NI 43-101 Technical Report on Resources
Cusi Mine
Mexico

Effective Date: January 31, 2017
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Report Prepared for

Sierra Metals, Inc.

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1 Summary

This report was prepared as a National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) on Resources for Sierra Metals, Inc. (Sierra Metals) by SRK Consulting (U.S.), Inc. (SRK) on the Cusi Mine, Mexico (Cusi or The Mine). The purpose of this report is to present the methods and results of the current mineral resource estimate for the Cusi Mine.

1.1 Property Description and Ownership

The Cusi Mine property is held by Sierra Metals, formerly known as Dia Bras Exploration, Inc., through subsidiary companies Dia Bras Mexicana S.A. de C.V. and EXMIN S.A. de C.V. (collectively Dia Bras). It is located within the Abasolo Mineral District in the municipality of Cusihuiriachie, state of Chihuahua, Mexico. The property is 135 kilometers from Chihuahua city by car and consists of 73 mineral concessions (11,664.6 hectares) wholly owned by Sierra Metals. Included in these concessions are six historic Ag-Pb producers developed on several vein structures: the San Miguel mine, La Bamba open pit, La India mine, Santa Eduwiges mine, San Marina mine, and Promontorio mine, as well as exploration concessions around the historic mine areas.

Sierra Metals holds surface rights to an area of 1,020 hectares located generally within the area where Sierra Metals holds mineral concessions. Sierra Metals' area of surface rights includes the access points to the Promontorio and Santa Eduwiges underground mines that are in operation, as well as surface rights over all resource areas delineated in this report, with the exception of La India.

1.2 Geology and Mineralization

The property lies within a possible caldera that contains a prominent rhyolite body interpreted as a resurgent dome. The rhyolite dome trends northwest-southeast with an exposure of roughly 7 km by 3 km and hosts mineralization. It is bounded (cut) on the east side by strands of the NW-trending Cusi fault and on the west by the Border fault. The Cusi fault is a regional fault that may have controlled the location of the caldera and resurgent dome. Continued movement on the Cusi and related faults cut and brecciated the caldera and dome rocks and provided conduits for mineralizing fluids.

Numerous mineralized veins on the property, typically moderately to steeply dipping to the southeast, southwest, and north, range from less than 0.5 to 2 m thick, extend 100 to 200 m along strike and up to 400 m down-dip. There are at least seven major mineralized structures within the Cusi area, described below. Historically, small open pits were typically developed at vein intersections. Mineralization mainly occurs in faults, epithermal veins, breccias, and fractures ranging from 1 to 10 meters thick.

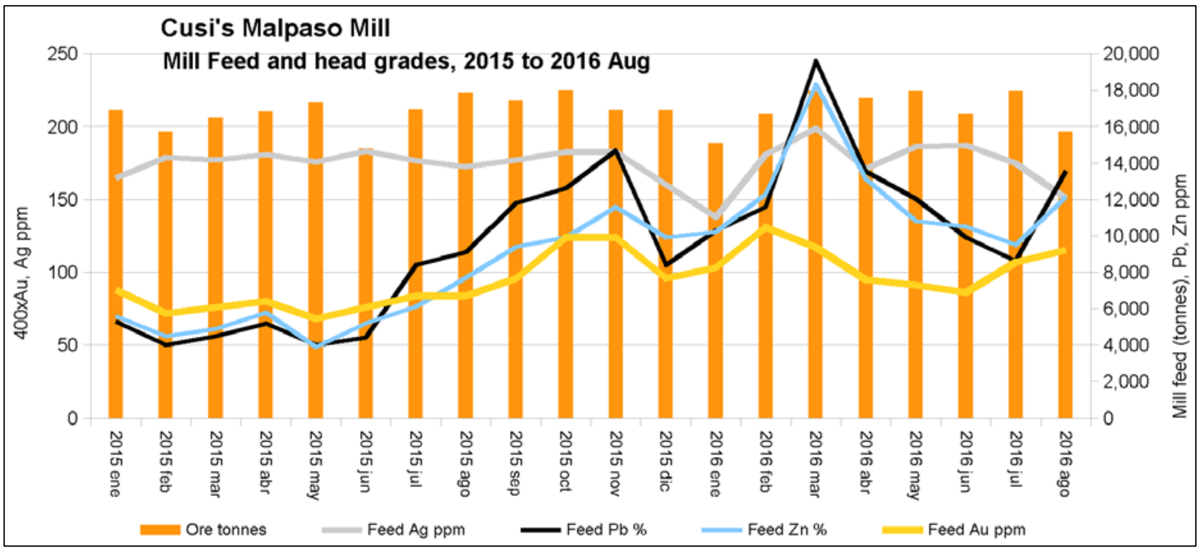
Low-grade mineralized areas exist adjacent to major structures, showing intense fracturing and are commonly laced with quartz veinlets forming a stockwork mineralized halo around more discrete structures. The country rock in these zones is variably silicified. Pyrite and other sulfide minerals are disseminated in the silicified country rock and are also clustered in the quartz veinlets. A well-developed mineralized stockwork zone is in the Promontorio area, especially proximal to the Cusi fault.

1.3 Status of Exploration, Development and Operations

The Cusi Mine is an operating mine, with extensive supporting infrastructure and underground development. In addition to this, there are numerous satellite exploration targets which are the subject of drilling and exploration drifts.

1.4 Mineral Processing and Metallurgical Testing

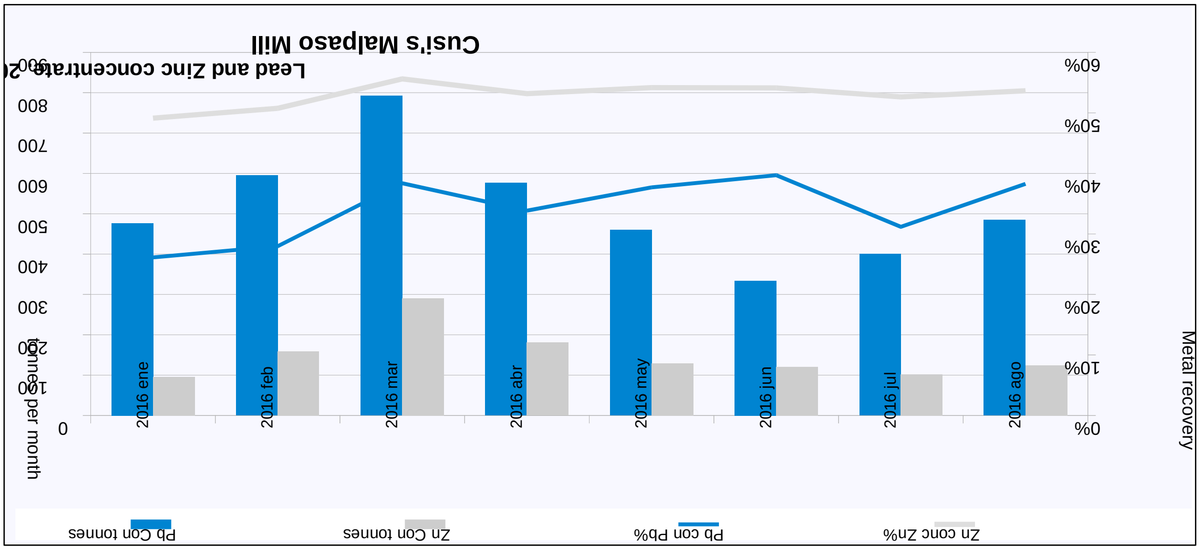
Cusi's Malpaso mill is a conventional processing facility that has been long in operation. The performance statistics that SRK had access to for the 2015 January to 2016 August period show that Cusi operates at a throughput ranging from 500 tonnes per day to 600 tonnes per day, or approximately 17,000 tonnes per month of fresh ore. Lead and zinc head grades are comparable and cover a wide range, with monthly average values for the 2016 period between 0.86% and 1.99%. Silver head grade range between 140 g/t to 200 g/t, and gold head grade is approximately 0.25 g/t in the same period (Figure 1-1).



Source: Dia Bras, 2016

Figure 1-1: Mill Feed and Head Grades – Malpaso Mill

Historically, Cusi produced lead concentrate only, and since 2015 December it is also producing zinc concentrate. Lead concentrate production for the first eight months in 2016 ranged approximately between 300 t/month to 800 t/month with lead grade ranging between 30% and 40% (Figure 1-2).



Source: Dia Bras, 2016

Figure 1-2: Pb/Zn Concentrate Grades – Malpaso Mill

Zinc concentrate production for the January to August 2016 period ranged approximately between 100 t/month and 300 t/month with zinc grade ranging from 50% to 55% approximately.

Silver metals is preferably deported to lead concentrate reaching recovery ranging from 70% to 80%. For the period in question, silver grade in lead concentrate is ranging from approximately 3,000 g/t to 7,000 g/t. Average Ag recovery for 2016 is approximately 74%.

Silver deportment to zinc concentrate is in the range of 1% to 3% and its grade reaches 300 g/t to 560 g/t, which is within commercially payable range.

1.5 Mineral Resource Estimate

Matthew Hastings, Senior Consultant, SRK Consulting (U.S.) Inc. conducted the resource estimation using a combination of software including Leapfrog Geo ™, Maptek Vulcan™, and statistical analysis software including Snowden Supervisor™ and X10 Geo™.

The basis for the mineral resource estimate is a digital database featuring details about geology, structure, and mineralization. The final drillhole and channel assay database was provided to SRK by Dia Bras on December 23, 2016. It features both drilling and channel samples which are current to October of 2016. The final database contains over 60,000 assays from drilling and over 36,000 from channel sampling. The two data sets have been merged for the purposes of geological modeling, statistical analysis, and estimation.

Three-dimensional wireframe models for the Cusi veins were created by Dia Bras using Leapfrog Geo™ software. SRK was provided the Leapfrog project files, which were reviewed and modified to include more detail on the structures as well as incorporate channel sample data where appropriate.

The geology models are developed on a combination of geology codes and Ag grades, and effectively are built using hanging wall and footwall surfaces derived through selection of these points in the drilling and channel sample database, with subsequent interpolation of the points into 3D surfaces and volumes.

SRK considered each vein its own domain for the purposes of statistical analysis and estimation. SRK limited high grade outlier samples by capping the maximum grades for each area, and limiting samples above the cap to the grade of the cap. In order to minimize the variance in the estimation due to inherent variability in grade distributions within domains and provide a more homogenous data set for estimation, SRK used capping of high grades as well as compositing of sample lengths. Capping analysis was done on the raw sample data, evaluating each data set by relevant area. SRK evaluated the sample lengths within the mineralized domains defined by the geological model. The mean sample length within the mineralized domains is 0.68 m, with a maximum sample length of 8.2 m. SRK notes that there are very few samples that would be affected by a compositing length of 1.5 m that would in turn affect the estimation. SRK selected a nominal composite length of 1.5 m, retaining short samples for use in the estimation.

Bulk density of vein material is assigned on the basis of the results of specific gravity samples analyzed by the Servicio Geologico Mexicano (SGM) on behalf of Dia Bras. The average density of the samples is 2.73 g/cm^3, and this density was flagged into the block model for use in the resource calculations.

Seven block models were built in Maptek Vulcan™ software and are designed to approximate the orientation of the strike for the major structures contained in each model. SRK interpolated grades for Ag, Au, Pb, and Zn using an inverse distance squared estimation method. In general, a nested three-pass estimation was used with higher restrictions on sample selection criteria in the initial smaller passes, to less restrictive criteria in the subsequent, larger ellipsoids. Ellipsoid orientations are controlled by the hanging wall and footwall surface of each structure. The variations in the distribution of samples and the issue of clustering of high grade channel samples is dealt with using an octant restriction on the estimation.

SRK has validated the estimation for each model using a variety of methods considered to be industry standard. These include a visual comparison of the blocks versus the composites, an assessment of the quality of the estimate, and comparative statistics of block vs. composites.

SRK is satisfied that the geological modeling honors the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource estimation. The sampling information was acquired primarily by core drilling and channel sampling from mine development. SRK classified the mineral resources in a manner consistent with CIM Guidelines as Indicated and Inferred Mineral Resources.

Significant factors affecting the classification include:

- Lack of historic and consistent QA/QC program;
- Lack of downhole surveys for most drillholes and measured deviations from planned and actual azimuths;
- Spacing of drilling compared to observed geologic continuity;
- Cusi is a producing mine with a successful operating history dating more than 10 years.

In order to classify mineralization as an Indicated Mineral Resource, "the nature, quality, quantity and distribution of data" must be "such as to allow confident interpretation of the geological framework and to reasonably assume the continuity" (CIM Definition Standards on Mineral Resources and Mineral Reserves, December 2005). SRK has based this classification both on the continuity observed in well-drilled areas of the Mine, as well as geologic continuity observed from underground exposures of the mineralization.

SRK depleted the block models for previous mining prior to reporting.

The "reasonable prospects for economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. Costs for mining and processing are taken from data provided by Dia Bras for their current underground mining operation. Costs are broken down as follows; Mining US$26.74/t, Processing US$16.63/t, and General and Administrative US$3.40/t. These costs aggregate to US$46.77. Assuming a price for Ag of US$18.30/oz (US$0.59/g), and a nominal Ag recovery of 74%, this cost equates to a grade of about 110 g/t Ag. SRK has reported the mineral resource for the Cusi mine at this cut-off.

The January 31, 2017, consolidated mineral resource statement for the Cusi Mine area is presented in Table 1.

Table 1: Cusi Mine Mineral Resource Estimate as of January 31, 2017– SRK Consulting (U.S.), Inc.

Source	Class	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Tonnes (000's)
Promontorio	Indicated	223	0.08	0.32	0.38	692
Eduwiges		226	0.36	1.63	1.52	378
SRL		206	0.14	0.23	0.22	290
San Nicolas		300	0.11	0.32	0.36	344
San Juan		227	0.35	0.09	0.05	45
Minerva		202	0.14	0.21	0.22	106
Candelaria		376	0.14	0.18	0.29	44
Durana		226	0.06	0.05	0.02	91
Total Indicated		**237**	**0.16**	**0.53**	**0.53**	**1,990**
Source	**Class**	**Ag (g/t)**	**Au (g/t)**	**Pb (%)**	**Zn (%)**	**Tonnes (000's)**
Promontorio	Inferred	220	0.12	0.37	0.60	265
Eduwiges		171	0.22	2.03	1.68	45
SRL		269	0.15	0.28	0.31	189
San Nicolas		387	0.15	0.54	0.65	599
San Juan		153	0.03	0.08	0.06	4
Minerva		226	0.04	0.17	0.30	30
Candelaria		151	0.19	0.60	1.23	68
Durana		126	0.01	0.22	0.13	2
Total Indicated		**305**	**0.14**	**0.51**	**0.64**	**1,200**

(1) Mineral resources are reported inclusive of ore reserves. Mineral resources are not ore reserves and do not have demonstrated economic viability. All figures rounded to reflect the relative accuracy of the estimates. Gold, silver, lead and zinc assays were capped where appropriate.

(2) Mineral resources are reported at a single cut-off grade of 110 g/t Ag based on metal price assumptions*, metallurgical recovery assumptions, mining costs (US$26.74/t), processing costs (US$16.63/t), and general and administrative costs (US$3.40/t).

* Metal price assumptions considered for the calculation of the cut-off grade are: Silver (Ag): US$/oz 18.30.

The resources were estimated by SRK. Matthew Hastings, M.Sc., PGeo, MAusIMM #314693 of SRK, a Qualified Person, performed the resource calculations for the Cusi Mine.

1.6 Mineral Reserve Estimate

SRK did not produce a reserve estimate or review reserves stated by Sierra Metals.

1.7 Mining Methods

SRK did not conduct a detailed review of mining methods as a part of this study.

1.8 Recovery Methods

SRK did not conduct a detailed review of recovery methods as a part of this study.

1.9 Project Infrastructure

SRK did not conduct a detailed review of infrastructure as a part of this study.

1.10 Environmental Studies and Permitting

Based on communications with representatives from Sierra Metals, it does not appear that there are currently any known environmental issues that could materially impact the extraction and beneficiation of mineral resources. However, given the pre-regulation vintage of the original tailings storage facilities (piles), the likelihood is high that these facilities are not underlain by low-permeability liners, increasing the risk of a long-term liability of metals leaching and groundwater contamination. Sierra Metals intends to cover these facilities during decommissioning in order to minimize this risk.

1.11 Capital and Operating Costs

SRK did not conduct a detailed review of costs as a part of this study.

1.12 Economic Analysis

SRK did not conduct a detailed review of costs as a part of this study.

1.13 Conclusions and Recommendations

1.13.1 Geology and Mineral Resources

SRK is of the opinion that the exploration efforts at Cusi are sufficient for the definition of mineral resources. The primary exploration method at Cusi has been diamond core drilling followed by limited underground development, which has been successful in delineating a system of discrete epithermal veins and related stockwork mineralization. The drilling appears to be able to target and identify mineralized structures with reasonable efficacy, and the majority of drilling is oriented in a fashion designed to approximate true thicknesses of the veins. The exploration planning suffers from a lack of focus, and should be designed to maximize conversion of higher grade Inferred areas with less dense drilling to Indicated, or extending mineralization away from known areas accessed through channel sampling. Efforts should be focused on a single structure or perhaps two structures to continue to develop these areas along strike and down dip, rather than scattered around several veins with very limited drilling.

Mine development is also used for exploration, as direct access of the veins along underground drifts is an excellent and efficient way for Cusi to understand the mineralization on a more local basis. More effort should be made to improve underground survey data, channel sampling consistency, and 3D asbuilt data.

SRK notes that recent efforts are improving the quality of the drilling and information through more complete and thorough survey data (for drilling and underground development), as well as modern QAQC programs which are delivering reasonable results. This lends additional confidence to recently-defined resources or newly drilled portions of historic areas.

SRK also notes that problems for the internal Malpaso Mill laboratory, identified in this document as well as previous technical reports, appear to continue. These are related to significant differences in precision recognized between the values reported for identical samples between Malpaso and third-party laboratories. These issues, combined with historic deficiencies in downhole surveying and QA/QC detract from the confidence in quality of the data.

The geologic model has been constructed by Dia Bras geologists, and refined by SRK using Leapfrog Geo™ software. Drilling and channel sample data, as well as sectional interpretation was used in development of the 3D geology shapes, defining veins and stockwork zones. These are used as resource domains to constrain and control the interpolation of grade during the estimation.

SRK built individual block models for the main resource areas, which have been rotated and sub-blocked to better fit the geologic contacts in each area. Grade was interpolated from capped and composited sample data using an inverse distance squared algorithm, with sample selection criteria designed to decluster the channel sample data compared to the drilling. A nested three-pass estimation was used, with decreasing data selection criteria.

SRK is of the opinion that the Mineral Resource Estimate has been conducted in a manner consistent with industry best practices and that the data and information supporting the stated mineral resources is sufficient for declaration of Indicated and Inferred classifications of resources. SRK has not classified any of the resources in the Measured category due to aforementioned uncertainties regarding the data supporting the Mineral Resource Estimate.

These deficiencies include:

- The lack of a historic QA/QC program, which has only been supported by a recent resampling and modern QA/QC program for a limited number of holes. This will be required in order to achieve Measured resources which generally are supported by high resolution drilling or sampling data that feature consistently implemented and monitored QA/QC.
- The lack of consistently-implemented down-hole surveys in the historic drilling. Observations from the survey data which has been done to date show significant down-hole deviations that influence the exact position of mineralized intervals. These discrepancies are confirmed by nearby workings that project the mineralized structures in a different position than that defined by the un-surveyed holes.
- The lack of industry-standard 3D survey asbuilt data delineating mined areas. This has been defined using a combination of the existing survey data, as well as polygons defining other areas thought to be mined. SRK believes these polygons to be conservative, as it is likely that pillar areas or other partially mined areas exist within the limits of the polygons, but are being excluded by this rudimentary methodology.

SRK has the following recommendations for additional work to be performed at the Cusi mine:

- Identify areas that are dominantly supported by channel sample data and complete step out drilling. This should be done at a regular spacing of approximately 25 m.
  - Further to this, SRK notes opportunities where significant areas of veins have very few drillholes, but exhibit very high grades, resulting in local high grade Inferred blocks that could theoretically be converted to Indicated with additional drilling. These should be prioritized.
- Continue the implementation of the current QA/QC program as documented by Dia Bras internal reports. This program is robust and appropriate for the type of deposit.
- Abandon the practice of using the current internal blanks for QA/QC. A thoroughly washed silica sand is readily available in Mexico and would be a reasonable alternative. The results of the current practices hint at either significant contamination issues during the preparation phase of sample analysis, or a contaminated blank material. In either case, this should be resolved as soon as possible. Continue the use of newly acquired commercial standards for future QA/QC monitoring.
- All analyses supporting a mineral resource estimation should continue to be analyzed by an ISO-certified independent laboratory such as ALS Minerals. The intra-lab performance of check samples shows significant and unexpected deviations between ALS and the internal Dia Bras lab.
- Every drillhole exceeding 50 m in length should be surveyed downhole via Reflex or other appropriate survey tool.
- SRK strongly recommends implementing the practice of consistent use of a total station GPS for surveying of drillhole collars and channel sample locations, as well as mine workings. Discrepancies between the precise locations of these three types of data occur regularly where they are closely spaced, and reduces confidence in the data as it impacts the Mineral Resource estimate.
  - A 3D mine survey could be accomplished relatively easily and for minimal cost, and could be conducted on a quarterly basis to develop a better measurement of mined material to be used in reconciliation processes.
- Evaluate more refined resource estimation procedures incorporating other means of dealing with the highly clustered data.
- Develop a simple method of reconciling the resource models to production, using stope shapes and grades derived from channel sampling.

2 Introduction

2.1 Terms of Reference and Purpose of the Report

This report was prepared as a National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) on Resources for Sierra Metals, Inc. (Sierra Metals) by SRK Consulting (U.S.), Inc. (SRK) on the Cusi Mine, Mexico (Cusi or The Mine). The purpose of this report is to present the mineral resource estimate for the operating Cusi mine and surrounding exploration areas.

The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in SRK's services, based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Sierra Metals subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits Sierra Metals to file this report as a Technical Report with Canadian securities regulatory authorities pursuant to NI 43-101, Standards of Disclosure for Mineral Projects. Except for the purposes legislated under provincial securities law, any other uses of this report by any third party is at that party's sole risk. The responsibility for this disclosure remains with Sierra Metals. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

This report provides Mineral Resource and Mineral Reserve estimates, and a classification of resources and reserves prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum Standards on Mineral Resources and Reserves: Definitions and Guidelines, May 10, 2014 (CIM, 2014).

2.2 Qualifications of Consultants (SRK)

The Consultants preparing this technical report are specialists in the fields of geology, exploration, Mineral Resource and Mineral Reserve estimation and classification, underground mining, geotechnical, environmental, permitting, metallurgical testing, mineral processing, processing design, capital and operating cost estimation, and mineral economics.

None of the Consultants or any associates employed in the preparation of this report has any beneficial interest in Sierra Metals. The Consultants are not insiders, associates, or affiliates of Sierra Metals. The results of this Technical Report are not dependent upon any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings between Sierra Metals and the Consultants. The Consultants are being paid a fee for their work in accordance with normal professional consulting practice.

The following individuals, by virtue of their education, experience and professional association, are considered Qualified Persons (QP) as defined in the NI 43-101 standard, for this report, and are members in good standing of appropriate professional institutions. QP certificates of authors are provided in Appendix A. The QP's are responsible for specific sections as follows:

- Matthew Hastings, Senior Consultant is the QP responsible for Geology and Mineral Resources, Sections 4-12 and 14, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.

- Mark Willow, Principal Consultant is the QP responsible for Environmental Studies, Permitting and Social or Community Impact Section 20, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.
- Daniel Sepulveda, Associate Principal Consultant is the QP responsible for Mineral Processing and Metallurgical Testing Section 13, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.

2.3 Details of Inspection

Table 2-1: Site Visit Participants

Personnel	Company	Expertise	Date(s) of Visit	Details of Inspection
Matthew Hastings	SRK Consulting (U.S.) Inc.	Geology and Mineral Resources	March 11-16, 2015	Reviewed geologic interpretation, drilling and sampling, QA/QC, and underground geology.
Daniel Sepulveda	SRK Consulting (U.S.) Inc.	Metallurgy and Process	October 19-20, 2016	Reviewed mill facility, process design and metallurgical balance.

2.4 Sources of Information

The sources of information include data and reports supplied by Dia Bras or Sierra Metals personnel as well as documents cited throughout the report and referenced in Section 27.

2.5 Effective Date

The effective date of this report is January 31, 2017.

2.6 Units of Measure

The metric system has been used throughout this report. Tonnes are metric of 1,000 kg, or 2,204.6 lb. All currency is in U.S. dollars (US$) unless otherwise stated.

3 Reliance on Other Experts

The Consultant's opinion contained herein is based on information provided to the Consultants by Sierra Metals or their subsidiary Dia Bras throughout the course of the investigations. Where noted, SRK has relied upon the work of other consultants in the project areas in support of this Technical Report.

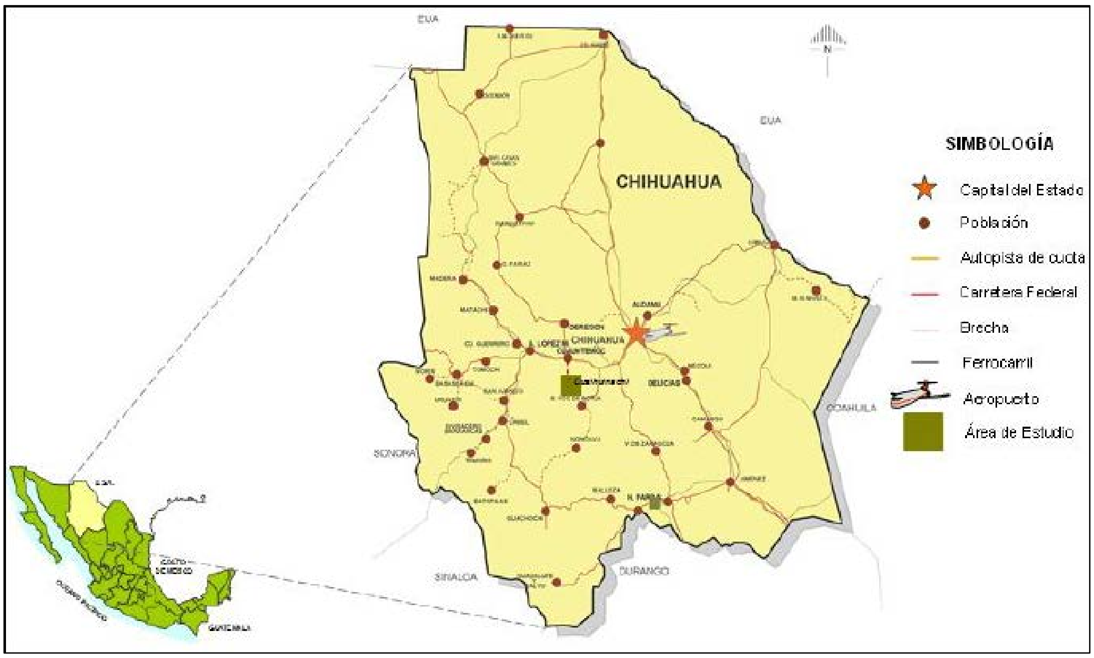
The Consultants used their experience to determine if the information from previous reports was suitable for inclusion in this technical report and adjusted information that required amending. This report includes technical information, which required subsequent calculations to derive subtotals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the Consultants do not consider them to be material.

These items have not been independently reviewed by SRK and SRK did not seek an independent legal opinion of these items.

4 Property Description and Location

4.1 Property Location

The Cusi Mine property is held by Sierra Metals, formerly known as Dia Bras Exploration, Inc., through subsidiary companies Dia Bras Mexicana S.A. de C.V. and EXMIN S.A. de C.V. (collectively Dia Bras). It is located within the Abasolo Mineral District in the municipality of Cusihuiriachie, state of Chihuahua, Mexico. The property is 135 kilometers from Chihuahua city by car and consists of 73 mineral concessions wholly owned by Sierra Metals. Included in these concessions are six historic Ag-Pb producers developed on several vein structures: the San Miguel mine, La Bamba open pit, La India mine, Santa Eduwiges mine, San Marina mine, and Promontorio mine, as well as exploration concessions around the historic mine areas. The shaft of the Promontorio mine is located at Northing 3,125,854 meters and Easting 319,019 meters in the 13R UTM grid in WGS84 ellipsoid.



Source: Ciesieski, 2007

Figure 4-1: Location Map showing the Cusi Area (green box) and Nearby Infrastructure

4.2 Mineral Titles

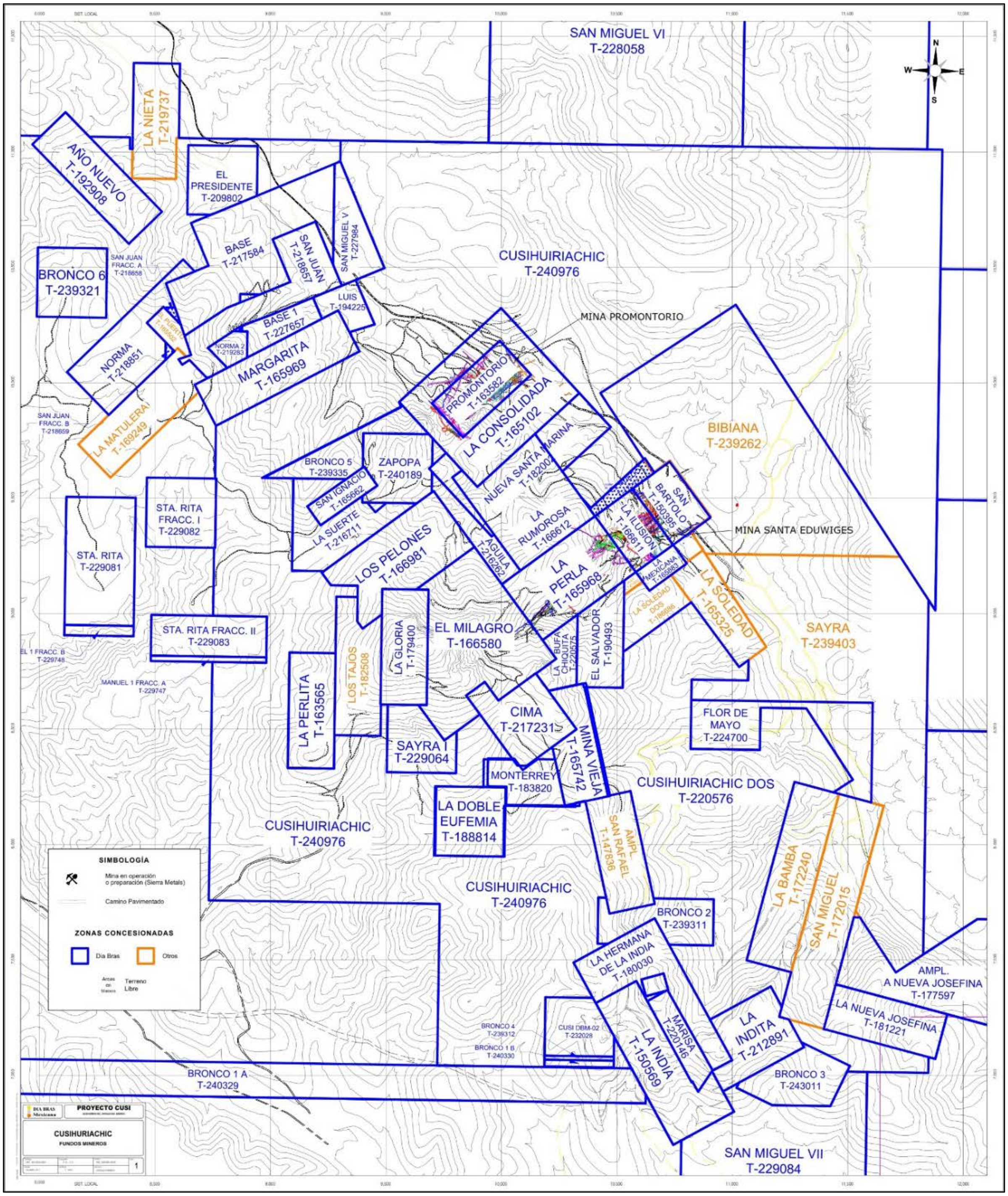
Sierra Metals wholly owns rights for exploration and mining for the Cusi Property for 73 mineral concessions covering an area of 11,664.6 hectares (Figure 4-2). Locations of the concessions for the Cusi project and their expiry dates are listed in Table 4-1. Expiry dates are all represented as forward-looking dates (i.e., '52 refers to 2052).

Table 4-1: Mineral Concessions at Cusi

Holding Company	Name	Type	Area (ha)	File No.	Title No.	Enrolled	Expiry
Dia Bras Mexicana	Base*	Exploration	23.8090	016/30975	217584	8/6/2002	8/5/1952
Dia Bras Mexicana	Flor de Mayo*	Exploration	14.4104	016/32699	224700	5/31/2005	5/30/1955
Dia Bras Mexicana	Base 1	Exploration	3.9276	016/33729	227657	7/28/2006	7/27/1956
Dia Bras Mexicana	Santa Rita	Exploration	16.6574	016/34624	229081	3/6/2007	3/5/1957
Dia Bras Mexicana	Sayra I	Exploration	7.2195	016/34623	229064	2-3-20070	3/1/1957
Dia Bras Mexicana	San Miguel	Exploration	96.2748	016/33730	229166	3/21/2007	3/20/1957
Dia Bras Mexicana	San Miguel I	Exploration	98.6218	016/33731	228484	11/24/2006	11/23/1956
Dia Bras Mexicana	San Miguel II	Exploration	100.00	016/33732	227363	6/14/2006	6/13/1956
Dia Bras Mexicana	San Miguel III	Exploration	100.00	016/33733	227364	6/14/2006	6/13/1956
Dia Bras Mexicana	San Miguel IV	Exploration	96.9850	016/33734	227485	6/27/2006	6/26/1956
Dia Bras Mexicana	San Miguel VI	Exploration	98.9471	016/34642	228058	9/29/2006	9/28/1956
Dia Bras Mexicana	San Miguel VII	Exploration	52.6440	016/34640	229084	3/6/2007	3/5/1957
Dia Bras Mexicana	Saira	Exploration	16.00	016/33735	227365	6/14/2006	6/13/1956
Dia Bras Mexicana	Manuel	Exploration	100.00	016/33714	227360	6/14/2006	6/13/1956
Dia Bras Mexicana	Santa Rita Fracc. I	Exploration	9.00	016/34624	229082	3/6/2007	3/5/1957
Dia Bras Mexicana	Santa Rita Fracc. II	Exploration	8.8141	016/34624	229083	3/6/2007	3/5/1957
Dia Bras Mexicana	San Miguel V	Exploration	6.5328	016/34641	227984	9/26/2006	9/25/1956
Dia Bras Mexicana	San Juan	Exploration	12.3587	016/31500	218657	12/3/2002	12/2/1952
Dia Bras Mexicana	San Juan Fracc. A	Exploration	0.1727	016/31500	218658	12/3/2002	12/2/1952
Dia Bras Mexicana	San Juan Fracc. B	Exploration	0.1469	016/31500	218659	12/3/2002	12/2/1952
Dia Bras Mexicana	Norma	Exploration	12.2977	016/31700	218851	1/22/2003	1/21/1953
Dia Bras Mexicana	Norma 2	Exploration	1.7561	016/31715	219283	2/25/2003	2/24/1953
Dia Bras Mexicana	Cima	Exploration	9.9637	016/30957	217231	7/2/2002	7/1/1952
Dia Bras Mexicana	Manuel 1 Fracc A	Exploration	1.1858	016/34849	229747	6/13/2007	6/12/1957
Dia Bras Mexicana	Manuel 1 Fracc B	Exploration	1.3425	016/34849	229748	6/13/2007	6/12/1957
Dia Bras Mexicana	Alma	Exploration	80.4612	Valid	227982	9/25/2006	9/25/1956
Dia Bras Mexicana	San Bartolo	Exploitation	6.00	Valid	150395	9/30/1968	9/29/2018
Dia Bras Mexicana	Marisa	Exploration	5.08	Valid	220146	6/17/2003	6/16/1953
Dia Bras Mexicana	La India	Exploitation	15.76	Valid	150569	10/29/1968	10/27/2018
Dia Bras Mexicana	Alma	Exploration	87.2041	Valid	227650	7/27/2006	7/27/1956
Dia Bras Mexicana	Alma I	Exploration	106.00	Valid	226816	3/9/2006	3/9/1956
Dia Bras Mexicana	Alma II	Exploration	91.00	Valid	227651	7/27/2006	7/27/1956
Dia Bras Mexicana	Nueva Recompensa	Exploitation	21.00	Valid	195371	9/15/1992	9/13/1942
Dia Bras Mexicana	Monterrey	Exploitation	5.4307	Valid	183820	11/22/1988	11/21/1938
Dia Bras Mexicana	Nueva Santa Marina	Exploitation	16.00	Valid	182002	4/8/1988	4/7/1938
Dia Bras Mexicana	San Ignacio	Exploitation	3.00	Valid	165662	11/28/1979	11/27/2029
Dia Bras Mexicana	Promontorio	Exploitation	8.00	Valid	163582	10/30/1978	10/29/2028
Dia Bras Mexicana	La Perla	Exploitation	15.00	Valid	165968	12/13/1979	12/12/2029
Dia Bras Mexicana	La Perlita	Exploitation	10.00	Valid	163565	10/10/1978	10/9/2028
Dia Bras Mexicana	Luís	Exploitation	3.1946	Valid	194225	12/19/1991	12/18/1941
Dia Bras Mexicana	La Consolidada	Exploitation	22.00	Valid	165102	8/23/1979	8/22/2029
Dia Bras Mexicana	La Doble Eufemia	Exploitation	9.00	Valid	188814	11/29/1990	11/28/1940
Dia Bras Mexicana	La Gloria	Exploitation	10.00	Valid	179400	12/9/1986	12/8/1936
Dia Bras Mexicana	La Indita	Exploration	9.9034	Valid	212891	2/13/2001	2/12/1949
Dia Bras Mexicana	La Suerte	Exploration	10.5402	Valid	216711	5/28/2002	5/27/1952
Minera Cusi	El Hueco	Exploitation	1.8379	Valid	172321	11/23/2003	11/23/1933
Dia Bras Mexicana	El Presidente	Exploitation	8.1608	Valid	209802	8/9/1999	8/8/1949
Dia Bras Mexicana	El Salvador	Exploitation	7.7448	Valid	190493	4/29/1991	4/28/1941
Dia Bras Mexicana	Cusihuiriachic Dos	Exploitation	87.6748	Valid	220576	8/28/2003	8/27/1953
Dia Bras Mexicana	La Bufa Chiquita	Exploitation	3.6024	Valid	220575	8/28/2003	8/27/1953
Dia Bras Mexicana	Aguila	Exploration	4.2772	Valid	216262	4/23/2002	4/22/1952
Dia Bras Mexicana	Año Nuevo	Exploration	12.00	Valid	192908	12/19/1991	12/18/1941
Dia Bras Mexicana	Ampl. Nueva Josefina	Exploitation	18.2468	Valid	177597	4/2/1986	3/31/1936
Dia Bras Mexicana	El Milagro	Exploitation	26.8259	Valid	166580	6/27/1980	6/26/1930

Holding Company	Name	Type	Area (ha)	File No.	Title No.	Enrolled	Expiry
Dia Bras Mexicana	Los Pelones	Exploitation	16.3018	Valid	166981	8/5/1980	8/4/1930
Dia Bras Mexicana	La Ilusión	Exploitation	6.00	Valid	166611	6/27/1980	6/26/1930
Dia Bras Mexicana	La Hermana de la India	Exploitation	13.1412	Valid	180030	3/23/1987	3/22/1937
Dia Bras Mexicana	La Rumorosa	Exploitation	20.00	Valid	166612	6/27/1980	6/26/1930
Dia Bras Mexicana	La Nueva Josefina	Exploitation	10.00	Valid	181221	9/11/1987	9/10/1937
Dia Bras Mexicana	Mina Vieja	Exploitation	8.25	Valid	165742	12/11/1979	12/10/2029
Dia Bras Mexicana	Margarita	Exploitation	14.00	Valid	165969	12/13/1979	12/12/2029
Minera Cusi	Cusihuiriachic	Exploration	472.2626	Valid	240976	11/16/2012	11/15/1962
Dia Bras Mexicana	CUSI-DBM	Exploration	4,716.6621	Valid	229299	4/3/2007	4/2/1957
Dia Bras Mexicana	CUSI-DBM 02	Exploration	4,695.1748	Valid	232028	6/10/2008	6/9/1958
Dia Bras Mexicana	Bronco 1 A	Exploration	55.6309	Valid	240329	5/23/2012	5/22/1962
Dia Bras Mexicana	Bronco 1 B	Exploration	0.8801	Valid	240330	5/23/2012	5/22/1962
Dia Bras Mexicana	Bronco 2	Exploration	7.5296	Valid	239311	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 3	Exploration	8.1186	Valid	243011	5/30/2014	5/29/1964
Dia Bras Mexicana	Bronco 4	Exploration	0.5224	Valid	239312	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 5	Exploration	6.7121	Valid	239335	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 6	Exploration	9.00	Valid	239321	12/13/2011	12/13/1961
Dia Bras Mexicana	Zapopa	Exploration	8.3867	Valid	240189	4/13/2012	4/12/1962
Minera Cusi	La Mexicana	Exploration	2.00	Valid	165883	12/12/1979	12/13/1982

Source: Dia Bras, 2017



Source: Dia Bras, 2017

Figure 4-2: Map Showing Locations of Cusi Mineral Concessions as of 2017

4.2.1 Nature and Extent of Issuer's Interest

Sierra Metals holds surface rights to an area of 1,020 hectares located generally within the area where Sierra Metals holds mineral concessions. Sierra Metals' area of surface rights includes the access points to the Promontorio and Santa Eduwiges underground mines that are in operation, as well as surface rights over all resource areas delineated in this report, with the exception of La India. Sierra Metals has a working relationship with the local Santa Rita community, who views mining at the Promontorio mine and associated jobs favorably.

4.3 Royalties, Agreements and Encumbrances

Production from the Cusi Project area is subject to net smelter royalties ranging from 1.5% to 3%, depending on origin of the mined quantity with respect to the mineral concession area.

Mineral concessions that make up the Cusi property were acquired from private entities and the Mexican federal government (Dirección General de Minas). The terms associated for the claim blocks are described below.

4.3.1 Purchase Agreement with Minera Cusi

Mineral concessions were purchased from Minera Cusi S.A. de C.V. under a purchase agreement dated April 15, 2008. A total of 31 mineral concessions for 862 hectares were acquired from Minera Cusi. Sierra Metals is subject to a net smelter royalty (NSR) on production from the Minera Cusi concessions of 2% if the price of silver is less than US$11 per ounce; and a NSR of 3% if the price of silver is greater than US$11 per ounce.

4.3.2 Purchase Agreement with Manuel Holguin

The mineral concessions from Manuel Holguin consisting of 27 concessions over an area of 976 hectares were acquired under three purchase agreements dated May 30, 2006, December 7, 2006, and November 15, 2007. Royalties under the original purchase agreements were acquired under purchase agreements dated April 24, 2012 and November 23, 2012. These concessions are not currently subject to any royalties.

Sierra Metals holds 100% interest in these concessions.

4.3.3 Purchase Agreement with Martha Azucena Holguin

The mineral concessions from Martha Azucena Holguin consisting of 50% share of three concessions over an area of 293 hectares were acquired under a purchase agreement dated May 12, 2010. The remaining 50% share was acquired under purchase agreement with Manuel Holguin May 30, 2006. These concessions are not subject to any royalties. Sierra Metals holds 100% interest in these concessions.

4.3.4 Purchase Agreement with Hector Sanchez

The mineral concessions consisting of two concessions over an area of 21 hectares were purchased from Hector Sanchez Villalobos and Carmen Saenz Rodriguez under a purchase agreement dated May 2, 2006. These concessions are subject to a 1.5% NSR royalty from production on the two concessions, to a maximum of US$1.5 million. Sierra Metals holds 100% interest in these concessions.

4.3.5 Agreement with Mexican Government

The ten concessions over an area of 10,954 hectares were acquired from the Mexican federal government. Exploration and mining at the Cusi property are subject to semiannual payments to the Mexican federal government. Fees are paid to the federal government twice each year, in January and July. Sierra Metals made a payment of 494,652.00 Mexican Pesos to the Mexican federal government in January 2014 covering the concessions for the Cusi Project for the period from January to June 2014.

4.4 Environmental Liabilities and Permitting

4.4.1 Environmental Liabilities

Previous technical reports noted that as part of current mining operations, waste rock from mining at Promontorio and Santa Eduwiges is stored near the entrances of the respective mines. Management of these waste rock piles does not require permits.

Tailings are stored in two tailings piles in the vicinity of the Malpaso Mill. Previous technical reports also noted that the tailings pile at the Malpaso Mill may not be lined, and may constitute a potential environmental liability.

4.4.2 Required Permits and Status

According to the information provided to Gustavson, as reported in previous technical reports Cusi mine and Malpaso mill are exempt from permit requirements because the operations predate the environmental laws. Sierra has received formal recognition of the permit exemption for Malpaso and is awaiting documentation of recognition of the exemption for the Cusi mine. Requirements for environmental and land use change permits are managed by the Mexican federal government’s Secretary of Environment and Natural Resources (Secretaria de Medio Ambiente y Recursos Naturales, or “SEMARNAT”) and local government.

Sierra Metals holds an explosives use permit from the Mexican federal government’s Secretary of National Defense (Secretaria de la Defensa Nacional, or “SEDENA”). This permit is in good standing and is renewed annually.

4.5 Other Significant Factors and Risks

As Sierra Metals does not hold surface rights for the La India area, it would be difficult to construct access or begin operations at La India at this time. Sierra Metals believes that it will be possible to secure these surface rights in a timely manner at a reasonable cost, but until such an agreement is secured, that portion of the resource remains at risk.

While no permit is required for the tailings piles at the Malpaso Mill, because the existing tailings deposit pre-dates permitting requirements, the tailings pile at the Malpaso Mill may not be lined, and may constitute a potential environmental liability.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Topography, Elevation and Vegetation

The topography of the Cusi Project ranges from approximately 2,000 to 2,500 above masl.

The Cusi Project is covered by vegetation consisting of deciduous forest in the valleys and coniferous forest at higher altitudes. Land use around the Cusi property is agricultural, including crops and cattle ranching. Overburden thickness ranges from one to three meters and consists of unconsolidated conglomerate with pebbles and boulders of volcanic rocks, sand, clay, and volcanic ash. Wildlife in and surrounding Cusi property includes insects, lizards, snakes, birds, and small mammals.

5.2 Accessibility and Transportation to the Property

The Cusi property is situated within the municipality of Cusihuiriachic located in the central portion of Chihuahua State, Mexico, approximately 135 kilometers (km) by car west of the City of Chihuahua. Access to the village of Cusihuiriachic from the City of Chihuahua is 105 km along Federal Highway No. 16 to Cuauhtémoc, then south for 22 km along a paved road to the village of Cusihuiriachic, where the Cusi Property is located.

5.3 Climate and Length of Operating Season

The climate at the Cusi Project is described as semi-arid with average daily mean temperatures per month ranging from 7.5° to 21.7° Celsius, with hotter months occurring mid-year. Annual precipitation is approximately 448 millimeters, with monthly precipitation ranging from 4.1 to 121 millimeters. The highest rainfalls during the year are recorded between July and September. Climate is conducive for year round mining operations.

5.4 Sufficiency of Surface Rights

Sierra Metals holds surface rights over most of the main mining and resource areas discussed in this report. The main mine shaft of the Promontorio Mine is close to the surface rights boundary, and there is a second, currently unused shaft, (Tiro Consolidada) which is just outside the surface rights area. Cusi does not currently control surface rights for the La India mine. Otherwise, surface rights are expected to be sufficient for mining.

5.5 Infrastructure Availability and Sources

5.5.1 Power

Electrical power at the Cusi Project and Malpaso Mill is provided by the Mexican Electricity Federal Commission (Comisión Federal de Electricidad). At the Cusi mine, electricity is conveyed in 33,000-volt power lines. At the Malpaso Mill, electricity is delivered on a 1,290-kilowatt power line. Existing electricity supply is expected to be adequate for foreseeable mining operations.

5.5.2 Water

At the Cusi mine, Sierra Metals utilizes water recovered from the underground workings for process water and support of mining operations. Water was generated from dewatering operations in the Promontorio and Santa Eduwiges Mines. Potable water is trucked in.

5.5.3 Mining Personnel

At the Cusi mine, approximately 100 persons are employed, and 67 persons are employed at the Malpaso Mill.

5.5.4 Potential Tailings Storage Areas

Two tailings dams are located in the vicinity of the Malpaso Mill. Land position within the Malpaso Mill complex is expected to be adequate to support anticipated future milling operations.

5.5.5 Potential Waste Rock Disposal Areas

Tailings are stored in two tailings piles in the vicinity of the Malpaso Mill. Previous technical reports (Gustavson, 2014) noted that the existing tailings pile at the Malpaso Mill may not be have been constructed using a low permeability under-liner (soil and/or geomembrane), and that this lack of liner system could pose a risk to underlying groundwater resources and potential long-term environmental liability from the leaching of the tailings materials by meteoric precipitation. Given the extremely arid conditions at the site, however, this would likely be a low to moderate risk.

5.5.6 Potential Processing Plant Sites

Ore from the Cusi Project is processed in the El Triunfo circuit of the Malpaso Mill, which has a capacity of 650 tonnes per day, and is expected to be sufficient for expected future operations.

6 History

6.1 Prior Ownership and Ownership Changes

Since discovery and initial production of precious metals in the Cusi district in the late 1800's, the ownership history is extensive and complex. This is summarized in Section 6.4.

6.2 Exploration and Development Results of Previous Owners

The extensive exploration history of the Cusi district is not well-documented. From surface sampling and exploration drifting in historic times to modern diamond drilling, the exploration has always been focused on development of more accurate understanding of the orientations and relationships of the many veins in the district.

6.3 Historic Mineral Resource and Reserve Estimates

As summarized in a previous technical Report (RPA 2006), exploration activities were conducted by Slocan Development Corp., Minera Cusi, and Pacific Islands Gold. Slocan Development Corp. conducted mineralogical studies which were reported in 1975; these reports were not available. Minera Cusi conducted surface and geochemical studies and reported results in 1988 and 1989; these reports were not available. Pacific Gold conducted geologic mapping, surface and underground chip sampling, and reverse circulation (RC) drilling along the San Miguel vein; these results were not available. There are no reports of historic Mineral Resource or Reserve Estimations.

6.4 Historic Production

Gold and silver were first discovered and exploited in the Cusi area within the San Miguel and La Candelaria zones by a Spaniard, Antonio Rodríguez, in 1687, and continued until the Mexican war of independence, which began in 1810. The amounts mined during the Spanish colonial time are not well documented.

The Mexican war of independence occurred from 1810 to 1821. The actual operators and production history in the vicinity of Cusi from 1821 to 1881 are not known. From 1881 to 1890, Don Enrique Mining Co. conducted mining operations. From 1896 to 1911, the Helena Mining Company purchased and conducted mining operations: during this period, the Santa Marina and San Bartolo shafts were sunk to the 1,000 foot level.

In 1911, Cusi Mexicana Mining Co. purchased the property from Helena Mining Company. During the period of the Mexican Revolution from 1910 to 1920, mining at the Cusi Project area occurred intermittently. Total tonnage mined from 1821 to 1920 is unknown.

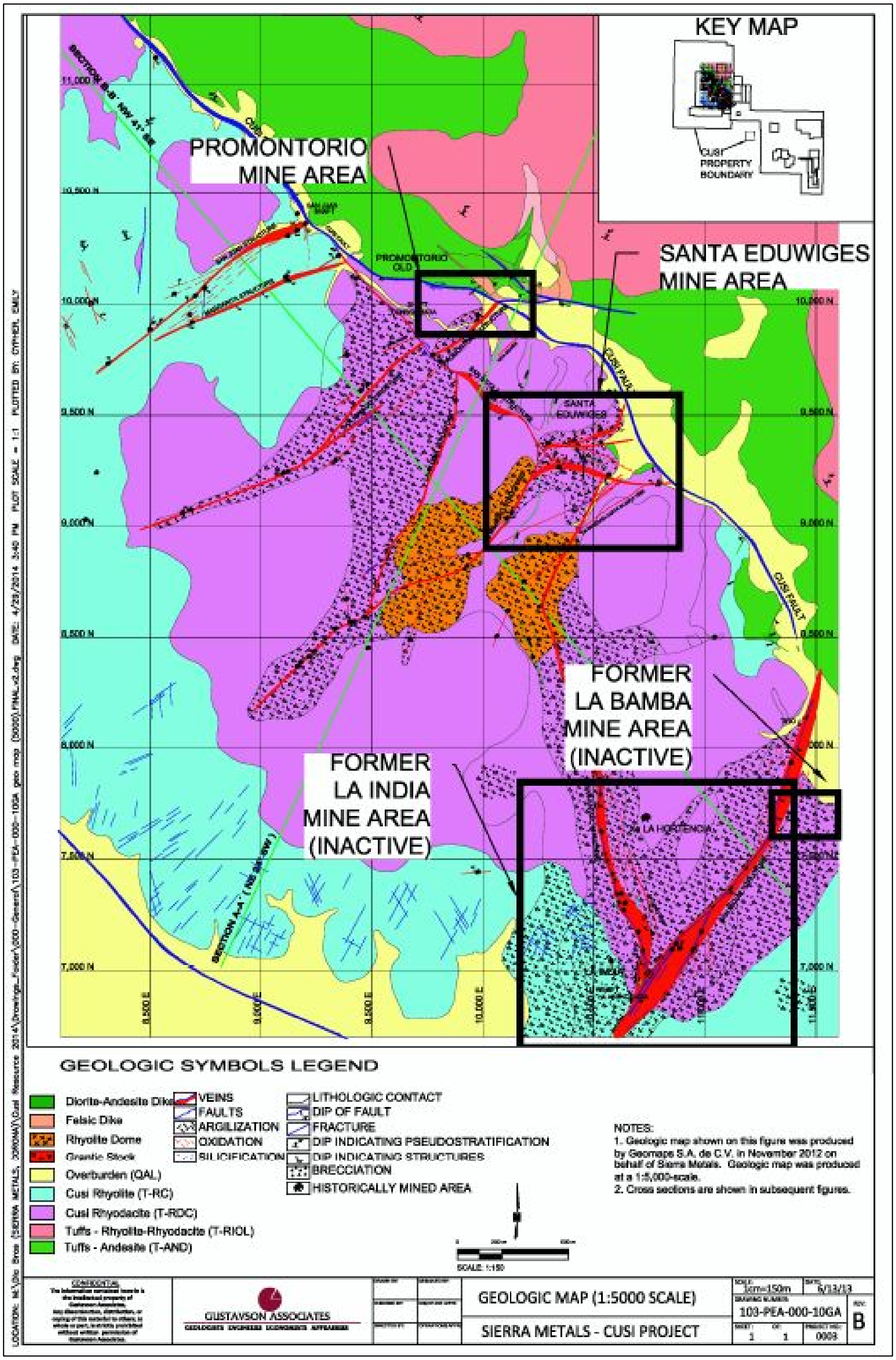
From the 1920s to 1937, concessions of the Cusi Project area were acquired by The Cusi Mining Company of American Capital. As reported by Sierra Metals, one million tonnes were mined. As reported in RPA (2006), from 1924 to 1942, 504,048 tonnes were mined, producing 265,460 kilograms of silver; however, the specific locations of mined areas were not reported. From 1937 to the 1970s, mining from the Cusi property was reportedly dormant. In the 1970s, mining occurred in several mines in the Cusi Project area: an estimated 3,000 tons of ore per month were being produced at an average silver grade of 12 to 18 ounces per ton silver. As reported in RPA (2006), during the 1980s, Minera Cusi conducted limited mining: no quantities were reported.

7 Geological Setting and Mineralization

7.1 Regional Geology

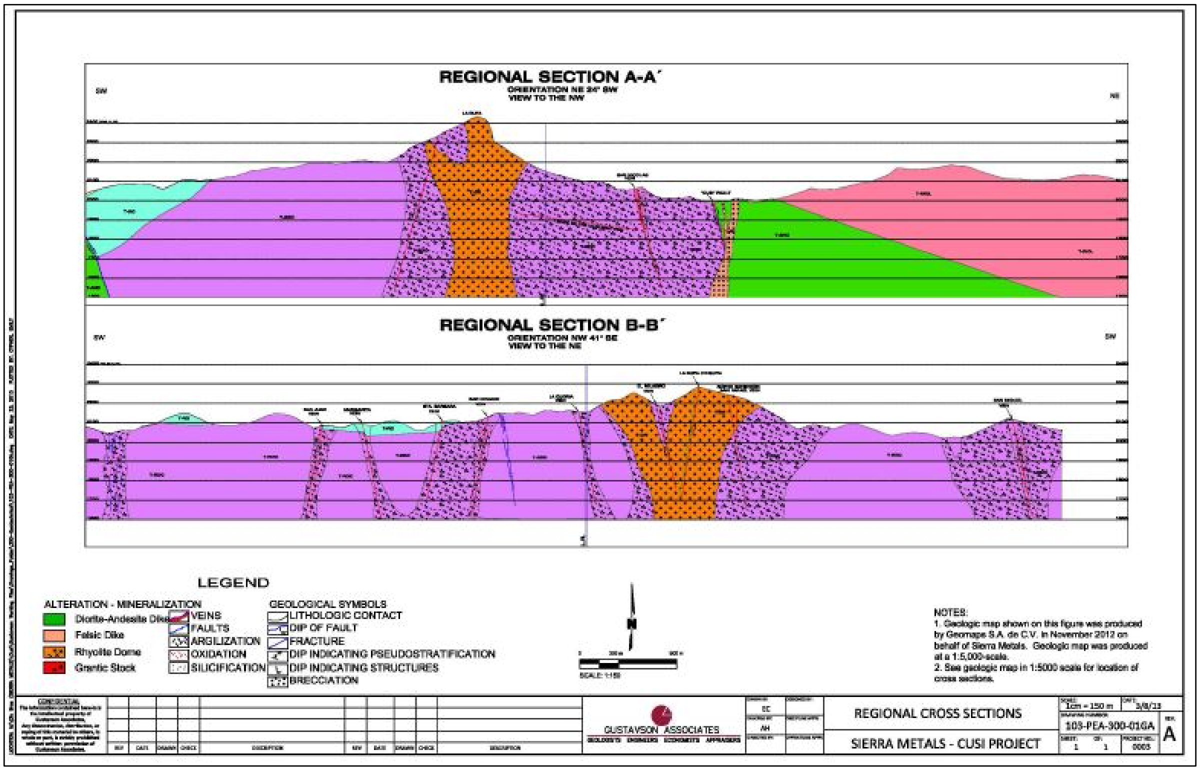
The Cusi Project is located within the Sierra Madre Occidental, a 1,200 by 300 km northwest-trending mountain system featuring a long volcanic plateau within a broad anticlinal uplift. The region is dominated by large-volume rhyolitic ash flow tuffs related to Oligocene (35 to 27 Ma) calderas considered to be the Upper Volcanic Series. These volcanic rocks comprise calc-alkalic rhyolitic ignimbrites with subordinate andesite, dacite, and basalt with a cumulative thickness of up to a kilometer. The Upper Volcanic series unconformably overlies rocks of the slightly older Eocene (46 to 35 Ma) Lower Volcanic Series which predominantly comprises andesite with interlayered felsic ash flow tuffs (Figure 7-1).

Deposition of the Lower Volcanic Series was accompanied by the intrusion of hornblende-bearing quartz diorite and granodiorite batholiths and stocks. The Lower Volcanic Series hosts the majority of the epithermal and porphyry-related precious metals deposits in the Sierra Madre Occidental. Thin flows of basaltic to rhyodacitic composition of late Miocene and younger age cap many of the plateaus in the region. The oldest structural episode is related to the Laramide orogeny which produced east-striking, steeply dipping strike-slip faults, generally with right-lateral sense of shear. Later transtensional tectonics resulted in the development of N-S normal faults and NNW-SSE trending subvertical faults with right-lateral strike-slip and normal sense of shear. Structures developed in the Cusi region are believed to have controlled emplacement of a series of north-northwest trending intrusions. Permeability associated with these and other faults and intrusive contacts formed conduits for hydrothermal fluids associated with mineralization (Figure 7-2).



Source: Gustavson, 2014

Figure 7-1: 1:5000 Scale Map showing generalized lithologies and locations of historic and active mining areas on the property



Source: Gustavson, 2014

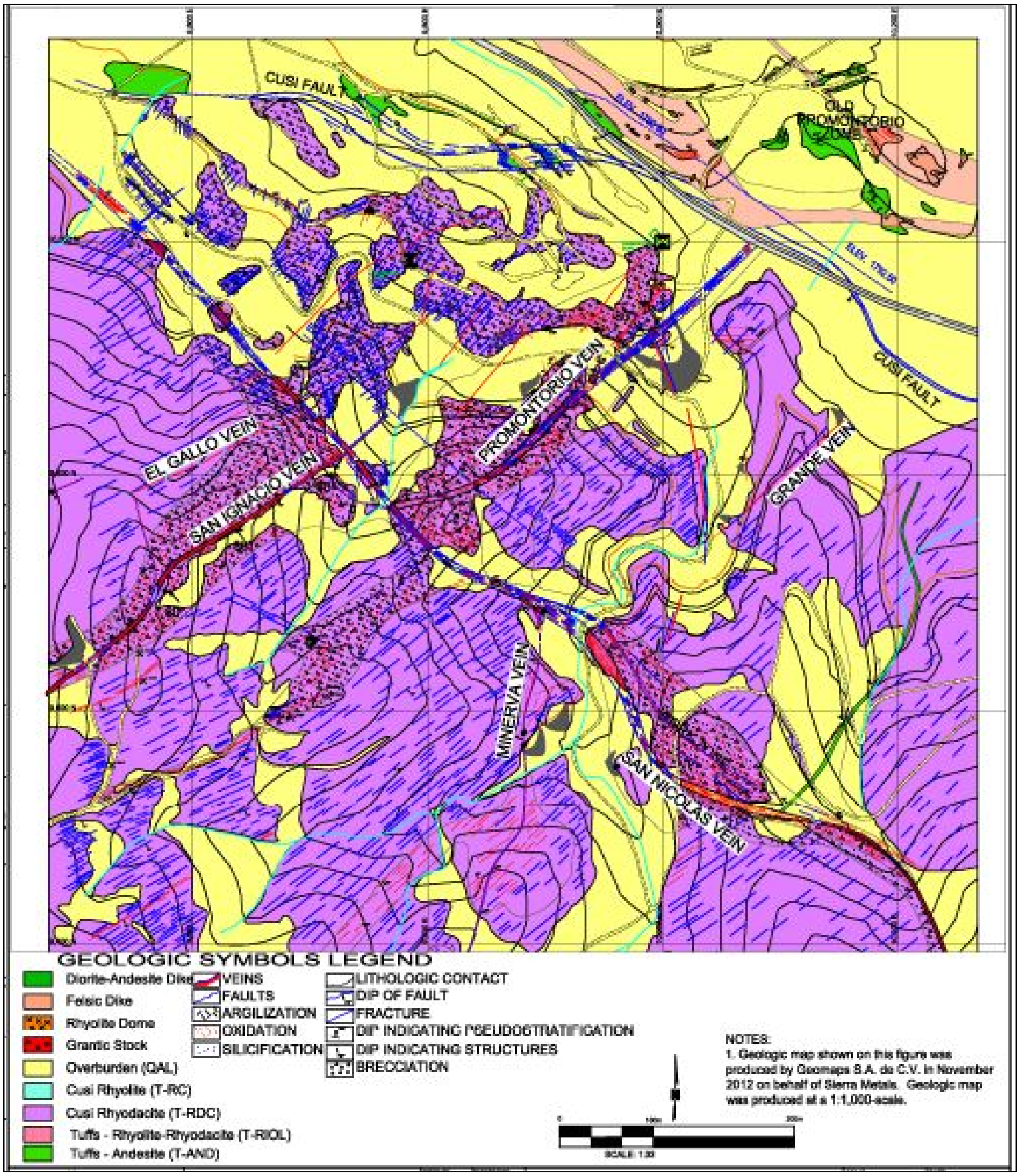
Figure 7-2: Northwest and Northeast-looking cross sections through the Cusi area, 1:5000 scale

7.2 Local Geology

As reported in Geomaps (2012), the geology of the Cusi region ranges from andesitic volcanism of late Mesozoic to Eocene age to the issuance of rhyolitic tuffs and ignimbrites of Oligocene-Miocene age.

The Oligocene Bufa Formation ignimbrite forms the dominant topographic feature in the Cusi area. Older andesites in the area are members of the Loma del Toro Formation, located mostly to the north and northeast of the mineralized Bufa Formation.

Mapping by CRM suggests that the property is hosted within a collapsed caldera (Geostat, 2008). The Cusi fault is a regional NW-trending fault that may have localized and then faulted the caldera. Within the caldera, adjacent to the Cusi fault, a rhyolite dome has been identified which hosts much of the mineralization in the district. Hydrothermal mineralization at Cusi was episodic and accompanied by structural movement (Geostat, 2008). Galena, sphalerite, and chalcopyrite are the predominant sulfides commonly ranging from 5% to 10% with occasional massive sulfide zones. Historical mining activity in the District exploited a series of planar veins that cut a lower andesitic volcanic unit and an upper rhyolitic unit. The veins occur in northwest and northeast-striking faults that appear to define an overall transtensional regime. All veins contain quartz with a variety of crustiform and banded textures typical of the epithermal environment. Most historical mining was shallow (<100 m) and appears to have concentrated on supergene-enriched ores including Ag chlorides and native silver (Meinert, 2007) (Figure 7-3).



Source: Gustavson, 2014

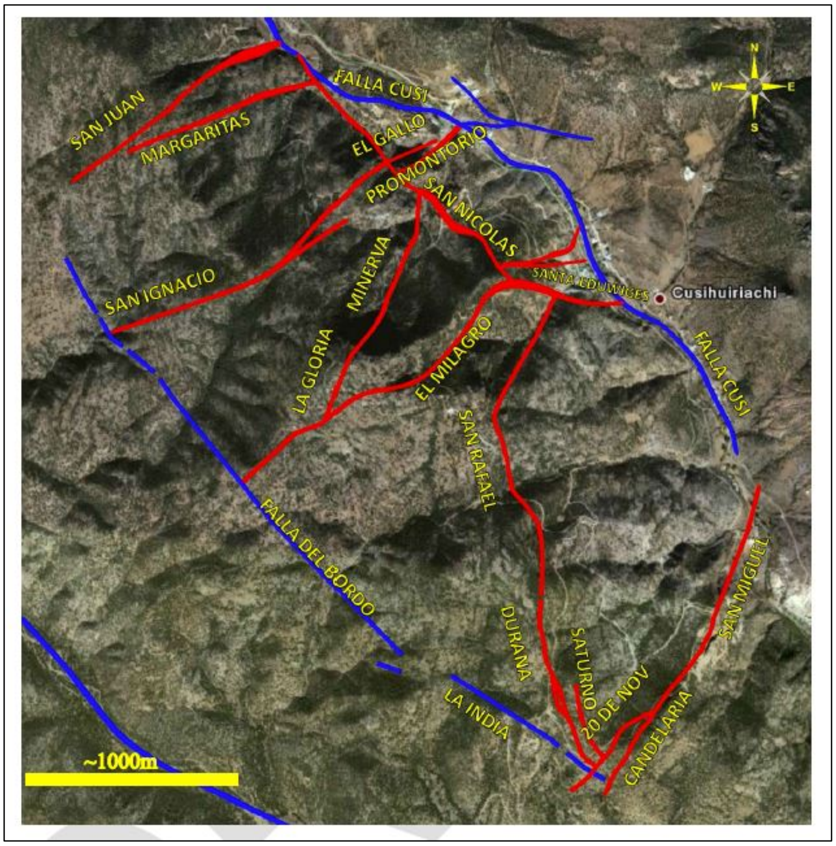
Figure 7-3: Local Geology Map showing the location of mineralized veins

7.3 Property Geology

The property lies within a possible caldera that contains a prominent rhyolite body interpreted as a resurgent dome. The rhyolite dome trends northwest-southeast with an exposure of roughly 7 km by 3 km and hosts mineralization. It is bounded (cut) on the east side by strands of the NW-trending Cusi fault and on the west by the Border fault. The Cusi fault has both normal and right-lateral strike-slip senses of shear. Strands of the Cusi fault are intersected by NE-trending faults, some of which indicate left-lateral strike-slip shear. NE-trending veins associated with these faults dip steeply either NW or SE. High-grade and wide alteration and mineralization zones exist in the areas of intersection of NW and NE structures (Figure 7-4).

The property tectonically formed during dextral transtension associated with oblique subduction of the Farallon plate beneath the North American plate. Strike-slip and normal faults related to this transtension controlled igneous and hydrothermal activity in the region. Regional NW-trending faults like Cusi are generally right-lateral strike-slip faults with a normal slip component. NE-trending faults are commonly left-lateral strike slip faults which were antithetic Riedel shears in the overall dextral transtensional tectonic regime.

The Cusi fault is a regional fault that may have controlled the location of the caldera and resurgent dome. Continued movement on the Cusi and related faults cut and brecciated the caldera and dome rocks and provided conduits for mineralizing fluids.



Source: Dia Bras, 2016

Figure 7-4: Aerial Photo of the Cusi property showing the locations and orientations of mineralized structures

7.4 Significant Mineralized Zones

Numerous mineralized veins on the property, typically moderately to steeply dipping to the southeast, southwest, and north, range from less than 0.5 to 2 m thick, extend 100 to 200 m along strike and up to 400 m down-dip. There are at least seven major mineralized structures within the Cusi area, described below. Small open pits were typically developed at vein intersections. Mineralization mainly occurs in faults, epithermal veins, breccias, and fractures ranging from 1 to 10 meters thick.

Low-grade mineralized areas exist adjacent to major structures, showing intense fracturing and are commonly laced with quartz veinlets forming a stockwork mineralized halo around more discrete structures. The country rock in these zones is variably silicified. Pyrite and other sulfide minerals are disseminated in the silicified country rock and are also clustered in the quartz veinlets. A well-developed mineralized stockwork zone is in the Promontorio area, especially proximal to the Cusi fault.

8 Deposit Type

8.1 Mineral Deposit

Mineralization at Cusi has been variably described as a) low-sulfidation epithermal (Ciesielski, 2007), b) high-sulfidation epithermal (SGS, 2008) and linked epithermal-base metal system (Meinhert, 2006). Meinhert (2006) notes that although shallow (<100 m) historic mining is reported to have encountered grades exceeding 1000 oz/ton Ag, the veins currently exposed are more base-metal rich than would be expected in an epithermal system. However, Sierra Metals geologists consider the abundance of base metals on the property to be primarily a function of depth of exposure; SRK agrees with this interpretation. Mineralization occurs along narrow fractures containing quartz, sphalerite, and galena; wallrock alteration consists primarily of silicification and the development of clays and iron oxides. Veins themselves contain quartz with crustiform and banded textures typical of epithermal systems.

8.2 Geological Model

The current geologic model for the Cusi property is as follows:

The country rock on the property consists primarily of felsic volcanics interpreted to represent a caldera with a resurgent dome. Magma is interpreted to have intruded along the Cusi fault, a regional NW-trending, right-lateral strike-slip fault; subsequent eruption produced the collapsed caldera and Upper Volcanic Series felsic tuffs. A resurgent dome then arose within the caldera on the western side of the Cusi fault. This dome was then dissected by numerous northeast-trending, left-lateral faults, which acted as conduits for hydrothermal fluids and now host mineralized veins.

Two of the vein sets at Cusi are relatively large and have been mapped along strike for nearly a kilometer each. Within these vein sets, dilatational areas and structural intersections host the best mineralization. The veins are composed of both wide, continuous areas of mineralization and also of zone of numerous smaller swarms of veins. The mineralization is predominately Ag and Pb-rich with lesser amounts of Au, Zn and Cu present in some areas.

SRK is of the opinion that the geologic model developed by Dia Bras, which focuses primarily on interpretation of the discrete veins and their related splays/stockwork zones is appropriate for the deposit type and mining method, and that this has been borne out by a history of successful production.

9 Exploration

In addition to drilling, Sierra Metals has commissioned several geologic studies, conducted several geologic mapping campaigns, and completed surface and underground sampling programs.

9.1 Relevant Exploration Work

Sierra Metals has commissioned several geologic studies culminating in reports summarizing their findings:

- *Cusi Epithermal Ag-Au District, Chihuahua, Mexico*. Prepared by Eric R. Braun for Dia Bras Exploration dated November 26, 2006.
- *Geology and Geochemistry of Mineralized Zones*. Prepared by Andre P. Ciesielski for Sierra Metals Exploration Inc. dated December 2007.
- *Observations on the Cusihuiriachic District*. Prepared by Lawrence D. Meinert of Smith College for Sierra Metals Exploration Inc. dated July 6, 2006.
- *Mineralogy, Assay, and Fluid Inclusion Characteristics of Quartz-Sulfide Veins of the Cusihuiriachic District, Chihuahua, Mexico*. Prepared by Lawrence D. Meinert for Dia Bras Exploration, Inc., dated January 17, 2007.
- *Mineralogy of High Grade Ag Zones in the Cusihuiriachic District*. Prepared by Lawrence D. Meinert for Dia Bras Exploration, Inc., dated April 13, 2007.

On behalf of Sierra Metals, Geomaps S.A. de C.V. has prepared geologic maps showing surface lithology at 1:5,000 scale and 1:1,000 scale, two regional cross sections through the Cusi Project area and a stratigraphic column. Geomaps' surface lithology maps also contained structural measurements of faults and veins.

9.2 Sampling Methods and Sample Quality

On behalf of Sierra Metals, Geomaps conducted surface rock sampling in the Promontorio area in an effort to identify the presence of disseminated mineralization. From November to December 2012, Sierra Metals collected 571 samples from rock outcrops in an area of approximately 0.1 square kilometer (650 m by 200 m). Samples were collected in lines perpendicular to main structure and faults where quartz vein and fractures with oxidation were identified. Samples were assayed for gold, silver, lead, manganese, and zinc at Sierra Metal's internal laboratory in the Malpaso Mill. Sierra Metals reviewed these data and found silver grades ranged from non-detect (less than 20 grams per tonne) to 351 grams per tonne. From these results, Sierra Metals concluded that disseminated mineralization near the surface within the Promontorio Viejo-San Ignacio- and San Nicolas zone are restricted to the intersections of main structures. Geomaps continued to conduct surface sample work in 2013. Sampling has now been performed over the entire project area, totaling over 2300 samples. Surface sample data for La Gloria / Minerva, and Monaco / Milagro areas only were used for this resource estimate. This set includes 116 surface channels at La Gloria/Minerva, and 67 surface channels at Milagro/Monaco.

Numerous mine workings are present at the Cusi Project area. Sierra Metals has conducted extensive sampling within these mine workings, the results of which were described in a 2014 technical report by Gustavson and are summarized in Table 9-1. All samples were analyzed at Sierra

Metals' internal laboratory at Malpaso. The 2014 report by Gustavson does not mention sample spacing or other factors that may have resulted in biases.

Table 9-1: Summary of Channel Sampling by Area

Mine	No. Samples	Avg. Ag Grade (g/t)	Avg. Pb Grade (%)	Avg. Zn Grade (%)
Santa Eduwiges	1,380	399	1.30	1.09
La India	1,187	53.8	0.06	0.15
La Gloria/Minerva	450	77.6	0.07	0.04
Milagro (incl. Monaco)	588	177	0.79	1.28

Source: SRK, 2016

9.3 Significant Results and Interpretation

Surface mapping of structures has been used where possible, but the majority of interpretation for the veins is taken from underground development and sampling, with diamond and reverse circulation drilling comprising the remainder.

10 Drilling

10.1 Type and Extent

The primary exploration method at Cusi has been diamond core drilling followed by limited underground development. To date, 1,015 drillholes have been completed with an average length of 175 m. This represents over 185,000 m of drilling. The drillholes have historically been drilled primarily from surface in a wide variety of orientations, although recent drilling has been dominated (~65%) by underground drilling. In the areas of focused exploration, the average drillhole spacing ranges between 25 to 50 m. In the less explored areas, the average drillhole spacing ranges between 75 and 150 m. Overall, the majority of the drilling completed by Sierra has been relatively closely spaced and not very deep. The closely spaced drilling has been designed to identify the base of historic mining and also directed at resource definition. The wider spaced drilling has been designed to test down dip from surface vein exposures to attain vein orientation and mineralization grades.

Table 10-1: Drilling Summary by Type

Hole Type	Count	Meters
NQ/BQ	3	244
NQ	157	36,597
HQ/BQ	1	406
HQ/NQ	353	74,559
HQ	156	36,788
BQ	304	35,117
TT-45	37	1,390
Total	**1,011**	**185,101**

Note: Four holes are not accounted for in this table due to misnomenclature.
Source: SRK, 2016

Table 10-2: Drilling Summary by Period

Year	Count	Meters	% of Total
2006	53	10,177	5%
2007	99	22,358	12%
2008	86	13,245	7%
2009	84	8,206	4%
2010	71	10,055	5%
2011	84	19,623	11%
2012	199	37,827	20%
2013	102	24,130	13%
2014	73	10,543	6%
2015	147	27,158	15%
2016	17	2,432	1%

Source: SRK, 2016

10.2 Procedures

The drilling has been conducted with Sierra-owned drills and outside contractors.

All drill core is appropriate size (HQ/NQ/BQ) and has been logged by Sierra staff geologists. Samples intervals are determined by the geologist and the core is then split in half and bagged by Sierra technicians.

Collar locations are surveyed on surface using handheld GPS, and underground using total station. Collar surveys are accurate for both types of drilling and underground drill stations generally correspond to clusters of underground drill collars. Core is transported by Dia Bras personnel to the logging facility near the mine offices.

Core is logged by qualified Dia Bras geologists for lithology, alteration, structure, and mineralization, with sampling intervals identified during logging to delineate mineralized areas. Sample intervals are marked in the boxes along with a line down the core axis for splitting. Samples are split via core saw, and separated into labeled bags. As of yet, no barcode or automated tracking system has been implemented at Cusi or Malpaso for sampling.

10.2.1 Downhole Deviation

Only about 25% (246) of the drillholes have downhole deviation surveys. Since 2014, when a survey tool was acquired by the mine, the majority of drillholes have been surveyed. Surveys are done using a Reflex deviation tool, at intervals ranging between 25 and 50 meters or as available due to drilling conditions. Deviations in the bearing (for non-vertical holes) average only 0.33 degrees, but feature local significant deviations in excess of 15 degrees between intervals. Dip deviations range between -7 degrees and 13 degrees, with an average of 0.4 degrees between intervals.

A significant number of the historic drillholes are relatively long and their precise location is considered uncertain due to the lack of downhole deviation surveys. This contributes significantly to the uncertainty in the geological model as well as the resource estimation. SRK has noted a select few cases where a drillhole which is not surveyed crosses very close to surveyed mine workings, and the vein intercept is offset 5 to 10 m from the projection of the structure using the channel samples and mine development.

Of the 769 drillholes which are not surveyed, the average length per hole is 179 m. This would indicate significant potential for deviation of these holes over these distances based on observed deviations in the surveyed holes. SRK noted that there are areas where the drill stations have probably been over-used, rather than simply moving the drill to a new station which would take advantage of closer proximity to the targets. There may be some advantages to efficiency, cost, and accuracy of drilling if the rig is moved more frequently to new drill stations.

10.2.2 Core Recovery

Core recovery is assessed prior to logging and sampling. This is based on the percentage of an interval that is recovered into the core box compared to the expected length of the interval. Recoveries are generally very good at Cusi, and is more than 98% on average in mineralized intervals.

10.3 Interpretation and Relevant Results

SRK notes that the Cusi Mine is an advanced property with active mining ongoing.

Relationships between thicknesses of drilling intercepts and actual thicknesses in the mineralized veins underground have been confirmed through ongoing production. SRK does note that Dia Bras generally attempts to intersect veins in a perpendicular fashion through drilling, but does not always accomplish this due to difficulty of position rigs from surface or underground. Selected veins are sometimes drilled near the plane of the structure, which may exaggerate mineralized intercepts thicknesses. SRK is not reporting thicknesses or grades of any of these structures.

11 Sample Preparation, Analysis and Security

11.1 Security Measures

Samples are collected by the logging technicians or geologists after being marked and labeled in core boxes. These are grouped into larger batches of 10 samples per reinforced sack, with a weight of no more than 25 kilograms. Each sack is noted with the intervals contained, the hole ID, and the order number for the laboratory. Samples are stored on site, behind access-controlled gates, until such a time as they are to be taken to the relevant laboratory. Historically, this has been the Malpaso Mill, a Dia Bras-owned mill facility, or ALS Chemex, an independent and ISO-certified laboratory with processing facilities in Hermosillo and analytical facilities in Vancouver, Canada. Currently, samples are sent to ALS and ALS only, but historically this decision was made after the sample was first sent to the Malpaso Mill for analysis, with any positive results of interest warranting confirmation by ALS, utilizing the coarse reject material from Malpaso.

11.2 Sample Preparation for Analysis

The analytical history of the Cusi sampling is complex, and includes various generations of analyses between the nearby Malpaso Mill and ALS. For samples assayed at ALS in Vancouver, drill core samples were prepared at the ALS prep lab in Chihuahua, Mexico. Upon receipt of samples, ALS dries the samples, records the received sample weight, and processes the samples as follows:

- Core is crushed to 70% passing rate of 2 millimeters;
- A 150 gram split is taken for pulp preparation; and
- The split sample is pulverized to a pulp at 85% passing rate at 75 micrometers.

Upon receipt of samples from the mine or exploration team, the Malpaso Laboratory also dries, weighs, and catalogs the samples. Drying times are 4 hours for channel samples and 8 hours for drill core. The current sample preparation procedures in practice at the Malpaso mill are as follows:

- Rock from core or channel is crushed to ¾ inch, then is placed in a cone crusher with the sample passing rate of 2 millimeters.
- A split is taken from this crushed material for pulp preparation (200 g=mine samples; 400 g=core). Samples are dried again for 30 minutes.
- Split samples are pulverized to a pulp at 90% passing rate 75 micrometers.

Previous technical reports have noted that the sample preparation procedures at Malpaso differ from those at ALS. For samples historically assayed at the Malpaso Mill, samples were crushed initially to 3.175-millimeter (1/8-inch) grain size, then further pulverized to 85% passing rate of 100 mesh (152-micrometer) or 150 mesh (104-micrometer).

SRK is aware that The Malpaso lab is working to improve and adopt procedures such as those utilized by ALS.

11.3 Sample Analysis

Sample analyses have been performed variably at ALS Chemex and Malpaso Mill. Historically, all samples have been analyzed at Malpaso, with periodic checks of analyses at ALS Chemex. This practice was deemed to be insufficient due to analytical and preparation inconsistencies in the

Malpaso Mill. Thus, a series of campaigns were run with the analyses being entirely duplicated at ALS, with the findings showed significant differences between the two labs. Currently, all drill core analysis supporting the mineral resource estimation is performed by ALS, although an initial analysis of the sample is done at Malpaso to determine whether it is warranted to send to ALS or if the material is barren. The coarse reject from the initial crushing of the sample at Malpaso is retained in case the sample needs to be analyzed by ALS. If the sample is analyzed at ALS, the coarse reject is submitted and the remainder of sample preparation is completed at the ALS Chemex Hermosillo, Mexico facility. Final analysis is conducted at the primary laboratory in North Vancouver, BC, Canada.

SRK notes that the channel samples are still analyzed by the Malpaso internal laboratory as this laboratory has a considerably better turnaround time on analyses than ALS, which is critical for timely production decisions. The analytical techniques are appropriate for the mineralization. The analytical methods appear to be similar, but the Malpaso laboratory has an extremely high lower limit of detection (20 g/t Ag). Most modern laboratories (such as ALS) have significantly lower limits of detection in the 1 to 5 g/t Ag range for ore grades. While this likely does not affect the results of the resource estimation, it should be noted that the methods used by Malpaso may not be the same as ALS, and may introduce a bias in comparisons made between labs.

At the ALS lab in Vancouver, several analytical techniques are employed for different generations of data. For primary analysis, pulverized samples are digested by aqua regia, followed by analysis for three metals (silver, lead, and zinc, collectively identified as “Limited Metals”) by inductively coupled plasma atomic emission spectroscopy (ICP-AES) under Method ICP41. A large portion of samples were analyzed for the entire suite of 35 metals by ICP-AES. A large portion of samples were also analyzed for gold by fire assay and atomic absorption (AA). For over-limit analysis, detections of silver, lead, and zinc that exceed the reporting limit of ICP41 are reanalyzed by an ore grade (OG) ICP-AES method, AA, or fire assay gravimetric methods (Table 11-1).

For samples analyzed at the Malpaso Mill, pulverized material is assayed for gold and silver by fire assay and base metals by plasma atomic emission spectroscopy. Reporting limits for assays at Malpaso are summarized in Table 11-2. SRK notes that the reporting limits for the Malpaso lab are inconsistent with industry norms for analytical precision for all known metals, and that this should be rectified in order to have better confidence in these analyses. The uncertainty associated with stating material that may sit in the ranges of the lower limits of detection for Malpaso allows for the possibility of the expectation for completely unmineralized material to have grades of 0.5 g/t Au and 20 g/t Ag, which would seem to have significantly more value than the actuals

Table 11-1: Analytical Methods and Reporting Limits for ALS

Metal	Initial Assay		Over-Limit	
	Analytical Method	Reporting Limits (g/t)	Analytical Method	Reporting Limits (g/t)
Gold	AA23	0.005-10	GRA-21	0.05-1000
Silver	MEICP-41	0.2-100	OG-46	1-1500
			GRA-21	5-10000
Lead	MEICP-41	2-1000	OG-46	10-200000
Zinc		2-1000	OG-46	10-600000

Source: ALS Minerals Fee Schedule, 2016-2017

Table 11-2: Analytical Methods and Reporting Limits for Malpaso

Metal	Analytical Method	Lower Limit of Detection (g/t)
Gold	Fire Assay	0.5
Silver	Fire Assay	20
Lead	AES	8
Zinc	AES	8

Source: Dia Bras, 2017

11.4 Quality Assurance/Quality Control Procedures

In general, Sierra Metals has been drilling for the past ten years and has only recently (2013) instituted an industry standard quality assurance/quality control (QA/QC) program. The QA/QC was abandoned for an extended period of time in 2014, resulting in a gap in the QA/QC monitoring. This was done by Dia Bras management to save costs.

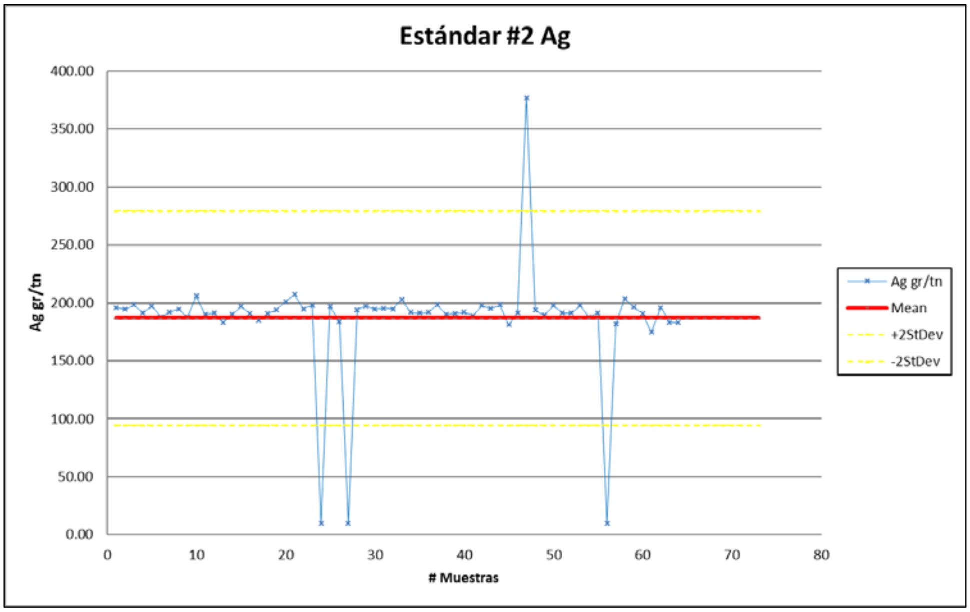
A typical QA/QC program includes blanks, standard reference material and duplicates. The purpose is to submit sample with known values or properties which identifies sample mix ups, sample preparation contaminations, laboratory precision and accuracy and laboratory bias. Although there is no reason to assume the analytical data for Cusi is problematic, the lack of a consistent QA/QC program does reduce the confidence in the precision and accuracy of the analytical data.

11.4.1 Standards

Prior to 2013, a total of 144 standards were inserted into the sample stream at Cusi, in 2012. These standards were prepared internally by Sierra Metals.

Following the implementation of a more formal QA/QC program in 2013, Sierra Metals began inserting standards (either high grade, medium grade, or low grade) into the sample stream regularly at a rate of one standard per twenty samples. The standards are internal standards prepared at the Malpaso mill, from material chosen for its similarity (mineralogical and in terms of appearance) to the samples from the Cusi exploration program.

SRK notes that these “standards” do not adhere to the international reporting criteria of what a standard or certified reference material should be. As noted in Figure 11-1, the standard #2 is reported by Dia Bras to have a failure criteria of +/- 2 standard deviations, in this case representing a +/- of over 80 g/t Ag. This is wholly inconsistent with other labs (and even other standards within Sierra Metals) which feature much tighter ranges of expected performance.



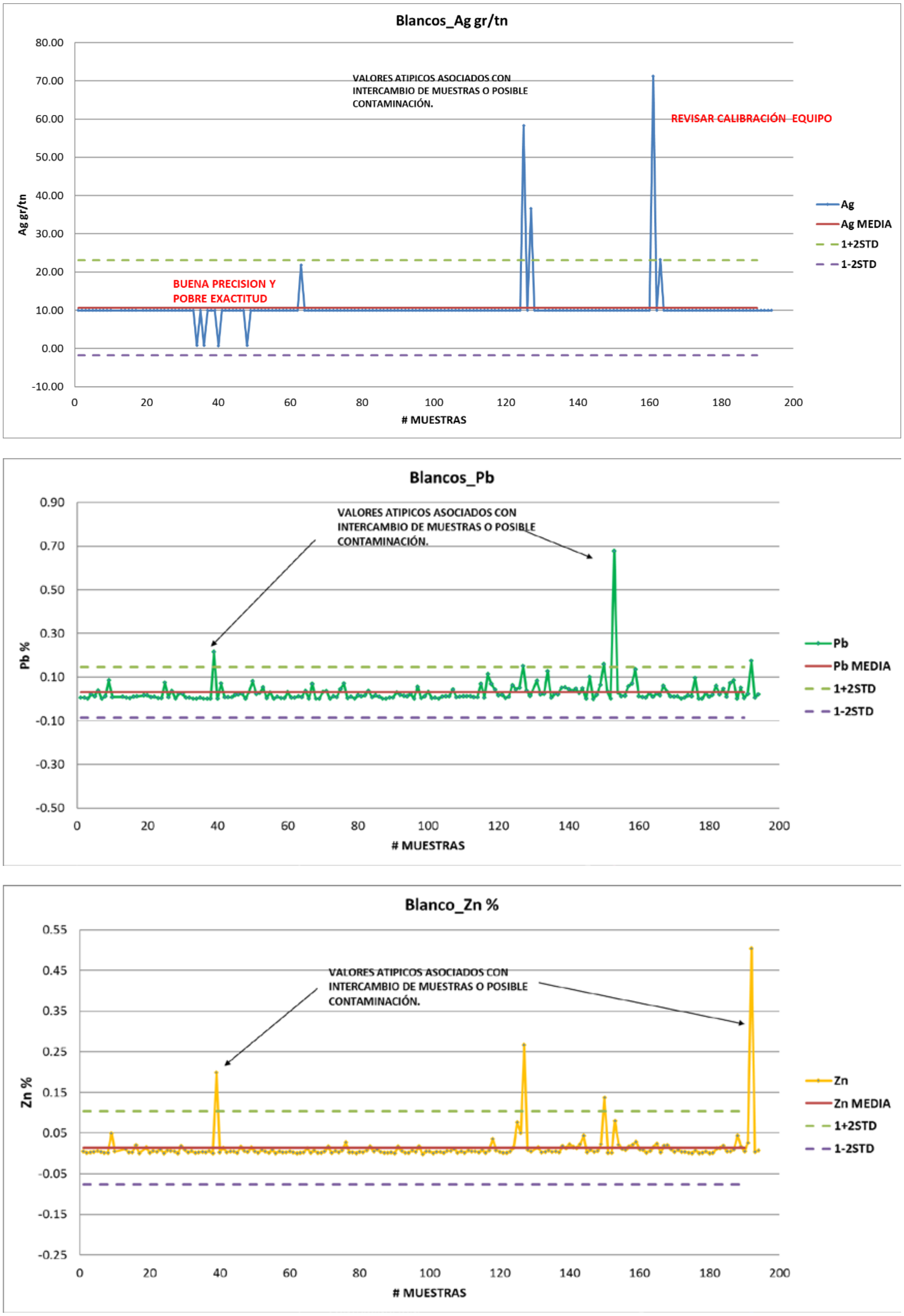
Source: Dia Bras, 2016

Figure 11-1: Internally Prepared QA/QC Chart for Standard #2 Performance in 2014

11.4.2 Blanks

Prior to 2013, 173 blank samples were inserted into the sample stream at Cusi, also in 2012. The blank samples were prepared internally by Sierra Metals from pulverized andesite presumed to be unmineralized. Previous technical reports note that for gold, 97% of blank assays complied with acceptance criteria (values less than or equal to 5-times the ALS reporting limit); however, silver and lead performed less well (67% and 68% compliance, respectively), and for zinc, all blank assays exceeded the acceptance criteria. Gustavson (2014) concluded that unexpectedly high values for blank samples did not appear to be caused by carryover of the preceding sample, and suggested that the andesite was in fact mineralized. Based on this result, it was recommended that Sierra purchase commercially prepared blank samples.

Since 2013, Sierra Metals has inserted blanks into the sample stream regularly, at a rate of one blank per every 30 to 50 samples. Blanks continue to be prepared internally from pulverized andesite.



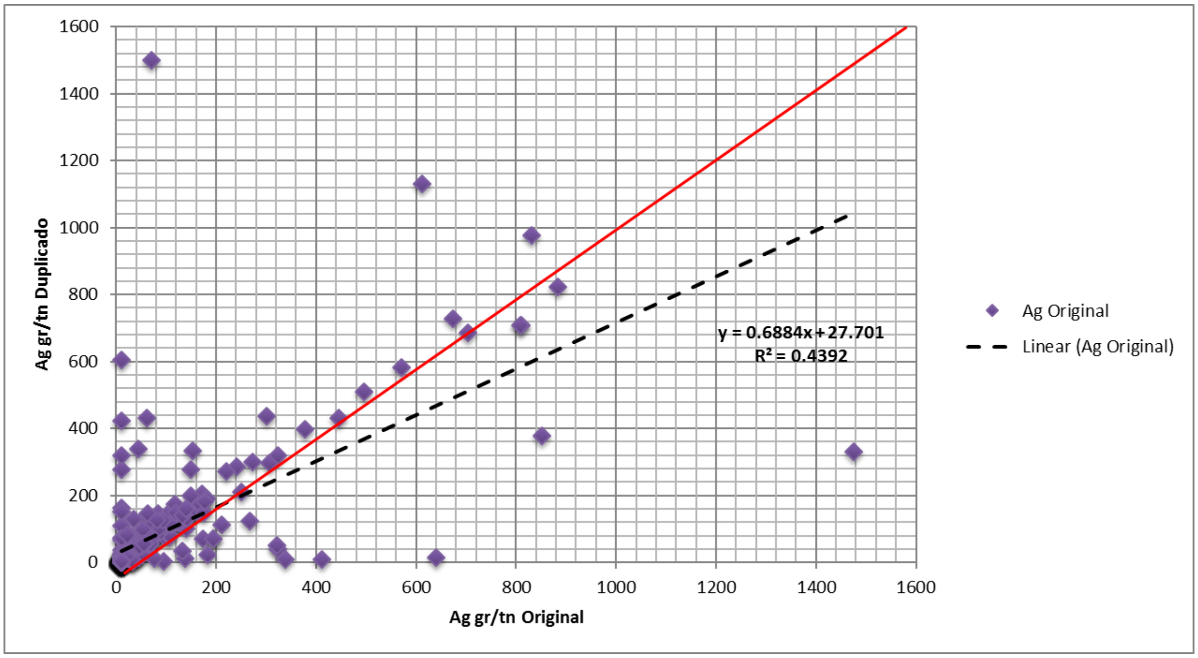
Source: Dia Bras, 2016

Figure 11-2: Blank Analysis Prepared by Sierra Metals for 2015 Blanks

11.4.3 Duplicates

Prior to 2013, 208 duplicates were inserted into the sample stream at Cusi, in 2008. Sierra Metals provided Gustavson with the results of the duplicate sample but was not able to provide information on the corresponding original, and so it was not possible to evaluate laboratory precision.

Following the implementation of a more formal QA/QC program in 2013, Sierra Metals devised a system whereby three types of duplicates (coarse duplicates, core duplicates, and external duplicates) are inserted into the sample stream every 30 to 50 samples. External duplicates are sent to ALS Chemex for comparison against the Malpaso Mill to ensure that the internal lab is performing in a manner consistent with industry standards.



Note: Original assay is Malpaso and Duplicate is ALS.
Source: Dia Bras, 2016

Figure 11-3: Scatter Plot prepared by Sierra Metals to compare performance of duplicates at the internal Malpaso lab and ALS Chemex

11.4.4 Actions

SRK conducted a thorough review of the QA/QC procedures and performance at Cusi. The review process included auditing internal QA/QC charts prepared by Sierra Metals, as well as independent analyses using data provided by the company for all QAQC work completed since 2013. Although Sierra Metals maintains a QA/QC database, tracks the performance of duplicate, blank, and standard samples, and is aware of poor performance in some cases, no formal failure criteria have been developed. SRK's independent analyses therefore included developing of a set of failure criteria for each type of QA/QC data and determining failure rates.

11.4.5 Results

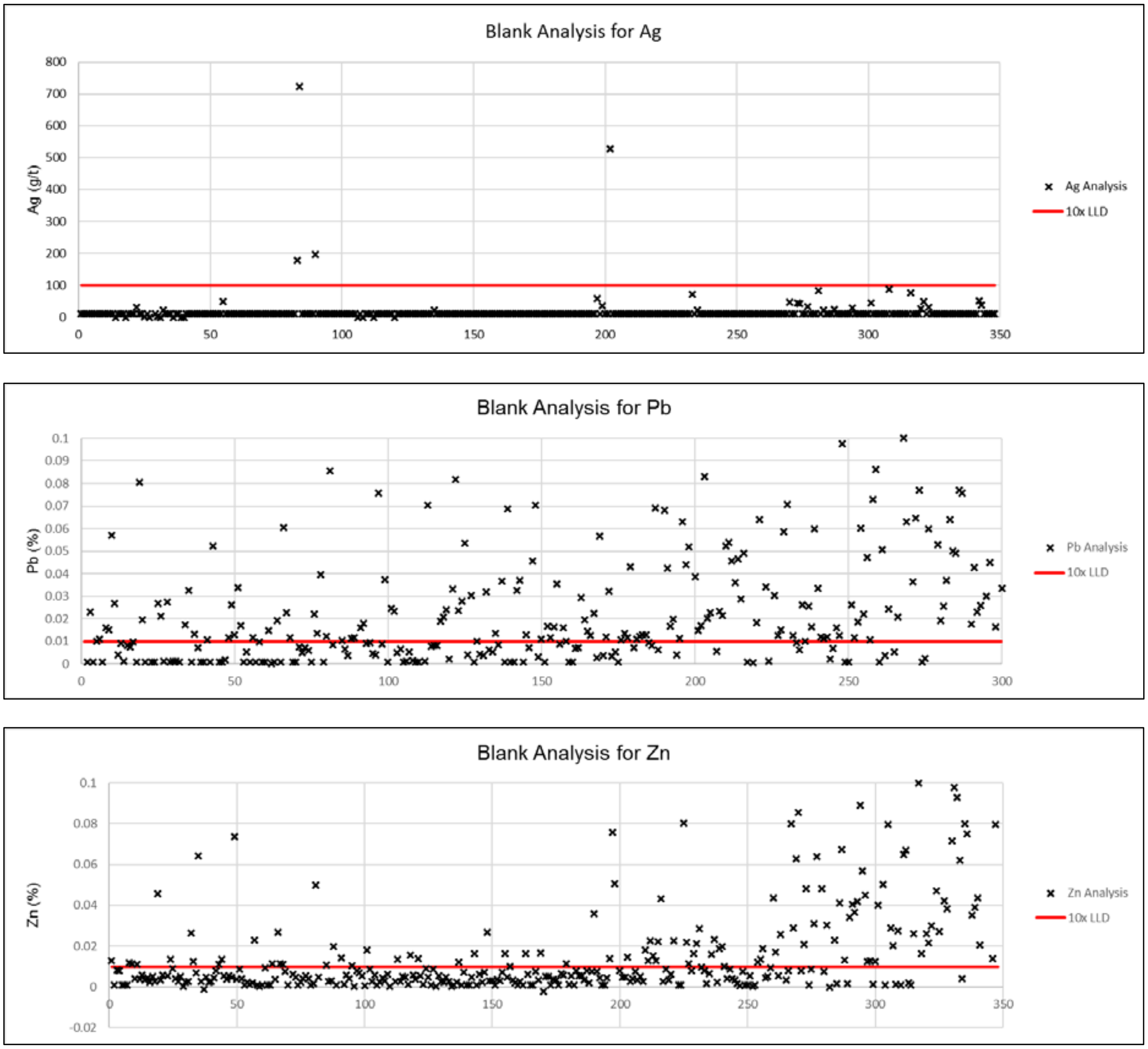
The results for the 2014-2016 QA/QC monitoring at Cusi show significant failure rates or inconsistencies across all types of QA/QC, with these failures made all the more egregious by the fact that Dia Bras uses its own QA/QC materials for these tests, which feature standard deviations far in excess of industry-standard QA/QC. A summary of the failures for the internal Dia Bras standards is shown in Table 11-3. SRK notes that new commercial standards have been acquired recently by Dia Bras.

Table 11-3: Failure Statistics for Cusi Standards and Blanks

Failure Statistics - Ag			
	Failure Criterion	**Number of Failures**	**% Failure**
Standard 1	± 3SD	1	6%
Standard 2	± 3SD	2	1%
Standard 3	± 3SD	0	0
Standard 4	± 3SD	4	6%
Blanks	>10x LLD	4	1%
Failure Statistics - PB			
	Failure Criterion	**Number of Failures**	**% Failure**
Standard 1	± 3SD	0	0%
Standard 2	± 3SD	4	3%
Standard 3	± 3SD	1	7%
Standard 4	± 3SD	4	6%
Blanks	>10x LLD	235	68%
Failure Statistics - Zn			
	Failure Criterion	**Number of Failures**	**% Failure**
Standard 1	± 3SD	0	0%
Standard 2	± 3SD	2	1%
Standard 3	± 3SD	1	7%
Standard 4	± 3SD	0	0%
Blanks	>10x LLD	139	40%

Source: SRK, 2017

The results of SRK's QA/QC review show generally poor performance for blank samples, particularly for Pb and Zn. Many blank samples for these elements report values above 10x the lower limit of detection. Although the failure rate for Ag is 1%, the lower limit of detection for Ag at the Malpaso mill is 10 g/ton, significantly higher than at most commercial laboratories. SRK notes that although Sierra Metals tracks the performance of blanks at the mill (Figure 11-4), their results are compared to the standard deviation of the entire dataset for each element as opposed to the lower limit of detection for each element. The blanks dataset generally exhibits high standard deviation and it is SRK's opinion the performance of blanks is exaggerated in Sierra Metals' internal QA/QC review as a result. SRK agrees with Gustavson's (2014) conclusion that internally prepared "blank" material at Cusi may not be unmineralized.



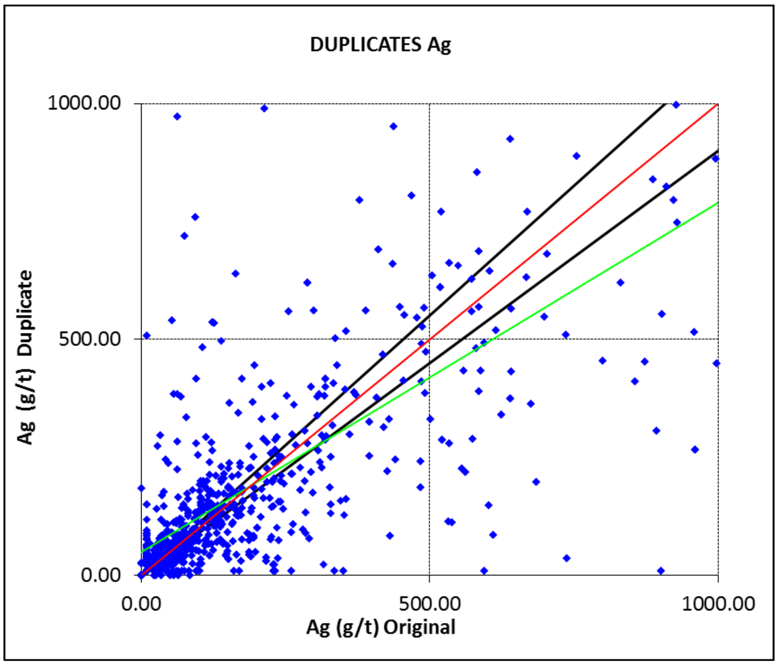
Source: SRK, 2017

Figure 11-4: Blank Analysis for Ag, Pb and Zn

Failure statistics for standards at Cusi are between 0% and 7% and are not consistent across all elements. SRK notes that the standard deviations used to define the failure criteria for standards were derived from the standards dataset and are higher than industry standard. Samples of each standard have been sent to three independent laboratories to define certified values for Ag, Pb, and Zn (ALS Chemex, SGM, and LIMSA); SRK notes that in most cases, the internally derived standard deviations are 2x to 3x higher than the standard deviations reported by external labs. This is not consistent with industry best practices for acceptable intra-lab performance.

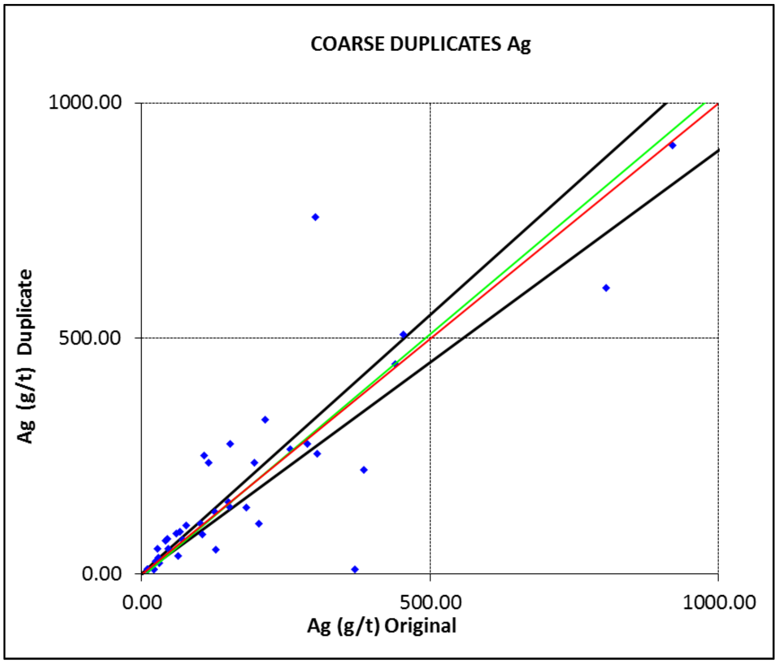
Although a failure rate was not determined for duplicate samples, SRK's review shows that internal duplicates generally exhibit poor performance. Figure 11-5, Figure 11-6, and Figure 11-7 show scatterplots for Ag duplicates from core, coarse reject, and external labs. The figures suggest that performance of the Malpaso mill is inconsistent, both internally and in comparison to commercial laboratories; however, they also suggest that the precision of the internal lab is higher for coarse duplicates than for core duplicates. Sierra Metals has not developed failure criteria for duplicates, but acknowledges poor performance.

SRK notes that the 2014-2016 intra-lab check analyses show a general agreement, which is encouraging. This agreement is only when evaluating the assays >20g/t Ag, which is the Malpaso lower detection limit. In comparison of those assays above 20 g/t Ag, ALS reports average grades that are slightly higher than Malpaso for all metals, but which generally agree. This would indicate that the Malpaso Mill may be under-reporting grades in general, which may not be easy to perceive given the elevated lower limit of detection.



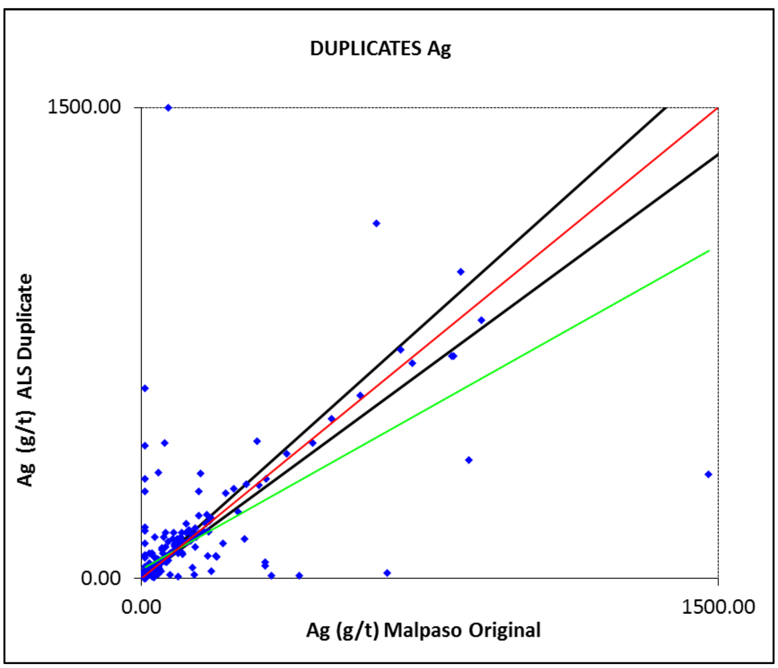
Source: SRK, 2017

Figure 11-5: Scatterplot for Core Duplicates Analyzed at the Malpaso Mill, 2014-2016



Source: SRK, 2017

Figure 11-6: Scatterplot for Coarse Duplicates Analyzed at the Malpaso Mill, 2014-2016



Source: SRK, 2017

Figure 11-7: Scatterplot for Duplicates Analyzed at the Malpaso Mill and by ALS Chemex

11.5 Opinion on Adequacy

The results of the QA/QC program shows that the performance of the Malpaso lab as it pertains to the accuracy and precision of the analysis is sub-par and inconsistent with the reasonable performance obtained by ALS. Previous technical reports such as Gustavson, 2014 feature excellent analyses which support this conclusion, showing low failure rates of standards during the ALS periods of analysis, with notable increases in failures for the Malpaso lab. This trend has continued since these were noted and publicly stated in 2014. SRK notes that the Malpaso lab procedures should be reviewed to confirm whether they are identical to ALS and ensure they can be used with the same confidence as ALS, as their analyses are now being incorporated into the estimation.

The poor performance of the QA/QC at the Malpaso Mill and inconsistent performance of blanks, standards, and duplicates across multiple grade ranges is a contributing factor to the lack of Measured Resource for the Cusi Mine. This reflects the uncertainty in the accuracy of the Malpaso Mill data, which continues to support a significant portion of the mineral resource. It remains unclear as to the source of the factors influencing the poor QA/QC performance, but SRK suggests that they are related to different processes between industry standard labs and Malpaso, poorly-homogenized internal “standards”, and the inherent local variability of the deposit.

SRK is of the opinion that the performance of the QA/QC is poor for a mine in operation, and strongly recommends improvement to an industry-standard QA/QC program in the near future. SRK is aware that improvements to the Malpaso laboratory are pending, and that recent QAQC measures have been using commercially available standards to improve the monitoring of analytical precision.

12 Data Verification

12.1 Procedures

The data supporting the mineral resource estimation for Cusi has been validated in a number of ways by previous workers as well as SRK. Detailed descriptions of these validations are found in Gustavson's 2014 report, and are material to the consideration of the deposit as a whole. Since these validations were performed, SRK notes that Cusi has implemented marked improvements in things like the location of drillholes and downhole surveys, which were issues in previous reports.

SRK visited the mine in 2016 and was able to access the mine workings, reviewing estimated vein thicknesses and grades in the mine and finding them appropriately stated. In addition, SRK witnessed the collection of channel samples as well as underground drilling at Cusi and noted these to be consistent with basic industry standards.

12.1.1 Database Validation

As a part of this mineral resource estimation, SRK also reviewed the drilling database against ALS Minerals assay certificates. A selection of ALS analytical certificates was selected at random from the files provided to SRK by Dia Bras, and these were compared back to the drilling database. This represented a total number of samples of 1,467, which only represents about 2.6% of the drilling database. SRK does note that all samples reviewed from the certificates matched the database exactly.

Finally, and due to the historic performance of the QA/QC and the intra-lab data between ALS and Malpaso, SRK recommended that a series of re-analyses were run in areas which are judged critical to the mineral resource and mine development. The purpose of this was to obtain a separate selection of samples, taken from core or coarse reject material that could be submitted to ALS (and hadn't been previously) along with appropriate QA/QC to support the mineral resource where previously the only support had been from Malpaso. In total, this small program featured 233 samples from various areas of the Cusi Mine, across grades ranging from 0.2 g/t Ag to over 3,700 g/t Ag. Duplicates, blanks and standards were submitted with these samples, and show reasonable performance across all grade ranges.

However, the intra-lab check samples do not show close agreement to expectations for the analysis quality and data between labs. For this small subset of samples, Malpaso reports an average Ag of 142 g/t Ag compared to 111 g/t Ag from ALS. Although some of this is related to the Malpaso lab's inability to report grades less than 20 g/t Ag, there are several intervals where Malpaso reports very high grades, in excess of 500 g/t Ag, where ALS reports less than 20 g/t Ag. Although it is possible that this is related to the highly variable nature of the mineralization at Cusi and its representation in split core halves, SRK would expect an average that is more similar between the two labs. SRK does note that, in general, the higher grade samples occurring in a sequence of similar samples are repeated between the labs.

12.2 Limitations

No external auditor or consultancy, including SRK, has validated 100% of the database to date with independent samples or third-party laboratory checks.

12.3 Opinion on Data Adequacy

SRK notes that the database validation against provided certificates shows excellent agreement, but that the results of the recent intra-lab comparison showed significant variation. This, combined with other factors such as the lack of consistent down hole deviation make the data sufficient for reporting of Indicated and Inferred resources only, as Measured resources would need more precision and repeatability than what can be demonstrated at this time.

13 Mineral Processing and Metallurgical Testing

13.1 Testing and Procedures

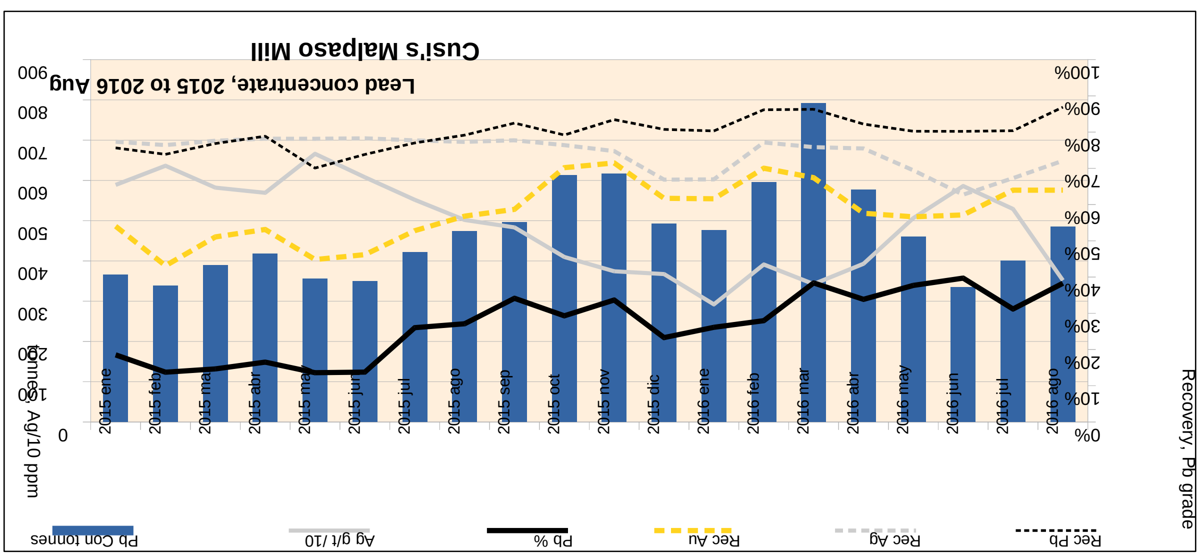
Cusi's Malpaso mill facilities include a recently upgraded metallurgical laboratory. Sampling and testing is executed on an as-needed basis to support the industrial scale operation. No detailed metallurgical testwork results were available at this time for the areas being mined.

13.2 Recovery Estimate Assumptions

Metallurgical performance at Malpaso shows a steady improvement in the 2015 January to 2016 August period. While initially producing lead concentrate only, Malpaso started a separating and producing zinc concentrate since 2015 December.

Metal recoveries to lead concentrate (Figure 13-1) appear consistent with an upward trend for the period in question as follows:

- Lead metal recovery initially in the 75% to 80% range has improve to values ranging from 80% to 88%. Lead grade in concentrate has been improved over time, and is approaching 40% which is in the lower end of a typical commercial quality lead concentrate.
- Silver metal is preferably deported to lead concentrate reaching recovery ranging from 70% to 80%. For the period in question, silver grade in lead concentrate is ranging from approximately 3,000 g/t to 7,000 g/t.
- Other metals in lead concentrate include gold with concentration ranging approximately between 4 g/t to 7 g/t which is above the typical payable grade in lead concentrates. Since Cusi started producing zinc concentrate, zinc metal concentration in lead concentrate ranges between 6% and 10% which is possibly translating to a penalty. No deleterious metals are present in concentrations high enough to translate into penalty payments.

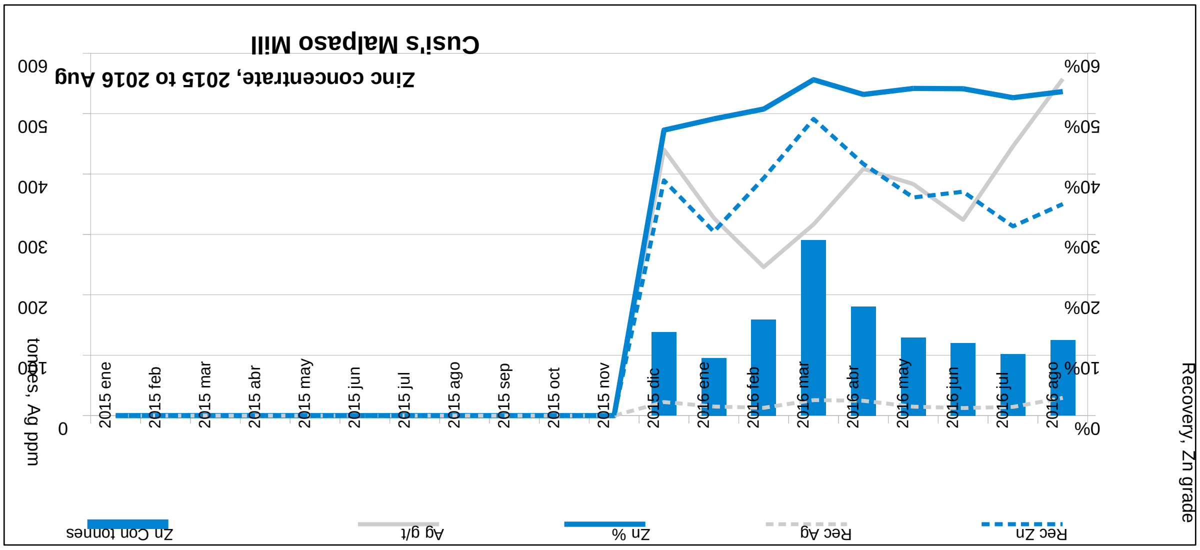


Source: Dia Bras, 2016

Figure 13-1: Lead Concentrate Tonnes and Grades

Deportment of metals to zinc concentrate (Figure 13-2) shows zinc recovery ranging approximately from 30% to 50%, and reaching grade consistently above 50%.

Silver deportment to zinc concentrate is in the range of 1% to 3% and its grade reaches 300 g/t to 560 g/t which is within commercially payable range.



Source: Dia Bras, 2016

Figure 13-2: Zinc Concentrate Tonnes and Grades

Based on the performance of the Malpaso Mill in 2016, the projected production from the mill in 2017 is as summarized in Table 13-1. SRK notes that this information is provided by Dia Bras and is based on actual recoveries from the existing mine, projected using the expected tonnes and grades from their operational plan. SRK notes that the head grade for Au is more than 2X less than the lower limit of detection for the Malpaso analytical laboratory.

Table 13-1: Metallurgical Balance for Malpaso Mill – 2017

Metallurgical Balance			Assays				Recovery %			
Type	Tonnes	%	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Au	Ag	Pb	Zn
Head	221,000	100	0.18	184.3	0.89	1.04				
Conc. Pb	6,305	2.85	3.21	4,785.3	25.38	5.00	52.04	74.07	81.00	
Conc. Zn	2,718	1.23	0.50	350.0	1.26	50.00				59.26
Final Tails	211,977	95.92	0.08	45.3	0.16	0.29				

Source: Dia Bras, 2017

14 Mineral Resource Estimate

Matthew Hastings, Senior Consultant, SRK Consulting (U.S.) Inc. conducted the resource estimation for the Promontorio veins, San Nicolas, Santa Rosa Lima, and San Juan veins. Bart Stryhas, Principal Consultant, SRK Consulting (U.S.) Inc., conducted the resource estimation for the Santa Eduwiges veins, Candelaria veins, and Durana veins. This was done using a combination of mining software including Leapfrog Geo ™, Maptek Vulcan™, and statistical analysis software such as Snowden Supervisor™ and X10 Geo™.

14.1 Drillhole Database

The drilling and channel sample databases are kept in separate Microsoft Excel files with six tabs for drill collars, surveys, lithology, geotechnical parameters, geochemistry, and assays. The lithologies logged are used in combination with the assay data to identify mineralization for the geologic model. Geotechnical parameters are recorded for drilling and features rock quality designation (RQD), and recovery. Both geochemistry and assays feature the analyses for the primary elements to be reported at Cusi (Ag, Au, Pb, Zn), but the assays feature only these assays plus Cu, Fe, and Mn. The geochemistry table also features other elements that have been analyzed for a small percentage of samples for other purposes.

The final drillhole and channel assay database was provided to SRK by Dia Bras on December 23, 2016. It features both drilling and channel samples which are updated to October of 2016. The final database contains over 60,000 assays from drilling and over 36,000 from channel sampling. The two data sets have been merged for the purposes of statistical analysis and estimation. The distribution of samples between types and elements is summarized in Table 14-1.

Table 14-1: Summary of Sample Counts by Type

Element	Drill Assays	Channel Assays
Ag	61,920	36,250
Au	46,639	33,568
Pb	61,353	36,279
Zn	61,360	36,306

Source: SRK, 2016

The database features variable incomplete analyses for Au compared to the other elements, which are all relatively consistent for all intervals. The reason for the partial Au assays is unclear, but is likely related to older analyses or inability to transcribe from historic assay sheets. SRK assigned a value of 0.001 to any element with missing assays. Cu is also partially assayed at Cusi, but features comparably fewer missing assays than the Au, and is generally quite low grade. Cu was not used in the estimation of the MRE for Cusi.

SRK notes that the database contains several drillholes that have no assay intervals due to lost data or other doubts regarding data accuracy. In some cases, Dia Bras has used these to guide the geology model, but they have been ignored for the purposes of the estimation. Any other missing or unsampled intervals in the drilling are given a value of 0 for all elements, on the assumption that the geologists logging did not identify any mineralization or alteration of interest in the rock. SRK notes that, due to the aforementioned inaccuracy of some of the unsurveyed drilling, that these unsampled intervals may cut through historic areas of production, and would artificially bias the grades low.

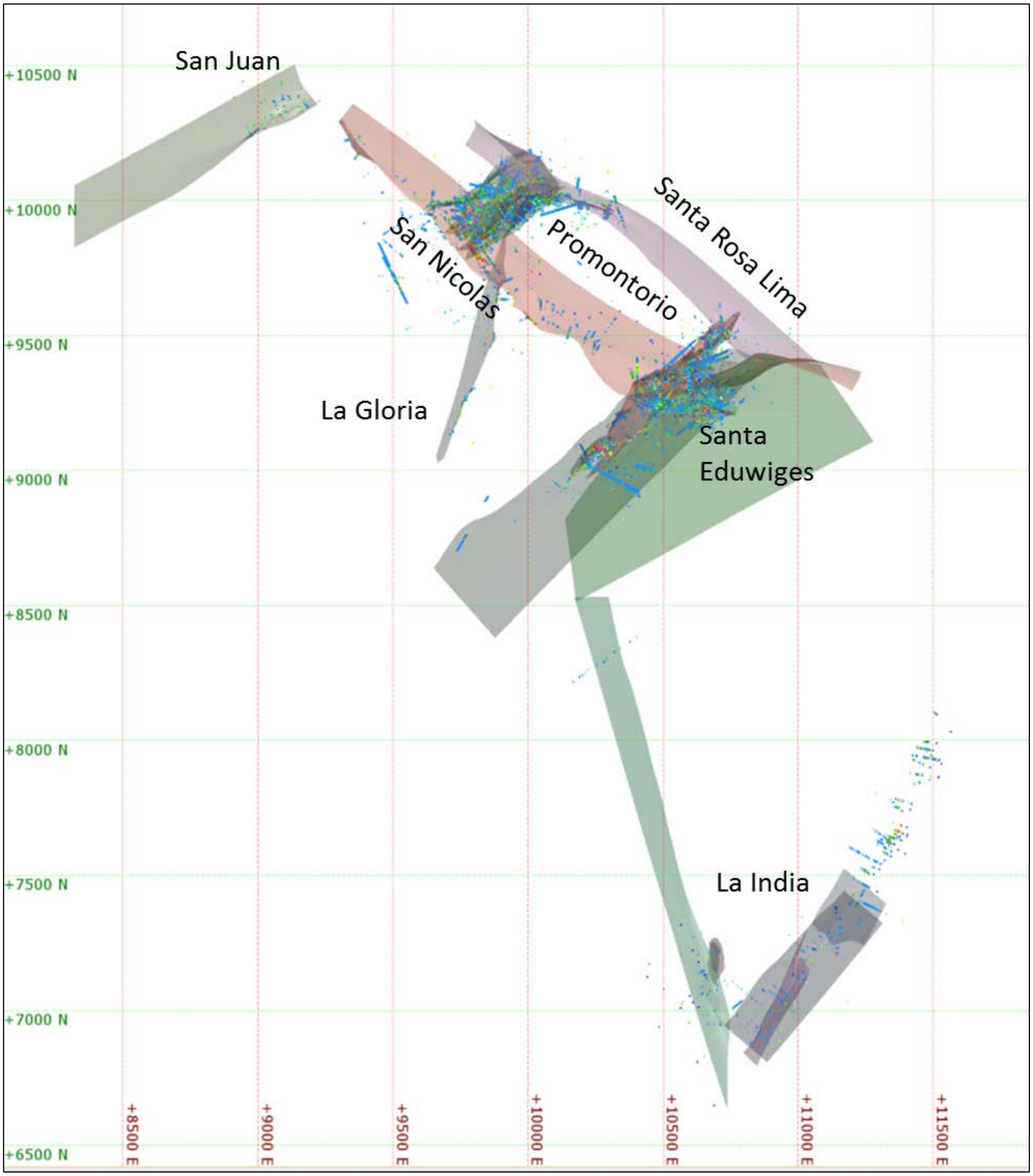
14.2 Geologic Model

Three-dimensional wireframe models for the Cusi veins were created by Dia Bras using Leapfrog Geo™ software. SRK was provided the Leapfrog project files, which were reviewed and modified to include more detail on the structures as well as incorporate channel sample data where appropriate. The geology models are developed on a combination of geology codes and Ag grades, and effectively are built using hanging wall and footwall surfaces derived through selection of these points in the drilling and channel sample database, with subsequent interpolation of the points into 3D surfaces and volumes.

There are five areas within the greater Cusi District (Figure 14-1), defined based on similarity of mineralization or orientation of structures. These areas were used to define capping limits, on the assumption that all mineralization within the area is related to the same processes, based on the cross-cutting relationships of the veins. Within these areas, the geologic model defines 33 separate structures or stockwork zones (in the case of Azucarera), all of which are considered discrete domains for the purposes of resource estimation. The volumes defined in the geologic model serve to constrain and guide the estimation. Descriptions of the areas, resource domains, and general geology are summarized in Table 14-2.

Examples of the geology models are shown in Figure 14-2, Figure 14-3, and Figure 14-4.

SRK notes that the surveyed channel samples play a critical role in modeling of the mineralized structures. Where an unsurveyed drillhole intercept does not align with the projection of the vein from nearby channel samples, the drillhole intercept is ignored in favor of the geometry from the mine workings. Dia Bras and SRK agree the working are more accurate than the drilling in these cases. The net result of this is improved and valid vein geometries but locally includes samples within the vein that may not be within the vein due to the deviation from the drillhole that was not measured. This generally occurs in the vicinity of previous production as all new drillholes are being surveyed and appear to track well with the projection of the veins from the mine workings.



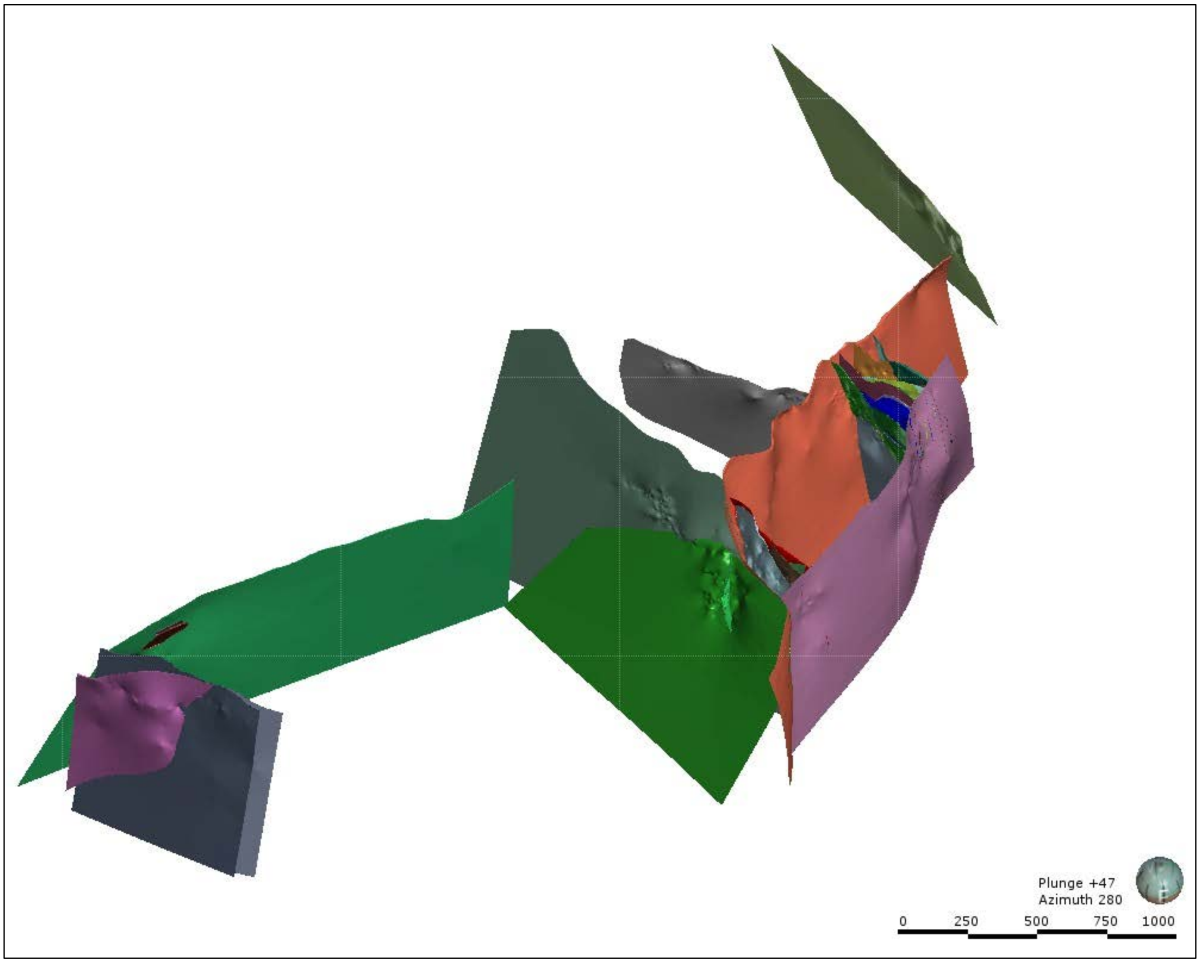
Source: SRK

Figure 14-1: Plan View of Areas within Cusi District

Table 14-2: Summary of Project Areas and Relationships to Resource Estimation Domains

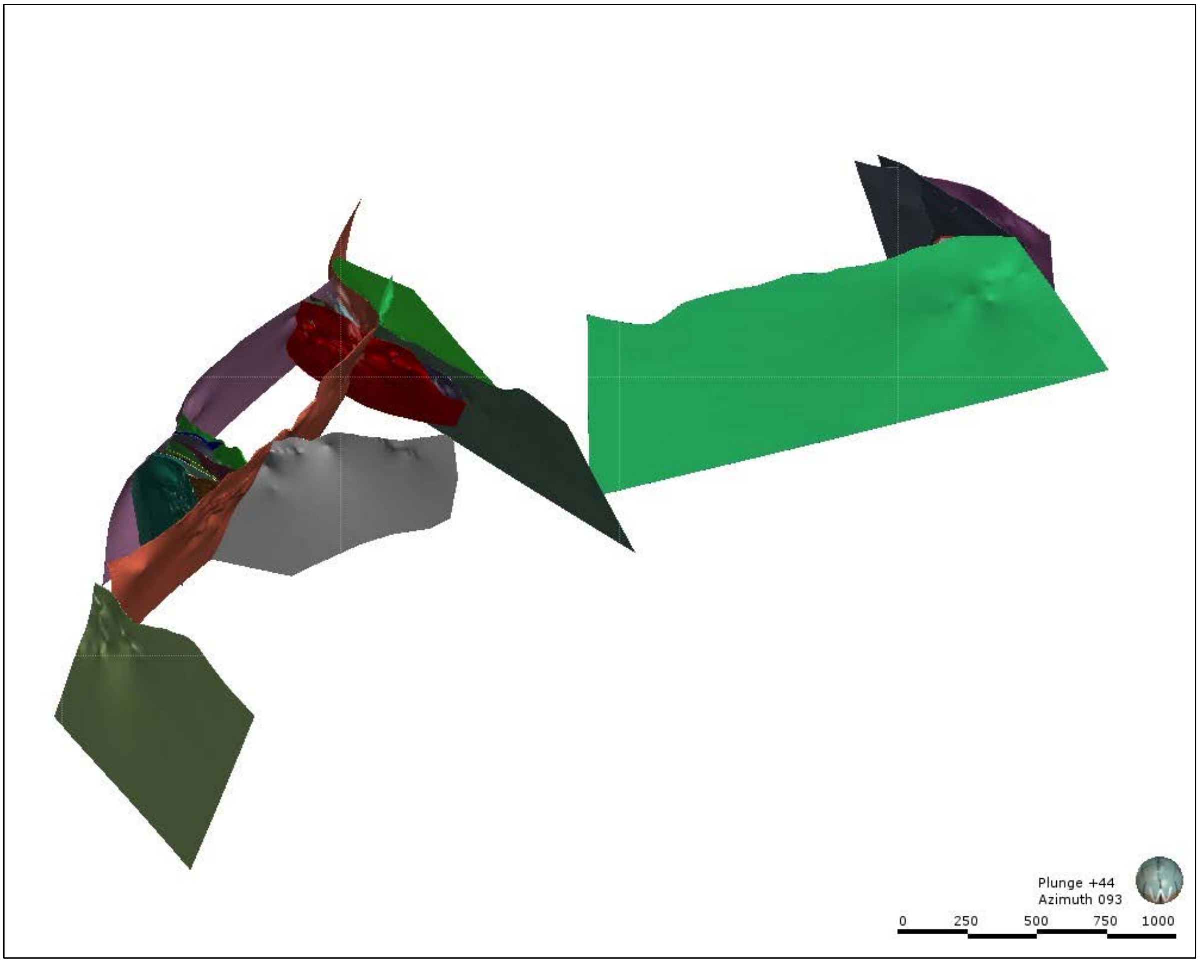
Area	Veins	Description
Promontorio	Alto El Gallo	Anastomosing sequence of NE-trending steeply dipping veins, locally appearing stacked or sheeted. Numerous crossings and truncations within the sequence. Locally featuring extraneous stockwork zones or splay structures, which may not be defined in drilling. The Azucarera domain is a stockwork zone which has been accessed by workings and appears to be related to the intersection of multiple structures. Truncated to the north and south by the Santa Rosa Lima and San Nicolas structures respectively. Explored extensively through drilling and exploration/development drifts. Primary production source.
	Bajo L	
	El Gallo	
	El Gallo Bajo	
	H	
	J	
	K	
	K'	
	L	
	L'	
	Promontorio	
	V1	
	V2	
	VBP	
	Azucarera	
	San Juan	
Eduwiges	San Antonio	Series of moderately to steeply dipping veins with variable strike trends. Thicknesses vary dramatically. The majority trend NE similar to Promontorio, but local cross structures are orthogonal. Some structures appear to be related to the trend of the San Nicolas vein, while others are perpendicular and appear to cross San Nicolas. All appear truncated by the Santa Rosa Lima structure to the north. Extensively explored through drilling and exploration/development drifts. Primary production source.
	San Bartolo	
	Santa Marina	
	Mexicana	
	Milagros	
	Milagros Ramal 1	
	Moctezuma	
	Portilla	
San Nicolas	San Nicolas	Two anastomosing NW/SE trending, steeply-dipping structures with the most significant strike length of the modeled veins. Appear to truncate most structures, although others have been demonstrated to cross San Nicolas with small (5-10m) offsets. Significant potential for exploration and addition of resources. Features drilling and limited channel sampling along development drifts. Primary production source.
	Santa Rosa Lima	
La India	Candelaria 1	Two sets of variable thickness and orientation veins with NW/SE trends (Durana) and NE/SW trends (Candelaria) to the extreme south of the project. Although generally lower grade, there are selected areas of very high grade mineralization noted. Exploration is not as extensive as other areas, and is based almost exclusively on drilling. No production of note.
	Candelaria 2	
	Durana	
	Durana Ramal 1	
	Durana Ramal 2	
	20 de Noviembre	
La Gloria	Minerva	Anasotomosing NE/SW trending steeply-dipping vein to the south of the San Nicolas vein. Dominantly explored via exploration drift. Limited production.

Source: SRK, 2017



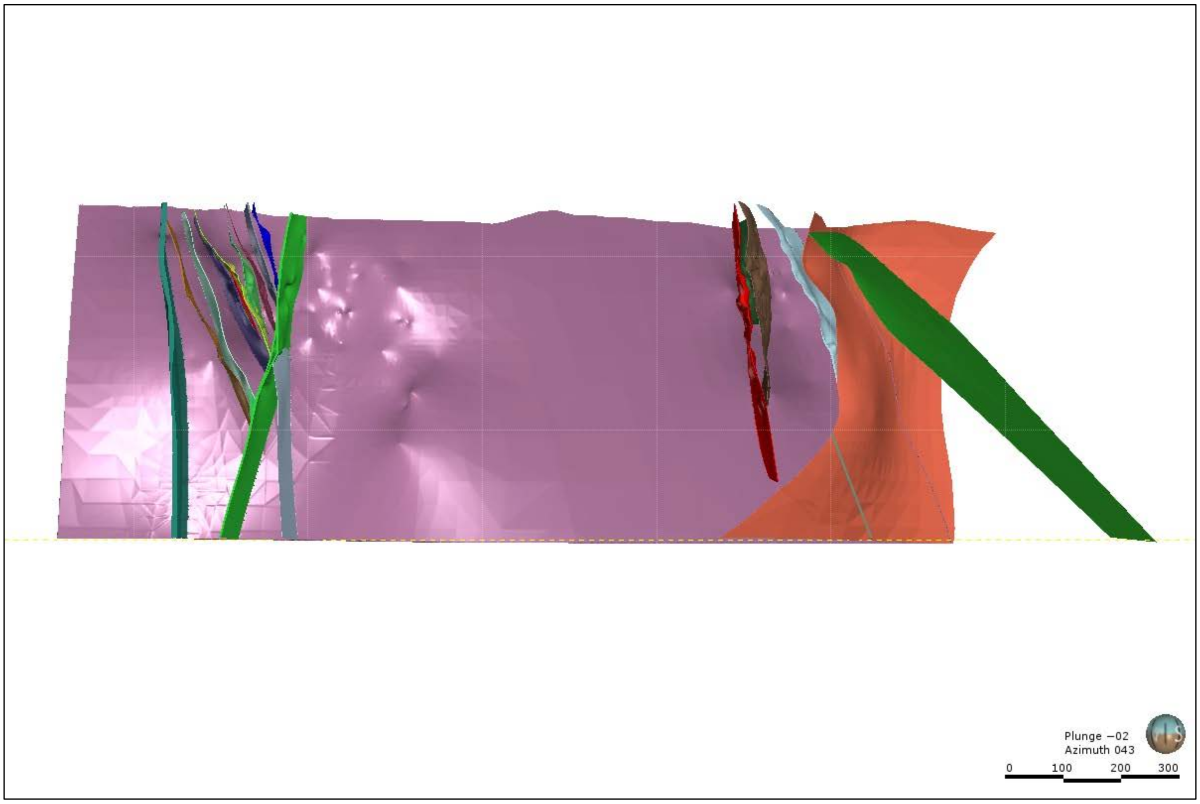
Source: SRK

Figure 14-2: Oblique View of the Cusi Geologic Model



Source: SRK

Figure 14-3: Oblique View of the Cusi Geologic Model, looking east

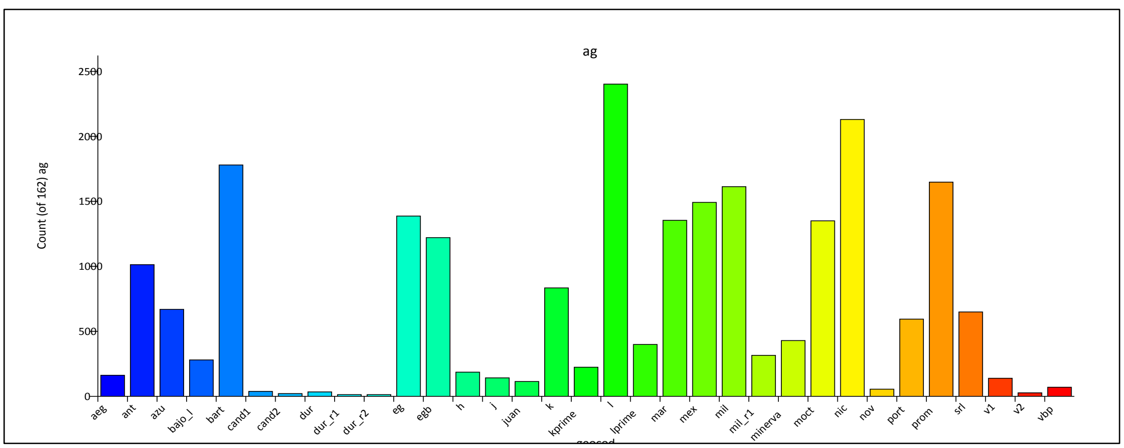


Source: SRK

Figure 14-4: Northeast Cross-section through the Cusi Geologic Model, showing complex vein interactions

14.2.1 Domain Analysis

SRK considered each vein its own domain for the purposes of statistical analysis and estimation. As shown in Figure 14-5, the amount of samples per vein domain are highly variable, influenced largely by the amount of channel sampling in development along structures.



Source: SRK, 2016

Figure 14-5: Sample Count by Vein Domain

The individual resource domains also feature a wide range of grade distributions. The mean grades for each element by vein are shown in Table 14-3. As shown, Ag is the obvious and most dominant contributor to the economic value of the mineralization. Veins in the Eduwiges area commonly feature more base metals than others.

Table 14-3: Grade Means by Structure

Name	Mean Ag	Mean Au	Mean Pb	Mean Zn
All	233.1	0.30	0.81	0.86
Alto El Gallo	125.0	0.02	0.13	0.22
San Antonio	229.3	0.20	1.58	1.92
Azucarera	286.0	0.07	0.27	0.29
Bajo L	134.7	0.05	0.19	0.23
San Bartolo	271.4	0.32	1.56	1.06
Candelaria 1	123.4	0.06	0.25	0.38
Candelaria 2	153.6	0.19	0.58	1.07
Durana	63.7	0.04	0.15	0.16
Durana Ramal 1	132.3	0.07	0.02	0.01
Durana Ramal 2	156.8	0.06	0.05	0.02
El Gallo	270.1	0.50	0.34	0.40
El Gallo Bajo	269.2	0.17	0.29	0.35
H	204.0	0.10	0.29	0.29
J	177.0	0.04	0.20	0.27
San Juan	152.2	0.35	0.11	0.13
K	276.9	0.09	0.42	0.42
K'	195.6	0.08	0.21	0.22
L	371.5	0.12	0.32	0.34
L'	145.0	0.07	0.26	0.32
Santa Marina	201.2	0.31	1.29	1.06
Mexicana	160.1	0.36	1.16	1.77
Milagros	220.9	1.62	1.28	1.67
Milagros Ramal 1	133.0	0.52	0.85	1.30
Minerva	93.9	0.22	0.08	0.04
Moctezuma	150.3	0.22	3.05	2.93
San Nicolas	231.2	0.21	0.36	0.39
20 de Noviembre	45.3	0.02	0.22	0.27
Portilla	301.4	0.33	1.72	1.37
Promontorio	224.3	0.07	0.34	0.31
Santa Rosa Lima	258.2	0.11	0.47	0.63
V1	165.4	0.03	0.28	0.29
V2	136.2	0.08	0.47	0.48
VBP	130.4	0.05	0.30	0.37

Source: SRK, 2017

14.3 Assay Capping and Compositing

In order to minimize the variance in the estimation due to inherent variability in grade distributions within domains and provide a more homogenous data set for estimation, SRK used capping of high grades as well as compositing of sample lengths.

14.3.1 Outliers

SRK limited high grade outlier samples by capping the maximum grades for each area, and limiting samples above the cap to the grade of the cap. Capping analysis was done on the raw sample data, evaluating each data set by relevant area of mineralization. Capping was not reviewed for every individual vein, as the paucity of sampling for many of the veins did not yield appropriate populations for statistical analysis. Thus, areas of the model were selected for similarity in mineralization style, orientation, and other parameters that would suggest that the grouped veins were related to a single mineralizing event.

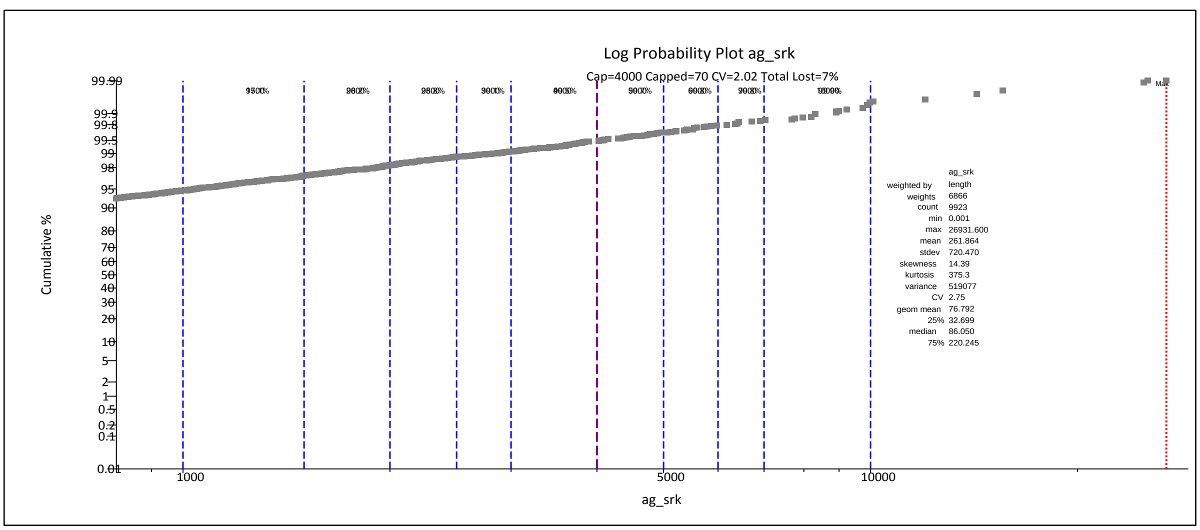
After the data was grouped by these areas, SRK generated log probability plots (to assess the frequency at various grade ranges and evaluate continuity, changes in slope, and other factors that would indicate high grade sub-populations within the domained assay data. As these were identified, sample plots were generated within the domained areas to determine if any high grade continuity could be developed and modeled. In the case of Cusi, the veins are simply highly variable and no significant high grade chutes or zones within the structures were modeled separately. Using the probability plots and statistics of the capping (i.e. percentages of data capped, impact of capping on CV/Mean, total metal lost to capping, etc.) SRK selected appropriate capping limits for each of the areas, as shown in Table 14-4.

Examples of the capping analysis can be seen in Figure 14-6 and Table 14-5.

Table 14-4: Capping Limits Utilized for the Cusi MRE

	Capping Limit			
Area	**Au (g/t)**	**Ag (g/t)**	**Pb (%)**	**Zn (%)**
Promontorio	3.25	4000	7	6
Santa Eduwiges	15	4000	18.5	19
San Nicolas/SRL	3.5	2000	5	5
La India	0.5	750	3	4
La Gloria	2.3	500	0.42	0.31

Source: SRK, 2017



Source: SRK, 2017

Figure 14-6: Example Log Probability Plot – Promontorio Ag

Table 14-5: Example Capping Analysis – Promontorio Ag

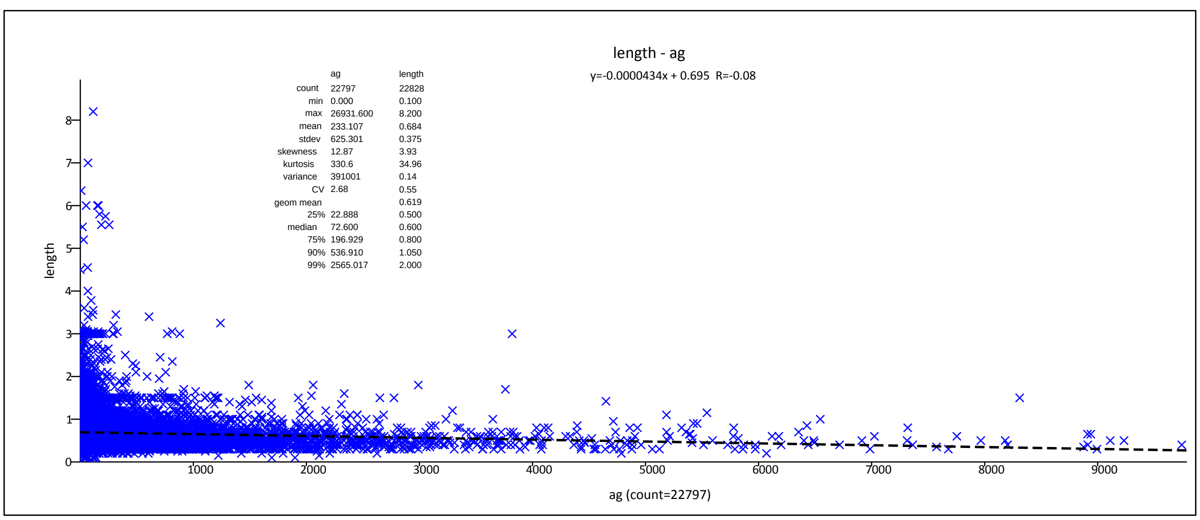
Cap	Capped	Percentile	Capped %	Lost %	CV %	Count	Max	Mean	CV
NA	NA	100%	0.00%	NA	NA		26,931.60	261.86	2.75
10000	7	99.9%	0.07%	2%	13%		10,000	257.72	2.41
7000	20	99.8%	0.20%	3%	18%		7,000	254.39	2.26
6000	26	99.8%	0.30%	4%	20%		6,000	252.54	2.2
5000	41	99.7%	0.40%	5%	23%		5,000	249.88	2.12
4000	70	99.5%	0.70%	7%	27%	9,923	4,000	245.75	2.02
3000	121	99.1%	1.20%	10%	32%		3,000	238.75	1.88
2500	158	98.8%	1.60%	12%	35%		2,500	233.47	1.79
2000	234	98.2%	2.40%	15%	39%		2,000	226.23	1.69
1500	369	97.1%	3.70%	20%	44%		1,500	214.73	1.55
1000	662	90.0%	6.70%	28%	50%		1,000	195.12	1.36
Ag > 4000						70	26931.60	7048.23	0.63
Ag <= 4000						9853	3888.56	225.79	1.84

Source: SRK, 2017

14.3.2 Compositing

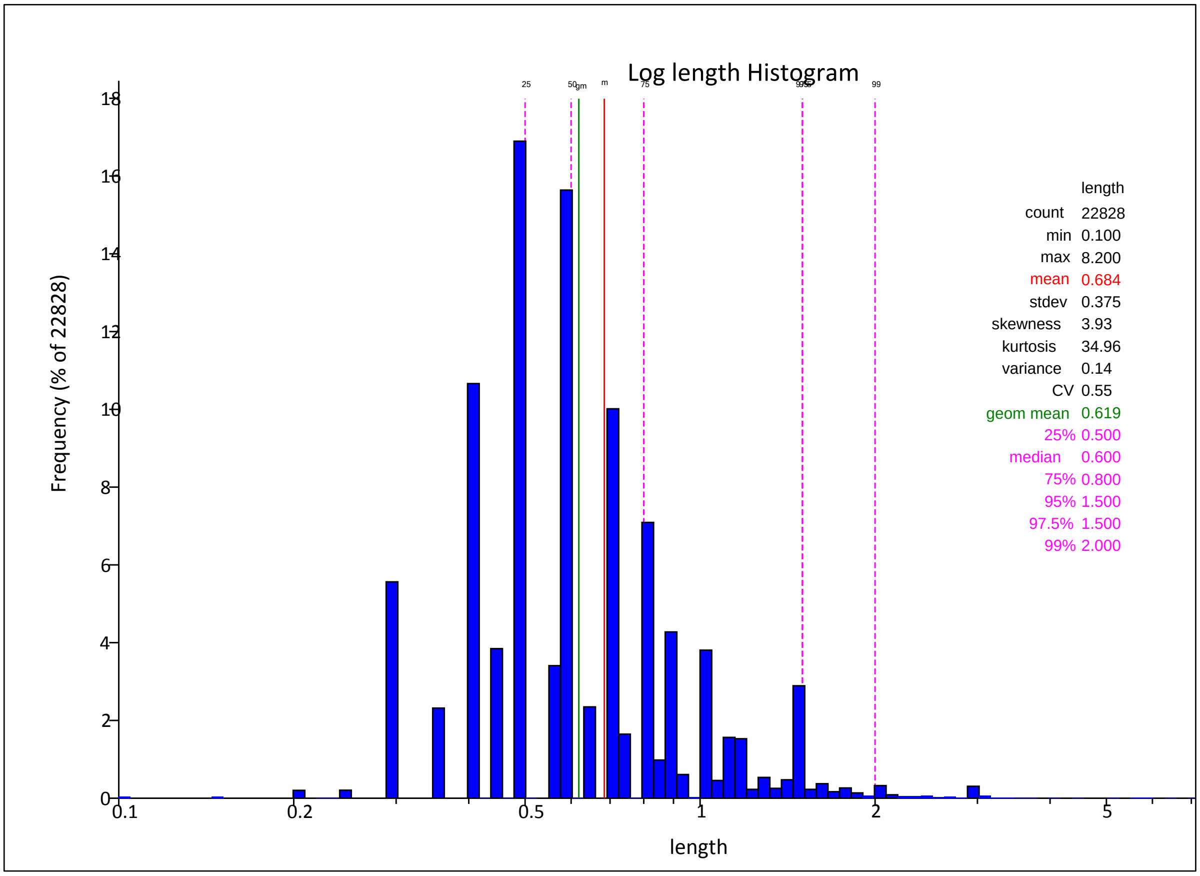
SRK evaluated the sample lengths within the mineralized domains defined by the geological model. The mean sample length within the mineralized domains is 0.68 m, with a maximum sample length of 8.2 m. The mean sample length above the 97.5% percentile is 1.5 m. SRK examined the relationship between sample length and Ag grade to determine if there were significant populations of high grade samples that were greater than 1.5 m. The overwhelming majority of samples with significant grade are in samples where the length is less than 1.5 m as shown in Figure 14-7. SRK notes that there are very few samples that would be affected by a compositing length of 1.5 m that would in turn affect the estimation.

A histogram distribution of sample lengths (Figure 14-8) within the mineralized domains shows that the relative percentages of sample lengths above the 1.5 m composite length is very small. SRK selected a nominal composite length of 1.5 m, retaining short samples for use in the estimation. Any bias due to short samples is handled using length-weighting during the estimation.



Source: SRK, 2017

Figure 14-7: Scatter Plot of Length vs. Ag



Source: SRK, 2017

Figure 14-8: Histogram of Sample Lengths

14.4 Density

Bulk densities are assigned on the basis of the results of specific gravity samples analyzed by the Servicio Geologico Mexicano (SGM) on behalf of Dia Bras. The 11 samples were taken from various areas throughout the Promontorio and Santa Eduwiges areas, but are considered by Dia Bras geologists to be representative of the material types in mineralized areas of all of the Cusi veins. Samples were ground to 100% passing -100 mesh (150 microns) and were analyzed via the use of a pycnometer using ethanol as a solution. Distilled water is used as a reference (0.99712 g/cm3) in the evaluations. The results of this analysis are presented in Table 14-6.

The average density of the samples is 2.73 g/cm3, and this density was flagged into the block model for use in the resource calculations.

Table 14-6: Results for Density Analyses

Sample ID	Stope	Area	Vein	Level Elevation	Density (g/cm^3)
1	REB 668	Promontorio	San Nicolas	8 1850	2.71
2	REB 9461	Sta. Eduwiges	Moctezuma	13A 1801	2.98
3	REB 9400	Sta. Eduwiges	Veta B	13 1839	2.69
4	REB 9315	Sta. Eduwiges	San Antonio	15 1769	2.99
5	REB 627	Promontorio	El Gallo	8 1865	2.66
6	REB 9306	Sta. Eduwiges	Sta. Marina	13 1817	2.78
7	REB 786	Promontorio	Promontorio	6 1910	2.68
8	REB 9400	Sta. Eduwiges	Riodacita	12 1839	2.57
9	REB 652	Promontorio	Gallo Back	6 1930	2.63
10	REB 1024	Promontorio	Promontorio	10 1910	2.68
11	REB 1024	Promontorio	Promontorio	10 1910	2.67
				Average	**2.73**

Source: Dia Bras, 2017

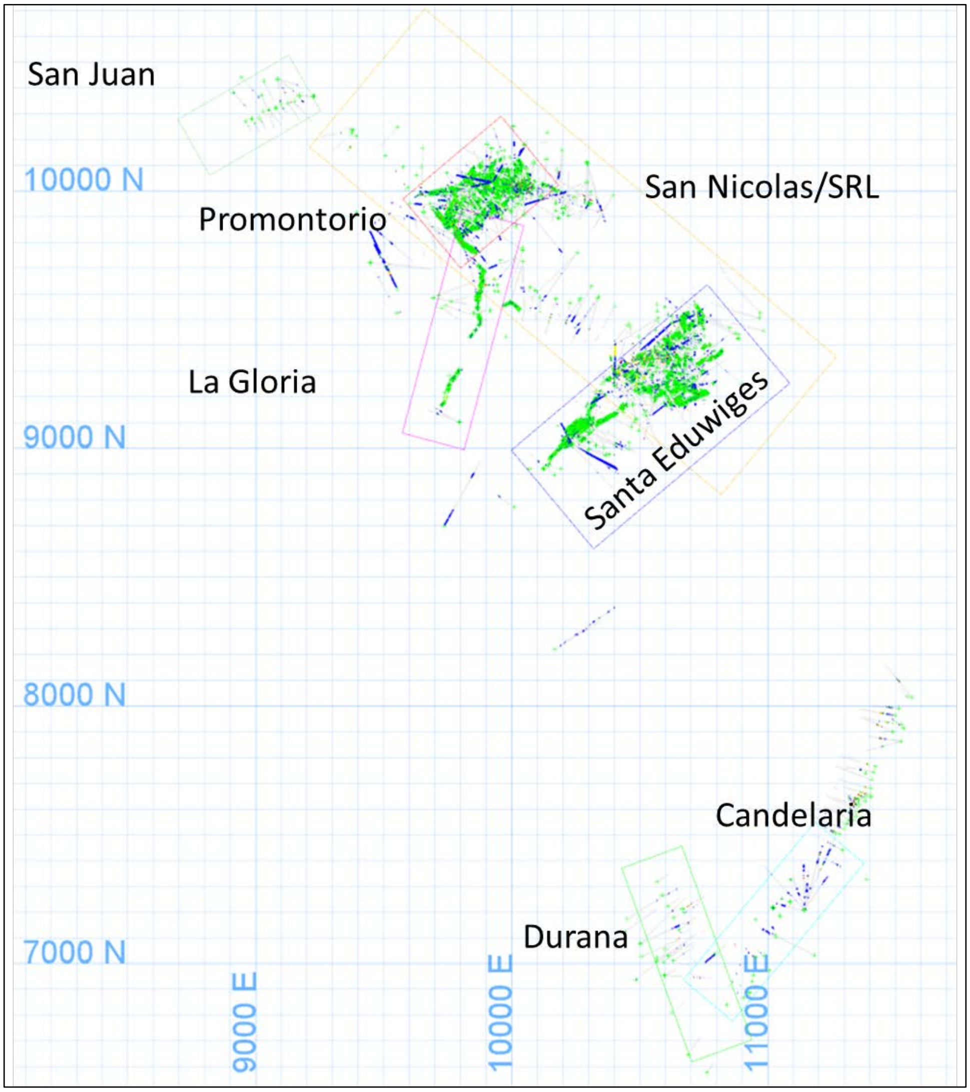
14.5 Variogram Analysis and Modeling

SRK did not conduct any variogram analysis for this MRE. Previous efforts have noted issues with production of good variograms sufficient for informing kriging equations, and SRK's efforts produced similar results. As has been described previously, the inherent local variability in the mineralization and the relationships between the veins make assessing continuity through the use of geostatistics very difficult. In addition, the level of domaining that has resulted in the definition of the individual veins means that there are fewer samples within each vein to use for spatial statistical analysis.

SRK is of the opinion that the orientations of continuity are established through the mapped or logged interpretation of the veins, and that the ranges of the estimation should be dependent on the drill spacing, ensuring selection of multiple holes/channel samples from different areas to interpolate grade between these points.

14.6 Block Model

Seven block models were built in Maptek Vulcan™ software and are designed to approximate the orientation of the strike for the major structures contained in each model. The models are rotated about the Z axis (and only the Z axis) and limited to the footprint of the structures contained in each model. The model extents are shown in Figure 14-9. The models are sub-blocked along the mineralized domain margins. Details regarding the block models and their parameters are shown in Table 14-7. All models have been sub-blocked to a minimum of 1 m x 1 m x 1 m with the exception of San Nicolas and Santa Rosa Lima, which are sub-blocked to a minimum of 0.5 m x 0.5 m x 0.5 m.



Source: SRK, 2017

Figure 14-9: Block Model Extents and Positions

Table 14-7: Block Model Details

Model	Origin			Bearing	Extents (m)			Numbers of Blocks
	X	Y	Z		X	Y	Z	
Promontorio	9800	9700	1380	50	500	350	1000	1,629,411
Eduwiges	10320	8610	1380	50	1000	500	1000	1,065,127
San Nicolas/SRL	9210	10170	1380	130	2100	700	1000	2,050,942
Minerva	9814	8995	1380	15	900	250	1000	156,997
Durana	10430	7370	1380	160	800	250	1000	149,178
Candelaria	10863	6776	1380	40	800	250	1000	365,489
San Juan	8820	10060	1380	60	500	250	1000	102,640

Source: SRK, 2017

14.7 Estimation Methodology

SRK interpolated grades for Ag, Au, Pb, and Zn using an inverse distance squared estimation method. In general, a nested three-pass estimation was used with higher restrictions on sample selection criteria in the initial shorter search passes, to less restrictive criteria in the subsequent, larger ellipsoids. Ellipsoid orientations are controlled by the hanging wall and footwall surface of each structure. A flattened “pancake” ellipsoid shape is used to mirror the vein anisotropy, with the orientations varying as a function of the bearing, dip, and plunge of the structure. These three parameters are estimated in to the block model from the hanging wall and footwall surfaces of each vein, using the varying local anisotropy tool in Vulcan. They ultimately control the orientation of the search ellipsoid at each block in the model. Maximum numbers of samples per hole in combination with sample minimums of 3 ensure that all estimates in the first and second passes must use more than one hole.

The variations in the distribution of samples and the issue of clustering of high grade channel samples is dealt with using an octant restriction on the estimation. This permits a maximum number of samples to be selected from one octant, working with the sample selection criteria to force a minimum number of octants to be used in the estimate. In this way, the amount of data used to estimate from a single area is limited, and other samples must be used from areas that may not be as clustered. SRK implemented this methodology for the estimation on every domain.

SRK varied parameters like the minor ellipsoid ranges, sample selection criteria, and octant restrictions based on performance of the estimation during review of the validation, but notes that the parameters selected are very similar between the individual structures and seem to work well given the wide variety of data spacing. The estimation parameters used for each area are summarized in Table 14-8.

Table 14-8: Estimation Parameters

Promontorio/San Juan	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)***	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	5	3	16	2	2
2	NA	NA	NA	50	50	10	3	16	2	2
3				75	75	20	1	16	2	NA

Eduwiges	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)***	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	10	3	16	2	2
2	NA	NA	NA	50	50	20	3	16	2	2
3				75	75	30	1	16	2	NA

San Nicolas/SRL	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)***	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	5	3	16	2	2
2	NA	NA	NA	50	50	10	3	16	2	2
3				100	100	20	1	16	2	NA

Azucarera	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)**	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	5	3	16	2	2
2	315	-60	0	50	50	10	3	16	2	2
3				75	75	20	1	16	2	NA

Candelaria Durana	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)***	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	10	3	16	2	2
2	NA	NA	NA	50	50	20	3	16	2	2
3				75	75	30	1	16	2	NA

Minerva	**ID2**									
Pass	**Bearing (Z)**	**Plunge (Y)***	**Dip (X)***	**Major**	**Semi-Major**	**Minor**	**Min**	**Max**	**Max/DH**	**Max/Octant**
1				25	25	10	3	16	2	2
2	NA	NA	NA	50	50	20	3	16	2	2
3				75	75	30	1	16	2	2

* Controlled by VLA unfolding using fault block-specific hangingwall and footwall surfaces.

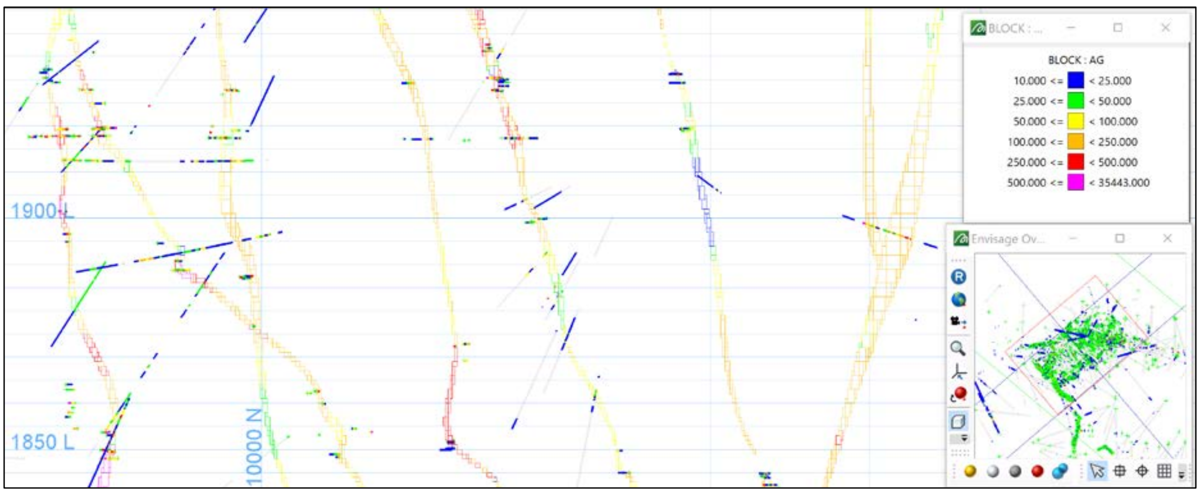
Source: SRK, 2017

14.8 Model Validation

SRK has validated the estimation for each model using a variety of methods considered to be industry standard. These include a visual comparison of the blocks versus the composites, an assessment of the quality of the estimate, and comparative statistics of block vs. composites. As Ag is the primary commodity by far at the Cusi Mine, validation is focused primarily on this rather than the other elements. Cursory validation of the other elements was performed to ensure no material overestimation.

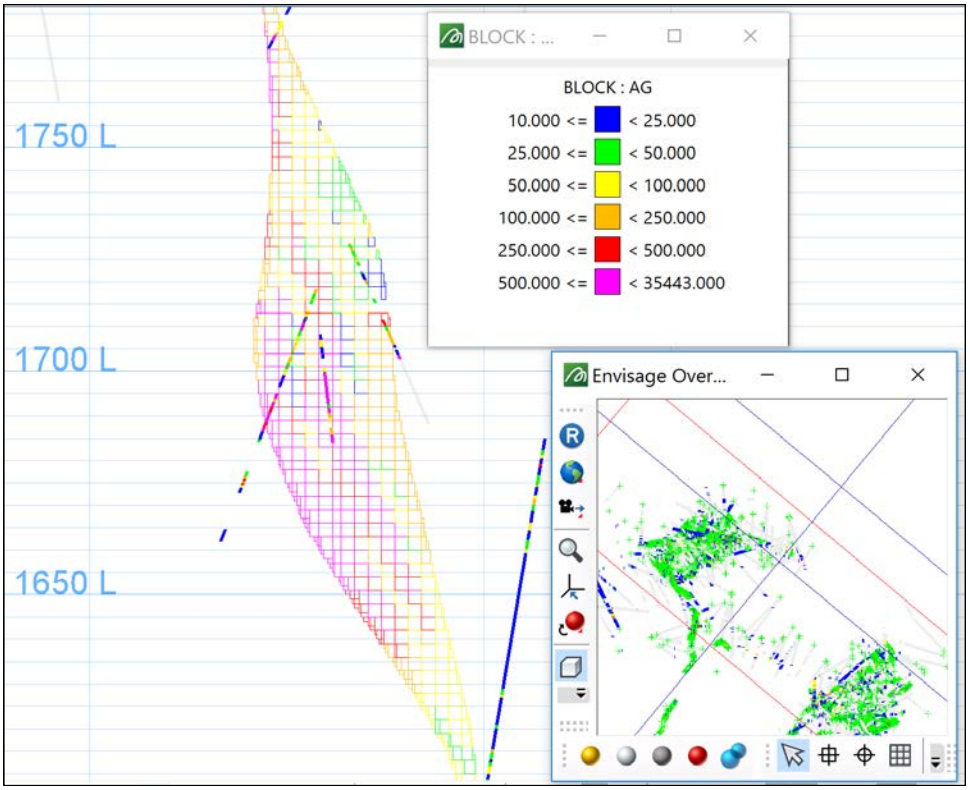
14.8.1 Visual Comparison

SRK reviewed the block estimation visually in comparison with the composite grades to determine any potential for obvious bias. In general, the objective is to identify areas where the composites do not closely approximate the blocks. SRK reviewed all models in this context and noted that they all seem to match the drilling well. Examples are shown in Figure 14-10 and Figure 14-11.



Source: SRK, 2017

Figure 14-10: Example of Visual Validation – Promontorio Area



Source: SRK, 2017

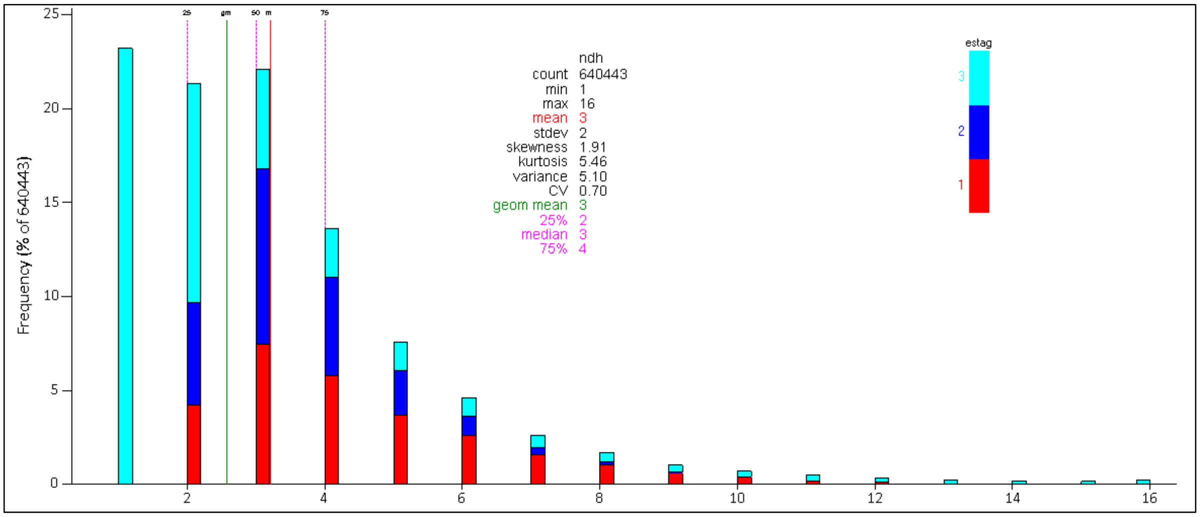
Figure 14-11: Example of Visual Validation – San Nicolas Area

14.8.2 Estimation Quality

SRK reviews the quality of the estimation using a combination of statistical comparisons of the number of holes, samples, and average distances per estimation pass. As the estimation passes are used to help assign confidence to the estimate, it is helpful to understand how much data is being used in the passes to have confidence that the passes are ensuring high quality estimates in passes 1 and 2 and complete estimation of the blocks in the ranges in the third pass.

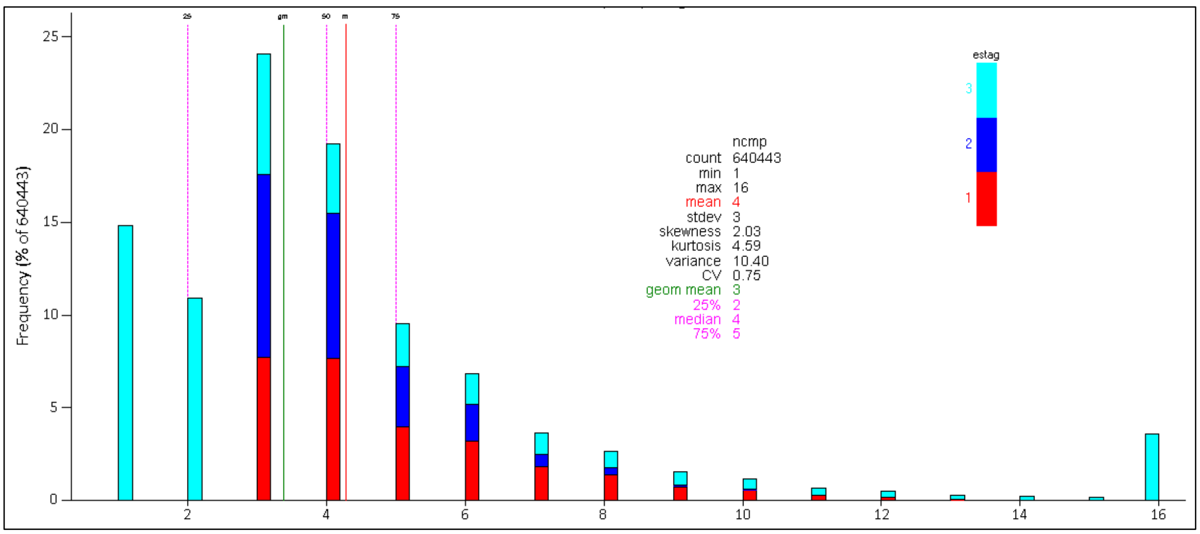
The example histograms shown in Figure 14-12, Figure 14-13, and Figure 14-14 illustrate that the Promontorio estimation passes are using more data in the first and second passes, at closer spacing than the third pass. Importantly, the first and second passes are always using more than one hole to estimate, and for the most part are using three to six holes with three to eight composites. Average distances for all estimation passes are only about 26 m, with the majority of blocks in the first and second passes estimated between 5 and 30 m.

SRK is satisfied from this analysis that the estimations are appropriate for each model.



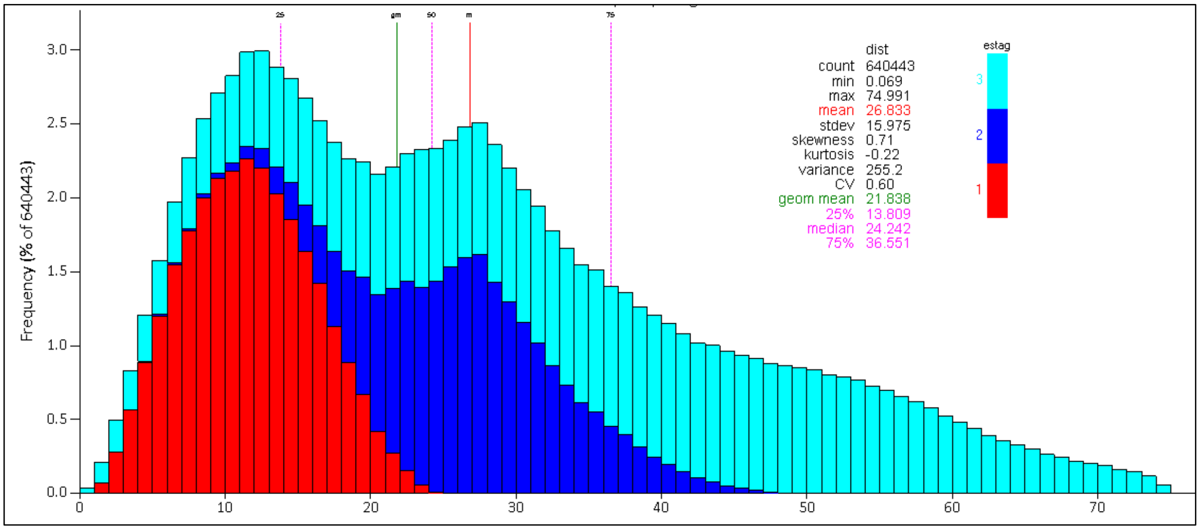
Source: SRK, 2017

Figure 14-12: Histogram of Number of Holes - Promontorio



Source: SRK, 2017

Figure 14-13: Histogram of Number of Composites - Promontorio



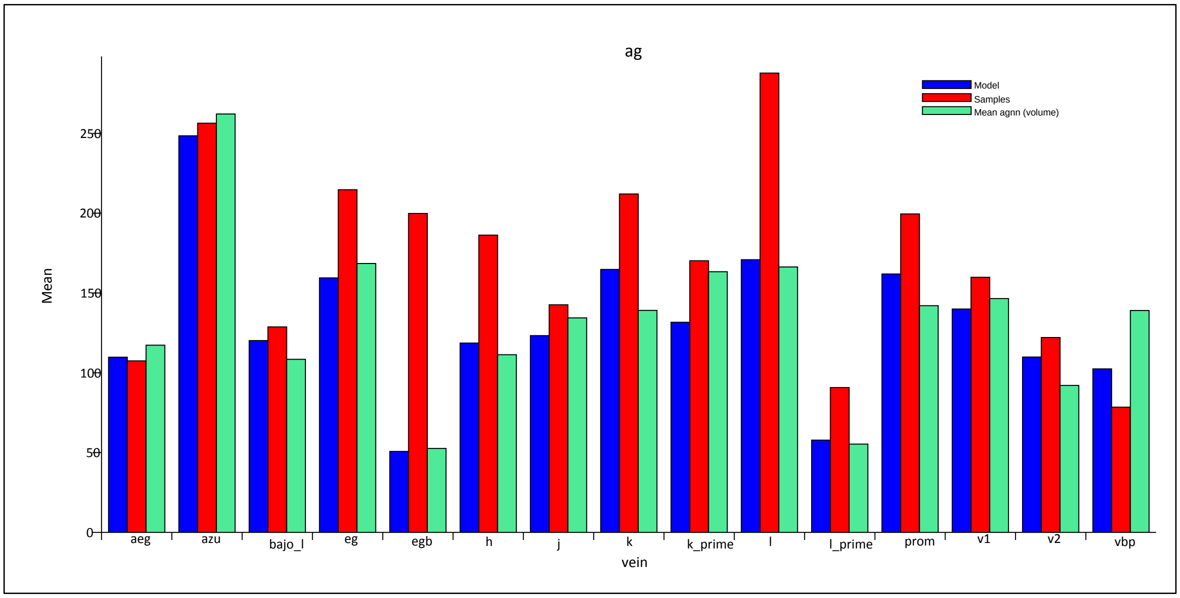
Source: SRK, 2017

Figure 14-14: Histogram of Average Distances - Promontorio

14.8.3 Comparative Statistics

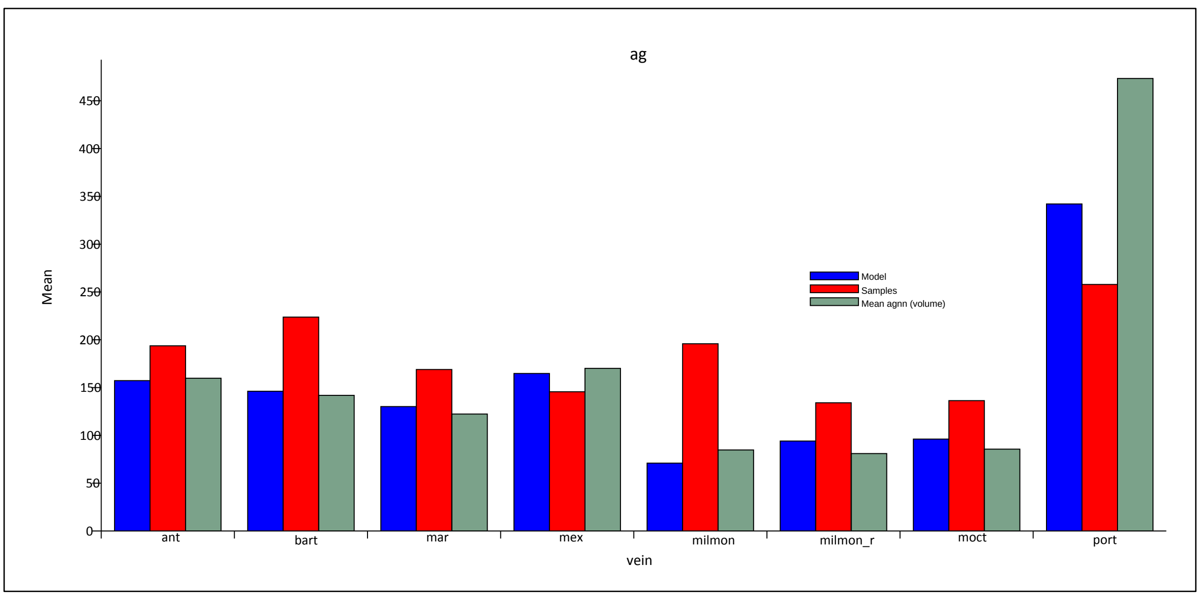
SRK compared the estimated block grades to the composite grades on a vein by vein basis as well as a global basis, assessing for local and global biases which may indicate over-estimation. Means are compared against the raw composite data as well as a nearest neighbor estimate (the theoretical declustered composite mean). In the case of many of the Cusi veins, the composite grades tend to be biased high due to the concentration of channel samples which are collected predominantly in the mineralized areas. The degree of bias depends on a number of factors including the relative number of channel samples and the percentage of these samples taken in high grade areas (tends to be higher). Thus, SRK reviewed the estimates in areas featuring higher number of channel samples using a nearest-neighbor declustered mean to assess the degree of impact of the clustered channel samples on the estimate.

An example of a simple mean comparison at Promontorio is shown in Figure 14-15. This shows that the block estimates (blue) are generally comparing well against the composite means (red). Nearest-neighbor means are shown in green, and are generally approximating the grades of the ID2 estimate. However, in some cases such as the El Gallo Bajo (EGB) vein, there is a clear bias in the composites due to highly clustered channel samples (more samples, less blocks) vs. a smaller number of drillholes (less samples, more blocks) that is reflected in both the ID2 estimate and the nearest-neighbor estimate. In other cases, SRK notes slight over-estimations in the structures such as the VBP vein, where a condition may exist that features a small percentage of higher grade samples influencing a larger amount of blocks, perhaps on the margins of the vein. SRK is of the opinion that this is acceptable, as these blocks are likely estimated in the third pass of estimation, and would be classified as Inferred. Other multi-vein comparisons are shown in Figure 14-16 and Figure 14-17.



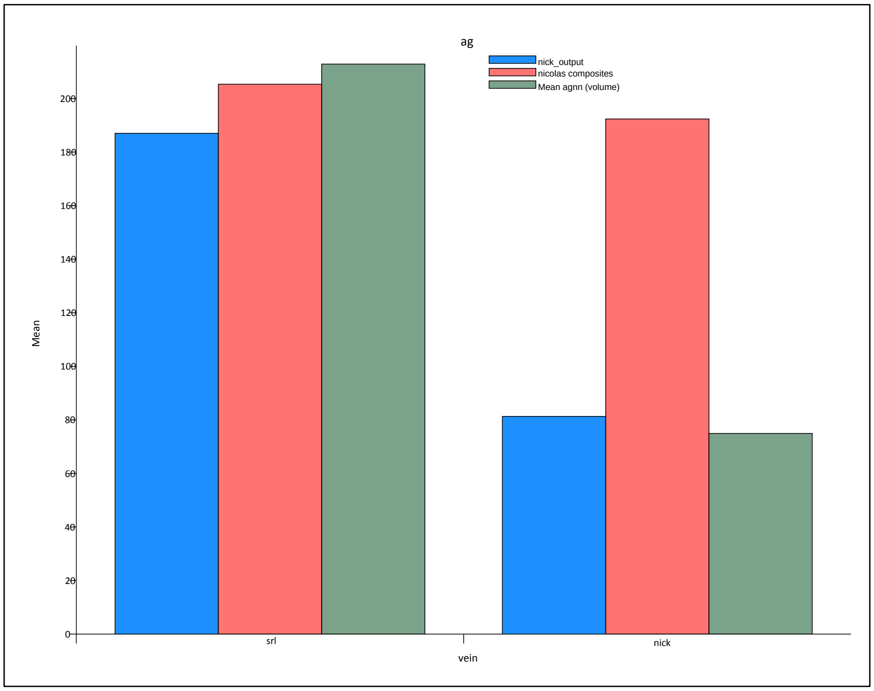
Source: SRK, 2017

Figure 14-15: Mean Analysis by Domain – Promontorio Ag



Source: SRK, 2017

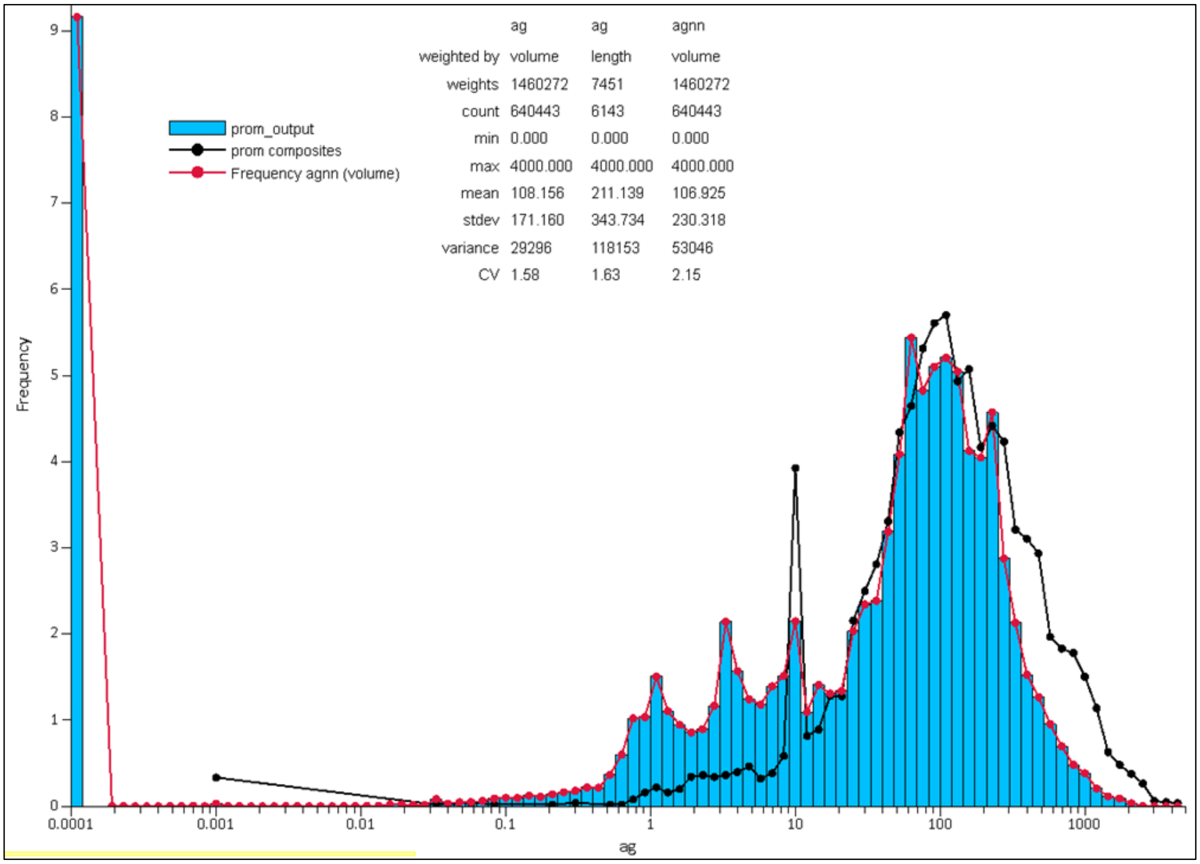
Figure 14-16: Mean Analysis by Vein Domain – Santa Eduwiges Ag



Source: SRK, 2017

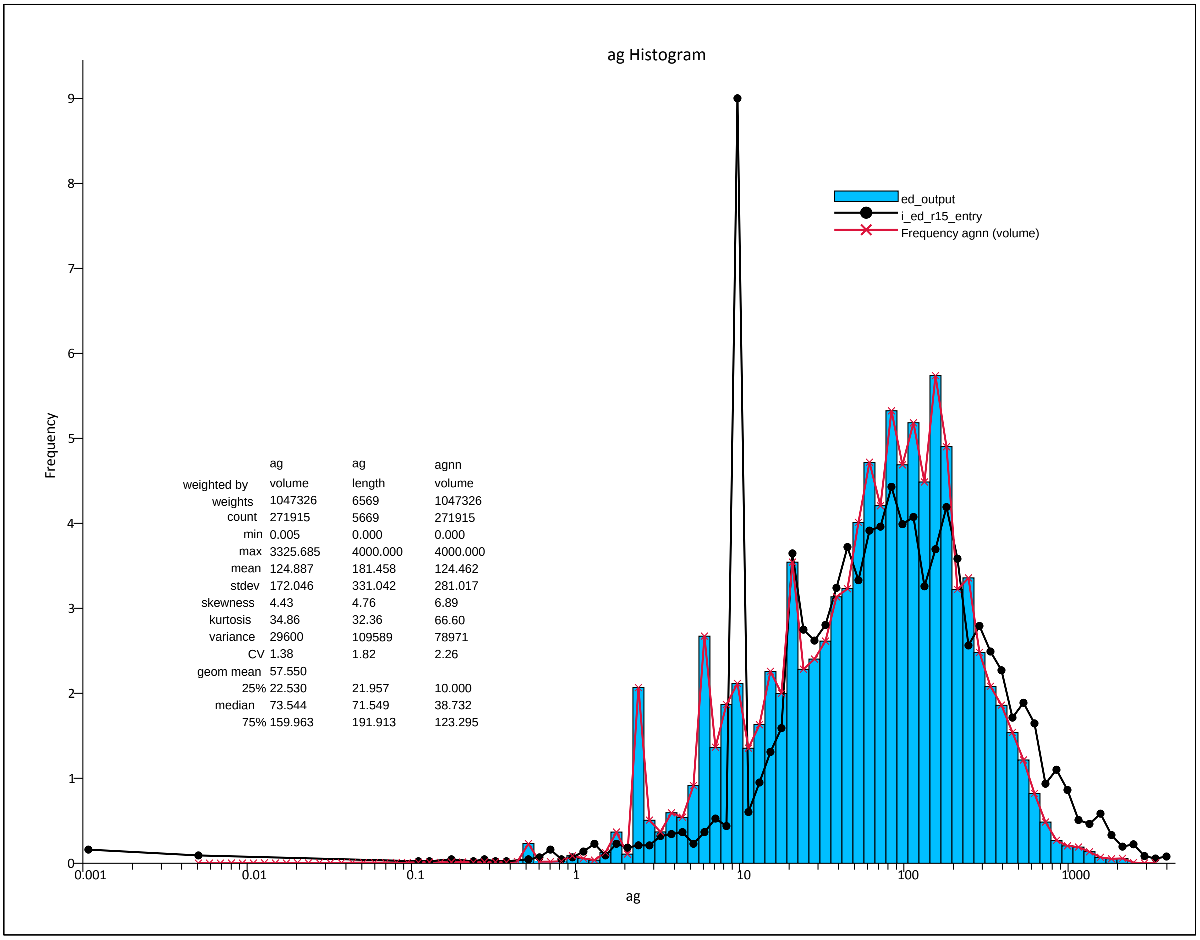
Figure 14-17: Mean Analysis by Vein Domain – San Nicolas/SRL Ag

Global comparisons were also conducted for the models against the composites and the nearest neighbor estimations. These were done by examining histogram distributions as well as global statistics for each model. SRK notes that the comparison to the global sample mean is somewhat misleading due to the number of higher grade channel samples compared to drillholes. Thus, the comparison is somewhat more meaningful against the nearest neighbor estimate. SRK notes that the bias due to channel sampling is reduced by almost 50% in the declustered nearest neighbor estimate, which closely approximates the mean of the ID2 estimate. These comparisons have been conducted for each area and each metal, and the plots for Ag are shown in Figure 14-18, Figure 14-19, Figure 14-20, Figure 14-21, Figure 14-22, Figure 14-23, and Figure 14-24.



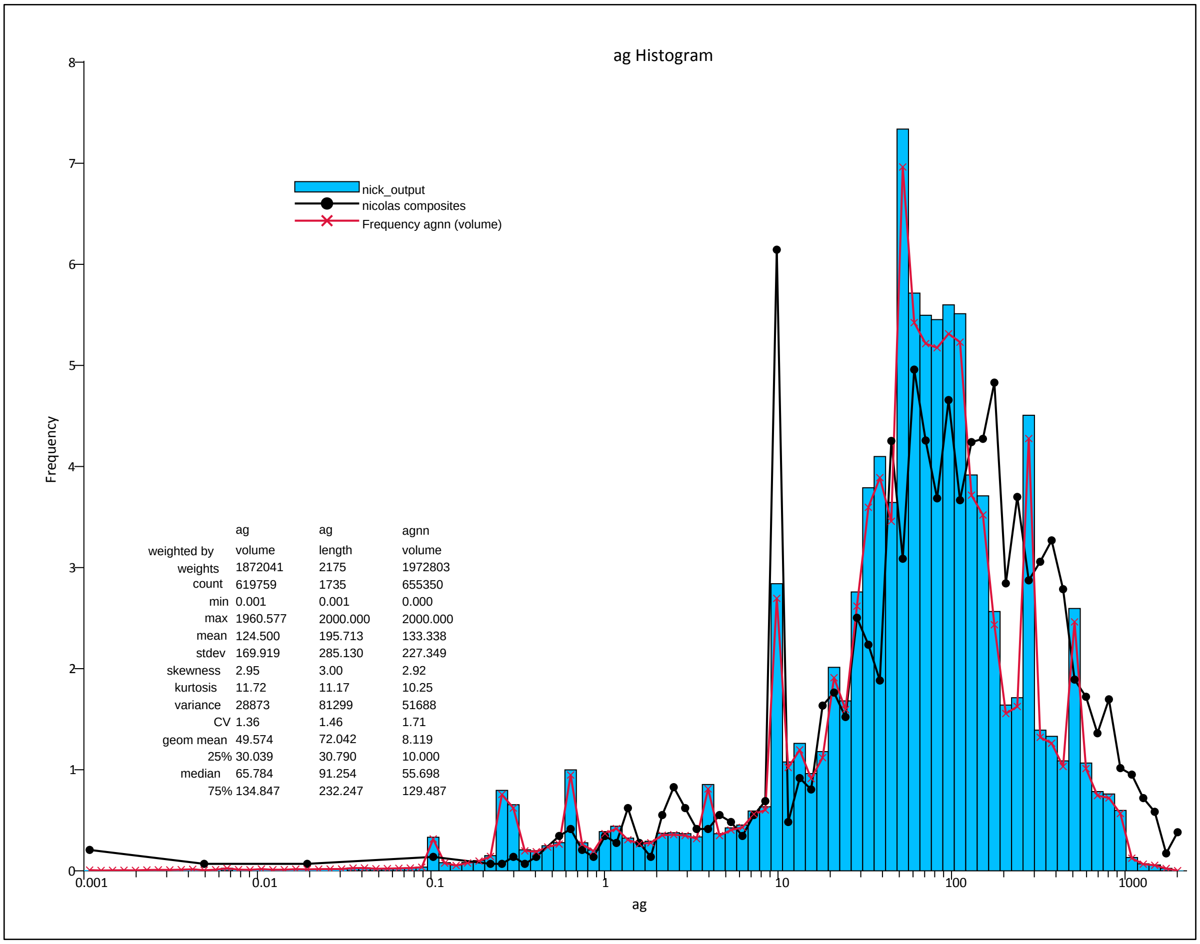
Source: SRK, 2017

Figure 14-18: Histogram of Block vs. Composites - Promontorio



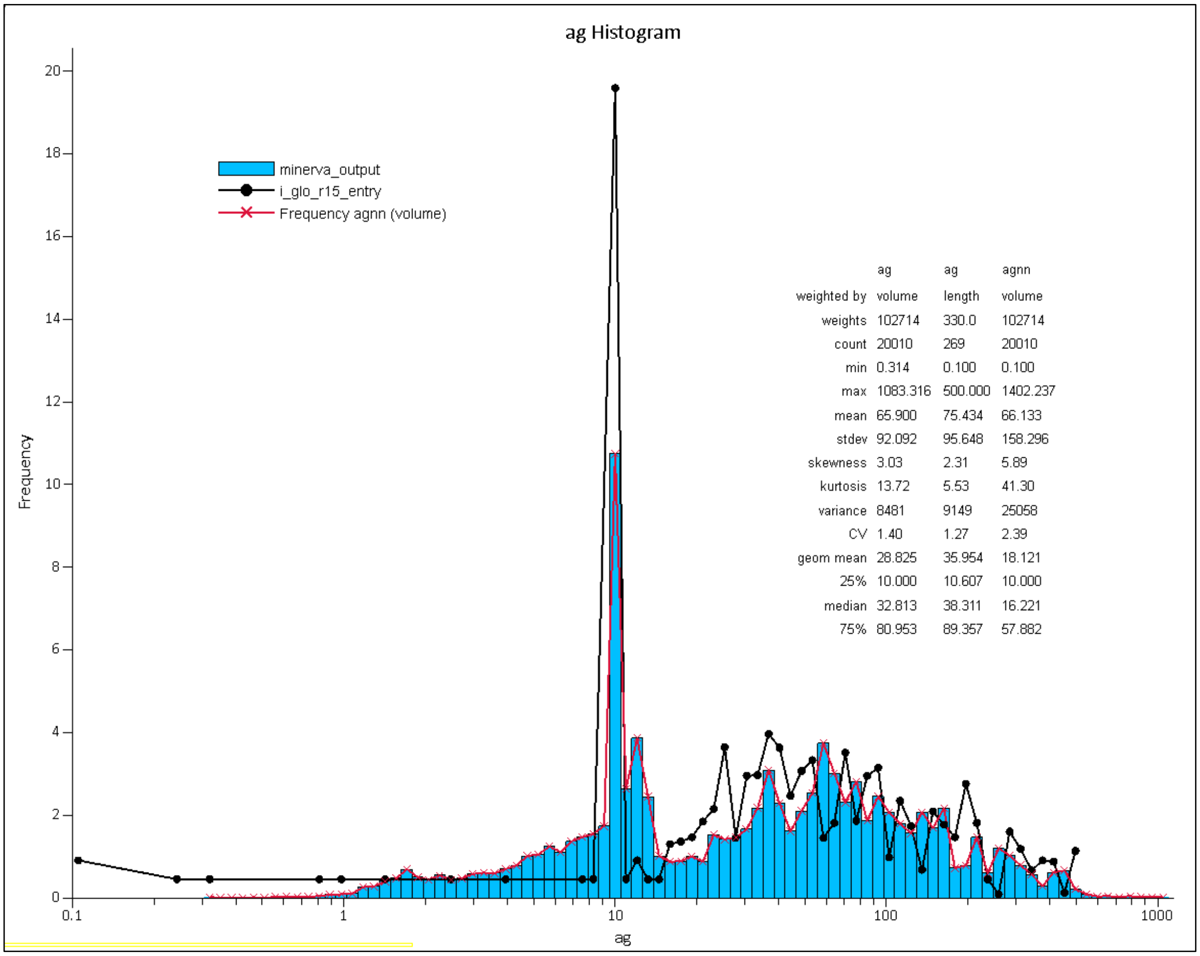
Source: SRK, 2017

Figure 14-19: Histogram of Block vs. Composite – Santa Eduwiges



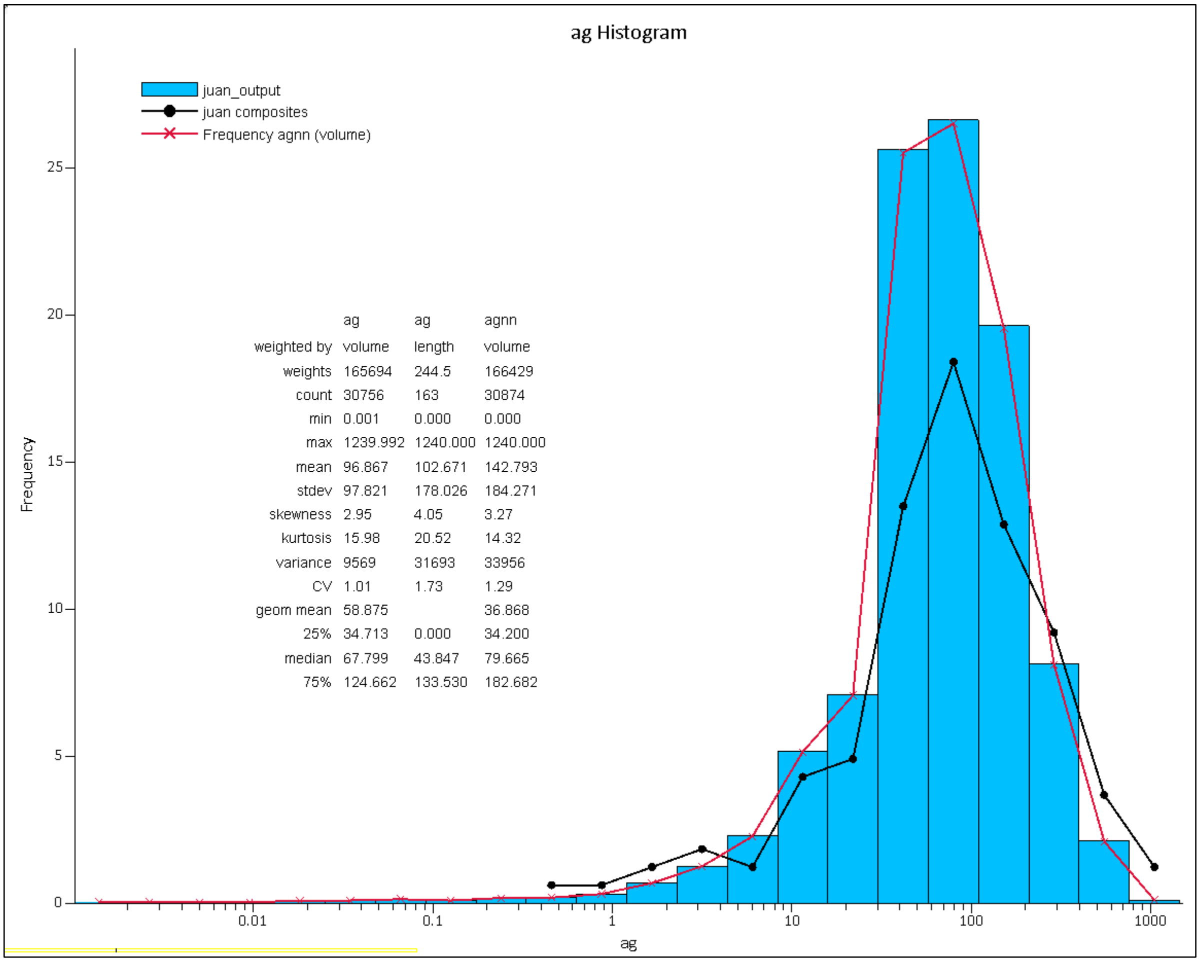
Source: SRK, 2017

Figure 14-20: Histogram of Block vs. Composite – San Nicolas/SRL



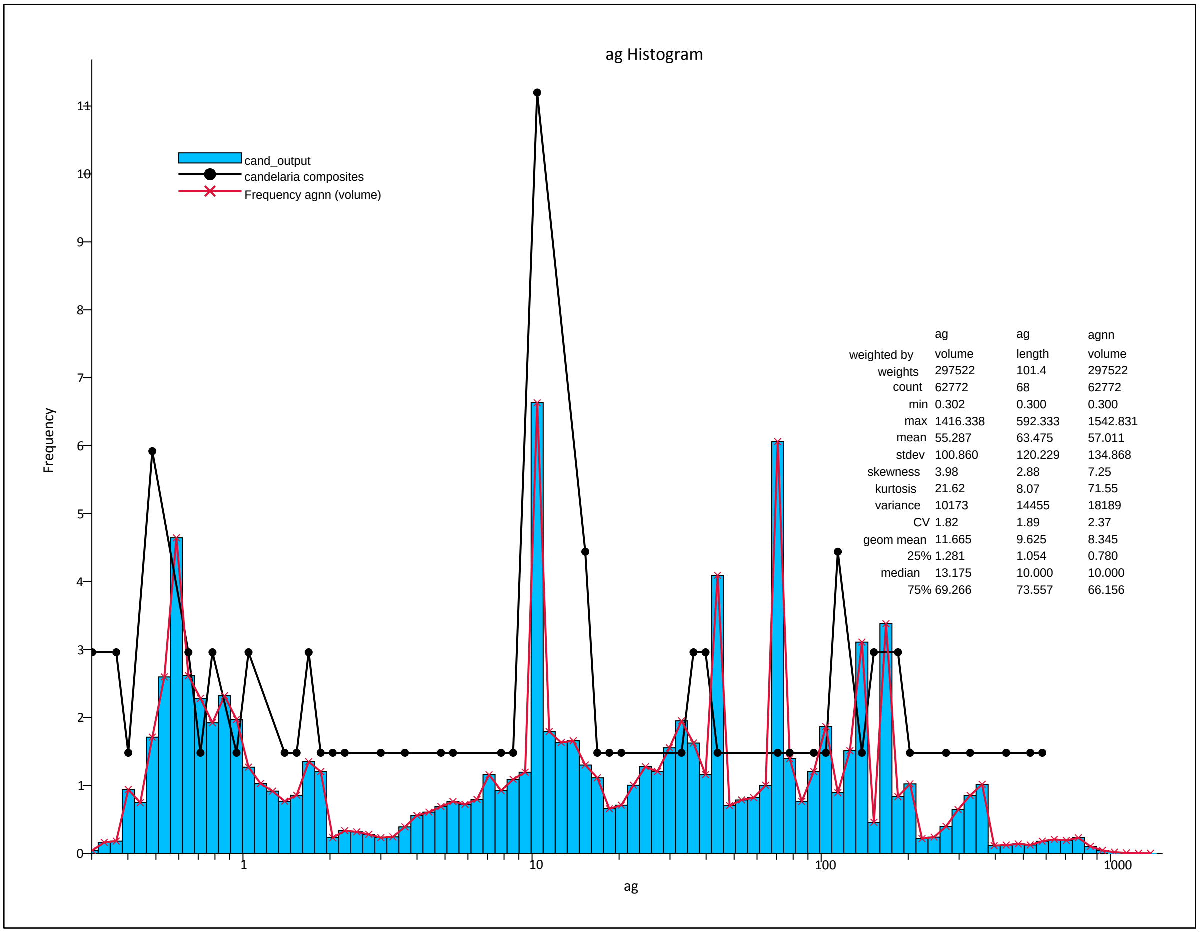
Source: SRK, 2017

Figure 14-21: Histogram of Block vs. Composites – Minerva



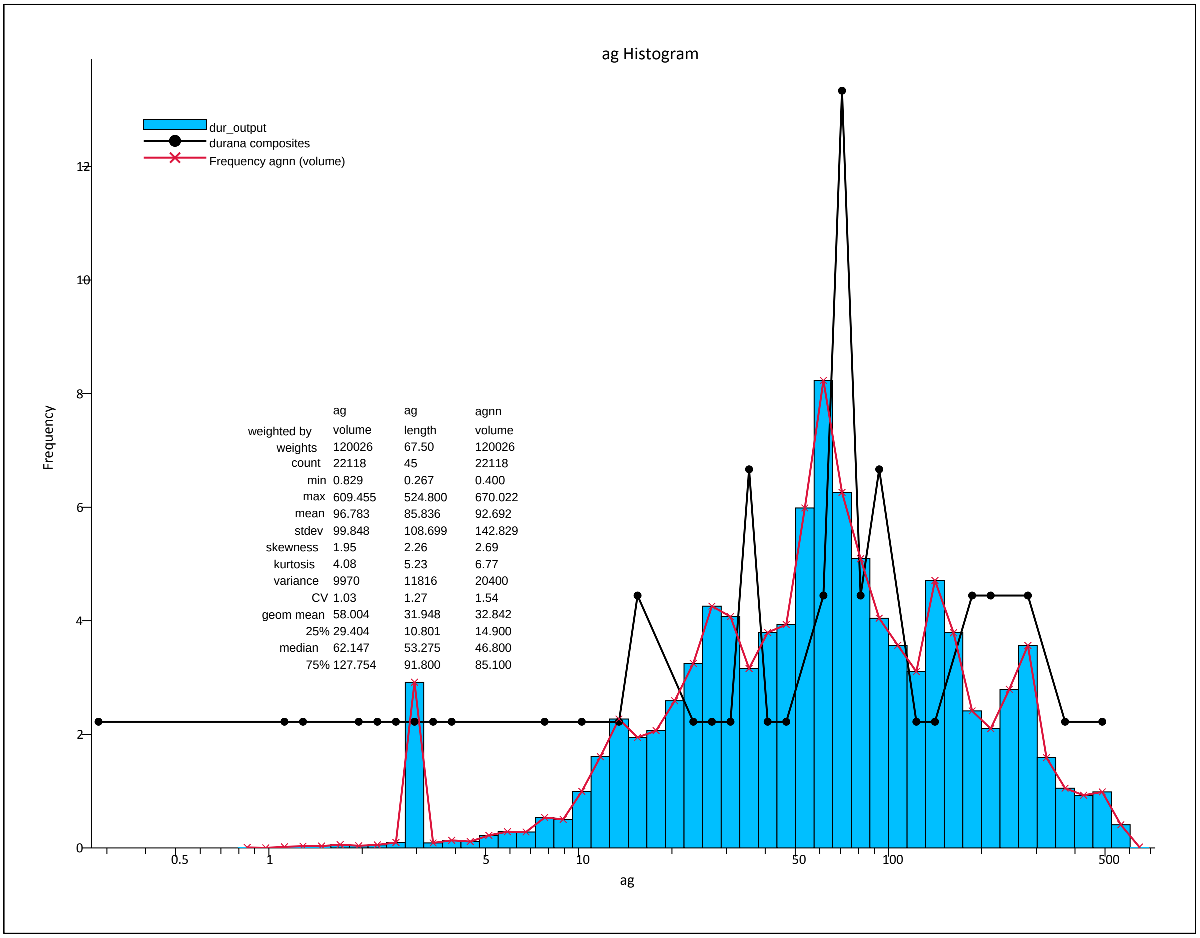
Source: SRK, 2017

Figure 14-22: Histogram of Block vs. Composites – San Juan



Source: SRK, 2017

Figure 14-23: Histogram of Block vs. Composites - Candelaria



Source: SRK, 2017

Figure 14-24: Histogram of Block vs. Composites – Durana

Overall, SRK is satisfied with the estimations on a vein by vein basis as well as the global basis, although it is noted that there are opportunities to improve the estimate in selected veins by employing more restrictions on sample selection or using other means to deal with the highly variable data spacing. This is most obvious for the Durana veins, which show a slight overestimation.

14.9 Resource Classification

Mineral resource classification is a subjective concept, and industry best practices suggest that resource classification should consider both the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates and the geostatistical confidence in the tonnage and grade estimates. Appropriate classification criteria should aim at integrating all of these concepts to delineate regular areas of similar resource classification.

SRK is satisfied that the geological modeling honors the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource estimation. The sampling information was acquired primarily by core drilling and channel sampling from mine development.

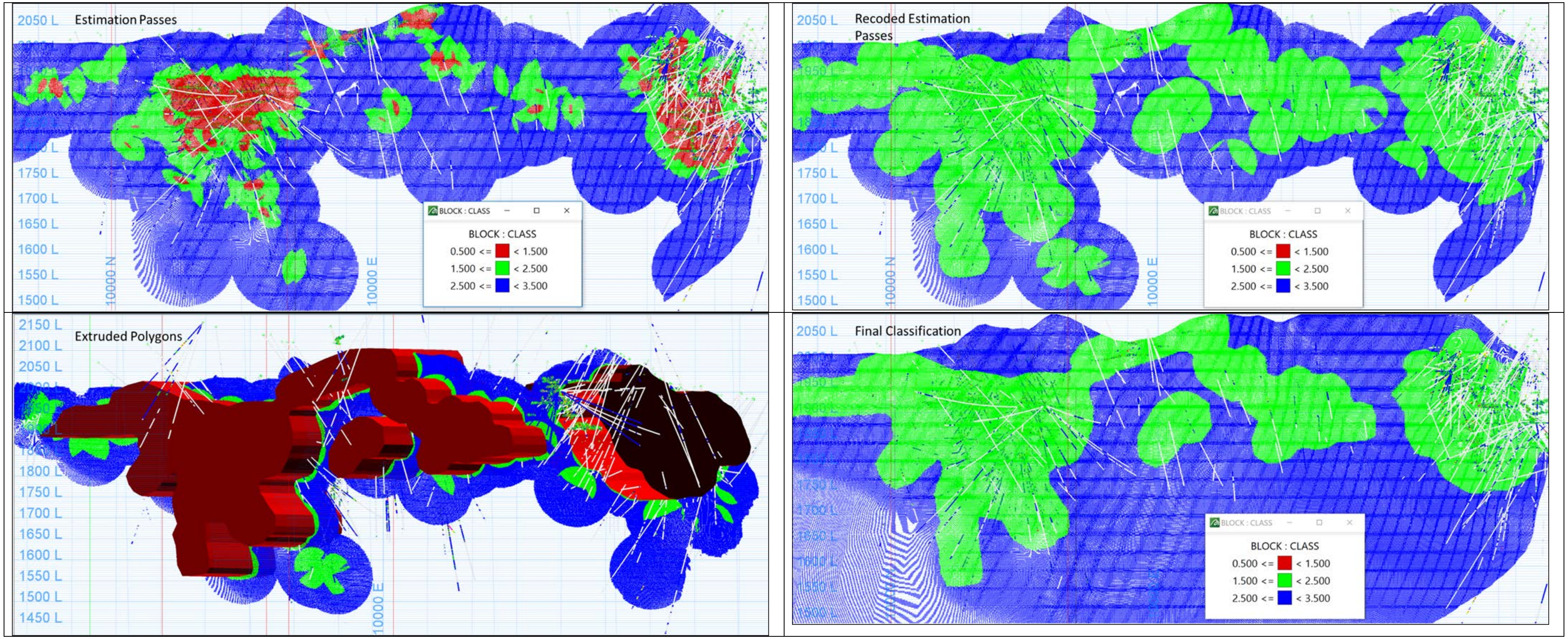
Significant factors affecting the classification include:

- Lack of historic and consistent QA/QC program;
- Lack of downhole surveys for most drillholes and measured deviations from planned and actual azimuths;
- Spacing of drilling compared to observed geologic continuity; and
- Cusi is a producing mine with a successful operating history dating more than 10 years.

In order to classify mineralization as an Indicated Mineral Resource, "the nature, quality, quantity and distribution of data" must be "such as to allow confident interpretation of the geological framework and to reasonably assume the continuity" (CIM Definition Standards on Mineral Resources and Mineral Reserves, December 2005). SRK has based this classification both on the continuity observed in well-drilled areas of the Project, as well as geologic continuity observed from underground exposures of the mineralization. The classification is generally based on the block estimation passes, using the amount of data and ranges of interpolation from the nested passes to flag blocks, which are then considered to guide a manually digitized polygon to assign the final classification and eliminate local inconsistencies in the block-by-block classification of the estimation pass. In the cases of Promontorio, San Nicolas, and San Juan, a secondary script was employed to better approximate the continuity for classification. An example of the classification results from San Nicolas is shown in Figure 14-25.

The general category for classification is as follows:

- Indicated: Blocks estimated in the first or second pass, with continuity along strike between more than two holes.
  - For Promontorio veins, San Nicolas, and San Juan, a script flagging blocks where the average distance is less than 50 m and the number of drillholes was more than 2 was used to flag Indicated blocks.
  - For the Azucarera area, a script flagging blocks where the average distance is less than 15 m and number of holes greater than 3 was used to flag Indicated blocks.
- Indicated blocks are based on the estimation passes or scripts, but are manually flagged using extruded polygons to eliminate small areas of Inferred within otherwise continuous Indicated mineralization and vice versa.
- All estimated blocks not assigned to the Indicated category were assigned to the Inferred category.



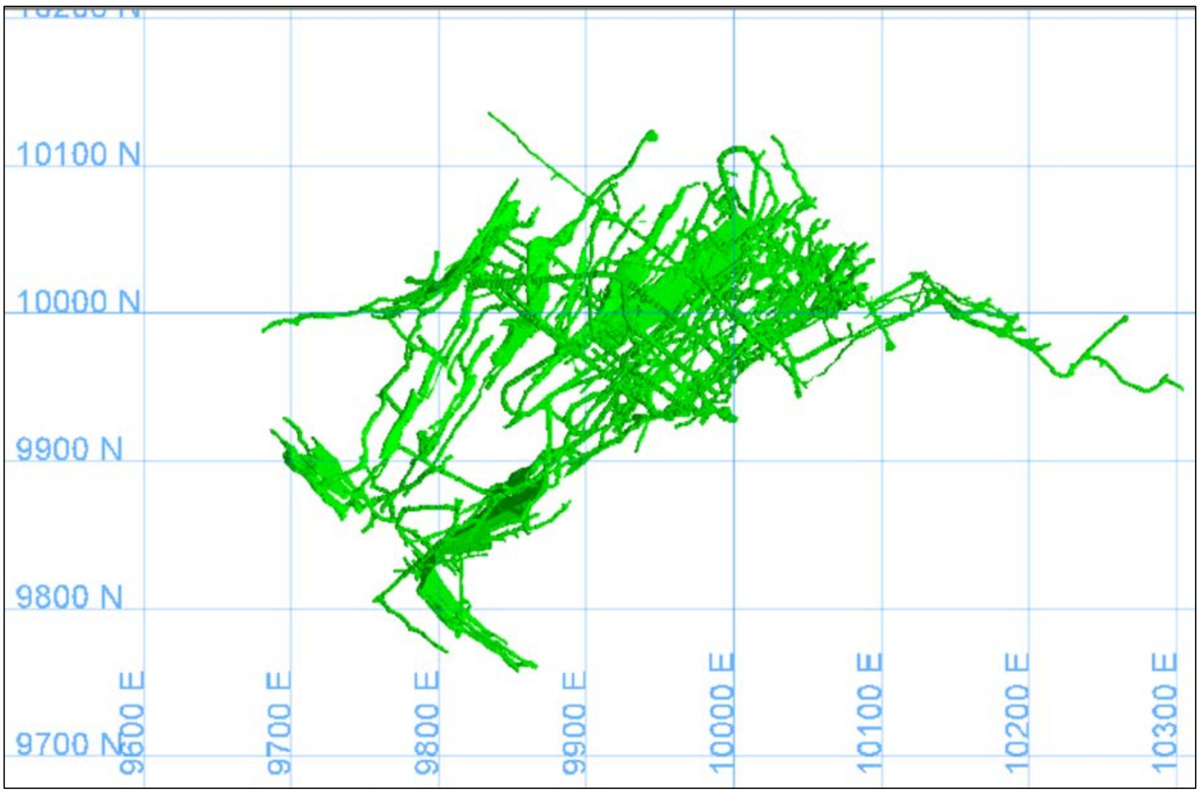
Source: SRK, 2017

Figure 14-25: Classification Methods and Results – San Nicolas

14.10 Depletion for Mining

SRK depleted the block models for previous mining prior to reporting. A variable called “mined” is coded into all models that contain any areas with existing mine workings. The variable is coded between 0-1, with 0 being completely available for mining and 1 being completely mined out. This variable is used in Vulcan’s reporting tools to eliminate mined tonnes from the resource reporting.

Two methods have been employed to account for mined areas. First, the 3D asbuilt mine workings were provided to SRK by Dia Bras for all surveyed areas. SRK noted that these are locally reasonable and well-surveyed, but are also inaccurate in other areas, where the channel samples do not plot inside of the surveyed workings. It is suspected that poor survey practices are to blame for these discrepancies. Regardless, the 3D solids were used to complete an initial pass at depleting the models. An example of the surveyed 3D workings for the Promontorio area is shown in Figure 14-26.

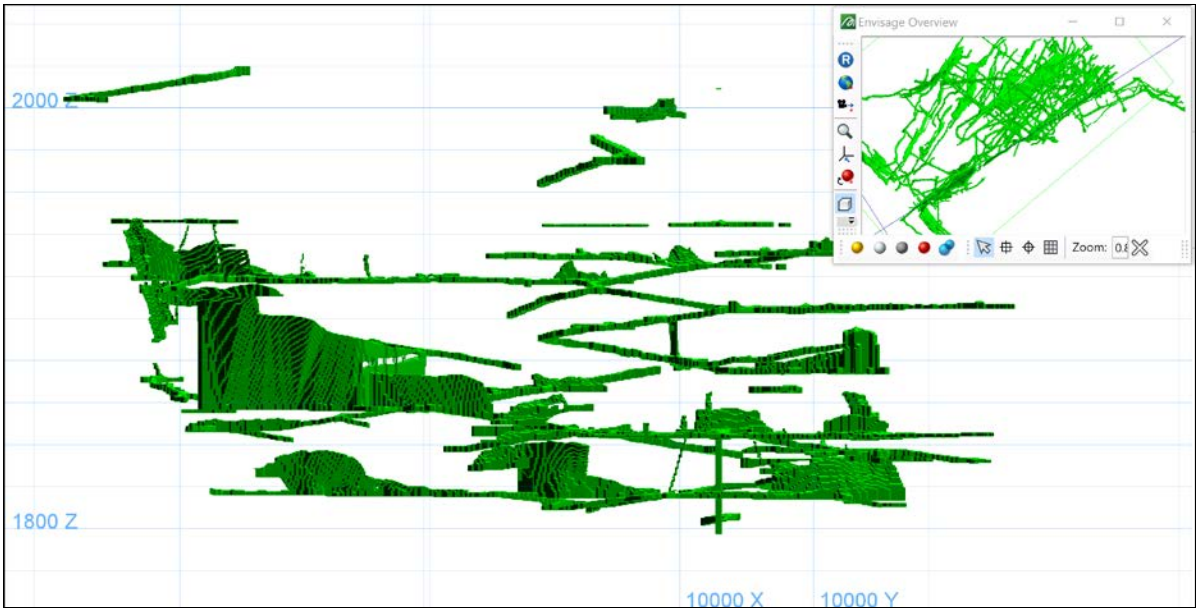


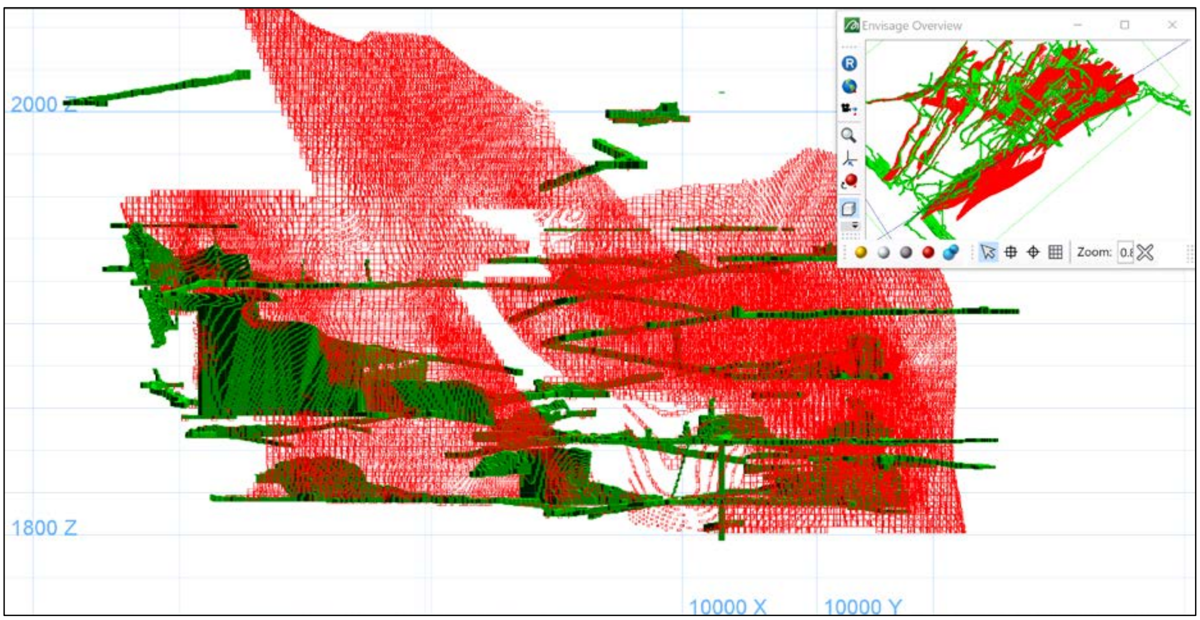
Source: SRK, 2017

Figure 14-26: 3D As-built Shapes - Promontorio

In addition to the surveyed workings, Dia Bras also provided polygons projected onto long sections of each vein, which delineate areas where mining has occurred that have not been consistently surveyed. Many of these are historical. The differences between the surveyed workings and the provided polygons are dramatic, as noted in Figure 14-27. These polygons were made into extruded 3D solids, and the veins were flagged as mined = 1 within the extruded polygons.

All mined solids and polygon projections are actualized to January 31, 2017.





Note: Green shapes are surveyed 3D as-builts. Red areas are blocks mined using extruded 3D polygons.

Source: SRK, 2017

Figure 14-27: Example of Mined Polygons vs. 3D As-builts

14.11 Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves (December 2005) defines a mineral resource as:

"A concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable

prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge".

The "reasonable prospects for economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. Costs for mining and processing are taken from data provided by Dia Bras for their current underground mining operation. Costs are broken down as follows; Mining US$26.74/t, Processing US$16.63/t, and General and Administrative US$3.40/t. These costs aggregate to US$46.77. Assuming a price for Ag of US$18.30/oz (US$0.59/g), and an average Ag recovery of 74%, this cost equates to a grade of about 110 g/t Ag. SRK has reported the mineral resource for the Cusi mine at this cut-off.

The January 31, 2017, consolidated mineral resource statement for the Cusi Mine area is presented in Table 14-9.

Table 14-9: Cusi Mine Mineral Resource Estimate as of January 31, 2017– SRK Consulting (U.S.), Inc.

Source	Class	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Tonnes (000's)
Promontorio	Indicated	223	0.08	0.32	0.38	692
Eduwiges		226	0.36	1.63	1.52	378
SRL		206	0.14	0.23	0.22	290
San Nicolas		300	0.11	0.32	0.36	344
San Juan		227	0.35	0.09	0.05	45
Minerva		202	0.14	0.21	0.22	106
Candelaria		376	0.14	0.18	0.29	44
Durana		226	0.06	0.05	0.02	91
Total Indicated		**237**	**0.16**	**0.53**	**0.53**	**1,990**
Source	**Class**	**Ag (g/t)**	**Au (g/t)**	**Pb (%)**	**Zn (%)**	**Tonnes (000's)**
Promontorio	Inferred	220	0.12	0.37	0.60	265
Eduwiges		171	0.22	2.03	1.68	45
SRL		269	0.15	0.28	0.31	189
San Nicolas		387	0.15	0.54	0.65	599
San Juan		153	0.03	0.08	0.06	4
Minerva		226	0.04	0.17	0.30	30
Candelaria		151	0.19	0.60	1.23	68
Durana		126	0.01	0.22	0.13	2
Total Indicated		**305**	**0.14**	**0.51**	**0.64**	**1,200**

(1) Mineral resources are reported inclusive of ore reserves. Mineral resources are not ore reserves and do not have demonstrated economic viability. All figures rounded to reflect the relative accuracy of the estimates. Gold, silver, lead and zinc assays were capped where appropriate.

(2) Mineral resources are reported at a single cut-off grade of 110 g/t Ag based on metal price assumptions*, metallurgical recovery assumptions, mining costs (US$26.74/t), processing costs (US$16.63/t), and general and administrative costs (US$3.40/t).

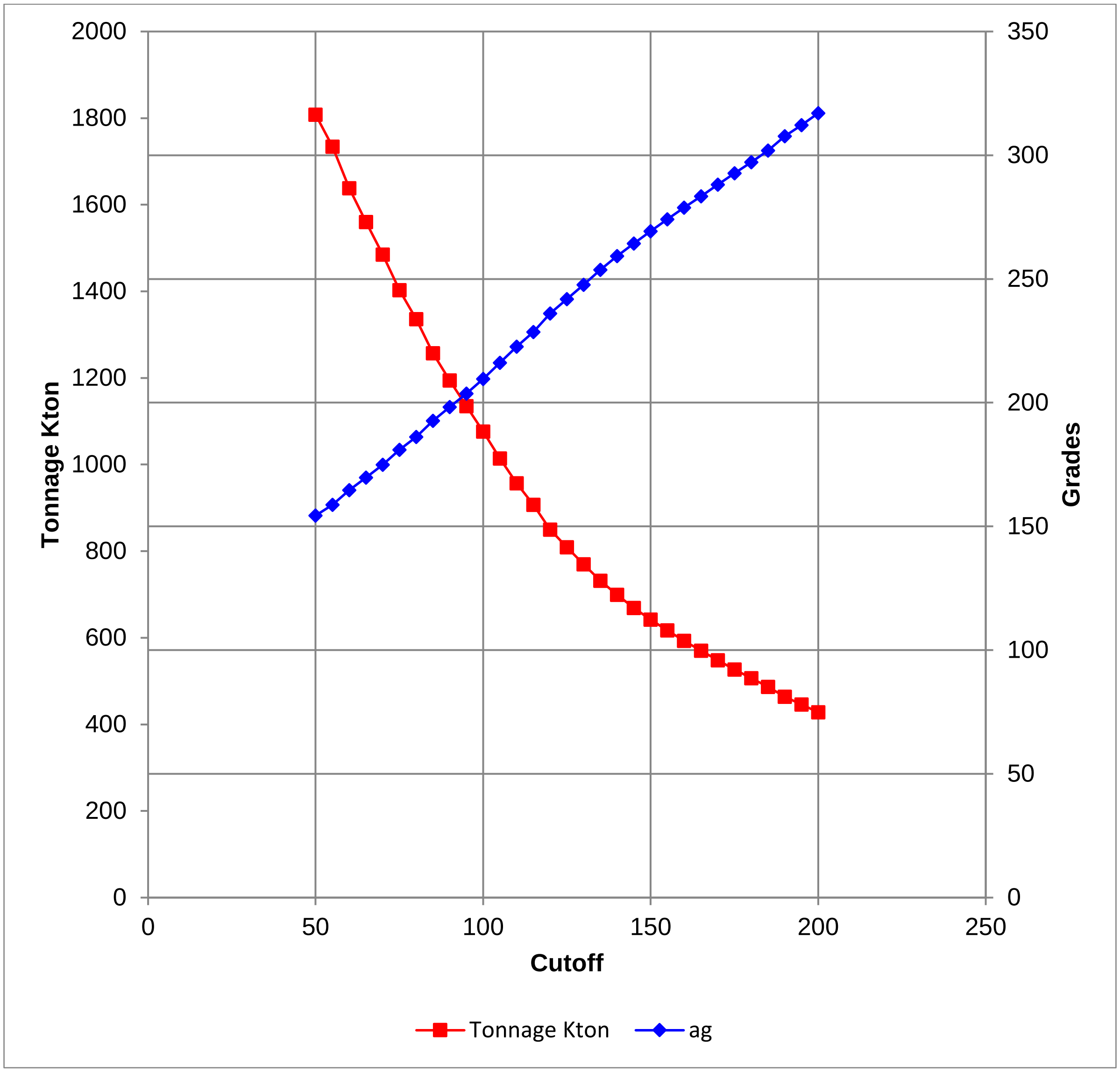
* Metal price assumptions considered for the calculation of the cut-off grade are: Silver (Ag): US$/oz 18.30.

The resources were estimated by SRK. Matthew Hastings, M.Sc., PGeo, MAusIMM #314693 of SRK, a Qualified Person, performed the resource calculations for Bolivar.

14.12 Mineral Resource Sensitivity

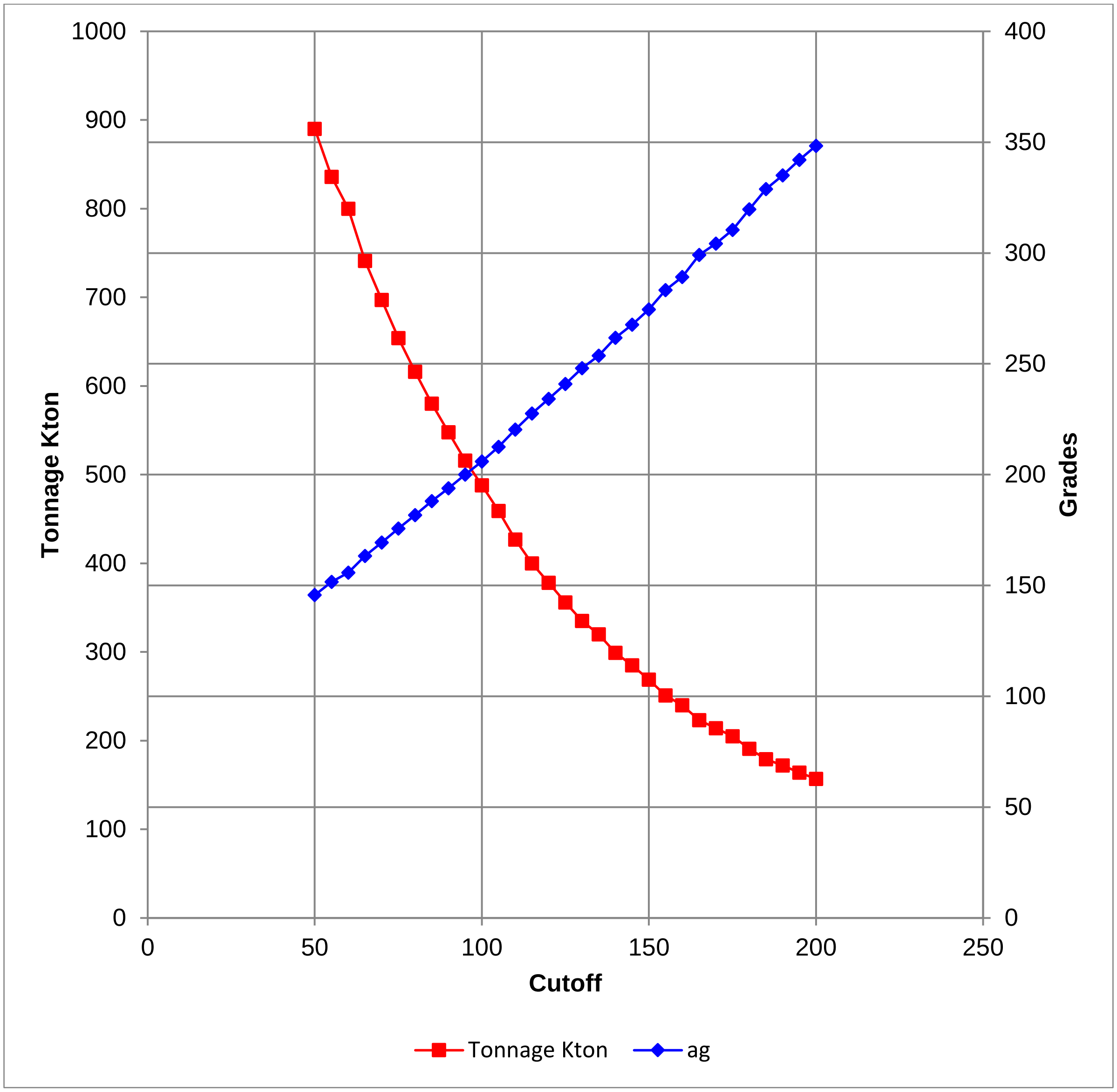
SRK has generated grade-tonnage charts which illustrate the fluctuations of tonnage and Ag grade as a function of the cut-off. These charts are shown in Figure 14-28, Figure 14-29, Figure 14-30, Figure 14-31, Figure 14-32, Figure 14-33 and Figure 14-34.

SRK notes that the Cusi Mine is very sensitive to the cut-off, in both Indicated and Inferred mineralization.



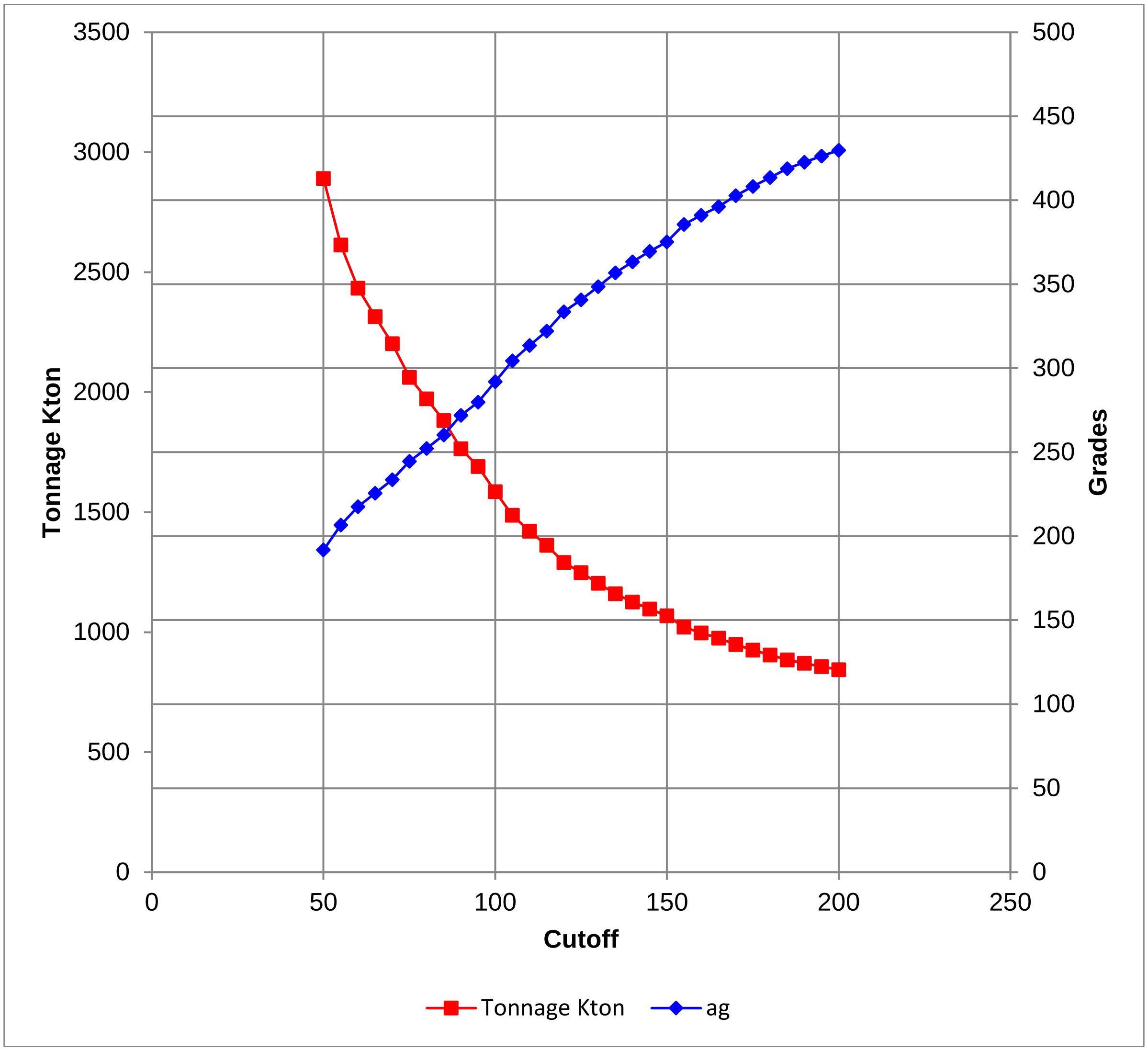
Source: SRK, 2017

Figure 14-28: Grade-Tonnage Chart – Promontorio Area



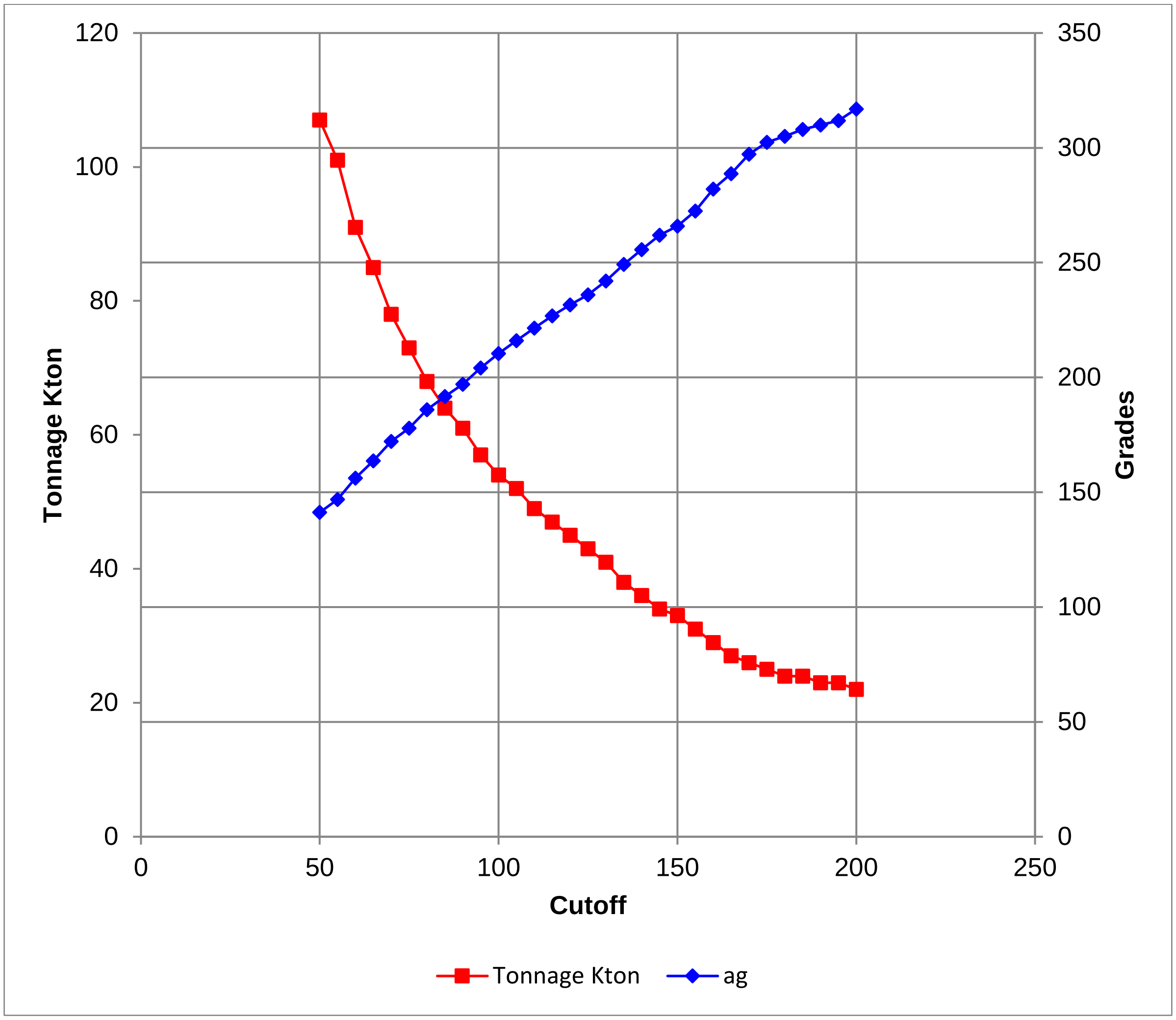
Source: SRK, 2017

Figure 14-29: Grade-Tonnage Chart – Santa Eduwiges Area



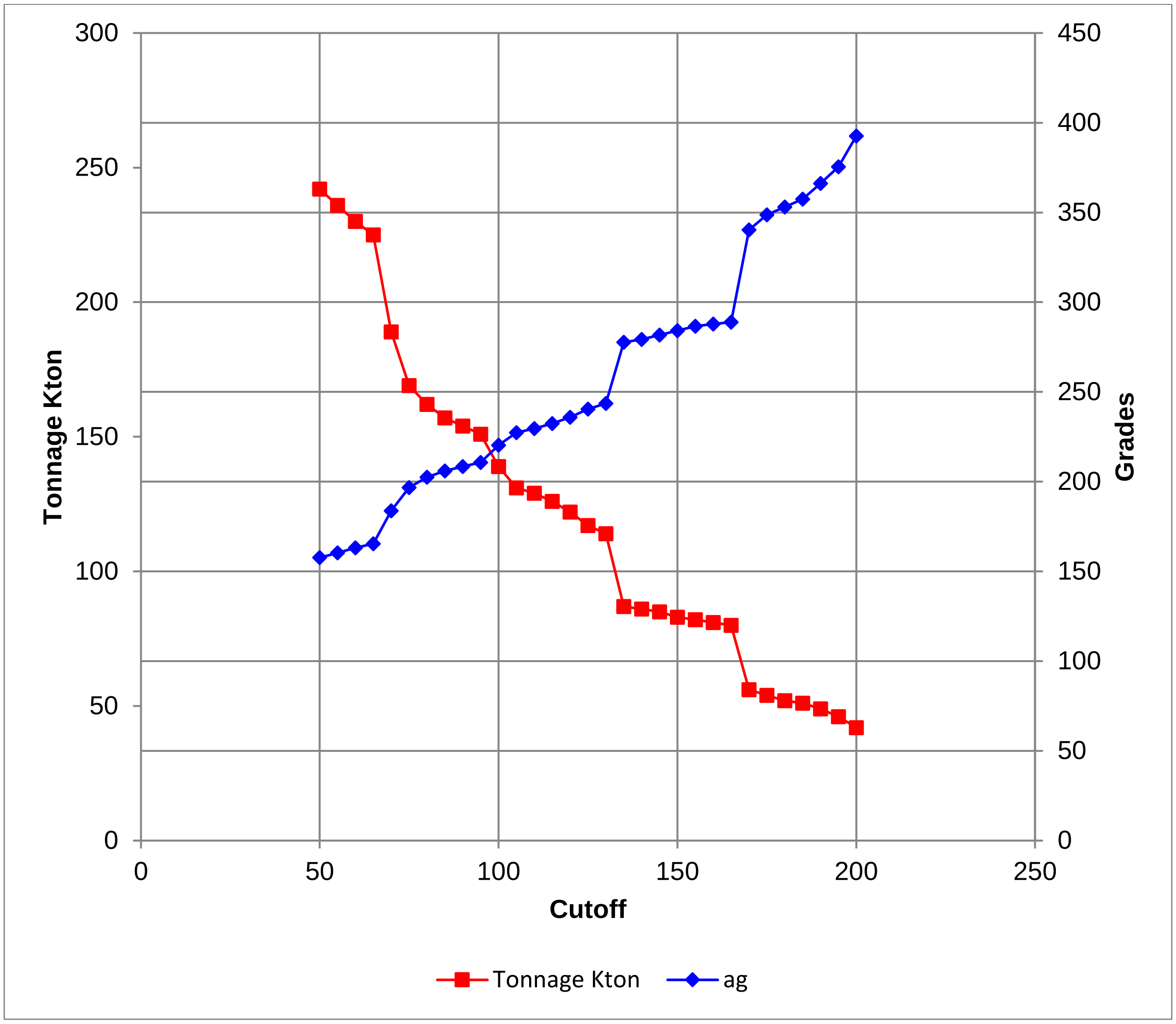
Source: SRK, 2017

Figure 14-30: Grade Tonnage Chart – San Nicolas/SRL



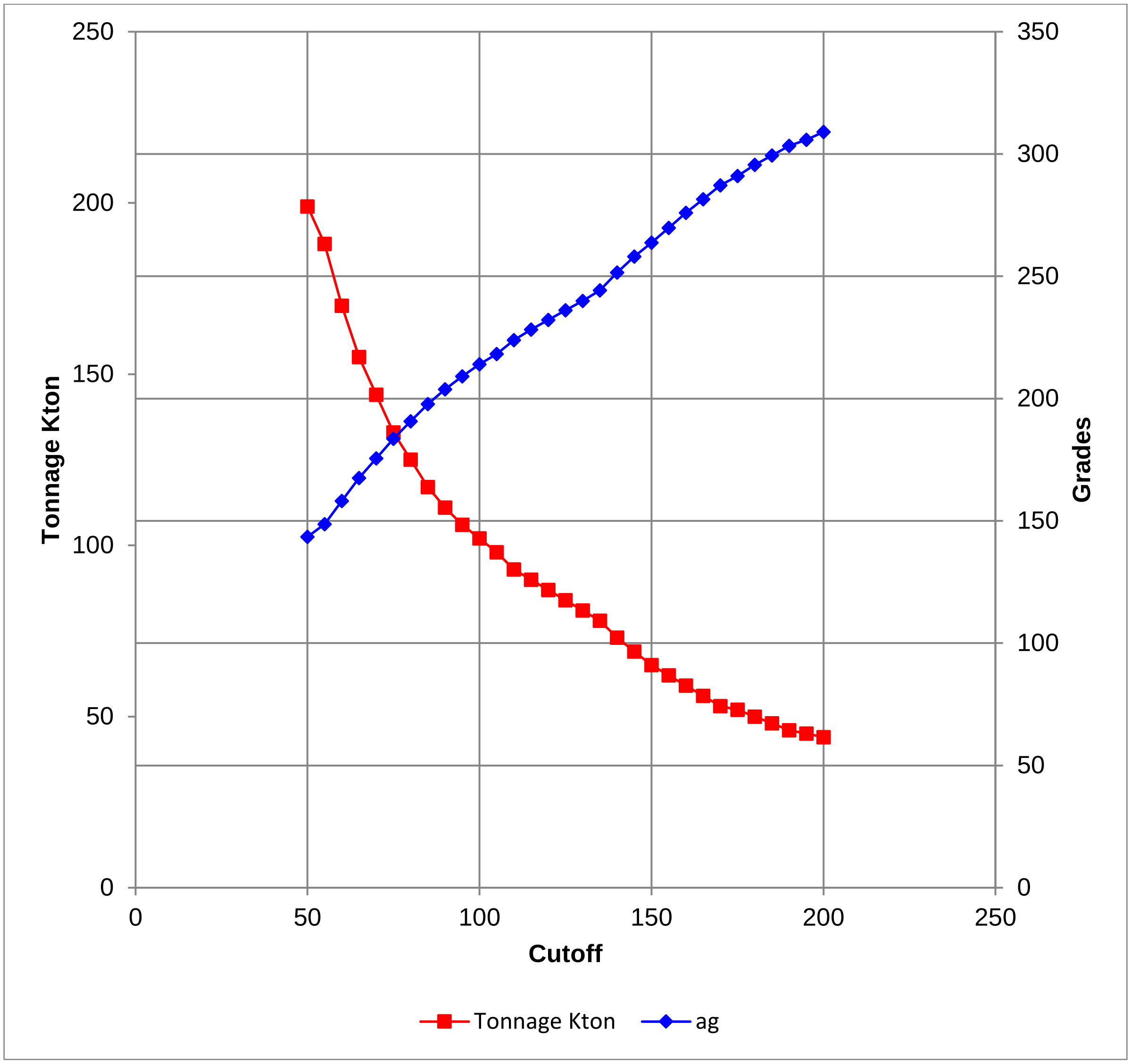
Source: SRK, 2017

Figure 14-31: Grade Tonnage Chart – Minerva Area



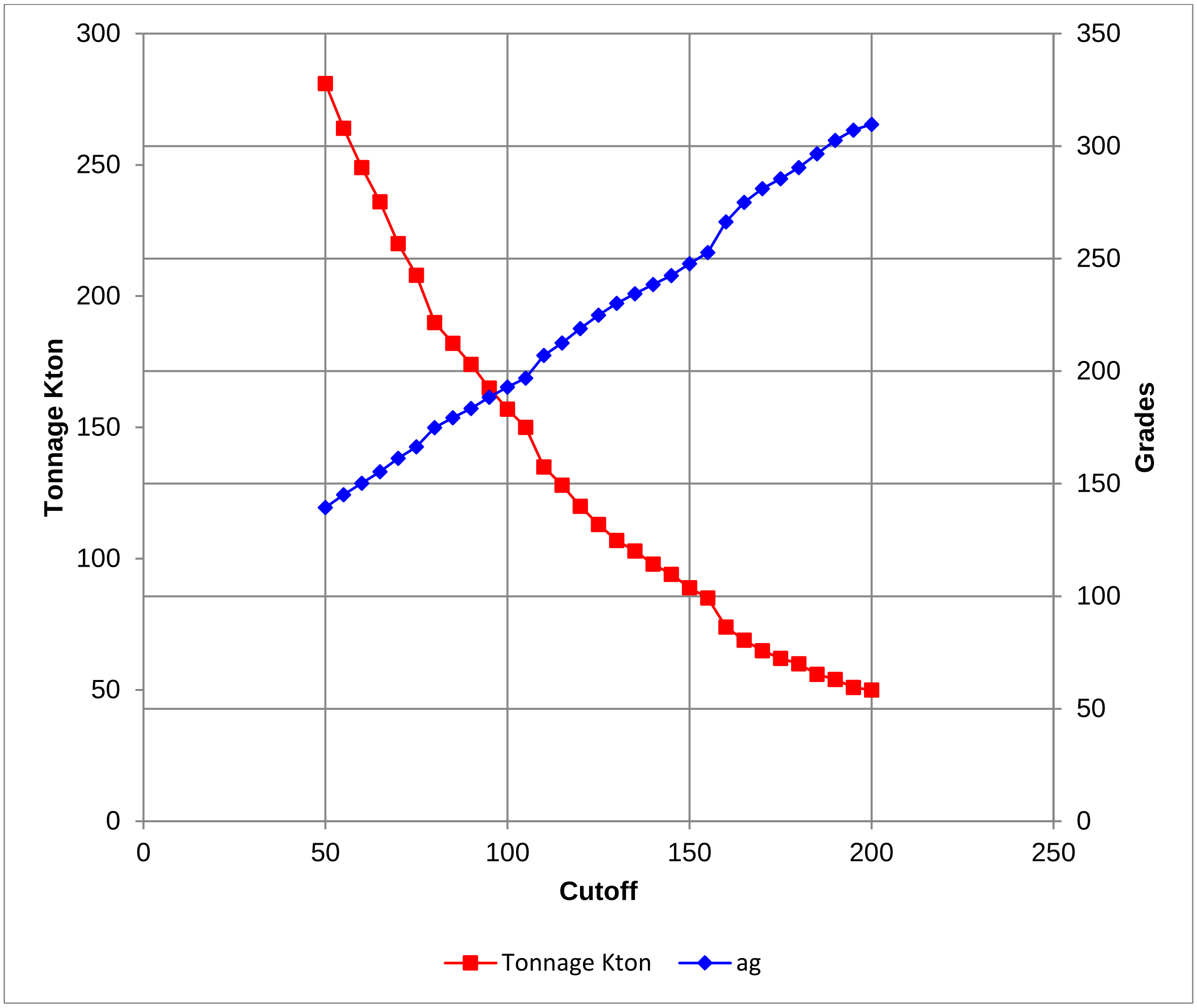
Source: SRK, 2017

Figure 14-32: Grade Tonnage Chart – Candelaria



Source: SRK, 2017

Figure 14-33: Grade Tonnage Chart – Durana



Source: SRK, 2017

Figure 14-34: Grade Tonnage Chart – San Juan

14.13 Relevant Factors

SRK is not aware of any additional relevant factors that would impact the statement of mineral resources at this time.

15 Mineral Reserve Estimate

SRK has not estimated mineral reserves as a part of this study.

16 Mining Methods

SRK has not conducted any work regarding mining methods for this study.

17 Recovery Methods

SRK has not assessed any part of the recovery methods beyond those stated in Section 11 as a part of this study.

18 Project Infrastructure

SRK has not reviewed the project infrastructure as a part of this study.

19 Market Studies and Contracts

SRK has not conducted any market studies or reviews of purchase/sale contracts as a part of this study.

20 Environmental Studies, Permitting and Social or Community Impact

20.1 Environmental Studies and Background Information

SRK's environmental specialist did not conduct a site visit of the Cusi Mine or Malpaso Mill operations. As such, the following information is predicated on a review of available documentation and direct communications with the operator.

20.2 Environmental Studies and Liabilities

The Cusi Project area is located within the municipality of Cusihuiriachic in the central portion of Chihuahua State, Mexico, approximately 135 km from the City of Chihuahua. The Project area encompasses 11,657 hectares over a range of elevation of 1,950 to 2,460 meters above sea level (masl) in the Sierra Madre Occidental Mountain Range. Details of environmental studies completed for these operations was not available for this review.

Based on communications with representatives from Sierra Metals, it does not appear that there are currently any known environmental issues that could materially impact the extraction and beneficiation of mineral resources or reserves. However, given the pre-regulation vintage of the original tailings storage facilities (piles), the likelihood is high that these facilities are not underlain by low-permeability liners, increasing the risk of a long-term liability of metals leaching and groundwater contamination. Sierra Metals intends to cover these facilities during decommissioning in order to minimize this risk. (Gustavson, 2014)

20.3 Environmental Management

20.3.1 Tailings Management

Tailings generated from the milling operations are stored in two tailings piles in the vicinity of the Malpaso Mill. SRK is uncertain if these older disposal areas are underlain by low-permeability liner material, as the Malpaso Mill has been in operation since the 1970s, prior to the promulgation of environmental laws governing extractive mineral wastes. At the current time, no environmental permit is necessary for operation of the Malpaso Mill. At closure, it is Sierra Metals' intent to cover these tailings piles.

In 2015, Sierra Metals initiated construction of a new tailings storage facility. The new impoundment is located immediately adjacent to the former tailings pile(s). SRK understands that the expanded capacity of the new impoundment should allow an additional four years of operational capacity at the current processing rates. In the dry climate of the Chihuahuan desert, the need for additional water resources has led Sierra Metals to consider dry-stack tailings disposal in this new facility. This new impoundment required permitting under the current regulatory regime, including environmental impact analyses.

20.3.2 Waste Rock Management

Waste rock generated from the underground workings at Promontorio and Santa Eduwiges is deposited near the entrances of the respective mines. Management of these waste rock piles does not require permits.

20.3.3 Geochemistry

Geochemical characterization data for the waste, ore and tailings generated at the Cusi Mine and Malpaso Mill, respectively, were not available for this review.

20.4 Mexican Environmental Regulatory Framework

20.4.1 Mining Law and Regulations

Mining in Mexico is regulated through the Mining Law, approved on June 26, 1992 and amended by decree on December 24, 1996, Article 27 of the Mexican Constitution.

Article 6 of the Mining Law states that mining exploration; exploitation and beneficiation are public utilities and have preference over any other use or utilization of the land, subject to compliance with laws and regulations.

Article 19 specifies the right to obtain easements, the right to use the water flowing from the mine for both industrial and domestic use, and the right to obtain a preferential right for a concession of the mine waters.

Articles 27, 37 and 39 rule that exploration; exploitation and beneficiation activities must comply with environment laws and regulations and should incorporate technical standards in matters such as mine safety, ecological balance and environmental protection.

The Mining Law Regulation of February 15, 1999 repealed the previous regulation of March 29, 1993. Article 62 of the regulation requires mining projects to comply with the General Environmental Law, its regulations, and all applicable norms.

20.4.2 General Environmental Laws and Regulations

Mexico’s environmental protection system is based on the General Environmental Law known as *Ley General del Equilibrio Ecológico y la Protección al Ambiente* - LGEEPA (General Law of Ecological Equilibrium and the Protection of the Environment), approved on January 28, 1988 and updated December 13, 1996.

The Mexican federal authority over the environment is the *Secretaría de Medio Ambiente y Recursos Naturales* - SEMARNAT (Secretariat of the Environment and Natural Resources). SEMARNAT, formerly known as SEDESOL, was formed in 1994, as the *Secretaría de Medio Ambiente Recursos Naturales y Pesca* (Secretariat of the Environment and Natural Resources and Fisheries). On November 30th, 2000, the Federal Public Administration Law was amended giving rise to SEMARNAT. The change in name corresponded to the movement of the fisheries subsector to the *Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* - SAGARPA (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food), through which an increased emphasis was given to environmental protection and sustainable development.

SEMARNAT is organized into a number of sub-secretariats and the following main divisions:

- INE – Instituto Nacional de Ecología (National Institute of Ecology), an entity responsible for planning, research and development, conservation of national protection areas and approval of environmental standards and regulations.

- PROFEPA - Procuraduría Federal de Protección al Ambiente (Federal Attorney General for the Protection of the Environment) responsible for law enforcement, public participation and environmental education.
- CONAGUA – Comisión Nacional del Agua (National Water Commission), responsible for assessing fees related to water use and discharges.
- Mexican Institute of Water Technology.
- CONANP – Comisión Nacional de Areas Naturales Protegidas (National Commission of Natural Protected Areas).

The federal delegation or state agencies of SEMARNAT are known as *Consejo Estatal de Ecología* – COEDE (State Council of Ecology).

PROFEPA is the federal entity in charge of carrying out environmental inspections and negotiating compliance agreements. Voluntary environmental audits, coordinated through PROFEPA, are encouraged under the LGEEPA.

Under LGEEPA, a number of regulations and standards related to environmental impact assessment, air and water pollution, solid and hazardous waste management and noise have been issued. LGEEPA specifies compliance by the states and municipalities, and outlines the corresponding duties.

Applicable regulations under LGEEPA include:

- Regulation to LGEEPA on the Matter of Environmental Impact Evaluations, May 30, 2000;
- Regulation to LGEEPA on the Matter of Prevention and Control of Atmospheric Contamination, November 25, 1988;
- Regulation to LGEEPA on the Matter of Environmental Audits, November 29, 2000;
- Regulation to LGEEPA on Natural Protected Areas, November 20, 2000;
- Regulation to LGEEPA on Protection of the Environment Due to Noise Contamination, December 6, 1982;
- Regulation to LGEEPA on the Matter of Hazardous Waste, November 25, 1988.

Mine tailings are listed in the Regulation to LGEEPA on the Matter of Hazardous Waste. Norms include:

- Norma Oficial Mexicana (NOM)-CRP-001-ECOL, 1993, which establishes the characteristics of hazardous wastes, lists the wastes, and provides threshold limits for determining its toxicity to the environment.
- NOM-CRP-002-ECOL, 1993 establishes the test procedure for determining if a waste is hazardous.
- On September 13, 2004, SEMARNAT published the final binding version of its new standard on mine tailings and mine tailings dams, NOM-141-SEMARNAT-2003. The new rule has been renamed since the draft version was published in order to better reflect the scope of the new regulation. This NOM sets out the procedure for characterizing tailings, as well as the specifications and criteria for characterizing, preparing, building, operating, and closing a mine tailings dam. This very long (over 50 pages) and detailed standard sets out the new criteria for characterizing tailings as hazardous or non-hazardous, including new test methods. A series of technical annexes address everything from waste classification to

construction of the dams. The rule is applicable to all generators of non-radioactive tailings and to all dams constructed after this NOM goes into effect.

- Existing tailings dams will have to comply with the new standards on post-closure. The NOM formally went into effect sixty (60) days after its publication date.

PROFEPA "Clean Industry"

The *Procuraduría Federal de Protección al Ambiente* (the enforcement portion of Mexico's Environmental Agency, referred to as PROFEPA), administers a voluntary environmental audit program and certifies businesses with a "Clean Industry" designation if they successfully complete the audit process. The voluntary audit program was established by legislative mandate in 1996 with a directive for businesses to be certified once they meet a list of requirements including the implementation of international best practices, applicable engineering and preventative corrective measures.

In the Environmental Audit, firms contract third-party PROFEPA-accredited auditors, considered to be experts in fields such as risk management and water quality, to conduct the audit process. During this audit, called "Industrial Verification," auditors determine if facilities are in compliance with applicable environmental laws and regulations. If a site passes, it receives designation as a "Clean Industry" and is able to utilize the Clean Industry logo as a message to consumers and the community that it fulfills its legal responsibilities. If a site does not pass, the government can close part, or all of a facility if it deems it necessary. However, PROFEPA wishes to avoid such extreme actions and instead prefers to work with the business to create an "Action Plan" to correct problem areas.

The Action Plan is established between the government and the business based on suggestions of the auditor from the Industrial Verification. It creates a time frame and specific actions a site needs to take in order to be in compliance and solve existing or potential problems. An agreement is then signed by both parties to complete the process. When a facility successfully completes the Action Plan, it is then eligible to receive the Clean Industry designation.

PROFEPA believes this program fosters a better relationship between regulators and industry, provides a green label for businesses to promote themselves and reduces insurance premiums for certified facilities. The most important aspect, however, is the assurance of legal compliance through the use of the Action Plan, a guarantee that ISO 14001 and other Environmental Management Systems cannot make.

According to Sierra Metals, the company has initiated the PROFEPA "Clean Industry" application process for the Malpaso Mill. The site is currently preparing for the third-party external audit, and anticipated obtaining the certification in 2017.

SIGA

Many companies in Mexico adopt the corporate policy, *Sistema Integral de Gestión Ambiental* (SIGA) (Integral System of Environmental Management), for the protection of the environmental and prevention of adverse environmental impacts. SIGA emphasizes a commitment to environmental protection along with sustainable development, as well as a commitment to strict adherence to environmental legislation and regulation and a process of continuous review and improvement of company policies and programs. The companies continue to improve their commitments to environmental stewardship through the use of the latest technologies that are proven, available, and economically viable.

SRK is not aware if the Cusi operations participate in the SIGA program at this time, but recommends that they do so.

Other environmental/social industry programs that the mine could participate in include:

- Seeking accreditation under the voluntary self-management program for health and safety with the Mexican Department of Labor and Social Welfare (PASST); and
- Strive to receive the Social Responsible Company (ESR) Distinctive, which is awarded by the Mexican Center of Philanthropy.

20.4.3 Other Laws and Regulations

Water Resources

Water resources are regulated under the National Water Law, December 1, 1992 and its regulation, January 12, 1994 (amended by decree, December 4, 1997). In Mexico, ecological criteria for water quality is set forth in the Regulation by which the Ecological Criteria for Water Quality are Established, CE-CCA-001/89, dated December 2, 1989. These criteria are used to classify bodies of water for suitable uses including drinking water supply, recreational activities, agricultural irrigation, livestock use, aquaculture use and for the development and preservation of aquatic life. The quality standards listed in the regulation indicate the maximum acceptable concentrations of chemical parameters and are used to establish wastewater effluent limits. Ecological water quality standards defined for water used for drinking water, protection of aquatic life, agricultural irrigation and irrigation water and livestock watering are listed.

Discharge limits have been established for particular industrial sources, although limits specific to mining projects have not been developed. NOM-001-ECOL-1996, January 6, 1997, establishes maximum permissible limits of contaminants in wastewater discharges to surface water and national "goods" (waters under the jurisdiction of the CONAGUA).

Daily and monthly effluent limits are listed for discharges to rivers used for agricultural irrigation, urban public use and for protection of aquatic life; for discharges to natural and artificial reservoirs used for agricultural irrigation and urban public use; for discharges to coastal waters used for recreation, fishing, navigation and other uses and to estuaries; and discharges to soils and to wetlands. Effluent limitations for discharges to rivers used for agricultural irrigation, for protection of aquatic life and for discharges to reservoirs used for agricultural irrigation have also been established.

The Cusi operations currently consume water recovered from the underground workings for process water and support of surface operations. Fresh make-up water is sourced from a well located approximately two kilometers away on private property. A contract with the landowner allows Cusi to pump water to a surface storage tank, and subsequently to the plant site for use. Make-up water consumption is approximately 1.0 m^3/t of ore. Potable water is trucked in from off site.

Ecological Resources

In 2000, the National Commission of Natural Protected Areas (CONANP) (formerly CONABIO, the National Commission for Knowledge and Use of Biodiversity) was created as a decentralized entity of SEMARNAT. As of November 2001, 127 land and marine Natural Protected Areas had been proclaimed, including biosphere reserves, national parks, national monuments, flora and fauna reserves, and natural resource reserves.

Ecological resources are protected under the *Ley General de Vida Silvestre* (General Wildlife Law). (NOM)-059-ECOL-2000 specifies protection of native flora and fauna of Mexico. It also includes conservation policy, measures and actions, and a generalized methodology to determine the risk category of a species.

Other ecological laws and regulations that may affect the Cusi operations include:

- Forest Law, December 22, 1992, amended November 31, 2001, and the Forest Law Regulation, September 25, 1998.
- Fisheries Law, June 25, 1992, and the Fisheries Law Regulations, September 29, 1999.
- Federal Ocean Law, January 8, 1986

Regulations Specific to Mining Projects

All aspects related to Mine Safety and Occupational Health are regulated in Mexico by NOM-023-STPS-2003 issued by the Secretariat of Labor. Appendix D of this regulation refers specifically to ventilation for underground mines, such as Bolívar Mine, and establishes all the requirement underground mines should comply with, which are subject of regular inspections.

New tailings dams are subject to the requirements of NOM-141-SEMARNAT-2003, Standard that Establishes the Requirements for the Design, Construction and Operation of Mine Tailings Dams. Under this regulation, studies of hydrogeology, hydrology, geology and climate must be completed for sites considered for new tailings impoundments. If tailings are classified as hazardous under NOM-CRP-001-ECOL/93, the amount of seepage from the impoundment must be controlled if the facility has the potential to affect groundwater. Environmental monitoring of groundwater and tailings pond water quality and revegetation requirements is specified in the regulations.

NOM-120-ECOL-1997, November 19, 1998 specifies environmental protection measures for mining explorations activities in temperate and dry climate zones that would affect xerophytic brushwood (*matorral xerofilo*), tropical (*caducifolio*) forests, or conifer or oak (*encinos*) forests. The regulation applies to “direct” exploration projects defined as drilling, trenching, and underground excavations. A permit from SEMARNAT is required prior to initiating activities and SEMARNAT must be notified when the activities have been completed. Development and implementation of a Supervision Program for environmental protection and consultation with CONAGUA is required if aquifers may be affected. Environmental protection measures are specified in the regulations, including materials management, road construction, reclamation of disturbance and closure of drillholes. Limits on the areas of disturbance by access roads, camps, equipment areas, drill pads, portals, trenches, etc. are specified.

20.4.4 Expropriations

Expropriation of ejido and communal properties is subject to the provisions of agrarian laws.

20.4.5 NAFTA

Canada, the United States and Mexico participate in the North American Free Trade Agreement (NAFTA). NAFTA addresses the issue of environmental protection, but each country is responsible for establishing its own environmental rules and regulations. However, the three countries must comply with the treaties between themselves; and the countries must not reduce their environmental standards as a means of attracting trade. At this time, SRK is not aware of any impacts to the Cusi operations from the requirements of NAFTA.

20.4.6 International Policy and Guidelines

International policies and/or guidelines that may be relevant to the Bolívar Mine include:

- International Finance Corporation (Performance Standards) – social and environmental management planning; and
- World Bank Guidelines (Operational Policies and Environmental Guidelines).

These items were not specifically identified and included in SRK's environmental scope of work; however, given that Sierra Metals is a Canadian entity, general corporate policy tends to be in compliance with IFC, World Bank and Equator Principles.

SRK recommends that a more comprehensive audit of the Cusi Mine be conducted with respect to these guidelines and performance standards.

20.4.7 Required Permits and Status

According to Sierra Metals, the Cusi Mine and Malpaso Mill are exempt from a number of permit requirements since the operations predate the environmental laws. Sierra has received formal recognition from SEMARNAT of the permit exemption for the Malpaso Mill and the Cusi Mine operations.

The required permits for continued operation at the Cusi Mine and Malpaso Mill, including exploration of the site, have been obtained. SRK has not independently verified the current status of all the site permits. At this time, SRK has not been made aware of any outstanding permits or any non-compliance issues that would affect the ability of the operator to extract rock, process ore, and/or disposal of tailings. The following information regarding the permits was provided by Sierra Metals.

Table 20-1: Permit and Authorization Requirements for the Cusi Mine and Malpaso Mill

Permit	Agency	Approval Date (or anticipated Approval Date)
Mining Law Concession	President via the Minister of Commerce and Industrial and the General Directorate of Mines Promotion - *Mexican Secretaría de Economía*	See Table 20-2
Manifestación de Impacto Ambiental (MIA) - Environmental Impact Statement	*Secretaría de Medio Ambiente y Recursos Naturales* (SEMARNAT) - Secretariat of the Environment and Natural Resources	The following concessions are exempt from having to apply for the MIA, according to the document SG.IR.08-20141 / 93 from SEMARNAT dated May 2014 that recognizes the exception because Dia Bras proved that the mining concessions operated prior to the 1988 regulations. Any other concession will need a MIA or prove operation prior to this date: • San Bartolo (Title 150395), • La India (Title 150569), • Promontorio (Title 163582), • La Consolidada (Title 165102), • La Perla (Title 165968), • El Milagro (Title 163580), • La Ilusión (Title 166611), • La Rumorosa (Title 163512), • Los Pelones (Title 166981), • La Hermana de la India (Title 180030), • Nueva Santa María (Title 182002), • La Gloria (Title 179400), • La Perlita (Title 163565).
Análisis de Riesgo - Risk Analysis Report	*Dirección Estatal de Proteccion Civil Chihuahua* (with assistance from external consultant)	A risk analysis is in process by *La dirección de Protección Civil de Gobierno del estado de Chihuahua*. It is focused on the security in the mine and the use of explosives. Resolution is expected in the coming weeks; In August 2013, an external consultant (Rodrigo de la Garza Aguillar) presented a geohydrological and geotechnical study on the San Bartolo Mine; and In December 2016 an external constant (Ing. Alfredo Rodriguez) presented a Geo-hydrological study for the San Bartolo and Santa Eduwiges mines.
Operating License (and Air Quality Permit)	SEMARNAT	In the Cusihuiriachi mines, there are no atmospheric emissions. At the Malpaso mill, SEMARNAT issued a *Licencia Unica Ambiental* (unique environmental license) dated August 2013.
Cambio de Uso de Suelo - Land Use Change Permit	SEMARNAT	The following concessions are exempt from having to apply for the *Cambio de Uso de Suelo*, according to the document SG.IR.08-20141 / 93 from SEMARNAT dated May 2014 that recognizes the exception because Dia Bras proved that the mining concessions operated prior to the 1988 regulations. Any other concession will need the *Cambio de Uso de Suelo* permit or prove that it was in operation prior to that year: • San Bartolo (Title 150395), • La India (Title 150569), • Promontorio (Title 163582), • La Consolidada (Title 165102), • La Perla (Title 165968), • El Milagro (Title 163580), • La Ilusión (Title 166611), • La Rumorosa (Title 163512), • Los Pelones (Title 166981), • La Hermana de la India (Title 180030), • Nueva Santa María (Title 182002), • La Gloria (Title 179400), • La Perlita (Title 163565).
Concession Title for Underground Water Extraction	*Comisión Nacional del Agua* (CONAGUA) - National Water Commission)	Mine dewatering is regulated under the Mining Law and no permit is required to extract mine water.
Wastewater Discharge Permit	CONAGUA	For the Malpaso plant, a discharge permit (02CHI141178/34EMDL15) was issued in August 2015.

Permit	Agency	Approval Date (or anticipated Approval Date)
		For the Cusi mines, CONAGUA documents No B00.E.22.4.-420 and No B00.E.22.4.-419, dated November 12, 2014, exempt Dia Bras from requiring discharge permits, as the water does not contain contaminants or is used in industrial processes.
Hazardous Waste Registration	SEMARNAT	The last update to this registration was November 04, 2016.
Explosives Use Permit	*Secretaría de la Defensa Nacional* (SEDENA)	Permit Number 4599 – last updated December 1, 2016. Expires in 1 year.

Source: Permit information provided by Sierra Metals, and not independently verified by SRK

Table 20-2: Cusi Mine Concessions

Holding Company	Name	Type	Area (ha)	File No.	Title No.	Enrolled	Expiry
Dia Bras Mexicana	Base*	Exploration	23.8090	016/30975	217584	8/6/2002	8/5/1952
Dia Bras Mexicana	Flor de Mayo*	Exploration	14.4104	016/32699	224700	5/31/2005	5/30/1955
Dia Bras Mexicana	Base 1	Exploration	3.9276	016/33729	227657	7/28/2006	7/27/1956
Dia Bras Mexicana	Santa Rita	Exploration	16.6574	016/34624	229081	3/6/2007	3/5/1957
Dia Bras Mexicana	Sayra I	Exploration	7.2195	016/34623	229064	2-3-20070	3/1/1957
Dia Bras Mexicana	San Miguel	Exploration	96.2748	016/33730	229166	3/21/2007	3/20/1957
Dia Bras Mexicana	San Miguel I	Exploration	98.6218	016/33731	228484	11/24/2006	11/23/1956
Dia Bras Mexicana	San Miguel II	Exploration	100.00	016/33732	227363	6/14/2006	6/13/1956
Dia Bras Mexicana	San Miguel III	Exploration	100.00	016/33733	227364	6/14/2006	6/13/1956
Dia Bras Mexicana	San Miguel IV	Exploration	96.9850	016/33734	227485	6/27/2006	6/26/1956
Dia Bras Mexicana	San Miguel VI	Exploration	98.9471	016/34642	228058	9/29/2006	9/28/1956
Dia Bras Mexicana	San Miguel VII	Exploration	52.6440	016/34640	229084	3/6/2007	3/5/1957
Dia Bras Mexicana	Saira	Exploration	16.00	016/33735	227365	6/14/2006	6/13/1956
Dia Bras Mexicana	Manuel	Exploration	100.00	016/33714	227360	6/14/2006	6/13/1956
Dia Bras Mexicana	Santa Rita Fracc. I	Exploration	9.00	016/34624	229082	3/6/2007	3/5/1957
Dia Bras Mexicana	Santa Rita Fracc. II	Exploration	8.8141	016/34624	229083	3/6/2007	3/5/1957
Dia Bras Mexicana	San Miguel V	Exploration	6.5328	016/34641	227984	9/26/2006	9/25/1956
Dia Bras Mexicana	San Juan	Exploration	12.3587	016/31500	218657	12/3/2002	12/2/1952
Dia Bras Mexicana	San Juan Fracc. A	Exploration	0.1727	016/31500	218658	12/3/2002	12/2/1952
Dia Bras Mexicana	San Juan Fracc. B	Exploration	0.1469	016/31500	218659	12/3/2002	12/2/1952
Dia Bras Mexicana	Norma	Exploration	12.2977	016/31700	218851	1/22/2003	1/21/1953
Dia Bras Mexicana	Norma 2	Exploration	1.7561	016/31715	219283	2/25/2003	2/24/1953
Dia Bras Mexicana	Cima	Exploration	9.9637	016/30957	217231	7/2/2002	7/1/1952
Dia Bras Mexicana	Manuel 1 Fracc A	Exploration	1.1858	016/34849	229747	6/13/2007	6/12/1957
Dia Bras Mexicana	Manuel 1 Fracc B	Exploration	1.3425	016/34849	229748	6/13/2007	6/12/1957
Dia Bras Mexicana	Alma	Exploration	80.4612	Valid	227982	9/25/2006	9/25/1956
Dia Bras Mexicana	San Bartolo	Exploitation	6.00	Valid	150395	9/30/1968	9/29/2018
Dia Bras Mexicana	Marisa	Exploration	5.08	Valid	220146	6/17/2003	6/16/1953
Dia Bras Mexicana	La India	Exploitation	15.76	Valid	150569	10/29/1968	10/27/2018
Dia Bras Mexicana	Alma	Exploration	87.2041	Valid	227650	7/27/2006	7/27/1956
Dia Bras Mexicana	Alma I	Exploration	106.00	Valid	226816	3/9/2006	3/9/1956
Dia Bras Mexicana	Alma II	Exploration	91.00	Valid	227651	7/27/2006	7/27/1956
Dia Bras Mexicana	Nueva Recompensa	Exploitation	21.00	Valid	195371	9/15/1992	9/13/1942
Dia Bras Mexicana	Monterrey	Exploitation	5.4307	Valid	183820	11/22/1988	11/21/1938
Dia Bras Mexicana	Nueva Santa Marina	Exploitation	16.00	Valid	182002	4/8/1988	4/7/1938
Dia Bras Mexicana	San Ignacio	Exploitation	3.00	Valid	165662	11/28/1979	11/27/2029
Dia Bras Mexicana	Promontorio	Exploitation	8.00	Valid	163582	10/30/1978	10/29/2028
Dia Bras Mexicana	La Perla	Exploitation	15.00	Valid	165968	12/13/1979	12/12/2029
Dia Bras Mexicana	La Perlita	Exploitation	10.00	Valid	163565	10/10/1978	10/9/2028
Dia Bras Mexicana	Luís	Exploitation	3.1946	Valid	194225	12/19/1991	12/18/1941
Dia Bras Mexicana	La Consolidada	Exploitation	22.00	Valid	165102	8/23/1979	8/22/2029
Dia Bras Mexicana	La Doble Eufemia	Exploitation	9.00	Valid	188814	11/29/1990	11/28/1940
Dia Bras Mexicana	La Gloria	Exploitation	10.00	Valid	179400	12/9/1986	12/8/1936
Dia Bras Mexicana	La Indita	Exploration	9.9034	Valid	212891	2/13/2001	2/12/1949
Dia Bras Mexicana	La Suerte	Exploration	10.5402	Valid	216711	5/28/2002	5/27/1952
Minera Cusi	El Hueco	Exploitation	1.8379	Valid	172321	11/23/2003	11/23/1933
Dia Bras Mexicana	El Presidente	Exploitation	8.1608	Valid	209802	8/9/1999	8/8/1949
Dia Bras Mexicana	El Salvador	Exploitation	7.7448	Valid	190493	4/29/1991	4/28/1941
Dia Bras Mexicana	Cusihuiriachic Dos	Exploitation	87.6748	Valid	220576	8/28/2003	8/27/1953
Dia Bras Mexicana	La Bufa Chiquita	Exploitation	3.6024	Valid	220575	8/28/2003	8/27/1953
Dia Bras Mexicana	Aguila	Exploration	4.2772	Valid	216262	4/23/2002	4/22/1952
Dia Bras Mexicana	Año Nuevo	Exploration	12.00	Valid	192908	12/19/1991	12/18/1941
Dia Bras Mexicana	Ampl. Nueva Josefina	Exploitation	18.2468	Valid	177597	4/2/1986	3/31/1936
Dia Bras Mexicana	El Milagro	Exploitation	26.8259	Valid	166580	6/27/1980	6/26/1930

Holding Company	Name	Type	Area (ha)	File No.	Title No.	Enrolled	Expiry
Dia Bras Mexicana	Los Pelones	Exploitation	16.3018	Valid	166981	8/5/1980	8/4/1930
Dia Bras Mexicana	La Ilusión	Exploitation	6.00	Valid	166611	6/27/1980	6/26/1930
Dia Bras Mexicana	La Hermana de la India	Exploitation	13.1412	Valid	180030	3/23/1987	3/22/1937
Dia Bras Mexicana	La Rumorosa	Exploitation	20.00	Valid	166612	6/27/1980	6/26/1930
Dia Bras Mexicana	La Nueva Josefina	Exploitation	10.00	Valid	181221	9/11/1987	9/10/1937
Dia Bras Mexicana	Mina Vieja	Exploitation	8.25	Valid	165742	12/11/1979	12/10/2029
Dia Bras Mexicana	Margarita	Exploitation	14.00	Valid	165969	12/13/1979	12/12/2029
Minera Cusi	Cusihuiriachic	Exploration	472.2626	Valid	240976	11/16/2012	11/15/1962
Dia Bras Mexicana	CUSI-DBM	Exploration	4,716.6621	Valid	229299	4/3/2007	4/2/1957
Dia Bras Mexicana	CUSI-DBM 02	Exploration	4,695.1748	Valid	232028	6/10/2008	6/9/1958
Dia Bras Mexicana	Bronco 1 A	Exploration	55.6309	Valid	240329	5/23/2012	5/22/1962
Dia Bras Mexicana	Bronco 1 B	Exploration	0.8801	Valid	240330	5/23/2012	5/22/1962
Dia Bras Mexicana	Bronco 2	Exploration	7.5296	Valid	239311	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 3	Exploration	8.1186	Valid	243011	5/30/2014	5/29/1964
Dia Bras Mexicana	Bronco 4	Exploration	0.5224	Valid	239312	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 5	Exploration	6.7121	Valid	239335	12/13/2011	12/13/1961
Dia Bras Mexicana	Bronco 6	Exploration	9.00	Valid	239321	12/13/2011	12/13/1961
Dia Bras Mexicana	Zapopa	Exploration	8.3867	Valid	240189	4/13/2012	4/12/1962
Minera Cusi	La Mexicana	Exploration	2.00	Valid	165883	12/12/1979	12/13/1982

Source: Concession information provided by Sierra Metals, and not independently verified by SRK.

According to Sierra Metals, Dia Bras is the identified owner of the La India concession title (No. 150569); however, there is currently no contract in place with the San Bernabe Ejido, the owner of the surface land, for access and occupation. In the past, the Ejido has allowed Dia Bras to explore on this concession, and is apparently willing to sign a contract with the operations to allow for additional exploration (and possible exploitation) in the future. No documentation to this effect was made available for this review.

20.4.8 MIA and CUS Authorizations

In April 2014, SEMARNAT conducted an inspection of the Dias Bras Cusi operations. During this site visit, the inspectors met with security and mine planning personnel, who were asked to provide a copy of the Environmental Impact Assessment (MIA) to legally support, in terms of environmental impact, the work being carried out by the company. However, the MIA could not be provided by the company's employees. Since the MIA authorization could not be produced, SEMARNAT issued a notice of violation against the company.

The following month, in a letter addressed to Arturo Valles Chávez, legal representative of Dia Bras Mexicana SA de CV, SEMARNAT acknowledges that Dia Bras is the legitimate holder of the following concessions in the municipality of Cusihuiriaci, Chihuahua: San Bartolo, Promontorio, La Consolidad, La Perla, El Milagro, La Ilusión, La Rumurosa, Los Pelones, La Hermana de la India, Nueva Santa Marina, La Gloria, and La Perlita, and that these concessions pre-date the General Law for Sustainable Forest Development, as well as the General Law on Ecological Equilibrium and Environmental Protection, regarding to Environmental Impact Assessment. As such, SEMARNAT agreed the existing operations (and minor alteration thereto), should not be subject to the Environmental Impact Assessment procedure. However, SEMARNAT did stipulate that, in case of disturbance and/or removal of vegetation, Dia Bras must comply with the regulations regarding to land use change before the Federal delegation, as well as the proper management of waste generated during mining and processing (i.e., tailings).

SEMARNAT officially dismissed the notice of violation on May 14, 2015 in Administrative Record No. PFPA/15.212C.27.1/0055-14.

20.4.9 Inspections

In April 2014, during the same inspection by SEMARNAT of the Cusi operations, the agency found no irregularities in the emission of pollutants to the environment. There was also no mention of any irregularities regarding the process of mineral extraction and storage disposal.

On November 17, 2015, Chihuahua State regulators, through the Secretary of Urban Development and Ecology, inspected Promotorio Mine and found that the water discharged by Dia Bras complies with the parameters established by NOM-001/SEMARNAT 2015. At the same time, Dia Bras presented the argument that a special waste water discharge permit from CONAGUA is not required to discharge water from mining activities developed in Promontorio and San Bartolo mines.

20.5 Social Management Planning and Community Relations

SRK was not provided with any information regarding public consultation or stakeholder engagement activities on the part of Dia Bras for the Cusi operations.

20.6 Closure and Reclamation Plan

Current regulations in México require that a preliminary closure program be included in the MIA and a definite program be developed and submitted to the authorities during the operation of the mine (generally accepted as three years into the operation). These closure plans tend to be conceptual and typically lack much of the detail necessary to develop an accurate closure cost estimate. However, Sierra Metals has attempted to prescribe the necessary closure activities for the operation.

In February 2017, *Treviño Asociados Consultores* presented to DIABRAS, S.A. de C.V. a work breakdown of the anticipated tasks for closure and reclamation of the Cusi Mine and Malpaso Mill. This breakdown, and the associated costs, is summarized in Table 20-3.

Table 20-3: Cusi Mine and Malpaso Mill Cost of Reclamation and Closure of the Mine

Closure Activity	Cost Estimate MXN$
Cusi Waste Rock Piles (regrading, soil preparation, revegetation) (5Ha)	$231,650
Exploration Drill Pads (remove contaminated soils, soil preparation, revegetation, erosion control) (4Ha)	$42,000
Roads (Border reconstruction, ditches, revegetation) (5Ha)	$52,500
Building Demolition (Dismantling buildings and removing equipment and machinery)	$594,000
Sub-Total Cusi Reclamation and Closure Costs	**$920,150**
Malpaso Tailings Impoundment (regrading, soil cover and preparation, revegetation) (14Ha = 2×7Ha)	$1,901,200
Stream Restoration (gabion installation) (500m)	$1,750,000
Roads (Border reconstruction, ditches, revegetation) (3Ha)	$31,500
Facilities and Buildings (offices, laboratory, warehouses – dismantle and remove, remediate spills, restore soil and revegetation)	$2,035,000
Sub-Total Malpaso Reclamation and Closure Costs	**$5,717,700**
Total (MXN)	**$6,637,850**
Total (US$)*	**$325,385**

*Based on exchange rate of US$1 = MXN$20.4 (22Feb2017)
Source: Dia Bras, 2017

SRK's scope of work did not include an assessment of the veracity of this closure cost estimate, but, based on projects of similar nature and size within Mexico, the estimate appears low in comparison. SRK recommends that Sierra Metals conduct an outside review of this estimate, with an emphasis on benchmarking against other projects in northern Mexico.

While Mexico requires the preparation of a reclamation and closure plan, as well as a commitment on the part of the operator to implement the plan, no financial surety (bonding) has thus far been required of mining companies. Environmental damages, if not remediated by the owner/operator, can give rise to civil, administrative and criminal liability, depending on the action or omission carried out. PROFEPA is responsible for the enforcement and recovery for those damages, or any other person or group of people with an interest in the matter. Also, recent reforms introduced class actions as a means to demand environmental responsibility from damage to natural resources.

21 Capital and Operating Costs

SRK has not assessed any capital or operating cost assumptions as a part of this study, beyond the general costs provided to SRK for determination of cut-off grade for the mineral resource statement.

22 Economic Analysis

SRK has not conducted any economic analysis as a part of this study.

23 Adjacent Properties

As noted in Figure 4-2, a number of mining claims within the Cusi area are not controlled by Sierra Metals. Mineral resources are not reported within these areas. No publicly disclosed mineral resource or reserve estimates exist for these areas.

24 Other Relevant Data and Information

SRK is not aware of any additional relevant data and information for the mineral resource estimation at this time.

25 Interpretation and Conclusions

25.1 Exploration

SRK is of the opinion that the exploration efforts at Cusi are sufficient for the definition of mineral resources. The primary exploration method at Cusi has been diamond core drilling followed by limited underground development, which has been successful in delineating a system of discrete epithermal veins and related stockwork mineralization. The drilling appears to be able to target and identify mineralized structures with reasonable efficacy, and the majority of drilling is oriented in a fashion designed to approximate true thicknesses of the veins. The exploration planning suffers from a lack of focus, and should be designed to maximize conversion of higher grade Inferred areas with less dense drilling to Indicated, or extending mineralization away from known areas accessed through channel sampling. Efforts should be focused on a single structure or perhaps two structures to continue to develop these areas along strike and down dip, rather than scattered around several veins with very limited drilling.

Mine development is also used for exploration, as direct access of the veins along underground drifts is an excellent and efficient way for Cusi to understand the mineralization on a more local basis. More effort should be made to improve underground survey data, channel sampling consistency, and 3D asbuilt data.

SRK notes that recent efforts are improving the quality of the drilling and information through more complete and thorough survey data (for drilling and underground development), as well as modern QA/QC programs which are delivering reasonable results. This lends additional confidence to recently-defined resources or newly drilled portions of historic areas.

SRK also notes that struggles for the internal Malpaso Mill laboratory, identified in this document as well as previous technical reports, appear to continue. These are related to significant differences between the values reported for identical samples between Malpaso and third-party laboratories. These issues, combined with historic deficiencies in downhole surveying and QA/QC detract from the overall confidence in quality of the data.

SRK is aware that Malpaso and Dia Bras are currently implementing procedures to improve the collection and reporting of data supporting mineral resource estimations. This includes improving down hole surveys, improved channel sampling and mine working surveys, acquiring commercial standards for QA/QC (October 2016), and improvements of the Malpaso Mill to make sample preparation procedures and analyses consistent with ISO-certified laboratories like ALS. SRK is of the opinion that a combination of these factors, once demonstrated to be in full use and functioning appropriately, will result in a significant portion of the Indicated resource being converted to Measured.

25.2 Mineral Resource Estimate

The geologic model has been constructed by Dia Bras geologists, and refined by SRK using Leapfrog Geo™ software. Drilling and channel sample data, as well as sectional interpretation was used in development of the 3D geology shapes, defining veins and stockwork zones. These are used as resource domains to constrain and control the interpolation of grade during the estimation.

SRK built individual block models for the main resource areas, which have been rotated and sub-blocked to better fit the geologic contacts in each area. Grade was interpolated from capped and composited sample data using an inverse distance squared algorithm, with sample selection criteria designed to decluster the channel sample data compared to the drilling. A nested three-pass estimation was used, with decreasing data selection criteria.

SRK is of the opinion that the Mineral Resource Estimate has been conducted in a manner consistent with industry best practices and that the data and information supporting the stated mineral resources is sufficient for declaration of Indicated and Inferred classifications of resources. SRK has not classified any of the resources in the Measured category due to aforementioned uncertainties regarding the data supporting the Mineral Resource Estimate.

These deficiencies include:

- The lack of a historic QA/QC program, which has only been supported by a recent resampling and modern QA/QC program for a limited number of holes. This will be required in order to achieve Measured resources which generally are supported by high resolution drilling or sampling data that feature consistently implemented and monitored QA/QC.
- The lack of consistently-implemented down-hole surveys in the historic drilling. Observations from the survey data which has been done to date show significant down-hole deviations that influence the exact position of mineralized intervals. These discrepancies are confirmed by nearby workings that project the mineralized structures in a different position than that defined by the unsurveyed holes.
- The lack of industry-standard 3D survey asbuilt data delineating mined areas. This has been defined using a combination of the existing survey data, as well as polygons defining other areas thought to be mined. SRK believes these polygons to be conservative, as it is likely that pillar areas or other partially mined areas exist within the limits of the polygons, but are being excluded by this rudimentary methodology.

25.3 Metallurgy and Mineral Processing

The metallurgical balance as stated by Dia Bras is based on actual production data as reported to SRK. SRK is of the opinion that this is more than sufficient support for the statement of mineral resources, where the cut-off grade is based partially on expectations of recovery.

Cusi’s highly variable fresh feed head grades pose a challenge to the steady metallurgical performance of the processing facilities.

25.4 Foreseeable Impacts of Risks

SRK notes that the main risk associated with the mineral resources at Cusi are in areas where historic drilling or poorly surveyed channel sampling defines the shape of the vein. It has been demonstrated, where new data juxtaposes old, that there can be material offsets to the projections of the structures. This will predominantly affect older areas of the Cusi mine, many of which have been mined out, although SRK notes newer areas where the effect is material on the statement of mineral resources.

Ongoing risk associated with the performance of the Malpaso Mill internal laboratory is difficult to quantify, and is probably not material to the declaration of mineral resources beyond the reduction in confidence noted in this report. SRK finds the discrepancies between Malpaso and third party laboratories to be troubling in the sense of defining precision for the analytical work that would support a Measured resource, unfortunately and notably in the vicinity of the workings where all channel samples are supported by Malpaso analyses.

SRK is aware that Sierra is aggressively pursuing improvements to the methods and procedures at Cusi, and that these will be ongoing in the coming year.

26 Recommendations

26.1 Recommended Work Programs and Costs

SRK has the following recommendations for additional work to be performed at the Cusi mine:

- Identify and drill areas that are dominantly supported by channel sample data. This should be done at a regular spacing of approximately 25 m.
    - Further to this, SRK notes opportunities where significant areas of veins have very few drillholes, but exhibit very high grades, resulting in local high grade Inferred blocks that could theoretically be converted to Indicated with additional drilling. These should be prioritized.
- Continue the implementation of the current QA/QC program as documented by Dia Bras internal reports. This program is robust and appropriate for the type of deposit.
- Abandon the practice of using the current internal blanks for QA/QC. A thoroughly washed silica sand is readily available in Mexico and would be a reasonable alternative. The results of the current practices hint at either significant contamination issues during the preparation phase of sample analysis, or a contaminated blank material. In either case, this should be resolved as soon as possible. Continue the use of newly acquired commercial standards for new QA/QC.
- All analyses supporting a mineral resource estimation should continue to be analyzed by an ISO-certified independent laboratory such as ALS Minerals. The intra-lab performance of check samples shows significant and unexpected deviations between ALS and the internal Dia Bras lab.
- Every drillhole exceeding 50 m should be surveyed via Reflex or other appropriate survey tool.
- SRK strongly recommends implementing the practice of consistent use of a total station GPS for surveying of drillhole and channel samples, as well as mine workings. Discrepancies between the three types of data occur regularly where they are closely spaced, and reduce confidence in the estimate.
    - A 3D mine survey could be accomplished relatively easily and for minimal cost, and could be conducted on a quarterly basis to develop a better working understanding of mined material to be used in reconciliation processes.
- Evaluate more detailed resource estimation procedures incorporating other means of dealing with the highly clustered data.
- Develop a simple method of reconciling the resource models to production, using stope shapes and grades derived from channel sampling.
- SRK recommends that Cusi evaluate the maximum head grade the mill is able to receive without compromising quality of its lead concentrate because of the high presence of zinc (currently grading at about 9%). Improving selectivity will likely improve the overall lead grade in concentrate that needs to be at 50% Pb or higher to achieve better economic value.

26.1.1 Costs

SRK notes that the costs for the majority of recommended work are likely to be a part of normal operating budgets, which Cusi has as an operating mine. These are cost estimates, and would depend on actual contractor costs and scope to be determined by Dia Bras/Sierra Metals. SRK notes that the recommendations for metallurgy, mine design, geotechnical studies, or economic analysis are not included in these costs, and that these recommendations solely impact the quality of the mineral resource estimation.

Table 26-1: Summary of Costs for Recommended Work

Item	Cost (US$)
Drilling	$2,000,000
Underground 3D Survey	$60,000

27 References

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Geostat Systems International Inc. (2008) Dia Bras Exploration Inc., Cusi Project, Chihuahua state, Mexico, Resource Estimate Technical Report, June 16, 2008.

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RPA (2006) Technical Report on the Cusi Silver Project, Mexico, NI 43-101 Report, December 20, 2006

28 Glossary

The Mineral Resources and Mineral Reserves have been classified according to CIM (CIM, 2014). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, the Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

28.1 Mineral Resources

A **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

An **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

A **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

28.2 Mineral Reserves

A **Mineral Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. The public disclosure of a Mineral Reserve must be demonstrated by a Pre-Feasibility Study or Feasibility Study. This has not been done as a part of this study.

A **Probable Mineral Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

A **Proven Mineral Reserve** is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

28.3 Definition of Terms

The following general mining terms may be used in this report.

Table 28-1: Definition of Terms

Term	Definition
Assay	The chemical analysis of mineral samples to determine the metal content.
Capital Expenditure	All other expenditures not classified as operating costs.
Composite	Combining more than one sample result to give an average result over a larger distance.
Concentrate	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore.
Crushing	Initial process of reducing ore particle size to render it more amenable for further processing.
Cut-off Grade (CoG)	The grade of mineralized rock, which determines as to whether or not it is economic to recover its gold content by further concentration.
Dilution	Waste, which is unavoidably mined with ore.
Dip	Angle of inclination of a geological feature/rock from the horizontal.
Fault	The surface of a fracture along which movement has occurred.
Footwall	The underlying side of an orebody or stope.
Gangue	Non-valuable components of the ore.
Grade	The measure of concentration of gold within mineralized rock.
Hangingwall	The overlying side of an orebody or slope.
Haulage	A horizontal underground excavation which is used to transport mined ore.
Hydrocyclone	A process whereby material is graded according to size by exploiting centrifugal forces of particulate materials.
Igneous	Primary crystalline rock formed by the solidification of magma.
Kriging	An interpolation method of assigning values from samples to blocks that minimizes the estimation error.
Level	Horizontal tunnel the primary purpose is the transportation of personnel and materials.
Lithological	Geological description pertaining to different rock types.
LoM Plans	Life-of-Mine plans.
LRP	Long Range Plan.
Material Properties	Mine properties.
Milling	A general term used to describe the process in which the ore is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product.
Mineral/Mining Lease	A lease area for which mineral rights are held.
Mining Assets	The Material Properties and Significant Exploration Properties.
Ongoing Capital	Capital estimates of a routine nature, which is necessary for sustaining operations.
Ore Reserve	See Mineral Reserve.

Term	Definition
Pillar	Rock left behind to help support the excavations in an underground mine.
RoM	Run-of-Mine.
Sedimentary	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
Shaft	An opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste.
Sill	A thin, tabular, horizontal to sub-horizontal body of igneous rock formed by the injection of magma into planar zones of weakness.
Smelting	A high temperature pyrometallurgical operation conducted in a furnace, in which the valuable metal is collected to a molten matte or doré phase and separated from the gangue components that accumulate in a less dense molten slag phase.
Stope	Underground void created by mining.
Stratigraphy	The study of stratified rocks in terms of time and space.
Strike	Direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction.
Sulfide	A sulfur bearing mineral.
Tailings	Finely ground waste rock from which valuable minerals or metals have been extracted.
Thickening	The process of concentrating solid particles in suspension.
Total Expenditure	All expenditures including those of an operating and capital nature.
Variogram	A statistical representation of the characteristics (usually grade).

28.4 Abbreviations

The following abbreviations may be used in this report.

Table 28-2: Abbreviations

Abbreviation	Unit or Term
Ag	silver
Au	gold
AuEq	gold equivalent grade
°C	degrees Centigrade
CoG	cut-off grade
cm	centimeter
cm^2	square centimeter
cm^3	cubic centimeter
cfm	cubic feet per minute
°	degree (degrees)
dia.	diameter
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
g	gram
gal	gallon
g/L	gram per liter
gpm	gallons per minute
g/t	grams per tonne
ha	hectares
ID2	inverse-distance squared
ID3	inverse-distance cubed
kg	kilograms
km	kilometer
km^2	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year

Abbreviation	**Unit or Term**
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
L	liter
lb	pound
LoM	Life-of-Mine
m	meter
m^2	square meter
m^3	cubic meter
masl	meters above sea level
mg/L	milligrams/liter
mm	millimeter
mm^2	square millimeter
mm^3	cubic millimeter
Moz	million troy ounces
Mt	million tonnes
m.y.	million years
NI 43-101	Canadian National Instrument 43-101
oz	troy ounce
%	percent
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RC	rotary circulation drilling
RoM	Run-of-Mine
RQD	Rock Quality Description
SEC	U.S. Securities & Exchange Commission
t	tonne (metric ton) (2,204.6 pounds)
t/h	tonnes per hour
t/d	tonnes per day
t/y	tonnes per year
TSF	tailings storage facility
V	volts
W	watt
y	year

Appendices

Appendix A: Certificates of Qualified Persons

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CERTIFICATE OF QUALIFIED PERSON

I, Matthew Hastings, MSc Geology, MAusIMM (CP) do hereby certify that:

1. I am Senior Consultant Resource Geologist of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled “NI 43-101 Technical Report on Resources, Cusi Mine, Mexico” with an Effective Date of January 31, 2017 (the “Technical Report”).
3. I graduated with a degree in B.S.-Geology from University of Georgia in 2005. In addition, I have obtained a M.S.-Geology from University of Nevada-Reno in 2007. I am a CP of the MAusIMM and Certified Professional Geology, PGL-1343. I have worked as a Geologist for a total of 10 years since my graduation from university. My relevant experience includes working in exploration and mineral resource definition for precious metals, base metals, iron ore, and rare earth element deposits worldwide.
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify 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.
5. I visited the Cusi Mine property on March 11, 2015 for five days.
6. I am responsible for the preparation of Geology and Mineral Resources, Sections 4-12 and 14, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is a series of operational reviews and gap analyses that were conducted for Sierra Metals prior to the technical work supporting the technical report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 14th Day of April, 2017.

“Signed and Sealed”

____

Matthew Hastings, MSc Geology, MAusIMM (CP)

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CERTIFICATE OF QUALIFIED PERSON

I, Daniel H. Sepulveda, B.Sc, SME-RM, do hereby certify that:

1. I am Associate Consultant (Metallurgy) of SRK Consulting (U.S.), Inc., 1125 Seventeenth Street, Suite 600, Denver, CO, USA, 80202.
2. This certificate applies to the technical report titled "NI 43-101 Technical Report on Resources, Cusi Mine, Mexico" with an Effective Date of January 31, 2017 (the "Technical Report").
3. I graduated with a degree in Extractive Metallurgy from University of Chile in 1992. I am a registered member of the Society of Mining, Metallurgy, and Exploration, Inc. (SME), member No 4206787RM. I have worked as a Metallurgist for a total of 23 years since my graduation from university. My relevant experience includes: employee of several mining companies, engineering & construction companies, and as a consulting engineer.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify 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.
5. I visited the Cusi Mine property on October 19, 2016 for two days.
6. I am responsible for Mineral Processing and Metallurgical Testing Section 13, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is a series of operational reviews and gap analyses that were conducted for Sierra Metals prior to the technical work supporting the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 14th Day of April, 2017.

"Signed and Sealed"

____

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CERTIFICATE OF QUALIFIED PERSON

I, Mark Allan Willow, SME-RM do hereby certify that:

1. I am Practice Leader of SRK Consulting (U.S.), Inc., 5250 Neil Road, Reno, Nevada 89502.
2. This certificate applies to the technical report titled "NI 43-101 Technical Report on Resources, Cusi Mine, Mexico" with an Effective Date of January 31, 2017 (the "Technical Report").
3. I graduated with Bachelor's degree in Fisheries and Wildlife Management from the University of Missouri in 1987 and a Master's degree in Environmental Science and Engineering from the Colorado School of Mines in 1995. I have worked as Biologist/Environmental Scientist for a total of 22 years since my graduation from university. My relevant experience includes environmental due diligence/competent persons evaluations of developmental phase and operational phase mines through the world, including small gold mining projects in Panama, Senegal, Peru, Ecuador, Philippines, and Colombia; open pit and underground coal mines in Russia; several large copper and iron mines and processing facilities in Mexico and Brazil; bauxite operations in Jamaica; and a coal mine/coking operation in China. My Project Manager experience includes several site characterization and mine closure projects. I work closely with the U.S. Forest Service and U.S. Bureau of Land Management on permitting and mine closure projects to develop uniquely successful and cost effective closure alternatives for the abandoned mining operations. Finally, I draw upon this diverse background for knowledge and experience as a human health and ecological risk assessor with respect to potential environmental impacts associated with operating and closing mining properties, and have experienced in the development of Preliminary Remediation Goals and hazard/risk calculations for site remedial action plans under CERCLA activities according to current U.S. EPA risk assessment guidance.

   I am a Certified Environmental Manager (CEM) in the State of Nevada (#1832) in accordance with Nevada Administrative Code NAC 459.970 through 459.9729. Before any person consults for a fee in matters concerning: the management of hazardous waste; the investigation of a release or potential release of a hazardous substance; the sampling of any media to determine the release of a hazardous substance; the response to a release or cleanup of a hazardous substance; or the remediation soil or water contaminated with a hazardous substance, they must be certified by the Nevada Division of Environmental Protection, Bureau of Corrective Action;

   I am a Registered Member (No. 4104492) of the Society for Mining, Metallurgy & Exploration Inc. (SME).
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify 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.
5. I did not visit the Cusi Mine property.
6. I am responsible for Environmental Studies, Permitting and Social or Community Impact Section 20, and portions of Sections 1, 25 and 26 summarized therefrom, of this Technical Report.
7. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.

10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 14th Day of April, 2017.

Mark A. Willow, M.Sc., CEM, SME-RM

SME
Society for
Mining, Metallurgy
& Exploration
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SME Registered Member No. 4104492
Signature__________
Date Signed__________
Expiration date 12/31/18