

**NI 43-101 TECHNICAL REPORT ON RESOURCES  
FLORIDA CANYON ZINC PROJECT  
Amazonas Department, Peru**



**PREPARED FOR  
SOLITARIO ZINC CORP**

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**Report Date: April 5, 2021  
Effective Date: February 1, 2021**

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# 1 EXECUTIVE SUMMARY (ITEM 1)

Gustavson Associates, LLC (Gustavson) was commissioned by Solitario Zinc Corporation (Solitario) to prepare an updated Mineral Resource Estimate for the Florida Canyon project in the Amazonas Department of Peru. This technical report presents the estimate in accordance with Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101), June 30, 2011, and Canadian Institute of Mining, Metallurgy and Petroleum (CIM) “Best Practices and Reporting Guidelines for Mineral Resources and Mineral Reserves”, May 10, 2014. The effective date of this report is February 1, 2021. SRK previously prepared the NI 43-101 Preliminary Economic Assessment for the Florida Canyon Project which was published on SEDAR in August of 2017. Additional mineral resources identified since 2017 have changed the proportions of the ore types from the Mineral Resources identified in the PEA, prompting additional metallurgical testing prior to advancing the project.

## 1.1 PROPERTY DESCRIPTION & OWNERSHIP

The Florida Canyon Zinc Project is in the Eastern Cordillera of Peru in the upper Amazon River Basin. It is 680 km north-northeast of Lima and 245 km northeast of Chiclayo, Peru, in the District of Shipasbamba, Bongará Province, Amazonas Department (Figure 4-1). The central coordinates of the Project are approximately 825,248 East and, 9,352,626 North (UTM Zone 17S, Datum WGS 84). Elevation ranges from 1,800 meters to approximately 3,200 meters. The climate is classified as high-altitude tropical jungle and the annual rainfall average exceeds 1 m with up to 2 m in the cloud forest at higher elevations.

The mineral resources at Florida Canyon are located on sixteen contiguous mining concessions covering approximately 12,600 ha (Table 4-1, Figure 4-2). The concession titles are in the name of the Peruvian company Minera Bongará S.A. and are subject of the Minera Bongará joint venture agreement between Solitario and Nexa Resources. All concession titles are current.

Nexa, who acts as Operator of the joint venture companies Minera Bongará and Minera Chambará, entered into a surface rights agreement with the local community of Shipasbamba which controls the surface rights of the portion of the Project affected by planned development. This agreement provides for annual payments and funding for mutually agreed upon social development programs in return for the right to perform exploration work including road building and drilling as described in 4.5.1.

## 1.2 GEOLOGY & MINERALIZATION

The Project is located within an extensive belt of Mesozoic carbonate rocks belonging to the Upper Triassic to Lower Jurassic Pucará Group and equivalents. This belt extends through the central and eastern extent of the Peruvian Andes for nearly 1000 km and is the host for many polymetallic and base metal vein and replacement deposits in the Peruvian Mineral Belt.

The Pucará Group is divided into 3 formations: Chambará (base), Aramachay (middle), and Condorsinga (top). The rocks of the Late Triassic-Early Jurassic Pucará Group that host the mineralized bodies were deposited along the coast basin.

The Chambará formation has an approximate thickness between 650 m and 750 m in the project area, and consists of crinoidal packstone, wackstones and rudstones. The bulk of known zinc mineralization is hosted in Chambará 2. The stratigraphy between the distinctive Coquina (CM) and Intact Bivalve (IBM) paleontological marker horizons in Chambará 2 define a sequence of permeable higher energy facies within the Chambará 2 that control much of the especially strong dolomitization within the sequence.

The structure at Florida Canyon is dominated by a N50°-60°W trending domal anticline (or doubly plunging anticline). This domal anticline is cut on the west by the Sam Fault and to the east by the Tesoro-Florida Fault.

Because most of the work has concentrated further west on the San Jorge, Karen Milagros and Sam Fault areas there is little information on the Tesoro-Florida Fault. At both the Karen-Milagros and San Jorge areas, feeder structures have an important control on the mineralized mantos but also represent a significant portion of the resource as steeply dipping structural fillings and replacement. Pre-mineral karsting also played a role in controlling mineralization along with simple structural filling and passive replacement adjacent to conduits.

The zinc-lead-silver mineralization of the Florida Canyon deposit occurs as sulfides hosted in dolomitized zones of the Chambará 2 Formation. Dolomite paragenesis and later sulfide mineralization are controlled by a combination of porosity, permeability, and structural preparation. Metals occur in sphalerite and lesser galena, which contains silver. Minor mineralization is hosted in limestones, but the bulk of sphalerite and galena is hosted in dolomite.

### 1.3 EXPLORATION STATUS

The Florida Canyon Project has identified and delineated mineral resources in the San Jorge, Sam, 1021, and Karen-Milagros areas. An extensive regional reconnaissance exploration program was also conducted over a large area throughout the Mesozoic carbonate belt to the north and south of the Property. Geochemical samples were collected of stream sediments, soils and rocks. During development of the San Jorge adit, Nexa completed geologic mapping and chip sampling of the underground workings.

The drill database includes 545 drillholes, with a total of 136,758.1 m drilled at the Florida Canyon Project (Table 10-1). All holes were diamond drilled, with 447 holes drilled from surface and 98 holes drilled from the San Jorge adit (underground). Drilling procedures meet industry best practice.

Exploration strategy for MVT deposits at the Florida Canyon project has been strongly influenced by the interpreted favorability of specific units of the stratigraphy of the region. Numerous occurrences of alteration and mineralization occur throughout the Pucara Group, but economic deposits have only been thus far located within the Triassic Chambará formation.

### 1.4 MINERAL PROCESSING & METALLURGICAL TESTING

Limited test work undertaken on the sulfide samples from 2010 to 2014 indicated that a conventional polymetallic process flowsheet using standard chemical reagents will produce a marketable-grade zinc concentration (>50% Zn) with a projected recovery of 93% for sulfide only ore.

Historical test work completed was on oxide and mixed samples. The authors believe that the previous test work will need to be increased for the current mineral resource, however, based on the existing work, zinc recoveries are expected to be about 80% for partially oxidized material up to 93% for pure sulfide.

Therefore, a new metallurgical program has been proposed and is recommended for the sulfide samples acquired during the most recent drilling program in order to advance the project to the PFS level. No economic assessment of the project should be undertaken until this test work is completed.

## 1.5 MINERAL RESOURCE ESTIMATE

An updated Mineral Resources Estimate for Florida Canyon was completed by Nexa Resources based on a data base available in July of 2020. The database included 545 drill holes with a total drilled length of nearly 137 km. The estimate was audited by Donald E. Hulse of Gustavson Associates LLC with the audit completed on February 1, 2021. Work was completed in Datamine Studio RM, Leapfrog Geo, and Snowden Supervisor.

Florida Canyon is a Mississippi Valley type deposit, dominated by lead and zinc sulfides. The minerals are disseminated within stratigraphically controlled dolomitization within the Chambara Formation of the late Triassic/early Jurassic. The Florida Canyon deposit has the form of a dome at regional scale. This may be due to a regional anticline. This trend was incorporated into the geological model with the interpretation of 84 mineralized structures. (70 mantos and 14 feeders). The bodies are grouped into four areas, labeled as 1021, Karen Milagros, San Jorge, and Sam.

There are subtle local differences between the bodies, although most behave statistically well with coefficients of variation less than two. This indicates that the distributions are not highly skewed. Since there is insufficient drilling to connect all bodies, the spatial separation led to estimating each body as a separate zone.

Capping was performed area by area based on the shape of the cumulative frequency curve. Composites were nominal 2 meters long with some variability due to the thickness of the zone, with 88% of the composites approximately 2 meters.

Variography was completed on each zone with sufficient samples to calculate experimental variograms. If there were insufficient samples the models used were from nearby zones with similar grades and shapes. Any of these areas were classified as inferred resource. In general, the mantos are slightly lower grade than the feeders with longer variogram ranges.

The block model was estimated in Datamine software. The block size was 6x6x3m with a minimum sub-cell of 0.5m in each direction. Grades were estimated by three methods, Ordinary Kriging, Inverse Distance to a Power, and Nearest Neighbor. For economic stope design, the OK values were used.

The search distances were roughly  $\frac{1}{2}$  of the variogram range for Pass 1, the full variogram range for Pass 2, and a longer search was used for inferred to fill in between drill holes for the zone. For Pass 1 and 2, a minimum of 6 composites were required and a maximum of 16 were used, for Pass 3, a minimum of 2 and a maximum of 8 were used. Mineral resources reported were based on the OK estimates. A metallurgical recovery was assigned based on the oxidation state.



Density was calculated as a function of grade using an equation developed by SRK during the 2017 study. This relationship was not changed by Nexa during this study, and Gustavson judges that there was not sufficient additional data to change the equation.

## 1.6 MINERAL RESOURCE CLASSIFICATION

Mineral resource classification utilized criteria based on drill spacing and variogram ranges. Measured mineral resource required a spacing of 25x25m with at least 3 composites, indicated mineral resource, 50x50m with 3 composites, and inferred resource estimates required a spacing of 100x100m with at least 2 composites.

Using the estimated grade and recovery, economic stope shapes were developed using a “stope optimizer” tool in Deswik software. The limits for the stopes are summarized in Deswik Stope Parameters Table 14-8. The cutoff grade was established in net smelter return (NSR) for each mining method, Sublevel Stopping, Cut and Fill, and Room and Pillar. Only mineral resources within an economic stope shape were reported.

## 1.7 AUDIT OF FINAL MINERAL RESOURCE ESTIMATE

Gustavson audited the Nexa model by examining it in 3-dimensions in the Leapfrog software and by comparing the statistics of the samples in each zone with the modeled grades. The Leapfrog work appears to have been done carefully. Gustavson feels that this is a good representation of the volume of the mineralized material.

The grades reported have an implicit cutoff as part of the stope optimizer analysis in addition to the explicit cutoff applied to the composite data. The stope optimizer tends to select only the best grade where it is sufficiently continuous to allow development of a stope of a defined size. For the Florida Canyon study, the prices used were very near to the market prices in December of 2020 when the study was finalized. Gustavson was able to compare the statistics of samples within the stope shells with the reported mineral resources and found a generally good correlation.

The mineral resource estimate is tabulated in Table 1-1. Gustavson feels that the reported Mineral Resource Estimate meets the standard for reporting under CIM (2019).

## 1.8 MINERAL RESOURCE TABULATION

The Mineral Resource by zone is shown in Table 1-1 and the total Mineral Resource is shown in Table 1-2.

**Table 1-1 Mineral Resource Summary**

Zone	Classification	Sum of Tonnes	Zn %	Ag g/t	Pb %	Fe %
Karen Milagros	Measured	328,254	9.07	9.77	1.34	1.53
	Indicated	913,273	7.65	10.41	1.36	1.35
	Measured + Indicated	1,241,527	8.03	10.24	1.35	1.39
	Inferred	7,072,315	8.82	10.55	1.20	1.57
San Jorge	Measured	478,691	12.85	19.29	1.42	3.07
	Indicated	721,429	13.61	20.52	1.25	3.35
	Measured + Indicated	1,200,120	13.31	20.03	1.32	3.24
	Inferred	3,895,089	13.09	11.34	0.68	2.41
1021	Inferred	3,291,937	6.71	13.58	1.77	2.65
Sam	Inferred	599,392	12.78	6.99	2.96	0.93

**Table 1-2 Total Mineral Resource**

Classification	Sum of Tonnes	Zn %	Ag g/t	Pb %	Fe %
Measured	806,945	11.32	15.42	1.39	2.44
Indicated	1,634,702	10.28	14.87	1.31	2.23
Measured + Indicated	2,441,647	10.62	15.05	1.33	2.30
Inferred	14,858,733	9.63	11.28	1.26	2.00

Mineral Resources are not Mineral Reserves and have not been demonstrated to have economic viability. There is no certainty that the Mineral Resource will be converted to Mineral Reserves. The quantity and grade or quality is an estimate and is rounded to reflect the fact that it is an approximation. Quantities may not sum due to rounding.

## 1.9 MATERIAL DEVELOPMENT & OPERATIONS

Exploration will continue at Florida Canyon to further expand and upgrade the mineral resources. Relationships with the Shipsabamba community will continue. Small upgrades to infrastructure will proceed pending a decision to move the exploration status to preproduction.

## 1.10 ENVIRONMENT & PERMITTING

The Ministry of Environment (MINAM) is the environmental authority in Peru. Its administrative department oversees compliance of environmental regulations for mineral exploration activities. Depending on the level of environmental impacts of a proposed exploration program the proponent will be required to prepare an environmental study to support an operating plan according to the following criteria.

A fully detailed Environmental Impact Study (*Estudio de Impacto Ambiental Detallado* or EIAD) must be presented for mine construction. The Florida Canyon Project currently works under an approved EIAsd which has been modified four times. A fifth modification of the EIAsd is in preparation which will permit in excess of 100 additional drill sites and provide for expanded underground exploration previously permitted in earlier modifications. The fifth modification is planned for submission in 2021.

Thirteen authorizations, permits, and licenses will be required for future mining include. Based on the relationship with both the government and the community, there is no reason to expect that these cannot be acquired.

### 1.11 ECONOMIC ANALYSIS

No economic analysis was prepared for this Technical Report on Mineral Resources.

### 1.12 CONCLUSIONS

Florida canyon has long been recognized as a significant Mississippi Valley Type mineral resource for zinc. The work performed to complete this study demonstrates that Florida Canyon has sufficient zinc resources, with about 2.4 million tonnes of measured and indicated mineral resource and nearly 15 million tonnes of inferred, to warrant further work. These tonnages are representative of material that is both of sufficient grade, and sufficient continuity to form potential stope shapes, even though mineral resources are not mineral reserves.

A thorough understanding of the resource and the mineralogy will be needed. At least some of the mineralized material is in the form of carbonates or silicates which will require distinct treatment to recover the metal and produce a viable concentrate.

The project is in a remote area with challenging topography which will require upgrading of the local infrastructure for a commercial operation. Successful development and operation will require a strong commitment to the community to maintain the social license.

### 1.13 RECOMMENDATIONS

Gustavson has reviewed many of the technical studies completed by Nexa and its predecessor, Votorantim. Most of these studies have been conducted at a prefeasibility level and will form the basis for feasibility investigations to support a production decision. To attain this level of project design detail, new studies will need to be completed in order to provide the foundation for future development. Recommendations for this future work are provided in the 2017 SRK PEA, most of which are not restated here. The following comments focus on the most impactful recommendations for project development in the near term.

#### 1.13.1 Metallurgy

The focus of this report is to update, restate and refine the resource estimation. The newly restated resources define a larger inventory of ore with a significantly different mineralogical and metallurgical composition than that previously used in the PEA. The increased proportion of sulfide ore with less impurities of oxidized zinc and lead minerals provides a significant opportunity, in comparison to the PEA, for lower processing costs, higher recoveries and increased concentrate grades. These more favorable operating parameters should have a significant favorable impact on project economics, particularly combined with the larger global resources base. However, the currently available metallurgical studies are inadequate to support an optimization study of processing options.

Therefore, a redesigned program of metallurgy is recommended, starting with more representative sampling of the ore deposit with variability testing in mind. Future studies by a reputable metallurgical firm should prioritize work on the most abundant and most profitable ore type,

sulfide ore. Upon completion of a new metallurgical study and combined with the newly increased resource base, a new economic assessment may be warranted.

### 1.13.2 Resource Conversion Drilling

Follow up drilling in 2018-19 of targets recommended in the 2017 PEA was very successful in defining new resources within the previously defined footprint of the deposit. Further additions by discovery of new bodies within the existing resource are probable but the primary emphasis of drilling in the core of the deposit should shift to resource conversion core drilling since the ratio of Measured/Indicated to Inferred resource is low. Detailed mine planning requires a higher proportion of closely spaced drilling. Underground drilling is recommended because the surface topography is challenging for the development of drill stations and the surface drilling season is short. The relative closeness of individual ore shoots also supports underground drilling, the access for which can be developed due to the steep terrain. It is likely that subsurface drilling will identify new zones that are not feasible to be tested from surface drill sites.

Permits will provide for underground drilling in both the northern and southern parts of the deposit.

### 1.13.3 Resource Expansion Drilling

Permitting is in progress to test several exploration targets that have been identified on the Minera Bongará Property. Figure 18-1 shows the location of these prospects. There are also surface drill sites that are currently permitted that can be used to test known targets.

A proposed work program is detailed in Table 1-3.

**Table 1-3 Planned work program for 2021-2022**

<b>Florida Canyon Prefeasibility Technical Work</b>				
Task	Description	Quantity	Unit Cost US\$	Est. Budget
Metallurgy				
	Sampling	20		\$10,000
	Test Work	20		\$250,000
Underground				
	North Adit Development	1000 m	\$2,000	\$2,000,000
	South Adit Development	250 m	\$2,000	\$500,000
Drilling				
	Underground Resource	15,000 m	\$250	\$3,750,000
	Surface Resource	10,000 m	\$300	\$3,000,000
Support Cost	Camp, Oversight	-		\$1,500,000
Total				\$11,010,000

\*\* Assumes Road Access Complete. (Does not include project fixed costs)

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## 2 INTRODUCTION (ITEM 2)

### 2.1 TERMS OF REFERENCE AND PURPOSE OF THE REPORT

Gustavson Associates, LLC (Gustavson) was commissioned by Solitario Zinc Corporation, (Solitario) to prepare an updated Technical Report on Mineral Resources for the Florida Canyon Zinc project.

This report was prepared to comply with public reporting obligations for Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101), NI 43-101 Form F1, and Canadian Institute of Mining, Metallurgy and Petroleum (CIM) “Best Practices and Reporting Guidelines”. The mineral resource estimate and interpretations and conclusions reported here are based on technical data available prior to the effective date of this report, February 1, 2021.

Items 15 through 22 of Form 43-101F1 (Mineral Reserve Estimates, Mining Methods, Recovery Methods, Project Infrastructure, Market Studies and Contracts, Environmental Studies, Permitting and Social or Community Impact, Capital and Operating Costs, and Economic Analysis, respectively) are not required for a Technical Report on Resources and are not included in this report.

### 2.2 QUALIFICATIONS OF QUALIFIED PERSONS

**Mr. Donald Hulse, P.E., SME-RM V.P.,** and Principal Mining Engineer for Gustavson, is a Qualified Person as defined by NI 43-101. Mr. Hulse acted as project manager during preparation of this report and is specifically responsible for report Chapters 1-10, Sections 11.4 and 11.5, Chapter 12, and Chapters 14-20. Mr. Hulse is also responsible for the overall organization and content of the document. Mr. Hulse is independent of Solitario.

**Mr. Simon Mortimer, Atticus Consulting,** Principal Geologist at Atticus Consulting, Lima, is a Qualified Person as Defined by NI 43-101 and is responsible for Chapters 11 and 12, and Section 2.2.1. Mr Mortimer has acted as an independent consulting geologist for Solitario, working on the Florida Canyon project and visited the project installations in Shipasbamba during the 2019 helicopter assisted drill campaign as part of a review and due diligence on the data collection processes.

**Deepak Malhotra, PhD., SME-RM, President, ProSolv Consulting,** is a qualified person as defined by NI 43-101 and is responsible for Chapter 13 and portions of Section 1. Dr. Malhotra is independent of Solitario.

#### 2.2.1 Details of Inspection

Mr. Mortimer conducted a visit of the Florida Canyon Drill support camp in Shipasbamba from the 6<sup>th</sup> to the 8<sup>th</sup> of August, 2019, where the objective of his visit was to understand the protocols and processes surrounding the geological logging and sampling with respect to the generation of a geological model and subsequent resource calculation.

Time on site was spent with Todd Christensen, country manager for Solitario and Watson Flores, Florida Canyon project manager for Nexa. During this visit, time was spent in the core storage facility and the area used for the logging, reviewing the processes for the geological logging and data capture for lithology, alteration, and mineralization. The information captured by the logging geologists was recorded on a laptop or tablet using the software DH Logger which was configured to capture data in a controlled manner on rock type, texture, structure, fossil occurrence and mineral content. The sampling methodology was explained by Watson Flores and the process of data capture and subsequent data handling was reviewed; with samples taken through zones where mineralization was noted and using sample lengths based on geological contacts. The laboratory analyses were introduced directly into the Nexa company database by the designated database manager and a data export designed to extract all the drill hole data files relevant to the Florida Canyon project in a secure, and consistent manner.

A detailed review of the sample security and chain of custody of the samples was not part of the objective of this visit, however the protocols applied by Nexa at Florida Canyon in the collection and transport of samples to the laboratory and the QAQC methodology are considered extremely thorough and within industry standard practices.

It was not possible during the site visit to review the underground workings, and for logistical and safety reasons no time was spent in the helicopter or on the drill platforms.

#### 2.2.2 Contributing Authors

Mrs. Amanda Irons, Geologist with Gustavson Associates, contributed writing and text editing, assisted with database preparation and resource audit, and prepared various figures as well as compilation and presentation of statistics for the report.

### 2.3 SOURCES OF INFORMATION

The information, opinions, conclusions, and estimates presented in this report are based on the following:

- Information and technical data provided by Solitario.
- Review and assessment of previous investigations.
- Assumptions, conditions, and qualifications as set forth in the report; and
- Review and assessment of data, reports, and conclusions from other consulting organizations and previous property owners.

These sources of information are presented throughout this report and in Item 27 – References. The qualified persons are unaware of any material technical data other than that presented by Solitario.

### 2.4 EFFECTIVE DATE

This report was completed based upon information available at the effective date of this report, February 1, 2021.

## 2.5 UNITS OF MEASURE

Unless stated otherwise, all measurements reported here are in metric units, tonnes are metric, and currencies are expressed in constant 2021 US dollars. Precious metal content is reported in grams metal per metric tonne (g/t).

### 3 RELIANCE ON OTHER EXPERTS (ITEM 3)

Solitario staff provided documentation related to environmental status, land and legal maps, deeds, mineral claims and royalty agreements, which were relied upon to support Sections 4, 5 and 6 of the report.

Previous reports were reviewed by Gustavson to determine if they the materials were suitable to be used in this report and edited where necessary.

## 4 PROPERTY DESCRIPTION & LOCATION (ITEM 4)

### 4.1 PROPERTY DESCRIPTION & LOCATION

The Florida Canyon Zinc Project is located in the Eastern Cordillera of Peru in the upper Amazon River Basin. It is 680 km north-northeast of Lima and 245 km northeast of Chiclayo, Peru, in the District of Shipasbamba, Bongará Province, Amazonas Department (Figure 4-1). The Project area can be reached from the coastal city of Chiclayo by the paved Carretera Marginal highway. The central point coordinates of the Project are approximately 825,248 East and, 9,352,626 North (UTM Zone 17S, Datum WGS 84). Elevation ranges from 1,800 meters to approximately 3,200 meters. The climate is classified as high-altitude tropical jungle and the annual rainfall average exceeds 1 m with up to 2 m in the cloud forest at higher elevations.



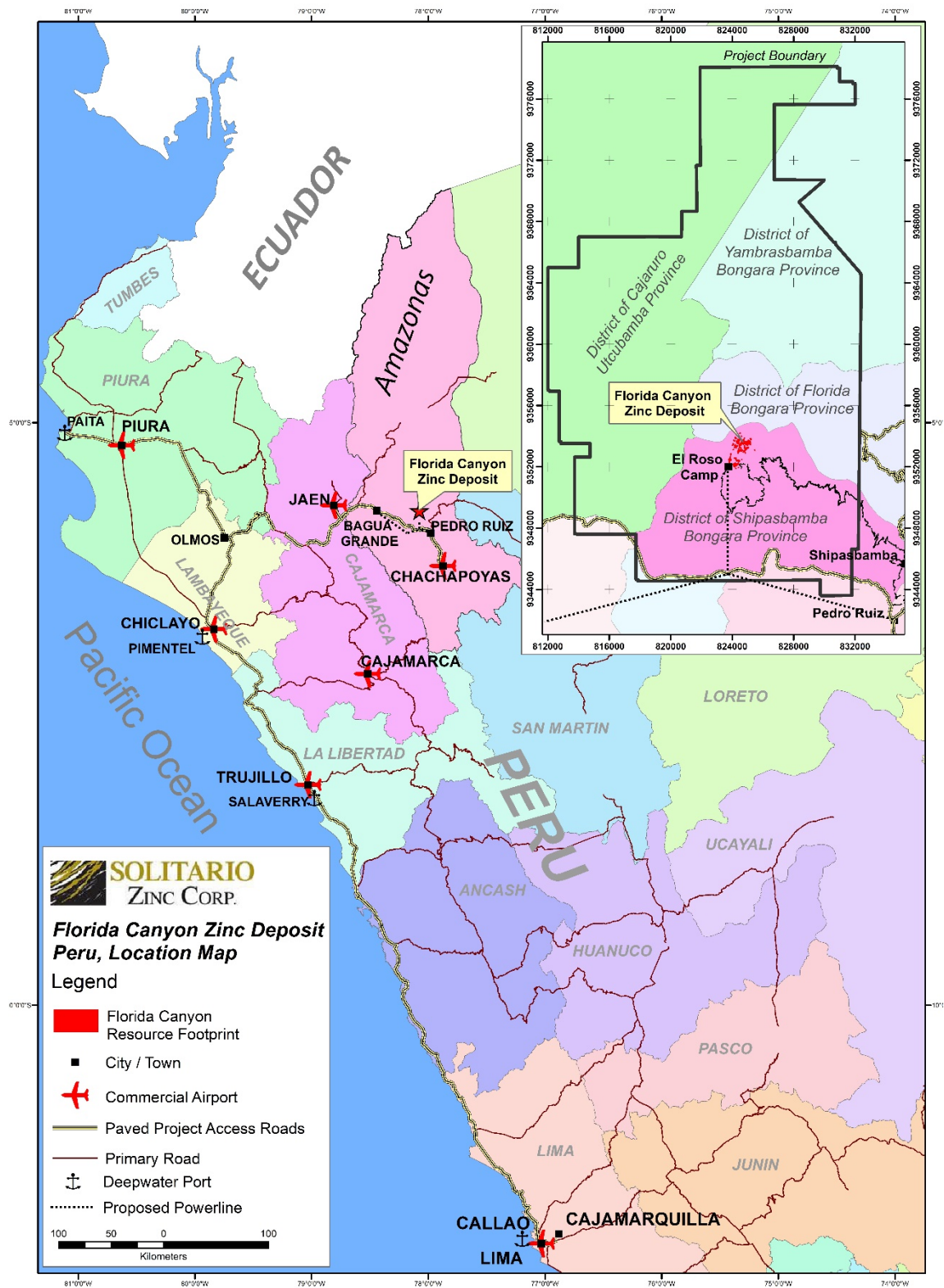


Figure 4-1 Project Location Map

## 4.2 MINERAL RIGHTS IN PERU

Mining in Peru is governed by the General Mining Law, which specifies that all mineral assets belong to the Peruvian State. Mining concessions are granted to individuals or other entities of national or foreign origin and authorize the title holder to perform all minerals-related activities from exploration to exploitation. Once titled, concessions are irrevocable for so long as the fees are paid to the federal government and legal obligations are performed on time. A claim can be granted only in multiples of a cuadrícula, which is a 100-ha plot, up to a maximum size of 1,000 ha. Boundaries of newly granted claims are oriented north-south or east-west. No monumentation of the claim boundary in the field is necessary.

Concessions are real assets and are subject to laws of private property. Foreign entities have the same rights as Peruvians to hold claims except for a zone within 50 km of international borders. Title holders have a right of access and development of minerals, but an access agreement is required with private property surface rights owners and formalized “Communities”. To ratify an agreement with a Community, a majority of all community members must vote in favor of the agreement as written. A recently issued law (as modified) also requires formal consultation with federally recognized indigenous communities in certain areas.

To maintain mining concessions in good standing the owner must:

- Pay annual license fees (“derechos de vigencia”), currently USD\$3/ha. Fees are reduced for qualified “small miners” who pay USD\$1/ha. The small miner is an individual or company owning no more than 2000 ha of mineral rights in Peru. Failure to pay the applicable license fees for any two consecutive years results in the cancellation of mining concessions.
- Starting in year 11 after originally acquiring the concession, the owner must either meet minimum production levels or minimum expenditure commitments. If the concession owner does not meet expenditure or production commitments, then the owner must also pay an annual penalty as follows.
  - Minimum annual production (MAP) must have a value of one UIT (Unidad Impositiva Tributaria), equal to 4,400 Peruvian soles (approximately US\$1200 in 2021) per hectare of the property. If the MAP is not achieved, then a penalty must be paid on a sliding scale escalating from 2% to 10% annually of the MAP. If the property is not in production by year 30 then the mineral rights are forfeited.
  - Minimum annual expenditure is defined as a value of ten times the value of the penalty as defined above.
  - Failure to pay applicable penalties for two consecutive years results in the cancellation of mining concessions.

### 4.3 MINERAL TITLES

The mineral resources at Florida Canyon are located on sixteen contiguous mining concessions covering approximately 12,600 ha (Table 4-1, Figure 4-2). The concession titles are in the name of the Peruvian company Minera Bongará S.A. and are subject of the Minera Bongará joint venture agreement between Solitario and Nexa Resources. All concession titles are current.

The Minera Bongará concessions are surrounded by a second group of forty-eight contiguous mining concessions, covering approximately 36,080 ha (Table 4-1, Figure 4-2). These concession titles are held in the name of Minera Chambará, a Peruvian company that is party to a separate joint venture agreement between Nexa and Solitario. Of the forty-eight concessions, nine titles are pending.

According to Peruvian law, concessions may be held indefinitely, subject to timely payment of annual fees to the government. At the time of issuance of this study, annual concession payments to the Peru Ministry of Mines were current for the Minera Bongará and Minera Chambará claims. Fees payable in 2021 for the Minera Bongará property will total approximately US \$613,000 (Table 4-1).

Nexa, who acts as Operator of the joint venture companies Minera Bongará and Minera Chambará, entered into a surface rights agreement with the local community of Shipasbamba which controls the surface rights of the portion of the Project affected by planned development. This agreement provides for annual payments and funding for mutually agreed upon social development programs in return for the right to perform exploration work including road building and drilling as described in 4.5.1.

**Table 4-1 List of Minera Bongará Mineral Concessions**

<b>Concession Name</b>	<b>Number</b>	<b>Status</b>	<b>Hectares</b>	<b>Claim Date</b>	<b>2021 Holding Fees (US\$)</b>	<b>District</b>
BONGARA CINCUENTICINCO	10233396	Titled	1,000	8/7/1996	26,561.64	FLORIDA/SHIPASBAMBA
BONGARA CINCUENTICUATRO	10233296	Titled	600	8/7/1996	15,936.99	FLORIDA/SHIPASBAMBA
BONGARA VEINTISIETE	10783595	Titled	300	6/26/1995	7,968.49	SHIPASBAMBA
DEL PIERO UNO	10338505	Titled	1,000	11/2/2005	26,561.64	FLORIDA/SHIPASBAMBA
DEL PIERO DOS	10338405	Titled	600	11/2/2005	13,280.82	FLORIDA/SHIPASBAMBA
DEL PIERO TRES	10338605	Titled	700	11/2/2005	15,936.99	FLORIDA/SHIPASBAMBA
DEL PIERO CUATRO	10000206	Titled	500	1/3/2006	26,561.64	FLORIDA/SHIPASBAMBA
DEL PIERO CINCO	10000306	Titled	1,000	1/3/2006	18,593.15	SHIPASBAMBA
DEL PIERO SEIS	10204507	Titled	1,000	3/23/2007	26,561.64	CAJARURO/FLORIDA
VM 42	10190507	Titled	1,000	3/21/2007	26,561.64	CAJARURO/FLORIDA/SHIPASBAMBA
VM 74	10193707	Titled	1,000	3/21/2007	26,561.64	SHIPASBAMBA
VM 75	10193807	Titled	1,000	3/21/2007	26,561.64	SHIPASBAMBA
VM 94	10045708	Titled	900	1/28/2008	2,700.00	FLORIDA/SHIPASBAMBA
VM 95	10045808	Titled	500	1/28/2008	13,280.82	FLORIDA
VM 97	10046008	Titled	1,000	1/28/2008	26,561.64	FLORIDA/SHIPASBAMBA
VM 98	10046108	Titled	500	1/28/2008	13,280.82	FLORIDA/SHIPASBAMBA
<b>Total</b>					<b>\$613,408.00</b>	

Source: Solitario, 2021

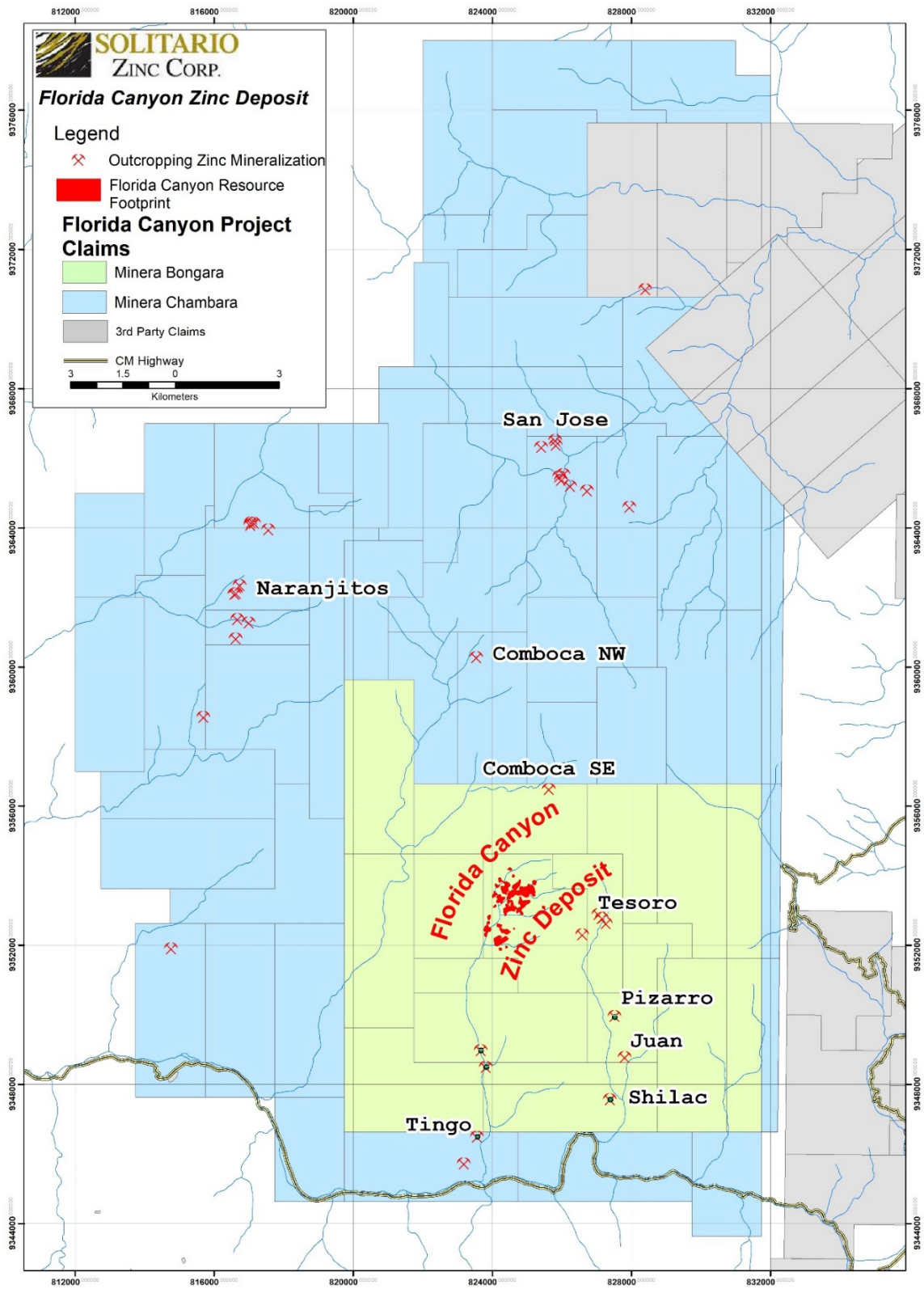


Figure 4-2 Map of Mineral Claims and Mineral Occurrences

#### 4.4 NATURE AND EXTENT OF ISSUER'S INTEREST

##### Minera Bongará Properties

Minera Bongará S.A. is a Peruvian company formed in 2006 in accordance with the terms of a joint venture agreement between Votorantim Metais-Cajamarquilla S.A. (now Nexa Resources) and Solitario. Nexa is the operating partner of Minera Bongará and is responsible for keeping the property in good standing. Current shareholding ownership of Minera Bongará is 39% Solitario, 61% Nexa. Nexa will earn a 70% interest in Minera Bongará by continuing to solely fund all project expenditures through the completion of a positive feasibility study. Nexa is required to offer a loan facility at market rates for Solitario's portion of construction capital to build a mine. Solitario will repay the loan through 50% of its project cash flow.

#### 4.5 ROYALTIES, TAXES & AGREEMENTS

Peru imposes a net smelter return royalty (NSR) on all precious and base metal production at a rate determined by the Operating Margin of a mining property. Table 4-2 shows the marginal royalty rate for various operating margins reported by the operator. The minimum rate is 1%.

**Table 4-2 Marginal royalty rates for various operating margins**

Royalty			
Nº	Operating Margin		Marginal Rate
1	0%	10%	1.00%
2	10%	15%	1.75%
3	15%	20%	2.50%
4	20%	25%	3.25%
5	25%	30%	4.00%
6	30%	35%	4.75%
7	35%	40%	5.50%
8	40%	45%	6.25%
9	45%	50%	7.00%
10	50%	55%	7.75%
11	55%	60%	8.50%
12	60%	65%	9.25%
13	65%	70%	10.00%
14	70%	75%	10.75%
15	75%	80%	11.50%
16	>80%		12.00%

Corporate income tax in Peru is charged at a flat rate of 29.5%. However, mining companies must also pay an additional "Special Mining Tax" (SMT) varying from 2 to 8.4% of net operating profit. The tax rate for the SMT is determined by the reported operating profit corresponding to one of 17 published tax brackets.



A Value added Tax of 18% is applied to the purchase prices of goods and services. However, certain geographical economic zones are excluded from the levy of this tax.

Since 2014, mining title holders are required to pay a contribution to the agencies in charge of regulatory oversight of mining activities: OEFA (environment); and OSINERGMIN (health and safety). The amount of the contribution is payable monthly and is calculated on the basis of monthly sales at rates of 0.10% to OEFA and OSINERGMIN.

#### 4.5.1 Property Agreements

The local community of Shipasbamba is the owner of the surface rights of the Minera Bongará Property. Nexa, the operator of the joint venture company Minera Bongará, entered into a three-year surface rights agreement in 2018 with the community of Shipasbamba. The agreement is in effect until the end of 2021. This agreement provides for annual payments to the community and funding for mutually agreed upon social development programs in return for Minera Bongará's right to perform exploration work including road building, underground exploration, and drilling. Under this agreement Nexa has obligations in 2021 as follows.

- Pay to the community US \$80,000
- Improve and maintain the existing forty-two-kilometer road from the town of Shipasbamba to the project area and local communities (See Figure 4-3)
- Assist the community by surveying community boundaries
- Provide the services of a veterinarian and a professional agronomist to assist community members with community projects.



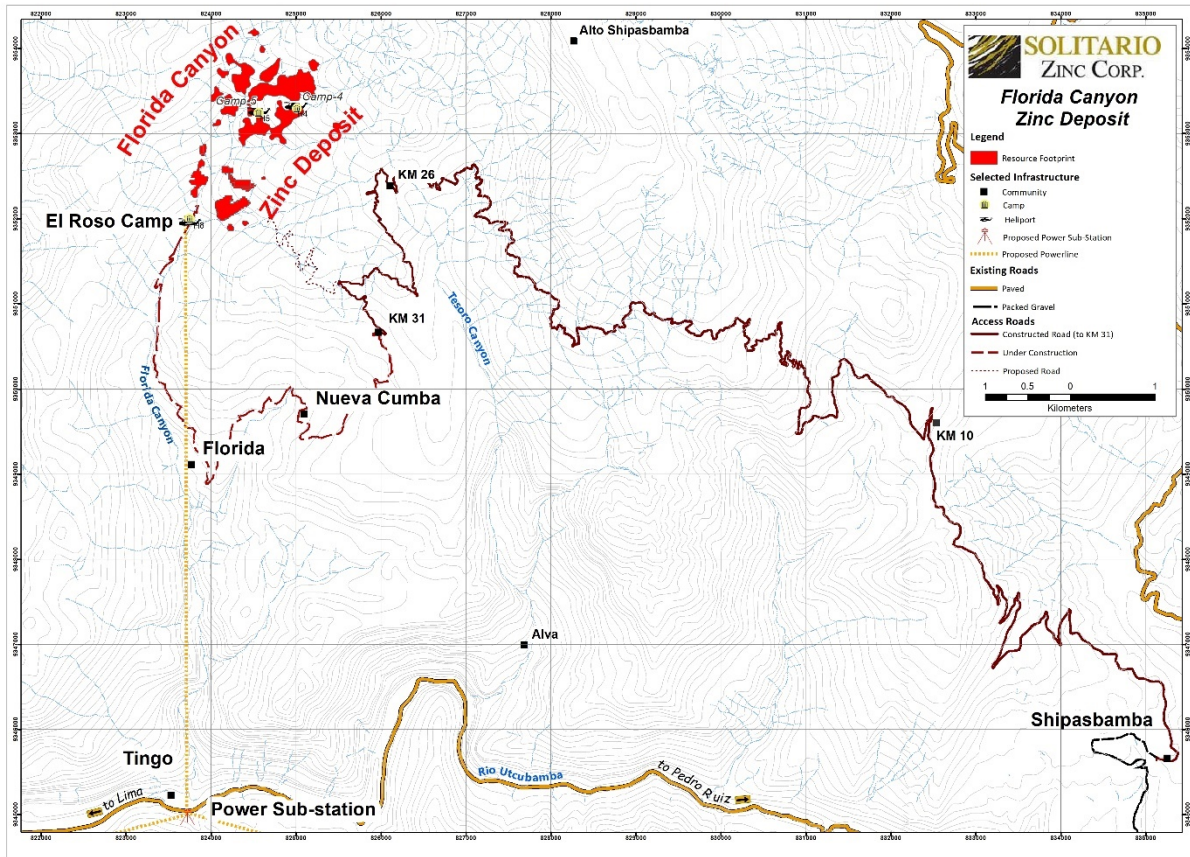


Figure 4-3 Access road to the Florida Canyon Project (in construction)

#### 4.6 ENVIRONMENTAL PERMITTING

The Ministry of Environment (MINAM) is the environmental authority in Peru. Its administrative department oversees compliance of environmental regulations for mineral exploration activities. Depending on the level of environmental impacts of a proposed exploration program the proponent will be required to prepare an environmental study to support an operating plan according to the following criteria.

An Environmental Technical Report (*Ficha Técnica Ambiental* or FTA) is a study prepared for approval of exploration activities with non-significant environmental impacts and the applicant is seeking permission to construct less than 20 drill platforms. The environmental authority has 10 working days to approve or make observations to the FTA.

An Environmental Impact Declaration (*Declaración de Impacto Ambiental* or DIA) must be presented for Category I level exploration activities which have a maximum of 40 drill platforms or disturbance of surface areas of up to 10 ha. The environmental authority has 45 working days to make observations.

A semi-detailed Environmental Impact Study (*Estudio de Impacto Ambiental Semi-Detallado* or EIAsd) is required for Category II exploration programs which have between 40–700 drill platforms or a surface disturbance of more than 10 ha. The environmental authority has 96

working days to make observations. The total process including preparation of the study by a registered environmental consulting company can take 6–12 months not including potential baseline studies.

A fully detailed Environmental Impact Study (*Estudio de Impacto Ambiental Detallado* or EIAD) must be presented for mine construction. The preparation and authorization of such a study can take as long as two years after preparation of the mine plan has been finalized.

Specific authorizations, permits and licenses required for future mining include, at a minimum:

- EIA (as modified during the mine life);
- Mine Closure Plan and Final Mine Closure Plan within two years of end of operation;
- Certificate of Nonexistence of Archaeological Remains;
- Water Use License (groundwater and/or surface water);
- Water construction authorization;
- Sewage authorization;
- Drinking water treatment facility license;
- Explosives use license and explosives storage licenses;
- Controlled chemicals certificate;
- Beneficiation concession;
- Mining authorization;
- Closure bonding; and
- Environmental Management Plan approval.

The Florida Canyon Project currently works under an approved EIAd which has been modified four times. A fifth modification of the EIAd is in preparation which will permit in excess of 100 additional drill sites and provide for expanded underground exploration previously permitted in earlier modifications. The fifth modification is planned for submission in 2021.

#### 4.7 OTHER SIGNIFICANT FACTORS & RISKS

There are no known significant factors or risks affecting access, title or right or ability to perform work on the property that are not discussed herein. Common risks of service rights, negotiations and permitting are not expected to be significant.

The project is in a remote area with challenging topography which will require upgrading of the local infrastructure for a commercial operation. Successful development and operation will require a strong commitment to the community to maintain the social license.

## 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY (ITEM 5)

### 5.1 TOPOGRAPHY, ELEVATION, VEGETATION

The Project area elevation ranges between 1,800 and 3,200 m, with areas of steep topography consisting of prominent escarpments and deep valleys. Dense jungle or forest vegetation covers most of the area, as shown in Figure 5-1.



**Figure 5-1 Photograph of the Florida Canyon Project Area**

Source: Solitario, 2021

### 5.2 CLIMATE & LENGTH OF OPERATING SEASON

The climate at the Project is high-altitude tropical jungle. The annual temperature at elevations between 1,000 m and 2,000 m averages around 25°C. Most precipitation occurs during the rainy season, generally from November to April. The annual rainfall average exceeds 1 m with up to 2 m in cloud forest at higher elevations. Although exploration can continue year-round, surface exploration is more difficult during the rainy season when visibility hampers helicopter supported programs and muddy conditions hinder ground travel and field work.

### 5.3 SUFFICIENCY OF SURFACE RIGHTS

The Project concession package provides legal basis for entry, exploration and mining. However, agreements are required with local surface rights owners prior to surface disturbing activities. Through the exploration period conducted to date, Nexa has signed periodic surface rights agreements with the community of Shipasbamba which controls virtually all land for which Minera Bongará controls mineral rights. Small inliers of private surface rights exist for which agreements with individual landowners are required from time to time. Minera Bongará has sufficient right for surface for the foreseen footprint of the operation.

### 5.4 ACCESSIBILITY & TRANSPORTATION TO THE PROPERTY

Road access to the Bongará province of Amazonas is provided primarily by the Carretera Marginal paved highway connecting the port city of Chiclayo to Pedro Ruiz Gallo, the largest town immediately adjacent to the project property. The road distance from Chiclayo to Pedro Ruiz is approximately 300 km and takes, on average, 6 hours by car. Pedro Ruiz is a regional commerce center with hotels, restaurants, communication, and a population estimated to be 10,000. The immediate Project area is not populated but there are several small villages nearby including the district capital of the Shipasbamba. Important smaller towns near the project are Florida and Nueva Cumba. A graded gravel road is maintained from Pedro Ruiz to Shipasbamba. Nexa is constructing a road that extends from Shipasbamba to local villages and the Project as discussed in 4.5.1 and shown on Figure 4-3.

### 5.5 INFRASTRUCTURE AVAILABILITY & SOURCES

#### 5.5.1 Existing Infrastructure

The Project area has little existing infrastructure with only the access road (under construction), several primitive drill camps (Figure 5-2 and Figure 5-3) and a number of drill pads. Drill camps provide support for drilling and technical crews, providing temporary housing, food preparation, mess halls, field offices and staging facilities during active drilling.

Surface drilling has been accomplished using helicopter support from Shipasbamba which lies 10 km to the southeast of the resource area. The Project core shed, heliport, sample preparation and sample storage facility are located in Shipasbamba (Figure 5-4). Office space and storage is also maintained in Pedro Ruiz.





**Figure 5-2 Photograph of part of the Roso Field Camp at Project Site**

Source: Solitario, 2014



**Figure 5-3 Drill Support Camp**

Source: Solitario, 2020



**Figure 5-4 Shipsabamba Project Camp**

Source: Solitario, 2020

### 5.5.2 Proximity to Population Center

No commercial services are currently available at the project site. The small communities of Florida and Nueva Cumba are 1 to 2 km south of the Roso drill camp on the foot trail from Tingo on the Utcubamba River to the Project. The Project Road under construction will connect Shipasbamba with the Roso camp and the villages of Florida and Nueva Cumba.

Shipasbamba is the nearest town to the Project with current road access. A graded gravel Provincial road provides access from Pedro Ruiz on the Carretera Marginal. Scheduled minibuses travel this route and public transportation is also provided by taxis and mototaxis.

Pedro Ruiz is the nearest town with commercial services including retail, hotels, restaurants and maintenance services. The nearest largest cities to Pedro Ruiz with regular air service are Chiclayo, a coastal port city, Jaen, a small city approximately three hours by road and Bagua Grande, two hours from Pedro Ruiz on the Carretera Marginal road.

The small population near the Project is supported by subsistence farming. Saleable crops include coffee, rocoto pepper, yucca, fruit and vegetables. Cedar trees are also harvested and used in local construction.

### 5.5.3 Power

There is currently no line power near the site. The 2017 Florida Canyon PEA assumed completion of a proposed hydropower generation and transmission development project located in close proximity to the mine (Figure 4-3). This planned project has now progressed to the detailed engineering phase by Energoret, a Private company with access to a mixture of government and private funding for hydroelectric projects. This Tingo hydroelectric complex near Florida Canyon is planned to be comprised of three separate hydroelectric plants along the Utcubamba River which will generate 400 MW. Power will be distributed to the national power grid by high voltage distribution lines. The closest point to the grid is seven kilometers south of El Roso camp on the

Utcubamba River where a substation is planned for power distribution to the Project (Figure 4-3). Nexa has entered into a Letter of Intent agreement with Energoret committing to use between 5 and 10 MW of available power. Current projections of power needs for a 2500 to 3000 tpd project at Florida Canyon is 7 to 8 MW.

The business arrangement between Energoret and Minera Bongará will be structured so that power rates would include repayment of capital to construct the powerline and substation.

#### 5.5.4 Water

The operation will require water for use for processing, mining, dust suppression and potable consumption. The processing facility will utilize a combination of recycled water generated by dewatering of tailings and stormwater captured on site for the majority of the processing needs. It is anticipated that ground water will be encountered in the mine and captured in sumps for mine water needs. Excess water will be released after residence in settling ponds. The very low pyrite content of the ore and waste and its high buffering capacity strongly suggests that water treatment of mine and other contact water will not be required.

Any additional water that will be required could be supplied by water well(s) developed on site.

Tesoro Creek, a small local drainage, has been used for domestic water supply by nearby residents. Treated water from this creek may be used for domestic requirements. It will be piped by gravity from the creek to a small treatment plant and a water storage tank.

Permits will be required from the Autoridad Nacional del Agua for industrial use, domestic use and treatment.

#### 5.5.5 Personnel

Many local workers have been employed at the project since its inception and have been trained in specialized tasks relating to minerals exploration. The majority reside in the local villages and in Pedro Ruiz. In addition, untrained labor is readily available from local communities where few formal employment opportunities currently exist. However, Peru is a mature mining country with a mobile workforce and abundant trained labor in specialized mining and industrial fields.



## 6 HISTORY (ITEM 6)

### 6.1 PREVIOUS OPERATIONS

Prior to the discovery of mineral occurrences by Solitario in 1994, no mineral prospecting had been done on the Property and no concessions had been historically recorded. In 1995 and later, Solitario staked many of the current mineral concessions in the Project area.

In 1996, Cominco Ltd. (Cominco) formed a joint venture partnership (JV) with Solitario. This agreement was subsequently terminated in 2000 and Solitario retained ownership of the property.

In 2006, Solitario formed two JV's with Nexa as described in Section 4.4, for the exploration and possible development of the properties.

### 6.2 HISTORICAL EXPLORATION & DEVELOPMENT RESULTS

In 1993 through 1995, Solitario executed a program of pitting and drilling at the previously known Mina Grande and Mina Chica oxide zinc prospects located 18 km northeast of the Project area. Solitario subsequently identified the Crystal prospect nearby and other oxidized zinc occurrences in the general area of the Yambrasbamba community. The geological studies and exploration work at these zinc deposits provided insights into the local stratigraphy and style of mineralization in the area. Comparisons with zinc occurrences elsewhere in Peru lead to the decision to undertake a regional exploration program to identify new occurrences of zinc in potentially more favorable stratigraphy.

The Florida Canyon zinc deposit was located through follow-up of an anomaly generated during a regional geochemical program in 1994.

Following formation of a JV with Solitario, Cominco Ltd., in conjunction with Solitario's workers, completed various programs of field work at Florida Canyon in 1997 to 2000 including geologic mapping, geophysical surveys, surface soil and rock sampling, and diamond drilling. The scope of these programs is summarized below.

- Geologic mapping at 1:1,000 scale covered 352 ha in the Project area. Mapping was conducted within Florida Canyon and its tributaries aided by hand-cut trails and clearing of vegetation-covered outcrops. This early mapping has been more recently validated in subsequent programs.
- Mineralized outcrops identified in the Project area were cleaned of soil cover and sampled by chip channels for a total of 347 channel samples collected. This sampling consisted of individual samples of lengths of up to 2.0 m at non-regular spacing.
- Stream sediment sampling of drainages was completed with consistent 500 m spacing along the gulches.
- Soil samples were collected along topographic contour lines spaced vertically 50 m apart but with irregular lateral spacing. Part of this soil sampling followed the crests of hills, especially in the western part of Florida Canyon, mainly to identify mineralized linear structures. A total of 600 samples were collected.

- An Induced Polarization (IP) geophysical survey in 3 lines covered 5.2 linear km. Two lines were located along the drainages A and B of the northern part of Florida Canyon with dipole-dipole spacing at 150 m, and a third line with dipole-dipole spacing  $a = 100$  m along the southern sector of the Sam Fault target. Cominco also surveyed 6.5 km of radial lines from holes FC-41 and FC-47, drilled in 1999.
- Diamond drilling between 1997 and 2000 totaled 82 holes and 24,781 m.

Solitario continued field work at a reduced scale until forming the Minera Bongará and Minera Chambará JV's in 2006 with a subsidiary of the private Brazilian mining company Votorantim Metais (now Nexa). Since that time Nexa increased the total number of exploration drill holes on the property to 545 comprising about 136,000 meters of core and completed about 700 meters of tunneling at the San Jorge deposit including 212 underground drill holes. Additionally, Nexa performed preliminary metallurgical work and various other engineering studies through 2017.

## 6.1 RECENT WORK

Since the issuance of the 2017 Florida Canyon PEA, drilling was conducted in 2018 and 2019 at the Florida Canyon Deposit, almost entirely within the known footprint of mineralization. This program consisted of 34 surface core holes totaling about 17,000 meters (Table 6-1). The primary objective of this drilling was to increase sulfide-dominant zinc resources. Additionally, the global resource model was reexamined and refined as data was gathered from new drilling. These programs were designed to accomplish the following objectives.

- Verify the hypothesized steeply dipping replacement deposit, the 1021 (ten twenty-one) Zone in the northern part of Florida Canyon. This objective was successful and delineated the mineralized structure for a strike length of approximately 800 meters based on a 1<sup>st</sup> pass spacing of drill intercepts. This new zone added Inferred Resources to the project resource model.
- Extend the San Jorge Zone in the southern part of Florida Canyon along strike to the south. This zone was successfully enlarged, and additions increased Inferred Resources to the project resource.
- Test continuity of the known steeply dipping Sam replacement zone. New drilling at the Sam Zone limited the extent of mineralization where tested and resulted in a modest decrease in Inferred Resources.
- Test the inferred presence of a new Manto (zone SJ-1412) extending to the east of the San Jorge Zone which successfully added Inferred Resources.
- Expand several other minor Manto zones which with modest increases in resources.
- The program successfully increased sulfide resources as all the 2018-2019 drill intercepts were sulfide dominant. Drill targets for sulfides are, by nature, deeper due to the depth of oxidation induced by surface weathering. However, the desirability of sulfide ores is much higher due to more favorable metallurgical characteristics of the ore.
- The change in Inferred resources as a result of all drilling and net of adjustments to the resource model was an addition of 6,015,733 tons of Inferred Resources in comparison to the previously reported 43-101 Compliant Report.

**Table 6-1 Campaign Summary - Florida Canyon**

<b>Year</b>	<b>Drill Holes</b>	<b>Company</b>	<b>Meters</b>	<b>Type</b>	<b>Contractor</b>
1997	34	Cominco	8,409.70	DDH	Boart Longyear
1998	8	Cominco	2,108.35	DDH	MDH Bradley
1999	9	Cominco	3,977.90	DDH	MDH Bradley
2000	31	Cominco	10,297.00	DDH	MDH Bradley
2006	26	Votorantim Metais	4,353.50	DDH	MDH Bradley
2007	33	Votorantim Metais	11,189.30	DDH	MDH Bradley
2008	54	Votorantim Metais	16,468.85	DDH	MDH Bradley
2009	13	Votorantim Metais	3,611.30	DDH	MDH Bradley
2010	42	Votorantim Metais	12,242.40	DDH	MDH Bradley
2011	44	Votorantim Metais	11,116.15	DDH	MDH Bradley
2012	110	Votorantim Metais	23,558.55	DDH	MDH Bradley
2013	102	Votorantim Metais	12,389.05	DDH	MDH Bradley
2018	5	Nexa Resources	2,202.90	DDH	Bretsa
2019	34	Nexa Resources	14,833.20	DDH	Bretsa
<b>Total</b>	<b>545</b>		<b>136,758.15</b>		

## 6.2 HISTORICAL MINERAL RESOURCE ESTIMATES

There were no mineral resource estimates prepared prior to the implementation of NI 43-101. Two mineral resource estimates were completed for the property in 2014 and 2017 by Votorantim and Solitario.

In 2014, SRK reported Measured and Indicated at 2.78 Mt of 12.77% Zn, 1.78% Pb, and 18.2g/t Ag and, Inferred at 9.07Mt of 10.87% Zn, 1.21% Pb and 12.2g/t Ag.

In 2017, SRK reported Measured and Indicated at 3.256 Mt of 12.2% Zn, 1.53% Pb, and 18.51g/t Ag, and Inferred at 8.843Mt of 10.15% Zn, 1.05% Pb and 13.21g/t Ag.

## 6.3 HISTORICAL PRODUCTION

There has not been any commercial mining in the Project area. The only underground excavation has been 700 m of underground drifting by Nexa to provide drill platforms at the San Jorge area.

## 7 GEOLOGICAL SETTING & MINERALIZATION (ITEM 7)

Information presented herein is derived from material provided by Nexa and Solitario, including Cominco reports, supported by independent reports including a thesis by Isaac Robles Vega of the National University of Huancavelica, M&R Consultores, and by the Regional Government of Amazonas, prepared by Walter Castro Medina. The character of the mineralization in core was confirmed by Simon Mortimer, Principle QP Geologist at Atticus Consulting in Lima/Santiago, during a site visit in 2020.

The Project is located within an extensive belt of Mesozoic carbonate rocks belonging to the Upper Triassic to Lower Jurassic Pucará Group and equivalents. This belt extends through the central and eastern extent of the Peruvian Andes for nearly 1000 km and is the host for many polymetallic and base metal vein and replacement deposits in the Peruvian Mineral Belt. Among these is the San Vicente Mississippi Valley Type (MVT) zinc-lead deposit that has many similarities to the Florida Canyon deposit and other MVT occurrences in the Project area. A regional geologic map is shown in Figure 7-1.

### 7.1 REGIONAL GEOLOGY

The Peruvian Andes are Northwest-Southeast trending. Reports by Megard (1979); Dalmayrac et al. (1988) and Benavides- Cáceres (1999) establish the regional geological studies related to the geological evolution of the Peruvian Andes. These include the basic tools that complement field data and geological context related to the occurrence of MVT mineralization.

The Marañón Complex of the Neoproterozoic Era forms the regional geological basement with a NW-SE orientation and consists of metasedimentary rocks (slate, quartzite, phyllite), schist, mica schist and gneiss. It outcrops in the Southwest sector of the quadrangle of Bagua and underlies the Mitu Group of the Permo-Triassic Period in an angular unconformity.

The Mitu Group is a typical molasse deposit (sandstones, shales, and conglomerates) of continental origin. It occurs in medium to thick layers and are differentiated by their reddish to pink colors. In the project area, it intercepts deep with drill holes V-46, V-36 and V37A. The most accessible outcrops are observed downstream of the Corontachaca bridge on the Utcubamba River (close to Pedro Ruiz). Along 10 km, there are red sandstone layers ranging from 0.30 m to 1 m in thickness. These layers are resistant to erosion and solidified the canyon morphology of the Utcubamba Valley. Overlying the Mitu Group outcrops the Upper Triassic to Lower Jurassic Pucará Group, which hosts the MVT mineralization of the Florida Canyon Project area.

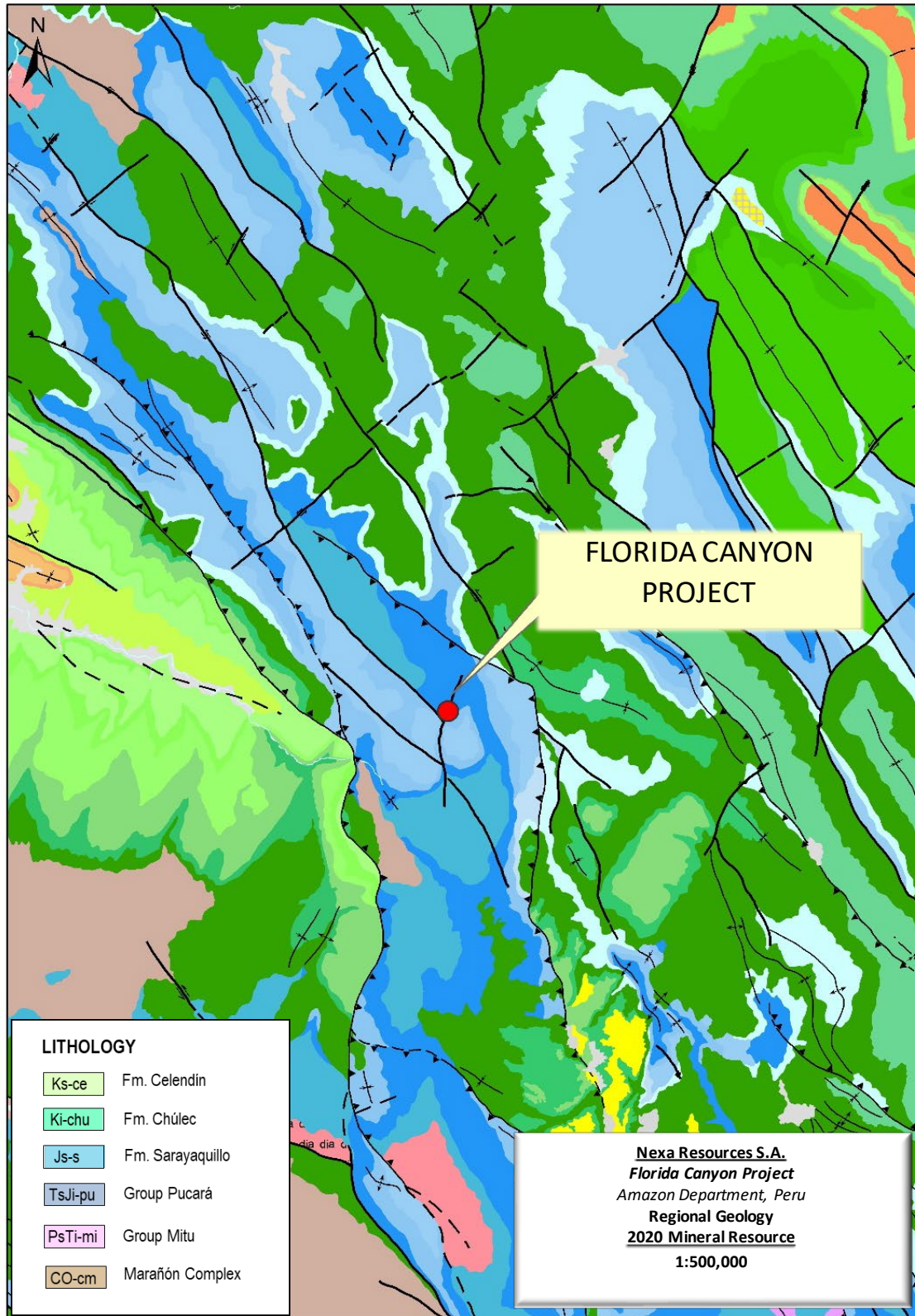
The Pucará Group is divided into 3 formations: Chambará (base), Aramachay (middle), and Condorsinga (top). The rocks of the Late Triassic-Early Jurassic Pucará Group that host the mineralized bodies were deposited along the coast basin. Sedimentation was dominated by carbonate rocks along a coastal sabkha plain. Evaporites, primarily anhydrite, associated with the coastal sabkha plain, along with coarse marine anoxic silt-carbonated mudstone, provided most of the components needed to host the Florida Canyon zinc-lead ore bodies.

1. The Chambará Formation corresponds to a marine sedimentation developed in subtropical to tropical seas where terrigenous contribution was restricted. Due to its lithological and

textural characteristics, the Chambará Formation represents lithofacies from the middle of the carbonated platform. In parts with shallow water features, such as coquina bioclastic limestone, the dolomitized levels are what host most of the MVT mineralization of Florida Canyon. In the Florida Canyon Project area, the Chambará Formation is composed of high energy carbonates of barrier environments with local reef development that are represented by floatstone, wackestone, packstone and rudstone textures. Dimond drilling confirms the presence of district continuity of biostratigraphic markers.

2. The Aramachay formation is made up of a sequence of bituminous limestone with alternating silt and clay in thin layers, corresponding to basin levels, where rhythmic sedimentation predominates which resulted in flat, tabular and regular bedding in layers of 10-20 cm. These layers are dark gray to black in color and present an abundance of organic material with the presence of fossils.
3. The Corontachaca Formation is made up of calcareous conglomerates and calcareous sedimentary breccias. The presence of the rock in this formation is limited in the project area. However, it outcrops on the high peaks of the Santa Catalina area near Shipasbamba and on the Corontachaca Bridge on the Utcubamba River. It is related to the uplift and intense erosion of the limestones of the Pucara Group that give rise to the accumulation of slope deposits which were cemented by their own calcium carbonate solutions.





**Figure 7-1 Regional Geologic Map**

Source: Solitario, 2020 (translated)

				LEGEND			
Eras	Period	Epoch	Age	LITHOLOGICAL UNIT	DESCRIPTION	IGNEOUS ROCKS	
CENOZOIC	QUATERNARY	Pleistocene		Alluvial deposits	Qp-al	Gravels, sands and clays that occupy river valleys, plains, alluvial fans and terraces	
	NEOGENE	Miocene		Fm. Sambimera	Upper Member	PN-s/s	Undifferentiated sequence of fine to coarse grained sandstones, reddish-brown shales, and siltstones. Levels of gray limestone and some beige tuffs.
		PALEOGENE		Oligocene	Lower Member	P-s/i	Marls, shales and siltsones interspersed with red sandstones, plus whitish layers of sandstones and siltstones. At the base are some layers of tuff.
				Eocene			
	Paleocene						
MESOZOIC	CRETACEOUS	UPPER/LATE	Maastrichtian	Formations under Triunfo/Rentema	KsP-ft/re	Sandstone interspersed with shales, marls and red siltstone, as well as microconglomerates. Conglomerates and conglomerate sandstones.	
			Campanian	Celendín Formation	Ks-ce	Gray to green sales and siltsones, sometimes variegated, with intercalations of thin gray limestone.	
		LOWER/EARLY	Albian	Cajamarca Formation	Ki-c	Undifferentiated sequence made up of beige limestones, brownish gray limestones, as well as gray sales, greenish gray siltstones and loamy limestones.	
				Pullucana/Quilquiñán Formations	Ki-p/q	Undifferentiated sequence of gray limestones, marly limestone in layers of 1 to 2 m	
				Chúlec Formation	Ki-chu	Gray limestones interspersed with gray sales.	
	Aptian	Goyllarisquiza Group	Ki-g	Medium grained, whitish quartz sandstone with cross stratification.			
	JURASSIC		Sarayaquillo Formation	Js-s	Fine to médium, reddish brown sandstones with cross stratification and layers of shales and red siltstones.		
			Pucará Group	TsJi-pu	Banks of gray and black limestone varying from centimeters to meters with chert and calcareous nodules. They are interspersed with black and gray sales, sometimes laminated. They contain ammonite and bivalve fossils.		
	TRIASSIC			Mitu Group	PsTi-mi	Arcosic sandstones of coarse to médium grain sandstones. Breccias and polymictic conglomerates With clasts of volcanic rocks, gneises, quartz schists and sandstones. Together they are red and sometimes purplish	
PALEOZOIC	PERMIAN						
	ORDOVICIAN						
	CAMBRIAN						
				Marañón Complex	CO-cm	Greenish-gray schists and micaschists. Less frequent gneises and quartzites. Associated with Quartz veins and andesitic dikes.	

**Figure 7-2 Legend of Regional Geology Map Figure 7-1**

Source: Solitario, 2020 (translated)



## 7.2 LOCAL GEOLOGY

### 7.2.1 Lithography & Stratigraphy

A schematic stratigraphic column developed by Cominco and refined by Nexa shows the major geologic rock units in the Project area (Figure 7-3). The basement rocks are the Pre-Cambrian Mara  n Complex consisting of gneisses, mica-schists, phyllites and quartzites. These are overlain by an angular unconformity with the overlying Permo -Triassic Mitu Group composed of a sequence of redbeds consisting of polymictic conglomerates interspersed with beds of fine-grained sandstones.



**Figure 7-3 Project Area Stratigraphic Column**

Source: Nexa, 2013b, translated by Solitario

Overlying the Mitu Group is the Pucará Group of Triassic - lower Jurassic age, which hosts the zinc-lead-silver mineralization of the Florida Canyon Project. The Pucará Group is divided into the Chambará Formation at the base, the Aramachay Formation in the middle and the Condorsinga Formation on top.

The Chambará formation has an approximate thickness between 650 m and 750 m in the project area, and consists of crinoidal packstone, wackstones and rudstones. It is divided into three

members in the Florida Canyon vicinity; from bottom to top, they are Chambará 1, Chambará 2 and Chambará 3. The bulk of known zinc mineralization is hosted in Chambará 2. The stratigraphy between the distinctive Coquina (CM) and Intact Bivalve (IBM) paleontological marker horizons in Chambará 2 define a sequence of permeable higher energy facies within the Chambará 2 that control much of the especially strong dolomitization within the sequence.

The Aramachay formation lies conformably on the Chambará with a variable thickness between 150 m and 250 m, consisting of a monotonous sequence of black and limonitic shales and bitumen with thin interbedded nodular limestones. The Condorsinga Formation concordantly lies above, with restricted outcrop distribution due to erosion. It consists of calcareous gray mudstones with thicknesses varying between 150 m and 300 m.

The Corontochaca Formation of Upper Jurassic age lies unconformably on the Pucará Group. It outcrops in erosional remnants and is locally more than 300 m thick consisting of a package of monotonous oligomictic and polymictic fluvial calcareous sediments and colluvial limestone breccias with local fragments of Paleozoic or Precambrian fragments.

The Goyllarisquizga Formation occurs in angular unconformity over the Corontochaca and Pucará Group and is present mainly in the eastern and western sections of the Project area. It consists of poorly sorted yellowish to white sandstone deposited in coastal marine to fluvial-deltaic environments. It also contains some thin, lenticular intercalations of siltstones and mudstones whitish to reddish. The thickness ranges from 300 to 400 m.

### 7.2.2 Structure

The following discussion of structural geology in the Project area is adapted in part from an internal report by Cominco (2000).

The structure at Florida Canyon is dominated by a N50°-60°W trending domal anticline (or doubly plunging anticline) as defined from the base of Chambará 2 formation. This domal anticline is cut on the west by the Sam Fault and to the east by the Tesoro-Florida Fault. The Sam Fault, which has been defined by drilling, has a north-south to northeast trend and a steep 80 to 85° westerly dip. The Sam Fault has an apparent scissor dip-slip displacement of >120 m in the north and <50 m in the south. To the south its trace is uncertain and complicated by northwest and possibly east-west structures. This appears to have been a long-lived structure, with its last strike-slip displacement being dextral. A facies change in the Chambará 2 from high energy to the east of the fault to low energy to the west may be due to original depositional features during growth fault formation that has important exploration implications.

At Florida Canyon there are also well-defined northwest and northeast fracture systems, which appear to have important controls on the location of mineralization. Mineralized structures occur in conjugate fractures, with N10°-50°E trends present at a number of mineralized surface outcrops while trends of N50°-80°W are identified at other showings. Mineralization of mantos within the Karen-Milagros area appears to be preferentially controlled by northeast feeder structures.

The Tesoro-Florida Fault defining the eastern limits of most drilling to date is a N15°-30°W trending structure, part of a regional lineament, and defined by an escarpment. It is interpreted to have a steep dip, with its sense of motion not having been defined, but with the east block being

structurally lower than the west block, which results in significantly deeper drilling on the east fault block to reach the Chambará 2 stratigraphy. Because most of the work has concentrated further west on the San Jorge, Karen Milagros and Sam Fault areas there is little information on the Tesoro-Florida Fault, but it likely has similarly complex splays as the Sam Fault and may be, like the Sam fault, a controlling feeder for untested mineral potential in the eastern area.

At both the Karen-Milagros and San Jorge areas, feeder structures have an important control on the mineralized mantos but also represent a significant portion of the resource as steeply dipping structural fillings and replacement. The displacement along these structures is not large although the exact throw is often difficult to ascertain due to the strong alteration and later mineralization. The interpretation of displacement is further obscured by likely subtle variation in thickness and lithology of local stratigraphic units on either side of structures due to growth faulting.

Pre-mineral karsting also played a role in controlling mineralization along with simple structural filling and passive replacement adjacent to conduits. Replacement of karst fragments and cave sediments are commonly observed in larger structurally controlled mineralized bodies. The configuration of mineralized structures as they control and merge with manto replacements often take the form of Christmas-tree breakthrough structures and will likely be shown to represent a larger proportion of the resource as more horizontally oriented drilling from underground workings supplants the dominantly high angle surface drilling performed to date.

Post mineral structure and karsting overprints earlier structural trends and controls in part oxidized remobilized mineralization.

### 7.2.3 Alteration

The alteration and solution overprints in the Florida Canyon deposit include dolomitization, pseudo brecciation and karstification, mainly affecting the limestones of Chambará 2 and locally Chambará 1 and 3. Dolomitization and karstification occurred in multiple events spatially overlapping the structural corridors Sam, San Jorge and Karen-Milagros. Dolomitization was an important control on the movement of mineralizing fluids and has been studied and logged in detail throughout all of the drilling campaigns. It is also modeled in this study as a limiting constraint on mineralization.

The alteration halo is open along structure in all directions and is especially pervasive in the stratigraphic interval lying between the paleontological marker horizons CM (Coquina Marker) and IBM (Intact Bivalve Marker) of the Chambará 2 formation. The alteration halo is composed mostly of medium and coarse-grained crystalline dolomite replacing calcareous packstone, rudstones, floatstones and wackestones. Mostly the dolomitic rudstones, and locally the packstones, transform laterally when in proximity of faults and major fractures (Sam, San Jorge and Karen-Milagros) to mineralized pseudobreccias and karst structures.

### 7.2.4 Mineralization

The zinc-lead-silver mineralization of the Florida Canyon deposit occurs as sulfides hosted in dolomitized zones of the Chambará 2 Formation. Dolomite paragenesis and later sulfide mineralization are controlled by a combination of porosity, permeability, and structural

preparation. Metals occur in sphalerite and lesser galena, which contains silver. Minor mineralization is hosted in limestones, but the bulk of sphalerite and galena is hosted in dolomite.

In a number of core samples, the mineralization has very sharp contacts along the dolomitization boundary. Characteristic mineralization textures include massive and disseminated mantos, mineralization in dissolution breccias, collapse breccias and pseudobreccias. The different breccias and vein types are structurally controlled by faults of north-south and northeast-southwest direction.

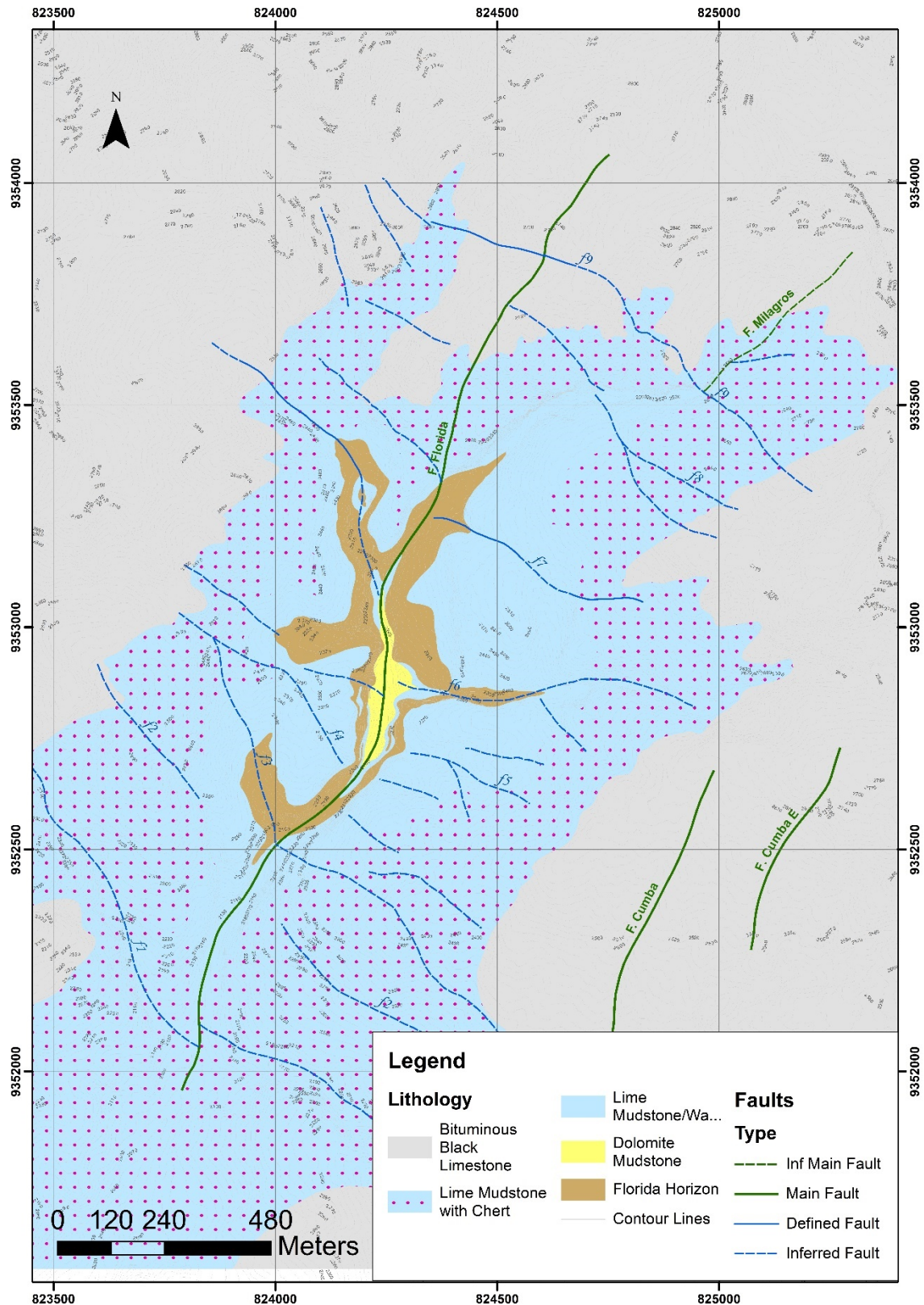
The mineralization is characterized by the presence of sphalerite, galena and locally pyrite. Sulfide replacements occur in dolomitized limestone of variable grain sized and in solution breccias with white dolospar and lesser amounts of late generation calcite. Pyrite content is generally low, with percentages averaging less than 2% by volume. Sphalerite in mineralized sections has variable grain size from 0.1 to greater than 5 mm, with colors ranging from dark brown through reddish brown to light brown. It occurs as individual crystals or in massive form, sometimes displaying colloform textures with bands of slightly differing color zoning, indicators of polyphase hydrothermal deposition.

Early fine-grained sphalerite has evidence of later deformation and reactions to secondary mineralizing fluids. A second phase of more massive sphalerite mineralization is observed within the core of the deposit. These crystals are coarse-grained, regular, euhedral and show very little evidence of any post-depositional deformation. The sphalerite is contemporaneous with fine to coarse grained galena and is often overprinted with a later stage coarse-grained, euhedral galena.

The presence of zinc oxides, locally to considerable depths, is due to syngenetic oxidation, with later contributions of basin-derived connate water and movement of rainwater through fractures that leached the limestones and formed significant karst cavities.

### 7.3 PROPERTY GEOLOGY

The areas of current exploration interest are the Karen/Milagros, San Jorge and Sam Fault deposits. These mineralized zones are hosted in the dolomitized Chambará 2 sub-unit of the Pucará Group carbonates, bracketed by the Coquina and Intact Bivalve Marker beds. Geologic mapping and modeling include refining the extents of Chambará 2, and further defining the steeply dipping feeder structures to predict additional zinc-lead-silver mineralization. The outcrop geology of the deposit area is shown in Figure 7-4, with emphasis on the Chambará Formation.



**Figure 7-4 Florida Canyon Project Geologic Map**

Source: Nexa, 2020 (translated)

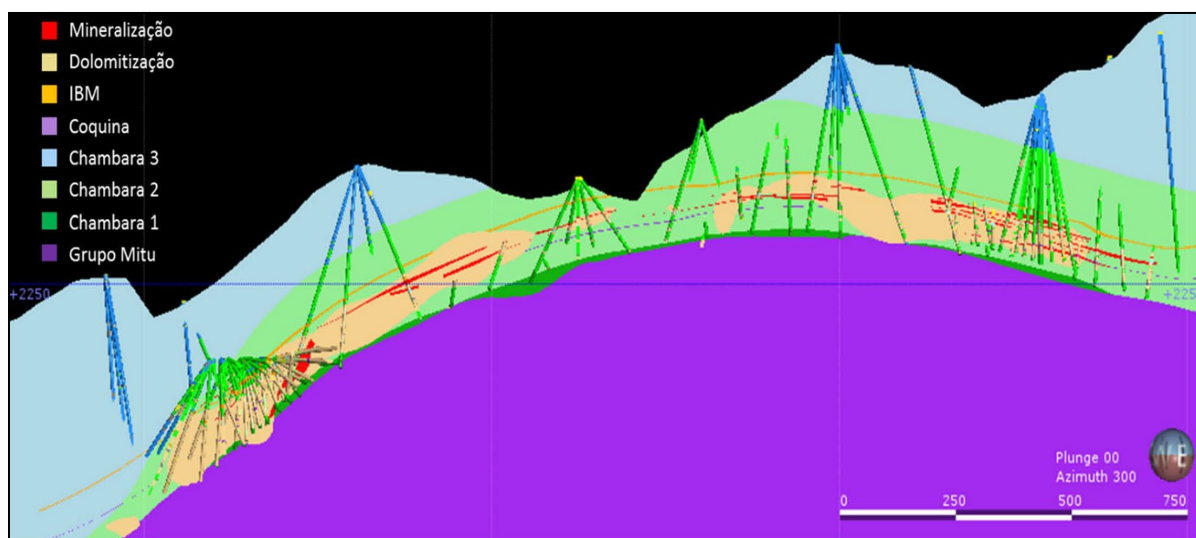


#### 7.4 SIGNIFICANT MINERALIZED ZONE

Local and regional geologic mapping, geologic drillhole logs, and the dome-shaped geometry of the deposit suggest the mineralization is hosted in a broad anticline structure. Florida Canyon is the collective name of the deposits in the Project area in Florida Canyon, and includes the Karen-Milagros, San Jorge, Sam Fault zones and similar mineralized strata between these areas.

Modeled manto zones are between 1 m and 9 m thick and occur over an area of about 1 km x 3 km and are open in all directions. Unmineralized gaps exist within the mineralized manto zones, as is typical for hydrothermal replacement deposits. Irregular steeply dipping replacement bodies also occur, frequently at the intersection of vein-like feeder structures and in karst-controlled mineralization.

Mineralization outcrops locally in a number of areas and has been drilled at depths of up to about 450 m below ground surface. Figure 7 4 is a west-facing cross section of the geologic model in the mineralized zone. Zinc mineralization occurs as massive sphalerite ( $\text{ZnS}$ ) and is locally oxidized to smithsonite ( $\text{ZnCO}_3$ ) and hemimorphite ( $\text{Zn}_4\text{Si}_2\text{O}_7(\text{OH})_2$ ). Lead occurs in galena ( $\text{PbS}$ ), cerussite ( $\text{PbCO}_3$ ) and anglesite ( $\text{PbSO}_4$ ).



**Figure 7-5 Cross Section of the Project Geologic Model**

Source: Nexa, 2013b

## 8 DEPOSIT TYPES (ITEM 8)

MVT deposits are hosted in carbonate rocks and show cavity-filling or replacement-style mineralization. The characteristic minerals are sphalerite, galena, fluorite, and barite which provide clean concentrates of Zn and Pb. The host rock may be silicified, and common alteration minerals include dolomite, calcite, jasperoid and silica. MVT deposits are typically spatially extensive but limited by the permeability of the host rock units. This control makes them appear stratabound. Chemical and structural preparation are the main controls on permeability, and therefore, the extent of fluid migration and metal precipitation (Guilbert and Park, 1986).

Pb-Zn deposits in South America are hosted in the Mesozoic Carbonate sequence of the Pucará Group in the central Andes. In Peru, this type of deposit is represented mainly by the San Vicente and Shalipayco deposits (located in central Peru), and Florida Canyon, located in the Bongará Region of northern Peru.

The Florida Canyon Deposit is in the Eastern Cordillera of Peru within the limit of the Shipasbamba community of the Amazonas Department.

### 8.1 MINERAL DEPOSIT

An area of 20 km x 100 km extending from Mina Grande to north to 80 km south of the Florida Canyon deposit has become the focus of what is an emerging Mississippi-Valley Type (MVT) zinc and lead province, with many surface occurrences and stream sediment anomalies distributed throughout the Pucará Group. The main host rock of zinc and lead occurrences in the mineral district and Project area is dolomitized limestone, which may show karst or collapse breccia textures.



[illegible]

Source: Nexa, 2014a

## 9 EXPLORATION (ITEM 9)

### 9.1 RELEVANT EXPLORATION WORK

The Florida Canyon Project has identified and delineated mineral resources in the San Jorge, Sam, 1021, and Karen-Milagros areas.

In previous years, Cominco and Nexa executed detailed surface mapping and rock sampling programs of the areas near the reported resource. Stream sediment and soil samples were collected and analyzed as described in Section 6.2

An extensive regional reconnaissance exploration program was also conducted over a large area throughout the Mesozoic carbonate belt to the north and south of the Property. Geochemical samples were collected of stream sediments, soils and rocks.

During development of the San Jorge adit, Nexa completed geologic mapping and chip sampling of the underground workings. Results were applied to the Project geologic model in support of resource estimation and continued exploration drillhole planning.

Sampling of drill core is described in detail in Section 11. The regional stream sediment program collected sediments that were screened to -80 mesh, crushed and analyzed for a multielement suite by ICP. Soil samples collected were composites of B horizon soils and C horizon when accessible.

Rock sample methodology varied according to location. Grab samples were taken where outcrops were found that showed evidence of dolomitization of carbonate beds. Mineralized outcrops were cleared manually with machetes and shovels and systematically chip channeled. Channels were oriented perpendicular to bedding to most accurately represent stratigraphic thickness. Channel samples were limited to 2 m in length by Cominco and 1 m by Nexa. Most of the chip channel sampling of higher-grade mineralization has been conducted in the Karen Milagros zone and other areas in the central part of the Property where outcrops of mineralization are most common, as illustrated in Figure 9-1.

### 9.2 SIGNIFICANT RESULTS & INTERPRETATION

Exploration strategy for MVT deposits at the Florida Canyon project has been strongly influenced by the interpreted favorability of specific units of the stratigraphy of the region. Numerous occurrences of alteration and mineralization occur throughout the Pucara Group, but economic deposits have only been thus far located within the Triassic Chambará formation (Figure 7-2). More specifically the middle member of the Chambará Formation (Chambará 2) has been found to host the most persistent and highest grade manto deposits due to its higher permeability and susceptibility to altering and mineralizing fluids. Synsedimentary structures, formed during or slightly after sedimentation, controlled the flow of basinal brines that dolomitized and subsequently mineralized the carbonates. The mineral rich fluids migrated from these “feeders” laterally into the stratigraphic column to form mantos.

Economic resources have been delineated in both the stratigraphically controlled mantos as well as the feeders, such as the San Jorge and Sam mineralized bodies. The higher angle structures have

also been subject to karst formation that further enhanced fluid flow and are themselves often well mineralized with higher grade wider mineralization e.g. San Jorge.

Particularly prospective locations to explore for these high grade, high tonnage deposits exist along the northeast trending lineaments (drainages) immediately north and south of Karen Milagros where outcropping massive mineralization may be expressions of breakthrough structures. These locations have not been adequately tested to date due to the difficult access for helicopter supported drilling. The completion of road access will facilitate testing of these targets.

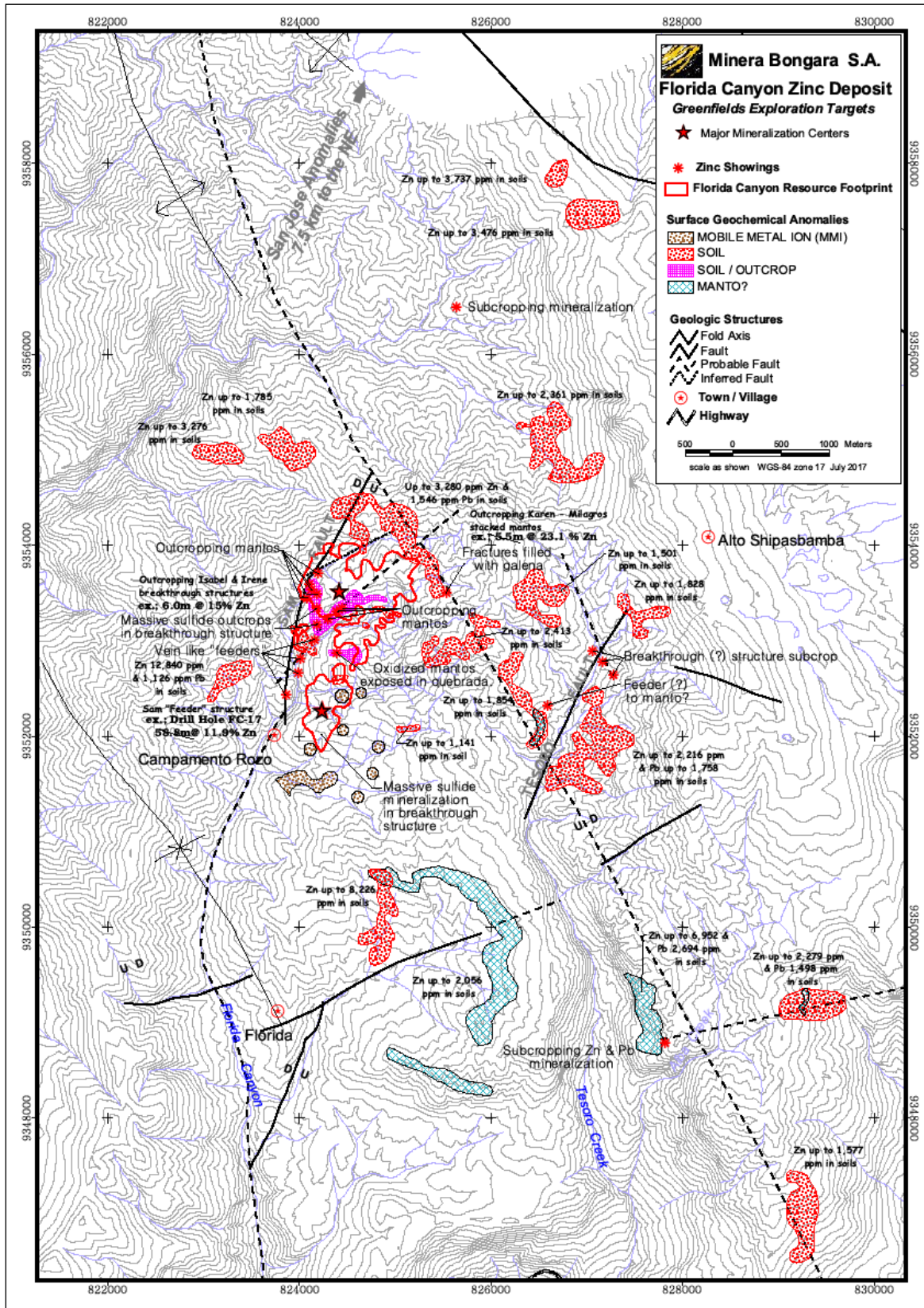


Figure 9-1 Florida Canyon Area Prospect and Geochemistry Map

These steeply dipping bodies occur over stratigraphic intervals that extend upwards into the Chambará 3, Aramachay and Condorsinga formations. The depth extent of mineralization in the feeders is currently unknown. These conduits enabled metal rich fluids to enrich the overlying stratigraphy and provide potentially important evidence for exploration.

Geochemical samples were collected at different stages during the life of the project. Information on sampling methods and results are scarce. Table 9-1 is a summary table on the surface sampling in the Project area.

**Table 9-1 Summary of Total Surface Samples**

<b>Year</b>	<b>Company</b>	<b>Rocks</b>	<b>Soils</b>	<b>Stream Sediment</b>
1996	Solitario		507	
1997	Cominco	1,240	2,361	3,426
1998	Cominco	1,404	3,821	1,773
1999	Cominco	380	1,752	491
2000	Cominco	155		26
2008	Votorantim	5	123	12
2009	Votorantim	77		20
2011	Votorantim	2		
2012	Votorantim	83	16	72
2019	Nexa	3		
<b>TOTAL</b>		<b>3,349</b>	<b>8,580</b>	<b>5,820</b>

Geochemical prospecting is very effective in locating the leakage halos in overlying stratigraphy around these structures. Initially stream sediments were used to identify geochemically enriched drainages and were followed up with prospecting and soil surveys to pinpoint mineralized centers. Although no detailed mapping has been done over much of the property, geologists made observations of the stratigraphic location within areas of high geochemical response.

Figure 9-2 shows the results of the regional geochemistry program. The area in the immediate vicinity of the Florida Canyon resource exhibits very high base metal content in stream sediment, soils and rocks. Only a small area of Chambará 2 crops out in this area as shown in orange color on the geologic map of the Florida/Tesoro vicinity (Figure 9-3). Outcropping high grade mineralization in this window of Chambará led to the initial discovery of the known Florida Canyon deposits.

Nearby, there are significant soil anomalies in higher stratigraphy that warrant future exploration drilling. These anomalies occur in undrilled areas within the horst that hosts the current resources as well as to the west of the Sam Fault and East of the Tesoro Fault.

Further to the north two very large and strong soil anomalies have been defined by the regional geochemical sampling program (Figure 9-2). The San Jose soil anomaly is of similar size and grade to that at Florida Canyon, however; it is untested with drilling. Based on the clear

relationship between surface geochemistry and subsurface mineralization at Florida Canyon, drilling is warranted in the San Jose and Naranjitos areas.



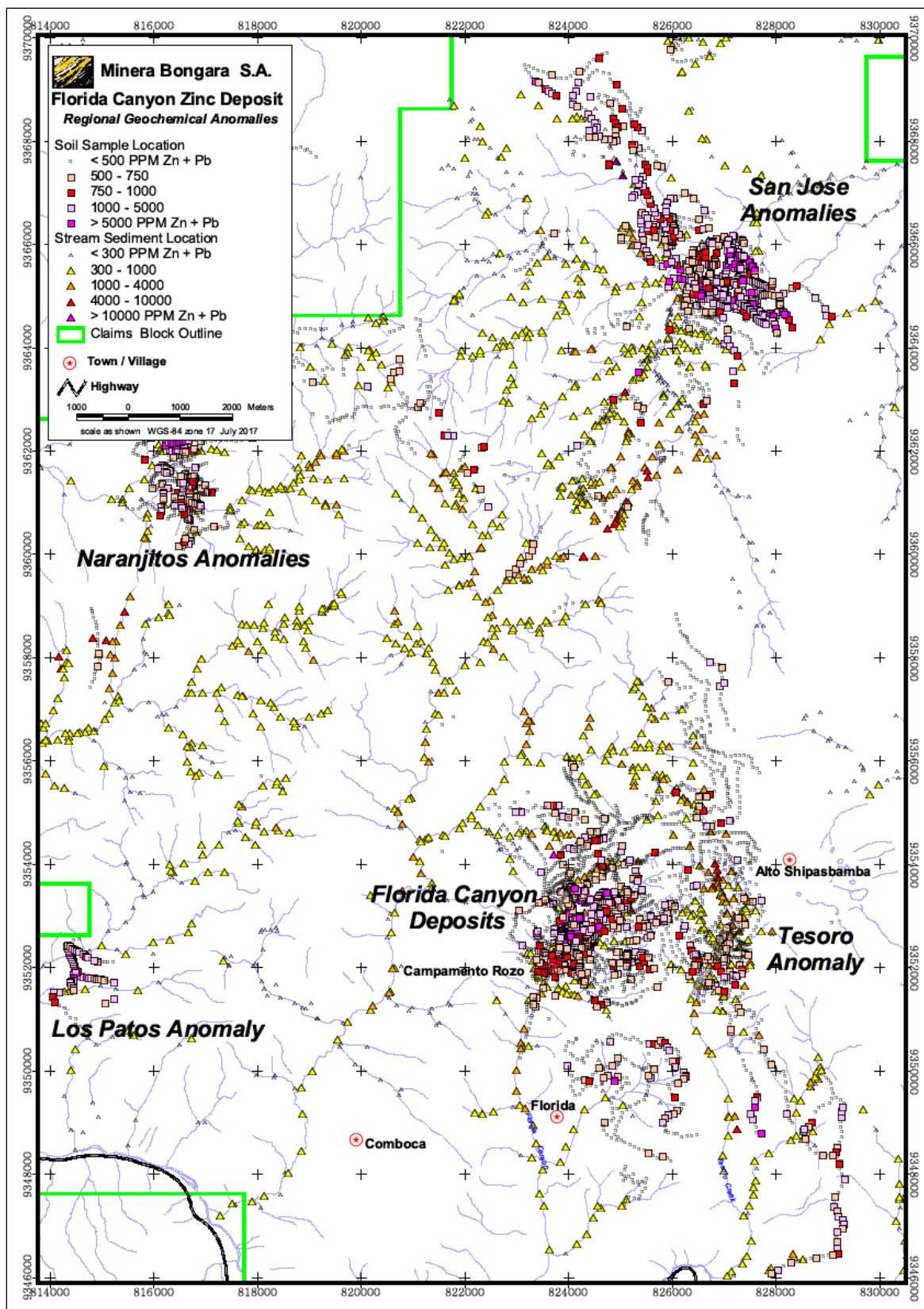


Figure 9-2 Regional Geochemical Results



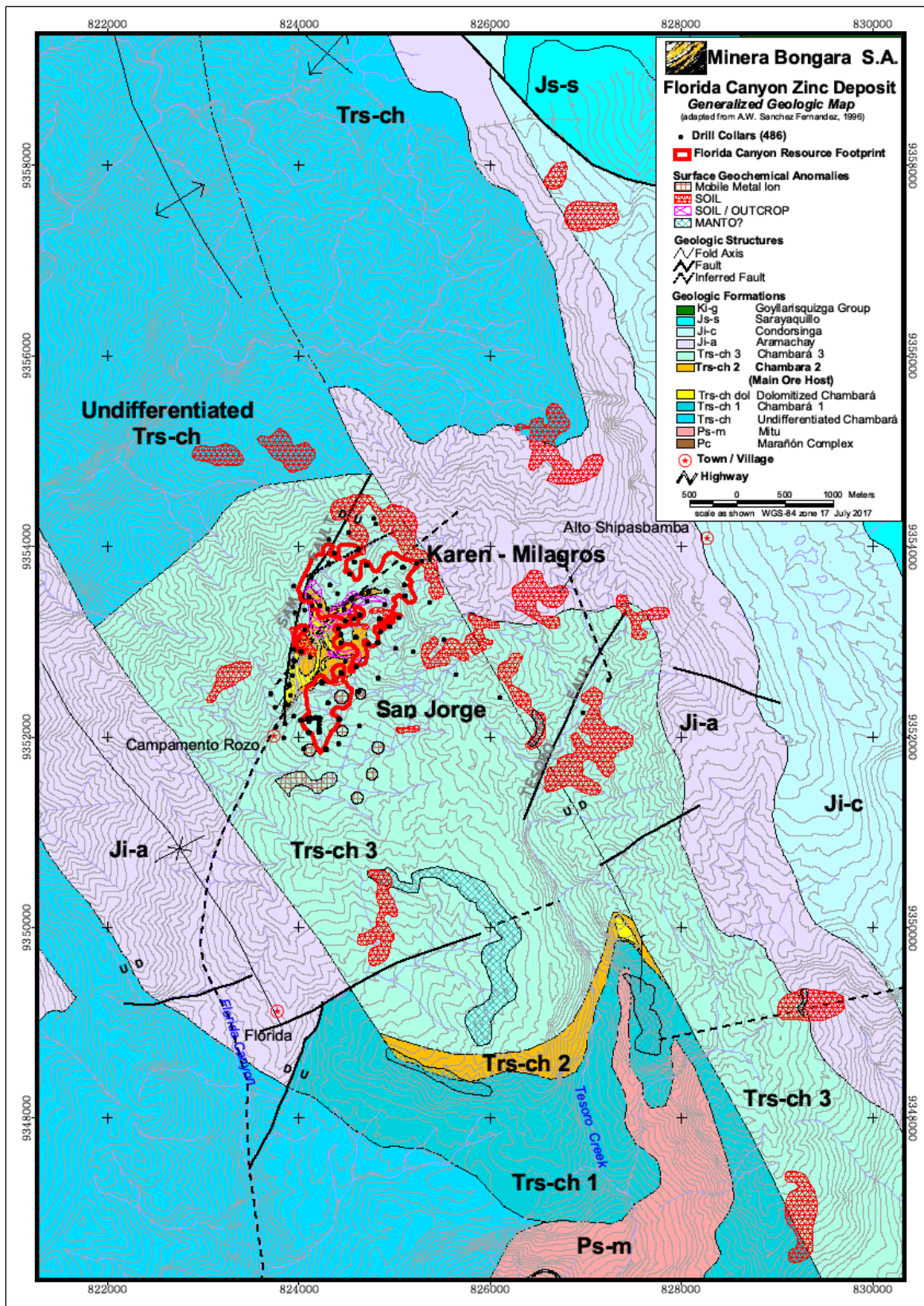


Figure 9-3 Florida Canyon Area Simplified Geology, Resource and Drillhole Map

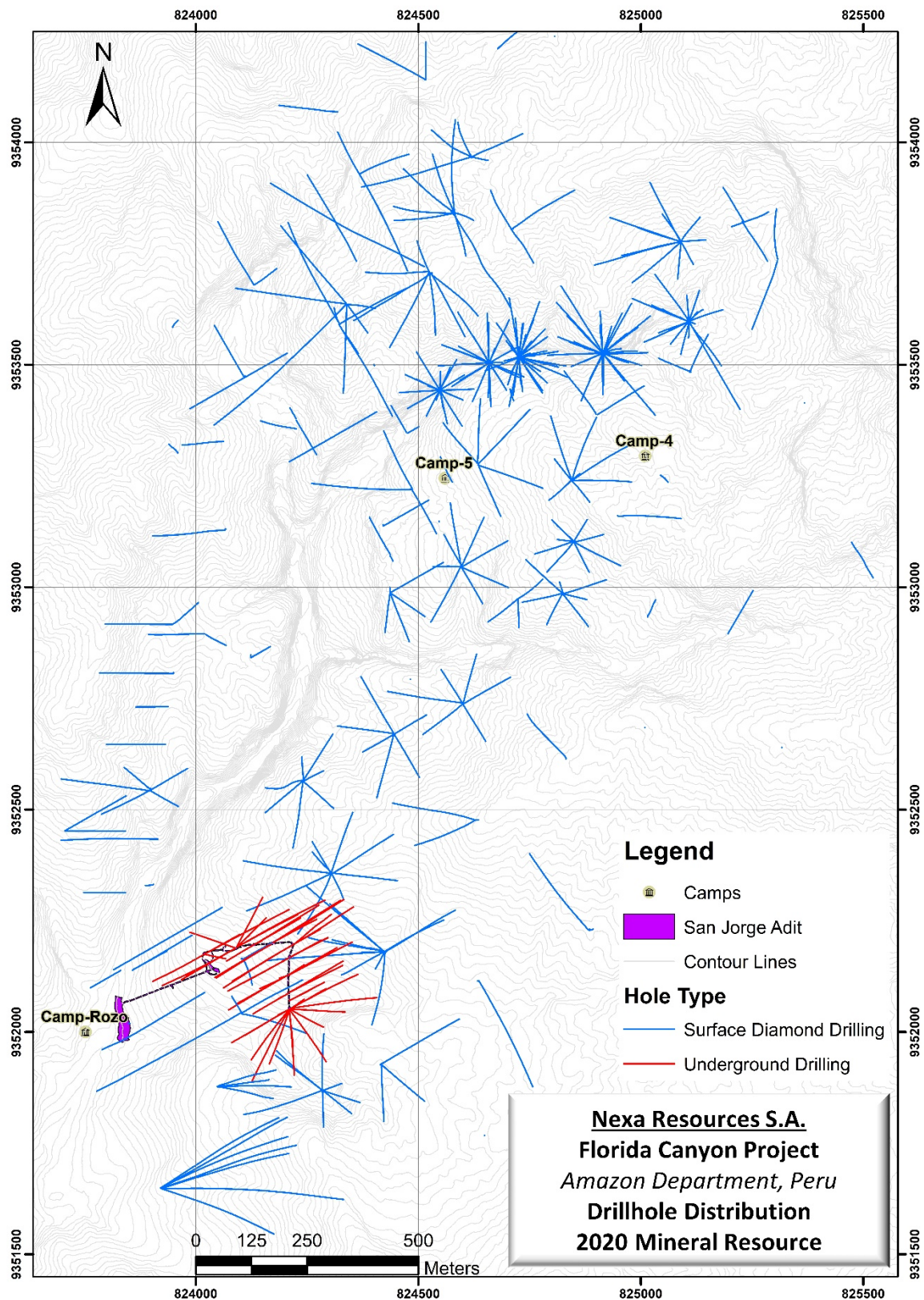
## 10 DRILLING (ITEM 10)

The database used for modeling and estimation of mineral resources includes 545 drillholes, with a total of 136,758.1 m drilled at the Florida Canyon Project (Table 10-1). The full collar database is listed in Appendix A. All of the holes were diamond drilling, with 447 holes drilled from surface and 98 holes drilled from the San Jorge adit (underground). Drilling began in 1997 by Cominco, followed by Votorantim between 2006 and 2013, and the last campaign was carried out by Nexa in 2018 and 2019. The drilling was completed by contracting companies Boart Longyear in 1997, MDH Bradley from 1998-2013, and Bresta from 2018-2019. Figure 10-1 is a map of the drillhole locations at the project.

**Table 10-1 Drilling Summary in Florida Canyon**

Surface				San Jorge Adit			Total		
Year	Number	Meters	Type	Number	Meters	Type	Number	Meters	Type
1997	34	8,409.70	DTH				34	8,409.70	DDH
1998	8	2,108.35	DDH				8	2,108.35	DDH
1999	9	3,977.90	DDH				9	3,977.90	DDH
2000	31	10,297.00	DDH				31	10,297.00	DDH
2006	26	4,353.50	DDH				26	4,353.50	DDH
2007	33	11,189.3	DDH				33	11,189.30	DDH
2008	54	16,468.85	DDH				54	16,468.85	DDH
2009	13	3,611.30	DDH				13	3,611.30	DDH
2010	42	12,242.40	DDH				42	12,242.40	DDH
2011	25	8,168.60	DDH	19	2,947.55	DDH	44	11,116.15	DDH
2012	59	14,163.00	DDH	51	9,395.55	DDH	110	23,558.55	DDH
2013	74	9,120.70	DDH	28	3,268.35	DDH	102	12,389.05	DDH
2018	5	2,202.90	DDH				5	2,202.90	DDH
2019	34	14,833.20	DDH				34	14,833.20	DDH
<b>Total</b>	<b>447</b>	<b>121,146.70</b>		<b>98</b>	<b>15,611.45</b>		<b>545</b>	<b>136,758.15</b>	





**Figure 10-1 Drillhole Location Map**

Source: Nexa, 2020 (translated)

## 10.1 PROCEDURES

Drilling procedures were coordinated and supervised by Cominco and Nexa geologists and were approved by the Exploration Manager. Diamond drillhole targeting is prepared by the geologists. Coordinates and orientation of the drillhole collars are communicated to a surveying supervisor who positions the drill precisely which is then validated by the geologist.

Cominco surface drilling was executed with a helicopter-supported LD-250 diamond core rig operated by Bradley Bros. Limited. Sermin completed the underground development and also completed drilling from the San Jorge adit with a LM-70 electric diamond core rig.

Drilling was performed on two 12-hour shifts with full 24-hour geological supervision by a geologist. The rig geologist role included:

- Coordination and communication between the drilling contractor and Nexa;
- Monitoring drilling procedures and inspecting the core extraction for sample quality;
- Boxing the core;
- Measuring and recording core recovery and Rock Quality Designation (RQD); and
- Completing a preliminary geological log.

Downhole surveys were completed with a Reflex EZ-Shot survey tool by the drillers at varying spacing, as summarized in Table 10-2. The survey records are stored digitally at the core facility. Drillhole collar locations were surveyed by Nexa with a GPS-based instrument.

**Table 10-2 Downhole Survey Data Point Spacing**

<b>Drilling Program (Year)</b>	<b>Survey Spacing (m)</b>
2010	100
2011	50
2012 to 2013	20
2018	25
2019	5

The identification of each drillhole was generated in a systematic and specific format which includes the camp, mining unit, year and sequential drillhole number. Basic drill information is entered into the database and archived within four days after the completion of the drillhole.

Drilling information was stored in a structured directory and was backed up to the central server in Brazil in the case of Nexa and in Vancouver for drilling conducted by Cominco. The information available in the drillhole database includes Collar, Survey, Assay and Lithology.

Surface drilling normally began with a HQ-diameter core (65mm) and is reduced to a NQ-diameter (45mm) hole if poor ground conditions necessitated.

After a drillhole is completed, the boxes were taken to a logging room where a logging and sampling was performed by a company or a contracted geologist. A photo was taken of each box for all holes and is stored on the server. Geologic logging was performed according to Cominco or Nexa Resources standards using geological, lithological, mineralogical and alteration terms.

Logging was recorded digitally using the software DH Logger, which is imported directly into Fusion Data Management Software. Fusion Software manages the database and automatically incorporates core and sample logging. The database administrator is responsible for verifying and validating the data and combining it into a series CSV files to later import into geological modeling software programs.

## 10.2 INTERPRETATION & RELEVANT RESULTS

The geologic logging and analytical data were added to the Project database after validation and applied to modeling and resource estimation. The modeling and resource estimation are discussed in detail in Section 14 (Mineral Resources). The true thickness of the mineralized intercepts varies from 80 to 100% of the drilled length and varies with the orientation of the drillhole.

Nexa's documentation of drilling procedures indicate that there is little or negligible sampling bias introduced during drilling. Nexa specifically analyzed the data for bias and the results are very appropriate with very low bias.

Gustavson considers the drilling and sample handling procedures to be appropriate for the geology, conducted according to industry best practice and standards, and the relevant results are sufficient for use in resource estimation.

## 11 SAMPLE PREPARATION, ANALYSIS & SECURITY (ITEM 11)

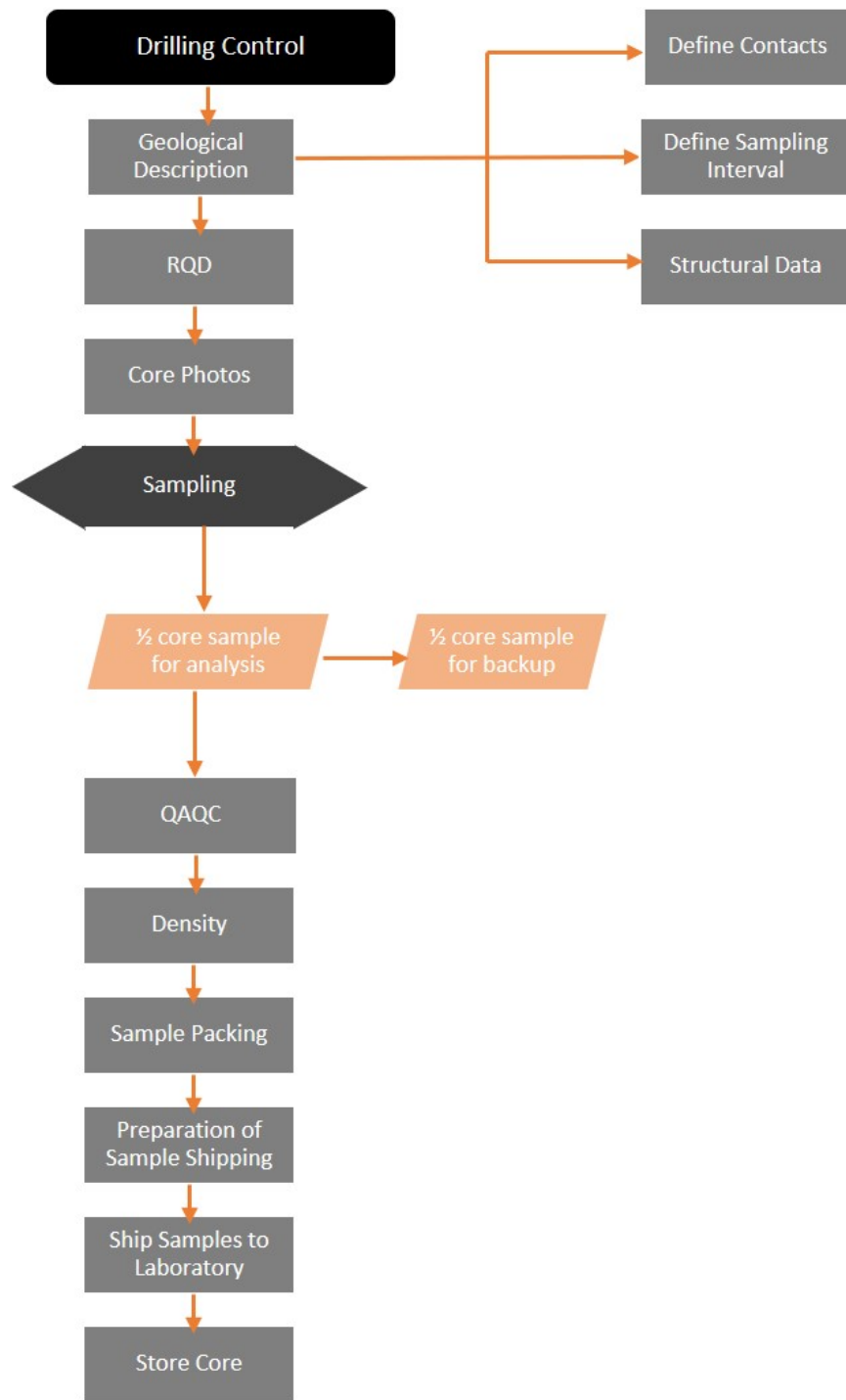
### 11.1 SAMPLING METHODS

Sampling procedures at the Florida Canyon Project are performed according to the Nexa Procedure (PS-EXP-GTO-009-PT9).

Geologic core sampling was carried out from 0.3 m to 2.0 m, except when encountering mineralogical, structural, or lithological contacts. For these cases, one sample was taken per domain, either lithological, structural, or mineralogical. All massive sulfides were sampled, and additional “support” samples were taken on both sides of the core box that are within the surrounding carbonate rocks to ensure that the entire mineralized zone is sampled.

Sampling was done under the supervision of the lead geologist who defined the length of the sample and cut line. Core was sampled by sawing. If a sample was severely fractured, 50% of the fragmented material was taken as a sample, stored in a prelabeled bag, and sent to ALS laboratory, while the remaining sample is kept as back up. Figure 11-1 shows the process for core sampling.





**Figure 11-1 Diamond Core Sampling Process**

Source: Nexa, 2020 (translated)

#### 11.1.1 Sampling for Geochemical Analysis

After photographing the core and completing geotechnical and geologic logging, a geologist marked the core for sample intervals that averaged 100 cm long. Samples had a minimum length of 30 cm and a maximum of 150 cm but were defined so that 100 cm samples were maintained as much as possible. Cut lines parallel to the core axis were drawn by the logging geologist, to ensure nearly symmetrical halves and minimal sampling bias relative to any visible mineralization. The core was cut on a rock saw with a 40 cm blade, under supervision of a Project geologist. After the core was cut, both halves were replaced in the core box.

Samples were always taken from the left side of the saw-cut core, double bagged and marked with sample numbers in two places. These were transported in larger bags containing seven samples each by Mobiltours freight company to the ALS Minerals laboratory in Trujillo or Lima, operated by ALS Minerals. Prior to 2012, analysis was completed in Trujillo. Since then, it was done in Lima.

Cominco also split the core samples and sampled half for geochemical analysis. Sample breaks were determined by geologic criteria. Cominco core samples were analyzed by Acme Labs, in Lima, Peru.

#### 11.1.2 Sampling for Density Measurement

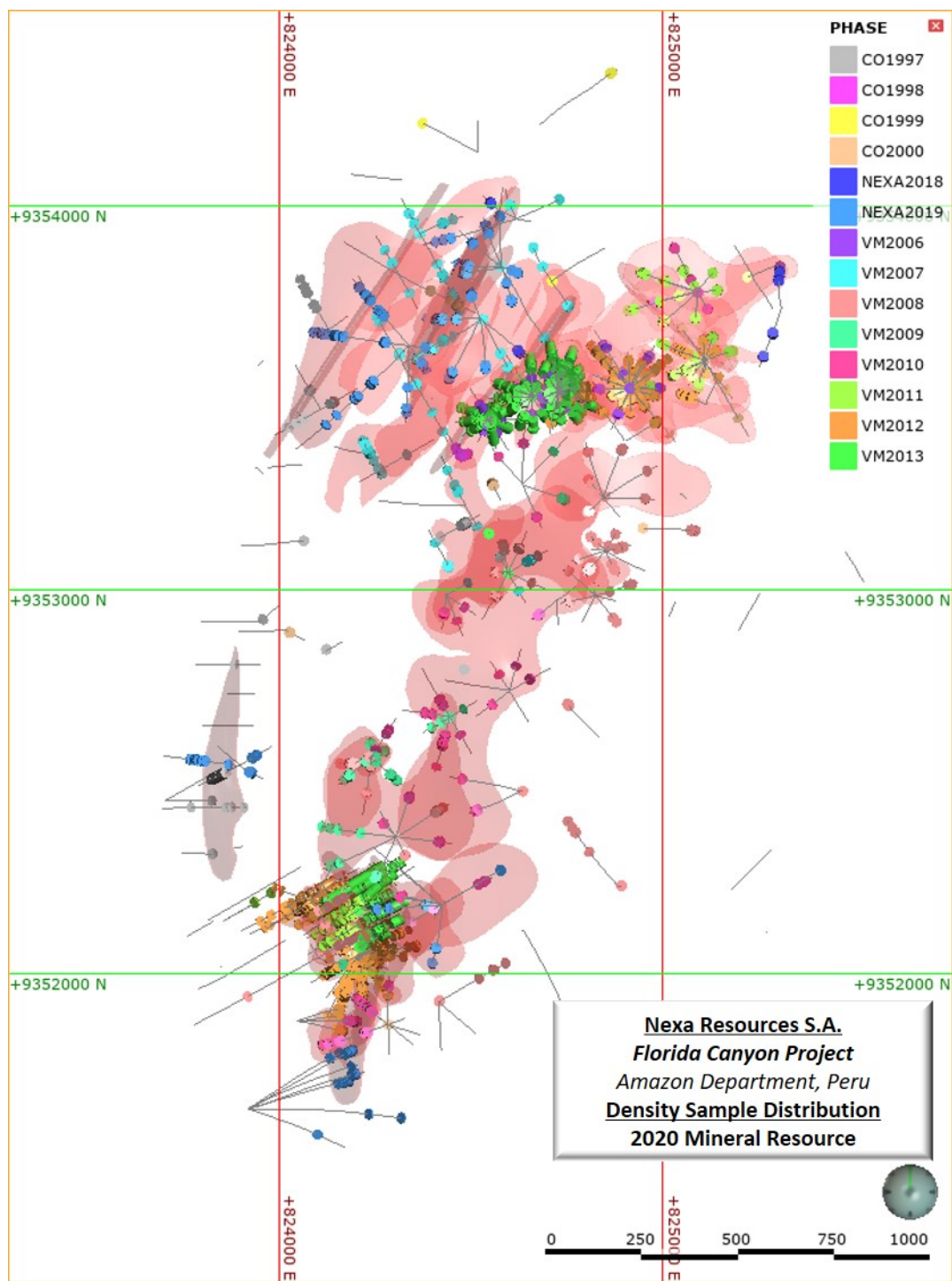
Specific gravity (SG) measurements were completed on site by Nexa on every sample obtained from the 2018-2019 core. SG measurements were completed on all mineralized intervals. Three SG measurement methods were used:

- Volume displacement;
- Hydrostatic; and
- A mesh method for broken material.

These techniques were designed and implemented by Inspectorate Services Peru SAC. A group of samples was also sent to an external lab to validate the results in the field. Table 11-1 shows the number of density samples taken per year by different campaigns. Figure 11-2 is a map displaying the distribution of the density samples.

**Table 11-1 Total number of Density Samples taken per year**

<b>Campaign</b>	<b>Type of Sample</b>	<b>No. Samples</b>
CO1997	Drill Holes	194
CO1998	Drill Holes	8
CO1999	Drill Holes	10
CO2000	Drill Holes	44
VM2006	Drill Holes	124
VM2007	Drill Holes	233
VM2008	Drill Holes	258
VM2009	Drill Holes	177
VM2010	Drill Holes	264
VM2011	Drill Holes	792
VM2012	Drill Holes	2,024
VM2013	Drill Holes	4,077
NEXA2018	Drill Holes	111
NEXA2019	Drill Holes	879
<b>Total</b>		<b>9,195</b>



**Figure 11-2 Density Sample Distribution**

Source: Nexa, 2020 (translated)

## 11.2 SECURITY MEASURES

During the site visit, the observed sample storage was secure, and provided adequate protection from rainfall. Sample security and chain of custody were maintained while the samples were transported from the core shed in Shipasbamba to Lima. Assay certificates are retained in the Nexa

office in Lima. Analytical data is loaded directly from the laboratory results files to the drillhole database, to minimize the risk of accidental or intentional edits.

### 11.3 SAMPLE PREPARATION FOR ANALYSIS

ALS Minerals (ALS) in Trujillo or Lima, Peru, completed sample preparation and analysis for all Nexa core samples. ALS is an independent, global analytical company recognized for quality, and is used by many exploration and mining companies for geochemical analysis. Current certifications and credentials include ISO 17025:2005 Accredited Methods & ISO 9001:2008 Registration in Peru, Brazil, Chile and Argentina (ALS Minerals, 2014a).

Upon delivery at the lab, bar coded sample identification labels were scanned, and the samples were registered to the Laboratory Information Management System (LIMS). Samples were weighed, and then air-dried in ambient conditions. Excessively wet samples were dried in an oven at a maximum 120°C. The sample preparation and analysis procedures used are summarized in Table 11-2. Specific analytical procedures and method detection limits for elements in the suite are reported in Table 11-3.

After analysis was complete, the remaining coarse reject and pulp samples were returned to the Florida Canyon core shed for storage.

Cominco analyzed samples with visible zinc or lead mineralization by atomic absorption spectrophotometry. All samples containing greater than 10,000 ppm zinc and lead were then analyzed by wet chemistry and the latter results were recorded in the data base.

**Table 11-2 Analytical Codes and Methods**

<b>Procedure Code</b>	<b>Description</b>
<b>Sample Prep</b>	
CRU-31	Crush to 70% less than 2 mm.
SPL-21	Riffle split off 1kg and retain the coarse reject.
PUL-32	Pulverize split to better than 85% passing 75 microns.
<b>Multi-Element Methods</b>	
ME-ICP61, -a	Multi-element Inductively Coupled Plasma method with Atomic Emission Spectroscopy analysis. Includes 4-acid, "near-total" digestion of 0.5 g sample.
(+)-AA62	HF, HNO <sub>3</sub> , HClO <sub>4</sub> digestion, HCl leach and Atomic Absorption Spectroscopy analysis.
(+)-VOL70	Volumetric titration for very high-grade samples.
XRF10	X-Ray fluorescence on fused pellet, 5 g sample.
<b>Element-Specific Methods</b>	
Au-AA23	Gold by fire assay and Atomic Absorption Spectrometry, 30 g sample.
Au-AA25	Ore-grade gold by fire assay and Atomic Absorption Spectrometry, 30 g sample.
Au-GRA21	Gold by fire assay and gravimetric finish, 30 g sample.
Hg-CV41	Trace level mercury by aqua regia and cold vapor/AAS.
Hg-ICP42	High grade mercury by aqua regia and ICP-AES.

Procedure Code	Description
In-MS61	Multi-element Inductively Coupled Plasma method with Mass Spectrometry detection. Includes 4-acid, "near-total" digestion of 0.5 g sample.
S-IR08	Total sulfur by Leco furnace.

Source: ALS Minerals, 2014b,

**Table 11-3 Analyzed Elements and Method Detection Limits**

Element	Symbol	Method	Unit	Lower MDL	Upper MDL	Overlimit Method	Unit	Lower MDL	Upper MDL	Overlimit Method	Unit	Lower MDL	Upper MDL
Silver	Ag	ME-ICP61	ppm	0.5	100	Ag-AA62	ppm	1	1,500				
Aluminum	Al	ME-ICP61	%	0.01	50								
Arsenic	As	ME-ICP61	ppm	5	10,000								
Barium	Ba	ME-ICP61	ppm	10	10,000	ME-ICP61a	ppm	50	50,000	XRF10	%	0.01	50
Beryllium	Be	ME-ICP61	ppm	0.5	1,000								
Bismuth	Bi	ME-ICP61	ppm	2	10,000								
Calcium	Ca	ME-ICP61	%	0.01	50								
Cadmium	Cd	ME-ICP61	ppm	0.5	1,000	Cd-AA62	%	0.0005	10				
Cobalt	Co	ME-ICP61	ppm	1	10,000								
Chromium	Cr	ME-ICP61	ppm	1	10,000								
Copper	Cu	ME-ICP61	ppm	1	10,000								
Iron	Fe	ME-ICP61	%	0.01	50								
Gallium	Ga	ME-ICP61	ppm	10	10,000								
Potassium	K	ME-ICP61	%	0.01	10								
Lanthanum	La	ME-ICP61	ppm	10	10,000								
Magnesium	Mg	ME-ICP61	%	0.01	50								
Manganese	Mn	ME-ICP61	ppm	5	100,000								
Molybdenum	Mo	ME-ICP61	ppm	1	10,000								
Sodium	Na	ME-ICP61	%	0.01	10								
Nickel	Ni	ME-ICP61	ppm	1	10,000								
Phosphate	P	ME-ICP61	ppm	10	10,000								
Lead	Pb	ME-ICP61	ppm	2	10,000	Pb-AA62	%	0.001	20	Pb-VOL70	%	0.01	100
Sulfur	S	ME-ICP61	%	0.01	10	S-IR08	%	0.01	50				
Antimony	Sb	ME-ICP61	ppm	5	10,000								
Scandium	Sc	ME-ICP61	ppm	1	10,000								
Strontium	Sr	ME-ICP61	ppm	1	10,000								
Thorium	Th	ME-ICP61	ppm	20	10,000								
Titanium	Ti	ME-ICP61	%	0.01	10								
Thallium	Tl	ME-ICP61	ppm	10	10,000								
Uranium	U	ME-ICP61	ppm	10	10,000								
Vanadium	V	ME-ICP61	ppm	1	10,000								
Tungsten	W	ME-ICP61	ppm	10	10,000								
Zinc	Zn	ME-ICP61	ppm	2	10,000	Pb-AA62	%	0.001	30	Zn-VOL70	%	0.01	100
Gold	Au	Au-AA23	ppm	0.005	10	Au-AA25	ppm	0.01	100	Au-GRA21	ppm	0.05	1,000
Indium	In	In-MS61	ppm	0.005	500								
Mercury	Hg	Hg-CV41	ppm	0.01	100	Hg-ICP42	%	0.1	10				

Source: Nexa (2014b),

## 11.4 QA/QC PROCEDURES

Nexa has a well-established QA\QC protocol since 2007 for core samples from operating mines and brownfield/greenfield projects. Nexa uses a corporate database (GDMS Fusion) from Datamine since 2017, which replaced the previous corporate database system used from 2007 to 2016. The current database system has several default laboratory packages, specific for different



Business Units (ore deposit types/countries) with pre-defined preparation and assay methods, reporting units and over-limit methods. All assay dispatches from all mines and projects follows the same protocols for each medium type (core, rock, soil, stream sediment samples). All written protocols are in a corporate internal system that requires revision and update every three years.

Nexa's Quality Control includes three types of duplicates (pulp, coarse rejects and ½ core duplicates), blank controls and certified standards. Inter-laboratory checks are also carried out in annual basis at certified laboratories. Fusion database has a collection of pre-defined QA\QC charts for each type of control where Nexa parameters for each control are built in. All blanks and certified standards are approved and registered in Fusion by the database administrator. Nexa protocols for construction and certification of new standards from operating mines and projects include a minimum of ten laboratories and minimum of five samples per lab in the Round Robin. Laboratories need to be from different continents and only three laboratories from the same group are allowed.

Every mine and advanced projects provide a detailed QA\QC report at least once a year and they are appended into Mineral Resource update Technical Reports.

For assay report import procedures into the GDMS Fusion database there is a safe and well-defined routine established by Nexa using the available lab import profile tools from Fusion. There are customized lab import profiles for each laboratory used by Nexa. These lab import profiles are created only by the Fusion administrator after defining with all laboratories the assay report layout including standard headings information required for import. The template accounts for standardized unit definition for each metal (g/t, ppm, %) and automatic built in overlimit assay methods. Assay report import routine into Fusion is carried out by the nominated Qualified Person for Fusion. Fusion has several validation checks for assay import and verifies all configurations defined in the lab packages mentioned above.

The 2018-2019 quality assurance/quality control (QA/QC) program at the Florida Canyon Project and its processes complies with current industry best practices. A total of 1,177 greenfield exploration samples were analyzed at an ALS laboratory (Appendix B). 187 control samples were inserted, making up 15.9% of the total samples analyzed. The results of the processing and evaluation of QC data are as follows:

- Coarse blanks show no evidence of contamination during the laboratory sample preparation and analysis process. ALS performed ICP MS analysis for all samples.
- Twinned samples indicate an acceptable error rate (<10%).
- Coarse and fine duplicates indicate an acceptable error rate (<10%). Apart from coarse duplicate (RG) in Zn, 2 out of 11 samples failed in low grades.
- The standards show acceptable accuracy in all of the elements evaluated (Ag, Cu, Pb, Zn).
- The external check validated the accuracy between the secondary laboratory (Certimin) and the primary laboratory (ALS) (<5.0% variation).

Overall, coarse blanks, duplicates, and standards results are considered acceptable and valid. A summary of the results is in Table 11-4.

**Table 11-4 QA/QC Insertion of Samples 2018-2019 Campaign**

Control Type		No. Samples	Insertion Ratio
Blanks	Coarse	23	1.95%
Standards	Low Grade (SPY-01)	19	1.61%
	Medium Grade (SPY-02)	19	1.61%
	High Grade (SPY-03)	20	1.70%
Duplicates	Coarse Duplicate (RG)	11	0.93%
	Twin Duplicate (RP)	11	0.93%
	Fine Duplicate (DP)	58	4.93%
	External Check (DC)	26	2.21%
<b>TOTAL</b>		<b>1,177</b>	<b>15.89%</b>

#### 11.4.1 Standards

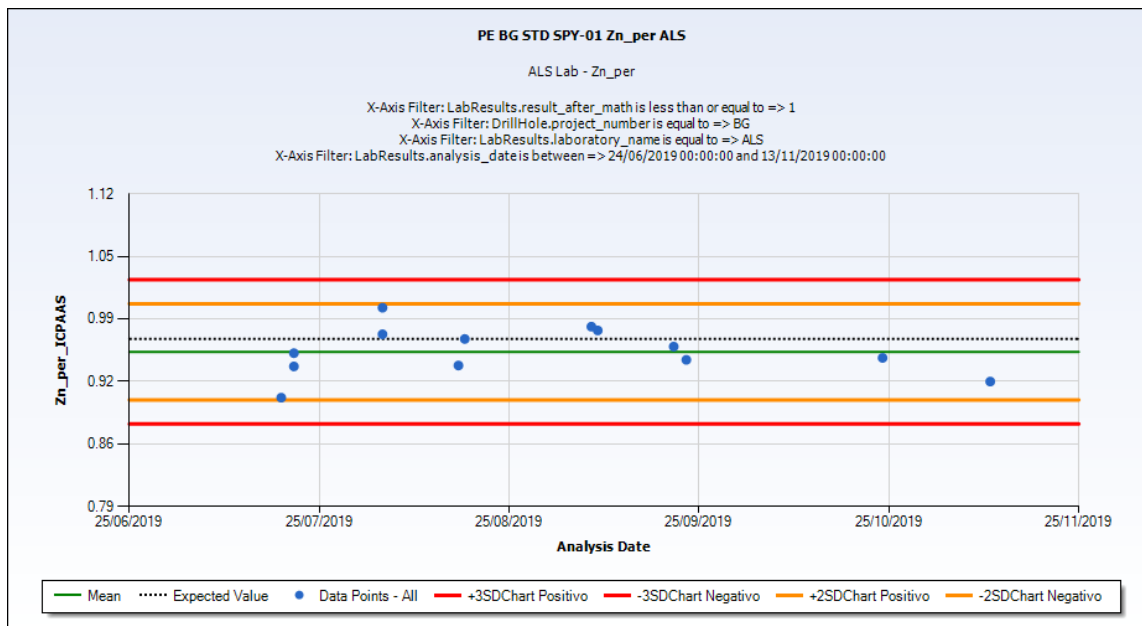
Summaries of the Standard Reference Material (SRM) certified values and analytical results for silver, copper, lead and zinc are shown in Table 11-5. The certified Standard Reference Material, ST800044B. Other, lower-grade reference materials made from Florida Canyon core were also included. Example lab results for Zn Standards are shown in Figure 11-3.

**Table 11-5 QA/QC Standard Bias % Results 2018-2019 Campaign**

Lab	Element	SPY-01		SPY-02		SPY-03		Comments
		n	Bias %	n	Bias %	n	Bias %	
ALS	Ag ppm	19	-1.69	19	2.53	20	6.25	
	Cu %	19	-9.5	19	-3.6	20	-2.19	Very low Cu grade in standard SPY-01
	Pb %	19	2.2	19	-0.96	20	0.36	
	Zn %	19	-1.41	19	0.83	20	-0.82	

0 - 5% bias	Excellent	>10% bias	Reject
5 - 10% bias	Attention		

$$\text{STD Bias \%} = (\text{average/certified value}) - 1$$



**Figure 11-3 ALS Lab - Zn Standards Results**

#### 11.4.2 Blanks

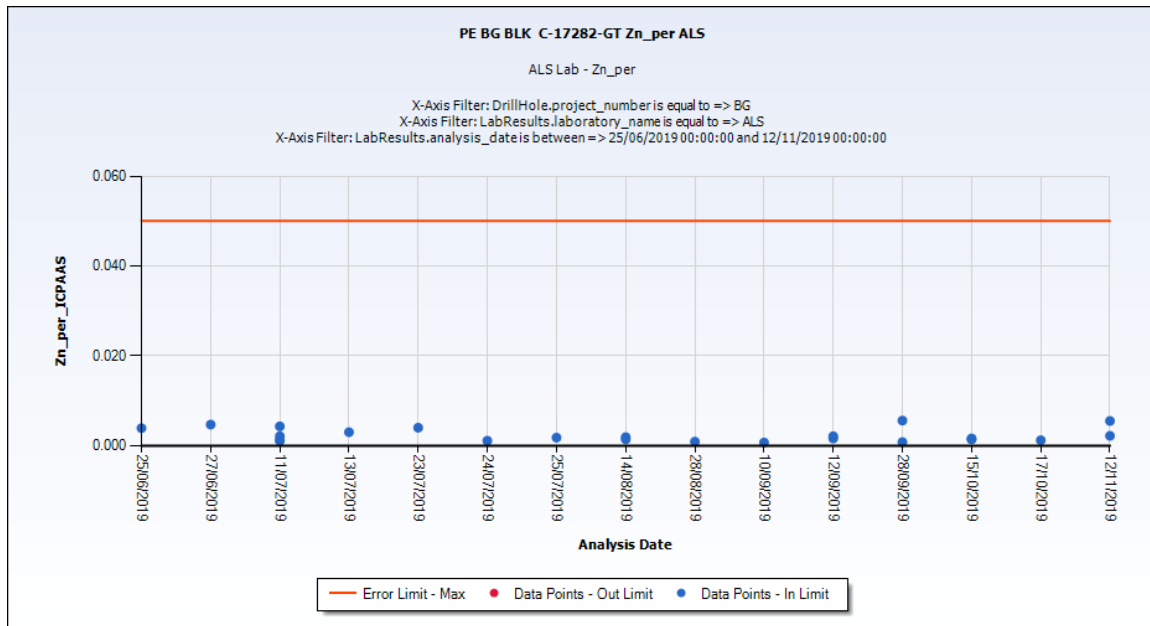
There were no contamination issues with blanks (Table 11-6). Example lab results for Zn Blanks are shown in Figure 11-4.

**Table 11-6 QA/QC Blanks Results 2018-2019 Campaign**

Lab	Element	HILBG		Comments
		n	Failure %	
ALS	Ag ppm	23	0	
	Cu %	23	0	
	Pb %	23	0	
	Zn %	23	0	

Limit 5% failure

Blank Failure = (failed/total samples)



**Figure 11-4 ALS Lab - Zn Blanks Results**

### 11.4.3 Duplicates

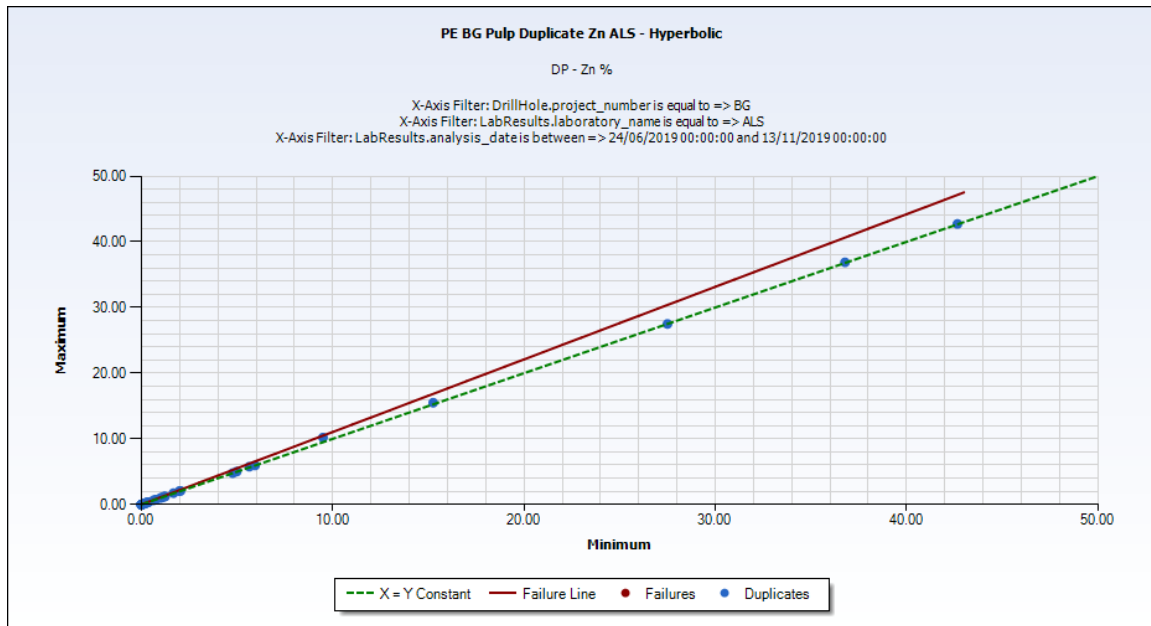
Duplicate samples were evaluated with the hyperbolic method and the results were good. A summary of all duplicate sample pairs is shown in Table 11-7. Example lab results for Zn Duplicates are shown in Figure 11-5.

**Table 11-7 QA/QC Duplicates Results 2018-2019 Campaign**

Lab	Element	DP - Pulp duplicates		RG - Coarse Rejects		RP - Core duplicate		Comments
		n	Failure %	n	Failure %	n	Failure %	
ALS	Ag ppm	58	0	11	0	10	0	
	Cu %	58	0	11	0	10	0	
	Pb %	58	0	11	0	10	0	
	Zn %	58	0	11	18.18	10	0	2 failed in RG, low grade in Zn

Limit 10% failure

Duplicates Failure % - (failed/total samples)



**Figure 11-5 ALS Lab - Zn Duplicate Results**

### 11.5 OPINION ON ADEQUACY

The assay QC database is organized well and has an extremely low error rate. Nexa maintains the assay QC data well and analyzes it in real time to address any issues promptly. There were no systematic issues apparent in the results available to review.

Gustavson considers the sample preparation and analysis procedures to comply with industry best practice. The QA/QC methods and results adequately verify the analytical database as sufficient for use in resource estimation.

## 12 DATA VERIFICATION (ITEM 12)

### 12.1 PROCEDURES

All analytical data is checked by the on-site and Lima-based geologists before it is added to the database. This includes review of standard, blank and duplicate sample results for outliers, and requesting re-analysis if necessary. Final analytical data is appended to the database by the Sao Paulo office staff after additional verification. The checking procedures are well documented and conform to best industry practice.

During the site visit, the geologic database was checked for its consistency to a) logged core, b) logging sheets and sample records and c) database provided. All aspects of the data capture and storage were seen to be in good order. The core sample library in the core shed (Figure 12-1) helps to make the logged geology consistent and for the purposes of developing a consistent geological model.



**Figure 12-1: Photograph of Project Core Lithology Reference Sample Library**

Source: SRK, 2014

Drillhole collar locations are verified against topography and compared with the survey reports. Downhole survey data are reviewed by an on-site geologist to verify the results.



## 12.2 OPINION ON DATA ADEQUACY

Nexa geologists have an extensive quality control program, including not only standard check samples, but numerical checks of sample bias for each metal. The data controls are complete and compliant with industry best practice.

The Project geologists and support staff were diligent about data verification and the quality of the drillhole database. Database validation in preparation for resource estimation has been done by Nexa. Gustavson has reviewed their internal audit trail. We believe the degree of organization of the data base and the measures in place to minimize errors in data that the database is adequate for mineral resource estimation.

## 13 MINERAL PROCESSING & METALLURGICAL TESTING (ITEM 13)

A 43-101 PEA report was written in 2017 for the Florida Canyon Zinc Project. The report summarized the metallurgical studies performed on the samples from the prospect undertaken in 2010, 2011 and 2014. Since then, additional drilling has resulted in expansion of the sulfide resource which is the primary objective of this technical report.

### 13.1 METALLURGICAL TEST WORK, 2010-2014

Smallvill S.A.C. of Lima, Peru (Smallvill) performed metallurgical studies on Florida Canyon mineralization types in 2010, 2011 and 2014. The drilling completed in 2018 and 2019 has increased the proportion of mineral resources to be dominated by sulfide lead-zinc material. This changes the character of the proposed mineral processing.

Since no metallurgical studies have been performed on the recent drilling samples a summary of historical work is presented here for reference:

- The majority of the metallurgical studies were performed on oxide and mixed ores. Limited test work has been completed on sulfide samples.
- Some of the composite samples classified as sulfides should have been designated as mixed ore because of presence of significant amounts of oxide zinc (Table 13-1).
- The Bond's crusher work index (Wi of 8.54 kwh/t) indicates that the sulfide ore is soft.
- The conventional flotation scheme for polymetallic ores and reagents employed in the test work did produce marketable-grade zinc concentrate ( $\pm 50\%$  Zn).
- The selected test results, reported by SRK in the 2017 PEA, indicates zinc recovery of 80% to 90.1% for samples with a variable proportion of oxide minerals. For pure sulfides, the results project a maximum recovery of 93%. The concentrates produced are at a concentrate grade of 50% to 55% Zn.
- Some of the results reported in Table 13.1 are not correct. For example, San Jorge sample assayed 0.41%  $\text{ZnO}_x$  and 7.63  $\text{Zn}_{\text{Total}}$ . Hence, it contained 5.4% of zinc as oxide. The recoveries reported in zinc concentrate are 90.1% for  $\text{Zn}_{\text{Total}}$  and 83.5% for  $\text{ZnS}$ . Even if all the oxide was recovered, the  $\text{ZnS}$  recovery should be 84.7%.
- The early logging of core from the project estimated visually the content of oxidized zinc minerals. Later, Nexa reanalyzed the mineralized core for zinc contained in sulfides vs. oxidized species. The visually estimated ratio of sulfide/oxide zinc was adjusted upward based on this study and current data reflects this adjustment.
- SRK projected recovery of metals by material type in the 2017 PEA (Table 13-2). Zinc recovery was projected to be 93% for the sulfide ores. The authors agree with the projection based on their extensive experience in polymetallic processing and the test work completed to date.

Drilling completed in 2019-20 has verified that the sulfide ore component of the deposit is greater than previously assumed.

**Table 13-1 Metallurgical Tests – Selected Results**

Report	Sample	Sample Type	Head Grade							
			Zn Total	ZnOx	ZnS	ZnOx/ ZnT	Pb Total	Pb S	Pb Ox	Ag g/t
2010 Apr	Core composite	Sulfide	7.52%	1.40%	6.10%	0.19	1.72%	1.26%	0.46%	11.6
2011 Jul	Core composite	Oxide	18.36%					18.40%	0.00%	1
2011 Aug	Core composite	Mixed	31.25%	13.20%	18.10%	0.42	2.38%			26.5
2011 Aug	Core composite	Sulfide	31.68%	0.98%	30.70%	0.03	3.88%			56.19
2011 Aug	Core composite	Mixed	31.25%	13.20%	18.10%	0.42	2.38%			26.5
2014 Feb	San Jorge	Sulfide	7.63%	0.41%	7.22%	0.05	0.65%			
2014 Feb	Karen Milagros	Sulfide	5.70%	0.00%	5.70%	0	1.12%			

Source: SRK, 2017

**Table 13-2 Florida Canyon Metal Recoveries by Material Type**

Parameter	Material Type		
	Sulfide	Mixed	Oxide
ZnOx/ZnT Ratio	$\leq 0.2$	0.2 to 0.8	$\geq 0.8$
Zn Recovery	93%	$(-0.8833 (\text{ZnOx/ZnT}) + 1.1067) * 100$	40%
Pb Recovery	84%	$(-0.7333 (\text{ZnOx/ZnT}) + 0.9867) * 100$	40%
Ag Recovery	56%	$(-0.4 (\text{ZnOx/ZnT}) + 0.64) * 100$	32%

## 14 MINERAL RESOURCE ESTIMATES (ITEM 14)

An updated Mineral Resources Estimate for Florida Canyon was completed by Nexa Resources based on a data base available in July of 2020. The database included 545 drill holes with a total drilled length of nearly 137 km.

The estimate was audited by Donald E. Hulse of Gustavson Associates LLC with the audit completed on February 1, 2021. Work was completed in Datamine Studio RM, Leapfrog Geo, and Snowden Supervisor. The models were reviewed by Gustavson using Leapfrog Geo for 3-dimensional geological models, Micro Model software for statistics and geostatistics, and Datamine RM for validation of the estimate. The Nexa database was reviewed, and statistical analysis was completed to validate the Nexa QA/QC results. Gustavson supports the use of the database for mineral resource estimation.

Geological modeling in Leapfrog utilized geological sections developed based on lithology, alteration, and mineralization to interpret a 3-dimensional geological model with 73 unique mineralized structures. Each of these structures was analyzed with classical statistics and geostatistics to estimate grades for zinc, lead, silver, and iron. Mineral resource classification utilized criteria based on drill spacing and variogram ranges. Measured mineral resource required a spacing of 25x25m with at least 3 composites, indicated mineral resource, 50x50m with 3 composites, and inferred resource estimates required a spacing of 100x100m with at least 2 composites. In addition, estimation required the demonstration of geological continuity within the Florida horizon as well as dolomitic alteration.

### 14.1 GEOLOGIC MODEL

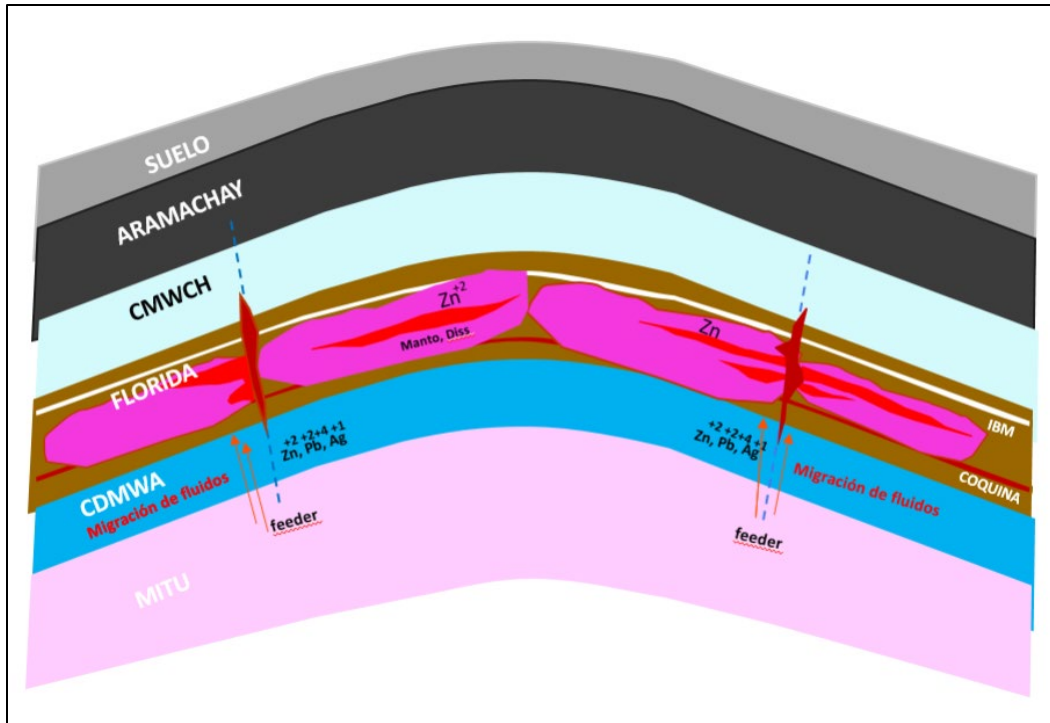
Florida Canyon is considered to be a Mississippi Valley type deposit, dominated by lead and zinc sulfides. The minerals are disseminated within stratigraphically controlled dolomites within the Chambara Formation of the late Triassic/early Jurassic. The deposit is in karstic terrane and due to the local percolation of meteoric water, shallow mineralization has locally oxidized into silicates and carbonates (smithsonite, hemimorphite, and cerussite) collectively referred to as “oxides”.

The mineralization occurs in both sub horizontal “mantos”, and steeply dipping feeders. The mantos are stratigraphically controlled within the Florida horizon of the Chambara formation. The stratigraphy in the area is composed of the layers shown in Table 14-1. Within the Florida, the Coquina and IBM fossil beds were used as markers in the logging.

**Table 14-1 Deposit Stratigraphy**

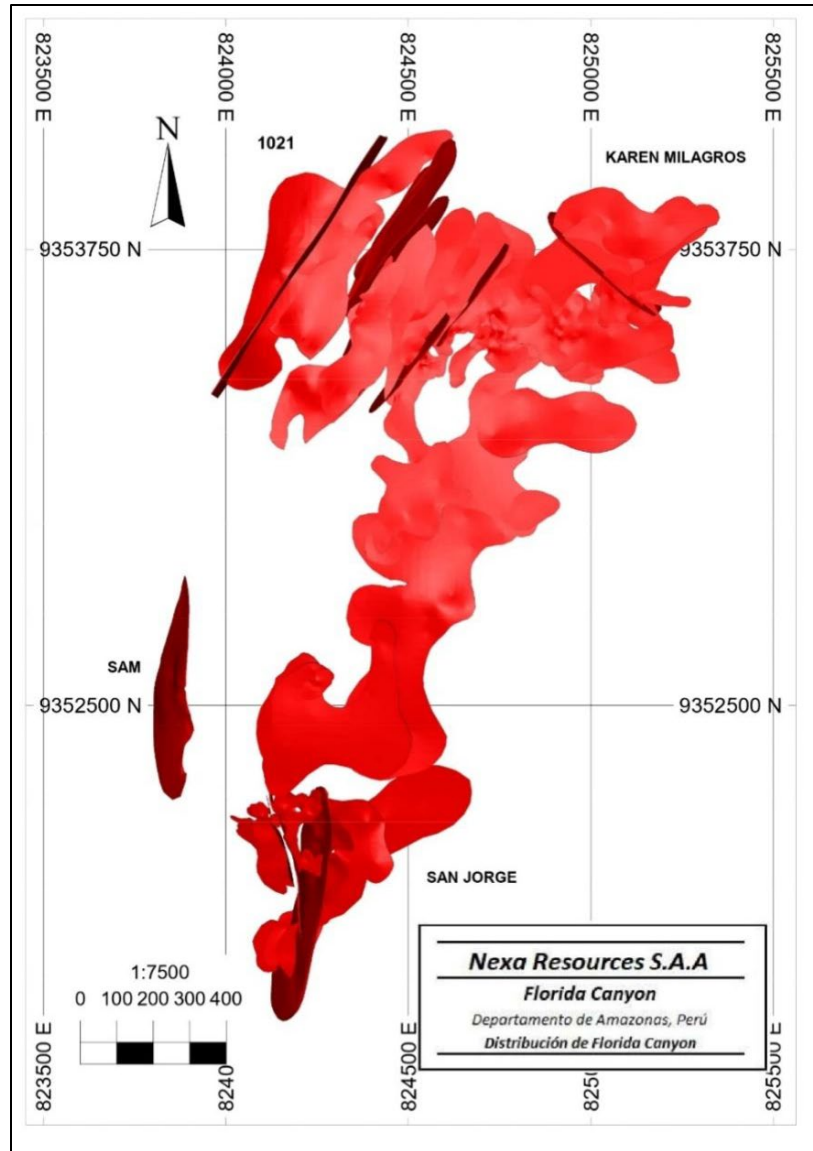
Soils
Aramachay Formation
CMWCH Horizon
Florida Horizon
CDMWS Horizon
Mitu Group

A schematic of the local stratigraphy is shown in Figure 14-1. The high grade Pb-Zn mineralization occurs in dolomitized material within the calcites of the Florida horizon.



**Figure 14-1 Schematic of Local Stratigraphy**

The Florida Canyon deposit has the form of a dome at regional scale. This may be due to a regional anticline. This trend was incorporated into the geological model with the interpretation of 84 mineralized structures. (70 mantos and 14 feeders). The distribution of the mineral bodies is shown in Figure 14-2. The bodies are grouped into four areas, labeled as 1021, Karen Milagros, San Jorge, and Sam. The Sam bodies are associated with the Sam fault to the south west of the area. The extent of these bodies is currently limited by drill data.



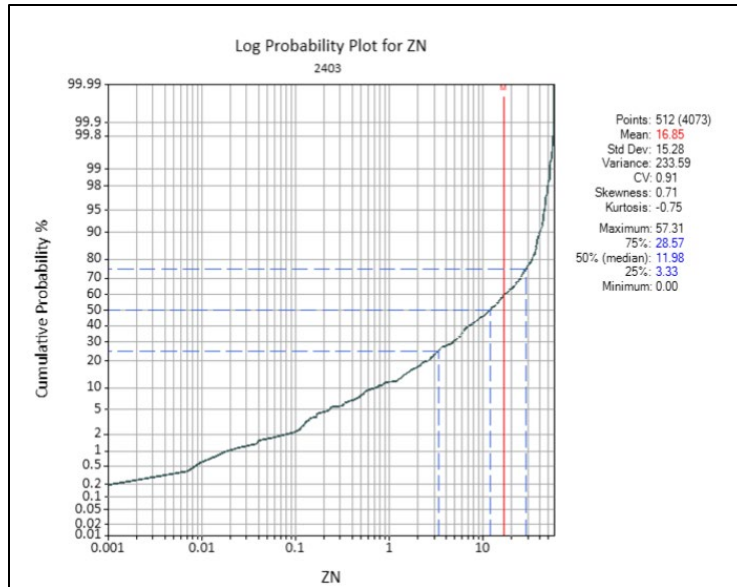
**Figure 14-2 Distribution of Mineralized Bodies**

## 14.2 EXPLORATORY DATA ANALYSIS

The database consists of 545 drill holes, measuring a total of 136,758.15m. The Exploratory Data Analysis (EDA) was performed on raw data (drill samples), composites, and capped values. Histograms and cumulative frequency diagrams were created for Zn, Pb, Ag and Fe. Summary examples of raw data, composite and capped cumulative frequency diagrams are in Appendix C and D.

For grade estimation, only samples within the solids defining the mantos and feeders were utilized. All drill and composite intervals were coded with the appropriate geological code. An example cumulative frequency curve is shown in Figure 14-3.





**Figure 14-3 Cumulative Frequency Curve for Zinc(Nexa)**

The statistics were analyzed for each of the 74 bodies. The domains are referenced in the included Table 14-2 by a three-part code. The first part is the area, the second part defines if it is a manto or a feeder zone, and the third part is a unique sequence number to identify separate zones in each area.

**Table 14-2 Description of Zone Codes for Statistics**

Areas	Code	Description
	D21	1021
	KM	Karen Milagros
	SJ	San Jorge
	Sam	Sam
Type	F	Feeder
	M	Manto

There are subtle local differences between the bodies, although most behave statistically well with coefficients of variation less than two. This indicates that the distributions are not highly skewed. Since there is insufficient drilling to connect all bodies, the spatial separation led to estimating each body as a separate zone. Summary zinc statistics for the principal zones are shown in Table 14-3.

**Table 14-3 Summary Statistics for Zinc by Zone (after Nexa)**

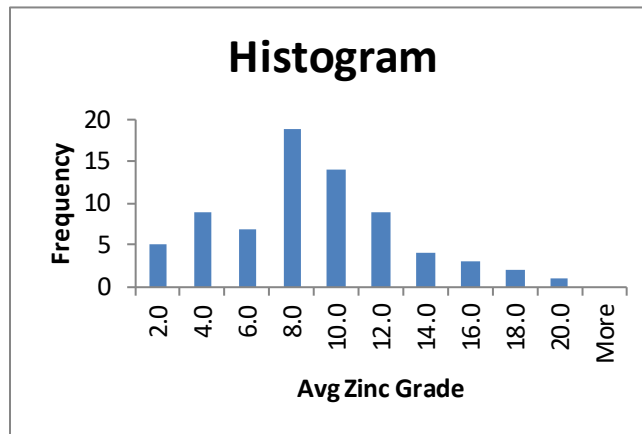
Zone Code	Zone	N-Samp	Min	Max	Mean	CV
1107	d21m1	12	0.06	29.2	5.34	1.35
1108	d21m2	34	0.04	49.58	8.23	1.55
1109	d21m3	17	0.04	9.53	2.39	1.26
1110	d21m4	12	0.01	13.6	1.5	2.08
1111	d21m7	17	0	36.58	9.77	1.15
1204	km3 10	33	0	39.24	7.97	1.36
1206	km1	48	0.01	37.66	6.66	1.32
1207	km2 1	56	0.01	42.6	8.83	1.29
1208	km2 3	13	0.96	40.49	14.01	1.04
1209	km3 1	27	0.09	40.31	8.8	1.28
1211	km3 4	22	0	30	8.2	1.24
1212	km3 5	72	0.01	44.41	7.9	1.37
1213	km3 7	32	0.02	39.37	5.03	1.93
1214	km3 8	16	0.26	34.64	10.21	1.21
1215	km3 9	4	1.27	39.76	13.62	1.27
1216	km3 2	144	0	46.63	6.54	1.56
1217	km4 1	27	0.08	28.91	3.22	1.8
1218	km4 2	16	0.08	41.39	7.43	1.45
1219	km4 3	134	0	45.48	5.88	1.63
1220	km4 5	15	0.02	11.4	2.42	1.13
1221	km4 7	41	0.47	32.7	6.87	1.33
1223	km6 2	30	0.15	32.99	6.77	1.31
1224	km6 3	14	0.34	39.64	4.77	1.52
1225	km6 5	36	0.02	40.24	11.51	1.13
1226	km6 6	9	1.23	39.27	13.46	1.04
1227	km6 9	76	0	41.58	8.17	1.29
1228	km7 1	89	0.18	49.06	9.31	0.97
1229	km7 2	16	0.01	15.45	3.54	1.19
1230	km7 3	4	0.25	1.59	0.83	0.7
1231	km10	42	0	39.31	6.26	1.57
1232	km13	29	0.1	35.15	5.65	1.51
1233	km15	22	0	35.01	9.54	1.24
1234	km6 4	56	0.22	36.05	12.19	0.84
1405	sjm1	21	0.07	25.7	7.25	1.3
1406	sjm2	42	0.01	40.68	6.27	1.72
1407	sjm3	40	0.01	44.09	9.07	1.33

Although there are differences in the grade from zone to zone, the overall behavior of the different areas is shown in Table 14-4

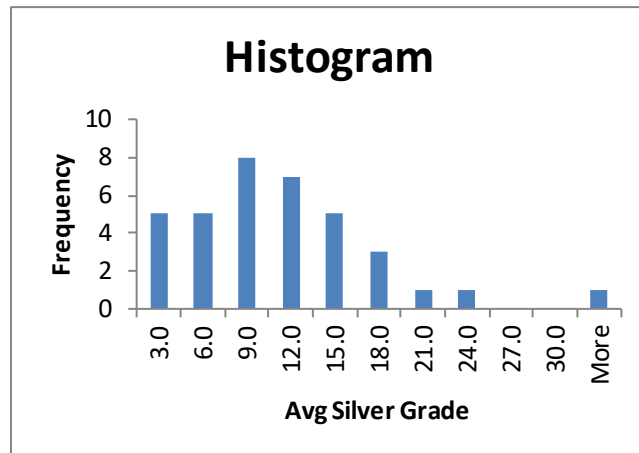
**Table 14-4 Average Metal Grades by Area**

		Samples	Avg Zn	Avg Ag	Avg Pb
Karen Milagros	Mantos	711	8.190	11.952	1.320
Karen Milagros	Feeders	98	11.351	18.866	2.590
San Jorge	Mantos	249	7.459	8.007	0.410
San Jorge	Feeders	306	10.607	16.154	0.724
1021	Mantos	25	5.066	9.542	0.709
1021	Feeders	117	6.378	13.646	1.373
Sam	Mantos	95	5.584	6.198	1.257

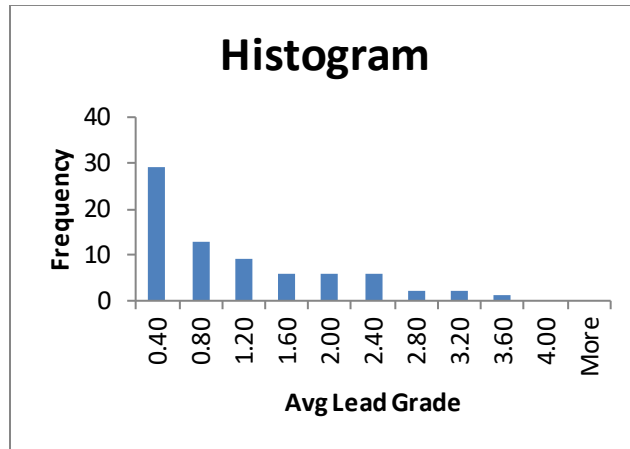
The overall distribution of the metal grades in the deposit is shown in the histograms in Figure 14-4, Figure 14-5 and Figure 14-6. Although the distributions for zinc and silver are slightly skewed, reflecting a log normal population, the overall behavior is good. This presents evidence that if the infill drilling connects these bodies, that the mineralization may develop as local zoning within a large continuous mineralized body. This is common in other MVT deposits, including the namesake deposits in the central USA.



**Figure 14-4 Histogram of Zinc in Mineral Zones**



**Figure 14-5 Histogram of Silver in Mineral Zones**



**Figure 14-6 Histogram of Lead in Mineral Zones**

### 14.3 DOMAINS FOR RESOURCE ESTIMATION

The domains or zones were defined in the EDA step of the study. Further drilling will support if these are unique pods of mineralization, or parts of a larger body. Due to the changing orientation identified in the Leapfrog model and the overall anticlinal shape, each zone was estimated with unique search parameters.

### 14.4 CAPPING AND COMPOSITING

Capping was performed area by area based on the shape of the cumulative frequency curve. Composites were nominal 2 meters long with some variability due to the thickness of the zone, with 88% of the composites approximately 2 meters. Capping values for key areas are shown in Table 14-5.

**Table 14-5 Outlier Capping Values by Area (after Nexa)**

Area	COD OB	Zn Cap	Pb Cap	Fe Cap	Ag Cap
d21f1	2101	32	6	22	50
d21f2	2102	42	30	22	160
d21f3	2103	42	30	22	160
d21f4	2104	32	6	22	50
d21f5	2105	32	6	22	50
d21f6	2106	21	21	12	58
kmf1	2201	40	15	11	120
kmf2	2202	45	17	22	100
kmf3	2203	45	17	22	100
sam	2301	28	8	2.5	20
km3 10	1204	20	10	7	52
d21m1	1107	-	-	-	-
d21m2	1108	27	7	-	60
d21m3	1109	27	7	-	60
d21m4	1110	-	-	-	-
d21m7	1111	27	7	-	60
km1	1206	25	12	6	60
km2 1	1207	37.3	15	11	100
km2 3	1208	40	13	17	81
km3 1	1209	35	4	8	51
km3 3	12102	40	13	17	81
km3 4	1211	38	19	15	120
km3 5	1212	38	19	15	120
km3 7	1213	37.3	15	11	100
km3 8	1214	37.3	15	11	100
km3 9	1215	37.3	15	11	100
km3 2	1216	34	9	-	40
km4 1	1217	18	3.5	-	20
km4 2	1218	37.3	15	11	100
km4 3	1219	28	10	5	100
km4 5	1220	10	7	-	-
km4 7	1221	38	19	15	120
km6 1	12221	38	19	15	120
km6 2	1223	38	19	15	120
km6 3	1224	18	3.5	-	20
km6 4	1234	-	10	7	52
km6 5	1225	-	6	-	-
km6 6	1226	-	6	-	-
km6 9	1227	35	4	8	51

## 14.5 GEOSTATISTICS

Variograms were calculated in each of the zones. Variograms for the manto and feeder zones are shown in Figure 14-7 and Figure 14-8. Overall, the variograms are characterized by a relatively low nugget with about 20% of the total variance, a short spherical structure with about one half of the total variance, and a longer spherical structure with about 30% of the total variance.

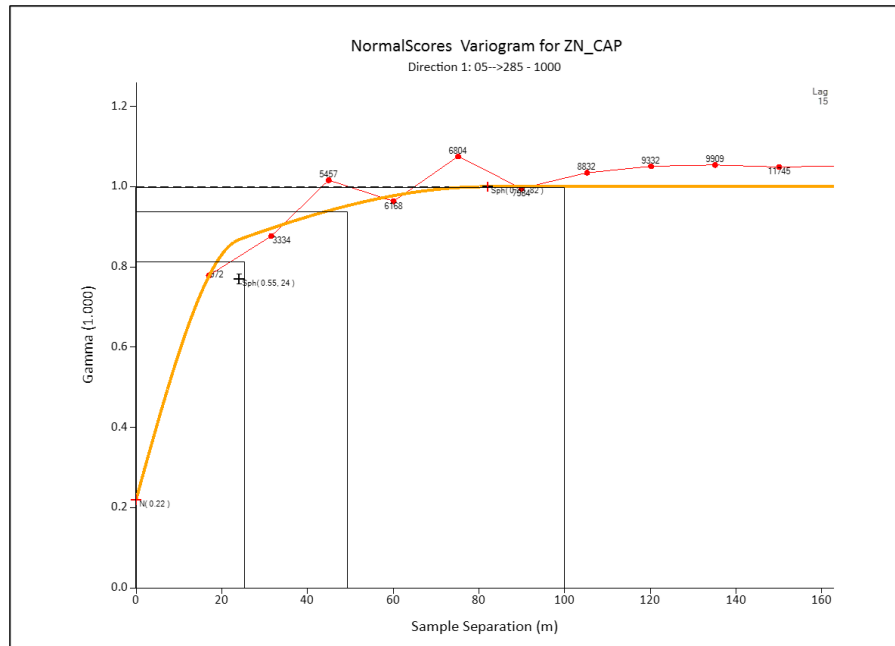


Figure 14-7 Example Zinc Variogram for Manto Zones (after Nexa)

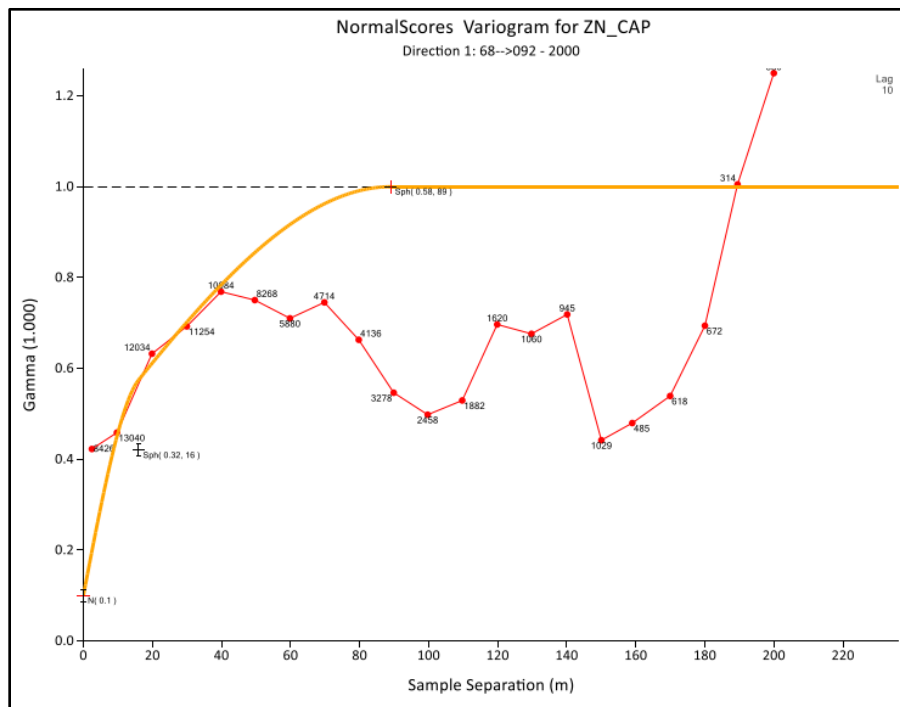


Figure 14-8 Example Zinc Variogram for Feeder Zones (after Nexa)



Generally, the variograms are similar in size and anisotropy, with variable orientations. Key variogram parameters are shown in Table 14-6.

**Table 14-6 Selected Variogram Parameters (after Nexa)**

Zone	Variable	Rotation	Dip	Plunge	Nugget(C0)	Structure 1				Structure 2			
						Max	Int	Minor	Sill(C1)	Max	Int	Minor	Sill(C2)
d21f6	AG CAP	33.78	-83.58	0	0.1	28	10	2	0.56	121	53	13	0.34
d21f6	ZN CAP	33.78	-83.58	0	0.13	16	17	4	0.4	83	104	11	0.47
d21f6	PB CAP	33.78	-83.58	0	0.15	9	18	3	0.56	83	92	11	0.3
d21f6	FE CAP	33.78	-83.58	0	0.16	9	23	2	0.32	114	136	13	0.52
d21m1	AG CAP	-49.91	-4.33	-177.5	0.3	24	18	6	0.54	82	74	25	0.16
d21m1	ZN CAP	-49.91	-4.33	-177.5	0.26	24	18	4	0.55	82	76	11	0.19
d21m1	PB CAP	-49.91	-4.33	-177.5	0.18	25	22	3	0.49	107	70	36	0.32
d21m1	FE CAP	-49.91	-4.33	-177.5	0.35	20	18	4	0.39	147	76	11	0.27
d21m2	AG CAP	120.07	-4.7	-178.29	0.3	24	18	6	0.54	82	74	25	0.16
d21m2	ZN CAP	120.07	-4.7	-178.29	0.26	24	18	4	0.55	82	76	11	0.19
d21m2	PB CAP	120.07	-4.7	-178.29	0.18	25	22	3	0.49	107	70	36	0.32
d21m2	FE CAP	120.07	-4.7	-178.29	0.35	20	18	4	0.39	147	76	11	0.27
d21m3	AG CAP	120.07	-4.7	-178.29	0.3	24	18	6	0.54	82	74	25	0.16
d21m3	ZN CAP	120.07	-4.7	-178.29	0.26	24	18	4	0.55	82	76	11	0.19
d21m3	PB CAP	120.07	-4.7	-178.29	0.18	25	22	3	0.49	107	70	36	0.32
d21m3	FE CAP	120.07	-4.7	-178.29	0.35	20	18	4	0.39	147	76	11	0.27
d21m4	AG CAP	-145.44	-7.05	174.89	0.3	24	18	6	0.54	82	74	25	0.16
d21m4	ZN CAP	-145.44	-7.05	174.89	0.26	24	18	4	0.55	82	76	11	0.19
d21m4	PB CAP	-145.44	-7.05	174.89	0.18	25	22	3	0.49	107	70	36	0.32
d21m4	FE CAP	-145.44	-7.05	174.89	0.35	20	18	4	0.39	147	76	11	0.27
d21m7	AG CAP	120.07	0.7	-178.29	0.3	24	18	6	0.54	82	74	25	0.16
d21m7	ZN CAP	120.07	0.7	-178.29	0.26	24	18	4	0.55	82	76	11	0.19
d21m7	PB CAP	120.07	0.7	-178.29	0.18	25	22	3	0.49	107	70	36	0.32
d21m7	FE CAP	120.07	0.7	-178.29	0.35	20	18	4	0.39	147	76	11	0.27

## 14.6 BLOCK MODEL PARAMETERS

The block model was estimated in Datamine software. The block size was 6x6x3m with a minimum sub-cell of 0.5m in each direction. General parameters are shown in Table 14-7.

**Table 14-7 Block Model Parameters**

Parameters	East (m)	North (m)	Elev (m)
Minimum	823,700	9,351,680	1,550
Maximum	825,650	9,354,422	3,161
Block dimension	6	6	3
Minimum sub-cell	0.5	0.5	0.5

#### 14.7 BLOCK GRADE ESTIMATION METHODOLOGY

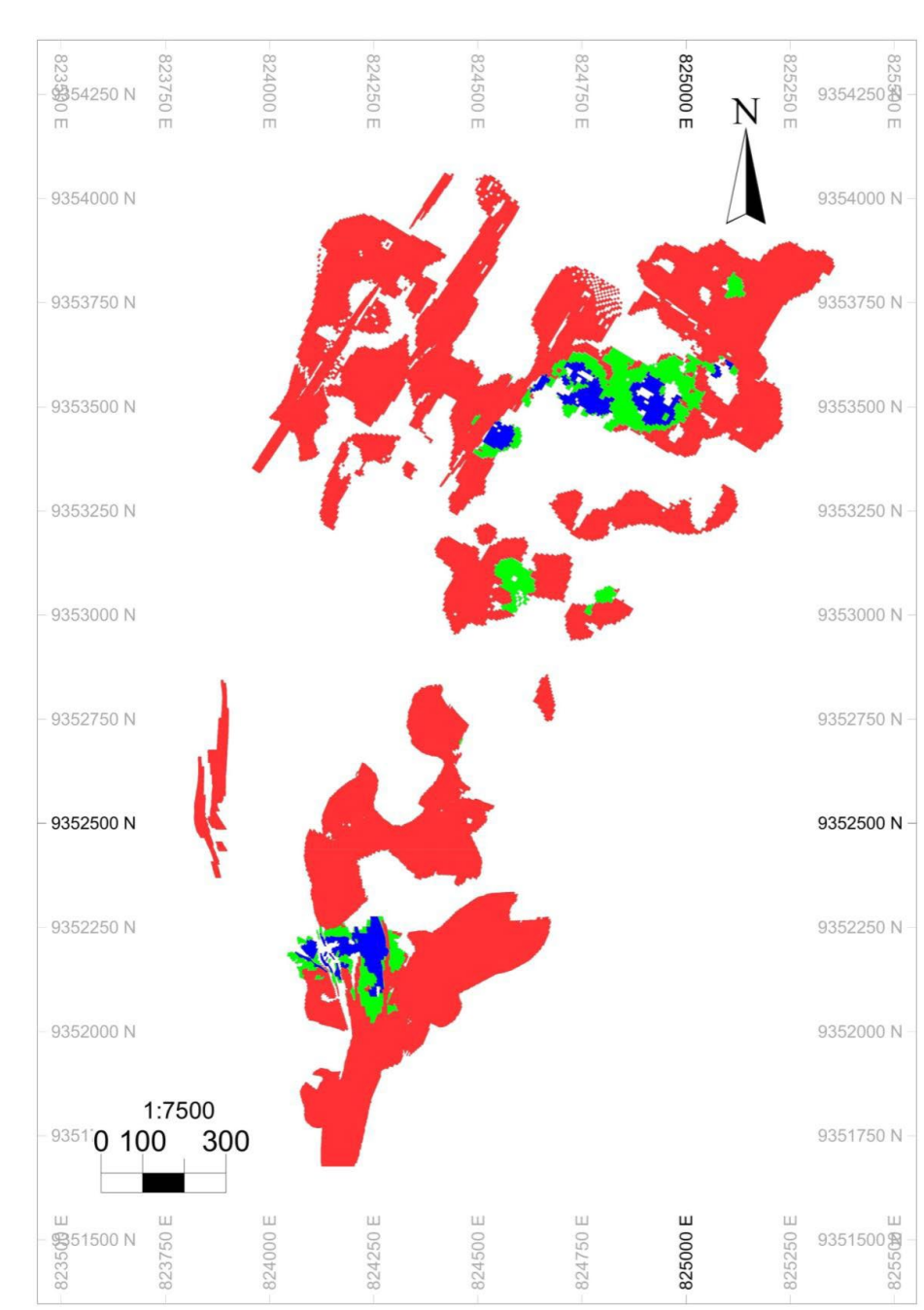
Grades were estimated by three methods, Ordinary Kriging, Inverse Distance to a Power, and Nearest Neighbor. For economic stope design, the OK values were used.

The search distances were roughly  $\frac{1}{2}$  of the variogram range for Pass 1, the full variogram range for Pass 2, and a longer search was used for inferred to fill in between drilling for the zone. For Pass 1 and 2, a minimum of 6 composites were required and a maximum of 16 were used, for Pass 3, a minimum of 2 and a maximum of 8 were used.

Nearest neighbor estimates were used to check the unbiased average of each zone before applying a cutoff grade.

#### 14.8 RESOURCE CLASSIFICATION

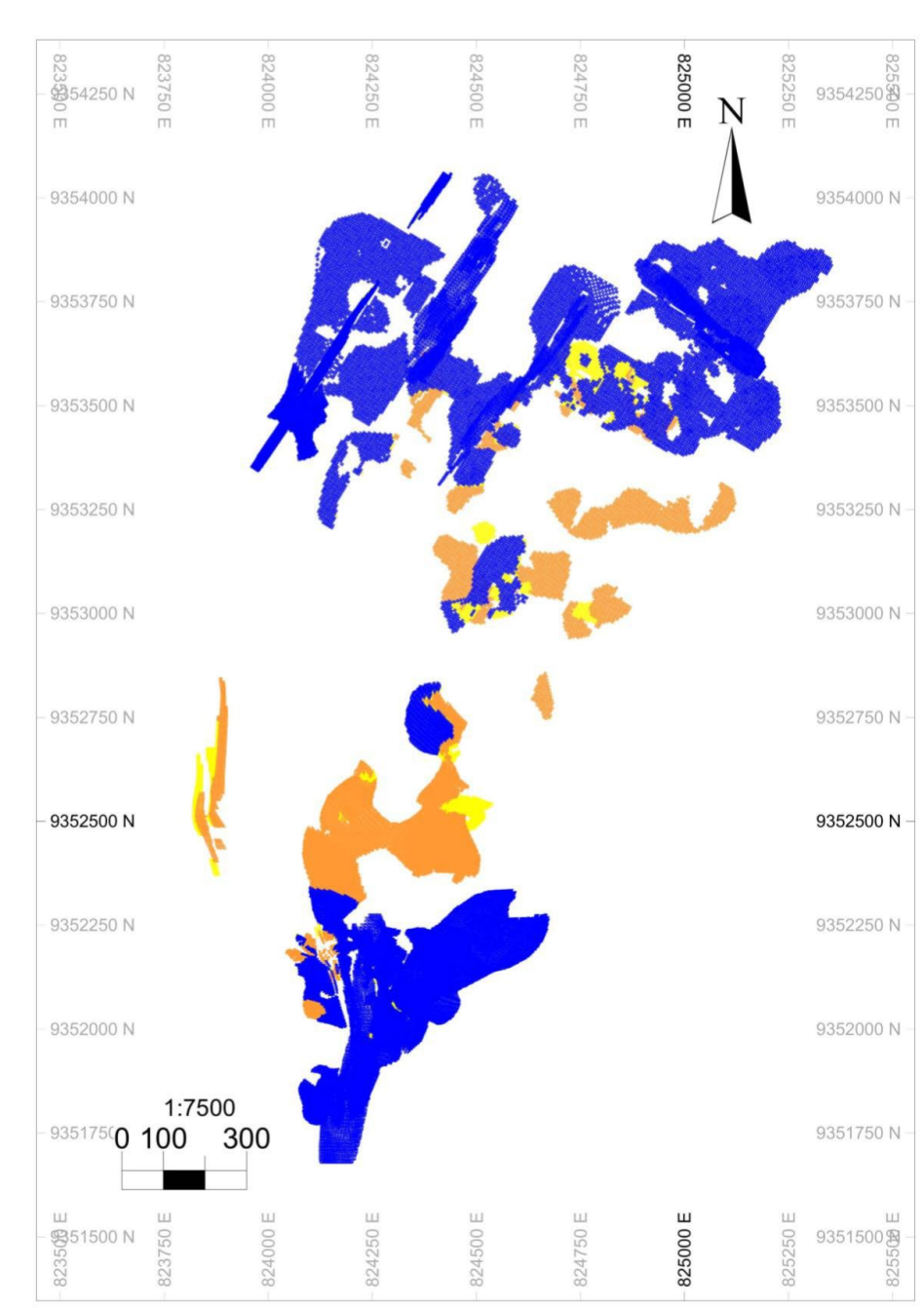
Mineral resource classification utilized criteria based on drill spacing and variogram ranges. Measured mineral resource required a spacing of 25x25m with at least 3 composites, indicated mineral resource, 50x50m with 3 composites, and inferred resource estimates required a spacing of 100x100m with at least 2 composites. In addition, estimation required the demonstration of geological continuity within the Florida horizon as well as dolomitic alteration. In Figure 14-9 mineral resource classes are shown with Measured Resources shown in blue, Indicated in green and Inferred in red.



**Figure 14-9 Distribution of Resource Classes (Source Nexa)**

#### 14.9 CUTOFF GRADE

Based on metallurgical test work, mineral types were assigned for sulfides, oxides, and mixed mineral based on the relation of oxide zinc with total zinc, and based on these criteria, a metallurgical recovery was assigned to each block. The blocks were coded with the most prominent oxidation state. Oxides are shown in orange, mixed material in yellow and sulfides in blue.



**Figure 14-10 Oxidation state of the mineral zones (Source Nexa)**

#### 14.10 DEVELOPMENT OF ECONOMIC SHELLS FOR REPORTING

A recovery was assigned based on the oxidation state. Using the estimated grade and recovery, economic stope shapes were developed using a “stope optimizer” tool in Deswik software. The limits for the stope are summarized in Table 14-8. The cutoff grade was established in net smelter return (NSR) for each mining method, Sublevel Stopping, Cut and Fill, and Room and Pillar. Only mineral resources within an economic stope shape were reported.

**Table 14-8 Deswik Stope Parameters**

	Sublevel Stopping	Cut and Fill	Room and Pillar
<b>Stope Length (m)</b>	4	3	Room 5.5x5.5 and Pillar 6x6
<b>Stope Height (m)</b>	16	3	4 to 20
<b>Minimum Stope Width (m)</b>	3	3	4
<b>Minimum Waste Pillar Width (m)</b>	3	3	6
<b>Dip</b>	50°/90°	20°/50°	20°/20°
<b>Cut-Off (NSR)</b>	41.4	42.93	40.61

Long term metals prices used for calculation of NSR are in Table 14-9.

**Table 14-9 Long term metal prices**

Metal	\$US/tonne	\$US/lb
Zn	2.816	1.27
Pb	2.249	1.02
Ag		19.40 / OzT

An example of the stope shapes used to declare a mineral resource is shown in Figure 14-11. Gustavson feels that the stope shells are a good estimate of the economic potential of the material, and that the parameters used are sufficiently developed to meet the definition of mineral resource estimate of the CIM.



**Figure 14-11 - Example Deswik Stope Shapes**

#### 14.11 SPECIFIC GRAVITY/DENSITY

Density was calculated as a function of grade using the following equation.

$$\text{Density} = 2.73 + 0.0126 * \text{Zn} + 0.035 * \text{Pb}$$

The equation was developed by SRK during the 2017 study. SRK determined that the expected error of using this equation for density was about 0.01%, and that there is no material effect or bias on the mineral resource estimate from this method.

#### 14.12 VALIDATION OF RESOURCE ESTIMATE

The estimate was validated by statistical comparison of the three estimates, and by visual inspection of cross sections of estimates against composites. At this time the classification was reviewed based on the average drill density. Inspection plots for zinc and silver are shown in Figure 14-12 and Figure 14-13.

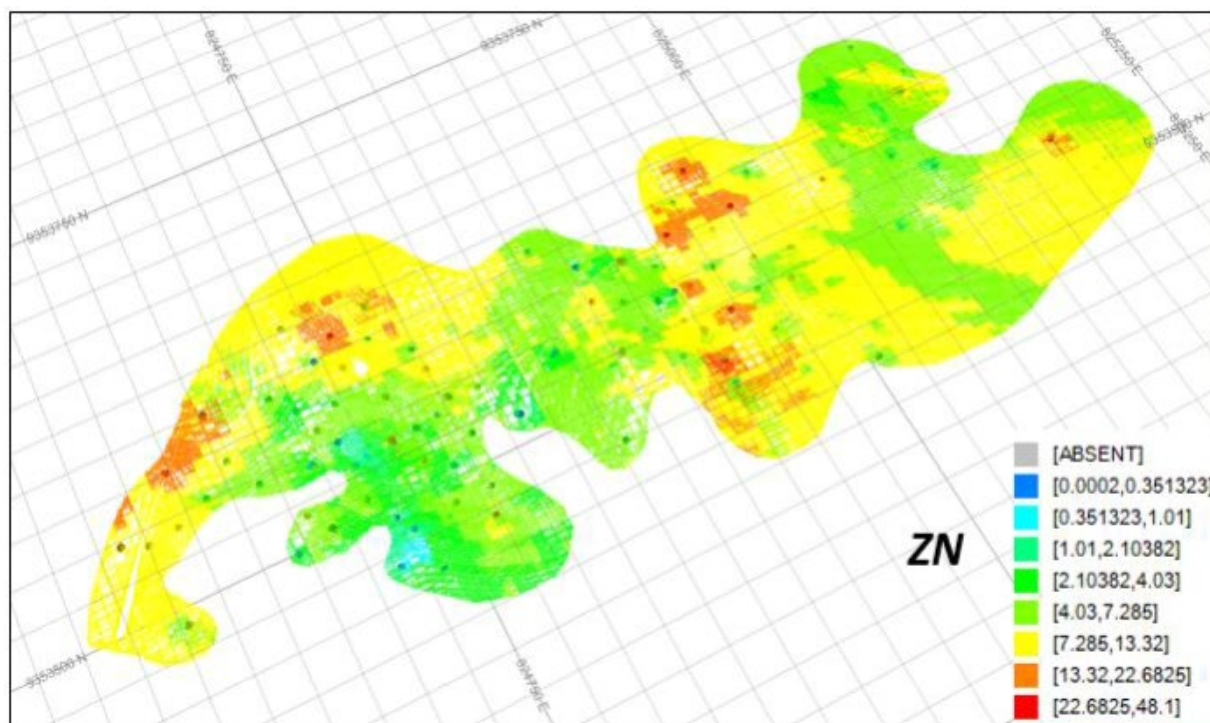
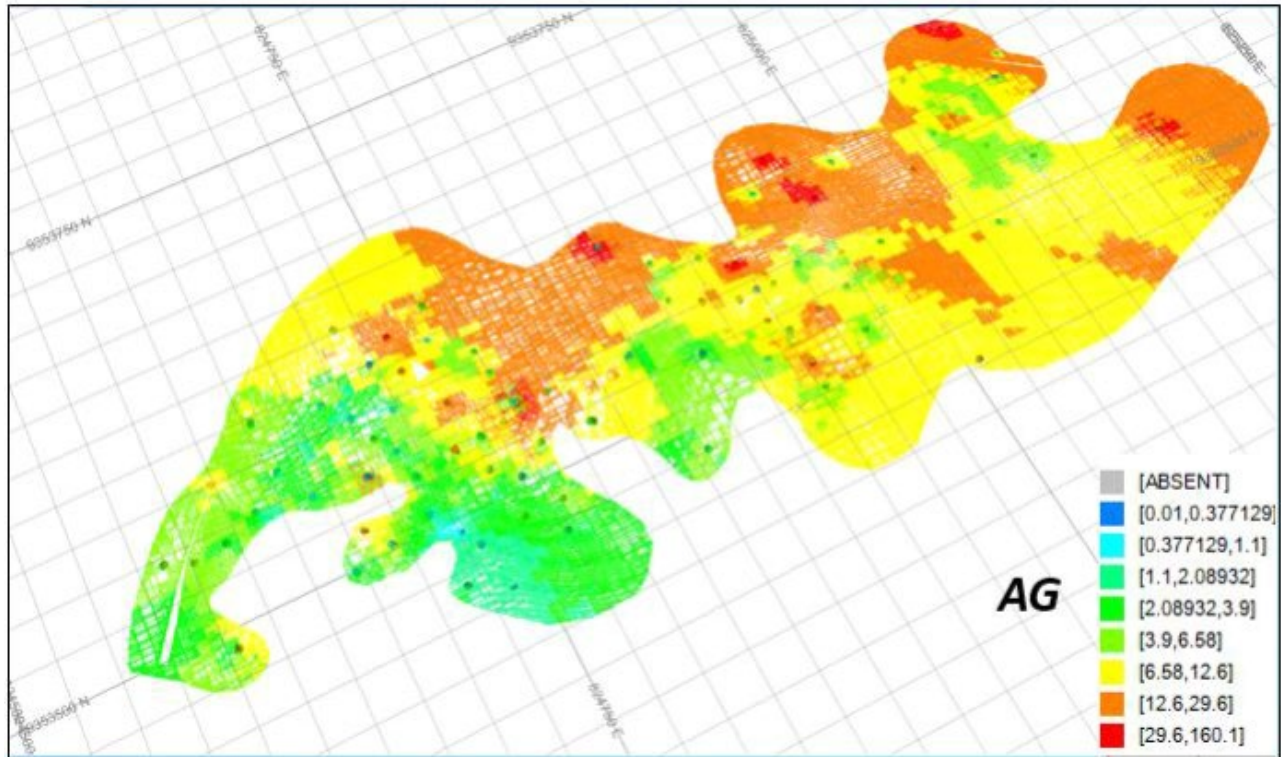


Figure 14-12 - Review of Estimates vs. Composites for Zinc in KM6-1





**Figure 14-13 - Review of Estimates vs. Composites for Silver in KM6-1**

#### 14.13 AUDIT OF FINAL MINERAL RESOURCE ESTIMATE.

Gustavson audited the Nexa model by examining it in 3-dimensions in the Leapfrog software and by comparing the statistics of the samples in each zone with the modeled grades. The Leapfrog work appears to have been done carefully, taking into account the limits of the dolomite zone within the Chambara formation where lead, zinc, and silver grades are concentrated. Gustavson feels that this is a good representation of the volume of the mineralized material.

The grades reported have an implicit cutoff as part of the stope optimizer analysis in addition to the explicit cutoff applied to the composite data. The stope optimizer tends to select only the best grade where it is sufficiently continuous to allow development of a stope of a defined size. This is a direct comparison to an economic pit limit analysis used in open pit mining to define an “in pit resource”. In both cases, the use of the economic mining limit implies the potential for future economic extraction.

For the Florida Canyon study, the prices used were very near to the market prices in December of 2020 when the study was finalized. Gustavson was able to compare the statistics of samples within the stope shells with the reported mineral resources and found a generally good correlation. Some of the stope shapes were formed largely on inferred material with limited drilling, and correlations were most precise between stope grades and composite grades when sampling was most regular.

The mineral resource estimate is tabulated in Table 14-10 Mineral Resource Summary. Gustavson feels that the reported Mineral Resource Estimate meets the standard for reporting under CIM (2019). The Mineral Resource Estimate separated by zone and mantos vs feeder is in Appendix E.

#### 14.14 MINERAL RESOURCE TABULATION

The Mineral Resource by zone is shown in Table 14-10.

**Table 14-10 Mineral Resource Summary**

Zone	Classification	Sum of Tonnes	Zn %	Ag g/t	Pb %	Fe %
Karen Milagros	Measured	328,254	9.07	9.77	1.34	1.53
	Indicated	913,273	7.65	10.41	1.36	1.35
	Measured + Indicated	1,241,527	8.03	10.24	1.35	1.39
	Inferred	7,072,315	8.82	10.55	1.20	1.57
San Jorge	Measured	478,691	12.85	19.29	1.42	3.07
	Indicated	721,429	13.61	20.52	1.25	3.35
	Measured + Indicated	1,200,120	13.31	20.03	1.32	3.24
	Inferred	3,895,089	13.09	11.34	0.68	2.41
1021	Inferred	3,291,937	6.71	13.58	1.77	2.65
Sam	Inferred	599,392	12.78	6.99	2.96	0.93

The total Mineral Resource at Florida Canyon is shown in Table 14-11.

**Table 14-11 Florida Canyon Total Mineral Resources**

Classification	Sum of Tonnes	Zn %	Ag g/t	Pb %	Fe %
Measured	806,945	11.32	15.42	1.39	2.44
Indicated	1,634,702	10.28	14.87	1.31	2.23
Measured + Indicated	2,441,647	10.62	15.05	1.33	2.30
Inferred	14,858,733	9.63	11.28	1.26	2.00

Mineral Resources are not Mineral Reserves and have not been demonstrated to have economic viability. There is no certainty that the Mineral Resource will be converted to Mineral Reserves. The quantity and grade or quality is an estimate and is rounded to reflect the fact that it is an approximation. Quantities may not sum due to rounding.

- CIM (2014) standards for mineral resources were followed.
- The effective date of the Mineral Resource Estimate is February 1<sup>st</sup>, 2021.
- The mineral resources are reported using a cutoff of US \$41.40/t NSR for the sub-level, US \$42.93/t for the cut and fill, and US \$40.61/t for the room and pillar areas of the mine.
- The minimum thickness was 3 m for sub-levels in cut and fill, and 4 m for stopes and pillars.
- Mineral resources are reported exclusive of mineral reserves.
- Mineral resources are not mineral reserves and have not demonstrated economic feasibility.
- Numbers may not sum correctly due to rounding.

- Estimates for mineral resources are based on drill results received up to 30 October 2020, with 545 holes and a total length of 136,758.15 m stope shapes for support of economic potential were developed using the stope optimizer tool of Deswik (DSO).

## **15 ADJACENT PROPERTIES (ITEM 23)**

The Minera Bongará concessions are surrounded by concessions held by Minera Chambará. Minera Chambará, as discussed in Section 4, is also a joint venture between Solitario and Nexa. The mineralized area as currently drilled is well within the limits of the Bongará concessions.

## **16 OTHER RELEVANT DATA & INFORMATION (ITEM 24)**

To the qualified persons' knowledge, there is no other relevant data or information that is not already disclosed in this report.

## **17 INTERPRETATIONS & CONCLUSIONS (ITEM 25)**

### **17.1 RESULTS & COMMENTS**

Florida Canyon has long been recognized as a significant Mississippi Valley Type mineral resource for zinc. The work performed to complete this study demonstrates that Florida Canyon has sufficient zinc resources to warrant further work, with about 2.4 million tonnes of Measured and Indicated mineral resource and nearly 15 million tonnes of Inferred. These tonnages are representative of material that is both of sufficient grade and sufficient continuity to form potential stope shapes, even though mineral resources are not mineral reserves.

In the area of historical drilling the steep topography has made drill site construction difficult without road access. All drilling to date has been completed with helicopter support. This has resulted in gaps in drill coverage and, in some cases, gaps in modelled ore shapes that are likely to be continuous. An access road to the site, to be completed in 2021, will provide better sites for surface drilling, support for underground development and logistical support. Permitting, currently in progress, will provide future road-accessible work areas south of the current resources.

### **17.2 SIGNIFICANT RISKS & UNCERTAINTIES**

A thorough understanding of the resource and the mineralogy will be needed. The majority of the ore is judged to be of favorable metallurgy as well as being amenable to producing a high quality and marketable concentrate. A subordinate quantity of the ore consists of variable amounts of the zinc minerals in the form of carbonates or silicates which may require distinct treatment to result in good recovery and produce a viable concentrate. The highest priorities for future work are to better quantify the metallurgy and to convert at least a portion of the resource from the Inferred to Indicated category so that reserves may be quantified for the completion of a Feasibility Study.

The project is in a remote area with challenging topography which will require upgrading of the local infrastructure for a commercial operation. Although the mine will be underground, with a relatively small surface footprint, the challenges of working in the area will require a strong attention to environmental sensitivities and a commitment to the community to maintain the social license.

## **18 RECOMMENDATIONS (ITEM 26)**

### **18.1 GENERAL RECOMMENDATIONS**

Gustavson has reviewed many of the technical studies completed by Nexa and its predecessor, Votorantim. Most of these studies have been conducted at a prefeasibility level and will form the basis for feasibility investigations to support a production decision. To attain this level of project design detail, new studies will need to be completed to provide the foundation for future development. A number of recommendations for this future work are provided in the 2017 SRK PEA, most of which are not restated in this report. The following recommendations focus on the most impactful recommendations for project development in the near term.

### 18.1.1 Metallurgy

The focus of this report is to review a new resource estimation by Nexa which updates, restates, and refines the 2017 resource estimation. The newly restated resources define a significantly larger inventory of ore with a very different mineralogical composition and metallurgical character than that previously described in the PEA. The increased proportion of sulfide ore with less oxidized zinc and lead minerals provides a significant opportunity, in comparison to the PEA, for:

1. Lower processing costs,
2. Higher metal recoveries,
3. Increased concentrate grades,
4. Lower transportation costs,
5. Decreased average smelter charges, and
6. Lower cutoff grade.

These more favorable operating parameters should have a significant impact on project economics, particularly combined with the larger global resource base.

However, the currently available metallurgical studies conducted by Smallvill S.A. are inadequate to support an optimization study of processing options. It is important to note that little of the historical studies have tested pure sulfide ore. Therefore, a new program of metallurgy is strongly recommended, starting with more representative sampling of the ore deposit with variability testing in mind. Planned studies should prioritize work on sulfide ore so that it may be scheduled for production early in the mine life.

The metallurgy of oxidized ore should also be recharacterized so that this lower quality ore can be incorporated into the mine plan.

It is recommended that the suggested program be undertaken by a reputable metallurgical consulting firm.

Samples for metallurgical test work can be procured from core in storage in Shipasbamba. New core for metallurgical sampling can be obtained by drilling from currently permitted sites from either underground or surface locations as described below if additional samples are needed.

Since additional drilling has indicated that sulfides constitute a majority of the total resources, a program of metallurgical testing is recommended with the following objectives:

- The emphasis of the metallurgical program for the project should be on the recovery of zinc, lead and silver from the sulfide ores.
- A secondary objective would be to refine the recoveries in oxidized ore.
- The composites should be prepared from the core currently in storage based on ore types/feed grade (high, average, and low grade). This would provide immediately available ore for testing. Follow up testing could use new drill core.
- Metallurgical testing should be directed at optimizing process parameters (grind size, flotation time, reagent type, dosage, etc.) for the rougher flotation and regrind and a



determination of the number of cleaner stages required to produce marketable-grade concentrates.

- Locked-cycle tests should be performed to determine the recovery and quality of the concentrates.
- Miscellaneous tests should also be undertaken to generate data for prefeasibility and feasibility work. This would include comminution ( $CW_i$ ,  $A_i$ ,  $BW_i$ ), thickening, filtration and tailing characterization testing.

### 18.1.2 Drilling

Additional exploration drilling is currently planned to increase the resource base of the project. Expansion of the resource is likely in a number of areas. However, drilling is also required to upgrade the category of the resource so that future mine planning and feasibility studies can be completed.

### 18.1.3 Resource Conversion Drilling

Follow up drilling in 2018-19 of targets recommended in the 2017 PEA was very successful in discovering new resources and new orebodies within the previously defined footprint of the deposit. Further future additions by discovery of new bodies within the limits of the existing resource are probable but it is recommended that the primary emphasis of drilling in the central part of the deposit be directed to resource conversion drilling since the ratio of Measured/Indicated to Inferred resource is low. Detailed mine planning requires an increased proportion of closely spaced drilling.

Underground drilling is preferable for resource conversion drilling because the surface topography is challenging and expensive for the development of surface drill stations. The relatively short distances between individual ore shoots also argues for underground drilling, the access for which can be readily developed due to the steep terrain. It is also likely that subsurface drilling will identify new zones and expand existing ones that are not feasible to be drilled from the surface sites. 15,000m of underground drilling is planned in the next campaign.

Development of underground access will be supported by completion of the new access road.

Previously obtained permits provided for new underground development and drilling in both the northern and southern parts of the deposit (Figure 18-1). However, it is uncertain if the previously permitted underground location in the northern part of the deposit (near zone 1021) is still current. Some additional underground development is currently permitted in the San Jorge workings.

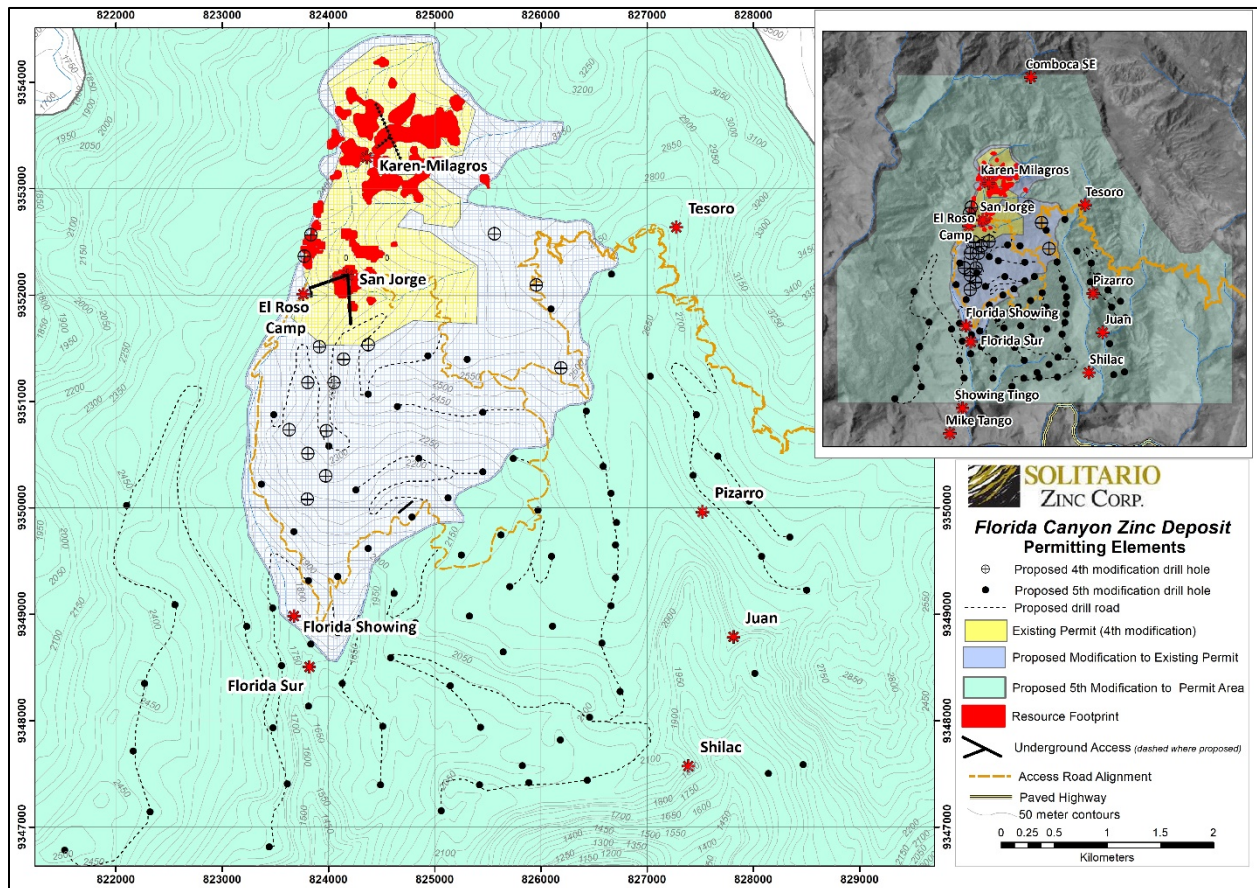
Resource conversion drilling can also be efficiently completed from surface drill locations in certain locations. An example would be the expansion of drilling of the manto east of San Jorge, an area which is currently permitted.

Some additional drifting and infill drilling from underground at San Jorge could expand resources in permitted areas. Locations such as these could also offer opportunities for obtaining metallurgical samples.

#### 18.1.4 Resource Expansion Drilling

An expansion of the existing surface drilling permit is currently in preparation. Figure 18-1 shows holes in prospective areas near the known resources to the south and east within the permit boundary (blue area).

Preparation of a longer-term permit (5<sup>th</sup> modification of the EIA) is also in progress for drill sites to test several new exploration targets that have been identified on the Minera Bongará Property. Figure 18-1 shows the location of some of these prospects. Ore grade outcropping mineralization is found at the Shillac, Juan, Tesoro and Pizarro. These surface showings, along with those in the expanded drilling area under the existing permit are quite accessible by new road construction compared to targets previously tested in the immediate vicinity of Florida Canyon.



**Figure 18-1 Future drilling and current and future underground exploration locations**

Figure 18-2 shows the hypothesized extension in long section of the “Favorable Horizon” of Florida mineralization to the south to be tested with the drill holes in this area. The mineralized outcrops mentioned above are within the Favorable Horizon within the Chambara Formation. 10,000m of resource expansion drilling is proposed for 2021-2022.

Drilling of these areas may be delayed until 2022 due to the timing of approvals for the permit modification.

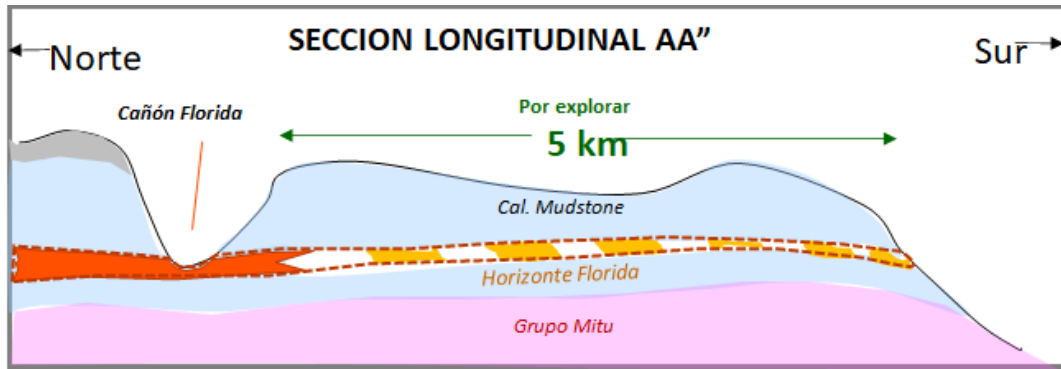


Figure 18-2 Northwest-Southeast long section of area shown in Figure 18-1

Table 18-1 is a projected work program budget.

Table 18-1 Planned work program for 2021-2022

Florida Canyon Prefeasibility Technical Work				
Task	Description	Quantity	Unit Cost US\$	Est. Budget
Metallurgy				
	Sampling	20		\$10,000
	Test Work	20		\$250,000
Underground				
	North Adit Development	1000 m	\$2,000	\$2,000,000
	South Adit Development	250 m	\$2,000	\$500,000
Drilling				
	Underground Resource	15,000 m	\$250	\$3,750,000
	Surface Resource	10,000 m	\$300	\$3,000,000
Support Cost	Camp, Oversight	-		\$1,500,000
Total				\$11,010,000

\*\* Assumes Road Access Complete. (Does not include project fixed costs)

## 19 REFERENCES (ITEM 27)

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## 20 GLOSSARY

### 20.1 MINERAL RESOURCES

The mineral resources and mineral reserves have been classified according to the “CIM Definition Standards for Mineral Resources and Mineral Reserves” (May 10, 2014). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, any Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

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.



## 20.2 MINERAL RESERVES

Modifying Factors are considerations used to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

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.

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. The Qualified Person(s) may elect, to convert Measured Mineral Resources to Probable Mineral Reserves if the confidence in the Modifying Factors is lower than that applied to a Proven Mineral Reserve.

**Probable Mineral Reserve** estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.

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. Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect the potential economic viability of the deposit.

Proven Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study. Within the CIM Definition standards the term Proved Mineral Reserve is an equivalent term to a Proven Mineral Reserve.

## 20.3 GLOSSARY

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

**Table 20-1 Glossary**

<b>Term</b>	<b>Definition</b>
Assay:	The chemical analysis of mineral samples to determine the metal content.
Capital Expenditure:	All other expenditures not classified as operating costs.
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 whether it is economic to recover its mineral 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.
Igneous:	Primary crystalline rock formed by the solidification of magma.
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.
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.
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.
Total Expenditure:	All expenditures including those of an operating and capital nature.



## 20.4 DEFINITION OF TERMS

The following abbreviations may be used in this report.

**Table 20-2 Abbreviations**

Abbreviation	Unit or Term
A	ampere
AA	atomic absorption
A/m <sup>2</sup>	amperes per square meter
Ag	silver
Au	gold
°C	degrees Centigrade
CCD	counter-current decantation
CIL	carbon-in-leach
CoG	cut-off grade
cm	centimeter
cm <sup>2</sup>	square centimeter
cm <sup>3</sup>	cubic centimeter
cfm	cubic feet per minute
ConfC	confidence code
CRec	core recovery
CSS	closed-side setting
CTW	calculated true width
Cu	copper
°	degree (degrees)
dia.	Diameter
EDX	energy dispersive x-ray
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FA	fire assay
ft	foot (feet)
ft <sup>2</sup>	square foot (feet)
ft <sup>3</sup>	cubic foot (feet)
g	gram
gal	gallon
g/L	gram per liter
g-mol	gram-mole
gpm	gallons per minute
g/t	grams per tonne
ha	hectares
Hp	Horsepower
HQ	drill core diameter of ~63.5 mm
HTW	horizontal true width
ICP-MS	inductively coupled plasma mass spectrometry
ID2	inverse-distance squared
ID3	inverse-distance cubed
kA	kiloamperes
kg	kilograms

Abbreviation	Unit or Term
km	kilometer
km <sup>2</sup>	square kilometer
koz	thousand troy ounce
kt	thousand tonnes
kt/d	thousand tonnes per day
kt/y	thousand tonnes per year
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
kWh/t	kilowatt-hour per metric tonne
L	liter
L/sec	liters per second
L/sec/m	liters per second per meter
lb	pound
LHD	Long-Haul Dump truck
LOI	Loss On Ignition
LoM	Life-of-Mine
m	meter
m <sup>2</sup>	square meter
m <sup>3</sup>	cubic meter
masl	meters above sea level
Ma	millions of years before present
mg/L	milligrams/liter
MLA	mineral liberation analysis
mm	millimeter
mm <sup>2</sup>	square millimeter
mm <sup>3</sup>	cubic millimeter
MME	Mine & Mill Engineering
Moz	million troy ounces
Mt	million tonnes
MTW	measured true width
MW	million watts
m.y.	million years
NGO	non-governmental organization
NI 43-101	Canadian National Instrument 43-101
NQ	drill core diameter of ~47.5 mm
opt	troy ounce per ton
OSC	Ontario Securities Commission
oz	troy ounce
%	Percent
Pb	lead
PGM	Pilot Gold Mill
PLC	Programmable Logic Controller
PLS	Pregnant Leach Solution
PMF	probable maximum flood
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control

Abbreviation	Unit or Term
RC	rotary circulation drilling
RoM	Run-of-Mine
RQD	Rock Quality Description
Sb	antimony
sec	second
SEM	Scanning Electron Microscope
SG	specific gravity
SPT	standard penetration testing
st	short ton (2,000 pounds)
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
TSP	total suspended particulates
µm	micron or microns
V	volts
VFD	variable frequency drive
W	Tungsten or watts
XRD	x-ray diffraction
XRF	x-ray fluorescence
Y	Year
Zn	zinc

## 21 CERTIFICATE OF AUTHOR FORMS

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### **CERTIFICATE of AUTHOR**

I, Donald E. Hulse, P.E., SME-RM do hereby certify that:

1. I am currently employed as Vice President of Mining by Gustavson Associates, LLC at:  
200 Union Boulevard, Suite 440  
Lakewood, Colorado 80228
2. I am a graduate of the Colorado School of Mines with a Bachelor of Science in Mining Engineering (1982) and have practiced my profession continuously since 1983.
3. I am a registered Professional Engineer in the State of Colorado (35269), and a registered member of the Society of Mining Metallurgy & Exploration (1533190RM).
4. I have worked as a mining engineer for a total of 39 years since my graduation from university; as an employee of a major mining company, a major engineering company, and as a consulting engineer. I have performed resource estimation and mine planning on numerous lead and zinc deposits for over 6 mining companies in three countries working as a consultant as well as an engineer or engineering manager for the projects.
5. 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.
6. Due to pandemic travel restrictions, I was unable to visit the property.
7. I am responsible for the preparation of the technical report entitled “NI 43-101 Technical Report on Resources, Florida Canyon Zinc Project, Amazonas Department, Peru”, with effective date February 1, 2021, and dated April 5<sup>th</sup>, 2021 (the “Technical Report”), with specific responsibility for Chapters 1-10, Sections 11.4 and 11.5, Chapter 12, and Chapters 14-20. I am also responsible for the overall organization and content of the document.
8. I have had no prior involvement with the property that is the subject of this Technical Report.

9. I am independent of the issuer, Solitario Zinc Corp. and the Florida Canyon property, applying all of the tests in Section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101, and the Technical Report has been prepared in compliance with that instrument and form.
11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 5<sup>th</sup> day of April 2021

/s/ Donald E. Hulse (Signature)  
*Signature of Qualified Person*

Donald E. Hulse  
*Print name of Qualified Person*

## CERTIFICATE OF QUALIFIED PERSON

I, Simon James Atticus Mortimer, a professional geologist residing at Ramon Zavala 420, Miraflores, Lima, Peru do hereby certify that:

I am a co-author of the "NI 43-101 Technical Report on the Florida Canyon Project".

- I am a Registered Professional Geoscientist, practicing, as a member of the Australian Institute of Mining and Metallurgy (#300947) and the Australian institute of Geoscientists (#7795). I graduated from the University of St. Andrews, Scotland, with a B. Sc. in Geoscience in 1995 and from the Cambourne School of Mines with a M.Sc. in Mining Geology in 1998.
- I have worked as a geoscientist in the minerals industry for over 20 years and I have been directly involved in the mining, exploration, and evaluation of mineral properties in Peru, Chile, Argentina, Brazil and Colombia for precious and base metals.
- I visited the Florida Canyon drill support camp at Shipasbamba from the 6<sup>th</sup> to the 8<sup>th</sup> of August 2019.
- I was retained by Solitario to visit the property to review the geological logging and data capture protocols with respect to the completion of a geological model and resource estimation.
- I am responsible for Chapters 11 and 12, and Section 2.2.1 of the "NI 43-101 Technical Report on the Florida Canyon Project".
- I am independent of Solitario as independence is described by Section 1.5 of NI 43-101. I have not received, nor do I expect to receive, any interest, directly or indirectly from Solitario.
- I have read National Instrument 43-101 and Form 43-101F1 and, by reason of education and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101. This technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

Dated this 5<sup>th</sup> day of April 2021

*/s/ Simon James Atticus Mortimer (Signature)*

Simon J.A. Mortimer, M.Sc. ACSM; Member AIG  
Dated this 04/02/2021

## CERTIFICATE OF AUTHOR

I, Deepak Malhotra, Ph.D., of Lakewood, Colorado, do hereby certify that:

1. I am currently employed as President of Pro Solv, LLC with an office at 15450 W. Asbury Avenue, Lakewood, Colorado 80228.
2. This certificate applies to the NI 43-101 Technical Report titled "**NI 43-101 Technical Report on Resources, Florida Canyon Zinc Project, Amazonas Department, Peru**" with effective date February 1, 2021, and dated April 5<sup>th</sup>, 2021 (the "Technical Report").
3. I am a graduate of Colorado School of Mines in Colorado, USA (Master of Metallurgical Engineering in 1973 and Ph.D. in Mineral Economics in 1978). I am a registered member in a good standing of the Association of Society of Mining and Metallurgical Engineers (SME) and a member of the Canadian Institute of Mining and Metallurgy (CIM). I have 48 years of experience in the area of metallurgy and mineral economics.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI43-101) 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 have not visited the property due to pandemic travel restrictions.
6. I am responsible for Sections 13 of the Technical Report.
7. I am independent of the Issuer and related companies applying all of the tests in Section 1.5 of the 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 the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101 F1.
10. As of the effective date of the Technical Report and the date of this certificate, to the best of knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 5<sup>th</sup> day of April 2021

/s/ Deepak Malhotra (Signature)

Deepak Malhotra, Ph. D., SME-RM  
Principal Metallurgist  
Pro Solv, LLC



## 22 APPENDIX A: DRILL HOLE COLLARS

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
BGFC-01	824110.3	9353472	2433.11	250.1
BGFC-02	824110.3	9353472	2433.11	189.7
BGFC-03	824109	9353471	2432.93	190.9
BGFC-04	824109	9353471	2432.93	213.1
BGFC-05	824306.8	9353337	2502.27	253.2
BGFC-06	824306.8	9353337	2502.27	220
BGFC-07	824436.6	9352986	2459.128	201.3
BGFC-08	823898.8	9352544	2299.51	207.3
BGFC-09	823959.4	9353301	2588.44	487.45
BGFC-10	823948	9353585	2521.34	457.4
BGFC-11	823947.5	9352916	2413.21	234.8
BGFC-12	824421.1	9353138	2472.183	158.6
BGFC-13	824482.3	9352793	2422.971	146.5
BGFC-14	824130.4	9353679	2461.91	244
BGFC-15	824422.4	9353138	2472.204	194.25
BGFC-16	824130.4	9353679	2461.91	187
BGFC-17	823898.8	9352544	2299.51	296.8
BGFC-18	824438.6	9352988	2458.92	204.2
BGFC-19	823898.8	9352544	2299.51	155.35
BGFC-20	824123.6	9352841	2368.83	147.1
BGFC-20A	824123.6	9352841	2368.83	93.9
BGFC-20B	824123.6	9352841	2368.83	174.3
BGFC-21	824721.4	9352972	2553.36	229.2
BGFC-22	824062.2	9353128	2467.13	237.4
BGFC-23A	823915	9352434	2209.45	343.55
BGFC-24	823931.9	9352647	2272.99	264.3
BGFC-25	823748.1	9352313	2238.38	274.9
BGFC-26	823949.8	9352806	2359.52	205.2
BGFC-27	823762.6	9352099	2114.94	230.8
BGFC-28	823949.8	9352806	2359.52	332.6
BGFC-29	823946.8	9352215	2218.196	368.5
BGFC-30	823705.8	9352452	2311.75	304.9
BGFC-31	823947.5	9352916	2413.21	361.9
BGFC-32	823705.8	9352452	2311.75	349.2
BGFC-33	824475.9	9353346	2401.37	87
BGFC-34	824318.6	9353818	2565.39	259.25
BGFC-35	824473.6	9353347	2401.293	109
BGFC-36	824915.9	9353523	2533.225	228.75

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
BGFC-37	824516.8	9354141	2639.61	439.2
BGFC-38	823946.8	9352215	2218.196	225.7
BGFC-39	825178.1	9352219	2509.473	430.05
BGFC-40	825195.8	9352895	2609.16	329.4
BGFC-41	825287	9353844	2724.605	512.4
BGFC-42	827233.4	9352599	2711	316
BGFC-43	824785	9354291	2669.38	277.5
BGFC-44	825368.3	9353415	2733.05	439.2
BGFC-45	824785	9354291	2669.38	610
BGFC-46	826977.9	9352253	2599	488
BGFC-47	824516.8	9354141	2639.61	515.45
BGFC-48	824318.6	9353818	2565.39	326.35
BGFC-49	824709.1	9353805	2775.08	493
BGFC-50	825231	9353822	2713.835	504.75
BGFC-51	823937.5	9352731	2301.5	181.5
BGFC-52	824019.9	9352895	2389.29	233.9
BGFC-53	825228.1	9353822	2713.61	508.35
BGFC-54	824022.6	9352894	2389.16	208.95
BGFC-55	824062.2	9353128	2467.13	325.35
BGFC-56	825107.6	9353598	2608.545	369.05
BGFC-57	824062.4	9353327	2506.33	194.2
BGFC-58	825108.8	9353597	2608.553	335.5
BGFC-59	824145.6	9353374	2419.83	157.6
BGFC-60	825109.6	9353595	2608.607	341.6
BGFC-61	824576.6	9353236	2517.33	197.25
BGFC-62	825109.7	9353595	2608.593	350.75
BGFC-63	824401.4	9353498	2570.93	256.3
BGFC-64	824917	9353523	2533.282	278.25
BGFC-65	824619.7	9353967	2725.87	463.9
BGFC-66	825044.5	9353252	2729.091	375.15
BGFC-67	825521.9	9353021	2752.11	114.9
BGFC-68	825015.5	9352933	2628.01	341.6
BGFC-69	825521.9	9353021	2752.11	537
BGFC-70	824318.6	9354069	2659.23	451.4
BGFC-71	824806.8	9354239	2687.07	493.75
BGFC-72	824947.8	9353161	2738.632	387.3
BGFC-73	826101	9352414	2792	603.9
BGFC-74	825642.5	9352657	2772.61	500.3
BGFC-75	823886.7	9352329	2124.64	106.25
BGFC-76	824427.3	9352180	2366.55	378.2

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
BGFC-77	824658.1	9353507	2465.706	208.3
BGFC-78	824285.5	9351867	2237.222	402.2
BGFC-79	824660.3	9353503	2465.616	150.55
BGFC-80	824318.6	9353818	2565.39	339
VMA1	824547.6	9353444	2429.054	160.15
VMA2	824550.5	9353439	2429.058	141.75
VMA3	824547.9	9353443	2429.057	106.25
VMA4	824549.8	9353446	2429.188	151.25
VMA5	824547.9	9353442	2428.999	137.25
VMA6	824552	9353443	2429.109	131.55
VMC1	824658.5	9353507	2465.66	179.2
VMC2	824658.4	9353503	2465.526	157.35
VMC3	824661.1	9353504	2465.467	154.55
VMC4	824656.7	9353506	2465.658	154.45
VMC5	824662.1	9353506	2465.646	150.1
VMC6	824658	9353503	2465.445	151.9
VMD1	824725.8	9353519	2480.759	87.5
VMD2	824726.7	9353517	2480.606	195.2
VMD3	824729.5	9353513	2480.645	194.1
VMD4	824730.3	9353518	2480.681	30
VMD4A	824730	9353518	2480.751	86.35
VMD5	824730.6	9353516	2480.778	179.2
VMD6	824726	9353516	2480.703	173.4
VMD7	824729.1	9353518	2480.675	101.8
VME1	824914.6	9353527	2533.173	282.35
VME2	824914.9	9353526	2533.104	238.4
VME3	824916.9	9353527	2533.286	272.15
VME4	824918.3	9353525	2533.166	240
VME5	824914.5	9353526	2533.097	255.2
VME6	824915.2	9353523	2533.242	242.1
V08	824620	9353967	2726	476.1
V08A	824620	9353967	2726	32.5
V08B	824620	9353967	2726	322.8
V09	824709	9353805	2775	512.95
V10	824709	9353805	2775	494.7
V10A	824709	9353805	2775	536.4
V13	824581.6	9353835	2688.352	413.3
V15	824582.2	9353834	2688.405	454.5
V18	824367.6	9353929	2588.43	324.4
V19	824367.6	9353929	2588.43	296.55

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V20	824367.6	9353929	2588.43	323.3
V21	824367.6	9353929	2588.43	377
V21A	824367.6	9353929	2588.43	341.35
V22	824528.6	9353706	2756.439	460.3
V23	824528.8	9353705	2756.451	491.2
V23A	824527.5	9353706	2756.4	494
V26	824315.8	9353816	2565.28	304
V28	824315.5	9353819	2565.28	298
V32	824321.8	9353594	2684.912	600
V33	824322	9353594	2684.914	380
V34	824321.6	9353591	2684.864	283.9
V35	824321.8	9353590	2684.883	442.95
V35A	824323.7	9353592	2684.864	416
V36	824486.6	9353221	2469.709	320.55
V37	824486.6	9353218	2469.744	191.2
V37A	824484.5	9353220	2469.553	452.1
V38	824597.4	9353048	2462.498	165.05
V39	824597.2	9353044	2462.226	162.55
V39A	824599.4	9353046	2462.498	167.4
V40	824225.5	9353379	2414.51	137.4
V41	824225.5	9353375	2414.444	149
V42	824437.3	9353073	2467.583	200.15
V43	824437	9353070	2467.337	167.7
V 44	824104.1	9352043	2218.567	308.4
V 45	824103.5	9352043	2218.577	293
V 46	824100.2	9352043	2218.641	750.5
V 47	824416.5	9351927	2328.957	430.1
V 48	824414.2	9351926	2328.954	453
V 49	824307.3	9352356	2469.198	339
V 50	824302.8	9352358	2469.207	168.1
V 51	824305.2	9352355	2469.171	377.6
V 52	824635.9	9352115	2405.196	434
V 53	824636.3	9352115	2405.242	583.4
V 54	824629.6	9352476	2580.375	398.6
V 55	824832.2	9352614	2625.939	46.2
V 56	824883.9	9352229	2492.771	497.5
V 57	824105.1	9352165	2269.818	293.6
V 58	824241	9352566	2392.067	257.4
V 59	824102.2	9352045	2218.616	83.45
V 63	824302.7	9352358	2469.212	162.4

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 87	824597	9353047	2462.533	140.5
V 88	824597.9	9353045	2462.335	170
V 89	824597.7	9353048	2462.476	173
V 90	824595.8	9353048	2462.486	199.6
V 91	824595	9353046	2462.464	164.4
V 92	824594.3	9353044	2462.241	210
V 109	824823.1	9352987	2590.437	246.4
V 110	824824.9	9352987	2590.623	248
V 111	824825.7	9352985	2590.529	269.1
V 112	824823	9352986	2590.395	287.3
V 113	824825.1	9352984	2590.399	290.2
V 114	824823.7	9352985	2590.304	269.9
V 115	824832.1	9352616	2625.554	389.3
V 121	824844.4	9353241	2692.052	359.6
V 122	824846.5	9353240	2692.051	398.3
V 123	824844.2	9353242	2691.901	398.3
V 124	824845.4	9353241	2692.042	398.3
V 125	824844.2	9353241	2691.998	356.5
V 126	824846.2	9353240	2692.055	125.4
V 127	824845	9353239	2692.043	349.5
V 128	824843.2	9353240	2691.838	352
V 129	824846.7	9353240	2692.046	365.4
V 130	824850.7	9353102	2633.127	284.5
V 131	824848.6	9353103	2633.139	117.9
V 132	824848.2	9353101	2632.94	305.4
V 133	824849.6	9353102	2632.949	299.5
V 134	824849.1	9353103	2633.239	282.6
V 135	824848.2	9353103	2633.096	303.7
V 136	824851	9353101	2632.906	302.2
V 137	824848.7	9353104	2633.322	299.5
V 138	824850.3	9353104	2633.477	278
V 139	824882.2	9352229	2492.711	437.3
V 145	824950.1	9353159	2738.679	431.5
V 164	824106.2	9352163	2269.462	347.5
V 165	824108.2	9352165	2270.029	284.4
V 166	824241	9352563	2392.013	305.3
V 167	824826.1	9352985	2590.509	152.3
V 168	824241.9	9352563	2392.054	227.2
V 169	824304	9352355	2469.172	455.4
V 170	824243.1	9352564	2392.077	203.6



BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 171	824303.9	9352356	2469.138	465
V 172	824241.4	9352566	2392.099	209.6
V 173	824239.4	9352564	2392.004	265.1
V 174	824304	9352357	2469.222	415.2
V 175	824447.1	9352671	2379.978	130.8
V 176	824443.3	9352670	2379.91	122.8
V 177	824446.2	9352670	2379.949	169.1
V 178	824102.5	9352041	2218.596	380.2
V 179	824634.6	9353274	2568.23	271.3
V 180	824634.9	9353277	2568.257	296
V 181	824282.8	9351870	2237.225	425.4
V 182	824634.5	9353276	2568.171	230.6
V 183	824423.4	9352180	2365.946	107.9
V 184	824634.8	9353275	2568.239	260
V 185	824422.3	9352180	2365.977	436
V 186	824284.1	9351870	2237.193	395
V 187	824632.3	9353279	2568.249	291
V 188	824633.3	9353280	2568.269	285
V 189	824422.9	9352182	2365.979	365
V 190	824282.6	9351868	2237.166	561
V 191	824437	9352985	2458.758	205
V 192	824426.4	9352182	2366.05	379
V 193	824436.3	9352986	2458.815	210
V 194	824438.2	9352986	2458.886	190
V 195	824286.5	9351867	2237.1	116
V 196	824422.9	9352181	2365.96	65.5
V 197	824281.8	9351871	2237.341	183
V 198	824723.6	9352973	2553.712	246
V 199	824423	9352182	2365.977	374
V 200	824305.7	9352358	2469.171	340
V 201	824722.6	9352973	2553.68	239.2
V 202	825089.3	9353776	2669.645	445
V 203	824306.1	9352358	2469.169	358.8
V 204	824601.3	9352735	2447.233	156
V 205	824601.6	9352735	2447.221	193
V 206	824304.5	9352358	2469.198	325
V 207	824600.2	9352738	2447.158	185
V 208	824601.1	9352739	2447.196	180
V 209	825088.7	9353779	2669.645	469
V 210	824242.1	9352567	2391.97	219

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 211	824626.7	9352475	2579.774	438
V 212	824444.5	9352668	2380.086	228
V 213	825090.8	9353776	2669.634	428
V 214	824444.1	9352673	2379.901	245
V 215	824626.6	9352477	2579.7	417
V 216	824443.1	9352671	2379.881	197
V 217	824446	9352669	2379.983	179
V 218	825088.6	9353776	2669.607	438
V 219	824599.7	9352739	2447.083	345
V 220	824049.4	9351876	2267.857	482
V 221	824604.1	9352739	2447.221	185
V 222	824599.6	9352737	2447.152	225
V 223	825107.1	9353596	2608.266	310.6
V 224	825106.8	9353596	2608.299	317.6
V 225	825107.6	9353598	2608.499	325
V 226	825107.4	9353598	2608.503	335.5
V 227	825108.9	9353599	2608.316	338.8
V 228	825109.8	9353598	2608.463	341.6
V 229	825108.1	9353595	2608.406	310
V 230	825109.8	9353597	2608.34	41.9
V 231	825110.2	9353597	2608.439	36
V 232	825089.5	9353776	2669.476	421.3
V 233	825088.4	9353776	2669.426	420.4
V 234	825088.7	9353777	2669.408	428.5
V 235	825090.7	9353775	2669.443	419.5
V 236	825091.7	9353777	2669.859	434.5
V 237	825091.1	9353778	2669.457	434.5
V 238	825089.2	9353779	2669.508	425.5
V 239	825088	9353776	2669.47	430
V 240	824207.3	9352165	2113.333	197.6
V 241	824207.4	9352165	2112.941	202.2
V 242	824207.6	9352165	2112.601	148.2
V 243	824207.9	9352166	2112.504	134.1
V 244	824212.4	9352168	2112.328	122.2
V 245	824212.8	9352168	2112.444	109.6
V 246	824213.2	9352168	2112.64	113.4
V 247	825088.4	9353777	2669.444	431
V 248	823844.3	9351986	2106.446	362.5
V 249	823846.9	9351987	2106.527	298
V 250	825106.9	9353597	2608.345	308.6



BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 251	824215	9352194	2112.572	205.8
V 252	824215.9	9352195	2111.973	133.4
V 253	824215.1	9352194	2112.235	200.5
V 254	824215.5	9352194	2111.975	167.5
V 255	824219.9	9352197	2111.892	81.6
V 256	824220.4	9352197	2112.229	95.45
V 257	824220.4	9352198	2112.773	105
V 258	824220.4	9352197	2113.324	157.8
V 259	823857.9	9352139	2117.582	227.3
V 260	823857.1	9352139	2117.765	212.5
V 261	824205.6	9352127	2113.235	195.3
V 262	824205.6	9352127	2113.055	218.2
V 263	824205.9	9352127	2112.89	190.4
V 264	824206.3	9352128	2112.907	169.3
V 268	824915.3	9353526	2533.106	242.5
V 269	825107.1	9353597	2608.343	315
V 265	824210	9352129	2112.889	140
V 266	824210.4	9352129	2112.892	134.8
V 267	824210.9	9352129	2113.1	145.1
V 270	824168.7	9352197	2111.506	163.1
V 271	824168.7	9352197	2111.865	104.8
V 272	824168.7	9352197	2111.13	187
V 273	824168.9	9352197	2110.835	176
V 274	824169.3	9352197	2110.853	105.95
V 275	824173.3	9352201	2110.823	95
V 276	824173.5	9352201	2111.059	93.75
V 277	824173.5	9352201	2111.74	118.7
V 278	824173.5	9352201	2112.236	186.4
V 279	825106.8	9353598	2608.335	334
V 280	824915.9	9353526	2533.13	239.5
V 281	825107.2	9353597	2608.369	323
V 282	824206.4	9352086	2113.093	207.2
V 283	824206.7	9352086	2113.109	200.8
V 284	824210.5	9352089	2112.958	166.4
V 285	824211.1	9352089	2113.3	196
V 286	825109.7	9353597	2608.516	45.8
V 287	825109.5	9353598	2608.454	313
V 288	825109.7	9353599	2608.439	320.6
V 289	824915.6	9353526	2533.12	226.6
V 290	824911.7	9353525	2533.11	223

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 291	825107.1	9353596	2608.38	314.5
V 292	824208.2	9352050	2113.784	247.35
V 293	824208.5	9352050	2113.672	273.6
V 294	824209	9352050	2113.606	227.15
V 295	824208.9	9352049	2113.509	230
V 296	824209.1	9352049	2113.467	394
V 297	824209.9	9352049	2113.472	279.2
V 298	824212	9352051	2113.604	242.4
V 299	824212.4	9352051	2113.577	240
V 300	824213	9352053	2113.795	265.9
V 301	824212.4	9352052	2113.488	205.3
V 302	824212.6	9352052	2113.508	209.5
V 303	824213	9352053	2113.739	234.3
V 304	824911.4	9353525	2533.125	230.2
V 305	824087.3	9352187	2110.091	135
V 306	824087.2	9352187	2109.619	174.3
V 307	824087.5	9352187	2109.154	191.8
V 308	824087.8	9352187	2109.064	116.8
V 309	824087.7	9352189	2109.837	115.4
V 310	824091.4	9352190	2109.156	107
V 311	824091.9	9352191	2109.411	111.7
V 312	824091.9	9352191	2110.274	161
V 313	824091.7	9352190	2110.64	225.1
V 314	824087.3	9352187	2109.243	257
V 315	824091.5	9352190	2111.576	146.6
V 316	824091.9	9352190	2111.131	100.3
V 317	824913.5	9353524	2533.132	221.5
V 318	825108.2	9353596	2608.328	290.5
V 319	824914.7	9353527	2533.131	239.6
V 320	824914.8	9353527	2533.139	257.5
V 321	825108.4	9353599	2608.424	317.5
V 322	824911.7	9353526	2533.143	217
V 323	825108.3	9353599	2608.446	320.5
V 324	824911.8	9353525	2533.133	217
V 325	824913.8	9353524	2533.142	230.6
V 326	824728.6	9353518	2480.53	146
V 327	824913.7	9353524	2533.125	220
V 328	824728.9	9353518	2480.523	117.7
V 329	824913.7	9353524	2533.142	226.1
V 330	824728	9353518	2480.597	128.5

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 331	824727.4	9353517	2480.54	122.6
V 332	824913.8	9353527	2533.184	221.5
V 333	824728	9353517	2480.595	146.1
V 334	824728.2	9353517	2480.598	158
V 335	824913.8	9353528	2533.189	223.3
V 336	824727.5	9353516	2480.573	125.5
V 337	824913.8	9353527	2533.188	239.5
V 338	824727.6	9353516	2480.565	131.5
V 339	824915.3	9353524	2533.155	211.5
V 340	824915.5	9353524	2533.15	212.5
V 341	824021	9352176	2108.104	128.1
V 342	824021.8	9352176	2107.852	123.3
V 343	824022.1	9352176	2108.059	130
V 344	824022.2	9352176	2108.6	152
V 345	824022.2	9352176	2108.988	49.8
V 346	824022.2	9352176	2109.231	215.5
V 347	824018.1	9352174	2108.134	271.05
V 348	824915.7	9353524	2533.157	97.3
V 349	824912.7	9353527	2533.218	215.5
V 350	824912.4	9353528	2533.229	227.5
V 351	824912.6	9353527	2533.22	248.1
V 352	824911.8	9353526	2533.126	209.5
V 353	824020.8	9352175	2108.07	148
V 354	824209.9	9352049	2113.49	314.3
V 355	824211.1	9352049	2113.584	289
V 356	824209.4	9352049	2113.458	262.8
V 357	824912	9353526	2533.129	153.2
V 358	824911.5	9353526	2533.144	171
V 359	824916	9353525	2533.17	218.5
V 360	824915.5	9353525	2533.142	230.5
V 361	824915.4	9353527	2533.123	230
V 362	824050.8	9351878	2267.92	508.1
V 363	824915.6	9353527	2533.144	242.5
V 364	824915.8	9353527	2533.165	268
V 365	824050.6	9351879	2268.429	576.4
V 366	824902.8	9353388	2652.128	368.5
V 367	824899.8	9353389	2652.076	367.5
V 368	825112.7	9353484	2680.215	367.9
V 369	824048	9351878	2267	569.5
V 370	825110.5	9353483	2680.188	421.2

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 371	824284.8	9351868	2237.013	110
V 372	824284.8	9351868	2237.013	115
V 373	824714.3	9353419	2568.488	245
V 374	824284.8	9351868	2237.013	110.1
V 375	824417	9351927	2329	190
V 376	824417	9351927	2329	190
V 377	824726	9353520	2480.745	116
V 378	824726	9353520	2480.776	146.5
V 379	824726.5	9353520	2480.739	194
V 380	824726.5	9353520	2481.061	152
V 381	824726.9	9353519	2480.721	131.2
V 382	824727.4	9353519	2480.636	150
V 383	824726.5	9353519	2480.685	141.7
V 384	824726.8	9353519	2480.788	118.1
V 385	824727.4	9353519	2480.599	127.8
V 386	824727.1	9353518	2480.627	116
V 387	824728.1	9353517	2480.583	166.7
V 388	824727.5	9353517	2480.608	143.1
V 389	824727.3	9353516	2480.628	136.9
V 390	824726.1	9353515	2480.612	106.8
V 391	824726	9353515	2480.62	112.4
V 392	824725.6	9353515	2480.612	132
V 393	824725.4	9353514	2480.586	148
V 394	824725	9353516	2480.637	145
V 395	824724.8	9353515	2480.863	136
V 396	824723.6	9353517	2480.625	119
V 397	824723.9	9353517	2480.621	116
V 398	824724.2	9353519	2480.556	134.6
V 399	824724.5	9353519	2480.603	122.5
V 400	824725.3	9353519	2480.625	135
V 401	824725.3	9353520	2480.763	188.2
V 402	824725.4	9353520	2480.732	152.2
V 403	824128.5	9352195	2110.66	100.6
V 404	824128.5	9352195	2110.417	77.5
V 405	824129.2	9352195	2110.073	62.7
V 406	824134.3	9352198	2110.091	70.1
V 407	824134.6	9352198	2110.634	111.65
V 408	824134.7	9352198	2111.239	120.5
V 409	824134.7	9352198	2111.542	7.7
V 410	824134.6	9352198	2111.936	167.35

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 411	824134.2	9352198	2110.02	72
V 412	824659.1	9353507	2465.702	157
V 413	824660.4	9353507	2465.633	151
V 414	824660	9353506	2465.648	101.3
V 415	824661	9353505	2465.441	107.3
V 416	824662.2	9353504	2465.561	116
V 417	824661.1	9353503	2465.502	116
V 418	824659.5	9353502	2465.472	135
V 419	824658.4	9353502	2465.483	136.5
V 420	824659	9353504	2465.58	119.5
V 421	824657.3	9353503	2465.538	150.6
V 422	824658.1	9353504	2465.59	116.4
V 423	824657.4	9353504	2465.619	125.1
V 424	824656.9	9353504	2465.549	156.3
V 425	824657.5	9353505	2465.575	108.9
V 426	824657.4	9353505	2465.612	140.2
V 427	824656.7	9353505	2465.672	163.8
V 428	824657.8	9353507	2465.694	116.4
V 429	824657.5	9353507	2465.693	98.4
V 430	824658.5	9353507	2465.748	110.3
V 431	824219.8	9352197	2111.621	93
V 432	824220.4	9352197	2113.788	109.1
V 433	824210.6	9352089	2112.95	168
V 434	824211.4	9352089	2114.204	145.5
V 435	824213.4	9352169	2113.393	107.1
V 436	824211	9352130	2113.873	136.5
V 437	824210.5	9352130	2112.817	132.7
V 438	824210	9352128	2112.822	151.3
V 439	824208.6	9352166	2112.332	120.1
V 440	824548.9	9353446	2429.17	83.4
V 441	824549.7	9353445	2429.127	95.4
V 442	824550	9353446	2429.162	86.1
V 443	824551.1	9353445	2429.107	88.7
V 444	824550.8	9353442	2429.106	101
V 445	824550.3	9353443	2429.13	95.2
V 446	824549.5	9353440	2428.945	106.5
V 447	824548.8	9353441	2429.029	92.3
V 448	824548.3	9353442	2429.042	86.3
V 449	824546.4	9353442	2428.982	101
V 450	824546	9353441	2429.026	115.5

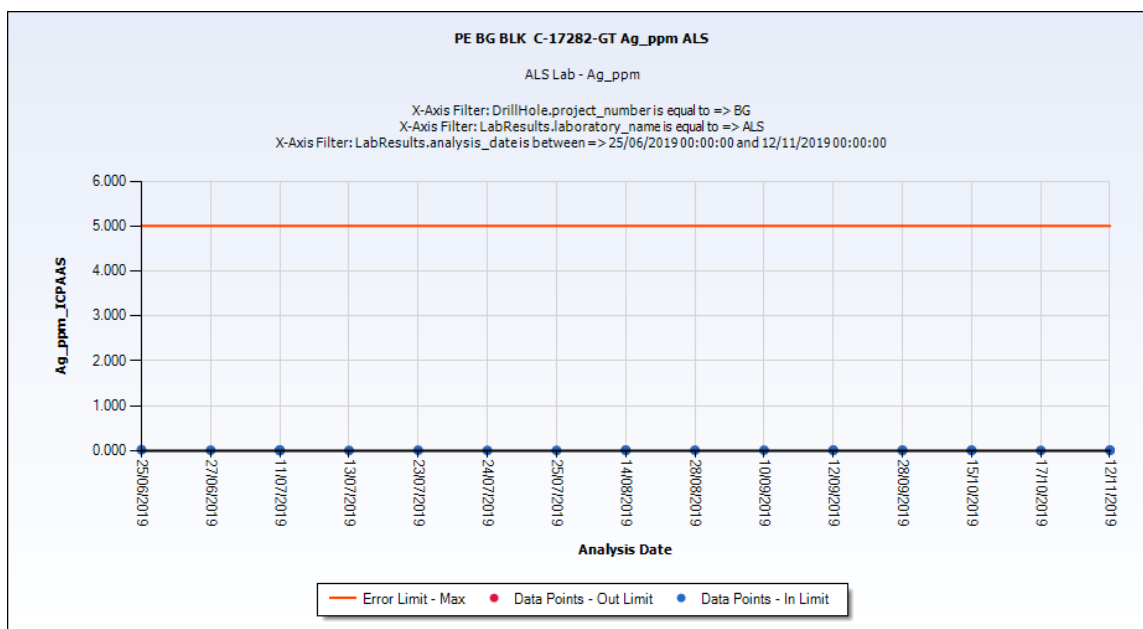
BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
V 451	824545.6	9353443	2429.073	124.5
V 452	824546.8	9353444	2429.064	86.3
V 453	824546.4	9353444	2429.072	107
V 454	824545.9	9353444	2429.094	118.5
V 455	824547.6	9353445	2429.157	101.5
V 456	824213.4	9352169	2113.862	94.2
V 457	824211	9352129	2114.622	159.5
V 458	824173.5	9352201	2112.541	180.2
V 459	824210.5	9352071	2113.267	177
V 460	824547.6	9353444	2429.127	101.6
V 461	824725.4	9353519	2481.258	149.1
V 462	824658.5	9353506	2465.71	135
V 463	824913.8	9353525	2533.102	158.5
V 464	824546.6	9353148	2499.087	161.6
V 465	824210.8	9352071	2113.224	168.1
V 466	824211.1	9352071	2113.483	133
V 467	824597.5	9353044	2463.286	150
V 468	825317	9352640	2766.444	40
V 469	825009	9352684	2661	40
V 470	825269	9352108	2564	42.1
V 471	824963	9352030	2480.821	122.6
V 472	824649	9351768	2390	160
V 473	824885	9352230	2493	110.5
V 474	824209.8	9352071	2113.362	100.3
V 475	824218.1	9352195	2111.99	100.05
V 476	824130.5	9352197	2110.121	100.2
V 477	823852.1	9352019	2106.604	146.8
V 478	824211.4	9352071	2113.886	102.4
PEBGD000002	824617.4	9353969	2725.68	471.4
PEBGD000003	824523.6	9353708	2756.337	475.4
PEBGD000004	825307.7	9353737	2736.647	560
PEBGD000005	824621	9353967	2725.732	178.8
PEBGD000006	824524.5	9353709	2756.444	475.4
PEBGD000008	824337.6	9353635	2685.748	570.2
PEBGD000012	823896.6	9352542	2299.677	384.3
PEBGD000015	823922.3	9351648	2175.996	493.2
PEBGD000018	823898.8	9352544	2299.763	204.2
PEBGD000019	824337.5	9353638	2685.795	454.3
PEBGD000021	824617.5	9353967	2725.668	506
PEBGD000023	823922.8	9351648	2176.027	580.4

BHID	XCOLLAR	YCOLLAR	ZCOLLAR	DEPTH
PEBGD000027	824423.1	9352181	2366.159	341.4
PEBGD000031	824580.1	9353841	2688.52	420
PEBGD000032	824423.9	9352180	2366.17	377.7
PEBGD000035	824427.5	9352182	2366.298	339
PEBGD000036	824580.8	9353843	2688.627	440.9
PEBGD000038	823921.5	9351649	2176.029	471.2
PEBGD000039	824425	9352180	2366.17	488.5
PEBGD000001	825307	9353734	2736.695	517.3
PEBGD000007	824581.7	9353840	2688.603	402.1
PEBGD000009	824582.6	9353842	2688.575	393.7
PEBGD000010	824523.2	9353710	2756.439	497.5
PEBGD000011	824337.4	9353637	2685.757	461.4
PEBGD000013	824523.4	9353711	2756.456	470.2
PEBGD000014	824339.1	9353635	2685.738	423
PEBGD000016	824524.4	9353707	2756.42	464.4
PEBGD000017	823898.8	9352542	2299.698	230
PEBGD000020	823922.3	9351648	2175.992	555.2
PEBGD000022	824423.2	9352180	2366.143	463.8
PEBGD000024	824339.8	9353636	2685.775	383
PEBGD000025	824340.1	9353636	2685.8	383.9
PEBGD000026	823921.2	9351649	2176.002	465.4
PEBGD000028	824580.2	9353841	2688.529	426.3
PEBGD000029	824423.5	9352181	2366.206	316.5
PEBGD000030	823921.3	9351649	2176.099	488.2
PEBGD000033	824580.4	9353842	2688.618	440.7
PEBGD000034	823920.9	9351649	2176	550.3
PEBGD000037	824581.2	9353843	2688.586	470.9



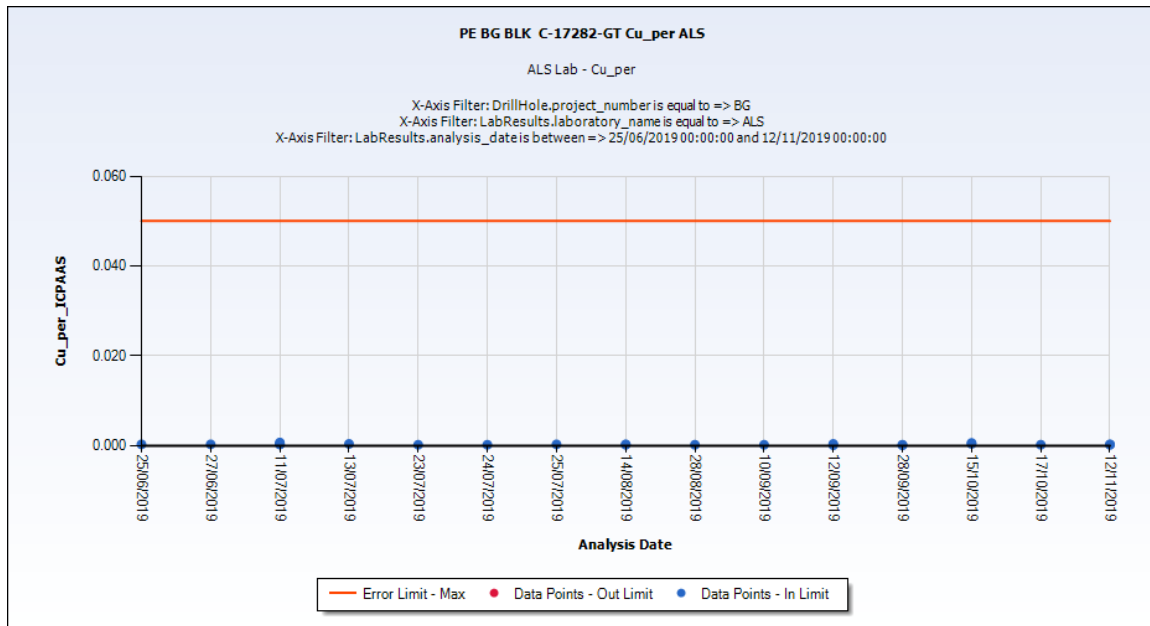
## 23 APPENDIX B: QA/QC 2019 LABORATORY RESULTS

### 23.1 COARSE BLANK RESULTS – ALS LABORATORY



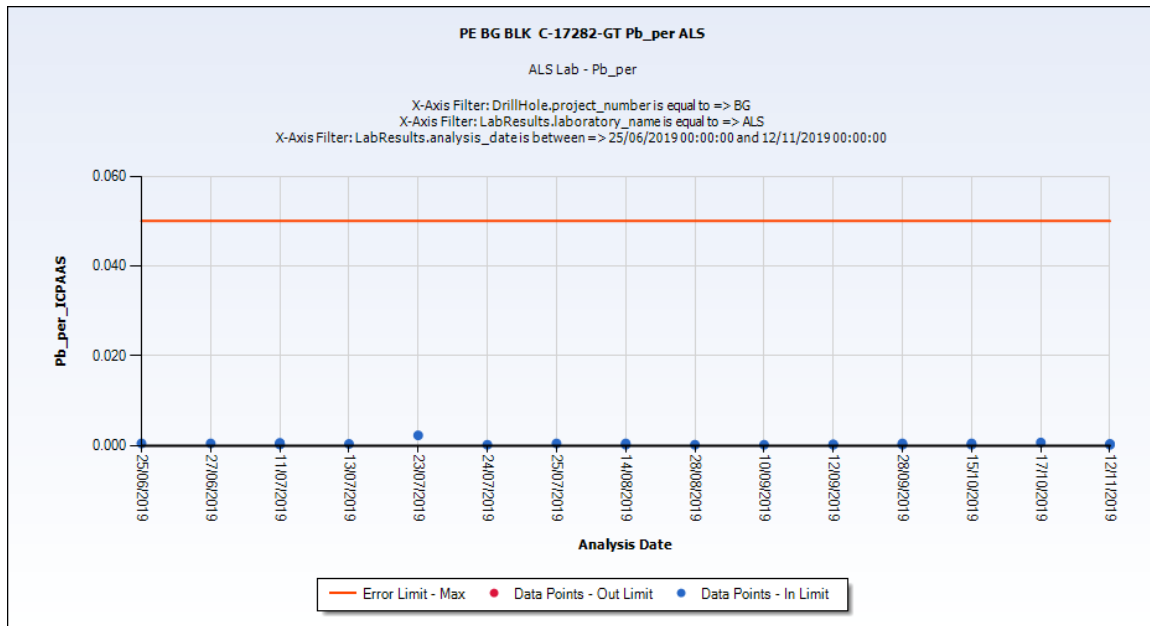
### Summary

Standard Code	C-17282-GT
Element	Ag
Unit of Measure	ppm
Analytical Technique	ICPAAAS
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Count of Samples	23
Number Of Failures	0
Failure %	0.00%



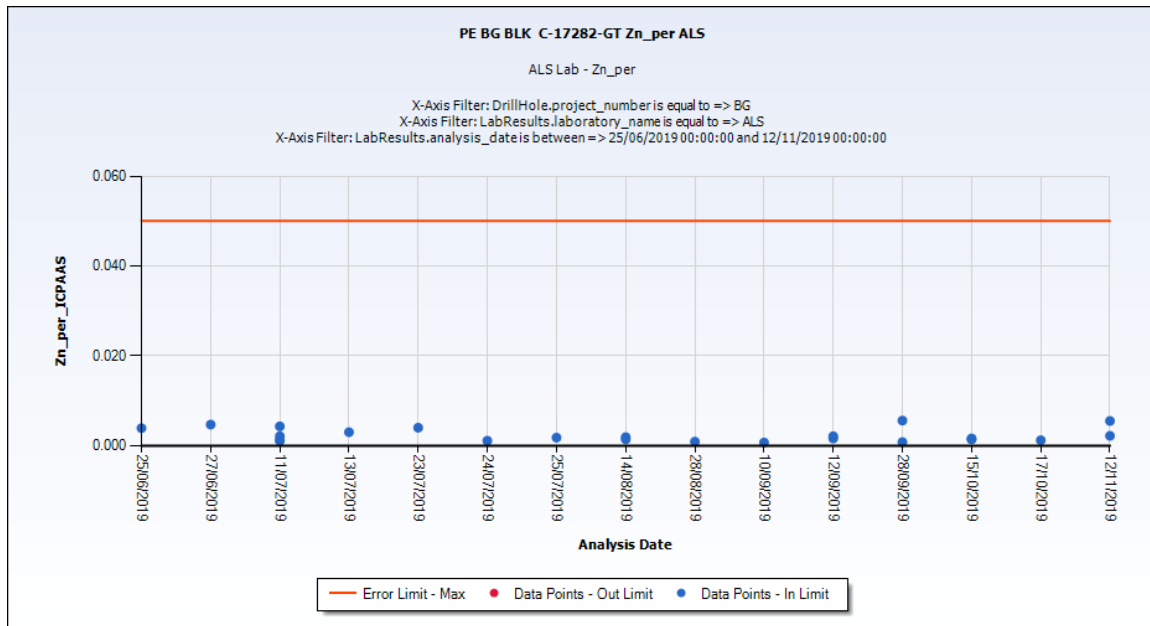
## Summary

Standard Code	C-17282-GT
Element	Cu
Unit of Measure	per
Analytical Technique	ICPAAAS
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Count of Samples	23
Number Of Failures	0
Failure %	0.00%



## Summary

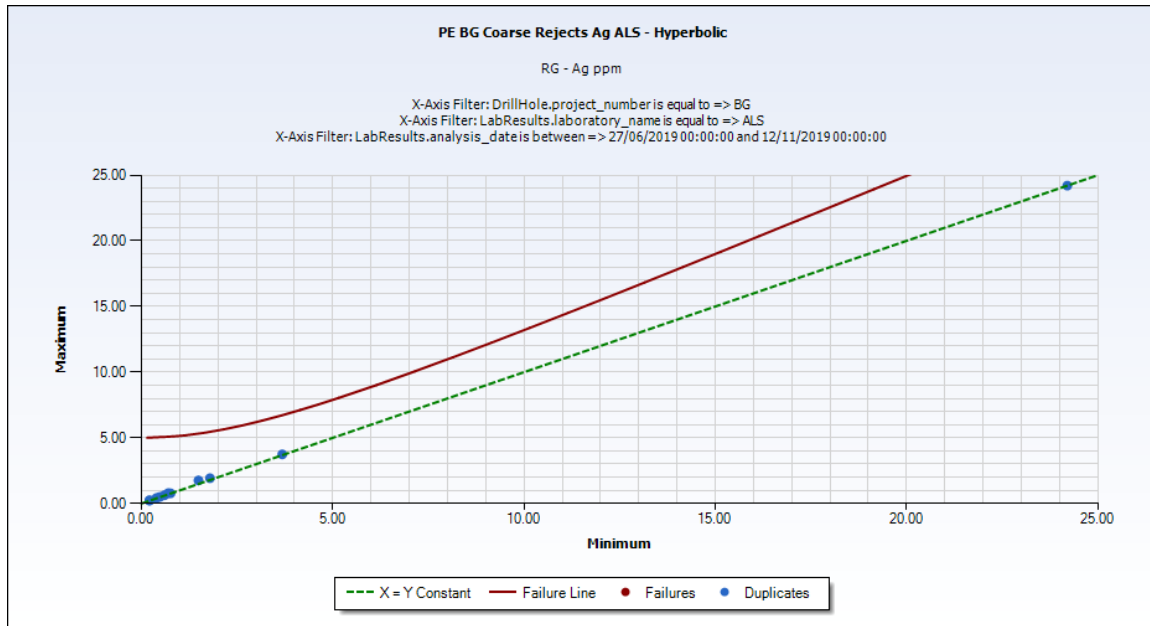
Standard Code	C-17282-GT
Element	Pb
Unit of Measure	per
Analytical Technique	ICPAAAS
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Count of Samples	23
Number Of Failures	0
Failure %	0.00%



## Summary

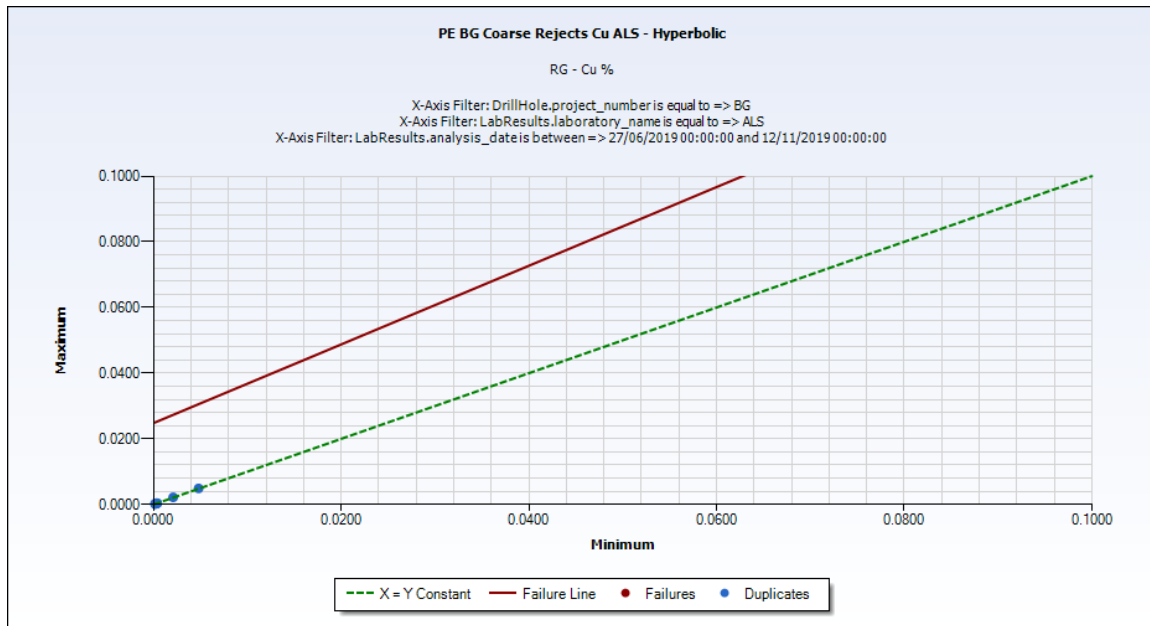
Standard Code	C-17282-GT
Element	Zn
Unit of Measure	per
Analytical Technique	ICPAAAS
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Count of Samples	23
Number Of Failures	0
Failure %	0.00%

## 23.2 DUPLICATE RESULTS – ALS LABORATORY



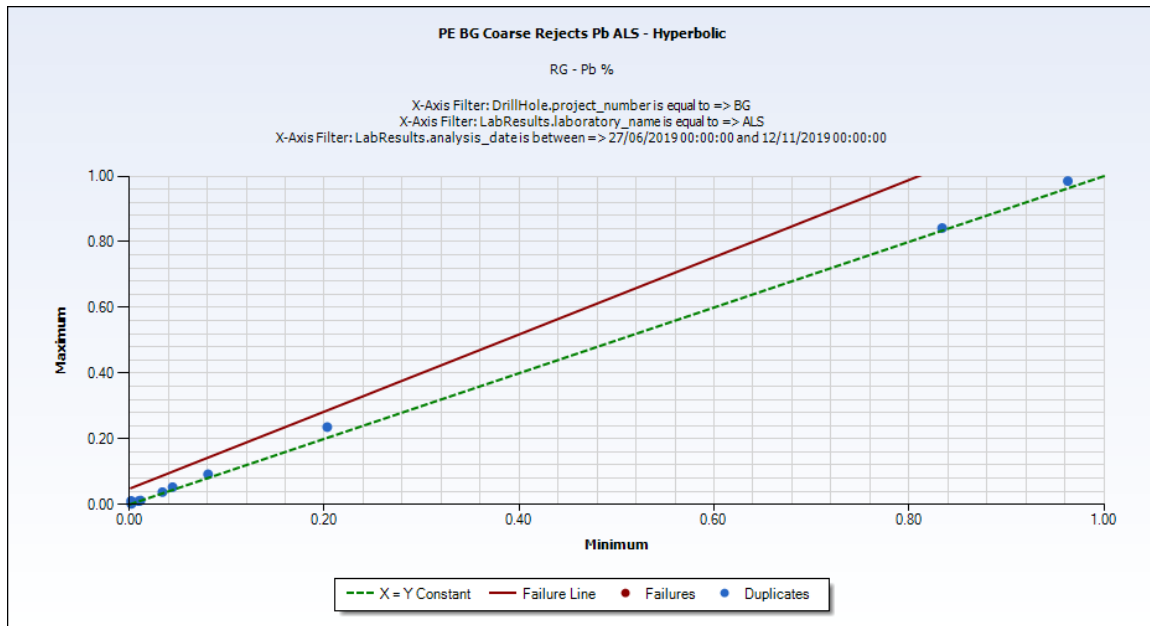
## Summary

Original Sample Type	OR
Duplicate Sample Type	RG
Element	Ag
Unit of Measure	ppm
Analytical Technique	Lab
Original Mean Value	3.18
Duplicate Mean Value	3.16
Count of Samples	11
Number Of Failures	0
Failure %	0.00



## Summary

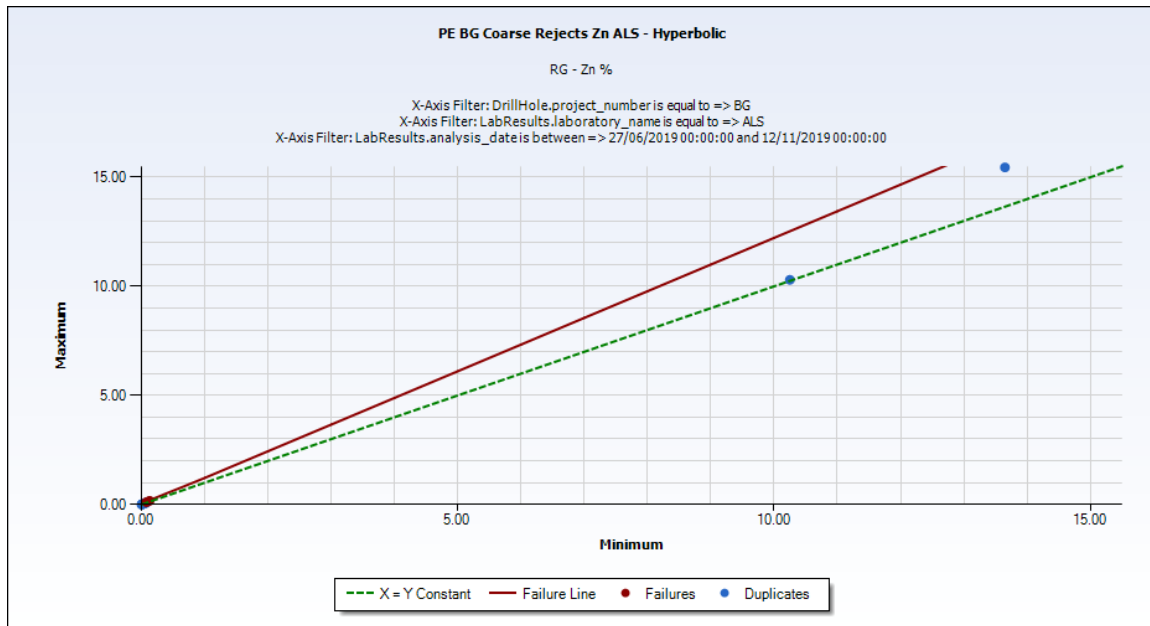
Original Sample Type	OR
Duplicate Sample Type	RG
Element	Cu
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.0009
Duplicate Mean Value	0.0009
Count of Samples	11
Number Of Failures	0
Failure %	0.00



## Summary

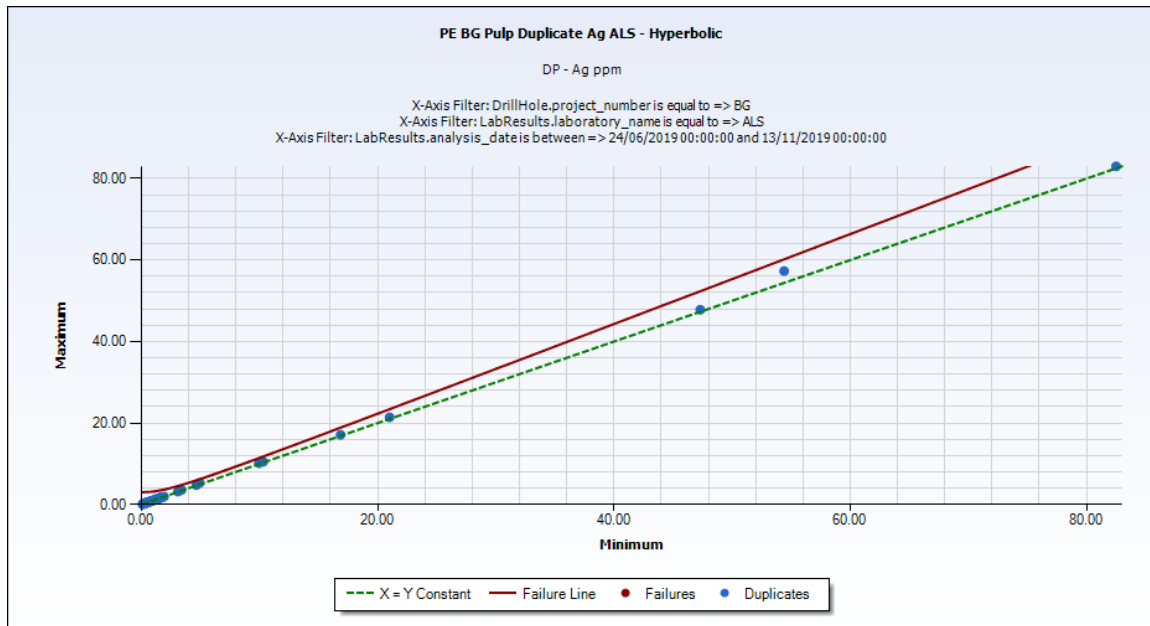
Original Sample Type	OR
Duplicate Sample Type	RG
Element	Pb
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.21
Duplicate Mean Value	0.20
Count of Samples	11
Number Of Failures	0
Failure %	0.00





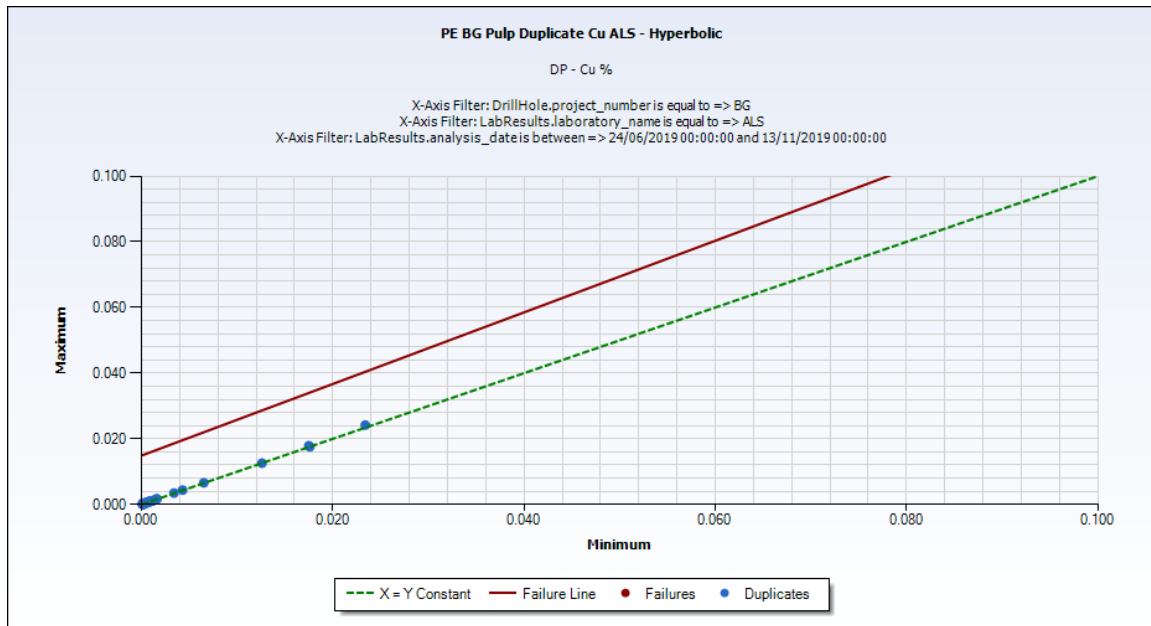
## Summary

Original Sample Type	OR
Duplicate Sample Type	RG
Element	Zn
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	2.22
Duplicate Mean Value	2.38
Count of Samples	11
Number Of Failures	2
Failure %	18.18



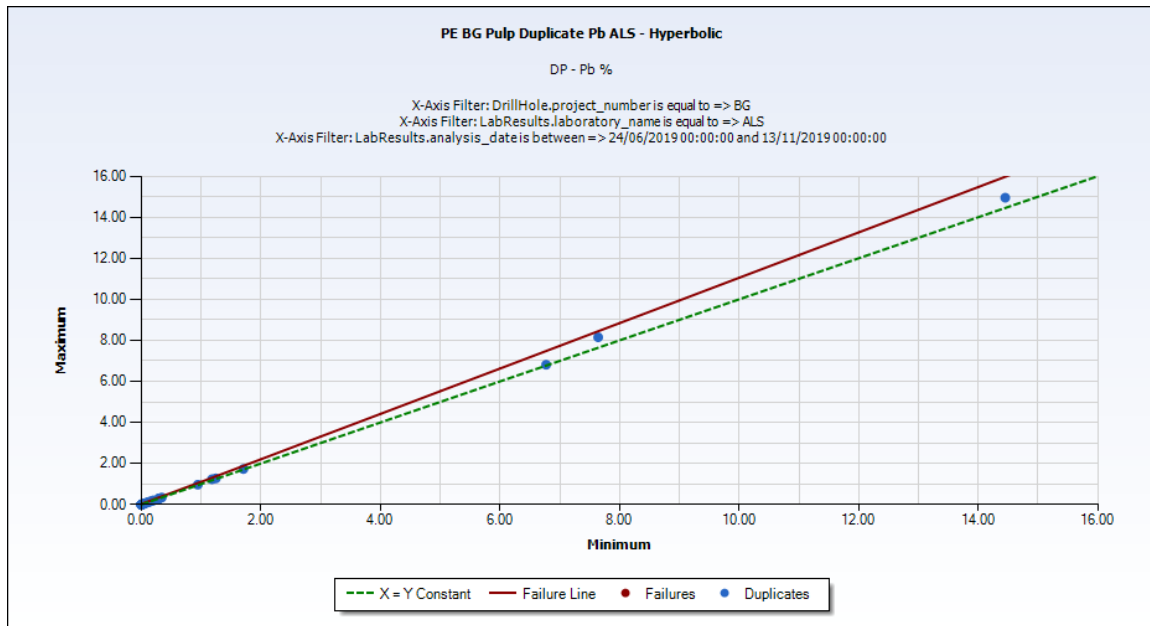
## Summary

Original Sample Type	OR
Duplicate Sample Type	DP
Element	Ag
Unit of Measure	ppm
Analytical Technique	Lab
Original Mean Value	5.04
Duplicate Mean Value	4.99
Count of Samples	58
Number Of Failures	0
Failure %	0.00



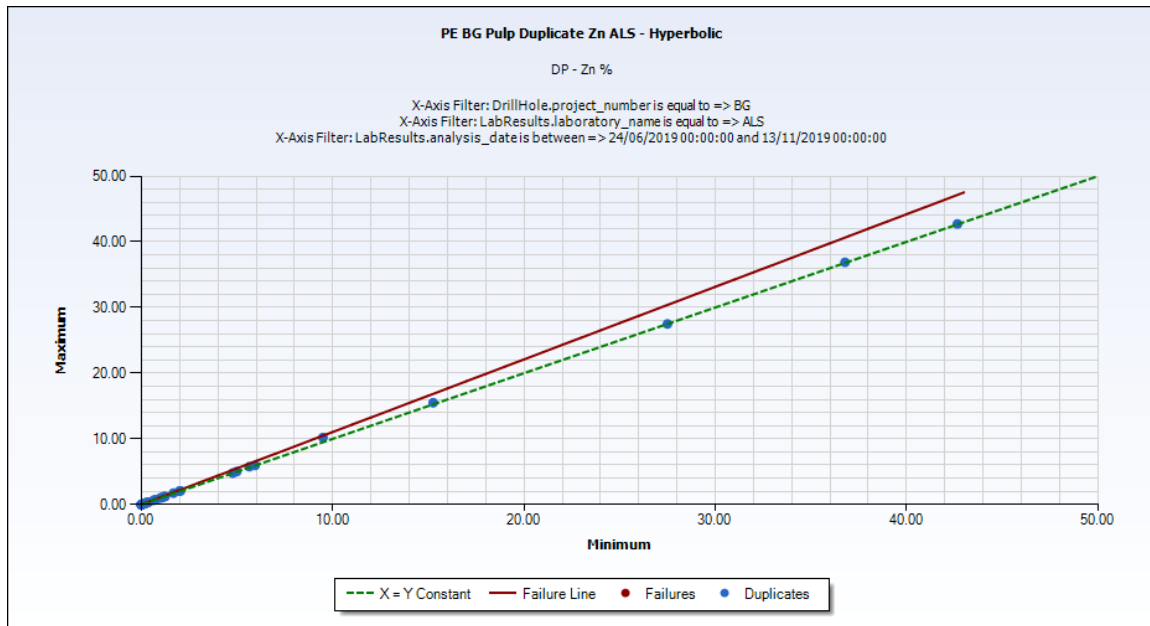
## Summary

Original Sample Type	OR
Duplicate Sample Type	DP
Element	Cu
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.002
Duplicate Mean Value	0.002
Count of Samples	58
Number Of Failures	0
Failure %	0.00



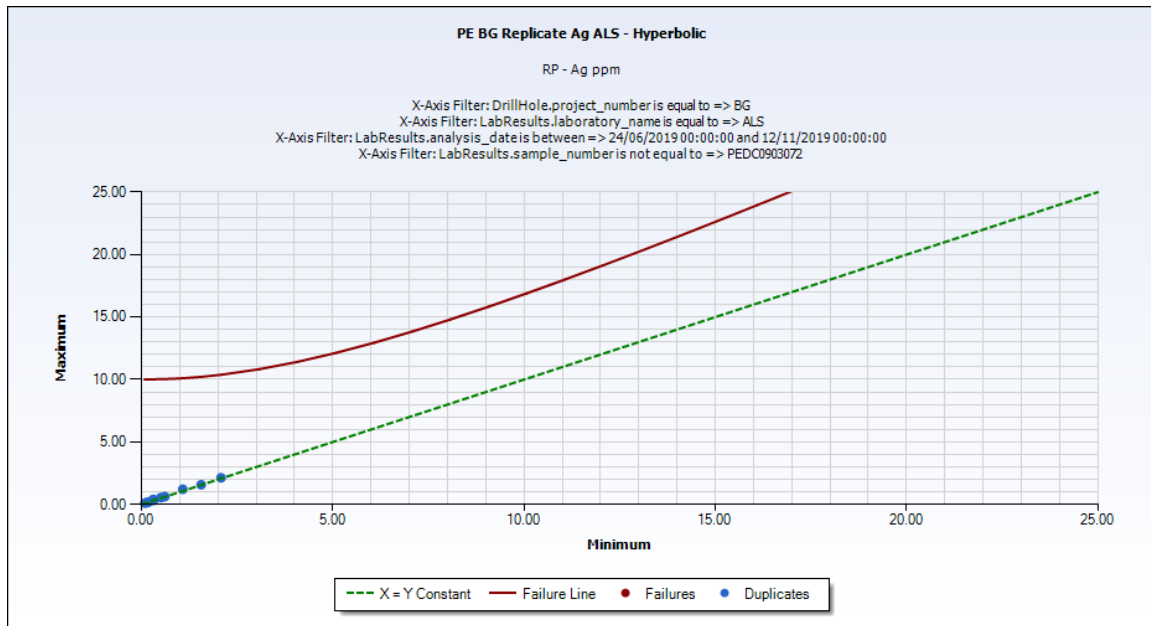
## Summary

Original Sample Type	OR
Duplicate Sample Type	DP
Element	Pb
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.65
Duplicate Mean Value	0.63
Count of Samples	58
Number Of Failures	0
Failure %	0.00



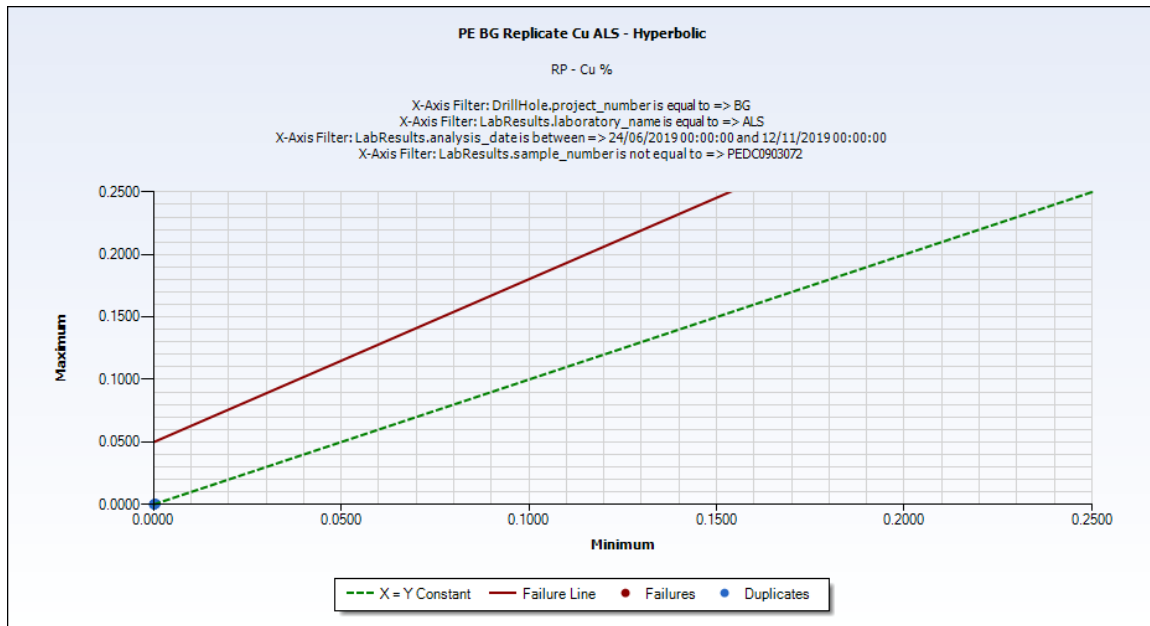
## Summary

Original Sample Type	OR
Duplicate Sample Type	DP
Element	Zn
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	2.90
Duplicate Mean Value	2.89
Count of Samples	58
Number Of Failures	0
Failure %	0.00



## Summary

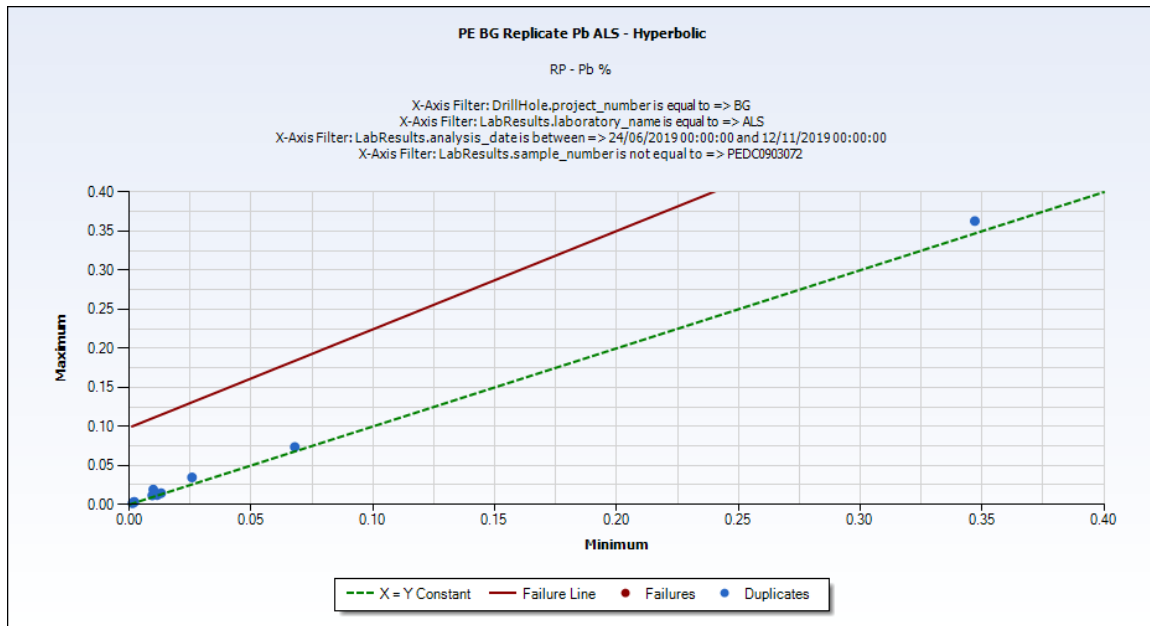
Original Sample Type	OR
Duplicate Sample Type	RP
Element	Ag
Unit of Measure	ppm
Analytical Technique	Lab
Original Mean Value	0.71
Duplicate Mean Value	0.72
Count of Samples	10
Number Of Failures	0
Failure %	0.00



## Summary

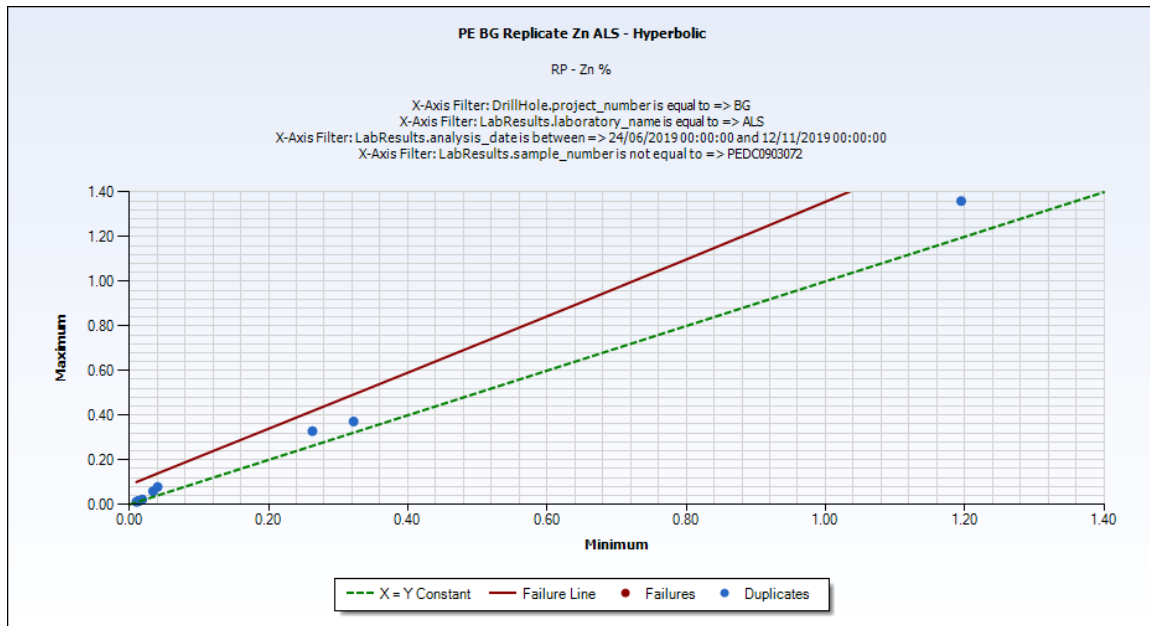
Original Sample Type	OR
Duplicate Sample Type	RP
Element	Cu
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.0003
Duplicate Mean Value	0.0003
Count of Samples	10
Number Of Failures	0
Failure %	0.00





## Summary

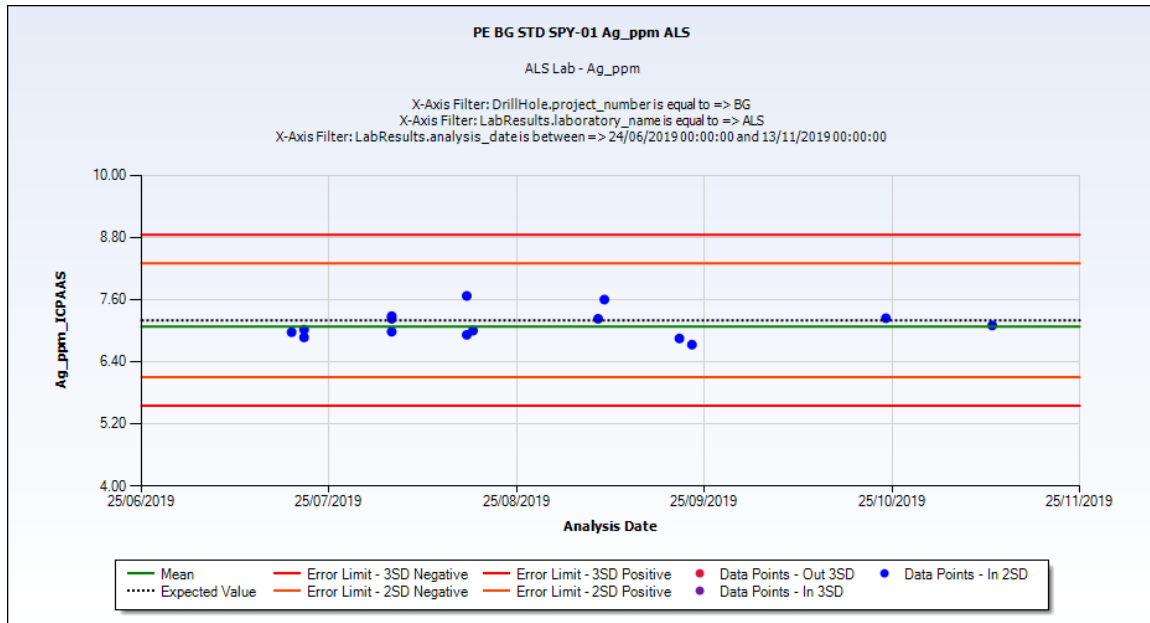
Original Sample Type	OR
Duplicate Sample Type	RP
Element	Pb
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.05
Duplicate Mean Value	0.05
Count of Samples	10
Number Of Failures	0
Failure %	0.00



## Summary

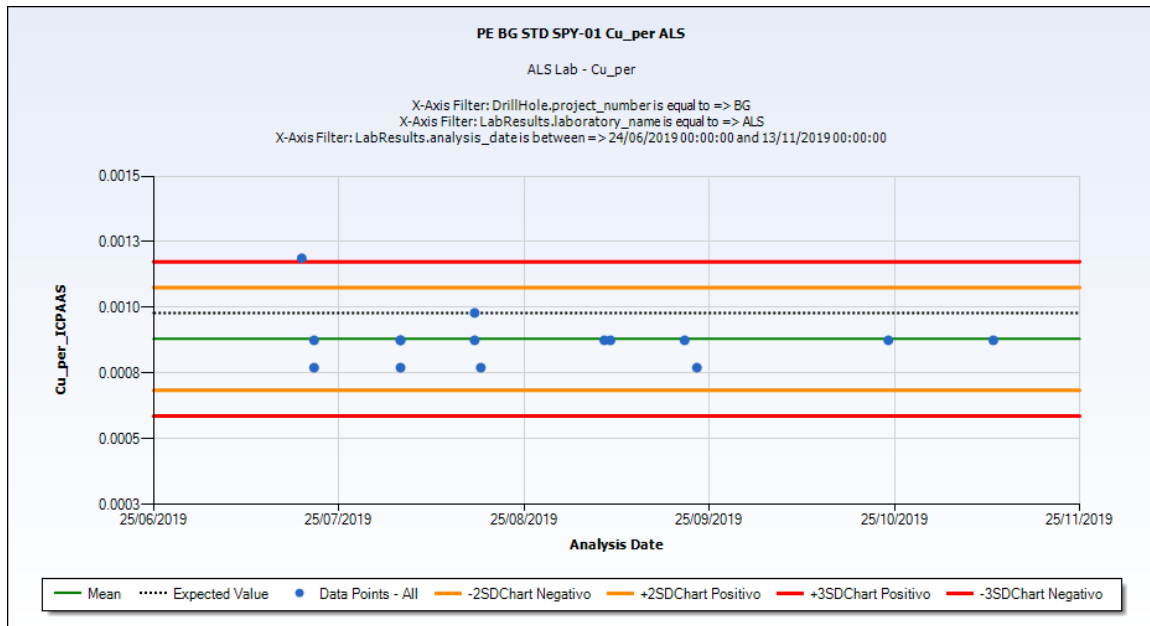
Original Sample Type	OR
Duplicate Sample Type	RP
Element	Zn
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.19
Duplicate Mean Value	0.23
Count of Samples	10
Number Of Failures	0
Failure %	0.00

### 23.3 STANDARDS RESULTS – ALS LABORATORY



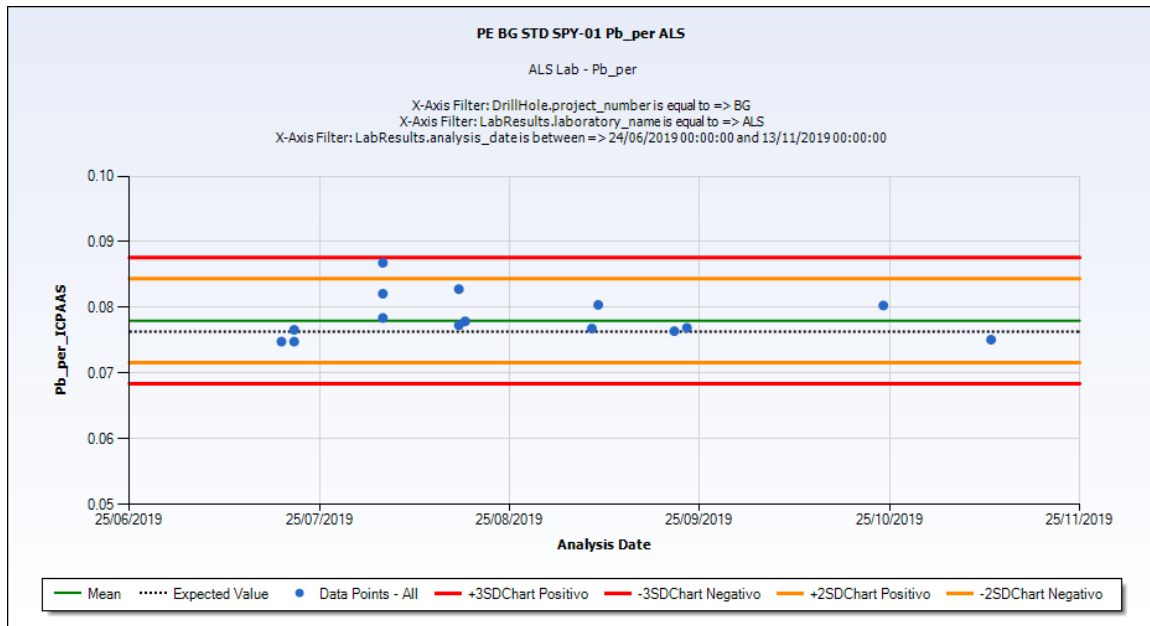
### Summary

Standard Code	SPY-01
Element	Ag
Unit of Measure	ppm
Analytical Technique	ICPAAS
Expected (Actual value)	7.20
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	13/11/2019
Standard Deviation	0.55
Count of Samples	19
Mean	7.08
Bias %	-1.69
Standard Deviation Chart	0.26



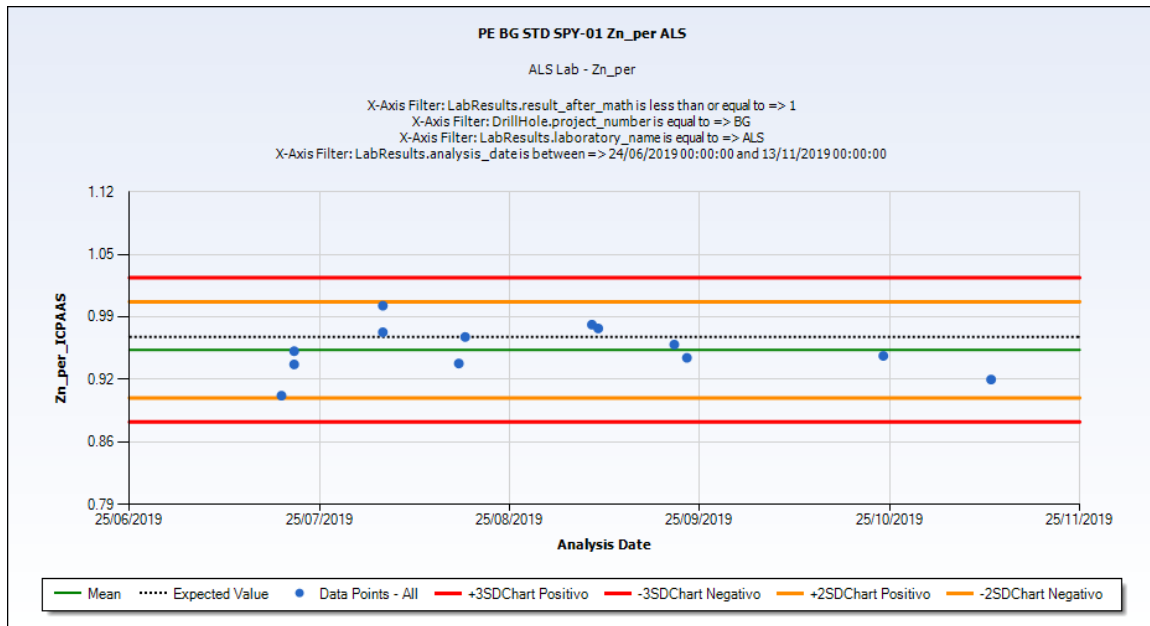
## Summary

Standard Code	SPY-01
Element	Cu
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.0010
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	13/11/2019
Standard Deviation	0.00005
Count of Samples	19
Mean	0.0009
Bias %	-9.50
Standard Deviation Chart	0.00009



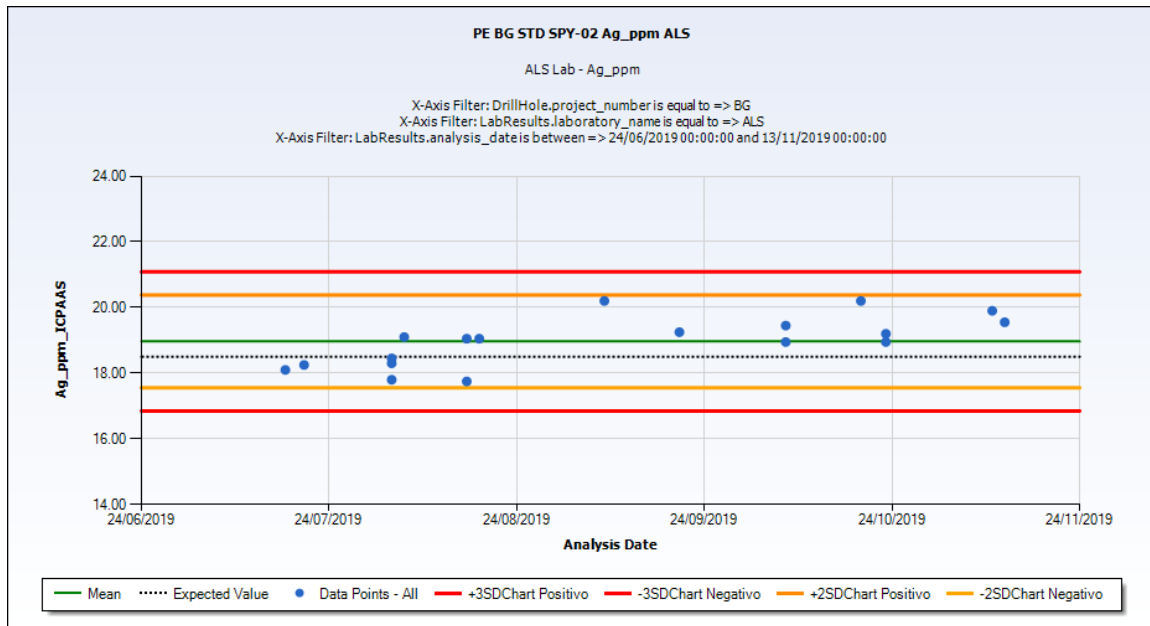
## Summary

Standard Code	SPY-01
Element	Pb
Unit of Measure	per
Analytical Technique	ICPAAS
Expected (Actual value)	0.08
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	13/11/2019
Standard Deviation	0.00
Count of Samples	19
Mean	0.08
Bias %	2.20
Standard Deviation Chart	0.00



## Summary

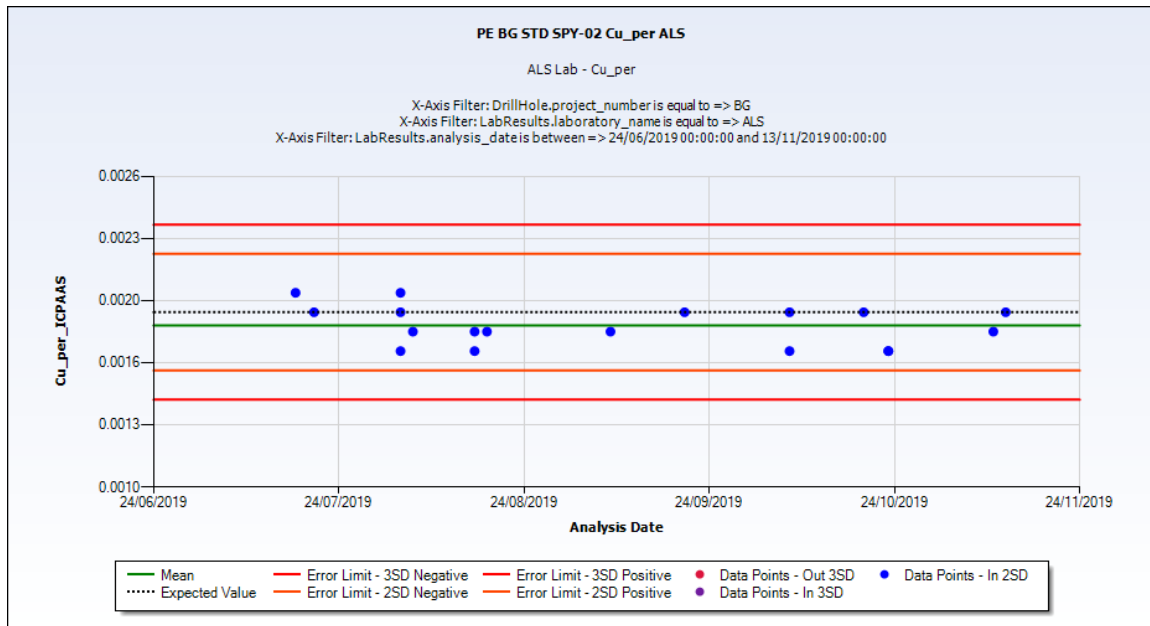
Standard Code	SPY-01
Element	Zn
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.97
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	13/11/2019
Standard Deviation	0.01
Count of Samples	17
Mean	0.95
Bias %	-1.41
Standard Deviation Chart	0.03



## Summary

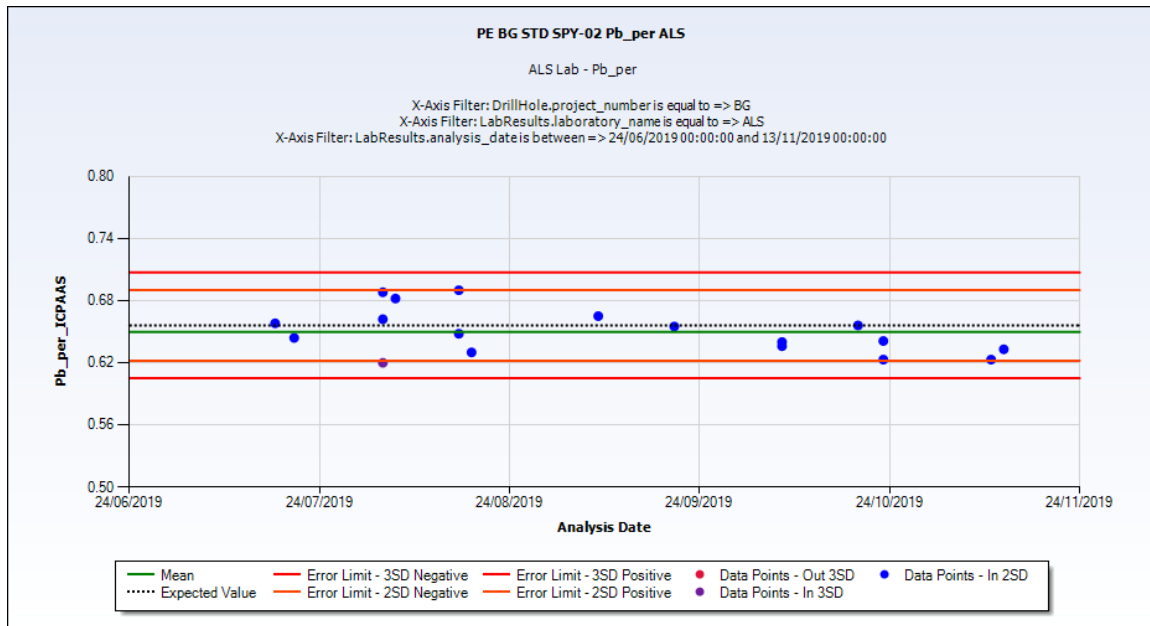
Standard Code	SPY-02
Element	Ag
Unit of Measure	ppm
Analytical Technique	ICPAAS
Expected (Actual value)	18.50
Project	BG
Lab	ALS
Analysis Date From	24/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.30
Count of Samples	19
Mean	18.97
Bias %	2.53
Standard Deviation Chart	0.71





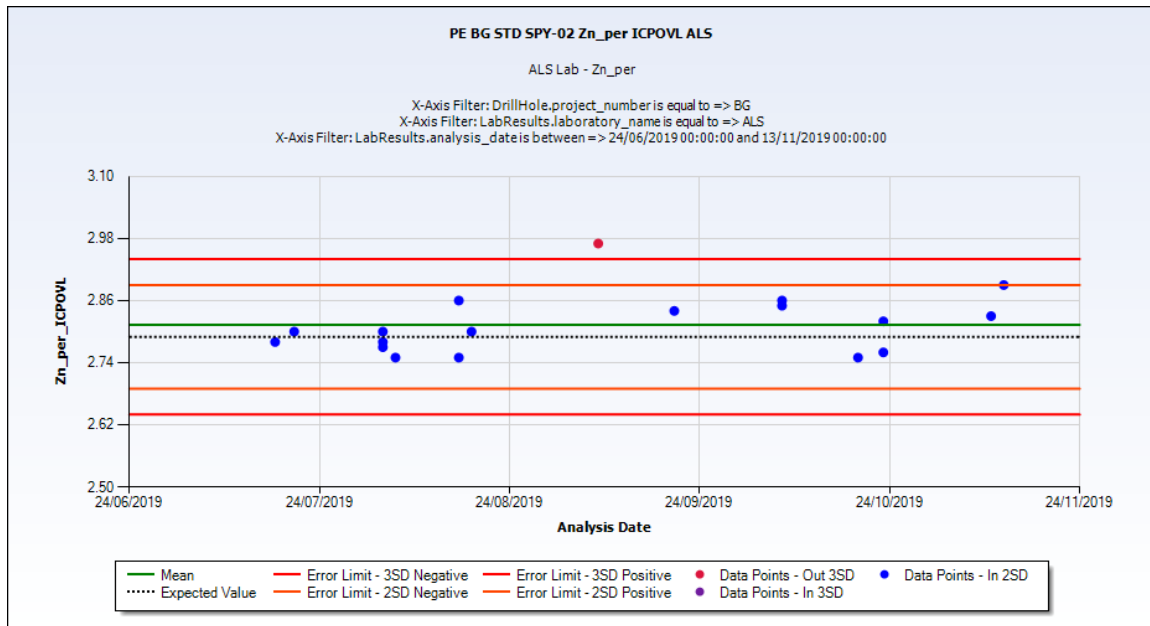
## Summary

Standard Code	SPY-02
Element	Cu
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.0019
Project	BG
Lab	ALS
Analysis Date From	24/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.0002
Count of Samples	19
Mean	0.0018
Bias %	-3.60
Standard Deviation Chart	0.0001



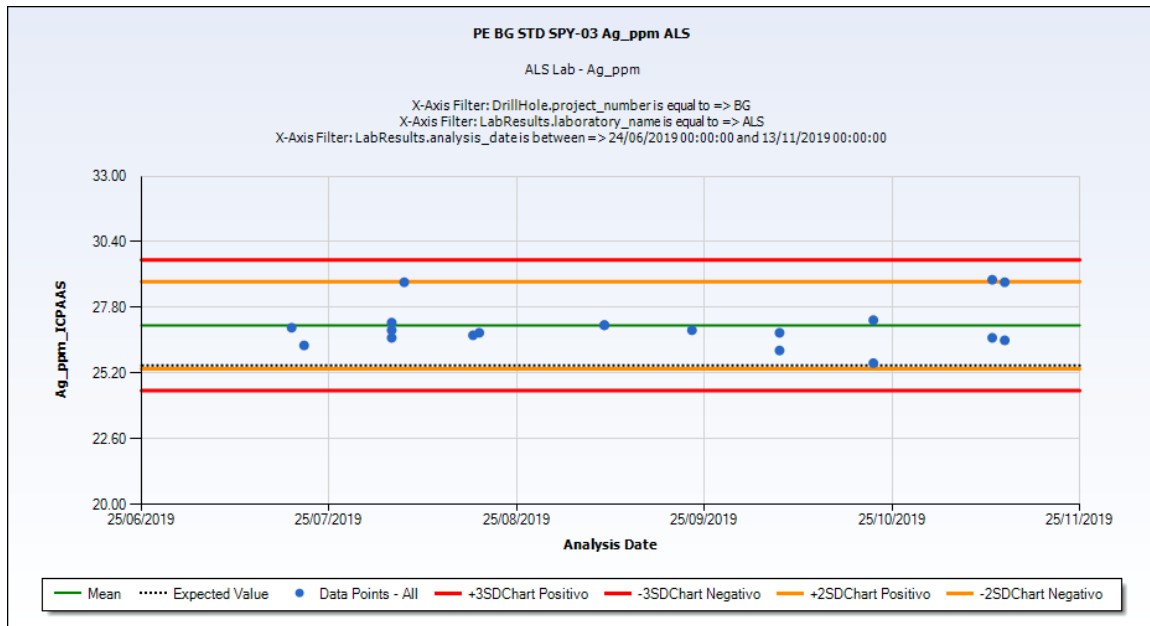
## Summary

Standard Code	SPY-02
Element	Pb
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.66
Project	BG
Lab	ALS
Analysis Date From	24/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.02
Count of Samples	19
Average Actual	0.65
Bias %	-0.96
Standard Deviation Chart	0.02



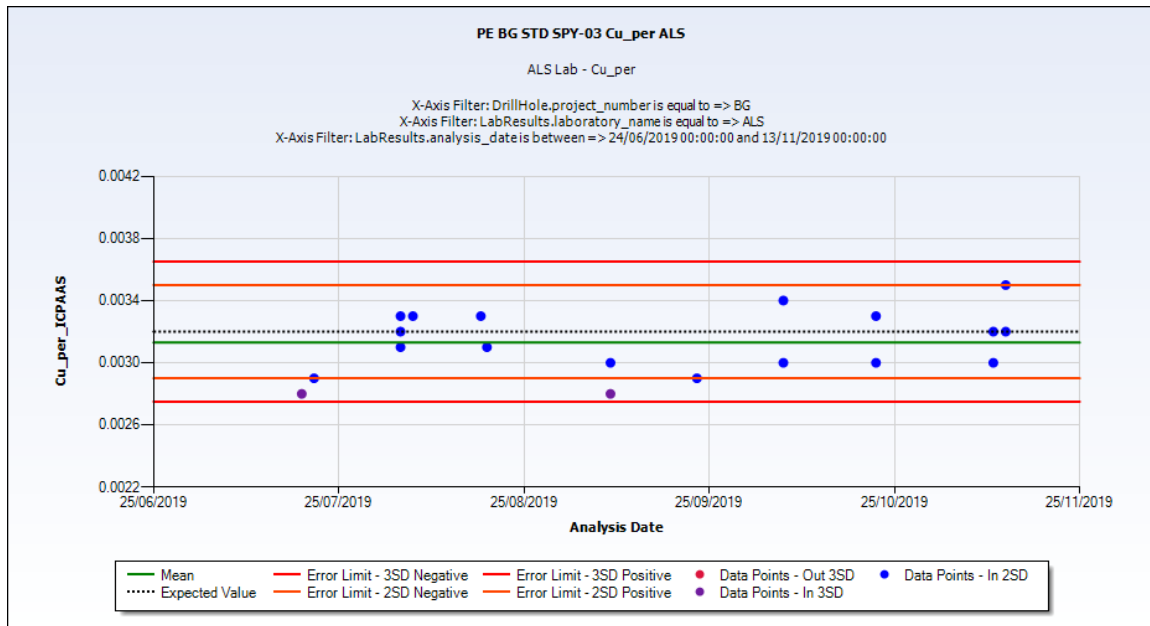
## Summary

Standard Code	SPY-02
Element	Zn
Unit of Measure	per
Analytical Technique	ICPOVL
Expected (Actual value)	2.79
Project	BG
Lab	ALS
Analysis Date From	24/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.05
Count of Samples	19
Mean	2.81
Bias %	0.83
Standard Deviation Chart	0.05



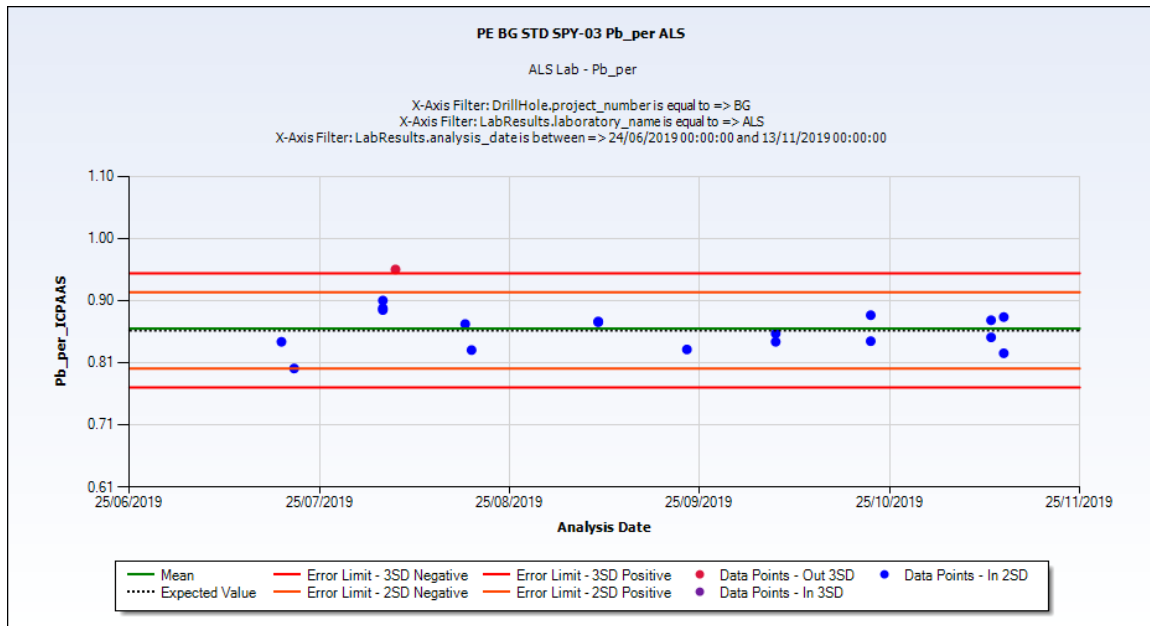
## Summary

Standard Code	SPY-03
Element	Ag
Unit of Measure	ppm
Analytical Technique	ICPAAS
Expected (Actual value)	25.50
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.45
Count of Samples	20
Mean	27.10
Bias %	6.25
Standard Deviation Chart	0.86



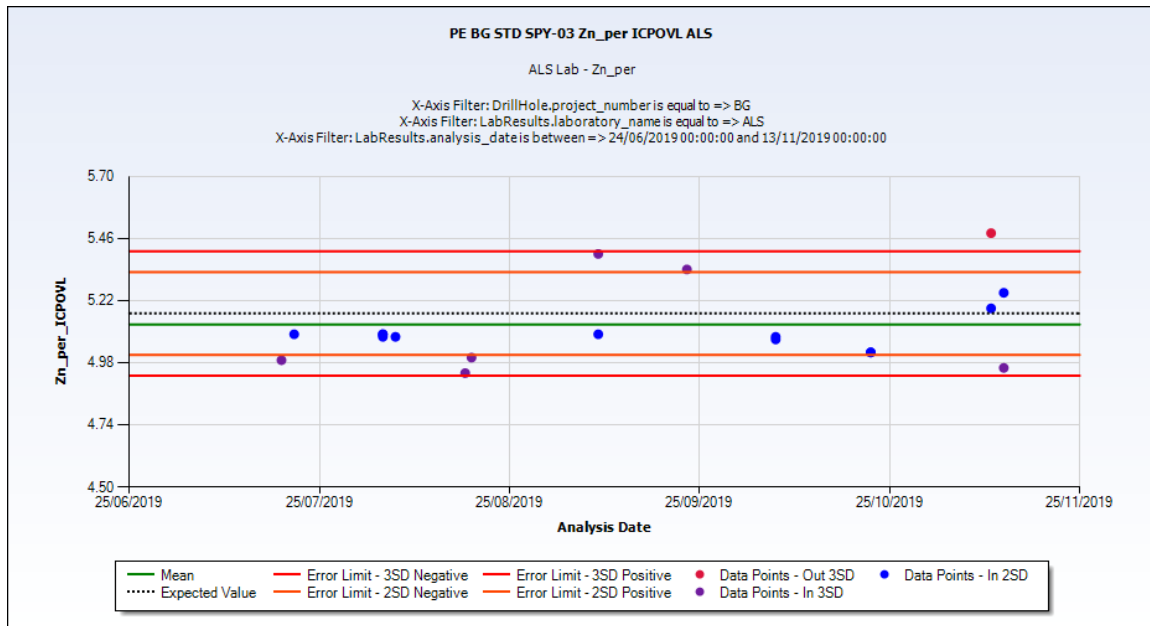
## Summary

Standard Code	SPY-03
Element	Cu
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.0032
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.0002
Count of Samples	20
Mean	0.0031
Bias %	-2.19
Standard Deviation Chart	0.0002



## Summary

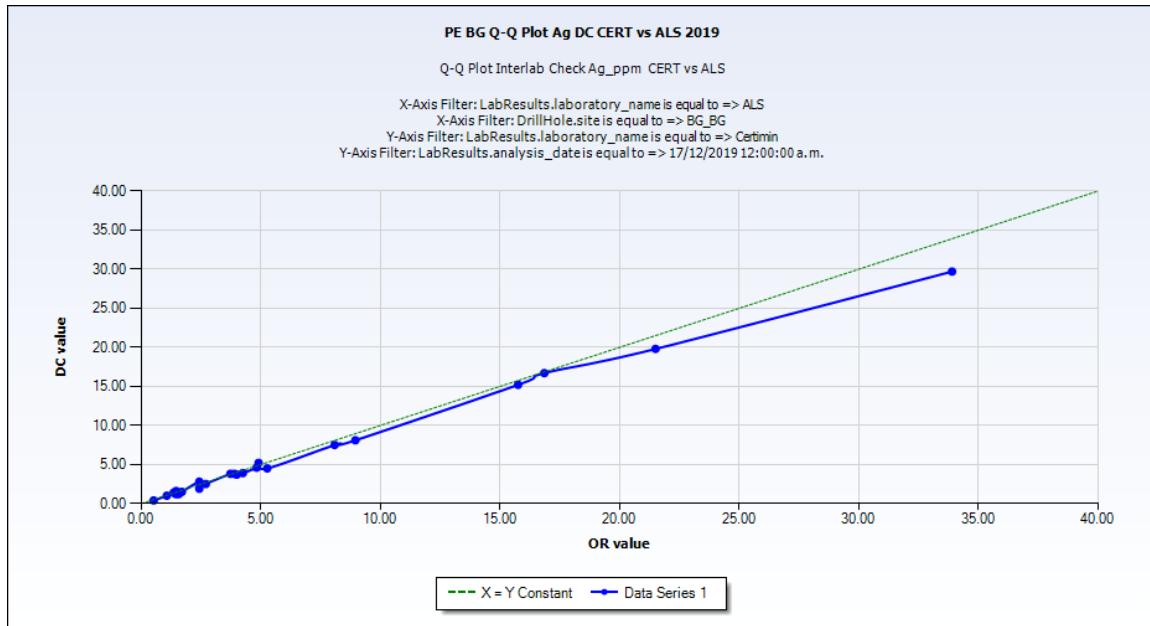
Standard Code	SPY-03
Element	Pb
Unit of Measure	per
Analytical Technique	ICPAAAS
Expected (Actual value)	0.86
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.03
Count of Samples	20
Mean	0.86
Bias %	0.36
Standard Deviation Chart	0.03



## Summary

Standard Code	SPY-03
Element	Zn
Unit of Measure	per
Analytical Technique	ICPOVL
Expected (Actual value)	5.17
Project	BG
Lab	ALS
Analysis Date From	25/06/2019
Analysis Date To	12/11/2019
Standard Deviation	0.08
Count of Samples	20
Mean	5.13
Bias %	-0.82
Standard Deviation Chart	0.15

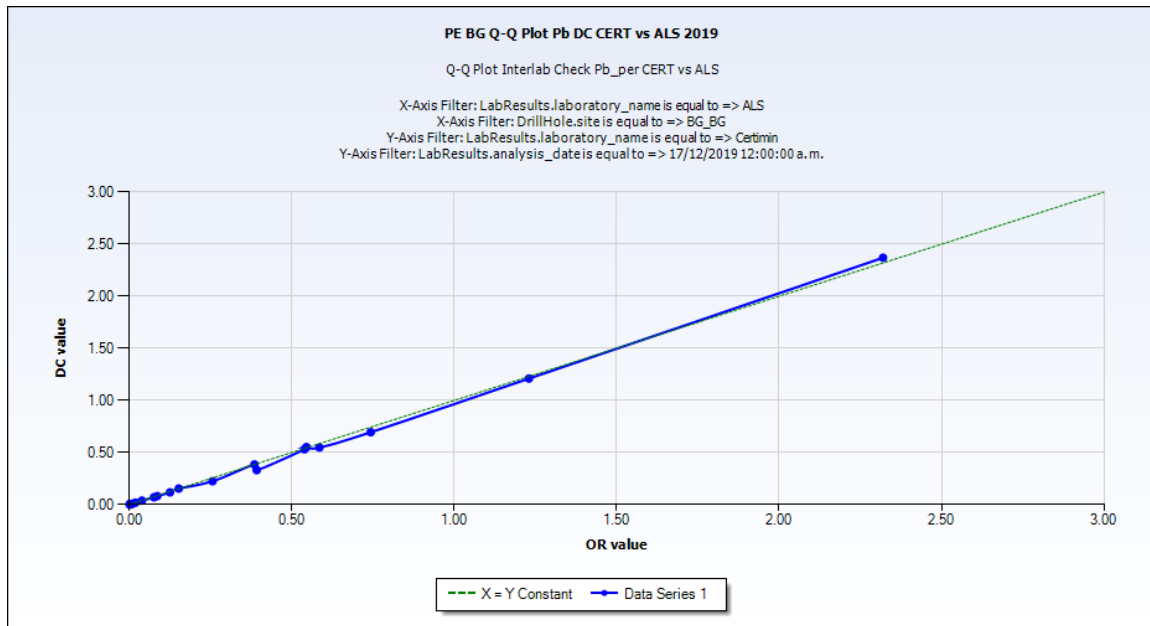
## 23.4 EXTERNAL CHECK RESULTS – CERT vs ALS LABORATORY



### Summary

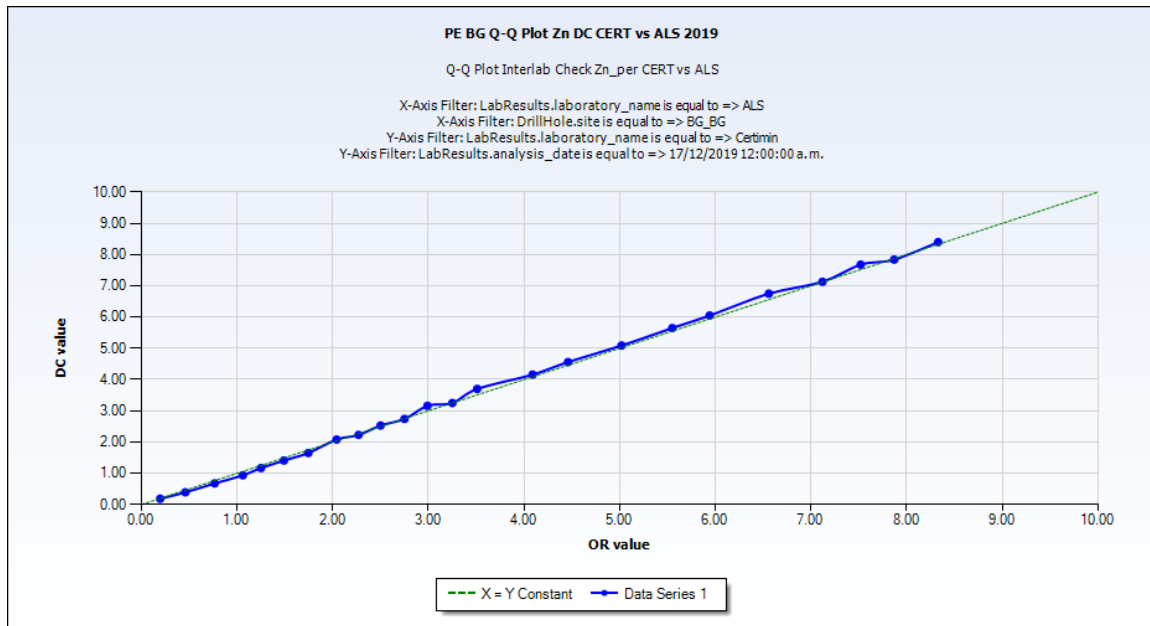
Original Sample Type	OR
Duplicate Sample Type	DC
Element	Ag
Unit of Measure	ppm
Analytical Technique	Lab
Original Mean Value	6.41
Duplicate Mean Value	5.98
Count of Samples	24
Bias %	-0.63





## Summary

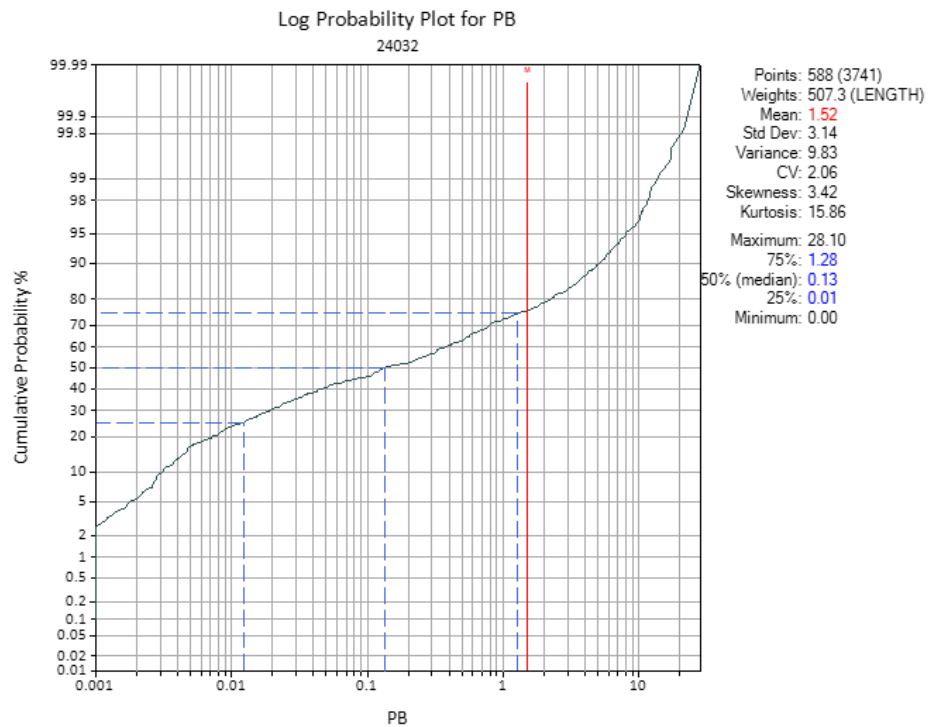
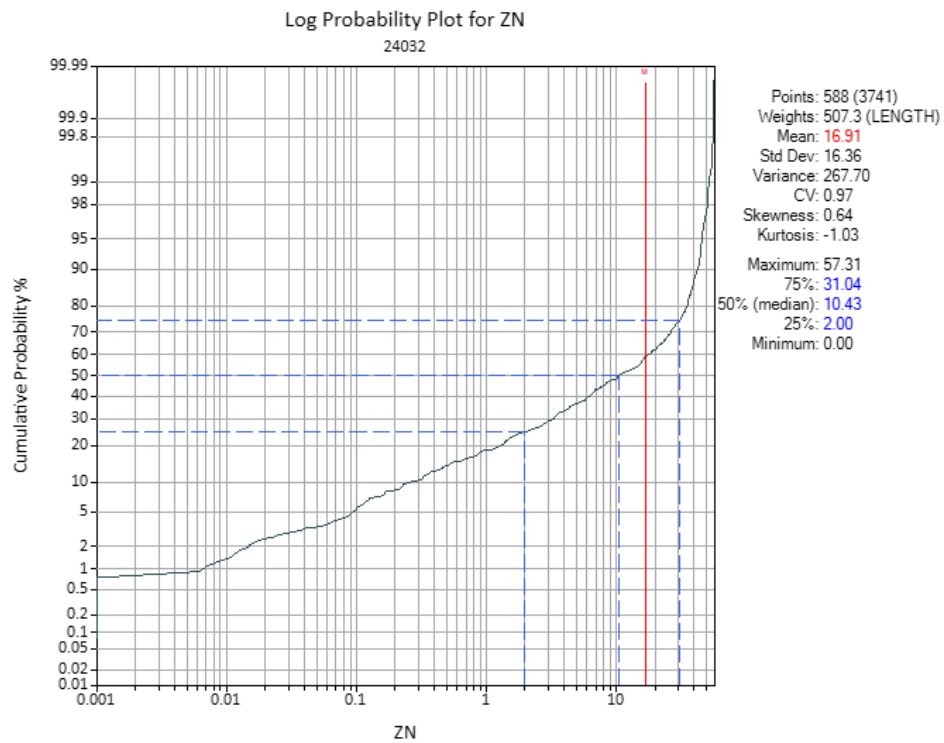
Original Sample Type	OR
Duplicate Sample Type	DC
Element	Pb
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	0.31
Duplicate Mean Value	0.31
Count of Samples	24
Bias %	-0.74

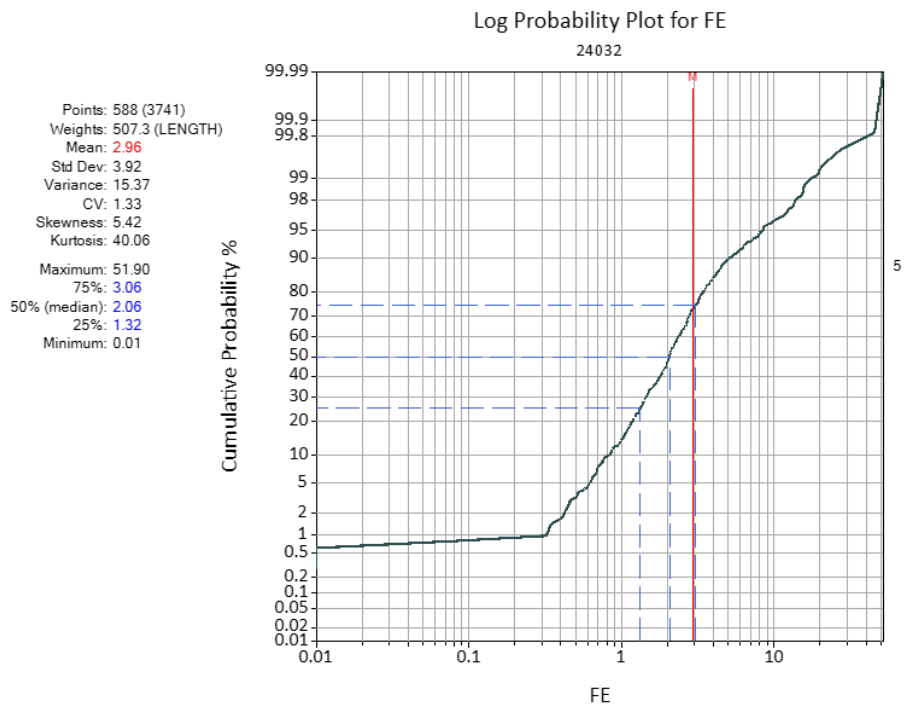
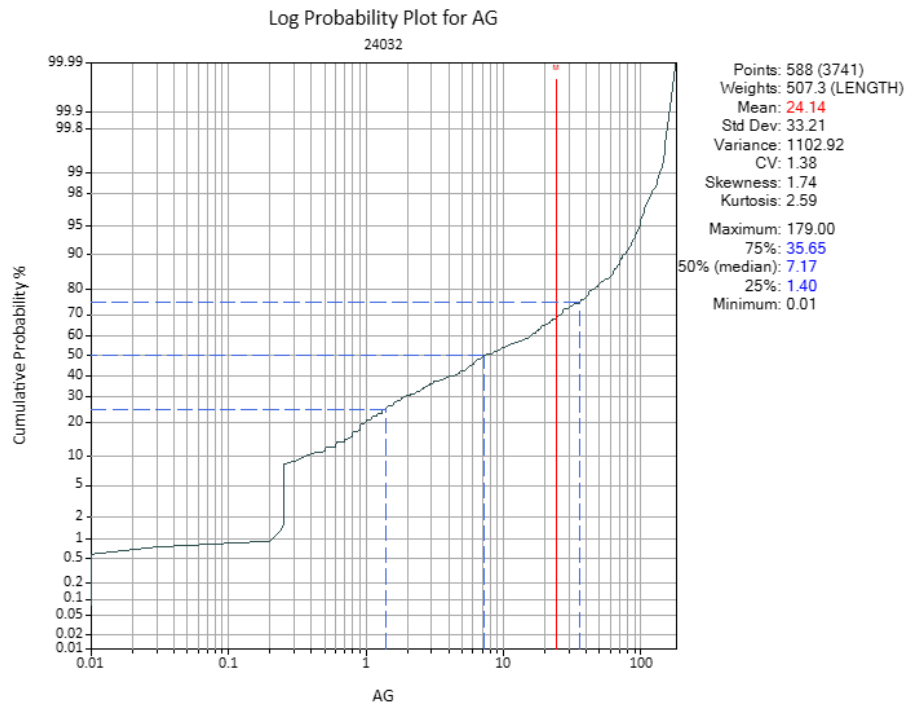


## Summary

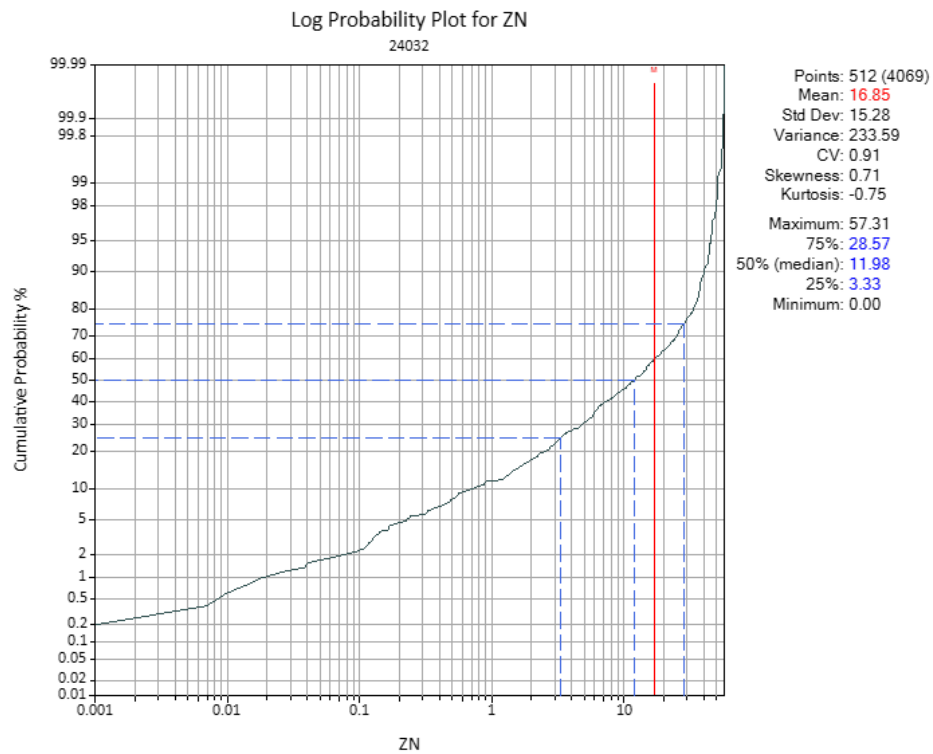
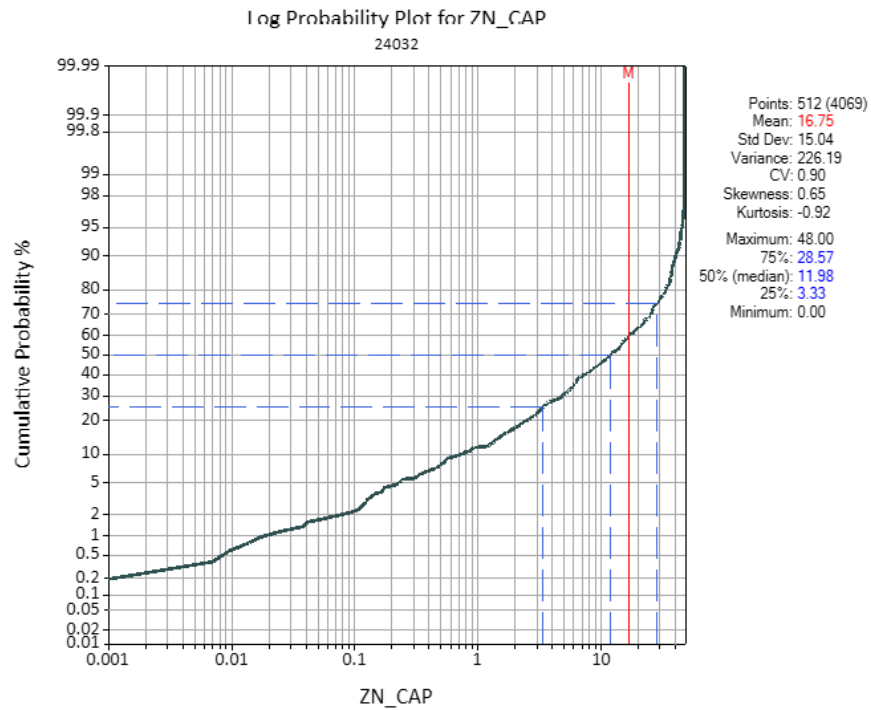
Original Sample Type	OR
Duplicate Sample Type	DC
Element	Zn
Unit of Measure	per
Analytical Technique	Lab
Original Mean Value	3.70
Duplicate Mean Value	3.73
Count of Samples	24
Bias %	-0.12

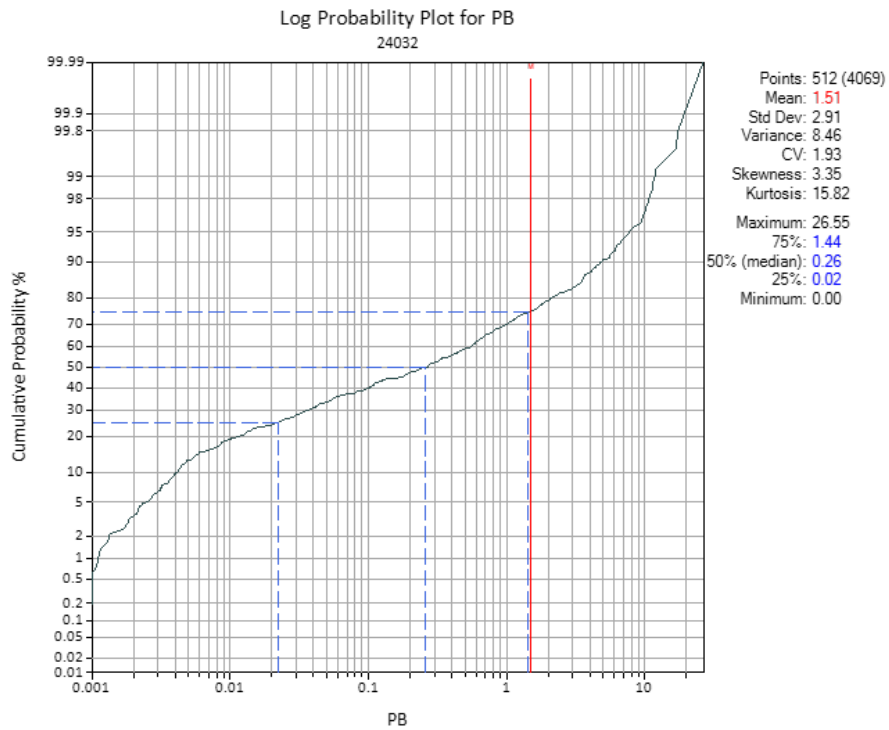
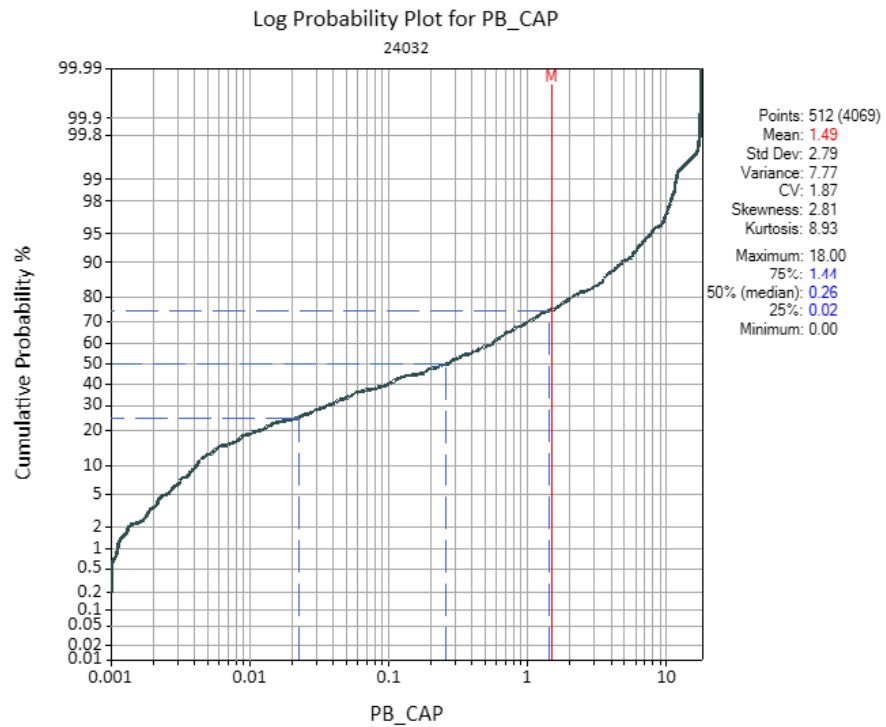
## 24 APPENDIX C: SAMPLE CUMULATIVE FREQUENCY PLOTS

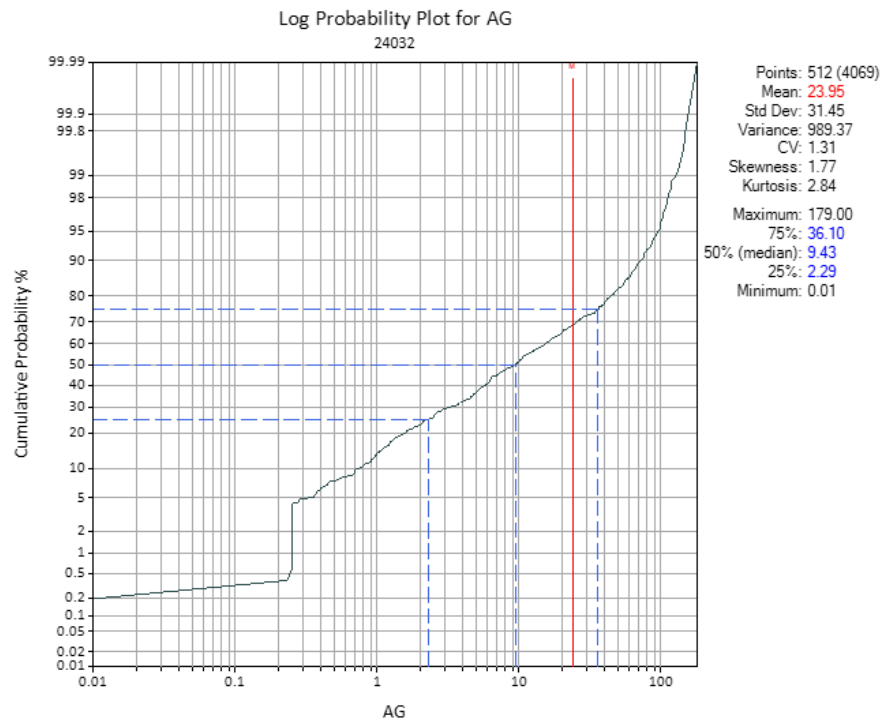
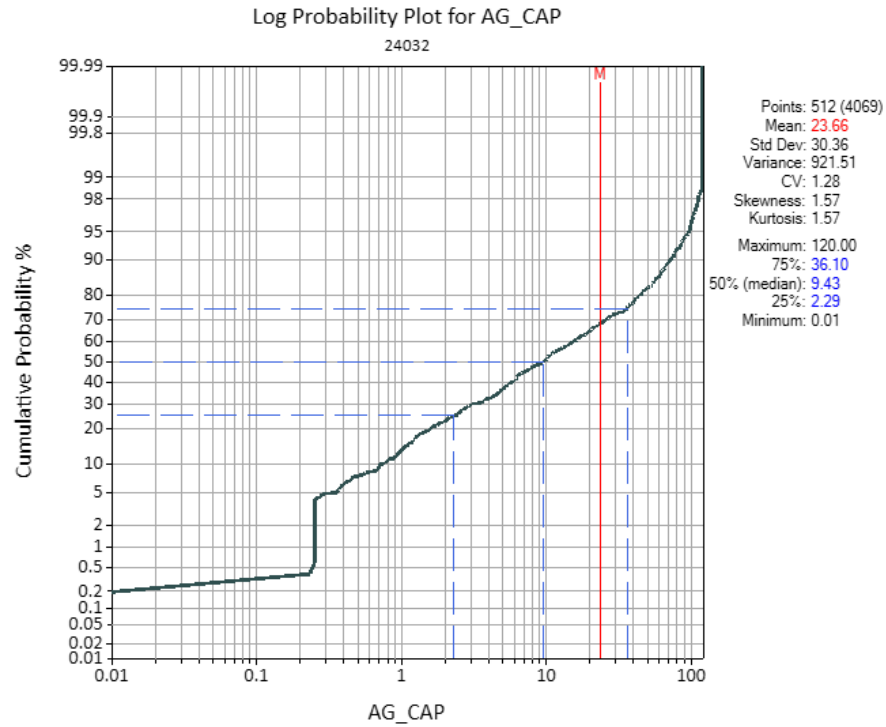


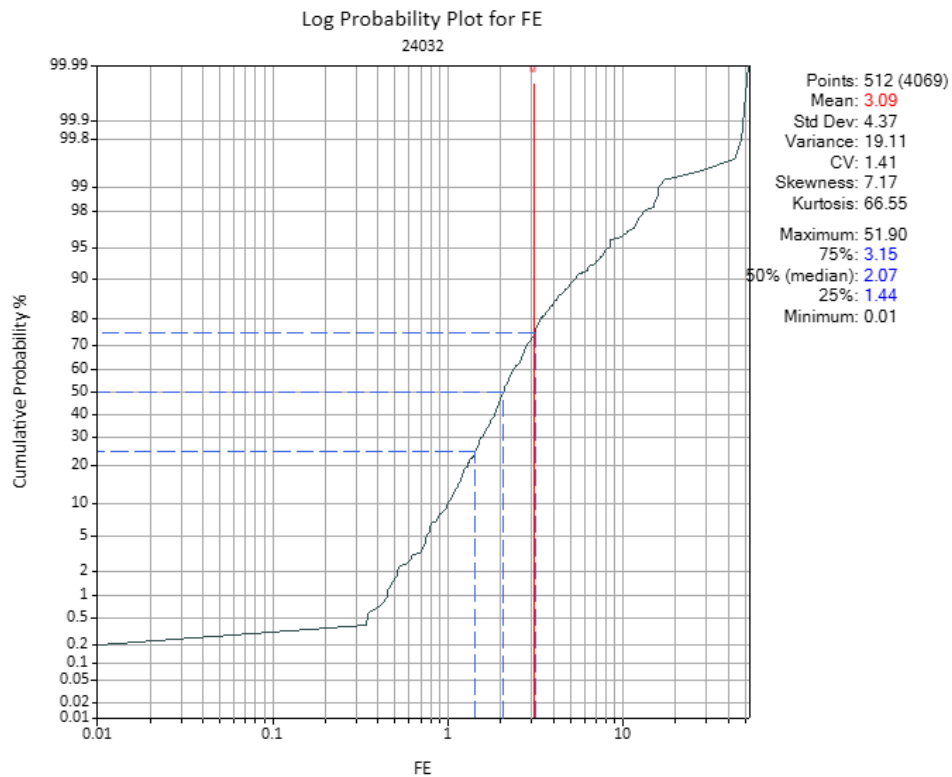
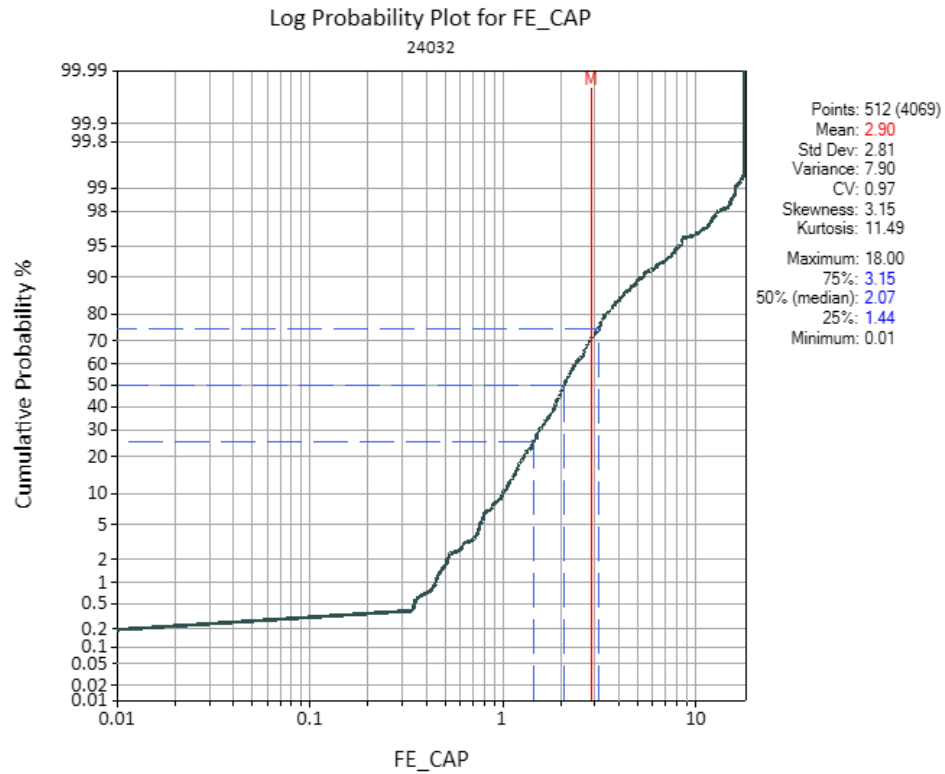


## 25 APPENDIX D: CAP-COMPOSITE CUM. FREQUENCY PLOTS











## 26 APPENDIX E: MINERAL RESOURCE

<i>Zone</i>	<i>Classification</i>	<i>Tonnes</i>	<i>Zn (%)</i>	<i>Ag (g/t)</i>	<i>Pb (%)</i>	<i>Fe (%)</i>
<i>1021_m1</i>	Inferred	96,236	3.07	10.45	0.15	0.44
<i>1021_m2</i>	Inferred	344,927	5.99	9.31	1.21	1.18
<i>1021_m3</i>	Inferred	33,616	2.7	7.65	0.99	0.75
<i>1021_m4</i>	Inferred	857	0.3	2.54	0.14	0.51
<i>1021_m7</i>	Inferred	332,228	7.06	17.56	0.94	2.06
<i>m_m3_10</i>	Measured	17,325	6.17	9.39	1.46	1.41
	Indicated	14,821	4.88	6.84	0.99	1.04
	Inferred	241	6.19	15.29	2.63	2.27
<i>Km_m1</i>	Indicated	48,683	5.78	10.7	1.68	1.19
	Inferred	212,585	6.23	16.13	2.45	1.36
<i>Km_m2_1</i>	Measured	8,920	3.79	4.58	0.67	1.13
	Indicated	48,066	5.82	8.32	1.14	1.1
	Inferred	487,535	7.01	9.42	1.4	1.48
<i>Km_m2_3</i>	Inferred	259,685	6.81	3.93	0.29	0.57
<i>Km_m3_1</i>	Inferred	128,365	11.41	11.92	0.74	3.29
<i>Km_m3_4</i>	Indicated	8,323	8.43	13.4	1.92	1.76
	Inferred	136,337	8.16	4.45	0.53	1.38
<i>Km_m3_5</i>	Indicated	30,480	7.72	2.35	0.16	1.1
	Inferred	567,175	8.43	5.77	0.38	1.29
<i>Km_m3_7</i>	Measured	11,396	6.89	16.41	2.6	1.62
	Indicated	2,380	3.65	6.38	0.94	1.31
<i>Km_m3_8</i>	Measured	4,068	5.92	4.81	0.67	0.72
	Indicated	13,566	8.49	12.42	1.72	0.92
	Inferred	39,879	9.63	15.19	2.01	0.95
<i>Km_m3_9</i>	Indicated	3,069	11.61	29.1	3.27	0.94
	Inferred	14,125	5.59	8.73	0.93	0.74
<i>Km_m3_2</i>	Indicated	75,331	5.78	5.56	0.84	1.09
	Inferred	607,754	8.07	9.01	1.16	1.7
<i>Km_m4_1</i>	Indicated	5,349	2.5	3.76	0.53	0.65
	Inferred	74,770	3.97	1.26	0.13	0.77
<i>Km_m4_2</i>	Measured	3,097	10.15	10.56	1.06	1.27
	Inferred	21,733	4.64	2.22	0.3	0.74
<i>Km_m4_3</i>	Measured	9,710	3.59	9.97	1.36	1.03
	Indicated	66,245	8.48	6.64	0.92	1.29
	Inferred	293,743	9.27	15.63	1.55	1.56
<i>Km_m4_5</i>	Inferred	1,790	1.72	3.69	0.46	0.57
<i>Km_m4_7</i>	Indicated	41,454	4.82	4.47	0.43	1.01
	Inferred	251,894	8.66	12.02	1.83	1.37

<i><b>Zone</b></i>	<i><b>Classification</b></i>	<i><b>Tonnes</b></i>	<i><b>Zn (%)</b></i>	<i><b>Ag (g/t)</b></i>	<i><b>Pb (%)</b></i>	<i><b>Fe (%)</b></i>
<i><b>Km_m6_2</b></i>	Inferred	289,291	10.25	7.05	0.79	1.18
<i><b>Km_m6_3</b></i>	Inferred	38,627	4.97	5.08	0.94	1.04
<i><b>Km_m6_5</b></i>	Inferred	294,551	14.03	9.17	1.43	1.96
<i><b>Km_m6_6</b></i>	Indicated	319	8.93	21.41	1.69	1.13
	Inferred	50,975	15.18	33.56	2.61	1.62
<i><b>Km_m6_9</b></i>	Indicated	31,453	9.74	9.8	0.81	1.3
	Inferred	770,446	11.93	6.02	0.4	1.38
<i><b>Km_m7_1</b></i>	Measured	44,785	10.28	7.21	1.2	1.17
	Indicated	39,383	8.74	5.98	1.2	1.06
	Inferred	5,910	5.66	3.22	0.49	0.78
<i><b>Km_m7_2</b></i>	Indicated	311	2.25	14.72	1.02	0.21
	Inferred	56,648	3.09	16.77	1.83	0.34
<i><b>Km_m10</b></i>	Inferred	755,292	7.42	11.82	0.27	1
<i><b>Km_m13</b></i>	Inferred	72,413	6.41	5.4	1.02	0.51
<i><b>Km_m6_4</b></i>	Measured	28,288	14.01	7.07	0.84	1.23
	Indicated	10,570	14.6	4.88	0.44	1.06
	Inferred	1,054	12.56	4.79	0.53	1.2
<i><b>sj_m1</b></i>	Measured	373	11.06	9.12	0.21	1.39
	Indicated	17,477	8.63	6.35	0.11	1.06
	Inferred	24,631	8.67	5.02	0.03	1.12
<i><b>sj_m2</b></i>	Measured	37	1.38	15.06	0.1	1.53
	Indicated	5,830	6.75	11.23	0.02	1.82
	Inferred	32,176	5.46	4.54	0.3	0.66
<i><b>sj_m3</b></i>	Measured	60	6.75	7.74	0.31	2.59
	Indicated	8,524	9.4	9.45	0.5	2.98
	Inferred	17,632	5.81	7.95	0.14	2.25
<i><b>sj_m4</b></i>	Measured	20	4.69	4.8	0.15	0.56
	Indicated	26	7.43	5.19	0.62	0.69
	Inferred	5,633	8.47	3.95	0.69	0.66
<i><b>sj_m5</b></i>	Measured	3,696	6.07	25.03	0.55	1.11
	Indicated	7,546	5.04	28.1	0.63	1
	Inferred	1,140	4.15	21.34	0.47	0.78
<i><b>sj_m6</b></i>	Measured	31,784	7.13	6.59	0.23	1.77
	Indicated	21,048	13.11	16.57	0.69	1.57
	Inferred	3,836	14.27	20.97	0.97	1.65
<i><b>sj_m7</b></i>	Measured	18,612	9.99	16.06	1.34	6.52
	Indicated	72,773	6.54	10.18	0.76	8.61
	Inferred	8,692	7.07	5.84	0.23	2.2

<i><b>Zone</b></i>	<i><b>Classification</b></i>	<i><b>Tonnes</b></i>	<i><b>Zn (%)</b></i>	<i><b>Ag (g/t)</b></i>	<i><b>Pb (%)</b></i>	<i><b>Fe (%)</b></i>
<i><b>sj_m8</b></i>	Measured	740	14.26	20.13	2.56	4.66
	Indicated	45,469	10.19	16.89	2.25	4.78
	Inferred	223,046	14.94	18.45	3.31	5.99
<i><b>sj_m9</b></i>	Indicated	41,624	6.29	7.74	0.63	1.72
	Inferred	65,342	8.78	9.14	0.99	1.96
<i><b>sj_m10</b></i>	Measured	4,112	10.52	29.18	0.42	2.08
	Indicated	16,031	5.92	16.79	0.27	1.3
	Inferred	3,211	3.45	8.25	0.1	0.9
<i><b>sj_m11</b></i>	Inferred	424,532	10.42	5.24	0.7	0.95
<i><b>sj_m12</b></i>	Inferred	270,429	8.78	6.58	0.54	4.17
<i><b>sj_m13</b></i>	Inferred	114,568	5.59	2.13	0	1.18
<i><b>sj_m14</b></i>	Inferred	71,914	11.98	13.48	0.68	1.52
<i><b>sj_m15</b></i>	Inferred	77,012	8.87	2.72	0.07	2.61
<i><b>sj_m16</b></i>	Inferred	29,828	4.54	1.95	0.01	1.42
<i><b>sj_m17</b></i>	Inferred	10,371	4.19	5.07	1.09	1.04
<i><b>sj_m18</b></i>	Measured	44	7.04	2.38	0.02	1.38
	Indicated	6,442	4.7	1.75	0.02	1.27
<i><b>sj_m19</b></i>	Indicated	3	3.32	6.31	0.32	4
<i><b>sj_m20</b></i>	Indicated	3,253	8.3	0.5	0.02	1.37
<i><b>sj_m21</b></i>	Measured	9,894	9.76	8.38	0.26	1.05
	Indicated	2,079	4.76	3.66	0.09	1.06
<i><b>sj_m22</b></i>	Inferred	21,803	11.3	0.92	0	1.45
<i><b>sj_m23</b></i>	Measured	34	0.85	1.83	0.01	0.66
	Indicated	1,593	6.35	10.35	0.04	0.85
<i><b>sj_m24</b></i>	Measured	452	12.54	13.51	0.43	1.74
	Indicated	264	8.35	6.98	0.27	1.43
<i><b>1021_f1</b></i>	Inferred	316,616	6.91	15.21	1.03	1.59
<i><b>1021_f2</b></i>	Inferred	1,002,131	7.95	13.44	1.41	3.35
<i><b>1021_f3</b></i>	Inferred	4,618	3.47	8.26	0.4	0.84
<i><b>1021_f4</b></i>	Inferred	22,371	2.49	4.51	0.5	1.1
<i><b>1021_f5</b></i>	Inferred	103,936	3.22	4.84	0.12	2.57
<i><b>1021_f6</b></i>	Inferred	1,034,401	6.52	14.96	3.19	3.28
<i><b>km_f1</b></i>	Inferred	519,921	4.11	13.64	1.98	0.92
<i><b>km_f2</b></i>	Inferred	288,920	8.36	18.49	2.56	6.42
<i><b>km_f3</b></i>	Inferred	437,530	14.38	12.86	1.36	2.18
<i><b>Sam_f1</b></i>	Inferred	599,392	12.78	6.99	2.96	0.93
<i><b>sj_f1</b></i>	Measured	21,430	8.66	14.8	0.58	1.39
	Indicated	19,797	9.5	14.48	0.33	1.65
	Inferred	148,436	5.6	7.56	0.28	1.2

<i><b>Zone</b></i>	<i><b>Classification</b></i>	<i><b>Tonnes</b></i>	<i><b>Zn (%)</b></i>	<i><b>Ag (g/t)</b></i>	<i><b>Pb (%)</b></i>	<i><b>Fe (%)</b></i>
<i><b>sj_f2</b></i>	Measured	15,720	7.5	14.44	0.09	1.5
	Indicated	20,833	7.16	9.79	0.14	1.34
	Inferred	9,852	3.48	10.33	0.25	1.21
<i><b>sj_f4</b></i>	Measured	13,427	8.39	2.99	0.19	1.21
	Indicated	9,443	6.72	2.29	0.06	0.99
<i><b>Km_m3_3</b></i>	Measured	60,395	7.64	12.36	1.44	2.23
	Indicated	252,459	8.62	16.14	1.95	1.98
	Inferred	127,411	6.99	9.99	1.34	1.78
<i><b>Km_m6_1</b></i>	Measured	140,270	9.63	9.97	1.4	1.5
	Indicated	221,011	7.67	10.34	1.43	1.04
	Inferred	265,715	9.53	19.84	4.01	0.81
<i><b>sj_f3</b></i>	Measured	358,256	14.35	21.83	1.74	3.33
	Indicated	421,374	17.7	26.9	1.6	3.09
	Inferred	2,331,005	15.51	13.75	0.54	2.38
<i><b>Total</b></i>		<b>17,300,383</b>	<b>9.77</b>	<b>11.82</b>	<b>1.27</b>	<b>2.05</b>

\*Note: *m* = mantos, *f*= feeder