NI 43-101 Technical Report

MINERAL RESOURCE ESTIMATE FOR THE **CHEECHOO PROJECT**

Eeyou Istchee James Bay, Québec, Canada

Prepared for:

Sirios Resources Inc.

SIRIOS

By qualified persons:

Pierre-Luc Richard, P. Geo. ..... BBA Inc.
Jorge Torrealba, P. Eng. .... BBA Inc.
Dario Evangelista, P. Eng......... BBA Inc.

BBA

Effective Date: December 6, 2019
Signature Date: January 24, 2020

DATE AND SIGNATURE PAGE

This report is effective as of the 6th day of December 2019.

"Signed and sealed original on file"	*January 24, 2020*
Pierre-Luc Richard, P. Geo. BBA Inc.	Date

"Signed and sealed original on file"	*January 24, 2020*
Jorge Torrealba, P. Eng., Ph.D. BBA Inc.	Date

"Signed and sealed original on file"	*January 24, 2020*
Dario Evangelista, P. Eng.. BBA Inc.	Date

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CERTIFICATE OF QUALIFIED PERSON

Pierre-Luc Richard, P. Geo.

This certificate applies to the NI 43-101 Technical Report and Mineral Resource Estimate for the Cheechoo Project, in Eeyou Istchee James Bay Québec, Canada, prepared for Sirios Resources Inc. (Sirios) issued on January 24, 2020 (the "Technical Report"), and effective as of December 6, 2019.

I, Pierre-Luc Richard, P. Geo., do hereby certify that:

1. I am a Principal Geologist with BBA Inc. located at 2020 Robert-Bourassa Blvd, Suite 300, Montréal, Québec, Canada, H3A 2A5.
2. I am a graduate of Université du Québec à Montréal in Resource Geology in 2004. I also obtained a M.Sc. from Université du Québec à Chicoutimi in Earth Sciences in 2012.
3. I am a member in good standing of the Ordre des Géologues du Québec (OGQ Member No. 1119), the Association of Professional Geoscientists of Ontario (APGO Member No. 1714), and the Northwest Territories Association of Professional Engineers and Geoscientists (NAPEG Member No. L2465).
4. I have worked in the mining industry for more than 15 years. My exploration expertise has been acquired with Richmont Mines Inc., the Ministry of Natural Resources of Québec (Geology Branch), and numerous companies through my career as a consultant. My mining expertise was acquired at the Beaufor mine and several other producers through my career. I managed numerous technical reports, mineral resource estimates and audits as a consultant for InnovExplo from February 2007 to March 2018 and as a consultant for BBA since.
5. I have read the definition of "qualified person" set out in NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am author and responsible for the preparation of this Technical Report except for Chapter 13 and Section 14.9.
8. I have visited the Cheechoo Property on October 10 to 15, 2019 and the core cutting and storage facility on September 16, 2019, and on other occasions during the course of this mandate.
9. I have had no prior involvement with the property that is the subject of the Technical Report, except for authoring Technical Reports in the past.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading

Signed this 24th day of January 2020.

"Signed and sealed original on file"

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Jorge Torrealba, P. Eng.

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I, Jorge Torrealba, P. Eng., Ph.D. (APEGNB no. M7957), do hereby certify that:

1. I am employed as an engineer by and carried out this assignment for BBA Inc. – Consulting Firm in Engineering, located at 2020 Robert-Bourassa Blvd., Suite 300, Montréal, Québec, Canada, H3A 2A5.
2. I graduated with a B.Eng. and M.Sc. in Metallurgy from Santiago de Chile University (Santiago, Chile) in 1998. I obtained a Ph.D. degree in Metallurgy from McGill University (Montreal, Quebec) in 2005.
3. I am a member in good standing of the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB licence No. M7957) and a member of the Canadian Institute of Mining Metallurgy and Petroleum.
4. I have worked as an engineer for a total of twenty two (22) years since graduating from University in 1998. My expertise in Mineral processing has been acquired with Santiago de Chile University in Chile, with Chile University in Chile, with McGill University in Quebec. I have been a consulting process engineer for BBA Inc. since February 2005.
5. I have read the definition of "qualified person" set out in NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am author and responsible for Chapter 13 of the Technical Report.
8. I have not visited the Cheechoo Property that is the subject of the Technical Report.
9. I have had no prior involvement with the properties that are the subject of the Technical Report.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
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Signed this 24th day of January 2020.

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Dario Evangelista, P. Eng.

This certificate applies to the NI 43-101 Technical Report and Mineral Resource Estimate for the Cheechoo Project, in Eeyou Istchee James Bay Québec, Canada, prepared for Sirios Resources Inc. (Sirios) issued on January 24, 2020 (the "Technical Report"), and effective as of December 6, 2019.

I, Dario Evangelista, P. Eng., do hereby certify that:

1. I am a Mining Engineer with BBA Inc. located at 2020 Robert-Bourassa Blvd, Suite 300, Montréal, Québec, Canada, H3A 2A5.
2. I am a graduate of McGill University with a bachelor's degree in Mining Engineering obtained in 2009.
3. I am a member in good standing of the Ordre des ingénieurs du Québec (OIQ Member No. 5011259).
4. I have worked in the mining industry for more than 10 years. My relevant experience includes working for several mining operations and as a consultant on numerous mining projects. I have participated in the production of several NI 43-101 technical reports.
5. I have read the definition of "qualified person" set out in NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am author and responsible for the preparation of Section 14.9.
8. I have not visited the Cheechoo Property that is the subject of the Technical Report.
9. I have had no prior involvement with the properties that are the subject of the Technical Report.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading

Signed this 24th day of January 2020.

"Signed and sealed original on file"

Dario Evangelista, P. Eng.
BBA Inc.

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TABLE OF ABBREVIATIONS	
Abbreviation	**Description**
3D	Three dimensional
a	Annum (year)
AA	Atomic absorption
Ag	Silver
Ai	Abrasion index
ALS	ALS Minerals
As	Arsenic
Au	Gold
B	Billion
BBA	BBA Inc.
Bi	Bismuth
BWi	Bond work index
C	Carbon
Ca	Calcium
CAD or $	Canadian dollar (examples of use: CAD2.5M / $2.5M)
CaO	Calcium oxide (lime)
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CO_2	Carbon dioxide
conc.	Concentrate
CRM	Certified reference material
Cu	Copper
CWi	Crusher work index
DDH	Diamond drillhole
DGPS	Differential Global Positioning Systems
DWT	Drop weight test
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
et al.	and others
FA	Fire assay
FS	Feasibility study
GEMS	Geovia GEMS software
GRG	Gravity recovery gold
HCN	Hydrogen cyanide
HLEM	Horizontal loop electromagnetic
HQ	HQ- Caliber drillhole

TABLE OF ABBREVIATIONS	
Abbreviation	**Description**
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ID^2	Inverse distance square
IP	Induced Polarization
JBNQA	James Bay and Northern Quebec Agreement
K	Potassium
K_{80}	80% passing – Particle size
KNA	Kriging neighbourhood analysis
LOM	Life of mine
M	Million
m.a.s.l.	Metres above sea level
Ma	Mega annum (Million years)
MELCC	*Ministère de l'Environnement et Lutte contre les changements climatiques*
MERN	*Ministère de l'Énergie et des Ressources naturelles*
Mg	Magnesium
MRE	Mineral Resource Estimate
MS	Metallic sieve (method)
Na	Sodium
NaCN	Sodium cyanide
NaOH	Sodium hydroxide
Ni	Nickel
NN	Nearest neighbour
No.	Number
NQ	NQ- Caliber drillhole
NSR	Net smelter return
NTS	National topographic system
OK	Ordinary kriging
OREAS	Ore Research & Exportation Pty Ltd. Assay Standards
P_{80}	80% passing - Product size
Pb	Lead
PEA	Preliminary economic assessment
pH	Potential of hydrogen
QA/QC	Quality Assurance / Quality Control
QP	Qualified person
RF	Revenue Factor
RIRGS	Reduced Intrusion-Related Gold System
RQD	Rock Quality Designation
RWi	Rod work index

TABLE OF ABBREVIATIONS	
Abbreviation	**Description**
SD	Standard deviation
SEDAR	System for electronic document analysis and retrieval
SG	Specific gravity
SMC	SAG mill comminution
Te	Tellurium
USD or US$	United States dollar (examples of use: USD2.5M / US$2.5M)
UTM	Universal Transverse Mercator
vs	Versus
WOL	Whole ore leach
y	Year (365 days)
W	Tungsten
Zn	Zinc

TABLE OF ABBREVIATIONS – UNITS OF MEASURE	
Unit	**Description**
Imperial	
ac	acre
deg. or °	angular degree
B	Billion
Btu	
ft^2	square feet
ft^2/d	square feet per day
ft^3	cubic feet
ft^3/h	cubic feet per hour
cfm	cubic feet per minute
d	day (24 hours)
°F	Degrees Fahrenheit
Ø	diameter
ft	feet (12 inches)
ft/d	feet per day
ft/s	feet per second
ft/s^2	feet per second squared
gal	gallon
gpm	gallons (US) per minute
gal/h	gallons per hour
ha	Hectare
hp	horsepower
h	hour (60 minutes)
in. or ”	inch
in. Hg	inches of mercury
in. WC	inches Water Column
in^2	square inch
K	Thousand (000)
k	Kips
k/ft^2	kips per square foot
lb	pound
lb/ft^3	pounds per cubic foot
lb/gal	pounds per gallon
lb/h	pounds per hour
lb/min	pounds per minute
lb/lb	pounds per pound
lb/t	pounds per tonne

TABLE OF ABBREVIATIONS – UNITS OF MEASURE	
Unit	**Description**
Imperial	
mi.	miles
mph	miles per hour
M	Million
MBtu	Million British thermal units
Mgal/d	Million gallons per day
mesh	US Mesh
min	minute (60 seconds)
mil	one thousandth of an inch
oz	Troy ounce
oz/t	Troy ounces per tonne
oz/y	Troy ounces per year
ppm	parts per million
%	Percent
%solids	Percent solids by weight
psf	pounds per square foot
psi	pounds per square inch
rpm	revolutions per minute
s	second
st	short ton (2,000 lbs)
SG	specific gravity
V	Volt
Wk	Week
wt%	weight percent
yd.	yard (36 inches)

TABLE OF ABBREVIATIONS – UNITS OF MEASURE	
Unit	**Description**
Metric	
deg. or °	angular degree
m^3	cubic metre
d	day (24 hours)
°C	Degrees Celsius
Ø	diameter
$/t	Dollars per metric tonne
G	Giga
g	gram
g/t	grams per (metric) tonne
h	hour (60 minutes)
kg	kilogram
kg/t	kilograms per tonne
km	kilometres
km^2	square kilometre
kt	kilotonne
L	litre
m	metre
mg	milligram
Ml	millilitre
µm	micron
mm	millimetre
M	Million
Mt	Million metric tonnes
ppm	parts per million
SG	specific gravity
m^2	square metre
mm^2	square millimetres
K	Thousand (000)
t	tonne (1,000 kg) (metric ton)
tpa	tonnes per annum
tpd	tonnes per day
tpy	tonnes per year
W	Watt

1. SUMMARY

1.1 Introduction

The Cheechoo Project (the "Project") is a gold property located in the Province of Québec, in the Eetou Istchee James Bay region. The Project is 100% owned by Sirios Resources Inc. (Sirios).

In September 2019, Sirios commissioned BBA Inc. (BBA) to lead and perform a Mineral Resource Estimate (MRE) on the Project in accordance with the guidelines of the Canadian Securities Administrators (CSA) National Instrument 43-101 (NI 43-101) and Form 43-101 F1.

This Report is in support of the Sirios press release dated December 11, 2019, entitled "Maiden mineral resource estimation for the Cheechoo gold deposit". The overall effective date of this Report is December 6, 2019. The Report has a number of close-out dates for information:

- Drill Database close-out date: March 19, 2019;
- Effective date of the mineral resource: December 6, 2019;
- Claim Status: January 16, 2020.

It should be understood that the mineral resources presented in this Report are estimates of the size and grade of the deposits. The estimates are based on a certain number of drillholes and samples, and on assumptions and parameters currently available. The level of confidence in the estimates depends upon a number of uncertainties. These uncertainties include but are not limited to: future changes in metal prices and/or production costs, differences in size, grade and recovery rates from those expected, and changes in Project parameters. In addition, there is no assurance that the Project implementation will be carried out.

1.2 Property Description, Location and Ownership

The Cheechoo Property (Main Block) is located 9 km east of the Éléonore gold mine whereas the Cheechoo deposit is approximately 15 km southeast of the Éléonore gold mine, in the Opinaca Reservoir area of the Eeyou Istchee James Bay region, in the Province of Québec, Canada. The Project is located approximately 200 km east of the Cree community of Wemindji, 330 km north of the towns of Matagami and Chibougamau, and 815 km north of Montreal

The coordinates for the approximate centre of the Project are latitude 52°38' N and longitude 75°54' W (438920E and 5833483N: NAD 83 / UTM Zone 18N) on NTS map sheets 33B12 and 33C09.

As of January 16, 2020, the Cheechoo Property consists of two non-contiguous groups of 121 electronic map designated mining claims for the Cheechoo main block and 35 electronic map-designated mining claims for the western block. Together they form what is called the Cheechoo Property. Sirios holds a 100% interest in the 156 mining claims included in the Cheechoo Project.

Some of the mineral claims comprising the Project are subject to certain agreements and royalties.

There are no known environmental liabilities on the Project and Sirios currently has a temporary camp permit that was in the process of being modified to a permanent camp permit at the time of writing this report.

1.3 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Cheechoo Project is located about 350 kilometres north of the mining town of Matagami or about 500 kilometres north of Val-d'Or. The area can be accessed via the paved James Bay highway (extension of highway #109), about midway between Matagami and Radisson, or via the all-weather gravel road *Route Du Nord* from Chibougamau. Various secondary gravel roads give access to the Opinaca Reservoir and other Hydro-Québec infrastructure, as well as to the Éléonore Mine.

The main block of the Cheechoo Property is accessible by land up to km 54 of the Éléonore mine all-weather gravel road. From this point, access to the Cheechoo camp or worksite is via a dirt access road which is not always in good condition.

The western block of the Cheechoo Property is partially located on an island within the Opinaca Reservoir and is currently only accessible by boat or helicopter.

The Opinaca Reservoir represents the easternmost extent of the James Bay lowlands, whose limit coincides with the Cheechoo Property. To the west, the landscape is dominated by a flat plain with an altitude of approximately 220 m.a.s.l. This plain is poorly drained with abundant marshes and meandering streams or inundated by the reservoir. It is punctuated by many hills typical of the Canadian Shield. Lakes are abundant, either shallow in muskegs, or more crystalline on hilltops.

The eastern area has a more rugged topography, typical of the Canadian Shield, with abundant lakes, dense drainage, and ubiquitous rounded hills reaching an altitude of 405 metres. Drainage is composed of the Opinaca River to the north and the Gipouloux River to the south; both flow into the Opinaca Reservoir then subsequently into Sakami Lake, the La Grande River and James Bay.

1.4 Geological Setting and Mineralization

The Cheechoo project is located at the boundary between the La Grande and Opinaca Subprovinces. The La Grande Subprovince is separated into a northern (La Grande River) and a southern domain (Eastmain River). These domains consist of Paleo- to Mesoarchean basement, overlain by Meso- to Neoarchean volcano-sedimentary sequences and injected by syn- to late-tectonic intrusions

The Opinaca Subprovince occurs between the Eastmain domain to the south and the La Grande domain to the north. The Opinaca belongs to metasedimentary belts, interpreted as accretionary prisms. The Opinaca Subprovince is characterized by paragneiss and migmatites, intruded by syn- to post-tectonic, locally ultramafic intrusions

In the vicinity of the Éléonore mine, syn- to late-tectonic intrusions and pegmatite dikes (2620-2603 Ma) intruded the La Grande Subprovince supracrustal rocks. One of those, the 2612±1 Ma Cheechoo intrusion, is located 15 km southeast of the Éléonore mine. The Cheechoo intrusion contains pegmatite dikes, mafic schist enclaves and hosts gold mineralization at Cheechoo. Various prospects and showings in the area occur along a NW-trending corridor characterized by a strong metamorphic gradient, roughly subparallel to the Opinaca-La Grande boundary.

The Cheechoo Property straddles the transition zone between the La Grande Subprovince with the high-grade metasedimentary rocks of the Opinaca Subprovince. The inferred contact, affected by open folds, is defined by the appearance of migmatite towards the northeast. This is illustrated on the Cheechoo Property by the preponderance of paragneissic rocks and migmatites (metatexites with local diatexites). Other lithologies include the Cheechoo intrusion, leucogranitic dikes and veins, banded iron formations, amphibolites and conglomerates from the Low formation. The 10 km^2 Cheechoo intrusion has homogeneous, very low magnetic susceptibilities, with local high magnetic domains at its margins, potentially associated with the presence of iron-rich formation with skarn-like assemblages in the metasedimentary package. The Cheechoo and Éléonore South (Azimut/Goldcorp/Eastmain joint venture) properties are interpreted to share the same auriferous system centered on the Cheechoo intrusion.

The vein network of the Cheechoo Property is composed of various types of auriferous veins including sheeted extensional, en-echelon quartz-dominated veins, as well as pegmatitic quartz-feldspar veins. Mainly occurring within the intrusion, but also in the surrounding paragneissic rocks, the vein network is commonly 40 m to 50 m wide and, at least, 100 m long. The vein density increases (from 15% to 50% of the rock volume) towards intrusion margins and with the occurrence of pegmatite dikes, tonalite apophyses and mafic schist. The gold grade is controlled by the presence of sulphides (particularly arsenopyrite), the density of veins, and deformation gradients.

The Main Zone gold occurrence is localized in the south part of the Cheechoo Property. It includes the eastern extremity of the Cheechoo granodiorite intrusion and the adjacent paragneissic rock. The Main zone consists of a network of various generations of deformed and auriferous quartz to quartz ± k-feldspar veins and veinlets (mm to cm) hosted by the granodiorite intrusion, particularly developed along the margins. The mineralization is defined essentially by free gold associated with stockwork of quartz and quartz-amphibolite breccia and veinlets with arsenopyrite grains.

The Eclipse gold occurrence is localized in the centre of the Cheechoo granodiorite intrusion, west of the Main Zone. Eclipse is defined by a folded quartz and feldspar veins and veinlets system with coarse gold grains. These veins have a pegmatitic texture and are hosted by the granodiorite stock associated with a strong to moderate alteration.

1.5 Status of Exploration and Drilling

Since the latest technical report in June 2013, various exploration work was completed each year: rock and sediment sampling, mapping, stripping as well as geophysical surveys.

New drillholes, totalling 262 and representing 63,275 m, were drilled from the surface between 2013 and 2019.

1.6 Drilling, Sampling Method, Approach and Analysis

From 2012 to winter 2016, they were sent to the IOS Services Geoscientifiques Inc. (IOS) facility where they were sawed in half and sampled based on the geologist instructions. Individual samples were cleaned, crushed, split and grinded to generate a pulp sample following a strict protocol directly at the IOS facility. Individual sample bags were placed in a box along with the list of samples. QA/QC samples were inserted by IOS personnel in each batch following the geologist instructions. Batches were shipped via transporter to ALS laboratory at Rouyn-Noranda.

From fall 2016 to 2019, drill core were sent to the Technominex facility where they were sawed in half and sampled based on geologist's instructions. Individual sample bags were placed in rice bags along with the list of samples. QA/QC samples were inserted by Technominex personnel in each batch following the geologist's instructions. Batches were shipped via transporter to a certified laboratory. From fall 2016 to winter 2018, they were sent to Actlabs at Ste-Germaine-Boulé and in winter 2019, they were sent to ALS laboratories in Rouyn-Noranda.

Both ALS and Actlabs have the ISO/IEC 17025:2005 accreditation through the Canadian Association for Laboratory Accreditation Inc. (ALA). They are both independent commercial laboratories.

As per National Instrument 43-101 (NI 43-101), quality control samples were inserted into the sample batches sent to the laboratory. Inserts included pulp duplicate samples, blank samples, standards and check assays.

The QP reviewed the sample preparation, analytical and security procedures, as well as insertion rates and the performance of blanks, standards and duplicates for the 2013-2019 drilling programs, and concluded that the observed failure rates are within expected ranges and that no significant assay biases are present. According to the QP's opinion, the procedure and the quality of the data are adequate to industry standards and support the Mineral Resource Estimate.

1.7 Data Verification

Pierre-Luc Richard, QP, employee of BBA, visited the Property from October 10 to October 15, 2019, and the core cutting and storage facility on September 16, 2019. The purpose of the visits was to review the Project with the Sirios team. The visits included an overview of the general geological conditions, a tour of the core storage facility, visual inspections of selected mineralized drill core samples, survey of numerous drillhole casings, and a visit of various mechanically stripped outcrops. A review of assaying, QA/QC and drillhole procedures was also completed. Pierre-Luc Richard, P. Geo. also visited the Sirios office in Montreal on a few occasions during the course of the mandate to exchange ideas with the geologists.

For the purpose of this MRE, BBA performed a basic verification on the entire Project database. All data was provided by Sirios in UTM coordinates. The database close out date for the resource estimate is March 19, 2019; data from 270 DDH (64,212.45 m) and 385 channels (3,214.88 m) was incorporated in the resource estimate block model area. The last hole included in the database was CH19-245.

Clovis Auger, P. Geo., from BBA was granted access to the original assay certificates directly from ALS for all holes drilled by Sirios on the Project. Mathieu Rancourt Chemist at Actlabs also provided 194 workorders from the 2016-2019 drilling programs. Assays for approximately 10% of the DDH intersecting the current MRE mineralized zones were verified. The assays recorded in the database were compared to the original certificates from the different laboratories. Values lower than the detection limits were set to zero (0). No major discrepancies were noted.

BBA is of the opinion that the drilling protocols in place are adequate. The database for the Cheechoo Project is of good overall quality. Minor issues have been noted during the validation process but have no material impact on the 2018 MRE. In the QP’s opinion, the Cheechoo database is appropriate to be used for the estimation of Mineral Resources.

1.8 Mineral Processing and Metallurgical Testing

A preliminary assessment of the response of metallurgical samples from the Cheechoo Project based on testwork programs from in 2015 (ALS Metallurgy), 2017 (Actlabs), and in 2019 (COREM). Sirios selected and prepared the samples used for all testwork programs.

The objective of the testwork was to gather mineralogical, comminution and metallurgical data for preliminary flowsheet development, reagent consumption estimation and gold recovery estimation purposes. Gold recovery was evaluated for the following processes:

- Gravity separation and leaching of gravity tails;
- Gravity separation and flotation of gravity tails;
- Whole ore leach (namely WOL);
- Heap leach.

Table 1-1 presents a summary of the overall gold recovery (P_{80} = 75 microns) estimated by gravity separation and leaching of gravity tails, gravity separation and flotation of gravity tails, and whole ore leach. Details on how the recoveries were estimated are presented in Chapter 13.

Table 1-1: Overall gold recovery estimation (excluding heap leach)

Criterion	Unit	Composite		
		9	12	26
Average feed grade	g/t Au	0.92	2.81	0.31
Flotation of gravity tails	%	77.9	80.8	70.9
Leaching of gravity tails	%	89.1	86.3	85.0
Whole ore leaching	%	82.2	86.8	87.4

Note: all the gold recovery estimations were done at P_{80} of 75 microns.

Table 1-2 presents a summary of the gold recovery (crushed size = -6.5 mm) estimated by heap leach method.

Table 1-2: Heap leach Au recovery

Criterion	Unit	Composite		
Composite ID		01306720	01306721	01306722
Material type		Meta-Sediments	Tonalite	Pegmatite
Average feed grade	g/t Au	0.64	0.43	43.5
Gold recovery interpolated at crush particle size = -6.5 mm	%	67.3	56.9	51.5

The best gold recovery results were found when the mineralized material was processed by gravity recovery followed by leach of gravity tails, but the results were comparable to the whole ore leach results. An optimization and variability testwork program is recommended to validate the best method of processing Cheechoo mineralized material.

- For gravity recovery followed by leach of gravity tails: 89.1%, 86.3% and 85.0% for composites 9, 12 and 26 respectively (average of 86.8%);
- Cyanide consumption was slightly higher for the leaching of gravity tailings: 0.67 kg/t, 0.67 kg/t and 0.89 kg/t for composites 9, 12 and 26 respectively;
- Lime consumption can be considered low for most of the tests. Among the three composites, composite 26 has the highest lime consumption. Lime consumption values of 0.70 kg/t, 0.73 kg/t and 1.23 kg/t were measured respectively for composites 9, 12 and 26.

Heap leach Au recovery results were maximized at a finer than normal crushed size. Additional percolation testwork at 6.5 mm is recommended.

- The estimated Au recovery for the heap leach process is 67.3%, 56.9% and 51.5 % for composites 01306720 (Meta-Sediments), 01306721 (Tonalite) and 01306722 (Pegmatite) respectively;
- The cyanide consumption (from 1.16 kg/t to 1.47 kg/t) was in an average range and lime consumption was negative, an indication that the samples were alkaline, and the pH increased during the leaching time.

1.9 Cheechoo Mineral Resource Estimate

BBA was retained by Sirios to prepare a maiden MRE for the Cheechoo Project, which incorporates recent drilling and channel sampling programs. Drillhole information up to March 20, 2019 was considered for this estimate. The QP for this MRE is Pierre-Luc Richard, P. Geo., from BBA Inc.

The herein MRE covers the whole Cheechoo Project with a strike length of 2,700 m and a width of approximately 2,600 m, down to a vertical depth of 500 m below surface.

Geological wireframes were constructed by Sirios' geologist Jordi Turcotte in Leapfrog Geo™ v.4.5 and were reviewed and validated by BBA's geologists Clovis Cameron Auger and Pierre-Luc Richard. Leapfrog Geo™ v.4.5 was used for the modelling of the overburden unit and of the topography surface. Geovia® GEMS 6.8.2.2 was used for the compositing, 3D block modelling, interpolation, classification and reporting. Statistical studies were conducted using Excel and Snowden Supervisor v. 8.11. The pit optimization analysis was carried out using the Deswik mining software version 2019.3.491.

The methodology for the estimation of the mineral resources involved the following steps:

- Database verification and validation;
- Review of the 3D modelling;
- Drillhole intercept;
- Basic statistics and composite generation for each unit;
- Capping;
- Geostatistical analysis including variography;
- Block modelling and grade interpolation;
- Block model validation;
- Resource classification;
- Cut-off grade calculation and pit shell optimization;
- Preparation of the mineral resource statement.

The pit-constrained Inferred Mineral Resource Estimate for the Project is presented in Table 1-3.

Table 1-3: Pit-constrained Inferred Mineral Resource estimate for the Cheechoo Project

	Tonnage (t)	Grade (Au g/t)	Ounces (Au oz)
Inferred Resources	**71,000,000**	**0.69**	**1,600,000**

Notes to Table 1-3:

1. The independent qualified person for the 2019 MRE, as defined by NI 43-101 guidelines, is Pierre-Luc Richard, P. Geo., of BBA Inc. The effective date of the estimate is December 6, 2019.
2. These mineral resources are not mineral reserves as they do not have demonstrated economic viability. The quantity and grade of reported Inferred resources in this MRE are uncertain in nature and there has been insufficient exploration to define these resources as Indicated or Measured; however, it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.
3. Resources are presented as undiluted and pit constrained scenario and are considered to have reasonable prospects for economic extraction. Although calculated cut-off grades range from 0.28 g/t Au to 0.29 g/t Au, a cut-off grade of 0.30 g/t Au was used for the MRE. The pit optimization was done using Deswik mining software version 2019.3.491. The constraining pit shell was developed using pit slopes of 45 to 50 degrees in hard rock and 26 degrees in overburden. The cut-off grade and pit optimization were calculated using the following parameters (amongst others): Gold price = USD1,300; CAD:USD exchange rate = 1.30; Hard Rock Mining cost = $2.60/t mined with incremental bench costs of $0.05 per 10 m bench; Overburden Mining Cost = $3.50/t mined; Mining Recovery = 95%; Mining dilution = 5% at 0 g/t Au; Metallurgical Recovery varying from 85% to 88%; Processing cost = $10.00/t processed; G&A = $2.94/t processed; Royalty of 3%; and Refining and Transportation cost = $5.00/oz. The conceptual pit-constrained resource has a 1.1:1 stripping ratio. The cut-off grade will be re-evaluated in light of future prevailing market conditions and costs.
4. The MRE was prepared using Geovia® GEMS 6.8.2 and is based on 270 surface drillholes and 385 surface channel samples, with a total of 47,363 assays. The resource database was validated before proceeding to the resource estimation. Grade model resource estimation was calculated from drillhole data using an OK interpolation method in a block model using blocks measuring 10 m x 10 m x 10 m in size. The cut-off date for drillhole database was March 20, 2019.
5. The model comprises 37 mineralized zones (which have a minimum thickness of 3 m), five lithological units and one low-grade mineralized body mostly included in the tonalite intrusive unit, each defined by drillholes' intercepts.
6. High-grade capping was done on the composited assay data and established on a per unit basis. Capping grades used vary from 5 g/t to 80 g/t Au and the use of restricted search ellipsoids was also used. A value of zero grade was applied in cases of core not assayed.
7. Fixed density values were established on a per unit basis, corresponding to the median of the SG data of each unit ranging from 2.65 to 2.71. A fixed density of 2.00 g/cm_3 was assigned to the overburden.
8. The MRE presented herein is categorized as an Inferred Resource. The Inferred Mineral Resource category is defined for blocks that are informed by a minimum of two drillholes where drill spacing is less than 100 m for the mineralized intrusive-related mineralization. Where needed, some materials have been either upgraded or downgraded to avoid isolated blocks.
9. The number of tonnes (metric) and ounces were rounded to the nearest hundred thousand.
10. CIM definitions and guidelines for mineral resource estimates have been followed.

1.10 Interpretation and Conclusions

The understanding of the regional geology, lithological and structural controls of the mineralization at Cheechoo are sufficient to support estimation of Mineral Resources.

BBA considers the 2019 MRE to be reliable and based on quality data, reasonable hypotheses and parameters that follow CIM Definition Standards. After completing the MRE and a detailed review of all pertinent information, BBA concluded the following:

- The 2019 MRE was built with the use of 37 mineralized zones, five lithological units and one low-grade mineralized body, mostly included in the tonalite intrusive unit, each defined by drillholes intercepts;
- Using a cut-off grade of 0.30 g/t Au, the Inferred In-pit Resources amounts to 71 Mt grading 0.69 g/t Au containing approximately 1,600,000 ounces of gold.
- No Measured and Indicated Resources have been defined in the 2019 MRE;
- It is likely that further diamond drilling would upgrade most of the inferred resources to indicated resources.
- The exploration potential remains high at the property scale, justifying compilation and target generation programs;
- The potential is high for adding additional resources to the Project by drilling lateral extensions to the west;
- It is likely that drilling additional holes, therefore improving the current drill spacing, would translate into upgrading Inferred resources to the Indicated category.

As with all mineral projects, there is an inherent risk associated with mineral exploration. Many of these risks are based on a lack of detailed knowledge and can be managed as more sampling, testing, design and engineering are conducted at the next study stages. The mineral resources may be affected by a future conceptual study assessment of mining, processing, environmental, permitting, taxation, socio-economic and other factors.

External risks are, to a certain extent, beyond the control of the Project proponents and are much more difficult to anticipate and mitigate, although, in many instances, some risk reduction can be achieved. External risks are things such as the political situation in the Project's region, metal prices, exchange rates and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions would affect the mineral resource estimate.

1.11 Recommendations

Based on the results of the 2019 MRE, BBA recommends initiating a Preliminary Economic Assessment (PEA) to investigate the likelihood of the Project to be economically viable. Following a positive PEA, additional exploration/definition drilling and further geological interpretation is warranted to gain a better understanding of the deposit before updating the current Mineral Resource Estimate.

BBA recommends the two-phase work program described below in which Phase 2 depends on the success of Phase 1.

Phase 1:

- Complete additional metallurgical testwork;
- Exploration drilling (5,000 m);
- Complete a Preliminary Economic Assessment (PEA) report.

Phase 2:

- Conversion drilling (15,000 m) should be done at a drill spacing of about 50 m, or smaller, in order to further delineate the geological and resources model;
- Exploration drilling (20,000 m) should be done to continue investigating any potential lateral extensions of the currently identified mineral resources as well as other target on the Property;
- A bulk sample is recommended on the Project in order to improve the understanding of the grade distribution for further mineral resource estimate updates;
- Implement a geotechnical field program to complement existing information.

Expenditures for Phase 1 are estimated at $2,185,000 (including 15% for contingencies). Expenditures for Phase 2 are estimated at $9,315,000 (including 15% for contingencies). The grand total is $11,500,000 (including 15% for contingencies).

2. INTRODUCTION

The Cheechoo Project (the "Project") is a gold property located in the Province of Québec, in the Eeyou Istchee James Bay region. The Project is 100% owned by Sirios Resources Inc. (Sirios).

In September 2019, Sirios commissioned BBA Inc. (BBA) to lead and perform a Mineral Resource Estimate (MRE) on the Project in accordance with the guidelines of the Canadian Securities Administrators (CSA) National Instrument 43-101 (NI 43-101) and Form 43-101 F1.

BBA (www.bba.ca) is an independent engineering consulting firm headquartered in Mont-Saint-Hilaire, Québec, with its mining group based in downtown Montréal and in Val-d'Or, Québec. The firm's expertise is recognized in the fields of energy, mining and metals, biofuels and oil and gas. BBA is supported by a network of offices across Canada to serve its clients and carry out mandates at the local, national and international levels.

2.1 Scope of Study

The following Technical Report (the "Report") presents the results of the Mineral Resource Estimate for the Cheechoo Project. As of the date of this Report, Sirios is a Canadian based exploration company listed on the TSX Venture Exchange (TSXV) under the trading symbol SOI with its head office located at:

1000 St-Antoine Ouest, #410
Montreal (Quebec)
H3C 3R7

This Report, titled "NI 43-101 Technical Report and Mineral Resource Estimate for the Cheechoo Project, in Eeyou Istchee James Bay, Québec", was prepared by Qualified Persons (QPs) following the guidelines of NI 43-101, and in conformity with the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves.

2.2 Report Responsibility and Qualified Persons

The following individuals, by virtue of their education, experience and professional association, are considered QPs as defined in NI 43-101, and are members in good standing of appropriate professional institutions.

- Pierre-Luc Richard, P. Geo. BBA Inc.
- Jorge Torrealba, P. Eng. BBA Inc.
- Dario Evangelista, P. Eng. BBA Inc.

The preceding QPs have contributed to the writing of this Report and have provided QP certificates, included at the beginning of this Report. The information contained in the certificates outlines the sections in this Report for which each QP is responsible. Each QP has also contributed figures, tables and portions of Chapters 1 (Summary), 25 (Interpretation and Conclusions), and 26 (Recommendations). Table 2-1 outlines the responsibilities for the various sections of the Report and the name of the corresponding Qualified Person.

Table 2-1: Qualified Persons and areas of report responsibility

Chapter	Description	Qualified Person	Company	Comments and exceptions
1.	Summary	P.-L. Richard	BBA	All Chapter 1
2.	Introduction	P.-L. Richard	BBA	All Chapter 2
3.	Reliance on Other Experts	P.-L. Richard	BBA	All Chapter 3
4.	Project Property Description and Location	P.-L. Richard	BBA	All Chapter 4
5.	Accessibility, Climate, Local Resource, Infrastructure and Physiography	P.-L. Richard	BBA	All Chapter 5
6.	History	P.-L. Richard	BBA	All Chapter 6
7.	Geological Setting and Mineralization	P.-L. Richard	BBA	All Chapter 7
8.	Deposit Types	P.-L. Richard	BBA	All Chapter 8
9.	Exploration	P.-L. Richard	BBA	All Chapter 9
10.	Drilling	P.-L. Richard	BBA	All Chapter 10
11.	Sample Preparation, Analyses and Security	P.-L. Richard	BBA	All Chapter 11
12.	Data Verification	P.-L. Richard	BBA	All Chapter 12
13.	Mineral Processing and Metallurgical Testing	J. Torrealba	BBA	All Chapter 13
14.	Mineral Resource Estimate	P.-L. Richard D. Evangelista	BBA BBA	All Chapter 14 except 14.9 Section 14.9
15.	Mineral Reserve Estimate	P.-L. Richard	BBA	Not required for a resource estimate
16.	Mining Methods	P.-L. Richard	BBA	Not required for a resource estimate
17.	Recovery Methods	P.-L. Richard	BBA	Not required for a resource estimate
18.	Project Infrastructure	P.-L. Richard	BBA	Not required for a resource estimate
19.	Market Studies and Contracts	P.-L. Richard	BBA	Not required for a resource estimate
20.	Environmental Studies, Permitting, and Social or Community Impact	P.-L. Richard	BBA	Not required for a resource estimate
21.	Capital and Operating Costs	P.-L. Richard	BBA	Not required for a resource estimate
22.	Economic Analysis	P.-L. Richard	BBA	Not required for a resource estimate
23.	Adjacent Properties	P.-L. Richard	BBA	All Chapter 23
24.	Other Relevant Data and Information	P.-L. Richard	BBA	All Chapter 24
25.	Interpretation and Conclusions	P.-L. Richard	BBA	All Chapter 25
26.	Recommendations	P.-L. Richard	BBA	All Chapter 26
27.	References	P.-L. Richard	BBA	All Chapter 27

2.3 Effective Dates and Declaration

This Report is in support of the Sirios press release dated December 11, 2019, entitled “Maiden mineral resource estimation for the Cheechoo gold deposit”. The overall effective date of this Report is December 6, 2019. The Report has a number of close-out dates for information:

- Drill Database close-out date: March 19, 2019;
- Effective date of the mineral resource: December 6, 2019;
- Claim Status: January 16, 2020.

This Report was prepared as National Instrument 43-101 Technical Report for Sirios by Qualified Persons from BBA Inc. collectively the “Report Authors”.

The quality of information, conclusions and estimates contained herein is consistent with the level of effort involved in the Report Authors’ services, based on: i) information available at the time of preparation; ii) data supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this Report. This Report is intended for use by Sirios, subject to terms and conditions of its respective contracts with the Report Authors. Except for the purposes legislated under Canadian provincial and territorial securities law, any other uses of this Report by any third party is at that party’s sole risk.

It should be understood that the mineral resources presented in this Report are estimates of the size and grade of the deposits. The estimates are based on a certain number of drillholes, channel samples, and on assumptions and parameters currently available. The level of confidence in the estimates depends upon a number of uncertainties. These uncertainties include but are not limited to: future changes in metal prices and/or production costs; differences in size; grade and recovery rates from those expected; and changes in Project parameters. In addition, there is no assurance that the Project implementation will be carried out.

As of the effective date of this Report, the QPs are not aware of any known litigation potentially affecting the Project. The QPs did not verify the legality or terms of any underlying agreement(s) that may exist concerning the Project ownership, permits, off-take agreements, license agreements, royalties or other agreement(s) between Sirios and any third parties.

BBA is not an insider, associate or an affiliate of Sirios and neither BBA nor any affiliate has acted as Advisor to Sirios, its subsidiaries or its affiliates, in connection with this Project. The results of the technical review by BBA are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings. The QPs are being paid fees for this work in accordance with the normal professional consulting practice.

The opinions contained herein are based on information collected throughout the course of investigations by the QPs, which in turn reflects various technical and economic conditions at the time of writing. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results can be significantly more or less favourable.

2.4 Sources of Information

This Report is based in part on internal company reports, maps, published government reports, company letters and memoranda, and public information, as listed in Chapter 27 “References” of this Report. Sections from reports authored by others may have been directly quoted or summarized in the report and are so indicated, where appropriate.

This MRE has been completed using available information contained in, but not limited to, the following reports, documents and discussions:

- Technical discussions with Sirios direction and personnel;
- QPs’ personal inspection of the Cheechoo Project site, including drill core and facilities;
- Review of exploration data provided by Sirios;
- Agreements, technical data and internal technical documents supplied by Sirios;
- Internal unpublished reports from Sirios;
- Additional information from public domain sources (SEDAR, etc.).

The QPs believe that the basic assumptions contained in the information above are factual and accurate, and that the interpretations are reasonable. The QPs have relied on this data and have no reason to believe that any material facts have been withheld or doubt the reliability of the information used to evaluate the mineral resources presented herein. The authors have sourced the information for this Report from the collection of documents listed in Chapter 27 (References).

2.5 Site Visit

Pierre-Luc Richard, QP, employee of BBA, visited the Property from October 10 to October 15, 2019, and the core cutting and storage facility on September 16, 2019. He also visited the head office on different other occasions as part of the current mandate. The purpose of the visits was to review the Project with the Sirios team. The visits included an overview of the general geological conditions, a tour of the core storage facility, visual inspections of selected mineralized drill core samples and a visit of various mechanically stripped outcrops. A review of assaying, QA/QC and drillhole procedures was also completed.

Jorge Torrealba and Dario Evangelista, both QPs and employees of BBA, did not visit the Property that is the subject of the Technical Report.

2.6 Currency, Units of Measure, and Calculations

Unless otherwise specified or noted, the units used in this Report are metric. Every effort has been made to clearly display the appropriate units being used throughout this Report.

- Currency is in Canadian dollars ("CAD" or "$"), unless otherwise stated;
- A Canadian dollar (CAD) to United States dollar (USD) exchange rate of CAD 1.30 for USD 1.00 was used;
- Block model and maps are in UTM NAD 83 zone 18N coordinates;
- This Report may include technical information that required subsequent calculations to derive subtotals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the QPs consider them immaterial.

2.7 Acknowledgment

The Report Authors would like to acknowledge the general support provided by Sirios personnel during this assignment. Their collaboration is greatly appreciated. The Project also benefitted from the inputs of the following specific individuals:

- Jordi Turcotte, Senior Geologist – Sirios
- Daniel Boudreau, Geologist – Sirios
- Dominique Doucet, President – Sirios
- Nathalie Schnitzler, Geologist – Sirios
- Vincent Raymond, GIT – Sirios
- Alexandra Blanchette, GIT – Sirios
- Clovis Cameron Auger, Geologist – BBA
- Charlotte Athurion, Geologist – BBA
- Manon Dussault, Project Assistant – BBA

Their commitment, contributions and team work are gratefully acknowledged and appreciated.

3. RELIANCE ON OTHER EXPERTS

3.1 Introduction

The Qualified Persons (QPs) relied on reports, information sources and opinions provided by Sirios for certain aspects of the Project, such as the Project's mineral rights, 3rd party agreements, surface rights, property agreements, royalties and environmental status.

As of the date of this Report, Sirios indicated that there are no known litigations potentially affecting the Cheechoo Project.

A draft copy of the Report has been reviewed for factual errors by Sirios. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are neither false nor misleading at the date of this Report.

3.2 Mineral Tenure and Surface Rights

Sirios supplied information regarding mining titles, options agreements, royalty agreements, environmental liabilities and permits. Pierre-Luc Richard, QP from BBA consulted the GESTIM online claim management system via:
https://gestim.mines.gouv.qc.ca/MRN_GestimP_Presentation/ODM02101_login.aspx
for the latest status regarding ownership and mining titles. Although the QPs have reviewed the option agreements and available claim status documents, they are not qualified to express any legal opinion with respect to the property titles, current ownership or possible litigations. A description of such agreements, the property, and ownership thereof, is provided for general information purposes only. In this regard, the QPs have relied on information supplied by Sirios and the work of experts they understand to be appropriately qualified.

This information is used in Chapter 4 of the Report. The information is also used in support of the Mineral Resource Estimate in Chapter 14.

3.3 Environmental Studies, Permitting, and Social or Community Impact

The QPs relied on information with respect to the Project's environmental status, permits and, Social and Community Impact as provided by Daniel Boudreau, P. Geo., and Jordi Turcotte, P. Geo., of Sirios. This information is used in Chapter 4 of the Report.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 Property Description and Location

The Cheechoo Property (Main Block) is located 9 km east of the Éléonore gold mine whereas the Cheechoo deposit is approximately 15 km southeast of the Éléonore gold mine, in the Opinaca Reservoir area of the Eeyou Istchee James Bay region, in the Province of Québec, Canada. The Project is located approximately 200 km east of the Cree community of Wemindji, 330 km north of the towns of Matagami and Chibougamau, and 815 km north of Montreal (Figure 4-1).

The coordinates for the approximate centre of the Project are latitude 52°38' N and longitude 75°54' W (438920E and 5833483N: NAD 83 / UTM Zone 18N) on NTS map sheets 33B12 and 33C09.

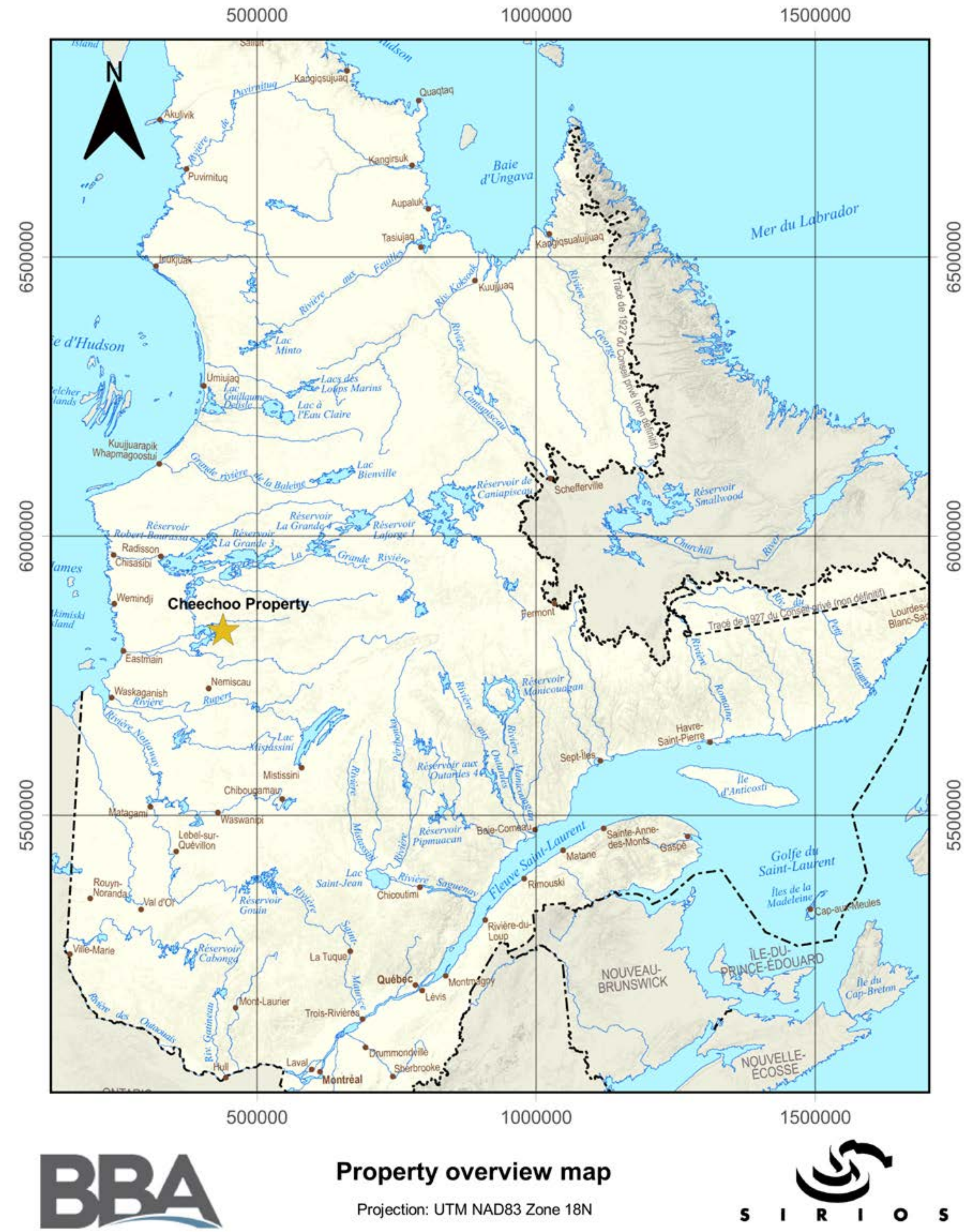

Figure 4-1: Overview map of the Cheechoo Property

4.2 Mineral Tenure

Pierre-Luc Richard, P. Geo., verified the status of the mineral claims using the Québec government online claim management tool GESTIM. As of January 16, 2020, the Cheechoo Property consists of two non-contiguous groups of 121 electronic map designated mining claims for the Cheechoo main block and 35 electronic map-designated mining claims for the western block (Figure 4-2). Together they form what is called the Cheechoo Property.

Sirios holds a 100% interest in the 156 mining claims included in the Cheechoo Project.

The total area of the Cheechoo Property is 8,154.34 hectares. A detailed list of the Project mineral claims is shown in Table 4-1.

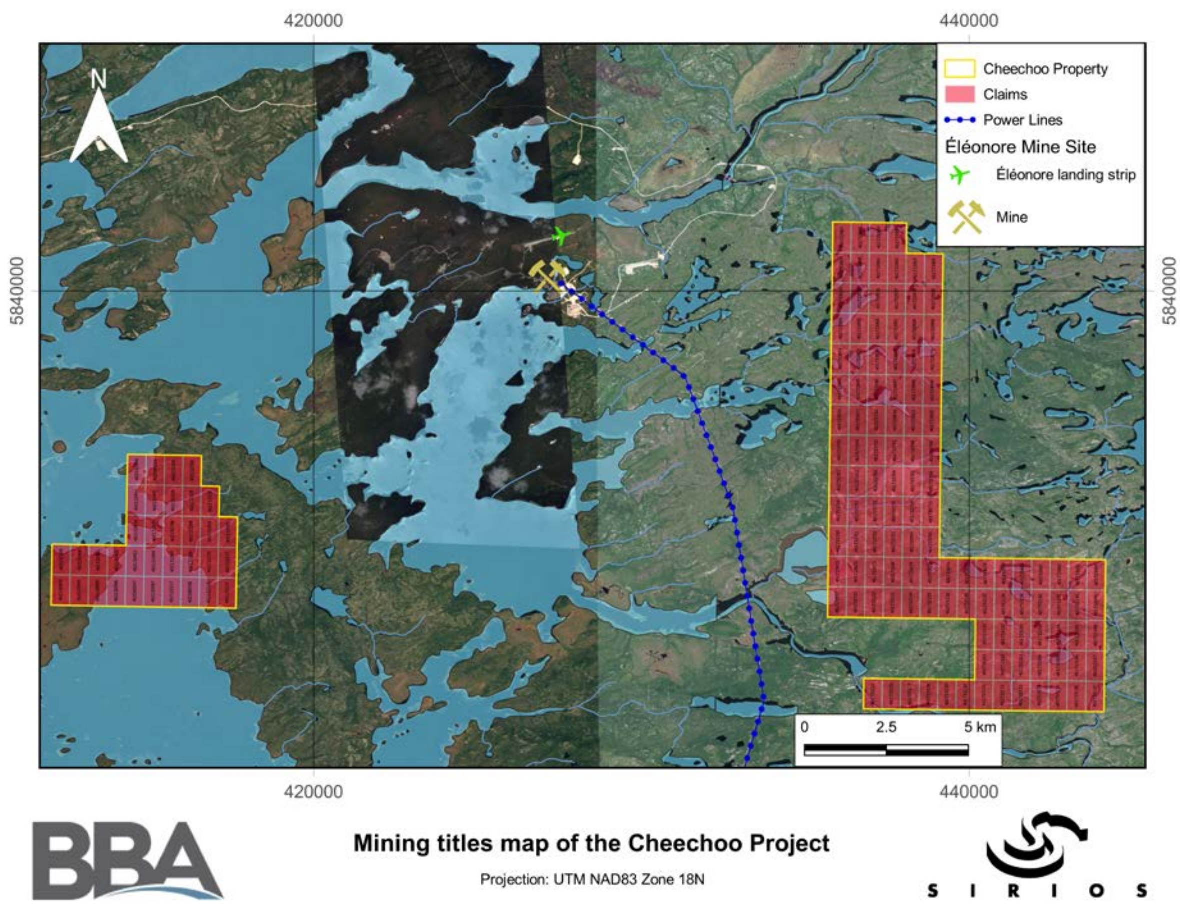

Figure 4-2: Cheechoo Property titles as of January 16, 2020

4.3 Royalties, Agreement and Encumbrances

Some of the mineral claims comprising the Project are subject to certain agreements and royalties. Figure 4-3 shows the claims with active royalties. Those royalties were part of the Sirios and Golden Valley 2012 binding sheet agreement. On July 27, 2016, Sirios confirmed that it had completed its fulfillment obligations and that the remaining 55% interest held by Golden Valley was transferred to Sirios. Sirios now holds 100% interest of the Cheechoo Property.

The Cheechoo Property is subject to the following royalty:

- Upon production, Sirios agreed to pay a net return royalty to Golden Valley Mines on gold using the per ounce price of gold as follows:
  - 2.5% NSR if gold price is less than $1,200 per ounce;
  - 3.0% NSR if gold price is between $1,200 to $2,400 per ounce;
  - 3.5% NSR if gold price is between $2,400 to $3,000 per ounce;
  - 4.0% NSR if gold price is more than $3,000 per ounce.
- The Property is also subject to a 4% net return royalty from all other mineral products mined or removed from the claims included in the agreement with Golden Valley Mines.

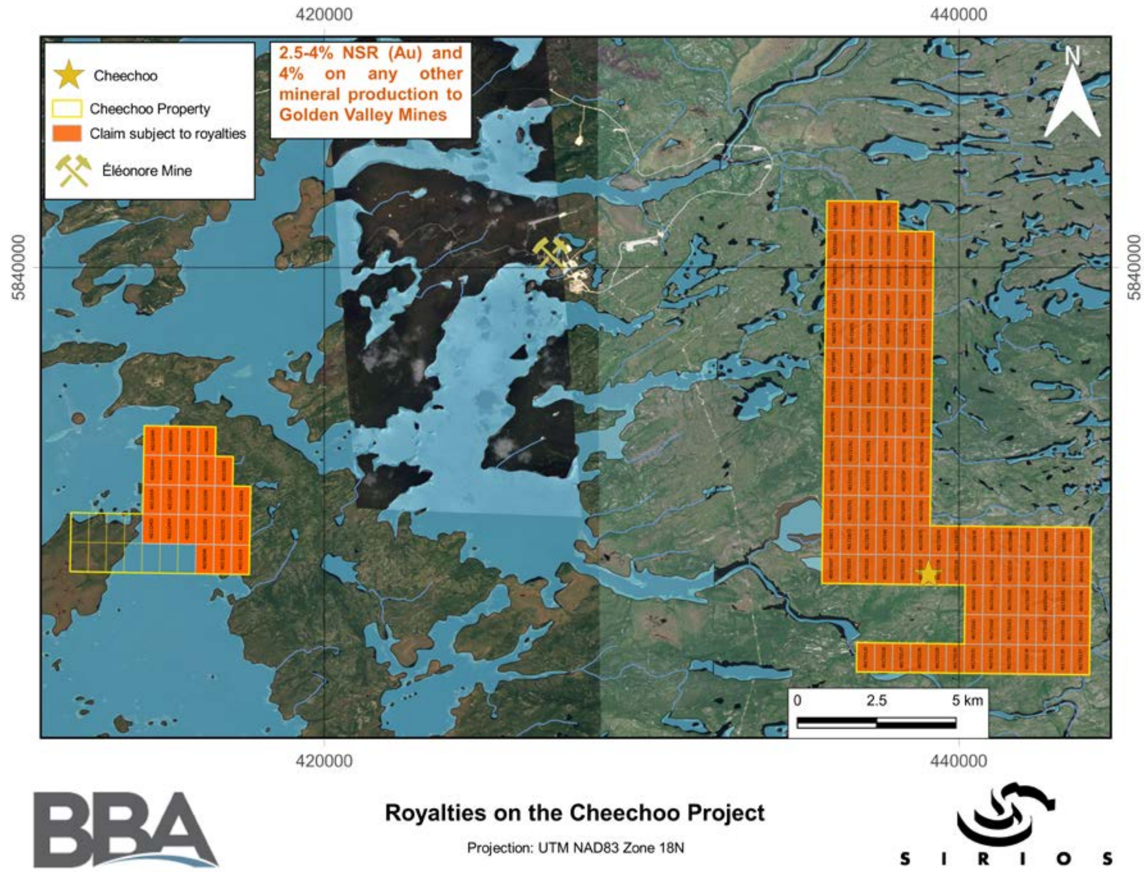

Figure 4-3: Cheechoo Property royalties

4.4 Environmental Liabilities

There are no known environmental liabilities on the Project.

4.5 Permitting

A forest intervention permit is required for any logging activity, including clearing for roads, camps and drill pads. Documentation for such a permit must be submitted by a forest engineer to the Chibougamau or Amos forest management unit, part of the Ministry of Energy and Natural Resources (*Ministère de l'Énergie et des Ressources naturelles* – MERN). In accordance with the *Paix des Braves* protocols, a representative from the MERN will contact the Cree Tallyman who owns the trap line where logging is needed; the Tallyman then has 45 days to provide his approval. A small logging royalty is deemed payable to the Ministry.

A “special intervention permit” is required to conduct drilling. This permit is very similar to and replaces the forest intervention permit. Road construction necessitating any earthmoving requires authorization from the MERN. This request is made concomitantly with the forest intervention permit request and may take a few months to be approved.

Installation of a temporary or permanent camp, such as needed to operate at Cheechoo, requires a permit to be issued by the *Municipalité de la Baie-James*, from Matagami. Installation must comply with municipal regulations as well as the Ministry of the Environment and the Fight against Climate Change (*Ministère de l'Environnement et Lutte contre les changements climatiques* – MELCC), especially concerning wastewater management. Sirios currently has a temporary camp permit that was in the process of being modified to a permanent camp permit at the time of writing this report.

Excavation and trenching operations may require a certificate of authorization from the MELCC once a specific volume of excavated material has been reached. Sirios was in the process of applying for such a permit at the time of writing this report.

No specific permit is required to conduct geophysics, line cutting or other activities not requiring significant logging.

4.6 First Nations Rights

The Cheechoo Property is covered by the James Bay and Northern Québec Agreement (*Entente de la Baie-James et du Nord Québécois*), binding the Cree Nation, the Québec government and the Canadian federal government. This agreement includes a set of rules covering territory management and project development. The rules differ from the rest of the province and add a general agreement concerning the rights of First Nations. Within this agreement, the territory was divided into different categories, with different sets of rights for the First Nations communities. Subsequently, the *Paix des Braves* agreement has been signed between the Québec government and the Cree Nation, which further clarifies the rules, mainly concerning forestry and traditional activities.

The Cheechoo Project is located on Category III lands according to the JBNQA, meaning that there is no substantial restriction to mineral exploration as far as the First Nations community is concerned. A courteous relationship is a prerequisite and notice of work must be forwarded to communities and tallymen prior to initiating any exploration work.

The Cheechoo Property is located within the traditional lands attributed to the Wemindji community, as well as on trap line VC-29, which is currently assigned to Mr. Angus Mayappo.

4.7 Other Significant Factors and Risks

There are no known significant factors and risks that may affect access, title, or the right or ability to perform work on the Property.

Table 4-1: Detailed list of the Project mineral claims (verified on January 16, 2020)

Claim No.	Claim status	Issue date	Anniversary date	Area Ha	Owner	Claim name	Type
402132301	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48020	CDC
402132464	Active	2004-12-10	2020-12-09	52.27	Ressources Sirios Inc. (13467) 100%	48009	CDC
401733844	Active	2004-09-29	2020-09-28	52.23	Ressources Sirios Inc. (13467) 100%	43460	CDC
401732140	Active	2004-11-17	2020-11-16	52.3	Ressources Sirios Inc. (13467) 100%	45509	CDC
401733162	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40003	CDC
402571534	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40013	CDC
401733875	Active	2004-09-29	2020-09-28	52.22	Ressources Sirios Inc. (13467) 100%	43467	CDC
401733702	Active	2004-09-29	2020-09-28	52.28	Ressources Sirios Inc. (13467) 100%	43432	CDC
401732138	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43417	CDC
401733819	Active	2004-11-17	2020-11-16	52.24	Ressources Sirios Inc. (13467) 100%	45450	CDC
401733705	Active	2004-11-17	2020-11-16	52.28	Ressources Sirios Inc. (13467) 100%	45443	CDC
401733673	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43421	CDC
402132403	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48005	CDC
402580554	Active	2004-12-10	2020-12-09	52.26	Ressources Sirios Inc. (13467) 100%	48012	CDC
401733847	Active	2004-09-29	2020-09-28	52.23	Ressources Sirios Inc. (13467) 100%	43463	CDC
401733165	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40006	CDC
401733936	Active	2004-09-29	2020-09-28	52.2	Ressources Sirios Inc. (13467) 100%	43480	CDC
402132268	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48013	CDC
401732135	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43413	CDC
401733134	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39998	CDC
401733166	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40007	CDC
401733763	Active	2004-09-29	2020-09-28	52.26	Ressources Sirios Inc. (13467) 100%	43444	CDC
402571549	Active	2004-09-29	2020-09-28	52.25	Ressources Sirios Inc. (13467) 100%	43449	CDC
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401733935	Active	2004-09-29	2020-09-28	52.2	Ressources Sirios Inc. (13467) 100%	43479	CDC
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401732131	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43409	CDC
401733681	Active	2004-11-17	2020-11-16	52.29	Ressources Sirios Inc. (13467) 100%	45515	CDC
401733960	Active	2004-09-29	2020-09-28	52.19	Ressources Sirios Inc. (13467) 100%	43484	CDC
401733163	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40004	CDC
401733192	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40010	CDC
401733131	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39995	CDC
401733732	Active	2004-09-29	2020-09-28	52.27	Ressources Sirios Inc. (13467) 100%	43438	CDC

Claim No.	Claim status	Issue date	Anniversary date	Area Ha	Owner	Claim name	Type
402571548	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43422	CDC
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401733963	Active	2004-11-17	2020-11-16	52.19	Ressources Sirios Inc. (13467) 100%	45460	CDC
401733795	Active	2004-11-17	2020-11-16	52.25	Ressources Sirios Inc. (13467) 100%	45449	CDC
402571556	Active	2004-09-29	2020-09-28	52.24	Ressources Sirios Inc. (13467) 100%	43456	CDC
401733161	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40002	CDC
401733793	Active	2004-09-29	2020-09-28	52.25	Ressources Sirios Inc. (13467) 100%	43451	CDC
401733905	Active	2004-09-29	2020-09-28	52.21	Ressources Sirios Inc. (13467) 100%	43473	CDC
401733962	Active	2004-09-29	2020-09-28	52.19	Ressources Sirios Inc. (13467) 100%	43487	CDC
401733989	Active	2004-09-29	2020-09-28	52.18	Ressources Sirios Inc. (13467) 100%	43492	CDC
401733195	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40014	CDC
401733730	Active	2004-09-29	2020-09-28	52.27	Ressources Sirios Inc. (13467) 100%	43436	CDC
402132299	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48018	CDC
401732133	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43411	CDC
401733792	Active	2004-09-29	2020-09-28	52.25	Ressources Sirios Inc. (13467) 100%	43450	CDC
402132358	Active	2004-12-10	2020-12-09	52.26	Ressources Sirios Inc. (13467) 100%	48024	CDC
401733765	Active	2004-11-17	2020-11-16	52.26	Ressources Sirios Inc. (13467) 100%	45446	CDC
401733137	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	40001	CDC
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401733132	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39996	CDC
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401733937	Active	2004-09-29	2020-09-28	52.2	Ressources Sirios Inc. (13467) 100%	43481	CDC
401733817	Active	2004-09-29	2020-09-28	52.24	Ressources Sirios Inc. (13467) 100%	43455	CDC
401732132	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43410	CDC
402132465	Active	2004-12-10	2020-12-09	52.27	Ressources Sirios Inc. (13467) 100%	48010	CDC
401733820	Active	2004-11-17	2020-11-16	52.24	Ressources Sirios Inc. (13467) 100%	45451	CDC
401733731	Active	2004-09-29	2020-09-28	52.27	Ressources Sirios Inc. (13467) 100%	43437	CDC
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401733126	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39990	CDC
402132269	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48014	CDC
401733990	Active	2004-09-29	2020-09-28	52.18	Ressources Sirios Inc. (13467) 100%	43493	CDC
401733987	Active	2004-09-29	2020-09-28	52.18	Ressources Sirios Inc. (13467) 100%	43490	CDC
401733194	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40012	CDC
401733848	Active	2004-11-17	2020-11-16	52.23	Ressources Sirios Inc. (13467) 100%	45452	CDC

Claim No.	Claim status	Issue date	Anniversary date	Area Ha	Owner	Claim name	Type
401733128	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39992	CDC
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402132218	Active	2004-12-10	2020-12-09	52.3	Ressources Sirios Inc. (13467) 100%	47999	CDC
401733849	Active	2004-11-17	2020-11-16	52.23	Ressources Sirios Inc. (13467) 100%	45453	CDC
401733674	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43423	CDC
401733845	Active	2004-09-29	2020-09-28	52.23	Ressources Sirios Inc. (13467) 100%	43461	CDC
402580548	Active	2004-12-10	2020-12-09	52.3	Ressources Sirios Inc. (13467) 100%	47998	CDC
401733879	Active	2004-11-17	2020-11-16	52.22	Ressources Sirios Inc. (13467) 100%	45455	CDC
401732134	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43412	CDC
401733909	Active	2004-11-17	2020-11-16	52.21	Ressources Sirios Inc. (13467) 100%	45457	CDC
401733907	Active	2004-09-29	2020-09-28	52.21	Ressources Sirios Inc. (13467) 100%	43475	CDC
401733761	Active	2004-09-29	2020-09-28	52.26	Ressources Sirios Inc. (13467) 100%	43442	CDC
401733877	Active	2004-09-29	2020-09-28	52.22	Ressources Sirios Inc. (13467) 100%	43469	CDC
401733938	Active	2004-11-17	2020-11-16	52.2	Ressources Sirios Inc. (13467) 100%	45458	CDC
401733196	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40015	CDC
402571539	Active	2004-11-17	2020-11-16	52.3	Ressources Sirios Inc. (13467) 100%	45510	CDC
401733934	Active	2004-09-29	2020-09-28	52.2	Ressources Sirios Inc. (13467) 100%	43478	CDC
401732139	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43418	CDC
401733671	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43419	CDC
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401733906	Active	2004-09-29	2020-09-28	52.21	Ressources Sirios Inc. (13467) 100%	43474	CDC
401733677	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43426	CDC
401733135	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39999	CDC
402132359	Active	2004-12-10	2020-12-09	52.26	Ressources Sirios Inc. (13467) 100%	48025	CDC
401733878	Active	2004-11-17	2020-11-16	52.22	Ressources Sirios Inc. (13467) 100%	45454	CDC
401733904	Active	2004-09-29	2020-09-28	52.21	Ressources Sirios Inc. (13467) 100%	43472	CDC
402132298	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48017	CDC
401733678	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43427	CDC
401733846	Active	2004-09-29	2020-09-28	52.23	Ressources Sirios Inc. (13467) 100%	43462	CDC
401732137	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43416	CDC
401733762	Active	2004-09-29	2020-09-28	52.26	Ressources Sirios Inc. (13467) 100%	43443	CDC
401733680	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43429	CDC
401733876	Active	2004-09-29	2020-09-28	52.22	Ressources Sirios Inc. (13467) 100%	43468	CDC
401733136	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	40000	CDC
401732136	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43415	CDC
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Claim No.	Claim status	Issue date	Anniversary date	Area Ha	Owner	Claim name	Type
401733734	Active	2004-11-17	2020-11-16	52.27	Ressources Sirios Inc. (13467) 100%	45444	CDC
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402132270	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48015	CDC
402571538	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43414	CDC
402571568	Active	2004-09-29	2020-09-28	52.19	Ressources Sirios Inc. (13467) 100%	43485	CDC
401733130	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39994	CDC
402132435	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48008	CDC
401733191	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40009	CDC
401733703	Active	2004-09-29	2020-09-28	52.28	Ressources Sirios Inc. (13467) 100%	43433	CDC
402132404	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48006	CDC
402132328	Active	2004-12-10	2020-12-09	52.27	Ressources Sirios Inc. (13467) 100%	48021	CDC
401733733	Active	2004-09-29	2020-09-28	52.27	Ressources Sirios Inc. (13467) 100%	43439	CDC
401733193	Active	2004-09-27	2020-09-26	52.31	Ressources Sirios Inc. (13467) 100%	40011	CDC
401733125	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39989	CDC
401733700	Active	2004-09-29	2020-09-28	52.28	Ressources Sirios Inc. (13467) 100%	43430	CDC
401733766	Active	2004-11-17	2020-11-16	52.26	Ressources Sirios Inc. (13467) 100%	45447	CDC
401733127	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39991	CDC
401733874	Active	2004-09-29	2020-09-28	52.22	Ressources Sirios Inc. (13467) 100%	43466	CDC
401733818	Active	2004-09-29	2020-09-28	52.24	Ressources Sirios Inc. (13467) 100%	43457	CDC
401733816	Active	2004-09-29	2020-09-28	52.24	Ressources Sirios Inc. (13467) 100%	43454	CDC
401733791	Active	2004-09-29	2020-09-28	52.25	Ressources Sirios Inc. (13467) 100%	43448	CDC
402132494	Active	2004-12-10	2020-12-09	52.26	Ressources Sirios Inc. (13467) 100%	48011	CDC
402132330	Active	2004-12-10	2020-12-09	52.27	Ressources Sirios Inc. (13467) 100%	48023	CDC
401733735	Active	2004-11-17	2020-11-16	52.27	Ressources Sirios Inc. (13467) 100%	45445	CDC
401733764	Active	2004-09-29	2020-09-28	52.26	Ressources Sirios Inc. (13467) 100%	43445	CDC
401733988	Active	2004-09-29	2020-09-28	52.18	Ressources Sirios Inc. (13467) 100%	43491	CDC
401733684	Active	2004-11-17	2020-11-16	52.29	Ressources Sirios Inc. (13467) 100%	45518	CDC
402132329	Active	2004-12-10	2020-12-09	52.27	Ressources Sirios Inc. (13467) 100%	48022	CDC
401733675	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43424	CDC
401733701	Active	2004-09-29	2020-09-28	52.28	Ressources Sirios Inc. (13467) 100%	43431	CDC
401733964	Active	2004-11-17	2020-11-16	52.19	Ressources Sirios Inc. (13467) 100%	45461	CDC
401733133	Active	2004-09-27	2020-09-26	52.33	Ressources Sirios Inc. (13467) 100%	39997	CDC
401733676	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43425	CDC
402132434	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48007	CDC
402571537	Active	2004-09-29	2020-09-28	52.3	Ressources Sirios Inc. (13467) 100%	43408	CDC
402132300	Active	2004-12-10	2020-12-09	52.28	Ressources Sirios Inc. (13467) 100%	48019	CDC

Claim No.	Claim status	Issue date	Anniversary date	Area Ha	Owner	Claim name	Type
401733679	Active	2004-09-29	2020-09-28	52.29	Ressources Sirios Inc. (13467) 100%	43428	CDC
401733164	Active	2004-09-27	2020-09-26	52.32	Ressources Sirios Inc. (13467) 100%	40005	CDC
402132271	Active	2004-12-10	2020-12-09	52.29	Ressources Sirios Inc. (13467) 100%	48016	CDC
402130993	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2427997	CDC
402130994	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2427998	CDC
402130995	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2427999	CDC
402130996	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2428000	CDC
402580547	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2428001	CDC
402130997	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2428002	CDC
402132217	Active	2015-05-25	2021-05-24	52.3	Ressources Sirios Inc. (13467) 100%	2428003	CDC
402132399	Active	2015-05-25	2021-05-24	52.29	Ressources Sirios Inc. (13467) 100%	2428004	CDC
402132400	Active	2015-05-25	2021-05-24	52.29	Ressources Sirios Inc. (13467) 100%	2428005	CDC
402132401	Active	2015-05-25	2021-05-24	52.29	Ressources Sirios Inc. (13467) 100%	2428006	CDC
402132402	Active	2015-05-25	2021-05-24	52.29	Ressources Sirios Inc. (13467) 100%	2428007	CDC

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES AND INFRASTRUCTURE, PHYSIOGRAPHY

5.1 Accessibility

The Cheechoo Project is located about 350 km north of the mining town of Matagami or about 500 km north of Val-d'Or. The area can be accessed via the paved James Bay highway (extension of highway #109), about midway between Matagami and Radisson, or via the all-weather gravel road *Route Du Nord* from Chibougamau. Various secondary gravel roads give access to the Opinaca Reservoir and other Hydro-Québec infrastructure, as well as to the Éléonore mine.

The main block of the Cheechoo Property is accessible by land via the Éléonore mine all-weather gravel road. At km 54 road marker of this road, an access to the Cheechoo camp or worksite is via a dirt access road.

The western block of the Cheechoo Property is partially located on an island within the Opinaca Reservoir and is currently only accessible by boat or helicopter.

Helicopters are available at Radisson or Chibougamau, about 1-1.5 hours away. A regional airport is located at Nemiscau, about 100 km south of the Project. Arrangements can also be made to land and fuel at the Éléonore mine (helicopter/plane) or KM-381 relays (helicopter only).

5.2 Climate and Vegetation

The area experiences a subarctic climate, characterized by short, cool summers and long, cold winters. The nearest permanent weather monitoring station maintained by Environment Canada (climat.qc.ca) is the La Grande Riviere A. According to the available data collected at this weather station from 1981-2010, the daily average temperature for January was -23.2°C and the daily average temperature in July was 14.2°C. The record low during this period was -44.6°C, and the record high was 37.3°C.

Data collected from the weather station from 1981 to 2010 indicates that the total annual precipitation was 697.2 mm, with peak rainfall occurring during August (91.1 mm average), and September (110.6 mm average). Snowfall is light to moderate, with an annual average of 261.3 cm. Snow typically accumulates from November to April, with a peak snowfall occurring in November (60.3 cm average), December (44.4 cm average); with a maximum snowpack depth of approximately 46 cm. On average, the Property is frost-free for 92 days.

Although tempered by James Bay and the abundant reservoirs, the climate remains cold continental with extreme seasonal variations. Precipitation is not abundant, although fog and mist can be common in the autumn. Ideal period for exploration work is in summer, from May to early September or in spring from late February to early April for programs requiring winter access.

The area is covered by a scattered boreal forest, taiga subzone, dominated by black spruce strands. Local stands of jack pine and poplar dominate the well-drained areas. Shrubs consist mostly of alders and willows, while Ericaceae can form dense carpets.

Mining and drilling operations can be conducted year-round, whereas surface exploration work (mapping, channel sampling) can take place from May to October.

5.3 Local Resources and Infrastructure

5.3.1 Local Work Force

Local workforce could be provided from the neighbouring Cree communities as well as specialized mining personnel from the Abitibi and Chibougamau regions.

5.3.2 Additional Support Services

Services in the vicinity of the project are limited:

- Newmont Goldcorp's Éléonore mine is located about 15 km to the north-west of the Cheechoo main block. Emergency services are available, such as a nurse and an airstrip. Limited arrangements can be made for lodging;
- Hydro-Québec EM-1 camp is located about 50 km to the south;
- KM-381 Roadstop is the most convenient outpost in the area, located along the James Bay highway. Services such as lodging, cafeteria, fuel, heliport, garage and an ambulance are available;
- A private airstrip servicing the Éléonore mine is located at the mine site. Arrangements with Newmont Goldcorp are possible for landing and fueling aircrafts. Limited arrangements can also be made to travel on Éléonore chartered flights;
- LG3 airport is located about 105 km to the north, while Nemiscau airport is located about 105 km to the south-east. Both are serviced by Air Creebec, with daily scheduled flights to Montreal's Trudeau Airport;
- The Cree community of Nemaska, located about 100 km to the southeast, offers various services such as lodging, grocery store, garage and fuel, as well as a dispensary. Nemaska is the site of the *Grand Conseil des Cris*.

Other services are available in the towns of Radisson 160 km to the north or Matagami, but mainly in the Abitibi region 500 km to the south which offers all services and amenities required for industrial developments or mining operations.

5.4 Physiography

The Opinaca Reservoir represents the easternmost extent of the James Bay lowlands, whose limit coincides with the Cheechoo Property. To the west, the landscape is dominated by a flat plain with an altitude of approximately 220 m.a.s.l. This plain is poorly drained with abundant marshes and meandering streams or inundated by the reservoir. It is punctuated by many hills typical of the Canadian Shield. Lakes are abundant, either shallow in muskegs, or more crystalline on hilltops.

The eastern area has a more rugged topography, typical of the Canadian Shield, with abundant lakes, dense drainage, and ubiquitous rounded hills reaching an altitude of 405 m. Drainage is composed of the Opinaca River to the north and the Gipouloux River to the south; both flow into the Opinaca Reservoir then subsequently into Sakami Lake, the La Grande River and James Bay.

Outcrops are not abundant, especially in the western area. Most outcrops are located on hill sides or tops. Overburden deposits are either thin till blankets to the east or a complex assemblage of periglacial and glacio-marine sediment to the west.

5.5 Infrastructure

Although the Project is located in a relatively isolated region, the Cheechoo Project benefits from its proximity to the Éléonore mine, which is 15 km away. On top of the mining infrastructure, the support facilities for the Éléonore mine include: an oversized access road accessible year-round, an airstrip and a camp that can accommodate more than 400 people. The mine is supplied with electricity by a 120/25 kV substation which is itself supplied by the substation at the Eastmain distribution point. The 161 kV power line serving the Éléonore mine runs 5 km to the west of the main Cheechoo block.

Sufficient water is available on the Property from surface water sources for both exploration and mining needs.

The Cheechoo work camp, located on the main property block, is reached via a 12-kilometre dirt access road. The quality of the road varies greatly with the seasons. The access road has one 40-foot bridge with a load-bearing capacity of 65 t. The work camp can presently lodge up to 39 people (45 with minor adjustments to the water treatment system). Partial cellular phone coverage is available on the Property.

Railheads are available in Matagami and Chibougamau, about 350 km and 450 km to the south. There is a seasonal seaport at Chisasibi, about 235 km to the northwest.

6. HISTORY

The earliest recorded mineral exploration in the area was undertaken by Noranda Inc. in 1964 and led to the discovery of the Ell Lake showing. Subsequently, various works were carried out in the region by governmental geological survey teams.

In 1972, regional low-density aeromagnetic surveys were carried out by the federal government. A geological framework was then established in the SDBJ period by Franconi (1978). More recent and accurate geological maps were made for NTS 33B (1/250 000) (Simard and Gosselin, 1999), 33C/09-33C/16 (1/50000) (Bandyayera and Fliszár, 2007), 33C/10 and 33C/15 (Bandyayera and Lacoste, 2009) and 33B/12-33B/13 (Bandyayera et al., 2010). A low-density aeromagnetic survey (GSC) and more recent medium density aeromagnetic and aerospectrometric surveys (Goldak, 2008) are available, along with a geochemical survey of lake-bottom sediments (Gleeson, 1976), reanalyzed by Beaumier and Kirouac (1995) for NTS sheet 33B and in 2004 for NTS sheet 33C (Beaumier and Leduc,2005).

In 2001, Virginia Gold Mines Inc. resumed exploration in the Lac Ell area, which led to the discovery of the Roberto Zone in 2003, from which the Éléonore gold mine was developed. This discovery launched a massive claim staking rush in the region. Initial staking in the area by Sirios coincided with this event.

6.1 Historical Mineral Exploration Work on the Cheechoo Property

In 2004, when the discovery of the Roberto Zone by Virginia Gold Mines was announced, Sirios acquired hundreds and later on in 2005 up to a few thousands of claims in the area immediately east and southeast of what is now the Éléonore mine. Close to 600 of these claims formed the property blocks formerly known as Shark, Cheechoo-A, Cheechoo-B (subsequently Cheechoo-B West and Cheechoo-B East) and Cheechoo-C. These claim blocks were progressively reduced to the Cheechoo-A and Cheechoo-B West blocks which, together, now make up the current Cheechoo Property. Based on available data, no previous exploration work was conducted within the Property boundaries prior to staking by Sirios in 2004.

In the same year, Golden Valley signed an option agreement with Sirios to acquire a 60% interest in the Cheechoo and Sharks projects. Golden Valley Mines initiated their prospecting work in the summer of 2005. Intensive efforts continued until 2007, followed by a drilling program in 2009.

In 2009, Golden Valley acquired their 60% interest of the Cheechoo Property after completing $4M of exploration work on the Property. Work continued sporadically until 2011. In 2012, Sirios took over the project and subsequently reacquired a 100% interest of the Property in June 2016, after the completion of $5M in exploration work and the issuance of 4,148,374 common shares to Golden Valley following the terms of a second agreement signed in 2012.

6.1.1 Golden Valley Mines

2005

In the winter of 2005, Golden Valley Mines commissioned an aeromagnetic and electromagnetic survey (DIGHEM) covering their properties in the area (Smith, 2005). The strategy of Golden Valley was then to outline electromagnetic conductors, using a traditional base-metal exploration approach.

In the summer, Golden Valley completed a lake bottom sediment geochemical survey (Lalancette and Girard, 2006a to 2006d; Allou and Girard, 2006). A prospecting and geological mapping program was also conducted. The prospecting work mainly targeted the identified AEM conductors. The main discovery, a cluster of gold-bearing boulders, was made on the western block of the Cheechoo Property (formerly Cheechoo A). Of the 177 samples collected, 23 graded between 0.1 g/t Au and 3.98 g/t Au, with local copper values up to 1.6% and 1.7% Cu and silver at 37.4 g/t Ag and 52.9 g/t Ag (Girard et al., 2006a). Only marginal gold values were obtained on the Cheechoo main block (formerly part of Cheechoo B) (Girard et al., 2006b). No significant results were found on Cheechoo C (Girard et al., 2006c) and Shark (Girard et al., 2006d).

2006

Pursuing with its approach of targeting AEM conductors, Golden Valley commissioned line cutting for a total of 93 km and a geophysical survey on the northeast corner of Cheechoo A. Geophysical work, performed by Geosig (Hubert, 2006), included induced polarization (77 km), horizontal loop electromagnetic (Max-Min) (13.3 km) and ground magnetic surveys (93 km). The anomalies detected were related to the electromagnetic conductors outlined in the airborne survey (Smith 2005).

A prospecting program was conducted in late summer (Harnois and Boubakour, 2009a,b,c). Targets included geophysical anomalies, lake-bottom anomalies as well as mineral occurrences discovered in 2006. Abundant rock samples were collected, leading to the discovery of three gold-bearing occurrences: Letang (Cheechoo A, 209 g/t Au in a selected sample), Marchard (Shark-Cheechoo B; 11.96 g/t Au in a selected sample) and Garrioch (Cheechoo-B, 0.39 g/t Au in a selected sample). Fourteen trenches were excavated over gossanous zones, most of them on AEM anomalies, for 142 channel samples, without any significant results except for arsenic. Three new gold-bearing boulder fields were also found on Cheechoo-A, with similar gold grade distribution as in 2005, between 0.1 g/t Au and 2.1 g/t Au.

2007

Pursuing its approach of targeting AEM conductors, Golden Valley commissioned line cutting over four grids as follows:

- Grid #1: Shark, North of Gladman Lake, 73.2 km, (Dubois 2007);
- Grid #2: Straddling Shark and Cheechoo-B, Marchand occurrence, 45.8 km (Dubois and Alvarado, 2007);
- Grid #3: South-east of Cheechoo-B, 29.0 km, Garrioch occurrence, (Alvarado and Lalande, 2007);
- Grid #4: South-east of Cheechoo-B, Last Day occurrence, 45.4 km, (Dubois 2008).

Geophysical surveys were conducted on part of the Property and included a combination of induced polarization, horizontal loop electromagnetic (Max-Min) and ground magnetic surveys with total field and measured vertical gradient (Dubois, 2007). The rationale for the grid selection is not indicated but, seems to relate to mineralized occurrences found during the 2005 or 2006 prospecting. Grids were apparently tailored to AEM conductors although HLEM was not conducted on every grid.

A Golden Valley team conducted a wide array of field work in 2007, as indicated in an exhaustive consolidated report (Harnois and Boubakour, 2009a). This fieldwork aimed to follow up on 2006 results. Very limited work was conducted outside of the geophysical grids. Although well illustrated with photographs, the grid mapping is poorly documented, with the geological features described only near the known occurrences.

The best result obtained during this campaign was 3.83 g/t Au from Cheechoo A from 82 collected grab samples. The program also included trenching and channel sampling of the Trap zone, Outcrop 150 and Outcrop 159 on Cheechoo A (Cheechoo western block). A total of 22 trenches, for 118 m, were excavated by hand and 150 channel samples were collected. Broad low-grade gold was intersected on Outcrop 159. A humus geochemical survey was also conducted with 5,496 samples collected over six grids. Gold by fire assay was the only element analyzed.

Finally, in autumn 2007, Golden Valley conducted an exploratory drilling program (Harnois and Boubakour, 2009b). A total of 19 short holes were drilled for 2,506.7 m and 682 samples collected on the Cheechoo A, Shark and B blocks. Twelve of these holes were drilled on the western block (formerly Cheechoo-A). All these holes targeted AEM conductive or IP chargeable zones. The holes intersected only slightly anomalous gold grades.

6.1.2 Golden Valley Mines and Sirios

2010

In the summer of 2010, Golden Valley commissioned a ground magnetometer and a soil geochemical survey in the Cheechoo B West area (main block) (Girard et Gao, 2010). The objective was to outline the source of the geochemical dispersion train found down-ice on the Éléonore-South property of Eastmain Resources (Canova et al., 2010). The surveys were conducted along uncut grids. The geochemical survey included 1,555 humus samples analyzed by ICP-MS after sodium pyrophosphate digestion. The same team conducted a magnetometer survey, using GEM sensor plus a base station located in the centre of the survey. Camille St-Hilaire interpreted the geophysical results.

Upon reception of the preliminary results, Golden Valley and Sirios conducted a ground follow-up prospecting program targeting the main geochemical anomalies (Girard, Aubin and Boubakour, 2011). The program consisted of prospecting, with abundant gold bearing samples being collected, most of them from a slightly altered granitoid. Of the 168 selected samples, 26 contained 0.1 g/t Au to 2.58 g/t Au. Numerous mineralized samples were coincident with soil anomalies.

2011

In the summer of 2011, a second prospecting program was initiated on the main block (formerly Cheechoo B-West) by Golden Valley. The objective was to cover the poorly explored northern and south-eastern part of the Property (Barrette and Ali, 2012). A total of 51 grab samples were collected and assayed, without any significant results.

6.1.3 Sirios Resources

2012

In the summer of 2012, line cutting of 51.45 km, followed by induced polarization and ground magnetic survey, was carried out (Dubois, 2012). The grid covers the southeast corner of the main block, encompassing roughly the same area as the 2010 soil geochemical survey.

Following the June 2012 agreement, Sirios became the operator of the project. At that time, Sirios' interest in the project was 40% and Golden Valley 60%.

A drilling program was initiated in the fall on the main block (Cheechoo B-West). Eight short, NQ-size holes (CH12-001 to CH12-008) were drilled in October, for 938 m and 792 samples collected. Five of the holes intersected broad low-grade gold mineralization.

2013

On February 2013, Sirios notified Golden Valley regarding the completion of the first terms of the option agreement, which grants the right to acquire a 5% supplementary interest in the Project. Later that year, Sirios notified Golden Valley of its acquisition of the 5% supplementary interest and of its intent to proceed with a complete acquisition of the Project. In the summer, Sirios released a NI 43-101 technical report on the Cheechoo Project (effective date June 14, 2013; Girard, 2013).

7. GEOLOGICAL SETTING AND MINERALIZATION

This following description of the geology is mostly taken from the recent scientific paper from the Geological Survey of Canada on the Cheechoo Property by Fontaine et al. (2018).

7.1 Regional Geology

The study area is located at the boundary between the La Grande and Opinaca Subprovinces, which is defined by: i) a gradual transition from greenschist to upper amphibolite and granulite metamorphic rocks (Gauthier et al., 2007; Bandyayera et al., 2010), ii) a regional aeromagnetic discontinuity (Bandyayera et al., 2010); and iii) the appearance of orthopyroxene and migmatites in the paragneissic rocks to the north (Bandyayera et al., 2010). Locally, the contact is obscured by tonalite and granodiorite intrusions (Hocq, 1994), such as the Janin and Boyd suites or the Rotis and Menouow intrusions (Bandyayera and Fliszár, 2007; Bandyayera and Lacoste, 2009; Bandyayera et al., 2010).

7.1.1 La Grande Subprovince

The La Grande Subprovince is separated into a northern (La Grande River) and a southern domain (Eastmain River) (Gauthier and Larocque, 1998). These domains consist of Paleo- to Mesoarchean basement, overlain by Meso- to Neoarchean volcano-sedimentary sequences and injected by syn- to late-tectonic intrusions (Card and Ciesielski, 1986; Hocq, 1994; Goutier et al., 2001). The La Grande River domain is interpreted to reflect a peri-cratonic environment, located directly to the south of the “Superior proto-craton” (Card, 1990; Percival et al., 1994; Stern et al., 1994; Gauthier, 2000). The Eastmain River domain has been mapped and studied, in detail, by the Geological Survey of Canada (Low, 1896) and the *Ministère de l’Énergie et des Ressources Naturelles* (Remick, 1977; Franconi, 1978; Simard and Gosselin, 1999; Moukhsil, 2000; Moukhsil et al., 2003). The Eastmain River domain is characterized by greenstone belts composed of four volcanic cycles dated from 2752 to 2703 Ma comprising komatiitic to rhyolitic lavas and tuffs with tholeiitic to local calk-alkaline affinities (Moukhsil et al., 2003). Conglomerate and turbiditic wacke (Roberto host rocks) containing local iron-rich units of the Low Formation overlie volcanic sequences (Franconi, 1978; Moukhsil et al., 2003; Bandyayera and Fliszár, 2007). Gold exploration activity is focused on the La Grande Subprovince and its margins with the Opinaca and Nemiscau Subprovinces, and within the Middle and Lower Eastmain belt, the largest greenstone belt in the Eeyou Istchee Baie-James municipality.

7.1.2 The Opinaca Subprovince

The Opinaca Subprovince occurs between the Eastmain domain to the south and the La Grande domain to the north. The Opinaca belongs to metasedimentary belts, interpreted as accretionary prisms, such as the Quetico, the Nemiscau and the Ashuanipi Subprovinces (Card, 1990; Williams, 1990; Goutier et al., 2001; Thurston, 2002; Percival et al., 2012; Morfin et al., 2014). The Opinaca Subprovince covers 35,000 km^2, characterized by paragneiss and migmatites, intruded by syn- to post-tectonic, locally ultramafic intrusions (Simard and Gosselin, 1999; Bandyayera and Fliszár, 2007; Morfin et al., 2013). Tonalitic to granitic intrusions and leucogranitic dikes and veins have a S-type peraluminous composition, suggesting a derivation from partial melting of metasedimentary rocks and fractionated magmas (Moukhsil et al., 2003; Morfin et al., 2014).

The Opinaca Subprovince has been interpreted as an injection complex by Morfin et al. (2013, 2014). As defined by Weinberg and Searle (1998), an injection complex is an accumulation of evolved anatectic melt in the lower crust, at a depth close to the solidus (Morfin et al., 2014). The timing of episodic partial melting is constrained between 2671 Ma, the age of the oldest metamorphic zircons and the 2637 Ma intrusion of leucogranitic dikes and veins, coeval with the main D2 phase of deformation in the Opinaca (David et al., 2010; Morfin et al., 2013). This long-lived tectonometamorphic event was first initiated in the highly metamorphosed core of the Opinaca Subprovince (Morfin et al., 2013) and later along its margins, within the lower grade La Grande Subprovince supracrustal rocks at 2620-2600 Ma (Dubé et al., 2011). Evidence of retrogression (hydration of orthopyroxene into biotite and/or amphibole) is restricted to late shear zones (Simard and Gosselin, 1999; Morfin et al., 2013). These shear zones are locally truncated by younger granitic and granodioritic intrusions (Morfin et al., 2013), associated with the Vieux Comptoir granitic with younger phases (nAvcr2) dated between 2640 and 2613 Ma (David and Parent, 1997; Goutier et al., 1999; Goutier, 2017). Leucogranitic dikes and veins of the Opinaca Subprovince have been interpreted as highly evolved leucogranites formed by partial melting of metasedimentary source, experienced an early fractional crystallization of plagioclase (Morfin et al., 2013; Morfin et al., 2014). Those intrusions are distinguished from the Tonalite-Trondjhemite-Granodiorite (TTG) suite that originated from melting of subducted oceanic crust (Condie, 1981; Jahn et al., 1981), such as the Desliens igneous suite in the Ashuanipi Subprovince (Percival et al., 2003), based on their Ni content, generally <15 ppm (Morfin et al., 2014) and MgO content (<2 wt%). The Vieux Comptoir suite (nAvcr2) is composed of ovoids alkaline granite and granite, containing biotite and magnetite, with youngest phases dated between 2640-2613 Ma (Goutier et al., 1999; Goutier, 2017). Those intrusions can contain up to 10% of tonalitic enclaves (Goutier et al., 1999; Bandyayera and Lacoste, 2009). The Rotis pluton, dated at 2671 Ma (David et al., 2010), is a massive to locally foliated granodiorite containing 10% of mafic minerals, which intruded and stitches the Opinaca- La Grande contact (Bandyayera and Lacoste, 2009; Bandyayera et al., 2010). The Janin suite, in the Opinaca Subprovince, is composed of several units from pegmatite, tonalite, granite to granodiorite with hornblende and biotite (Bandyayera and Fliszár, 2007; Bandyayera et al., 2010). In the vicinity of the Éléonore mine, syn- to late-tectonic intrusions and pegmatite dikes (2620- 2603 Ma) intruded the La Grande Subprovince supracrustal rocks (Ravenelle et al., 2010; Dubé et al., 2011; Fontaine et al., 2015). One of those, the 2612±1 Ma Cheechoo intrusion (Fontaine et al., 2015), is located 15 km southeast of the Éléonore mine. The Cheechoo intrusion contains pegmatite dikes, mafic schist enclaves and hosts gold mineralization at Cheechoo and Éléonore South properties (Sirios Inc., 2016). The Éléonore gold mine (Newmont), Cheechoo (Sirios Resources), Moni, JT (Azimut Exploration, Eastmain Resources, Newmont), Synee (Newmont) prospects and Sakami (Canada Strategic Metals) and Lac Menarik (Harfang Exploration) properties occur along a NW-trending corridor characterized by a strong metamorphic gradient, roughly subparallel to the Opinaca-La Grande boundary (Gauthier et al., 2007).

7.2 Local Geology

The Cheechoo Property straddles the transition zone between the La Grande Subprovince with the high-grade metasedimentary rocks of the Opinaca Subprovince (Figure 7-1). The inferred contact, affected by open folds, is defined by the appearance of migmatite towards the northeast. This is illustrated on the Cheechoo Property by the preponderance of paragneissic rocks and migmatites (metatexites with local diatexites). Other lithologies include the Cheechoo intrusion, leucogranitic dikes and veins, banded iron formations, amphibolites and conglomerates from the Low formation. The 10 km^2 Cheechoo intrusion has homogeneous, very low magnetic susceptibilities, with local high magnetic domains at its margins, potentially associated with the presence of iron-rich formation with skarn-like assemblages in the metasedimentary package. The Cheechoo and Éléonore South (Azimut/Newmont /Eastmain joint venture) properties are interpreted to share the same auriferous system centered on the Cheechoo intrusion (Fontaine et al., 2017b).

The main stripped area exposes two distinct domains of the Cheechoo intrusion and two E-trending sections through its margins (Figure 7-2). The mineral assemblage of the intrusion is characterized by feldspar phenocrysts and biotite porphyroblasts in a matrix of quartz, feldspars, biotite, amphibole and local traces of diopside and actinolite. The intrusion is characterized by a massive and a saccharoidal domain, and a more restricted highly foliated domain near its margins (25-30 m thick), which is associated with numerous leucogranitic pegmatite dikes (40-50%) that are generally subconcordant to the foliation (Figure 7-2). The Cheechoo intrusion is strongly recrystallized with saccharoidal texture, and progressively foliated towards its margins. The foliation within the intrusion is generally subparallel to the contact with biotite-rich paragneissic rocks. The high variability of mineral assemblages and proportions, enrichment in volatile elements (e.g. boron, and phosphorus) and the presence of miarolitic cavities suggest that these complex pegmatites are possibly at the magmatic-hydrothermal transition (exsolution of magmatic volatile phases from silicate melt).

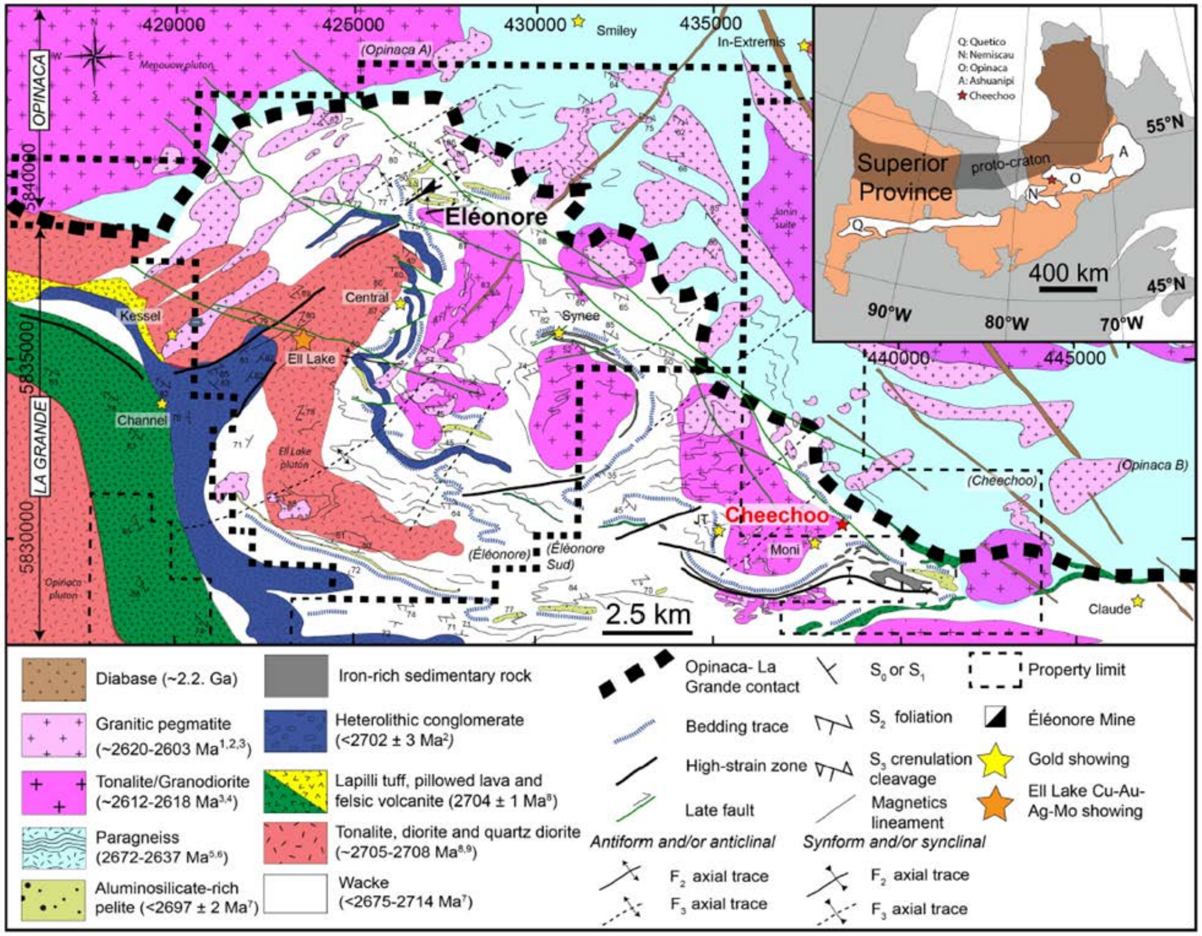


Figure 7-1: Simplified geological map of the Éléonore property and adjacent properties (modified after Fontaine et al. (2017a)

Source of geochronological data: 1: (Dubé et al., 2011); 2: (Ravenelle et al., 2010); 3: (Fontaine et al., 2015); 4: (Goutier et al., 2000); 5: (David et al., 2010); 6: (Morfin et al., 2013); 7: McNicoll V., unpublished; 8: (Bandyayera and Fliszár, 2007); 9: David, J., 2005, unpublished. Proto-craton from (Percival et al., 1994). Coordinates NAD83 UTM 18N.

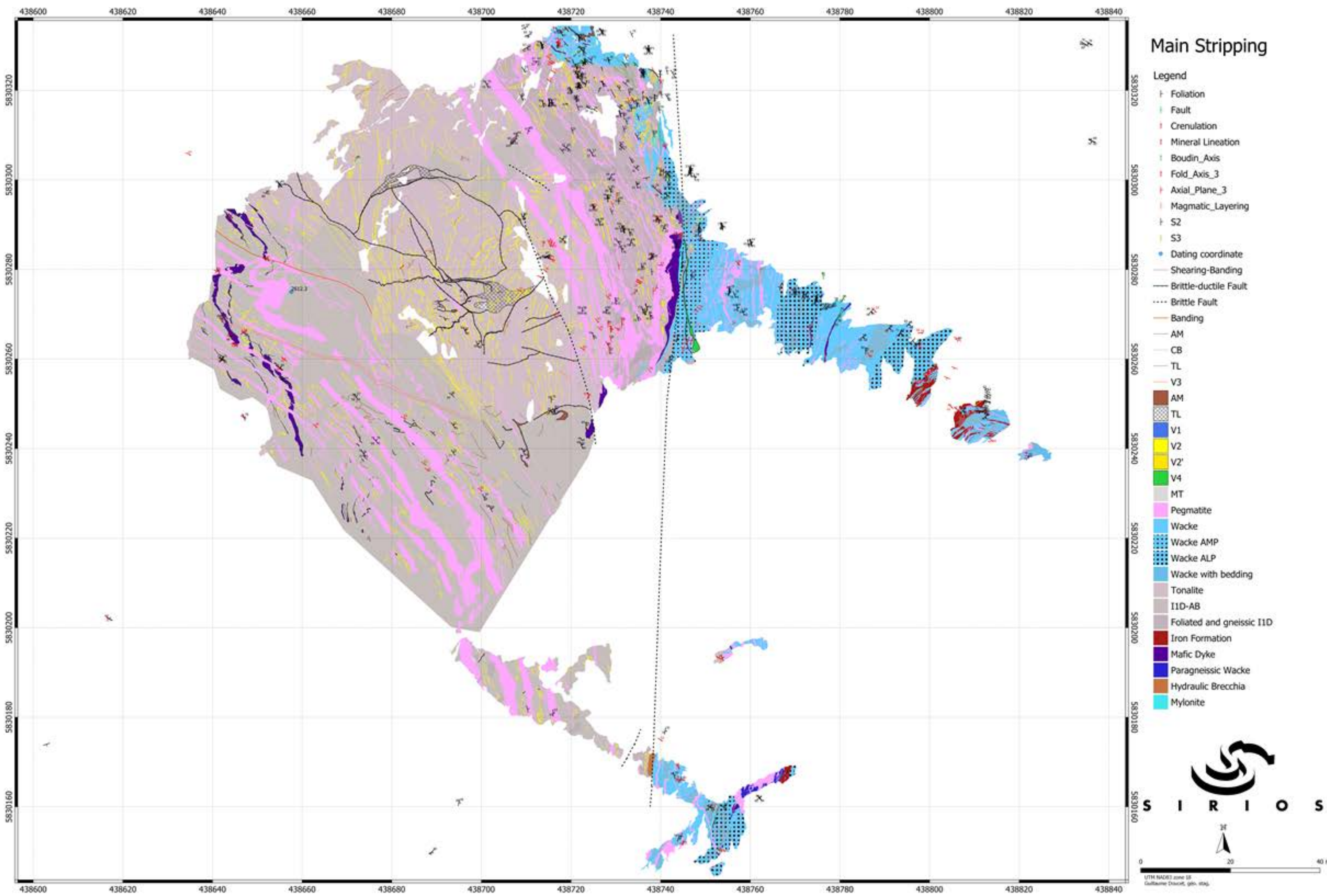


Figure 7-2: Geology of the main stripped area
(modified from Fontaine et al., 2018)

7.3 Structural Elements

7.3.1 Regional Framework

The Cheechoo Property is located a few kilometres south of the tectonic contact between the Opinaca and La Grande subprovinces (Bandyayera et al., 2010; Ravenelle et al., 2010). Here, deformed high-grade metasedimentary rocks are ubiquitous (e.g. migmatites with ptygmatitic folds) and similar to those described elsewhere in the area by Morfin et al. (2013). Within the Opinaca Subprovince, deformations commonly occur during granulite facies metamorphism and partial melting (Simard and Gosselin, 1999). The S_1 fabric is totally obliterated by the main phase of deformation and regional metamorphism although transposed S_0 is locally preserved in metatexites or inferred by variations in grain sizes and mineral proportions (Bandyayera et al., 2010; Morfin et al., 2013). The main S_2 fabric is a paragneissic fabric and/or migmatitic layering (Ravenelle et al., 2010). Leucocratic veins and dikes commonly strike parallel to the transposed bedding and some are asymmetrically folded (Morfin et al., 2013; Morfin et al., 2014), while others cut this fabric, suggesting that migmatization occurred during and outlasted D_2 (Ravenelle et al., 2010). The generally subvertical S_2 fabric is defined by biotite or amphibole alignments, with mineral and stretching lineations plunging to the east or the west (Bandyayera et al., 2010). The Cheechoo study area is part of the structural domain 2 of Bandyayera et al. (2010), characterized by EW-striking transposed bedding subparallel to S_1 and S_2 foliation, except along F_2 fold hinges that generally plunge to the west (Bandyayera et al., 2010).

The E-striking S_2 fabric and compositional layering of paragneiss are locally refolded by doubly plunging folds forming an elongated dome-and-basin pattern (Ravenelle et al., 2010), as originally described by Remick (1977). This specific pattern is due to F_3 folds and/or local doming associated with diapiric emplacement of late-tectonic intrusions (Bandyayera and Fliszár, 2007; Ravenelle et al., 2010; Fontaine et al., 2017b). A S_3 crenulation cleavage and associated inclined small-scale folds, deforms the S_2 fabric and migmatitic layering (Bandyayera et al., 2010). As proposed by Bandyayera et al. (2010), late-tectonic intrusions (e.g. Rotis, Menouow plutons and Vieux Comptoir, Janin suites), also influenced the trend of the S_2 fabric with local concentric distribution, as illustrated in the vicinity of the Rotis pluton. Flanks of F_2 and/or F_3 folds are locally truncated by EW-striking subvertical high-strain zones, attributed to a D_4 event (Morfin et al., 2013). The regional pattern is coherent with a NS-oriented shortening (Morfin et al., 2013).

7.3.2 Planar Fabrics

The margins of the Cheechoo intrusion are foliated to gneissic (Figure 7-2), and characterized by elongated biotite porphyroblasts, commonly attributed to the sub-magmatic S_2. The latter is commonly reoriented along the NW- to N-striking S_3 foliation. On the main stripped area, the S_2 foliation is visible in the gneissic margins of the Cheechoo intrusion, spatially associated with the presence of sheeted pegmatite dikes. The S_3 foliation dips steeply to the E-NE, similar to the S_2

foliation within the paragneiss and mafic schists, to the north of the main stripped area. In the paragneissic wacke, the S_2 and S_3 foliations are characterized by EW-striking bedding-parallel foliation and NW-striking crenulation cleavage, respectively. The S_3 crenulation cleavage is also present within mafic schist enclaves. On the 6-9 trench, the E-striking moderately-dipping S_2 foliation is present within the intrusion, while the dip of the S_2 foliation is steeper in the paragneissic wacke. Pegmatite dikes are commonly oriented sub-parallel to intrusion margins.

7.3.3 Folds

At least two generations of folds can be mapped in the Cheechoo intrusion. The most common type is the F_3 fold, affecting the S_2 foliation and pegmatite dikes. F_3 microfolds and axial-planar S_3 crenulation cleavage are also developed in the paragneissic rocks. F_3 folds are open, tight to isoclinal with strong asymmetries suggesting a close link with high-strain zone during late-D_2 to D_3. F_3 fold axes are often curvilinear, locally shallow plunging to the east or to the west, a feature also observed in the Opinaca Subprovince (Ravenelle et al., 2010). Refolded planes (S_2 foliation, vein and pegmatite dikes) in F_3 folds suggest the presence of F_2 folds. Earlier folding (F_1 and/or F_2) can be inferred based on the geometry of mafic schist enclaves and the local refolded pegmatite dikes. In the paragneissic rocks, F_2 folds with S_2 axial planar are locally identified.

7.4 Mineralization Types

The vein network of the Cheechoo Property is composed of various types of auriferous veins including sheeted extensional, en-echelon quartz-dominated veins, as well as pegmatitic quartz-feldspar veins. Mainly occurring within the intrusion, but also in the surrounding paragneissic rocks, the vein network is commonly 40 m to 50 m wide and, at least, 100 m long. The vein density increases (from 15% to 50% of the rock volume) towards intrusion margins and with the occurrence of pegmatite dikes, tonalite apophyses and mafic schist. The gold grade is controlled by the presence of sulphides (particularly arsenopyrite), the density of veins, and deformation gradients. The vein types (V_1, V_2, V_2’, V_3, V_4 and V_5) are essentially based on crosscutting relationships and are not related to the nomenclature of deformation events. The early V_1 auriferous vein network (about 5% of the vein network) is composed of millimetric to centimetric veins characterized by quartz, feldspar and minor amounts of diopside, actinolite and scheelite in association with pyrite, pyrrhotite, arsenopyrite and local visible gold. Veins are generally dismembered, with diopside, actinolite, albite-rich centimetric halos. Those veins are mainly perpendicular or at a high angle with the margins of the Cheechoo intrusion. V_2 veins (about 70% of the vein network) cut the V_1 vein network and are composed of quartz, feldspar, phlogopite, arsenopyrite and pyrrhotite. V_2 veins are oriented subparallel or at a low-angle with the intrusion margins and form a sheeted vein array. For instance, in the southern part of the 6-9 trench, the auriferous en-echelon V_2 vein network is oriented at a low-angle with the contact between the paragneiss and the intrusion. It is interpreted to represent ENE-trending dextral shear component associated with discrete high-strain zones. V_2’ veins (about 15% of the vein network) are composed of quartz ± feldspar and characterized by actinolite and feldspar-rich selvages. In all of those veins, feldspar is commonly interstitial to quartz grains, like those of some auriferous pegmatitic quartz-feldspar veins hosted by the Cheechoo granodiorite (Moni showing) or by paragneiss at the Éléonore gold mine. Locally, pegmatites laterally evolve into V_2 and V_2' veins while some pegmatite dikes cut veins, suggesting that some of them may be contemporaneous. V_3 are extensional veins (roughly 10% of the vein network) composed of quartz, actinolite and feldspar. Those veins are N-striking on the 6-9 trench and NNE-striking on the main stripped area. On the 6-9 trench, V_3 veins are oriented perpendicular to the intrusion margins and become progressively transposed sub-parallel to the contact towards the NNE, where they are also affected by F_3 folds. In contrast, on the main stripped area, the V_3 veins are NNW-striking, subparallel to the intrusion margins. Late V_4 are commonly barren. They are composed of chlorite ± (epidote, quartz) and oriented to the N-NNW in the northeastern part of the main stripped area. V_4 veins locally contain pyrite and visible gold in association with chlorite. V_5 veins are located 40 m west of the intrusion margins in chloritized paragneiss. These veins comprise tourmaline ± quartz, arsenopyrite and are sigmoidal and sub-concordant to the foliation and dip moderately to the east (50-60°) supporting a syn-D_2 emplacement.

The hydrothermal and gold mineralization features of the Cheechoo Property, temporal and/or spatial association with a reduced intrusion, pegmatites and mafic enclaves or dikes shares analogies with reduced intrusion-related gold systems (Thompson and Newberry, 2000; Hart, 2007). The composition of the Cheechoo intrusion shares similarities with reduced ilmenite series and gold-associated granitoids (Fontaine et al., 2017b) described in Yukon, and Alaska (Hart et al., 2004) and in New Brunswick (Yang et al., 2008). In New Brunswick Appalachians, Yang et al. (2008) have proposed that intrusion-related gold systems are controlled by magma sources, magmatic processes, redox conditions (country-rock nature), and local structural regimes. As suggested by Hart et al. (2004), the nature of the host rocks and the redox state of the magma is the most important factor controlling the metallogeny of intrusion-related systems. Particularly, during fractionation, redox features controlled the behaviour of metals (Ishihara, 1981; Hart et al., 2004). The crosscutting relationship between vein types can be explained by temperature variations and a possible steep thermal gradient on fluid chemistry, as described in detail by Hart (2007). In this scenario, V_1 veins, could have formed at 400-300°C, just below the brittle-ductile transition, whereas V_2, V_2' and V_3 veins were later emplaced at 250-300°C (Hart, 2007). According to Thompson and Newberry (2000), the early feldspathic alteration stage followed by a younger sericite-carbonate alteration, a feature described at Cheechoo, could illustrate the shift in sulphidation state from pyrite-pyrrhotite (early, Au-poor) to pyrite-arsenopyrite (late, Au-rich). Gold mineralization hosted by the 2612 Ma Cheechoo reduced intrusion is a new style of gold mineralization in the Éléonore gold mine area and elsewhere in the Eeyou Istchee Baie-James. The age and composition of the intrusion may represent a new regional metallotect, especially where occurring near the contact between the Opinaca and La Grande Subprovinces.

7.5 Mineralized Zones

7.5.1 Main Zone

The Main Zone gold occurrence is localized in the south part of the Cheechoo Property. It includes the eastern extremity of the Cheechoo granodiorite intrusion and the adjacent paragneissic rock. The intrusive-metasediment contact is generally sharp but can show presence of granodiorite apophyses and/or dikes, pegmatites and a NNE-trending pegmatitic V_2 vein network. The Main zone consists of a network of various generations of deformed and auriferous quartz to quartz ± k-feldspar veins and veinlets (mm to cm) hosted by the granodiorite intrusion, particularly developed along the margins. The mineralization is defined essentially by free gold associated with stockwork of quartz and quartz-amphibolite breccia and veinlets with arsenopyrite grains.

Veins are typically composed of sheeted quartz and feldspar with diverse shape (extension, en-echelon, pegmatite) and size (micrometre to centimetre). The mineralized veins are generally associated with a Na-K-Mg alteration envelope. The metallic signature is defined by bismuth, arsenic and tungsten, and more rarely by tellurium, selenium and lead. Sulphides associated with the mineralization account for a maximum of 1% of vein material and occur in the centre, on the margin, and disseminated throughout the veins network. The most common sulphide minerals are arsenopyrite, pyrrhotite and pyrite and their size varies from micrometre to millimetre. They are disseminated and are automorph. The gold grains are relatively coarse, from ten micrometres to a few millimetres. Those grains are isolated, locally in cluster or in fractures.

The structural control of the main zone mineralization seems to be syn to late D_2 and occurs on the marge of the Cheechoo granodiorite and on the roof of the intrusion. The mineralization is also deformed by D_3 and D_4, that can be seen in the veins and the folded zones.

7.5.2 Eclipse Zone

The Eclipse gold occurrence is localized in the centre of the Cheechoo granodiorite intrusion, west of the Main Zone.

Eclipse is defined by a folded quartz and feldspar veins and veinlets system with coarse gold grains. These veins have a pegmatitic texture and are hosted by the granodiorite stock associated with a strong to moderate alteration.

Vein composition varies from coarse quartz to pegmatitic quartz and feldspar. In the pegmatitic facies called “giraffe texture”, the automorph quartz grains are found in a matrix of felspar and account for 50% to 80% of the vein composition. In addition to the free gold associated with this vein network, various sulphides and other minerals are found in trace to 1%. Those minerals are mainly arsenopyrite, pyrite, pyrrhotite and scheelite.

8. DEPOSIT TYPES

8.1 Reduced Intrusion-Related Gold Systems

Currently the Cheechoo deposit is being interpreted as a Reduced Intrusion-Related Gold System (RIRGS), as described in detail by Fontaine et al. (2018). Most of the following deposit type description is borrowed and slightly modified from Hart (2007) and references therein, unless specified otherwise. The most diagnostic deposit style within the RIRGS classification is intrusion-hosted, sheeted arrays of thin, low-sulphide quartz veins with an Au-Bi-Te-W signature, which typically comprise bulk tonnage, low-grade Au resources.

RIRGS also include a wide range of intrusion-related mineral deposit styles (skarns, replacements, veins) that form within the region of hydrothermal influence surrounding the causative pluton and are characterized by proximal Au-W-As and distal Ag-Pb-Zn metal associations, thereby generating a zoned mineral system.

RIRGS are distinct from intrusion-related Au deposits as defined by Sillitoe (1991,1995). The RIRGS are a distinct class that lacks anomalous Cu, have associated W, low sulphide volumes, and a reduced sulphide mineral assemblage, and that are associated with felsic, moderately reduced (ilmenite-series) plutons; whereas oxidized intrusion-related Au deposits are mostly Au-rich (or relatively Cu-poor) variants of the porphyry Cu deposit model associated with mafic, oxidized, magnetite-series plutons. Therefore, within the intrusion-related clan, two different types of Au mineralizing systems can be identified using the prefixes “reduced” and “oxidized”.

The magmas have a reduced primary oxidation state that forms ilmenite-series plutons. This reduced state causes associated sulphide assemblages to be characterized by pyrrhotite, and quartz veins that host methane-rich inclusions. RIRGS mostly form at a depth of 5 km to 7 km and generate mineralizing fluids that are low salinity, aqueous carbonic in composition and are, therefore, unlike typical porphyry Cu deposits.

8.1.1 Grade and Tonnage

The most characteristic deposit style, intrusion-hosted sheeted vein deposits, is best represented by mineralization at active mines of Fort Knox (Kinross) and Eagle Gold Mine (Dublin Gulch, Victoria Gold Corp.). The grades of individual veins are 5 g/t Au to 50 g/t Au within otherwise barren host rocks, thus yielding ~1 g/t. Gold grade is, therefore, mainly controlled by vein density. Whereas Fort Knox and Dublin Gulch have similar overall grades, Fort Knox’s lower-grade mineralizations are enriched by higher-grade and overprinting, late-stage quartz shear veins. Sheeted vein arrays also occur at deposits such as Brewery Creek (Classic Zone), Dolphin, Shotgun, and Gil, but are not the main mineralization hosts because each deposit has other features that control grade distribution.

8.1.2 Geological Settings and Mineralization Controls

The RIRGS are best developed in and surrounding the apices of small, cylindrical-shaped plutons that intruded sedimentary or metasedimentary country rocks. Intrusion-hosted mineralization is preferentially sited in tensional zones that develop in the pluton's brittle carapace near the country rock contact.

Pluton size is important because batholiths are unlikely to develop into mineralizing systems. The RIRGS are generally well developed, surrounding small (<2 km^2) isolated plutons with mineralization in the intrusion and in the hornfelsed thermal aureole. Larger plutons (2–10 km^2) may have apophyses or later phases that are preferentially mineralized. Roof zones immediately above plutons may also be mineralized, in particular where there is large surface area of contact between the pluton and reactive country rocks.

Pluton geometry is also important. Elongate plutons reflect structural controls on pluton emplacement and indicate a dominant extensional direction that may be important for localizing later mineralization. Cylinder-shaped plutons with steep sides and domed or cupola-like roofs are preferred geometries because these features enhance fluid focusing (Figure 8-1). Sharp shoulders also provide regions of structural and rheological contrast that may enhance development of fluid focusing structures (Stephens et al., 2004).

Depth of pluton emplacement may be a feature critical to RIRGS formation. These systems generally lack multidirectional, interconnected vein stockworks that are characteristic of porphyry deposits. This is likely due to their deeper levels of emplacement (5–9 km; Baker and Lang, 2001; Mair et al., 2006a), whereby the increased confining pressure prevents rapid fluid exsolution and explosive pressure release, and the development of high permeability stockworks and breccias. As well, the depth precludes the entraining of significant volumes of meteoric water and the formation of broad alteration haloes. As a result, fluid flow and mineralization in most RIRGS systems is largely controlled by structural features that impinge on the thermally driven hydrothermal system (Hart et al., 2000b; Stephens et al., 2000, 2004; Mair, 2004).

The dominant structural control on RIRGS is a weak extension that forms arrays of parallel fractures in the brittle carapace, filled with thin (0.1–5 cm), auriferous, low-sulphide quartz veins that form extensive, intrusion-hosted sheeted arrays. Hornfels quartzite forms a brittle host lithology for mineralized quartz veins that range from shattered "stockworky" fractures to veins several metres in width (O'Dea et al., 2000). Solitary fracture, fissure, and shear-hosted veins occur in the pluton, in the hornfels, and as far as several km from the pluton, and may fill structures that were active while creating space during pluton emplacement (Stephens et al., 2004).

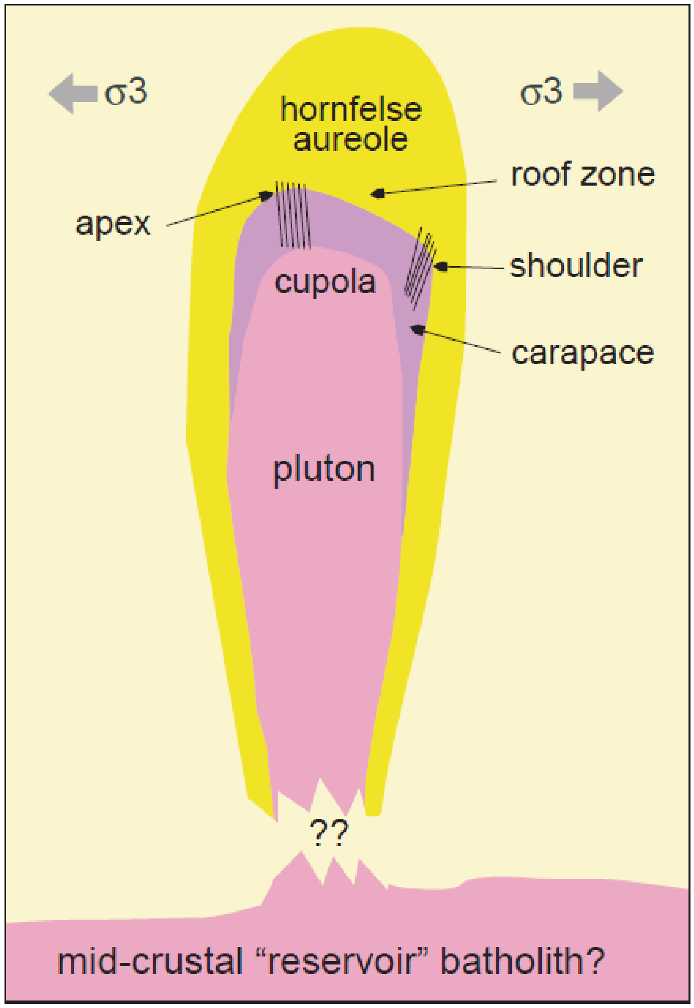


Figure 8-1: Hypothetical cross-section of a small (100 m-5k m across) pluton (Probably derived from a larger magmatic reservoir and intruding into extensional regimes at higher crustal levels. Of note is the asymmetric hornfels aureole and the early-chilled and more brittle marginal carapace. Preferred sites of intrusion-hosted Au mineralization are above the cupola, where exsolved fluids will accumulate, and mineralized fractures developed in the pluton's apex and shoulders. Epizonal styles of mineralization are associated with dike and sill complexes that would be hosted near the top of the hornfels aureole (Hart, 2007))

8.1.3 Deposit Size

Areas influenced by fluid interactions from the causative pluton in RIRGS are generally restricted to the limits of the hornfelsed zones, which themselves may extend for as far as 3 km from the pluton's margins. Deposit size and geometry are also dependent on the style of mineralization.

8.1.4 Alteration

Alteration in intrusion-hosted mineralization is neither extensive nor intensive and is typically limited to 0.5 cm to 3 cm-wide selvages adjacent to the veins with intervening, apparently fresh, barren rock. Alteration proximal to veins most commonly consists of either texture-destructive K-feldspar replacement (Maloof et al., 2001) or pervasive carbonate replacement of mafic minerals. An adjacent sericite-dominant ± pyrite ± carbonate assemblage overprinting plagioclase and mafic minerals is common.

8.1.5 Genetic Model

The RIRGS genetic model requires that the mineralization-generating cooling pluton reaches volatile saturation and that a fluid exsolves from the melt. Metals and volatiles such as sulphur and halogens presumably preferentially partition from the melt into an exsolving aqueous-carbonic mineralized fluid phase. Pressure, or depth of emplacement, exerts the greatest control on volatile saturation, particularly because volatiles are easily dissolved in felsic melts under higher pressures (Burnham and Ohmoto, 1980). However, volatile saturation is also induced by magmatic processes such as fractional crystallization, magma mixing, or simple cooling. Pluton emplacement depth appears, therefore, to be critical and explains why RIRGS are typically associated with a specific suite of plutons distributed over a broad area; such plutons likely represent melt crystallization at the same general crustal level.

At the pluton scale, mineralization is limited to regions above and outward from the site of volatile saturation. Being less dense than the melt, fluids will migrate to the uppermost parts of the less viscous portion of the magma chamber, which is usually the volatile-rich magmatic cupola immediately under the earlier-formed carapace (Candela and Blevin, 1995). Fluids will invade fractures in the carapace and opportunistically leak into and react with adjacent country rocks. Mineral occurrences are, therefore, most commonly sited at the pluton's apex, in the igneous carapace, or in hornfelsed country rocks adjacent to and above the pluton. The host plutons to many RIRGS likely have magma volumes that are too small to provide the large amount of metals and volatiles contained in these deposits, thereby suggesting the participation of larger volumes of primary magmatic fluids and metals (Candela and Piccoli, 2005). These could include deeper unexposed batholiths or mafic lamprophyric melts.

9. EXPLORATION

Exploration work completed on the Project prior to 2013 is described in the technical report on the Project by IOS Services Géoscientifiques Inc. (Girard, 2013). All the exploration work described in the sub-sections below was carried out by, or under the supervision of, Sirios Resources. No ground exploration work took place in 2013.

9.1 Surface Exploration

9.1.1 Surface Outcrop Sampling

2014

In June of 2014, a short prospecting/sampling program was carried out by Sirios in the northern portion of the main property block and along the 2012 grid. In total, 212 grab samples were collected; with seven samples returning grades higher than 0.1 g/t Au, but none exceeding 0.5 g/t Au. The samples were sent to ALS Minerals (ALS) in Val-d'Or, Québec for gold analysis by fire assay (Allard, 2014).

2016

Forty-four grab samples were collected from outcrops in the summer of 2016. These samples were mostly collected during the regional structural mapping work carried out on the main property block. Sample #91990262 returned slightly anomalous gold values of 0.13 g/t Au. The 91990-sample series and the R66701-sample series were sent to ALS in Val-d'Or for gold analysis by fire assay; the other samples were sent to Techni-Lab S.G.B Abitibi Inc., a subsidiary of Activation Laboratories Ltd. located in Sainte-Germaine-Boulé, Québec (Boudreau and Turcotte, 2018).

Eleven additional grab samples were collected from a cluster of large boulders located near drillhole CH16-038, at the border of the Éléonore-South property near the "Moni" prospect area. Two of these samples yielded high-grade gold results: 31.2 g/t Au (sample #1201006) and 113.5 g/t Au (sample #1201007) (Boudreau and Turcotte, 2018). The samples were sent to Techni-Lab S.G.B Abitibi Inc. for gold analysis by fire assay. High-grade samples #1201006 and #1201007 were analyzed by gravimetric finish and metallic sieve since they could not be dissolved by fire assay.

2017

The 2017 prospecting program was carried out with the aim of exploring parts of the main property block where coverage was considered poor or insufficient. The prospecting targeted three sectors in particular: the southern sector (main mineralized area), the southeast sector (mainly sediments and previously poor exploration coverage) and the northwest sector (follow up on the 2015 glacial sediments anomalies and Synee target; paragneiss boulder found nearby outside the property by Goldcorp with reported 21 g/t Au). A total of 371 grab samples were collected (111 outcrops and 260 boulders). The samples were sent to Techni-Lab S.G.B Abitibi Inc. for gold analysis by fire assay. No significant results were obtained (Boudreau and Turcotte, 2018).

2018

Relatively little ground exploration work took place in 2018 with only minor prospecting work around the “Mafic Dyke” showing. A total of 63 channel samples were collected with a diamond blade rock saw. Eleven samples had values greater or equal to 0.1 g/t Au with three samples yielding results ranging between 1.22 g/t Au and 4.3 g/t Au. Samples were sent to ALS in Val-d’Or for gold analysis by fire assay.

2019

Ground exploration work was minimal in 2019, with only a small program of soil anomaly verification following the reception of interpreted results of the 2016 survey. Seven grab samples were collected (5 outcrops and 2 boulders). No significant results were obtained, and the source of the soil anomaly was not discovered.

9.1.2 Overburden Stripping, Trenching and Channel Sampling

2015

Mechanical outcrop stripping and channel sampling were carried out in the main area in late summer 2015, at the same period as the soil and glacial sediment surveys. Four channels (CHRN15-001 to CHRN15-004), totalling 113 m, were sampled. Samples were sent to ALS in Val-d’Or for gold analysis by fire assay. Results revealed mainly broad low-grade gold mineralization, generally lower than 1.0 g/t Au.

2016

A large mechanical outcrop stripping and excavation program was undertaken in the summer and fall of 2016. The “Main Stripping” (Figure 9-1) was excavated in the central mineralized area connecting multiple already partially exposed outcrops. The total stripped surface (including outcrops) covers an area of approximately 10,000 m^2. From this surface, a grid totalling 910.6 m of channel sampling was collected and sent for analysis (CHRN16 #11 to 25, CHRN16 #26 to 31 and CHRN16 #43 to 177). Samples were sent to Techni-Lab S.G.B Abitibi Inc. for analysis of gold by fire assay and for multi-elements by inductively coupled plasma mass spectrometry (ICP-MS). The best continuous interval graded 1.3 g/t Au over 17.7 m. No significant results were obtained for the other elements analyzed (Boudreau and Turcotte, 2018).

Figure 9-1: Aerial view of the Main Stripping (Source: Sirios)

Two trenches were also excavated to follow up on the 2015 glacial sediment survey and the 2016 soil survey. The “Till Trench” (CHRN16 #5 to 10), located approximately 3 km northwest of the “Main Stripping”, did not yield any significant results that could explain the glacial sediment anomaly trend. In total, 36.2 m of channel samples were sent for analysis (Boudreau and Turcotte, 2018).

The “November Trench” (CHRN16 #32 and 33), located 600 m northwest of the “Main Stripping”, was excavated to follow up on a gold and arsenic soil anomaly from the 2015 soil survey. Results yielded 4.1 g/t Au over 8.1 m (including 25.4 g/t Au over 1 m). In total, 19.29 m of channel sampling were collected (Boudreau and Turcotte, 2018).

Samples from both trenches were sent to Techni-Lab S.G.B Abitibi Inc. for gold analysis by fire assay.

2017

Fifteen trenches were excavated in the summer of 2017 on the Cheechoo main property block. These trenches were excavated with the objective of providing additional geological information on the project and help guide exploration drilling (Boudreau and Turcotte, 2018).

Trench “2-2”, located approximately 150 m to the north of the “Main Stripping area”, yielded results of 4.0 g/t Au over 21.6 m (including 23.5 g/t Au over 3.1 m) (CHRN17 #212 and 213).

Trench “3” (CHRN17- #354 to 382) yielded values equal or greater than 0.1 g/t Au in 50 samples and up to 10.8 g/t Au.

Additional channel sampling was carried out in the “November” Trench (CHRN17-301) with a new combined interval of 1.4 g/t Au over 26.1 m.

Following observations made while prospecting, a trench was manually excavated to the northeast of the “Main Stripping” and yielded channel sampling results of 1.2 g/t Au over 3.7 m (Boudreau and Turcotte, 2018). This new mineralized zone is known as the “Mafic Dyke” showing.

Lastly, the “Main Stripping” was expanded and 1,083 m of channel sampling (CHRN17- #258 to 261; CHRN17- #264; CHRN17- #303 to 334 and CHRN17- #341 to 344) was added to the grid for a new total of 1,994.2 m.

All 2017 channel samples were sent to Techni-Lab S.G.B Abitibi Inc. for gold analysis by fire assay. Additional samples from the “Main Stripping” and samples collected from the “6-9” stripping were also analyzed for multi-elements ICP-MS. Many of the trenches were subsequently restored with only the most relevant sites being maintained.

2018

Relatively little ground exploration work took place in 2018 with only minor prospecting work around the “Mafic Dyke” showing. The “Mafic Dyke” trench was slightly enlarged manually; an additional 28 m of channel sampling was collected (CHRN18- #386 to 391). Results yielded 3.05 g/t Au over 4.4 m, including 11.38 g/t Au over 1.1 m (CHRN18-388).

9.1.3 Mapping

Regional structural mapping encompassing the entire main block was carried out in the summer of 2016 by a team of expert geologists that included geology university professors Mr. Normand Goulet, PhD and Mr. Michel Gauthier, PhD (Boudreau and Turcotte, 2018). The goal of the mapping program was to provide a broader understanding of the Cheechoo intrusion gold-bearing mineralized system. Preliminary mapping of the “Main stripping” was also undertaken at this time.

Detailed mapping of the “2-2”, “Mafic Dyke” and “6-9” trenches along with a more thorough mapping of a portion of the “Main Stripping” were completed in 2017 with the help of drone imagery. The “6-9” trench and “Main Stripping” geological mapping is presented in a publication by the Geological Survey of Canada on the geology of the Cheechoo gold property (Fontaine et al., 2018). The remaining portion of the detailed geological mapping of the “Main Stripping” was completed in 2018 and 2019 by Sirios (Figure 9-2).

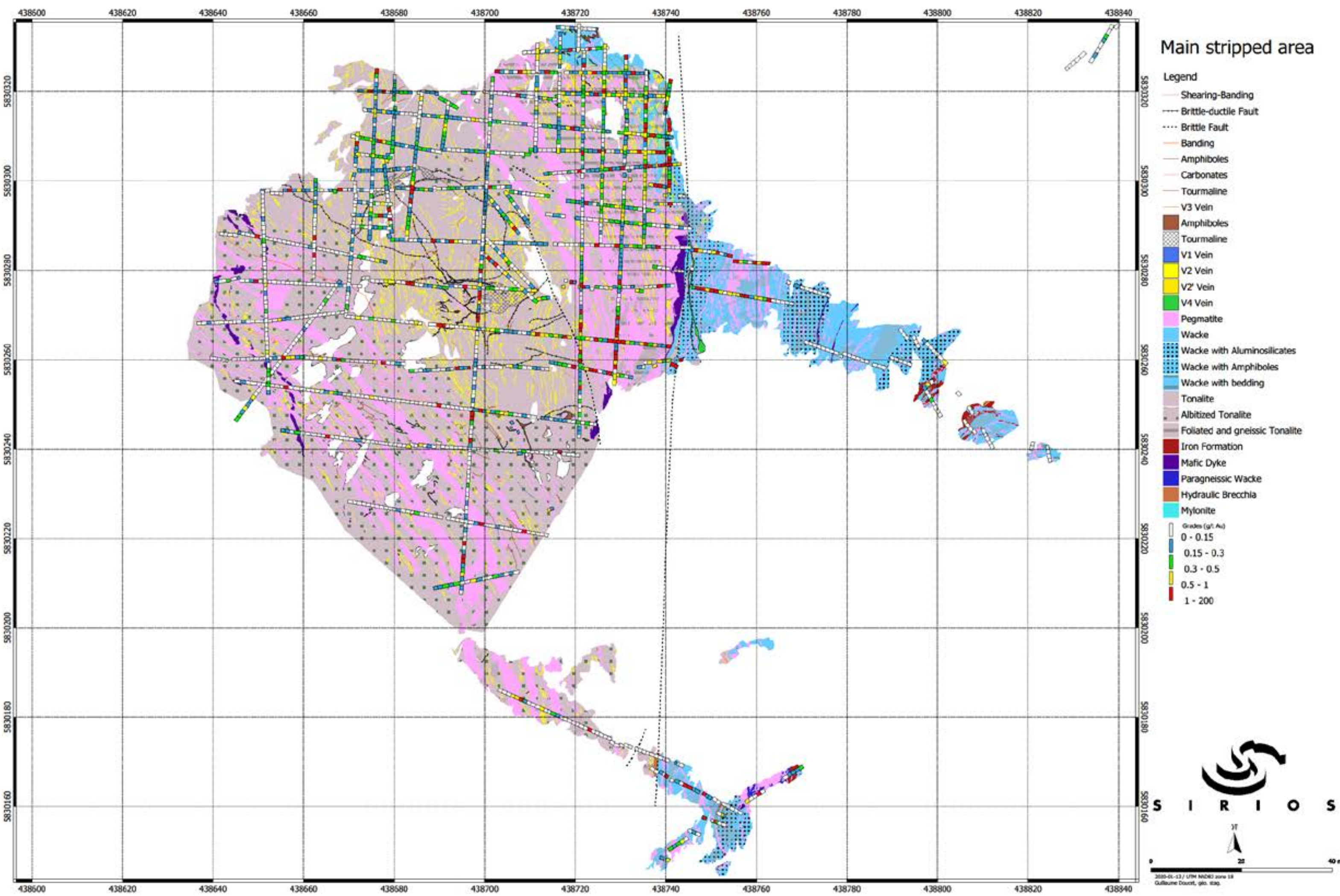


Figure 9-2: Detailed geological mapping of the main stripping (Source: Sirios)

9.1.4 Sediment Sampling

2015

In the summer of 2015, IOS Service Géoscientifiques carried out a humus soil geochemical survey on the main property block for Sirios. The survey covered two grids (A and B) and totalled 313 samples (Villeneuve and Fournier, 2016). The campaign followed up on the previous 2009 (Éléonore-South) and 2010 (Girard et al., 2011) soil geochemical surveys. Both previous surveys are referred to in the 2013 technical report on the Cheechoo property. Interpreted results of the 2015 survey revealed that gold was relatively abundant in the survey area and that it correlated locally with arsenic anomalies (Villeneuve and Fournier, 2016). Further investigation was recommended without mention of any specific targets.

This ground survey was conducted concurrently with a campaign of glacial sediment sampling where a significant number of gold grains were observed in two samples located inside the grid B (2015 soil survey). Out of the 36 samples collected, 131 grains of gold were counted in sample #91920011 while sample #91920012 contained 46 gold grains. Samples were characterized using the ARTGold® process (Villeneuve, 2015).

2016

In 2016, a large soil geochemical survey (2,495 humus samples) connecting the 2010 and 2015 grids and extending in the southeastern part of the property was carried out by Sirios. The survey prolonged previous coverage by about 3.5 km to the northwest and by 6.5 km to the southeast. Sampling procedures and sample preparation were done by Sirios following similar protocols to the 2010 and 2015 campaigns (Boudreau and Turcotte, 2018). All samples were subsequently sent to Actlabs for analysis. Sirios mandated the consultant IOS Geoscientific Services Inc. to level the data and interpret the results. The combination of all soil surveys on the Cheechoo Property covered an area of approximately 23.5 km^2.

2017

A glacial sediment survey was carried out in 2017 to follow up on the 2015 survey. In total, 43 samples were collected. The results of the survey confirmed the anomalous trend detected in 2015 but failed to produce any other significant results (Charbonneau and Robillard, 2018).

2019

In 2019, Sirios received the interpreted results of its 2016 soil geochemical survey. The results revealed the presence of seven discrete arsenic, copper and molybdenum anomalies (Girard, 2019).

Following the reception of interpreted results, a short verification of the ground was performed in late summer. The anomalies were not explained and no new outcrops were found in the vicinity.

9.2 Geophysical Work

9.2.1 Borehole Diagraphy

Three borehole diagraphy campaigns were completed by Wireline Services Group for Sirios between March 28, 2017 and April 28, 2018 on the Cheechoo Project. A total of 57 NQ holes were surveyed (10 during the 2017 winter campaign, 13 during the 2017 fall campaign and 34 during the 2018 winter campaign). The list and the location of these boreholes are presented in Table 9-1. Every borehole was surveyed with an Acoustic and an Optical televiewer. The holes were surveyed over their entire length apart from borehole surveys CH14-018, CH16-042, CH16-066, CH16-073, CH17-112, CH18-152, CH18-152 and CH18-167 which had to be prematurely stopped due to caving inside the holes. The goal of the surveys was to provide structural oriented data and a 3D core visualization. The 57 borehole surveys represent a total of 16,150.1 m of structural data from which 64,471 structural measurements were taken. The information collected was presented to Sirios in the form of raw data to be integrated to its database, and mainly describes fractures, contacts, veins and veinlets, chlorite breccias and foliations.

Table 9-1: List of the DDH surveyed by borehole diagraphy
Coordinates are in UTM NAD83 Zone 18N

DDH	Easting	Northing	Elevation (m)
CH14-018	438469.2	5830311	234.2
CH15-022	438500.3	5830171	247.0
CH15-025	438596.7	5830172	257.5
CH16-032	438514.0	5830175	247.3
CH16-040	438666.4	5830147	269.6
CH16-042	437324.8	5830924	223.7
CH16-043	437224.0	5830744	247.4
CH16-044	436724.7	5830982	216.7
CH16-052	438829.5	5830228	266.4
CH16-053	438716.8	5830236	265.7
CH16-055	438428.3	5830128	243.9
CH16-058	438554.3	5830047	250.0
CH16-059	438814.9	5830061	259.4
CH16-062	438855.6	5830160	274.0
CH16-066	436762.5	5831459	215.9
CH16-073	436316.1	5832324	221.1
CH16-074	438494.2	5830476	238.9
CH16-076	438287.5	5830484	230.6
CH16-081	438454.6	5830017	243.6

DDH	Easting	Northing	Elevation (m)
CH16-083	438890.9	5830202	266.3
CH16-086	438692.8	5830366	247.5
CH16-088	438531.0	5830513	242.0
CH16-089	438532.6	5830512	242.0
CH16-091	438507.1	5830355	237.1
CH16-093	438260.8	5830380	231.1
CH17-094	438665.8	5830148	269.4
CH17-098	438462.5	5830153	247.9
CH17-100	438171.7	5830087	233.1
CH17-101	437954.6	5830213	231.7
CH17-108	438437.6	5830024	243.9
CH17-112	438502.0	5830167	246.9
CH17-115	438627.0	5830400	244.2
CH17-120	438463.3	5830149	247.7
CH17-134	438564.2	5830270	240.5
CH17-137	438449.3	5830274	236.1
CH18-142	438698.4	5830013	251.5
CH18-145	437976.9	5830546	229.5
CH18-147	438200.6	5830533	229.3
CH18-152	438024.5	5830629	226.1
CH18-153	438025.2	5830629	226.0
CH18-157	437854.5	5830733	225.5
CH18-158	437853.7	5830733	225.4
CH18-160	437753.0	5830560	230.6
CH18-161	437587.9	5830068	233.0
CH18-163	437587.3	5830068	233.0
CH18-164	437858.1	5830041	232.9
CH18-167	435858.5	5830383	215.8
CH18-169	438076.6	5830031	232.5
CH18-170	436205.0	5830545	231.1
CH18-172	437988.9	5830082	232.3
CH18-173	438045.7	5830282	230.4
CH18-174	437816.5	5830181	232.7
CH18-176	437875.3	5830375	229.9
CH18-177	438220.1	5830172	232.8
CH18-178	437596.1	5830189	235.3
CH18-179	438262.4	5830045	240.9
CH18-180	438270.9	5830268	232.4

9.2.2 Airborne Surveys

2014

In February 2014, a high resolution heliborne magnetic survey was carried out by Geodata Solutions GDS Inc. for Sirios on the main property block (Cheechoo-B West at the time). A total of 1,411 linear kilometres were flown to cover the property. Traverse line spacing was 50 m with a nominal height of 30 m above ground level.

The goal of the survey was to identify geological structures that could potentially be associated to the positive drill results obtained in 2012 and 2013. Geological structural elements in relation with the tonalite that forms a large low-grade gold envelope were of particular interest. A detailed interpretation of the survey is presented in a report prepared by St-Hilaire (2014).

2017

A survey, which consisted of a high resolution heliborne magnetic survey, was carried out by Novatem Inc. for Sirios on the Property in the fall of 2017. A total of 1,710 linear kilometres were flown to cover the entire project. A comprehensive report of logistical and technical details is presented in a report prepared by Mouge (2017). General flight parameters for the survey are presented below:

- Traverse line spacing: 25 m;
- Tie-line spacing: 250 m;
- Traverse line heading: N0 / N180;
- Tie-line heading: E90 / W270;
- Sample rate: 10 Hz;
- Mean sensor terrain clearance: Drape surface, 50 m above the ground.

The goal of the survey was to increase the level of detail obtained in the 2014 survey by flying a tighter grid. However, the quality of the survey was considered disappointing as it did not provide the anticipated increase in detail due to the higher sensor elevation above the ground.

10. DRILLING

This chapter presents the drilling program carried out by Sirios between June 14, 2013 and March 19, 2019 (the “2013-2019 Program”) on the Cheechoo Project.

10.1 Drilling Methodology

From 2013 to the 2016 winter campaign, the drilling programs were performed by Rouillier Drilling with the collection of NQ size core (47.6 mm diameter). Between 2013 and 2015, the diamond drill rig was a track mounted type. For the 2016 winter campaign, the diamond drill rig was mounted on skids and hauled with a tractor.

The 2016 fall and the 2017 winter drilling campaign was completed by G4 Drilling with the collection of NQ size core. Two diamond drills on skids were used for this program.

The 2017 fall and the 2018 winter drilling campaign was completed by Rouillier Drilling with the collection of NQ and PQ (85 mm core diameter) size core. Two diamond drills on skids were used for this program.

The 2019 winter drilling campaign was performed by Youdin-Rouillier Drilling with the collection of NQ size core. Three diamond drills on skids were used for this program.

10.1.1 Drillhole Location/Set-up

Diamond drillholes (DDH) for the 2013-2019 Program were planned using vertical cross-sections and plan views, to first confirm the presence of underground mineralized zones and then define depth and lateral extensions of this interpreted system. The most recent programs also focused on discovering new mineralized zones on the Property.

The coordinate system in use was UTM Nad83 zone 18N.

The software used were ArcGIS, QGIS and Leapfrog to visualize the drillholes and GeoticLog to record and store the information. Hole collars were spotted by the geologist with a handheld GPS Garmin 60cx. The drillers aligned the drill according to the frontsite and backsite wooden pickets and with an azimuth alignment tool (APS 2 from Reflex). Once the drilling was completed, the drill casings were surveyed by the Sirios geologist using a high precision differential GPS (DGPS Trimble R8s). Collar azimuth and dip were measured when possible.

10.1.2 Drillhole Orientation During Operation

The drillhole orientation is checked and monitored using a down hole surveying device as follows:

- During drilling, the orientation, including the azimuth and dip as well as the magnetic field of the drillhole are measured every 50 m with a Reflex instrument. The data is collected and recorded by the driller. The geologist verifies the information afterward and transfers the data into the GeoticLog software.
- At the completion of every drillhole, the driller collects continuous data readings every 3 m with a Reflex device until the instrument reaches the surface (multi-shots test). The orientation data collected includes the azimuth, dip and the magnetic field of the drillhole. This data is then transferred onto a USB device by the geologist or the drill foreman. The raw file is saved in the database. The geologist verifies the file, modifies the format for the importation (this manipulation is performed automatically using a macro) and invalidates the inconsistent data. The modified file is then imported into the GeoticLog software.

This procedure was implemented during the 2015 fall and 2016 winter program. The data (orientation, dip and magnetic field) of the older drillholes were taken with a Flexit Smart Tool device every 30 m along the hole. Some downhole surveys were retaken with a Reflex EZ-Trac device every 5 m along the hole (CH13-009, CH14-014, CH14-017 to CH14-019). Downhole deviation tests were taken using hydrofluoric acid test tube etch method at the end of the 2012 drillholes. Since all the casings of the 2012 campaign were removed, no detailed directional survey were possible.

10.1.3 Drilling and Core Handling

Recovered drill cores by the drilling contractor are in NQ size. The core is collected in a standard drilling tube and the driller's helper carefully places the core into wooden core boxes at the drill rig. The helper also marks the depth (m) after each 3-m run with wooden blocks and closes the box with fiber tape. Core trays are numbered with a permanent marker indicating the drillhole number and the sequential box number.

Generally, the drillhole is stopped at a specific depth determined by the project manager during the campaign planification or following field geologist instruction.

Once the drillhole is completed and the final downhole survey reading is collected, the drill crew pulls the rods for mobilization to the next drill site. A metallic cap with a metal tag displaying the hole number is put on the collar of the hole. All casing has been left in place, except for the 2012 drillholes (CH12-001 to CH12-008) and the drillholes that had been stopped and restarted due to a bad orientation or dip. No drillholes have been grouted or cemented.

10.1.4 Core Logging and Measurement

In the core shack, Sirios employees place the boxes on the logging tables. The geologists rotate the core so that all pieces are fitted together, showing a cross-sectional view. They verify that distances are correctly indicated on the wooden blocks placed every 3 m. The core is then measured.

Sirios geologists log and record the data using GeoticLog software. Lithologies (principal and secondary), alteration, mineralization, veins, structures, magnetism, samples and assay results are compiled in the database.

10.1.4.1 Core Recovery

The core recovery is calculated by measurement in centimetres of core in the core tray divided by the centimetres claimed to be drilled on the meterage blocks. This number, multiplied by 100, is recorded as percent recovery. Core recovery is recorded for each drill run (3 m). Specific areas of loss are noted, if possible, and marked by placement of a wooden marker and the estimated loss. The ideal core recovery is 100%; however, it is not always possible due to ground conditions or sometimes loss of drill core during the coring process, e.g., grinding, etc. For the 2013-2019 Program, the average core recovery is 99.9%. No data has been collected for the 2012 and 2013 drillholes.

10.1.4.2 Rock Quality Designation (RQD)

The rock quality designation is designed to give qualitative and quantitative information on the stability of rock surrounding and included in mineralized material. This information is used to determine the mineability and rock control procedures that will be required to extract the mineralized material.

RQD is a quantitative index of rock quality based on a core recovery procedure in which the core recovery is determined by incorporating only those pieces of hard, solid core longer than twice the diameter of the core. For NQ core, the nominal diameter is 5 cm, so the length index is 10 cm; shorter lengths of core are ignored. RQD is determined for each core run as these are the only definitively known distance markers. RQD is determined using the following formula for each core run:

RQD (%) = 100 x the sum of the length of the core pieces equal to or longer than 10 cm / Core run length

It is important to distinguish between mechanical breaks and natural breaks identified in the core.

RQD is valid for solid core only and should not be used for very poorly disaggregated materials such as highly weathered rock, clays or un-cemented aggregates.

The average RQD for the 2013-2019 Program is 98.5% based on 19,294 measurements. No data has been collected for the 2012 and 2013 drillholes.

10.1.5 Core Photography

Once logged by the geologist, all drill core is photographed wet, four boxes at a time. The objective of core photos is to have a digital image recorded with sufficient details to clearly see core features prior to destructive sampling procedures. This record can be used later to qualify rock quality features and to examine core images against geological logging if the core is unavailable for examination. The photos are also used, as required, during the construction of geological sections.

Once the core is photographed, the boxes are closed with a core box lid and two screws at each end. A total of 36 boxes are then piled on wooden pallets and every pallet is then attached with metal straps and shipped by truck. From 2012 to 2016, pallets were shipped to the IOS Services Geoscientifiques installation in Chicoutimi, and from 2017 to 2019 to the Technominex installation in Rouyn-Noranda. Once there, it is assigned to the core saw operator for splitting and sampling.

10.1.6 Core Storage

After the sampling process, the core boxes are stored at the Technominex facilities. Every box is labelled with an aluminum tag displaying the hole number, the box number and the From-To meterage. All the boxes are stored outside in the secured and locked yard of Technominex. They are piled on wooden pallets or they are stored in metallic racks. Pulps and rejects are stored in locked containers in Technominex's yard.

Before 2017, the core boxes, pulps and rejects were stored in IOS facilities, in Saguenay, in their secured and locked yard. Since then, all the cores were moved to the Technominex facilities.

10.2 Recent Diamond Drilling

As of March 19, 2019 (close out date of the MRE database), Sirios has completed a total of 262 new DDH during the 2013-2019 campaign on the Property, totalling 63,274 m (Table 10-1; Figure 10-1).

Table 10-1: Summary of the drilling completed on the Property during the 2013-2019 Program (included in this MRE)

Year	Drillhole count	Total length (m)
2013	4	750
2014	7	1,557
2015	11	1,963
2016	71	14,763
2017	53	16,620
2018	65	16,300
2019	51	11,320
Total	**262**	**63,274**

Since October 2012, the close out date of the previous technical report, drilling was carried out each year to test the lateral and depth extension of the mineralization on the Cheechoo intrusion. Below is a summary of the drilling for each year:

2013

Four short DDH (CH13-009 to CH13-012), consisting of 750 m of drilling was initiated in the fall with a total of 763 samples sent for analysis. Positive results were obtained in three of the four DDH with 451 samples returning grades higher than 0.1 g/t Au, 51 of which were greater than 1 g/t Au. These results confirmed the gold zone discovered by the 2012 drilling (Turcotte, 2014a).

2014

In the spring, five additional DDH (CH14-013 to CH14-017) were drilled by Sirios for a total of 1,035 m. A total of 672 samples covering 813 m were sent for analysis. All five DDH returned mineralized intervals with 344 sample returning grades higher than 0.1 g/t Au, 34 of which were greater than 1 g/t Au. High-grade intervals were encountered with values reaching 6.9 g/t Au over 6.5 m (Turcotte, 2014b).

Two DDH (CH14-018 and CH14-019) were drilled in the fall of 2014. The previous DDH CH14-017 was also extended by 100 m. In total 522.4 m additional drilling was completed. A total of 446 samples covering 504.3 m was sent for analysis. Overall, 326 samples returned values greater than 0.1 g/t Au, 32 of which were greater than 1 g/t Au. High-grade intervals were also discovered, reaching 7.24 g/t Au over 7.9 m (Joly, 2015)

2015

In the fall, 11 DDH were completed (CH15-20 to CH15-30) totalling 1,962 m. High-grade intervals were reported in some of the DDH including: CH15-020 (9.6 g/t Au over 9.7 m and 15 g/t Au over 12.4 m) and DDH CH15-028 (13.1 g/t Au over 8.8 m; Turcotte, 2018).

2016

Drilling resumed in early winter 2016 with 27 DDH (CH16-22E and CH16-031 to CH16-056) totalling 4,431 m. Highlights include nearly half of the analyzed samples showing assay results equal or greater than 0.1 g/t Au, as well as DDH CH16-052 with 12.1 g/t Au over 20.3 m (Turcotte, 2018).

Following the results of winter 2016 drilling campaign, drilling was resumed in fall 2016. The drilling consisted of 44 DDH (CH16-057 to CH16-093, CH16-025E, CH16-052E, CH16-081A, CH16-081B, CH16-083A and CH16-085A) totalling 9,539 m. Multiple mineralized intervals were encountered with mainly broad low-grade samples locally punctuated by higher gold grade intervals (Turcotte et al., 2018).

2017

In the winter of 2017, 18 DDH were completed adding 5,322.1 m of drilling to the Cheechoo Project (CH17-094 to CH17-107, CH17-036E, CH17-037E, CH17-082E and CH17-100A). Drilling results were similar to previous campaigns and consisted of broadly low-grade gold over large intervals with localized higher grade intervals in DDH CH17-095 (11.9 g/t Au over 13.5 m), CH17-098 (53.8 g/t Au over 3 m) and CH17-099 (11.2 g/t Au over 10.6 m; Turcotte et al., 2018).

Thirty-five DDH (CH17-108 to CH17-140, CH17-111A and CH17-123A) totalling 10,774.4 m were completed in the fall of 2017. Results showed large low-grade intervals in DDH CH17-108 (0.7 g/t Au over 575.7 m), CH17-109 (0.7 g/t Au over 327.1 m), CH17-110 (0.8 g/t Au over 286.6 m), CH17-125 (1.0 g/t Au over 179.7 m) and CH17-140 (0.7 g/t Au over 268.5 m). Some higher-grade intervals were also intersected in DDH CH17-112 (29.3 g/t Au over 6.2 m and 41 g/t Au over 8.0 m) and CH17-139 (56.4 g/t Au over 8.2 m, including 867.1 g/t Au over 0.5 m; Turcotte et al., 2019).

2018

Sixty-one DDH and four PQ size DDH (CH18-141 to CH18-198, CH18-020E, CH18-033E, CH18-125E, CH18-162A, CH18-162B, CH18-181A and Ch18-195A) totalling 15,588.6 m were drilled in the winter of 2018. Again, results revealed large low-grade intervals such as in DDH CH18-154 (0.7 g/t Au over 264.5 m) and CH18-177 (0.7 g/t Au over 163.5 m) as well as some higher grade intervals in DDH CH18-125E (26.8 g/t Au over 6.8 m), CH18-182 (5.2 g/t Au over 30.2 m) and CH18-183 (4.8 g/t Au over 30 m) (Turcotte et al., 2019). Thirty-four DDH were surveyed with borehole logging imagery. The PQ drill core was sent to COREM for metallurgical testing.

2019

In the winter of 2019, 51 DDH (CH19-199 to CH19-245, CH19-207A, CH19-207B, CH19-215A and CH19-226A) were completed, totalling 11,320.7 m. The main results include the discovery of the Éclipse Zone, CH19-199 (45.9 g/t Au over 1.4 m), CH19-201 (219.0 g/t Au over 1.0 m), CH19-202 (174.3 g/t Au over 2.0 m, including 315.0 g/t Au over 1.1 m), CH19-204 (17.6 g/t Au over 3.5 m) and CH19-228 (31.3 g/t Au over 1.0 m). The high-grade vein first identified in DDH CH17-112 was also confirmed in DDH CH19-240 (25.5 g/t Au over 6.8 m, including 187.0 g/t Au over 0.8 m) and CH19-245 (18.9 g/t Au over 1.0 m). Finally, high-grade intervals were obtained in the Jordi Zone in DDH CH19-240 (26.7 g/t Au over 1.2 m) and CH19-245 (106.0 g/t Au over 1.3 m).

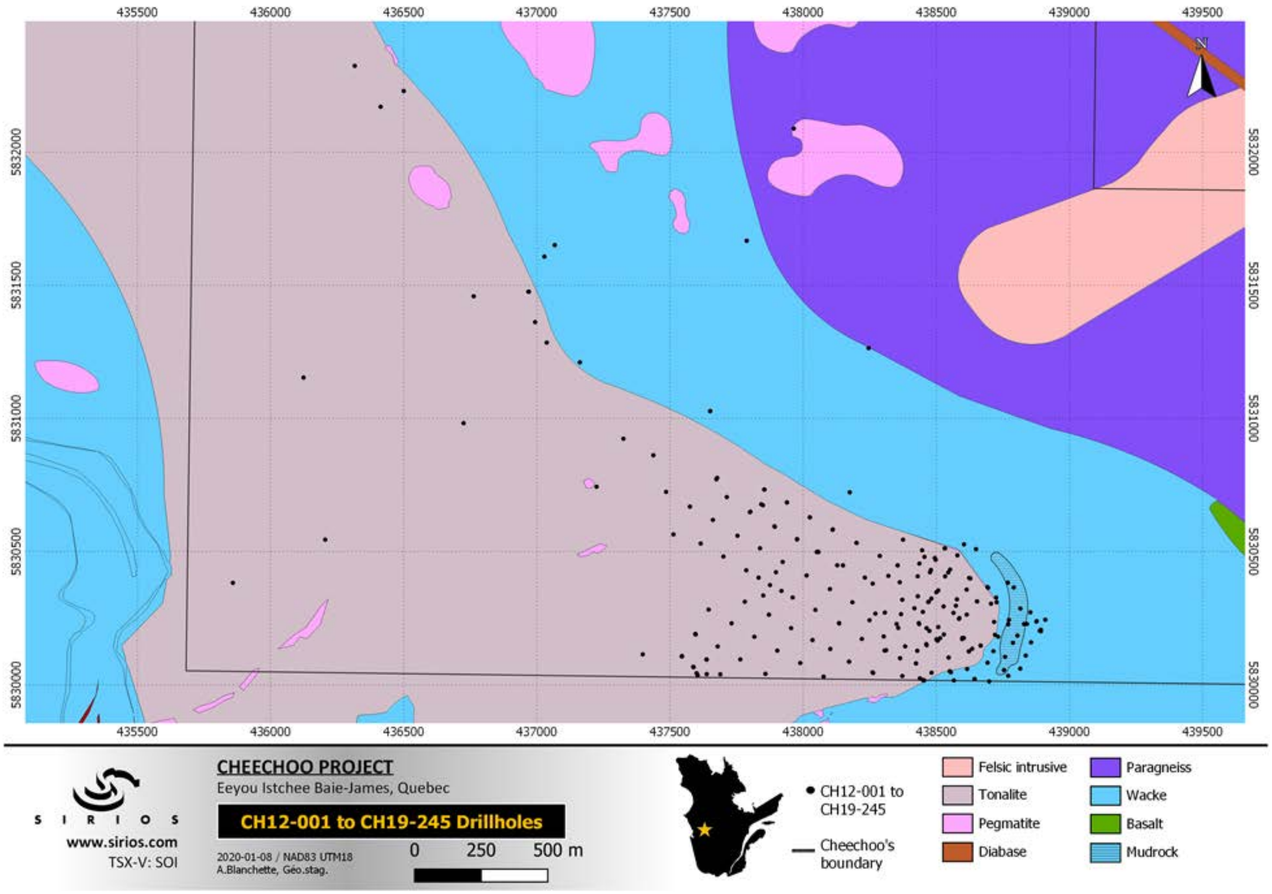


Figure 10-1: Location of the drillholes throughout the Property as of March 19, 2019 (262 DDH from 2013-2019, and 8 DDH from 2012)

11. SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Core Handling, Sampling and Security

The following sections describe Sirios' core handling, sampling and security procedures for the diamond drilling programs. Pierre-Luc Richard, P. Geo., did not conduct any drilling or sampling on the Project and the data provided in this chapter was provided by Jordi Turcotte, P. Geo., Sirios Senior Geologist.

11.1.1 Core Handling, Sampling and Security

The drill core is boxed and sealed at the drill rigs and transported, by the drillers, by skidoo sleigh or pick-up truck to the on-site core shack. After being logged on-site, the drill core is shipped to an external facility.

From 2012 to winter 2016, they were sent to the IOS Services Geoscientifiques Inc. (IOS) facility where they were sawed in half and sampled based on the geologist instructions. Individual samples were cleaned, crushed, split and grinded to generate a pulp sample following a strict protocol directly at the IOS facility. Individual sample bags were placed in a box along with the list of samples. QA/QC samples were inserted by IOS personnel in each batch following the geologist instructions. Batches were shipped via a transport company to ALS laboratory at Rouyn-Noranda.

From fall 2016 to 2019, drill core were sent to the Technominex facility where they were sawed in half and sampled based on geologist's instructions. Individual sample bags were placed in larger rice bags along with the list of samples. QA/QC samples were inserted by Technominex personnel in each batch following the geologist's instructions. Batches were shipped via a transport company to a certified laboratory. From fall 2016 to winter 2018, they were sent to Actlabs in Ste-Germaine-Boulé and in winter 2019, they were sent to ALS laboratories in Rouyn-Noranda.

11.1.2 Gold Assays Samples

With some exceptions and as the mineralization continues, all the drill core intervals were sampled. To create representative and homogenous samples, sampling honours as best as possible the lithological contacts, alteration boundary or mineralization boundary.

Sampling intervals are determined by the geologist during logging and marked on the core itself using red coloured lumber pencils with a line drawn at right angles to the core axis. Sample lengths typically range from 0.5 m to 2.0 m, with a preferred length of 1.0 m for the mineralized zones. The sampled cores are considered representative.

Samples are numbered in consecutive order using sample tag books containing sequences of 50 pre-labeled triplicate waterproof sample tags (three tags per sheet) or waterproof tags printed directly from the database. The first of the tags remains with the sample tag book as an archival record of the samples' parameters. The second tag is used to indicate the position of the sample in the core box. This is a permanent sample reference that will remain in the wooden core box. The third and last tag is inserted inside the sample bag. From each sample sheet, the last two tags are separated from the page and tucked under the core at the beginning of each sample by the geologist.

The sample sequence includes blank samples, duplicate samples and Certified Reference Materials (CRMs) that are inserted into the sample stream using sample numbers that are in sequence with the core samples. A CRMs sample, consisting of material of known metal content and internationally recognized and verified, is included in the sample sequence by the trained core sampler. A "blank" sample is material technically devoid of any metals. Blanks and CRMs are stored in a designated secure area at the sample preparation facility. There is never a written reference to the location of any control samples on sample bags, sample tags or dispatch documentation for the assay lab.

Once logged and labelled, the core of each selected interval is sawed in half using a typical table-feed circular rock saw. The core saw operator, trained in core cutting procedures, executes the core cutting at the external facility. The logging geologist has already clearly marked out all pertinent cores for cutting and sampling. The core is sawn in half, along its length, with a diamond bladed saw. One half (consistently from the same half of the split core) is put into the plastic sample bag and the other half is retained and kept in the core box for later reference. The paired sample tags are then torn with one tag stapled in the core box at the start of its sample interval and the other tag placed into the sample bag with the core sample.

From 2012 to winter 2016, at the IOS Services Geoscientifiques facility, the sampled half core was cleaned, dried, 100% crushed, split into 800-1,000 g and pulverized to better than 85% passing 75 µm. Then split into 100-150 g and bagged, and placed in a box by batch with the listing of sample for shipping to ALS laboratory.

From fall 2016 to 2019, the sample tag number of the core sample is also written on the outside of the sample bag using a permanent marker. The bag is then sealed using a zip tie and stored in sequence prior to sample dispatch preparation. Sample bags are packed in large "rice" bags and the rice bag is sealed with a zip tie which is only 'broken' or opened at the assay laboratories. The range of sample numbers inside the bag is written on the 'rice' bag. The sealed rice bags are stored inside a secure facility until shipping to the laboratories. For the 2016 to 2019 drilling campaigns, the samples were shipped to ALS in Rouyn-Noranda and to Actlabs in Ste-Germaine-Boulé.

11.1.3 Core Density Samples

Specific gravity (SG) was measured by water displacement method at the core shack.

Approximately 0.10 m to 0.20 m of core was selected for each density measurement. The dry mass was measured on the scale top plate, followed by the submerged mass, by placing the sample in the submerged wire basket under the scale. Both measurements were recorded in the database and the density was measured using the following formula:

$$Density = {Mass_{Dry}}/{(Mass_{Dry} - Mass_{Submerged})}$$

In total, 588 samples were tested, consisting of mineralized samples and waste (Table 11-1).

Table 11-1: Measured specific gravity for the different lithologies

Specific gravity						
Lithology	**Sub group**	**Number**	**Mean**	**Median**	**Min**	**Max**
I1D		**397**	**2.65**	**2.65**	**2.62**	**2.71**
	I1D/I1G	3	2.64		2.62	2.65
	I1D; POR	2	2.66		2.66	2.66
	I1D; PPG	39	2.65		2.62	2.67
I1G		**87**	**2.61**	**2.61**	**2.56**	**2.7**
I1N		**6**	**2.63**	**2.63**	**2.6**	**2.64**
M4		**19**	**2.77**	**2.76**	**2.73**	**2.82**
	M4; PAM	6	2.76		2.73	2.79
M8		**43**	**2.89**	**2.89**	**2.66**	**2.98**
	M8/BCI	2	2.72		2.66	2.77
S3		**30**	**2.76**	**2.76**	**2.72**	**2.83**
	S3; PAL	3	2.76		2.74	2.8
	S3; PAM	3	2.78		2.75	2.8
S9A	**S9A/S3 PGR**	**6**	**2.93**	**2.98**	**2.77**	**3.01**

Forty-five (45) duplicates have been tested at Actlabs in Ste-Germaine-Boulé with the same method by water displacement and no bias was observed (Figure 11-1).

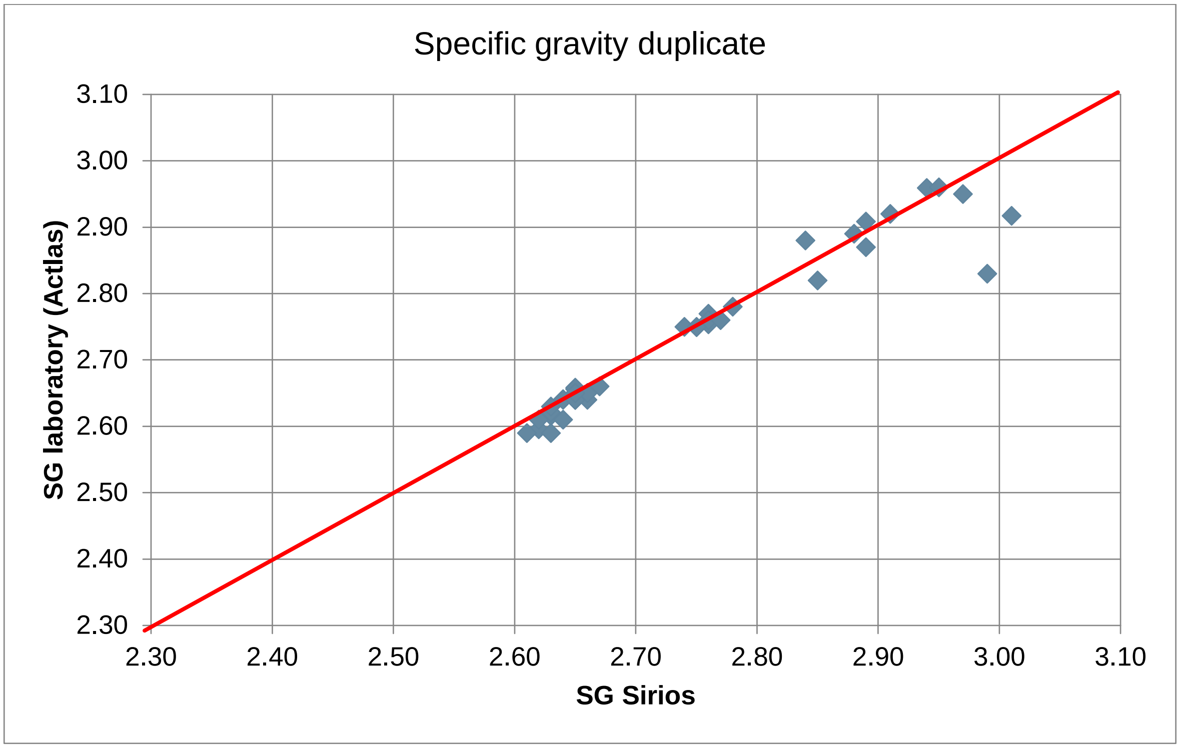


Figure 11-1: Specific gravity measured by Sirios vs specific gravity measured by Actlabs

11.1.3.1 Lab Accreditation and Certification

ALS and Actlabs both have the ISO/IEC 17025:2005 accreditation from the Standards Council of Canada (SCC). They are both independent commercial laboratories.

11.1.3.2 ALS Sample Analysis Procedure

At ALS laboratories, samples are sorted, bar-coded and logged into the ALS Webtrieve program. Damaged samples are documented and Sirios personnel is informed. Samples are dried to constant weight and weighted (WEI-21). The sample is then crushed to P_{90} 2,000 µm (CRU-32). A split is collected using a riffle splitter (SPL-21) and a reject duplicate split is prepared from that original sample (SPL-21d). A pulverization split of 1,000 g is then prepared (PUL-32) at P_{85} 75 µm. A pulp duplicate is also prepared from the original sample (SPL-34). When a metallic sieve analysis is conducted (Au-SCR21), a pulverization of 1,000 g P_{95} 106 µm is done (PUL-35a).

For 2012-2013 (CH12-001 to CH14-015), samples were analyzed by fire assay (FA) with atomic absorption (AA) spectroscopy from 30 g pulps (Au-AA23). The lower detection limit was 0.005 g/t. When assay results were higher than 10 g/t, the sample was re-assayed with a gravimetric finish (Au-GRAV21) on a 30 g pulp. For drillhole CH12-003, all samples were also re-assayed using the Metallic sieve (MS) method (Au-SCR21). In this case, 1,000 g was pulverized and screened to 100 µm. Duplicate assay was done on screened undersize and the entire oversize fraction was assayed.

For 2014 (CH14-016 to CH14-019), samples were analyzed by FA with AA spectroscopy from 50 g pulps (Au-AA23). The lower detection limit was 0.005 g/t. When assay results were higher than 10 g/t, the sample was re-assayed with a gravimetric finish (Au-GRAV21) on a 50 g pulp. Samples with visible gold were analyzed by MS method (Au-SCR21) on a 1,000 g pulp.

For 2015 to 2016 (CH15-020 to CH16-056), samples were analyzed by FA with AA spectroscopy from 50 g pulps (Au-AA23). The lower detection limit was 0.005 g/t. When assay results were higher than 3 g/t, the sample was re-assayed with a gravimetric finish (Au-GRAV21) on a 50 g pulp. Samples with visible gold were analyzed by MS method (Au-SCR21) on a 1,000 g pulp.

For 2019 (CH19-199 to CH19-245), samples ere analyzed by fire assay with atomic absorption spectroscopy from 50 g pulps (Au-AA23). The lower detection limit was 0.005 g/t. When assay results were higher than 2 g/t or with visible gold, the sample was re-assayed by metallic sieve method (Au-SCR21) on a 1,000 g pulp.

Results are provided through a secure server and downloaded by the geologist in charge of the project, in Excel format and the official certificate (sealed and signed) in PDF format.

As part of ALS internal quality control program, four QA/QC samples are inserted by ALS per batch of 24 samples (one blank, two standards and one pulp duplicate). A method blank and certified reference material is applied and reported for each furnace load to monitor the fire assay process. A duplicate crushed sample is drawn at random and assayed for each work order to monitor precision.

11.1.3.3 Actlabs Sample Analysis Procedure

Once the samples are received at the Actlabs facility, they are sorted, bar-coded and logged into the Actlabs LIMS program. Damaged samples are documented and Sirios personnel is informed with photographs. Samples are dried at 60°C, crushed to P_{90} passing 10 mesh, and split into 250 g to 300 g using a Jones riffle splitter. The sub-sample is pulverized to P_{85} passing 75 µm (200 mesh).

For 2016 to 2017 (CH16-057 to CH17-107), samples were analyzed by FA with AA spectroscopy from 50 g pulps. The lower detection limit was 0.005 g/t. When assay results were higher than 3 g/t Au but lower than 10 g/t Au, core sample pulps were re-assayed by FA with gravimetric finish on a 50 g pulp, while sample results higher than 10 g/t Au or with visible gold were rerun with the MS method on a 1,000 g pulp.

For 2017 to 2018 (CH17-108 to CH18-198), samples were analyzed by FA with AA spectroscopy from 50 g pulps. The lower detection limit was 0.005 g/t. When assay results are higher than 2 g/t or with visible gold, core sample were re-assayed by MS method on a 1,000 g pulp.

Results are provided through a secure server and downloaded, by the geologist in charge of the project, in Excel format and the official certificate (sealed and signed) in PDF format. As part of Actlabs' internal quality control program, four QA/QC samples are inserted by Actlabs per batch of 24 samples (one blank, two standards and one pulp duplicate).

11.1.4 Sample Shipping and Security

The following procedures are applied to ensure a safe and secure management of materials and data as it pertains to core samples of the Cheechoo Project:

- All core samples submitted for preparation and analysis to the laboratories are secured in rice bags with zip ties and sent directly to the laboratories;
- The lab is notified by email that the samples are sent and is instructed to notify Sirios geologists, Jordi Turcotte, P. Geo. and Nathalie Schnitzler, P. Geo. when the samples arrive at the preparation lab;
- The sample shipment contains a sample submittal form as well as a sample dispatch list detailing the security tag number, rice bag number and the number of samples contained in each rice bag;
- The sample submittal form and sample dispatch list is electronically transmitted to the laboratories once the shipment has left the Sirios core shack;
- Samples are sent to:

Actlabs	ALS Geochemistry
184, rue Principale, P.O. Box 208	1324 rue Turcotte
Ste-Germaine-Boulé, Qc, J0Z 1M0	Val-d’Or, Qc J9P 3X6

- Results are downloaded by Nathalie Schnitzler and the data base manager, via a secure server, as Excel files and PDF format;
- QA/QC data is evaluated when the samples are integrated into the master database;

- The core boxes are stored in roofed racks in the outdoor core storage in an area enclosed by secure fencing located in Rouyn-Noranda. The exact location of each hole in the outdoor core library is recorded in an Excel spreadsheet for future reference;
- The sample pulps and rejects are stored in Rouyn-Noranda.

11.2 Quality Assurance and Quality Control (QA/QC)

Canadian National Instrument 43-101 (NI 43-101) Standards of Disclosure for Mineral Projects requires mining companies reporting results in Canada to comply with the CIM Best Practice Guidelines. The guidelines describe the elements required in the reports, but do not provide guidance for Quality Assurance and Quality Control (QA/QC) programs.

QA/QC programs have two components: Quality Assurance (QA) deals with the prevention of problems using established procedures, while Quality Control (QC) aims to detect problems, assess them and take corrective actions. QA/QC programs are implemented, overseen and reported on by a Qualified Person (QP) as defined by NI 43-101.

QA programs should be rigorous, applied to all types and stages of data acquisition and include written protocols for: sample location, logging and core handling; sampling procedures; laboratories and analysis; data management; and reporting.

QC programs are designed to assess the quality of analytical results for accuracy, precision and bias.

The materials conventionally used in mineral exploration QC programs include standards, blanks and duplicates. Definitions of these materials are presented hereunder:

- **Standards** are samples of known composition that are inserted into sample batches to independently test the accuracy of an analytical procedure. They are acquired from a known and trusted commercial source. Standards are selected to fit the grade distribution identified in the Sirios mineralization;
- **Blanks** consist of material that is predetermined to be free of elements of economic interest to monitor for potential sample contamination during analytical procedures at the laboratory;
- **Duplicates** are samples submitted to assess both assay precision (repeatability) and to assess the homogeneity of mineralization. Duplicates can be submitted from all stages of sample preparation with the expectation that better precision is demonstrated by duplicates further along in the preparation process.

As per NI 43-101, quality control samples were inserted into the sample batches sent to the laboratory. Inserts included pulp duplicate samples, blank samples and standards. For illustration purpose, values below detection limit were assigned half of the detection limit value. Values above the maximum detection limit were ignored and not used in the scatterplots.

Table 11-2 summarizes the QA/QC samples submitted to the laboratories along with routine drill core samples.

Table 11-2: Samples submitted to the laboratories for analysis during the 2013-2019 drilling campaigns

Type of sample	Quantity	%
Primary drill core samples	47,363	82.1
Field blanks	2,643	4.6
CRM	3,041	5.3
Pulp duplicates	2,030	3.5
Check-assays	2,618	4.5
Total	**57,695**	**100%**

11.2.1 Duplicates

Duplicate samples are submitted to assess both assay precision (repeatability) and to assess the homogeneity of mineralization.

Coarse duplicates consist of second splits of crushed material. This material will then need to be pulverized.

Pulp duplicates consist of second splits of prepared samples ready to be analyzed and are indicators of analytical precision, which may also be affected by the quality of pulverization and homogenization.

As part of the Sirios QA/QC program, the laboratory assayed one coarse duplicate for every drillhole. The QA/QC program also included one pulp duplicate for every 20 samples. Figure 11-2 and Figure 11-3 show the scatterplots of the pulp duplicate for each laboratory. The correlation for both plots is 96%, which is good reproducibility.

For illustration purpose, in Figure 11-2 special values were removed (e.g., >10, NSS), which represents eight samples. All values above 3 g/t are included in the scatterplot but not shown.

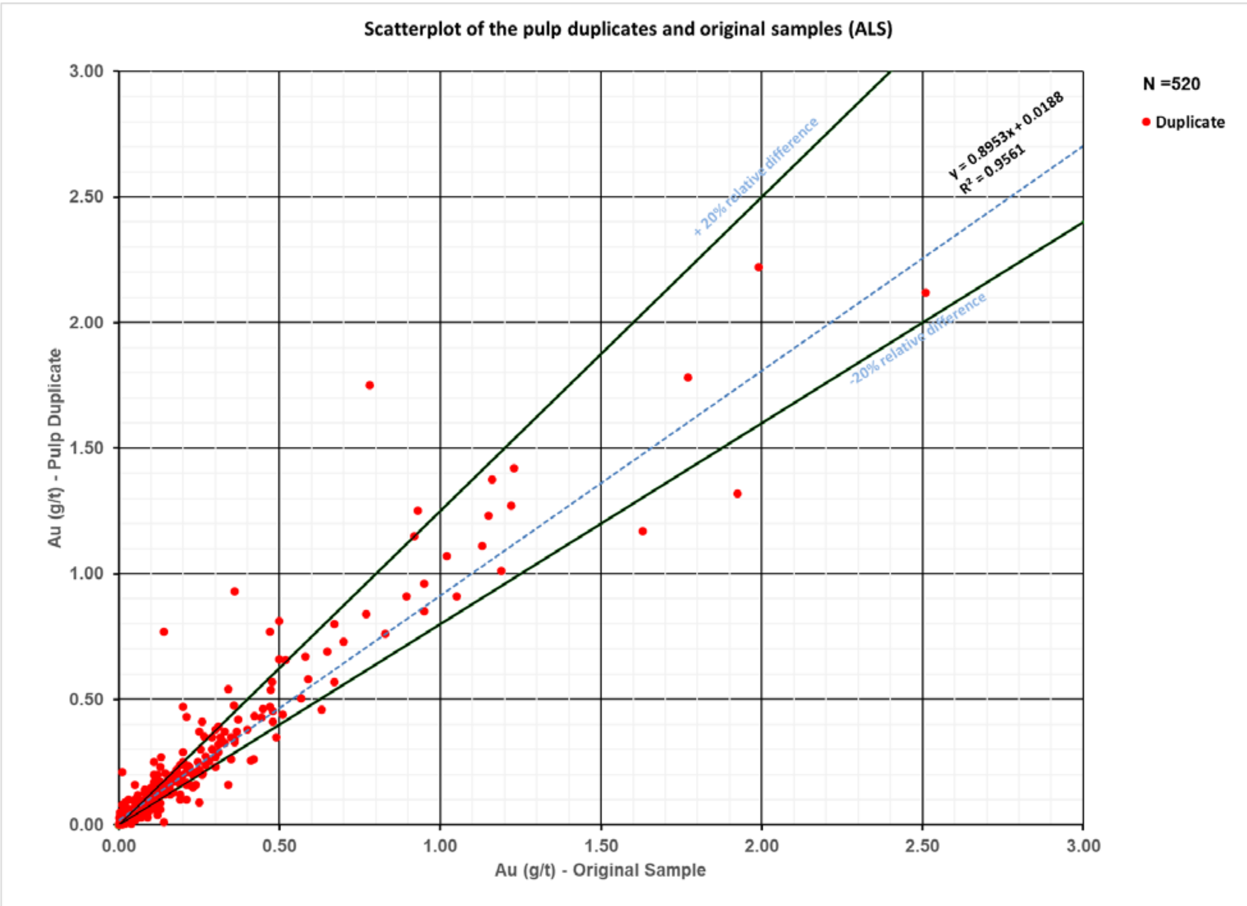


Figure 11-2: Zoomed in scatterplot with linear trend of pulp duplicates and original samples results from ALS laboratory for the 2013-2019 drilling program (n=552) (two higher grade results are not shown)

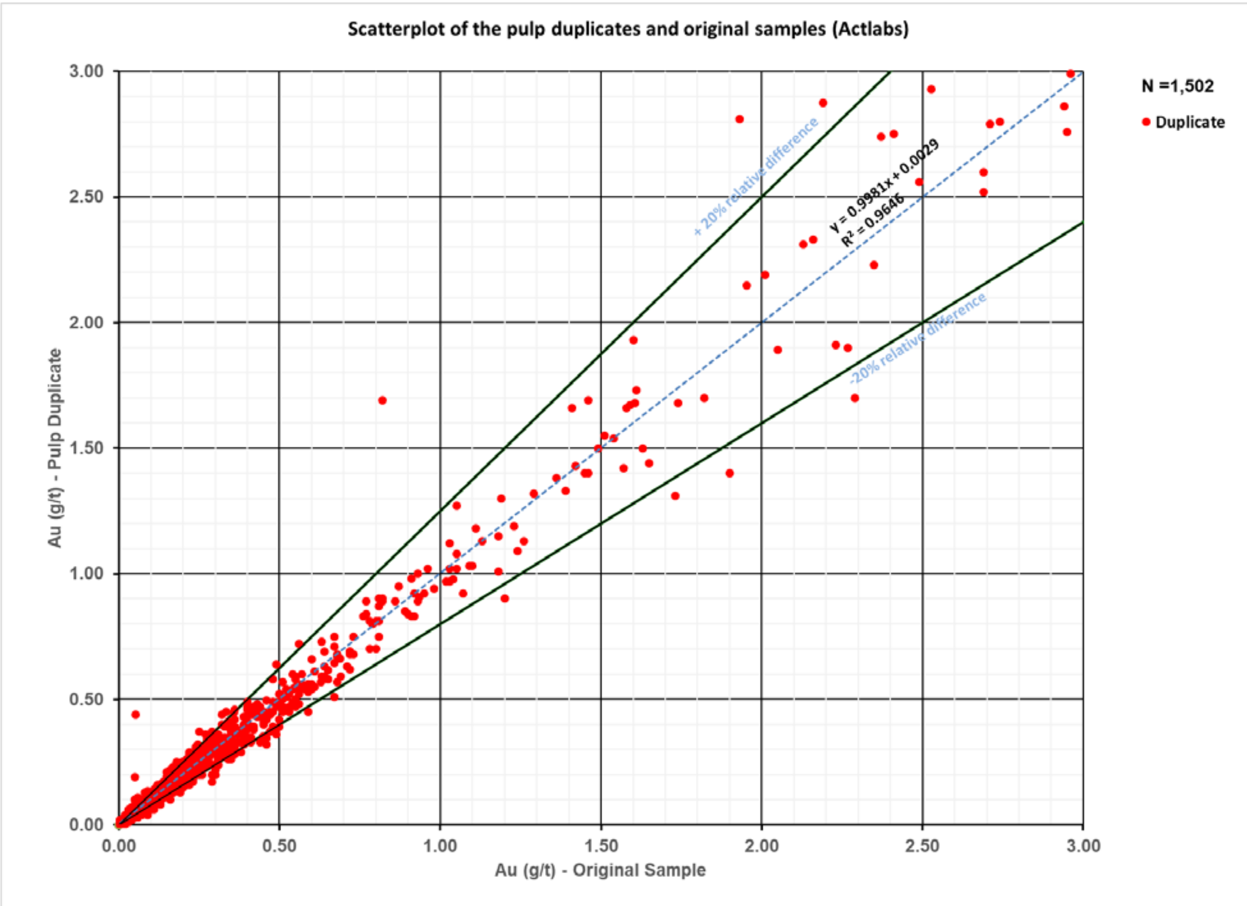


Figure 11-3: Zoomed in scatterplot with linear trend of pulp duplicates and original samples results from Actlabs for the 2013-2019 drilling program (n=1502) (22 higher grade results are not shown)

11.2.2 Blanks

Blanks are used to monitor for potential sample contamination that may take place during sample preparation and/or assaying procedures at the laboratory. Sample of barren crushed white quartz (blank) were used by Sirios.

One blank sample was inserted for every 20 samples. According to Sirios QA/QC protocol, if any blank yields a gold value above 0.1 g/t Au, all samples from the 20 samples batch should be re-analyzed. From the 2,643 inserted blanks (2,531 analysis results), six blank samples failed the protocol, which represents 0.2%. Figure 11-4 shows the results of the blanks used during the 2013-2019 programs on the Project.

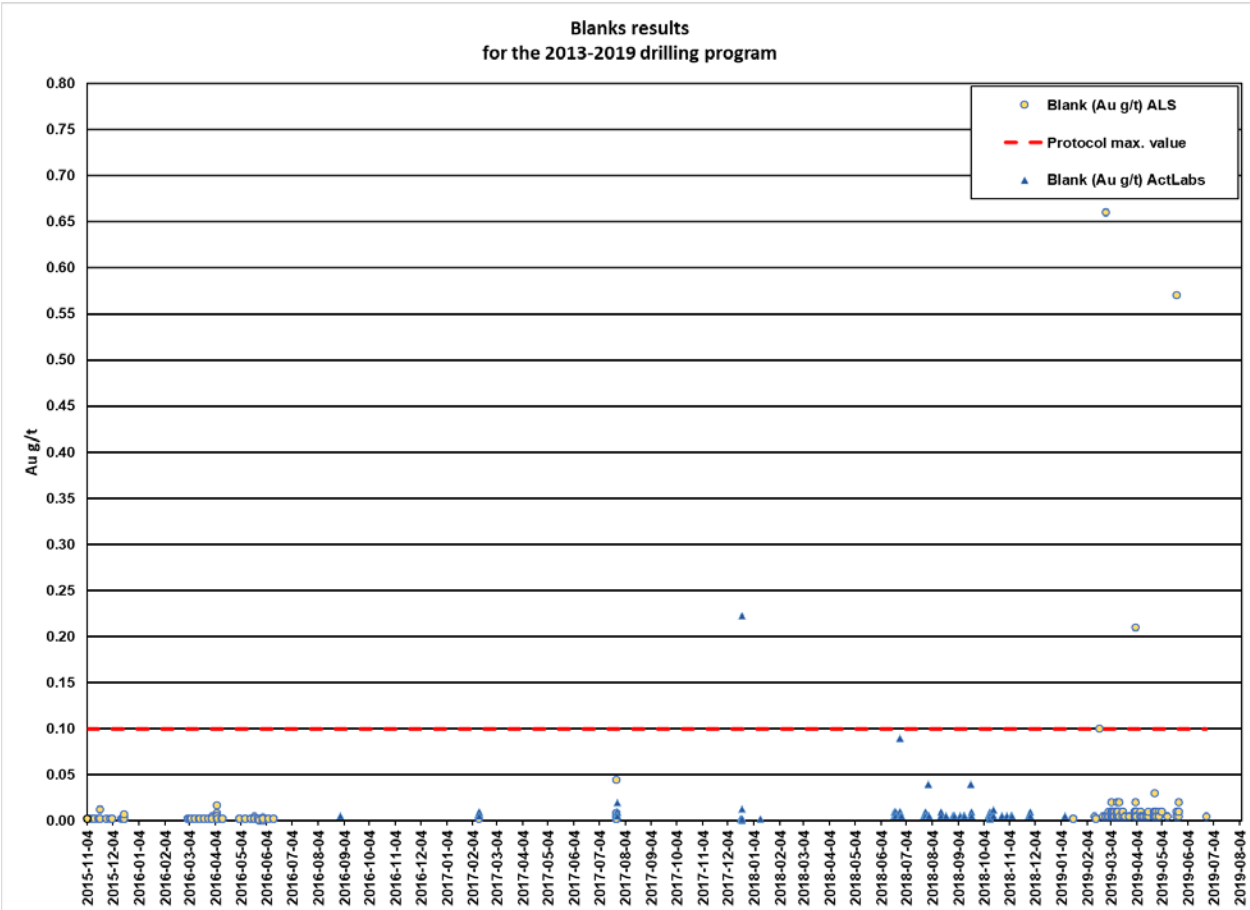


Figure 11-4: Results for blanks used during the 2013-2019 drilling program (607 samples assayed by ALS and 1,924 samples assayed by Actlabs; detection limit was from 0.005 to 0.01 g/t; two samples returned values above 5 g/t and are not shown in the scatterplot

A blank failure can indicate a contamination problem at the laboratories. In every case where a failure was observed, adequate follow-up has been put in place to explain, or re-assay affected samples.

11.2.3 Certified Reference Materials (Standards)

Accuracy and precision are monitored by the insertion of CRMs. A suite of commercially available CRMs is used at Cheechoo (Table 11-3). One CRMs sample was inserted for every 20 samples.

Table 11-3: Standard reference materials used at Cheechoo for the 2013-2019 drilling campaigns

Standard (CRMs)	Method	Lab	Certified Gold value (g/t)	Quantity inserted	Standard deviation	Minimum limit (mean-3SD)	Maximum limit (mean+3SD)	Failed	Gross outliers	(%) Passing QC
SE29	AA	ALS	0.597	227	0.016	0.549	0.645	6	1	97.4%
SN26	AA	ALS	8.543	8	0.175	8.018	9.068	1	0	87.5%
OxN49	AA	ALS	7.635	10	0.189	7.068	8.202	2	0	80.0%
OREAS 62e	AA	ALS	9.13	50	0.41	7.9	10.36	0	0	100.0%
OREAS 62e	AA	Actlabs	9.13	52	0.41	7.9	10.36	0	0	100.0%
SE86	AA	ALS	0.595	194	0.015	0.55	0.64	8	1	95.9%
SE86	AA	Actlabs	0.595	1,102	0.015	0.55	0.64	1	1	99.9%
SN75	AA	Actlabs	8.671	468	0.199	8.074	9.268	3	2	99.4%
SN91	AA	ALS	8.679	29	0.194	8.097	9.261	1	1	96.6%
SN91	AA	Actlabs	8.679	463	0.194	8.097	9.261	1	0	99.8%
OREAS 152b	AA	ALS	0.134	226	0.005	0.119	0.149	6	0	97.3%
OREAS 153b	AA	ALS	0.313	212	0.009	0.286	0.34	11	3	94.8%
Total				**3,041**				**40**	**9**	**98.7%**

CRMs were considered failed by Sirios when a result exceeded three standard deviations (±3 SD) beyond the expected value. During the 2013-2019 drilling programs, 40 CRMs representing 1.3% of all CRMs failed. Considering the low failure rate and the actions taken when such failures occurred, the QP is of the opinion that the failed CRMs are not material for the purpose of this MRE and show the natural statistical spread in the data.

11.2.4 Check Assays

Pulp check assays are conducted in a second lab for about 1 in 20 samples. Samples totalling 1,549 analyzed by Actlabs have been re-analyzed by ALS and 1,068 samples analyzed by ALS have been re-analyzed by Actlabs. Figure 11-5 shows the scatterplot of the results conducted by ALS on Actlabs and Figure 11-6 shows the scatterplot of the results conducted by Actlabs on ALS. The correlation coefficient varies from 74% to 90%. Considering the nugget effect and the fact that the population is low grade, the QP considers these results acceptable.

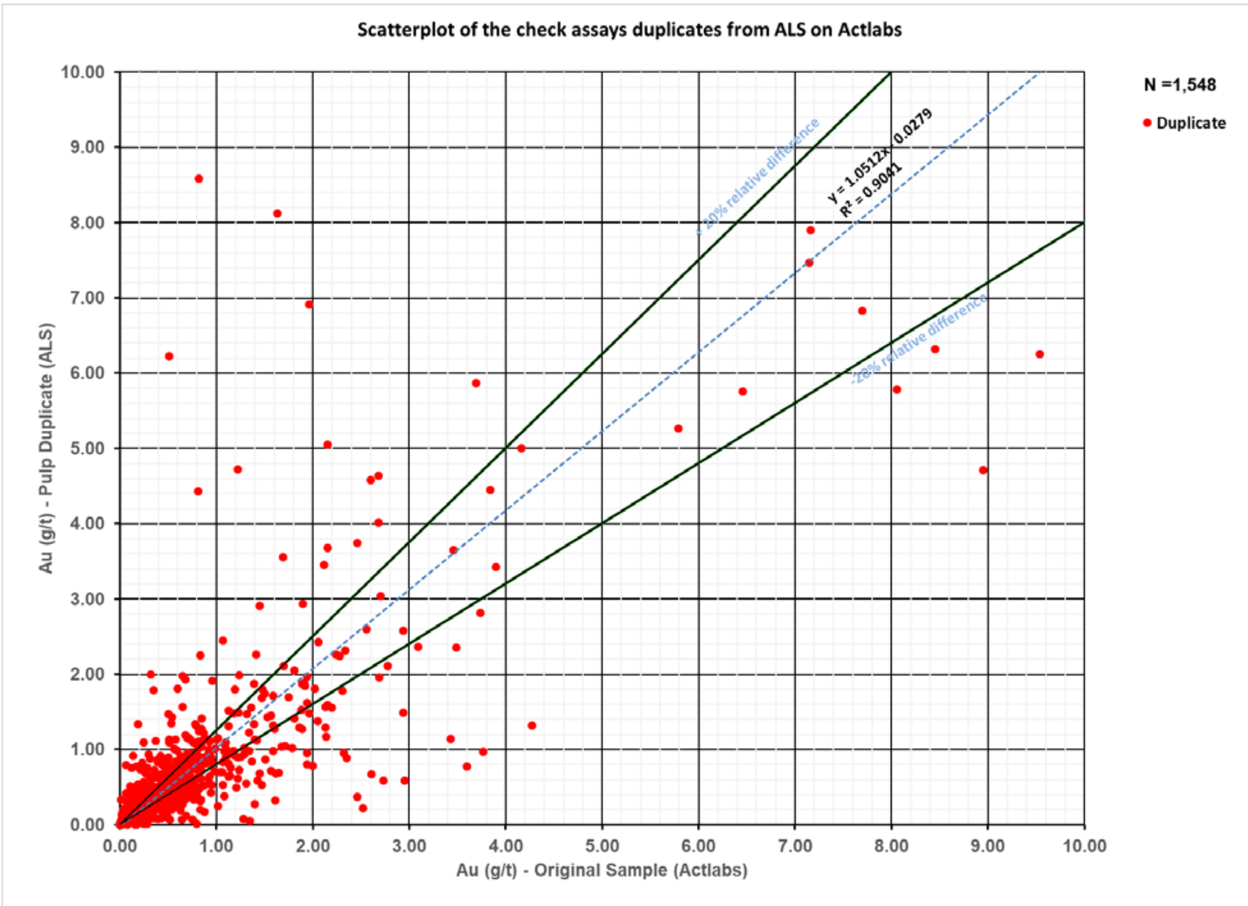


Figure 11-5: Scatterplot of lab check assays duplicates from ALS on Actlabs for the 2013-2019 drilling program (n=1,548) (results above 10 g/t are not shown)

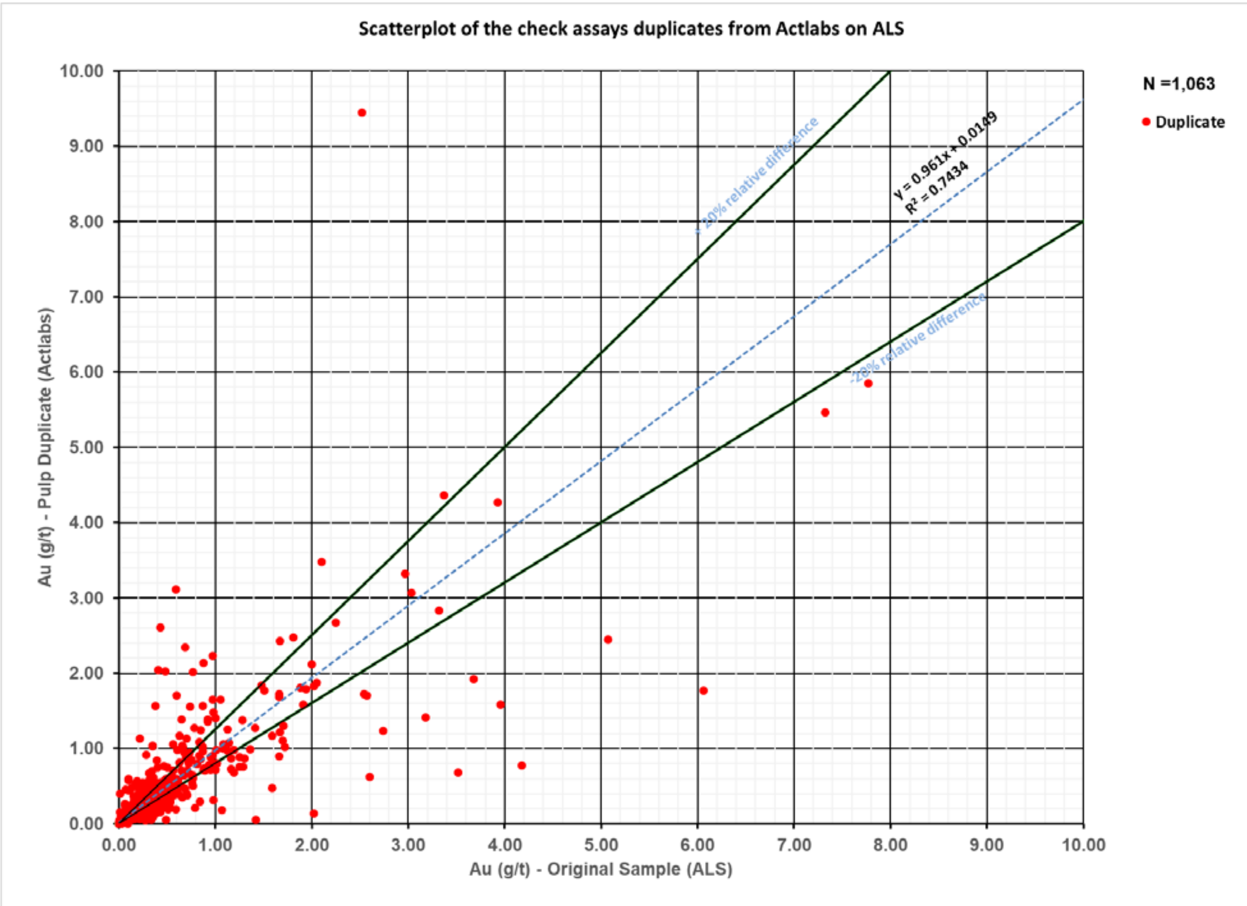


Figure 11-6: Scatterplot of lab check assays duplicates from Actlabs on ALS for the 2013-2019 drilling program (n=1,063) Results above 10 g/t are not shown

11.3 Rock Sampling

Grab samples from outcrops and boulder were sent to ALS and Actlabs for assaying. Same procedure as drill core samples was applied for the shipping, security and QA/QC protocols.

11.4 Channel Sampling

Channel samples from outcrops and stripping were sent to ALS and Actlabs for assaying. Same procedure as drill core samples was applied for the shipping, security and QA/QC protocols.

11.5 Conclusion

Pierre-Luc Richard reviewed the sample preparation, analytical and security procedures, as well as insertion rates and the performance of blanks, standards and duplicates for the 2013-2019 drilling programs, and concluded that the observed failure rates are within expected ranges and that no significant assay biases are present. According to the QP's opinion, the procedure and the quality of the data are adequate to industry standards and support the Mineral Resource Estimate.

12. DATA VERIFICATION

The Mineral Resource Estimate (MRE) in this Report is based on drillholes from 2012 and more recent. Therefore, numerical data and quality control on assaying has been implemented from the beginning.

For the purpose of this MRE, BBA performed a basic verification on the entire Project database. All data was provided by Sirios in UTM coordinates. The database close out date for the resource estimate is March 19, 2019; data from 270 DDH (64,212.45 m) and 385 channels (3,214.88 m) was incorporated in the resource estimate block model area. The last hole included in the database was CH19-245.

12.1 Site Visit

Pierre-Luc Richard, QP, employee of BBA, visited the Property from October 10 to October 15, 2019, and the core cutting and storage facility on September 16, 2019. The purpose of the visits was to review the Project with the Sirios team. The visits included an overview of the general geological conditions, a tour of the core storage facility, visual inspections of selected mineralized drill core samples, survey of numerous drillhole casings, and a visit of various mechanically stripped outcrops. A review of assaying, QA/QC and drillhole procedures was also completed.

Pierre-Luc Richard, P. Geo. also visited the Sirios office in Montreal on several occasions during the course of the mandate to exchange ideas with the geologists.

12.2 Sample Preparation, Analytical, QA/QC and Security Procedures

Sirios procedures are described in Chapters 10 and 11 of the current Report. Discussions held with on-site geologists confirmed that the procedures were adequately applied.

Pierre-Luc Richard reviewed sections of mineralized core while visiting the Project. All core boxes were labelled and properly stored (Figure 12-1). Sample tags were present in the boxes and it was possible to validate sample numbers and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

All the data used in this MRE was taken after the implementation of the NI 43-101. Information about sample preparation, analytical, QA/QC or security procedures is mostly available and conducted in accordance of the industry standards.

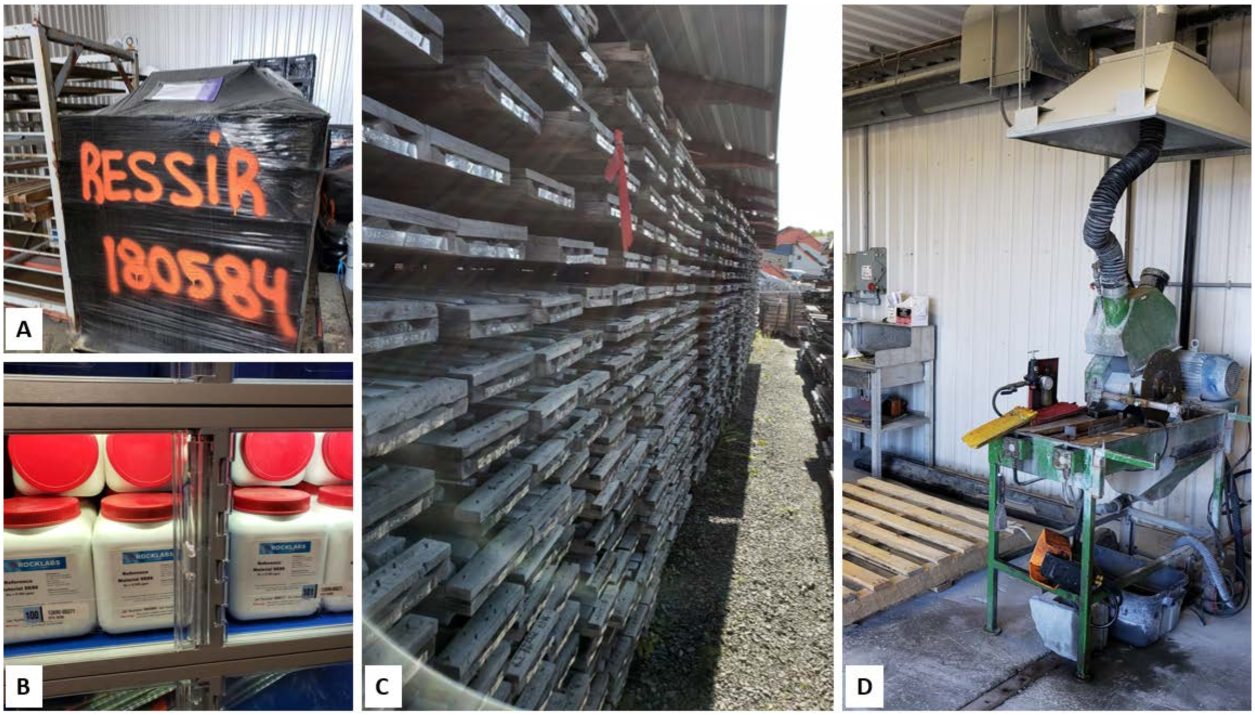


Figure 12-1: Storage and sampling procedures reviewed during the site visit at the Technominex facilities A) Wrapped drill core boxes; B) Properly stored CRM; C) Roofed drill core storage; D) Core saw used to sample the core

12.2.1 Drillhole Location

For the 2012 drilling campaign, collars were located with the use of cut grids and hand-held GPS. The 2012 casings were removed. Collars were implemented with a handheld GPS Garmin 60cx. In February 2018, Corriveau J.L. & Associés Inc. implemented six reference stations to use a DGPS instrument (Trimble R8s) in order to properly survey the collar locations.

12.2.2 Downhole Survey

Downhole survey data for the drilling programs were checked for discrepancies. Spurious measurements were tagged by the Sirios geologist as “false” in the database and were not considered by the software for the modelling. For the 2012 drilling campaign, acid tests were done at the end of the holes with acid tubes. From 2013 up to fall 2015, downhole surveying was carried out with a Flexit device at 30 m intervals. Starting in the fall 2015 campaign, deviation tests were carried out as described in Chapter 10, Section 10.1.2.

12.2.3 Assays

Clovis Auger, P. Geo., from BBA was granted access to the original assay certificates directly from ALS for all holes drilled by Sirios on the Project. Mathieu Rancourt Chemist at Actlabs also provided 194 workorders from the 2016-2019 drilling programs. Assays for approximately 10% of the DDH intersecting the current MRE mineralized zones were verified. The assays recorded in the database were compared to the original certificates from the different laboratories. Values lower than the detection limits were set to zero (0). No major discrepancies were noted.

In the assay table, the final gold value (AuMoy) is calculated using a conditional priority. Metallic screen procedure results always have priority over the gravimetric finish results. The gravimetric finish results always have priority over atomic absorption finish (AA). If more than one assay is done using the same analytical method, the mean of the results is used but still considering the priority listed above.

12.3 Conclusion

BBA is of the opinion that the drilling protocols in place are adequate. The database for the Cheechoo Project is of good overall quality. Minor issues have been noted during the validation process but have no material impact on the 2018 MRE. In the QP's opinion, the Cheechoo database is appropriate to be used for the estimation of Mineral Resources.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

This chapter presents the results of three testwork programs conducted on mineralized material from the Cheechoo deposit during the period of 2015 to present.

A preliminary assessment of the response of metallurgical samples from the Cheechoo Gold Project was conducted at ALS Metallurgy (Sloan and Mehfert, March and October 2015). A second program designed to explore the heap leach performance of metallurgical samples was conducted at Actlabs (Steyn, 2017). The latest testwork program was conducted at COREM as follows: Mineralogy (Perez, 2019); and Comminution and Metallurgical (Tremblay-Bouliane et al., 2019).

Sirios selected and prepared the samples used for all testwork programs.

13.2 Mineralogy

A mineralogy study of the Cheechoo material was conducted by COREM in 2019 (Perez, 2019).

As part of project T2450, mineralogical and chemical characterization was performed on 12 samples:

- Three composite samples having different P_{80}: Composite No. 9 (P_{80} = 106 µm), No. 12 (P_{80} = 112 µm) and No. 26 (P_{80} = 140 µm);
- Three Knelson concentrates were obtained after Knelson concentration of composites No. 9, No. 12 and No. 26;
- Six samples obtained after flotation of each composite Knelson tailings (one concentrate and one tailing sample for each composite Knelson tailings).

The goal of this study was to obtain the mineralogical composition of the samples, as well as a detailed gold deportment of Knelson concentrate and tailings.

The analyses performed on the composite samples showed that composites No. 9, No. 12 and No. 26 had gold grades of 0.5 g/t, 1.3 g/t and 0.3 g/t respectively. Granodiorite composites No. 9 and No. 12 were quite similar regarding their mineralogical composition and they were mostly composed of plagioclase, feldspar and quartz, while sulphide minerals composed 0.7% of both composites, being the amount of arsenopyrite 0.3% in both composites.

Metasediment composite No. 26 presented higher amount of micas (almost 20%) than the other two composites and arsenopyrite was present just in traces (0.01%).

The mineralogical and chemical characterization performed on Knelson concentrates showed that Knelson concentrate from composite No. 12 contained 28.8 g/t of gold, while Knelson concentrates from composites No. 9 and No. 26 were richer with gold grades of 67.0 g/t and 75.2 g/t respectively.

According to the characterization of gold deportment of Knelson concentrates, gold was present in the form of native gold and electrum. The characterization of gold liberation performed on Knelson concentrates showed that free gold represented 50% of Knelson concentrate for composite No. 12 and 65% of Knelson concentrate for composite No. 26. No free gold particles were observed in Knelson concentrate for composite No. 12; exposed gold accounted for 28%, 87% and 6% of Knelson concentrates on composites No. 9, No. 12 and No. 26 respectively; Locked gold (non-exposed gold) represented 22%, 13% and 29% of Knelson concentrates for composites No. 9, No. 12 and No. 26 respectively. In all Knelson concentrates, the most frequent association of gold was with arsenopyrite, being the proportion of gold surface associated with this mineral 63%, 46% and 14% respectively in Knelson concentrates from all three composites. Locked gold in the form of very fine inclusions (<5 µm) represented 11%, 3% and 3% of gold weight proportion in Knelson concentrates from composites No. 9, No. 12 and No. 26 respectively. The characterization of flotation products obtained after flotation of Knelson tailings of leach concentrate showed that gold grade was 4.2 g/t, 5.2 g/t and 2.3 g/t respectively in flotation concentrate of Knelson tailings for composites No. 9, No. 12 and No. 26. In flotation tailings of all three composites Knelson tailings, gold assays were lower than 0.2 g/t.

The few gold grains observed during the mineralogical analysis of these samples showed that gold was in the form of very fine inclusions (<2 µm) disseminated in arsenopyrite. No observations were made of gold associated with silicates. However, it should be noted that this lack of observations might be due to an insufficient number of polished sections analyzed considering the low gold grades of the samples.

13.3 Testwork

The objective of the testwork was to provide data to select metallurgical unit operations, develop preliminary flowsheets and produce a preliminary process design criteria for the process engineering and associated operating and capital cost estimations.

The work has been conducted from 2015 to the closing date for this report (November 2019) at three different laboratories: ALS Metallurgy (2015), Actlabs (2017) and COREM (2019).

13.3.1 Sample Preparation

13.3.1.1 ALS Testwork

The material tested in the ALS testwork program included 72 samples of crushed rock weighing a total of approximately 97 kg. Three samples were prepared under the instructions of Sirios (Sloan and Mehfert, March 2015). All assays were performed at the ALS geochemistry laboratory located in Rouyn-Noranda, Quebec. Table 13-1 presents the composite feed assays.

Three composites named Composite 1, Composite 2 and Composite 3 were prepared. Each composite was constructed according to Sirios instructions, homogenized, and rotary split into 2 kg charges for metallurgical testing. The composite construction information is included in report by Sloan and Mehrfet (March 2015; Appendix II - KM4609). A sub-sample was split from Composite 1 and Composite 2 for comminution testing.

Table 13-1: Composite feed assays ALS testwork

Composite ID	Calculated Au (g/t) (average of fire assay triplicates)	Assay Au (g/t) metallic
Composite 1	0.37	0.30
Composite 2	0.37	2.21
Composite 3	2.59	4.87

Some variability in the gold content by fire assay was measured, particularly with Composite 3. Coarse gold particles were suspected; therefore, a screen metallic determination was performed with a 1 kg sub-sample of each composite. The sub-sample was first pulverized and then screened at 106 μm (Tyler 150-mesh). The entire screen oversize fraction was fire assayed, as well as representative duplicate splits from the screen undersize fraction. Screen metallic results are shown in Table 13-1 and may be more representative of the gold head assays for the three composites.

13.3.1.2 Actlabs Testwork

Three samples at three different crush sizes were prepared under the instructions of Sirios (Steyn, 2017).

Each sample was crushed to -3/4 inch and a 3.5-4-kg sub-sample was taken. The remainder of each sample was further crushed to -3/8 inch and another split was reduced further to -10 mesh. A split of the -10 mesh was also retained for a head assay. Due to the difficulty in obtaining a small representative head split from the larger crush size (above 10 mesh), only the -10 mesh fraction of each sample was assayed.

Table 13-2: Composite feed assays Actlabs testwork

Composite ID	Calculated (g/t)		Assay (g/t)
1306720	-19 mm	0.27	0.64
	-12.5 mm	0.22	
	-2 mm	1.14	
1306721	-19 mm	0.40	0.43
	-12.5 mm	0.80	
	-2 mm	0.47	
1306722	-19 mm	26.20	43.50
	-12.5 mm	34.20	
	-2 mm	29.40	

Testing procedure is presented in Figure 13-1.

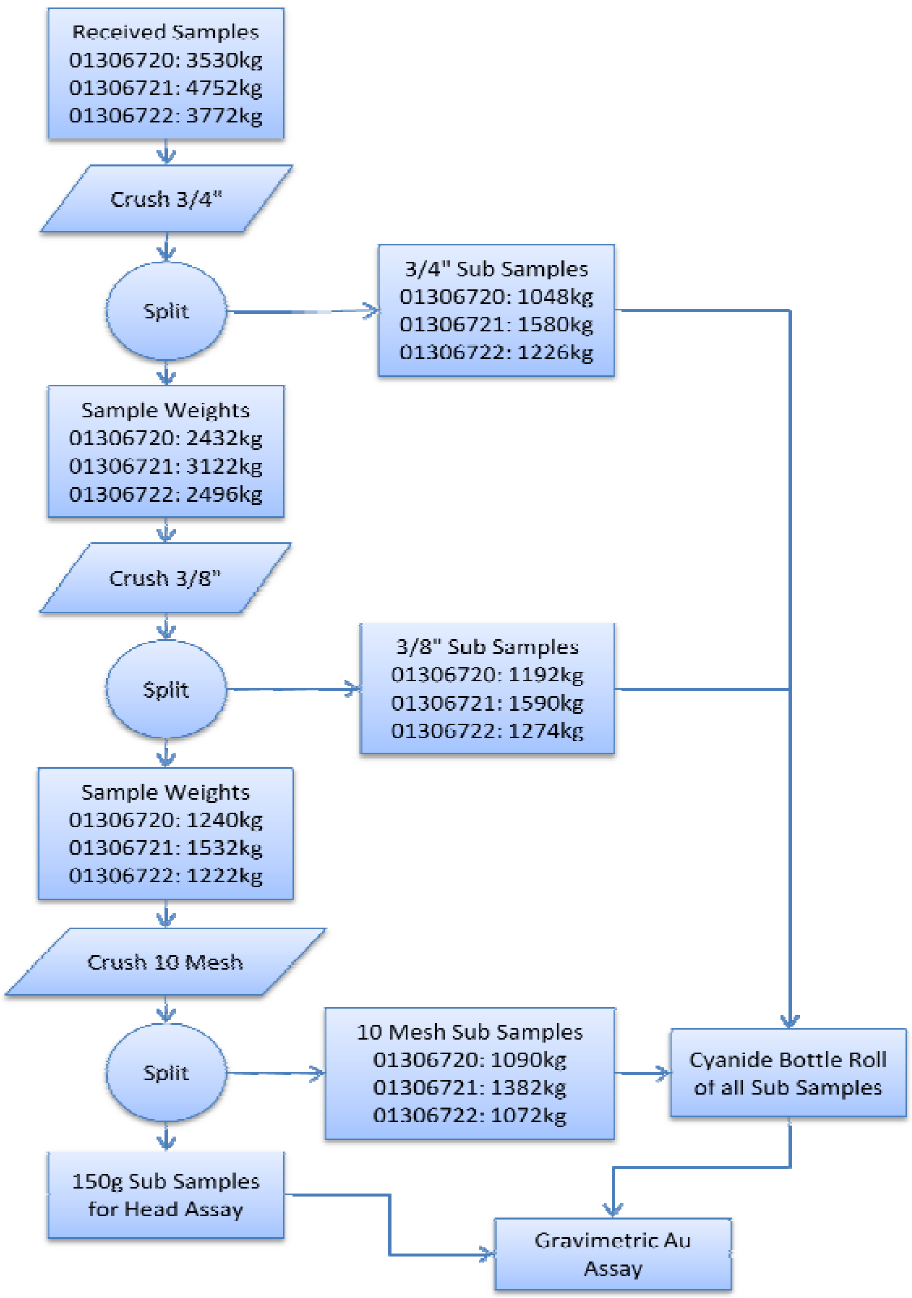


Figure 13-1: Actlab testing procedure protocol

13.3.1.3 COREM Testwork

A series of metallurgical tests were planned on composite samples selected by Sirios. The work was designed to study the response of gold recovery to different gold grades of mineralized samples. A mineralogical study (Perez, 2019) and comminution and metallurgical testwork (Tremblay-Bouliane et al., 2019) programs were performed.

Phase 1 of the project was limited to three composite samples of varying lithologies and gold grades: Composite No. 9 (tonalite, survey CH18-195, 0.66 g/t Au expected), Composite No. 12 (tonalite, pegmatite and mafic dyke, survey CH18-195, 4.38 g/t Au expected) and Composite No. 26 (sediment, survey CH18-198, 0.22 g/t Au expected).

Based on Sirios evaluation, composite 9 is expected to represent 70% of the processed material, while composites 12 and 26 are expected to represent 20% and 5% of the deposit respectively.

All three composite samples were subjected to head assays, grinding characterization, mineralogical characterization, gravity separation (GRG), bottle roll cyanidation and bulk sulfide flotation tests. The results from Phase 1 will help define the optimal conditions and flow sheet for the larger testwork planned in future Phase 2, which implies the processing of 30 samples of 100-200 kg each.

For each composite (composites 9, 12 and 26), some pieces of drill core were randomly chosen and cut into pieces (-75 mm +50 mm) for Bond crusher work index testing (CWi) and part of the drop weight test. Then, all the material was crushed for the other comminution characterization testing. Figure 13-2 presents the comminution sample preparation protocol.

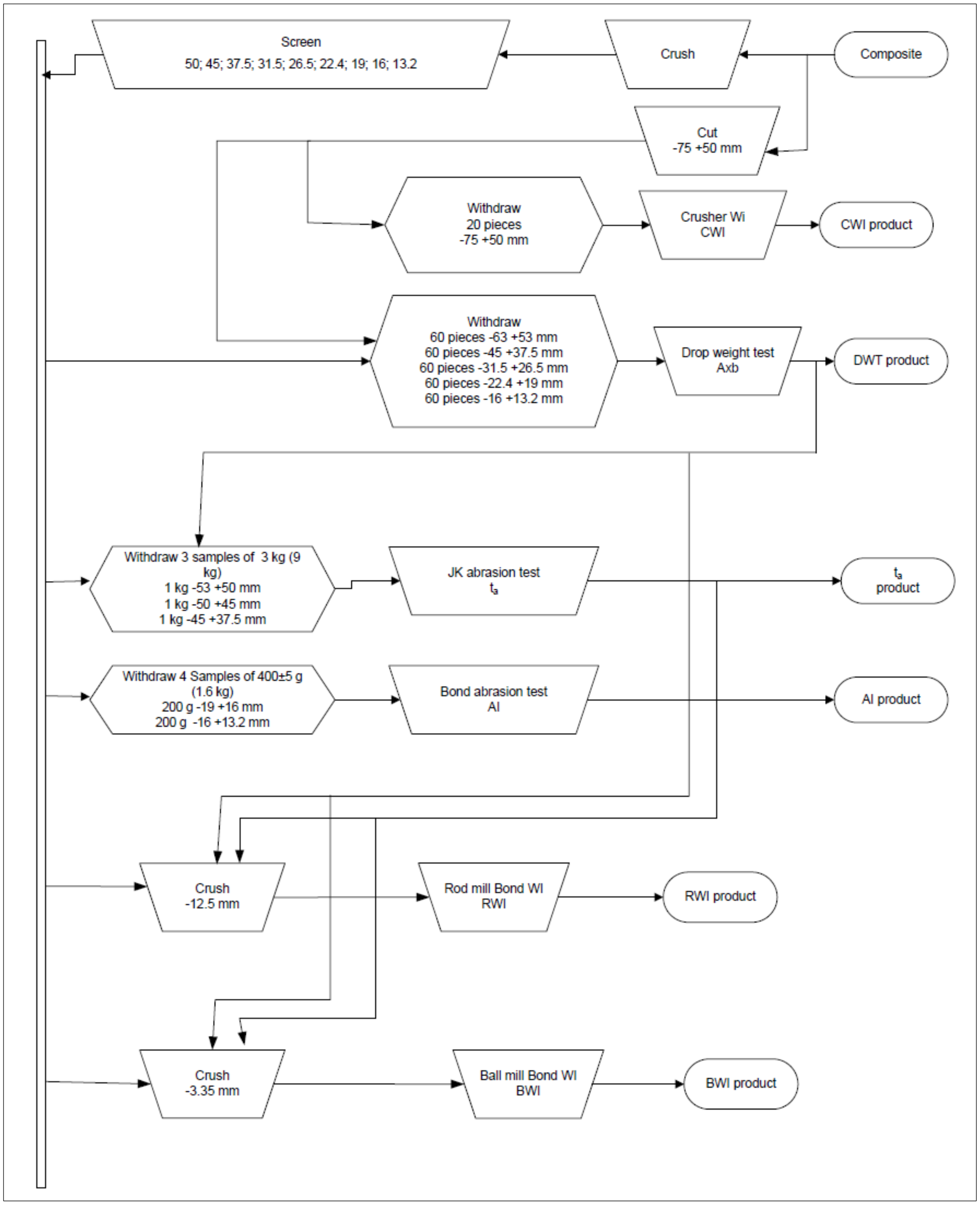


Figure 13-2: COREM comminution testwork protocol

Following the comminution testwork, the SMC, RWi, Ai, JK abrasion and DWT products of each composite were combined and crushed to P_{100}=850 µm. Each composite was then homogenized through three passes on a rotary splitter; at this point, 30 kg of each composite was reserved for the GRG tests, while the rest of the material was split in 2-kg bags (Figure 13-3).

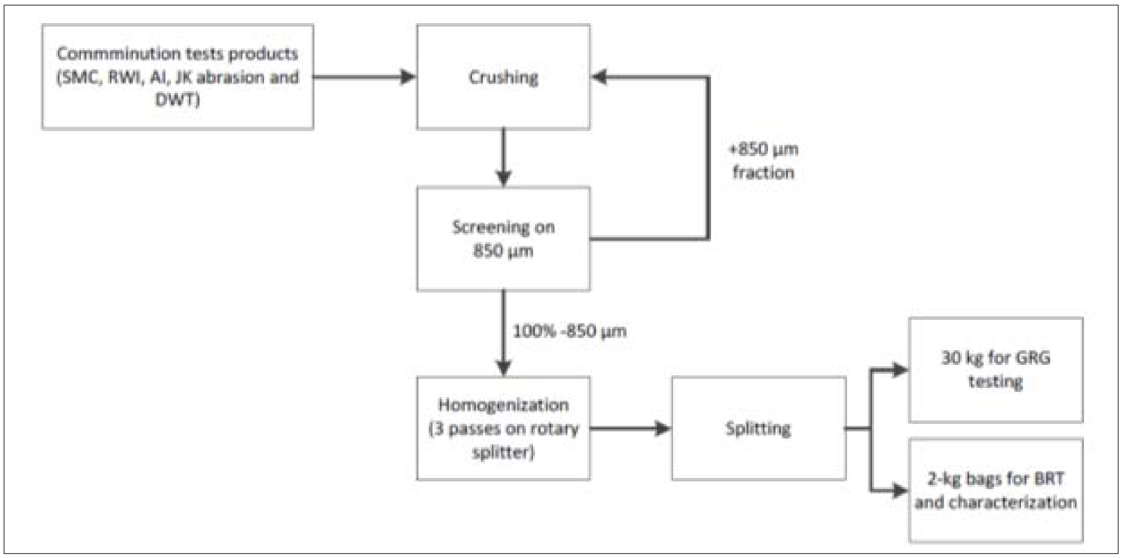


Figure 13-3: COREM metallurgical samples preparation flow diagram

Table 13-3 presents the composite Au feed from COREM testwork. Composite No. 12 presents the highest difference between the direct assays and the calculated assays; this could be explained by the presence of coarse gold. As in ALS testwork, it can be solved by performing a metallic gold analysis in the feed samples.

Table 13-3: Composite feed assays COREM testwork

Composite No.	P_{80} (microns)	Calculated Au feed (g/t)	Assay feed Au (g/t)
9	105	0.60	0.56
	75	0.53	
	50	0.54	
12	105	1.67	3.06
	75	1.68	
	50	2.44	
26	105	0.34	0.27
	75	0.31	
	50	0.27	

13.3.2 Comminution

Comminution testwork was conducted at ALS (only Bond mill work index, report KM4609), COREM (report T2450) and JKTech (SMC testwork conducted at SGS under the instructions of COREM). Results analysis presented in JKTech job No 19007/P6; Feb. 2019).

Samples were selected by Sirios to provide representative samples for the testwork.

13.3.2.1 ALS Testwork

Bond ball mill work index (BWi) was conducted on two composites (1 and 2) with closing aperture of 106 microns. Table 13-7 indicates the testwork results. The samples were classified as hard based on JKMRC evaluation.

13.3.2.2 COREM Testwork

The comminution testwork was conducted on three of the main mineralized zones (composites 9, 12 and 26). Table 13-3 indicates the composites characteristics.

Table 13-4 indicates the results of the Bond crusher work index (CWi). The results are classified as hard material under COREM's evaluation.

Table 13-4: Bond crusher work index

Sample's ID	CWi (kWh/t)
Composite 9	15.3
Composite 12	14
Composite 26	13.9

Table 13-5 and Table 13-6 present the results of the drop weight tests (DWT), abrasion test results and SMC respectively. Composites are classified as relatively soft (12), normal (26) and relatively hard (9) for DWT based on JKMRC evaluation. Regarding the SAG mill comminution (SMC) test, the composites are classified as relatively soft (12 and 26) and normal (9) according to JKMRC evaluation.

Table 13-5: Drop weight and abrasion test results

Sample ID	DWT				ta	
	A	b	Axb	Classification*		Classification*
Composite 9	93.1	0.453	42.2	Relatively hard	0.24	Hard
Composite 12	73.5	0.876	64.3	Relatively soft	0.34	Hard
Composite 26	76.5	0.699	53.5	Normal	0.36	Relatively hard

* Classification based from JKMRC evaluation.

Table 13-6: SMC testwork results

Sample name	A	b	Axb	Hardness percentile	ta	DWI (kWh/m³)	Mia (kWh/t)	Mih (kWh/t)	Mic (kWh/t)	SCSE (kWh/t)	Relative density
Composite 9	97.5	0.48	46.8	48	0.46	5.7	17.4	12.4	6.4	9.1	2.65
Composite 12	80.6	1.01	81.4	17	0.80	3.2	11.1	7.1	3.7	7.3	2.65
Composite 26	77.5	0.91	70.5	22	0.66	3.9	12.4	8.2	4.2	7.8	2.76

Table 13-7 presents the results of the Bond ball and rod mill index results for ALS and COREM test programs. Composites are classified as hard and very hard (26) based on JKMRC evaluation for the BWi. In terms of RWi, the results indicate that the mineralized material is soft according to JKMRC evaluation.

Table 13-7: Bond ball and Rod mill work index

Sample's ID	Reference screen (microns)	BWi (kWh/t)	Hardness*	RWi (kWh/t)	Hardness*
Composite 1 (ALS)	106	16.2	Hard		
Composite 2 (ALS)		14.1	Hard		
Composite 9 (COREM)		15.1	Hard	8	Soft
Composite 12 (COREM)		16.5	Hard	8.5	Soft
Composite 26 (COREM)		22.8	Very hard	6.3	Soft

* Classification based from JKMRC evaluation.

Table 13-8 presents the results of the Bond abrasion index (Ai). Additionally, the wear rate estimations for rods, balls and liners are presented. Composites are classified as low abrasion index (26) to medium (9 and 12) based on BBA database.

Table 13-8: Bond abrasion test results

Sample ID	Ai (g)	Wear rate (kg/kW)					
		Rod mill		Ball mill		Gyr/jaw/cone	Roll crusher
		Rod	Liner	Ball	Liner	Liner	Liner
Composite 9	0.457	0.1347	0.0125	0.1211	0.0094	0.0278	0.0581
Composite 12	0.352	0.1276	0.0115	0.1107	0.0086	0.0235	0.0489
Composite 26	0.229	0.1162	0.0101	0.0951	0.0075	0.0184	0.0366

13.3.3 Metallurgical testwork

The testwork objective was to evaluate the gold recovery through the following processes:

- Gravity separation and leaching of gravity tails;
- Gravity separation and flotation of gravity tails;
- Whole ore leach (namely WOL);
- Heap leach.

Testwork was conducted in three programs: ALS (whole ore leach, gravity and leaching of gravity tails), Actlabs (heap leach) and COREM (whole ore leach; and GRG testwork with leaching of GRG tails or flotation of gravity tails).

13.3.4 Gravity

Gravity testwork was conducted at two locations: ALS (Report 4609 and 4836, dated March and October 2015) and COREM (Report T2450 – Phase 1; dated August 29, 2019).

13.3.4.1 ALS Testwork

Gravity separation tests with a Knelson separator and panning of the Knelson concentrate were performed to assess the potential for gold recovery to a gravity concentrate. Nominal primary grind sizings of 100 and 150 µm K_{80} (Sloan and Mehrfet, March 2015; KM4609); and 200 and 250 µm K_{80} (Sloan and Mehrfet, October 2015; KM4836) were tested.

On the first series of gravity tests, 2 kg samples of Composites 1, 2 and 3 were tested. The Knelson concentrate was hand panned to achieve a mass recovery that is somewhat more representative of a Knelson unit operation in a concentrator. Feed gold recovery to the pan concentrate ranged between 66% and 75% for Composites 1 and 2. Between 0.2% and 0.7% of the feed mass was recovered to the pan concentrates grading between 65 g/t and 368 g/t gold. The calculated gold feed grade for Composite 1 was between 0.7 g/t and 1.1 g/t, higher than the gold head grade measured by fire assay and screen metallic methods.

A single gravity recovery test with Composite 3 was completed at a primary grind sizing of about 157 µm K_{80}. Feed gold was about 76% recovered to a pan concentrate grading 295 g/t gold, and about 1.2% of the feed mass was recovered. The results indicate that there is potential for including a gravity recovery circuit for the three feed types.

On the second series of gravity tests, 4 kg charges of Composite 1 and 2 kg charges of Composite 2. Feed gold recovery to the pan concentrate ranged between 28% and 49% for Composite 1, and between 52% and 73% for Composite 2. Mass recovery to the pan concentrate averaged 0.3% and 0.5% for Composite 1 and Composite 2 respectively. Although gravity gold recovery decreased for Composite 1 at coarser primary grind sizings, an increase in gravity gold recovery at a coarser sizing was recorded for Composite 2. The higher gold recovery for Composite 2 for the test completed at a coarser grind sizing might be attributed to a "nugget" effect gold in the feed, given the difference in calculated gold head grade between the two tests.

The gravity testwork was followed by a series of cyanidation on either gravity tailings or direct feed for grind sizes of 100, 150, 200 and 250 µm.

Table 13-9: ALS: Gravity recovery results

Program	Composites	P_{80} microns	Au head grade g/t	Gravity recovery %
KM4609	1	146	1.08	70.4
		109	0.70	72.5
	2	146	1.09	74.8
		100	0.90	65.8
	3	157	4.52	76.2
KM4836	1	196	0.40	49.4
		242	0.49	27.8
	2	202	0.64	52.3
		245	0.95	72.9

13.3.4.2 COREM Testwork

Following the preparation and the homogenization of the material, a gravity recoverable gold (GRG) test was carried out according to the standard 3-stage methodology developed by André Laplante,

The composite sample was processed with a MD3 Knelson separator to perform the three stages GRG test. These three stages were realized successively on reground samples: 100% -850 µm for stage 1, 50% -75 µm for stage 2, and 80% -75 µm for stage 3. Each concentrate and tailings were screened and each size fraction was analyzed by fire assay with an atomic adsorption finish to estimate its gold grade. A metallurgical balance was realized at each stage in order to evaluate the gold recovery at all stages.

The gravity testwork was followed by a series of cyanidation on either gravity tailings (µm) or direct feed for grind sizes of 106 µm, 75 µm and 50 µm.

An additional Knelson test, as well as sulfide flotation on the gravity tailings, was carried out for each of the three composites in order to produce material for the mineralogical characterization.

Table 13-10 shows the results of the gravity test.

Table 13-10: COREM: Gravity recovery results

Composites	P_{80} microns	Au head grade g/t	Gravity recovery %
9	75	0.92	81.4
12	75	2.81	88.0
26	75	0.31	56.5

13.3.5 Leaching of Gravity Tails

Leaching of gravity tails testwork was conducted at two locations: ALS (Sloan and Mehrfet, March and October 2015) and COREM (Tremblay-Bouliane et al, 2019).

13.3.5.1 ALS Testwork

Cyanidation leach bottle roll tests at grind size between 100 µm and 150 µm on the combined gravity tail were performed on Composites 1, 2 and 3 to measure overall gold recovery (report KM4609); and at coarser grind (200 µm to 250 µm) Composite 1 and 2 (report KM4836). No material was available for Composite 3 (report KM4836). The combined Knelson and pan tail was subjected to cyanidation bottle roll leaching for 48 hours at a sodium cyanide concentration of 1,000 ppm with interval samplings at 2, 6, 24 and 48 hours. The slurry was sparged with oxygen and the pH was maintained at a target of 11.0 during the cyanidation leach test with lime. Table 13-11presents the results of both programs.

Regarding leaching conducted at grinds between 100 µm to 150 µm, it was observed that:

- Combined gold recovery by gravity concentration followed by cyanidation leach extraction of the gravity tail averaged about 92% for the three composites tested. Overall gold recovery varied between 1% and 3% for Composite 1 and Composite 2 at the two primary grind sizes tested; additional testing would be required to determine whether the difference was significant.
- Gold leach kinetics recorded for tests at a nominal primary grind sizing of 150 µm K_{80} appeared to be more rapid than for tests performed with gravity tails at 100 µm K_{80}. Additional testing would be required to confirm. Sodium cyanide and lime consumption averaged about 0.4 kg/t over the tests completed.

Regarding leaching at coarser grind results (200 µm to 250 µm) leach feed:

- Combined gold recovery by gravity concentration followed by cyanidation leach extraction of the gravity tail averaged about 88% for Composite 1 and 93% for Composite 2. This represents a 4% decrease from the 92% overall gold extraction recorded for Composite 1 at 146 µm K_{80} in the previous test program. For Composite 2, the combined gold recoveries recorded at coarser primary grind sizings averaged 93%, similar to gold recoveries recorded in the previous test program at 146 µm K_{80}.

- Sodium cyanide and lime consumption averaged about 0.1 kg/t and 0.3 kg/t respectively, for tests completed in this program, a substantial decrease from the 0.4 kg/t average recorded in the previous test program at finer primary grind sizings.

Table 13-11: ALS: Leaching of gravity tails results

Program	Composites	P_{80} microns	Calculated Au head grade g/t	Au recovery %	NaCN kg/t	Lime kg/t
KM4609	1	146	0.25	74.4	0.5	0.47
		109	0.12	67.3	0.4	0.55
	2	146	0.18	67.5	0.34	0.30
		100	0.22	84.1	0.30	0.40
	3	157	0.89	69.2	0.54	0.32
KM4836	1	196	0.21	80.7	0.16	0.30
		242	0.26	80.6	0.08	0.28
	2	202	0.24	79.1	0.13	0.36
		245	0.28	82.2	0.10	0.39

13.3.5.2 COREM Testwork

Approximately 1 kg of sample was used for leaching tests in 4-L bottles. Leaching parameters were: duration 48h, % solids 50, pH (lime) 10.25-10.75, $[NaCN]_{maintained}$ 1,000 mg/L NaCN, Aeration Natural (open bottles).

In preparation for the bottle roll cyanidation, the ground mineralized material is introduced in a 4-L bottle, followed by the addition of the required demineralized water. The mixture is stirred and the pre-leach pH is noted and adjusted to the required pH using slaked lime powder. The bottle is then rolled for approximately 15 minutes and the pH is adjusted if necessary, followed by the initial cyanide addition to start the cyanidation reaction.

Sampling and assays schedule for bottle roll tests was at 2, 6, 24 hours (with control of pH, residual cyanide/cyanide addition, D.O. dissolved Au by atomic absorption), and 48 hours (with control of pH by total lime addition, residual cyanide, D.O., dissolved Au by atomic absorption, Au in solid tailings by metallic sieve on 500 g).

A total of nine bottle roll cyanidation tests were carried out. Bottle roll cyanidation results are presented in Table 13-12.

Testwork observations:

- Au recovery for the GRG tailings BRTs was lower when compared to the direct feed BRTs. The 48-hour Au recovery was 81.7%, 75.6% and 79.2% for composites 9, 12 and 26 respectively. The lower cyanidation recovery can be explained by the generally lower feed grade, as most of the gold was recovered during the GRG tests. With the lower feed grades, the encapsulated gold represents a higher proportion of the total gold present in the GRG tailings, resulting in a lower calculated recovery for the cyanidation step.
- Consumption was slightly higher for the leaching of gravity tailings: 0.67 kg/t, 0.67 kg/t and 0.89 kg/t for composites 9, 12 and 26 respectively.

The cyanide concentration was maintained at a notably high setpoint of 1,000 mg/L NaCN throughout the cyanidation tests to provide adequate leaching kinetics for proper evaluation of the achievable final Au recovery. Furthermore, for some of the tests (more specifically for the GRG tailings cyanidation tests), the pH dropped slightly below 10 overnight, which probably caused some amount of hydrocyanic acid (HCN) volatilization.

Cyanide concentration optimization through additional leaching tests would most likely lead to the determination of a lower setpoint and to overall lower cyanide consumption, even more so when combined with a pH maintained over 10.5 for the whole duration of the leaching.

Lime consumption can be considered low for most of the tests. Among the three composites, composite 26 has the highest lime consumption. Lime consumption values of 0.70 kg/t, 0.73 kg/t and 1.23 kg/t were measured respectively for composites 9, 12 and 26.

Table 13-12: COREM: Gravity tails leach results

Composite	Product	P_{80} µm	Replicate	Calc feed g/t	Assayed feed g/t	Au recovery, 48 hours %	NaCN consumption kg/t	Cao consumption kg/t	Cao equivalent kg/t
9	GRG tailings	75	1	0.14	0.17	83.2	0.51	1.14	0.86
			2	0.18		81.2	0.75	0.74	0.56
			3	0.11		80.5	0.76	0.90	0.68
			Average	0.15		81.7	0.67	0.93	0.70
12		75	1	0.35	0.29	76.6	0.5	1.0	0.76
			2	0.36		76.0	0.8	0.9	0.70
			3	0.36		74.1	0.7	1.0	0.73
			Average	0.36		75.6	0.67	0.97	0.73
26		75	1	0.12	0.12	80.6	0.9	1.8	1.32
			2	0.13		75.9	0.9	1.2	0.93
			3	0.12		81.1	0.9	1.9	1.42
			Average	0.13		79.2	0.89	1.62	1.23

13.3.6 Flotation of Gravity Tails

13.3.6.1 COREM Testwork (report)

Bulk sulphide flotation test was carried out on gravity separation tailings from each composite to study the gold-sulphide mineral associations. Testwork was conducted at COREM (Tremblay-Bouliane et al, 2019).

A 12-kg sample from each composite sample was subjected to a single Knelson gravity separation step at P_{80}=75 µm. The tailings were filtered, dried and split in 4-kg sub-samples to undergo flotation tests. Flotation tests were carried out in a 10-litre Denver cell at the following operating conditions: 30-35% solids, pH = 9.5, air flowrate = 50 L/min, rotation speed 900 rpm. The reagent additions were: 40 g/t of $CuSO_4$ at the rougher stage and PAX51 additions of 40, 20 and 20 g/t for the rougher and two stages of scavenger flotation. These conditions were set to recover as much sulphides as possible, while still obtaining a grade high enough to facilitate the mineralogical characterization of Au-sulphide associations.

Table 13-13 shows the bulk sulphide flotation results.

Table 13-13: COREM: Flotation of gravity tails results

Composite	Conc. Mass %	Tails Mass %	Sulfur mass balance				Au mass balance			
			Conc. Grade %	Tail grade %	Calc. feed* %	Recovery %	Conc. Grade %	Tail grade %	Calc. feed %	Recovery %
9	2.72	97.3	3.8	<0.1	0.15	51.5	4.2	0.07	0.18	62.7
12	5.30	94.7	2.7	<0.1	0.19	60.1	5.2	0.15	0.42	65.8
26	3.70	96.3	4.2	<0.1	0.20	61.8	2.3	0.06	0.14	59.5

* The sulphide calculated feed was based on a 0.1% grade in the tailings since the assay was under the detection limit. Thus, sulphide recovery is probably underestimated.

13.3.7 Whole Ore Leach

Whole ore leach (WOL) testwork was conducted at two locations: ALS (Sloan and Mehrfet, March and October 2015) and COREM (Tremblay-Bouliane et al, 2019).

13.3.7.1 ALS Testwork

Cyanidation leach bottle roll tests (WOL) using feed charges at a nominal primary grind sizing of 150 µm K_{80} were performed on Composite 1, Composite 2 and Composite 3 to measure gold extraction to benchmark with leaching of gravity tails results. The selection of the primary grind sizing was based on the previous gravity and cyanidation leach test results. Bottle roll leaching was carried out over 48 hours at a sodium cyanide concentration of 1,000 ppm with interval sampling at 2, 6, 24 and 48 hours. The slurry was sparged with oxygen and the pH was maintained to a target of 11.0 over the duration of the test with lime. The following comments relate to the test data (in comparison to Table 13-11):

- Gold extraction values by cyanidation leaching were 24% and 14% lower than the values measured for combined gravity and cyanidation leaching of the gravity tails for Composite 1 and Composite 2 respectively, at a similar primary grind sizing. However, the gold extraction by whole ore leaching for Composite 3 was only about 2% lower.
- Gold extraction kinetics were slower for the whole ore cyanidation leach tests than those measured for cyanidation leaching of gravity tails. Peak gold extraction was reached within about 24 hours for Composite 1 and Composite 2 in the whole ore leach tests but required only about 6 hours for the gravity tails. Peak gold extractions were measured after 24 hours or longer with the higher grade Composite 3.
- Sodium cyanide consumption was between 0.2 kg/t and 0.3 kg/t higher for whole ore cyanidation leach tests than values measured for cyanidation leach tests with gravity tails.

Table 13-14: ALS: Direct cyanidation (WOL) and gravity recovery followed by leaching of gravity tails (Grav + CN)

Composites	P_{80} microns	Test type	Calculated Au head grade g/t	Au recovery %	NaCN kg/t	Lime kg/t
1	146	WO	0.36	68.2	0.70	0.27
	146	Grav + CN	1.08	92.4	0.50	0.47
2	146	WO	0.73	78.1	0.66	0.31
	146	Grav + CN	1.09	91.8	0.34	0.30
3	157	WO	6.8	91.1	0.88	0.34
	157	Grav + CN	4.52	92.7	0.54	0.32

13.3.7.2 COREM Testwork

Same protocol was used to test the direct cyanidation (WOL) as presented in Section 13.3.5.2.

A total of 27 bottle roll cyanidation tests were carried out. Bottle roll cyanidation results are presented in Table 13-15.

Direct leach (WOL) tests observations:

- For the direct feed cyanidation tests, Au recovery generally increases with finer grind sizes. At a grind size of P_{80}=50 µm, the 48-hour Au recovery reached 88.1%, 92.0% and 87.8% for composites 9, 12 and 26 respectively.
- The smaller grind sizes also led to an increase in Au leaching kinetics, which is probably the result of an increase in the exposed gold surface.
- Cyanide consumption was moderate to low for all three composites tested for direct cyanidation and were slightly higher for coarser grind sizes; it ranged between 0.49-0.58 kg/t, 0.22-0.48 kg/t and 0.19-0.29 kg/t for composites 9, 12 and 26 respectively.
- Lime consumption was moderate to low for all three composites tested for direct cyanidation and were slightly higher for coarser grind sizes; it ranged between 0.56-0.70 kg/t, 0.65-0.88 kg/t and 0.84-1.09 kg/t for composites 9, 12 and 26 respectively.

Table 13-15: COREM: Direct cyanidation (WOL) testwork results

Composite	Product	P_{80} µm	Replicate	Calc feed g/t	Assayed feed g/t	Au recovery, 48 hours %	NaCN consumption kg/t	Cao consumption kg/t	Cao equivalent kg/t
9	Direct feed (WOL)	105	1	0.75	0.56	83.0	0.40	0.73	0.55
			2	0.53		73.6	0.70	0.56	0.42
			3	0.53		75.1	0.63	0.50	0.38
			Average	0.60		77.9	0.58	0.59	0.45
		75	1	0.56		82.4	0.50	0.66	0.50
			2	0.54		82.8	0.66	0.56	0.42
			3	0.49		81.4	0.35	0.48	0.36
			Average	0.53		82.2	0.50	0.56	0.43
		50	1	0.55		89.0	0.41	0.50	0.38
			2	0.47		87.0	0.54	0.93	0.70
			3	0.60		88.1	0.51	0.69	0.52
			Average	0.54		88.1	0.49	0.70	0.53
12		105	1	1.80	3.06	86.8	0.44	0.74	0.56
			2	1.62		85.9	0.58	0.33	0.25
			3	1.61		86.3	0.41	0.88	0.66
			Average	1.67		86.4	0.48	0.65	0.49
		75	1	1.86		87.7	0.19	1.00	0.74
			2	1.62		86.5	0.23	0.66	0.49
			3	1.57		86.0	0.27	0.67	0.49
			Average	1.68		86.8	0.23	0.78	0.57
		50	1	2.67		92.8	0.20	0.91	0.67
			2	2.46		92.0	0.25	0.99	0.73
			3	2.18		91.1	0.21	0.75	0.56
			Average	2.44		92.0	0.22	0.88	0.65
26		105	1	0.33	0.27	85.2	0.27	0.87	0.64
			2	0.37		86.1	0.32	0.86	0.63
			3	0.33		84.2	0.28	0.79	0.58
			Average	0.34		85.2	0.29	0.84	0.62
		75	1	0.33		88.1	0.22	0.92	0.68
			2	0.31		88.9	0.23	1.28	0.94
			3	0.28		84.8	0.26	1.07	0.79
			Average	0.31		87.4	0.24	1.09	0.80
		50	1	0.25		87.0	0.20	0.97	0.71
			2	0.28		88.9	0.05	1.01	0.75
			3	0.27		87.4	0.19	0.95	0.70
			Average	0.27		87.8	0.19	0.98	0.72

13.3.8 Heap Leach

Heap leach amenability testwork was conducted at Actlabs in behalf of Sirios Resources Inc.

The objective of the testwork was to study the gold extraction at three crush sizes: 19 mm (-3/4 inch), 12.5 mm (-3/8 inch) and 2 mm (-10 mesh). The cyanidation testwork was conducted using intermittent bottle rolls (as a proxy for heap leach) on three samples of mineralized material. Table 13-16 shows the results of the testwork.

Table 13-16:Actlabs: Heap leach amenability testwork

Material type (ID)	Crush size mm	Au head assay g/t	Calc head g/t	Leach residue %	Au final solution ppm	Au adjusted solution ppm	Cyanide consumption kg/t	Au recovery %
Met Sed (01306720)	-19	0.64	0.27	0.22	0.05	0.06	1.31	21
	-12.5		0.22	0.13	0.09	0.10	1.29	43
	-2		1.14	0.17	0.90	1.00	1.47	85
Ton (01306721)	-19	0.43	0.40	0.22	0.16	0.17	1.16	45
	-12.5		0.80	0.47	0.31	0.33	1.21	41
	-2		0.47	0.16	0.28	0.31	1.22	66
Peg (01306722)	-19	43.5	26.20	18.20	7.46	7.99	1.25	30
	-12.5		34.20	18.10	15.42	16.20	1.20	46
	-2		29.40	12.70	15.56	16.70	1.25	57

Actlabs report indicates that:

- The best results were found for the finer crushed size: 2 mm;
- Analysis of the leaching kinetics curves indicated that the gold dissolution rate increased between the 7th and 14th days indicating potential higher gold recovery with longer leaching time;
- The cyanide consumption (from 1.16 kg/t to 1.47 kg/t) was in an average range and lime consumption was negative, an indication that the samples were alkaline, and the pH increased during the leaching time.

13.3.9 Gold Recovery Estimation

Overall gold recoveries were calculated using results from testwork programs and assuming four processing methods: 1) gravity recovery followed by leaching of gravity tails; 2) gravity recovery followed by flotation of gravity tails; 3) whole ore leach (1 to 3 as part of COREM testwork); and 4) heap leach (Actlabs testwork).

The Au head grades of composites used for the heap leach testwork were 0.64 g/t, 0.43 g/t and 43.5 g/t for composites 01306720 (Metasediments), 01306721 (Tonalite) and 01306722 (Pegmatite) respectively. In contrast, the Au head grades of composites 9, 12 and 26 were 0.92 g/t, 2.81 g/t and 0.31 g/t respectively. Those composites were used for whole ore leach; gravity recovery followed by leach of gravity tails and gravity recovery followed by flotation of gravity tails.

The whole ore leach testwork was conducted at three different particle sizes (P_{80}) of 50, 75 and 105 microns, and leaching or flotation of gravity tails were conducted at P_{80} = 75 microns (product of the third stage of GRG testwork). A particle size of 75 microns was selected to estimate the gold recovery and to compare results of WOL versus gravity recovery followed by leaching or flotation of gravity tails testwork.

Summaries of each gold recovery method are presented in Table 13-17 to Table 13-20.

In the case of the testwork involving gravity recovery, the overall gold recoveries reported by COREM were:

- Gravity recovery (GRG): 81.4%, 88% and 56.5% for composites 9, 12 and 26 respectively (average of 75.3%).
- For gravity recovery followed by leach of gravity tails: 96.6%, 97.1% and 91.0% for composites 9, 12 and 26 respectively (average of 94.9 %);
- Gravity recovery followed by flotation of gravity tails: 93.1%, 95.9% and 82.4% for composites 9, 12 and 26 respectively (average of 90.5%).

These overall gold recovery values were calculated assuming a gold gravity recovery of 100% of the gravity recoverable gold (GRG). The GRG results are only referential. At industrial scale it is common to recover 40% to 50% of the GRG in a well-designed gravity recovery circuit. BBA recommends that 50% of the GRG index is to be assumed when estimating the gold gravity recovery. Therefore, the average recovery decreases by 7.7% when the gravity circuit recovery is assumed to be 50% instead of 100% of the GRG. The recalculated overall recoveries are:

- Gravity recovery (corrected): 41.0%, 44.0% and 28.0% for composites 9, 12 and 26 respectively (average of 38%).
- For gravity recovery followed by leach of gravity tails: 89.1%, 86.3% and 85.0% for composites 9, 12 and 26 respectively (average of 86.8%);
- Gravity recovery followed by flotation of gravity tails: 77.9%, 80.8% and 70.9% for composites 9, 12 and 26 respectively (average of 76.6%).

The gold recovery (at 75 microns) for the whole ore leach method was 82.2%, 86.8% and 87.4% (average = 85.5%) for composites 9, 12 and 26 respectively.

Table 13-17: Gravity gold recovery estimation

Criterion	Unit	Composite		
		9	12	26
Average Feed Grade	g/t Au	0.92	2.81	0.31
Gravity (GRG) recovery	%	81.4	88.0	56.5
GRG correction factor	%	50.0	50.0	50.0
Corrected gold gravity recovery	%	41.0	44.0	28.0

Table 13-18: Gold recovery estimation by flotation of gravity tails method

Criterion	Unit	Composite		
		9	12	26
GRG tailings gold flotation recovery (P_{80} of 75 microns)	%	62.7	65.8	59.5
Overall gold recovery (GRG corrected)	%	77.9	80.8	70.9

Table 13-19: Gold recovery estimation by leaching of gravity tails method

Criterion	Unit	Composite		
		9	12	26
GRG tailings gold leach recovery (P_{80} of 75 microns)	%	81.7	75.5	79.1
Overall gold recovery (GRG corrected)	%	89.1	86.3	85.0

Table 13-20: Gold recovery estimation by whole ore leach method

Criterion	Unit	Composite		
		9	12	26
Whole ore leaching gold recovery (P_{80} of 75 microns)	%	82.2	86.8	87.4

In the heap leach testwork, it was observed that the best results were found at a crush size of -2 mm. This particle size is not applicable at the industrial scale. To overcome this situation, the Gold recovery was plotted versus particle size and using heap leach results as presented in Table 13-16; the gold recovery was interpolated for two particle sizes: -6.5 mm and -9 mm; Table 13-21 presents the results. The average gold recovery at 6.5 mm and 9 mm are 58.6% and 53% respectively.

Table 13-21: Heap leach gold recovery

Criterion	Unit	Composite		
Composite ID	-	01306720	01306721	01306722
Material type	-	Meta-Sediments	Tonalite	Pegmatite
Average feed grade	g/t Au	0.64	0.43	43.5
a) Au Recovery interpolated at crush particle size = -9 mm	%	57.9	53.6	47.7
b) Au Recovery interpolated at crush particle size = -6.5 mm	%	67.3	56.9	51.5

In conclusion:

The best gold recovery results were found when the mineralized material was processed by gravity recovery followed by leach of gravity tails, but the results were comparable to the whole ore leach results. An optimization and variability testwork is recommended to validate the best method of processing Cheechoo mineralized material.

- For gravity recovery followed by leach of gravity tails: 89.1%, 86.3% and 85.0% for composites 9, 12 and 26 respectively (average of 86.8%);
- Cyanide consumption was slightly higher for the leaching of gravity tailings: 0.67 kg/t, 0.67 kg/t and 0.89 kg/t for composites 9, 12 and 26 respectively;
- Lime consumption can be considered low for most of the tests. Among the three composites, composite 26 has the highest lime consumption. Lime consumption values of 0.70 kg/t, 0.73 kg/t and 1.23 kg/t were measured respectively for composites 9, 12 and 26.

Heap leach Au recovery results were maximized at finer crushed size. It is recommended to use a crushed size of -6.5 mm, but it requires future percolation testwork at the recommended particle size.

- The estimated Au recovery for heap leach process is 67.3%, 56.9% and 51.5 % for composites 01306720 (Meta- Sediments), 01306721 (Tonalite) and 01306722 (Pegmatite) respectively;
- The cyanide consumption (from 1.16 kg/t to 1.47 kg/t) was in an average range and lime consumption was negative, an indication that the samples were alkaline, and the pH increased during the leaching time.

13.3.10 Recommendation for Future Work

The following future testwork is recommended for the Cheechoo deposit:

- A comminution testwork program to study the mineralized material hardness variability;
- A metallurgical testwork program to study the Au recovery variability with Au head grade;
- Heap leach testwork results should be validated using intermittent bottle rolls and, depending on the results, using columns (for example 15 cm diameter per 2 m high). Testwork should consider the influence of variables such as cyanide and lime addition, leaching time, particle size, percolation rate, and temperatures (at conditions to be seen at site);
- As a result of the good response of the material to the GRG testwork, it is recommended by BBA to prepare master composites for batch gravity testwork followed by leaching of gravity tails:
  - One of the variables to study is the optimization of the gravity feed size (investigate the effect of coarser particle size on Au recovery);
- Additional flotation testwork should be conducted to explore the amenability of the mineralized material to flotation at coarser grind (with and without leaching of flotation concentrate);
- An optimization testwork program of leaching variables for the option selected in the current testwork program (WOL or gravity recovery with leaching of gravity tails):
  - Stirred reactor tests could be conducted to validate or optimize process variables such as cyanide addition, oxygen vs air, lead nitrate addition, etc.;
- A preliminary cyanide destruction testwork program based on the future tailings handling system;
- A dynamic settling testwork program to optimize flocculant addition;
- It is also recommended to conduct a trade-off study to compare the economics of heap leach vs a gravity + leach of gravity tails flowsheet.

14. MINERAL RESOURCE ESTIMATE

14.1 Introduction

BBA was retained by Sirios to prepare a maiden Mineral Resource Estimate (MRE) for the Cheechoo Project (the "Project"), which incorporates recent drilling and channel sampling programs. Drillhole information up to March 20, 2019 was considered for this estimate. The QP for this MRE is Pierre-Luc Richard, P. Geo., from BBA Inc.

14.2 Methodology

The herein MRE covers the whole Cheechoo Project with a strike length of 2,700 m and a width of approximately 2,600 m, down to a vertical depth of 500 m below surface.

Geological wireframes were constructed by Sirios' geologist Jordi Turcotte in Leapfrog Geo™ v.4.5 and were reviewed and validated by BBA's geologists Clovis Cameron Auger and Pierre-Luc Richard. Leapfrog Geo™ v.4.5 was used for the modelling of the overburden unit and of the topography surface. Geovia® GEMS 6.8.2.2 was used for the compositing, 3D block modelling, interpolation, classification and reporting. Statistical studies were conducted using Excel and Snowden Supervisor v. 8.11. The pit optimization analysis was carried out using the Deswik mining software version 2019.3.491.

The methodology for the estimation of the mineral resources involved the following steps:

- Database verification and validation;
- Review of the 3D modelling;
- Drillhole intercept;
- Basic statistics and composite generation for each unit;
- Capping;
- Geostatistical analysis including variography;
- Block modelling and grade interpolation;
- Block model validation;
- Resource classification;
- Cut-off grade calculation and pit shell optimization;
- Preparation of the mineral resource statement.

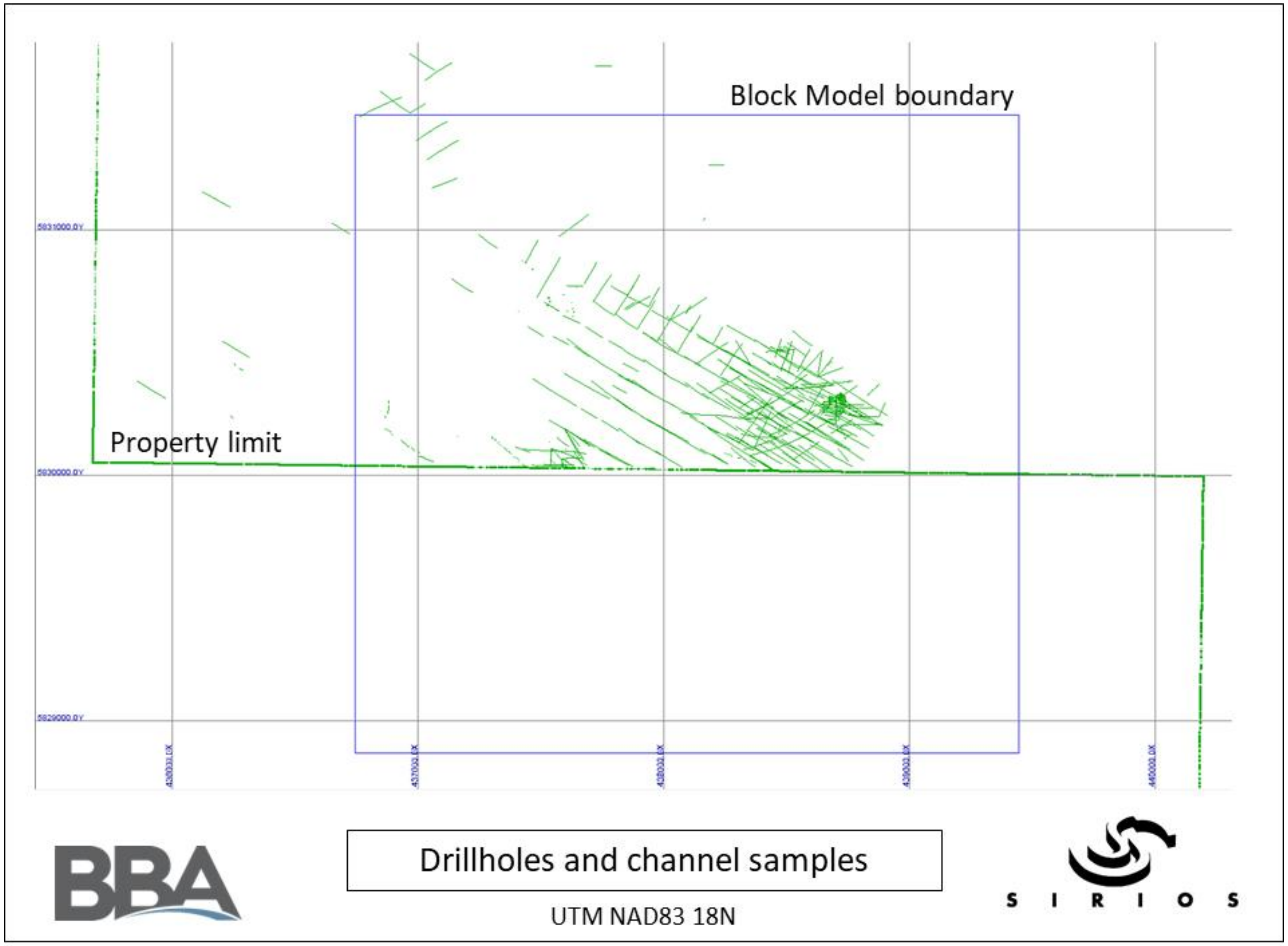


Figure 14-1: 2019 MRE block model, drillholes and channel samples location

14.3 Resource Database

The resource database for the Project, as of March 20, 2019, consisted of 270 diamond drillholes (DDH) totalling 64,212.45 m and 385 channels for 3,214.88 m with a total of 47,363 assays and was completed by Sirios between 2012 and 2019 (Figure 14-1).

The resource estimation for the Project relies on recent drilling and channel sampling programs. BBA included the channel sampling information into the resource estimation for the following reasons: 1) channel sampling data was validated as part of the mandate and no discrepancies were found; 2) drillholes were drilled in the vicinity of channel samples and the results show comparable geology and mineralization; and 3) statistical analysis (Figure 14-13) was made by BBA in order to compare the two population and no bias exists between the drilling samples and the channel samples.

The resource database was validated, and the protocols were reviewed before proceeding to the resource estimation. The validation steps are detailed in Chapter 12 of this Report. Minor variations have been noted during the validation process but have no material impact on the 2019 MRE.

The QP is of the opinion that the database is appropriate for the purposes of the mineral resource estimation and that the sample density, quality and spatial distribution allow to make a reliable estimate of the geometry, tonnage and grade continuity of the mineralization in accordance with the level of confidence established by the mineral resource categories as set forth in the CIM Standards.

14.4 Geological Interpretation and Modelling

A total of 37 high-grade domains and two low-grade envelopes were interpreted for the purpose of this MRE (Table 14-1).

Table 14-1: Domains of the 2019 MRE

Domain	Rockcode	Blockcode
OVB	OVB	10
Country Rock	WASTE	700
High Grade North	North_4	101
	North_5	102
	North_6	103
	North_7	104
	North_11	105
	North_12	106
	North_16	107
	North_17	108
	North_18	109
	North_19	110
	North_22	111
	North_23	112
	North_24	113
	North_25	114
	North_26	115
	North_27	116
	North_30	117
High Grade South	South_1	201
	South_2	202
	South_3	203
	South_4	204
	South_6	205
	South_7	206
	South_8	207
	South_9	208
	South_10	209
	South_13	210
	South_14	211
	South_15	212
	South_20	213
	South_21	214
	South_23	215
	South_24	216

Domain	Rockcode	Blockcode
	South_28	217
	South_29	218
	South_112	219
	South_Moni	220
Low Grade	LG_North	500
	LG_South	600

14.4.1 Geological Model

Geological wireframes were constructed in Leapfrog Geo™ by Jordi Turcotte of Sirios and validated by Pierre-Luc Richard and Clovis Cameron Auger of BBA. The model comprises 37 mineralized zones that have a minimum thickness of 3 m and two low-grade envelopes mostly included in the tonalite intrusive unit (Figure 14-2 and Figure 14-3).

They were modelled using geological knowledge of the deposit, geological mapping of the stripping, grade continuity and geological information provided in the DDH logs and channel samples logs (i.e., lithology, alteration and structure). Geological interpretation of five lithological units was also carried out to assist in the modelling of the mineralized zones.

The QP reviewed the geological model in 3D view, plan view and cross-section and is of the opinion that the level of detail to which the geology model was constructed represents adequately the complexity of the deposit. In the QP's opinion, the geological model is appropriate for the size, grade distribution and geometry of the mineralized zones and is suitable for the resource estimation of the Project.

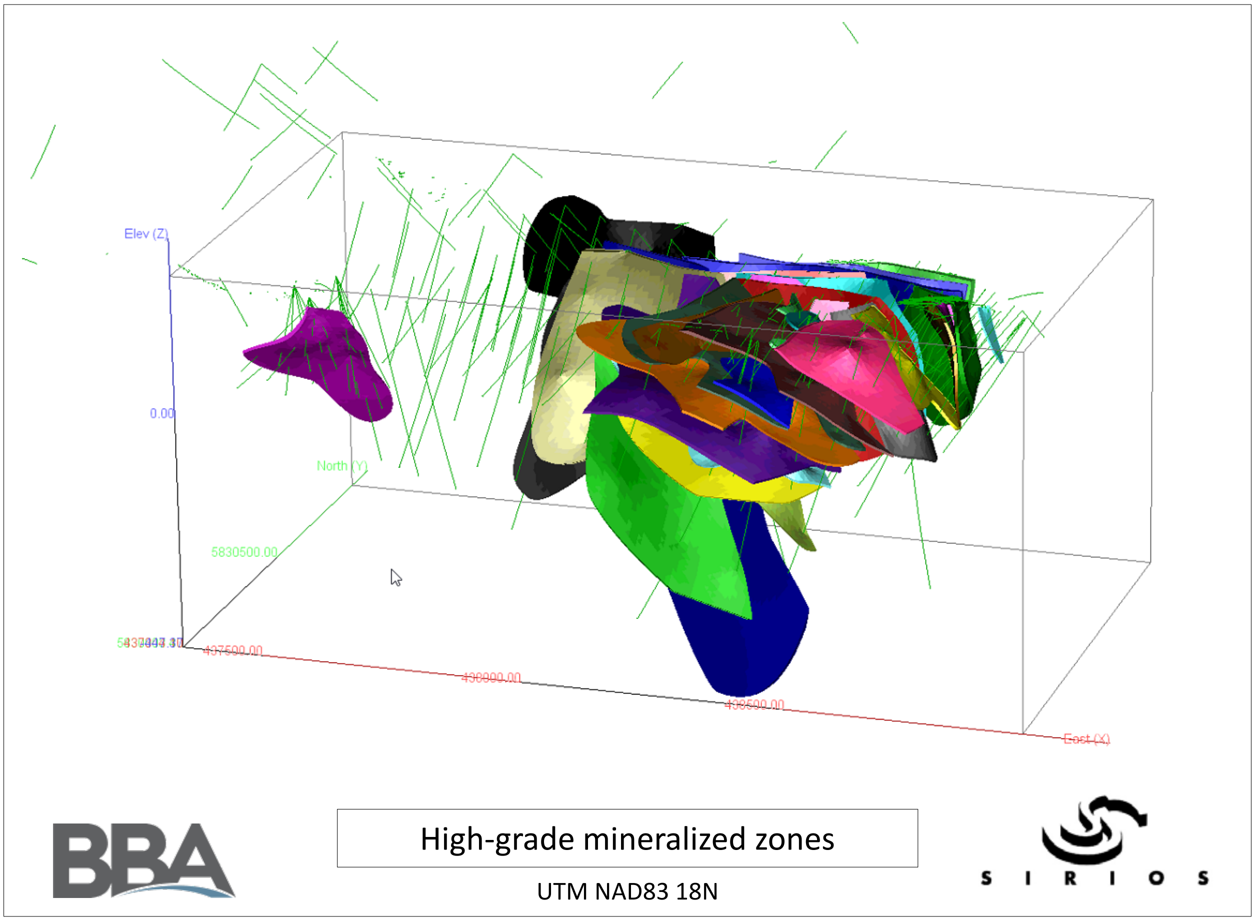


Figure 14-2: 3D view looking north-northwest (NNW) of the high-grade mineralized zones and of the drillholes included in this resource estimate
Note that the X-axis is 1,800m in length.

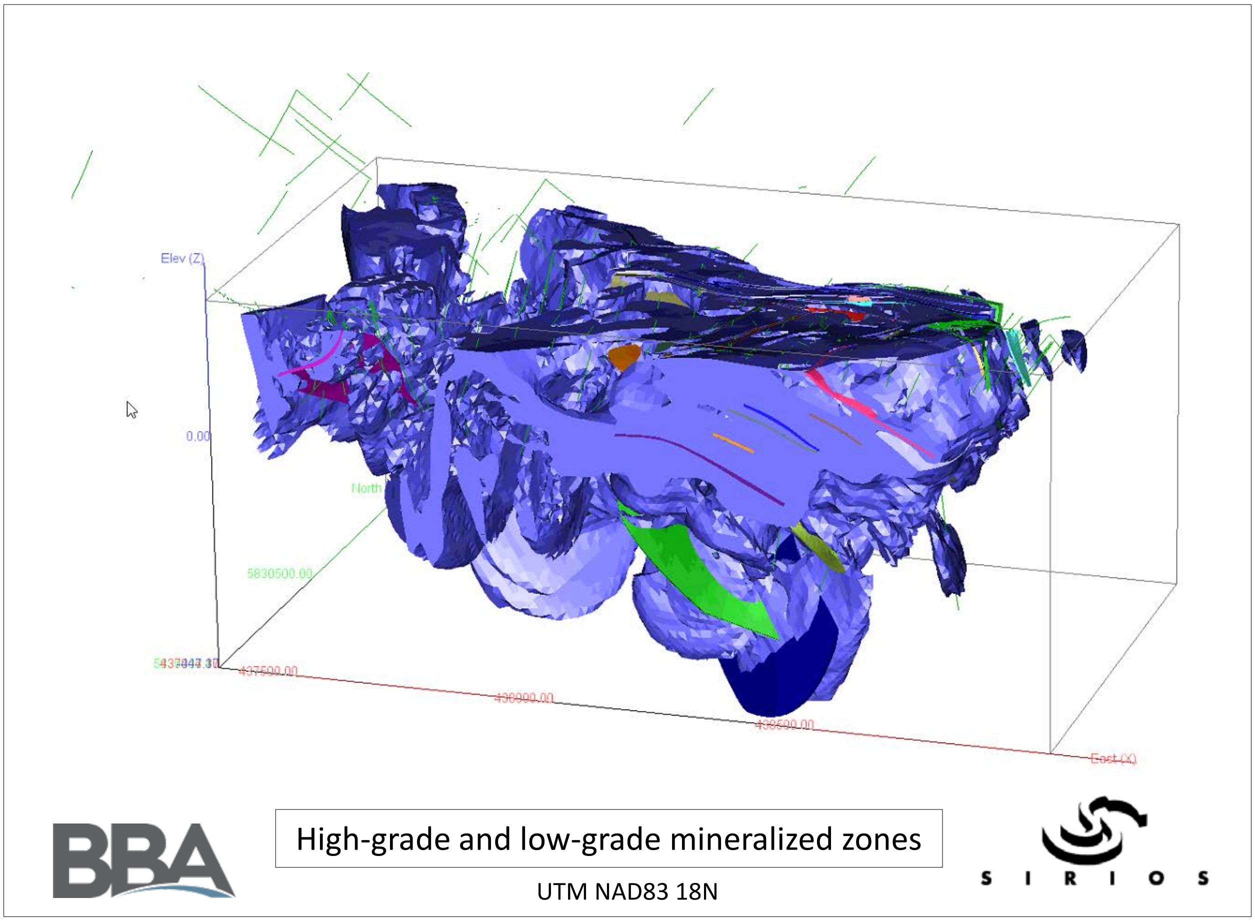


Figure 14-3: 3D view looking north-northwest (NNE) of the high-grade and low-grade mineralized zones and of the drillholes included in this resource estimate
Note that the X-axis is 1,800m in length.

14.4.2 Voids Model

No excavation has been done on the Project.

14.4.3 Overburden and Topography

A Lidar survey (2018) was used for the topographic surface. The overburden-rock interface was created by Sirios in Leapfrog Geo™ and is based on the drillholes collar coordinates, elevation and the lithological description.

14.5 Data Analysis

14.5.1 Raw Assay Statistics

All raw assay data that intersected the mineralized zones were assigned individual rock codes. These coded intercepts were used to produce basic statistics on sample lengths and grades. A total of 4,297 assays is included in the high-grade domains and 23,414 assays in the low-grade domains.

Basic statistics on the raw assays are presented in Table 14-2.

Table 14-2: Basic statistics on raw assays for each mineralized zone

	Raw assays				
Mineralized zone	Count sample	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	COV
101	445	0.000	118.80	2.03	5.00
102	468	0.000	121.61	1.17	5.18
103	133	0.000	90.62	3.40	3.40
104	154	0.000	123.95	3.78	4.11
105	170	0.040	89.50	2.38	3.88
106	118	0.020	33.10	1.78	3.17
107	34	0.130	8.84	1.59	1.37
108	52	0.020	38.41	2.71	2.79
109	163	0.010	11.40	0.87	1.54
110	126	0.000	112.00	1.81	5.57
111	10	0.020	30.88	4.92	2.11
112	73	0.000	42.30	3.38	2.00
113	48	0.020	12.00	0.77	2.25
114	53	0.020	25.90	2.06	2.08
115	145	0.000	25.38	1.31	1.94
116	34	0.050	33.30	2.19	2.75
117	15	0.020	16.10	2.69	1.65
201	205	0.000	867.06	11.15	5.89
202	249	0.000	156.00	5.08	3.46
203	71	0.010	118.51	4.00	3.91
204	141	0.020	32.42	1.14	2.56
205	96	0.030	36.00	1.47	2.63

	Raw assays				
Mineralized zone	Count sample	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	COV
206	87	0.010	146.89	3.69	4.52
207	169	0.040	124.00	3.51	4.32
208	78	0.010	11.20	1.22	1.33
209	89	0.060	101.90	2.66	4.16
210	59	0.030	38.50	1.97	2.66
211	177	0.020	46.63	2.54	2.57
212	152	0.010	70.10	2.92	3.20
213	52	0.010	167.19	7.09	3.63
214	61	0.000	118.63	3.03	5.01
215	81	0.040	8.63	0.89	1.28
216	12	0.150	9.59	1.85	1.39
217	73	0.040	46.50	2.62	2.35
218	33	0.050	53.17	3.49	3.19
219	53	0.040	269.65	21.59	2.49
220	117	0.010	315.00	12.22	3.84
500	8,965	0.000	22.72	0.30	2.31
600	14,449	0.000	137.71	0.34	4.43

14.5.2 Compositing

Compositing of drillhole samples was conducted in order to homogenize the database for the statistical analysis and remove any bias associated to the sample length that may exist in the original database. The composite length was determined using original sample length statistics and the thickness of the mineralized zones. Compositing was done within each domain in order that composite samples do not cross domain boundaries.

Inside the high-grade domains, the average sample length is 1.21 m and the median is 1.20 m. Less than 5% of the assays are between 1.5 m and 2.0 m and the number of samples longer than 2.0 m is negligible. Figure 14-4 shows the sample length distribution within the mineralized zones.

As a result, 2,690 composites were generated in the high-grade domains and 19,923 in the low-grade domains with a length of 2.0 m, but ranging from 1.0 m to 2.99 m when necessary after redistributing the tails.

Grades of 0.00 g/t Au were assigned to all missing intervals during the compositing process.

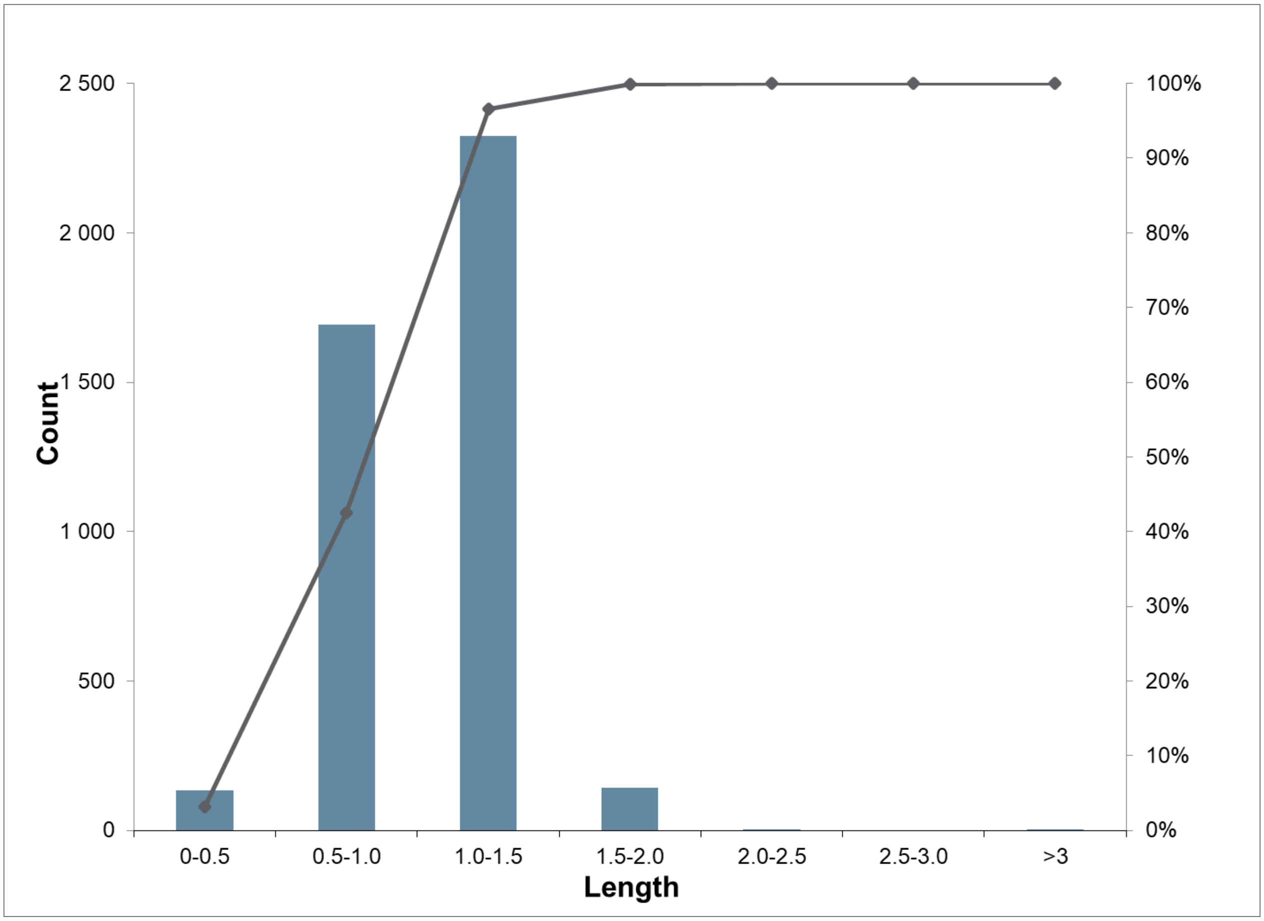


Figure 14-4: Sample length distribution within the high-grade domains

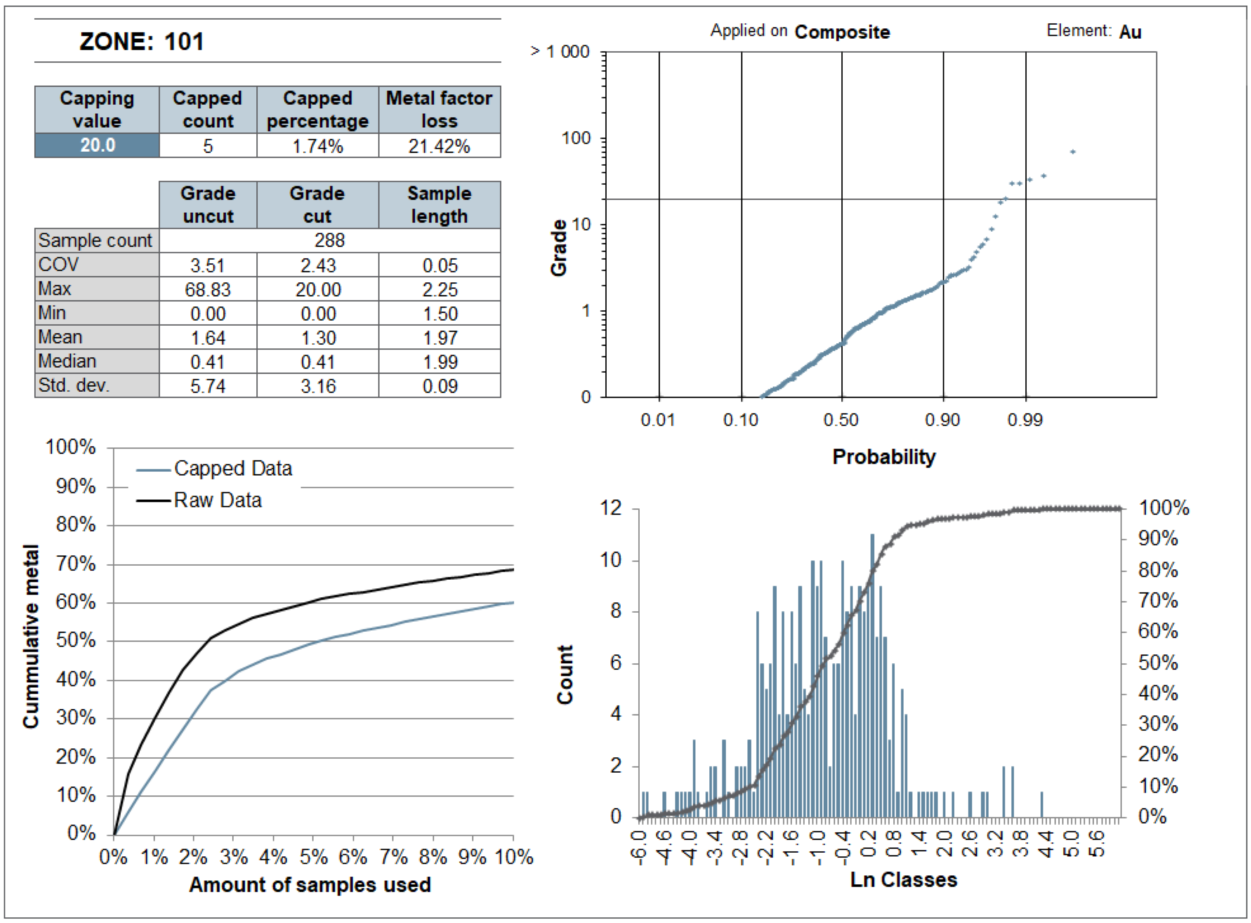
14.5.3 Outlier Handling

An outlier is an observation that appears to be inconsistent with the majority of the data. It is common practice to statistically examine the higher grades within a population and to trim the outlier to a lower grade value based on the results of a statistical study. The capping is performed on high-grade values considered to be outliers. High-grade capping was done on the composited assay data and established on a per deposit or zone type basis.

In addition, a high-grade limit or second capping value was used for the second and third pass grade interpolation to restrict high-grade impact at greater distance from the drillhole intersect for some zones (Table 14-8). It should be noted that this restriction approach is not a capping method per say, but rather a way to exclude higher grades to be used during the interpolation process when estimating blocks outside this restricted search ellipsoid.

The capping values were defined by searching for abnormal breaks or change of slope on the grade distribution probability plot while making sure that the coefficient of variation of the capped data was ideally lower than, or around 2.00 and no more than 10% of the total contained metal was enclosed within the first 1% of the highest-grade samples. The use of various statistical methods allows selecting the capping threshold in a more objective and justified manner. In any cases where the coefficient of variation was higher than 2.00, a restrictive search ellipsoid was used at a value allowing to reach that coefficient of variation of 2.00.

Basic statistics for composited assays and capped composites are summarized in Table 14-3. Figure 14-5 to Figure 14-10 show graphs supporting the capping threshold decisions.


ZONE: 101

Capping value	Capped count	Capped percentage	Metal factor loss
20.0	5	1.74%	21.42%

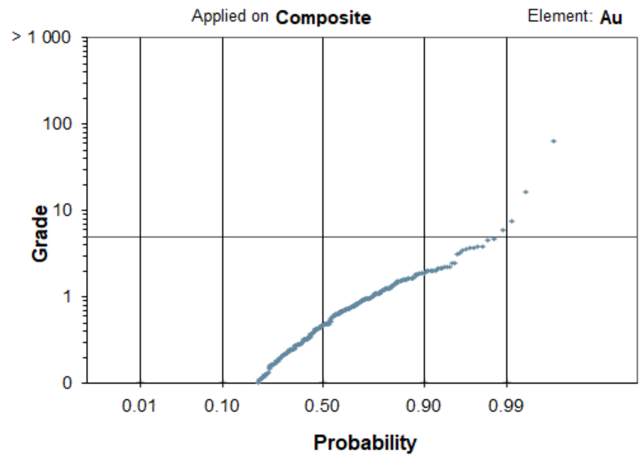
	Grade uncut	Grade cut	Sample length
Sample count		288	
COV	3.51	2.43	0.05
Max	68.83	20.00	2.25
Min	0.00	0.00	1.50
Mean	1.64	1.30	1.97
Median	0.41	0.41	1.99
Std. dev.	5.74	3.16	0.09

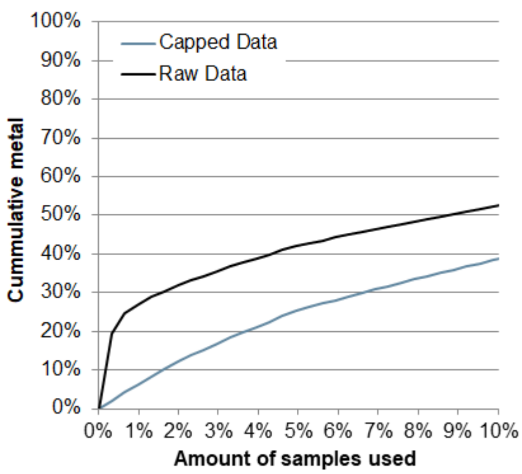
Figure 14-5: Graphs supporting capping threshold decisions on composites for the high-grade mineralized zone 101
Note that a second capping applied as a restricted search ellipsoid was set at 5 g/t Au and that any grade above said threshold was discarded during the interpolation process when estimating blocks outside this restricted search ellipsoid.

ZONE: 102

Capping value	Capped count	Capped percentage	Metal factor loss
5.0	4	1.32%	22.50%

	Grade uncut	Grade cut	Sample length
Sample count		304	
COV	3.62	1.20	0.06
Max	61.30	5.00	2.89
Min	0.00	0.00	1.01
Mean	1.02	0.79	2.01
Median	0.47	0.47	1.99
Std. dev.	3.69	0.95	0.12





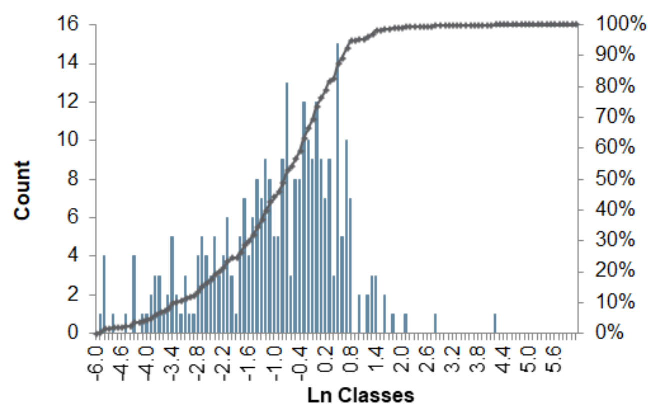
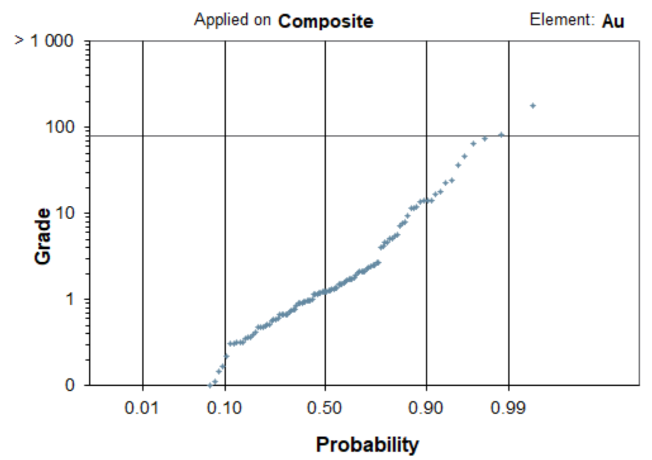


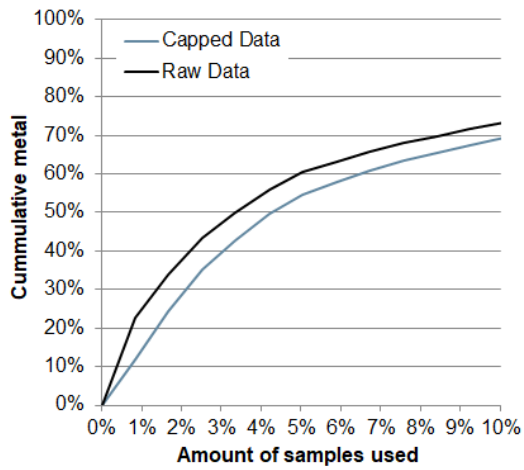
Figure 14-6: Graphs supporting capping threshold decisions on composites for the high-grade mineralized zone 102

ZONE: 201

Capping value	Capped count	Capped percentage	Metal factor loss
80.0	2	1.68%	12.73%

	Grade uncut	Grade cut	Sample length
Sample count		119	
COV	2.97	2.41	0.11
Max	176.97	80.00	2.52
Min	0.01	0.01	1.50
Mean	6.83	6.00	1.93
Median	1.22	1.22	1.91
Std. dev.	20.28	14.49	0.22





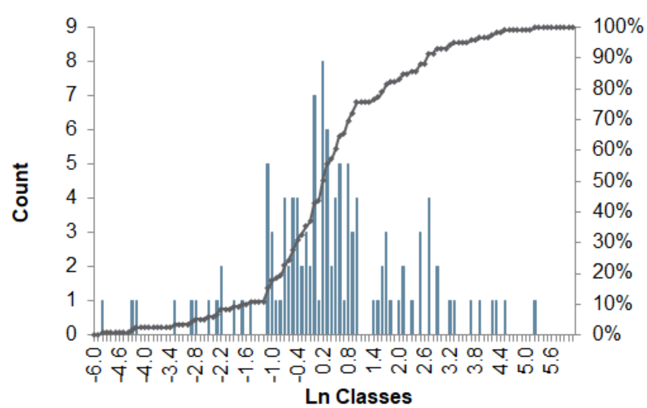
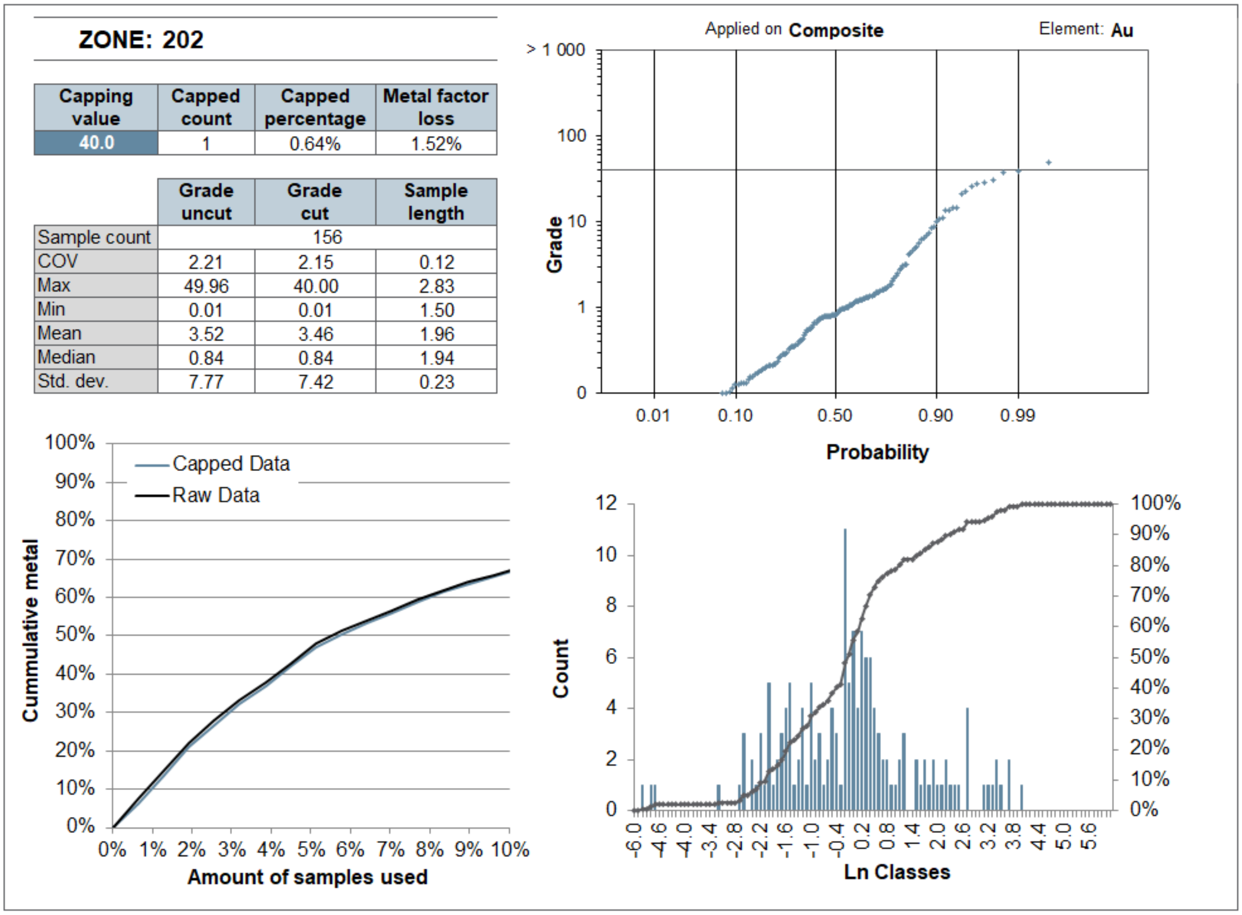


Figure 14-7: Graphs supporting capping threshold decisions on composites for the high-grade mineralized zone 201

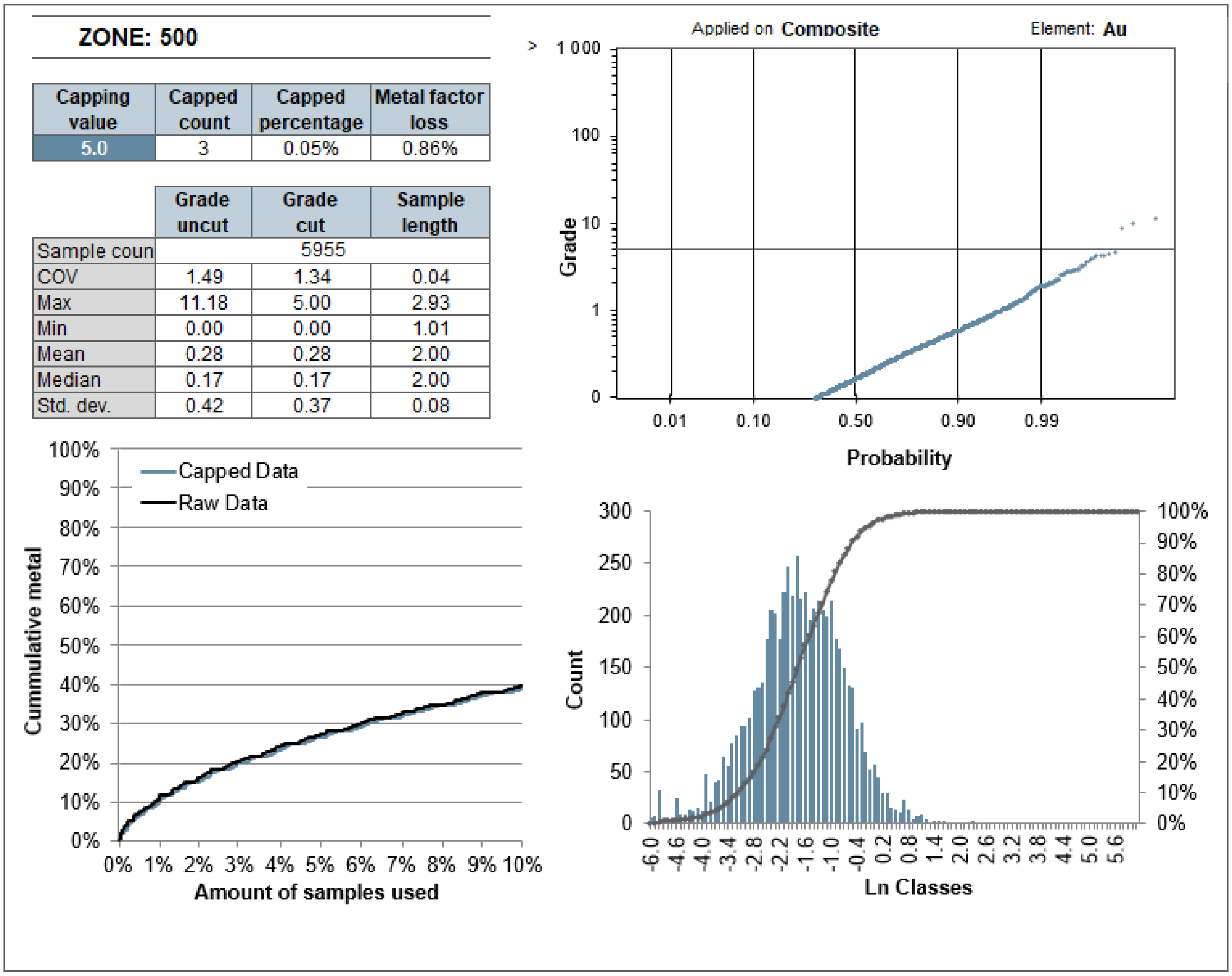
Note that a second capping applied as a restricted search ellipsoid was set at 15 g/t Au and that any grade above said threshold was discarded during the interpolation process when estimating blocks outside this restricted search ellipsoid.



Capping value	Capped count	Capped percentage	Metal factor loss
40.0	1	0.64%	1.52%

	Grade uncut	Grade cut	Sample length
Sample count		156	
COV	2.21	2.15	0.12
Max	49.96	40.00	2.83
Min	0.01	0.01	1.50
Mean	3.52	3.46	1.96
Median	0.84	0.84	1.94
Std. dev.	7.77	7.42	0.23

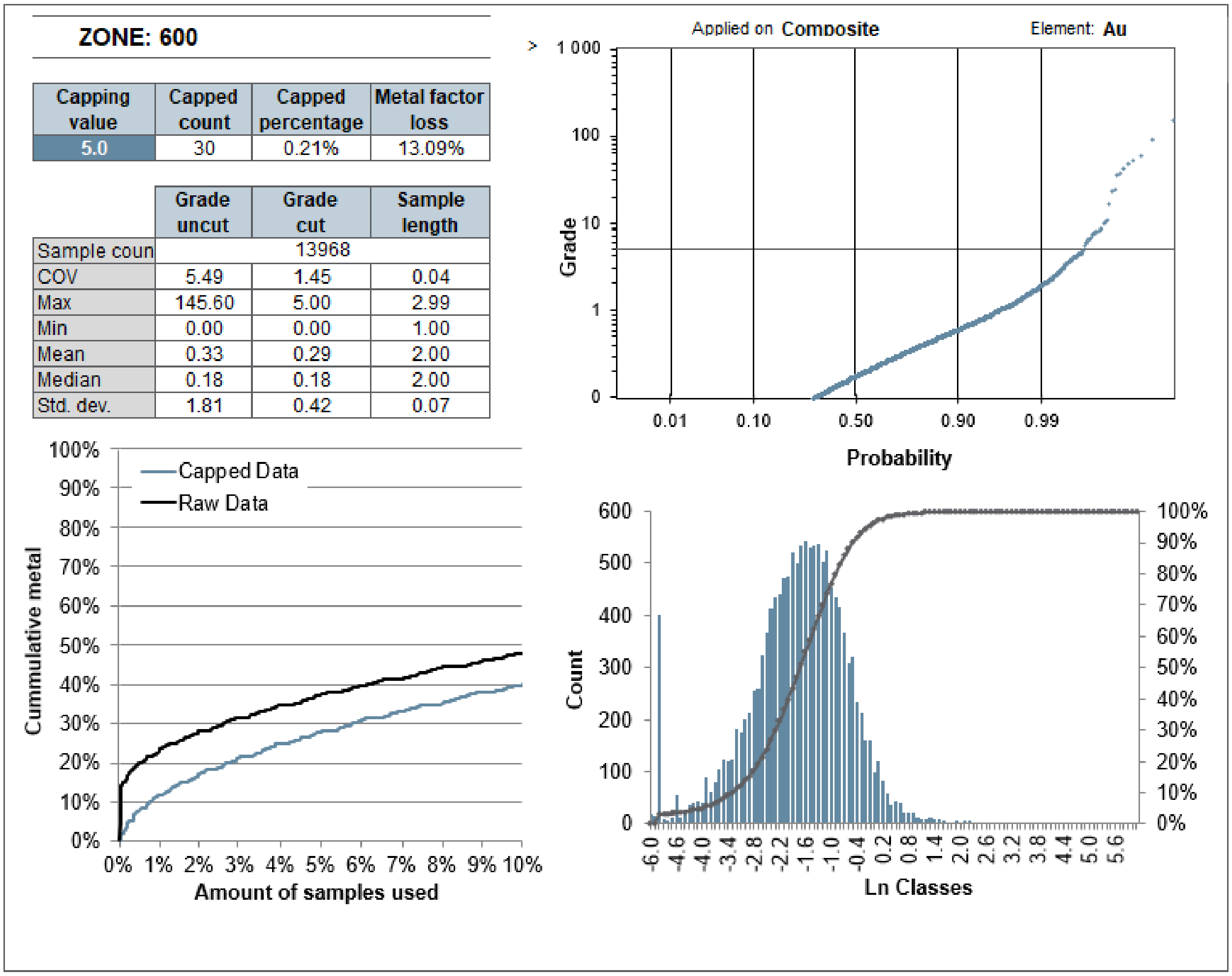
Figure 14-8: Graphs supporting capping threshold decisions on composites for the high grade domain 202 Note that a second capping applied as a restricted search ellipsoid was set at 15g/t Au and that any grade above said threshold was discarded during the interpolation process when estimating blocks outside this restricted search ellipsoid.



Capping value	Capped count	Capped percentage	Metal factor loss
5.0	3	0.05%	0.86%

	Grade uncut	Grade cut	Sample length
Sample coun	5955		
COV	1.49	1.34	0.04
Max	11.18	5.00	2.93
Min	0.00	0.00	1.01
Mean	0.28	0.28	2.00
Median	0.17	0.17	2.00
Std. dev.	0.42	0.37	0.08

Figure 14-9: Graphs supporting capping threshold decisions on composites for the low-grade domain 500



ZONE: 600

Capping value	Capped count	Capped percentage	Metal factor loss
5.0	30	0.21%	13.09%

	Grade uncut	Grade cut	Sample length
Sample coun		13968	
COV	5.49	1.45	0.04
Max	145.60	5.00	2.99
Min	0.00	0.00	1.00
Mean	0.33	0.29	2.00
Median	0.18	0.18	2.00
Std. dev.	1.81	0.42	0.07

Figure 14-10: Graphs supporting capping threshold decisions on composites for the low-grade domain 600

Table 14-3: Basic statistics on composites and high-grade capping value for each mineralized zone

		Composites based on cut raw assays												
	Zone	Composites count	COV	Max (g/t Au)	Min (g/t Au)	Uncut mean (g/t Au)	Uncut median (g/t Au)	Capping value	Number capped	Metal loss (%)	Capped COV	Capped mean (g/t Au)	Capped median (g/t Au)	Restricted capping
HG	101	288	3.51	68.83	0.004	1.64	0.41	**20**	5	21.42	2.43	1.30	0.41	5
	102	304	3.62	61.30	0.003	1.02	0.47	**5**	4	22.50	1.20	0.79	0.47	-
	103	82	1.95	24.52	0.005	2.66	0.43	**20**	3	5.06	1.85	2.53	0.43	5
	104	103	2.91	51.88	0.005	2.74	0.18	**20**	4	24.08	2.32	2.06	0.18	-
	105	95	2.91	52.42	0.076	2.41	0.71	**20**	2	24.91	1.80	1.81	0.71	-
	106	73	2.54	26.33	0.020	1.74	0.41	**20**	1	4.01	2.41	1.66	0.41	-
	107	20	1.08	7.26	0.431	1.52	0.98	**20**	0	0.00	1.08	1.52	0.98	-
	108	33	2.32	29.70	0.108	2.39	0.63	**20**	1	8.06	2.00	2.09	0.63	-
	109	92	0.97	6.14	0.013	0.83	0.64	**5**	1	1.44	0.89	0.81	0.64	-
	110	77	4.87	67.10	0.002	1.55	0.36	**5**	1	52.26	1.26	0.75	0.36	-
	111	6	1.60	25.09	0.020	5.74	0.30	**20**	1	15.60	1.52	4.89	0.30	-
	112	46	1.83	27.86	0.018	2.78	1.07	**20**	2	6.24	1.65	2.60	1.07	-
	113	32	1.33	4.95	0.099	0.65	0.36	**5**	0	0.00	1.33	0.65	0.36	-
	114	32	1.51	14.25	0.063	1.85	0.95	**20**	0	0.00	1.51	1.85	0.95	-
	115	93	1.35	12.03	0.007	1.22	0.82	**20**	0	0.00	1.35	1.22	0.82	-
	116	23	2.06	20.06	0.107	2.00	0.80	**20**	1	0.13	2.06	2.00	0.80	5
	117	10	1.02	8.24	0.063	2.52	1.52	**20**	0	0.00	1.02	2.52	1.52	-
	201	119	2.97	176.97	0.007	6.83	1.22	**80**	2	12.73	2.41	6.00	1.22	15
	202	156	2.21	49.96	0.005	3.52	0.84	**40**	1	1.52	2.15	3.46	0.84	15
	203	40	2.90	55.67	0.016	3.23	0.80	**15**	2	41.66	1.73	1.93	0.80	-

		Composites based on cut raw assays												
	Zone	**Composites count**	**COV**	**Max (g/t Au)**	**Min (g/t Au)**	**Uncut mean (g/t Au)**	**Uncut median (g/t Au)**	**Capping value**	**Number capped**	**Metal loss (%)**	**Capped COV**	**Capped mean (g/t Au)**	**Capped median (g/t Au)**	**Restricted capping**
	204	93	1.73	16.34	0.034	1.11	0.72	**15**	1	1.28	1.65	1.09	0.72	-
	205	60	2.32	25.95	0.043	1.46	0.69	**15**	1	12.74	1.67	1.28	0.69	-
	206	52	3.06	61.84	0.009	2.94	0.36	**5**	5	59.02	1.29	1.20	0.36	-
	207	97	3.40	88.71	0.040	3.24	0.66	**80**	1	2.84	3.28	3.15	0.66	15
	208	47	0.82	3.95	0.019	1.15	0.93	**5**	0	0.00	0.82	1.15	0.93	-
	209	66	3.28	55.78	0.173	2.05	0.98	**5**	2	41.82	0.87	1.28	0.98	-
	210	39	1.99	23.57	0.093	1.91	1.03	**5**	2	31.65	0.90	1.34	1.03	-
	211	126	1.75	21.64	0.017	2.03	0.81	**15**	2	4.87	1.58	1.93	0.81	-
	212	87	2.44	42.44	0.010	2.30	0.56	**15**	3	15.50	1.84	1.90	0.56	-
	213	30	2.23	42.80	0.022	3.70	0.99	**15**	2	28.51	1.52	2.61	0.99	-
	214	37	2.41	26.40	0.060	1.78	0.83	**5**	2	43.25	0.94	1.12	0.83	-
	215	46	0.77	2.88	0.056	0.83	0.60	**5**	0	0.00	0.77	0.83	0.60	-
	216	7	0.89	5.27	0.380	1.76	1.37	**15**	0	0.00	0.89	1.76	1.37	-
	217	41	1.49	18.60	0.061	2.31	1.07	**15**	1	3.82	1.37	2.23	1.07	-
	218	18	1.85	13.90	0.097	1.95	0.68	**5**	2	38.77	1.21	1.19	0.68	-
	219	24	1.88	90.63	0.052	14.88	1.56	**15**	5	68.74	1.21	4.73	1.56	-
	220	96	2.79	157.00	0.010	8.62	0.66	**65**	4	20.29	2.34	6.86	0.66	5
LG	500	5955	1.49	11.18	0.000	0.28	0.17	**5**	3	0.86	1.34	0.28	0.17	
	600	13968	5.49	145.60	0.000	0.33	0.18	**5**	30	13.09	1.45	0.29	0.18	

14.5.4 Density

Bulk density is an important parameter used to calculate tonnages for the estimated volumes derived from the resource-grade block model.

A total of 588 density measurements were collected on the Project by Sirios. The samples selected were from a variety of lithologies located across the Property and also included a range of associated gold grades. The specific gravity (SG) measurement was determined by the water displacement method. A summary of the SG data is presented in Table 14-4.

Table 14-4: Summary of the density measurements

Lithological unit	Count SG	Median SG	Mean SG
I1D	397	**2.65**	2.65
I1G	87	**2.61**	2.61
I1N	6	**2.63**	2.63
M4	19	**2.77**	2.76
M8	43	**2.89**	2.89
S3	30	**2.76**	2.76
S9A	6	**2.93**	2.98

For this MRE, fixed density values were established on a per lithology basis, corresponding to the median of the SG data. Therefore, the tonalite was assigned 2.65 g/cm^3 and the sedimentary unit was assigned 2.76 g/cm^3.

A fixed density of 2.00 g/cm^3 was assigned to the overburden.

14.5.5 Variogram Analysis

A semi-variogram is a common tool used to measure the spatial variability within a zone. Typically, samples taken far apart will vary more than samples taken close to each other. A variogram gives a measure of how much two samples taken from the same mineralized zone will vary in grade depending on the distance between those samples, and therefore allowing building search ellipsoids to be used during interpolation.

Three dimensional directional variography using the Snowden Supervisor v8.11 software was carried out on the composites. Variograms were modelled in the three orthogonal directions to define a 3D ellipsoid for each domain. The three directions of ellipsoid axes were set by using the variogram fans and visually confirmed with geological knowledge of the deposit. Lag distances were set according to drillhole grid spacing specific to the structural domain analyzed.

Then, a mathematical model was interpreted in order to best-fit the shape of the calculated variogram for each direction. When the domain did not have enough composites, the variography result of a representative domain was used. Three components were defined for the mathematical model: the nugget effect, the sill, and the range.

All variography tests were modelled with a nugget effect, as determined from the downhole semi-variograms and two spherical structures.

Table 14-5 presents the chosen variogram model parameters for each zone and Figure 14-11 and Figure 14-12 illustrate an example of the variography results.

The nugget effect values range from 15% to 53% and are typical of gold deposits.

In the QP's opinion, the data density and spatial distribution of this project are adequate to produce acceptable experimental variograms to which models can be fitted with confidence.

Table 14-5: Variogram model parameters for each mineralized zone

			First structure				Second structure			
	Zone	Nugget	Sill	Range X (m)	Range Y (m)	Range Z (m)	Sill	Range X (m)	Range Y (m)	Range Z (m)
HG	101	0.42	0.46	84	16	10	0.12	105	49	20
	102	0.29	0.35	32	38	10	0.36	101	68	20
	103	0.44	0.33	58	21	10	0.23	80	75	20
	104	0.44	0.33	58	21	10	0.23	80	75	20
	105	0.44	0.33	58	21	10	0.23	80	75	20
	106	0.44	0.33	58	21	10	0.23	80	75	20
	107	0.44	0.33	58	21	10	0.23	80	75	20
	108	0.44	0.33	58	21	10	0.23	80	75	20
	109	0.44	0.33	58	21	10	0.23	80	75	20
	110	0.43	0.34	58	21	10	0.23	91	73	20
	111	0.44	0.33	58	21	10	0.23	80	75	20
	112	0.44	0.33	58	21	10	0.23	80	75	20
	113	0.44	0.33	58	21	10	0.23	80	75	20
	114	0.44	0.33	58	21	10	0.23	80	75	20
	115	0.15	0.68	72	21	10	0.17	102	73	20
	116	0.44	0.33	58	21	10	0.23	80	75	20
	117	0.44	0.33	58	21	10	0.23	80	75	20
	201	0.39	0.48	89	58	10	0.13	100	94	20

			First structure				Second structure			
	Zone	**Nugget**	**Sill**	**Range X (m)**	**Range Y (m)**	**Range Z (m)**	**Sill**	**Range X (m)**	**Range Y (m)**	**Range Z (m)**
	202	0.45	0.45	56	66	10	0.11	91	90	20
	203	0.44	0.33	58	21	10	0.23	80	75	20
	204	0.44	0.33	58	21	10	0.23	80	75	20
	205	0.44	0.33	58	21	10	0.23	80	75	20
	206	0.44	0.33	58	21	10	0.23	80	75	20
	207	0.53	0.40	52	60	10	0.06	75	95	20
	208	0.44	0.33	58	21	10	0.23	80	75	20
	209	0.44	0.33	58	21	10	0.23	80	75	20
	210	0.44	0.33	58	21	10	0.23	80	75	20
	211	0.41	0.46	70	101	10	0.13	115	115	20
	212	0.45	0.44	89	66	10	0.11	110	100	20
	213	0.44	0.33	58	21	10	0.23	80	75	20
	214	0.44	0.33	58	21	10	0.23	80	75	20
	215	0.44	0.33	58	21	10	0.23	80	75	20
	216	0.44	0.33	58	21	10	0.23	80	75	20
	217	0.44	0.33	58	21	10	0.23	80	75	20
	218	0.44	0.33	58	21	10	0.23	80	75	20
	219	0.44	0.33	58	21	10	0.23	80	75	20
	220	0.47	0.42	59	40	10	0.10	101	80	20
LG	500	0.37	0.44	12	26	6	0.20	41	61	25
	600	0.39	0.44	22	14	11	0.17	35	40	22

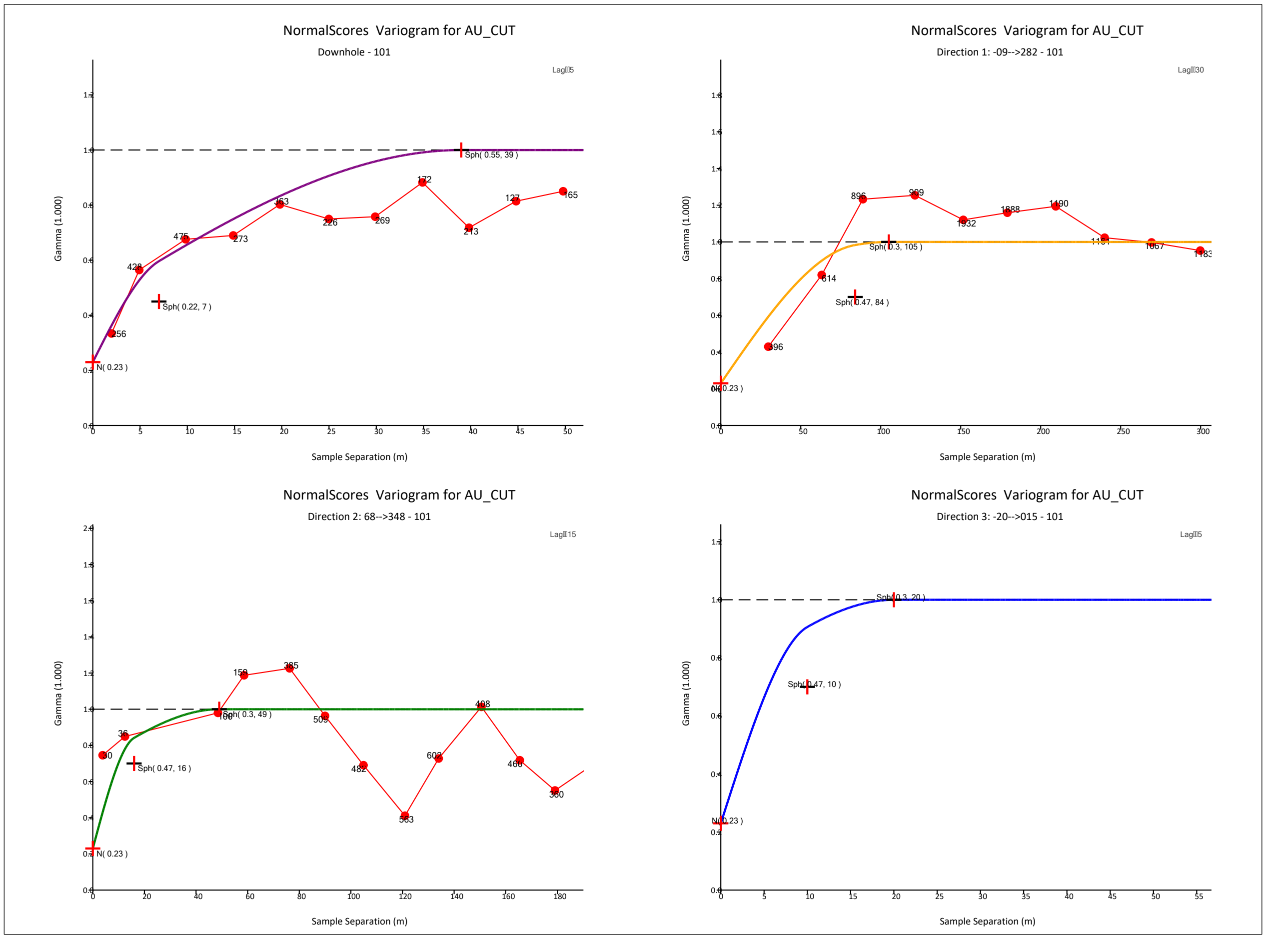


Figure 14-11: Example of the variography study for the high-grade domain 101

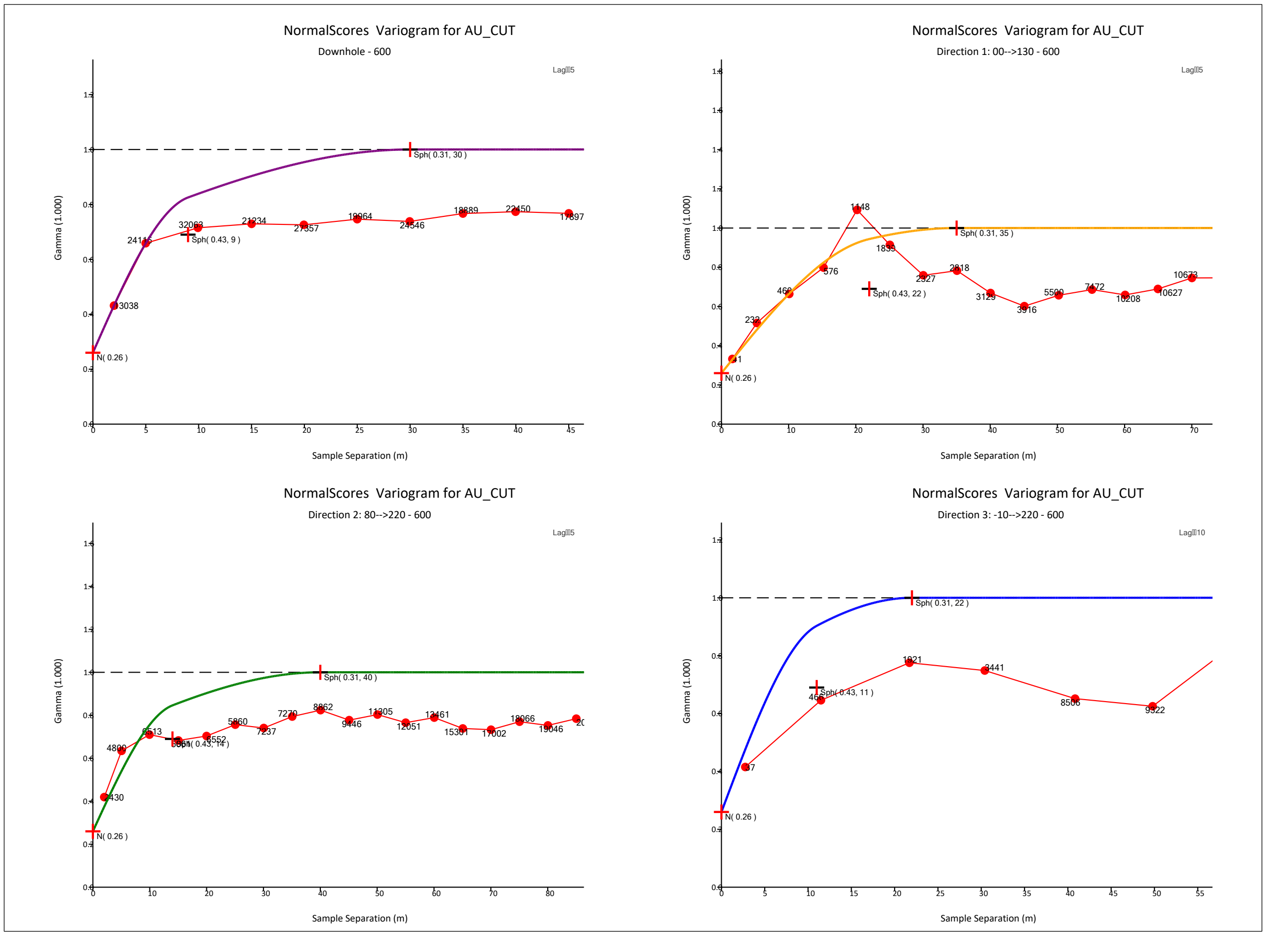


Figure 14-12: Example of the variography study for the low-grade domain 600

14.5.6 Contact Plot

Contact plots compare the nature of grade between two domains; they graphically display average grades of all pairs of data from both populations at increasing distances. Commonly used to determine if a hard or a soft interpolation boundary is justified, it can also be used to compare different populations within a mineralized zone. If there is a significant difference in grade across a domain boundary or different datasets (i.e. RC versus DDH, historical holes versus recent holes, etc.), the resource geologist must figure out a way to take that into consideration in the model, and in some cases discard one of the populations. Conversely, if a more gradual change in grade occurs across the boundary, the two datasets can be used as if they were from a single dataset.

A significant portion of the primary data is channel samples. In order to make sure there were no biases between drillhole and channel data, contact plots were generated comparing both populations.

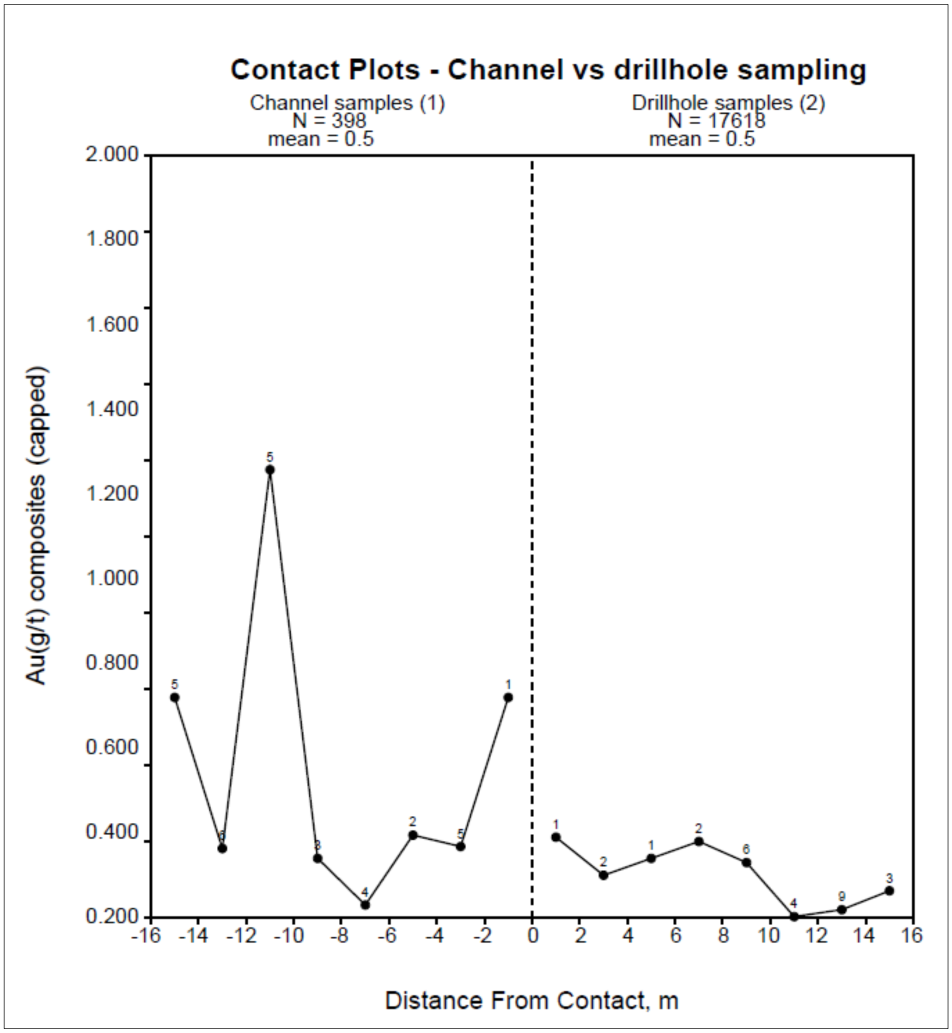


Figure 14-13: Contact analysis on the capped composites between the channel and the drillholes data (The number of pairs is low; this graph should be updated when more data is available.)

Despite an unequal amount of samples in both populations (398 composites of channel samples and 17,618 drillhole composites), the distributions shown in Figure 14-14 demonstrate that both populations are similar in nature and that no bias is believed to exist; therefore, both datasets can be used for the mineral resource estimate.

A similar approach was conducted in order to determine if a hard or a soft interpolation boundary is justified between the high-grade and the low-grade domains (Figure 14-14). There is a significant difference in grade between the two datasets; therefore, hard boundaries was applied for this MRE.

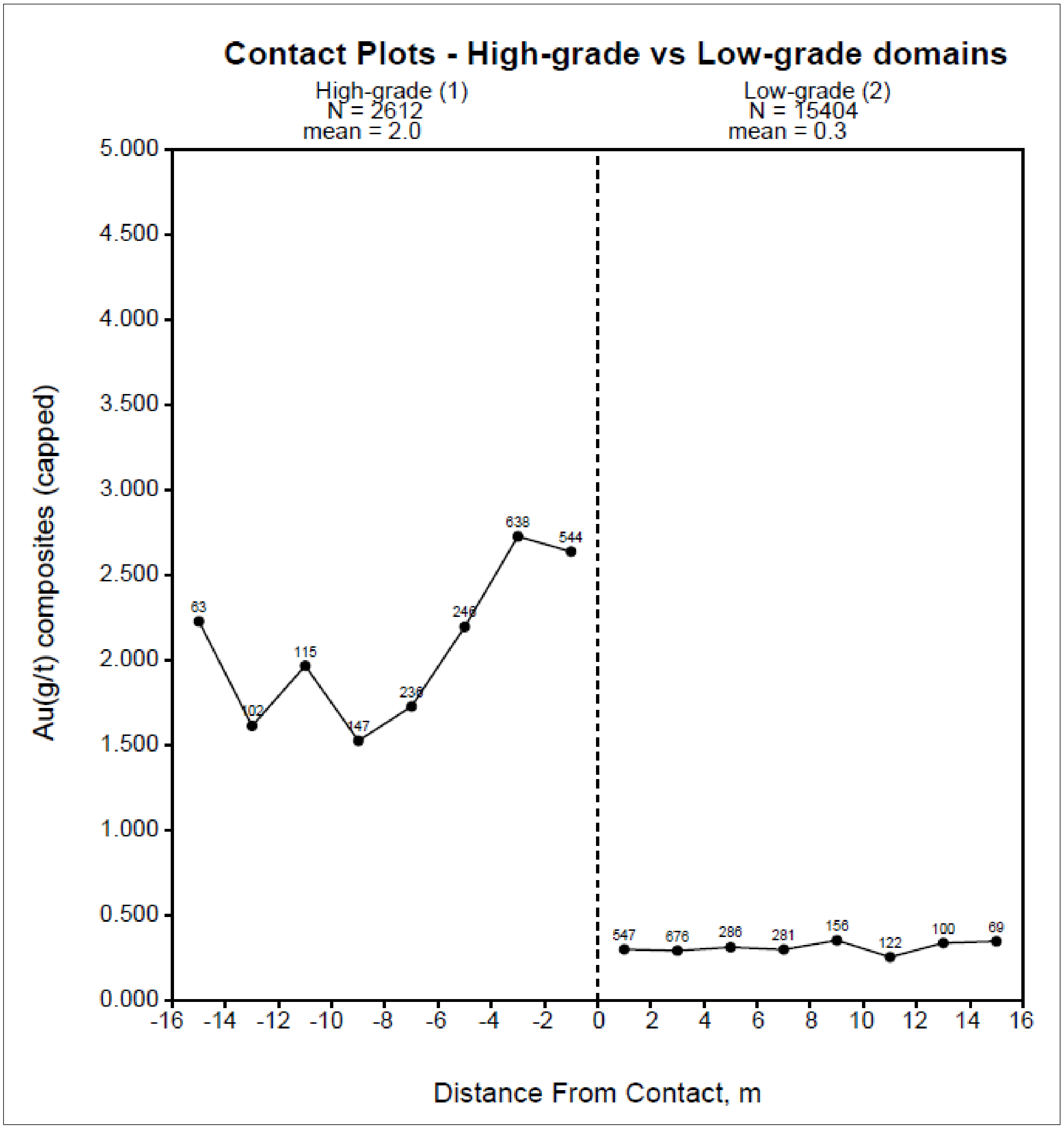


Figure 14-14: Contact analysis on the capped composites between the high-grade and low-grade domains

14.6 Block Modelling

The block model for the Project was built in Geovia® GEMS 6.8.2.

14.6.1 Block Model Parameters

The parameters provided in Table 14-6 were used for the current mineral resource estimate. Individual block cells have dimensions of 10 m long (X-axis) by 10 m wide (Y-axis) by 10 m vertical (Z-axis).

The size of the blocks was chosen in order to best match the drilling pattern, thickness of the zones, complexity of the geology model and a plausible future mining method.

Table 14-6: Cheechoo block model parameters

Properties	X (column)	Y (row)	Z (level)
Origin coordinates	436,746	5,828,867	330
Number of blocks	270	260	85
Block model extent (m)	2,700	2,600	850
Block size (m)	10	10	10
Rotation		0	

The block model was coded using the percent model method typical of Geovia GEMS™, reflecting the proportion of each solid inside every block. All blocks falling within a solid were assigned the corresponding solid block code. Once the interpolation was completed, a combined block model was created and therefore a single grade was estimated for each entire block taking into consideration the proportion of the original percent model. This combined block model was used for pit optimization and for official reporting.

14.6.2 Search Ellipsoid Strategy

The ranges of the ellipsoids used for the interpolation were established using the variography study and correspond to the half of the range of the second structure for the first pass, to approximately the second structure for the second pass and to two times the second structure for the third pass The third pass was only used for the low grade domains (Figure 14-15).

It is noteworthy to mention at this point that the classification was mostly based on drillhole spacing and, therefore, some interpolated blocks were not converted into the Inferred classification. Refer to section Mineral Resource Classification (Section 14.8) for more details.

Table 14-7 presents the orientation and ranges of the search ellipsoids for each pass.

In addition, a high-grade limit or second capping value was used for the second and third pass grade interpolations to spatially restrict high-grade influence at greater distance from the drillhole intersect (Table 14-8).

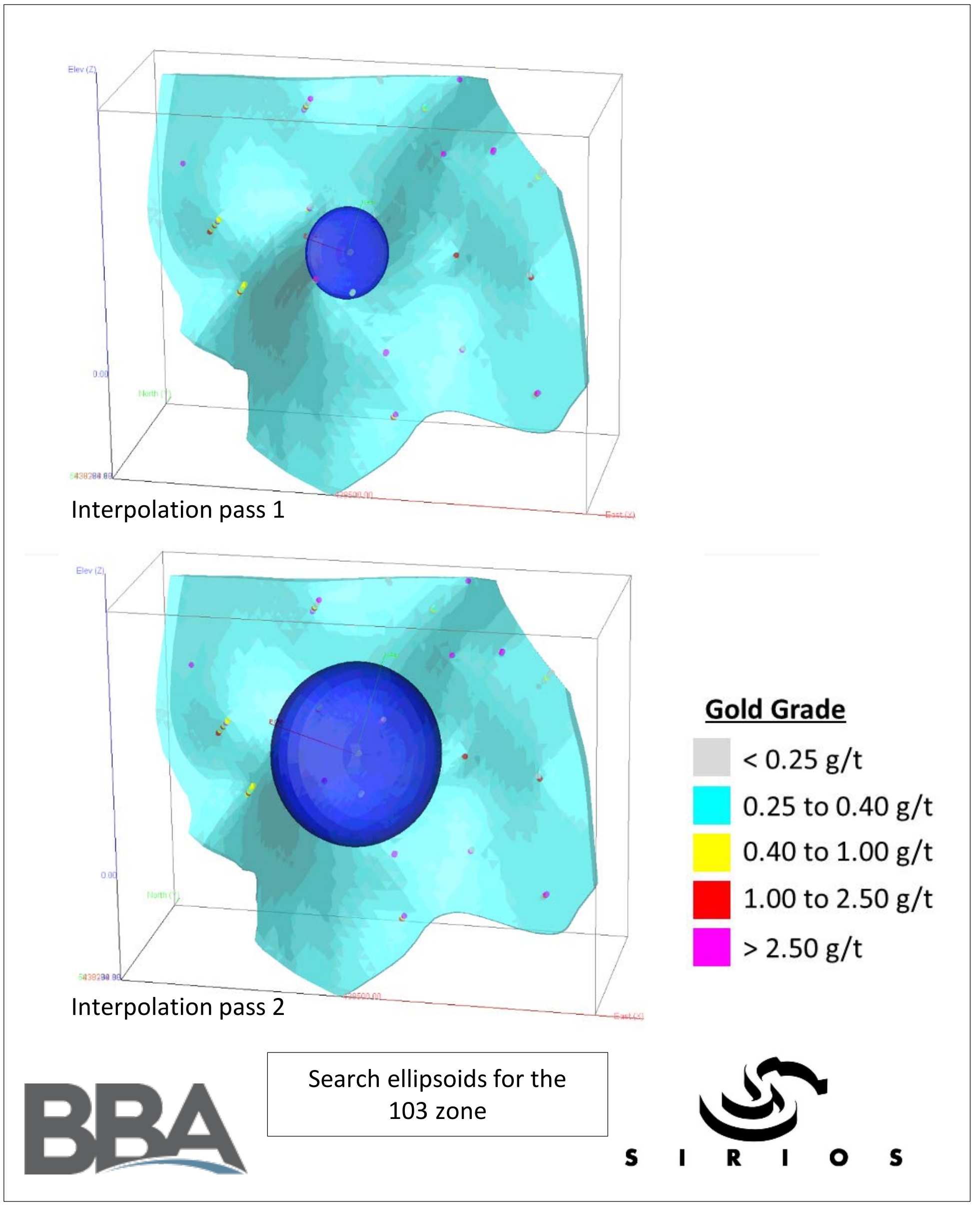


Figure 14-15: Example of search ellipsoids for the 103 high-grade domain for the two interpolation passes

Table 14-7: Search ellipsoid ranges by interpolation passes

	Mineralized zone	GEMS Orientation			First pass range			Second pass range			Third pass range		
		Azimut	Dip	Azimut	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)
HG	101	282	-9	348	52.5	24.5	10	105	49	40			
	102	324	-10	351	50.5	34	10	101	68	40			
	103	288	9	42	40	40	10	80	80	40			
	104	299	27	69	40	40	10	80	80	40			
	105	301	57	153	40	40	10	80	80	40			
	106	322	33	181	40	40	10	80	80	40			
	107	100	-15	100	40	40	10	80	80	40			
	108	308	39	213	40	40	10	80	80	40			
	109	287	-10	346	40	37.5	10	80	75	40			
	110	284	-5	356	45.5	36.5	10	91	73	40			
	111	100	-15	100	40	40	10	80	80	40			
	112	128	-62	78	40	40	10	80	80	40			
	113	300	-60	120	40	40	10	80	80	40			
	114	262	50	357	40	40	10	80	80	40			
	115	303	4	39	51	36.5	10	102	73	40			
	116	79	58	124	40	40	10	80	80	40			
	117	262	50	357	40	40	10	80	80	40			
	201	311	25	219	50	47	10	100	94	40			
	202	333	17	237	45.5	45	10	91	90	40			
	203	36	-11	316	40	40	10	80	80	40			
	204	137	-46	99	40	40	10	80	80	40			
	205	119	-26	52	40	40	10	80	80	40			
	206	151	-42	97	40	40	10	80	80	40			

	Mineralized zone	GEMS Orientation			First pass range			Second pass range			Third pass range		
		Azimut	Dip	Azimut	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)	X (m)	Y (m)	Z (m)
	207	111	-20	19	37.5	47.5	10	75	95	40			
	208	152	-17	47	40	40	10	80	80	40			
	209	191	-2	99	40	40	10	80	80	40			
	210	212	-6	118	40	40	10	80	80	40			
	211	113	-17	27	57.5	57.5	10	115	115	40			
	212	100	-2	10	55	50	10	110	100	40			
	213	297	11	214	40	40	10	80	80	40			
	214	280	-1	190	40	40	10	80	80	40			
	215	264	-28	126	40	40	10	80	80	40			
	216	36	-11	316	40	40	10	80	80	40			
	217	113	-61	49	40	40	10	80	80	40			
	218	111	-20	19	40	40	10	80	80	40			
	219	322	33	181	40	40	10	80	80	40			
	220	33	-55	266	50.5	40	10	101	80	40			
LG	500	295	5	31	20.5	30.5	12.5	41	61	50	82	122	100
	600	130	0	220	17.5	20	10	35	40	44	70	80	88

Table 14-8: Restricted search ellipsoid parameters

	Restricted search ellipsoid parameters			
Blockcode	**Range 1**	**Range 2**	**Range 3**	**Threshold value (g/t)**
101	20	20	20	5
103	20	20	20	5
116	20	20	20	5
201	20	20	20	15
202	20	20	20	15
207	20	20	20	15
220	20	20	20	5

14.6.3 Interpolation Parameters

Estimation and search parameters were evaluated through Kriging Neighbourhood Analysis (KNA) and contact analysis.

KNA was conducted on each unit and on each mineralized zones with the Snowden Supervisor software. KNA provides a quantitative method of testing different estimation parameters (i.e., block size, discretization and min/max of composites used for the interpolation) by evaluating their impact on the quality of the results. The interpretation of these helps select the optimal value for each parameter.

Following this study, the parameters provided in Table 14-9 were chosen for the interpolation of the block model.

Table 14-9: Interpolation parameters

Interpolation parameter	Pass 1	Pass 2	Pass 3
Minimum number of composites used	5	4	1
Maximum number of composites per drillhole used	4	3	16
Maximum number of composites used	16	16	16
Minimum number of drillhole used	2	2	1

14.6.4 Interpolation Methodology

The interpolation was run on a set of points extracted from the capped composited data. The block model grades were estimated using ordinary kriging (OK) methods. Hard boundaries between the mineralized zones were used in order to prevent grades from adjacent zones being used during interpolation. As a block was estimated, it was tagged with the corresponding pass number.

For comparison purposes, additional grade models were generated using: 1) inverse distance squared (ID^2); 2) nearest neighbour (NN); and 3) OK on uncapped composited data.

14.7 Block Model Validation

Every step of the block modelling process was revised to ensure fair representation and consistency of the primary data in the Block Model resource model.

More specific validations were completed on the block model including visual review of the interpolated grades in relation to the raw and composited data, checks for global and local bias, graphical validation (swath plots), statistical analysis of the model and comparison to other estimation methods.

14.7.1 Visual Validation

Block model grades were visually compared against drillhole composite grades and raw assays in cross-section, plan, longitudinal and 3D views (Figure 14-16 and Figure 14-17). This visual validation process also included confirming that the proper coding was done within the various domains and checks for global and local bias.

The visual comparison shows that the block model is consistent and correlate well with the primary data without excessive smoothing.

Visual comparisons were also conducted between ID^2, OK and NN interpolation scenarios. The OK scenario used for the resource estimate produced a grade distribution honouring drillhole data and the style of mineralization observed on the Cheechoo Project.

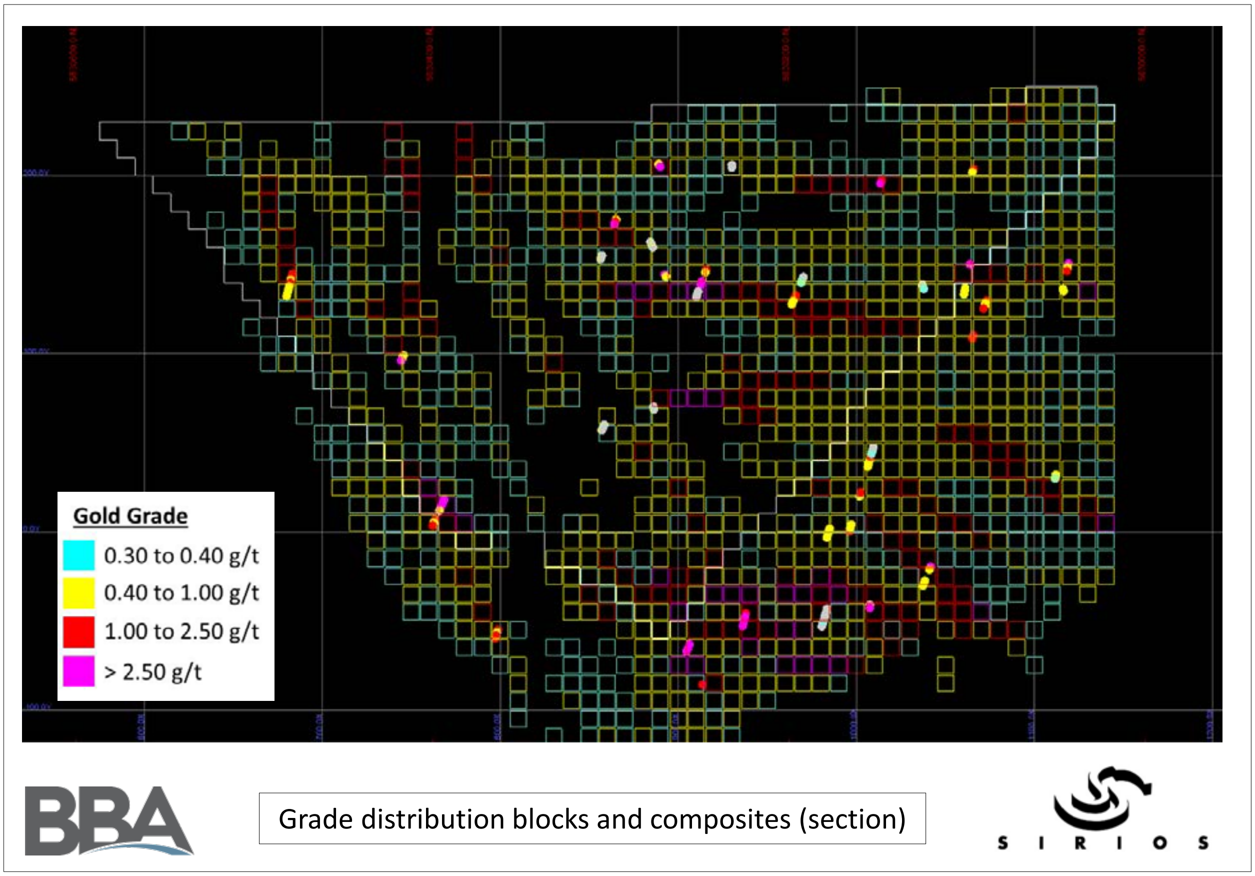


Figure 14-16: Comparative example of the grade distribution between the blocks and the composites in section view
The section is oriented north-south on easting 438398.5 and has a thickness of 20 m.
Note that only blocks above the cut-off grade (0.30 g/t Au) are shown.

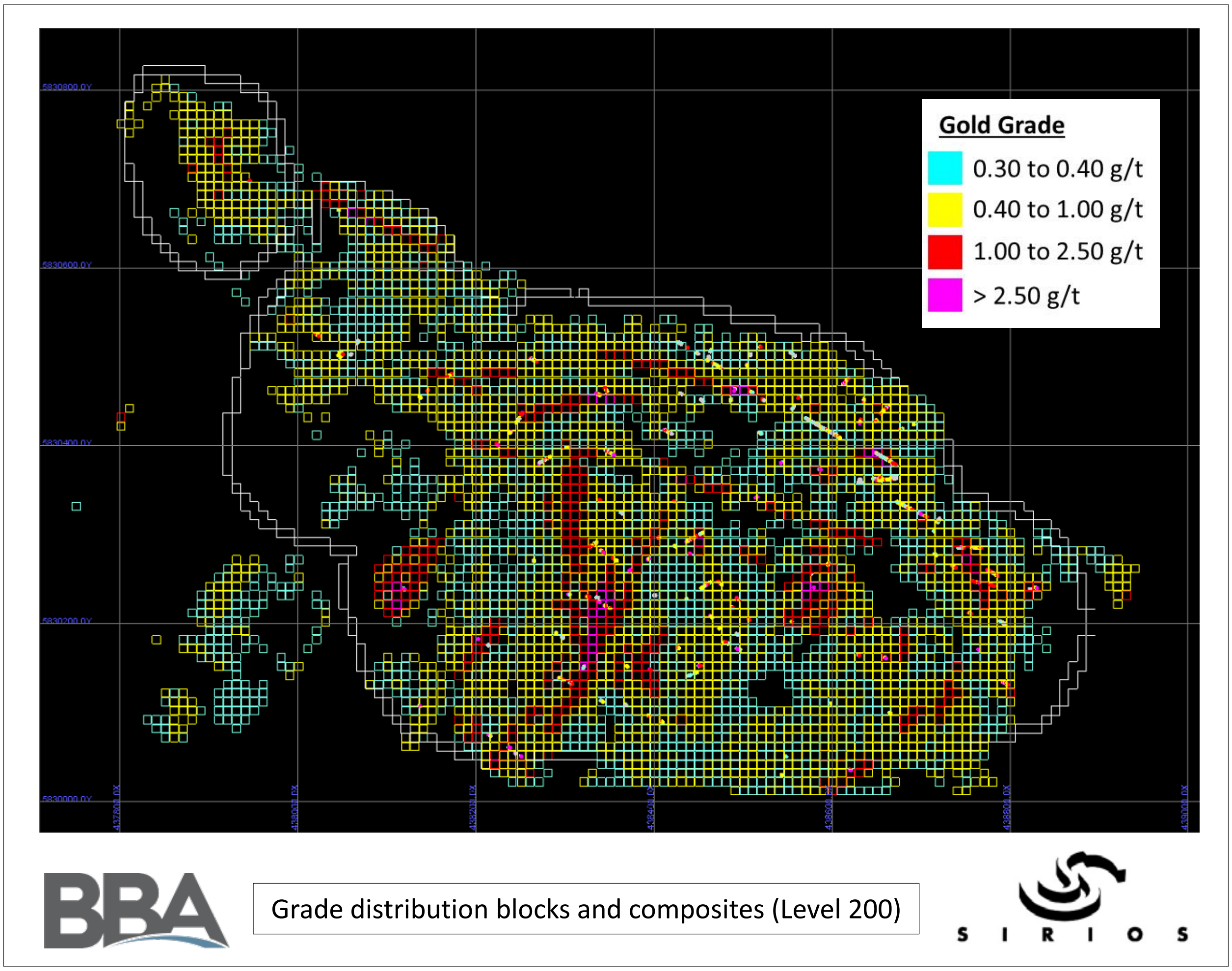


Figure 14-17: Comparative example of the grade distribution between the blocks and the composites in plan view (Level 200)
The plan view has a thickness of 50 m.
Note that only blocks above the cut-off grade (0.30 g/t Au) are shown.

14.7.2 Statistical Validation

Grade averages for the OK, NN and the ID^2 models were tabulated in Table 14-10. This comparison did not identify significant issues. As expected, block grade averages are generally lower than the composite grades and initial grades were well represented throughout the estimation process.

The average grades generated by the ID^2 interpolation method are very close to those reported from the OK interpolation method. This information provides a general indication that the resource model is reasonable.

Table 14-10: Comparison of the block and composite mean grades at a zero cut-off grade for Inferred blocks

Domains	Number of composites	Composite grade (g/t Au)	Composite grade (g/t Au capped)	Number of blocks	OK grade model (g/t Au)	ID^2 grade model (g/t Au)	NN grade model (g/t Au)	Uncut grade model (g/t Au)
All	18,016	0.62	0.54	119,594	0.38	0.38	0.40	0.41

14.7.3 Swath Plots

Swath plots were also generated as part of the block model validation using Snowden Supervisor software v. 8.11. A swath plot is a graphical display of the grade distribution derived from a series of bands (or swaths), generated in several directions throughout the deposit. Using the swath plots, grade variations from the OK model are compared to the distribution of grade interpolated with the NN and ID^2 methods and to the composite grades. This validation method also works as a visual mean to identify possible bias in the interpolation.

Figure 14-18 to Figure 14-20 illustrate a series of swath plots in the three directions. Generally, the grades estimated in the blocks are close to the average grades provided by the data source; no bias was found in the resource estimate in this regard.

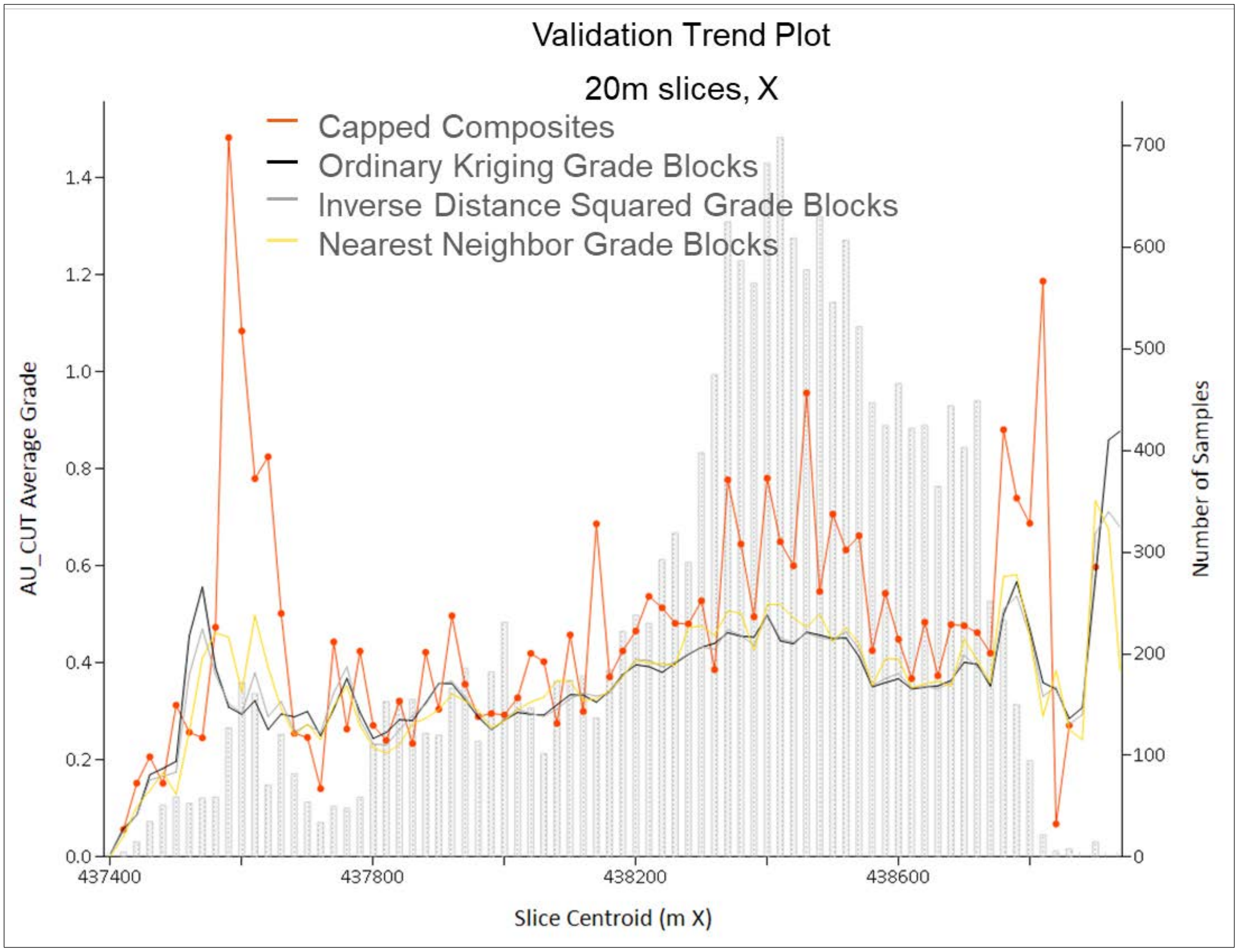


Figure 14-18: Block model validation swath plot along strike (X-direction)

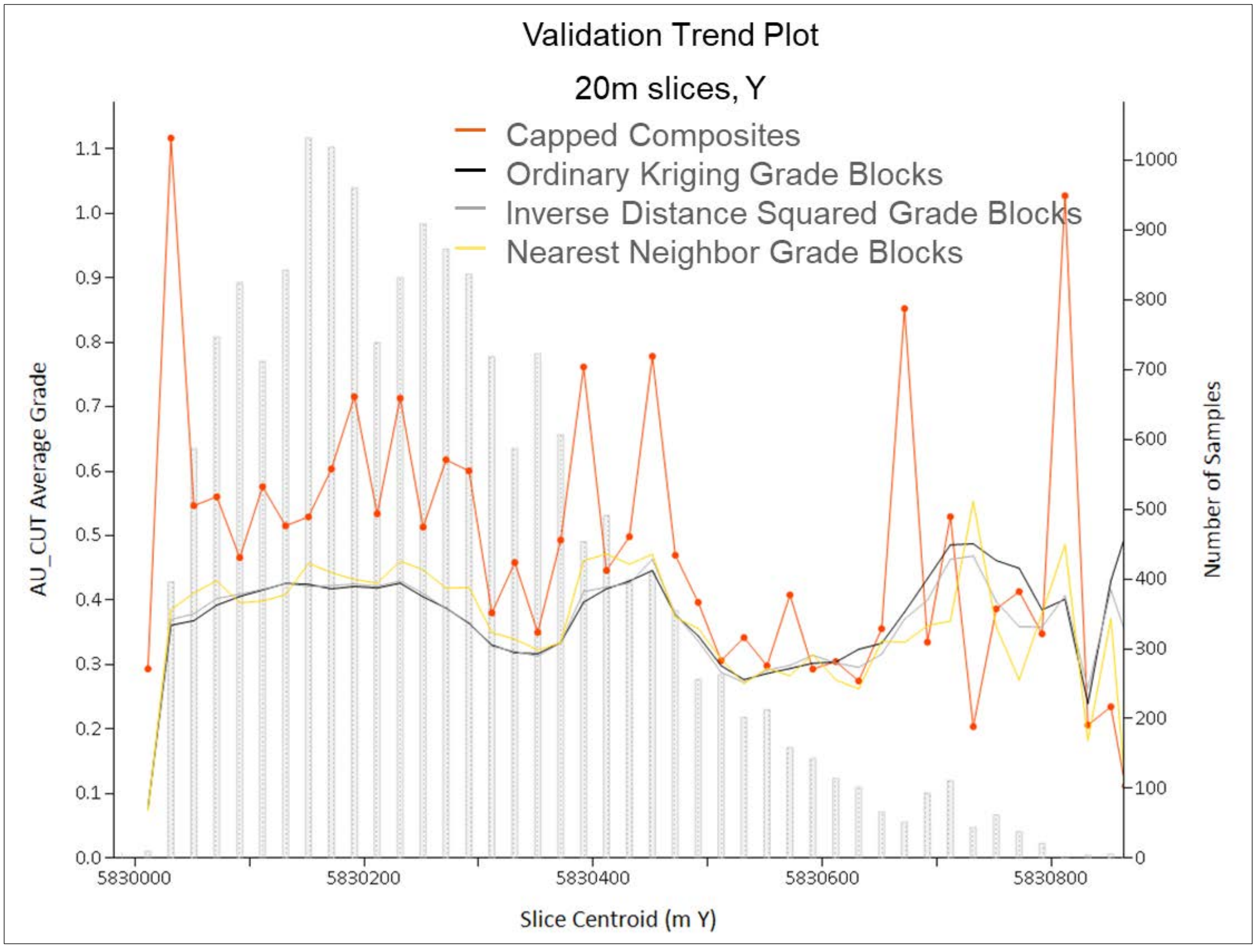


Figure 14-19: Block model validation swath plots across strike (Y-direction)

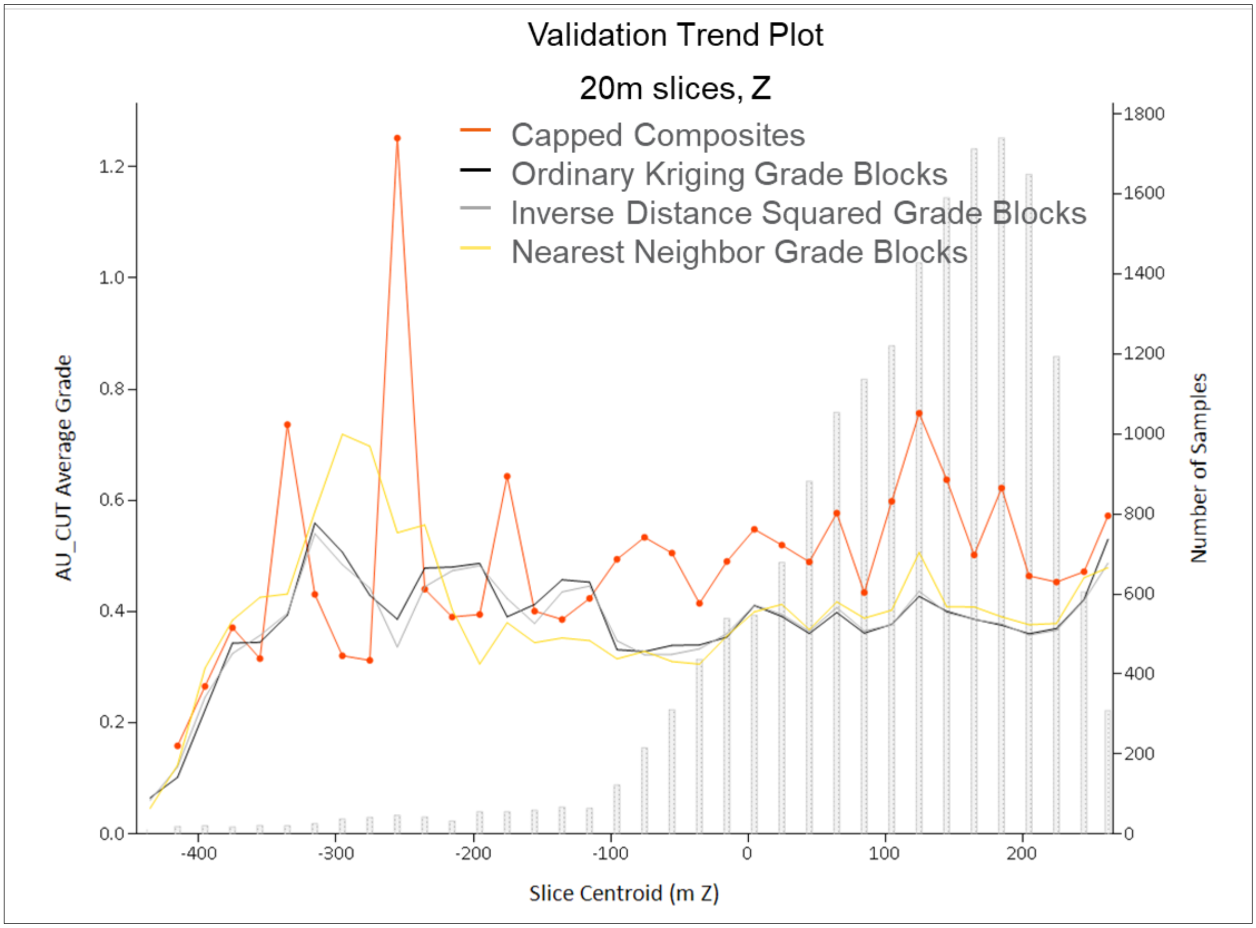


Figure 14-20: Block model validation swath plots along elevation (Z-direction)

Based on visual and statistical reviews, it is the QP's opinion that the Cheechoo block model provides a reasonable estimate of in situ gold resources.

14.8 Mineral Resource Classification

The mineral resources for the Cheechoo Project were classified in accordance with CIM Standards.

14.8.1 Mineral Resource Definition

The "CIM Definition Standards for Mineral Resources and Reserves" prepared by the CIM Standing Committee on Resource Definitions and adopted by the CIM council on May 10, 2014, provides standards for the classification of Mineral Resources and Mineral Reserves estimates as follows:

Inferred Mineral Resource:

An ***Inferred Mineral Resource*** *is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.*

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Indicated Mineral Resource:

An ***Indicated Mineral Resource*** *is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.*

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Measured Mineral Resource:

A ***Measured Mineral Resource*** *is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.*

Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

14.8.2 Mineral Resource Classification for the Block Model MRE

Following the previous definitions, the estimated block grades were classified into Inferred Mineral Resource category using drill spacing, a minimum number of drillhole and recognition of grade and geological continuity within the zones.

No Indicated and Measured resources were defined for the Project at this stage.

Inferred Mineral Resources were defined for blocks within the mineralized intrusive-related mineralization units that have been informed by a minimum of two drillholes within 50 m of a drillhole (100 m of drill spacing).

When needed, a series of clipping boundaries were created manually in longitudinal and 3D views to either upgrade or downgrade classification in order to homogenize the groups of resources by removing artificial features and isolated blocks or group of blocks due to automatically generated classification. All remaining estimated but unclassified blocks were flagged as “Exploration Potential”.

Figure 14-21 and Figure 14-22 show examples of the classification.

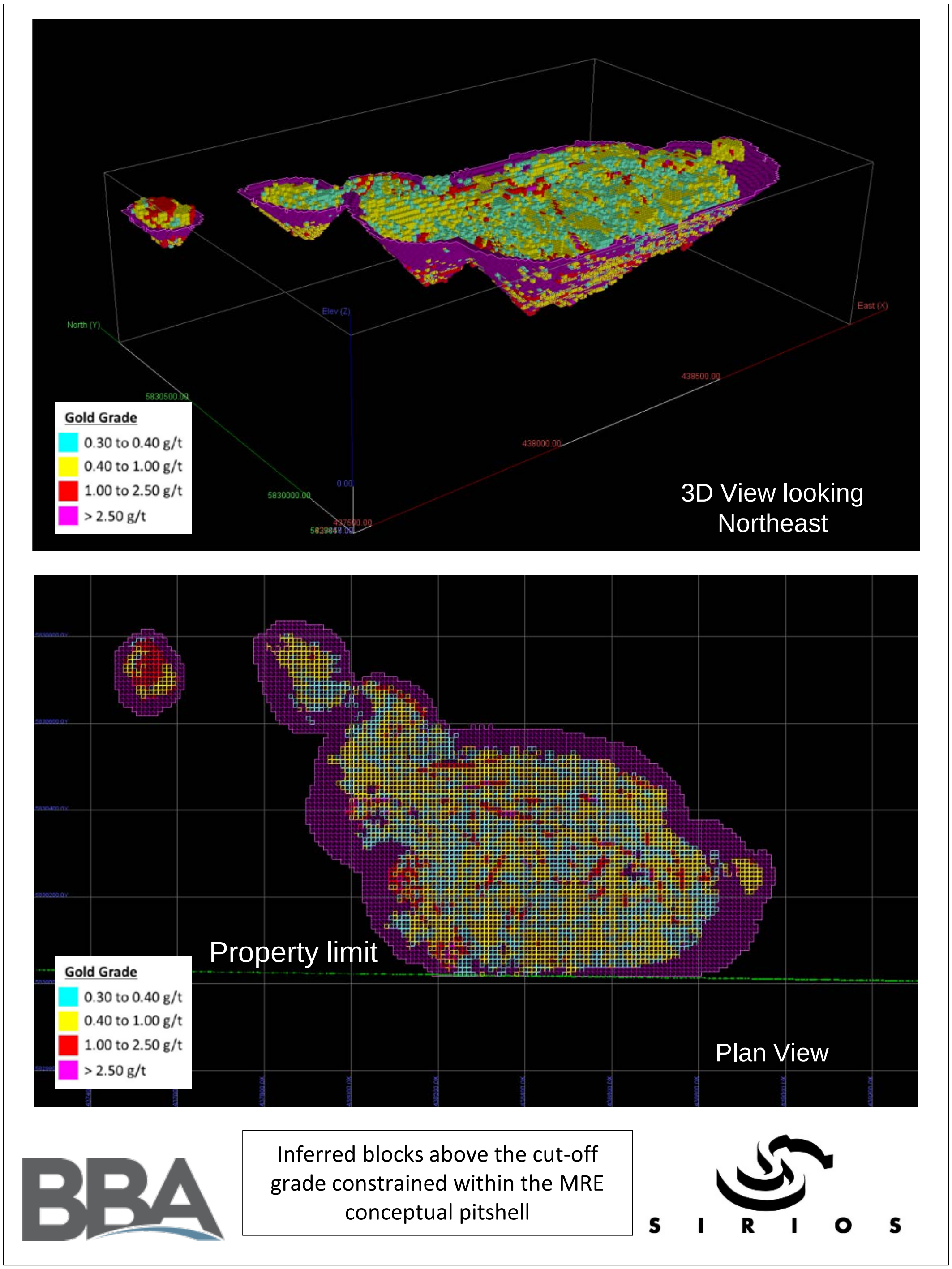


Figure 14-21: 3D and Plan views showing grade distribution and classification of the Project above the cut-off grade
All blocks presented are classified as Inferred.

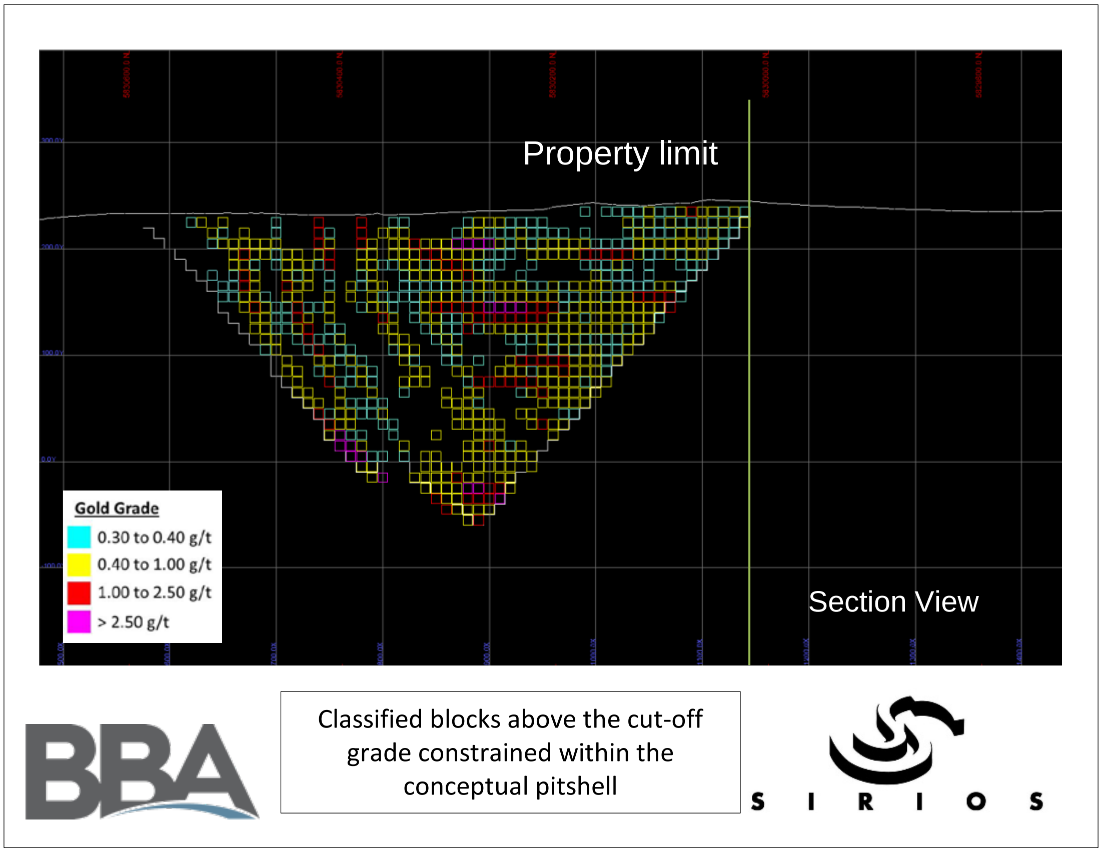


Figure 14-22: 3D and Plan views showing grade distribution and classification of the Project above the cut-off grade
All blocks presented are classified as Inferred.

14.9 Cut-off Grade and Pit Optimization Parameters

According to CIM's Definition Standards, for a deposit to be considered a Mineral Resource it must be proven that there are "reasonable prospects for economic extraction". This requirement implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade that considers extraction scenarios and processing recoveries. Various costs and parameters were determined based on similar projects and a given metallurgical process. It is assumed that a metallurgical plant will be located on the Property. These parameters were used to calculate cut-off grades, and the results are presented in Figure 14-11.

Table 14-11: Calculated cut-off grades

Lithological domain	Calculated cut-off grade (g/t Au)
Tonalite	0.28
Sediments	0.29

In order to determine the quantity of mineralization that shows “reasonable prospects for economic extraction” using open pits mining methods, BBA carried out a pit optimization analysis using the Deswik mining software’s Pseudoflow algorithm to generate a series of nested pit shells. The pit optimization analysis evaluates the potential profitability of each mineralized block in the model.

Only the material classified as Inferred was considered as mineralized, and all other material was considered as waste. As previously mentioned, no material was classified as either Measured or Indicated. While the limits of the resource block model extend beyond Sirios Resources’ claims, the pit optimization analysis was constrained to the claim limits. Lastly, the costs and revenues of each block were evaluated. The pit optimization parameters are presented in Table 14-12.

Table 14-12: Cut-off grade and pit optimization parameters

Pit optimization parameters	Unit	Value
Process Plant Throughput	tpy	7,665,000
Mining Cost – Fresh Rock	CAD/t mined	2.60
Mining Cost - Overburden	CAD/t mined	3.50
Incremental Bench Cost (10m)	CAD/t mined	0.05
Refining & Transportation Cost	CAD/oz	5.00
Process Cost	CAD/t processed	10.00
General & Administration Cost	CAD/t processed	2.94
Mining Recovery	%	95
Mining Dilution	%	5
Mining Dilution Grade	g/t	0.00
Process Recovery – Tonalite	%	88%
Process Recovery – Sediments	%	85%
Gold Selling Price	USD/oz	1,300
Gold Selling Price	CAD/oz	1,690
Exchange Rate	CAD/USD	1.3
Royalty	%	3
Grams per troy ounce	g/oz	31.1035
Overall Slope Angle – Tonalite	º	50
Overall Slope Angle – Sediments	º	45
Overall Slope Angle – Overburden	º	26

It should be noted that all parameters are either based on similar projects or reasonable technical and economic factors. It is of the opinion of Dario Evangelista P. Eng. of BBA Inc., the QP of this report section, that the calculated cut-off grades and the parameters used are relevant for a mineral resource estimate, as they are relevant to the grade distribution of the Project and that the mineralization exhibits sufficient continuity. However, these parameters must be analyzed in future studies and, subsequently, may change. Furthermore, the results of this pit optimization analysis are used solely for testing the reasonable prospects for economic extraction by open pit mining methods and do not represent an economic study.

The pit optimization analysis was evaluated for several revenue factors (RF), ranging from 0.5 to 1.5. The shell selected for the Mineral Resource Estimate was the RF 1, corresponding to a gold price of CAD1,690, and is shown in Figure 14-23. The resulting shell incorporated one main pit, with a shallow satellite pit to the northwest. Two insignificant pits were also obtained in the analyses but were excluded from the estimate.

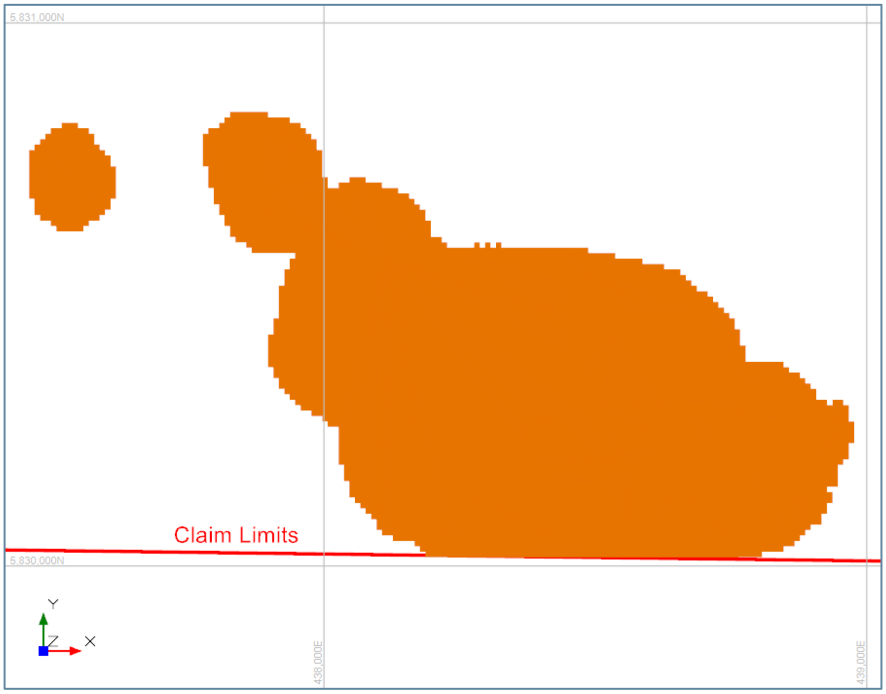


Figure 14-23: Revenue factor 1 pit selected for the MRE

Although the calculated cut-off grades used for the pit optimizations range from 0.28 g/t Au to 0.29 g/t Au, a rounded cut-off grade of 0.30 g/t Au was used for the Mineral Resource Estimate reporting.

14.10 Cheechoo Gold Deposit Mineral Resource Estimate

The pit-constrained Inferred Mineral Resource Estimate for the Project is presented in Table 14-13.

Table 14-13: Pit-constrained Inferred Mineral Resource estimate for the Cheechoo Project

	Tonnage (t)	Grade (Au g/t)	Ounces (Au oz)
Inferred Resources	**71,000,000**	**0.69**	**1,600,000**

Notes to Table 14-13:

1. The independent qualified person for the 2019 MRE, as defined by NI 43-101 guidelines, is Pierre-Luc Richard, P. Geo., of BBA Inc. The effective date of the estimate is December 6, 2019.
2. These mineral resources are not mineral reserves as they do not have demonstrated economic viability. The quantity and grade of reported Inferred resources in this MRE are uncertain in nature and there has been insufficient exploration to define these resources as Indicated or Measured; however, it is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.
3. Resources are presented as undiluted and pit constrained scenario and are considered to have reasonable prospects for economic extraction. Although calculated cut-off grades range from 0.28 g/t Au to 0.29 g/t Au, a cut-off grade of 0.30 g/t Au was used for the MRE. The pit optimization was done using Deswik mining software version 2019.3.491. The constraining pit shell was developed using pit slopes of 45 to 50 degrees in hard rock and 26 degrees in overburden. The cut-off grade and pit optimization were calculated using the following parameters (amongst others): Gold price = USD1,300; CAD:USD exchange rate = 1.30; Hard Rock Mining cost = $2.60/t mined with incremental bench costs of $0.05 per 10 m bench; Overburden Mining Cost = $3.50/t mined; Mining Recovery = 95%; Mining dilution = 5% at 0 g/t Au; Metallurgical Recovery varying from 85% to 88%; Processing cost = $10.00/t processed; G&A = $2.94/t processed; Royalty of 3%; and Refining and Transportation cost = $5.00/oz. The conceptual pit-constrained resource has a 1.1:1 stripping ratio. The cut-off grade will be re-evaluated in light of future prevailing market conditions and costs.
4. The MRE was prepared using Geovia® GEMS 6.8.2 and is based on 270 surface drillholes and 385 surface channel samples, with a total of 47,363 assays. The resource database was validated before proceeding to the resource estimation. Grade model resource estimation was calculated from drillhole data using an OK interpolation method in a block model using blocks measuring 10 m x 10 m x 10 m in size. The cut-off date for drillhole database was March 20, 2019.
5. The model comprises 37 mineralized zones (which have a minimum thickness of 3 m), five lithological units and one low-grade mineralized body mostly included in the tonalite intrusive unit, each defined by drillholes' intercepts.
6. High-grade capping was done on the composited assay data and established on a per unit basis. Capping grades used vary from 5 g/t to 80 g/t Au and the use of restricted search ellipsoids was also used. A value of zero grade was applied in cases of core not assayed.
7. Fixed density values were established on a per unit basis, corresponding to the median of the SG data of each unit ranging from 2.65 to 2.71. A fixed density of 2.00 g/cm$_3$ was assigned to the overburden.
8. The MRE presented herein is categorized as an Inferred Resource. The Inferred Mineral Resource category is defined for blocks that are informed by a minimum of two drillholes where drill spacing is less than 100 m for the mineralized intrusive-related mineralization. Where needed, some materials have been either upgraded or downgraded to avoid isolated blocks.
9. The number of tonnes (metric) and ounces were rounded to the nearest hundred thousand.
10. CIM definitions and guidelines for mineral resource estimates have been followed.

Table 14-14 shows the sensitivity of the block model estimate to grade cut-off for the in situ MRE. The reader is cautioned that the numbers presented in the following tables should not be misconstrued with a mineral resource statement.

Table 14-14: Cheechoo Project cut-off grade sensitivity table

	Inferred Resources		
Cut-off grade	**Tonnage (t)**	**Grade (g/t)**	**Ounces Au (oz)**
> 0.50 g/t	37,300,000	0.97	1,200,000
> 0.40 g/t	50,500,000	0.83	1,400,000
> 0.30 g/t	**71,000,000**	**0.69**	**1,600,000**
> 0.25 g/t	84,400,000	0.63	1,700,000
> 0.20 g/t	99,500,000	0.57	1,800,000

14.11 Potential Upside

The mineralization of the Cheechoo Project reaches the limits of the property and therefore the pit shell used for the MRE presented above was constrained within the limit of the Sirios property.

In order to estimate the amount of additional material that could be included in a conceptual pit shell not limited by the claim boundaries, BBA ran a model using the same parameters used for the MRE, but removed the property limits.

Using the current database and parameters established for the MRE presented above, there is a potential to add approximately 25% more ounces on the Cheechoo Project (Table 14-15), given that an agreement is reached with the neighbouring property owner to access this material. This additional material is located on Sirios' ground, but would only be accessible if the conceptual pit shell was allowed to cross the property limits. The reader is cautioned that this discussion should not be misconstrued with a mineral resource statement. Figure 14-24 and Figure 14-25 show 3D, plan and section views of this scenario.

It should be noted here that all the material on the neighbouring property was set to 0.00 g/t for this exercise.

Table 14-15: Cheechoo Project cut-off grade sensitivity table comparing the official MRE scenario (Limited by claim boundaries) to the scenario where the conceptual pit shell is not limited by claim boundaries (right)

Cut-off Grade	Pitshell limited by claim boundaries			Pitshell not limited by claim boundaries*		
	Tonnage (t)	Grade Au (g/t)	Ounces Au (oz)	Tonnage (t)	Grade Au (g/t)	Ounces Au (oz)
0.50	37 300 000	0.97	1 200 000	46 900 000	0.99	1 500 000
0.40	50 500 000	0.83	1 400 000	64 000 000	0.85	1 700 000
0.30	71 000 000	0.69	1 600 000	90 700 000	0.70	2 000 000
0.25	84 400 000	0.63	1 700 000	107 600 000	0.63	2 200 000
0.20	99 500 000	0.57	1 800 000	126 200 000	0.57	2 300 000

* Would require an agreement with the neighbour.

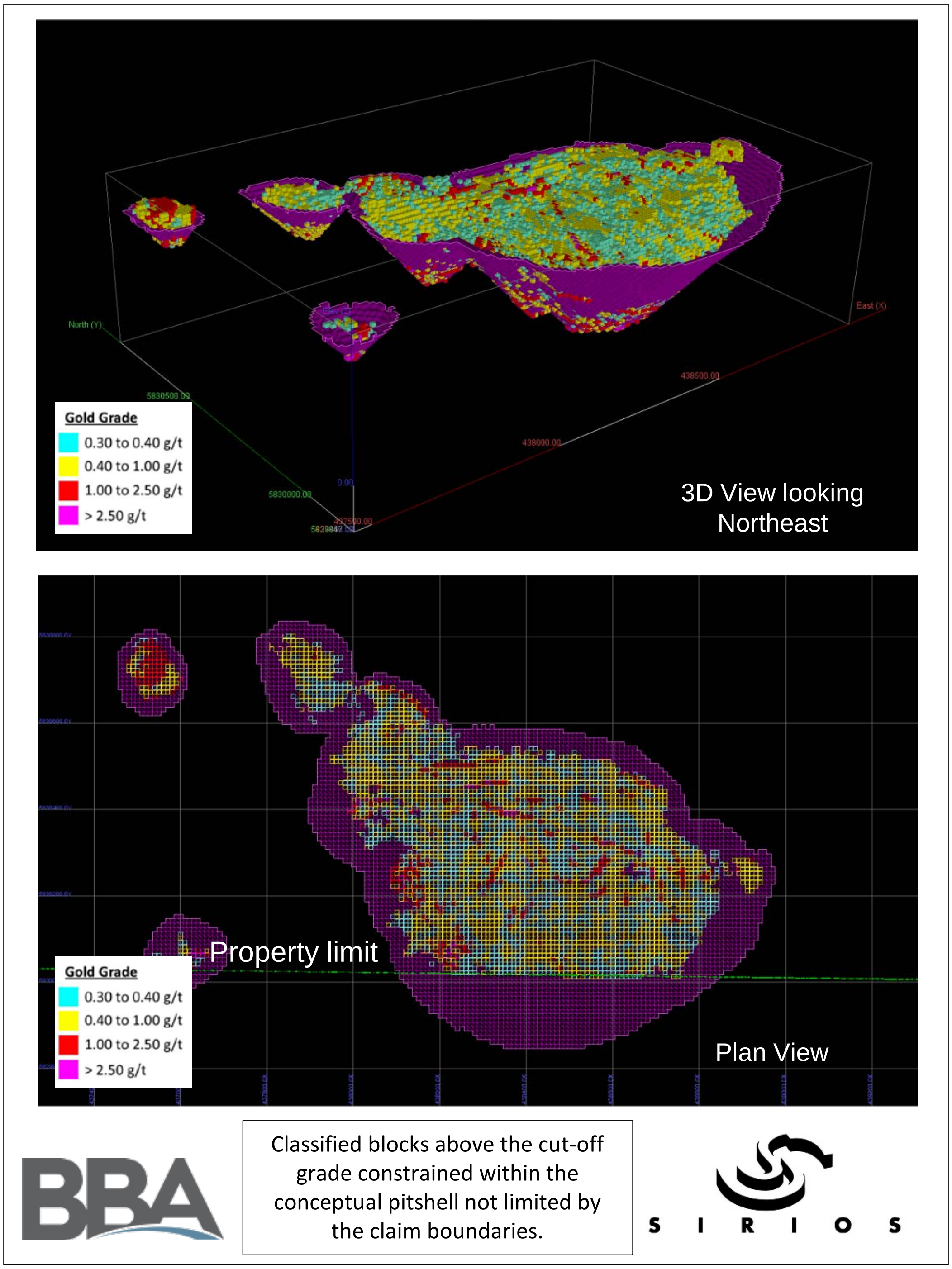


Figure 14-24: 3D and plan views showing grade distribution and classification of the Project above the cut-off grade All blocks presented are either classified as Inferred or would reach that category if an agreement with the neighbouring property owner was reached.

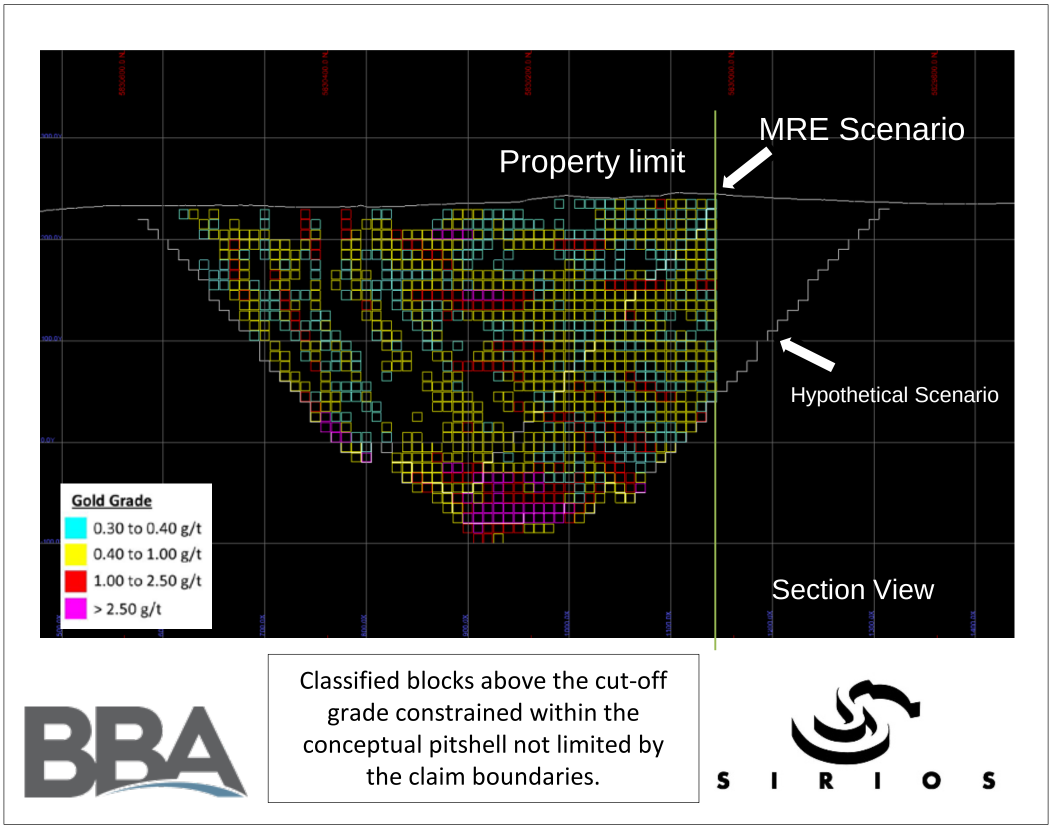


Figure 14-25: Section view showing grade distribution and classification of the Project above the cut-off grade All blocks presented are either classified as Inferred or would reach that category if an agreement with the neighbouring property owner was reached.

15. MINERAL RESERVE ESTIMATE

This chapter is not required for a Technical Report on Mineral Resources.

16. MINING METHODS

This chapter is not required for a Technical Report on Mineral Resources.

17. RECOVERY METHODS

This chapter is not required for a Technical Report on Mineral Resources.

18. PROJECT INFRASTRUCTURE

This chapter is not required for a Technical Report on Mineral Resources.

19. MARKET STUDIES AND CONTRACTS

This chapter is not required for a Technical Report on Mineral Resources.

20. ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

This chapter is not required for a Technical Report on Mineral Resources.

21. ECONOMIC ANALYSIS

This chapter is not required for a Technical Report on Mineral Resources.

22. CAPITAL AND OPERATING COSTS

This chapter is not required for a Technical Report on Mineral Resources.

23. ADJACENT PROPERTIES

Several junior exploration companies and prospectors (listed as others in the figure) are active in the Éléonore Mine area as illustrated in (Figure 23-1). The author has not been able to verify the information presented below and the information is not necessarily indicative of the mineralization on the Cheechoo Project (the subject of this Report).

23.1 Éléonore Mine Property

In April 2019, Newmont bought all the shares of Goldcorp and changed its name to Newmont Goldcorp. Subsequently, it changed its name back the Newmont in January 2020. One of the company's assets, the Éléonore Mine, is located 15 km northwest of the Cheechoo Project. As of November 2018, the total Proven and Probable of the Éléonore Mine reserve is estimated 17.77 Mt at a grade of 5.69 g/t Au for 3.25 Moz (Newmont website).

Pierre-Luc Richard, QP, has not been able to verify the information presented above and the information is not necessarily indicative of the mineralization on the Cheechoo Project.

The deposit is located in Archean rocks of the Superior Province in the transition zone between the Opinaca and the La Grande subprovinces. The contact between the two subprovinces is not well known, and generally corresponds to regional-scale deformation zones and a sharp change in the metamorphic gradient. The Éléonore deposit is considered to have many aspects in common with greenstone-hosted quartz-carbonate vein deposits but represents a clastic sediment-hosted stockwork disseminated end member.

23.2 Opinaca A, B and D Properties

Located 18 km north and 36 km northwest of the Cheechoo Project, the Opinaca A and Opinaca D properties are held by Azimut Exploration. They consist respectively of 322 and 167 claims. These properties contain some gold prospects with various exploration work carried out since 2005. The Opinaca B is located 8 km east of the Cheechoo Project and also has a couple of gold prospects.

23.3 Éléonore South Joint Venture Property

The Éléonore South Joint Venture is held by Eastmain, Azimut Exploration and Newmont. It is adjacent to the Cheechoo Project to the west. Formed in 2008, the joint venture now focuses on the metasediment and tonalite contact in the east. The property is in an exploration-drilling-stage consisting of 282 mining claims.

23.4 Éléonore Joint Venture Property

The Éléonore Joint Venture property is held by Midland Exploration (50%) and Osisko Gold Royalties (50%). A part of the property is adjacent to the south of the Cheechoo Project and the majority of the property is located about 20 km southeast. The property is considered to be located at the contact between the Opinaca and La Grande geological Subprovince. Numerous gold anomalies in the paragneiss have been found.

23.5 Wildcat Property

The Wildcat property is adjacent to the east of the Cheechoo Project. The 100% Hecla Quebec owned property consists of 347 claims. The geological setting and the types of gold mineralization and alteration are similar to the ones at the Roberto deposit of the Éléonore Mine. Various exploration work has been carried out since 2010 on the property, including 44 DDH.

23.6 O3 Mining

O3 Mining has a property east of the Cheechoo western block as well as scattered claims in the area.

23.7 Osisko Baie-James SENC

Osisko Baie-James SENC has a property north of the Cheechoo western block as well as scattered claims in the area.

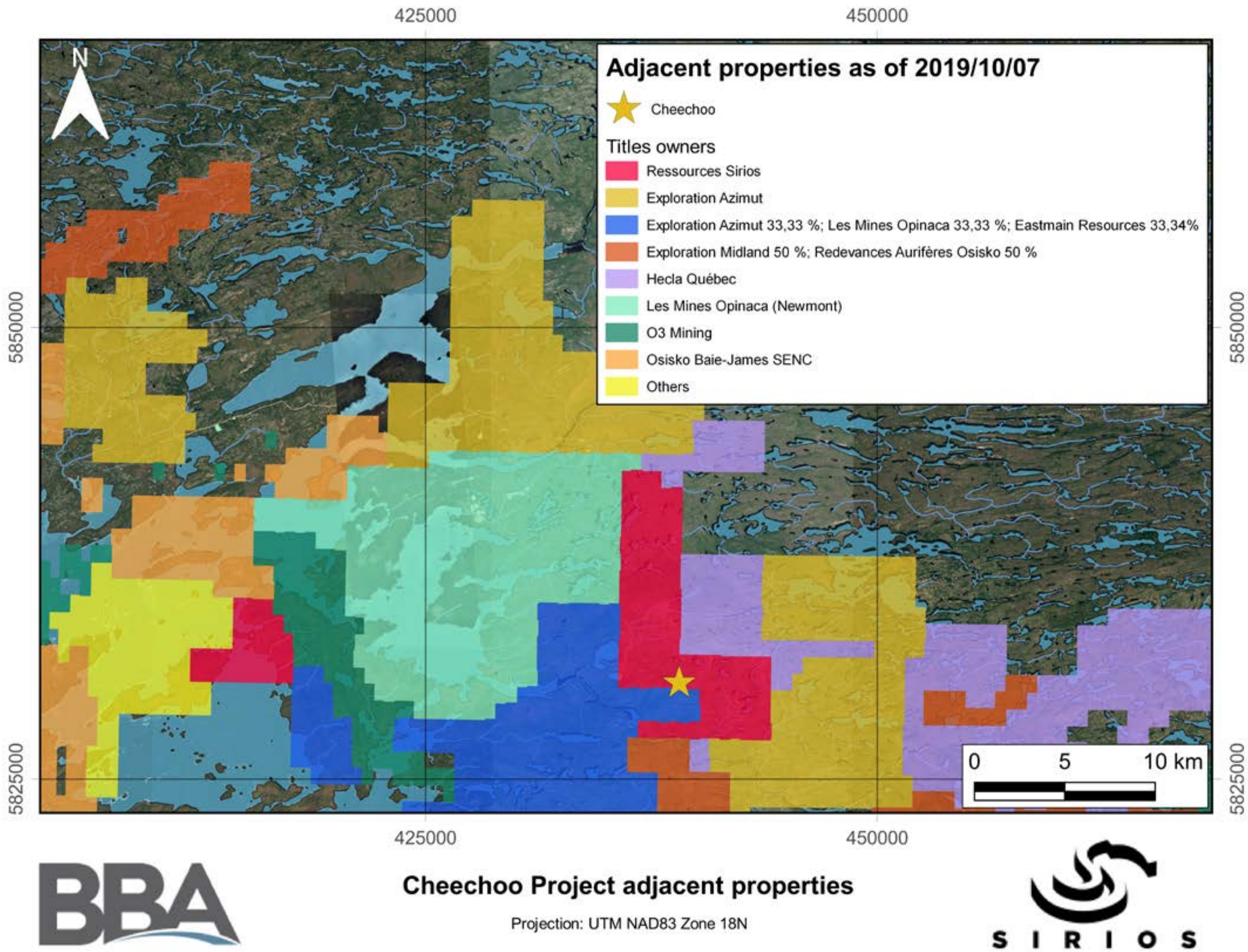


Figure 23-1: Cheechoo Project adjacent properties

24. OTHER RELEVANT DATA AND INFORMATION

BBA knows of no additional relevant data that might materially impact the interpretations and conclusions presented in this Technical Report.

25. INTERPRETATION AND CONCLUSIONS

25.1 Overview

The objective of BBA's mandate was to produce a Maiden Mineral Resource Estimate for the Cheechoo Gold Project and a supporting NI 43-101 Technical Report. This Report and the 2019 MRE herein meet this objective.

Geological wireframes were constructed by Sirios' geologist Jordi Turcotte. The mineral resource estimation parameters for the Cheechoo Project were established by BBA.

25.2 Mineral Tenure, Surface Rights, Agreements and Royalties

The information provided by Sirios supports the conclusion that the mining claims held are valid.

25.3 Environmental

The Project is not subject to any known environmental liabilities. As the area has a long history of exploration and recently mining, BBA does not anticipate any barriers to access the Project for work planned going forward.

25.4 Geology and Mineralization

The hydrothermal and gold mineralization features of the Cheechoo Property, temporal and/or spatial association with a reduced intrusion, pegmatites and mafic enclaves or dikes shares analogies with reduced intrusion-related gold systems (Thompson and Newberry, 2000; Hart, 2007). The composition of the Cheechoo intrusion shares similarities with reduced ilmenite series and gold-associated granitoids (Fontaine et al., 2017b) described in Yukon, and Alaska (Hart et al., 2004) and in New Brunswick (Yang et al., 2008). In New Brunswick Appalachians, Yang et al. (2008) have proposed that intrusion-related gold systems are controlled by magma sources, magmatic processes, redox conditions (country-rock nature), and local structural regimes.

The vein network of the Cheechoo Property is composed of various types of auriferous veins including sheeted extensional, en-echelon quartz-dominated veins, as well as pegmatitic quartz-feldspar veins. The vein network is commonly 40 m to 50 m wide and, at least 100 m long and mainly occurs within the intrusion, but also in the surrounding paragneissic rocks. The vein density increases (from 15% to 50% of the rock volume) towards intrusion margins and with the occurrence of pegmatite dikes, tonalite apophyses and mafic schist. The gold grade is controlled by the presence of sulphides (particularly arsenopyrite), the density of veins, and deformation gradients. The understanding of the regional geology, lithological and structural controls of the mineralization at Cheechoo are sufficient to support estimation of Mineral Resources.

25.5 Resources Database

The resource database for the Project, as of Mach 20, 2019, consisted of 270 surface drillholes and 385 surface channel samples, with a total of 47,363 assays. The QP reviewed the drilling, sample preparation, analytical and security procedures, as well as insertion rates and the performance of blanks, standards and duplicates for the 2013-2019 drilling programs and concluded that the observed failure rates are within expected ranges and that no significant assay biases are present.

The QP is of the opinion that the protocols in place are adequate and followed. The database for the Cheechoo Project is of good overall quality and meets industry standards. The QP is of the opinion that the database is appropriate for the purposes of the Mineral Resource Estimation and that the sample density allows for a reliable estimate to be made of the size, tonnage and grade of the mineralization in accordance with the level of confidence established by the Mineral Resource categories in the CIM Standards.

25.6 2019 Cheechoo Project Resource Estimate

The 2019 Cheechoo Mineral Resource Estimate (the "2019 MRE") was prepared by Pierre-Luc Richard, P. Geo., using all available information.

The mineral resources are not mineral reserves as they do not have demonstrated economic viability. The estimate is categorized as Inferred Resources based on data density, geological and grade continuity, search ellipse criteria, drillhole density and specific interpolation parameters. The effective date of the estimate is December 6, 2019 based on the compilation status and cut-off grade parameters.

BBA considers the 2019 MRE to be reliable and based on quality data, reasonable hypotheses and parameters that follow CIM Definition Standards. After completing the MRE and a detailed review of all pertinent information, BBA concluded the following:

- The 2019 MRE was built with the use of 37 mineralized zones, five lithological units and one low-grade mineralized body, mostly included in the tonalite intrusive unit, each defined by drillholes intercepts;
- Using a cut-off grade of 0.30 g/t Au, the Inferred In-pit Resources amounts to 71 Mt grading 0.69 g/t Au containing approximately 1,600,000 ounces of gold;
- No Measured and Indicated Resources have been defined in the 2019 MRE;
- It is likely that further diamond drilling would upgrade most of the inferred resources to indicated resources.

25.7 Exploration Potential

Following an overall review of all pertinent information, including the MRE, BBA concluded the following:

- The exploration potential remains high at the property scale, justifying compilation and target generation programs;
- The potential is high for adding additional resources to the Project by drilling lateral extensions to the west;
- It is likely that drilling additional holes, therefore improving the current drill spacing, would translate into upgrading Inferred resources to the Indicated category.

25.8 Risk and Opportunities

As noted in Chapter 4, BBA is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or relevant issues could be expected to affect the reliability or confidence in the exploration information and Mineral Resource discussed herein or the right or ability to perform future work on the Cheechoo Project.

As with all mineral projects, there is an inherent risk associated with mineral exploration. Many of these risks are based on a lack of detailed knowledge and can be managed as more sampling, testing, design and engineering are conducted at the next study stages. The mineral resources may be affected by a future conceptual study assessment of mining, processing, environmental, permitting, taxation, socio-economic and other factors.

Table 25-1 identifies what are currently deemed to be the most significant internal project risks, potential impacts and possible mitigation approaches that could affect the Project.

External risks are, to a certain extent, beyond the control of the Project proponents and are much more difficult to anticipate and mitigate, although, in many instances, some risk reduction can be achieved. External risks are things such as the political situation in the Project's region, metal prices, exchange rates and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions would affect the mineral resource estimate.

There are opportunities that could improve the Project. The major opportunities that have been identified at this time are summarized in Table 25-2 excluding those typical to all mining projects, such as changes in metal prices, exchange rates, etc. Further information and assessments are needed before these opportunities should be included in the Project economics.

Table 25-1: Project risks (preliminary risk assessment)

Risk description and potential impact	Mitigation approach
The interpreted mineralized zones could be affected by some structures (faults or folds) that could displace or stop the mineralized zones.	Definition drilling will improve the confidence in the interpretation.
Presence of a nugget effect in the gold distribution of the deposit could lead to local variability within the mineralized zones.	A bulk sample could provide a better understanding of the nugget effect on this Project.
The mineralized corridors might have slightly different shapes and orientations due to the complex geometry of the deposit.	Definition drilling will help define with more precision the mineralized zones.

Table 25-2: Project opportunities

Opportunity explanation	Benefit
Additional exploration drilling as the deposit remains open at depth and laterally to the west.	Potential to increase resources.
Reducing the drill spacing by adding infill drilling.	Could potentially upgrade Inferred resources to the Indicated category
Improve metallurgical knowledge on the Project.	Could improve assumptions.

Additional technical factors that may impact the MRE include:

- Mill terms and valuation assumptions;
- Changes to technical inputs used to estimate gold content (e.g., bulk density estimation and grade model methodology);
- Changes to geotechnical, hydrogeology and mining assumptions including the application of alternative mining methods;
- Changes to process plant recovery estimates if the metallurgical recovery in certain domains is less or greater than currently assumed, including the application of alternative processing methods;
- Social acceptability is an inherent risk for all mining projects. This could affect the Project's development.

26. RECOMMENDATIONS

26.1 Overview

Based on the results of the 2019 MRE, BBA recommends initiating a Preliminary Economic Assessment (PEA) to investigate the likelihood of the Project to be economically viable. Following a positive PEA, additional exploration/definition drilling and further geological interpretation is warranted to gain a better understanding of the deposit before updating the current Mineral Resource Estimate.

BBA recommends the two-phase work program described below in which Phase 2 depends on the success of Phase 1.

26.2 Phase 1 Recommended Activities

The following activities are recommended for the Phase 1.

26.2.1 Metallurgical Testwork

Additional metallurgical studies should be conducted on the Project in order to improve the understanding of the deposit for further mine planning and valuation. The following future testwork is recommended for the Cheechoo deposit:

- A comminution testwork program to study the mineralized material hardness variability;
- A metallurgical testwork program to study the Au recovery variability with Au head grade;
- Heap leach testwork results should be validated using intermittent bottle rolls and, depending on the results, using columns (for example 15 cm diameter per 2 m high). Testwork should consider the influence of variables such as cyanide and lime addition, leaching time, particle size, percolation rate, and temperatures (at conditions to be seen at site);
- As a result of the good response of the material to the GRG testwork, it is recommended by BBA to prepare master composites for batch gravity testwork followed by leaching of gravity tails:
  - One of the variables to study is the optimization of the gravity feed size (investigate the effect of coarser particle size on Au recovery);
- Additional flotation testwork should be conducted to explore the amenability of the mineralized material to flotation at coarser grind (with and without leaching of flotation concentrate);

- An optimization testwork program of leaching variables for the option selected in the current testwork program (WOL or gravity recovery with leaching of gravity tails):
  - Stirred reactor tests could be conducted to validate or optimize process variables such as cyanide addition, oxygen vs air, lead nitrate addition, etc.;
- A preliminary cyanide destruction testwork program based on the future tailings handling system;
- A dynamic settling testwork program to optimize flocculant addition;
- It is also recommended to conduct a trade-off study to compare the economics of heap leach vs a gravity + leach of gravity tails flowsheet.

26.2.2 Exploration Drilling

Drilling should be added on the western portion of the MRE where current drillhole spacings are too sparse to delineate Inferred mineral resources. If successful, these holes will have the potential to add mineral resources, both within the current limit of the MRE pit and beyond. Approximately 5,000 m would be required.

26.2.3 Preliminary Economic Assessment

A Preliminary Economic Assessment (PEA) is recommended based on the results of the MRE presented in the current Report.

26.3 Recommended Activities – Phase 2

Conditional to the success of Phase 1, the following activities are suggested for the Phase 2.

26.3.1 Conversion Drilling

Conversion drilling should be done at a drill spacing of about 50 m, or smaller, in order to further delineate the geological and resources model and to potentially upgrade Inferred resources to the Indicated category. Approximately 15,000 m would be required.

26.3.2 Exploration Drilling

Exploration drilling program should be done to continue investigating any potential lateral extensions of the currently identified mineral resources as well as other target on the Property. A provision of approximately 20,000 m should be considered.

26.3.3 Bulk Sample

A bulk sample is recommended on the Project in order to improve the understanding of the grade distribution for further mineral resource estimate updates.

26.3.4 Geotechnical Study

Implement a geotechnical field program to complement existing information by performing conventional overburden characterization and sampling (test pits and drilling), laboratory analyses, and engineering analyses and reporting. Open pit design will require oriented core drilling in a few locations. Results will be used to define the appropriate slopes for overburden excavations, verify stability for all impoundments and provide or confirm parameters for the open pit designs.

26.4 Work Plan Budget

The recommendations are budgeted at an estimate based on current site costs with details provided in Table 26-1.

Table 26-1: Work program budget

Description	Cost ($)
Phase 1 – Work Program	
Metallurgical Testwork	400,000
Exploration drilling (5,000 m)	1,000,000
Preliminary Economic Assessment (PEA)	500,000
Contingencies (15%)	285,000
Total Phase 1	**2,185,000**
Phase 2 – Work Program	
Conversion Drilling (15,000 m)	3,000,000
Exploration Drilling (20,000 m)	4,000,000
Bulk Sample	1,000,000
Geotechnical study	100,000
Contingencies (15%)	1,215,000
Total Phase 2	**9,315,000**
Total Phase 1 and Phase 2	**11,500,000**

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