.68
90 <sup>th</sup> Percentile	10.12	64.58	2.46	30.52	40.44	122.80
95 <sup>th</sup> percentile	13.06	83.50	2.97	39.34	50.84	144.10



Figure 9.4. 2017 B Horizon Soil Geochemistry for Cobalt (Co)

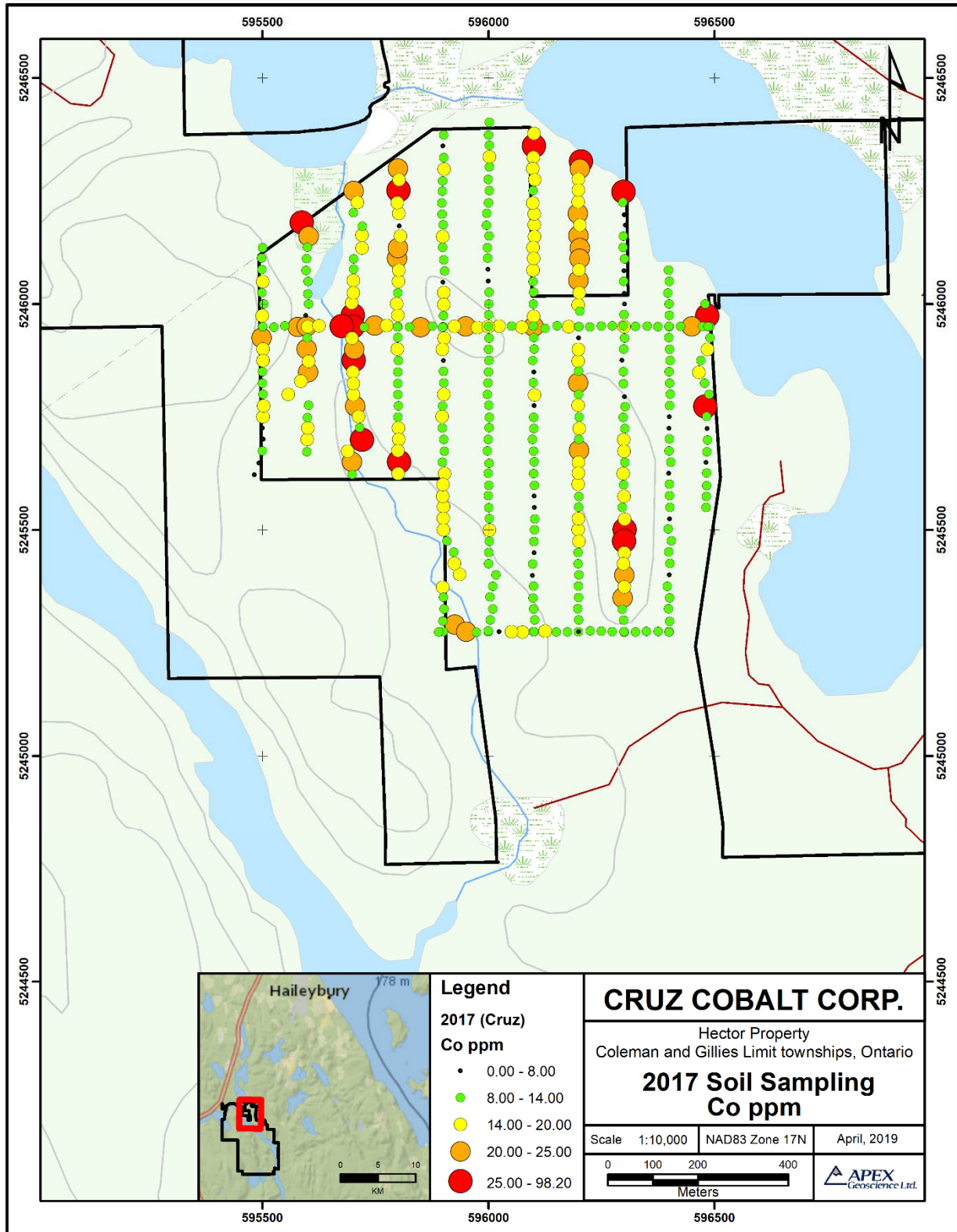


Figure 9.5. 2018 Ah Horizon Soil Geochemistry for Cobalt (Co)

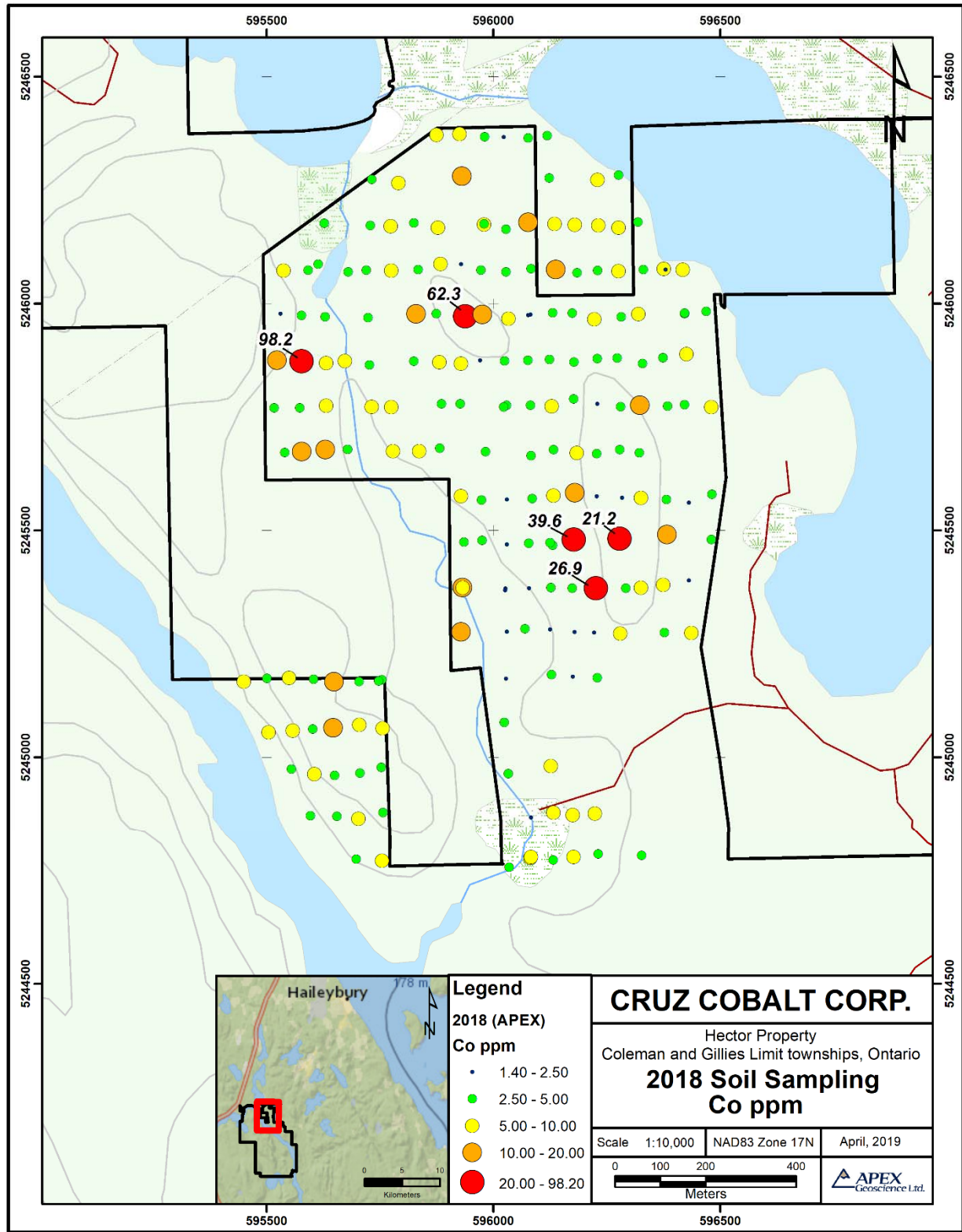


Figure 9.6. 2018 Ah Horizon Soil Geochemistry for Copper (Cu)

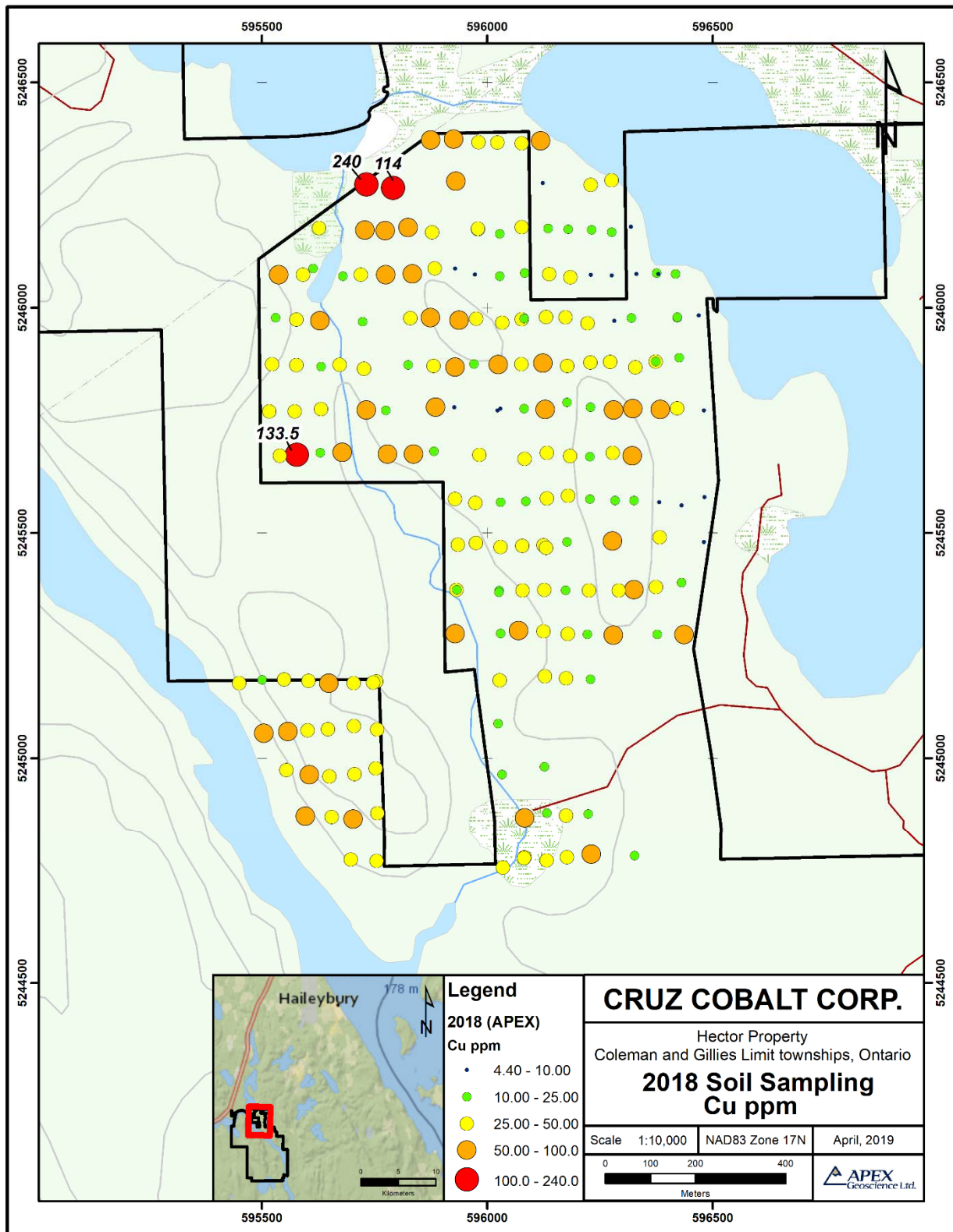
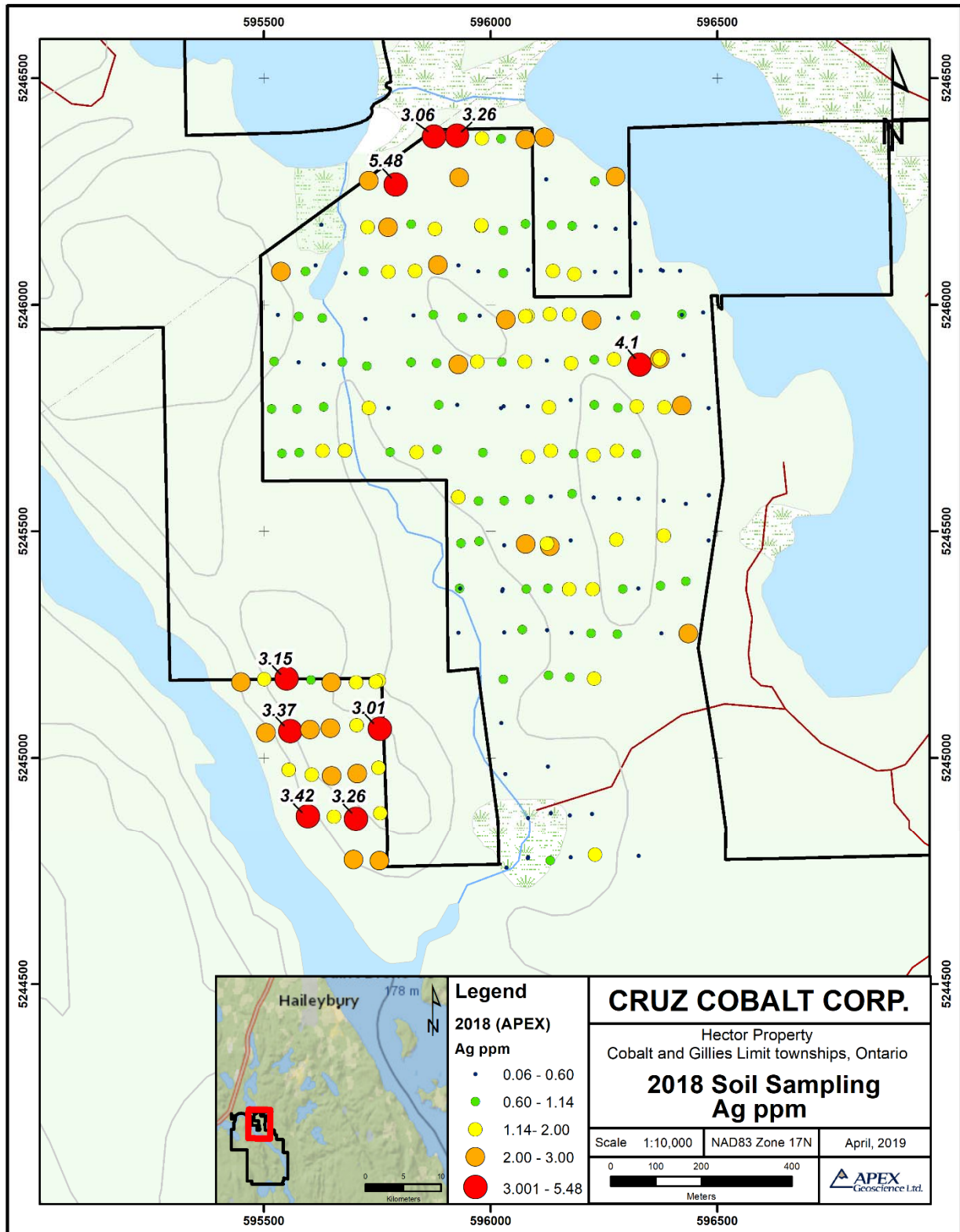


Figure 9.7. 2018 Ah Horizon Soil Geochemistry for Silver (Ag)



A total of 631 soil samples were collected during the 2017 and 2018 surveys. Soil geochemical results have defined several north-northwest trending geochemical anomalies within the Nipissing diabase in and/or near historical pits, shafts and mineralized veins. Cobalt, copper, silver anomalies are observed at the Gillies West, Gillies East and Hector. The Hector Anomaly is a 200 by 200 m soil anomaly occurring approximately 300 m northwest of the historic Hector silver mine shaft, and returned 4 samples with values greater than 25 ppm cobalt. The Gillies East Anomaly is approximately 600 m northwest of the Hector Anomaly, and returned 6 samples with values greater than 25 ppm cobalt. The Gillies West Anomaly is proximal to Gillies Creek, at the western margin of the survey area, and returned the highest cobalt value of 98 ppm.

### 9.3 2018 Rock Geochemical Survey

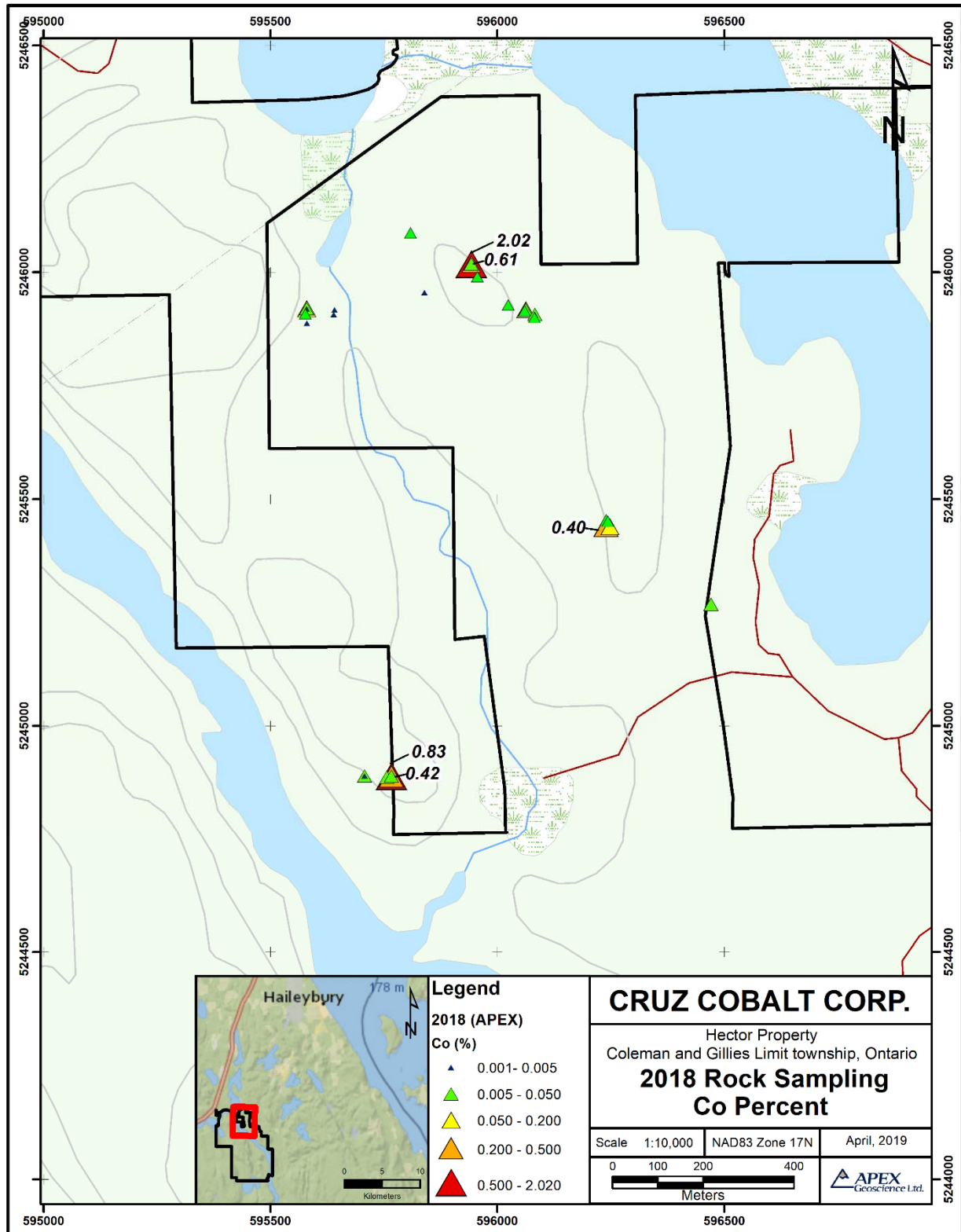
A total of 43 rock grab samples were collected during 2018 in the vicinity of Bass Lake, in the northeast part of the Hector Property. Rock samples tested historical occurrences, known pits, shafts and mineralized veins, and new sites of interest. Collected rock samples were representative of the mineralized vein systems within the property and typically found in outcrops, talus and floats.

Seven rock grab samples returned values greater than 0.1% cobalt, and up to 2.02% cobalt from the Gillies East, Gillies West and Hector anomalies. Anomalous silver (up to 13.1 ppm) and gold (up to 0.37 ppm) values were also returned (Table 9.4). Summary statistics for cobalt (Co), copper (Cu), silver (Ag), arsenic (As), gold (Au) and nickel (Ni) are presented in Table 9.5. A plan maps showing the 2018 analytical results for cobalt (Co) is presented in Figure 9.8.

**Table 9.4. 2018 Anomalous Rock Sample Results**

Sample ID	Prospect	Sample Type	Co (%)	Ag (g/t)	Au (g/t)	Cu (g/t)
2018KBP040	Gillies East	Prospect Pit Float	2.02	13.1	-	-
2018KBP042		Outcrop	0.61	4.1	-	-
2018KBP034	Gillies West	Outcrop	0.82	-	-	-
2018KBP033		Outcrop	0.42	-	-	-
18MAP075	Hector	Prospect Pit Float	0.4	0.4	-	-
18KRP601		Prospect Pit Float	0.19	-	-	-
2018KBP037	Gillies West	Prospect Pit Float	0.19	-	-	-
2018KBP061		Outcrop	-	-	0.37	-
18KRP604	Gillies East	Prospect Pit Float	-	0.5	-	0.107

Figure 9.8. 2018 Rock Geochemistry for Cobalt (Co)



**Table 9.5. 2018 Rock Sample Geochemistry Summary Statistics**

Statistics	Co (%)	Cu (%)	Ag (g/t)	Au (g/t)	Ni (%)
Mean	0.12	0.02	0.61	0.01	0.01
Median	0.01	0.01	0.10	0.00	0.01
Minimum	0.00	0.00	0.10	0.00	0.00
Maximum	2.02	0.11	13.10	0.37	0.16
70th Percentile	0.03	0.02	0.20	0.00	0.01
90th Percentile	0.41	0.05	0.94	0.03	0.04
95th percentile	0.78	0.06	3.54	0.04	0.09

The Gillies East anomaly returned the highest assay values for cobalt, silver and copper while the Gillies West anomaly have returned the highest assay value for gold. The Hector anomaly returned a moderate assay value for both cobalt and silver.

#### 9.4 2018 Ground Magnetometer Survey

A 23 line-km ground magnetic (magnetometer) survey was completed at the Hector Property as part of the 2018 exploration program between July 25<sup>th</sup>, 2018 and August 2<sup>nd</sup>, 2018. The ground magnetic survey was conducted to augment the soil sampling survey and to map the extents of the Nipissing diabase in the northwest area of the Property. The survey grid was composed of 33 traverse lines, with lines ranging in length from 215 m to 1030 m, spaced at 50 m, and oriented east-west.

##### 9.4.1 Equipment and Procedures

The ground magnetic survey was conducted on foot using a “walking” magnetometer capable of acquiring nearly continuous data. No line-cutting or grid making was required for the survey work to be completed, rather, the traverse lines were established on-the-go using handheld GPS receivers that were pre-loaded with the proposed survey line paths. The GPS operator did not use flagging tape to mark the traverse lines as the magnetometer operator was always within view of the GPS operator.

The survey was completed using a Gem Systems Inc. GSM-19W CDGPS magnetometer collecting readings of the total magnetic field in walking mode at a 1 Hz frequency. A Gem Systems GSM-19 magnetometer was set up at a fixed location near the grid to record the diurnal variation at a fixed location (base station). The base station was positioned at approximately 596699E, 5244799N.

The GSM-19W walking magnetometers have a built-in GPS receiver which is used to affix a GPS location to each magnetic intensity measurement. The station locations were recorded using NAD27 datum UTM Zone 17 projection, then immediately re-projected to NAD 83 datum UTM Zone 17 projection.

Equipment and software used:

Base Magnetometer:	GemSystem Overhauser GSM-19
Rover Magnetometer:	GemSystem Overhauser GSM-19W
Handheld GPS Receiver:	Garmin GPSmap 64
QA/QC and Processing:	Geosoft Oasis montaj

GSM-19W magnetometer specifications:

Sensitivity:	0.022 nT @ 1 Hz, (0.015 nT option)
Resolution:	0.01 nT
Absolute Accuracy:	+/- 0.1 nT
Dynamic Range:	20,000 to 120,000 nT
Gradient Tolerance:	Over 10,000 nT/m
Sampling Intervals:	60+, 5, 3, 2, 1, 0.5, 0.2 sec

Metal cultural features (cabins, metal drums, pipelines, power lines, etc.) were rarely observed in the field during the survey. A power line near traverse lines in the southern part of the block had no effect on geophysical results.

During the survey, small lakes / ponds, streams and marshy areas within the grid area were avoided and as a result, traverse lines were adjusted accordingly. The majority of traverse lines did not significantly deviate from the proposed lines, except where topography or private properties were a factor.

#### *9.4.2 Data Processing and QA/QC*

The quality of the data collected by both the base and walking magnetometers were assessed for excessive noise based on the recorded signal quality, the 4<sup>th</sup> difference noise levels, and the presence of high-frequency and high-amplitude signals in the magnetic intensity survey readings. The base magnetometer data was additionally reviewed for excessive space weather noise (due to solar events such as mass coronal ejections, etc.). The data collected by the base magnetometer was found to be sufficient for all diurnal corrections. The quality of the station coordinates recorded by the walking magnetometer was assessed for low confidence (less than 4 satellites visible to the GPS antenna) and unlikely positions (jumps in position that were not humanly possible). Poor quality data was then either removed from the database or filtered to assign more realistic station locations.

Diurnal corrections were performed by subtracting the magnetic field intensity readings recorded by the base magnetometer from the coincident magnetic field intensity readings recorded by the walking magnetometer – linear interpolation of the base magnetometer data was carried out to match the cycling rate of the walking magnetometer.



The survey was completed over multiple days, therefore an overlap line of more than 100 metres was traversed at the start and end of each day to facilitate levelling of the survey data to a common datum. To perform the levelling, the average magnetic intensity was calculated from each traverse of the overlap line, and then this value was subtracted from each corresponding dataset.

The diurnally corrected and leveled survey data was then merged into a single database; corrected and leveled data is labelled residual magnetic intensity (RMI). A simple moving window mean filter was also applied to the dataset to help smooth out high frequency noise; ideal window size was subjectively determined to be 5 to 7 readings.

Data was processed and gridded using Geosoft Oasis Montaj. The grids were created using the minimum curvature method, also called RANGRID, with 15 m cell size. GeoTIFF images of the grids was exported from Geosoft and imported into ArcGIS 10.3 to generate the geophysical survey figures for this Report.

### *9.4.3 Survey Results*

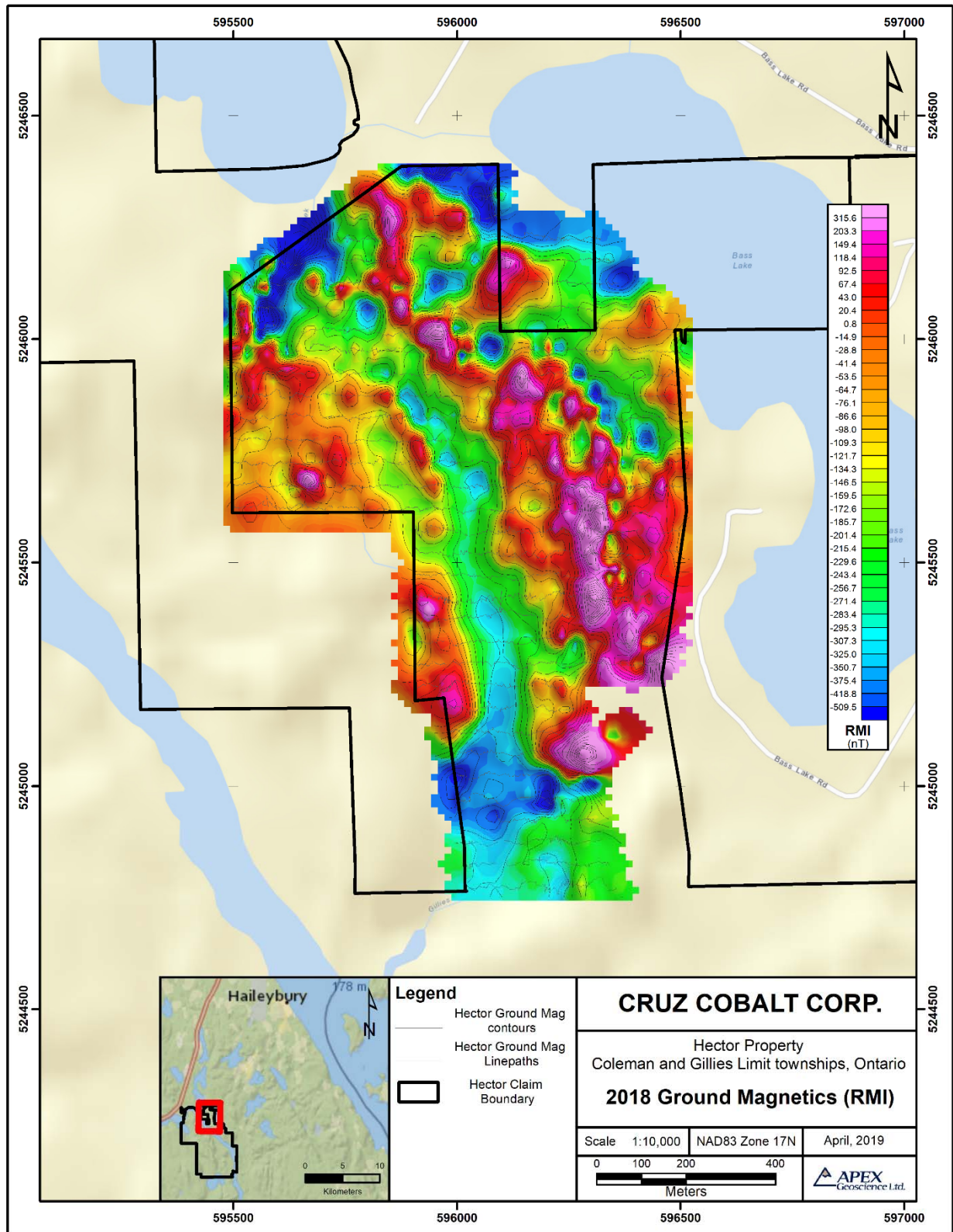
Residual magnetic intensity (RMI; Figure 9.9) and RMI first vertical derivative (1VD; Figure 9.10) data show laterally persistent linear highs and corresponding lows paralleling the structural trend at the Property. The high anomalies may represent stronger magnetic phases within the diabase complex; the magnetic lows are interpreted as structural jointing and/or localized offsets (faults).

The magnetic survey results provide a significant improvement in resolution versus the existing airborne magnetic data, defining local structural features and magnetic anomalies that may have exploration potential. Two primary anomalies of interest were identified west of Bass Lake:

- 1) A strong, arcuate, NNW-trending magnetic high anomaly at the center of the Nipissing diabase. The anomaly is most pronounced near the lower contact of the Nipissing diabase to the southeast and covers the historical Hector Silver Mine shaft (Hector Anomaly) and Gillies East.
- 2) A smaller NNW-trending anomaly to the west, proximal to the top of the sill and covering the northern part of the Gillies West anomaly.

Both anomalies are coincident with cobalt in soil anomalies from the 2017 and 2018 geochemical surveys and/or historical workings or mineral occurrences (Figure 9.11).

Figure 9.9. 2018 Ground Magnetic Survey Residual Magnetic Intensity (RMI)



**Figure 9.10. 2018 Ground Magnetic Survey Residual Magnetic Intensity First Vertical Derivative (RMI 1VD)**

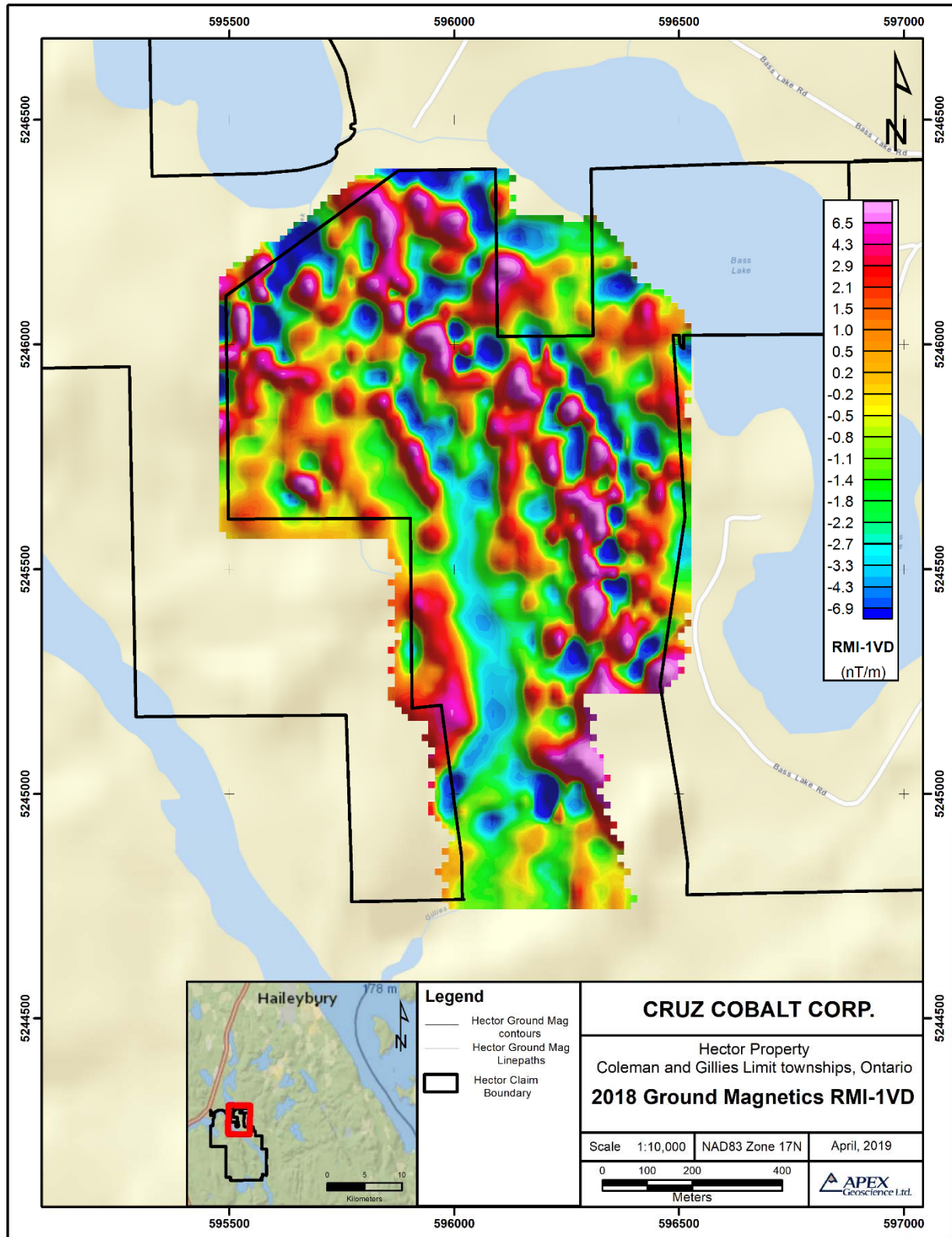
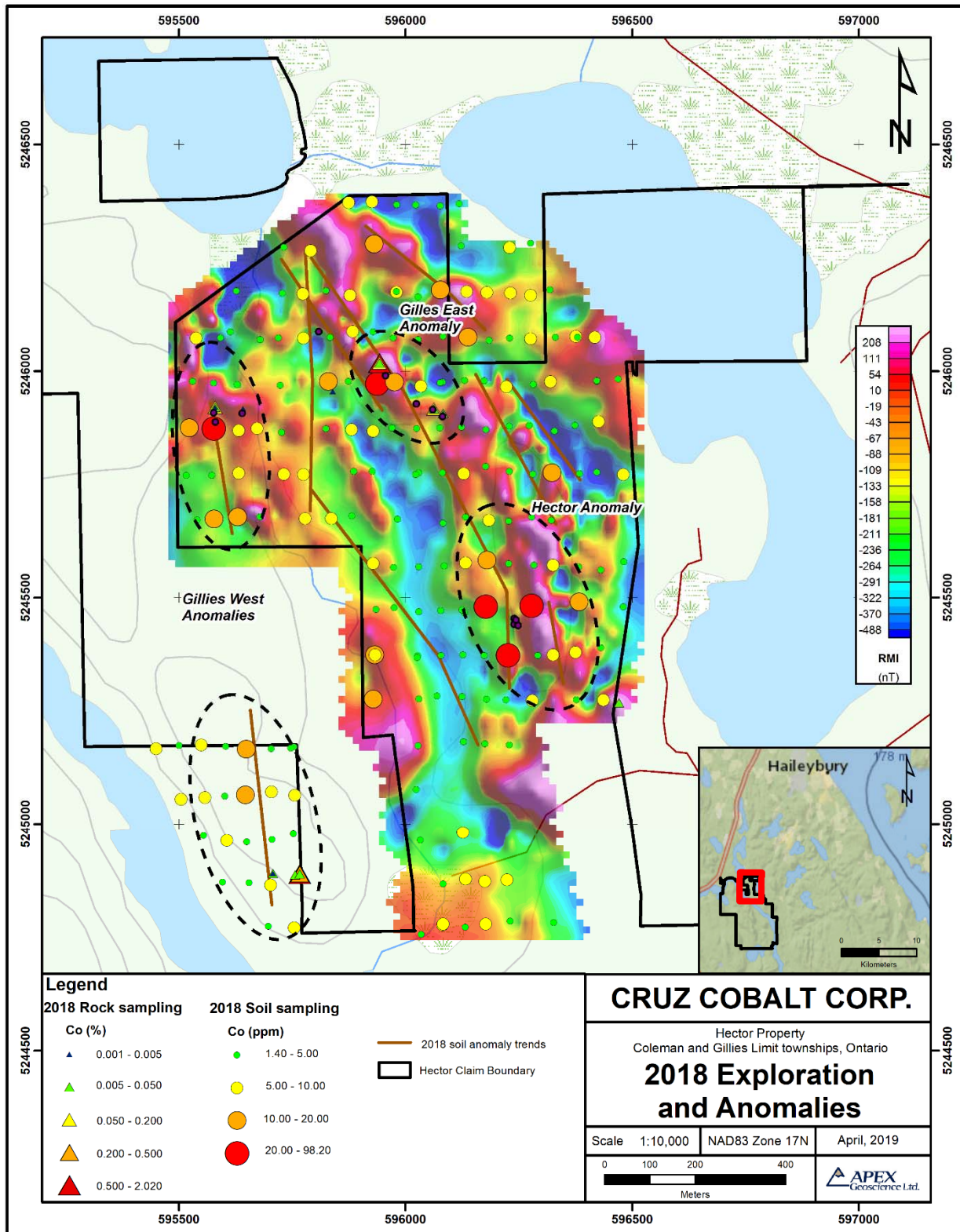


Figure 9.11. 2018 Geochemical Anomalies with Ground Magnetic Survey RMI



## 10 Drilling

In 2018, Cruz Cobalt completed a diamond drilling program at the Hector Property comprising ten NQ diameter diamond drill holes, totalling 843 m. (Table 10.1; Figure 10.1). The drilling program tested historical cobalt results, in addition to 2017 and 2018 surface geochemical anomalies and ground magnetic anomalies at the Hector and Gillies East targets. Four drill holes totalling 395 m tested the Hector anomaly, 3 holes totalling 264 m tested the Gillies East 1 anomaly, and 3 holes totalling 185 m targeted the Gillies East 2 anomaly.

**Table 10.1. 2018 Diamond Drill Hole Details**

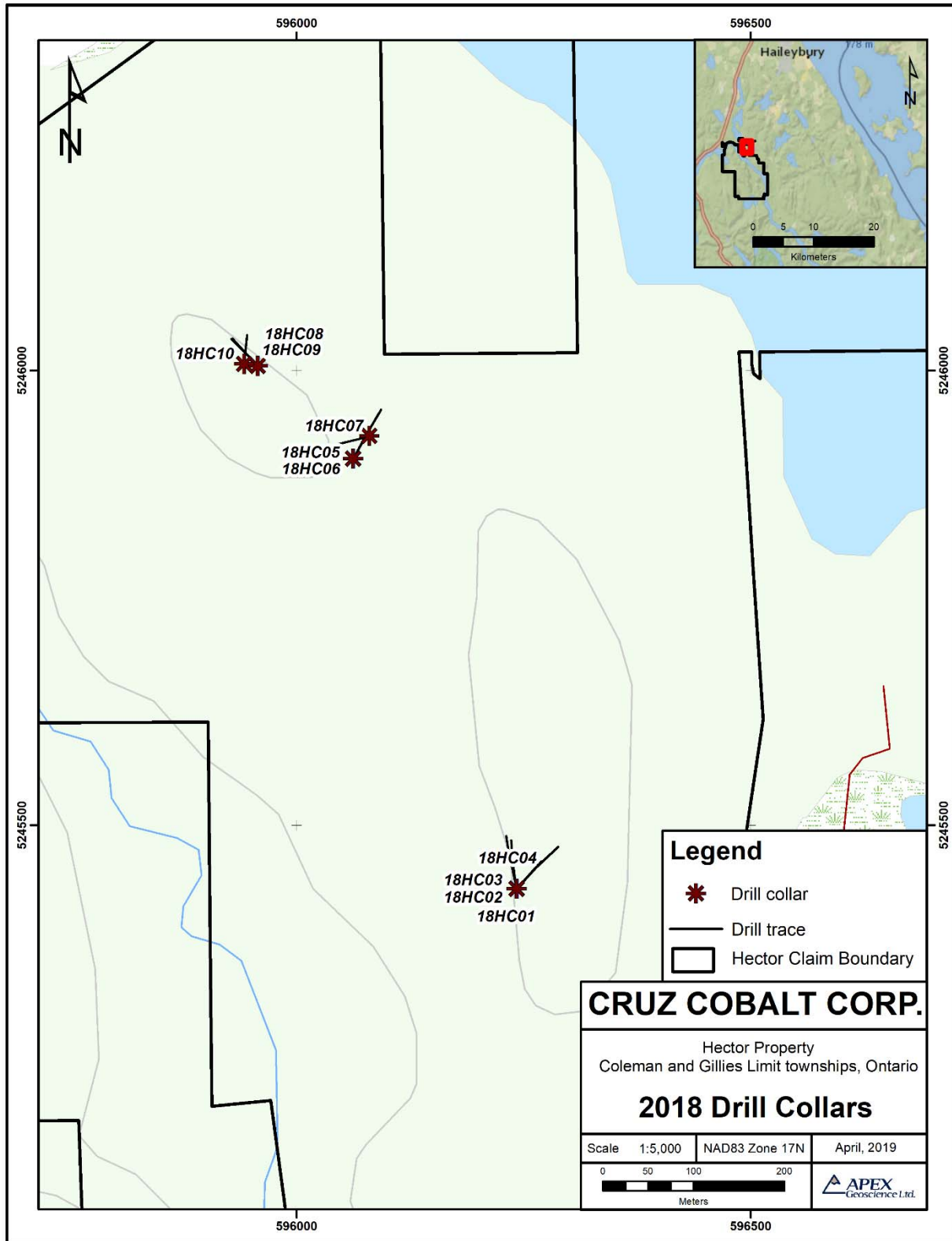
Hole ID	Easting	Northing	Elevation (m)	Azimuth	Dip	Depth (m)
18HC01	596242	5245430	294	350	-45	85.7
18HC02	596242	5245430	294	350	-60	105
18HC03	596242	5245430	294	40	-50	105
18HC04	596242	5245430	294	40	-65	99
18HC05	596062	5245903	303	30	-45	91.5
18HC06	596062	5245903	303	30	-60	98.5
18HC07	596080	5245928	294	255	-45	74
18HC08	595957	5246005	295	315	-45	59
18HC09	595957	5246005	295	315	-60	80
18HC10	595942	5246007	295	5	-45	45.5
					<b>Total:</b>	<b>843.2</b>

The drilling program was executed by APEX personnel and Vital Drilling Services of Sudbury, Ontario. Drill core logging and sampling was completed by APEX geological staff. For each drill hole, geological observations were recorded comprising lithology, mineralization, alteration, veining and structural measurements. Geotechnical data were recorded comprising core recovery, rock quality designation (RQD) and magnetic susceptibility. The drilling program was completed between October 29<sup>th</sup> and December 19<sup>th</sup>, 2018.

### 10.1.1 Hector Anomaly Results

Drill holes 18HC01 through 18HC04 targeted historical trenches and cobalt in rock and soil geochemical anomalies. All holes drilled through variable phases of the Nipissing diabase without reaching the lower contact with the Archean rocks. The holes intersected moderate to strong alteration and near surface anomalous cobalt (Co) and copper (Cu) values beneath the vertical projection of the historical trench. Mineralization was present as disseminated to clotty pyrite-chalcopyrite and is associated with moderate to intense chlorite-silica and potassic alteration of diabase host-rocks and narrow carbonate-quartz-potassium feldspar vein zones.

Figure 10.1. 2018 Diamond Drill Hole Locations



Drill hole 18HC01 returned 66 ppm Co and 132 ppm Cu over 10.88 m core length from a depth of 5.12 m. Drill holes 18HC02, 18HC03, and 18HC04 intersected a second zone of mineralization from 80 to 95 m depth. Drill hole 18HC02 returned 310 ppm Co over 1 m core length starting at a depth of 83.45 m down hole. Hole 18HC03 returned 300 ppm Cu and 90 ppm Co over 2.1 m core length starting at 93.4 m down hole, and 410 ppm Cu and 80 ppm Co over 1 m core length starting at 92 m down hole. Significant drill hole intercepts are presented in Table 10.2. Cross sections for the Hector Anomaly holes are presented in Figures 10.2 and 10.3.

**Table 10.2. 2018 Diamond Drill Hole Significant Intercepts**

Target	Drill Hole	From (m)	To (m)	Interval (m)*	Co (ppm)	Cu (ppm)	Au (ppb)	Ag (ppm)
Hector	18HC01	5.12	16	10.88	66	132	-	-
	<i>and</i>	24	25	1	110	-	-	-
	18HC02	83.45	84.45	1	310	60	-	-
	<i>and</i>	89.45	91.45	2	110	110	-	-
	<i>and</i>	94.33	95.02	0.69	130	150	-	-
	18HC03	11.8	17	5.2	-	127	-	-
	<i>and</i>	89.1	89.6	0.5	130	240	-	-
	<i>and</i>	93.4	95.5	2.1	90	300	-	-
Gillies East 1	18HC04	92	93	1	80	410	-	-
	18HC05	12	14	2	70.00	50.00	-	-
	<i>and</i>	30.8	31.3	0.5	40.00	230.00	-	-
	18HC06	10.5	15.5	5	42	162	-	-
	<i>and</i>	50	51	1	50	650	-	-
	18HC07	4.0	4.5	0.5	30.00	110.00	-	-
Gillies East 2	<i>and</i>	32	33	1	40.00	110.00	-	-
	18HC08	8	9	1	-	-	37	1.3
	<i>and</i>	18	21	3	97	57	-	-
	18HC09	18	23	5	-	472	-	-
	<i>including</i>	18	19	1	-	1420	-	-
	<i>and</i>	74.15	74.65	0.5	120	-	21	-
	18HC10	15	16	1	110	-	33	-
	<i>and</i>	18	21	3	-	283	-	-
<i>including</i>	19	20	1	-	560	-	-	

\* The true width of mineralization is estimated to be 70-80% of the drilled interval.

Figure 10.2. Drill Cross Section 18HC01 and 18HC02

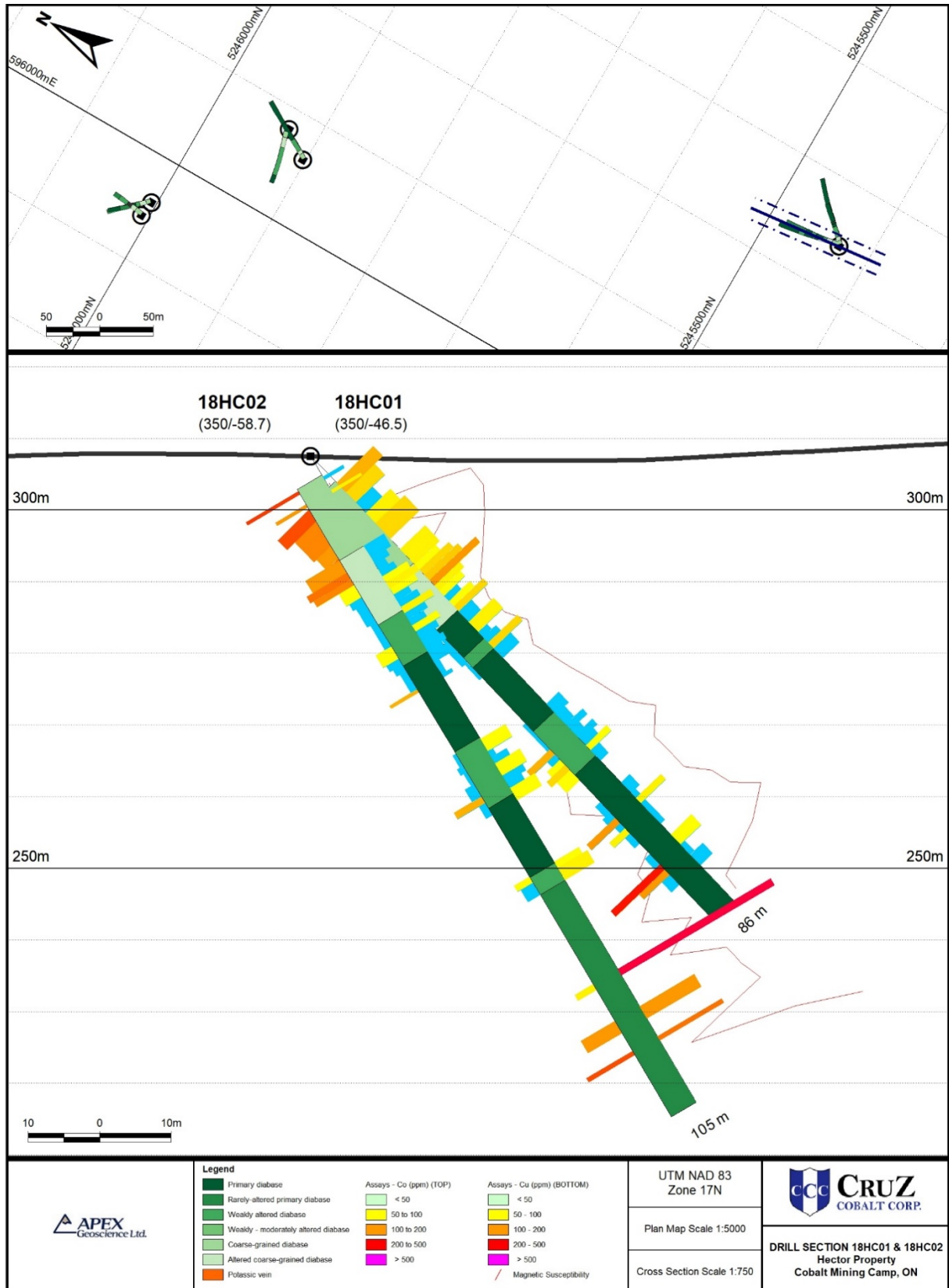
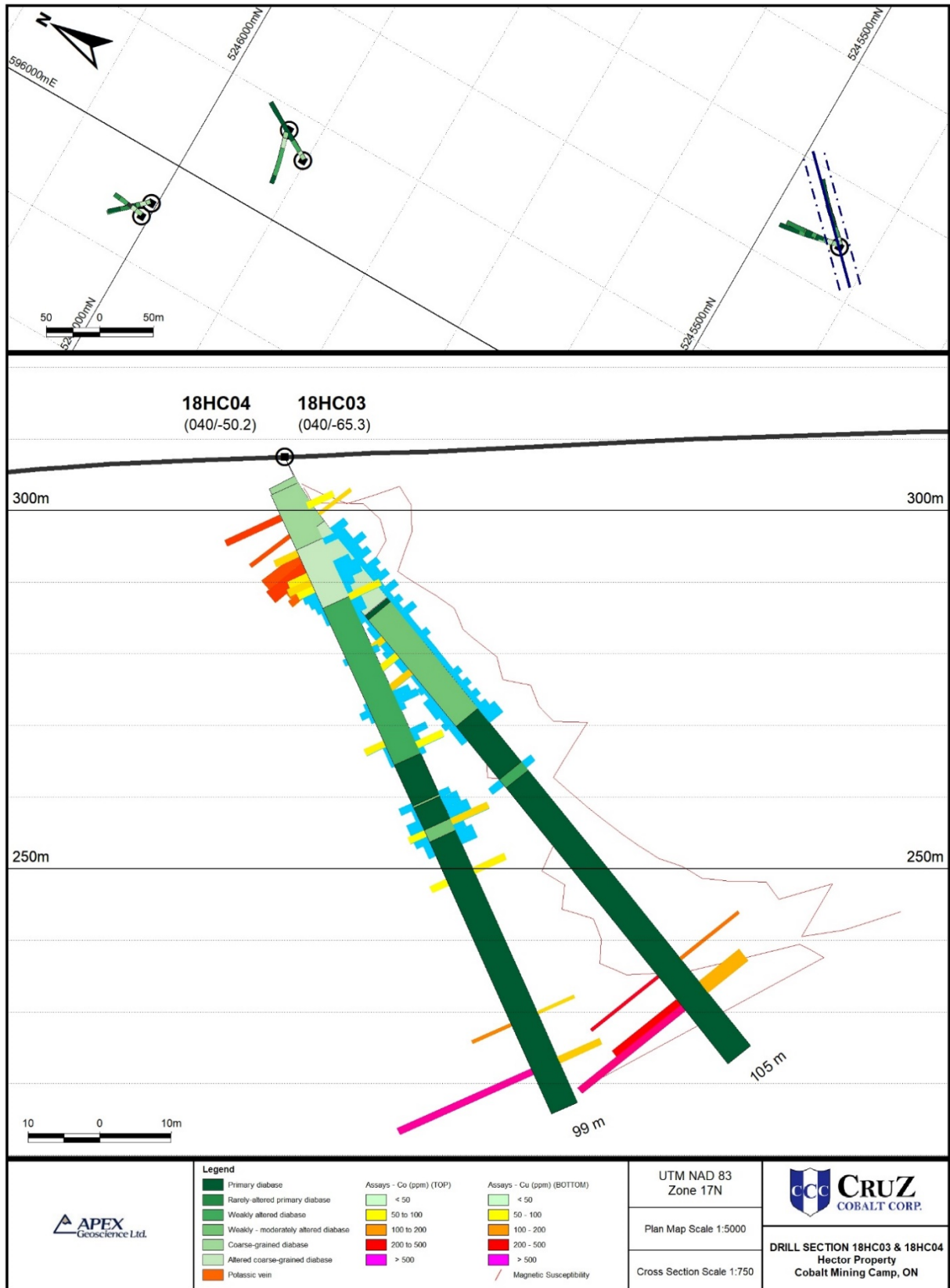




Figure 10.3. Drill Cross Section 18HC03 and 18HC04



### *10.1.2 Gillies East 1 Anomaly Results*

The Gillies East 1 target is a northwest trending, sub-vertical vein zone intermittently exposed on the surface over a 100 m strike length. It is associated with anomalous cobalt in rock and soil values. Hole 18HC06 drilled across the projected strike of the vein at a -60° dip. The drill hole intersected a broad zone of anomalous copper returning 162 ppm Cu and 42 ppm Co over 5 m core length starting at a depth of 10.5 m down hole. The zone is associated with moderate chlorite-potassic alteration and disseminated pyrite-chalcopyrite mineralization. A deeper, narrow zone of pyrite-chalcopyrite vein mineralization, coincident with the vertical projection of surface mineralization, returned 650 ppm Cu over 1 m core length starting at a depth of 50 m down hole. Drill hole 18HC05 returned 230 ppm Cu over 0.5 m starting at 30.8 m down hole. A cross section for the Gillies East 1 Anomaly holes is presented in Figure 10.4.

### *10.1.3 Gillies East 2 Anomaly Results*

The Gillies East 2 target is centred over an area of historic prospect pits and shallow vertical shafts. The previous exploration was driven by a series of narrow, northwest trending fracture-controlled pyrite-chalcopyrite-erythrite (hydrous cobalt-arsenite) mineralized potassic altered quartz veins that returned cobalt values of 2.02% and 0.61% in float and rock outcrop. Mineralization intersected in 18HC08, 18HC09 and 18HC10 is coincident with the vertical projection of the vein system and is strongly associated with moderate to intense alteration haloes surrounding carbonate-potassium feldspar-silica ( $\pm$ chlorite) veins, and clotty pyrite-chalcopyrite.

Hole 18HC08 drilled oblique across the area of the historic trenches at a -45° dip. The hole returned 97 ppm Co over 3 m core length starting at a depth of 18 m down hole, coincident with the vertical projection of surface mineralization. Hole 18HC09 drilled at a -60° dip intersected a broader zone of copper mineralization, returning 472 ppm Cu over 5 m core starting at a depth of 18 m down hole, including 0.14% Cu over 1 m. Hole 18HC10 drilled to the north at a -45° dip, and intersected the same zone returning 283 ppm Cu over 3.0 m; including 560 ppm Cu over 1 m core length starting at a depth of 18.00 m down hole. A cross section for the Gillies East 2 Anomaly holes is presented in Figure 10.5.

Figure 10.4. Drill Cross Section 18HC05, 18HC06 and 18HC07

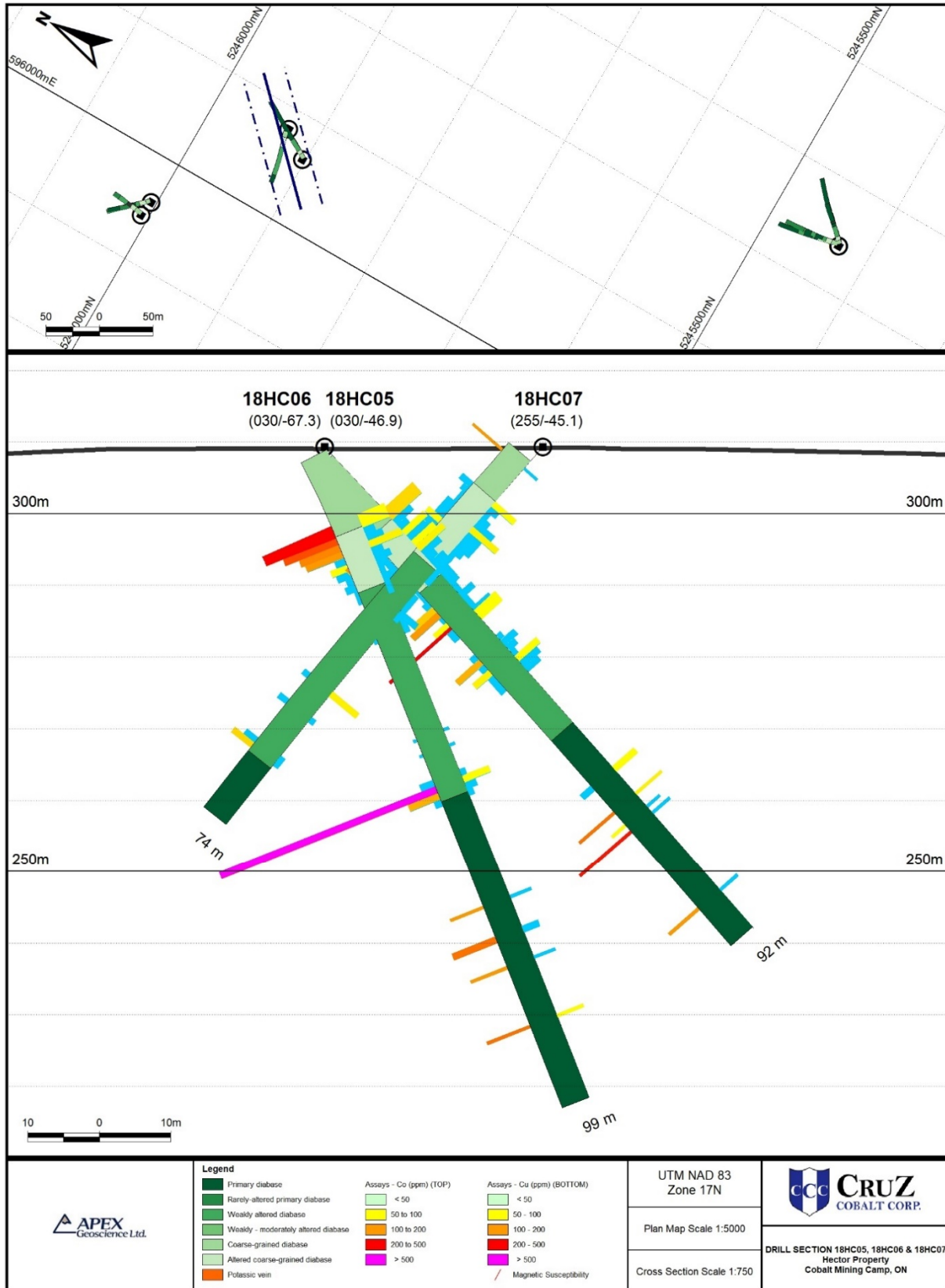
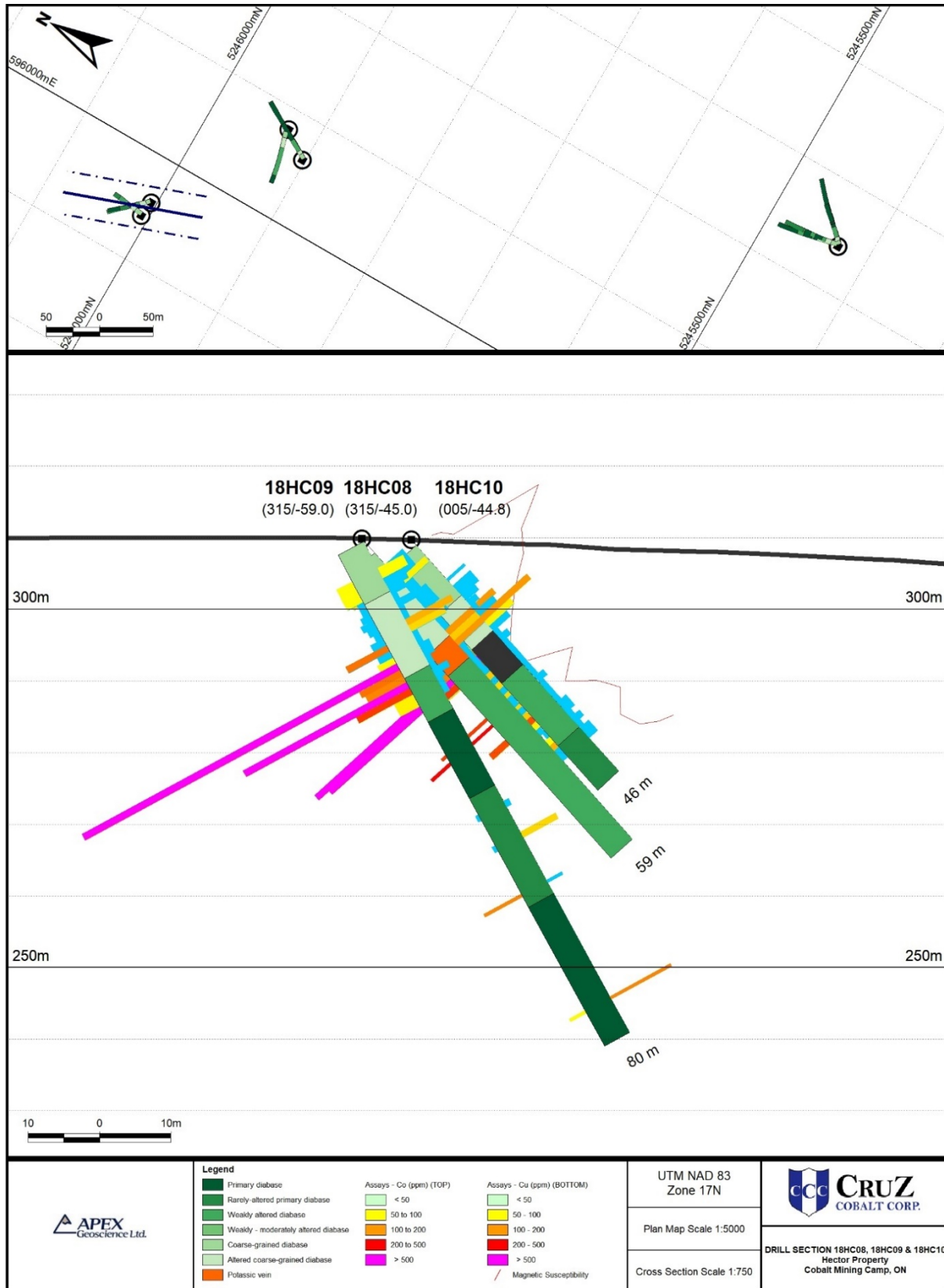


Figure 10.5. Drill Cross Section 18HC08, 18HC09 and 18HC10



## 11 Sample Preparation, Analyses and Security

### 11.1 2017 Soil Samples

#### *11.1.1 Sample Collection and Shipping*

A total of 428 soil samples were collected by Jean Marc Gaudreau at the Hector Property in 2017, primarily targeting the B horizon. A shovel or auger was used to dig a small hole to reach the B horizon. Depending on ground conditions and vegetation, the hole depth ranged from a few centimetres (cm) up to 61 cm, but was typically 10 to 12 cm. Samples weighing approximately 50 to 100 grams (g) were placed in labelled sample bags and sealed. Sample locations were recorded with a handheld GPS device and written in a notebook along with the matching sample number and a description of the sample, and later transcribed to an Excel spreadsheet. Handheld GPS devices are accurate to  $\pm 5$  m.

From the field, samples were transported to AGAT laboratories in Mississauga, Ontario for analysis. The authors of this Report consider the measures employed in the chain of custody of the samples to be sufficient for this stage of exploration.

#### *11.1.2 Sample Preparation and Analysis*

Once received by AGAT, the soil samples were dried and screened to -180 microns (80 mesh). The prepared samples were analyzed by AGAT method number 201-071 (Metals Package by 4 Acid Digest, ICP/ICP-MS Finish). A prepared sample is digested with hydrochloric, perchloric, nitric and hydrofluoric acids. The final solution is then analyzed by inductively coupled plasma mass spectrometry (ICP-MS).

#### *11.1.3 Quality Assurance and Quality Control*

For the 2017 soil sampling program, Cruz Cobalt relied on the internal quality assurance and quality control (QA/QC) measures employed by AGAT laboratories. QA/QC measures at AGAT include routine screen tests to verify crushing and pulverizing efficiency, sample preparation duplicates, and analytical quality controls (blanks, standards, and duplicates). AGAT Mississauga is certified with ISO/IEC 17025:2005 and ISO 9001:2008 accreditation from the Standards Council of Canada.

It is the authors' opinion that the sample collection, preparation, security, analytical and QA/QC measures used during the 2017 soil sampling program were adequate for this stage of exploration at the Hector Property.

## 11.2 2018 Soil Samples

### *11.2.1 Sample Collection and Shipping*

A total of 203 soil samples were collected by APEX personnel at the Hector Property in 2018, primarily targeting the Ah horizon (humus). A shovel was used to clear the sample area of surface material and dig a small hole to reach the Ah horizon. Depending on ground conditions and vegetation, the hole depth ranged from a few centimetres (cm) up to 30 cm, but was typically 4 to 6 cm. Samples weighing approximately 50 to 100 grams (g) were placed in labelled sample bags along with a sample tag inscribed with the unique sample number, and sealed. Sample locations were recorded with a handheld GPS device and on a tablet device along with the matching sample number, the date, the sampler's name and a description of the sample. Additional details, such as site disturbance, ground cover, vegetation and landform were also recorded on the tablet device. All data recorded on the tablet was later copied into an Excel spreadsheet. Handheld GPS and tablet devices are accurate to  $\pm 5$  m and  $\pm 7$  m respectively.

Soil samples were placed into woven poly (rice) bags for shipment to the analyzing laboratory. Cable ties were used to securely close the rice bags. Samples were transported by APEX personnel to the ALS geochemistry laboratory in Sudbury, Ontario for preparation. From there, the samples were transported within the ALS network to the ALS geochemistry laboratory in North Vancouver, British Columbia for analysis.

### *11.2.2 Sample Preparation and Analysis*

Once received by ALS, the soil samples were logged in to the ALS computerized tracking system, assigned bar code labels and weighed. The samples were then dried at 60°C and weighed again. Each sample was screened to -180 micron (80 mesh). The plus fraction was retained for storage and the minus fraction was split to obtain a 0.5 gram sample for analysis. All rejects were retained for storage.

The prepared samples were analyzed by ALS Geochemistry Method ME-MS41 (Ultra Trace Analysis by Aqua Regia Digestion and ICP-MS). A prepared sample (nominal 0.5 g) is digested with 75% aqua regia (3:1 ratio of HCl:HNO<sub>3</sub>) in a graphite heating block. The solution is then analyzed by inductively coupled plasma mass spectrometry (ICP-MS) with results corrected for spectral inter-element interferences.

### *11.2.3 Quality Assurance and Quality Control*

Quality assurance and quality control (QA/QC) measures at ALS include routine screen tests to verify crushing and pulverizing efficiency, sample preparation duplicates (every 50 samples), and analytical quality controls (blanks, standards, and duplicates). Quality control samples are inserted with each analytical run, with the minimum number of QC samples dependant on the rack size specific to the chosen analytical method. Results for quality control samples that fall beyond the established limits are automatically red-flagged for serious failures and yellow-flagged for borderline results. Every batch of samples is subject to a dual approval and review process, both by the individual analyst and the Department Manager, before final approval and certification. ALS Sudbury is certified with ISO/IEC 17025:2017 and ISO 9001:2015 accreditation from the Standards Council of Canada.

The QA/QC measures employed by APEX in the field during the 2018 soil sampling program comprised inserting field duplicate samples at a rate of approximately 1 duplicate per 20 samples. Duplicate sample were collected to assess the repeatability of individual analytical values. A total of 11 duplicate samples were collected and analyzed. No significant QA/QC issues were detected during review of the soil sampling data.

It is the authors' opinion that the sample collection, preparation, security, analytical and QA/QC measures used during the 2018 soil sampling program were adequate for this stage of exploration at the Hector Property.

## 11.3 2018 Rock Samples

### *11.3.1 Sample Collection and Shipping*

A total of 43 rock samples were collected by APEX personnel at the Hector Property in 2018. One representative rock sample, weighing no more than 2.5 kg, was collected from each sample site. Samples were placed in labelled sample bags along with a sample tag inscribed with the unique sample number and sealed. Sample locations were recorded with a handheld GPS device and written on a sample card bearing the matching sample number, the date and the sampler's name. Rock samples were described in terms of lithology, mineralization, alteration, mineralogy, grain size and texture. These observations were recorded on the sample card and later transcribed to an Excel spreadsheet. Handheld GPS devices are accurate to  $\pm 5$  m.

Rock samples were placed into woven poly (rice) bags for shipment to the analyzing laboratory. Cable ties were used to securely close the rice bags. Samples were transported by APEX personnel to the ALS geochemistry laboratory in Sudbury, Ontario for preparation. From there, the samples were transported within the ALS network to the ALS geochemistry laboratory in North Vancouver, British Columbia for analysis.

The authors did not have control over the rock samples at all times during transport, and therefore cannot personally verify what happened to the samples from shipping up to the time they were received by ALS. However, the authors have no reason to believe that the security of the samples was compromised in any way during transport or once they entered the ALS chain of custody.

### *11.3.2 Sample Preparation and Analysis*

Once received by ALS, the rock samples were logged in to the ALS computerized tracking system, assigned bar code labels and weighed. The samples were then dried and crushed to pass a U.S. Standard No. 10 mesh, or 2 mm screen (70% minimum pass). A 500 g split is taken and pulverized to pass a U.S. Standard No. 200 mesh, or 75 micron screen (85% minimum pass). All rejects were retained for storage.

The prepared samples were analyzed by ALS Geochemistry Methods ME-ICP81 (Cobalt, Copper and Nickel by Sodium Peroxide Fusion and ICP-AES), PGM-ICP23 (Platinum, Palladium and Gold by Fire Assay and ICP-AES, and Ag-AA45 (Silver by Aqua Regia Digestion and AAS). For ME-ICP81, a prepared sample (nominal 0.2 g) is subject to sodium peroxide fusion and analysis by inductively coupled plasma atomic emission spectroscopy (ICP-AES). For PGM-ICP23, a prepared sample (nominal 30 g) is subject to standard lead oxide collection fire assay and analysis by ICP-AES. For Ag-AA45, a prepared sample (nominal 0.5 g) is digested with 75% aqua regia (3:1 ratio of HCl:HNO<sub>3</sub>) in a graphite heating block. The solution is then analyzed atomic absorption spectroscopy.

### *11.3.3 Quality Assurance and Quality Control*

For the 2018 rock sampling program, Cruz Cobalt and APEX relied on the internal quality assurance and quality control (QA/QC) measures employed by AGAT laboratories. Quality assurance and quality control (QA/QC) measures at ALS include routine screen tests to verify crushing and pulverizing efficiency, sample preparation duplicates (every 50 samples), and analytical quality controls (blanks, standards, and duplicates). Quality control samples are inserted with each analytical run, with the minimum number of QC samples dependant on the rack size specific to the chosen analytical method. Results for quality control samples that fall beyond the established limits are automatically red-flagged for serious failures and yellow-flagged for borderline results. Every batch of samples is subject to a dual approval and review process, both by the individual analyst and the Department Manager, before final approval and certification. ALS Sudbury is certified with ISO/IEC 17025:2017 and ISO 9001:2015 accreditation from the Standards Council of Canada.

It is the authors' opinion that the sample collection, preparation, security, analytical and QA/QC measures used during the 2018 soil sampling program were adequate for this stage of exploration at the Hector Property.



## 11.4 2018 Diamond Drilling

### *11.4.1 Sample Collection and Shipping*

Ten NQ diameter diamond drill holes, totalling 843 m, were completed during the 2018 program. Once extracted, drill core was placed in wooden core boxes, sealed with wooden lids and transported to a core logging tent. For each drill hole, geological observations were recorded comprising lithology, mineralization, alteration, veining and structural measurements. Geotechnical data were recorded comprising core recovery, rock quality designation (RQD) and magnetic susceptibility. Down-hole survey directional data was collected using a Reflex EZ-Shot instrument.

A total of 292 drill core intervals were selected and sent for analysis, totalling 320.57 metres of core length. Sample lengths ranged from 0.5 m to 2.0 m, depending on the intensity of visual mineralization and alteration. The average sample length was 1.0 m. The sample intervals were marked out and tagged by APEX geologists, and the core was then photographed. Samples were sawed in half longitudinally using a core saw. For each sample, one half core was sent for analysis and the other was left in the box. Duplicate samples were cut into quarters, where one quarter of the core was used as the "original" sample and the other quarter was used as the "duplicate" sample. The remaining half core was left in the box.

Drill core samples were placed into labelled plastic sample bags along with a sample tag inscribed with the unique sample number. The samples were placed into woven poly (rice) bags for shipment to the analyzing laboratory. Cable ties were used to securely close the rice bags. Samples were transported by APEX personnel to the ALS geochemistry laboratory in Sudbury, Ontario for preparation. From there, the samples were transported within the ALS network to the ALS geochemistry laboratory in North Vancouver, British Columbia for analysis.

### *11.4.2 Sample Preparation and Analysis*

Once received by ALS, the drill core samples were logged in to the ALS computerized tracking system, assigned bar code labels and weighed. The samples were then dried and crushed to pass a U.S. Standard No. 10 mesh, or 2 mm screen (70% minimum pass). A 500 g split is taken and pulverized to pass a U.S. Standard No. 200 mesh, or 75 micron screen (85% minimum pass). All rejects were retained for storage.

The prepared samples were analyzed by ALS Geochemistry Methods ME-ICP81 (Cobalt, Copper and Nickel by Sodium Peroxide Fusion and ICP-AES), PGM-ICP23 (Platinum, Palladium and Gold by Fire Assay and ICP-AES, and Ag-AA45 (Silver by Aqua Regia Digestion and AAS). For ME-ICP81, a prepared sample (nominal 0.2 g) is subject to sodium peroxide fusion and analysis by inductively coupled plasma atomic emission spectroscopy (ICP-AES). For PGM-ICP23, a prepared sample (nominal 30 g) is subject to standard lead oxide collection fire assay and analysis by ICP-AES. For Ag-AA45, a prepared sample (nominal 0.5 g) is digested with 75% aqua regia (3:1 ratio of

HCl:HNO<sub>3</sub>) in a graphite heating block. The solution is then analyzed atomic absorption spectroscopy.

#### *11.4.3 Quality Assurance and Quality Control*

Quality assurance and quality control (QA/QC) measures at ALS include routine screen tests to verify crushing and pulverizing efficiency, sample preparation duplicates (every 50 samples), and analytical quality controls (blanks, standards, and duplicates). Quality control samples are inserted with each analytical run, with the minimum number of QC samples dependant on the rack size specific to the chosen analytical method. Results for quality control samples that fall beyond the established limits are automatically red-flagged for serious failures and yellow-flagged for borderline results. Every batch of samples is subject to a dual approval and review process, both by the individual analyst and the Department Manager, before final approval and certification. ALS Sudbury is certified with ISO/IEC 17025:2017 and ISO 9001:2015 accreditation from the Standards Council of Canada.

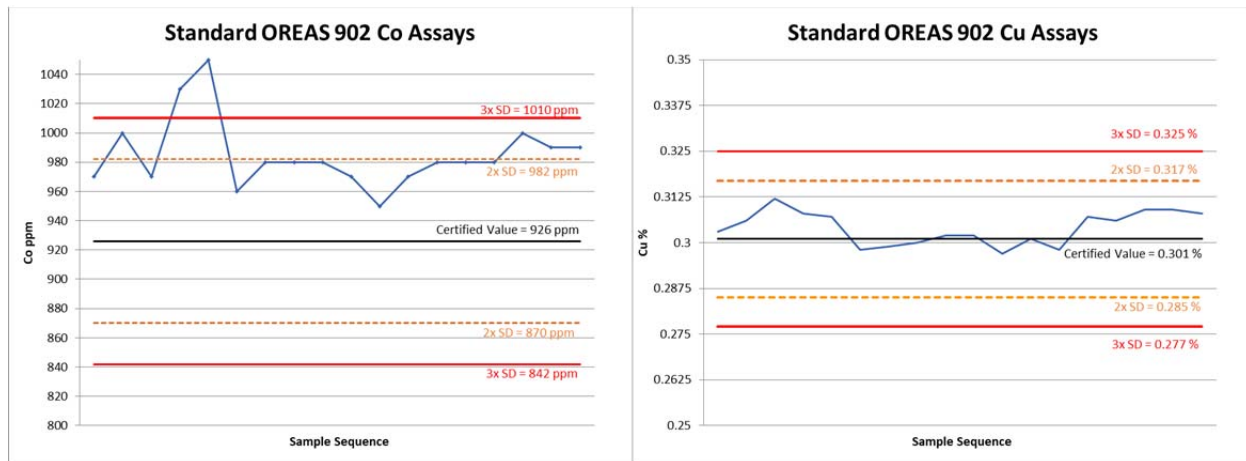
The QA/QC measures employed in the field by APEX during the 2018 diamond drilling programs comprised inserting analytical standards, blanks and duplicate samples into the sample stream, each at an approximate rate of 1 QA/QC sample per 20 samples. Standards and blanks are compared to expected values to ensure the lab results fall within the acceptable margin of error. Similarly, duplicate sample results are compared to originals to test the repeatability of lab results.

In the author's opinion, the QA/QC procedures are reasonable for this type of deposit and the current level of exploration. Based on the results of the QA/QC sampling summarized below, the analytical data is considered to be accurate; the analytical sampling is considered to be representative of the drill sample, and the analytical data to be free from contamination.

#### *Standards*

Analytical standards were inserted into the sample stream to verify the accuracy of the laboratory analysis. OREAS 902 Certified Reference Materials (CRMs) were selected for the diamond drilling program. QA/QC summary charts for cobalt and copper are presented in Figure 8.1. The charts indicate the measured values for each standard in addition to the certified value, and the second and third "between laboratory" standard deviation for cobalt (Co) and copper (Cu).

**Figure 11.1. QA/QC Analytical Standards (Co and Cu)**



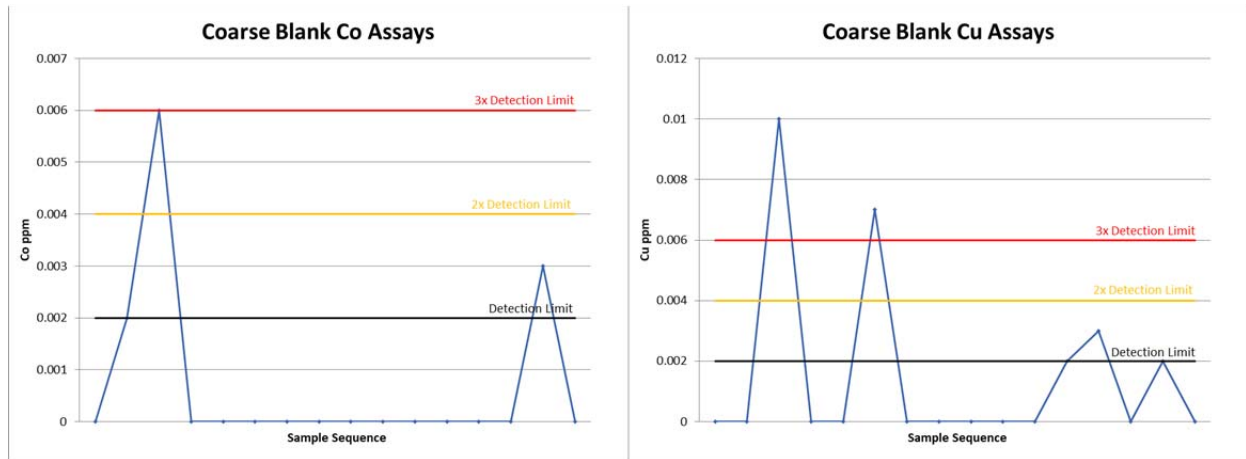
Standards are assigned a “pass” or “reviewable” status. A “reviewable” standard is defined as any standard occurring anywhere in the sample sequence returning a value greater than three standard deviations (>3SD) above or below the accepted value. QA/QC samples falling outside the established limits are flagged and subject to review and possible re-analysis, along with the 10 preceding and succeeding samples.

A total of 18 standards were inserted into the sample stream of 292 drill core samples. Two samples were considered reviewable for returning values >3SD above the certified value for Co.

### *Blanks*

Barren coarse material was used for coarse “blank” samples to monitor potential contamination during the sample preparation procedure. Analytical Solutions Ltd. (ASL) coarse silica blanks were used, sourced from Carboniferous sedimentary rocks of the Maritimes Basin in New Brunswick. QA/QC summary charts for the blanks are presented in Figure 8.2. The charts indicate the measured values for each blank in addition to the analytical method detection limit, 2x the detection, and 3x the detection limit for cobalt (Co) and copper (Cu). A blank is considered “reviewable” if it returns a value greater than 3x the detection limit of the analytical method.

**Figure 11.2. QA/QC Blank Samples (Co and Cu)**

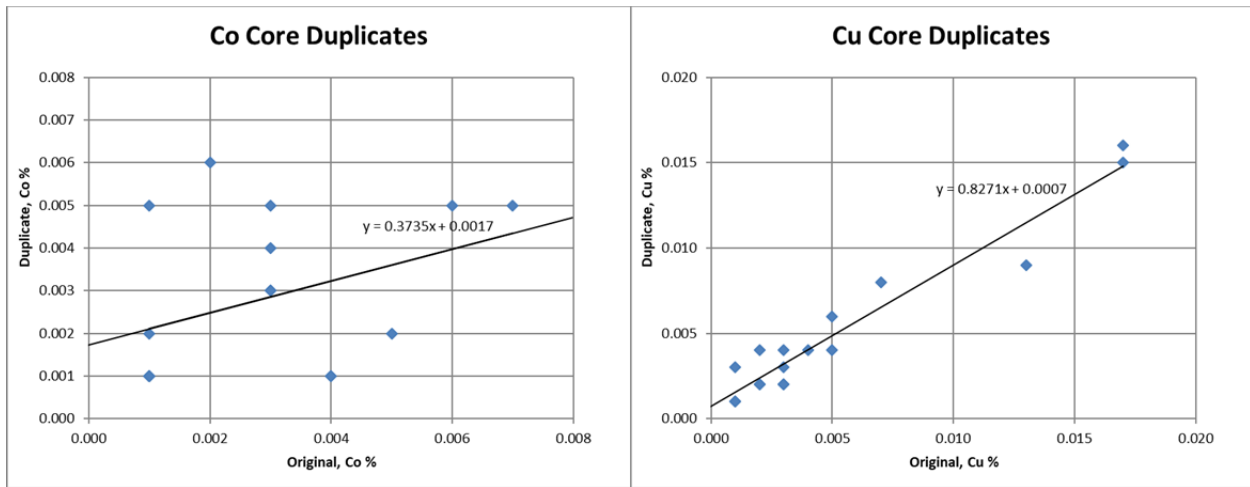


A total of 16 blanks were inserted into the sample stream of 292 drill core samples. Two samples were initially considered reviewable for returning values greater than 3x the detection limit for Cu. Upon review, the results were deemed to be acceptable. All other blanks were assigned a “pass” status according to the criteria outlined above.

### *Duplicates*

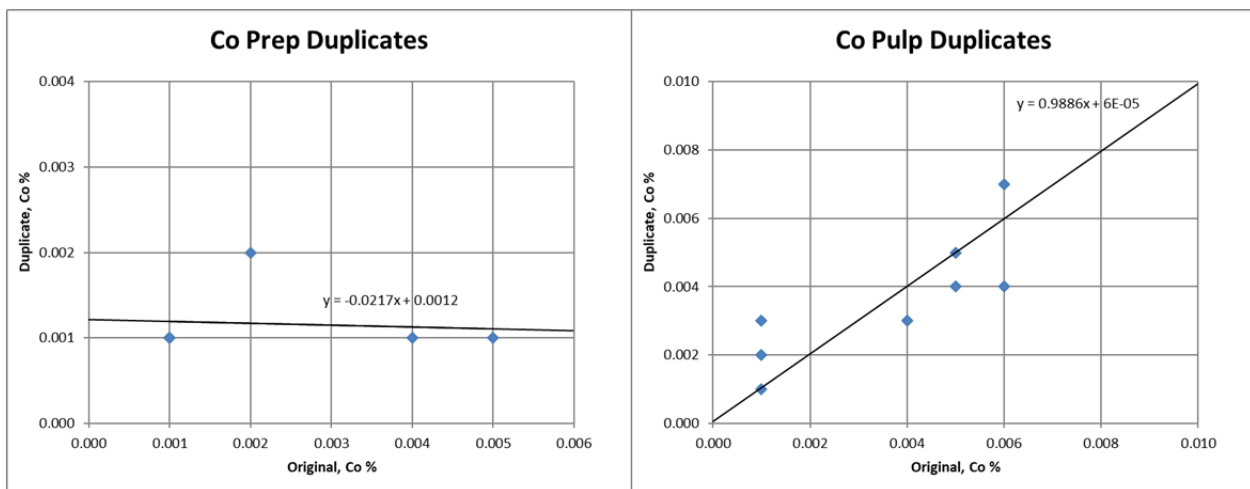
Duplicate (quartered drill core) samples were collected to assess the repeatability of individual analytical values. A total of 17 duplicate samples were collected and analyzed. Figure 8.3 shows the original versus duplicate core duplicate values for cobalt (Co) and copper (Cu). The results indicate a good overall repeatability of the copper values. This is interpreted to indicate a low “nugget” effect with respect to copper analysis. Excluding primary geological heterogeneity (quarter-core), the data show a homogenous distribution of copper values within the Hector drill core. There is a higher variability of the cobalt values, which is amplified by the generally low values returned for duplicate analysis.

**Figure 11.3. QA/QC Quartered Core Duplicate Samples (Co and Cu)**



As part of their internal QA/QC program, ALS completed routine re-analysis of prep (coarse reject) and pulp duplicates to monitor precision. Only the prep and pulp duplicates for the 2018 soil sampling program are available. ALS analyzed a total of 6 prep duplicates and 9 pulp duplicates for cobalt, for a total of 15 prep/pulp duplicates analyzed. Figure 8.4 shows the original versus duplicate prep and pulp values for cobalt (Co).

**Figure 11.4. QA/QC Prep and Pulp Duplicate Samples (Co and Cu)**



## 12 Data Verification

A site visit to the Property was completed by Mr. Raffle during October 2018. During the site visit Mr. Raffle completed traverses within the Hector Property, and visited historically documented silver-cobalt mineral occurrences throughout the Bass Lake area, collected surface rock grab samples designed to confirm the historically reported mineralization, completed ground checks of significant 2018 cobalt in soil geochemical anomalies, and reviewed and observed the proposed diamond drill sites.

Based on the results of the traverse, the author has no reason to doubt the reported exploration results. Slight variation in assays is expected however the analytical data are considered to be representative. The level of data verification adequately reflects the early stage exploration status of the Hector Property.

## 13 Mineral Processing and Metallurgical Testing

No metallurgical testing analysis has been carried out on the Property as of the Effective Date.

## 14 Mineral Resource Estimates

No mineral resource estimates are available for the Property as of the Effective Date.

## 23 Adjacent Properties

Cruz Cobalt holds 100% interest in 387 additional claims, located north of the Hector Property within a distance of 10 km. The claims are located in the Bucke, Coleman, Firstbrook, Gillies Limit, and Lorrain townships. Cruz Cobalt has focused its early exploration activities on the Hector Property since 2017 and as such, these additional claims do not currently represent a Property of material interest to Cruz Cobalt, in accordance to the guidelines set out by the NI 43-101 guidelines.

The Author has been unable to verify the following information and the information is not necessarily indicative to the mineralization on the Hector Property that is the subject of the Technical Report.

### 23.1 First Cobalt Corp.

First Cobalt Corp. ("First Cobalt") assembled a property package to facilitate an exploration program in 2018 across approximately 10,000 ha. The property package is divided into three exploration properties: the Cobalt North, Cobalt Central and Cobalt South Properties. First Cobalt carried out a drilling program on its properties in 2017, completing 61 diamond drill holes, totaling 6,361m (Faure et al., 2017).

#### *23.1.1 Cobalt North Property*

The Cobalt North Property is located 2 km to the east of the Hector Property, made up of 49 mining claims and 8 leases held by First Cobalt. Past producing mines are present in the Cobalt North area, the Silverfields, Ophir, Kerr Lake, and Lawson mines. The Silverfields mine was owned by Teck Resources Ltd., at was shutdown in 1983. Guindon et al. (2016) reported total production from 1964 to 1983 at 1,200,035 tonnes with 17,793,862 ounces of Ag, 357,501 pounds of Co, 493,255 pounds of Ni, and 238,893 pounds of Cu. Full details of the Ophir Mine are unknown. Guindon et al (2016) reported Ophir Mine production of 69 ounces of Ag in 1921. The Kerr Lake deposit was discovered in 1904 and production from the Kerr Lake Mine commenced in 1905. The mine operated intermittently until closure in 1964. From 1905 to 1956, the deposit produced 28,502,037 ounces of Ag (Cunningham, 1963). The Lawson deposit was discovered in 1905 and production commenced in 1909. At closure in 1919, a total of 4,213,553 ounces of Ag had been produced (Cunningham, 1963). Between 1922 and 1944, the Lawson Mine was operated under several leases. The mine was later re-opened in 1953 and operated through 1960 by Silver Miller Mines Ltd., however records of silver production are not available.

### *23.1.2 Cobalt Central Property*

The Cobalt Central Property is located 8 km to the southeast of the Hector Property. The Cobalt Central Property consists of 42 unpatented mining claims held by First Cobalt. One mine was operational in the Cobalt Central property, the Lang-Caswell mine. Guindon et al. (2016) reported minor production of 46.8 kg Ag and 2,237 kg Co from the mine in 1936.

### *23.1.3 Cobalt South Property*

The Cobalt South Property is located 20 km to the southeast of the Hector Property and consists of a total of 38 unpatented mining claims, 5 patented surface and mining rights, and 12 mining leases.

Three mines were historically operational on the Cobalt South Property: the Keeley Mine, Frontier Mine, and Bellellen Mine. The Keeley Mine, operated by Keeley Silver Mines, produced intermittently from 1908 to 1942. Total reported production was 12,154,353 oz Ag and 1,617,684 lbs Co. The Frontier Mine was operated by Mining Corporation of Canada Ltd. From 1921 to 1943 and produced 6,695,415 oz Ag, 1,683,796 lb Co and 12,158 lb Ni. Keeley Frontier Mines Ltd./ Canadian Keeley Mines Ltd. operated the combined Keeley and Frontier Mines from 1963 to 1965 and produced 347,645 oz Ag, 9,003 lb Co and 14,358 lb Ni. The Bellellen Mine operated between 1910 and 1943 intermittently, producing 1,182,772 g Ag, 12,930 kg Co and 6,085 kg Ni (Guindon et al., 2016).

## 23.2 Cobalt Power Group

Cobalt Power Group ("CPG") has two properties in the area of the Hector Property: The Smith Cobalt Property and the Canadian Cobalt Property. These properties were

acquired prior to Ontario's conversion to an online system for claim registration using the cell-based provincial grid.

### *23.2.1 Smith Cobalt Property*

The Smith Cobalt Property comprises 13 unpatented claims (56 units totalling approximately 880 ha) and 19 patent claims (approximately 234.3 ha), in addition to two surface rights-only patents which overlie the Smith Cobalt unpatented mining claims.

The historic Smith Mine is located within the CPG's Smith Cobalt Property, with development beginning in 1927. Approximately 4,350 km (9,570 lbs) of cobalt-mineralized rock was extracted in 1935 and additional production in 1939 and 1940 was reported to be 126 and 331 lbs, respectively (Trinder, 2018).

### *23.2.2 Canadian Cobalt Property*

The Canadian Cobalt Property comprises 57 unpatented claims (674 units totalling approximately 10,784 ha), and one mining lease (approximately 15 ha).

The Wettlaufer mine lies partially outside CPG's mining lease. A total production of 7,989 oz of silver was reported in 1918 (Trinder, 2018).

## **24 Other Relevant Data and Information**

The author has not identified any other relevant data or information that is required to summarize the exploration status of the Hector Property. All relevant data and information regarding the Property have been disclosed under the relevant sections of this Technical Report.

## **25 Interpretation and Conclusions**

### **25.1 Results and Interpretations**

This Technical Report was prepared by APEX to present the Hector Property for Cruz Cobalt, the issuer. Cruz Cobalt acquired the project in August 2016 and currently holds 100% ownership of the 126 mining claims, totalling 2,243 ha, which are active and in good standing.

The Hector Property is an early stage exploration project with historical development and small-scale production in the 1920s and early 1930s that yielded mineralized rock containing silver and cobalt. The Property is located within the Cobalt Embayment, associated with the structurally significant Montreal River fault system. The Cobalt Embayment is recognized for its occurrence of and potential to host arsenide silver-cobalt vein deposits.



The majority of mineral occurrences with the Hector Property consist of narrow fracture controlled northwest-southeast, or northeast-southwest striking, sub-vertical to steeply dipping, quartz-carbonate-potassium feldspar veins containing variable percentages of disseminated to clotted pyrite, chalcopyrite, pyrrhotite, and erythrite (hydrated cobalt arsenate) mineralization. Veins range in width from less than 5 cm up to 25 cm in width. The majority of historically reported mineral occurrences are represented by one or more shallow prospect pits and trenches, or water-filled shafts.

The results of the 2017 and 2018 soil and rock geochemical campaigns have defined cobalt in soil and rock anomalies west of Gillies Creek that warrant follow-up exploration. Airborne and ground magnetic geophysical surveys reveal diabase sills present strong positive magnetic anomalies in comparison to Archean basement. Internal magnetic variation of the diabase sill, which comprises one or more parallel linear or sinuous magnetic trends, indicates it is a multi-phase composite intrusion. Locally

The results of 2018 diamond drill testing of the Hector and Gillies east targets were disappointing, however the area tested represents only approximately 10% of the total Hector Property. Importantly, given the reconnaissance nature of the 2018 diamond drill program, no drill hole pierced lower contact of the diabase into the underlying Coleman Member and/or Archean basement. Surface soil and rock geochemical anomalies and cobalt in diamond drill intercepts returned from the Bass Lake area are interpreted to represent high-level expressions of potential Archean unconformity-associated silver-cobalt vein mineralization; the geologic setting from which the majority of historic Cobalt Camp silver production occurred.

The distribution of historic mineral occurrences throughout the Hector Property is coincident with interpreted structural lineaments within the Nipissing Diabase sill, for example between the Williamson to Brewster occurrences, and in the case of the Bass Lake area showings they appear to be locally spatially associated with the margins of a relatively more magnetic phase of the diabase. The majority of historic silver-cobalt vein showings within the Hector Property occur within the Nipissing Diabase, and are spatially related to one of two parallel northwest trending structural lineaments coincident with the trace of the Kelvin Lake fault, and an interpreted Archean basement topographic high and anticlinal fold axis subparallel to the Montreal River fault. In the area east of the Montreal River there is a close spatial relationship between Archean volcanic, basal Coleman Member sediments and diabase rocks, which is considered highly prospective within the context of the silver-cobalt arsenide vein deposit model.

Additional follow-up exploration within both the Kelvin Lake and Montreal River fault and anticline areas are warranted where a close spatial relationship between the Archean-Huronian unconformity and diabase sill is predicted by prior geologic mapping.

## 25.2 Risks and Uncertainties

The Property is subject to the typical external risks that apply to all mining projects, such as changes in metal prices, availability of investment capital, changes in government regulations, community engagement and general environmental concerns.

There is no guarantee that further diamond drilling of soil, rock, and geophysical anomalies will result in the discovery of additional silver-cobalt mineralization, definition of a mineral resource, or an economic mineral deposit. However, in the Author's opinion there are no significant risks or uncertainties that could reasonably be expected to affect the reliability or confidence in the presently available exploration information with respect to the Hector Property.

## 26 Recommendations

Based on the presence of silver-cobalt arsenide vein intersects in drill core and numerous historic occurrences, airborne and ground magnetic geophysical anomalies, cobalt and silver in rock and soil geochemical anomalies, and favourable geology; the Hector Property is of a high priority for follow-up exploration.

The 2019 exploration program should include but not be limited to:

**Phase 1:** A surface exploration program of rock and soil geochemical sampling, ground magnetic surveys, and geologic mapping designed to evaluate the silver-cobalt arsenide vein potential of the Kelvin Lake and Montreal River fault zones. Geologic mapping should focus on defining the geometry of the Nipissing Diabase sills, and on identifying areas with the potential to host Coleman Member sediments overlain by diabase; in particular in proximity to exposed Archean basement and the Huronian unconformity in the Montreal River area. The results of geologic mapping should be used to prioritize rock, soil and ground magnetic surveys over geologically perspective targets.

**Phase 2:** The Phase 2 exploration is contingent on the results of the Phase 1 exploration. Diamond drilling of approximately 10 holes totaling 2,000 m designed to test priority targets defined by the Phase 1 exploration. The estimated cost to complete the Phase 2 exploration is \$500,000.00 (Table 26.1).

**Table 26.1. Recommended 2019 Budget for Hector Property**

<b><u>Budget Item</u></b>	<b><u>Estimated Cost</u></b>
<b><u>Soil and Rock Geochemical Sampling, Ground Magnetic Survey, Geologic Mapping (4 weeks)</u></b>	
PHASE 1:	
Salaries Field - Senior Supervision, 2 Project Geologists and 2 Field Assistants for 30 days	\$55,000.00
Flights/Accommodations and Meals	\$10,000.00
Fuel (gas, diesel)	\$1,000.00
Field Rentals – magnetometer, laptop/software, GPS, sample bags, etc.	\$5,000.00
Truck rental	\$4,000.00
Analytical (50 rocks, 500 soils)	
Rock Samples - ALS (PREP-31, ME-MS61) Soil Samples - ALS (PREP-41, ME-MS41L)	\$20,000.00
Miscellaneous Field Supplies - fuel, field supplies, freight	\$2,000.00
Office and Logistics	\$3,000.00
<b>TOTAL PHASE 1:</b>	<b>\$100,000.00</b>
PHASE 2: : (Contingent on the results of Phase 1) Diamond drilling of priority targets (2000 metres @ \$250/metre all up)	<b>\$500,000.00</b>
<b>Total Project Costs, Excluding GST</b>	<b>\$600,000.00</b>

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## 28 Certificate of Author

I, Kristopher J. Raffle, residing in Vancouver British Columbia, do hereby certify that:

1. I am a Principal of APEX Geoscience Ltd., located at 410-800 West Pender Street, Vancouver, British Columbia, Canada.
2. I am the author of this Technical Report entitled: "NI 43-101 Technical Report on the Hector Property", dated April 25, 2019 (the "Technical Report"). I am a graduate of The University of British Columbia, Vancouver, British Columbia with a B.Sc. in Geology (2000) and have practiced my profession continuously since 2000. During April 2013, I visited the Hector Property on behalf of Cruz Cobalt Corp. I have supervised numerous exploration programs specific to Archean lode gold and low sulphidation epithermal gold-silver deposits having similar geologic characteristics to the Hector Property throughout British Columbia, Manitoba, Ontario and Nunavut, Canada, and Mexico. I am a Professional Geologist registered with APEGBC (Association of Professional Engineers and Geoscientists of British Columbia) and I am a 'Qualified Person' in relation to the subject matter of this Technical Report.
4. I visited the Property that is the subject of this Report on October 2-3, 2018.
5. I am responsible for all sections of the Technical Report
6. I am independent of the Cruz Cobalt Corp., applying all of the tests in section 1.5 of National Instrument 43-101. I have not received, nor do I expect to receive, any interest, directly or indirectly, in Cruz Cobalt Corp. I am not aware of any other information or circumstance that could interfere with my judgment regarding the preparation of the Technical Report.
7. I have read and understand National Instrument 43-101 and Form 43-101 FI and the Report has been prepared in compliance with the instrument.
8. To the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
9. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this April 25, 2019

Vancouver British Columbia, Canada

*"Signed"*

Kristopher J. Raffle, B.Sc., P.Geo.