NI 43-101 TECHNICAL REPORT

VALERIANO PROJECT
INFERRED RESOURCE ESTIMATES

Atacama Region, Chile

Submitted By:

David Hopper
Chartered Geologist of the Geological Society of London, Fellow No. 1030584

Effective Date: November 13, 2020

CERTIFICATE OF QUALIFIED PERSON

David R. Hopper
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I, **David R. Hopper** do hereby certify:

- I am an independent consultant, resident in El Arrayán, Santiago, Chile.
- This certificate applies to the technical report "NI 43-101 TECHNICAL REPORT VALERIANO PROJECT INFERRED RESOURCE ESTIMATES, Atacama Region, Chile" dated November 13, 2020 (the "Technical Report") with respect to the Valeriano Project in Atacama Region, Chile (the "Property").
- I graduated in 1990 with a BSc (Hons) in Applied Geology from the University of Leicester, UK, and in 1998 with a MSc in Mineral Exploration from James Cook University, Australia.
- I am a Chartered Geologist in good standing of the Geological Society of London, License No. 1030584. The GSL is a recognized professional association as defined by NI 43-101.
- I have worked as a geologist continuously for 29 years since my graduation from University. Throughout these years of professional experience, I have been directly involved in mineral exploration for porphyry copper and epithermal gold deposits in numerous geologic settings.
- I have read the definition of "qualified person" set out in NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and confirm that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- I am responsible for all sections of the Technical Report except for Section 14.
- I am independent of ATEX Resources Inc. as described in Section 1.5 of NI 43-101.
- I am independent of the Vendors of the Valeriano Property as described in Section 1.5 of NI 43-101.
- I am independent of the Valeriano mineral rights and surface rights as understood in Section 1.5 of NI 43-101.
- I was the Chile Exploration Manager for Hochschild Mining plc while it had an option agreement on the Valeriano Project and explored it from 2010 through 2013.
- I last visited the property on March 5th, 2014. The project has been inactive since May 2013 and there have been no material changes to the project site or access.
- I have read NI 43-101 and this Report. The Report has been prepared in accordance with NI 43-101.
- As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Santiago, Chile this 13th day of November 2020

CERTIFICATE OF QUALIFIED PERSON

Joled Nur Paredes
Civil Mining Engineer, SRK Consulting (Chile) SpA
Santiago, Chile
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I, **Joled Nur Paredes**, do hereby certify:

- I am employed by SRK Consulting (Chile) SpA as a Civil Mining Engineer specializing in resource and reserve estimation.
- I am a resident in Santiago, Chile.
- This certificate applies to the technical report "NI 43-101 TECHNICAL REPORT VALERIANO PROJECT INFERRED RESOURCE ESTIMATES, Atacama Region, Chile" dated November 13, 2020 (the "Technical Report") with respect to the Valeriano Project in Atacama Region, Chile (the "Property").
- I graduated in 1995 with a degree in Civil Mining Engineer from the University of Santiago, Chile.
- I am a register member in good standing of the La Comisión Calificadora de Competencias en Recursos y Reservas Mineras (Public Register of Competent Persons in Mining Resources and Reserves), No. 0181. The Comisión is a recognized professional association as defined by NI 43-101.
- I have worked as a geologist continuously for 20 years since my graduation from University. Throughout these years of professional experience, I have been extensively involved in all aspects of resource and reverse estimations.
- I have read the definition of "qualified person" set out in NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and confirm that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- I am responsible for Section 14 of Technical Report.
- I am independent of ATEX Resources Inc. as described in Section 1.5 of NI 43-101.
- I am independent of the Vendors of the Valeriano Property as described in Section 1.5 of NI 43-101.
- I am independent of the Valeriano mineral rights and surface rights as understood in Section 1.5 of NI 43-101.
- I have read NI 43-101 and this Report. The Report has been prepared in accordance with NI 43-101.
- As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Santiago, Chile this 13th day of November 2020

Joled Nur Paredes

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$	US dollars
%	percent
°C	degrees Celsius
AA	atomic absorption
Ag	silver
agg	agglomerate
amph Bx	amphitheatre breccia
Antofagasta	Antofagasta Minerals S.A.
As	arsenic
ATEX	ATEX Resources Inc. or ATEX Valeriano SpA
Au	gold
Barrick	Barrick Gold Corp.
BM	block model
bx	breccia
bn	bornite
C$	Canadian dollar
Ch$	Chilean peso
CO	cut-off
Company	ATEX Resources Inc. or ATEX Valeriano SpA
COV	coefficient of variation
cpy	chalcopyrite
Cu	copper
Cu eq.	copper equivalent
cv	covellite
DB	database
DD	diamond drilling
DDH	diamond drill hole
dio	diorite
DTH	down the hole
E	east
ED	estimation domain
g/t	grams per tonne
grdio	granodiorite
ha	hectare
Hochschild	Hochschild Mining plc
HOC	Hochschild Mining plc
IP	induced polarization
kg	kilogram
km	kilometres
lb	pound
m	metres
m^3	cubic metres
mm	millimetres
Mo	molybdenum
Mt	million tonnes
N	north
NE	northeast
NI 43-101	National Instrument 43-101
NS	north south
NSR	net smelter royalty
NW	northwest

oz	troy ounces
PCD	porphyry copper deposits
Phelps Dodge	Phelps Dodge Corporation
porph	porphyry
ppm	parts per million
PQDH	quartz-hornblende diorite porphyry
py	pyrite
py-en	Pyrite-enargite
QP	qualified person
RC	reverse circulation
Report	NI-43-101 Technical Report on the Valeriano Project, Atacama Region, Chile
rhyo	rhyolite
S	south
SCM Valleno	Sociedad Contractual Minera Valleno
SE	southeast
sndstn	sandstone
SRK	SRK Consulting (Chile) SpA
STD	standard deviation
SW	southwest
t	tonne
volc	volcanic
W	west

NOTE REGARDING RESOURCE EQUIVALENT GRADES:

Gold Equivalent Grades

Au equivalent grades are calculated based upon a Au price of $1,800 per oz and a Ag price of $25.00 per oz (all prices in US$). Metal recoveries were not considered.

Formula for Au Eq.% calculation:

$$\mathrm{Au_{eq}(g/t)} = \mathrm{Au_{g/t}} + \frac{\mathrm{Ag_{g/t} * Ag_{price}}}{\mathrm{Au_{price}}}$$

Copper Equivalent Grades

Cu equivalent grades are calculated based upon a Cu price of $3.00 per pound, Au price of $1,800 per oz and Ag price of $25.00 per oz (all prices in US$). Metal recoveries were not considered.

Formula for Cu Eq.% calculation:

$$\mathrm{Cu_{eq}(\%)} = \frac{\mathrm{Cu\_ppm}}{10{,}000} + \frac{\mathrm{Au_{g/t} * Au_{price}}}{22.0462 * 31.0135 * \mathrm{Cu_{price}}} + \frac{\mathrm{Ag_{g/t} * Ag_{price}}}{22.0462 * 31.0135 * \mathrm{Cu_{price}}}$$

1.0 SUMMARY

The Valeriano Project (the "Project", "Property" or "Valeriano") hosts a classic porphyry-epithermal system of Miocene age (Sillitoe et al 2016). The well-preserved system comprises a mineralized Cu-Au porphyry at depth, which transitions upwards into mineralized high-sulphidation epithermal Au-(Ag) mineralization at and near the present-day surface. The Project has been the subject of multiple exploration programs by different companies (Table 1), beginning with the exploration of the epithermal potential in the 1980's, and culminating in the discovery of the mineralized porphyry in 2013.

Most recently, Valeriano was the subject of a report titled "NI 43-101 Technical Report on the Valeriano Project, Atacama Region, Chile" prepared for ATEX Resources Inc. ("ATEX") by David Hopper C.Geol, with an effective date of November 25th 2019. That report was appropriately filed on the "System for Electronic Document Analysis and Retrieval" and is available online at www.sedar.com.

The following Report, also prepared for ATEX, details the results for resource estimates completed by SRK Consulting (Chile) SpA ("SRK") for the near surface Gold Oxide Deposit and the underlying Copper Gold Porphyry Deposit and summarised as follows:

Gold Oxide Resource Estimate: An inferred resource of 34.4 million tonnes grading 0.528 grams per tonne ("g/t") gold ("Au") and 2.40 g/t silver ("Ag") at a 0.275 g/t Au cut-off grade, for a combined gold equivalent ("Au eq.") grade of 0.561 g/t, has been estimated for the Gold Oxide Deposit for a total of 584,684 ounces ("oz") of Au and 2,653,895 Ag oz or 621,539 Au eq. oz. The gold oxide resource is associated with high-sulphidation style, epithermal gold and silver mineralization developed within volcanic and volcaniclastic host rocks overlying the Valeriano copper gold porphyry system.

Copper Gold Porphyry Resource Estimate: Underlying and separate from the gold oxide resource and below the high-sulphidation style alteration, lies the Valeriano copper gold porphyry mineralization which has been estimated to host an initial inferred resource of 297.30 million tonnes grading 0.59% copper ("Cu"), 0.193 g/t Au and 0.90 g/t Ag (copper equivalent ("Cu eq.") grade of 0.77%) at a 0.5% Cu cut-off grade, for an estimated 1.77 million tonnes of contained Cu, 1.844 million oz of contained Au and 8.62 million oz of contained Ag or 2.3 million tonnes Cu eq. The porphyry resource has been tested by four drill holes and is open horizontally in all directions and to depth.

1.1 Property Summary

Valeriano is located in the Atacama Region of northern Chile, approximately 125 km to the southeast of the City of Vallenar (151 km by road) and 27 km north of Barrick's Pascua-Lama Project. The Property comprised 15 exploitation concessions and 2 exploration concessions covering a total area of 3,795 ha, excluding overlapping concessions. The project abuts the Chile-Argentina border. Elevations vary from 3,800 to 4,400 masl.

The Valeriano Property is owned by Sociedad Contractual Minera Valleno and is under option to ATEX Valeriano SpA, a 100% owned Chilean subsidiary of ATEX Resources Inc. The option agreement has been appropriately filed with the Chilean authorities under Repertorio No.14.738-2019. The Property is subject to a 2.5% net smelter royalty payable on any metal production.

ATEX may earn a 100% interest in the Valeriano property by making payments of US$12.4 million and incurring work commitments of US$15 million prior to Aug 29, 2024 and issuing 2.0 million Units of ATEX.

1.2 Geology and Mineralization Summary

Valeriano is part of the north-south trending Miocene to early Pliocene metallogenic belt of northern Chile and contiguous Argentina (Sillitoe and Perelló, 2005) and comprises a graben-hosted sequence of felsic volcanics that bisects and overlies Paleozoic granites to the west (Sierra de las Palas) and Permo-Triassic granites and metamorphic units to the east (Nevado del Toro). To the north of Valeriano a number of Cu ±Au porphyry deposits have been discovered along this trend including the Caserones deposit owned by Pan Pacific Copper & Mitsui, and the Helados project of NGEX.

To the south of the Project extends the north-south trending El Indio Mineral Belt (Siddley, G., and Araneda, R., 1990), which is the southeastern extension of the Miocene-Pliocene Metallogenic belt. This belt contains a number of high-sulphidation Au-Ag deposits including the Veladero Mine (Barrick/Shandong Gold), Pascua Lama and Alturas projects (Barrick) and the closed El Indio Mine.

The Valeriano property is underlain by a sequence of felsic volcanics which have been intruded by a multi-phase granodiorite porphyry at depth. The porphyry generated a large hydrothermal system that displays a classic porphyry-epithermal alteration zoning pattern from high-level advanced argillic alteration with local gold-(silver) mineralization down into a well-developed potassic alteration zone close to and within the porphyry, with associated stockwork and disseminated copper and gold mineralization. A large surface alteration zone (lithocap), covering a surface area of approximately 13 by 4.5 km, extends from the Valeriano property northward. Molybdenite accompanying the copper mineralization was dated by the Re-Os method at 9.95 ± 0.04 Ma, indicating that the mineralization is Miocene in age.

1.3 Summary of Historical Exploration Activities

Three companies have undertaken drilling programs at Valeriano: Phelps Dodge (1989-1991), Barrick (1995-1997) and Hochschild (2011-2013). The drilling activities are summarized in Table 1.1.

Over the three drill campaigns, a zone of near-surface blanket-like high-sulphidation epithermal Au ±Cu mineralization was cut in 18 holes at depths ranging from 0 to 233 m.

The most extensive campaign was carried out by Hochschild with 14,269.7 m of diamond drilling in 16 drill holes including five holes drilled to depths ranging from 1,058 and 1,878 m. Six of the 16 holes drilled by Hochschild intersected Cu-Au porphyry mineralization at depth with two of those drill holes intersecting the mineralized Valeriano granodiorite.

Hochschild's drilling results demonstrate a vertically zoned hydrothermal alteration and mineralization pattern, from top to bottom, of advanced argillic – quartz-illite – quartz-sericite and underlying potassic alteration accompanied by near-surface high-sulphidation epithermal Au-(Ag) and deeper Cu-Au-(Mo) porphyry-type mineralization comprising of pyrite-enargite – pyrite-chalcopyrite – chalcopyrite-bornite.

Table 1.1 Valeriano Drilling Campaigns

Company	Period	RC		DDH		Holes	Total
		#	metres	#	metres	#	meters
Phelps Dodge	1989-1991	18	3,500.0	9	2,902.7	27	6,402.7
Barrick	1995-1997	20	6,175.0			20	6,175.0
Hochschild	2011-2013			16	14,269.7	16	14,269.7
TOTALS	**1989-2013**	**38**	**9,675.0**	**25**	**17,172.4**	**63**	**26,847.4**

Molybdenum occurs as a dome-like anomaly overlying the porphyry-style Cu-Au mineralization and defines an area at least 2 km long (NW) and 800 m wide. This dome is thought to reflect the extent of Cu-Au mineralization at depth and the anomaly remains open in a number of directions.

Beneath the upper zone of epithermal mineralisation, porphyry-style copper and gold mineralization, stockwork type-A veinlets (equigranular quartz, K-feldspar-anhydrite-sulphide) and alteration increase progressively at depth. Three of the deep drill holes (VALDD12-09, VALDD13-14 AND VALDD13-16) cut chalcopyrite > bornite mineralization in well-developed potassic alteration which remains open laterally and at depth.

1.4 Resource Estimate Summary

Resource estimates were prepared by Joled Nur, Civil Mining Engineer, SRK Consulting (Chile) SpA (“SRK”) for the near surface Gold Oxide deposit and the at depth Copper Gold Porphyry deposit. Resource estimates for the two separate deposits are summarized in Table 1.2 and Table 1.3.

Table 1.2 Valeriano Gold Oxide Resource Estimate - Inferred

Cut-off Au *(g/t)*	Tonnes	Grade			Ounces		
		Au *(g/t)*	Ag *(g/t)*	Au Eq. *(g/t)*	Au	Ag	Au Eq.
0.200	62,819,175	0.395	2.16	0.425	797,662	4,361,385	858,244
0.225	51,842,530	0.434	2.22	0.464	722,647	3,691,909	773,917
0.250	41,119,097	0.485	2.32	0.517	641,089	3,065,582	683,664
0.275	**34,435,360**	**0.528**	**2.40**	**0.561**	**584,684**	**2,653,895**	**621,539**
0.300	28,900,615	0.574	2.44	0.608	533,581	2,269,764	565,106
0.350	20,891,789	0.670	2.56	0.706	450,033	1,719,813	473,922
0.400	15,750,241	0.767	2.61	0.804	388,574	1,321,227	406,924

1. *Mineral resources are not confined by economic or mining parameters.*
2. *Cut-off grades are for reporting purposes only and no economic conditions are implied.*
3. *Au equivalent grades are calculated based upon a Au price of $1,800 per oz and a Ag price of $25.00 per oz (all prices in US$). Minor discrepancies may exist due to rounding. Metal recoveries were not considered.*
4. *Formula for Au Eq.% calculation:* $Au_{eq}(g/t) = Au_{g/t} + \frac{Ag_{g/t} * Ag_{price}}{Au_{price}}$
5. *Tonnage and grade estimates are in metric units. Contained gold ounces are reported as troy ounces.*
6. *Estimated copper grades, at the 0.275 g/t cut-off grade, are 0.06%.*

Table 1.3 Valeriano Copper Gold Porphyry Resource Estimate – Inferred

Cut-off Cu *(%)*	Tonnes *(millions)*	Grade				Contained Metal			
		Cu (%)	Au *(g/t)*	Ag *(g/t)*	Cu Eq. *(%)*	Cu *(tonnes)*	Au *(oz)*	Ag *(oz)*	Cu Eq. *(tonnes)*
0.2	684.58	0.49	0.163	0.91	0.64	3,321,772	3,590,244	20,039,444	4,374,922
0.3	645.33	0.50	0.167	0.91	0.66	3,225,909	3,473,140	18,882,439	4,242,805
0.4	515.43	0.53	0.180	0.97	0.70	2,746,126	2,986,710	16,030,960	3,619,818
0.5	297.30	0.59	0.193	0.90	0.77	1,766,743	1,844,884	8,621,904	2,301,579
0.6	142.93	0.65	0.198	0.81	0.83	926,661	908,024	3,730,162	1,187,958
0.7	15.74	0.73	0.235	0.91	0.95	115,180	118,723	458,731	149,235

1. *Mineral resources are not confined by economic or mining parameters.*
2. *Cut-off grades are for reporting purposes only and no economic conditions are implied.*
3. *Cu equivalent grades are calculated based upon a Cu price of $3.00 per pound, Au price of $1,800 per oz and Ag price of $25.00 per oz (all prices in US$). Minor discrepancies may exist due to rounding. Metal recoveries were not considered.*
4. *Formula for Cu Eq.% calculation:* $Cu_{eq}(\%) = \frac{Cu\_ppm}{10{,}000} + \frac{Au_{g/t} * Au_{price}}{22.0462 * 31.0135 * Cu_{price}} + \frac{Ag_{g/t} * Ag_{price}}{22.0462 * 31.0135 * Cu_{price}}$
5. *Tonnage and grade estimates are in metric units. Contained gold ounces are reported as troy ounces.*

The cut off grades selected for the resource estimates are for reporting purposes only and no economic conditions are implied.

NOTE: Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources will be converted into Mineral Reserves.

1.5 Conclusions and Recommendation

Based on the data that has been generated and which the author has reviewed, it is the author's opinion that the continued exploration of the Valeriano Property is warranted.

For the near-surface gold-oxide resource a systematic drill program is recommended specifically to:

1. confirm the Phelps-Dodge and Barrick drilling programs as there is no QA/QC data available;
2. infill drilling to upgrade the resource to a measured and indicated category; and,
3. exploratory drilling to extend the current resource and test other near-surface gold anomalous targets.

The target is a near-surface epithermal gold-(silver) deposit of such size and metallurgical characteristics that it could be amenable to low-cost open-pit mining and heap-leach processing. In particular the program should focus on the identification and metallurgical characterization of zones of oxide gold mineralization.

For the copper-gold porphyry resource a diamond drilling exploration program is recommended, with the aim of defining the size and grade of the copper-gold mineralization discovered by Hochschild.

The target is a porphyry copper-gold deposit of sufficient grade and size that it might be amenable to large-scale underground mining. In particular, ATEX should target the early-mineral porphyries such as the Valeriano granodiorite, mineralized breccias, and more mafic rocks with may have the potential to host higher grade mineralization.

2.0 INTRODUCTION

Dr. Raymond Jannas, President and CEO of ATEX Resources Inc. ("ATEX") has retained David Hopper, a Chartered Geologist of the Geological Society of London, Fellow No. 1030584, to prepare a report that meets the requirements of NI 43-101, which details the resource estimate prepared for the Gold Oxide Deposit and Copper Gold Porphyry Deposit situated on ATEX's Valeriano Property, located in the Atacama Region of Chile. Mr. Hopper, is a Qualified Person ("QP") as defined by National Instrument 43-101 Standards for Disclosure for Mineral Projects ("NI 43-101") and is independent of ATEX, the vendors, and the property. Mr. Hopper is a resident of Santiago, Chile, and has over 30 years of relevant experience in exploration of porphyry-epithermal systems in a variety of geological environments. This report is effective as at November 13, 2020.

SRK Consulting (Chile) SpA. was retained to prepare and is responsible for the resource estimates provided in this report. Joled Nur, Civil Mining Engineer, SRK Consulting (Chile) SpA and a member of the Public Register of Competent Persons in Mining Resources and Reserves of Chile, No. 181, is the independent qualified person ("QP"), as defined by National Instrument 43-101 Standards for Disclosure for Mineral Projects, who prepared the resource estimates.

ATEX is a publicly traded, limited liability company which is listed on the TSX Venture Exchange and trades under the stock symbol "ATX". The corporate head office is located at 25 Adelaide Street East, Suite 1900, Toronto, Canada M5C 3A1. The Company, previously Colombia Crest Gold Corp., was renamed ATEX Resources Inc., on February 8, 2019. ATEX was established under the Canada Business Corporations Act (federal corporations' law of Canada) on June 12, 2008. The registered office of ATEX is located at 1055 West Hastings Street, Suite 300, Vancouver, Canada.

The information contained within this report comes from activities conducted during a number of exploration programs by different companies, as well as various reports, memorandums, letters, presentations, scientific papers, figures and maps, of both internal company and public domain character as listed at the end of this report in "Section 19 - References".

The author of this report has relied on certain technical information collected and prepared by Phelps Dodge, Barrick and Hochschild during their respective exploration activities on the Project (disclosed in Section 6 and Section 10), including assay results and descriptive logs from drilling programs, the results from geophysical surveys completed by Barrick and Hochschild (disclosed in Sections 6.5 and 6.6) and Hochschild's report on its exploration activities "Reporte Técnico Campaña Exploración 2012-2013-Proyecto Valeriano-Franja Mioceno Norte Chico-Región de Atacama" as disclosed in Sections 6 and 10 (see references, Hochschild, December 2013). In particular, the author has relied, to a certain extent, on the results of activities completed by Hochschild while he was the supervising geologist during Hochschild's exploration campaigns at Valeriano.

The author has read NI 43-101 and this Report. Joled Nur has read NI 43-101 and Section 14 – Resource Estimate. The Report has been prepared according to the guidelines provided in NI 43-101.

2.1 Scope of Site Inspection

The author visited the Property on numerous occassions from 2010 to 2014 while he was the Chile Exploration Manager for Hochschild Mining plc during the period it was conducting exploration activities at Valeriano. During the period the author spent in excess of 20 days on the property. The last time the author visited the property was on March 5th 2014, after the conclusion and demobilization of Hochschild's drilling campaign.

The drill core from the project is currently stored in Vallenar. The author personally reviewed the Valeriano drill core from the 25th to 27th of June 2019.

As confirmed by the property vendors, SCM Valleno, both verbally and by means of a notarized declaration signed by Mr. Ramon Araneda, a legal representative of SCM Valleno , no significant activities have taken place at Valeriano since the completion of the Hochschild exploration campaigns in 2013 that would materially affect the contents of this report.

A search of the Servicio Nacional de Geología y Minería ("SERNAGEOMIN") registry further confirmed that no significant exploration activities have occurred at Valeriano since the end of Hochschild's drilling in 2013, and the optioning of the property by ATEX on August 29, 2019. SERNAGEOMIN must be notified before any signficant exploration activity, including drilling, is undertaken on a property located in Chile.

3.0 RELIANCE ON OTHER EXPERTS

The author has relied upon information provided by ATEX that describes: the terms of the purchase option agreement under which ATEX has optioned Valeriano; the data that describes the legal status, rights, obligations, dimensions and coordinates of the mineral claims; and, the need for and status of agreements and/or permits required to access and undertake activities on the property.

3.1 Mining Property Tenure

The author is not competent to comment on the ownership rights of the Valeriano concessions but has relied on a "Title Opinion", dated October 4, 2019, prepared by Antonio Ortúzar V. of Baker McKenzie, ATEX's legal counsel in Santiago, Chile. The author has viewed the "Certificada de pago's" for the concessions noting payment of the annual fees for 2020 which maintain the Valeriano exploitation concessions in good standing until March 2021 and exploration concessions in good standing until May 2021.

The author has been informed by ATEX that, to the best of its knowledge, there are no current or pending litigations, easements or other encumberances that may be material to the exploration and development of the Valeriano assets.

Raymond Jannas, President and CEO of ATEX assumes full responsibility for statements on mineral title and ownership as disclosed in Section 4 of this report.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Property Location

The Project is located in the Andes Mountains approximately 125 km to the southeast of the City of Vallenar, Atacama Region, Chile and 27 km northeast of Barrick's Pascua Lama Project. The eastern and southern boundaries of the Property are located approximately 5 km and adjacent, respectively, from the Chilean – Argentinian border.

The Property is located in the headwaters of the Valeriano River Valley at elevations from 3,800 to 4,400 masl.

The coordinates of the center of the Project are 6,779,000 North and 415,000 East (PSAD 56, UTM zona 19S, datum La Canoa), which correspond to latitude and longitude 29°06'51''S and 69°52'25''W respectively (Figure 4.1).

4.2 Mineral Rights / Land Tenure

The Project consists of 15 exploitation concessions registered to Sociedad Minera Contractual Valleno ("SCM Valleno") totalling 3,705 hectares and two exploration concessions, of 100 hectares each, registered to R. Araneda Gonzalez all of which are currently valid and in good standing. The total area covered by the concessions, excluding overlapping concessions, is 3,795 ha. Concession details are listed in Table 4.1 and shown in Figures 4.2 and 4.3.

Under the mining laws of Chile, exploitation concessions can be held in perpetuity provided that the appropriate annual payments have been made. There is no requirement that the property be put into production within a specified time frame, there are no minimum work or investment commitments, and there is no requirement to reduce concession sizes over time.

Payments to maintain exploitation and exploration concessions are made annually in March. The Property payments, as made to date, will maintain the Valeriano exploitation concessions in good standing until March 2021 and exploration concessions in good standing until May 2021. The total cost to maintain the exploitation and exploration concessions is estimated to be approximately Ch$ 18,500,00 (approximately $31,000) annually. Prices are calculated using local tax (UTM) and inflation based (UF) indices that vary daily and thus cannot be calculated exactly.

The corners of exploitation concessions are marked in the field by cement monuments surveyed and erected by an authorized surveyor and appropriately inscribed.

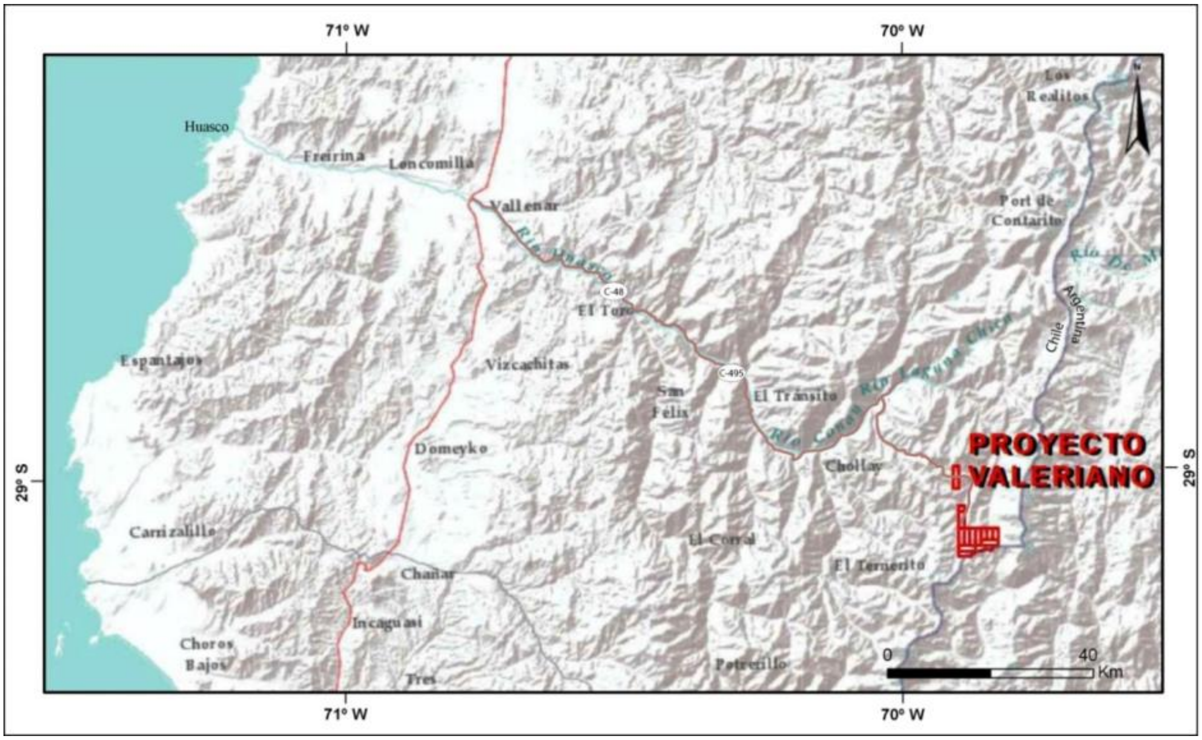


Figure 4.1 Location of the Valeriano Project

Table 4.1 Valeriano Property Concessions

Ident. #	Name	Owner	Area	Survey Inscription ID			SCM Valleno Domain Inscription			Status
			ha	pages	#	Yr				
03304-0080-3	BRANDY 1/30	SCM Valleno	300	20	10	1989	297	71	2010	Constituted
03304-0081-1	DANKO 1/30	SCM Valleno	300	25V	11	1989	298	72	2010	Constituted
03304-0082-K	ASJA 1/20	SCM Valleno	200	29V	12	1989	299	73	2010	Constituted
03304-0128-1	ALONDRA 1/30	SCM Valleno	300	0273V	115	1990	309	83	2010	Constituted
03304-0198-2	BAKER 1/30	SCM Valleno	300	0201V	75	1991	300	74	2010	Constituted
03304-0199-0	BIO-BIO 1/30	SCM Valleno	200	258	85	1991	307	81	2010	Constituted
03304-0200-8	CALLE-CALLE 1/20	SCM Valleno	200	264	86	1991	308	82	2010	Constituted
03304-0201-6	HUASCO 1/20	SCM Valleno	200	0240V	82	1991	304	78	2010	Constituted
03304-0202-4	MULCHEN 1/30	SCM Valleno	300	246	83	1991	305	79	2010	Constituted
03304-0203-2	PALENA 1/27	SCM Valleno	246	0217V	78	1991	302	76	2010	Constituted
03304-0204-0	PASCUA 1/30	SCM Valleno	300	212	77	1991	301	75	2010	Constituted
03304-0205-9	SALADO 1/20	SCM Valleno	200	0252V	84	1991	306	80	2010	Constituted
03304-0206-7	YELCHO 1/28	SCM Valleno	259	224	79	1991	303	77	2010	Constituted
03304-0242-3	TOLITA I 1/10	SCM Valleno	100	189	73	1991	310	84	2010	Constituted
03304-0243-1	ESTEBAN I 1/30	SCM Valleno	300	230	80	1991	311	85	2010	Constituted
0330447075-5	ESCONDIDO 2	R. Araneda Gonzalez	100	694V	343	2018				May 2021
0330447076-3	ESCONDIDO	R. Araneda Gonzalez	100	696V	344	2018				May 2021
		Total Hectares	3,905*							

- Total area encompassed by property boundary is 3,795 ha taking into account overlapping concessions

4.3 Surface Rights

The Project´s surface area, as shown in Figure 4.2, is part of Estancia Valeriano and is controlled by private individuals. The access road to the Project cuts through the Los Sauces and el Morado farms owned by Mr. Domingo Vargas. ATEX will need to negotiate agreements with the owners of the surface rights in order to access and explore the Property. Currently, it is understood that Antofagasta has agreements to access and explore the contigous El Encerrio property using the same roads. Previously, Hochschild and Barrick had access agreements with the same surface owners. ATEX is currently negotiating access rights to Valeriano.

A local indigenous group, the Huasco Altinos, has established a private nature reserve, located to the west of Valeriano as shown in Figure 4.2 (shaded orange area).

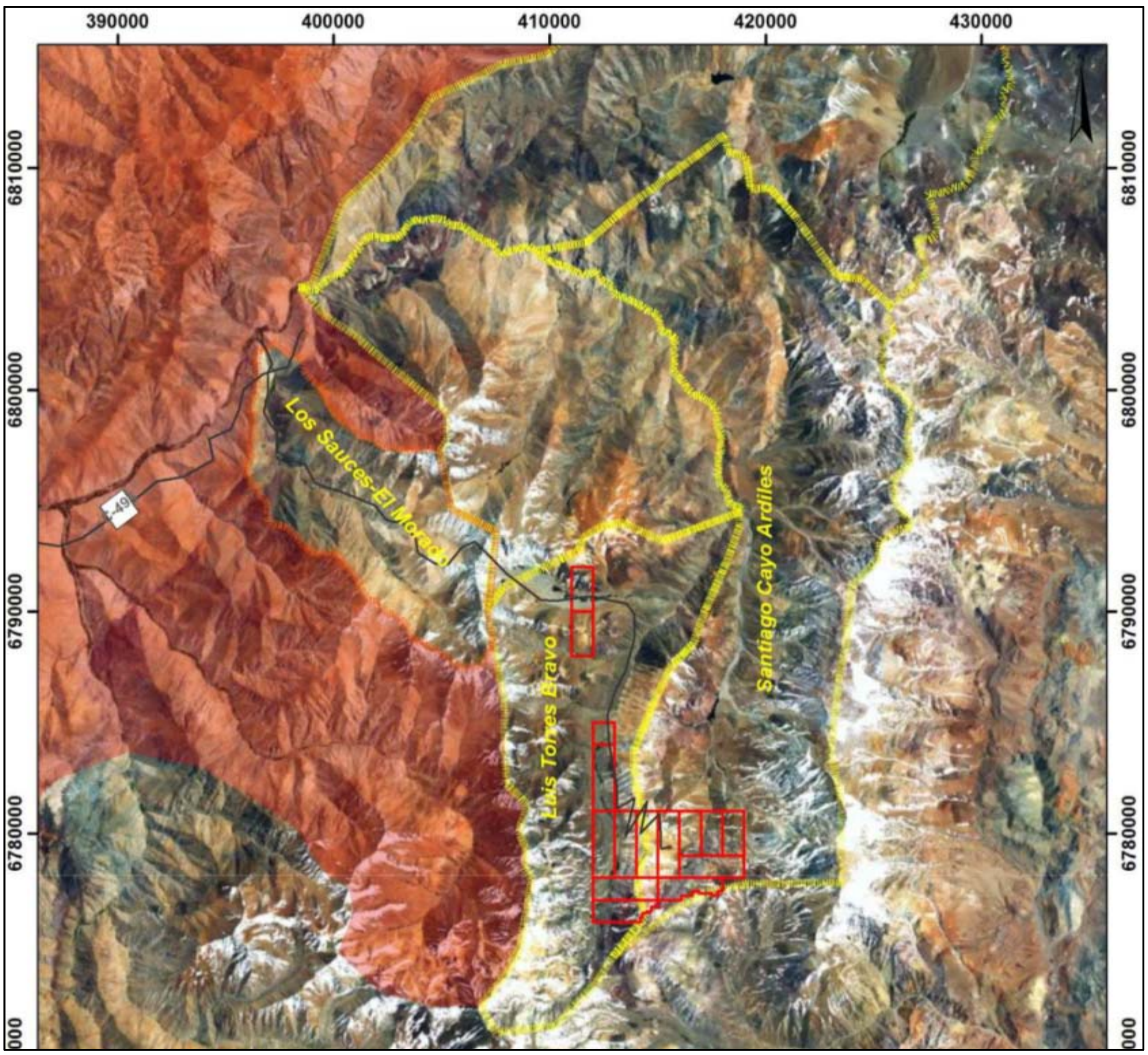


Figure 4.2 Overlying Surface Area Ownership (yellow outline)
Valeriano Property Concessions (red outline)
Huasco Altinos Private Nature Reserve (shaded red area)

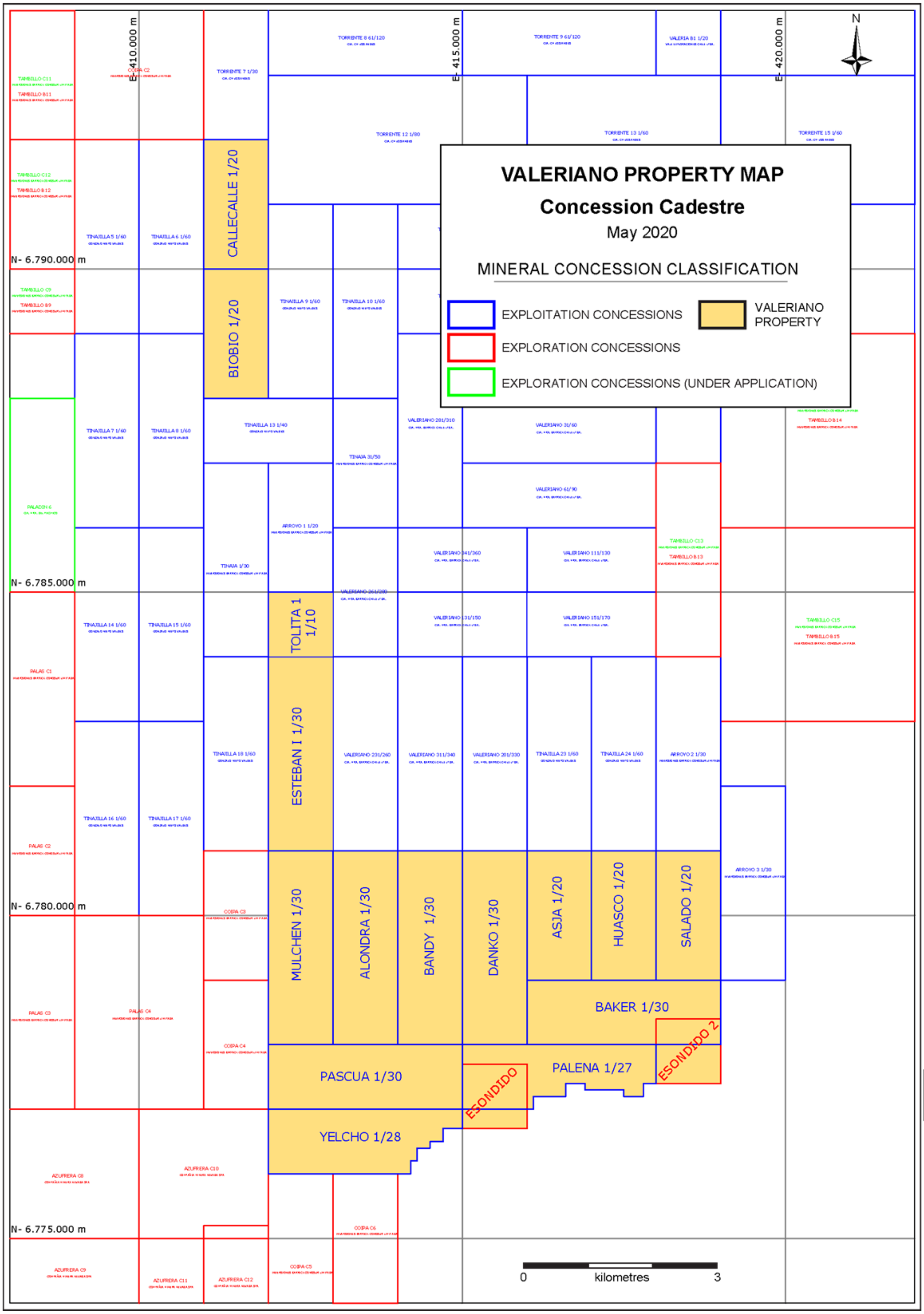


Figure 4.3 Valeriano Property Concessions

4.4 Underlying Agreements

On August 29, 2019, ATEX entered into an option agreement with SCM Valleno to earn up to a 100% interest in the Valeriano property in consideration of payments of $12,000,000 and undertaking work commitments of $15,000,000 over a four year period, including 8,000 m of drilling by August 29, 2021, and a 2.25% net smelter royalty.

On January 15, 2020, ATEX and SCM Valleno revised the option agreement, extending the terms the agreement over a five year period as noted in Table 4.2. The cash payments were increased such that US$12,400,000 in total cash payments are due prior to August 2024.

Under a transfer and assignment agreement, SBX Asesorías e Inversiones Limitada transferred rights it had negotiated with SCM Valleno to acquire the Valeriano property, to ATEX in consideration of a cash payment $150,000, 2.0 million ATEX Units and a net smelter royalty of 0.25%. Each ATEX Unit is comprised of one common share and one full warrant exercisable at C$0.40 for four years.

Table 4.2 Total Consideration for the Option of the Valeriano Project – *2020/01/15 Revision*

	Cash (US$)	ATEX Units	Work Commitments	Ownership Earned
On Signing *(2019/08/29)*	$350,000	-	-	-
Upon start of drilling	$300,000	1.0 million [1]	Nil	-
August 29, 2021	$250,000	Nil	Nil	-
August 29, 2022	$3,500,000 [2]	1.0 million [1]	$10,000,000 [4]	49%
August 29, 2023		Nil	Nil	-
August 29, 2024	$8,000,000 [3]	Nil	$5,000,000	100%
Totals	**$12,400,000**		**$15,000,000**	**100%**
NOTE: Total consideration includes a NSR of 2.5%.				

1. *The issuance of Units will be delayed if their issuance results in the creation of an Insider until such time as the issuance does not create an Insider.*
2. *50% of the payment may be made in shares of ATEX at the option of the Company.*
3. *50% of the payment may be made in shares of ATEX at the option of SCM Vallero.*
4. *Including 8,000 metres of drilling*

4.5 Environmental Liabilities

Previous exploration work, commencing in 1989, comprised largely trenching and drilling along with the construction of roads and drill pads. Notwithstanding this, it is the author’s understanding that there are no environmental liabilities for ATEX providing that ATEX can demonstrate that any impacts were caused by previous operators. This should be verified by ATEX’s legal counsel.

4.6 Permits

Based on precedent, it is anticipated that an Environmental Impact Declaration (“EID”) will not be required to conduct ATEX’s planned exploration drilling activities, however, ATEX may need to submit a “Carta de Pertinencia” (essentially an EID waiver request), accompanied by an environmental management plan (plan de manejo ambiental) to the Servicio de Evaluacion Ambiental (“SEA” the regional environmental evaluation service) which must certify that activities proposed by ATEX does not require an EID or Environmental Impact Study ("EIS"). Once granted, the waiver must then be presented to SERNAGEOMIN, the Chilean National Mining and Geology Service, in order to obtain approval to install a fixed camp and undertake earth moving and drilling activities (Activity initiation approval or "Iniciacion de Actividades"). With receipt of a Carta de Pertinencia (if required) and the Iniciacion de Actividades, a company can build access roads and drill up to 40 drill holes in the Atacama Region before requiring an EID.

ATEX has informed the author that permits to extract water are not required because the water will be purchased from the surface rights holders, who are either the owners of formal water rights, or by virtue of their surface rights ownership are entitled to extract water.

4.7 Risks and Uncertainities

As discussed in Section 4.3, ATEX has stated that it is in negotiations with the owners of the surface rights in order to access and explore the Property. While historically, the owners of the surface rights signed agreements with the previous exploration companies, the outcomes, terms and timing of future negotiations between the surface rights owners and ATEX cannot be guaranteed.

The "Carta de Pertinencia" (Section 4.6) and accompanying environmental management plan submitted by Hochschild for its drilling program received a favourable ruling from the SEA and an environmental impact declaration (EID) was not requested. While there have been no material changes in the project since then, the criteria and judgement of the current environmental regulators is not known and the same outcome cannot be assured. If required, a baseline environmental study and accompanying Carta de Pertinencia should be commissioned as soon as possible as no drilling can be conducted until such approval is received. In the case that the SEA does requests an EID the possibility of conducting drilling during the 2020-2021 summer will be severely reduced and may require rescheduling for the 2021-2022 summer.

As in most exploration jurisdictions around the world, the eventual granting of a "Carta de Pertinencia" that will allow exploration drilling (Section 4.6) will apply specifically to the type and duration of activity as presented to the authorities, and in no way guarantees the granting of future permits to further explore, evaluate and or develop a mine at the site, which would require the submission and approval of environmental impact declarations (EID) and environmental impact studies (EIS).

Access to nearby water required for diamond drilling was previously negotiated with the owners of the surface rights over the Valeriano claims, as part of the access agreements. As per the first paragraph above, such access cannot be assumed. Although more distant and hence more costly alternatives exist, it is important that nearby water supplies be secured as soon as possible.

The Huasco Altinos (Section 4.3) have used their territorial claims and private nature reserve to hinder and halt the exploration and development of mineral projects that lie within their area of influence. To the best of the author's knowledge, to date there has been no confrontation between the Huasco Altinos and the previous explorers of Valeriano, nor Antofagasta Minerals who are currently exploring the adjacent El Encierro project, in part because the projects lie outside of the areas controlled by the Huasco Altinos. However, as in most areas of Latin America and the world in general, an attempt by the Huasco Altinos or other opponents to mining to hinder or obstruct exploration at Valeriano cannot be ruled out, particularly if and when the project is required to submit an impact statement, that will require a public consultation.

The outbreak of the novel strain of coronavirus, specifically identified as "SARS-CoV-2" and commonly referred to as "Covid-19", has resulted in governments worldwide, including Chile, enacting emergency measures to combat the spread of the virus. These measures, which include the implementation of international, regional and local travel bans, curfews, enforced quarantine periods and social distancing, have caused material disruption to businesses globally resulting in an economic slowdown. The duration and impact of the COVID-19 outbreak is unknown at this time. It is possible that ATEX could incur delays in planned exploration activity, impacting its ability to meet obligations under current regulations or its agreements and may reduce its ability to source financing for future activities. However, at this time it is not possible to reliably estimate the length and severity of these developments and their impact on the Company in the future.

4.8 Comments on Section 4

With respect to Environmental Liabilities, the author recommends that all previous exploration activities be photographically documented by a notary public and, if appropriate, by the environmental consulting firm used to prepare the Carta de Pertinencia (Section 4.6). Concerning community and land owners relations, a single point of contact and engagement policy should be established for ATEX and a full register should be maintained of all interactions and their outcomes, including written, telephone and face-to-face conversations and meetings, both formal and informal. Local news and websites should be monitored for reference to the project, favourable or otherwise. ATEX should confirm the limits and legal status of the Huasco Altinos reserve and other claims.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Access Roads

Valeriano is accessed from the City of Vallenar, Chile by a combination of good two lane paved roads and then variable gravel roads and takes approximately four hours to cover the 151 km.

Directions to the property are as follows: from Vallenar travel southeast (Route C-48) to Alto del Carmen, approximately 42 km from Vallenar and turn-off onto Route C-495 to El Tránsito for 28 km. From El Tránsito follow the road for 37 km until reaching the village of El Corral. Routes C-48 and C-495 are state-owned and maintained as far as Corral. From El Corral, turn SE passing by a bridge (in regular condition) and follow a private gravel road for 44-km to the site.

The road between the El Corral turn-off and the Hacienda Valeriano, and the access road within the Hacienda and leading to the western side of the project are both on privately owned land. Drill-roads to the eastern side of the project are also on private land. The drill-roads were constructed and maintained by previous exploration companies and will require rehabilitation before drilling activities can commence. ATEX will have to negotiate with the local surface rights owners to obtain surface access for rehabilitation, drilling and camp instalation. The access roads are shown in Figures 4.1 and 4.3.

5.2 Climate

Precipitation consists largely of snow during the Andean winter months of May through September, with rare, but intense, rain storms of short duration occurring during the summer months from January through April. Precipitation in this part of the Andes averages less than 200 mm (Nunez, et al. 2011) while evaporation from surface water and soils varies between 1,500 to 2,000 mm/yr (Bartlett, et. al., 2004) resulting in the extremely arid conditions.

Local wildlife is sparse although a variety of birds, reptiles, foxes and guanaco may occasionally be encountered. The typical exploration field season at these elevations is from approximately November through April, or a duration of 5-6 months. However, advanced programs and mines in the area operate year round.

Because of the high altitudes, extremely strong winds frequently can develop in the afternoons and evenings. White-outs and lightning storms, termed the "Bolivian Winter", which can create hazardous conditions, may occur during the summer months. The average annual temperatures are on the order of 11^{o} C and ranges between -30^{o} C at night in the winter months to 20^{o} C during the summer months.

5.3 Local Resources and Infrastructure

Apart from small villages and a basic medical post and police station in Conay, 58 km from the Project, there is no infrastructure or emergency services in close proximity to Valeriano. Sufficient resources and infrastructure to support exploration and mining operations are found in Vallenar (population aprox. 52,000) including fuel, hospital, mining logistic services and an airfield suitable for private and charter aircraft. The closest commercial airports are at La Serena (196 km S) and Caldera (200 km N). The closest port is Huasco, 150 km NW of Valeriano, owned and operated by Compañía de Acero del Pacífico (CAP) a local iron ore exporter.

Electric power is not available at site. While domestic electricity is available at La Juntas de Valeriano, it is not sufficient for a mining operation. Grid power is currently available at power stations in Maintencillo located 120 km NE and Punta Colorada, 115 km SW of the Project. A new high tension transmittion line is planned to the nearby El Morro-Fortuna deposit of the Nueva Union project, however access to this power cannot be guaranteed.

There is no telephone coverage available at the site and satelite communications and repeater stations will need to be contracted for the exploration campaign.

In the past, water for drilling purposes was supplied by Mr. Luis Torres Bravo, owner of water rights associated with the Cajón El Encierro, and Mr. Santiago Cayo, owner of the water rights of the headwaters of the Valeriano River. ATEX will have to negotiate an agreement for the purchase of water and truck water for its planned drilling program. Hochschild successfully negotiated water purchase agreements with land owners in the area.

5.4 Physiography

Local physiography in the vicinity of the project is alpine in character and consists of a series of abrupt, NS-trending mountain ranges with high peaks ranging from 4,000 to 6,168 m.

The area is dominated by glacial geomorphology, in particular the “U” shaped valleys of Cajón el Encierro and Rio Valeriano, moraines, cirques, and lakes as shown in Figure 5.1. There are no glaciers in the immediate project area although minor rock glaciers or zones of permafrost may exist. Soils are poorly developed to non-existent within the area dominated by talus and scree.

Water from both valleys drains north and then southwest, as tributaries of Río El Tránsito, which in turn is a tributary of the Huasco River.

Vegetation consists mainly of sparse spinifex grasses in the valleys and on mountain slopes, and local zones of bog near accumulations of water or watercourses.

5.5 Comments on Section 5

There is a substantial active mining industry in northern Chile and qualified mining personnel should be available in the area. As discussed in Section 5.3, the nearest power stations are in Maintencillo located 120 km NE and Punta Colorada, 115 km SW of the Project. Depending upon the size of any potential mining operation, water may be sourced from local aquifers or, more likely in the case of a signficant operation, desalinated water could be piped from the Pacific Ocean located 150 km to NW. The closest port facilitiy is located at Huasco, 150 km NW of Valeriano, owned and operated by Compañía de Acero del Pacífico (CAP).

The concession area is considered sufficiently large, and includes enough gently sloping areas, to host required infrastructure, including underground operations, processing plant, tailings facilities, and waste rock storage. Notwithstanding, surface easements within this area will need to be obtained through negotiation or the courts to allow construction. It is reasonable to expect that these, and if need be additional surface rights, can be obtained through existing and known processes, although this cannot be guaranteed.

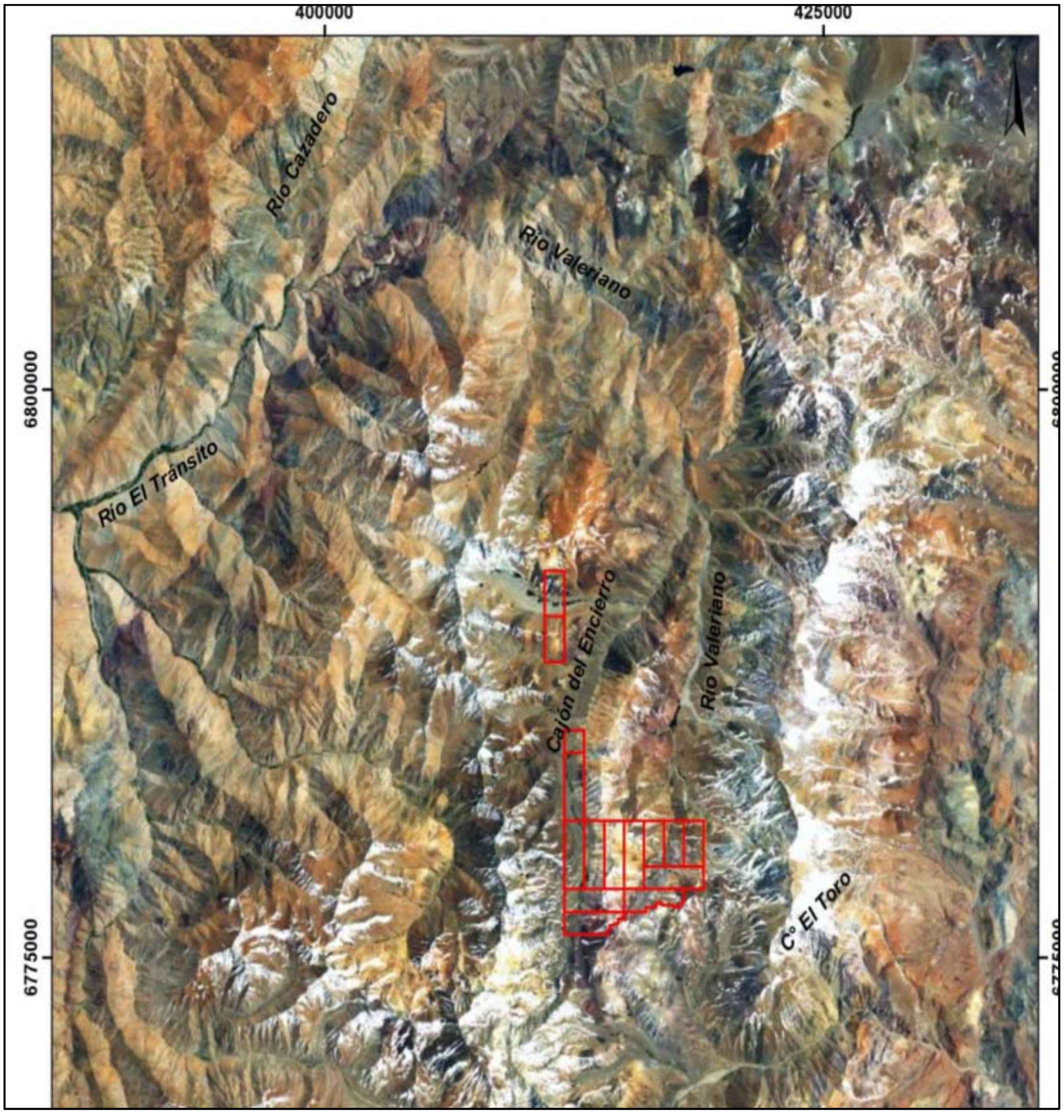


Figure 5.1 Valeriano Project Physiography Map

6.0 HISTORY

Information regarding the details of pre-Hochschild exploration activities is limited. The majority of these activities were focused on exploring for near-surface high-sulphidation gold mineralization similar to that found elsewhere in the El Indio Belt. Surface sampling by previous explorers was largely confined to the altered and locally brecciated volcanics and identified a number of target areas for drilling as shown in Figure 7.3. The sampling methodology is unknown.

As noted in Table 6.1, drilling campaigns were undertaken by Phelps Dodge (diamond and RC) and Barrick (RC) which identified high-sulphidation epithermal gold mineralization in the Central Zone and South Breccia areas, however, the size and continuity of the epithermal mineralization was limited and exploration was discontinued. The Hochschild drilling program focused initially on the near-surface epithermal mineralization but targeted a deep-seated Cu-Au-Mo porphyry system as exploration progressed. Total meters drilled are based on assay databases provided by Phelps Dodge, Barrick and Hochschild. Information regarding assaying, geophysics and additional studies were obtained from available reports written by Ambrus, Barrick and Hochschild duly cited in the text and referenced in the appendices. Drill hole locations are shown in Figures 10.1 and 10.2.

6.1 Pre-1989 Exploration Activities

The first reported work in the vicinity of Valeriano was mapping and geochemical sampling in 1983, by Carlos Llaumet of behalf of CIDEF Limitada in Caracolito (north of Valeriano) and EXXON Minerals SW of the Valeriano Tarn (close to Caracolito). Both studies reportedly had negative results although the reports are not available (pers. Comms R. Araneda) Table 6.1 shows the work completed on the property since 1986 as summarized from various reports provided to ATEX by the SCM Valleno.

1986 – Jozsef Ambrus

In early 1986, Jozsef Ambrus carried out a preliminary reconnaissance of Rio Valeriano describing siliceous veinlets in outcrops and talus samples, vuggy silica with enargite-scorodite and siliceous sinters with native sulphur-alunite-jarosite. Twenty selected (grab) geochemical samples were collected from outcrop and float. It is reported that all samples returned Au assay results above 0.1 ppm, ten samples had values above 1 ppm and one sample returned 7 ppm.

In view of these results, J. Ambrus acquired exploration concessions in the area and carried out additional studies by the end of 1986, including surface mapping and geochemical sampling of 53 talus and 14 in-situ hand samples. As reported in "Preliminary Report on the Rio Valeriano Prospect, Atacama Region, Chile –J. Ambrus, Diciembre 1986", "An area of roughly 300 x 200 mts was found to be strongly anomalous in Au, Ag, Cu and As." By the end of the study, J. Ambrus defined three breccia zones of interest and recommended road construction, further systematic geologic-geochemical studies and a drilling campaign.

1988 – Rayrock

SCM Valleno reports that Rayrock carried out detailed surface mapping as well as trenching (720 samples) and geochemical assays of talus fines samples (403 samples). Reports and results from the sampling program are not available.

Table 6.1 Summary of Exploration Activities at Valeriano *(from SCM Valleno)*

Company	J.Ambrus	Rayrock	Phelps Dodge	Newmont	Barrick	Hochschild	Totals
	1986	*1988*	*1989-1991*	*1993-1994*	*1995-1997*	*2010-2014*	
Drilling							
DD			2,902.7			14,269.7	17,172.4
RC			3,500.0		6,175.0		9675.0
Total Drilling			6,402.7		6,175.0	14,269.7	26,847.4
Sampling							
Talus	53	403			521		977
Rocks					124	128	252
Chips	54		27		48		129
Trench		720	961	450	664		2,795
Geophysics							
IP – km					15.3	36.0	51.3
Mag - km				32.0	51.7		83.7
Mapping	X	X	X	X	X	X	
Special Studies							
Petrography		X		X	X	X	
Fluid Inclusions					X		
SWIR analysis						X	
Dating					X	X	

6.2 Phelps Dodge Drilling Program – 1989 to 1991

Phelps Dodge carried out a major drilling campaign during two consecutive exploration seasons from 1989 to 1991 completing 6,402.7 m of drilling in 27 drill holes (9 DDH and 18 RC drill holes) as well as surface mapping and geochemical sampling. Hand written drill logs with assays are available.

From the diamond drill logs available from the Phelps Dodge drilling, it is apparent that the core was appropriately logged by hand with geology, alteration type and intensity, veining type and intensity, mineralization and structure recorded. Notes on the observed geology and mineralization were written and other features were graphically recorded (drawn) down vertical column representing the drill core. Assay results were recorded by hand on the logs.

The size of the diamond core drilled is not recorded. The nine diamond drill holes were oriented between N36W and N45W and typically drilled at an angle of -50 although DDHV-6 was drilled at -80.

The Phelps Dodge diamond drill core is currently stored at Vallenar in wooden boxes which are considerably deteriorated due to exposure to the elements. The core should be transferred to new core boxes.

The Phelps Dodge RC drilling program continued where the diamond drill program left off. Again, little information on the drill program is available other than handwritten drill logs which are a simpler version of the diamond drill logs with brief notes on the geology along the side and a graphic representation of the alteration type and mineralization type and intensity drawn on vertical columns representing the drill core. Assay results were recorded by hand on the logs.

The RC drill holes were oriented in a NW, NE or SE direction and various inclinations from -50 to vertical.

Figure 10.1 shows the location of the Phelps Dodge drilling in relation to the areas of interest.

6.3 Barrick Drilling Program – 1995 to 1997

There is little information regarding the Barrick drilling program. The program comprised of 6,175.0 of RC drilling in 20 holes focused on the near-surface epithermal gold mineralization in the Central Zone and South Breccia areas which had not be drilled by Phelps Dodge as shown in Figure 10.1.

6.4 Hochschild Drilling Program – 2011 to 2013

Hochschild commenced drilling activities in late 2011 completing 14,269.7 m of diamond drilling in 16 drill holes over 3 consecutive field seasons (Hochschild Mining, 2013). Drilling activities were completed initially by Superex Drilling and later by Griffith Drilling, La Serena, Chile, both professional drilling firms with 20 and 30 years' experience, respectively, in Chile. The Griffith drilling was done using RBS 1800 diamond drills which are capable of drilling NQ (47.6 mm diameter) core to a depth of 2,300 m. It is reported that the deep drill holes were initial cored with HQ (63.5 mm diameter) and reduced to NQ when drilling became difficult. It is further reported that one of the deep holes was reduced to BQ (36.4 mm diameter) at depth. Although the core diameter was recorded in daily drill reports provided to Hochschild, these records are not currently available to ATEX.

The drill hole collars were located by GPS and later surveyed after the hole was completed. After a drill hole was completed, the collar was cased with PVC or casing and the casing cemented in place. Downhole surveys were carried out by Comprobe, a professional drill hole survey company based out of Copiapo, Chile, using a Surface Recording Gyroscope. Drill hole strike and dip were recorded in the drill hole database at 5 m intervals.

Core was drilled in 3 m runs, extracted from the drill hole using a wireline and core tube system, and placed in wooden core boxes. Cut wooden blocks were placed at the end of each 3 m run to record the core depth. The core boxes were then transported by 4-wheeled vehicle to the Hochschild field camp, located on the Valeriano property, for logging and sampling.

Core was logged by Hochschild geologists. All relevant features were recorded including lithology, mineralization type and intensity, alteration type and intensity, vein types and paragenesis and structure. In addition to the geological features, spectral analyses (SWIR) for alteration identification using a TerraSpec spectrometer were recorded by a Hochschild geologist and interpreted using TSG software. Trained technicians recorded magnetic susceptibility measurements every two metres, as well as recovery and RQD. A proprietary Hochschild logging program was used for data capture. Excel spreadsheets recording all the logged information are available.

From a review of the core logs, core recovery was good throughout the drill holes with the exception of the first few metres of core due to the weathered and broken nature of the rock near surface.

Core boxes were appropriately labelled with hole number, start depth and finish depth, and the core photographed. The author last reviewed the Valeriano drill core in July 2019. The Hochschild drill core is currently stored in Vallenar in a fenced compound and is in good condition. However, the core boxes are stored on rudimentary pallets and exposed to the elements where they will eventually deteriorate. Consideration should be given to providing better protection.

Section 12.3 summarizes the drill core sampling procedures used by Hochschild.

Phase 1 - October 2011-March 2012: Hochschild drilled eight diamond drill holes (VALDD-001 to VALDD-008) totalling approximately 4,884.4 m.

Phase 2 - October 2012-January 2013: Four deeper diamond drill holes were drilled (VALDD-009 to VALDD-012), totalling approximately 3,687.0 m.

Phase 3 - February 2013-May 2013: Hochschild drilled four deep diamond drill holes totalling approximately 5,697.3 m plus a 1,206 m extension of VALDD-09 to a depth of 1,878 m.

Further details on the results of each phase of the drilling program are provided in Section 10.1. The location of the drill hole collars are shown in Figures 10.1 and 10.2.

6.5 Geophysics – Induced Polarization Survery

Between February and March 2011, 36 km of pole-dipole induced polarization was completed by Argali Geofisica E.I.R.L, Antofagasta on behalf of Hochschild and the following information in this Section is summarized from a report prepared by Argali (Jordan, J. 2011).

The IP data was acquired with a pole-dipole array and a dipole spacing of 200 m expanded through up to 22 separations (n= 1 to 22). With the large number of dipole separations (n=22), the depth penetration of the survey was expected to exceed 1000 m near the center of the line. A time-domain waveform with a frequency of 0.125 Hz (2 seconds) was employed. Eight lines totaling 36 km were surveyed. The GPS datum was WGS84, Zone 19S.

Contact impedances were moderate throughout most of the grid, and transmitted currents generally varied from 1.5 to 5 amperes. Signal-to-noise levels were generally moderate. Higher noise levels occurred in the conductive areas, where contact impedances were high, and at the deeper n-levels. Multiple readings were acquired on each dipole so that the decay curves could be manually edited in order to reduce noise. Accepted readings were then averaged. With this processing, repeatable chargeability data were acquired up to n=22, far in excess of the planned n=10. Consequently, the depth of penetration of the survey is greater than proposed.

<u>*Interpretation:*</u> The interpretation by Argali states "*The IP data outline a large anomalous chargeability zone measuring approximately 3 km long by 2 km wide… (as shown in Figure 6.1. Figures 6.2 through 6.9 show 2D resistivity inversion and 2D chargeability invesion pseudo sections) ...At depth, the chargeability anomaly appears to form a high-chargeability halo around a central zone with moderately high chargeabilities. A strong, deep conductive zone at over 400 m depth correlates closely with the center of the chargeability anomaly. A strongly resistive zone overlies the deep conductor. The shallow, resistive cap is associated with low chargeabilities, possibly indicating oxidation of the sulphide minerals.*

The resistivity and chargeability data outlined a large hydrothermal alteration system with the shallow high-resistivity zones characteristic of high-sulfidation alteration. The deep conductor and high chargeabilities at depth may be associated with porphyry mineralization, however, it should be noted that the IP results at depths in excess of 3,300 m elevation are questionable due to the limitation of the survey equipment used."

Drilling results appear to confirm that the highly resistive, low chargeability cap near surface reflects leached epithermal alteration and overburden. The doughnut-like high chargeability anomaly beneath this is probably reflecting the pyrite-rich “shell” in the upper parts of the porphyry alteration system, and the somewhat atenuated core – coincident with a subtle magnetic high – could be showing the dome-like apex of the porphyry system with deeper magnetite-bearing potassic alteration or relicts thereof.

In keeping with the interpretation by Argali, the deeper IP results are near the limits of depth penetration and cannot be considered reliable. Although the IP method successfully identifies the high-level epithermal alteration and the top parts of what is now known to be the porphyry related alteration system, it cannot reach the depths of current exploration and in no way detects the mineralised porphyry intrusive itself. A more sensitive IP system with greater depth penetration is still unlikely to reach the required depths and so would be of little assistance, although it could help better define the extent of mid to high-level alteration to the north and south of the areas already surveyed.

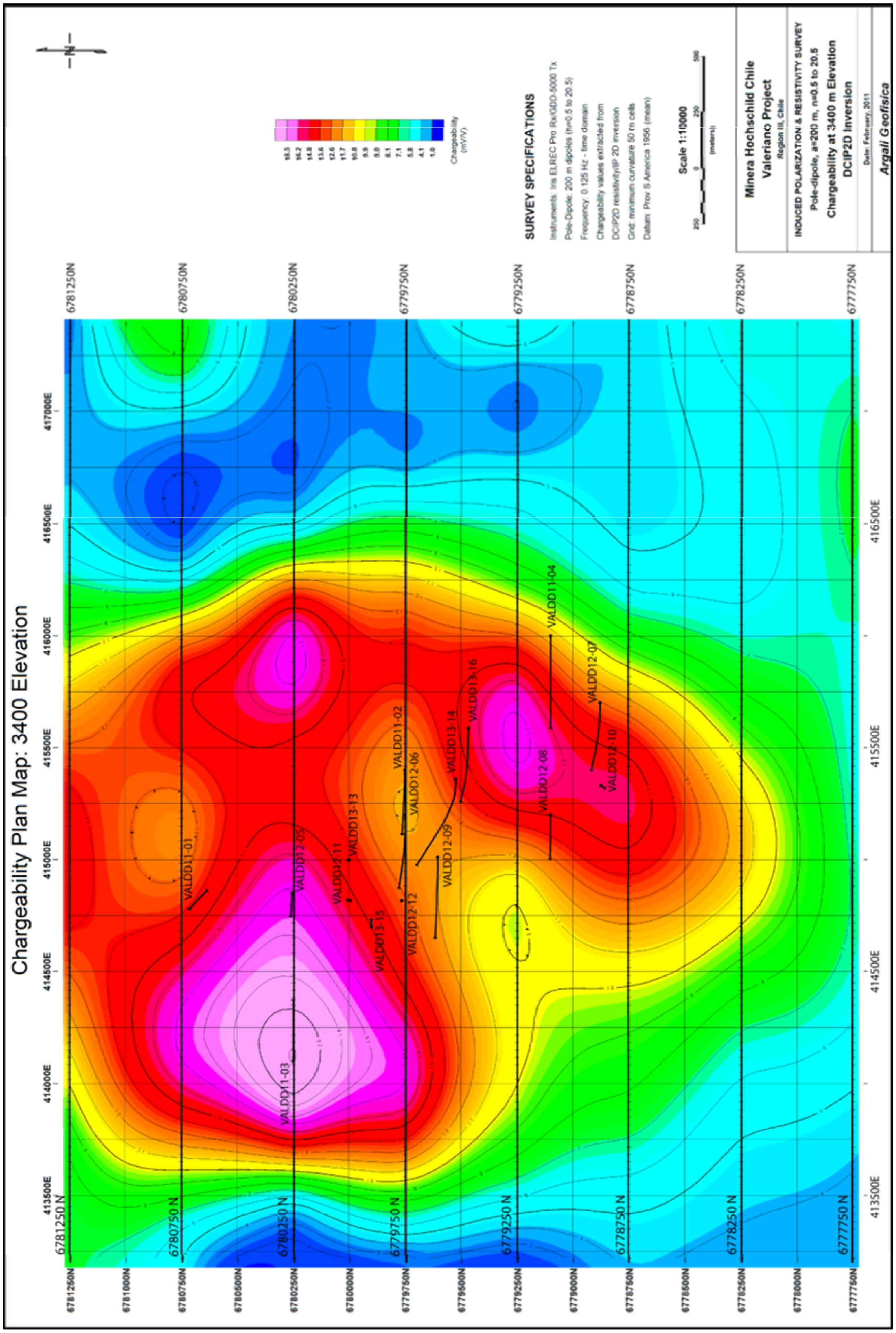


Figure 6.1 Chargeability Level Plan 3400 Elevation With Hochschild Drill Collars.

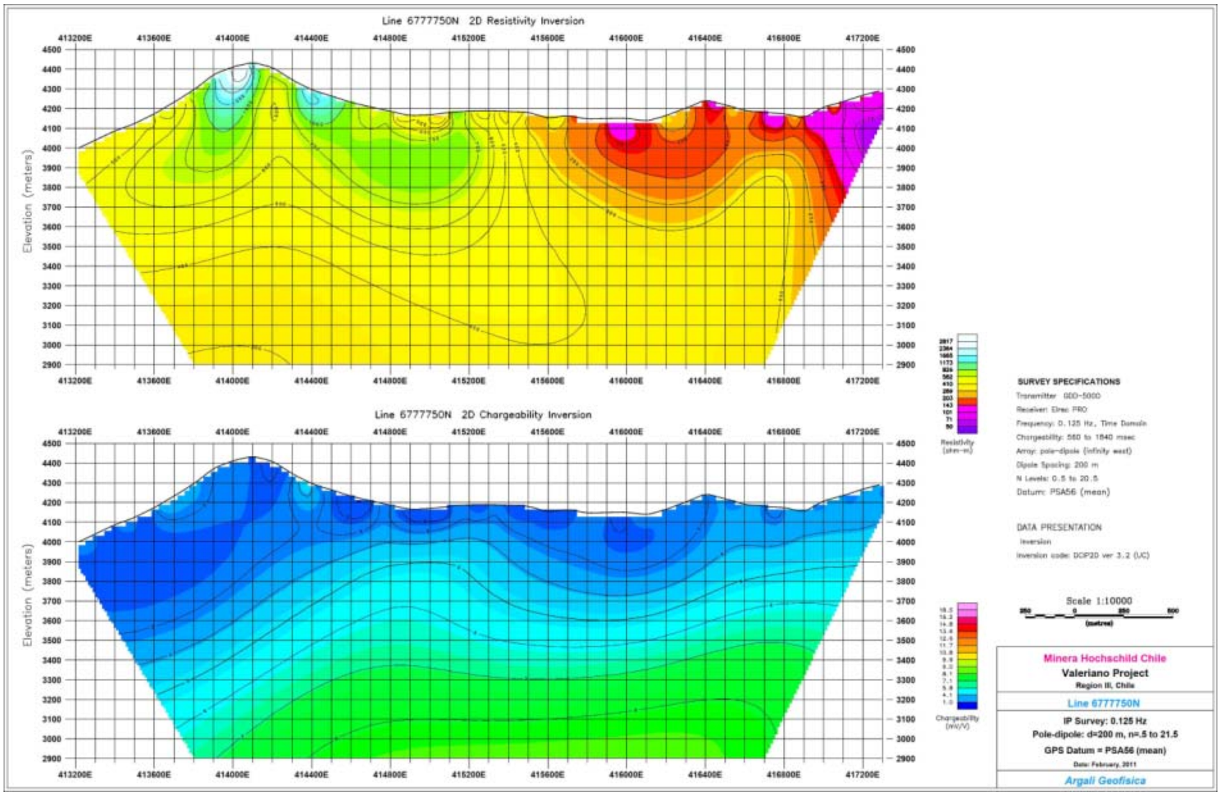


Figure 6.2 Line 6777750 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

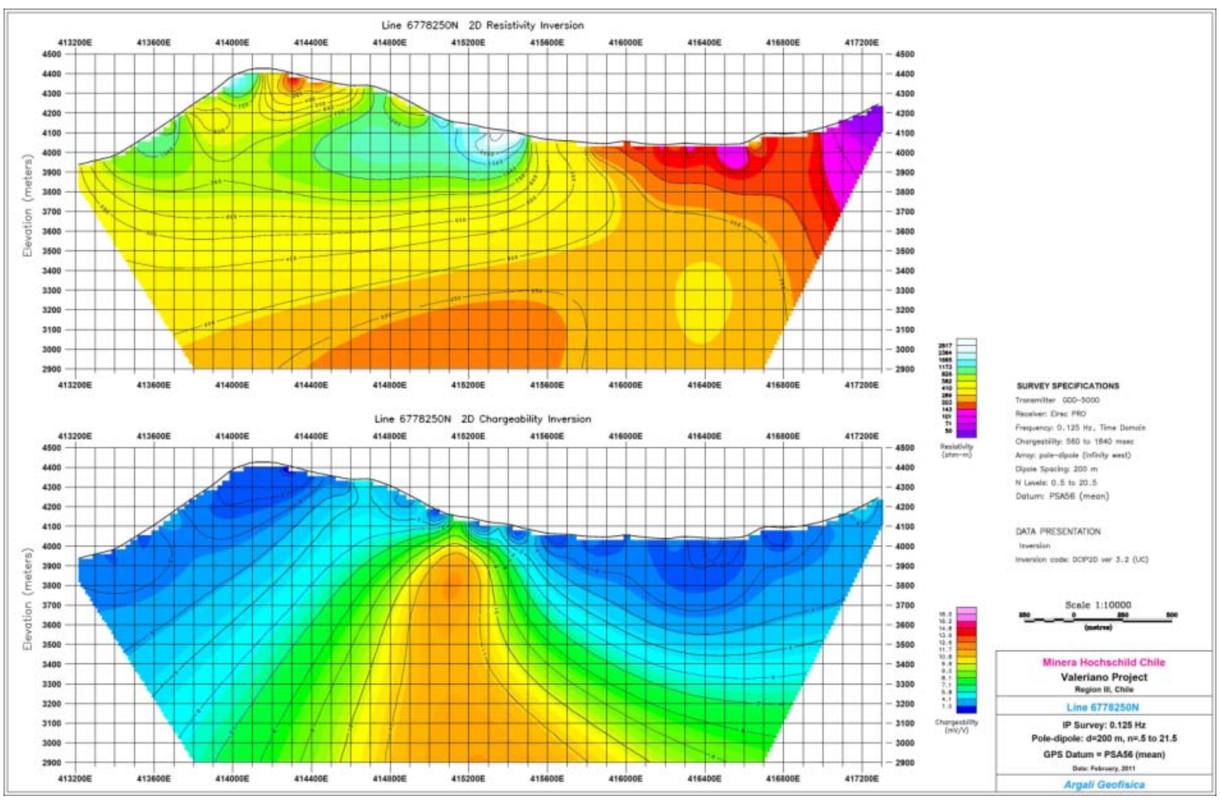


Figure 6.3 Line 6778250 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

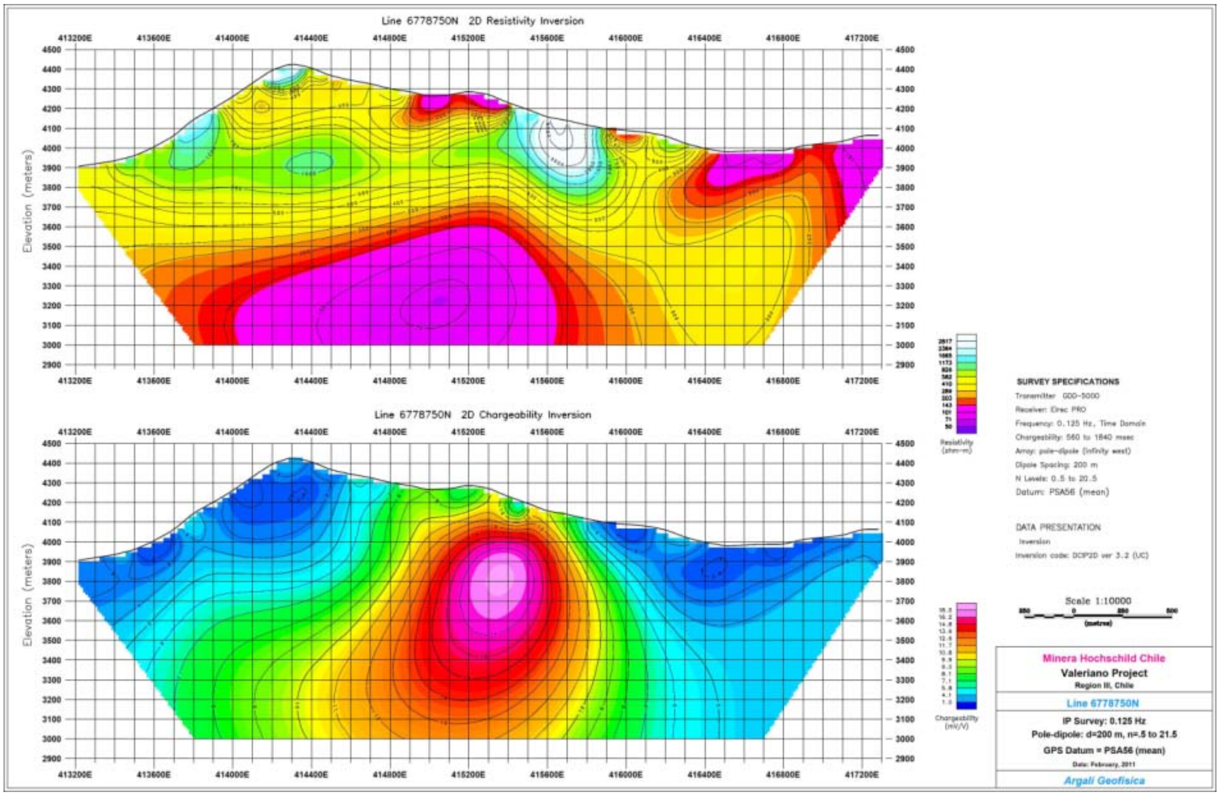


Figure 6.4 Line 6778750 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

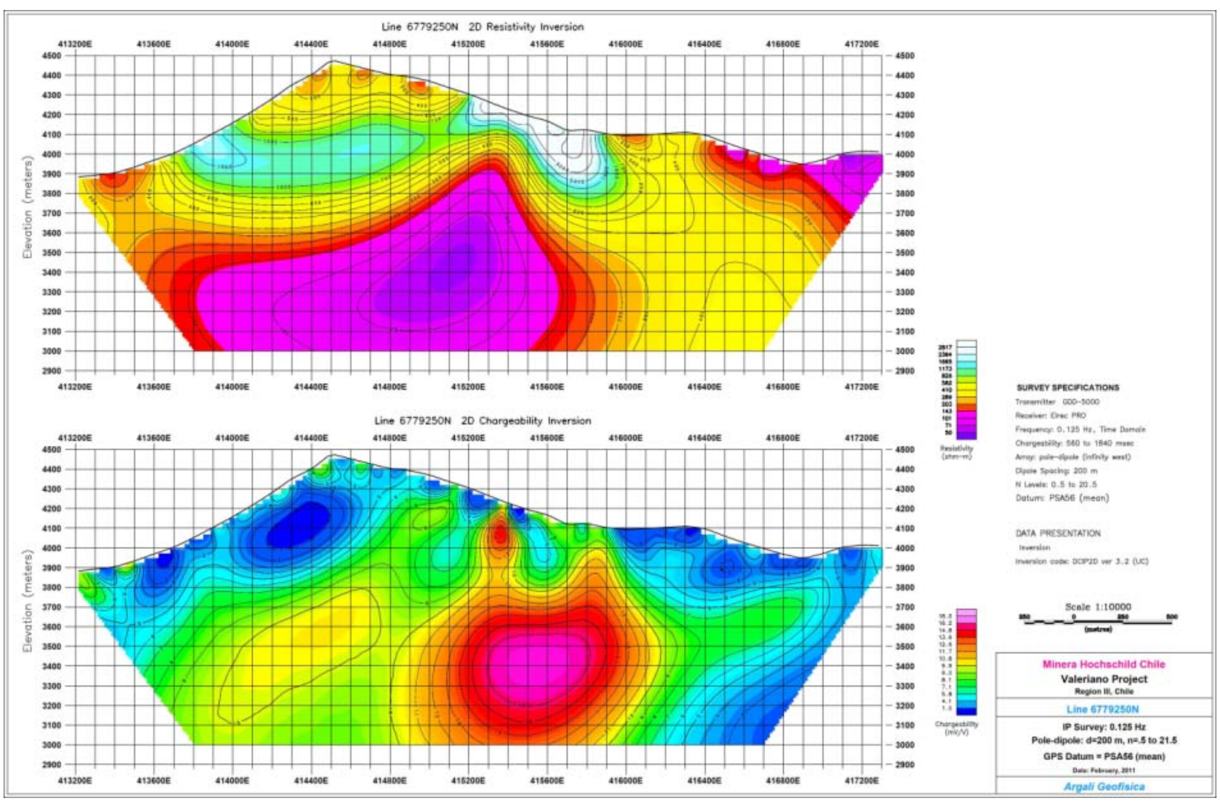


Figure 6.5 Line 6779250 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

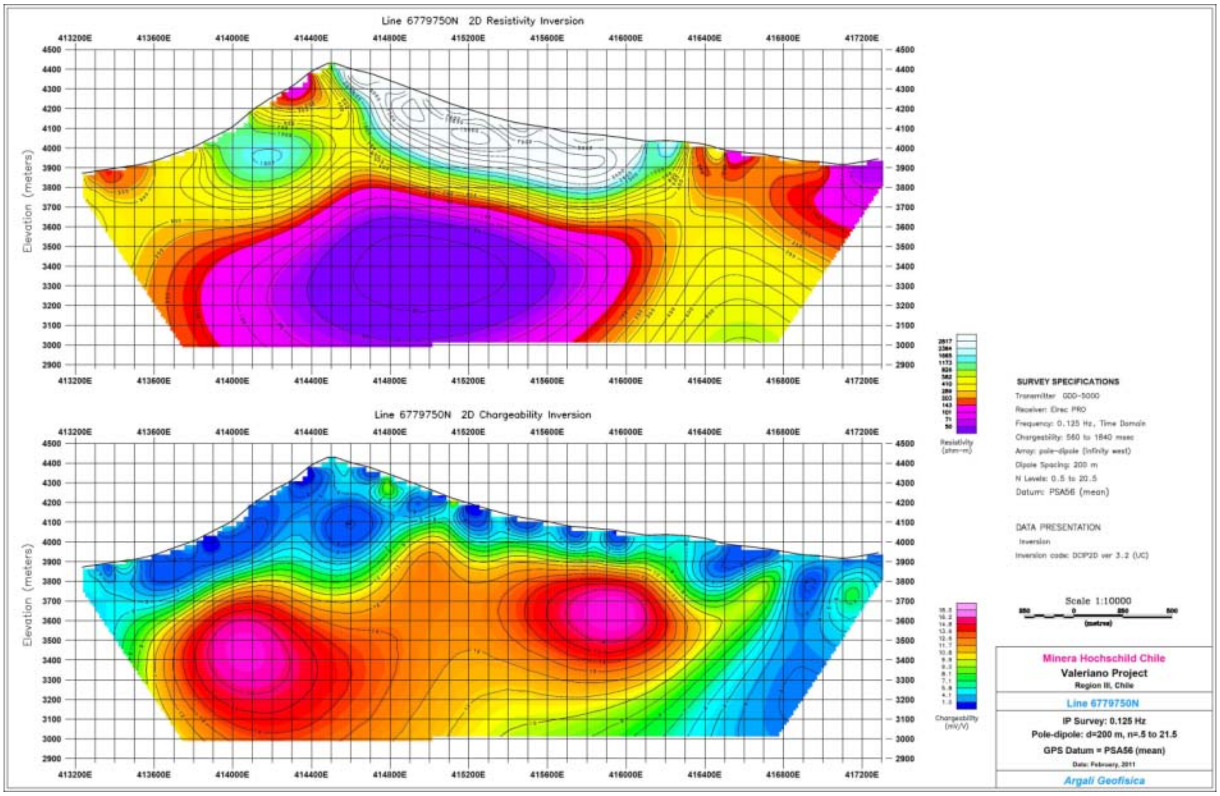


Figure 6.6 Line 6779750 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

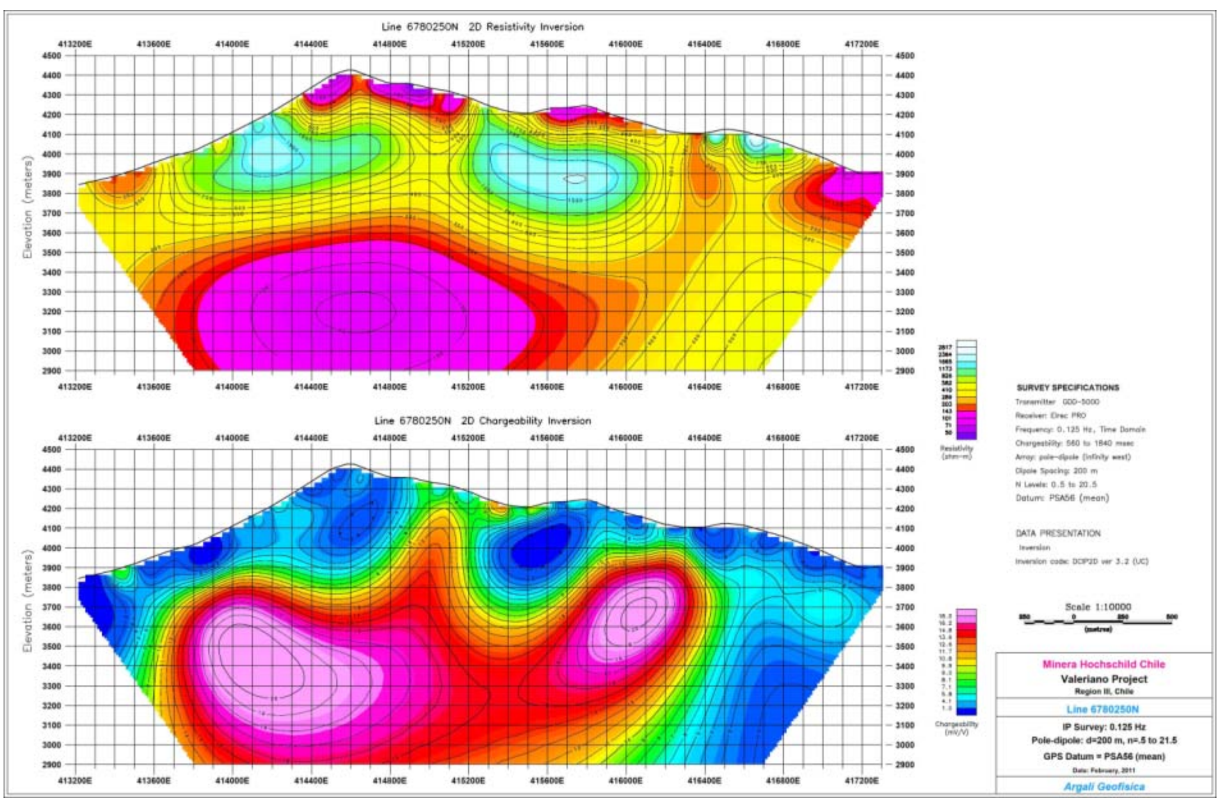


Figure 6.7 Line 6780250 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

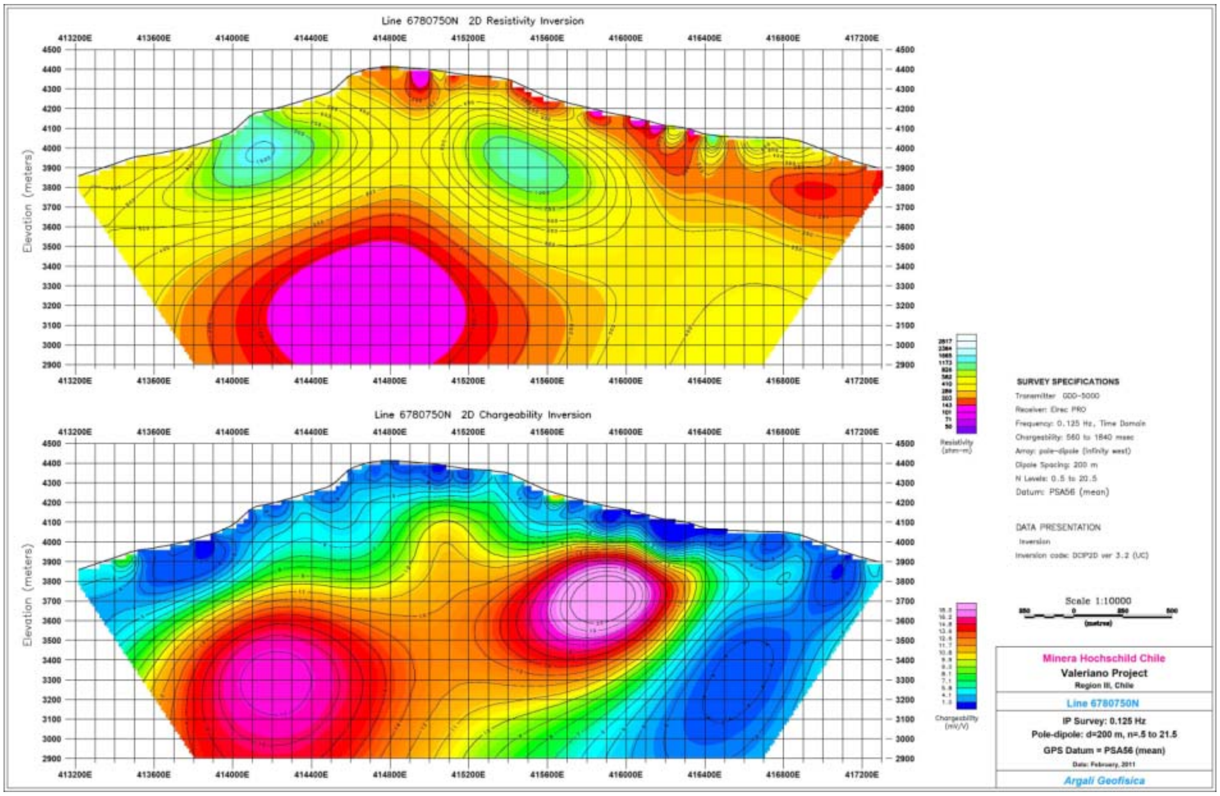


Figure 6.8 Line 6780750 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

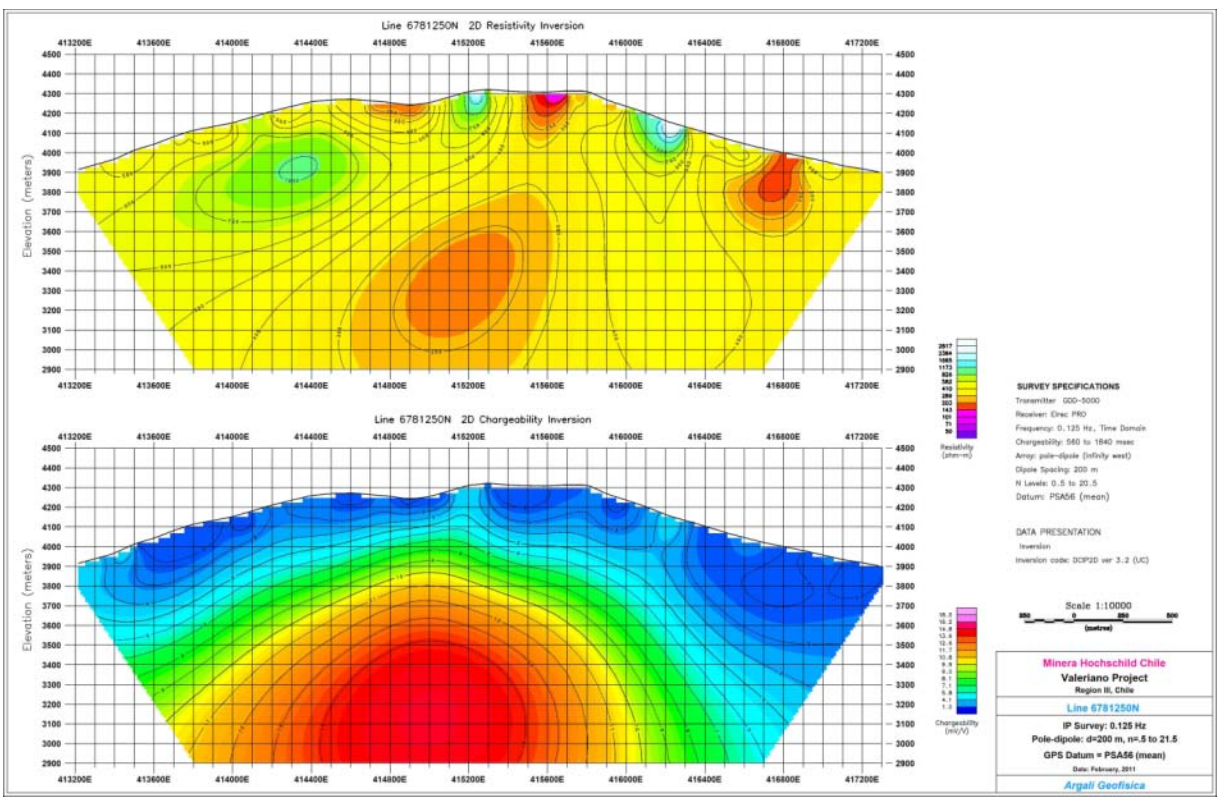


Figure 6.9 Line 6781250 N: 2D Resistivity Inversion (top) and 2D Chargeability Inversion (bottom)

6.6 Geophysics – Magnetics

During January and February 1997, geophysical operator GEODATOS, under contract to Barrick, completed 57.1 km of ground magnetics. Readings were taken every 10 m along 100 m spaced north-east trending lines using Geometrics G-856-AX magnetometers. In 2010, Hochschild contracted GEODATOS to reprocess the 1997 magnetic survey data. The results are reported in Geodatos, 2011, Estudio geofísico: Magnético terrestre y polarización inducida dipolo-dipolo, Proyecto Valeriano, abril 1997-Reproceso diciembre 2010, sector Vallenar, III Región de Atacama, Chile.

Additional processing of geophysical data was provided to Hochschild between 2011 and 2013 by Robert Ellis of EGC Inc., a professional geophysical provider based in Reno, Nevada. Mr. Ellis did not provide reports, only products. The results of his work were not used in this report.

Interpretation: As part of GEODATOS' reprocessing, an Analytical Continuation 50 m Reduced to the Pole image was produced which was used to discriminate different types of magnetic areas due to deeper bodies or magnetic zones. The image shows a shallow magnetic low associated with the area of drill holes VALDD12-09, VALDD13-14 and VALDD13-16 (see Figure 6.10). This low may represent a zone of magnetite destruction related to the intense hydrothermal (phyllic and advanced argillic) alteration that converted magnetite to pyrite (+hematite) and chalcopyrite.

6.7 General Results of Historical Exploration Activities

Three companies have undertaken drilling programs at Valeriano: Phelps Dodge (1989-1991), Barrick (1995-1997) and Hochschild (2011-2013). The most extensive campaign was by Hochschild with 14,267.0 m of diamond drilling in 16 drill holes including five holes drilled to depths ranging from 1,058 and 1,878 m.

Over the three drill campaigns, a zone of near-surface blanket-like high-sulphidation epithermal Au-(Ag) mineralization was cut in 18 holes at depths ranging from 0 to 233 m.

Six of the 16 holes drilled by Hochschild intersected Cu-Au porphyry mineralization at depth with two of those drill holes intersecting the early-mineral Valeriano granodiorite.

Hochschild's drilling results demonstrate a vertically zoned hydrothermal alteration and mineralization pattern, from top to bottom, of advanced argillic – quartz-illite – quartz-sericite and underlying potassic alteration accompanied by near-surface high-sulphidation epithermal Au-Ag and deeper Cu-Au-Mo porphyry-type mineralization comprising of pyrite-enargite – pyrite-chalcopyrite – chalcopyrite-bornite.

Beneath the upper zone of epithermal mineralisation, porphyry-style copper and gold mineralization, stockwork type-A veinlets (equigranular quartz, K-feldspar-anhydrite-sulphide) and alteration increase progressively at depth. Three of the deep drill holes (VALDD12-09, VALDD13-14 AND VALDD13-16) cut chalcopyrite > bornite mineralization in well-developed potassic alteration which remains open laterally and at depth.

Molybdenum occurs as a dome-like anomaly overlying the porphyry-style Cu-Au mineralization and defines an area at least 2 km long (NW) and 800 m wide. This dome is thought to reflect the extent of Cu-Au mineralization at depth and the anomaly remains open in a number of directions.

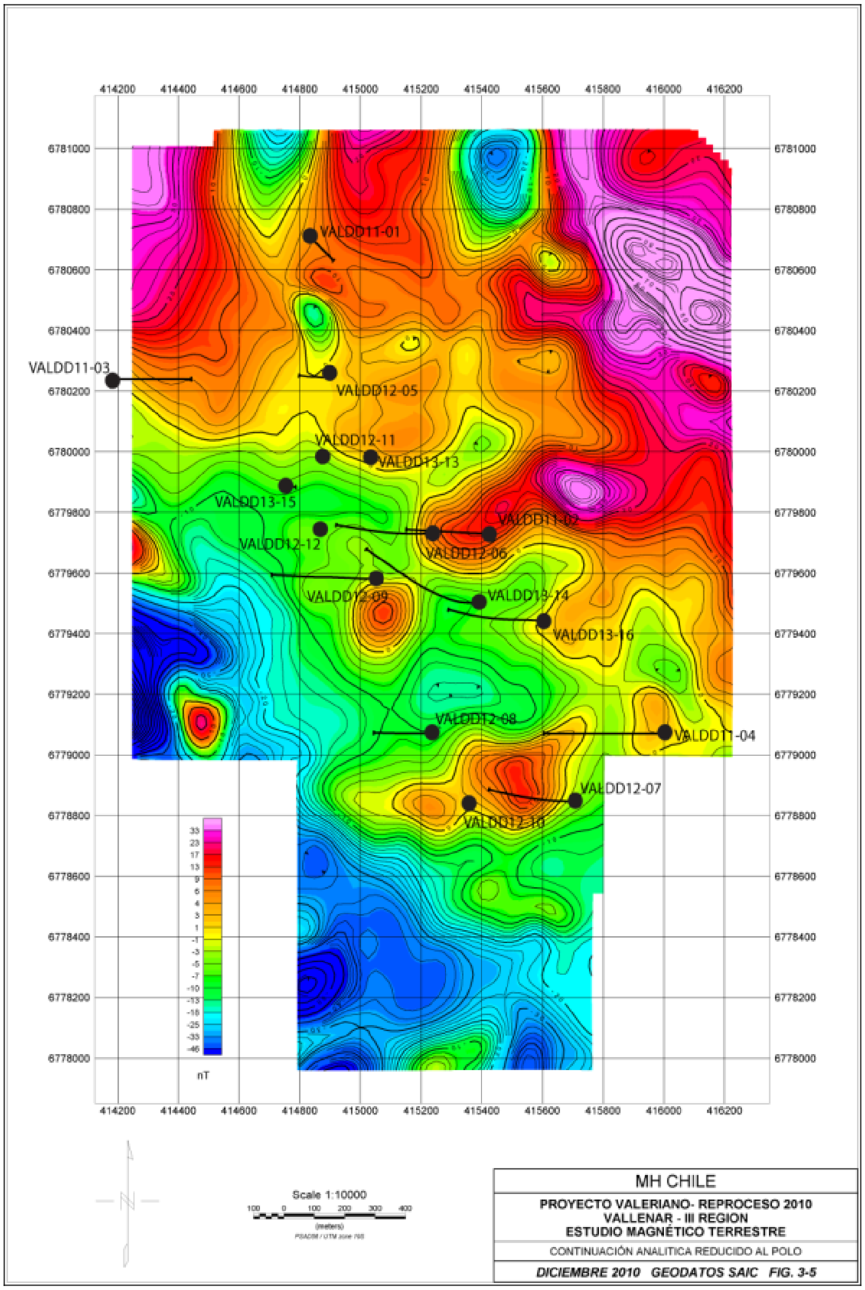


Figure 6.10 Analytical Continuation 50 m Reduced to the Pole Ground Magnetics

6.8 Production

There is no record of any mineral production from the Valeriano Property.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional and Local Geology

Valeriano is located within the north-south trending Miocene to early Pliocene metallogenic province of northern Chile and contiguous Argentina (Sillitoe and Perelló, 2005) and lies at the northern end of the El Indio Belt (Siddeley, G., and Araneda, R., 1990) which was extensively explored during the 1990´s in search of precious metal epithermal deposits such as El Indio.

Country Rocks

The oldest outcroppping unit in the area is the basal Las Placetas Formation (Reutter, 1974), an Upper Paleozoic marine sedimentary sequence of graywackes, schist and sandstone with calcareous intercalations that outcrop NE of the Project on the eastern flank of Valeriano River.

The Las Placetas Formation is overlain, in discordant contact, by the Permo-Triassic Pastos Blancos Formation (Nasi et al. 1990), dominated by rhyolite-dacite flows and domes, pyroclastic breccias and ignimbrites intercalated with lesser andesites and continental sediments (Ortiz, M., Merino, R.N. 2015). The Pastos Blancos unit outcrops on the east flank of the Valeriano River, where it forms the high ridges along the Argentine border (Figures 7.1 and 7.2) and underlies the main Valeriano ridge.

The Las Placetas and Pastos Blancos Formations are intruded by the Permo-Triassic Chollay Unit (Nasi et al. 1990) of coarse to very coarse, pink monzogranite, granodiorite and syenogranite.

The Pastos Blancos and Chollay Units are interpreted as the host rocks to most of the wall-rock alteration and mineralization seen to date at Valeriano.

The Late Oligocene-Early Miocene Escabroso unit of the Doña Ana Formation (Thiele, 1964; Maksaev et al., 1984) overlies the Pastos Blancos Formation in angular discordant contact (Figure 7.2). In the project area this unit consists of gently dipping rhyolite-dacite pyroclastics, epiclastics and flow-domes that form much of the Valeriano ridge, intercalated with and capped by andesite and basaltic-andesite lavas along the high crests and is considered post to syn-mineral.

These units are all cut by the Cenozoic Infiernillo Unit (Maksaev et al.; 1984) of small stocks and dykes of granitic - granodioritic – dioritic and andesitic composition. This unit outcrops in El Cajón del Encierro (Plutón del Cajón del Encierro) to the west of the project.

Structural Geology

The dominant structural pattern in this portion of the high Andes consists of extensive NS reverse faults bounding horst and graben structures. The extensive epithermal alteration zones at Valeriano and south in the El Indio Belt, have been preserved from erosion in these grabens.

Reverse faults identified in the Project area include El Encierro Fault to the west and La Coipa Faults to the east as shown in Figure 7.2. Both faults generate discordant contacts between Permo-Triassic and Late Oligocene-Early Miocene Formations; Pastos Blancos and the Infiernillo Unit of Doña Ana formations respectively.

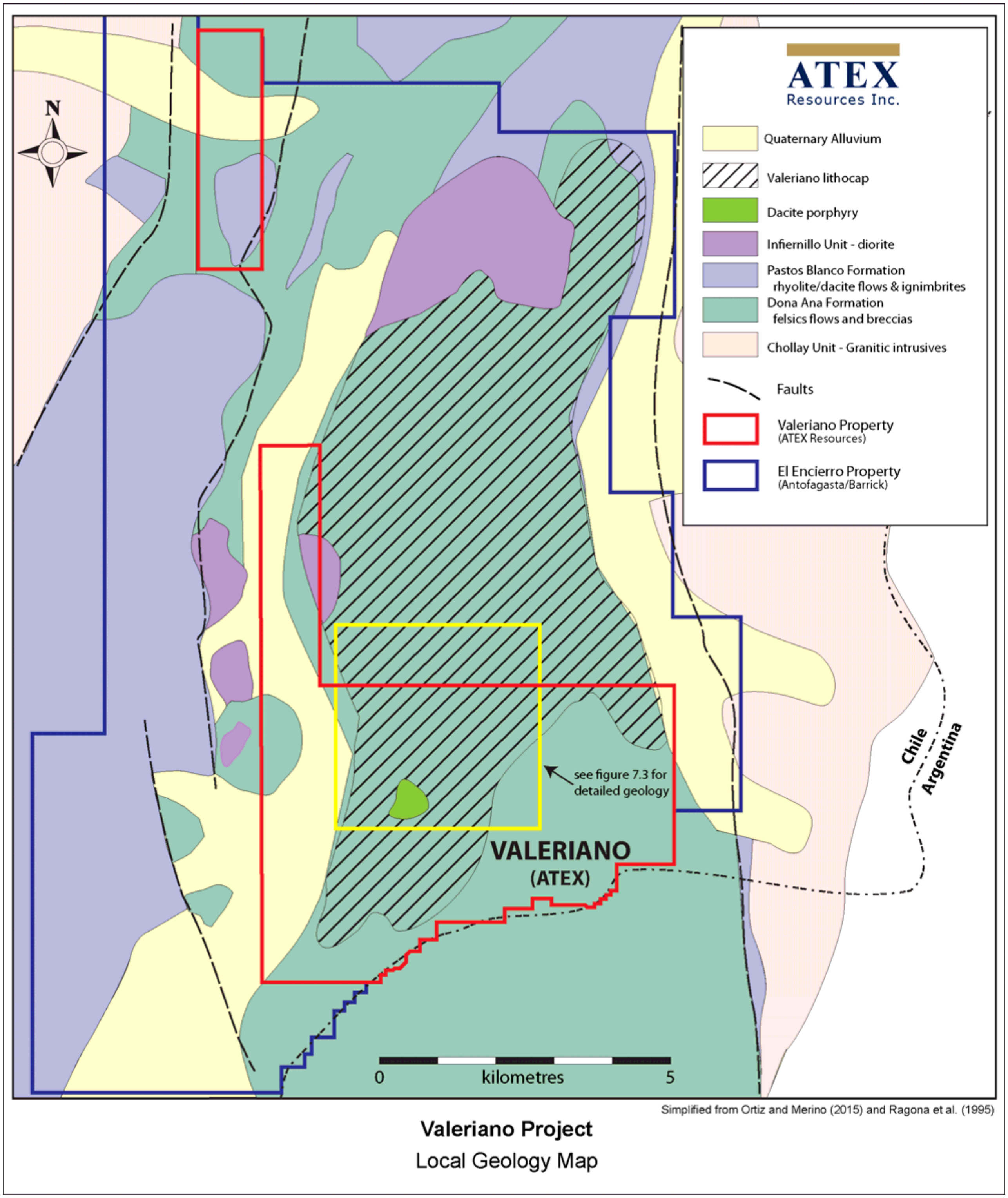


Figure 7.1 Local Geology

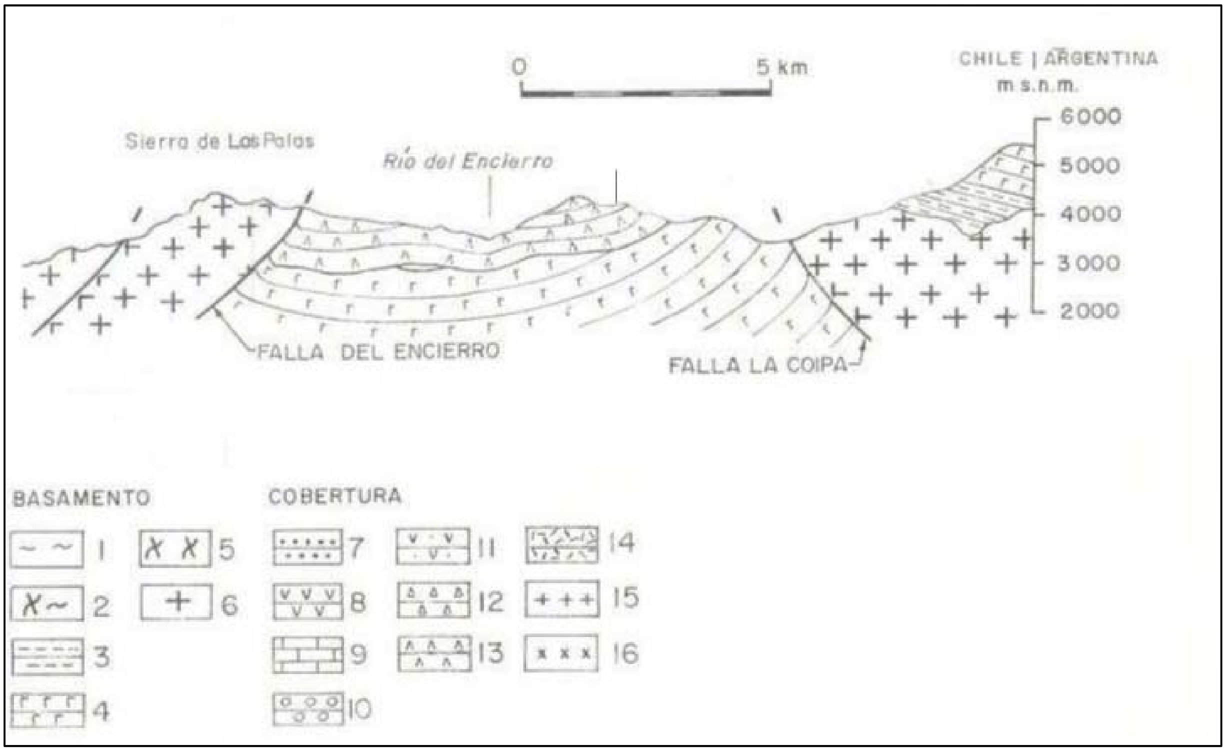


Figure 7.2 Stratigraphic Section showing the El Encierro Graben
(3) Upr. Paleozoic Las Placetas Fm. (4) Permo-Triassic Pastos Blancos Fm. (13) Late Oligocene-Early Miocene Escabroso Unit (Doña Ana Fm.) (15) Permo-Triassic Chollay Formation intrusives. (Nasi et al., 1990)

7.2 Property Geology

7.2.1 Host Rocks and Breccias

The principal host rocks of the Valeriano porphyry system are rhyolites and dacites of the Pastos Blancos formation as described in Section 7.1. The rocks are siliceous and poor in mafic minerals such that both phyllosilicate alteration, potassic alteration and sulphide mineralization is less intensely developed than would be the case in more typical andesitic host rocks. Nonetheless the rocks are pervasively altered throughout the property and are cut by veins and zones of alteration indicative of a porphyry-epithermal system.

At surface these altered rocks, which occur mainly as flows, domes, tuffs and ignimbrites, outcrop over much of the area (Figure 7.3). Towards the south of the property and along the high ridgeline they are capped by fresh to weakly propylitized andesites and dacites of the Escabroso Formation.

Two breccia bodies cut the Pastos Blancos country rocks, the Breccia Anfiteatro and Breccia Sur. Breccia Sur is probably early mineral as it contains quartz vein stockwork and porphyry clasts, and shows a downwards increase in Cu and Au grades similar to the surrounding wall rocks. This breccia remains a potential drill target. Breccia Anfiteatro contains fragments of quartz veins and has fewer cross cutting veins suggesting that it is later than Breccia Sur, and grades are lower than the surrounding rocks. However, both breccias have limited drilling and this interpretation may change with further information.

At depths below 1,000 m from surface, variably porphyritic granodioritic to dioritic intrusives cut the host rocks (Figure 7.4). Where they have been intersected, in the central and southern part of the prospect (potentially biased impression due to a lack of deep drilling), most of the intrusives appear to be narrow and may be vertical dyke-like bodies. Based on the different generations and frequency of cross-cutting quartz veinlets, early-mineral, inter-mineral and late-mineral phases can be distinguished. As expected, Cu and Au grades are better in the early-mineral porphyries and lower to absent in late and post-mineral intrusives.

The best mineralized intrusive rock intersected to date is the Valeriano Granodiorite, a largely equigranular phase affected by strong pervasive K-feldspar dominant potassic alteration. It is cross-cut by more generations and frequency of quartz veinlets than the other porphyries. The Valeriano granodiorite is cut in two drill holes (VALDD13-14, VALDD13-16) and, unlike the later phases, may be part of a larger dome-like stock. More drilling is required to better constrain its geometry. Although the Valeriano granodiorite is the earliest of the porphyries observed to date, there could be one or more earlier phases that could have yet more veining and, therefore, higher grades.

An alternative interpretation is that the Valeriano granodiorite is in fact part of the Triassic Chollay Formation country rocks and that the causative early-mineral porphyry has yet to be intersected.

Molybdenite accompanying the copper mineralization was dated by the Re-Os method at 9.95 ± 0.04 Ma, indicating that the mineralization is Miocene in age, however U-Pb dating of magmatic zircon is required to determine the age of the intrusives. This would confirm if the Valeriano granodiorite is coeval with mineralisation or is older country rock.

The units are summarised below and shown in Figures 7.3 and 7.4.

- *South Breccia* (*early to early-intermineral stage*): Clast-supported breccia with rock-flour and hydrothermal mineral matrix (sericite-quartz-K feldspar). Clasts consist of rhyolite and Valeriano granodiorite with quartz veinlets. This unit outcrops in the SE portion of Central Block with pervasive quartz-alunite and sericitic alteration.

- *Anfiteatro Breccia* *(intermineral stage):* This NS elongated unit was identified in drill holes VALDD-006, 009, 011 and 012 and is described as a rhyolite clast-supported breccia with rock-flour and pyrophilite-sericite-K-feldspar matrix. Scarce type A vienlets crosscut this unit. Cu and Au mineralization occurs as chalcopyrite within the K-feldspar alteration zone.

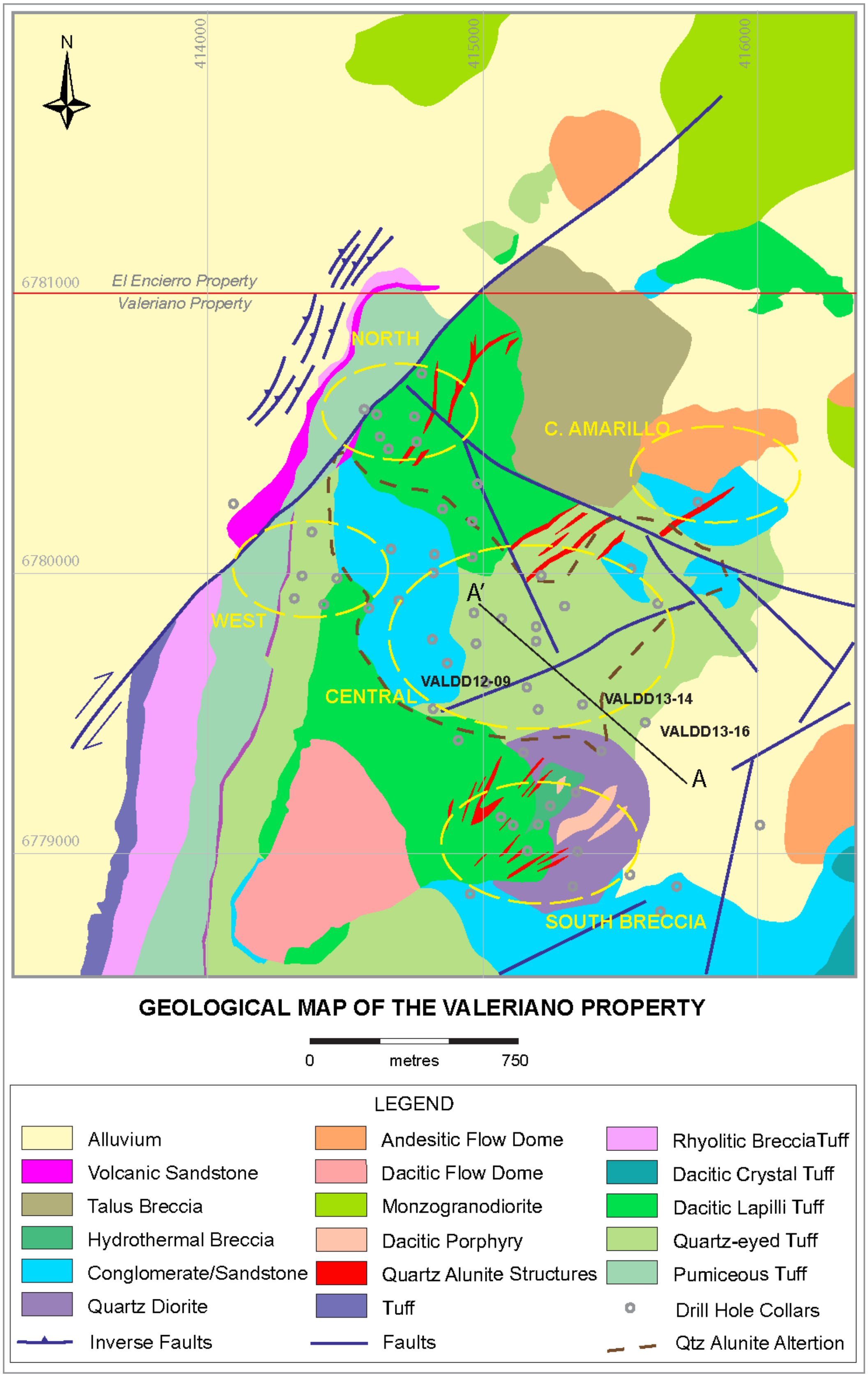


Figure 7.3 Valeriano Property Geology (Modified after SCM Valleno, 2015)

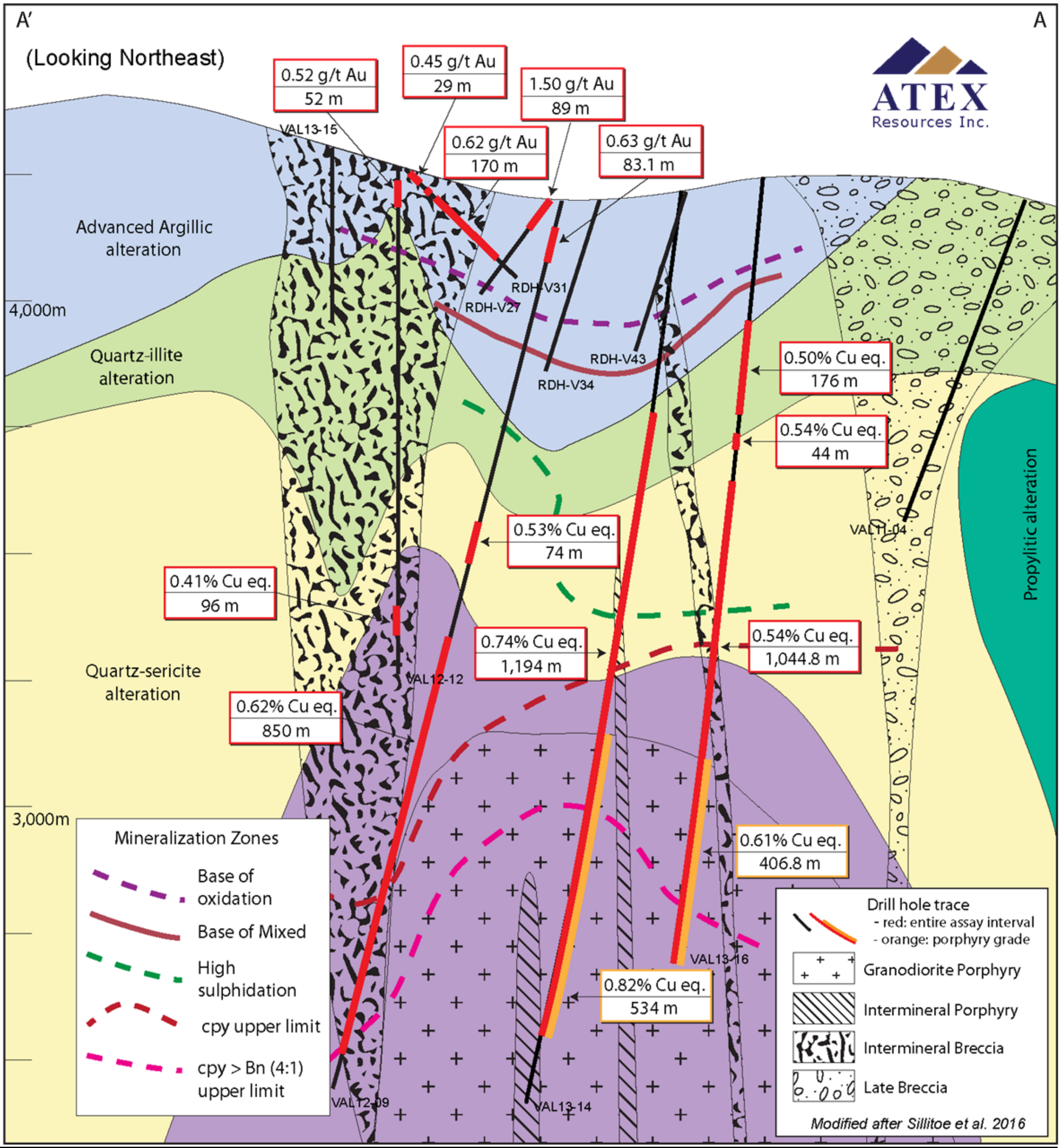


Figure 7.4 Schematic NW–SE Cross Section through the Valeriano Porphyry System

- *Valeriano Granodiorite-GD (early-mineral intrusive)*: Coarse grained, biotite granodiorite stock affected by phyllic alteration, grading down to K-feldspar alteration and abundante type A stockwork veinlets at depth. Mineralization grades from pyrite-chalcopyrite in the phyllic alteration zone to chalcopyrite and chalcopyrite > bornite (5:1) in the potassic zone (Figure 7.5) This unit was identified at depth in drill holes VALDD-14 and VALDD-16. This unit generally has the highest Cu-Au grades intersected to date.

- *Hornblende Diorite Porphry (PDH, PD) and Hornblende-Quartz-Diorite Porphyry (PDQ) (inter-mineral intrusives):* This unit consist of dykes with phyllic alteration grading down to K-feldspar alteration at depth. Cu mineralization grades from pyrite-chalcopyrite, chalcopyrite to chalcopyrite > bornite at depth. This unit has moderate to scarce type A stockwork veinlets and lower Cu-Au grades than the early stage Valeriano Granodiorite. These units were identified in drill holes VALDD12-09, VALDD13-14 and VALDD13-16.

- *Late Diorite Porphyry – PDT* *(late mineral intrusive):* Thin dykes (less than 5 m) with plagioclase phenocrysts and K-feldspars altered to biotite-magnetite-chlorite and lesser phyllic alteration. This unit was identified in holes VALDD12-09, VALDD12-11, VALDD12-12, VALDD13-14 and VALDD13-16.

Figure 7.5 VALDD13-014, 1634-1636 m - 0.8 ppm Au, 1.5% Cu. Valeriano granodiorite with K-feldspar and biotite potassic alteration cut by early-biotite and A-type quartz vein stockwork with chalcopyrite and bornite mineralization.

7.2.2 Hydrothermal Alteration

Hydrothermal alteration at Valeriano shows a classic vertical zonation from high-level epithermal advanced argillic alteration, through mid-level quartz-illite and quartz-sericite phyllic alteration, to deep potassic alteration (Figure 7.4). The advanced argillic zone with quartz-alunite-pyrophyllite alteration represents the remnants of a largely eroded lithocap that may have once hosted high-sulphidation style precious metals mineralization like that encountered in shallow drilling.

The advanced argillic alteration transitions downwards into porphyry related quartz-illite and quartz-sericite phyllic alteration. Near the transition local “patchy” textures are observed and early pyrite is coated by a hypogene overprint of high-sulphidation state Cu minerals including enargite, chalcocite, covellite, bornite and digenite. The patchy textures and high-sulphidation state Cu assemblage are typical of the base of advanced argillic lithocaps over other porphyry Cu systems.

The phyllic alteration zones down into and overprints earlier biotite, K-feldspar and magnetite bearing potassic alteration that represents the deep proximal zone of the system and which is best developed within and immediately around the intrusive rocks. The alteration styles are described below:

- *Advanced Argillic Alteration:* (quartz-pyrophyllite-alunite): This alteration assemblage is observed at surface and may reach vertical thicknesses of approximately 400 m within felsic rocks of the Pastos Blancos Fm., where it occurs in laterally extensive subhorizontal "mantos", vertical structurally controlled quartz-alunite "ledges", and discordant hydrothermal breccias. Advanced argillic alteration tends to occur as pervasive flooding of the rock and replaces all minerals except quartz with variable mixtures of quartz-pyrophyllite-alunite. Siliceous veins with coarse-grained enargite are observed on the ridgeline near VALDD11-001 and fine grained pyrite-enargite-chalcocite-covellite-digenite is observed in areas close to the base of the advanced argillic zone where it transitions into the illite zone.

- *Illite Alteration (quartz-illite):* Illite alteration occurs at the base of the advanced argillic lithocap and represent a lower temperature variation of the underlying phyllic zone. It occurs in association with pyrite and specularite as pervasive zones and vein selvedges and preferentially affects feldspars and mafic minerals.

- *Phyllic Alteration (quartz-sericite):* Phyllic alteration assemblages are observed near surface down to 3,800-2,900 m below sea level. Phyllic alteration is earlier than overlying advanced argillic alteration and is later than, and forms a shell like envelope around, earlier potassic alteration which it overprints with increasing depth. Phyllic alteration replaces feldspars and where intense, mafics, with a fine aggregate of sericite (muscovite) and quartz in association with abundant pyrite, specularite and with increasing depth, chalcopyrite. It forms in vein selvedges which coallesce with increasing intensity and vein density until the entire rock mass is altered.

- *Potassic Alteration (K-feldspar-biotite-magnetite):* Potassic alteration forms an ovoid core at depth, below 2,900 masl. It first appears as "relict" coffee coloured stains in phyllic alteration and increases downwards until it dominates the rock. In the potassic zone feldpsars are replaced by pinkish to orangey secondary k-feldspar and mafics are generally replaced by secondary biotite and magnetite. Alteration is most intense in vein selvedges and with depth. Potassic alteration is open in all directions and at depth.

7.3 Mineralization

Mineralization shows the same classic epithermal to porphyry vertical zoning as does the alteration assemblages. In the upper part of the advanced argillic lithocap environment mineralization is dominated by veinlets and disseminations containing epithermal high-sulphidation assemblages, mainly pyrite-enargite with associated gold and silver . The zoning changes gradually downwards to veinlets and disseminations of pyrite>chalcopyrite and chalcopyrite>pyrite in the phyllic zone, and then finishes in chalcopyrite>bornite veinlets and disseminations in the potassic zone. A zone of enargite, chalcocite, covellite, bornite, digenite and tetrahedrite-tennantite overprints prexisting pyrite-chalcopyrite at the advanced-argillic/phyllic transition.

Within the epithermal environment, Au grades typically increase in areas of more intense advanced argillic alteration, in particular in and around zones of intense silification and subsequent leaching referred to as “vuggy” silica. Within the underlying porphyry environment copper and gold grades increase downwards as the chalcopyrite to bornite ratio decreases. At the bottom of hole 14 and 16 the chalcopyrite:bornite ratio is about 4:1 suggesting that further grade increases can be expected in depth and or laterally towards the locus of mineralization. Based on the limited drilling to date, there is no evidence of a barren core or a systematic decrease in total sulphide content.

Mineralization at Valeriano occurs in typical porphyry-epithermal style sheeted and random stockwork veinlets and cloud-like disseminations. Mineral zones are gradational and overlap and often lack “hard” contacts or preferred orientations. Indeed, zone boundaries in porphyry Cu and high-sulphidation epithermal deposits are often defined on the basis of cut-off grade.

Mineralization at Valeriano can be split into the following zones as shown in Figure 7.4:

- Oxide Zone
- Mixed Zone
- Hypogene Sulphide Zones

Details are as follows:

7.3.1 Oxide Zone

The oxidation zone extends from surface up to 300 m below surface, or deeper along major fracture zones (reaching >300 m). Epithermal goldmineralization intersected in numerous historical drill holes is generally associated with structurally controlled, sub-vertical zones or “ledges” of vuggy quartz, breccias and silicified felsic volcanics within a broader sub-horizontal envelope of advanced argillic alteration as shown in Figure 7.3. Where oxidised, gold within these zones is associated with iron-oxides such as hematite, goethite and jarosite and lesser manganese oxides. Where not oxidized, the gold mineralization occurs in association with pyrite and enargite. The most prominent and advanced of these zones, referred to as the Central Zone, measures approximately 300 by 600 metres. Most vuggy quartz “ledges” measure a couple of metres across and some tens of metres in length. Dominant orientations of the controlling structures are poorly constrained due to limited drilling to date but appear to be dominated by NNE and NW trends and subvertical dips. One of the objectives of the recommended drilling program is to better constrain the depth to the base of the oxide zone and the orientations of controlling structures.

7.3.2 Mixed Zone

Oxide-sulphide zones contain hematite-jarosite and reach 300-400 m depth along structures. Mineralization consists of +pyrite ±enargite-covellite together with Fe and Mn oxides. The mixed zone has similar dimensions and orientations to the oxide zone noted above and will be better constrained by additonal drilling

7.3.3 Hypogene Sulphide Zones

High-Sulphidation Copper Zone: A hypogene Cu enrichment zone is observed in the southeastern portion of the Central Block straddling the advanced-argillic / quartz-illite / quartz-sericite transition and may be better developed near NE trending advanced argillic ledges and their keels. Mineralization consists of enargite, chalcocite, covellite, bornite, digenite and tetrahedrite-tennantite as fine disseminations, often in vugs, and as coatings on earlier pyrite and chalcopyrite crystals and veins. The complete lack of oxidation, the depth this assemblage occurs at, and its position at the base of the advanced argillic zone all indicate a hypogene origin.

This zone is irregular and is open and shallows towards the east. This could simply be following the shallowing base of the advanced-argillic lithocap, or alternatively it could indicate a shallowing of the underlying porphyry system towards the east. Drill hole density is insufficient to define a specific volume or orientation, alhough the zone has been intersected over an area of some 500m x 500m in plan with a thickness of between 100 and 400m.

Pyrite-Chalcopyrite Zone: This mineralization assemblage is the most voluminous and is associated to phyllic alteration, which gradually passes from pyrite > chalcopyrite to pyrite = chalcopyrite to chalcopyrite > pyrite in potassic alteration zones overprinted by phyllic alteration. Associated minerals are specularite and martite. Based on limited Hochschild drilling the pyrite-chalcopyrite bearing phyllic zone is intercepted in 13 of the 16 drill holes and in plan view forms an ovoid volume of altered and mineralized rock measuring at least 2000m NW-SE, 800m NE-SW, and 500m vertically. This zone remains open to the N, S, E and W, although IP chargeability indicates that the pyrite extends over a maximum area of 3000 x 3000m which is typical of a large porphyry copper deposit.

There is insufficient information to define an orientation or thickness to the zone, however, in most porphyry systems the pyrite-chalcopyrite and phyllic zone forms an amorphous shell-like cloud of mineralization around the inner chalcopyrite-bornite bearing potassic zone. There are often no preferred orientations and the concept of orientation and true thickness is not applicable. Likewise, as in most porphyry systems, grades are uniform throughout the entire rock volume except where truncated by later, lower-grade intrusive bodies. As such the “boundaries” of the zone are transitional and are generally defined by cut-off grade.

Chalcopyrite Zone: This zone is commonly observed in Pastos Blancos rhyolite (host rock) and intrusives associated with K-feldspar-biotite potassic alteration assemblages. Disseminated and veinlet chalcopyrite occurs together with specularite and martite. This zone is transitional between the pyrite-chalcopyrite zone above, and the chalcopyrite-bornite zone below, and also forms a shell like cloud measuring at least 1000m WNW-ESE by 500m NNE-SSW and 100/200m of vertical thickness. The zone remains open to the N,S,E and W.

Chalcopyrite > Bornite Zone: This is the deepest mineralization zone. It occurs at greater depth in k-feldspar-biotite potassic altered intrusives and is cut in only three of 16 drill holes to date. The chalcopyrite:bornite ratio at the end of holes VALDD13-014 and VALDD13-016 is approximately 4:1. Favourable potassic alteration was intercepted in 7 of 16 holes and defines an ovoid zone measuring roughly 1000m WNW-ESE by 500m NNE-SSW and up to 250m vertical thickness. Mineralisation occurs as random veinlets and disseminations and cannot be assigned a preferred orientation or thickness. This zone remains open in depth and laterally with the base of mineralisation defined only by the base of drilling.

Molybdenum Zone: Molybdenite occurs in B type veinlets throughout the deeper phyllic and potassic zones. However it is best developed within the upper phyllic zone where it forms a dome-like cap or “shell” some 800 m above the Cu-Au mineralization. Therefore the Mo shell is an important exploration tool because it is a potential indicator of the geometry and distance to underlying Cu-Au mineralization.

The Mo “dome” intersected to date measures over 1,600 m long NW-SE, 800 m wide NE-SW and between 200-400m thick, suggesting a large mineralized stock at depth.

7.3.4 Porphyry-Style Veining

A full sequence of porphyry Cu-Au-Mo style veining can be observed at Valeriano with numerous variations. As in all porphyry systems the presence and frequency of veining depends on the timing of the emplacement of the host rock, with country rocks and early-mineral porphyries being cut by more vein generations, and each later intrusive having progressively fewer generations of veinlets. Post mineral rocks have none. In general, the sequence of veining at Valeriano from early to late is as follows:

EB – Early Biotite ± magnetite, typical in the potassic zone within early mineral porphyries.

F – K-feldspar alteration in potassic zones within early and inter-mineral porphyry phases.

A – Quartz infill veinlets progressing from irregular to sinuous to straight and lacking selvedges.

M – Magnetite infill, typically between the A and B vein events. Locally chloritic selvedges.

B – Quartz infill with molybdenite, often as bands along the margins. Negligible selvedges.

D – Quartz-pyrite infill with sericite alteration selvedges. Diagnostic of the phyllic zone.

E – Specularite infill sometimes with pyrite, typical of the phyllic zone late in sequence.

SM – Massive pyrite ± enargite infill and pyrophyllite-dickite selvedges, typical of the advanced argillic zone.

Sheeted and stockwork veinlet frequencies are typical of productive porphyry Cu-Au-Mo systems and range from less than 1 veinlet per metre in distal zones or late-mineral rocks, to greater than 50 veinlets per metre in potassic altered early-mineral porphyries.

8.0 DEPOSIT TYPES

To date, two styles of mineralization have been discovered on the property: 1) porphyry copper gold; and 2) epithermal high-sulphidation gold genetically related to the porphyry mineralization. The following description of porphyry copper (+Au, Mo) deposits ("PCDs") is summarized from USGS, Scientific Investigations Report 2010-5070-B, Porphyry Copper Deposit Model, D.A. John et al., 2010.

8.1 Porphyry Copper Deposits

PCDs consist of disseminated copper minerals and copper minerals (±Au, ±Mo) in veins and breccias that are relatively evenly distributed in large volumes of rock, forming high tonnage (greater than 100 million tons), low to moderate grade (0.3–2.0 percent copper) ores. Host rocks are altered and genetically related granitic porphyry intrusions and adjacent wall rocks. PCDs are the world's most important source of copper, accounting for more than 60 percent of the annual world copper production and about 65 percent of known copper resources.

PCDs are mined primarily for copper, although molybdenum and gold are co-products in some deposits, and with silver a by-product in many deposits. Rhenium, tellurium, platinum group elements, arsenic, and zinc are recovered from a few deposits. With increasing molybdenum/copper, PCDs are transitional to porphyry molybdenum deposits, and with increasing gold/copper, they are transitional to porphyry gold deposits.

PCDs commonly are centered on or around cylindrical porphyry stocks or swarms of dikes that in some cases are demonstrably cupolas of larger underlying plutons or batholiths. Plan areas of ore-related intrusions typically range from 0.2 to 0.5 km^2. Undeformed ore zones commonly have circular or elliptical shapes in plan view, with diameters that typically range from 0.1 to 1.0 km and have vertical dimensions that are similar to their horizontal dimensions. In cross section, ore zones vary from cylindrical shells with altered, but low-grade, interiors referred to as "barren" cores, to inverted cups around barren cores, to multiple domes or inverted cups, and to vertically elongate, elliptical shapes (Figure 8.1). Not all PCDs have barren cores with diorite, gold-rich and or mafic hosted PCDs often having high-grade vertical extensive cores of altered rock. In other deposits the ore is concentrated in vertical breccia pipes which may occur alone or in clusters.

The predominant copper minerals in hypogene ore are chalcopyrite, which occurs in nearly all deposits, and bornite, found in about 75 percent of deposits. The only molybdenum mineral of significance, molybdenite, occurs in about 70 percent of deposits. Gold and silver, co-products or by-products generally reside in bornite and chalcopyrite; and by-product rhenium resides within molybdenite.

Copper and molybdenum minerals typically account for 1–2 volume percent of hypogene ore and occur in several forms: (1) disseminated in host rocks as discrete, less than or equal to 1 mm anhedral to subhedral crystals that replace feldspars and other minerals internally and along grain boundaries or in millimeter-to-centimeter clot-like aggregates; (2) in veins, less than 1 millimeter to several centimeters wide; and (3) in breccia matrices with quartz and other hypogene minerals. Copper, molybdenum, and other hypogene minerals in these three forms are part of the zoned alteration mineral assemblages (Figure 8.1) superimposed on intrusions and wall rocks.

Supergene ores form where near-surface hypogene ores have been exposed to weathering and oxidation for prolonged periods, resulting in the breakdown of hypogene ores, their leaching from the rock and downward migration of the liberated copper and other minerals, and re-precipitation and concentration of these in a blanket-like zone near the top of the water table. Such supergene processes and their products are negligible at Valeriano so a detailed description is beyond the scope of this report, however key secondary copper minerals include azurite, atacamite, brochantite, malachite and many other “oxide” minerals in the leached zone, and chalcocite, covellite, digenite and bornite as secondary sulphide coatings on pre-existing sulphides and in fractures near the top of the water table. Gold and Molybdenum are less mobile and may remain in the leached cap.

The vertical extent of copper ore in PCDs is generally less than or equal to 1 to 1.5 km, although there are notable exceptions. Because copper-mineralized rock can continue several kilometers deeper, the base of ore is dependent on copper grade, the price of copper, mining costs, and mine design. In some deposits, the base of ore represents the limits of drilling and remains open in depth. The vertical extent of supergene enriched copper ore varies considerably, depending on many factors, but seldom exceeds 200 m.

In PCDs environments, hydrothermal alteration is characterized by ionic metasomatism, including alkali metasomatism and hydrolytic (or acidic) reactions, oxidation-reduction reactions (including sulphidation), solubility-induced precipitation reactions, such as quartz precipitation, and hydration-carbonation reactions in which water or carbonate is added. Several types of wall-rock alteration characterize porphyry copper ore zones. These alteration types extend upward and outward several kilometers from deposit centers and are spatially and temporally zoned. Major alteration types commonly present in porphyry copper deposits are: potassic, sericitic (phyllic), advanced argillic, intermediate argillic, and propylitic, each of which has distinctive mineralogical, geochemical, and sometimes geophysical characteristics. These zones are sometimes overprinted by genetically related epithermal high-sulphidation systems with advanced-argillic alteration and sometimes anomalous to economic gold mineralization (see section 8.2 for further description).

8.2 Epithermal High-Sulphidation Gold Deposits

In the nearer-surface zone of numerous well-preserved porphyry copper deposits the porphyry-centred alteration and mineralization zones described in Section 8.1 are temporally and spatially overprinted by epithermal high-sulphidation (EHS) gold mineralization with associated advanced argillic alteration (Sillitoe, 1973). These advanced-argillic assemblages form from the upward flow of hot acidic fluids and gases from the underlying magmatic source. These progressively alter the rocks to clay minerals and residual silica with or without gold (and sometimes silver and copper) mineralization.

This type of epithermal system, which hosts the Pascua-Lama, Veladero, and Alturas deposits of the nearby El Indio belt (Siddley and Araneda, 1990), is mainly observed on a lesser scale in the top 200 mts of drilling at Valeriano, where a blanket-like “manto” of advanced argillic alteration hosting gold mineralization was intercepted in drilling.

Manto-like EHS deposits are generally hosted in coeval volcanic and proximal volcanoclastic sedimentary rocks deposited during active volcanism. Porous pyroclastic and fragmental flow units are particularly good hosts. EHS deposits are formed by magmatic acidic fluids and vapours that rise along structures and diffuse within and above the water table as shown in Figure 8.2.

Where fully preserved from erosion, these systems comprise an upper blanket of steam heated alteration underlain by advanced argillic alteration that is zoned from inner quartz alunite, out to quartz kaolinite, and then quartz illite. In some cases, a blanket of chalcedonic silica can form at the base of the steam heated zone/top of the paleo water table.

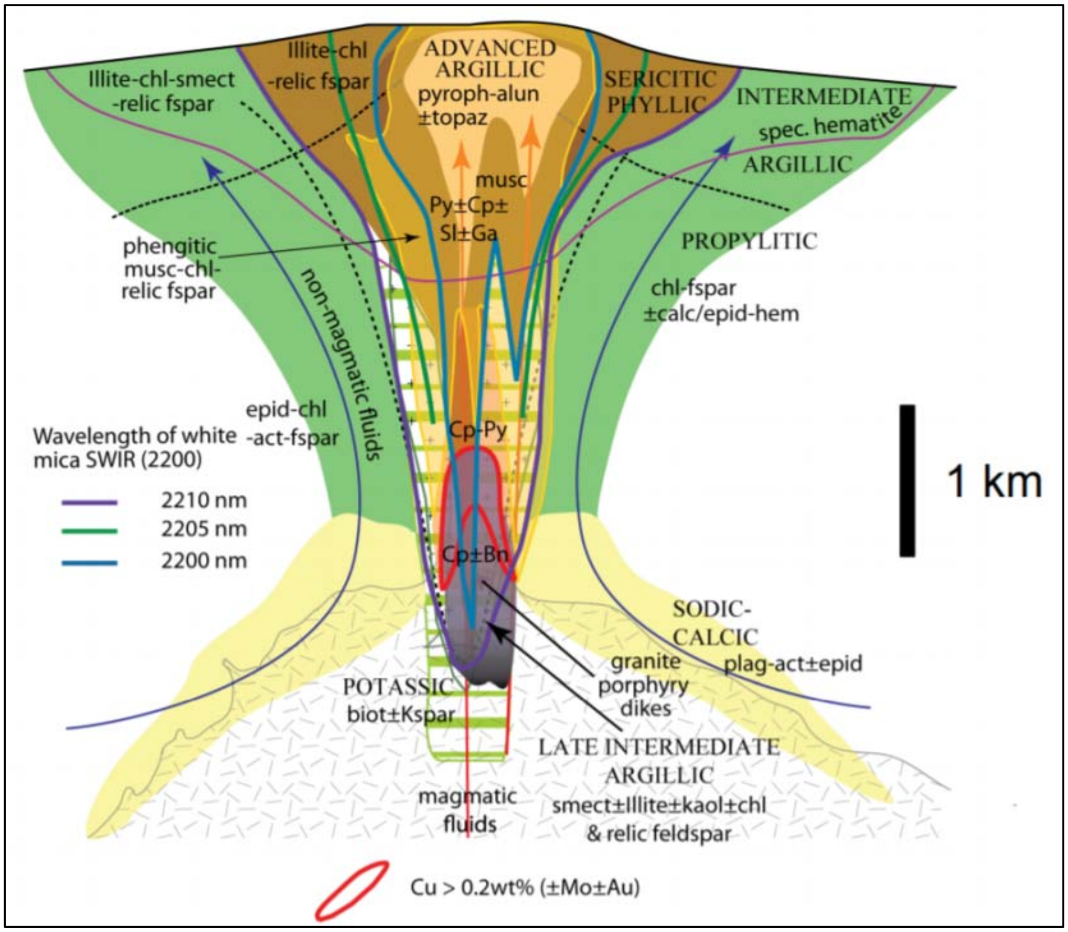


Figure 8.1 Integrated Porphyry Copper – Epithermal Deposit Model (Halley et al. 2015)

This pervasive, often lithologically controlled alteration, sometimes hosts bulk lower grade mineralization on the order of 0.X g/t Au and 100s of g/t Ag. This transitions into / is overprinted by structurally focused, often discordant “ledges” (lodes) of vuggy silica which can host higher grade mineralization grading from 1 to tens of g/t Au and 1000’s of g/t Ag.

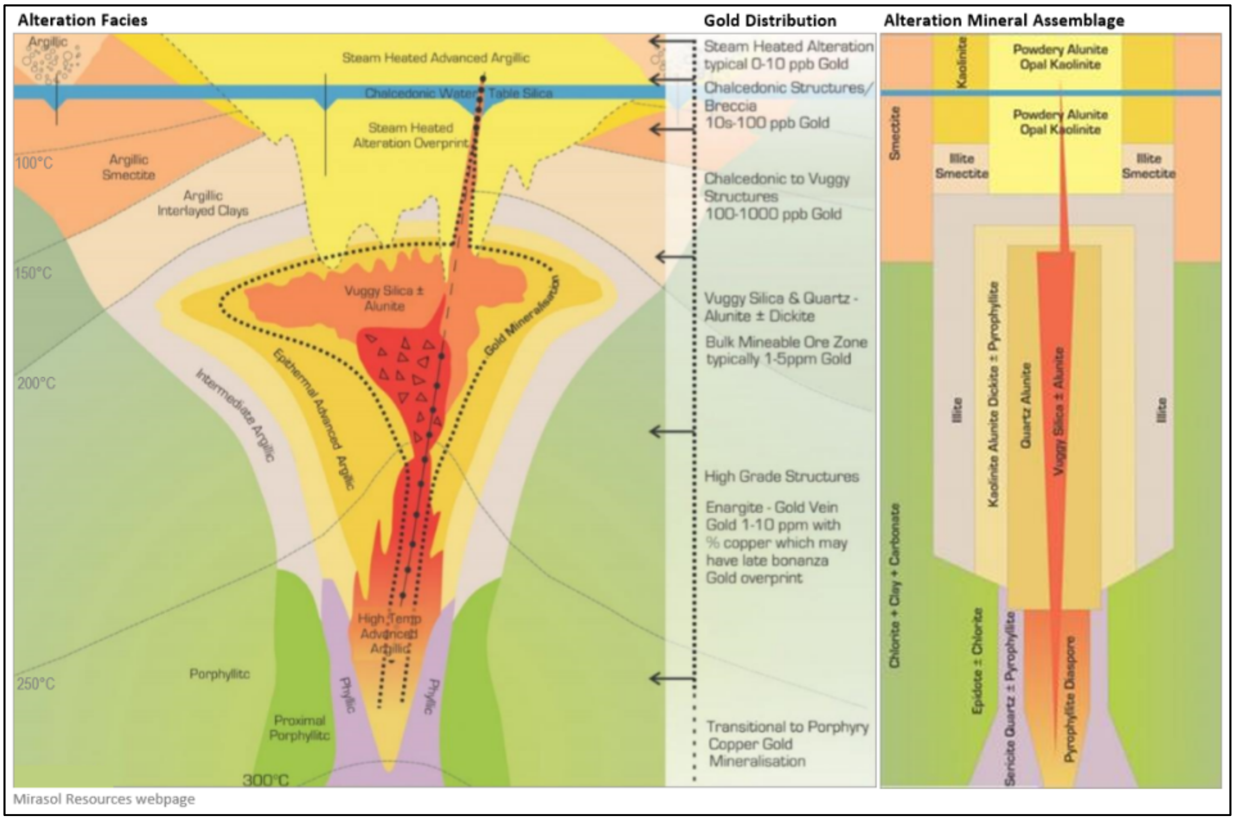


Figure 8.2 Integrated Model of an Epithermal High-Sulphidation Deposit above a Deep Porphyry

8.3 Comments on Section 8

The Author recommends a porphyry-epithermal deposit model for exploration at Valeriano. Indeed, the discovery history of the Valeriano copper mineralization by Hochschild Mining is a good example of how effective such a model can be when properly used (Sillitoe et al. 2015).

The systematic drilling completed by Hochschild from 2011 through 2013 outlined the zoned hydrothermal alteration and mineralisation zones, from shallow advanced argillic through phyllic to deep potassic, associated with porphyry-epithermal systems, and resulted in the discovery of significant porphyry copper-gold mineralization at depth. The porphyry-style mineralization remains open laterally and at depth.

The epithermal high-sulphidation gold mineralisation at Valeriano appears restricted in size and secondary to the porphyry mineralization in terms of ultimate exploration priority. However, it is near-surface and oxidised and should be evaluated with a view to outlining an economically viable, heap leachable gold resource.

Future exploration activities at Valeriano should focus on confirming the dimensions, geometry and grade of the gold and copper-gold mineralization. Within the epithermal gold part of the system, particular emphasis should be placed on defining the base of oxidation and controls on mineralisation, particularly where higher grade. Within the porphyry part of the system the focus of exploration needs to be on defining the location and extent of the causative early mineral intrusives and mineralised breccias in order to define both tonnage and areas of higher grade.

9.0 EXPLORATION

Exploration activities at Valeriano have been carried out since 1986. Table 9.1 summarizes the exploration activities completed to date. Further details regarding the historical exploration activities, including drilling activities and geophysical surveys, are provided in Section 6.

To date, ATEX has not undertaken any exploration activities, beyond a cursory project review and site visit.

Table 9.1 Valeriano Exploration Activities From 1986 to 2013 *(from SCM Valleno)*

Company	J.Ambrus	Rayrock	Phelps Dodge	Newmont	Barrick	Hochschild	Totals
	1986	*1988*	*1989-1991*	*1993-1994*	*1995-1997*	*2010-2014*	
Drilling							
DDH			2,902.7			14,269.7	17,172.4
RC			3,500.0		6,175.0		9,675.0
Sampling							
Talus	53	403			521		977
Rocks					124	128	252
Chips	54		27		48		129
Trench		720	961	450	664		2,795
Geophysics							
IP – km					15.3	36.0	51.3
Mag - km				32.0	51.7		83.7
Mapping	X	X	X	X	X	X	
Special Studies							
Petrography		X		X	X	X	
Fluid Inclusions					X		
SWIR Analysis						X	
Dating					X	X	

10.0 DRILLING

To date, 17,172.4 m of diamond drilling and 9,675.0 m of reverse circulation drilling have been completed on the Valeriano property for a total of 26,847.4 m. Details of the historical drilling programs have been discussed in Section 6.2, 6.3 and 6.4. A summary of the drill hole details is provided in Table 10.1 and Table 10.2. Drill hole information was obtained from the Project drill hole database provided by SCM Valleno and cross-checked against Phelps Dodge, Barrick and Hochschild drill logs. The author has prior first-hand knowledge of the details of the Hochschild drilling. The Phelps Dodge and Barrick drill hole information, including collar locations and azimuths, has been provided by SCM Valleno.

Drill hole collar locations, in relation to target areas and epithermal Au mineralization as defined by Araneda (2010), are shown in Figure 10.1. Drill hole traces are displayed in Figure 10.2.

Based on personal review of the drill logs and drill core from the Phelps Dodge and Hochschild diamond drilling programs, as well as the authors prior first-hand knowledge of Hochschild procedures, the author considers there were no drilling, sampling or recovery factors that may have materially impacted the accuracy and reliability of the diamond drilling results as they pertain to this report, in particular the deep porphyry mineralization.

With respect to the historical near-surface reverse circulation drilling by Phelps Dodge and Barrick, insufficient information is available to confidently verify the reliability of the reverse circulation results as they pertain to the shallow epithermal gold mineralization. Further independent verification is required if ATEX wishes to use this information for estimation of a reclassified epithermal Au resource.

Further information on the diamond drilling sampling procedures is provided in Section 11.

Table 10.1 Meters Drilled and Assayed at Valeriano

Company	Hole ID	Holes #	Diamond Drilling *(metres)*	RC Drilling *(metres)*	Metres Drilled		Metres Assayed
Phelps Dodge							
DDH	DDHV1 to V9	9	2,902.7		2,902.7		1,501.7
RC	RDHV10 to V25	18		3,500.0	3,500.0		2,393.0
Barrick							
RC	RDHV26 to V45	20		6,175.0	6,175.0		6,051.0
Hochschild							
DDH	VALDD-01 to -16	16	14,269.7		14,267.0		14,159.6
TOTAL		**63**	**17,172.4**	**9,675.0**	**26,847.4**		**24,105.3**

Table 10.2 Drill Hole Location and Orientation

Hole#	Easting	Northing	Elev.	Dip	Azi.	Depth	Type	Company
DDH-V1	415214.3	6779991.0	4231.3	-60	325	300.42	DDH	Phelps Dodge
DDH-V2	415540.0	6780009.0	4154.0	-50	325	339.46	DDH	Phelps Dodge
DDH-V3	415298.1	6779884.0	4160.0	-50	325	360.51	DDH	Phelps Dodge
DDH-V4	415634.4	6779888.0	4090.4	-50	325	269.01	DDH	Phelps Dodge
DDH-V5	415952.0	6779893.0	4090.3	-50	325	212.00	DDH	Phelps Dodge
DDH-V6	414931.7	6780225.0	4310.0	-80	320	294.63	DDH	Phelps Dodge

DDH-V7	415065.0	6779127.0	4373.0	-50	325	218.07	DDH	Phelps Dodge
DDH-V8	414877.4	6780299.0	4347.3	-55	139	502.64	DDH	Phelps Dodge
DDH-V9	415165.0	6779004.0	4372.2	-50	325	405.95	DDH	Phelps Dodge
RDH-V10	415212.2	6779176.6	4312.4	-70	320	261.00	RC	Phelps Dodge
RDH-V11	415305.4	6779242.3	4254.4	-80	320	250.00	RC	Phelps Dodge
RDH-V12	414408.5	6779896.3	4415.9	-80	140	50.00	RC	Phelps Dodge
RDH-V12A	414408.5	6779896.3	4415.9	-90	0	150.00	RC	Phelps Dodge
RDH-V13	415745.2	6780286.0	4238.2	-75	140	250.00	RC	Phelps Dodge
RDH-V14	414734.6	6780487.4	4422.7	-70	140	250.00	RC	Phelps Dodge
RDH-V15	414739.2	6780587.8	4418.1	-90	0	281.00	RC	Phelps Dodge
RDH-V16	414600.7	6780566.1	4405.9	-75	65	57.00	RC	Phelps Dodge
RDH-V16A	414597.2	6780564.8	4405.9	-80	65	202.00	RC	Phelps Dodge
RDH-V17	414628.9	6780468.0	4429.7	-80	65	250.00	RC	Phelps Dodge
RDH-V18	414365.2	6780136.0	4340.8	-80	140	250.00	RC	Phelps Dodge
RDH-V19	414334.5	6779980.1	4333.3	-65	140	250.00	RC	Phelps Dodge
RDH-V20	414603.9	6780499.3	4421.0	-80	65	102.00	RC	Phelps Dodge
RDH-V21	414960.2	6780340.7	4354.5	-70	135	244.00	RC	Phelps Dodge
RDH-V22	414453.1	6779982.0	4421.5	-70	140	100.00	RC	Phelps Dodge
RDH-V23	414740.5	6780585.1	4417.7	-65	140	100.00	RC	Phelps Dodge
RDH-V24	415081.7	6779120.5	4372.2	-60	270	250.00	RC	Phelps Dodge
RDH-V25	414297.0	6779911.0	4328.5	-65	135	203.00	RC	Phelps Dodge
RDH-V26	414949.41	6779771.07	4268.63	-59.42	321.07	300.00	RC	Barrick
RDH-V27	415011.05	6779615.57	4248.52	-57.39	318.27	300.00	RC	Barrick
RDH-V28	415342.16	6778999.87	4273.74	-57.68	321.25	300.00	RC	Barrick
RDH-V29	415499.37	6778959.02	4208.57	-58.32	326.19	275.00	RC	Barrick
RDH-V30	414933.99	6779896.11	4274.86	-58.23	132.42	300.00	RC	Barrick
RDH-V31	414835.86	6779716.68	4327.14	-54.36	142.84	300.00	RC	Barrick
RDH-V32	414798.55	6780091.63	4344.91	-60.11	136.47	300.00	RC	Barrick
RDH-V33	415120.11	6779386.1	4277.51	-69.97	309.12	350.00	RC	Barrick
RDH-V34	415165.17	6779545.62	4220.45	-69.83	309.02	350.00	RC	Barrick
RDH-V35	415305.26	6779719.82	4153.3	-69	310.11	350.00	RC	Barrick
RDH-V36	415610.77	6778823.01	4146.41	-68.08	308.41	250.00	RC	Barrick
RDH-V37	415397.47	6779394	4190.73	-58.77	130.75	300.00	RC	Barrick
RDH-V38	414792.46	6779542.42	4322.13	-60.03	319.4	300.00	RC	Barrick
RDH-V39	414562.23	6779913.68	4404.39	-59.06	129.54	300.00	RC	Barrick
RDH-V40	414640.8	6780111.29	4403.5	-58.58	130.99	300.00	RC	Barrick
RDH-V41	414901.05	6779420.31	4315.26	-64.81	130.07	350.00	RC	Barrick
RDH-V42	415035.95	6779869.79	4232.39	-59.93	49.45	300.00	RC	Barrick
RDH-V43	415173.7	6779545.27	4220.55	-59.9	40.04	300.00	RC	Barrick
RDH-V44	414922.15	6778888.2	4309.19	-59.46	40.31	300.00	RC	Barrick
RDH-V45	415330.19	6778704.72	4219.62	-61.2	40.44	350.00	RC	Barrick
VALDD11-01	414780	6780713	4405	-70	135	358.85	DDH	Hochschild
VALDD11-02	415400	6779750	4129.29	-60	270	606.35	DDH	Hochschild
VALDD11-03	414100	6780250	4169.62	-70	90	799.05	DDH	Hochschild
VALDD11-04	416000	6779100	4095.45	-60	270	825.20	DDH	Hochschild
VALDD12-05	414850	6780254	4330	-80	270	636.00	DDH	Hochschild
VALDD12-06	415200	6779750	4176	-60	270	626.20	DDH	Hochschild
VALDD12-07	415700	6778880	4128	-60	270	622.75	DDH	Hochschild
VALDD12-08	415200	6779100	4314	-60	270	410.00	DDH	Hochschild
VALDD12-09	415011	6779604	4250	-80	270	1878.20	DDH	Hochschild
VALDD12-10	415331	6778875	4260	-90	250	790.70	DDH	Hochschild
VALDD12-11	414819	6780006	4326	-90	0	1167.05	DDH	Hochschild
VALDD12-12	414817	6779764	4324	-90	0	1058.00	DDH	Hochschild
VALDD13-13	415000	6780000	4382	-90	0	645.75	DDH	Hochschild
VALDD13-14	415360	6779525	4162	-80	270	1844.90	DDH	Hochschild
VALDD13-15	414700	6779900	4350	-85	90	379.90	DDH	Hochschild
VALDD13-16	415588	6779466	4143	-80	270	1620.80	DDH	Hochschild

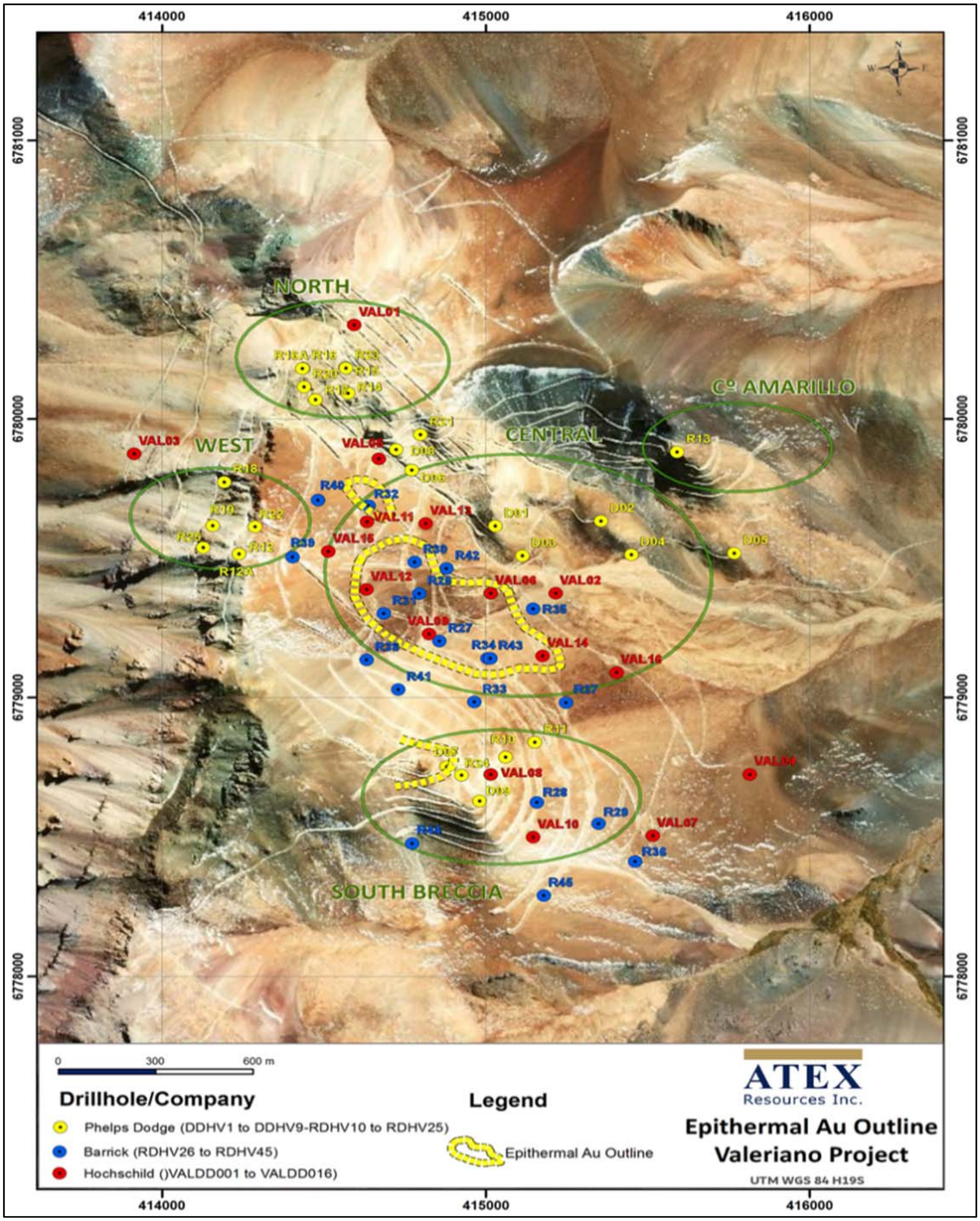


Figure 10.1 Drill Hole Collar Location Map *("VAL-" prefixed drill holes refer to "VALDD-" holes)*

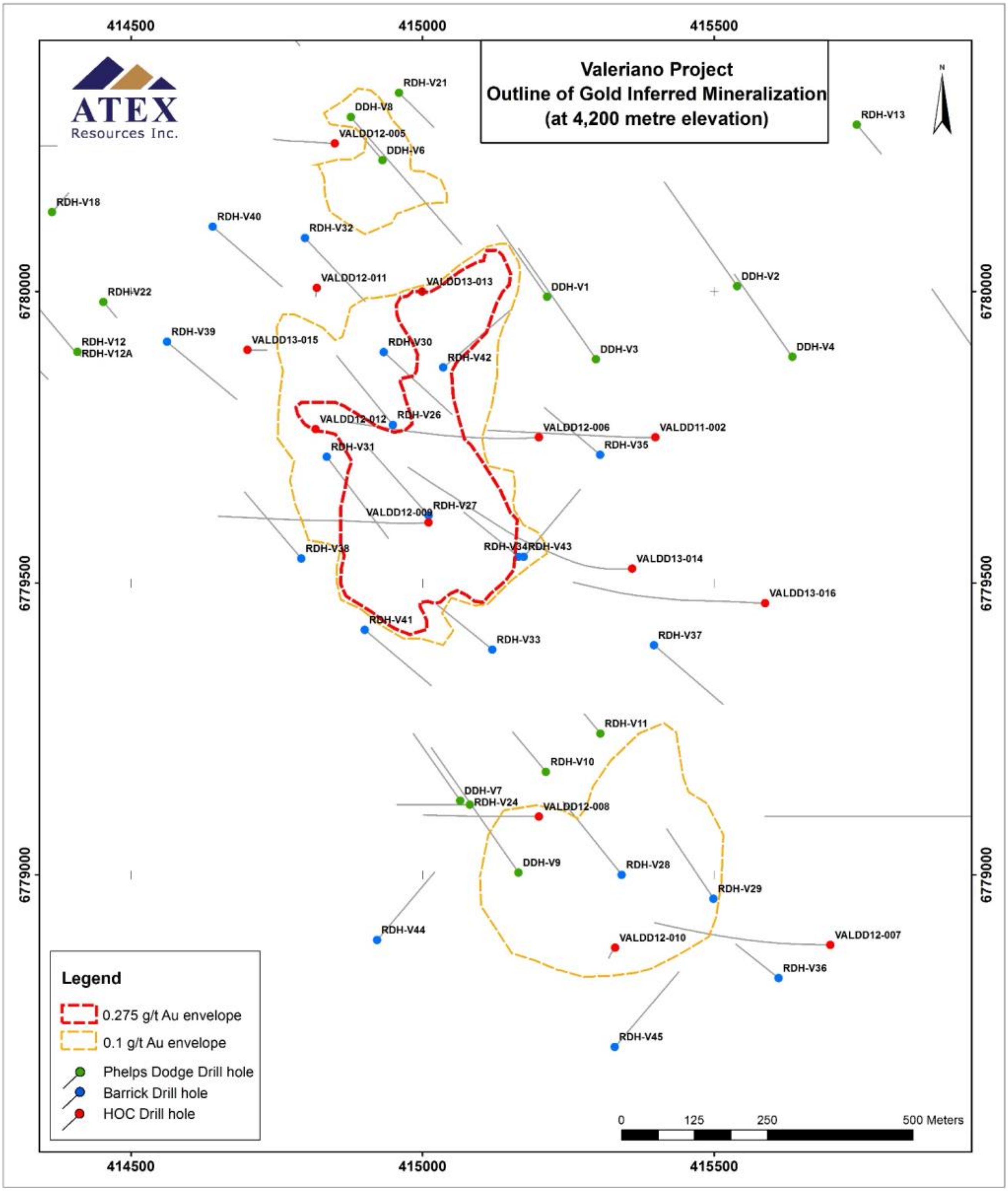


Figure 10.2 Drill Hole Traces with Au Mineralization Outlines Projected from 4200-m Elevation

10.1 Drill Results - Epithermal Au and Porphyry Cu-Au-Mo Mineralization

It is known that Phelps Dodge and Barrick assayed for Au, Ag and Cu but information regarding preparation and analytical methods used by those companies is not available. Hochschild assayed Au via fire assay with a 50 gram aliquot size and atomic absorption finish (FA-50-g/AA) and 35 elements via ICP-MS including Cu, Mo and As. An aqua regia digest was used. The assay database was reviewed by ATEX.

Two (2) types of mineralization were identified:

- Epithermal Au with low Ag and Cu values in shallow drill holes performed by Phelps Dodge and Barrick, as well as in the upper portions of diamond drill holes performed by Hochschild.
- Porphyry Cu-Au-Mo in deeper portions of the drill holes bored by Hochschild

10.1.1 Epithermal Au Mineralization

High-sulphidation epithermal Au-Ag (±Cu, ±As) mineralization was intersection in a number of drill holes with the significant intervals (greater than 0.3 g/t Au over a 5 m width) summarized in Table 10.3. The epithermal Au-Ag (±Cu, ±As) intercepts occur in the upper portions of the mineralization system, from surface to depths of approximately 200 m, and coincide with zones of vughy silica and or breccia in a broader manto-like envelope of advanced argillic alteration. Mineralisation in the upper 150 meters is mainly oxidized (based on core logs) and assciated with fe-oxides such as hematite, goethite and jarocite. Locally gold occurs in association with fresh pyrite and enargite in relict zones of pervasive silification and vuggy silica.

Table 10.3 Epithermal Au Mineralized Intervals

HOLE-ID	Company	From	To	Length[1]	Au[2]	Cu	As
		metres			*g/t*	*%*	*%*
DDH-V7	Phelps Dodge	77.0	82.0	5.0	1.83	N/A[3]	N/A
		89.0	107.0	18.0	0.70	N/A	N/A
RDH-V26	Phelps Dodge	35.0	42.0	7.0	0.91	0.14	N/A
RDH-V27	Phelps Dodge	19.0	108.0	89.0	1.50	0.05	N/A
	incl.	79.0	99.0	20.0	2.82	1.50	N/A
RDH-V29	Barrick	1.0	23.0	22.0	0.52	0.00	N/A
RDH-V30	Barrick	5.0	14.0	9.0	0.64	0.05	N/A
		43.0	57.0	14.0	1.24	0.07	N/A
RDH-V31	Barrick	11.0	40.0	29.0	0.45	0.02	N/A
		54.0	64.0	10.0	1.79	0.14	N/A
		84.0	98.0	14.0	0.75	0.03	N/A
		104.0	154.0	50.0	0.73	0.05	N/A
RDH-V32	Barrick	73.0	78.0	5.0	1.64	0.01	N/A
		91.0	99.0	8.0	0.93	0.04	N/A
		117.0	126.0	9.0	0.51	0.12	N/A
VALDD12-09	Hochschild	37.9	58.4	20.5	0.59	0.02	0.57
		68.0	79.8	11.8	0.70	0.08	0.25
		91.0	121.0	30.0	0.91	0.03	0.25
VALDD12-12	Hochschild	32.0	84.0	52.0	0.52	0.02	0.36
VALDD13-13	Hochschild	84.0	96.0	8.0	0.43	0.03	0.34
VALDD13-14	Hochschild	2.0	10.0	8.0	0.40	0.01	0.02

1. *Lengths represent drill hole intervals. See text for discussion on true widths.*
2. *0.3 Au g/t cut off grade with maximum 5.0 m width internal dilution*
3. *N/A – No assays*

The outline of the gold mineralization envelope, intersected in numerous historical drill holes, is shown on a plan view in Figure 10.1. Within the envelope, oxide gold mineralization occurs with mixed and sulphide mineralization to depths of up to 230 metres below surface and is generally associated with structurally controlled, sub-vertical zones of vuggy silica, breccias and silicified felsic volcanics within a broader sub-horizontal envelope of advanced argillic alteration.

Several gold-mineralized zones have been identified within the Valeriano property with various levels of exploration completed. The most prominent and advanced of these zones, referred to as the Central Zone, measures approximately 300 by 600 metres. The South Breccia has a smaller surface foot print, approximately 200 m by 200 m, than the Central Zone and remains open to the west of DDH-V7.

There is currently insufficient drill density to determine the exact orientation, thickness and limits of gold mineralization. and, therefore it is not possible to determine true widths. In general high-sulphidation style epithermal mineralisation is a mix of structurally controlled and disseminated mineralisation with transitional boundaries which do not allow for definition of true widths.

While there are narrow cm-scale intervals of higher grade gold mineralization with the upper 200 m, probably related to discreet veins, these intervals are typically isolated from the wider (+ 5 m) intervals presented in Table 10.4. There is one case, in drill hole RDH-V27, where a higher grade interval, 20 m grading 2.82 g/t Au and 1.5% Cu, had a relatively significant impact on the wider composited interval (i.e. smearing). However, In general, there are few cases of higher grade internal intervals that have a signficant impact on the wider composited interval.

10.1.2 Porphyry Cu-Au-Mo Mineralization

Seven of 16 drill holes bored by Hochschild cut significant intervals of porphyry Cu-Au-Mo mineralization, and at least five of the intersections are open at depth (VALDD-09 – 1,878 m, VALDD-11 – 1.167 m, VALDD-13 – 646 m, VALDD-14 – 1,850 m and VALDD-16 – 1,621 m). Intersections greater than 15 m, with Cu equivalent cut off of 0.4% and no more than 10m dilution, are shown in Table 10.4.

As would be expected of porphyry-style mineralisation, the Cu and Au assay results are quite consistent throughout with no signficant higher grade intervals of Cu, Au or Mo which impact the composited intervals other than those which have been shown in Table 10.5 and even those cases are of limited signficance.

Deep Cu-Au mineralisation occurs as disseminated and veinlet chalcopyrite>pyrite and chalcopyrite>bornite in K-feldspar and biotite altered rhyolites and granodiorite. The characteristics of the porphyry-style mineralization at Valeriano have been described in greater detail elsewhere in this Report. Cu and Au grades, Cu eq grades, and intercept lengths are similar to well-mineralized porphyries elsewhere and are considered by the author as a strong indication that the Valeriano hydrothermal system has the potential to produce large volumes of higher grade mineralisation that could potentially be economic for underground mining. Further deep diamond drilling is the only way to test this possibility.

Given the limited deep drilling completed to date, there is insufficient information to establish the dimensions or orientation of the porphyry-style mineralization or true widths of the mineralized intervals, or if such measures are actually required and/or appropriate . As discussed elsewhere in this report, porphyry copper mineralisation commonly occurs as large volumes of random vein stockworks and cloud-like disseminations, often with no preferred orientation and in these cases “corrections” for true thickness are both uneccessary and misleading, unless the porphyry system is cut by post mineral bodies (e.g. dykes, breccias, fault zones) that form low grade or barren “screens”. In such cases the dimensions and orientations of the low grade or barren screens are estimated so they can be subtracted from the enclosing “volume” of porphyry-style mineralisation.

Nontheless, and in very general terms, the deep higher-grade porphyry mineralization intersected to date and reported in Table 10.5 can be extrapolated over a horizontal distance of at least 700 m NW-SE and 400 m NE-SW , over a vertical interval of 900 m. Within this zone, the last 400-500 m of holes VALDD14 and 16 are even higher grade.

Cu-Au grades remain open in depth, and even where they drop off this is because the drill hole enters lower grade inter or late-mineral porphyries or breccias which truncate the early stage mineralisation. As such mineralisation may continue on the other side of the later unit. As mentioned elsewhere there is as yet no evidence of a barren or low grade core and Cu-Au grades could conceivably continue to increase as the bornite:chalcopyrite ratio increases with depth.

10.2 Drill hole Sections

Five sections with a 125 m wide swath showing epithermal Au and porphyry Cu-Au mineralized intervals were prepared along the section lines shown in Figure 10.3.

- Figure 10.4 and Figure 10.5 depict epithermal Au mineralization near surface
- Figure 10.6, Figure 10.7 and Figure 10.8 show Cu-Au mineralization at depth.

Table 10.4 Cu-Au-Ag Porphyry Mineralized Intervals (Hochschild)

Hole-ID		From	To	Length	Cu	Au	Ag	Cu eq.
		metres			%	g/t	g/t	%
VALDD12-006		452.0	470.0	18.0	0.52	0.12	0.58	0.63
VALDD12-09		714.0	756.0	42.0	0.42	0.24	0.62	0.64
		900.0	1,750.0	850.0	0.47	0.16	0.77	0.62
	incl.	1,016.0	1,096.0	80.0	0.60	0.24	0.33	0.82
	and	1,182.0	1,314.0	132.0	0.56	0.21	0.98	0.76
VALDD12-11		918.0	958.0	40.0	0.33	0.10	0.68	0.43
		972.0	1,167.1	195.1	0.43	0.14	0.85	0.57
VALDD12-12		914.0	952.0	38.0	0.32	0.13	0.72	0.44
VALDD13-14		378.0	394.0	16.0	0.83	0.26	0.94	1.07
		424.0	440.0	16.0	0.37	0.20	0.26	0.55
		448.0	500.0	52.0	0.36	0.18	0.26	0.52
		514.0	558.0	44.0	0.38	0.29	0.88	0.65
		614.0	638.0	24.0	0.35	0.23	1.04	0.57
		676.0	882.0	206.0	0.44	0.24	0.86	0.66
		910.0	1118.0	208.0	0.52	0.18	0.72	0.70
	incl.	1,042.0	1,086.0	44.0	0.73	0.20	0.89	0.91
		1,132.0	1,830.0	698.0	0.57	0.27	1.22	0.82
	incl.	1,482.0	1,528.0	46.0	0.76	0.36	0.45	1.07
	and	1,596.0	1,670.0	76.0	0.85	0.41	2.18	1.24
VALDD13-16		270.0	402.0	122.0	0.25	0.30	0.54	0.52
		424.0	446.0	22.0	0.27	0.28	0.31	0.52
		476.0	196.0	20.0	0.30	0.14	0.72	0.43
		576.0	776.0	200.0	0.34	0.20	0.52	0.52
		822.0	896.0	74.0	0.59	0.17	1.02	0.59
		938.0	1,620.8	682.8	0.42	0.16	0.72	0.57
	incl.	1,214.0	1,620.8	406.8	0.46	0.17	0.80	0.61

1. Lengths represent drill hole intervals. See text for discussion on true widths.
2. 0.4% Cu eq. cut-off, 10.0 m internal dilution.
3. Minimum 15 m intervals reported

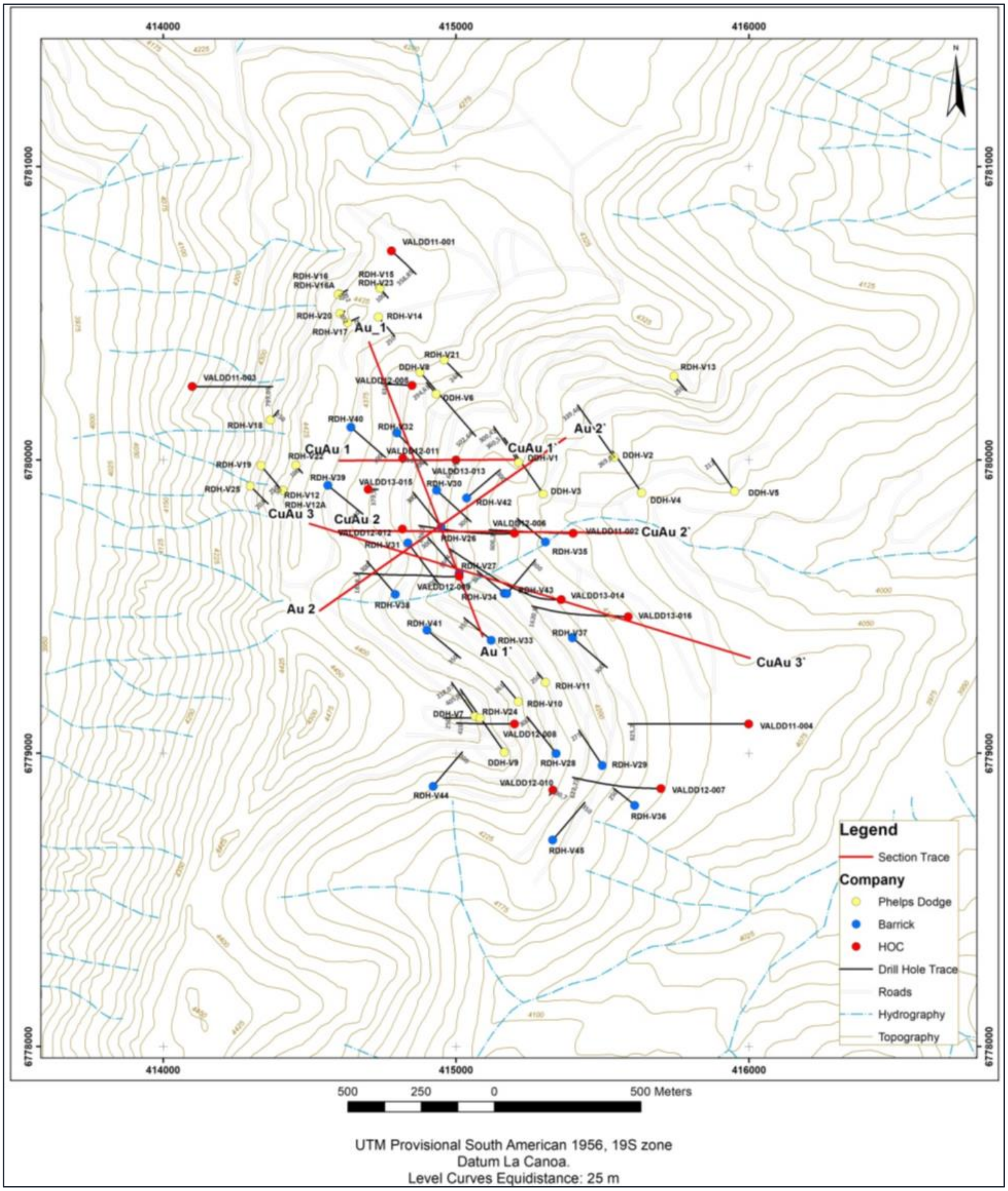


Figure 10.3 Planview: Sections Au1, Au2, CuAu1, CuAu2 and CuAu3

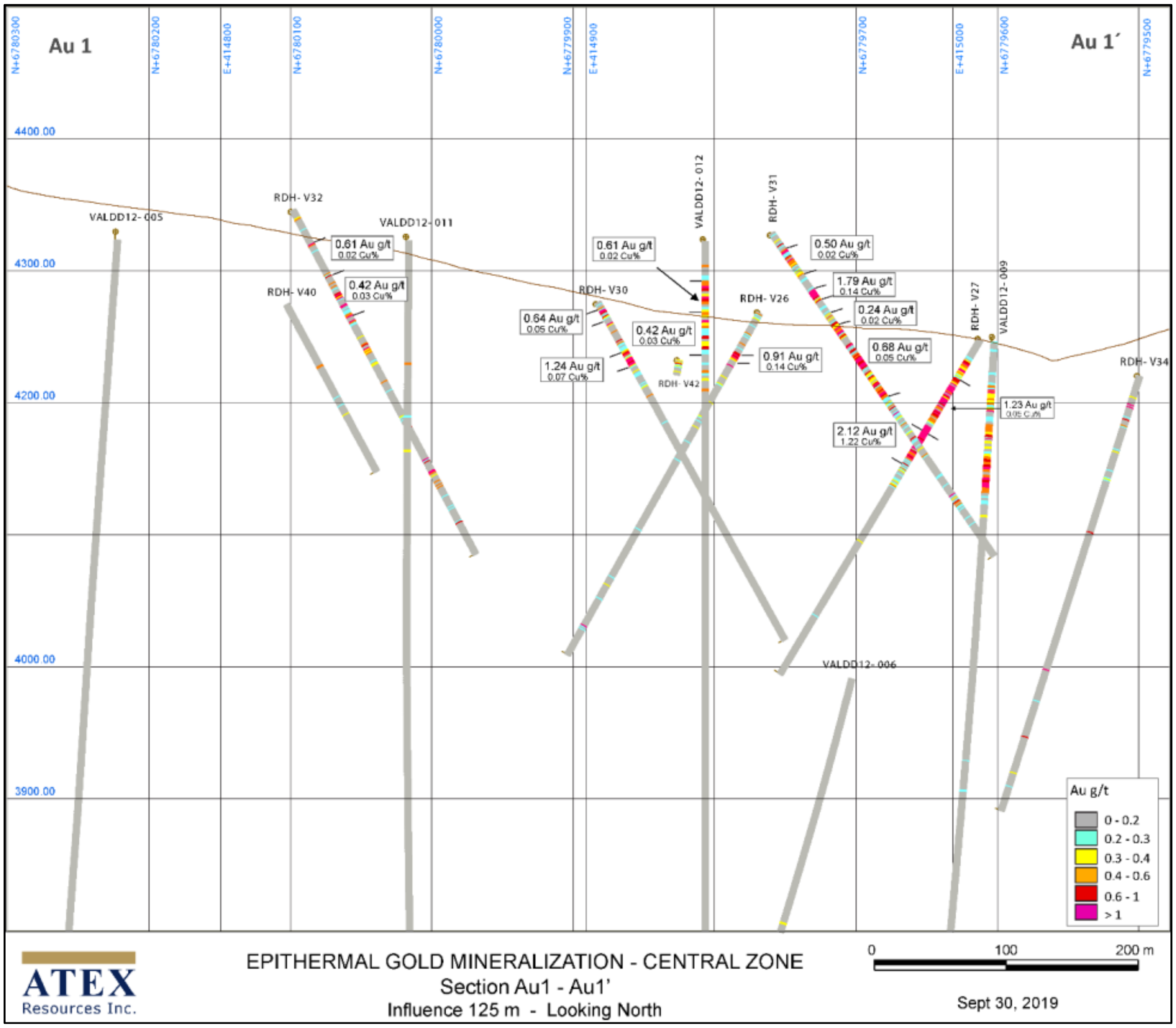


Figure 10.4 Assay Section Au1 – Central Zone Epithermal Gold Mineralization

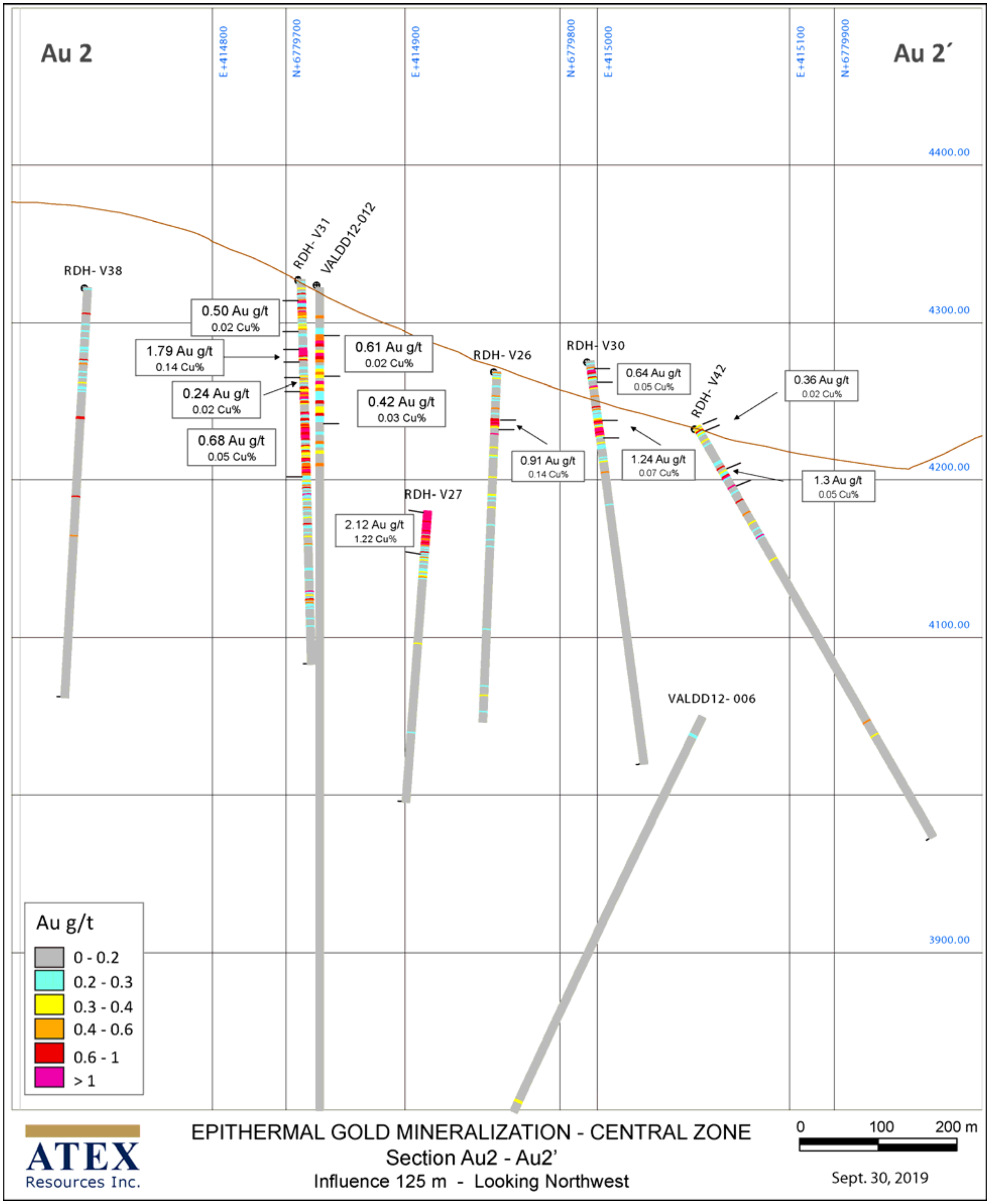


Figure 10.5 Assay Section Au2 – Central Zone Epithermal Gold Mineralization

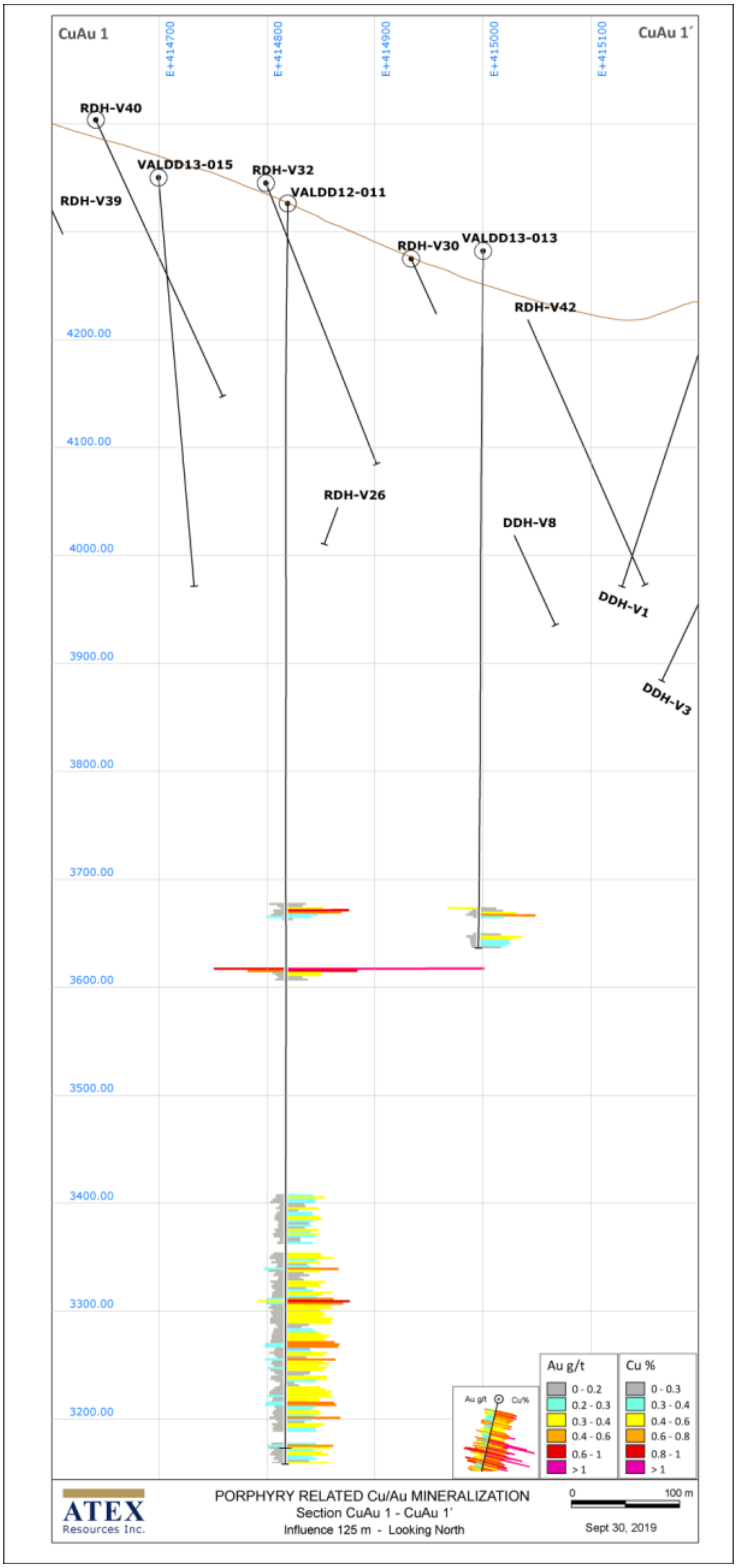


Figure 10.6 Assay Section CuAu1 – Porphyry Related Cu-Au Mineralization

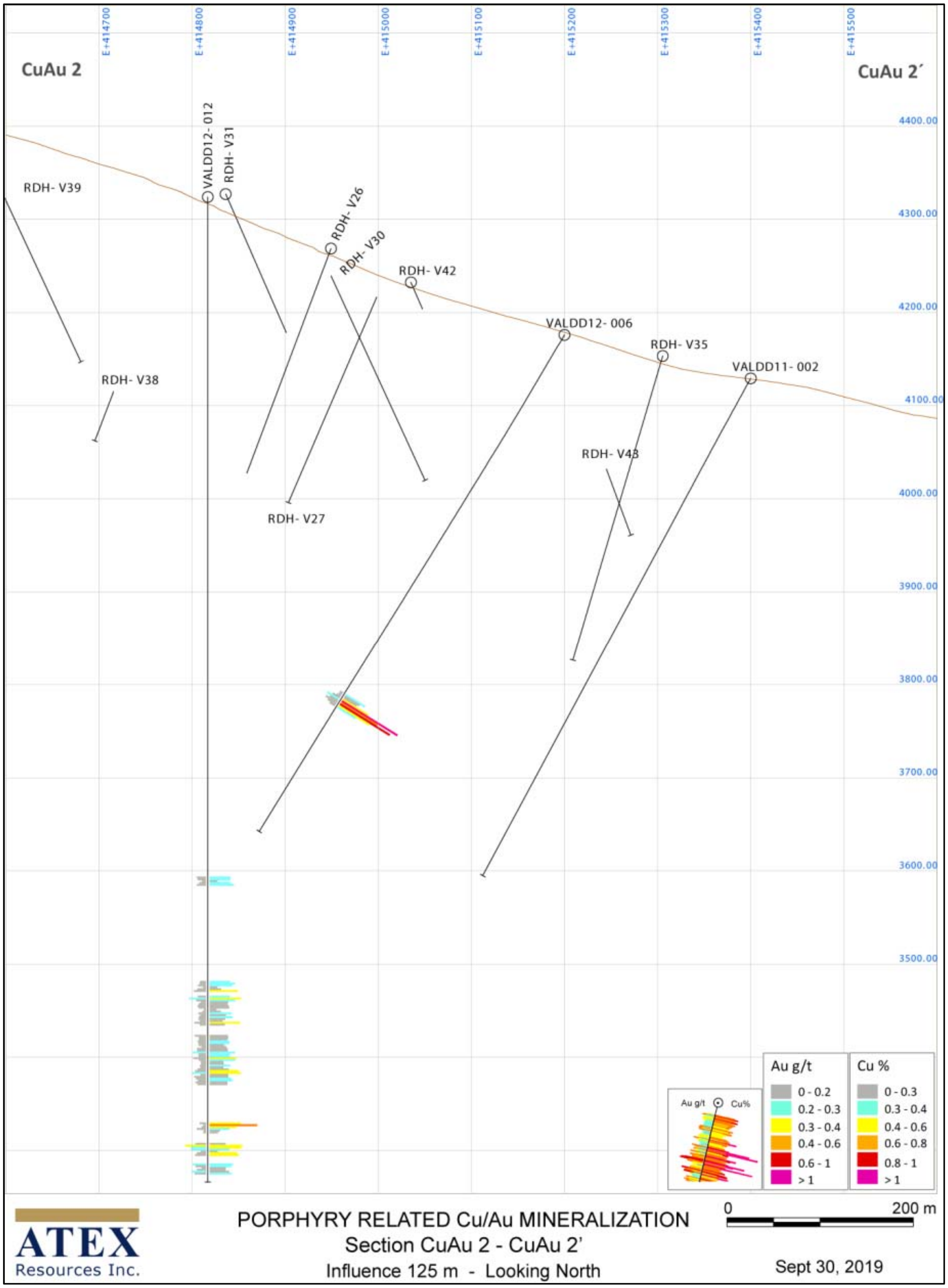


Figure 10.7 Assay Section CuAu2 – Porphyry Related Cu-Au Mineralization

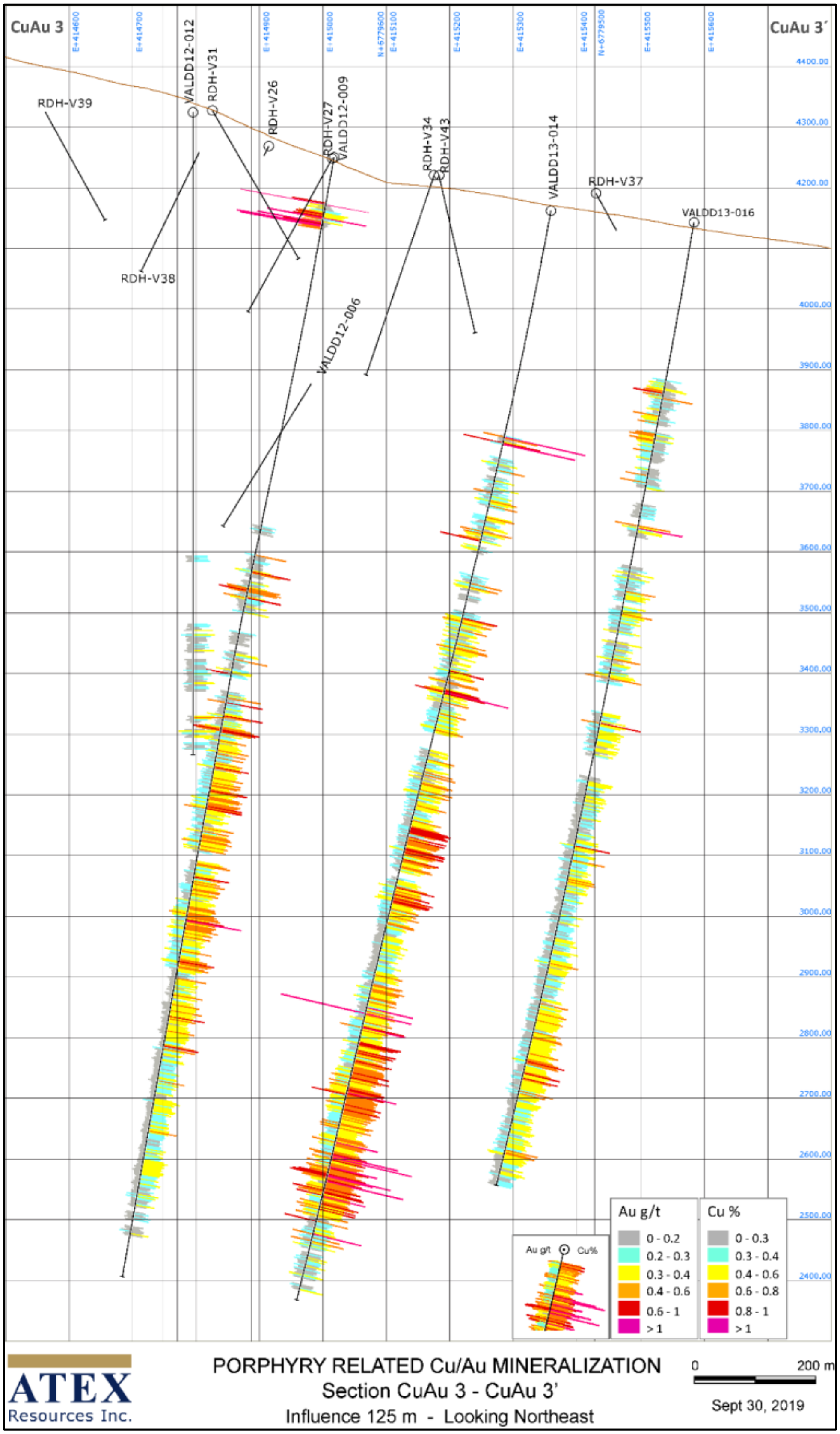


Figure 10.8 Assay Section CuAu3 – Porphyry Related Cu-Au Mineralization

11.0 SAMPLING PREPARATION, ANALYSES AND SECURITY

For details regarding sampling preparation, analyses and security for the exploration programs, the reader should refer to the technical report “NI 43-101 TECHNICAL REPORT ON THE VALERIANO PROJECT, ATACAMA REGION, CHILE” dated November 25, 2019, written by the David R. Hopper and filed appropriately on www.sedar.com. A summary of “Section 11.0 SAMPLING PREPARATION, ANALYSES AND SECURITY” from the November 25, 2019 report follows.

Sampling, sample preparation, analytical procedures and chain of custody protocols, as well as quality control and quality assurance data for gold and copper, were available only for Hochschild’s exploration programme.

The sample preparation and assaying of drill core samples from Hochschild diamond drilling program was undertaken by the ALS Global - Geochemistry Analytical Lab (previously ALS Chemex) located in Coquimbo and Copiapo, Chile. The laboratory meets the requirements of International Standards ISO/IEC 17025:2005 and ISO 9001:2015. ALS Global quality control program includes quality control steps through sample preparation and analysis, inter-laboratory test program and internal audits.

ALS Chemex-Coquimbo carried out preparation, chemical analyses and QA/QC. The preparation protocol (PREP-31B) consisted of crushing 70% to less than 2 mm (-10#), rotary split of 1 kg and pulverization to better than 85% passing 75 microns (-150#).

Gold was analyzed via 50 gram fire assay and AA. Thirty-five (35) additional elements, which included copper, silver, molybdenum and arsenic were assayed using aqua regia digestion and ICP-AES analysis (ME-ICP41).

The quality control and assurance programme for gold and copper included analytical assays of pulp, coarse reject and ¼ core duplicates as well as Au-Cu standards and blanks.

Results obtained in the analyses of pulp and coarse duplicates indicated that Student T tests, biases, absolute relative difference, correlation coefficients and slopes complied with QA-QC acceptability criteria.

Gold and copper mean relative values for both pulp and coarse duplicates were above acceptance limits due to the amount of very low and near detection limit values; 67% and 73% respectively. The effect of very low gold and copper grades on the mean relative error was verified by repeating the statistical analyses on grades above 0.1 g/t Au and 500 ppm Cu. Final mean relative errors for Au-Cu pulp and coarse duplicates met acceptance limit criteria. Details are presented in the Table 11.1.

Statistical results on Au and Cu standards and blanks were satisfactory.

Overall, QA-QC results comply with industrial standards.

Table 11.1 Mean Relative Errors for Au-Cu Pulp and Coarse Duplicates

Variable	Cut-off ppm	Duplicate Type	Size	Number of Samples	Student T Test	Mean Rel Error	Bias	% Data with |Rel Diff| < max	Lineal Regression r^2	Intercept	Slope
Au	≥ 0.005	Pulp	75µ (-150#)	299	-0.62	**10.29**	-0.54	98.93	0.981	0.002	0.989
		Coarse	2mm (-10#)	301	0.54	**13.19**	0.51	99.35	0.983	-0.005	1.050
	≥ 0.1	Pulp	75µ (-150#)	99	-0.23	7.09	-0.20	100.00	0.966	0.008	0.962
		Coarse	2mm (-10#)	98	0.20	6.39	0.24	100.00	0.976	0.027	1.137
Cu	≥ 1	Pulp	75µ (-150#)	108	-0.70	**6.14**	-0.34	96.30	0.999	**-0.618**	1.005
		Coarse	2mm (-10#)	111	1.32	**13.60**	2.65	95.58	0.986	**-1.347**	0.977
	≥ 500	Pulp	75µ (-150#)	23	-1.27	1.51	-0.70	100.00	0.999	**6.278**	1.003
		Coarse	2mm (-10#)	19	0.78	6.50	1.43	100.00	0.985	**15.582**	0.985

The overall conclusion is that the available QA-QC data generated by Hochschild for the Valeriano drill program meets acceptability criteria for the stage of the project and the exploration data can be used for modeling and estimation of inferred resources.

There is no QA/QC data available from the Phelps Dodge drilling program. From drill logs, it is apparent that diamond core was sampled based upon geological controls in areas of potential mineralization and was sampled and assayed at 1-metre intervals in areas of no apparent mineralization. Drill core recovery appears to have been good. The sampling protocol resulted in variable sample lengths in areas of interest typically from 10 to 50 centimeters. In the case of reserve circulation drill holes, sampling was completed at 1-metre intervals and the entire drill hole was sampled and assayed. There is no information available regarding the sample preparation or assaying methods used by Phelps Dodge.

There is no QA/QC data available and little sample or assaying methodology information available from the Barrick reverse circulation drilling program other than sampling was undertaken at 1-metre intervals and sampling commenced at the beginning of the drill holes.

11.1 Comments on Section 11

Considering the seniority of the companies and the professionals involved at the time, there is no apparent reason to question the validity of the Phelps Dodge or Barrick assaying information. The assay results are internally consistent within the oxide resource area, geologically reasonable for the type of deposit and intensity of mineralization, and are comparable to the assay results returned by Hochschild drilling in the same area. It is therefore considered reasonable that these results be included in the estimation of an inferred resource on an early stage exploration property.

12.0 DATA VERIFICATION

The author considers the data contained in the preceding sections of this report to be sufficiently accurate and reliable for the calculation of an inferred resource estimate for the Valeriano deposits, specifically the near-surface gold oxide deposit and the deeper copper-gold porphyry deposit, and to make recommendations regarding further evaluation and exploration work, and what form such work might take.

The author visited the core storage facilities in Vallenar between the 25th and 27th of June, 2019 and verified the condition of the facilities and Phelps Dodge and Hochschild diamond drill core and cuttings.

To the best of his ability, the author has independently cross-checked a reasonable number of records and products included in this report, such as drill hole intercepts, copper equivalent calculations, collar coordinates, azimuths etcetera, against the raw database as provided to ATEX by SCM Valleno.

By virtue of his prior first-hand knowledge of the project and Hochschild’s practices and procedures, the author also can attest to the reliability of other information (in so far as geological data can be considered reliable) collected and processed by Hochschild, such as but not limited to geological and geophysical data presented, geochemical assay results and spectral data and interpretations, sections and interpretations prepared by Hochschild, the author, and ATEX.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

No mineral processing or metallurgical test work has been completed on mineralization from the Valeriano Project. ATEX has collected samples from the Hochschild diamond drill core for bottle roll testing. Results are pending.

14.0 MINERAL RESOURCES ESTIMATES

ATEX requested that SRK Consulting (Chile) SpA (SRK) prepare gold (Au), copper (Cu) and silver (Ag) resource estimate for the near surface gold oxide mineralization and the deeper, underlying copper gold porphyry mineralization. The resources were based upon in-house structural, lithological and mineralization three-dimensional models.

Tasks carried out by SRK were as follow:

- Statistics on sample lengths and copper values for composite length determination.
- Block model definition
- Gold, copper and silver estimations consisting of the following studies:
  - Definition of gold, copper and silver estimation domains based upon lithological and mineralization models
  - Classification of mineralized and non-mineralized material via indicator kriging for each estimation domain
  - Variography
  - Estimation plans
  - Global bias and drift analyses for model validation
  - Graphic validation of drill hole composites against block estimates
- Resource tabulations for each mineralized zone

The Gold Oxide Resource Estimate is based upon 4,455 metres in 55 drill holes (1,148 metres in 19 diamond drill holes and 3,307 metres in 36 reverse circulation drill holes) from the 1990's Barrick and Phelps Dodge exploration programs and from Hochschild 2011 to 2013 drilling programs. A total of 2,209 two-meter composites were used in the estimation. The resource estimation units are based on ATEX's three-dimensional models for lithology and mineralization that were built using geological units described in Hochschild's core logs and a structural model based upon surface maps, ground magnetics, and satellite imagery.

The Gold Oxide Resource lies within the oxide zone confined to rhyolite and overlying volcaniclastic units (sandstone and agglomerate). The majority of the Oxide Resource extends to depths of approximately 100 metres below surface, locally extending deeper. Within the rhyolite sequence, the Oxide Resource is restricted to upper 85 metres of the rhyolite unit as statistical analyses shows that the gold grade drops significantly below that horizon.

After statistical analysis of gold grades within each estimation domain, and prior to the resource estimation, mineralized versus non-mineralized material was defined by indicator kriging for each domain. Variography was analyzed by means of down the hole correlograms and omnidirectional correlograms.. The resource was estimated via Ordinary Kriging in 4 passes. Gold grades were capped at 4.00 g/t Au in agglomerate, 1.65 g/t Au in upper rhyolite and 0.29 g/t Au in sandstone. The resulting 10 x 10 x 10-metre block model was validated by means of global and conditional bias assessments drift analyses and graphic comparisons between block estimates and composite mean grades

The Copper Gold Porphyry Resource Estimate is based upon 2,701 metres of diamond drilling in four drill holes completed by Hochschild. A total of 1,353 two-metre composites were used in the estimation. The

Copper Gold Porphyry Resource is limited to the zone of dominant chalcopyrite copper mineralization. This mineralization was subdivided in two sub-units for resource tabulation purposes: 1) higher copper grade within the granodiorite porphyry and south breccia (Chalcopyrite-2)); and 2) lower copper grade within all other intrusive units, amphitheatre breccia and rhyolite (Chalcopyrite-1). After statistical analysis of copper grades within each estimation unit, and prior to the resource estimation, mineralized versus non-mineralized material was defined by indicator kriging for each unit. Variography was analyzed by means of down the hole correlograms and omnidirectional correlograms. The resource was estimated via Ordinary Kriging in 4 passes. Copper grades were capped at 1.0% in "Chalcopyrite-1" and 1.2% in Chalcopyrite-2. The resulting 10 x 10 x 10-metre block model was validated by means of global and conditional bias assessments, drift analyses and graphic comparisons between block estimates and composite mean grades.

No specific gravity measurements have been completed on mineralized material from either the oxide gold resource or the copper gold porphyry resource. An estimated specific gravity of 2.5 has been used for both resource estimates. Samples for specific gravity analyses are currently be collected from drill core from the 2012 – 2014 drilling program.

Given the current drill density for the Copper Gold Porphyry Resource, partial lack of data for QA/QC analyses in the Gold Oxide Resource and absence of specific gravity data, both resource estimates have been classified as Inferred Mineral Resources.

14.1 Geology Model

The Valeriano geology model consists of structural, lithological and mineralogical interpretations based upon the following information:

- Hochschild drill hole logs
- Ground magnetics 3-D data
- Surface topography
- Satellite imagery
- Hochschild and Phelps Dodge surface geology maps

Three dimensional (3-D) solids were generated using "implicit modelling technique" of Leapfrog Geo software. Solid boundary generation in the structural, lithological and mineralization models were controlled by "snapping" modelled outlines with corresponding drill hole contact points.

14.1.1 Structural Model

Structure modelling was based upon the interpretation of surface structural patterns, ground magnetics pole-reduced and analytical signal maps and satellite images. Bearing-dip determinations and possible structural displacements were inferred from surface topography analysis and geophysical data interpretations that were finally correlated to diamond drill hole geological descriptions.

Lithology and mineralization interpretations, described in the following sections, were based upon this model.

Structural pattern interpretation on satellite and analytical signal magnetics images are shown in Figure 14.1 and a view of the structural 3-D model in Figure 2-2.

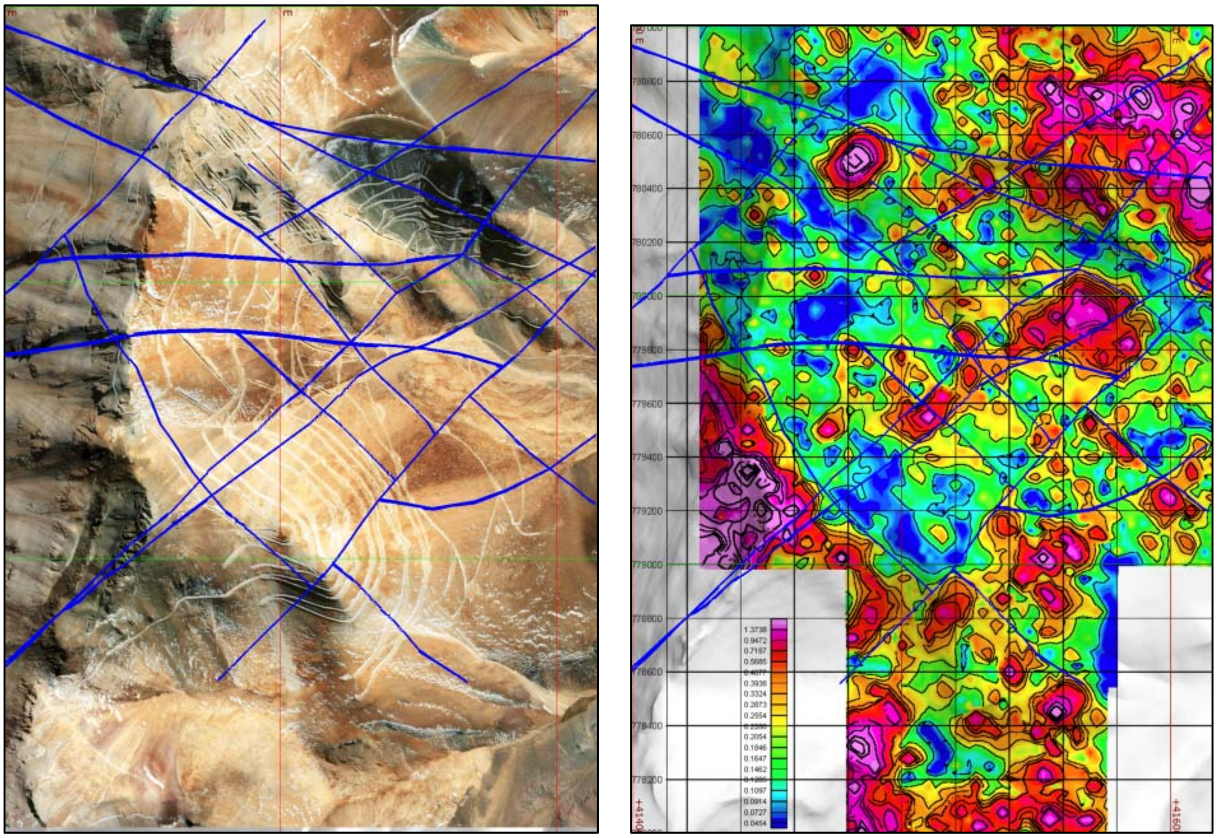


Figure 14.1 Structural pattern interpretation: satellite (left) & analytical signal mag (right)

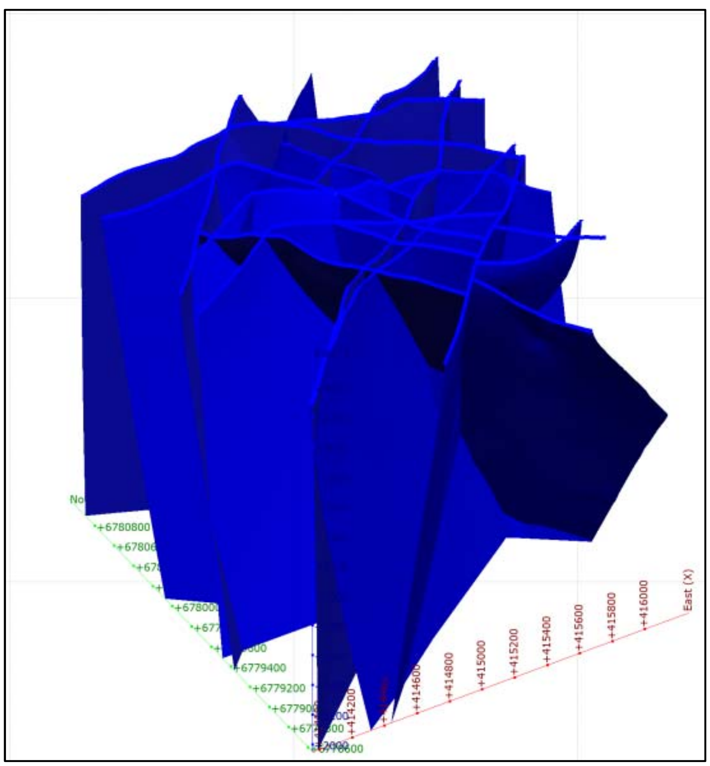


Figure 14.2 3-D Structural model (NE view)

14.1.2 Lithological 3-D Model

The lithological model was based upon Hochschild drill hole and surface geology data (2011-2013), as well as in Phelps Dodge maps (1997).

HOC identified twenty-one (21) lithological types that ATEX grouped in eight (8) main units for modelling purposes. Details of original and grouped units are shown in Table 1.1. These units were primarily defined according to genetic and geochemical similarities and secondarily to spatial distribution.

Three dimensional views are shown in Figure 14.3 and Figure 14.4.

Table 14.1 HOC Lithological Types - ATEX Lithological Units – Color Code

HOC Lithology Types	ATEX Litho Units	Color
Volcanic agglomerate	AV	
Cracked volcanic agglomerate		
Tuffite		
Lapilli dacite tuff		
Sandstone	ARE	
Mudstone		
Regolith		
Tuffite		
Overburden		
Amphitheatre breccia	BX ANFITEATRO	
Diorite porphyry		
South breccia	BX SUR	
Hydrothermal breccia		
Granodiorite	GD	
Granodiorite porphyry		
Hornblende diorite porphyry	PD_T	
Late diorite porphyry		
Andesite		
Qz-hornblende diorite porphyry	PQDH	
Rhyolite	RIO	
Cracked rhyolite		
Dacite Tuff		OR
Andesite		

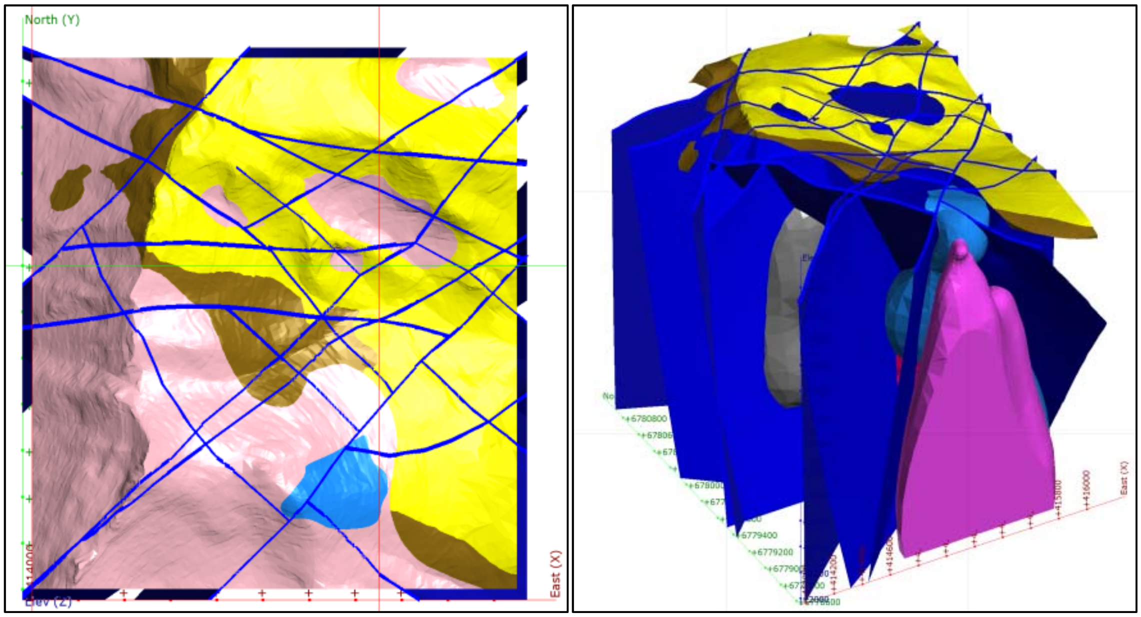


Figure 14.3 Lithology model 3-D solid plan view (left); and NE view (right)

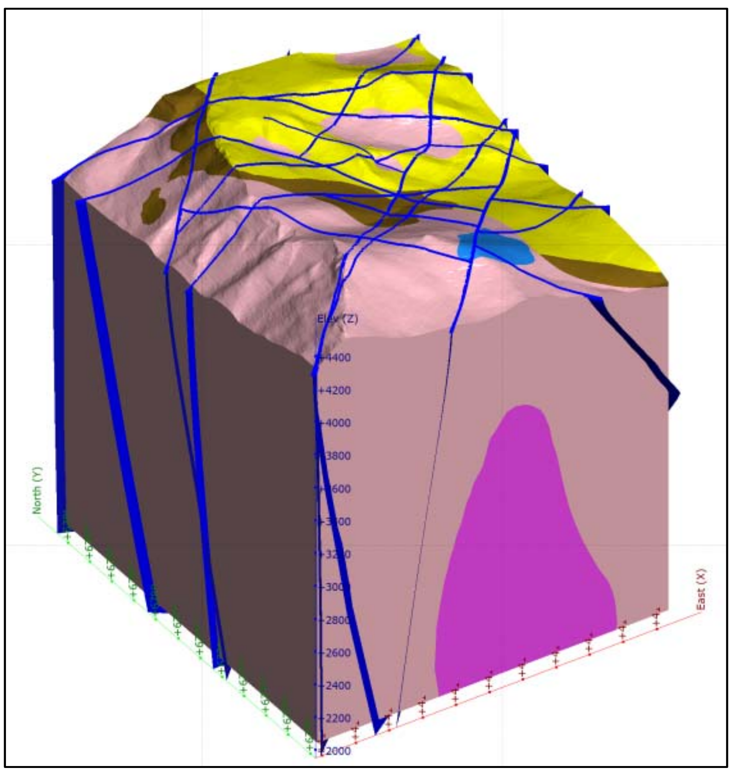


Figure 14.4 Lithology model 3-D solid - NE view

Lithological solids were identified and coded by SRK. Corresponding database and block model variable assignations are given in Table 14.2.

Table 14.2 SRK Lithological Solid Identification and Variable Assignment

Lithological Unit	Solid	Code	DB Variable	BM Variable
ARE	GM_GROUP2_-_ARENISCA_DXF	1	Lito f	Lito f
AV	GM_GROUP2_-_AV_DXF	2		
BX ANFITEATRO	GM_GROUP2_-_BX_ANFITEATRO_DXF	3		
BX SUR	GM_GROUP2_-_BX_SUR_DXF	4		
GD	GM_GROUP2_-_GD_DXF	5		
PD_T	GM_GROUP2_-_PD_T_DXF	6		
PQDH	GM_GROUP2_-_PQDH_DXF	7		
RIO	GM_GROUP2_-_RIOLITA_DXF	8		

14.1.3 Mineralization Model

The mineralization model is based upon Hochschild's drill hole descriptions correlated with the ATEX's structural model.

HOC identified ten (10) mineralogical associations that were grouped in six (6) main units according to dominant mineral in each assemblage. Details are shown in Table 14.3.

Three dimensional views are shown in Figure 14.5 and Figure 14.6.

Table 14.3 HOC Mineralization Assemblages – ATEX Units – Color Code

HOC Min Assemblages	ATEX Min Units	Color
Oxide	OX	
Oxide + Sulphide	MX	
Pyrite - Covellite	CV	
Pyrite - Covellite - Chalcopyrite		
Pyrite - Enargite	PY-EN	
Chalcopyrite	CPY	
Chalcopyrite > Pyrite		
Chalcopyrite > Bornite		
Pyrite	PY	
Pyrite > Chalcopyrite		

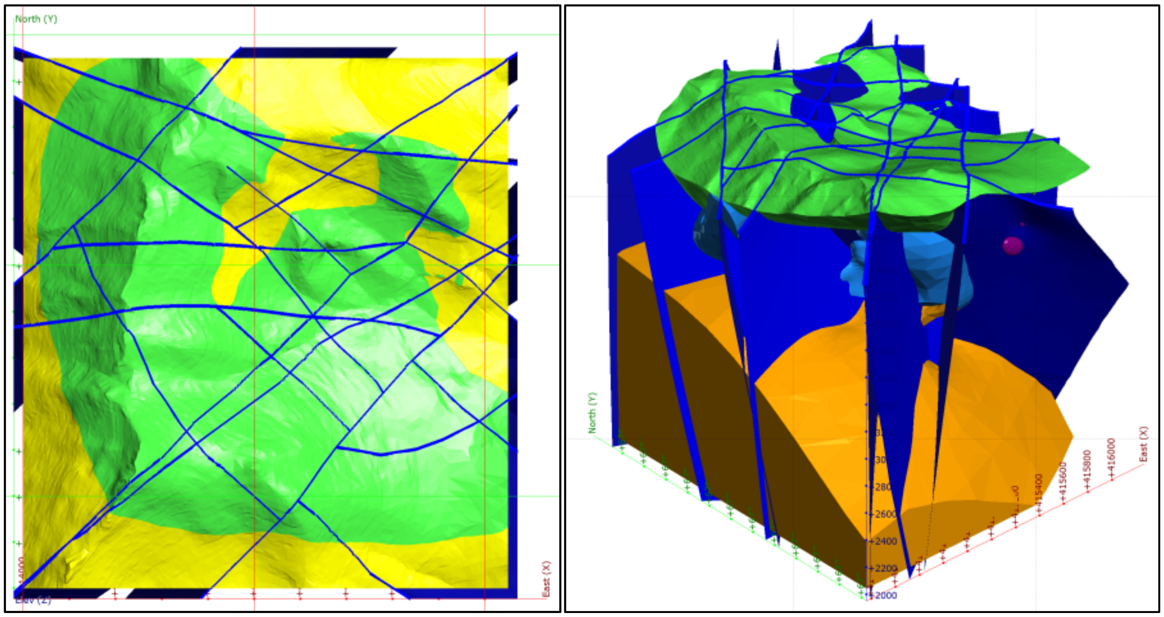


Figure 14.5 Mineralization model 3-D solid plan view (left) and NE view (right)

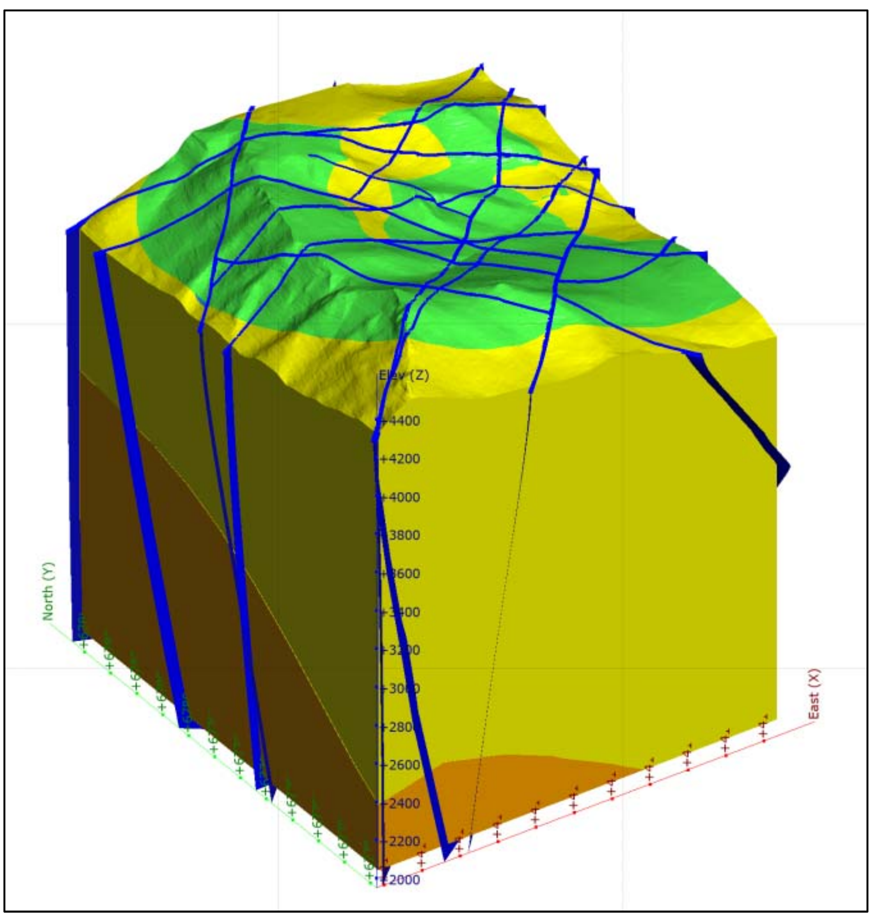


Figure 14.6 Mineralization model 3-D NE view

Mineralization solids were identified and coded by SRK. Corresponding database and block model variable assignations are given in Table 14.4.

Table 14.4 SRK Mineralization Solid Identification and Variable Assignment

Mineralization Units		Solid	Code	DB Variable	BM Variable
Oxides	OX	GM_MINZONE_GROUP_-_OX_DXF	1	Minz f	Minz f
Mixed (oxides - sulphides)	MX	GM_MINZONE_GROUP_-_MX_DXF	2		
Covellite	CV	GM_MINZONE_GROUP_-_CV_DXF	3		
Chalcopyrite	CPY	GM_MINZONE_GROUP_-_CPY_DXF	4		
Pyrite-Enargite	PY-EN	GM_MINZONE_GROUP_-_PY-EN_DXF	5		
Pyrite	PY	GM_MINZONE_GROUP_-_PY_DXF	6		

14.1.4 Estimation Boundary - 3D Solid

ATEX provided SRK with an estimation boundary solid in order to eliminate blocks estimated beyond a 300 meter envelope. A schematic section of this model is depicted in Figure 14.7.

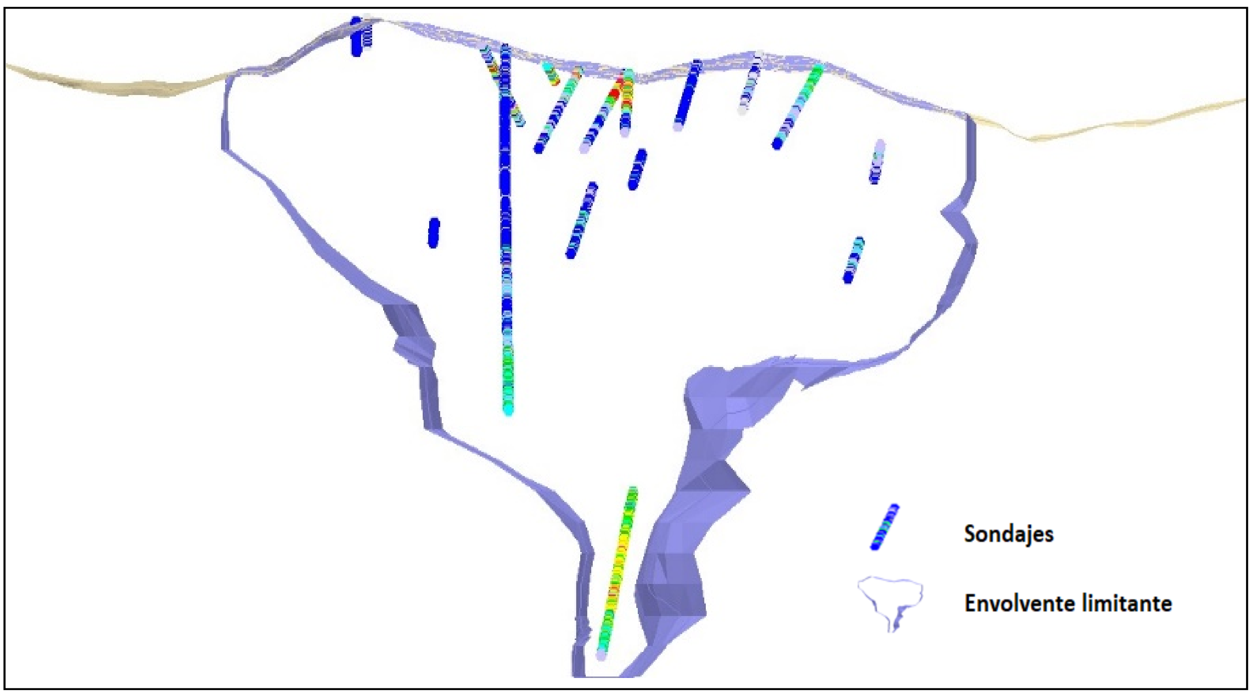


Figure 14.7 Estimation Boundary Model Schematic Section

14.2 Exploratory Data Analysis

14.2.1 Database Description

The ATEX database consisted of the three files which include data pertaining a total of 63 (25 DDH and 38 RC) drill holes:

- **Collar_Val**: Hole-ID – X-Y-Z coordinates, length, date, drill hole type (DDH or RC) and company.
- **Survey_Val**: Hole-ID – from – to – azimuth and dip.

- **Assays_Val**: Hole-ID – from – to – Au (g/t) – copper (ppm) – silver (ppm)

ATEX drill hole data was imported to Vulcan™ software and filed as *"valsondajes_2020.son.isis"*. Drill hole locations are shown in Figures 10.1 and 10.2.

14.2.2 Compositing and Statistics

The majority of sample lengths at Valeriano are of 1.0 or 2.0 m as shown in the histogram in Figure 14.8. One (1.0) and two (2.0) m samples amount to 11,279 and 6,522 respectively.

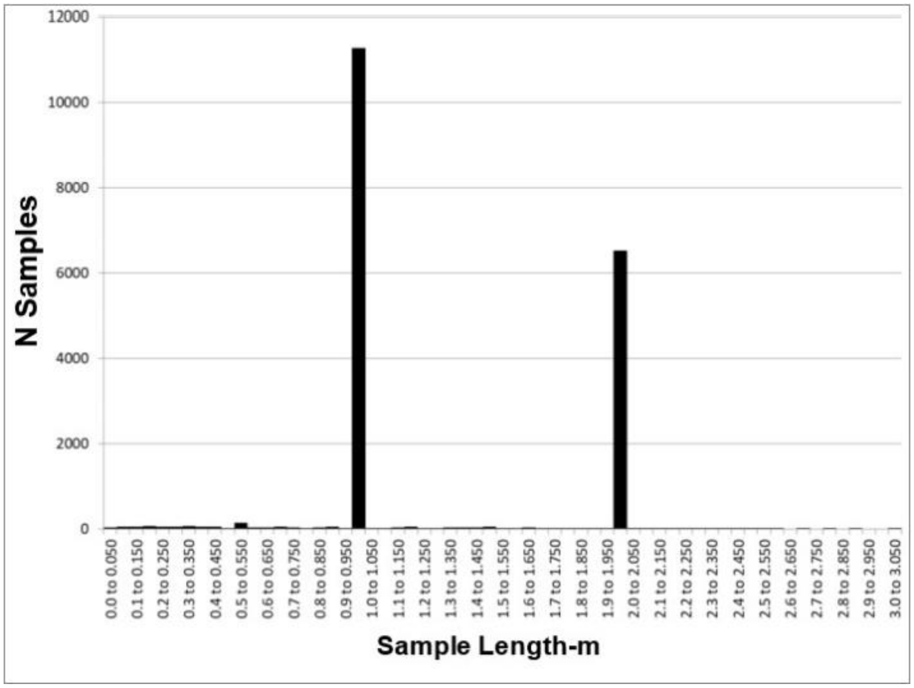


Figure 14.8 Sample Length Histogram

Cu mean, standard deviation, variance and coefficient of variation, as well as corresponding relative error for each of these variables were calculated for 1.0, 2.0, 3.0, 4.0, 5.0 and 6.0 m composites and then compared to determine the "best" composite length for the resource estimation. Results are shown in the following graphs:

- Composite length (vs Cu mean and standard deviation) and (vs composite variance and coefficient of variation) graphs are shown in Figure 14.9 and Figure 14.10 respectively.
- Composite Pair (vs Cu mean and standard deviation relative errors) and (vs composite variance and coefficient of variation relative errors) graphs are shown in Figure 14.11 and 14.12 respectively.

Relative errors were calculated between the following pairs of composites [xm and (xm-1m)]:

- and 1.0 m
- and 2.0 m
- and 3.0 m
- and 4.0 m
- and 5.0 m

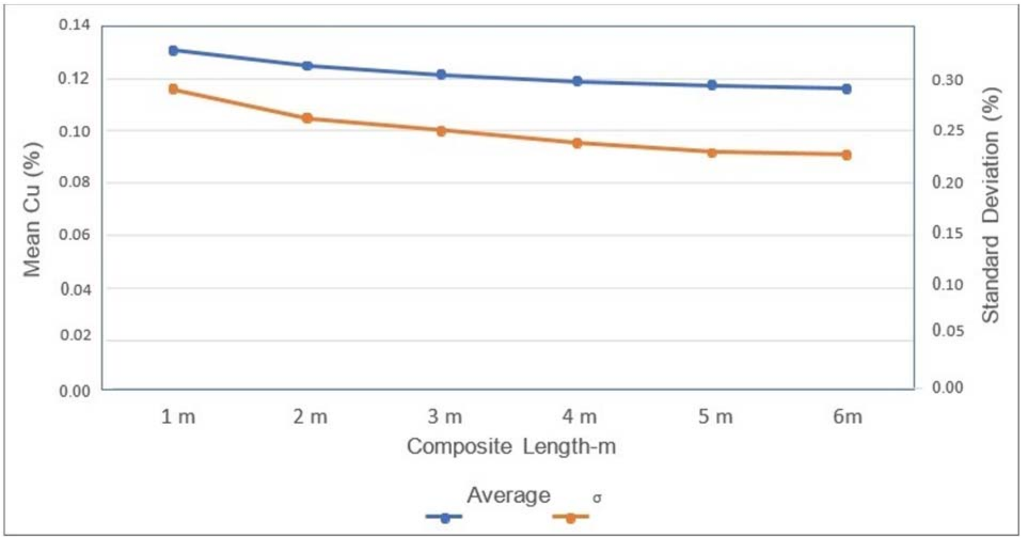


Figure 14.9 Composite Length vs Cu Mean and Standard Deviation

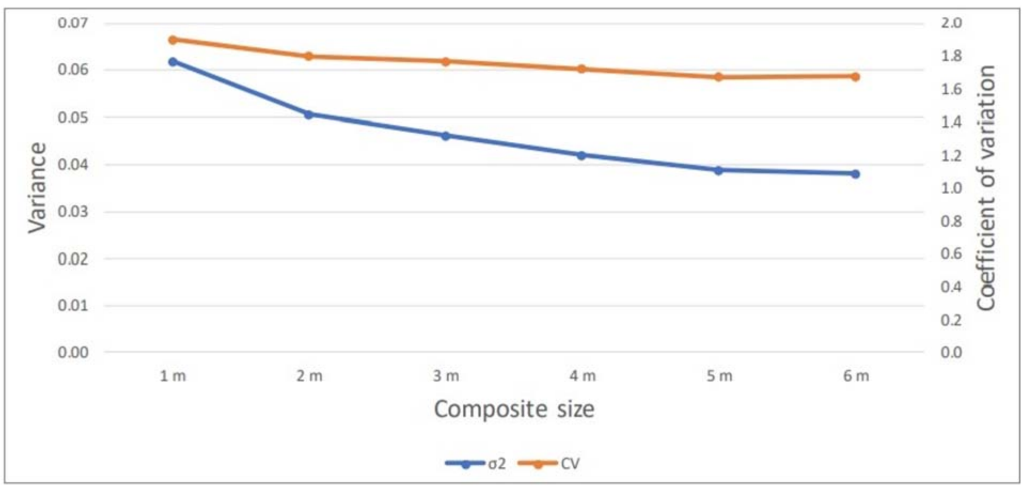


Figure 14.10 Composite Length vs Variance and Coefficient of Variation

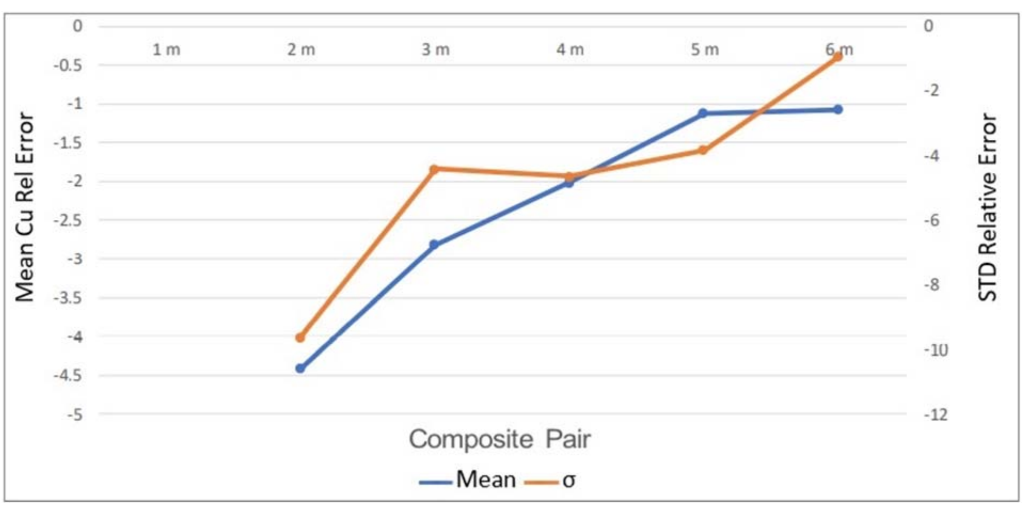


Figure 14.11 Composite Pair [comp (xm) to comp (xm-1m)] vs Cu Mean and STD Relative Errors

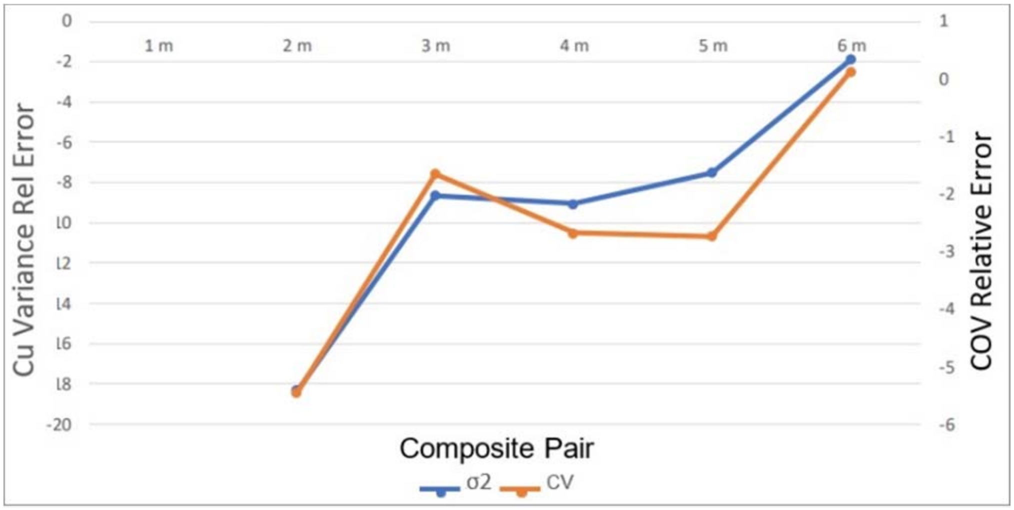


Figure 14.12 Composite Pair [comp (xm) to comp (xm-1m)] vs Cu Variance & COV Relative Errors

14.2.3 Comments and Conclusions

- 1.0 m composites have the highest variability within the analyzed length range as seen in Figure 14.9 and Figure 14.10.
- Cu Mean relative errors stabilize at comparisons between 4.0 and 5.0 m composites, while standard deviation relative errors at 3.0 and 2.0 m composites. See Figure 14.11.
- Variance and coefficient of variance mean relative errors stabilize at comparisons between 3.0 and 2.0 m composites. See Figure 14.12.
- Based on these results, as well as in the original sample lengths, it was decided to use 2.0 m composites for Cu-Au-Ag estimations.

14.3 Block Model Definition

Block model definition and parameters for gold, copper and silver resource estimation are shown in Table 14.5 and Table 14.6 respectively.

Table 14.5 Valeriano Block Model Definition

Parameter		Unit
X Origin	414,000	m
Y Origin	6,778,000	m
Z Origin	2,000	m
Model Size X-Axis	2,300	m
Model Size Y-Axis	2,500	m
Model Size Z-Axis	2,500	m
Bearing	90	deg.
Plunge	0	deg.
Dip	0	deg.
Block Size - X	10	m
Block Size - y	10	m
Block Size - Z	10	m

Table 14.6 Valeriano Block Model Parameters

Variable	Description
Lito_f	Block lithology unit
Minz_f	Block mineralization unit
UE_AUF	Final Au estimation domain
UE_CUF	Final Cu estimation domain
AU_GT	Estimated Au grade in g/t
CU_PPM	Estimated Cu grade in ppm
AG_PPM	Estimated Ag grade in g/t
FLAG_AU	Au estimation pass
FLAG_CU	Cu estimation pass
FLAG_AG	Ag estimation pass
SUSTE	Rhyolite upper limit
DENSIDAD	Block density: 2.5 t/m^3
INDI_AU	Block probability Au mineralization
INDI_CU	Block probability Cu mineralization
AU_EQ	Au equivalent – ppm (Au-Cu)
CU_EQ_AU	Cu equivalent – % (Cu-Au)
CU_EQ_AU_AG	Cu equivalent – % (Cu-Au-Ag)

14.4 Gold-Au Estimation

14.4.1 Au Estimation Domain Definition

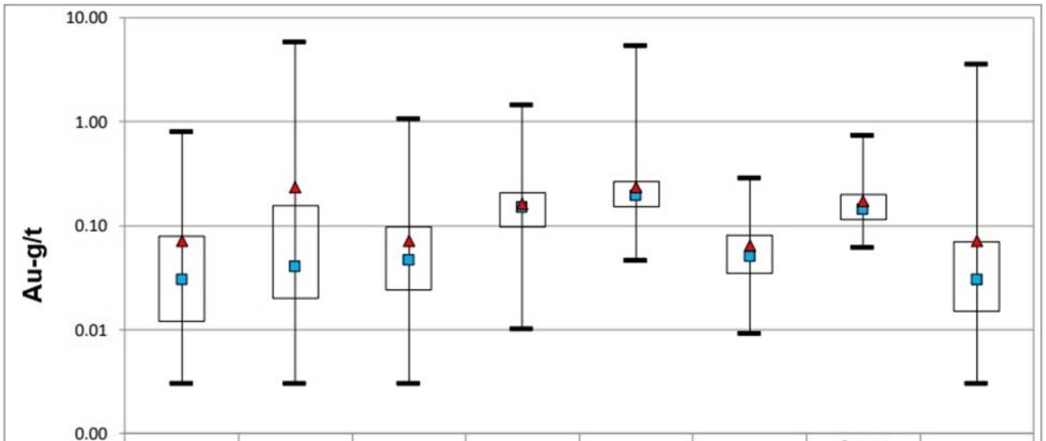
Box-plots with statistics for lithological and mineralization zones are shown in Figure 14.13 and in Figure 14.14 respectively.

Comments – Lithological Zone Statistics

- Highest mean Au grades are observed in volcanic agglomerate (0.24 g/t) and granodiorite (0.23 g/t) lithological zones.
- Lowest mean Au grades (0.07 g/t) are observed in sandstone, amphitheatre breccia and rhyolite lithological zones.
- Rhyolite is the most abundant lithological type followed by amphitheatre breccia; 69 and 13% respectively.

Comments – Mineralization Zone Statistics

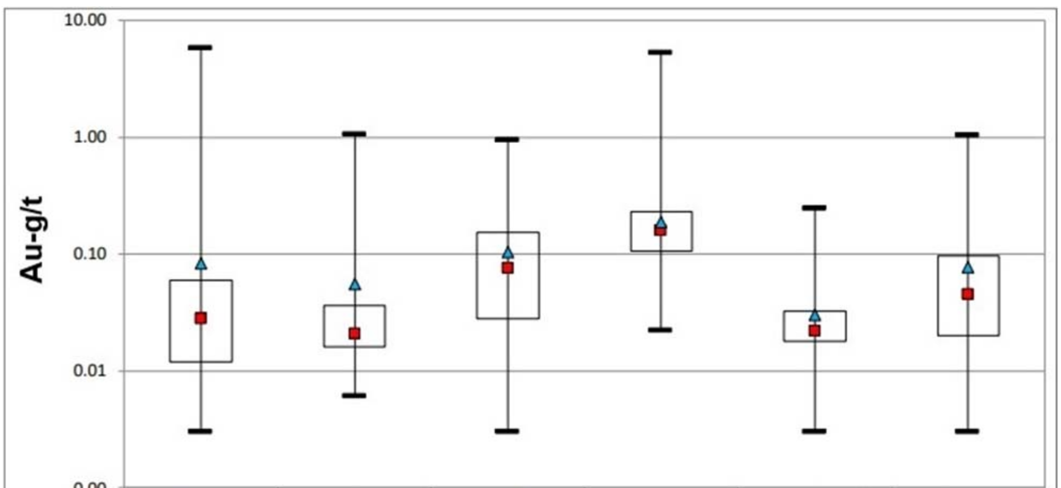
- Chalcopyrite mineralization zone has the highest mean Au grade (0.19 g/t).
- Oxide is the most abundant mineralization type followed by pyrite; 48 and 30% respectively.



	Sandstone	Volcanic Agglomerate	Anfiteatro Breccia	Sur Breccia	Granodiorite	Diorite Porphyry	Quartz Porphyry (PQDH)	Rhyolite
Q1	0.01	0.02	0.02	0.10	0.15	0.04	0.12	0.02
Min	0.00	0.00	0.00	0.01	0.05	0.01	0.06	0.00
Median	0.03	0.04	0.05	0.15	0.20	0.05	0.14	0.03
Mean	0.07	0.24	0.07	0.16	0.23	0.06	0.17	0.07
Max	0.79	5.80	1.05	1.44	5.27	0.28	0.73	3.55
Q3	0.08	0.16	0.10	0.21	0.27	0.08	0.20	0.07
NSamples	77	507	1,539	817	470	291	85	8,458

Lithology

Figure 14.13 Au Composite Statistics – Lithological Zones



	Oxide	Mixed Ore	Covellite	Chalcopyrite	Pyrite-Enargite	Pyrite
Q1	0.01	0.02	0.03	0.11	0.02	0.02
Min	0.00	0.01	0.00	0.02	0.00	0.00
Median	0.03	0.02	0.08	0.16	0.02	0.05
Mean	0.08	0.06	0.10	0.19	0.03	0.08
Max	5.80	1.05	0.94	5.27	0.24	1.03
Q3	0.06	0.04	0.15	0.23	0.03	0.10
NSamples	5,867	46	1,670	911	85	3,665

Mineral Zone

Figure 14.14 Au Composite Statistics – Mineralization Zones

Statistical results, such as Au mean grades, for both lithological and mineralization units suggest possible combinations for estimation domain definitions. These are shown in Table 14.7 and Table 14.8. The following data are enhanced in each table:

- Mean Au grades greater or equal to 0.18 g/t are shown in bold red numbers, and N° of samples within highest Au grade zone combinations (≥ 0.18 g/t) are shown in bold red numbers in Tables 14.7 and 14.8 respectively.
- Zone combinations with highest percentage of data are shown in blue cells (Table 14.8).
- Mineralization and lithological zones with highest percentage of data are shown in light red cells (Table 14.8).

Table 14.7 Mean Au Grades for Combined Lithological and Mineralization Zones

Au (g/t)			Min Zone					
			Oxide	Mixed	Cv	Cpy	Py-En	Py
			1	2	3	4	5	6
Lithological Zone	Sandstone	1	0.08					0.02
	Volcanic Agglomerate	2	**0.25**				**0.24**	0.02
	Amphitheatre Breccia	3	0.04	0.06	0.07	0.13		0.05
	South Breccia	4	**0.20**		**0.18**	**0.18**		0.13
	Granodiorite	5				**0.25**		0.17
	Diorite Porphyry	6			0.13			0.06
	PQDH	7				**0.18**		0.14
	Rhyolite	8	0.07	0.05	0.09	0.13	0.03	0.08

Table 14.8 Number & Percentage of Composites within Combined Lithological &Mineralization Zones

N° - % OF SAMPLES WITHIN COMBINED ZONES		MINERALIZATION ZONE													
		Oxide		Mixed		Covellite		Cpy		Py-En		Py		TOTAL	
LITHOLOGICAL ZONE		1		2		3		4		5		6		All	
		N	%	N	%	N	%	N	%	N	%	N	%	**N**	**%**
Sandstone	1	70	0.6									7	0.1	**77**	**0.6**
Volcanic Agglomerate	2	**468**	3.8							*1*	*0.0*	38	0.3	**507**	**4.1**
Amphitheatre Breccia	3	255	2.1	34	0.3	559	4.6	268	2.2			423	3.5	**1,539**	**12.6**
South Breccia	4	**134**	1.1			**342**	2.8	**58**	0.5			283	2.3	**817**	**6.7**
Granodiorite	5							**384**	3.1			86	0.7	**470**	**3.8**
Diorite Porphyry	6					22	0.2					269	2.2	**291**	**2.4**
PQD	7							**71**	0.6			14	0.1	**85**	**0.7**
Rhyolite	8	4,940	**40.3**	12	0.1	747	6.1	130	1.1	84	0.7	2,545	**20.8**	**8,458**	**69.1**
TOTAL	All	**5,867**	**47.9**	**46**	**0.4**	**1,670**	**13.6**	**911**	**7.4**	**85**	**0.7**	**3,665**	**29.9**	**12,244**	**100.0**

Comments – Lithological and Mineralogical Zone Combinations

- Mean Au grades greater or equal to 0.20 g/t are observed in (volcanic agglomerate-oxide: 0.25 g/t) and (south breccia-cpy: 0.20 g/t).
- Mean Au grades equal to 0.18 g/t are observed in (south breccia-cv and cpy), (granodiorite and PQDH-cpy).
- 69.1% of samples within the model are rhyolite, followed by 12.6% of amphitheatre breccia.
- 47.9% of samples within the model are in the oxide zone, followed by 29.9% in the pyrite zone.

Based upon results obtained in the previous analysis, nine (9) preliminary estimation domains were defined. Codes and descriptions for these domains are given in Table 14.9 and Table 14.10.

Table 14.9 Lithological and Mineralization Combinations for Au Estimation Domains (ED or UE)

Au-ED	Description
1	Sandstone
2	Volcanic Agglomerate in oxide zone (1 sample in py-en Min Zone excluded) – high Au grade (0.25 g/t)
3	Amphitheatre breccia - oxide + mixed + covellite Min Zones - low Au grade
4	Covellite and chalcopyrite Min Zones in amph bx + dio porph + rhyo Litho Zones- medium Au grades (0.11 g/t)
5	South breccia in oxide – high Au grade (0.20 g/t)
6	Covellite, chalcopyrite and py zones in south bx + granodiorite + PQDH lithological zones – high Au grade (0.18 g/t)
7	Granodiorite in chalcopyrite Min Zone - high Au grade (0.25 g/t)
8	Pyrite Min Zone - low Au grades
9	Rhyolite in oxide, mixed and py-en Min Zones – low Au grade

Table 14.10 Au Estimation Domains and Mean Au Grades

Au Estimation Domains	Oxide		Mixed		Covellite		Cpy		Py-En		Py	
	ED	Au-g/t	ED	Au-g/t	ED	Au-g/t	ED	Au-g/t	ED	Au-g/t	ED	Au-g/t
Sandstone	**1**	0.08									**1**	0.02
Volcanic Agglomerate	**2**	**0.25**									**8**	0.02
Amphitheatre Breccia	**3**	0.04	**3**	0.06	**3**	0.07	**4**	0.13			**8**	0.05
South Breccia	**5**	**0.20**			**6**	0.18	**6**	0.18			**6**	0.13
Granodiorite							**7**	**0.25**			**6**	0.17
Diorite Porphyry					4	0.13					**8**	0.06
PQD							**6**	0.18			**6**	0.14
Rhyolite	**9**	0.07	**9**	0.05	**4**	0.09	**4**	0.13	**9**	0.03	**8**	0.08

As mentioned previously, rhyolite is the most abundant lithological type at Valeriano. The latter unit is intruded by diorite and granodiorite porphyry and associated breccia and underlies high Au volcanic agglomerate within the oxide zone.

Overall, mean Au grades in rhyolite are low, nevertheless it was deemed necessary to segregate the upper portions of this unit in order to determine if the upper zone of the rhyolite within the oxide zone had higher gold grades than the overall average. The methodology used consisted of generating a topographical surface along the contact between these lithological units that was replicated in 5-m slices down to 150 m below the initial topographical surface. Schematic sections depicting the initial topographical surface and replicated 5-m slices are shown in Figure 14.15 and Figure 14.16 respectively.

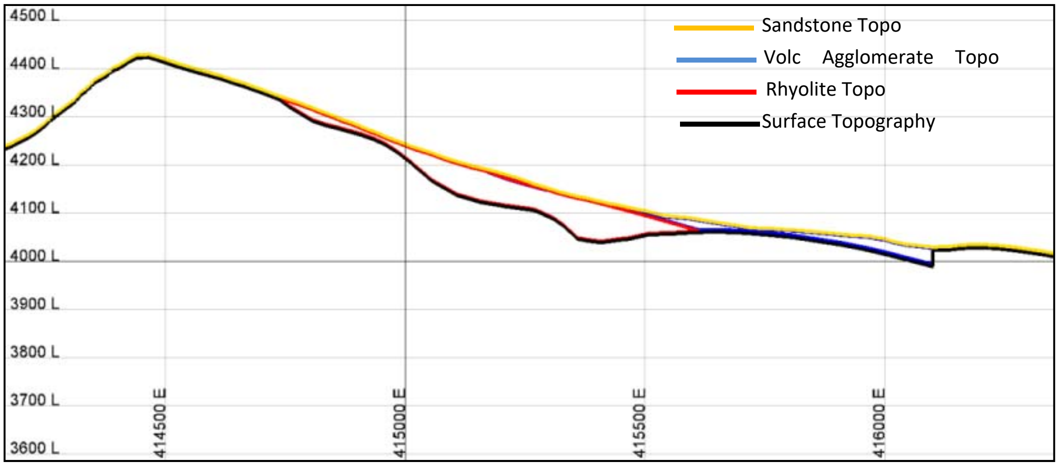


Figure 14.15 Topographical Surfaces between Volcanic Agglomerate-Sandstone and Rhyolite

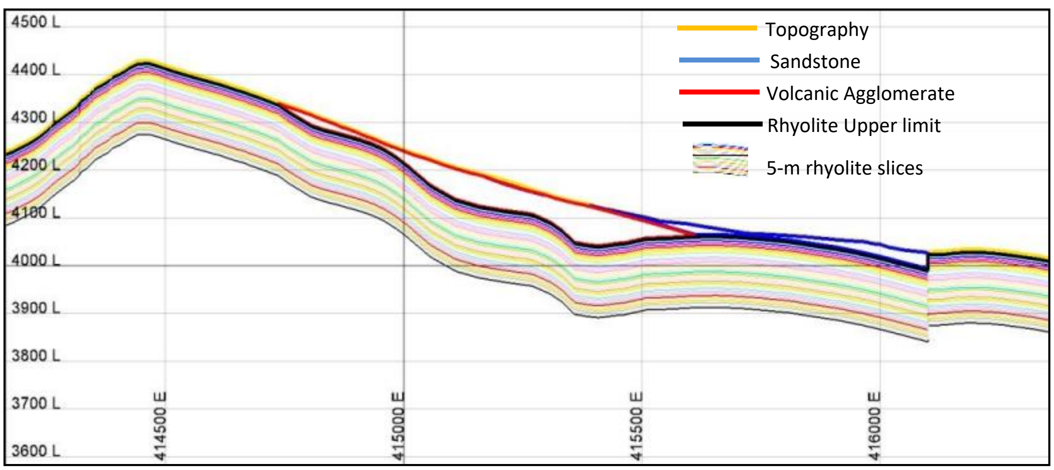


Figure 14.16 Schematic Section with 5-m Rhyolite Slices in Oxide Zone

Mean Au grades for each slice are shown in Figure 41-17.

As can be seen, Au grades decrease significantly below 85-m depth, therefore it was decided to split the preliminary rhyolite estimation domain (ED 9) in two units:

- Estimation Domain 10: rhyolite above 85 m depth (higher Au grade)
- Estimation Domain 9: rhyolite below 85 m depth (low grade).

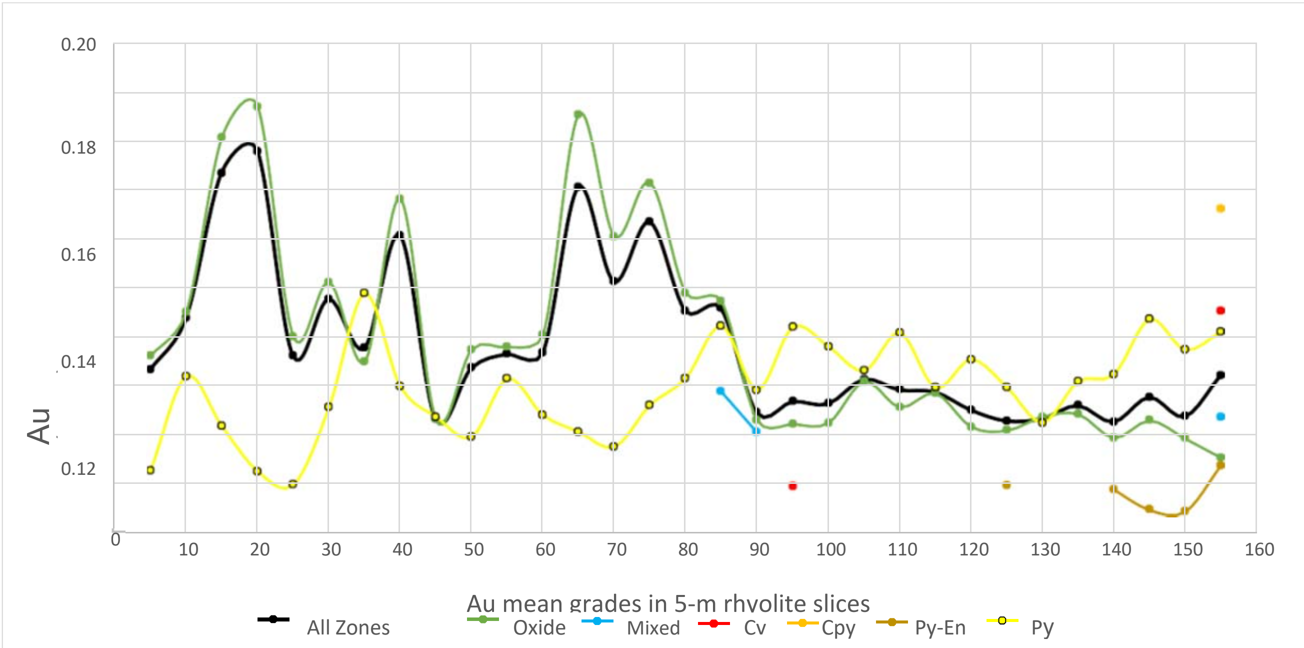


Figure 14.17 Au mean grades within 5-m rhyolite slices in the oxide zone

14.4.2 Au - Mineralized and Non-Mineralized Block Estimation

Mineralized and non-mineralized block estimation was carried out via indicator and ordinary kriging. Estimation plan parameters were based upon the analyses of log probability plots for each estimation domain and indicator variograms.

Log-Probability Plot Analysis: Cut-off Au grades for separating mineralized and non-mineralized materials were set upon results shown in Figure 41-18 and Table 41-11.

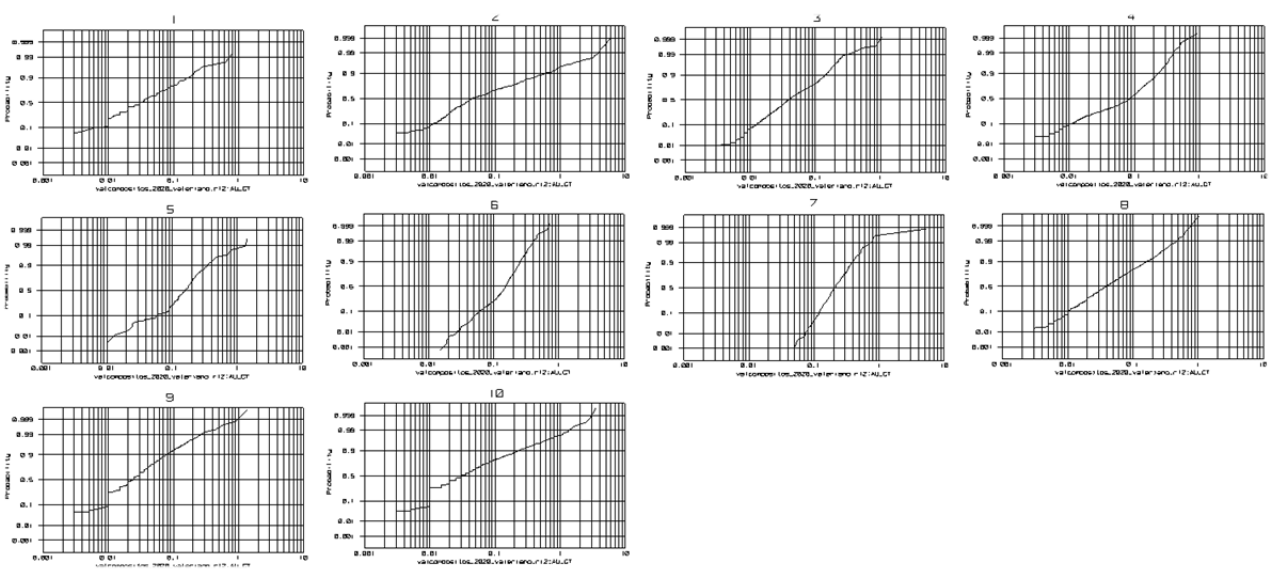


Figure 14.18 Log-Probability Plots for Au Estimation Domains

Table 14.11 Au Cut-off Grades for Mineralized / Non-Mineralized Composite Classification

Au-ED	Au Cut-off Log-Prob Plot	Grouped ED for Min/Non Min Classification	Au Cut-off for Indicator Kriging (ppm)
1	0.01	-	-
2	0.04	2	0.05
3	0.05		
4	0.055		
5	0.09	3	0.1
6	0.105		
7	-	-	-
8	0.01	1	0.01
9	0.01		
10	0.01		

Comments and Conclusions – Log Probability Plot Analysis

- ED 1 (sandstone in ox and py min zones) and ED 7 (granodiorite in cpy zone) were not grouped.
- ED 2, 3 and 4 were grouped as unit 2 since Au cut-offs in log-probability plots are similar; close to 0.05 g/t Au.
- ED 5 and 6 were grouped in unit 3 since both log-probability cut-offs are close to 0.1 g/t Au.
- Similarly, ED 8, 9 and 10 were grouped in unit 1 since all log-probability cut-offs are equal to 0.01 g/t Au.

Indicator Variogram Analyses: Search radii were set based on omnidirectional indicator variograms were for groups 1, 2 and 3. Graphs are shown in Figure 14.19, Figure 14.20 and Figure 14.21.

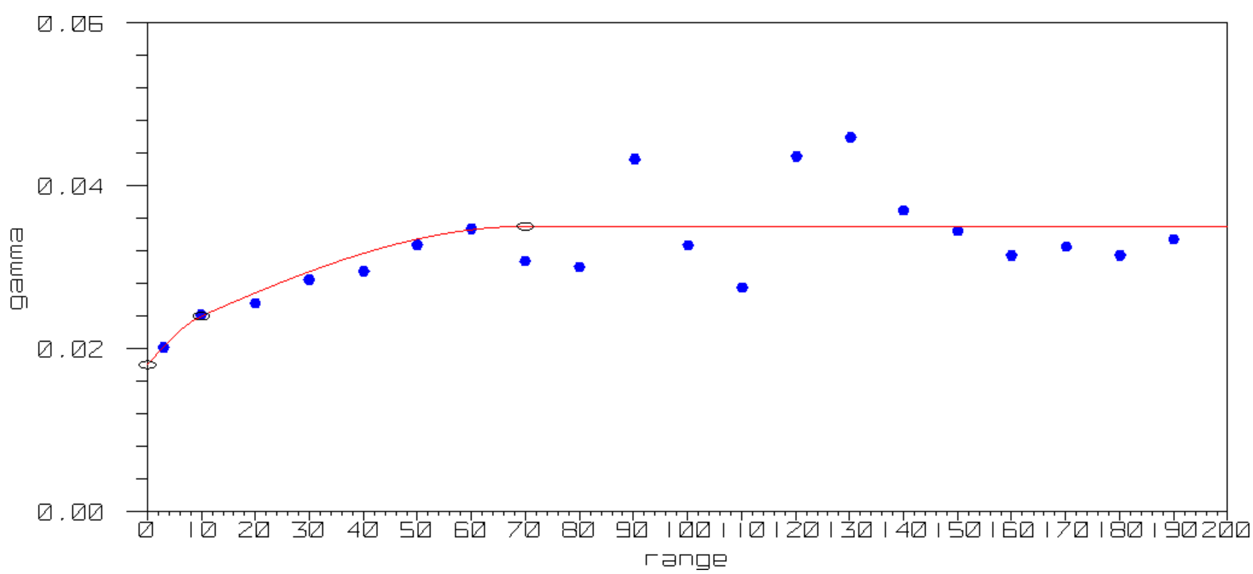


Figure 14.19 Indicator Variogram – Group 1 (ED 8+9+10)

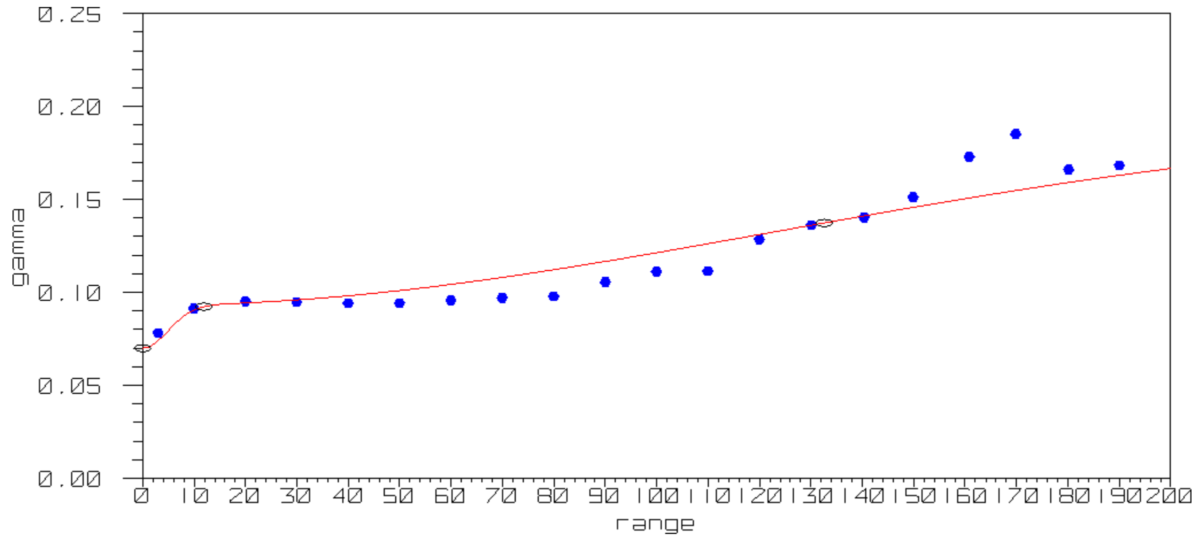


Figure 14.20 Indicator Variogram – Group 2 (ED 2+3+4)

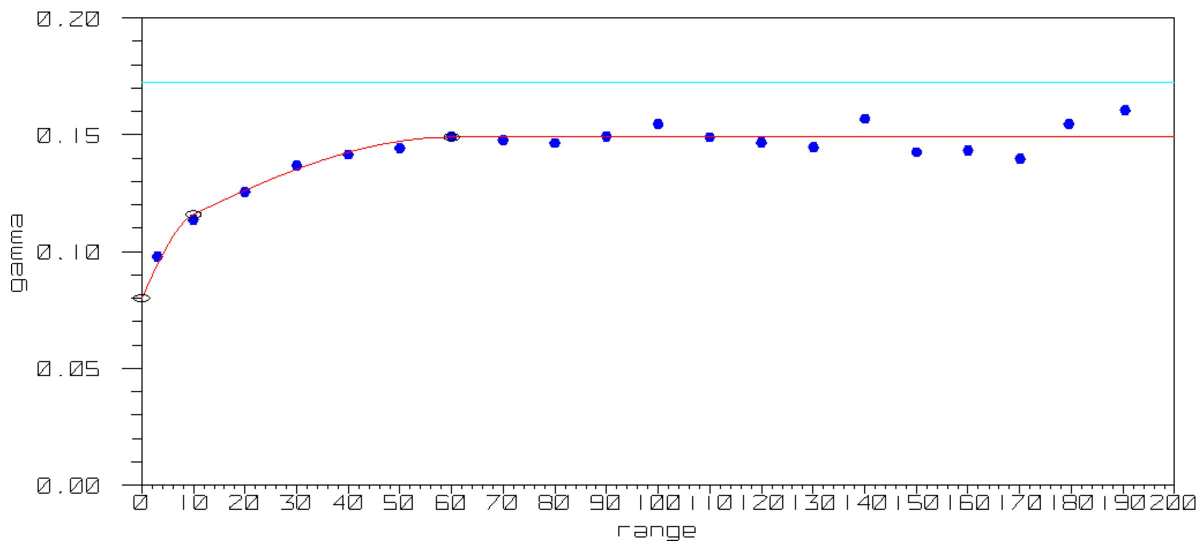


Figure 14.21 Indicator Variogram – Group 3 (ED 5+6)

Based upon variograms, search radii for groups 1, 2 and 3 were set at 60, 120, 1000 and 5000 m for 1st, 2nd, 3rd and 4th passes respectively. Maximum number of samples was set in 10 to avoid overestimating Au grades. Estimation plan parameters are given in Table 14.12.

Table 14.12 Indicator Kriging Au Estimation Plan Parameters

Group	Pass	Estimator	Search Angles			Search Radii			# of Samples		DATABASE		Au	Max Samples per Hole
			Bearing (°)	Plunge (°)	Dip (°)	X	Y	Z	MIN	MAX			Cut-off (ppm)	
1	1	OK	0	0	0	60	60	60	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.01	5
	2	OK	0	0	0	120	120	120	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.01	5
	3	OK	0	0	0	1000	1000	1000	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.01	5
	4	OK	0	0	0	5000	5000	5000	1	10	valcompositos_2020_valeriano.rl2	IND_AU	0.01	-
2	1	OK	0	0	0	60	60	60	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.05	5
	2	OK	0	0	0	120	120	120	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.05	5
	3	OK	0	0	0	1000	1000	1000	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.05	5
	4	OK	0	0	0	5000	5000	5000	1	10	valcompositos_2020_valeriano.rl2	IND_AU	0.05	-
3	1	OK	0	0	0	60	60	60	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.1	5
	2	OK	0	0	0	120	120	120	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.1	5
	3	OK	0	0	0	1000	1000	1000	6	10	valcompositos_2020_valeriano.rl2	IND_AU	0.1	5
	4	OK	0	0	0	5000	5000	5000	1	10	valcompositos_2020_valeriano.rl2	IND_AU	0.1	-

Probabilities (mineralized and non-mineralized) were estimated via indicator kriging (i.e. probability 0.3: non-mineralized – probability 0.5: mineralized or non-mineralized – probability 0.7: mineralized).

Finally, an additional variable (INDI_AU) was used in order to assign mineralized or non-mineralized category to each block:

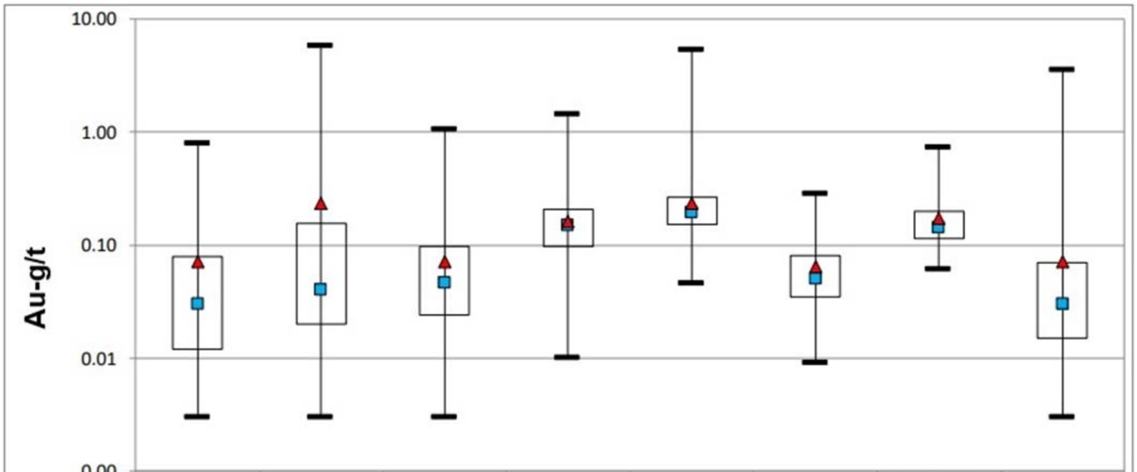
- INDI_AU < 0.5: low grade block/non-mineralized
- INDI_AU ≥ 0.5: high grade block/mineralized

Indicators of these categories (ED_AUF or UE_AUF) for each estimation domain are shown in Table 14.13. As can be seen, ED's for blocks classified as mineralized remain as originally denominated (1 through 10) and non-mineralized blocks in the previously defined groups; 1 through 3, were classified as estimation domains 20, 50 and 80 respectively.

Table 14.13 Final Estimation Domains: ED_AUF (UE_AUF)

Au ED	Final Estimation Domains: ED_AUF	
	Indicator Below Cut-off	Indicator Above Cut-off
1	1	1
2	20	2
3	20	3
4	20	4
5	50	5
6	50	6
7	7	7
8	80	8
9	80	9
10	80	10

Basic statistics for each estimation domain (ED_AUF) are shown in Figure 14.22. As can be seen, mineralized blocks in ED-2 (volcanic agglomerate in oxide minzone) have the highest mean Au grades (0.51 g/t), followed by ED-7 (granodiorite in cpy minzone) and ED-5 (south bx in oxide minzone) with mean Au grades of 0.25 and 0.22 g/t respectively. On the other hand, mean Au grades in rhyolite blocks in the upper 85-m of the oxide zone (ED-10) increased form 0.07 g/t to 0.11 g/t.



	Sandstone	Volcanic Agglomerate	Anfiteatro Breccia	Sur Breccia	Granodiorite	Diorite Porphyry	Quartz Porphyry (PQDH)	Rhyolite
Q1	0.01	0.02	0.02	0.10	0.15	0.04	0.12	0.02
Min	0.00	0.00	0.00	0.01	0.05	0.01	0.06	0.00
Median	0.03	0.04	0.05	0.15	0.20	0.05	0.14	0.03
Mean	0.07	0.24	0.07	0.16	0.23	0.06	0.17	0.07
Max	0.79	5.80	1.05	1.44	5.27	0.28	0.73	3.55
Q3	0.08	0.16	0.10	0.21	0.27	0.08	0.20	0.07
NSamples	77	507	1,539	817	470	291	85	8,458

Lithology

Figure 14.22 Box Plot: Au statistics for each estimation domain

14.4.3 Au - Variography

Variography for each domain was approached through the use of omnidirectional correlograms. Experimental correlogram calculation parameters are given in Table 14.14.

The estimation of the nugget effect was done calculating and plotting "down the hole" (DTH) correlograms. Results are given in Table 14.15.

Omnidirectional correlograms showing experimental (blue dots) as well as fitted models, and DTH correlograms for highest Au grade domains 2, 4, 5, 6, 7 and 10 are shown in Figure 14.23, Figure 14.24, Figure 14.25, Figure 14.26, Figure 14.27 and Figure 14.28 respectively. Theoretical model parameters, such as sills and ranges are shown below each figure.

Table 14.14 Omnidirectional Correlogram Search Angles – ED_AUF

ED_AUF	Bearing (°)	Plunge (°)	Dip (°)
1	325	5	-5
2	325	10	-15
3	325	90	0
4	325	90	0
5	90	75	80
6	325	90	0
7	90	-80	80
8	325	0	0
9	0	-8	0
10	0	-8	-20
20	325	90	0
50	325	90	0
80	0	-8	0

Table 14.15 Estimated Nugget Effects

ED_AUF	Nugget Effect
1	0.28
2	0.18
3	0.20
4	0.20
5	0.05
6	0.15
7	0.25
8	0.18
9	0.26
10	0.25
20	0.35
50	0.50
80	0.10

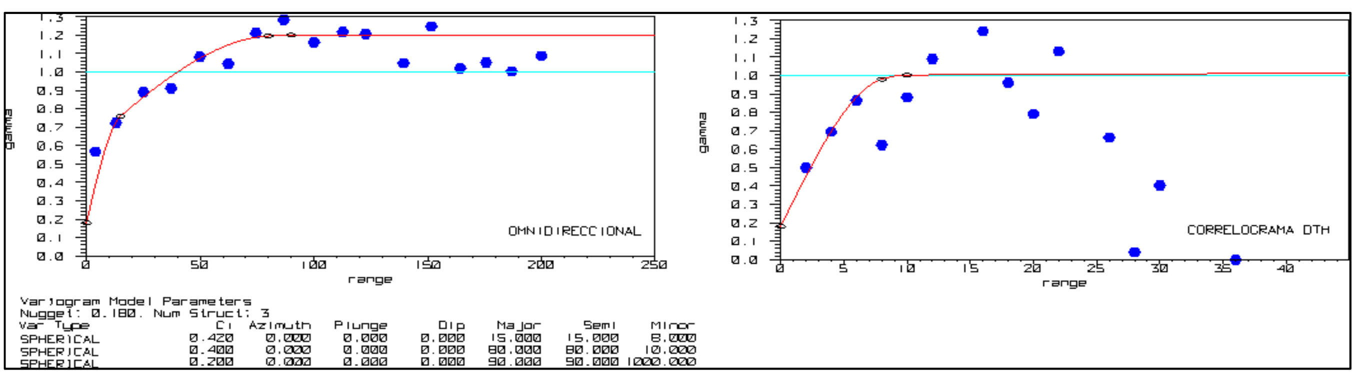


Figure 14.23 UE_AUF 2 - Correlogram.

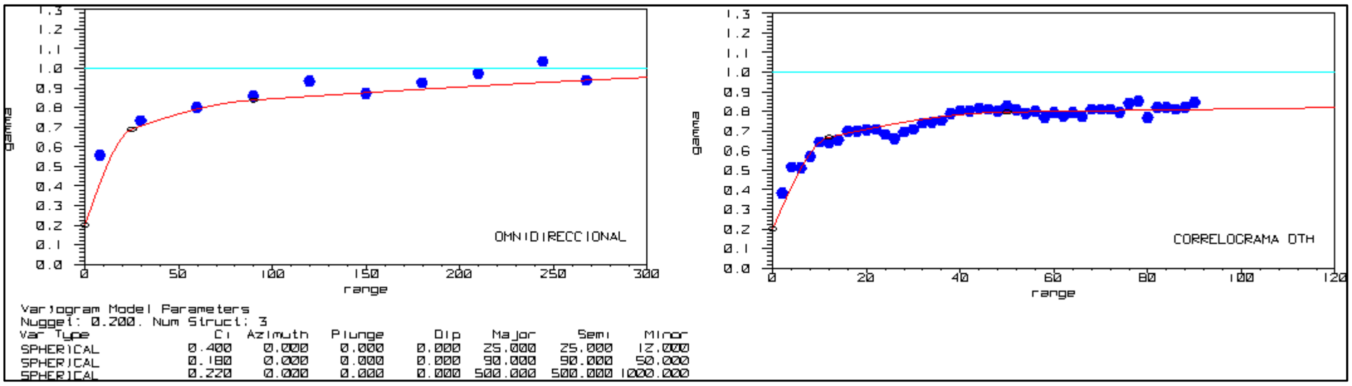


Figure 14.24 UE_AUF 4 – Correlogram

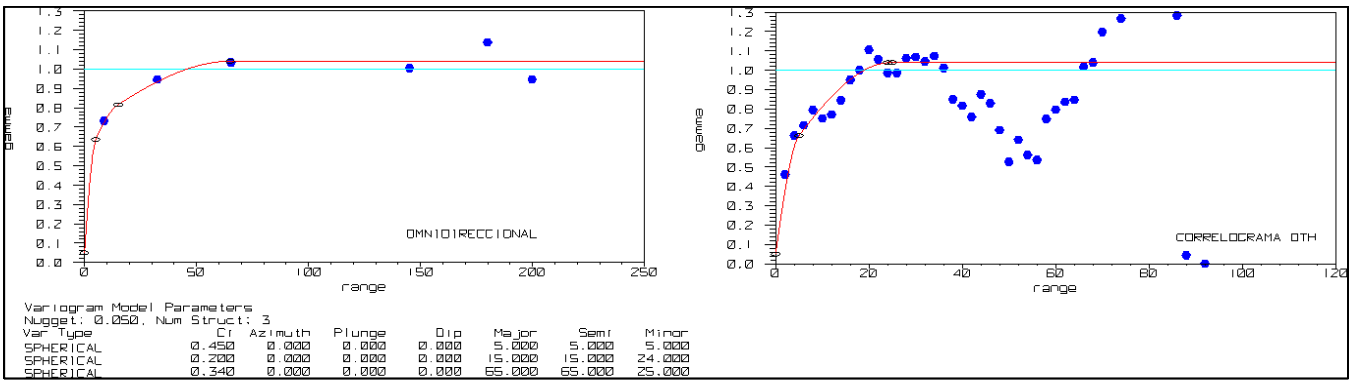


Figure 14.25 UE_AUF 5 – Correlogram

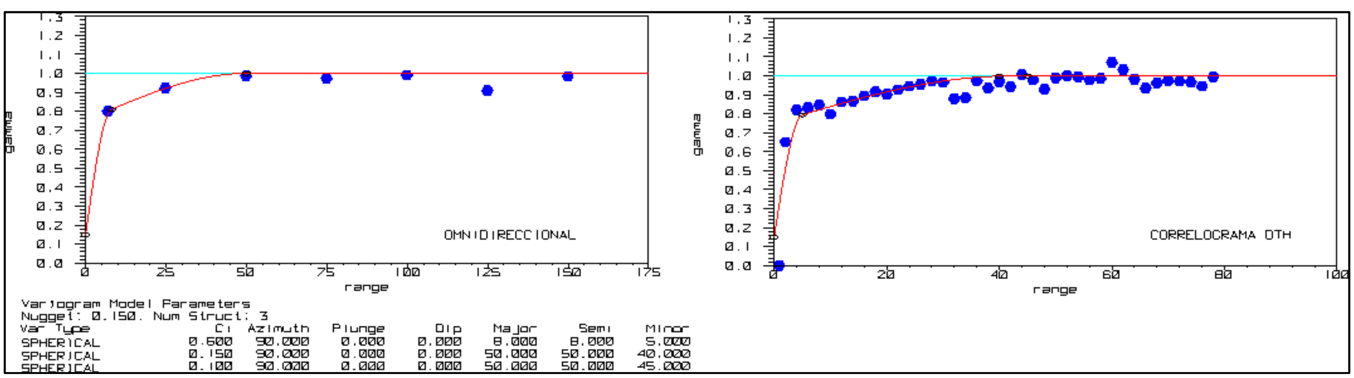


Figure 14.25 UE_AUF 6 – Correlogram

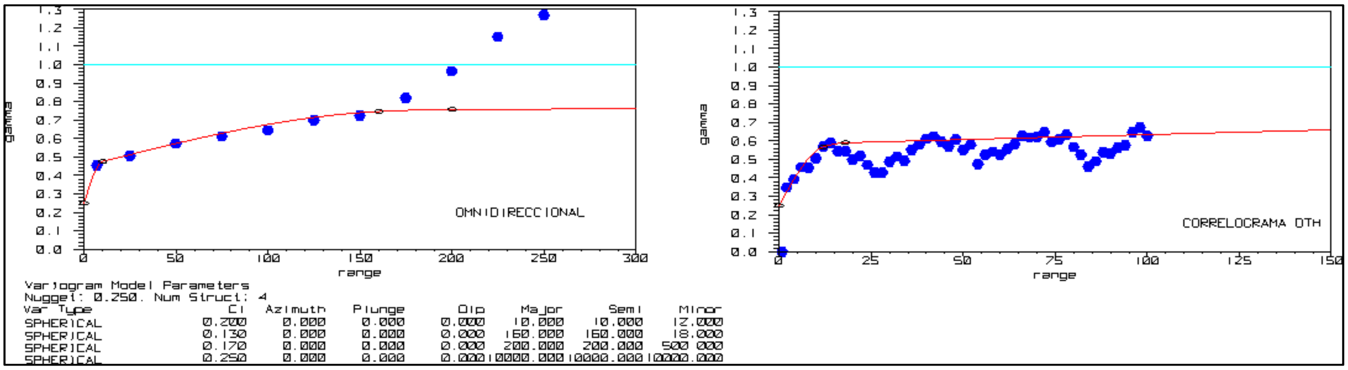


Figure 14.27 UE_AUF 7 – Correlogram

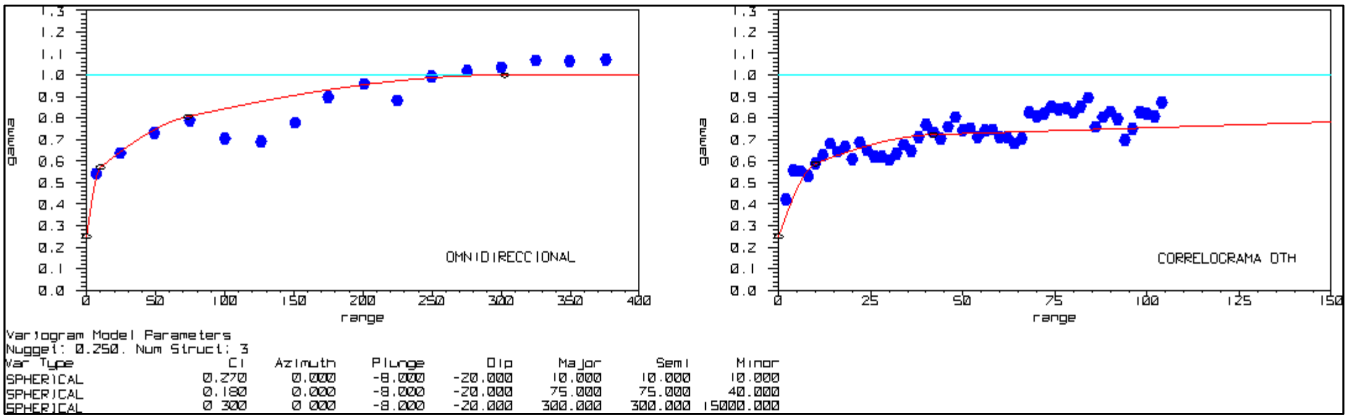


Figure 14.28 UE_AUF 10 – Correlogram

14.4.4 Au - Outliers

It is well known that isolated high grades (outliers) may cause overestimation during the kriging process. To avoid this effect, high Au grades that departed from log normality were capped. Au values for each estimation domain are shown in Table 14.16.

Table 14.16 Gold grade Capping

UE_AUF	Au g/t
1	0.29
2	4.00
3	0.27
4	0.53
5	0.47
6	0.48
7	0.80
8	0.53
9	0.29
10	1.65
20	0.28
50	0.17
80	0.082

14.4.5 Au Estimation Plan

The grade estimation plan for Valeriano was carried out in four (4) passes. General settings are detailed below:

- The search radii for the first kriging pass were set at the maximum variogram range.
- Search radii for second and third passes double the first and second pass respectively.
- Search radii for the fourth kriging pass were set quite large in order to avoid leaving too many blocks not estimated.
- All estimations were performed using Ordinary Kriging method.
- Block discretization was set at 4x4x3 m.
- Some domains were estimated with few samples to avoid increasing global bias.
- Minimum and maximum number of samples, in addition to maximum number of samples per drill holes, guaranteed using at least two drill holes in 1st, 2nd and 3rd pass block estimations.
- Au grade capping was applied in all estimation domains.

Estimation plan parameters are shown in Table 14.17.

Table 14.17 Au Estimation Plan

UE_AUF	Pass	Search Angles			Search Radii			# of Samples		Database		Au Cap g/t	Max Samples per Hole
		Bearing (°)	Plunge (°)	Dip (°)	Major (m)	Semi (m)	Minor (m)	Min	Max				
1	1	325	5	-5	50	50	8	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	2	325	5	-5	100	100	16	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	3	325	5	-5	200	200	32	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	4	325	5	-5	1000	1000	100	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.29	-
2	1	325	10	-15	75	75	10	6	14	valcompositos_2020_valeriano.rl2	AU_GT	4.0	5
	2	325	10	-15	150	150	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	4.0	5
	3	325	10	-15	300	300	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	4.0	5
	4	325	10	-15	1000	1000	100	3	12	valcompositos_2020_valeriano.rl2	AU_GT	4.0	-
3	1	325	0	0	90	90	10	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.27	5
	2	325	0	0	180	180	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.27	5
	3	325	0	0	360	360	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.27	5
	4	325	0	0	1000	1000	100	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.27	-
4	1	325	0	0	85	85	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	2	325	0	0	170	170	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	3	325	0	0	340	340	80	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	4	325	0	0	1000	1000	160	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.53	-
5	1	0	0	0	65	65	10	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.47	5
	2	0	0	0	130	130	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.47	5
	3	0	0	0	260	260	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.47	5
	4	0	0	0	1000	1000	100	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.47	-
6	1	325	0	0	50	50	30	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.48	5
	2	325	0	0	100	100	60	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.48	5
	3	325	0	0	200	200	120	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.48	5
	4	325	0	0	1000	1000	240	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.48	-
7	1	325	0	0	160	160	15	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.8	5
	2	325	0	0	320	320	30	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.8	5
	3	325	0	0	640	640	60	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.8	5
	4	325	0	0	1000	1000	120	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.8	-
8	1	325	0	0	50	50	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	2	325	0	0	100	100	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	3	325	0	0	220	220	80	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.53	5
	4	325	0	0	1000	1000	160	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.53	-
9	1	325	0	0	100	100	25	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	2	325	0	0	200	200	75	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	3	325	0	0	400	400	150	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.29	5
	4	325	0	0	1000	1000	300	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.29	-
10	1	0	-8	-20	75	75	15	6	14	valcompositos_2020_valeriano.rl2	AU_GT	1.65	5
	2	0	-8	-20	200	200	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	1.65	5
	3	0	-8	-20	400	400	75	6	14	valcompositos_2020_valeriano.rl2	AU_GT	1.65	5
	4	0	-8	-20	1000	1000	100	3	12	valcompositos_2020_valeriano.rl2	AU_GT	1.65	-
20	1	325	0	0	75	75	20	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.28	5
	2	325	0	0	150	150	40	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.28	5
	3	325	0	0	300	300	100	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.28	5
	4	325	0	0	1000	1000	200	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.28	-
50	1	325	0	0	15	15	15	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.17	5
	2	325	0	0	50	50	50	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.17	5
	3	325	0	0	100	100	100	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.17	5
	4	325	0	0	1000	1000	1000	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.17	-
80	1	325	0	0	50	50	15	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.082	5
	2	325	0	0	100	100	50	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.082	5
	3	325	0	0	200	200	100	6	14	valcompositos_2020_valeriano.rl2	AU_GT	0.082	5
	4	325	0	0	1000	1000	200	3	12	valcompositos_2020_valeriano.rl2	AU_GT	0.082	-

Statistics of gold mean grades (Au g/t) and tonnages estimated, as well as nearest neighbour gold mean grades (Au-NN) for each kriging pass are shown in Table 14.18.

Table 14.18 Estimated Block Model Statistics

UE_AUF	Pass	Au g/t	Au-NN	Tonnage	Δ Error (%)	Au g/t	Au-NN	Tonnage	Δ Error (%)
1	1	0.07	0.17	12,500	-59.5	0.04	0.06	101,380,000	-36.3
	2	0.04	0.04	860,000	-9.5				
	3	0.05	0.04	4,935,000	12.0				
	4	0.04	0.06	95,572,500	-38.1				
2	1	0.63	0.64	3,317,500	-2.2	0.48	0.48	20,230,000	-0.2
	2	0.49	0.56	11,175,000	-12.0				
	3	0.38	0.25	5,710,000	54.4				
	4	0.34	0.10	27,500	231.8				
3	1	0.08	0.09	27,500	-6.8	0.11	0.12	118,630,000	-5.3
	2	0.11	0.12	11,300,000	-8.6				
	3	0.11	0.12	66,425,000	-6.1				
	4	0.11	0.11	40,877,500	-2.8				
4	1					0.15	0.16	686,977,500	-9.8
	2	0.16	0.17	8,205,000	-6.7				
	3	0.16	0.17	140,540,000	-2.4				
	4	0.14	0.16	538,232,500	-11.8				
5	1					0.20	0.19	15,532,500	9.1
	2	0.22	0.20	2,285,000	10.9				
	3	0.20	0.19	8,972,500	7.6				
	4	0.19	0.17	4,275,000	11.4				
6	1					0.18	0.19	480,180,000	-5.5
	2	0.15	0.14	12,500	4.5				
	3	0.18	0.19	38,860,000	-4.8				
	4	0.18	0.19	441,307,500	-5.6				
7	1	0.25	0.23	965,000	7.9	0.23	0.23	143,365,000	0.3
	2	0.24	0.24	46,112,500	3.7				
	3	0.24	0.25	43,582,500	-4.4				
	4	0.22	0.21	52,705,000	1.5				
8	1	0.07	0.06	2,882,500	11.9	0.07	0.06	3,233,447,500	14.7
	2	0.06	0.05	29,905,000	13.6				
	3	0.07	0.07	477,437,500	4.7				
	4	0.07	0.06	2,723,222,500	16.7				
9	1	0.04	0.04	87,892,500	-3.6	0.03	0.03	992,537,500	12.7
	2	0.04	0.03	370,342,500	4.0				
	3	0.03	0.02	382,290,000	18.4				
	4	0.03	0.02	152,012,500	48.5				
10	1	0.09	0.08	16,712,500	11.4	0.09	0.06	405,615,000	31.4
	2	0.10	0.09	178,535,000	14.1				
	3	0.09	0.05	119,842,500	76.4				
	4	0.05	0.03	90,525,000	40.4				
20	1	0.04	0.04	802,500	-1.1	0.03	0.03	552,300,000	2.3
	2	0.04	0.04	47,605,000	-3.4				
	3	0.04	0.04	189,865,000	8.7				
	4	0.03	0.03	314,027,500	-1.6				
50	1					0.07	0.06	113,047,500	24.6
	2								
	3	0.08	0.05	35,000	42.7				
	4	0.07	0.06	113,012,500	24.6				
80	1					0.01	0.01	561,255,000	19.3
	2	0.01	0.01	285,000	97.6				
	3	0.02	0.01	9,497,500	141.8				
	4	0.01	0.01	551,472,500	17.3				

14.4.6 Validations

14.4.6.1 Global Bias

Global biases between estimated and nearest neighbour (NN) Au means ≤ |10%| are considered acceptable. Due to the limited amount of data currently available at Valeriano, some low Au grade estimation domains surpass acceptability criteria, therefore it was deemed necessary to analyze results for each estimation domain based upon results shown in Table 14.18 and Table 14.19. The latter table is a summary of Estimated (OK) and NN estimates Au estimates and composited Au means.

Table 14.19 Estimated, NN and Composite Au Means

Estimation	Au g/t			
Domain	**Estimated**	**NN**	**Bias**	**Composites**
1	0.04	0.06	-36.3	0.07
2	0.48	0.48	-0.2	0.51
3	0.11	0.12	-5.3	0.11
4	0.15	0.16	-9.8	0.14
5	0.20	0.19	9.1	0.22
6	0.18	0.19	-5.5	0.18
7	0.23	0.23	0.3	0.25
8	0.07	0.06	14.7	0.07
9	0.03	0.03	12.7	0.04
10	0.09	0.06	31.4	0.11
20	0.03	0.03	2.3	0.04
50	0.07	0.06	24.6	0.08
80	0.01	0.01	19.3	0.01

Comments based upon comparisons between Estimated (OK) and NN estimates, and composite means are as follow:

- **ED_AUF-1** (sandstone-ox) is underestimated, nevertheless it is not relevant due to its low Au grade.
- Biases in **ED_AUF-2** (volcanic agglomerate-ox) and **ED_AUF-7** (granodiorite-cpy) are very low; -0.2 and 0.3 respectively.
- Biases in **ED_AUF-3** (amph bx – [ox-mix-cv]), **ED_AUF-4** (amph bx-cpy + diorite porph-cv + rhyo [cv-cpy]), **ED_AUF-5** (south bx-ox) and **ED_AUF-6** (south bx – [cv-cpy-py] + granodiorite-py + PQDH – [cpy-py]) are between 5.3 and 9.8, which is satisfactory.
- **ED_AUF-8** (pyrite – [volc agg + amph bx + diorite porphyry + rhyo]) and **ED_AUF-9** (rhyo below 85 m) are slightly overestimated; 14.7 and 12.7 respectively, nevertheless estimated and NN Au grades are similar and composite mean are closer to the estimated Au grades.
- **ED_AUF-10** (rhyo-ox above 85 m) is overestimated (31.4), nevertheless Au grades are low and the estimated Au grade is closer to the composite mean (0.11 g/t).
- Bias in **ED_AUF-20** (non-mineralized volc agg + amph bx + south bx) is very low (2.3).

- **ED_AUF-50** (non-mineralized south bx) and **ED-80** (non-mineralized py-minzone and rhyo) are overestimated, but again Au grades are low. Furthermore, estimated Au grade for ED-50 is closer to the composite mean.

Main conclusions based upon these findings are:

- Estimation domains with estimated Au grades above or equal to 0.11 g/t have low biases (ED_AUF-2, ED_AUF-3, ED_AUF-4, DE_AUF-5, ED_AUF-6 and ED_AUF-7).
- Remaining domains were slightly overestimated except ED_AUF-1 which was underestimated. These biases are negligible considering their low Au grades.

Overall, global bias analysis results are considered acceptable.

14.4.6.2 Au – Drift Analysis

Drift analyses were carried out by comparing the average kriging estimated block grades against the average NN estimates along 50 x 50 x 20-m slices in the X, Y and Z directions, respectively. Average kriging estimated block grades are shown in blue, NN estimated grades in red and associated tonnage in grey.

Graphs for each estimation domain are shown in Figure 14.29, Figure 14.30, Figure 14.31, Figure 14.32, Figure 14.33, Figure 14.34, Figure 14.35, Figure 14.36, Figure 14.37, Figure 14.38, Figure 14.39, Figure 14.40 and Figure 14.41.

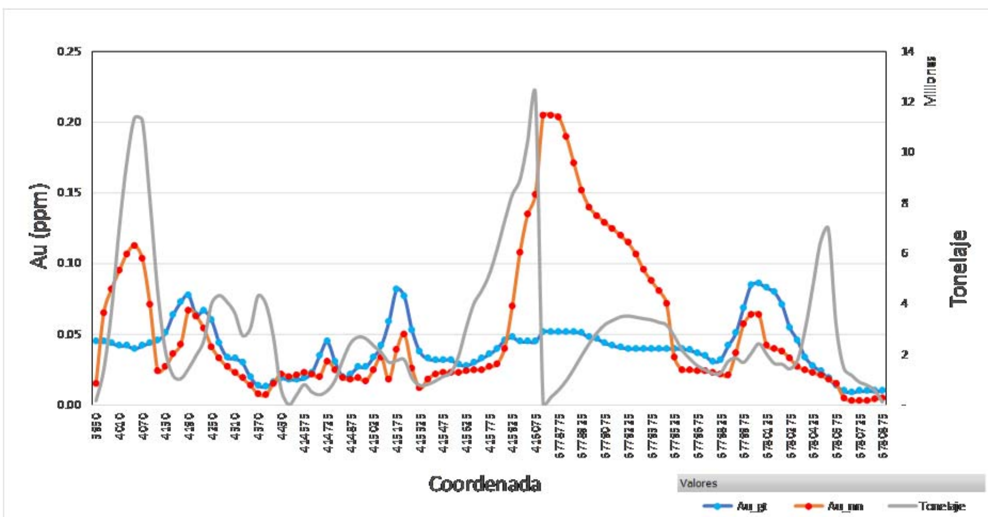


Figure 14.29 ED-AUF 1 Drift

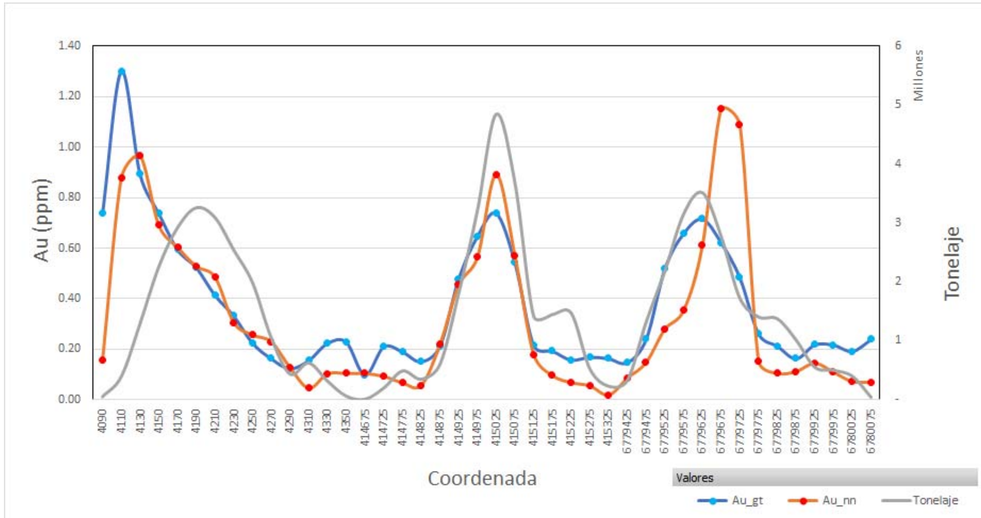


Figure 14.30 ED-AUF 2 Drift

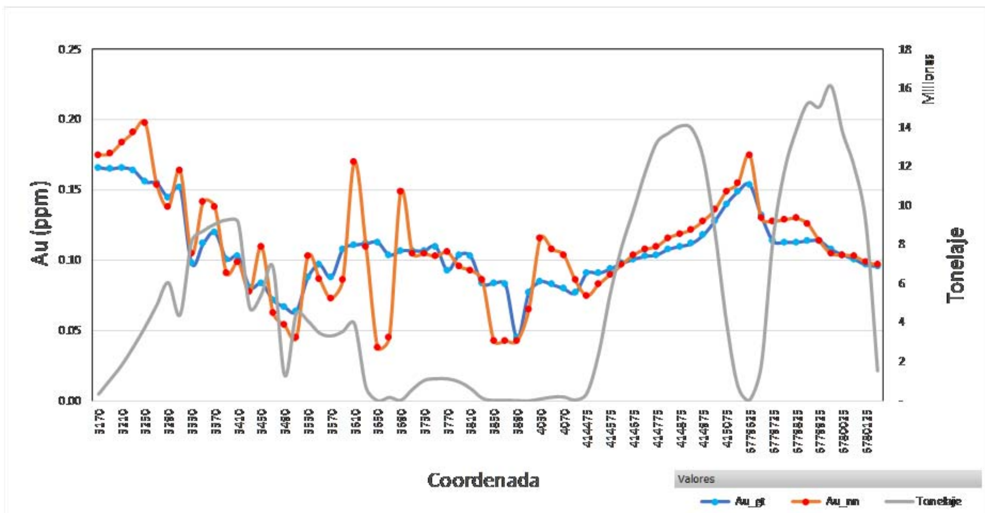


Figure 14.31 ED-AUF 3 Drift

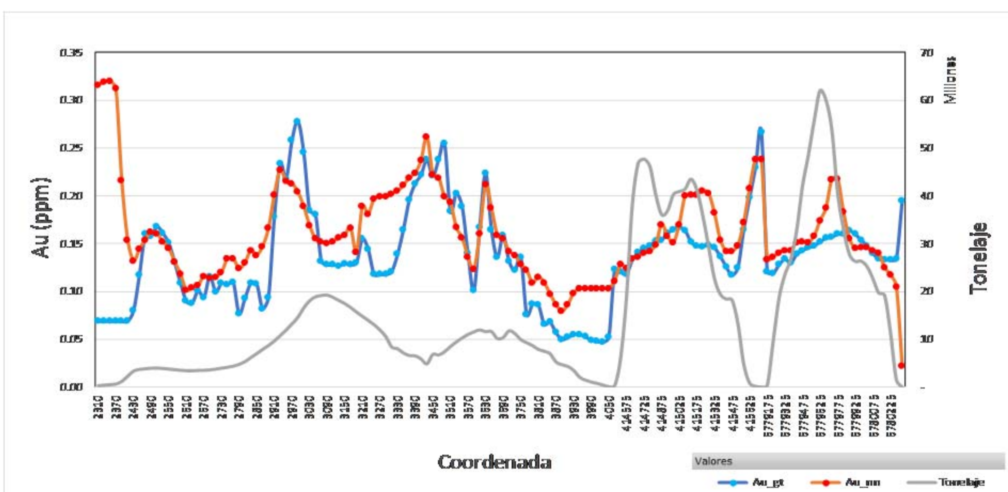


Figure 14.32 ED-AUF 4 Drift

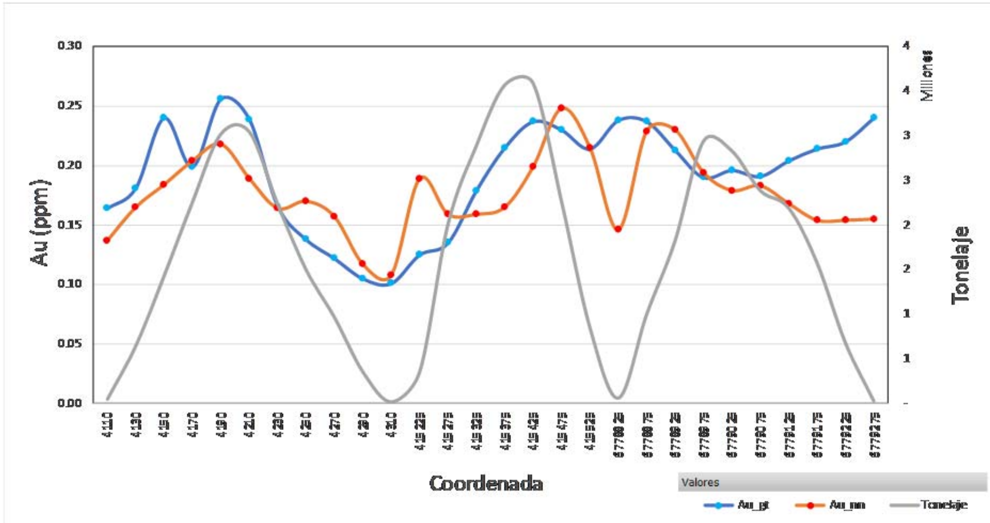


Figure 14.33 ED-AUF 5 Drift

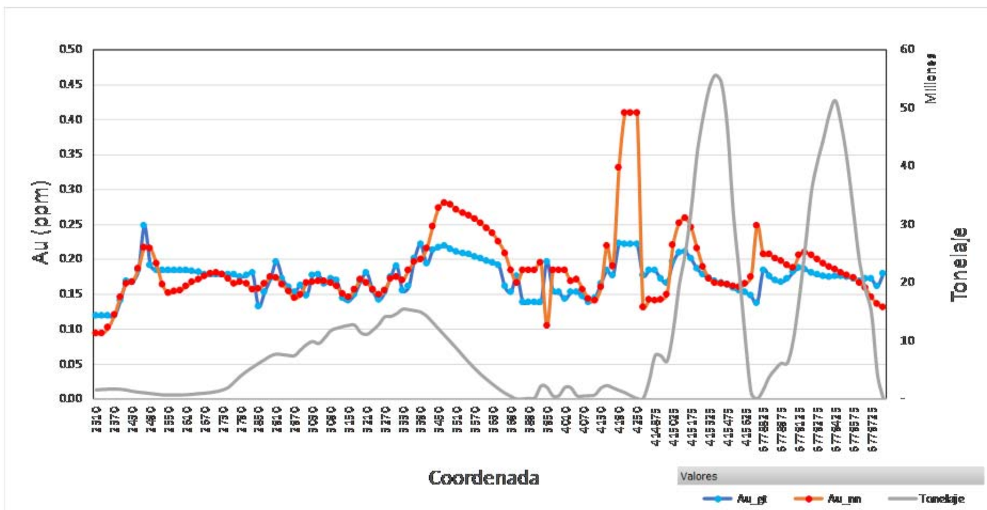


Figure 14.34 ED-AUF 6 Drift

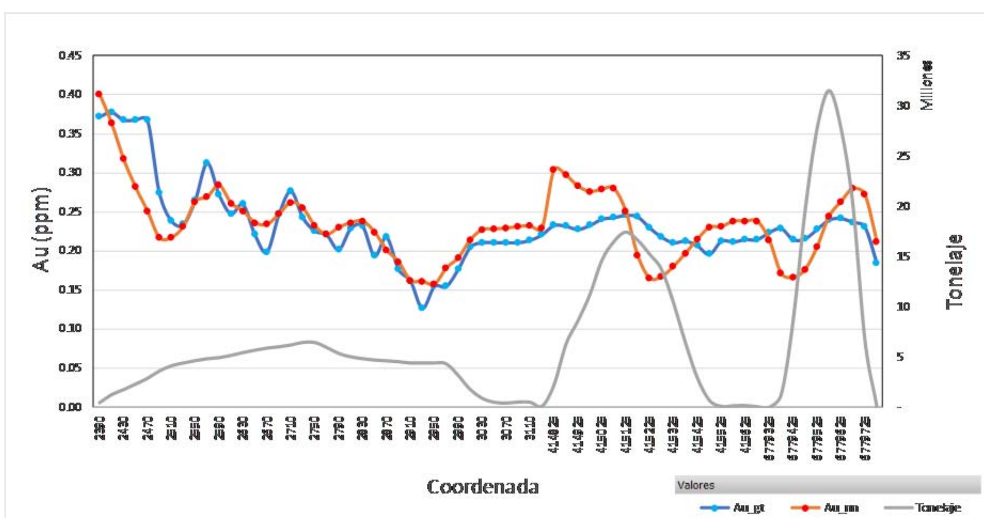


Figure 14.35 ED-AUF 7 Drift

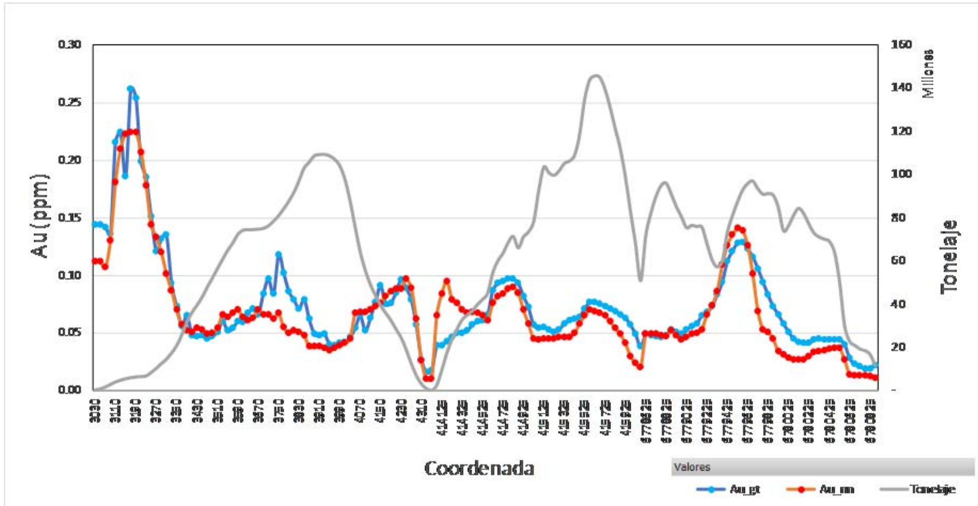


Figure 14.36 ED-AUF 8 Drift

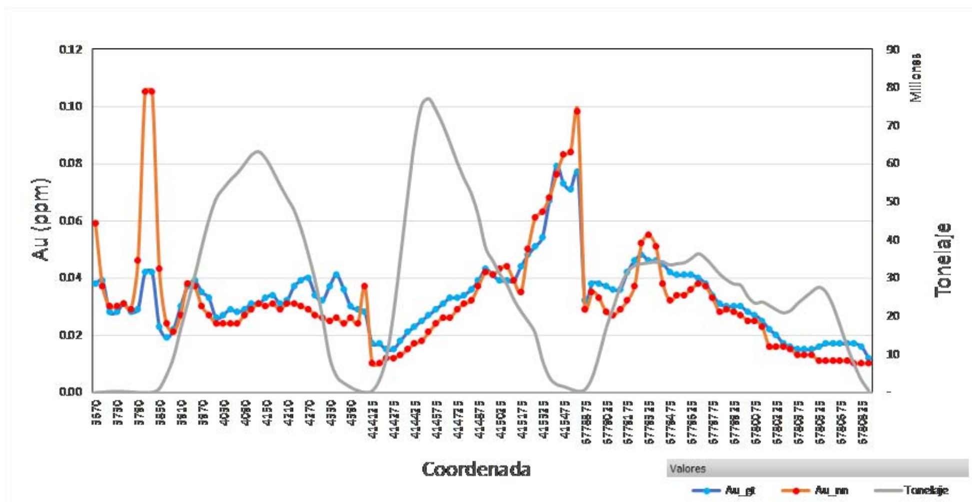


Figure 14.37 ED-AUF 9 Drift

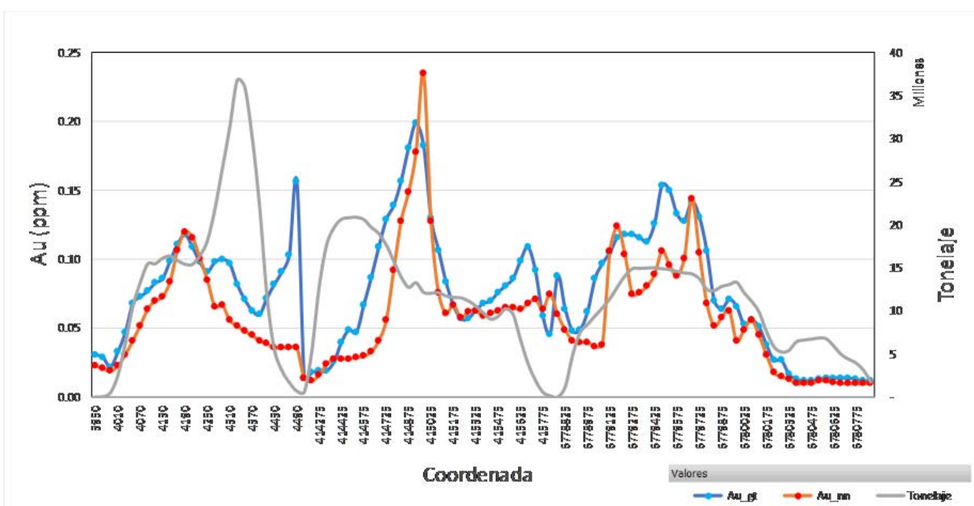


Figure 14.38 ED-AUF 10 Drift

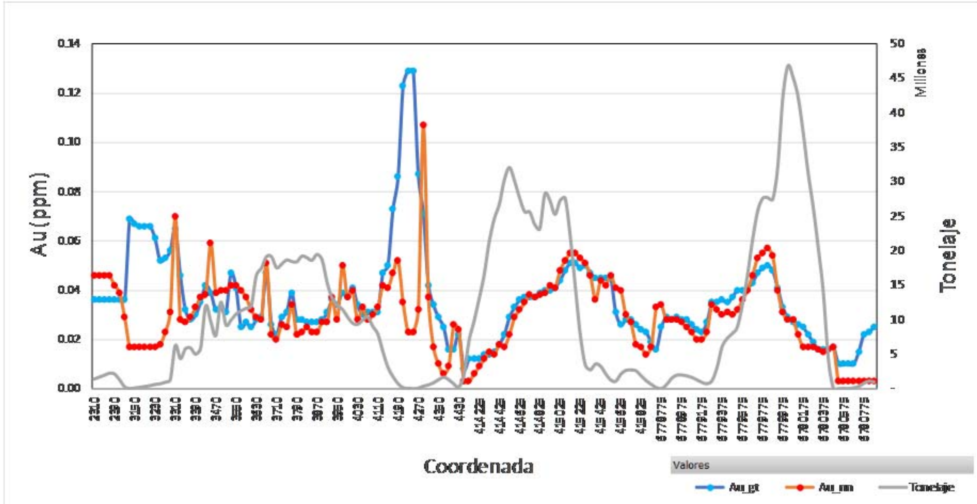


Figure 14.39 ED-AUF 20 Drift

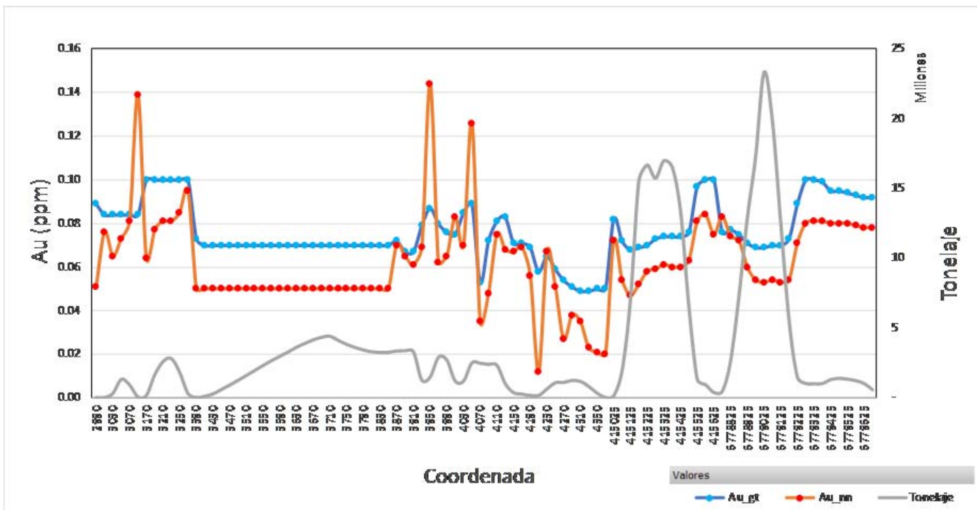


Figure 14.40 ED.AUF 50 Drift

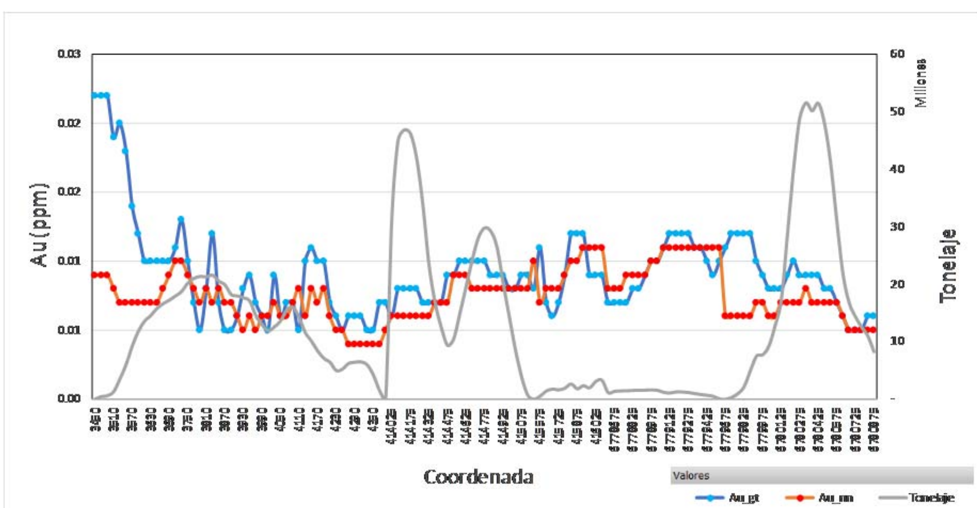


Figure 14.41 ED-AUF 80 Drift

Conclusions drawn from drift analyses are as follow:

- Au grades in ED_AUF 1 show large variability in NN estimates as depicted by the higher Au grade peak. Kriged Au estimates are excessively smoothed.
- NN and kriging estimated Au grades show similar trends in ED_AUF 2, 3, 4, 6, 8 9 and 20.
- Some smoothing is observed in ED_AUF 5 and ED_AUF 7.
- ED_AUF 10 shows a large variability in both NN and kriging estimated Au grades. This domain (rhyolite in oxide) requires further studies in order to segregate high and low gold grade zones.
- NN and kriging trends in low gold grade estimation domains, ED-50 and ED 80 are similar.

In general, the drift analyses results indicate that the estimation process is satisfactory.

14.4.7 Graphic Validation

Two sets of sections were prepared in order to compare block estimates against drill hole composites using the same color scheme; set E-415 000 and set N 6 779 600. . Each set has an overall view of the entire deposit shown in Figures 14.42 and 14.44 and a close-up view of the oxide zone shown in Figures 14.43 and 14.45.

Generally, drill hole high-grade and low-grade zones are well reproduced in the block model. Results were considered satisfactory.

It should be noted that horizontal artifacts are observed in Figures 14.42 and 14.44 due to the small amount of drill hole data at depth.

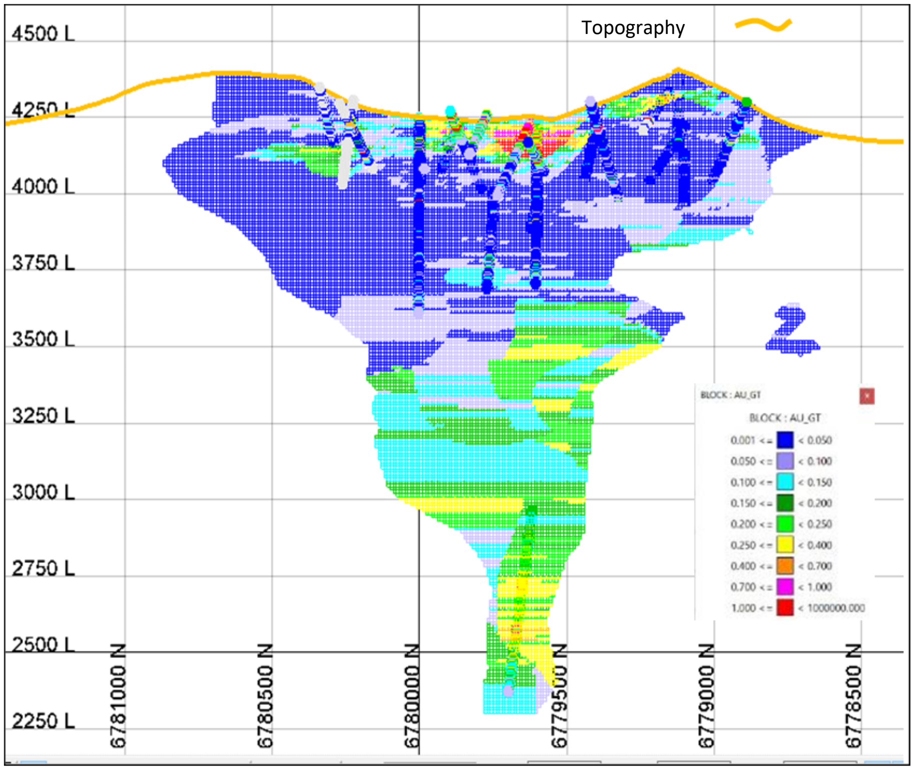


Figure 14.42 Overall View - Section E 415 000 – Au grades.

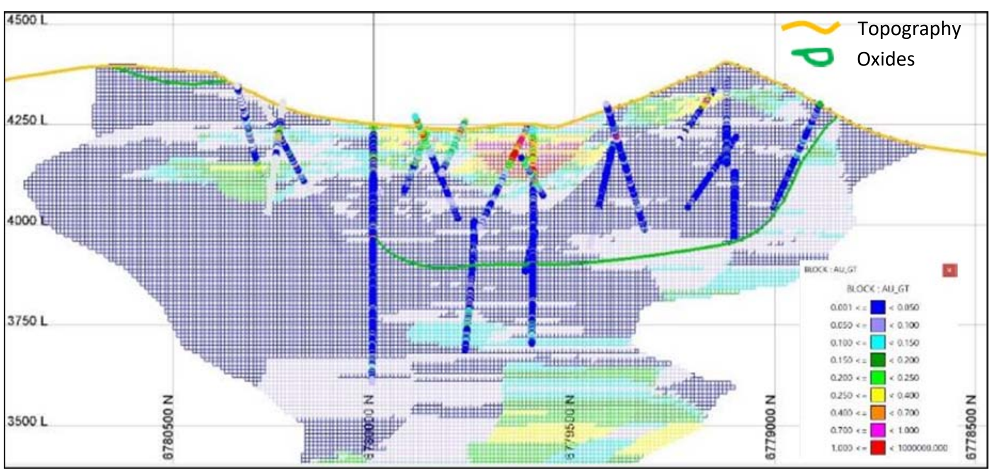


Figure 14.43 Oxide Zone - Section E 415 000 – Au grades

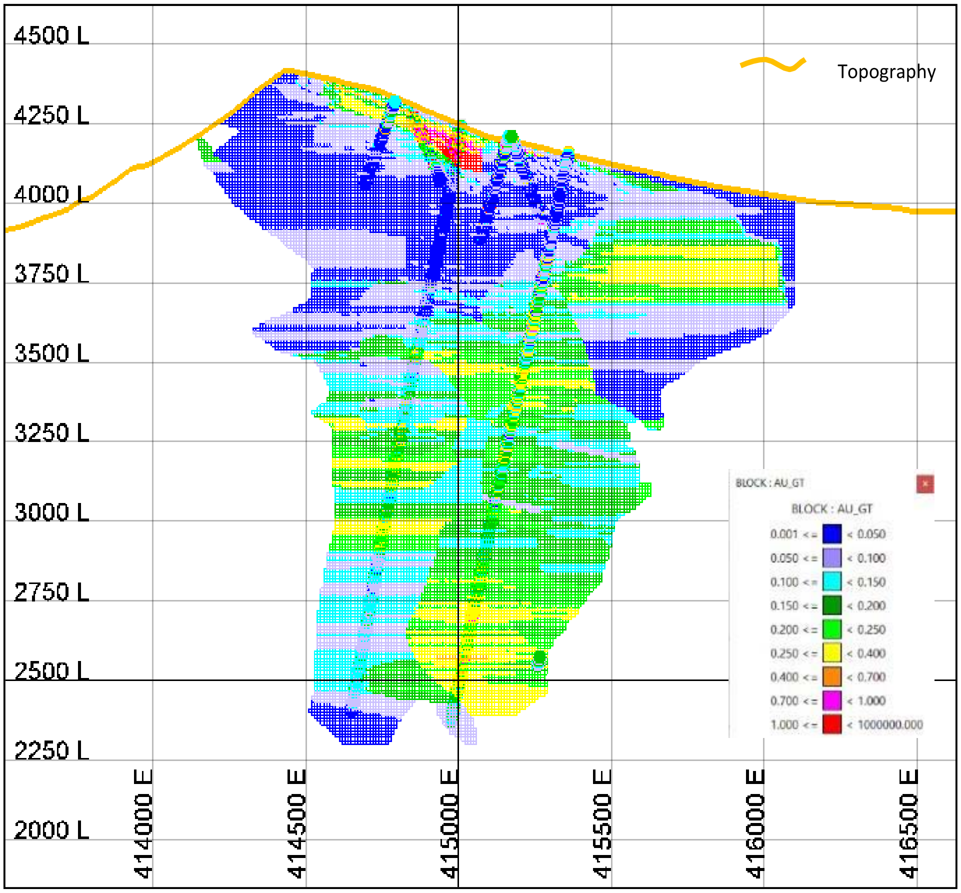


Figure 14.44 Overall View - Section N 6 779 600 – Au grades

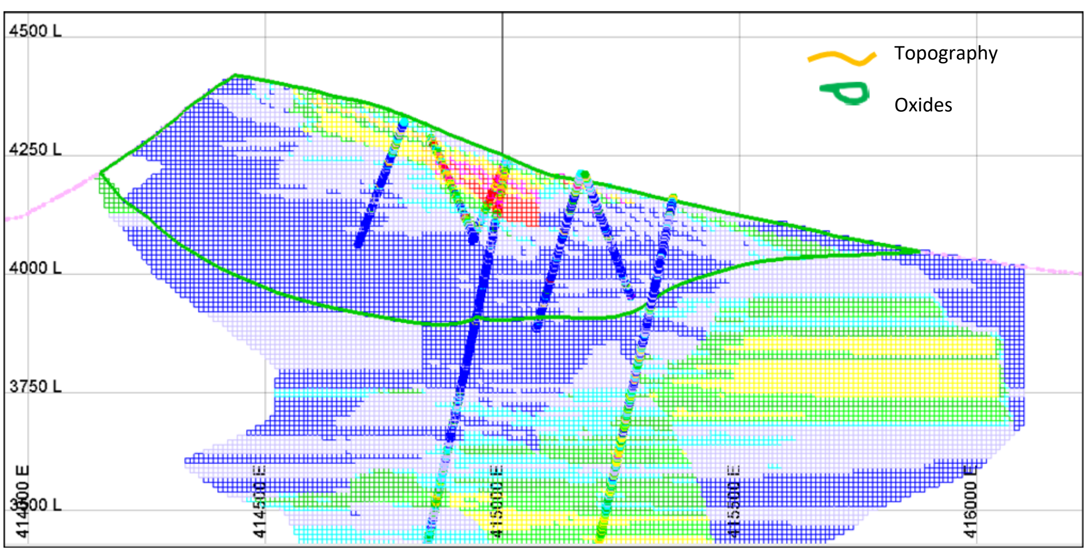


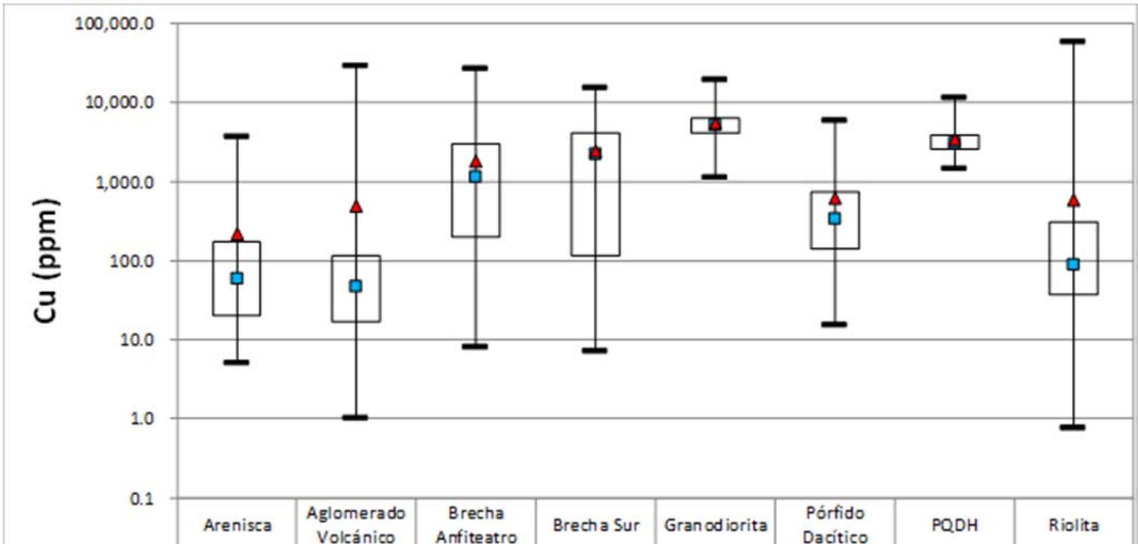
Figure 14.45 Oxide Zone - Section N 6 779 600 – Au grades

14.5 Copper-Cu Estimation

14.5.1 Cu Estimation Domains

Box-plots with statistics for lithological and mineralization zones are shown in Figure 14.46 and Figure 14.47 respectively. The following comments are pertinent for data shown in these box-plots:

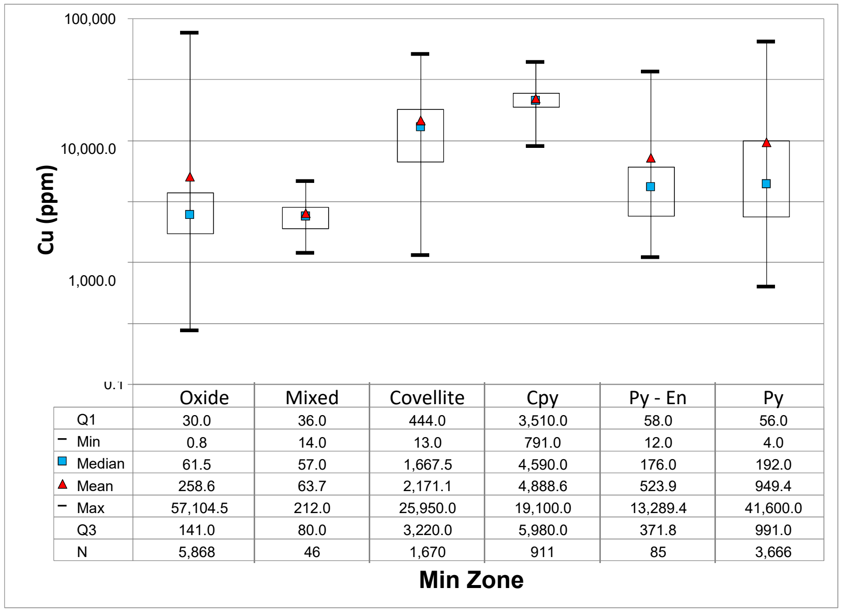
- Highest mean Cu grades are observed in granodiorite (0.55 %) and PQDH (0.35%), and lowest mean Cu grades in rhyolite.
- Chalcopyrite and covellite mineralization zones have the highest mean Cu grades; 0.49 and 0.22% respectively.



	Arenisca	Aglomerado Volcánico	Brecha Anfiteatro	Brecha Sur	Granodiorita	Pórfido Dacítico	PQDH	Riolita
Q1	19.9	17.0	199.3	116.7	4,150.0	141.3	2,597.5	37.5
Min	5.0	1.0	8.0	7.0	1,120.0	15.0	1,460.0	0.8
Median	59.5	47.0	1,145.0	2,260.0	5,120.0	333.0	3,050.0	89.0
Mean	216.5	488.7	1,819.2	2,462.1	5,452.4	613.4	3,477.2	592.5
Max	3,611.0	28,500.0	25,950.0	15,230.0	19,100.0	5,840.0	11,430.0	57,104.5
Q3	174.9	114.9	2,985.0	4,112.5	6,420.0	743.6	3,830.0	309.0
NSamples	77	507	1,539	817	470	291	85	8,460

Litología

Figure 14.47 Cu Composite Statistics – Lithological Zones



	Oxide	Mixed	Covellite	Cpy	Py - En	Py
Q1	30.0	36.0	444.0	3,510.0	58.0	56.0
Min	0.8	14.0	13.0	791.0	12.0	4.0
Median	61.5	57.0	1,667.5	4,590.0	176.0	192.0
Mean	258.6	63.7	2,171.1	4,888.6	523.9	949.4
Max	57,104.5	212.0	25,950.0	19,100.0	13,289.4	41,600.0
Q3	141.0	80.0	3,220.0	5,980.0	371.8	991.0
N	5,868	46	1,670	911	85	3,666

Figure 14.48 Cu Composite Statistics – Mineralization Zones

Statistical results, such as Cu mean grades, for both lithological and mineralization units suggest possible combinations for estimation domains as shown in Table 14.20 and Table 14.21.

- Mean Cu grades greater or equal to 0.33 % and N° of samples within highest Au grade zone combinations (≥ 0.33% g/t) are shown in bold red numbers in Tables 14.19 and 14.20 respectively.
- Zone combinations with highest percentage of data are shown in blue cells (Table 14.20).
- Mineralization and lithological zones with highest percentage of data are shown in light red cells (Table 14.20).

Table 14.20 Mean Cu Grades for Combined Lithological and Mineralization Zones

Cu Mean Grades *(ppm)*			MINERALIZATION ZONES					
			Oxide	Mixed	Cv	Cpy	Py - En	Py
			1	2	3	4	5	6
Lithology Zone	Sandstone	1	182					557
	Volcanic Agglomerate	2	526				884	21
	Amphitheatre Breccia	3	111	62	1,909	**4,464**		
	South Breccia	4	116		**3,802**	**5,973**		
	Granodiorite	5				**5,705**		
	Diorite Porphyry	6			1,730			522
	PQDH	7				**3,366**		
	Rhyolite	8	246	68	1,634	**3,699**	520	806

Table 14.21 Number and percentage of composites within combined Litho and Min Zones

N° - % OF SAMPLES WITHIN COMBINED ZONES		MINERALIZATION ZONE													
		Oxide		Mixed		Covellite		Cpy		Py-En		Py		TOTAL	
LITHOLOGICAL ZONE		1		2		3		4		5		6		All	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
Sandstone	1	70	0.6									7	0.1	**77**	**0.6**
Volcanic Agglomerate	2	468	3.8									38	0.3	**506**	**4.1**
Amphitheatre Breccia	3	255	2.1	34	0.3	559	4.6	**268**	2.2			423	3.5	**1,539**	**12.6**
South Breccia	4	134	1.1			**342**	2.8	**58**	0.5			283	2.3	**817**	**6.7**
Granodiorite	5							**384**	3.1			86	0.7	**470**	**3.8**
Diorite Porphyry	6					22	0.2					269	2.2	**291**	**2.4**
PQD	7							**71**	0.6			14	0.1	**85**	**0.7**
Rhyolite	8	4,941	**40.4**	12	0.1	747	6.1	**130**	1.1	84	0.7	2,546	20.8	**8,460**	**69.1**
TOTAL	All	**5,868**	**47.9**	**46**	**0.4**	**1,670**	**13.6**	**911**	**7.4**	**84**	**0.7**	**3,666**	**29.9**	**12,245**	**100.0**

Comments – Lithological and Mineralization Zone Combinations

- Mean Cu grades greater or equal to 0.35% are observed in (south bx-covellite; 0.38%), (amph bx-cpy: 0.45%), (south bx-cpy: 0.6%), (granodiorite-cpy: 0.57%) and (rhyolite-cpy: 0.37%).
- Highest copper grades are in all intrusive and breccia units within the chalcopyrite zone.
- 69.1% of samples within the model are rhyolite followed by 12.6% of amphitheatre breccia.
- 47.9% of samples within the model are in the oxide zone followed by 29.9% in the pyrite zone.

Based upon results obtained in the previous analysis, seven (7) preliminary estimation domains were defined. Codes and descriptions for each estimation domain are given in Table 14.22 and Table 14.23.

It should be noted that estimation domain 5 was split into ED-51 and ED-52, the latter being the higher Cu estimation domain; Cu > 0.55%.

Table 14.22 Lithological and mineralization combinations for Cu estimation domains (ED or UE)

Cu-ED	Description
1	Sandstone in all min zones
2	Volcanic agglomerate in all min zones
3	All oxide and mixed min zones excluding sandstone and volcaniclastic agglomerate
4	Covellite min zone excluding south bx, sandstone and volcaniclastic agglomerate
51	Medium Cu grades (approximately 0.4% average) in covellite, chalcopyrite and pyrite min zones
52	**High Cu grades in south bx and granodiorite in chalcopyrite min zone.**
6	Low Cu in py-en and py zones

Table 14.23 Cu Estimation Domains and Mean Cu Grades

Cu Mean Grade (ppm) Estimation Domains			MINERALIZATION ZONES											
			Oxide		Mixed		Cv		Cpy		Py - En		Py	
			ED	Cu	ED	Cu	ED	Cu	ED	Cu	ED	Cu	ED	Cu
Litho Zone	Sandstone	1	1	182	1		1		1		1		1	557
	Volcanic Agglomerate	2	2	526	2		2		2		2	884	2	21
	Amphitheatre Breccia	3	3	111	3	62	4	1,909	51	4,464	6		6	
	South Breccia	4	3	116	3		51	3,802	52	5,973	6		6	
	Granodiorite	5	3		3		4		52	5,705	6		51	
	Diorite Porphyry	6	3		3		4	1,730	51		6		6	522
	PQDH	7	3		3		4		51	3,366	6		51	
	Rhyolite	8	3	246	3	68	4	1,634	51	3,699	6	520	6	806

Cu mean grades variability were reviewed in 5-m rhyolite slices using the same procedure described in Section 1.41 (Au estimation domain definition). Results are shown in Figure 14.49.

Mean grades are quite stable down to 140 m depth in the oxide zone, therefore the rhyolite domain will remain as defined in Table 14.22.

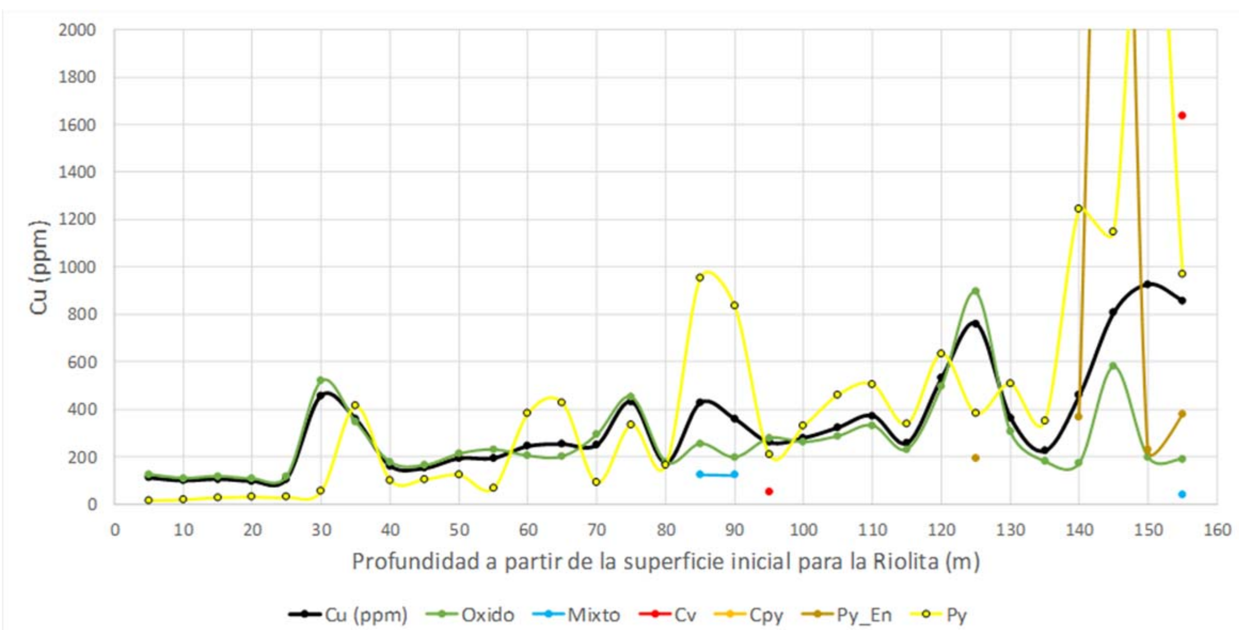


Figure 14.49 Mean Cu Grades within 5-m Rhyolite Slices in the Oxide Zone.

14.5.2 Cu – Mineralized and Non Mineralized Block Estimation

Mineralized and non-mineralized block estimation was carried out via indicator and ordinary kriging. Estimation plan parameters were based upon the analyses of log probability plots for each estimation domain and indicator variograms.

Log-Probability Plot Analysis: Cut-off Au grades for mineralized and non-mineralized material were based upon the analyses of log-probability plots for each Cu estimation domain shown in Figure 14.50. Cu cut-off grades are shown in Table 14.24.

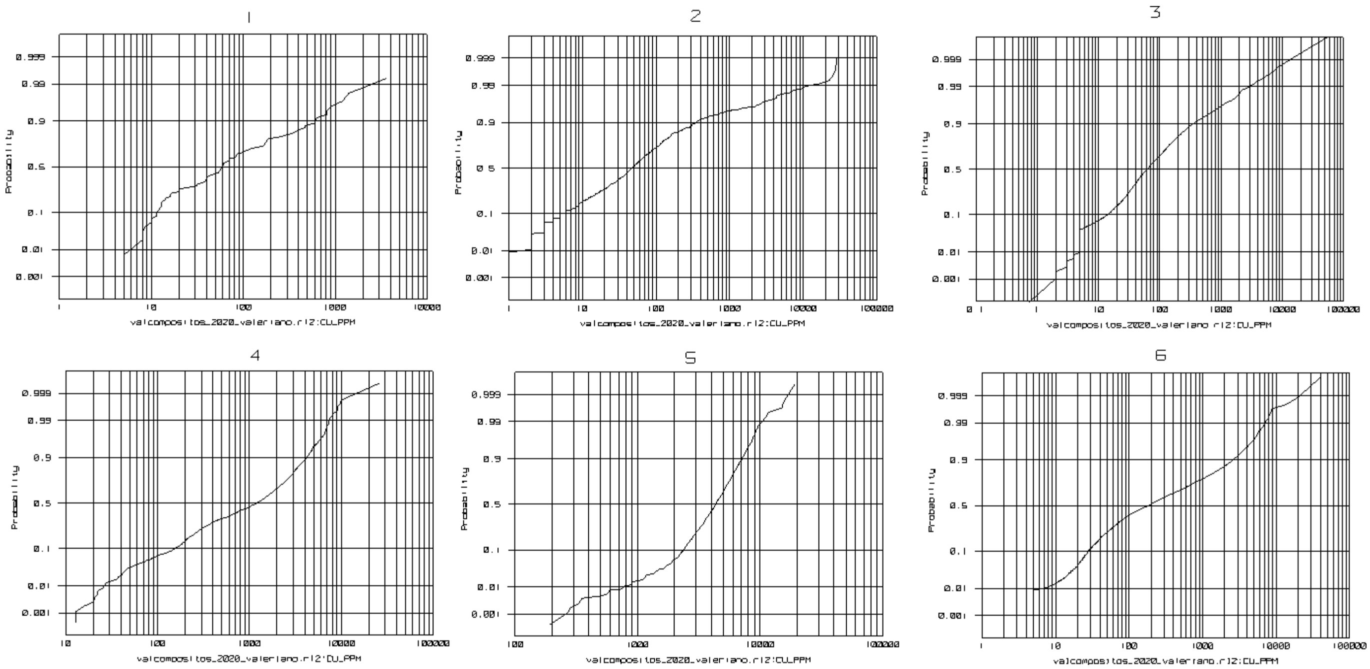


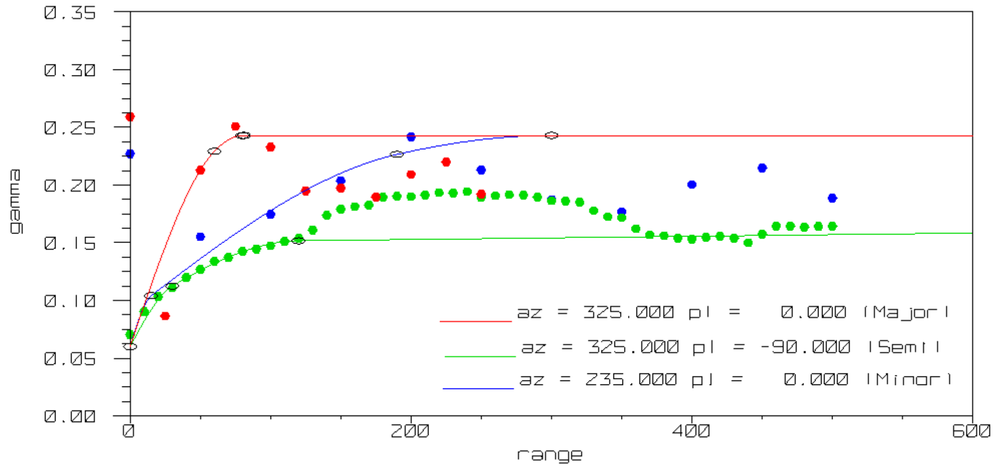
Figure 14.50 Log-Probabilty Plots for Cu Estimation Domains

Table 14.24 Cu Cut-off Grades for Mineralized / Non Mineralized Block Classification

<table>
<tr><th>Cu-ED</th><th>Cu Cut-off For Indicator Kriging (ppm)</th></tr>
<tr><td>1</td><td>-</td></tr>
<tr><td>2</td><td>-</td></tr>
<tr><td>3</td><td rowspan="4">200</td></tr>
<tr><td>4</td></tr>
<tr><td>5 (51-52)</td></tr>
<tr><td>6</td></tr>
</table>

Indicator kriging cut-off for mineralized and non-mineralized block classification was set a 200 ppm (0.02% Cu) for ED-2, 3, 4 and 5. Cut off grades were not applied in ED-1 and ED-2.

The indicator variogram is shown in Figure 14.51.




```
Variogram Model Parameters
Nugget: 0.060, Num Struct: 3
Var Type          Ci     Azimuth   Plunge    Dip      Major    Semi      Minor
SPHERICAL         0.030  325.000   0.000   -90.000   60.000    30.000    15.000
SPHERICAL         0.060  325.000   0.000   -90.000   80.000   120.000   190.000
SPHERICAL         0.093  325.000   0.000   -90.000   81.000 10000.000   300.000
```

Figure 14.51 Indicator Variogram for Mineralized / Non-Mineralized Block Classification

The estimation procedure was similar to that used for Au block classification, except for the following differences:

- Estimation was carried out in three (3) passes. Search radii for the first pass were set at 75, 120 and 150 m for X-Y-Z respectively. Second and third passes were carried out using 1,000 and 5,000 m respectively.
- The IND_CU variable is 0 (below cut-off) or 1 (above cut-off).

The indicator kriging Cu estimation plan is given in Table 14.25.

Table 14.25 Cu – Indicator Kriging Estimation Plan

Group	Pass	Search Angles			Search Radii			N° Samples		DATABASE		Cu Cut-off	MAX N° Samples
		Bearing (°)	Plunge (°)	Dip (°)	Major (m)	Semi (m)	Minor (m)	Min	Max				
1	1	325	0	-90	75	120	150	6	10	valcompositos_2020_valeriano.rl2	IND_CU	200	5
	2	325	0	-90	1000	1000	1000	6	10	valcompositos_2020_valeriano.rl2	IND_CU	200	5
	3	325	0	-90	5000	5000	5000	1	10	valcompositos_2020_valeriano.rl2	IND_CU	200	-

Probabilities were estimated via indicator kriging (i.e. probability 0.3: non-mineralized – probability 0.5: mineralized or non-mineralized – probability 0.7: mineralized).

Finally, an additional variable (INDI_CU) was used in order to assign mineralized or non-mineralized category to each block:

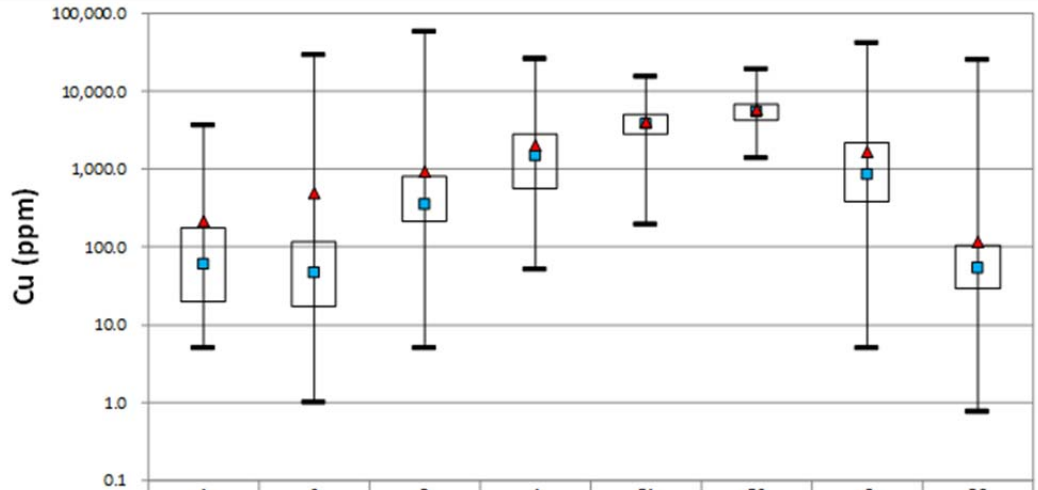
- INDI_CU < 0.5: low grade block/non-mineralized
- INDI_CU ≥ 0.5: high grade block/mineralized

Indicators of these categories (ED_AUF or UE_AUF) for each estimation domain are shown in Table 14.26. As can be seen, ED's for blocks classified as mineralized remain as originally denominated (3 through 6) and non-mineralized blocks were classified as estimation domain 30. ED-1 and ED-2 were not classified.

Table 14.26 Final Estimation Domains: ED_CUF (UE_CUF).

Cu-ED	Indicator	ED_CUF
1	Not Classified	1
2	Not Classified	2
3	Below Cut-Off	30
	Above Cut-Off	3
4	Below Cut-Off	30
	Above Cut-Off	4
51	Below Cut-Off	30
	Above Cut-Off	51
52	Below Cut-Off	30
	Above Cut-Off	52
6	Below Cut-off	30
	Above Cut-Off	6

Basic statistics for final estimation domain (ED_CUF) are shown in Figure 14.52. As can be seen, mineralized blocks in ED_CUF 52 (south bx and granodiorite in cpy minzone) have the highest mean Cu grade (0.55 %), followed by ED_CUF 51 with mean Cu grade of 0.4



	1	2	3	4	51	52	6	30
Q1	19.9	17.0	215.0	567.8	2,830.0	4,310.0	379.8	29.5
Min	5.0	1.0	5.0	51.0	194.0	1,350.0	5.0	0.8
Median	59.5	47.0	354.0	1,500.0	3,830.0	5,465.0	863.5	54.0
Mean	216.5	488.7	934.6	1,998.1	4,001.0	5,740.5	1,645.7	116.9
Max	3,611.0	28,500.0	57,104.5	25,950.0	15,230.0	19,100.0	41,600.0	25,150.0
Q3	174.9	114.9	813.8	2,841.9	5,027.5	6,780.0	2,180.0	103.5
NSamples	77	507	811	1,149	911	442	1,732	6,617

UE_CUF

Figure 14.52 Basic Statistics for Final Cu Estimation Domains

14.5.3 Cu Variography

Variography for each domain was approached through the use of omnidirectional correlograms. Experimental correlogram calculation parameters for final estimation domains (ED_CUF) are given in Table 14.27.

The estimation of the nugget effect was done calculating and plotting "down the hole" (DTH) correlograms. Results are given in Table 14.27.

Omnidirectional correlograms showing experimental (blue dots) as well as fitted models, and DTH correlograms for ED_CUF 2, 3, 4, 51-52, 6 and 30 are shown in Figure 14.53, Figure 14.54, Figure 14.55, Figure 14.56, Figure 14.57 and Figure 14.58 respectively. Theoretical model parameters, such as sills and search angle and radii are shown below each figure.

Table 14.27 Search Angles for ED_CUF

ED_CUF	Bearing (°)	Plunge (°)	Dip (°)
1	325	5	-5
2	325	10	-15
3	325	0	0
4	325	0	0
51/52	325	0	0
6	325	0	0
30	325	0	0

Table 14.28 Nugget effects for ED_CUF

ED_CUF	Nugget Effect
2	0.05
3	0.5
4	0.15
51 / 52	0.01
6	0.2
30	0.4

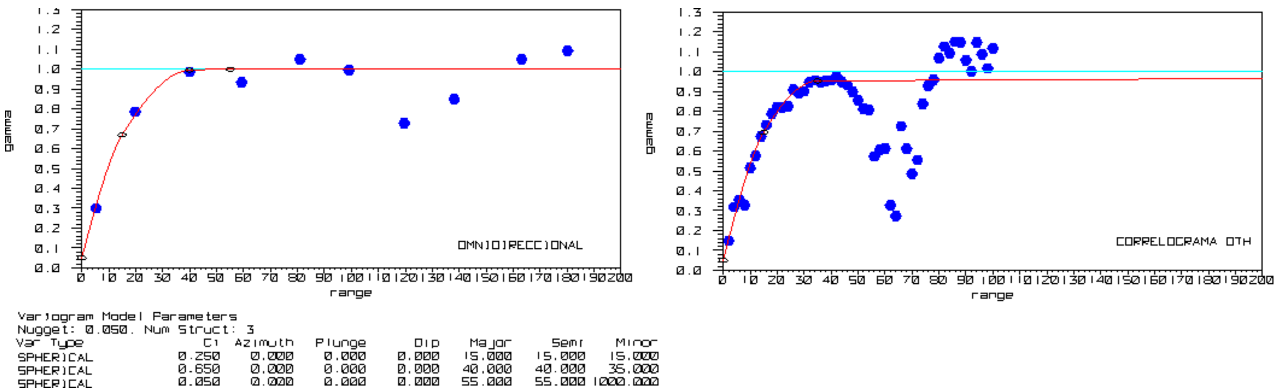


Figure 14.53 Correlogram ED_CUF 2

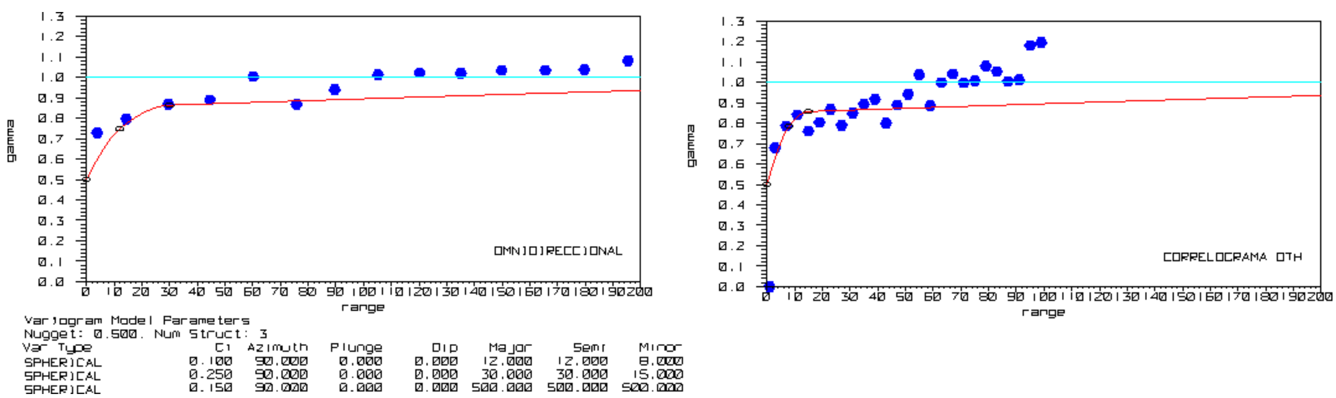


Figure 14.54 Correlogram UE_CUF 3

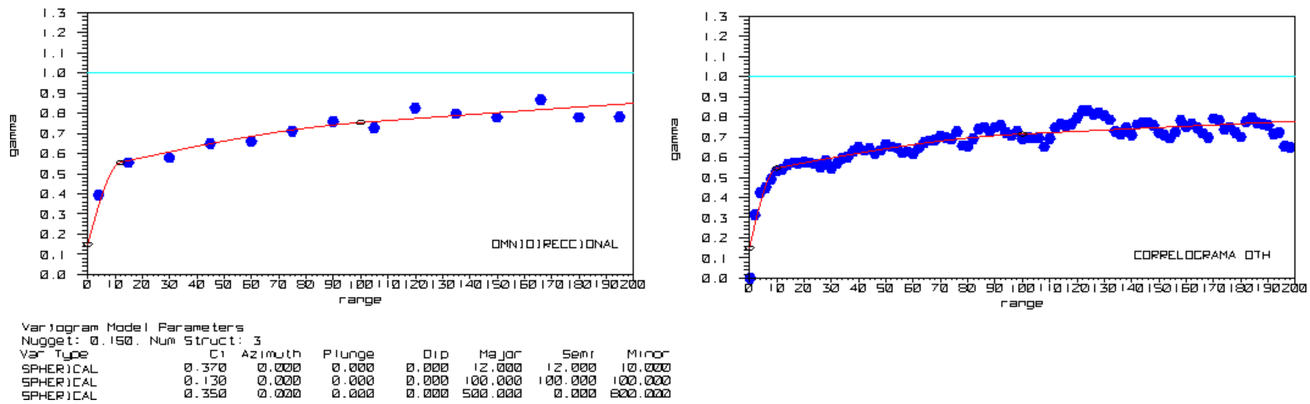


Figure 14.55 Correlogram ED_CUF 4

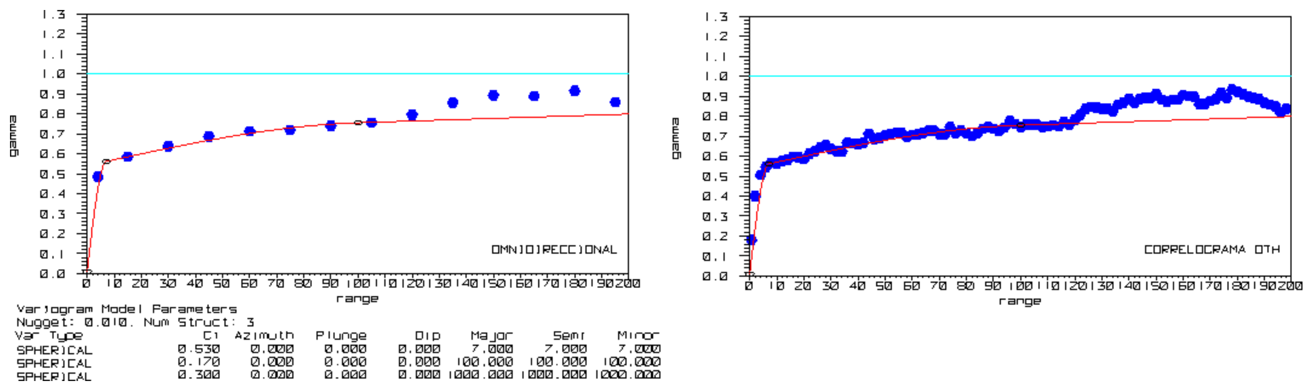


Figure 14.56 Correlogram ED_CUF 51 and 52

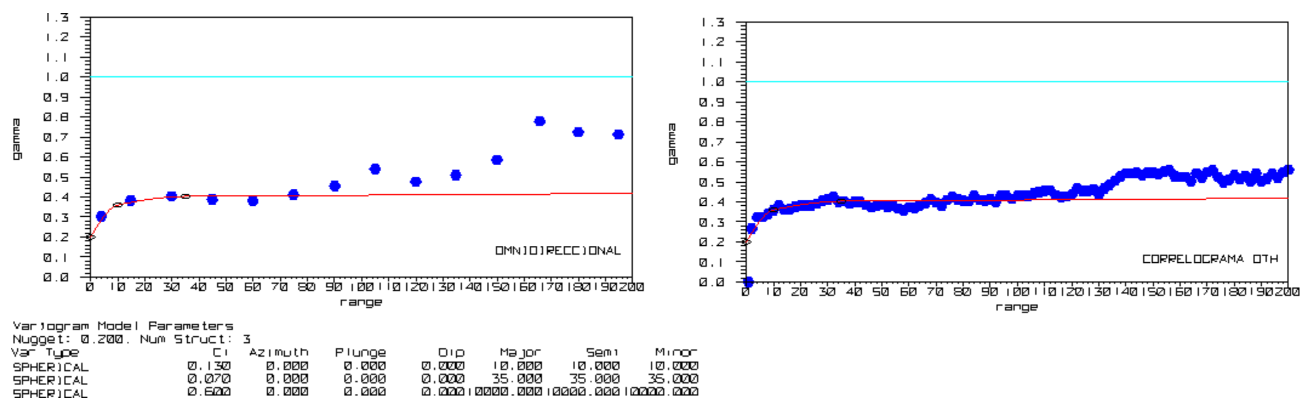


Figure 14.57 Correlogram ED_CUF 6

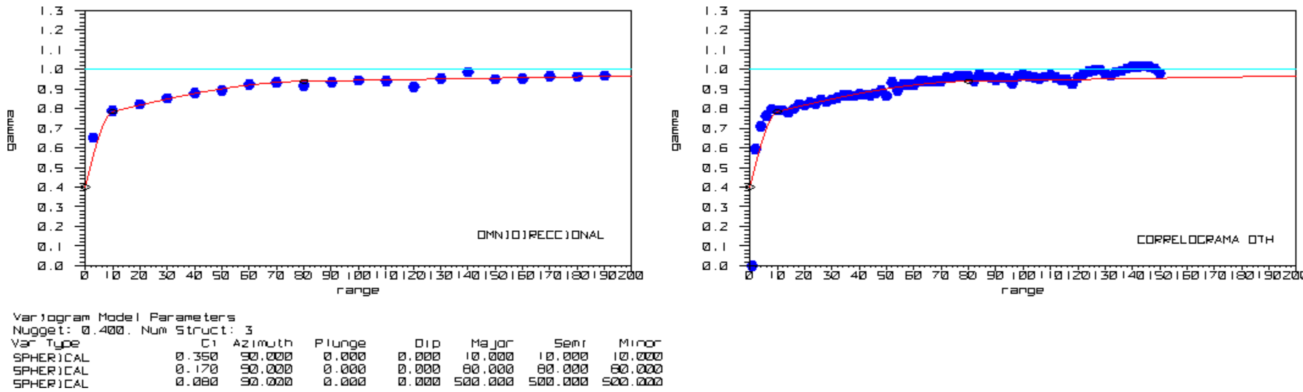


Figure 14.58 Correlogram ED_CUF 30

14.5.4 Cu - Outliers

It is well known that isolated high grades (outliers) may cause overestimation during the kriging process. To avoid this effect, high Cu grades that departed from log normality were capped. Cu values for each estimation domain are shown in Table 14.29.

Table 14.29 Cu grade Capping

ED_CUF	Anomalous Cu (ppm)
1	1,400
2	11,000
3	8,800
4	7,800
51	10,000
52	12,000
6	9,200
30	950

14.5.5 Cu Estimation Plan

The Cu estimation plan for each unit consists of nested ellipsoids. General settings are listed below:

- The first pass was set according to the correlogram distribution for each angle, and the search radii were set at the maximum variogram range.
- In general, search radii for the second pass double the first pass, except ED_CUF 2, 3 and 4.
- Search radii for the third pass double the second pass.

- Search radii for the fourth pass were set quite large (2,000 m) in order to avoid leaving to many blocks un-estimated.
- All estimations were performed using Indicator Kriging method.
- Block discretization was set at 4x4x3 m.
- Some domains were estimated with few samples to avoid increasing global bias.
- Maximum and minimum number of samples, in addition to maximum number of samples per drill hole guarantees using at least two drill holes in all passes.
- Cu grade capping was applied in all estimation domains.

Estimation plan parameters are shown in Table 14.30.

Table 14.30 Cu Estimation Plan

ED_CUF	Pass	Search Angles			Search Radii			# of Samples		DATABASE		Cu Cap (ppm)	Max Samples Per Hole
		Bearing (°)	Plunge (°)	Dip (°)	Major (m)	Semi (m)	Minor (m)	MIN	MAX				
1	1	325	5	-5	50	50	8	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	1,400	5
	2	325	5	-5	100	100	16	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	1,400	5
	3	325	5	-5	200	200	50	6	10	valcompositos_2020_valeriano.rl2	CU_PPM	1,400	5
	4	325	5	-5	2000	2000	500	3	8	valcompositos_2020_valeriano.rl2	CU_PPM	1,400	-
2	1	325	10	-15	40	40	35	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	11.000	5
	2	325	10	-15	100	100	75	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	11.000	5
	3	325	10	-15	200	200	150	6	10	valcompositos_2020_valeriano.rl2	CU_PPM	11.000	5
	4	325	10	-15	2000	2000	500	3	8	valcompositos_2020_valeriano.rl2	CU_PPM	11.000	-
3	1	325	0	0	45	45	25	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	8,000	5
	2	325	0	0	100	100	50	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	8,000	5
	3	325	0	0	200	200	100	6	20	valcompositos_2020_valeriano.rl2	CU_PPM	8,000	5
	4	325	0	0	2000	2000	1000	6	20	valcompositos_2020_valeriano.rl2	CU_PPM	8,000	-
4	1	325	0	0	90	90	45	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	7,800	5
	2	325	0	0	180	180	90	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	7,800	5
	3	325	0	0	360	360	180	6	10	valcompositos_2020_valeriano.rl2	CU_PPM	7,800	5
	4	325	0	0	2000	2000	2000	3	8	valcompositos_2020_valeriano.rl2	CU_PPM	7,800	-
51	1	325	0	0	100	100	50	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	10,000	5
	2	325	0	0	200	200	100	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	10,000	5
	3	325	0	0	400	400	200	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	10,000	5
	4	325	0	0	2000	2000	1000	3	12	valcompositos_2020_valeriano.rl2	CU_PPM	10,000	-
52	1	325	0	0	100	100	50	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	12,000	5
	2	325	0	0	200	200	100	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	12,000	5
	3	325	0	0	400	400	200	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	12,000	5
	4	325	0	0	2000	2000	1000	3	12	valcompositos_2020_valeriano.rl2	CU_PPM	12,000	-
6	1	325	0	0	35	35	35	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	9,200	5
	2	325	0	0	90	90	90	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	9,200	5
	3	325	0	0	200	200	200	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	9,200	5
	4	325	0	0	2000	2000	2000	3	12	valcompositos_2020_valeriano.rl2	CU_PPM	9,200	-
30	1	325	0	0	80	80	80	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	950	5
	2	325	0	0	160	160	160	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	950	5
	3	325	0	0	400	400	400	6	14	valcompositos_2020_valeriano.rl2	CU_PPM	950	5
	4	325	0	0	2000	2000	2000	3	12	valcompositos_2020_valeriano.rl2	CU_PPM	950	-

Statistics of copper mean grades (Cu-ppm) and tonnages estimated, as well as nearest neighbour Cu mean grades (Cu-NN) in each kriging pass and globally are shown in Table 14.31.

Table 14.31 Cu Estimated Block Statistics

ED_CUF	Pass	Cu-ppm	Cu-NN	Tonnage	Δ Error (%)	Cu-ppm	Cu-NN	Tonnage	Δ Error (%)
1	1	19.3	10.8	12,500	79.1	144.4	84.2	101,380,000	71.5
	2	51.4	50.5	860,000	1.7				
	3	173.9	180.4	6,582,500	-3.6				
	4	143.2	77.8	93,925,000	84.2				
2	1	660.8	673.4	870,000	-1.9	212.5	215.0	103,340,000	-1.1
	2	624.2	641.0	15,477,500	-2.6				
	3	308.2	275.6	33,640,000	11.9				
	4	25.5	45.7	53,352,500	-44.3				
3	1	959.1	1,376.4	990,000	-30.3	954.4	765.0	198,805,000	24.8
	2	857.4	776.1	15,695,000	10.5				
	3	887.0	897.8	67,290,000	-1.2				
	4	1,007.2	680.4	114,830,000	48.0				
4	1	1,235.5	1,133.3	282,500	9.0	2,232.3	2,518.4	614,795,000	-11.4
	2	1,962.4	2,004.1	79,615,000	-2.1				
	3	2,532.0	2,809.1	374,747,500	-9.9				
	4	1,667.2	2,096.1	160,150,000	-20.5				
51	1					4,375.1	4,518.6	697,865,000	-3.2
	2	3,934.4	3,852.7	27,620,000	2.1				
	3	4,524.7	4,420.2	330,625,000	2.4				
	4	4,265.3	4,668.6	339,620,000	-8.6				
52	1					5,550.9	5,277.0	200,195,000	5.2
	2	5,700.5	5,571.7	14,757,500	2.3				
	3	5,494.4	5,507.3	98,525,000	-0.2				
	4	5,589.5	4,965.8	86,912,500	12.6				
6	1	1,016.6	686.7	277,500	48.0	1,494.2	1,606.7	1,548,447,500	-7.0
	2	1,330.6	1,093.2	9,187,500	21.7				
	3	1,408.7	1,482.0	230,310,000	-4.9				
	4	1,510.5	1,632.4	1,308,672,500	-7.5				
30	1	90.4	89.4	118,367,500	1.1	87.0	88.3	3,959,670,000	-1.5
	2	91.2	89.3	835,070,000	2.1				
	3	86.7	85.1	2,367,775,000	1.9				
	4	81.9	98.8	638,457,500	-17.1				

14.5.6 Validations

14.5.6.1 Global Bias

Global bias between estimated and nearest neighbour Cu means ≤ |10%| are considered acceptable. Due to the limited amount of data currently available at Valeriano, some low Cu grade estimation domains surpass acceptability criteria; therefore it was deemed necessary to analyze results for each estimation domain based upon results shown in Table 14.30 and a summary of estimated, NN and composite means shown in Table 14.32.

Table 14.32 Estimated (OK), NN and Composite Cu Means

ED	Cu-%			
CUF	**Estimated**	**NN**	**Bias**	**Composites**
1	0.0144	0.0084	71.5	0.0216
2	0.0212	0.0215	-1.1	0.0488
3	0.0954	0.0765	24.8	0.0935
4	0.2232	0.2518	-11.4	0.1998
51	0.4375	0.4519	-3.2	0.4001
52	0.5551	0.5277	5.2	0.5741
6	0.1494	0.1607	-7.0	0.1646
30	0.0087	0.0088	-1.5	0.0117

Comments based upon comparisons between OK and NN estimates are as follow:

- **ED_CUF 1** (sandstone) is over estimated; nevertheless it is not relevant due to its low Cu grade. Furthermore, estimated Cu via OK (0.0114%) is lower than the composite mean (0.0216%).
- Biases are low in **ED_CUF 2** (volcanic agglomerate), **ED_CUF 51** (medium Cu in covellite, chalcopyrite and pyrite zones), **ED_CUF 52** (high Cu in south bx and granodiorite within the chalcopyrite zone), **ED_CUF 6** (low Cu in pyrite zone) and ED_CUF 30 (non-mineralized).
- **ED_CUF 3** (oxide and mixed zones) is overestimated (bias: 24.8%), nevertheless the OK estimate (0.095%) is very close to the composite mean (0.094%). The largest bias (48%) is observed in the fourth pass.
- **ED_CUF 4** (covellite mineralization zone) is underestimated (bias: -11.4), nevertheless estimated and composite means are quite close; 0.22 and 0.20%. The largest bias is observed in the fourth pass (-20.5%).

Main ***conclusions*** based upon these findings are:

- Estimation domains with medium and high Cu grades have low biases (**ED_CUF 51 and 52**).
- **ED_CUF 2, 6 and 30** have biases within the acceptable range.
- **ED_CUF 3** will require further analyses once additional drill hole information is available.
- Bias en **ED_CUF 4** (-11.4%) is slightly above the acceptable limit (≤ |10|).

Overall, global bias analysis results are considered acceptable.

14.5.6.2 Cu – Drift Analysis

Drift analyses were carried out by comparing the average kriging estimated block grades against the average NN estimates along 50 x 50 x 20-m slices in the X, Y and Z directions, respectively. Average kriging estimated block grades are shown in blue, NN estimated grades in red and associated tonnage in grey.

Graphs for each estimation domain are shown in Figure 14.59, Figure 14.60, Figure 14.61, Figure 14.62, Figure 14.63, Figure 14.64, Figure 14.65 and Figure 14.66.

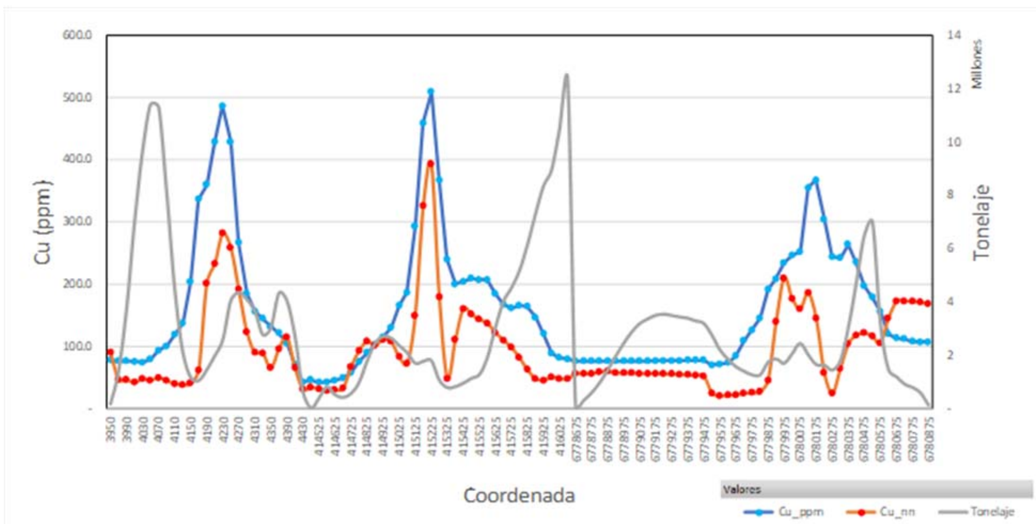


Figure 14.59 Drift ED_CUF 1

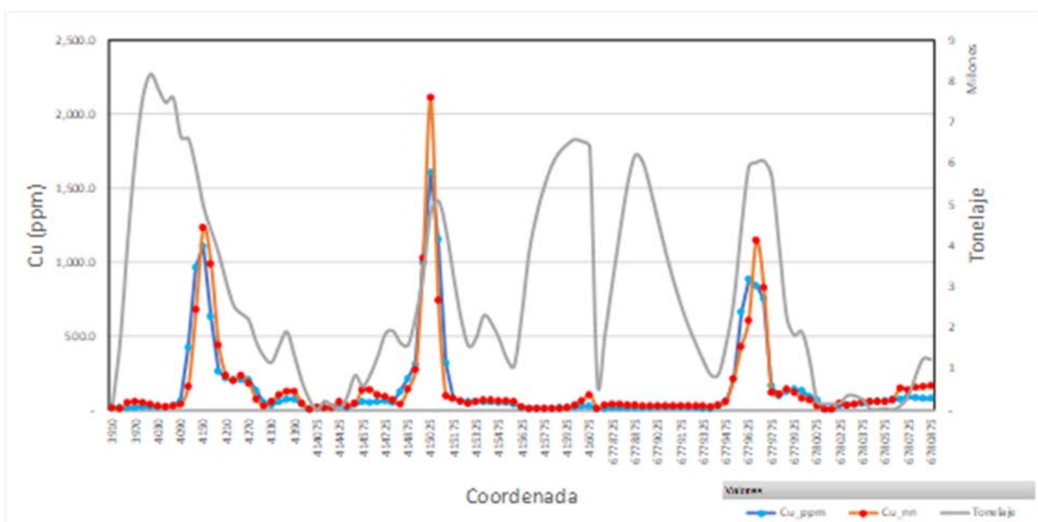


Figure 14.60 Drift ED_CUF 2

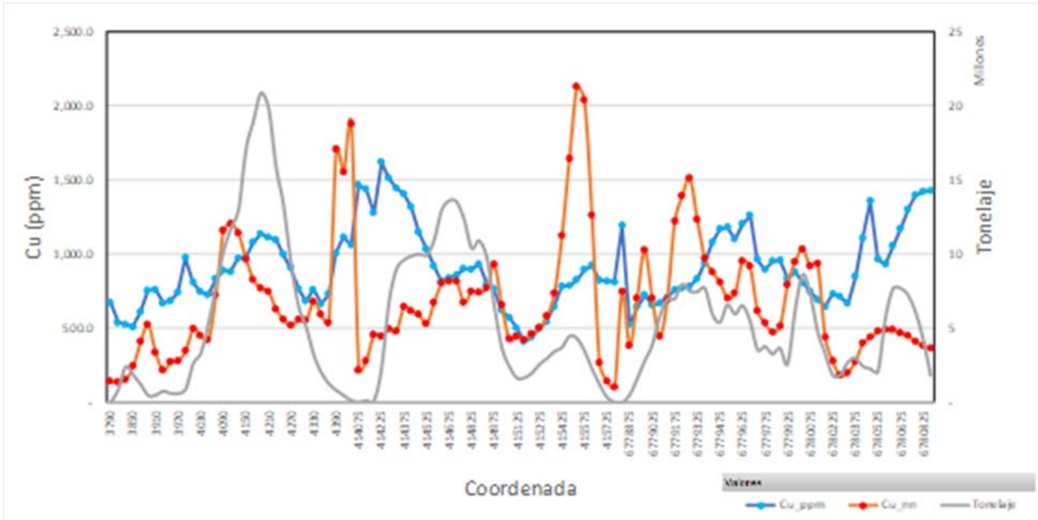


Figure 14.61 Drift ED_CUF 3

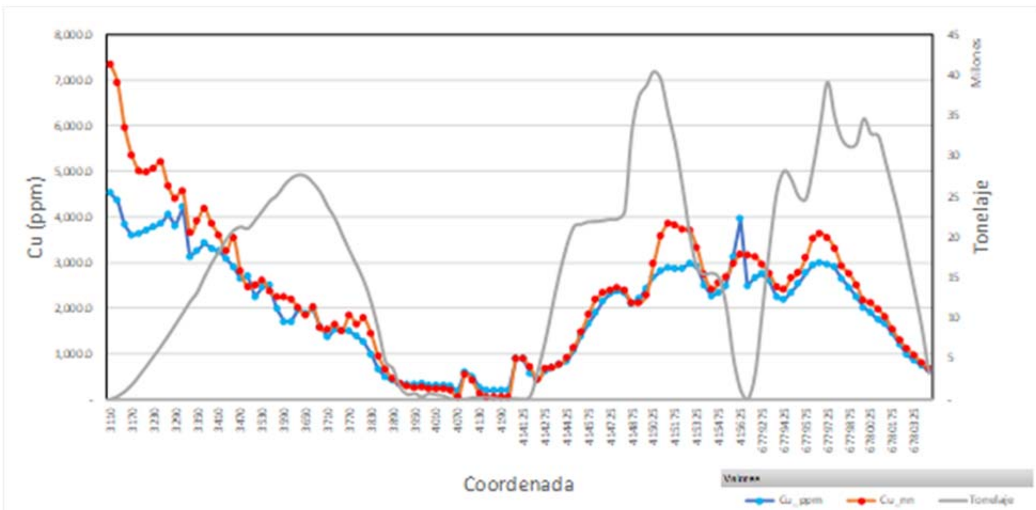


Figure 14.62 Drift ED_CUF 4

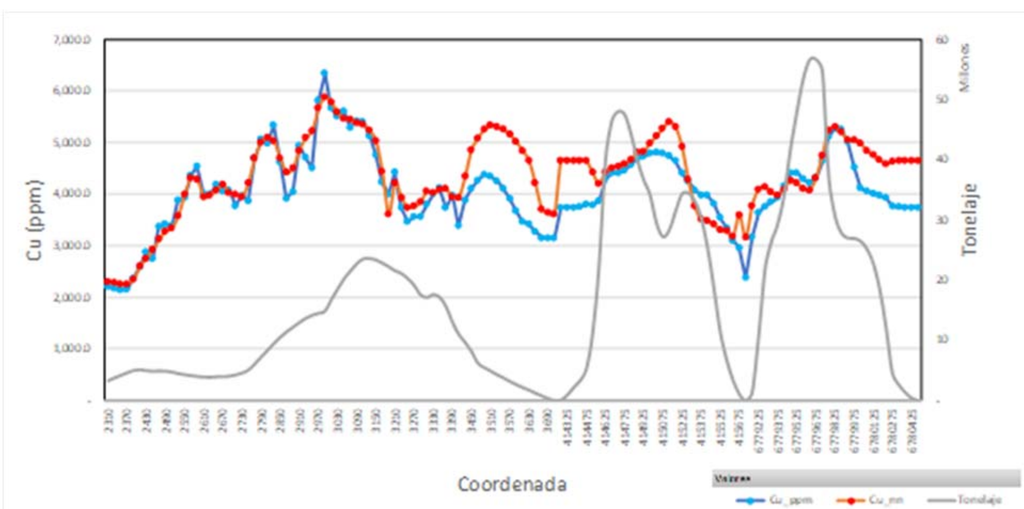


Figure 14.63 Drift ED_CUF 51

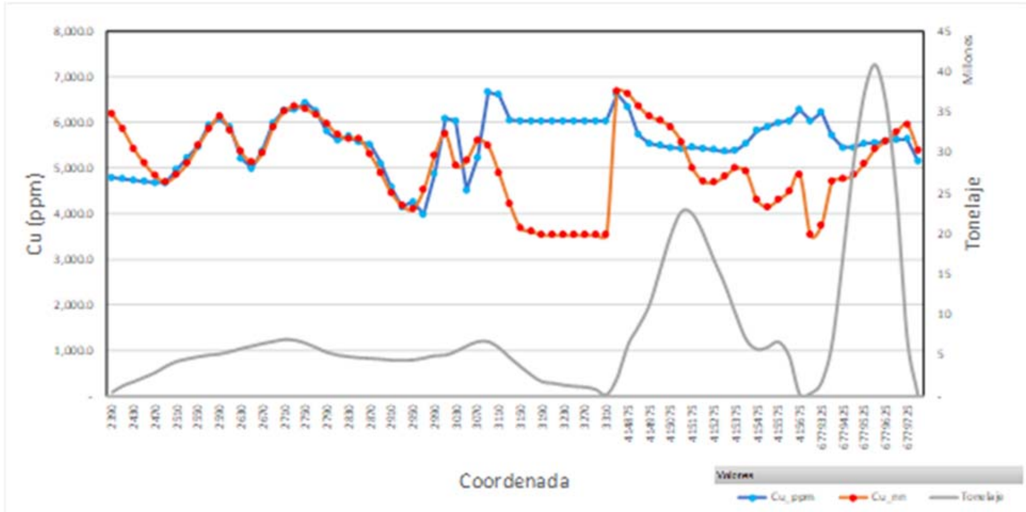


Figure 14.64 Drift ED_CUF 52

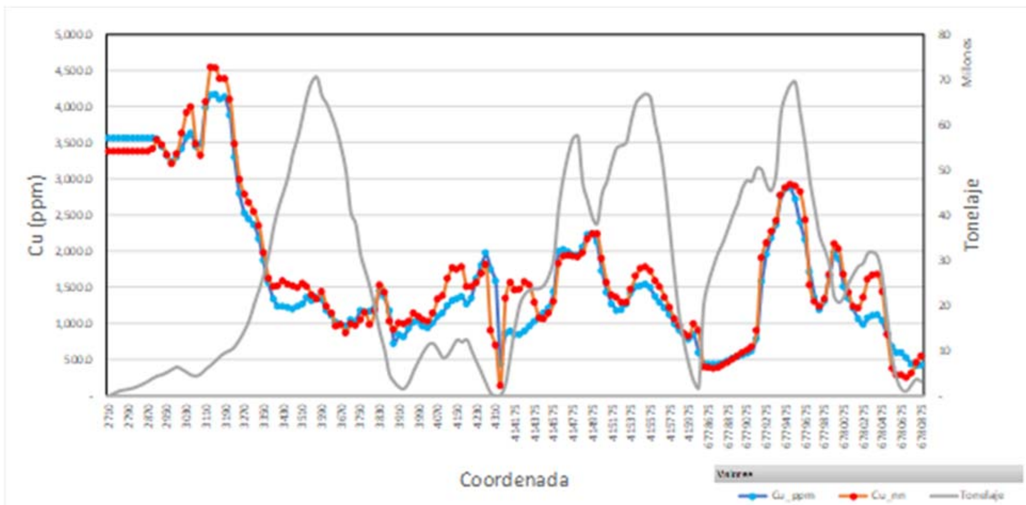


Figure 14.65 Drift ED_CUF 6

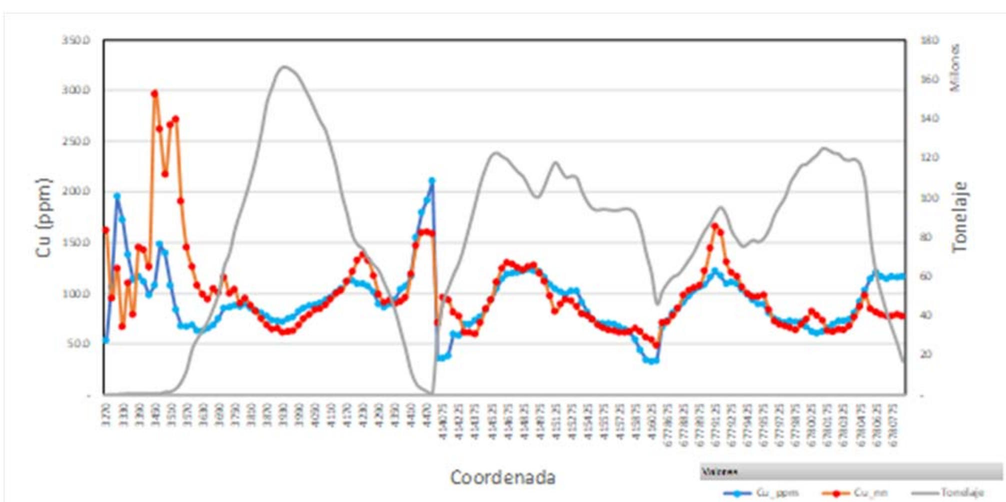


Figure 14.66 Drift ED_CUF 3

Conclusions drawn from drift analyses are as follow:

- Kriged Cu values are systematically higher than NN estimates in ED_CUF 1, nevertheless the mean Cu grade is higher than the kriged Cu mean.
- Kriged and NN trends in ED_CUF 2, 4, 6 and 30 are similar.
- ED_CUF 3 shows a significant variability in NN estimates. This unit will require further analyses as mentioned previously.
- In general, kriged and NN estimates in ED_CUF 51 and 52 show similar trends, except in zones with low tonnage.

Overall results indicate that the estimation was satisfactory.

14.5.6.3 Graphic Validation

Two sections were prepared in order to compare block estimated against drill hole composites using the same color scheme; section E 415 000 and N 6 799 600 in Figure 14.67 and Figure 14.68 respectively.

Generally, drill hole high and low grade zones are well reproduced in the block model. Results were considered satisfactory.

It should be noted that horizontal artifacts are observed due to the small amount of drill hole data at depth.

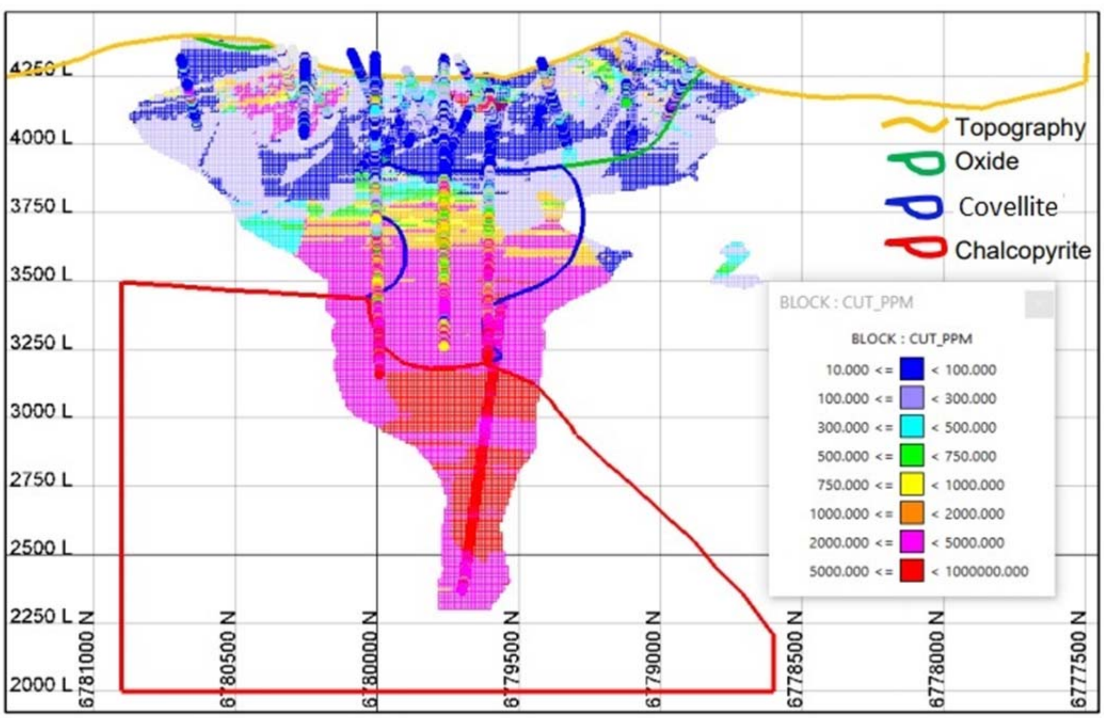


Figure 14.67 Section E 415 000 – Cu

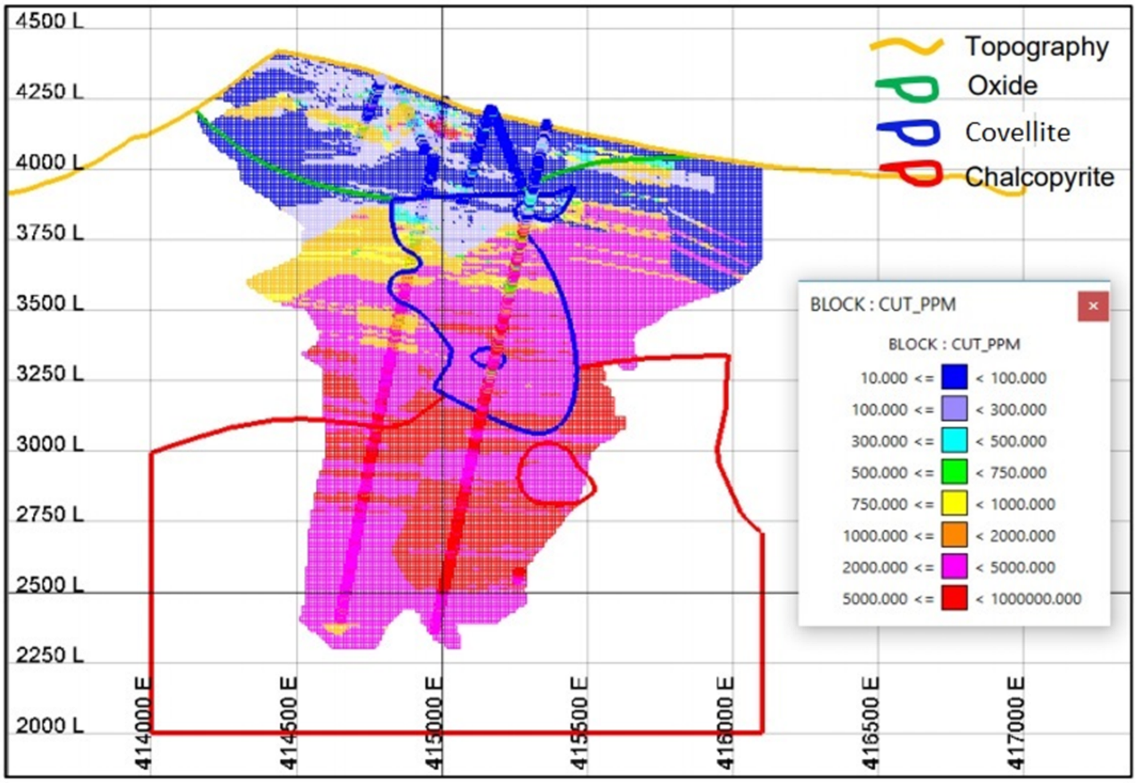


Figure 14.68 Section N 6 779 600 - Cu

14.6 Silver Ag Estimation

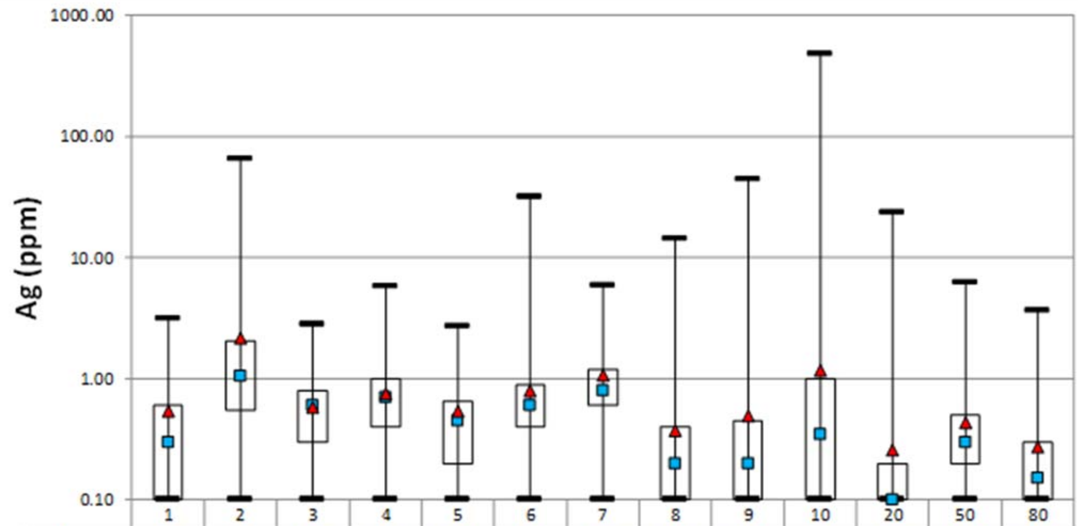
Silver estimation was carried out using Au estimation domains and variograms, therefore sections included in this chapter are as follow:

- Ag means in Au estimation domains
- Ag outliers
- Ag estimation plan
- Graphic validations

14.6.1 Ag Means in Au Estimation Domains

Silver basic statistics within final gold estimation domains (ED_AUF) are shown in Figure 14.69.

As can be seen, highest mean Ag grades are in ED_AUF 2 (volcanic agglomerate-oxide) and ED_AUF 10 (rhyolite-upper 85 m); 2.17 and 1.19 g/t respectively.



	1	2	3	4	5	6	7	8	9	10	20	50	80
Q1	0.10	0.55	0.30	0.40	0.20	0.40	0.60	0.10	0.10	0.10	0.10	0.20	0.10
Min	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Median	0.30	1.05	0.60	0.70	0.45	0.60	0.80	0.20	0.20	0.35	0.10	0.30	0.15
Mean	0.54	2.17	0.58	0.75	0.54	0.80	1.07	0.38	0.49	1.19	0.26	0.44	0.27
Max	3.15	65.00	2.80	5.80	2.70	31.70	5.90	14.21	43.65	474.95	23.40	6.25	3.65
Q3	0.60	2.05	0.80	1.00	0.65	0.90	1.20	0.40	0.45	1.00	0.20	0.50	0.30
NSamples	77	218	261	775	116	701	384	3,050	2,847	1,811	1,230	171	604

UE_AUF

Figure 14.69 Box Plot: Ag mean grades in Au estimation domains (ED_AUF)

14.6.2 Ag Outliers

Ag outliers were identified using log-probability plots. Results are shown in Table 14.33.

Table 14.33 Ag Outliers

ED_AGF	Ag Outliers (ppm)
1	2.5
2	10.0
3	1.55
4	3.17
5	2.5
6	4.2
7	4.9
8	3.7
9	5.8
10	15.0
20	2.4
50	3.0
80	2.7

14.6.3 Ag Estimation Plan

The silver estimation plan is shown in Table 14.34.

Table 14.34 Ag Estimation Plan

ED_AUF	Pass	Search Angles °			Search Radii-m			N Samples Estimation		Ag Outlier	Max Samp per Hole
		Bearing	Plunge	Dip	Major	Semi	Minor	Min	Max		
1	1	325	5	-5	50	50	8	6	14	2.5	5
	2	325	5	-5	100	100	16	6	14	2.5	5
	3	325	5	-5	200	200	32	6	14	2.5	5
	4	325	5	-5	1000	1000	100	3	12	2.5	-
2	1	325	10	-15	75	75	10	6	14	10.0	5
	2	325	10	-15	150	150	20	6	14	10.0	5
	3	325	10	-15	300	300	40	6	14	10.0	5
	4	325	10	-15	1000	1000	100	3	12	10.0	-
3	1	325	0	0	90	90	10	6	14	1.6	5
	2	325	0	0	180	180	20	6	14	1.6	5
	3	325	0	0	360	360	40	6	14	1.6	5
	4	325	0	0	1000	1000	100	3	12	1.6	-
4	1	325	0	0	85	85	20	6	14	3.2	5
	2	325	0	0	170	170	40	6	14	3.2	5
	3	325	0	0	340	340	80	6	14	3.2	5
	4	325	0	0	1000	1000	160	3	12	3.2	-
5	1	0	0	0	65	65	10	6	14	2.5	5
	2	0	0	0	130	130	20	6	14	2.5	5
	3	0	0	0	260	260	40	6	14	2.5	5
	4	0	0	0	1000	1000	100	3	12	2.5	-
6	1	325	0	0	50	50	30	6	14	4.2	5
	2	325	0	0	100	100	60	6	14	4.2	5
	3	325	0	0	200	200	120	6	14	4.2	5
	4	325	0	0	1000	1000	240	3	12	4.2	-
7	1	325	0	0	160	160	15	6	14	4.9	5
	2	325	0	0	320	320	30	6	14	4.9	5
	3	325	0	0	640	640	60	6	14	4.9	5
	4	325	0	0	1000	1000	120	3	12	4.9	-
8	1	325	0	0	50	50	20	6	14	3.7	5
	2	325	0	0	100	100	40	6	14	3.7	5
	3	325	0	0	220	220	80	6	14	3.7	5
	4	325	0	0	1000	1000	160	3	12	3.7	-
9	1	325	0	0	100	100	25	6	14	5.8	5
	2	325	0	0	200	200	75	6	14	5.8	5
	3	325	0	0	400	400	150	6	14	5.8	5
	4	325	0	0	1000	1000	300	3	12	5.8	-
10	1	0	-8	-20	75	75	15	6	14	15.0	5
	2	0	-8	-20	200	200	40	6	14	15.0	5
	3	0	-8	-20	400	400	75	6	14	15.0	5
	4	0	-8	-20	1000	1000	100	3	12	15.0	-
20	1	325	0	0	75	75	20	6	14	2.4	5
	2	325	0	0	150	150	40	6	14	2.4	5
	3	325	0	0	300	300	100	6	14	2.4	5
	4	325	0	0	1000	1000	200	3	12	2.4	-
50	1	325	0	0	15	15	15	6	14	3.0	5
	2	325	0	0	50	50	50	6	14	3.0	5
	3	325	0	0	100	100	100	6	14	3.0	5
	4	325	0	0	1000	1000	1000	3	12	3.0	-
80	1	325	0	0	50	50	15	6	14	2.7	5
	2	325	0	0	100	100	50	6	14	2.7	5
	3	325	0	0	200	200	100	6	14	2.7	5
	4	325	0	0	1000	1000	200	3	12	2.7	-

Statistics of silver mean grades (Ag g/t) and tonnages estimated, as well as nearest neighbour silver means (Ag-NN) in each kriging pass are shown in Table 14.35.

Table 14.35 Ag - Estimated Block Model Statistics

ED_AUF	Pass	Ag g/t	Ag-NN	Tonnage	Δ Error-%	Ag g/t	Ag-NN	Tonnage	Δ Error-%
1	1	0.82	0.68	12,500	20.9	0.26	0.19	101,380,000	34.9
	2	0.38	0.35	860,000	7.6				
	3	0.37	0.29	4,935,000	27.2				
	4	0.26	0.19	95,572,500	36.0				
2	1	2.19	2.23	3,317,500	-1.6	1.74	1.67	20,230,000	3.9
	2	1.72	1.82	11,175,000	-5.4				
	3	1.51	1.07	5,710,000	41.2				
	4	2.29	1.36	27,500	67.5				
3	1	0.66	0.75	27,500	-11.0	0.59	0.59	118,630,000	-1.4
	2	0.60	0.60	11,300,000	0.3				
	3	0.60	0.60	66,425,000	0.5				
	4	0.56	0.59	40,877,500	-5.0				
4	1					0.77	0.89	686,977,500	-13.2
	2	0.58	0.62	8,205,000	-5.1				
	3	0.66	0.68	140,540,000	-3.6				
	4	0.80	0.94	538,232,500	-15.1				
5	1					0.51	0.51	15,532,500	0.8
	2	0.57	0.62	2,285,000	-9.1				
	3	0.54	0.54	8,972,500	-0.8				
	4	0.43	0.38	4,275,000	14.4				
6	1					0.68	0.72	480,180,000	-6.6
	2	0.48	0.30	12,500	59.2				
	3	0.78	0.74	38,860,000	5.9				
	4	0.67	0.72	441,307,500	-7.7				
7	1	1.15	1.03	965,000	11.6	1.09	1.04	143,365,000	4.7
	2	1.15	1.09	46,112,500	5.2				
	3	1.13	1.16	43,582,500	-2.6				
	4	0.99	0.89	52,705,000	12.1				
8	1	0.64	0.68	2,882,500	-6.3	0.32	0.32	3,233,447,500	1.3
	2	0.46	0.50	29,905,000	-8.6				
	3	0.35	0.34	477,437,500	5.1				
	4	0.31	0.31	2,723,222,500	0.8				
9	1	0.45	0.46	87,925,000	-2.6	0.52	0.52	992,537,500	0.0
	2	0.50	0.49	370,370,000	2.6				
	3	0.57	0.58	382,230,000	-0.8				
	4	0.44	0.46	152,012,500	-2.5				
10	1	0.76	0.79	16,712,500	-4.0	0.88	0.77	405,615,000	15.1
	2	0.92	0.81	178,535,000	13.1				
	3	1.05	0.72	119,842,500	46.4				
	4	0.61	0.74	90,525,000	-17.4				
20	1	0.30	0.28	802,500	7.4	0.22	0.19	552,300,000	15.9
	2	0.25	0.23	47,605,000	5.4				
	3	0.24	0.21	189,865,000	18.0				
	4	0.21	0.18	314,027,500	16.5				
50	1					0.43	0.61	113,047,500	-30.0
	2								
	3	0.53	0.56	35,000	-5.8				
	4	0.43	0.61	113,012,500	-30.0				
80	1					0.21	0.21	561,255,000	0.3
	2	0.30	0.24	285,000	23.1				
	3	0.26	0.25	9,497,500	0.6				
	4	0.21	0.21	551,472,500	0.3				

14.6.4 Validation

14.6.4.1 Global Bias

Table 14.36 shows estimated, nearest neighbour bias, and composite means for each domain.

Table 14.36 Estimated, NN and Composite Ag Means

Estimation	Ag g/t			
Domain	**Estimated**	**NN**	**Bias**	**Composites**
1	0.26	0.19	34.9	0.54
2	1.74	1.67	3.9	2.17
3	0.59	0.59	-1.4	0.58
4	0.77	0.89	-13.2	0.75
5	0.51	0.51	0.8	0.54
6	0.68	0.72	-6.6	0.80
7	1.09	1.04	4.7	1.07
8	0.32	0.32	1.3	0.38
9	0.52	0.52	0.0	0.49
10	0.88	0.77	15.1	1.19
20	0.22	0.19	15.9	0.26
50	0.43	0.61	-30.0	0.44
80	0.21	0.21	0.3	0.27

- **ED 1, 10 and 20** are overestimated, nevertheless estimated grades are below Ag composite means.
- **ED 2, 3, 5, 6, 7, 8, 9 and 80** have acceptable biases.
- **ED 4 and 50** are underestimated but estimated grades are closer to the Ag composite means.

Overall, global bias results are satisfactory.

14.6.4.2 Graphic Validation

Two sections were prepared in order to compare block estimates against drill hole composites using the same color scheme; Section E 415 000 and N 6 779 600 shown in Figure 14.70 and Figure 14.71 respectively.

As can be seen, drill hole high and low grade zones are well reproduced in the block model. Results were considered satisfactory.

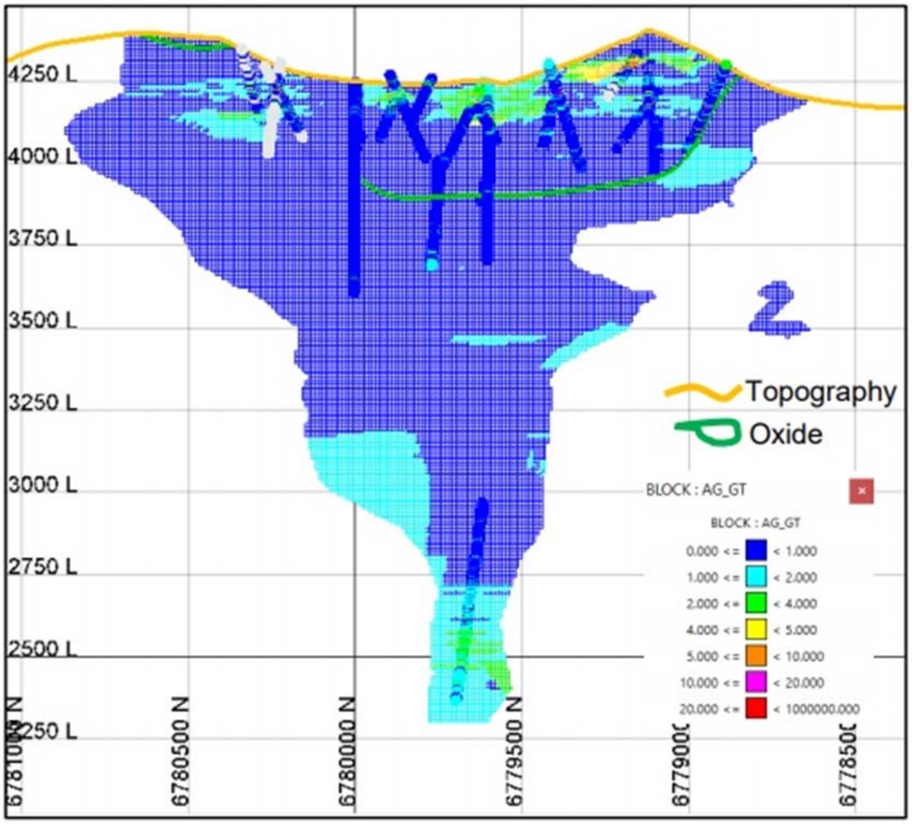


Figure 14.70 Section E 415 000 – Ag Block Model

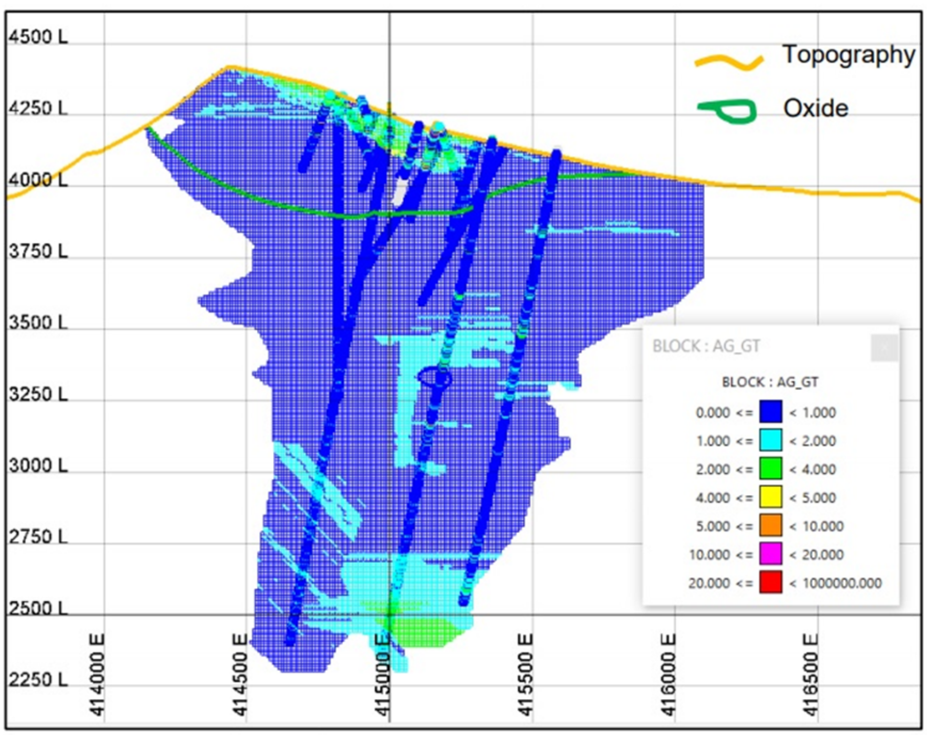


Figure 14.71 Section N 6 779 600 - Ag Block Model

14.7 Resource Tabulation

Estimated resources for the Valeriano deposit are under the INFERRED category.

Grade-tonnage curves for gold, copper, gold equivalent and copper equivalent were built using the following parameters and formulas:

- Au Price: US$ 1,800 / oz
- Cu Price: US$ 3.00 / lb
- Ag Price: US$ 25.0 / oz
- SG: 2.5 t/m^3
- AuEq-g/t: $Au_{g/t} + [(Ag_{price} * Ag_{g/t}) / Au_{price}]$
- CuEq-%: $Cu_{\%} + \left[[(Au_{g/t} * Au_{price}) + (Ag_{g/t} * Ag_{price})] / [22.0462 * 31.1035 * Cu_{price}] \right]$

Resources were tabulated for oxide, mixed, pyrite-enargite, and pyrite mineralization zones. The chalcopyrite zone was subdivided in two:

Chalcopyrite – 1: amphitheatre breccia + diorite porphyry + quartz-hornblende diorite porphyry (PQDH) + rhyolite

Chalcopyrite – 2: south breccia + granodiorite

Results of Au, AuEq, Cu and CuEq estimations are given Table 14.37, Table 14.38, Table 14.39 and Table 14.40, respectively.

Table 14.37 Au-Grade-Tonnage Curve

Au	CHALCOPYRITE-2					PYRITE - ENARGITE					PYRITE					TOTAL				
Cutoff	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq
0.000	200.1	0.21	0.56	0.98	0.23	2.7	0.03	0.06	0.34	0.03	3,994.9	0.07	0.07	0.33	0.07	7,410.9	0.08	0.11	0.45	0.08
0.025	200.1	0.21	0.56	0.98	0.23	1.4	0.04	0.04	0.29	0.04	2,756.3	0.09	0.09	0.38	0.10	5,181.4	0.10	0.15	0.53	0.11
0.050	200.1	0.21	0.56	0.98	0.23	0.0	1.03	0.37	2.66	1.06	1,714.2	0.12	0.11	0.45	0.13	3,424.0	0.14	0.21	0.63	0.15
0.075	200.1	0.21	0.56	0.98	0.23	0.0	1.03	0.37	2.66	1.06	1,174.2	0.15	0.13	0.48	0.16	2,556.9	0.16	0.25	0.70	0.17
0.100	196.1	0.22	0.56	0.99	0.23	0.0	1.03	0.37	2.66	1.06	789.2	0.18	0.17	0.51	0.19	1,968.9	0.18	0.30	0.76	0.19
0.125	192.4	0.22	0.56	1.00	0.23	0.0	1.03	0.37	2.66	1.06	645.0	0.20	0.18	0.53	0.20	1,582.6	0.20	0.31	0.80	0.21
0.150	175.8	0.22	0.56	1.04	0.24	0.0	1.03	0.37	2.66	1.06	486.1	0.22	0.19	0.54	0.22	1,205.3	0.22	0.32	0.83	0.23
0.175	137.5	0.24	0.57	1.14	0.26	0.0	1.03	0.37	2.66	1.06	370.9	0.23	0.18	0.52	0.24	905.7	0.24	0.32	0.86	0.25
0.200	107.7	0.26	0.57	1.22	0.27	0.0	1.03	0.37	2.66	1.06	232.8	0.26	0.17	0.53	0.27	595.8	0.27	0.32	0.95	0.28
0.225	74.5	0.28	0.57	1.36	0.30	0.0	1.03	0.37	2.66	1.06	165.4	0.28	0.16	0.56	0.28	418.6	0.29	0.32	1.02	0.30
0.250	43.7	0.31	0.57	1.59	0.33	0.0	1.03	0.37	2.66	1.06	119.6	0.29	0.16	0.57	0.30	266.0	0.32	0.30	1.11	0.33
0.275	26.9	0.33	0.57	1.86	0.36	0.0	1.03	0.37	2.66	1.06	76.8	0.31	0.11	0.50	0.32	164.2	0.36	0.24	1.19	0.37
0.300	16.7	0.36	0.54	2.14	0.39	0.0	1.03	0.37	2.66	1.06	33.1	0.34	0.10	0.62	0.35	82.5	0.42	0.19	1.58	0.45
0.325	13.2	0.37	0.51	2.30	0.41	0.0	1.03	0.37	2.66	1.06	20.4	0.35	0.09	0.50	0.36	59.1	0.47	0.18	1.73	0.49
0.350	12.2	0.38	0.51	2.36	0.41	0.0	1.03	0.37	2.66	1.06	13.8	0.36	0.08	0.45	0.37	47.0	0.50	0.19	1.89	0.53
0.375	2.5	0.41	0.60	2.24	0.44	0.0	1.03	0.37	2.66	1.06	0.0	0.38	0.33	0.64	0.39	20.4	0.69	0.16	2.53	0.72
0.400	1.2	0.44	0.66	2.12	0.47	0.0	1.03	0.37	2.66	1.06						17.0	0.74	0.15	2.58	0.78
0.425	0.7	0.46	0.67	2.17	0.49	0.0	1.03	0.37	2.66	1.06						14.7	0.80	0.15	2.61	0.83
0.450	0.4	0.48	0.69	2.16	0.51	0.0	1.03	0.37	2.66	1.06						13.1	0.84	0.14	2.64	0.88
0.475	0.2	0.49	0.73	2.16	0.52	0.0	1.03	0.37	2.66	1.06						11.8	0.88	0.15	2.67	0.92
0.500	0.0	0.51	0.75	2.22	0.54	0.0	1.03	0.37	2.66	1.06						10.5	0.93	0.15	2.72	0.97

Au	OXIDE					MIXED					COVELLITE					CHALCOPYRITE-1				
Cutoff	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq	Mt	Au	Cu	Ag	AuEq
0.000	1,746.0	0.05	0.02	0.57	0.06	12.5	0.04	0.02	0.27	0.04	968.9	0.10	0.22	0.43	0.11	485.8	0.14	0.46	0.88	0.16
0.025	938.8	0.08	0.02	0.72	0.09	11.0	0.04	0.02	0.26	0.05	797.9	0.12	0.25	0.48	0.13	475.9	0.15	0.46	0.89	0.16
0.050	414.1	0.13	0.03	1.04	0.15	2.7	0.07	0.03	0.36	0.07	632.5	0.14	0.29	0.55	0.15	460.5	0.15	0.46	0.91	0.16
0.075	228.2	0.19	0.03	1.38	0.21	0.7	0.09	0.07	0.48	0.10	517.1	0.16	0.32	0.60	0.17	436.6	0.15	0.47	0.92	0.17
0.100	157.1	0.24	0.03	1.66	0.27	0.1	0.11	0.03	0.70	0.12	428.6	0.17	0.35	0.63	0.18	397.8	0.16	0.48	0.92	0.17
0.125	120.8	0.28	0.04	1.91	0.31	0.0	0.15	0.03	0.67	0.16	343.8	0.19	0.36	0.66	0.20	280.6	0.18	0.50	0.97	0.19
0.150	97.9	0.32	0.04	2.03	0.34	0.0	0.15	0.04	0.67	0.16	274.9	0.20	0.37	0.68	0.21	170.5	0.21	0.50	0.98	0.22
0.175	77.5	0.36	0.04	2.10	0.39						188.0	0.22	0.39	0.70	0.23	131.8	0.22	0.52	1.02	0.24
0.200	62.8	0.40	0.05	2.16	0.43						109.3	0.24	0.40	0.84	0.25	83.1	0.24	0.53	1.02	0.26
0.225	51.8	0.43	0.05	2.22	0.46						72.7	0.25	0.42	0.89	0.26	54.2	0.26	0.57	1.00	0.27
0.250	41.1	0.49	0.06	2.32	0.52						27.0	0.27	0.43	1.06	0.29	34.6	0.27	0.60	1.01	0.28
0.275	34.4	0.53	0.06	2.40	0.56						10.7	0.30	0.42	0.94	0.31	15.4	0.28	0.63	0.98	0.29
0.300	28.9	0.57	0.07	2.44	0.61						3.8	0.31	0.39	0.88	0.33					
0.325	24.8	0.62	0.08	2.47	0.65						0.6	0.33	0.44	1.02	0.35					
0.350	20.9	0.67	0.09	2.56	0.71															
0.375	17.8	0.72	0.10	2.58	0.76															
0.400	15.8	0.77	0.11	2.61	0.80															
0.425	13.9	0.81	0.12	2.64	0.85															
0.450	12.7	0.85	0.13	2.66	0.89															
0.475	11.6	0.89	0.14	2.68	0.93															
0.500	10.5	0.93	0.15	2.72	0.97															

Table 14.38 AuEq-Grade-Tonnage Curve

AuEq	OXIDE					MIXED					COVELLITE					CHALCOPYRITE-1				
Cutoff	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag
0.000	1,746.0	0.06	0.05	0.02	0.57	12.5	0.04	0.04	0.02	0.27	968.9	0.11	0.10	0.22	0.43	485.8	0.16	0.14	0.46	0.88
0.025	1,205.4	0.08	0.07	0.02	0.70	11.7	0.05	0.04	0.02	0.27	807.8	0.13	0.12	0.25	0.48	475.9	0.16	0.15	0.46	0.89
0.050	521.0	0.13	0.12	0.03	0.98	3.6	0.07	0.06	0.02	0.35	656.6	0.15	0.14	0.29	0.54	461.9	0.16	0.15	0.46	0.91
0.075	291.3	0.18	0.17	0.03	1.28	0.9	0.09	0.09	0.06	0.48	534.8	0.16	0.16	0.32	0.60	451.8	0.16	0.15	0.47	0.92
0.100	179.8	0.25	0.22	0.03	1.60	0.1	0.12	0.11	0.03	0.70	467.2	0.18	0.17	0.34	0.63	423.2	0.17	0.16	0.47	0.93
0.125	136.4	0.29	0.26	0.03	1.84	0.0	0.13	0.12	0.04	0.79	372.5	0.19	0.18	0.36	0.66	358.3	0.18	0.17	0.48	0.94
0.150	112.5	0.32	0.29	0.04	2.03	0.0	0.16	0.15	0.03	0.67	300.0	0.21	0.20	0.37	0.68	191.3	0.21	0.20	0.50	0.99
0.175	94.4	0.35	0.32	0.04	2.19						218.6	0.22	0.21	0.39	0.72	145.1	0.23	0.22	0.51	1.03
0.200	77.7	0.39	0.35	0.04	2.34						130.3	0.24	0.23	0.40	0.83	107.7	0.25	0.23	0.52	1.06
0.225	65.3	0.42	0.39	0.04	2.42						87.7	0.26	0.25	0.41	0.90	74.8	0.26	0.25	0.54	1.04
0.250	51.4	0.47	0.43	0.05	2.51						48.5	0.27	0.26	0.43	1.05	42.8	0.28	0.27	0.59	1.03
0.275	42.4	0.51	0.48	0.06	2.62						15.3	0.30	0.29	0.43	1.07	26.5	0.29	0.27	0.61	1.07
0.300	35.9	0.55	0.52	0.06	2.70						7.1	0.32	0.30	0.40	1.00	1.5	0.30	0.29	0.61	1.16
0.325	30.4	0.60	0.56	0.07	2.74						1.6	0.33	0.32	0.37	1.04					
0.350	26.0	0.64	0.60	0.08	2.78						0.1	0.37	0.35	0.50	1.46					
0.375	22.3	0.69	0.65	0.08	2.82															
0.400	19.0	0.74	0.70	0.10	2.82															
0.425	16.6	0.79	0.75	0.10	2.79															
0.450	14.7	0.83	0.79	0.11	2.79															
0.475	13.2	0.87	0.83	0.12	2.77															
0.500	11.8	0.92	0.88	0.14	2.81															

AuEq	CHALCOPYRITE-2					PYRITE - ENARGITE					PYRITE					TOTAL				
Cutoff	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag	Mt	AuEq	Au	Cu	Ag
0.000	200.1	0.23	0.21	0.56	0.98	2.7	0.03	0.03	0.06	0.34	3,994.9	0.07	0.07	0.07	0.33	7,410.9	0.08	0.08	0.11	0.45
0.025	200.1	0.23	0.21	0.56	0.98	1.8	0.04	0.03	0.06	0.33	2,944.6	0.09	0.09	0.08	0.37	5,647.2	0.10	0.10	0.14	0.52
0.050	200.1	0.23	0.21	0.56	0.98	0.0	0.73	0.70	0.26	2.12	1,841.0	0.12	0.12	0.11	0.45	3,684.1	0.14	0.13	0.20	0.63
0.075	200.1	0.23	0.21	0.56	0.98	0.0	1.06	1.03	0.37	2.66	1,320.0	0.15	0.14	0.13	0.49	2,799.0	0.16	0.15	0.24	0.70
0.100	197.5	0.23	0.21	0.56	0.99	0.0	1.06	1.03	0.37	2.66	896.7	0.18	0.17	0.15	0.52	2,164.6	0.19	0.18	0.28	0.76
0.125	195.8	0.23	0.22	0.56	0.99	0.0	1.06	1.03	0.37	2.66	684.7	0.20	0.19	0.18	0.53	1,747.7	0.20	0.19	0.31	0.80
0.150	181.4	0.24	0.22	0.56	1.03	0.0	1.06	1.03	0.37	2.66	526.0	0.22	0.21	0.19	0.55	1,311.3	0.23	0.21	0.31	0.84
0.175	155.5	0.25	0.23	0.56	1.10	0.0	1.06	1.03	0.37	2.66	416.2	0.23	0.23	0.19	0.54	1,029.7	0.24	0.23	0.32	0.88
0.200	120.4	0.27	0.25	0.57	1.19	0.0	1.06	1.03	0.37	2.66	270.4	0.26	0.25	0.17	0.56	706.6	0.27	0.25	0.32	0.99
0.225	87.6	0.29	0.27	0.57	1.31	0.0	1.06	1.03	0.37	2.66	182.9	0.28	0.27	0.16	0.56	498.4	0.29	0.28	0.32	1.07
0.250	59.8	0.31	0.29	0.57	1.48	0.0	1.06	1.03	0.37	2.66	140.4	0.29	0.29	0.16	0.57	342.9	0.32	0.30	0.31	1.15
0.275	36.7	0.34	0.31	0.57	1.72	0.0	1.06	1.03	0.37	2.66	90.0	0.31	0.30	0.13	0.54	211.0	0.35	0.33	0.27	1.27
0.300	23.7	0.37	0.34	0.56	1.96	0.0	1.06	1.03	0.37	2.66	41.3	0.34	0.33	0.11	0.59	109.5	0.41	0.39	0.22	1.61
0.325	15.9	0.39	0.36	0.53	2.18	0.0	1.06	1.03	0.37	2.66	29.3	0.35	0.34	0.08	0.65	77.3	0.46	0.43	0.18	1.79
0.350	13.0	0.41	0.38	0.51	2.32	0.0	1.06	1.03	0.37	2.66	16.4	0.36	0.36	0.08	0.51	55.5	0.50	0.48	0.18	2.00
0.375	12.2	0.41	0.38	0.50	2.36	0.0	1.06	1.03	0.37	2.66	0.6	0.38	0.37	0.06	0.49	35.0	0.59	0.55	0.23	2.62
0.400	9.4	0.42	0.38	0.51	2.55	0.0	1.06	1.03	0.37	2.66	0.0	0.40	0.39	0.30	0.62	28.4	0.63	0.59	0.23	2.73
0.425	1.4	0.46	0.43	0.64	2.19	0.0	1.06	1.03	0.37	2.66						18.0	0.76	0.72	0.15	2.75
0.450	0.8	0.48	0.45	0.67	2.18	0.0	1.06	1.03	0.37	2.66						15.5	0.81	0.78	0.14	2.76
0.475	0.5	0.50	0.47	0.68	2.19	0.0	1.06	1.03	0.37	2.66						13.7	0.86	0.82	0.14	2.75
0.500	0.2	0.52	0.49	0.72	2.18	0.0	1.06	1.03	0.37	2.66						12.0	0.91	0.87	0.15	2.80

Table 14.39 Cu-Grade-Tonnage Curve

Cu	OXIDE					MIXED					COVELLITE					CHALCOPYRITE-1				
Cutoff	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq
0.00	1,746.0	0.02	0.05	0.57	0.07	12.5	0.02	0.04	0.27	0.06	968.9	0.22	0.10	0.43	0.31	485.8	0.46	0.14	0.88	0.59
0.01	724.4	0.04	0.07	0.67	0.11	6.3	0.03	0.04	0.31	0.07	878.4	0.24	0.11	0.45	0.34	485.8	0.46	0.14	0.88	0.59
0.05	164.4	0.12	0.08	0.64	0.20	1.0	0.08	0.06	0.46	0.14	722.5	0.29	0.12	0.50	0.40	485.8	0.46	0.14	0.88	0.59
0.10	87.0	0.16	0.08	0.52	0.24	0.2	0.12	0.08	0.36	0.20	656.2	0.31	0.13	0.53	0.43	485.8	0.46	0.14	0.88	0.59
0.20	6.8	0.36	0.55	1.53	0.85						528.9	0.34	0.15	0.58	0.48	484.5	0.46	0.14	0.88	0.59
0.30	2.9	0.53	1.03	2.25	1.46						315.7	0.41	0.17	0.65	0.56	445.2	0.48	0.15	0.88	0.61
0.40	2.2	0.58	1.17	2.48	1.64						163.1	0.46	0.19	0.68	0.64	326.3	0.51	0.16	0.95	0.67
0.50	2.0	0.60	1.14	2.41	1.62						31.6	0.55	0.20	0.78	0.74	157.6	0.59	0.18	0.88	0.75
0.60	0.7	0.71	1.57	2.88	2.11						5.3	0.64	0.18	0.70	0.80	65.3	0.65	0.19	0.76	0.83
0.70	0.4	0.75	1.55	2.74	2.14						0.0	0.71	0.20	0.83	0.89	4.1	0.73	0.25	0.80	0.96

Cu	CHALCOPYRITE-2					PYRITE - ENARGITE					PYRITE					TOTAL				
Cutoff	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq	Mt	Cu	Au	Ag	CuEq
0.00	200.1	0.56	0.21	0.98	0.75	2.7	0.06	0.03	0.34	0.09	3,994.9	0.07	0.07	0.33	0.13	7,410.9	0.11	0.08	0.45	0.19
0.01	200.1	0.56	0.21	0.98	0.75	2.6	0.06	0.03	0.34	0.09	2,309.3	0.11	0.08	0.36	0.18	4,606.9	0.18	0.09	0.51	0.27
0.05	200.1	0.56	0.21	0.98	0.75	1.0	0.14	0.03	0.44	0.17	1,196.0	0.19	0.10	0.40	0.28	2,770.7	0.28	0.12	0.57	0.40
0.10	200.1	0.56	0.21	0.98	0.75	0.7	0.16	0.04	0.46	0.20	822.1	0.25	0.11	0.43	0.35	2,252.1	0.33	0.13	0.61	0.46
0.20	200.1	0.56	0.21	0.98	0.75	0.2	0.26	0.08	0.55	0.33	511.4	0.32	0.14	0.50	0.44	1,731.9	0.39	0.15	0.69	0.53
0.30	200.1	0.56	0.21	0.98	0.75	0.0	0.48	0.74	1.23	1.15	245.7	0.39	0.17	0.54	0.55	1,209.7	0.45	0.17	0.77	0.61
0.40	189.1	0.57	0.22	1.00	0.77	0.0	0.48	0.74	1.23	1.15	67.4	0.51	0.20	0.49	0.69	748.1	0.52	0.19	0.87	0.69
0.50	139.7	0.60	0.21	0.93	0.80	0.0	0.52	0.85	1.29	1.28	35.4	0.57	0.21	0.49	0.76	366.4	0.59	0.20	0.86	0.77
0.60	77.6	0.64	0.21	0.85	0.84						8.0	0.64	0.23	0.45	0.84	156.9	0.65	0.21	0.80	0.84
0.70	11.6	0.73	0.23	0.94	0.95						0.0	0.74	0.05	0.66	0.79	16.2	0.73	0.27	0.95	0.98

Table 14.40 CuEq-Grade-Tonnage Curve

CuEq-%	OXIDE					MIXED					COVELLITE					CHALCOPYRITE-1				
Cutoff	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu
0.00	1,746.0	0.07	0.05	0.57	0.02	12.5	0.06	0.04	0.27	0.17	968.9	0.31	0.10	0.43	0.22	485.8	0.59	0.14	0.88	0.46
0.01	1,716.0	0.07	0.05	0.57	0.02	12.5	0.06	0.04	0.27	0.17	952.9	0.32	0.10	0.43	0.22	485.8	0.59	0.14	0.88	0.46
0.05	719.8	0.13	0.09	0.84	0.04	5.8	0.08	0.05	0.33	0.26	832.4	0.36	0.11	0.47	0.25	485.8	0.59	0.14	0.88	0.46
0.10	295.8	0.21	0.15	1.15	0.07	0.9	0.15	0.08	0.52	0.77	705.8	0.41	0.13	0.51	0.29	485.8	0.59	0.14	0.88	0.46
0.20	93.7	0.36	0.30	2.02	0.07	0.2	0.21	0.09	0.37	1.27	598.8	0.45	0.14	0.56	0.32	485.8	0.59	0.14	0.88	0.46
0.30	35.2	0.56	0.51	2.60	0.09						499.6	0.49	0.16	0.60	0.35	472.2	0.60	0.15	0.89	0.46
0.40	17.4	0.78	0.71	2.74	0.13						355.2	0.55	0.18	0.66	0.39	440.8	0.62	0.15	0.90	0.47
0.50	11.1	0.98	0.88	2.66	0.17						220.9	0.62	0.20	0.72	0.44	347.6	0.66	0.16	0.95	0.51
0.60	7.8	1.16	1.05	2.77	0.20						116.7	0.67	0.22	0.75	0.47	216.8	0.72	0.18	0.93	0.55
0.70	6.1	1.30	1.17	2.84	0.24						30.6	0.75	0.23	0.85	0.54	110.0	0.80	0.20	0.87	0.61

CuEq-%	CHALCOPYRITE-2					PYRITE - ENARGITE					PYRITE					TOTAL				
Cutoff	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu	Mt	CuEq	Au	Ag	Cu
0.00	200.1	0.75	0.21	0.98	0.56	2.7	0.09	0.03	0.34	0.63	3,994.9	0.13	0.07	0.33	0.07	7,410.9	0.19	0.08	0.45	0.11
0.01	200.1	0.75	0.21	0.98	0.56	2.7	0.09	0.03	0.34	0.63	3,962.8	0.13	0.07	0.33	0.07	7,332.7	0.19	0.08	0.45	0.11
0.05	200.1	0.75	0.21	0.98	0.56	1.6	0.12	0.03	0.38	0.92	2,422.1	0.19	0.10	0.40	0.10	4,667.6	0.28	0.11	0.56	0.18
0.10	200.1	0.75	0.21	0.98	0.56	0.8	0.18	0.03	0.45	1.47	1,514.6	0.26	0.12	0.44	0.15	3,203.8	0.37	0.13	0.62	0.25
0.20	200.1	0.75	0.21	0.98	0.56	0.2	0.32	0.07	0.54	2.53	792.1	0.38	0.15	0.49	0.24	2,170.9	0.48	0.16	0.71	0.33
0.30	200.1	0.75	0.21	0.98	0.56	0.0	1.10	0.83	2.18	3.48	467.8	0.47	0.17	0.53	0.32	1,674.9	0.55	0.17	0.75	0.39
0.40	200.1	0.75	0.21	0.98	0.56	0.0	1.30	1.03	2.66	3.67	303.7	0.54	0.19	0.55	0.36	1,317.1	0.60	0.18	0.79	0.43
0.50	197.8	0.76	0.21	0.99	0.56	0.0	1.30	1.03	2.66	3.67	175.0	0.60	0.21	0.59	0.41	952.3	0.66	0.20	0.86	0.48
0.60	176.2	0.78	0.22	1.03	0.58	0.0	1.30	1.03	2.66	3.67	67.8	0.70	0.22	0.56	0.50	585.3	0.73	0.22	0.91	0.53
0.70	144.0	0.81	0.23	1.06	0.59	0.0	1.30	1.03	2.66	3.67	30.1	0.77	0.23	0.51	0.57	320.7	0.81	0.24	0.96	0.59

14.8 Summary and Conclusions

The following conclusions and recommendations are pertinent:

- The methodology employed to complete the resource estimates were appropriate to the task.
- Mineralized and non-mineralized classification via Indicator Kriging was appropriate. Going forward, the creation of 3-D solids outlining the copper and gold mineralization boundaries will assist in analyzing the mineralized borders.
- The comparison of Au, Cu and Ag composite mean grades of thirty 5-m slices of rhyolite within the oxide zone, clearly indicated a high-low grade boundary at a depth of 85 m below the upper rhyolite contact. Drift analysis on these units showed that the rhyolite oxide boundaries should be extended towards the outer limits of the deposit.
- Some estimation domains have very few samples. These domains could have eventually been included in others with larger amount of data; nevertheless, it was decided not to include the domain, hence avoiding grade smoothing and/or increasing conditional bias (overestimation of low grades and underestimation of high grades).

- The structural model of Valeriano indicated a certain degree of anisotropy in the deposit. Unfortunately, the use of search angles was not possible due to the limited amount of composite data; therefore, omnidirectional correlograms for horizontal and sub-horizontal range definition and down-the-hole correlograms for vertical range definition were prepared.

- First passes in Au, Cu and Ag estimations were carried out using ellipsoids with correlogram ranges. Ranges for second and third passes were proportional to those used in the first pass, while ranges for fourth passes were set at 1000-metres to assure that all blocks were estimated.

- Estimation parameters set for 1st, 2nd and 3rd passes ensured that each block was estimated with at least two drill holes. As a result of this requirement and given that data was scarce, a very small percentage of the blocks were estimated in the first pass; approximately 113 million tonnes were estimated, of which only 5.8 Mt exceeded a cut-off grade of 0.20 g/t Au. The latter resource potentially could have been classified under the indicated category; however, it was decided to classify it under the inferred category.

- High Au, Cu and Ag values were capped in all estimation domains.

- Overall, global bias analyses for Au, Cu and Ag indicated that estimated values were unbiased (estimated values approach nearest neighbour values). Largest biases were observed for Ag estimated values, which are probably due to the fact that analytical precision for such low Ag grades (very close to detection limit) is high.

- As summarized in Table 14.41, the Inferred resources within the Oxide Gold deposit, at a 0.275 g/t Au cut off grade, amount to 34.4 million tonnes with an average grade of 0.528 g/t Au and 2.40 g/t Ag for a gold equivalent grade of 0.561 g/t.

- As summarized in Table 14.42, the Inferred resources within the chalcopyrite zones, referred to as the Copper Gold Porphyry deposit, are estimated at 297.3 million tonnes with an average grade of 0.59% Cu, 0.193 g/t Au, and 0.90 g/t Ag for a copper equivalent grade of 0.77% at a 0.50% Cu cut off grade.

Table 14.41 Valeriano Gold Oxide Resource Estimate – Inferred

Cut-off Au (g/t)	Tonnes	Grade Au (g/t)	Grade Ag (g/t)	Grade Au Eq. (g/t)	Ounces Au	Ounces Ag	Ounces Au Eq.
0.200	62,819,175	0.395	2.16	0.425	797,662	4,361,385	858,244
0.225	51,842,530	0.434	2.22	0.464	722,647	3,691,909	773,917
0.250	41,119,097	0.485	2.32	0.517	641,089	3,065,582	683,664
0.275	**34,435,360**	**0.528**	**2.40**	**0.561**	**584,684**	**2,653,895**	**621,539**
0.300	28,900,615	0.574	2.44	0.608	533,581	2,269,764	565,106
0.350	20,891,789	0.670	2.56	0.706	450,033	1,719,813	473,922
0.400	15,750,241	0.767	2.61	0.804	388,574	1,321,227	406,924

7. *Mineral resources are not confined by economic or mining parameters.*
8. *Cut-off grades are for reporting purposes only and no economic conditions are implied.*
9. *Au equivalent grades are calculated based upon a Au price of $1,800 per oz and a Ag price of $25.00 per oz (all prices in US$). Minor discrepancies may exist due to rounding. Metal recoveries were not considered.*
10. *Formula for Au Eq.% calculation:* $Au_{eq}(g/t) = Au_{g/t} + \frac{Ag_{g/t} * Ag_{price}}{Au_{price}}$
11. *Tonnage and grade estimates are in metric units. Contained gold ounces are reported as troy ounces.*
12. *Estimated copper grades, at the 0.275 g/t cut-off grade, are 0.06%.*

Table 14.42 Valeriano Copper Gold Porphyry Resource Estimate – Inferred

Cut-off Cu (%)	Tonnes (millions)	Grade Cu (%)	Grade Au (g/t)	Grade Ag (g/t)	Grade Cu Eq. (%)	Contained Metal Cu (tonnes)	Contained Metal Au (oz)	Contained Metal Ag (oz)	Contained Metal Cu Eq. (tonnes)
0.2	684.58	0.49	0.163	0.91	0.64	3,321,772	3,590,244	20,039,444	4,374,922
0.3	645.33	0.50	0.167	0.91	0.66	3,225,909	3,473,140	18,882,439	4,242,805
0.4	515.43	0.53	0.180	0.97	0.70	2,746,126	2,986,710	16,030,960	3,619,818
0.5	297.30	0.59	0.193	0.90	0.77	1,766,743	1,844,884	8,621,904	2,301,579
0.6	142.93	0.65	0.198	0.81	0.83	926,661	908,024	3,730,162	1,187,958
0.7	15.74	0.73	0.235	0.91	0.95	115,180	118,723	458,731	149,235

6. *Mineral resources are not confined by economic or mining parameters.*
7. *Cut-off grades are for reporting purposes only and no economic conditions are implied.*
8. *Cu equivalent grades are calculated based upon a Cu price of $3.00 per pound, Au price of $1,800 per oz and Ag price of $25.00 per oz (all prices in US$). Minor discrepancies may exist due to rounding. Metal recoveries were not considered.*
9. *Formula for Cu Eq.% calculation:* $Cu_{eq}(\%) = \frac{Cu\_ppm}{10{,}000} + \frac{Au_{g/t} * Au_{price}}{22.0462 * 31.0135 * Cu_{price}} + \frac{Ag_{g/t} * Ag_{price}}{22.0462 * 31.0135 * Cu_{price}}$
10. *Tonnage and grade estimates are in metric units. Contained gold ounces are reported as troy ounces.*

15.0 MINERAL RESERVE ESTIMATES

No mineral reserves have been established at the Valeriano Project.

16.0 ADJACENT PROPERTIES

There are no mineral deposits within the immediate area of Valeriano.

The Veladero Mine, a high sulphidation epithermal gold silver deposit with Measured and Indicated Resources (including Proven and Probable reserves) of 177.5 million tonnes grading 0.67 g/t Au for 3.86 million ounces of gold, is located in Argentina approximately 30 km south of Valeriano. The Veladero Mine is jointly owned by Barrick and Shandong Gold. Resource figures are from “Mineral Reserves and Mineral Resources, Barrick Gold Corporation, December 31, 2018”.

Barrick owns the Pascua-Lama high sulphidation epithermal gold silver project located 27 km southeast of Valeriano. Pascua-Lama hosts measured and indicated resources of 435 million tonnes grading 1.5 g/t Au and 53 g/t Ag for 21 million ounces of gold and 730 million ounces of silver. Resource figures are from “Mineral Reserves and Mineral Resources, Barrick Gold Corporation, December 31, 2018”.

Antofagasta Minerals has an option agreement to earn a 51% interest in Barrick’s El Encierro porphyry copper project. Current drilling at the project is reported to be adjacent to the northern contiguous extension of the Valeriano property limit (east of the Tolita 1/20 concession) and 5 km north of the Valeriano Central zone. Claims included in the Antofagasta option surround the Valeriano property to the north, east and west. The results of the El Encierro drilling have not be made public.

16.1 Comments on Section 16

The author of this report has been unable to directly verify the information in this Section and it is important to note the information provided in Section 16 is not necessarily indicative of the mineralization on the Valeriano property.

17.0 OTHER RELEVANT DATA AND INFORMATION

To the best of the author's knowledge at the time of writing, there is no other relevant data or information to be disclosed to make the report not misleading.

18.0 INTERPRETATIONS AND CONCLUSIONS

The historical exploration campaigns completed to date, which include 26,847.39 m of drilling, ground magnetics, induced polarization, surface sampling and geological mapping by three previous companies, resulted in the discovery of a well-preserved hydrothermal system comprising a mineralized high-sulphidation epithermal Au-Ag deposit at and near the present-day surface, which transitions downwards into a mineralized coeval Cu-Au-Mo porphyry deposit at depth.

Hydrothermal alteration is zoned from near-surface advanced argillic, through intermediate quartz-illite and quartz-sericite phyllic, to deep underlying potassic alteration, all accompanied by zoned epithermal Au-Ag and porphyry-type Cu-Au-Mo mineralization comprising of near surface pyrite-enargite, intermediate pyrite-chalcopyrite, and deep chalcopyrite-bornite.

In the near-surface epithermal environment, Au-Ag mineralisation occurs as veins and disseminations of pyrite and enargite associated with zones of silification and brecciation within a sub-horizontal envelope of advanced argillic alteration. The epithermal mineralisation occurs over an area of some 650 metres by 500 metres and has been oxidized to depths of up to 200mts and remains open in some directions. Additional untested near surface Au anomalies exist on the property.

Underlying, and separate from the epithermal mineralisation, the porphyry-style Cu-Au mineralization occurs in stockwork type A and B quartz-sulphide veinlets and disseminations associated with potassic alteration which increase progressively at depth. The mineralization intersected in three of five deeper drill holes (VALDD12-09, VALDD13-14 AND VALDD13-16), with chalcopyrite > bornite mineralization approaches grades reported in economic porphyry deposits and suggests that potential exists for higher grade mineralization. The mineralization is open laterally and at depth.

Molybdenum occurs as a dome-like anomaly overlying the porphyry-style Cu-Au mineralization and coincident with the upper parts of the phyllic alteration zone. The Mo dome and phyllic alteration as intersected in drilling to date defines an area at least 2 km long NW-SE and 800 m wide that is thought to reflect the extent of Cu-Au mineralization at depth and suggests that potential may exist for large volumes of mineralization.

Historical drill hole spacing, sampling and assaying methods, and QA/QC results where available, are appropriate for the types of deposit, the early-stage nature of the project and the calculation of an inferred resource.

An inferred resource estimate has been completed for the deposits. The Au-Ag oxide resource estimate totals 34.4 Mt at 0.528 g/t Au and 2.4 g/t Ag (0.561 g/t Au eq.) at a 0.275 g/t Au cut-off grade. The Cu-Au porphyry resource estimate totals 297.3 Mt at 0.59% Cu, 0.193 g/t Au and 0.90 g/t Ag (0.77% Cu eq.) at a cut-off grade of 0.50% Cu.

Further exploration and evaluation is recommended on the Valeriano property: The shallow gold-oxide mineralization requires additional drilling to upgrade the inferred resource to measured & indicated category and test for additonal resources. Metallurgical test work must be completed to evaluate gold recoveries. The deep copper-gold porphyry mineralization requires additional drilling to define the size and grade of the deposit, which remains open laterally and in depth.

18.1 Risks and Uncertainities

The author is not aware of any significant risks and uncertainties that could be expected to materially affect the reliability or confidence of the information discussed herein.

As with all mineral projects, there is an inherent risk associated with exploration. There is no guarantee that drilling activities will be successful, will lead to the establishment or improvement of a resource estimate or that, if a resource is established, it will be successfully converted to a mineral reserve.

The Project's potential economic viability is predicated on the establishment of a mineral reserve which has its own inherent risks and uncertainties associated with parameters outside the scope of this report including, but not limited to: future metal prices; development costs; mining methods, metallurgical recovery rates, regulatory and permitting processes; delays in obtaining financing; or the successful fulfillment of obligations and completion of exploration. These risks are not specific to this project but rather implicit to all exploration activities.

19.0 RECOMMENDATIONS

Based on the data that has been generated and which the author has reviewed, it is the author's opinion that the continued exploration and evaluation of the Valeriano Property is warranted.

For the near-surface gold-oxide resource a systematic drill program is recommended specifically to:

1. confirm the results of the Phelps-Dodge and Barrick drilling as there is no QA/QC data available,
2. infill drilling to upgrade the resource to a measured and indicated category, and
3. step-out and exploratory drilling to extend the current resource and test additional gold targets.

The target is a near-surface epithermal gold-(silver) deposit of such size and metallurgical characteristics that it could be amenable to low-cost open-pit mining and heap-leach processing. In particular the program should focus on the identification, delimitation and metallurgical characterization of zones of oxide gold mineralization.

For the copper-gold porphyry resource a diamond drilling exploration program is recommended, with the aim of defining the size and grade of the copper-gold mineralization discovered by Hochschild.

The target is a porphyry copper-gold deposit of sufficient grade and size that it might be amenable to large-scale underground mining. In particular, ATEX should target the early-mineral porphyries such as the Valeriano granodiorite, mineralized breccias, and more mafic rocks with may have the potential to host higher grade mineralization.

19.1 Phase I Program

Table 19-1 summarizes the proposed activities and associated budget for a systematic drill program to confirm and potentially expand the epithermal gold mineralization at Valeriano. The budgeted CDN $3.5 million program, which entails 5,000 metres of RC drilling, is reasonable and justifiable.

Table 19.1 Proposed Valeriano Phase I Program Budget

Item	CDN$
RC Drilling including sampling, assaying, and associated costs	$ 2,700,000
Roads access upgrade / surface rights access	135,000
Updated Resource Estimation	70,000
Salaries	65,000
Metallurgical Studies	65,000
Permitting	15,000
Subtotal	**$ 3,050,000**
VAT 19%	457,500
Total	**3,507,500**

19.2 Comments on Section 19

ATEX has until August 29, 2022 to complete 8,000 m of drilling in order to fulfill its first stage work commitment obligations under the terms of the Valeriano option agreement. Drilling activities at Valeriano can be undertaken during spring to fall months in Chile, generally from November through April. Assuming the Company does not face any unforseen obstacles (eg. financing, permitting, access agreements, logistics, or Covid-19 restrictions) the two field seasons are enough to complete the proposed programs, receive assay results and make a decision before the deadline.

The proposed budgets are considered by the author to be appropriate for the recommended exploration and evaluation activities given the current stage of exploration, the program´s objectives and the technical characteristics of the Valeriano project.

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