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Ana Paula Project

NI 43-101 Technical Report

Mineral Resource Estimate Update

Guerrero, Mexico

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DATE AND SIGNATURES PAGE

The effective date of this Technical Report is November 27, 2023. The issue date of this Technical Report is January 11, 2024. See Appendix A, Mineral Resource Estimate Contributors and Professional Qualifications, for certificates of qualified persons.

ANA PAULA PROJECT
FORM 43-101F1 TECHNICAL REPORT
MINERAL RESOURCE ESTIMATE UPDATE

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1 SUMMARY

This technical report was compiled by M3 Engineering & Technology Corporation (M3) for Heliostar Metals Ltd. (hereafter referred to as Heliostar) and comprises a Mineral Resource Estimate Update of Heliostar's wholly owned Ana Paula Gold Project, which is a gold resource development project located in the Guerrero Gold Belt in Guerrero, Mexico. The Ana Paula Project is controlled by Minera Aurea S.A. de C.V., which is a wholly owned subsidiary of Heliostar. This technical report summarizes the results of the Mineral Resource Estimate Update and was prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1. This updated technical report replaces and supersedes the previous PFS published by Heliostar for the Ana Paula Project in its entirety. The previous PFS was filed on the SEDAR website on March 9, 2023, and had an effective date of February 28, 2023. Heliostar owns all issued and outstanding shares of Aurea Mining, which through its wholly owned subsidiary Minera Aurea indirectly holds the title and permit to mine the Ana Paula Gold Project.

1.1 INTRODUCTION

The Ana Paula Project is a gold resource development project located in Guerrero State, Mexico. The Project encompasses several gold occurrences within an exploration concession covering an area of more than 550 km^2. The Project was previously owned by Alio Gold, Inc. (Alio Gold), which published a Pre Feasibility Study (PFS) Technical Report on May 26, 2017 and an amended PFS technical report on June 7, 2017, both with an effective date of May 16, 2017. Alio Gold (then Timmins Gold Corp.) acquired Ana Paula through its acquisition of Newstrike Capital Inc. in an arrangement that closed on May 26th, 2015. With the arrangement, Timmins Gold acquired ownership of all of the issued and outstanding common shares of Newstrike Capital Inc., its Canadian subsidiary Aurea Mining Inc. (Aurea Mining), and its Mexican subsidiary Minera Aurea S.A. de C.V. (Minera Aurea). The shares of Aurea Mining and Minera Aurea were subsequently acquired by Argonaut Gold Inc. (Argonaut) in a merger with Alio Gold on July 1, 2020.

On December 5, 2022, Argonaut entered into a binding agreement with Heliostar for the sale of all of the issued and outstanding shares of Aurea Mining, a wholly owned subsidiary of Argonaut, which through Aurea Mining's wholly owned subsidiary Minera Aurea, holds a 100% indirect interest in and to the Ana Paula Gold Project (Argonaut press release, December 5, 2022). On March 28th, Heliostar announced it closed the transaction with Argonaut Gold and had acquired, indirectly, a 100% interest in the Ana Paula Gold deposit (Heliostar press release, March 28, 2023).

M3 Engineering & Technology Corp. (M3) was commissioned by Heliostar Metals Limited to summarize the results of a Mineral Resource Estimate Update that included drilling carried out by Heliostar in 2023 pursuant to Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1 standards (collectively, "NI 43-101").

1.2 PROPERTY DESCRIPTION AND LOCATION

The Ana Paula Project is located in the north central part of the State of Guerrero in southern Mexico, roughly halfway between the major cities of Mexico City and Acapulco. The Ana Paula Project centre is at 407,675.8 m East and 1,995,421.1 m North (WGS84 Zone 14N, EPSG 32614) or by 99° 52' 19.8" west longitude and 18° 2' 42.9" north latitude. The Ana Paula Project is located in the Sierra Madre del Sur mountain range of southern Mexico where topography can range from moderate to rugged with elevations varying from 900 to over 1,460 meters above sea level (masl). The Company's exploration drilling activities were conducted primarily between 900 to 1,200 masl. The Project is bisected by the Balsas River, which divides the Sierra Madre del Sur Mountains into north and south ranges.

The climate in the region is warm and humid, with temperatures ranging from 4º to 42º Celsius (ºC). Precipitation averages at 874.3 millimeters (mm) per year, mostly occurring between June and October during the monsoon season, which is influenced by hurricanes from both the Atlantic and Pacific oceans. According to Mexican regulation NOM-141 SEMARNAT-2003, the Ana Paula site falls under seismic region D, where severe and destructive ground shaking is expected but not located close to a major fault.

Minera Aurea S.A. de C.V. exercised an agreement, dated May 11, 2010, (held by Newstrike Capital Inc., now Alio Gold) for a 100% interest in the concessions Apaxtla 3, Tembo, Tembo Dos, and Tembo Tres from Desarrollos Mineros San Luis, S.A. de C.V. and Minera San Luis S.A. de C.V., wholly owned Mexican subsidiaries of Goldcorp Inc. The final documentation was submitted for registration in Mexico City on June 24, 2010.

Minera Aurea S.A. de C.V. has the obligations set forth below for the maintenance of the four concessions.

On October 18, 2017, Goldcorp and Alio Gold executed an agreement for Alio Gold to buy one-third of the 3% NSR royalty, as agreed upon, arising from the completion of the pre-feasibility study on May 16, 2017. The remaining 2% NSR royalty held by Goldcorp was acquired by Maverix Metals Inc. (Maverix), as announced in a news release on September 21, 2020. On January 19, 2023, Triple Flag Precious Metals Corp. completed the acquisition of the Maverix Metals Inc. 2% NSR royalty.

As of January 11, 2024, Minera Aurea S.A. de C.V. controls surface access to 1,869.28 hectares overlying the Ana Paula Project area. A total of 1,373.5 hectares are 100% owned by Minera Aurea, an additional 488.08 hectares are under contract in 30-year access lease agreements and finally, 7.68 hectares are under contract in a 10-year lease.

1.3 GEOLOGY AND MINERALIZATION

Economically significant gold deposits of the 55 km long northwest trend of the GGB are controlled by a variety of structural and lithologic settings and largely occur in clusters directly associated with a northwest-trending suite of early Tertiary calc-alkalic intrusions. The GGB straddles a boundary between two older tectonic sub-terranes; a volcanic-volcaniclastic arc assemblage to the west and a thick carbonate platform sequence overlain by younger marine deposits to the east. Ana Paula is located at the northwest end of the GGB.

The stratigraphy of both sub-terranes that comprise the GGB was deformed during the compressive Laramide orogeny and subsequently intruded by a ±62-66 million year calc-alkalic magmatic event that is currently thought to be associated with the timing of mineralization responsible for the gold deposits and showings of the GGB.

The geologic units underlying the Ana Paula Project are primarily sedimentary rocks composed of interbedded limestones, shales and thin waterlain tuffs along with carbonaceous limestones that have been intruded by intermediate sills, dikes and stocks. Five principal geological domains within Ana Paula Deposit have been recognized:

- The Sediment domain is characterized by light brown weathering, platy outcrops, with distinct gray shale and brown limestone and tuff beds which range from a few centimeters to as much as 25 centimeters thick. Also included is a massive to thin bedded laminated carbonaceous limestone that is present in this domain. The sediment domain is located in the eastern part of the deposit.
- The Intrusive Suite domain is a package of several different feldspar porphyry intrusive phases that, in a general sense, appear to be similar in composition and age.
- The Skarn-Hornfels domain is found along the some of the contacts of the intrusive domain dykes and sills with the host sediments in the upper zones and appears more widespread in the deeper zones of the deposit. It shows a down-dip and distal zonation from unaltered sedimentary limestone-shale nearest the surface to hornfels then to skarn with increasing depth.
- The Polymictic Breccia domain that sits in the core of the main Ana Paula deposit is a steeply dipping sub-vertical diatreme stretched in an east-west direction and plunging steeply to the south.
- The Monomictic Breccia domain is essentially a brecciated intrusion composed of mostly monolithic fragments in a silica rich matrix with mixed sulphide-oxide mineralogy. It is located in the southern part of the deposit.

In general, four gold depositional settings are recognized at Ana Paula, including:

1. Polymictic Breccia hosted mineralization with mainly sulphide (arsenopyrite and/or pyrrhotite later replaced by pyrite) filling the matrix.
2. Exoskarn style sediment replacement and pyrite overprinting along intrusive contacts.
3. Micro-fractures with arsenopyrite fracturing all rock types, but best developed in the feldspar porphyries.
4. Disseminated sulphides in the feldspar porphyries, likely related to emplacement of V2 arsenopyrite micro-veinlets.

The veinlets, stockwork, clots and disseminated mineralization, along with the contact replacement textures, (settings 1, 3 and 4 above) are commonly observed within the intrusive and sediment domains that collectively make up a corridor of structurally-controlled, northerly-trending, and west-dipping marine sediments and intrusive sill / dyke stratigraphy that is host to widespread lower grade mineralization.

The bulk of the high-grade mineralization at Ana Paula occurs in the Polymictic Breccia domain. This lithological unit consists of a core of polymictic breccia in an east-west trending, steeply south plunging column, surrounded by local high-grade mineralization which is characterized by veinlets, fracture zones, and massive sulphides along contact replacement zones. Outboard of that high grade zone is a large area of low-grade mineralization of similar but more widespread veinlets, fractures and contact replacement zones.

The vertical extent of the Polymictic Breccia domain has been modelled to a depth of 950 m below surface and it is currently unconstrained by due to lack of deep drilling. Horizontally, the high-grade mineralization (the High Grade Panel) extends approximately 300 m east – west and is 60 to 80 m thick near surface. This High Grade Panel extends 100 m down-plunge, mainly within the Polymictic Breccia domain. Mineralization is continuous, and grade tends to be highest in the center of the Polymictic Breccia but extends out into the sediments, intrusive, and skarn / hornfels lithologies, with grade decreasing with distance away from the center.

1.4 EXPLORATION AND DRILLING

Active exploration of the Ana Paula Project began in 2005 and occurred annually between 2010 and 2018. Exploration resumed again in 2023. Exploration activities included property-scale and detailed surface mapping and sampling, geophysical surveys, and drilling. Outcrop and road cut locations were registered using handheld GPS devices and lithologic, structure, mineralization, alteration and other relevant details were translated from field map sheets and then digitally to Geographic Information System ("GIS") workspaces. Geophysical surveys of the project area have included aeromagnetics, airborne radiometrics (K, Th, U), induced polarization (IP), and airborne Z-axis tipper electromagnetic (ZTEM) surveys. Petrographic and alteration studies and environmental studies have also been carried out. To date over 166,000 metres of drilling has been completed.

The primary means of exploration was surface core drilling which began with Goldcorp in 2005. More significant drill programs were subsequently carried out by Newstrike from 2010-2014, Alio Gold from 2015 to 2018 and finally by Heliostar in 2023. Table 1-1 shows the drill hole summary by year and company.

Table 1-1: Drill Hole Summary by Year and Company

Year	Company	Number of holes	Total length (m)
2005	Goldcorp	21	4,966.0
2006	Goldcorp	6	2489.2
2007	Goldcorp	6	1721.3
2010	Newstrike	12	5,227.1
2011	Newstrike	57	29,698.1
2012	Newstrike	75	42,352.3
2013	Newstrike	87	38,694.3
2014	Newstrike	15	7,316.4
2015	Alio	10	2,008.3
2016	Alio	31	7,304.3
2017	Alio	58	13,478.2
2018	Alio	8	4,337.0
2023	Heliostar	22	4,202.8
		Total:	166,587.1

Drilling by Alio Gold at the Ana Paula property from 2015 to 2018 comprised metallurgical, confirmation drilling, geotechnical and infill drilling in 2015. No drilling or exploration were carried out by Argonaut.

In 2023 Heliostar carried out 4,202.8 metres of drilling that was primarily focused on testing the High Grade Panel area in support of an anticipated mineral resource update. Geotechnical data was collected from drilling of the High Grade Panel and PQ core was utilized to support the collection of metallurgical sample material. In addition, a limited amount of drilling was carried out testing exploration targets in the vicinity of the High Grade Panel. Owing to a drill orientation that more optimally tested the High Grade Panel, the 2023 drilling better delineated the lithologic and structural controls on mineralization and increased confidence in the grade and continuity of mineralization in the High Grade Panel. The average drill hole spacing is approximately 20-50 m in the main part of the Ana Paula High Grade panel Zone and 50-150 m to the east and west extents of the High Grade Panel.

1.5 METALLURGY

A series of metallurgical test programs was conducted at Blue Coast Research Ltd on Ana Paula with the most recent work conducted in 2023. Prior flowsheet development primarily focused on comminution, gravity concentration, flotation, regrinding of flotation concentrate and atmospheric oxidation (AOX) of flotation concentrate ahead of CIL to recover gold and silver. The most recent phase of work focused on the metallurgical response of samples to both cyanidation and gravity techniques, and samples were selected primarily from the High-Grade Panel.

1.5.1 Metallurgical Testwork (Blue Coast Research Ltd., 2016-2017)

A 2016 metallurgical testwork program was conducted on four Ana Paula composite samples, representing four main lithological domains present within the deposit (granodiorite, complex breccia, sediments & monolithic breccia).

Comminution results suggest that Ana Paula material is moderately hard to hard. Comminution testwork consisted of JK RBT Lite tests, Bond Ball Work Index Tests, SMC tests and Abrasion index tests. Results are presented in Table 1-2. The SMC results indicate the material is somewhat harder than that suggested by the JK RBT Lite work. The SMC results represent a more conservative approach to grinding circuit design. Abrasion testing results indicate that the Ana Paula material is mildly abrasive and that mill liner wear will not be extreme.

Table 1-2: Comminution Test Results

Domain Composite	JK RBT Lite Unscaled Parameter (Axb)	SMC Results (Axb)	BWI (kWh/t)	Abrasion Index (Ai)
Granodiorite (GD)	43.3	34.8	19.4	0.189
				0.203
High Grade Breccia (HGB)	44.0	33.3	16.0	0.194
Limestone Shale (LS)	39.6	N/A	15.1	0.078
Low Grade Breccia (LGB)	55.6	N/A	16.2	0.081

A comprehensive flotation testwork program was completed on the three predominant domains (GD, LGB, and LS). The study evaluated the impacts of primary grind size, reagent scheme, pH, retention time, and pulp density. Gold recoveries to rougher concentrate ranged from 93-96%, a primary grind size of 160 µm was selected, and all composites benefited from copper sulphate addition.

Extended Gravity Recoverable Gold (EGRG) tests were conducted on each domain composite. These tests are conducted with successively finer grind sizes culminating with a final grind of 80% passing 75 µm. The EGRG numbers for each domain composite were 53%, 49%, 40% and 12% for GD, HGB, LS and LGB respectively. The Ana Paula samples responded well to gravity concentration, indicating that gravity concentration should be included in the final flowsheet. Given that primary grind sizes necessary for adequate flotation were coarser, one may expect that deportment of gold to gravity concentrate would be somewhat lower than the EGRG tests report.

A comprehensive set of whole rock cyanidation tests were conducted on the three main domain composites (GD, HGB and LS). Gold recoveries ranged from 59-70% for GD (1.59 g/t gold head grade) and HGB (4.78 g/t gold head grade) domains. The LS domain (3.29 g/t gold head grade) contained preg-robbing carbon and gold recoveries ranged from 6-50%. Results of the whole rock leach program highlight that gold recovery is limited by the refractory gold content in the material.

Oxidation testwork was conducted, with the purpose of liberating refractory gold from the arsenopyrite and pyrite sulphide matrix to increase overall gold recovery. Pressure oxidation testwork and atmospheric oxidation testwork were both conducted on the Ana Paula samples, and cyanidation conducted on the oxidation test products.

Acidic pressure oxidation of both whole ore and flotation concentrates displayed overall gold recoveries in excess of 95%. Sulphide oxidation in these tests ranged from 96% to 98%. Due to the amount of acid consuming carbonate present in Ana Paula material, an alkaline pressure oxidation test was conducted. However, oxidation was incomplete at 50% and gold recovery was limited to 75%.

An atmospheric oxidation process was tested at ambient pressure and temperature of 75ºC in open tanks with a sodium based neutralizing agent. Testwork indicated that overall gold recovery from the atmospheric oxidation process would yield an average overall gold recovery of approximately 85% to 86% using soda ash as the neutralizing agent.

1.5.2 Blue Coast Research Testwork (2023)

A 2023 metallurgical testwork program was conducted, with specific focus on the High-Grade Panel of the Ana Paula Deposit. The program was designed to give preliminary insight into gold recovery by conventional processing methods, by conducting cyanidation and gravity testwork on eight samples.

A matrix of cyanidation tests was conducted to evaluate the effect of grind size, and the effect of carbon-in-leach processing to counteract any preg-robbing material if present. Gold recovery of the eight composites tested ranged from 29.5% to 87.5%. Key findings of the cyanidation testwork include:

- Cyanide leaching of eight composites resulted in an average gold recovery of 73.8%, based on a 75 µm primary grind and carbon-in-leach conditions.
  - AuBOT23-03 (located in the footwall of the High-Grade Panel) was a notable outlier, with an average gold recovery of 29.5%. Diagnostic leaching of this composite showed a greater association of gold with sulfides, suggesting a higher proportion of refractory gold.
- No preg-robbing effect was observed; carbon-in-leach (CIL) and standard kinetic cyanidation tests (without activated carbon) achieved similar final recoveries.
- No significant effect of grind size was observed in the 20-75 µm range.
- Negligible to minor improvements in gold recovery were observed in most samples at the sub10 µm grind size. Two samples (AuBOT23-01 and AuBOT23-06) showed a 9% increase in recovery at this grind size.

Gravity amenability testwork conducted on the eight bottle roll composites indicated the potential for gravity recovery on select samples. Based on these results, additional material was submitted for EGRG testwork on four samples. EGRG testwork resulted in high gravity recoverable gold content on three samples from the High-Grade Panel; EGRG content on the four samples ranged from 21.7% to 63.8%. These test results continue to support the inclusion of gravity in the future flowsheet.

Results from the cyanidation and gravity tests are presented in Table 1-3.

Table 1-3: Summary of Gold Recovery from Ana Paula Samples

Composite	Average of 20-75µm Au Recovery (%)	10µm CIL Au Recovery (%)	Superpanner Tip Au Recovery (%)	EGRG Number (%)
AuBOT23-01/AuEGRG23-01	77.7	86.9	50.6	63.8
AuBOT23-02	79.0	76.8	35.0	
AuBOT23-03/AuEGRG23-02	29.5	32.7	16.1	21.7
AuBOT23-04	76.3	78.2	30.5	
AuBOT23-05	86.4	85.8	69.0	
AuBOT23-06/AuEGRG23-03	74.8	83.5	53.3	61.8
AuBOT23-07/ AuEGRG23-04	87.5	86.6	51.2	63.1
AuBOT23-08	79.1	75.4	39.6	
Average	73.8	75.8	43.2	

As part of a metallurgical testwork program initiated in 2023, Heliostar submitted a number of comminution samples to BCR. Three comminution samples were submitted for JK Drop Weight tests and integrated SMC tests; results from these tests indicate moderate resistance to impact breakage. JK DWT Axb values ranged from 51.8 to 55.0, and SMC Axb values ranged from 47.4 to 51.0. Both the JK Drop Weight Test and SMC results are categorized as moderate resistance to impact breakage. Bond Low Energy Impact tests (CWI) were conducted on seven comminution composites. Test results ranged from moderately soft to very hard, with an average CWI of 15.0 kWh/tonne.

1.6 MINERAL RESOURCE ESTIMATE

Based on the review of the QA/QC, data validation, and statistical analysis, the QP is of the opinion that the QA/QC protocols and verification of the results, meet or exceed industry norms and believe the data verification is adequate for this type of deposit.

Reputable, independent ISO-accredited laboratories were utilized in all analytical results and no Company management nor officers were involved in sample preparation. The rate of insertion of QA/QC samples has met industry standards. Although some contamination of blank samples is evident, the degree of contamination is not deemed to be material. Precision of historic drilling was poor in respect of gold, however, 2023 drilling recognized improvements in precision that are likely related to the broad scope of historic drilling compared to the focused scope of the 2023 drilling. Varying styles of mineralization within disparate lithologic units and the presence of coarse gold are likely contributing to some of the poor precision observed, particularly in historic drilling.

Extensive external check assaying has been undertaken on the project using drill hole reject and pulp materials. Although the precision of external checks was generally poor near the lower detection limits, overall external checks compared favourably with original assays, particularly at potentially mineable grades. The use and frequency of standards to verify the accuracy of the drill geochemical database meets industry standards, however a significant number of standards failed QA/QC control limits. Many of these comprised historic, in-house standards that may not have been sufficiently homogenized or characterized. Notably, little corrective action was taken with the historic standards. However, external check assaying was carried from 2010 to 2017 when most drilling was completed. External check assays compared favourably between original and check assay laboratories. The precision of external check assays versus original assays was generally better than the precision of within-lab precision. If there were significant accuracy issues related to failed standards, this should have been reflected in poor precision between decreased reproducibility or poorer precision between external check assays and original assays. Therefore, the database is deemed to be sufficiently accurate for use in resource calculations.

Based on the above conclusions and effective November 27, 2023, the Ana Paula updated Mineral Resource Estimate (MRE) was developed in conformance with the CIM Mineral Resource definitions referred to in the NI 43-101 Standards of Disclosure for Mineral Projects. This mineral resource estimate is a new estimate and not dependent on previous estimates.

The estimate was completed based on the concept of a high-grade underground gold mine. As such, model specifications were changed from previous estimates.

The Ana Paula Resource model database was closed and locked on September 30, 2023. The database included 317 drillholes totaling 121,108 meters. The resource model area included 249 drillholes totaling 97,708 meters. The drill data was validated visually and using leapfrog validation tools. Six drill collars, surveyed in 2018, were noted a high and were resurveyed correcting the issue.

The Ana Paula geologic model was updated to include 2023 geologic logging. The geologic model includes six principal domains: 1) Overburden; 2) Main Breccia; 3) Monolithic Breccia; 4) Porphyry (intrusive rock types); 5) Hornfels (+sulfide-bearing, metamorphic skarn); 6) Sedimentary (rock types). Once domains were updated, these were validated by comparing the domain to the original logging based on both number of meters and entries. Results were found to be satisfactory.

A Leapfrog-Geo strain ellipsoid model comprising localized structural domains was generated to reflect the primary north south regional fabric and local east-west fabric.

An indicator model gold grade shell was created to restrict the resource block model, and a gold grade shell sensitivity analysis was performed at 0.2 and 0.3 g/t gold grades using 2.0 and 3.0m composites. A final grade shell model using 2.0m composites, 0.2g/t gold cutoff at 50% probability was selected to delimit the resource model.

Exploratory data analysis was conducted to select and validate composite lengths and validate domaining. Analysis supports the selected domaining using two-metre composites.

A Parrish capping analysis was performed to determine the effects of capping methodology. It was determined the most favorable approach was to apply capped gold assays after compositing. Capping grades were selected by domain. The Main Breccia (polymictic breccia) cap was set at 64g/t gold and is most important as the key host of mineralization. The effect of capping on measured and indicated resources was measured. At a 2.5g/t gold cutoff grade, capping removes 3.82% of gold ounces.

Bulk density of the models was calculated based on 7,177 samples collected. The upper limit of density was capped at 4 g/cm3. The final interpolated bulk density was performed using inverse distance squared (ID2) method per domain to honor local variations and use for the final estimation report. As such, bulk density was built into the resource model and reported as such as opposed to by domain.

Three-dimensional gold grade variograms were computed by estimation domain. Traditional variograms were modeled with a nugget and two spherical structures for each estimation domain. Estimated nugget values were derived from the downhole variogram, using a 2-metre lag spacing that corresponds to the length of the composites. The variograms showed reasonable structure and provided reasonable generated models.

The updated, Nov. 2023 gold resource model was generated using Seequent's Leapfrog-Geo and Leapfrog-Edge software platforms, v2023.1.1. The resource model was constrained within a 0.2 g/t gold grade shell, using an indicator radial basis function (RBF) numerical model at a 50% probability. It consists of 5x5x5 metre blocks with a minimum sub-block size of 1x1x1 metre. Final grade estimation was based on ordinary kriging using 2.0-metre composites.

Nearest neighbor (NN) and inverse distance squared (ID2) were applied as model interpolations for validation. This was undertaken as a three-pass approach using increasing search parameters with each pass. The model is classified as Measured, Indicated, or Inferred, using search pass parameters and modeled geologic parameters. The estimate was based on 249 core holes totaling 97,708.6 metres completed between 2005-2023 (Table 1-4).

Results of the Mineral Resource estimate at a 2.5 g/t gold cutoff grade include:

- Total measured and indicated mineral resources of 710,920 gold ounces grading 6.60 g/t gold
- Total inferred mineral resources of 447,512 gold ounces grading 4.24 g/t gold

Table 1-4: Ana Paula Project Mineral Resource Estimate (2.5 g/t cutoff grade)

Classification	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)
Measured	2.5	1.11	8.97	320,204
Indicated	2.5	2.24	5.42	390,716
Total Measured & Indicated	2.5	3.35	6.60	710,920
Inferred	2.5	3.28	4.24	447,512

Comparison of the previous, March 2023, resource estimate with the updated November 2023 estimate has yielded positive total percentage adjustments in average gold grade for each Measured, Indicated, Measured+Indicated, and Inferred categories. This was done at a 2.5 g/t gold cutoff based on comparisons reflecting the proposed Ana Paula underground cutoff. As the Ana Paula project focus shifts from a previous open pit design to an underground mining scenario, positive adjustments in average minable gold grade is a notably positive outcome.

Table 1-5: Comparison Between November 2023 and March 2023 Resource Estimates at 2.5g/t cutoff

Classification	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Change in Grade	Change in Ounces
	March 2023 MRE				Updated November 2023 MRE					
Measured	2.5	2.51	5.68	457,943	2.5	1.11	8.97	320,204	58%	-30%
Indicated	2.5	3.00	4.18	402,576	2.5	2.24	5.42	390,716	30%	-3%
Total Measured & Indicated	2.5	5.51	4.86	860,519	2.5	3.35	6.60	710,920	36%	-17%
Inferred	2.5	0.05	3.72	5,564	2.5	3.28	4.24	447,512	14%	7,943%

1.7 CONCLUSIONS

It is the conclusion of the Qualified Persons preparing this technical report that the information contained within this report adequately supports the Mineral Resource Estimate for the Ana Paula Project.

The Ana Paula Project contains a measured and indicated resource of 3.35 million tonnes of material grading 6.60g/t gold for 710,920 contained gold ounces at a 2.5g/t gold cutoff grade. Further it contains 3.28 million tonnes grading 4.24 g/t gold for 447,512 contained gold ounces at a 2.5g/t gold cutoff.

Based on the information contained in this technical report, the Project is technically viable as an underground mining operation; further study at a preliminary economic assessment level should be performed in order to verify these conclusions.

As with any mining project, there are risks that could affect the economic viability of the Project, as well as opportunities to improve the economics, timing, and/or permitting potential of the Project. These risks and opportunities are detailed in Section 25 of this technical report.

1.8 RECOMMENDATIONS

It is recommended that the Ana Paula Project be advanced as an underground mine through Preliminary Economic Assessment (PEA) studies. Work completed to date including resource growth, increases in average grade, a modeled spatial coherence to high grade mineralization, and metallurgical recoveries using conventional flow sheets indicate the potential viability of Ana Paula as a high-grade underground gold mine.

A PEA level study should include the following workflow components:

- Metallurgical test work including grindability testing, cyanidation variability testing, flotation test work, cyanidation optimization in order to optimize the process flowsheet and quantify operating parameters and reagent consumptions.
- Initial TSF and WRF engineering including hydrologic models and site wide water balance.
- PEA level engineering and mine designs
- Additional geologic studies to include additional assaying, gold deportment studies, and historic database compilation
- Additional geotechnical and environmental studies.

Detailed costs of the recommended work are included in Section 26. Estimated costs for a PEA level study specific to the Project total $1.13M and itemized in Table 1-6.

Table 1-6: Preliminary Economic Assessment Study Estimated Costs in USD

Item	Cost ($000)	Description
Metallurgical Testwork	80	Metallurgical Core Sampling, Pilot Plant Testwork, Analysis and Interpretation.
Tailing Management and Waste Rock, Facilities and Water Supply	100	Geotechnical and Design Engineering for Tailings Management and Waste Rock Facilities. Hydrogeology and Geochemical Characterization.
PEA Mine Engineering & Management Services	298	PEA-Level Mine, Infrastructure and Designs.
PEA Process Engineering & Management Services	120	PEA-Level Process Designs.
Geological Studies	275	Assaying, Geomet model additions, Geology & Peer Review.
Geotechnical Studies	30	Additional Geotech studies.
Local Infrastructure Engineering	20	Access Roads, Power Line corridor.
Environmental studies	60	Compliance and permitting.
Subtotal	938	
Contingency (15%)	148	
Total (USD)	1,130	Excludes Owner's Costs

2 INTRODUCTION

2.1 BASIS OF TECHNICAL REPORT

This technical report was compiled by M3 for Heliostar Metals Ltd. and comprises a Mineral Resource Estimate Update of Heliostar's wholly owned Ana Paula Gold Project, which is a gold resource development project located in the Guerrero Gold Belt in Guerrero, Mexico. The Ana Paula Project is controlled by Minera Aurea S.A. de C.V., which is a wholly-owned subsidiary of Heliostar. This technical report summarizes the results of the Mineral Resource Estimate Update and was prepared following the guidelines of the Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1. This updated technical report replaces and supersedes the previous PFS published by Heliostar for the Ana Paula Project in its entirety. The previous PFS was filed on the SEDAR website on March 9, 2023, and had an effective date of February 28, 2023. Heliostar has agreed to acquire all the issued and outstanding shares of Aurea Mining, which through its wholly-owned subsidiary Minera Aurea, indirectly holds the title and permit to mine the Ana Paula Gold Project.

2.2 TERMS OF REFERENCE

The previous technical report on the Project, entitled "NI 43-101 Technical Report Preliminary Feasibility Study Update, Guerrero, Mexico", was authored by M3 and other consultants with an effective date of February 28, 2023. The 2023 technical report was filed on the System for Electronic Document Analysis and Retrieval (SEDAR, www.sedar.com).

The effective date of this Technical Report is November 27, 2023.

Scope of Work

This technical report summarizes the work carried out by the Consultants, who are all independent of Heliostar. The scope of work for each company is listed below. Combined, this comprises the total Project scope.

M3's scope of work included:

- Compile Mineral Resource Update technical documentation
- Coordinate technical report writing

Blue Coast Research's (BCR) scope of work included:

- Evaluate the metallurgical properties and process flowsheet options with a focus on the High Grade Panel area of Ana Paula. Quantify gold recovery using simplified flow sheet options.
- Work with site team to optimize sample selection. Samples reflect mineable widths of representative grades and material types. Samples were selected from spatially diverse areas representing different grade ranges from within the targeted High Grade Panel.
- Specific metallurgical testing included:
    - CIL and kinetic bottle roll gold leaching at various grind sizes
    - Gravity recoverable gold testing
    - Extended gravity recoverable gold testing
    - Diagnostic leach testing of gold recoveries
    - Gold deportment and grain size analysis
- Comminution testing included
    - JK drop-weight testing

- SMC testing
- Crusher work index testing

Teal CPG Inc.'s (Teal) scope of work included:

- Update the Geologic and Resource model to reflect additional drilling completed by Heliostar Metals in 2023. This includes the following activities:
- Evaluate the historic and current data and model assumptions:
  - Review and evaluate quality control and quality analysis of assaying and drill database used of for resource model.
  - Validate assay preference list selection
  - Review and evaluate existing geologic and resource model
  - Perform exploratory data analysis of geologic model and geochemistry to validate model appropriateness
- Update the geologic model
  - Update model controls to reflect current level of geologic understanding
  - Update the model with 2023 geologic logging
- Update the Gold Resource Model
  - Update block model and sub-block parameters to reflect an underground mining scenario
  - Refine variography to include recent drilling
  - Create an updated gold block model
- Complete resource model reporting and comparison to historic models

2.3 QUALIFIED PERSON RESPONSIBILITIES AND SITE INSPECTIONS

The Qualified Persons (QPs) preparing this technical report are specialists in the fields of geology, exploration, mineral resource estimation and classification, metallurgical testing, mineral processing, and processing design.

None of the QPs or associates employed in the preparation of this technical report is an insider, associate, affiliate or has any beneficial interest in Heliostar. The QPs are considered to be independent of Heliostar as independence is described in Section 1.5 of NI 43-101. The results of this technical report are not dependent upon any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings between Heliostar and the QPs.

The following individuals, by virtue of their education, experience and professional association, are considered QPs as defined in the NI 43-101, and are members in good standing of appropriate professional institutions. The QPs are responsible for specific sections as follows in Table 2-1.

Table 2-1: Qualified Person Responsibilities

Qualified Person	Company	Qualification	Site Visit Date	Report Sections of Responsibility
Lewis Teal	Teal CPG	C.P.G.	10 Jan 2023	Sections 1.1, 1.2, 1.3., 1.4, 1.6, 1.7, 1.8, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.1, 12.2, 14, 23, 24, 25.1, 25.2, 25.3, 26.1 and 27
Rita Teal	Teal CPG	C.P.G.	n/a	Section 14
Andrew Kelly	BCR	P.Eng.	n/a	Sections 1.5, 12.3, 13, 25.4, 26.2

2.4 UNITS OF MEASURE, CURRENCY, AND ROUNDING

This technical report was conducted using mainly metric units following the International System of Units (SI) for unit terms and prefixes where possible. Unless otherwise noted, all weights are reported on a dry basis. Gold and silver grades are expressed in grams per metric tonne (g/t).

2.5 UNITS, CURRENCY AND ROUNDING

Unless otherwise specified or noted, the units used in this technical report are metric. Every effort has been made to clearly display the appropriate units being used throughout this technical report. Currency is in United States dollars (US$ or $). Table 2-2 summarizes the units of measure used in this technical report. Table 2-3 is a glossary of terms used in this technical report.

Table 2-2: Units of Measure

Prefixes	M	mega	million
	k	kilo	thousand
	c	centi	one hundredth
	m	milli	one thousandth
	μ	micro	one millionth
Weight	g	gram	
	kg	kilogram	1,000 grams
	t	tonne, metric, dry basis	1,000 kilograms
	st	short tonne, dry basis	2,000 pounds
	kt	kilotonne	1,000 tonnes, metric
	g/t	grams/tonne (metric)	
	oz	troy ounce	31.103477 grams
	koz	kilo ounce	1,000 troy ounces
	Moz	Million ounce	
	lb	US pound	
	klbs	kilo pounds	1,000 US pounds
	Mlb	million pound	1,000,000 US pounds
Length	m	meter	
	km	kilometer	1,000 meters
Volume	li	liter	1,000 ml or cm^3
	m^3	cubic meter	1,000 liters
Temperature	^oC	degrees Celsius	
Pressure	Pa	pascal	
	kPa	kilopascal	
	MPa	megapascal	
	psi	pounds per square inch	
Power & Energy	W	watts	
	kW	kilowatt	1,000 watts
	MW	megawatt	1,000,000 watts
	kWh	kilowatt-hour	

Table 2-3: Glossary of Terms

Term	Description
%	Percent
<	Less than
>	More than
±	More or less
#N	UTM grid measurement in meters north of the equator
#E	UTM grid measurement in meters east of the central Meridian
Ag, As, Au, Bi, Co, Cu, Fe, Hg, K, Mo, Pb, Sb, Te, U, and Zn	Chemical symbols from the periodic group of elements; silver (Ag), arsenic (As), gold (Au), bismuth (Bi), cobalt (Co), copper (Cu), iron (Fe), mercury (Hg), potassium (K), molybdenum (Mo), lead (Pb), antimony (Sb), tellurium (Te), uranium (U) and zinc (Zn).
Alteration	Physical and chemical changes to the original composition of rocks due to the introduction of hydrothermal fluids, of ore forming solutions, to changes in the confining temperature and pressures or to any combination of these. The original rock composition is considered "altered" by these changes, and the product of change is considered an "alteration". (From Hacettepe University online dictionary, after AGI)
Ana Paula Project	The area inside the boundaries of all of the Minera Aurea mineral rights concessions in Guerrero, accruing 56,334.1 Ha in total. Referred to also as "Ana Paula" and the "Project".
Anomalous (anomaly)	a. A departure from the expected or normal. b. The difference between an observed value and the corresponding computed value (background value). c. A geological feature, esp. in the subsurface, distinguished by geological, geophysical, or geochemical means, which is different from the general surroundings and is often of potential economic value; e.g., a magnetic anomaly. (From Hacettepe University online dictionary, after AGI)
Minera Aurea	Minera Aurea S.A. de C.V., Heliostar's wholly owned Mexican operating subsidiary
BCR	Blue Coast Research
Breccia	Means fragmental rocks whose components are angular and, therefore, as distinguished from conglomerates as not water worn. May be sedimentary or formed by crushing or grinding along faults or by hydrothermal explosions.
CAD$	Canadian dollars
calc - silicate alteration	An alteration consisting mainly of calc - silicate minerals
CRM, SGM	Consejo de Recursos Minerales (also Coremi). The former Mexican Geological Survey now renamed the Servicio Geológico Mexicano or "SGM"
Consp	Consumption
E14A87, E14C17	Mapping index system for Mexico
epithermal	Said of a hydrothermal mineral deposit formed within about 1 km of the Earth's surface and in the temperature range of 50 to 200 degrees C, occurring mainly as veins. Also, said of that depositional environment.
FeOx	Iron oxide
G&A	General and Administrative [Operating Costs]
GGB	The Guerrero Gold Belt. A linear array of gold iron skarn and gold skarn developed at the contacts between platform carbonate rocks and early Tertiary intrusions.
g/t	Grams per Tonne. Where a gramme (also gram) is a unit of measure equal to 1/1000th of a kilogram. A Tonne is a metric Tonne having a unit weight of 1,000 kilograms.
GPS	An electronic device that records the data transmitted by the geographic positioning satellite system.

Term	Description
High Grade Panel	A discrete structurally controlled body of irregular dimensions including a structurally controlled core breccia that trends east-west and that is surrounded by a mineralized alteration of sediment, intrusions and other breccia, that is delineated in drill core and tends to host a higher-grade mineralization
Higher grade gold/ higher grade mineralization	Averages greater than or equal to 2.0 grams per tonne gold ("High grade"), unless specifically specified
l/m	liters per minute
Ltd, Inc	Limited, Incorporated
Monomictic Breccia	An intrusion hosted breccia body of irregular dimensions delineated in drill core and that tends to host a lower grade gold mineralization with a composite average grade of 0.92 grams per tonne gold.
lower grade gold	Averages less than or equal to 1.0 grams per tonne gold ("Low grade"), unless specifically specified
M, Ma, Mt, Moz	million, million years, million tonnes, million ounce
M3	M3 Engineering & Technology Corporation
Mex$	Mexican Peso
MIA	Manifestación de Impacto Ambiental
Mineralization (mineralizing)	The presence of minerals of possible economic value – and the process by which concentration of economic minerals occurs.
N, S, E, W, NW, NE, etc.	North, south, east, west, northwest, northeast etc.
No.	Number
NQ, HQ, PQ Core	Specifies the diameter of a cylinder of drill core, HQ has a 54mm diameter. NQ has a 45 mm diameter and PQ has an 85.0 mm diameter.
NAG	Non - Acid Generating
NI 43 - 101	National Instrument 43 - 101 Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators
NSR	Net Smelter Return
nT	Nano Tesla. The international unit for measuring magnetic flux density.
PFS	Preliminary Feasibility Study
ppm	Parts per million
ProDeMin	Prospección y Desarrollo Minero del Norte S.A. de C.V.
QA/QC	A quality assurance and quality control program
QP	Qualified Person
S.A de C.V	Sociedad Anónima de Capital Variable
SEDAR	System for Electronic Document Analysis and Retrieval
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales
showing	A location where alteration and/or mineralization occurs at surface.
skarn	A metamorphic rock rich in calcium bearing silicate minerals (calc - silicates), commonly formed at or near intrusive rock contacts by the introduction of silica rich hydrothermal fluids into a carbonate rich country host rock such as limestone and dolomite. Also, part of an alteration process for the introduction and formation of mineralized material forming mineralization and a common host for mineralization/ore.
target	A focus or loci for exploration
threshold	In geochemical prospecting, the limiting anomalous value below which variations represent only normal background effects and above which they have significance in terms of possible mineral deposits. (From Hacettepe University online dictionary, after Hawkes)
US$	United States dollars

Term	Description
UTM	Universal Transverse Mercator
WGS84	An ellipsoid model of the earth

3 RELIANCE ON OTHER EXPERTS

The QP's have followed standard professional procedures in preparing the content of this technical report. Data used in this technical report has been verified where possible, and the technical report is based upon information believed to be valid and appropriate at the time of completion considering the current status of the Ana Paula Project and the purpose for which the technical report is prepared.

The technical data are considered appropriate for producing a mineral resource estimate statement for the Project. The authors, by virtue of their technical review of the Ana Paula Project, affirm that the work program and recommendations presented in the technical report are in accordance with the CIM Definition Standards referred to in the NI 43-101 regulations.

The authors of this technical report have relied on ownership information provided by Heliostar. Heliostar has obtained a title opinion from ALN Abogados Consultores, July 3, 2023, which certifies the legal status of the mineral concessions described in Sections 4.2 and 4.3 of this technical report. None of the authors of this technical report has researched or verified property title or mineral and land access rights for the Ana Paula property.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The Ana Paula Project is located in the north central part of the State of Guerrero in southern Mexico, roughly halfway between the major cities of Mexico City and Acapulco. The Ana Paula Project centre is at 407,675.8 m East and 1,995,421.1 m North (WGS84 Zone 14N, EPSG 32614) or by 99° 52' 19.8" west longitude and 18° 2' 42.9" north latitude (Figure 4-1). Figure 4-2 indicates the location of the Ana Paula Project relative to other mines, deposits and mineral tenure in the Guerrero Gold Belt (GGB). Figure 4-3 illustrates Heliostar's GGB mineral tenure for the Ana Paula Project.

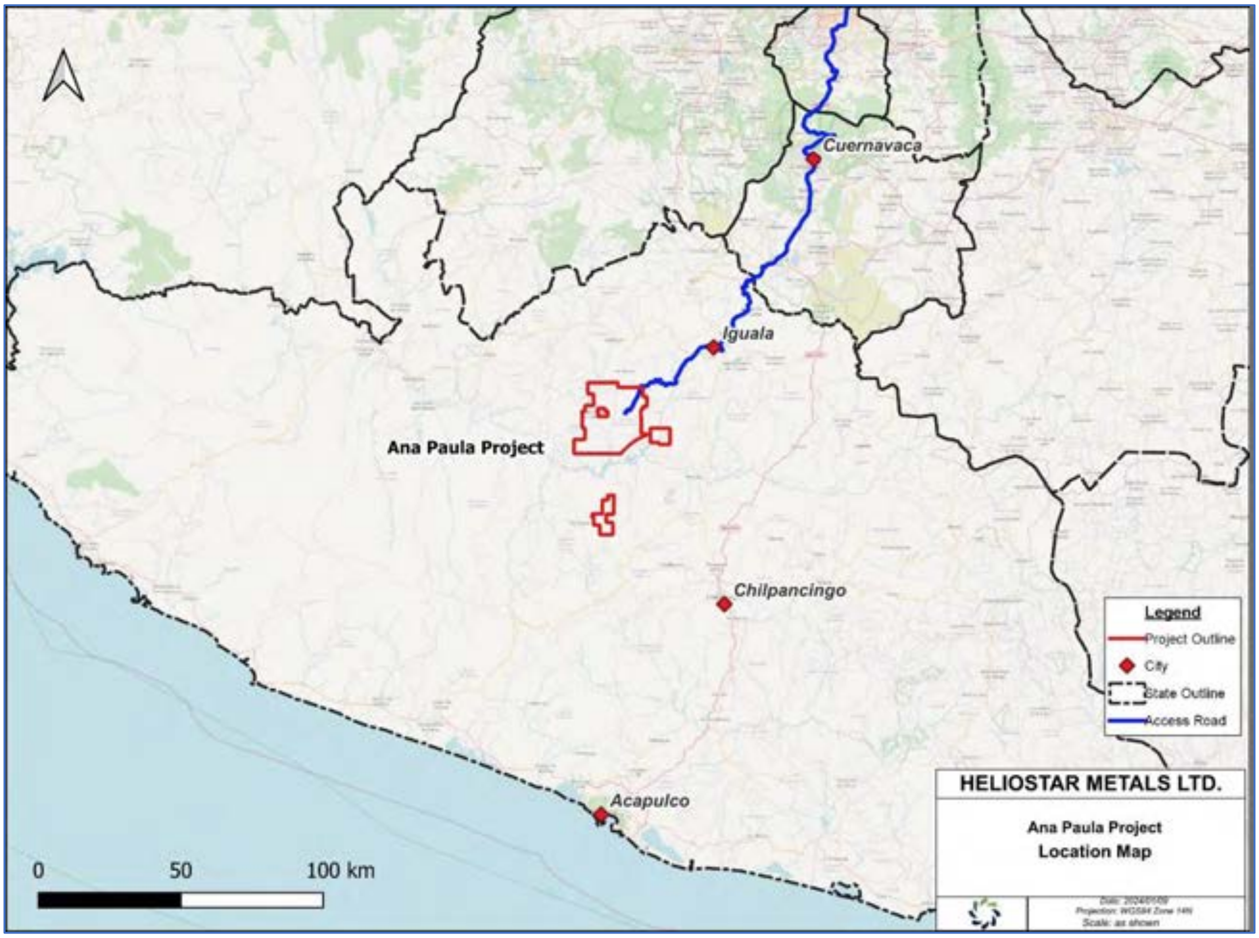


Figure 4-1: Property and Access Map

4.2 MINERAL TITLES

The Ana Paula Project comprises fifteen mining concessions in three blocks held by Minera Aurea S.A. de C.V. comprising 56,334.1 ha. The Ana Paula Deposit is hosted in a contiguous block of twelve claims covering 46,749.7 ha. A second block of claims south of the Ana Paula Deposit is comprised of two claims (Aurea Sur) and totals 5,819 ha that encompass the Peña Prieta showing and east of the Ana Paula Deposit is another claim, the Cosmo Fracción 2 Reducción (3765.4 ha). A map of the mining concessions is shown in Figure 4-2.

The Mexican Constitution maintains a direct non-transferable ownership of the nation's mineral wealth (considered a national resource) that is governed under established Mining Law. The use and exploitation of such national resources is provided for through clear title to a mineral rights concession (lot or concession) that is granted by the Federal Executive Branch for a fee and under prescribed conditions. Mining concessions are only granted to Mexican companies and nationals or ejidos, (agrarian communities, communes, and indigenous communities). Foreign companies can hold mining concessions through their 100% owned Mexican-domiciled companies. A number of Government agencies have responsibility for enforcing mining laws and their applicable regulations that must be complied with; non-compliance may result in cancellation of a concession.

Mining concessions confer rights with respect to all mineral substances as listed in their Registry document (the title) provided the concessions are kept in good standing. The main obligations to maintain title to a concession in good standing are performance of work expenditures, payment of mining fees and compliance with environmental laws. Mineral rights fees are paid bi-annually in January and July and annual proof of exploration work expenditures is done via a work report filed by the end of May of the following year (assessment report or "comprobación de obras"). The amount of the mineral rights fees and the amount of expenditures required varies each year. It is calculated based on a per hectare and age of claim rate that typically increases annually in line with annual inflation rates. The new rates are published each year in advance in the Official Gazette of the Mexican Federation (Diario Oficial).

According to applicable Mexican Mining Law, the term of a mineral rights concession is 50 years, with the term commencing on the date recorded by the Public Registry of Mining, which is the date the title is granted. A second 50-year term can be granted if the applicant has abided by all appropriate regulations and makes the application within five years prior to the expiration date of the original title. Title to the Ana Paula Project concessions is owned by Minera Aurea S.A. de C.V., the 100 percent owned Mexican subsidiary of Heliostar, with underlying royalties as described in the Section 4.2.1 of this technical report.

Mexican Mining Law was subject to an amendment enacted on May 9, 2023, this reform included several changes to current mining regulations, including those related to the effective term of a mining concession which may be extended only once for a period of 30 years after its expiration date. The enactment of such reform was challenged by most mining companies in Mexico in order to avoid retroactive application of the amended provisions, including the Mexican subsidiary of Heliostar, final ruling on such challenge is still pending resolution. Application of the reform is still subject to issuance and enactment of secondary regulations as provided in the mining reform decree. See Table 4-1 for the expiration date of all mineral concessions.

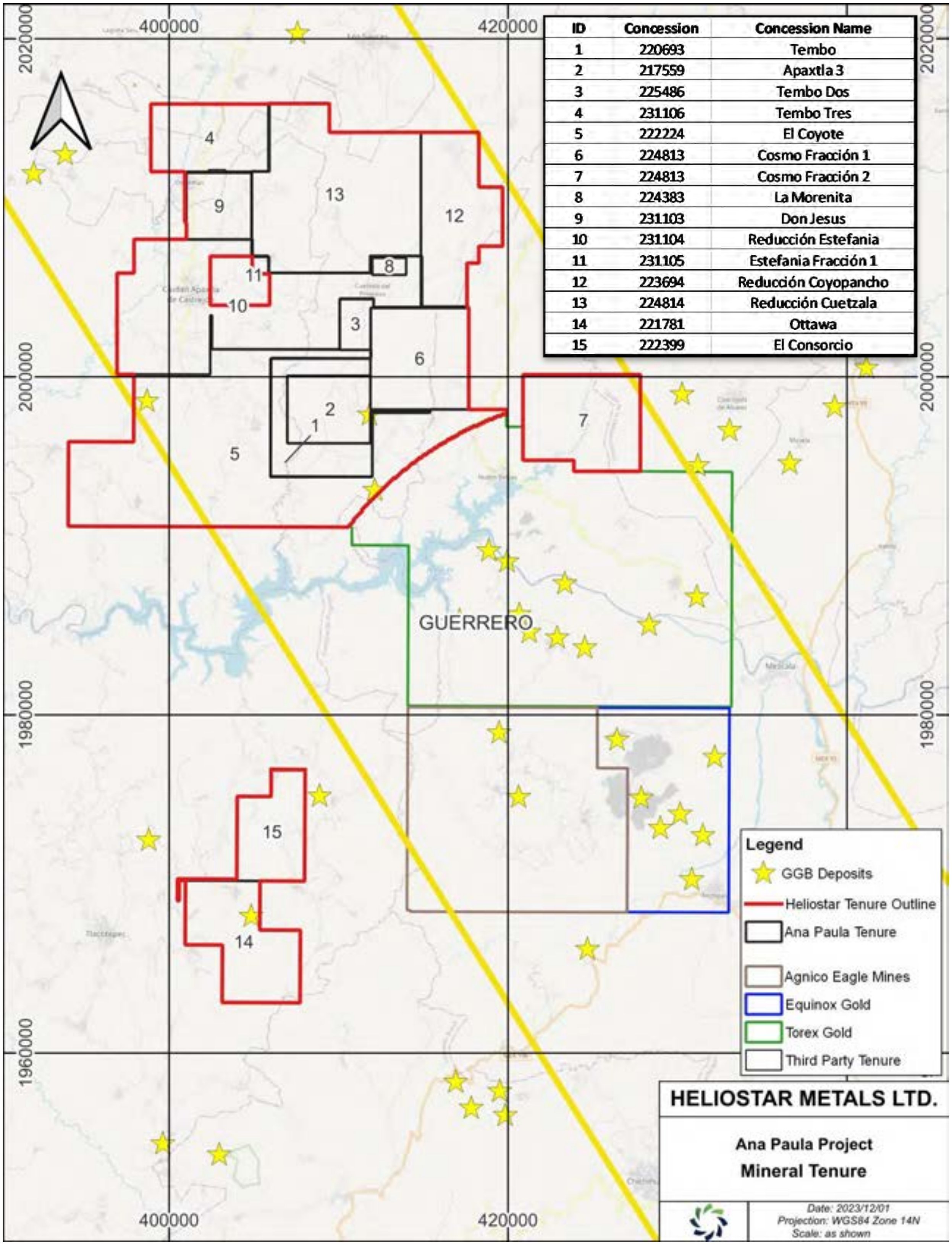


Figure 4-2: Mineral Tenure Map

4.2.1 Nature and Extent of Issuer's Interest

Minera Aurea S.A. de C.V. is 100% owner of the 15 mining concessions. Table 4-1 lists all mining concessions and includes their respective areas, title numbers, expiration dates and ownership details.

Table 4-1: Minera Aurea Mining Concessions

Claim	Hectares	Title	Expiration	Owner
Ana Paula Project				
Tembo	2,243	220693	29/09/2053	Minera Aurea S.A. de C. V.
Apaxtla 3	1,995	217559	30/07/2052	Minera Aurea S.A. de C. V.
Tembo Dos	563	225486	12/09/2055	Minera Aurea S.A. de C. V.
Tembo Tres	2,822	231106	16/01/2058	Minera Aurea S.A. de C. V.
El Coyote	13,535.8	222224	14/06/2054	Minera Aurea S.A. de C. V.
Cosmos Fracción 1	3,480	244793	13/01/2055	Minera Aurea S.A. de C. V.
La Morenita	200	224383	02/05/2055	Minera Aurea S.A. de C. V.
Don Jesús	1,518.6	231103	16/01/2058	Minera Aurea S.A. de C. V.
Reducción Estefania	8,177	244792	15/01/2058	Minera Aurea S.A. de C. V.
Estefania Fracción 1	100	231105	16/01/2058	Minera Aurea S.A. de C. V.
Reducción Coyopancho	3,833.8	244795	02/02/2055	Minera Aurea S.A. de C. V.
Reducción Cuétzala	8,282	244796	13/06/2055	Minera Aurea S.A. de C. V.
Sub-total	46,749.7			
Eastern Claim				
Cosmos Fracción 2	3,765.4	244794	13/01/2055	Minera Aurea S.A. de C. V.
Aurea Sur				
Ottawa	3,452	221781	25/03/2054	Minera Aurea S.A. de C. V.
El Consorcio	2,367	222399	05/07/2054	Minera Aurea S.A. de C. V.
Sub-total	5,819			
Total	56,334			

4.3 SURFACE TENURE

As of January 11, 2024, Minera Aurea S.A. de C.V. controls surface access to 1,869.28 hectares overlying the Ana Paula Project area. A total of 1,373.5 hectares are 100% owned by Minera Aurea, an additional 488.08 hectares are under contract in 30-year access lease agreements and finally, 7.68 hectares are under contract in a 10-year lease. Figure 4-3 is a map of the land positions that Heliostar holds.

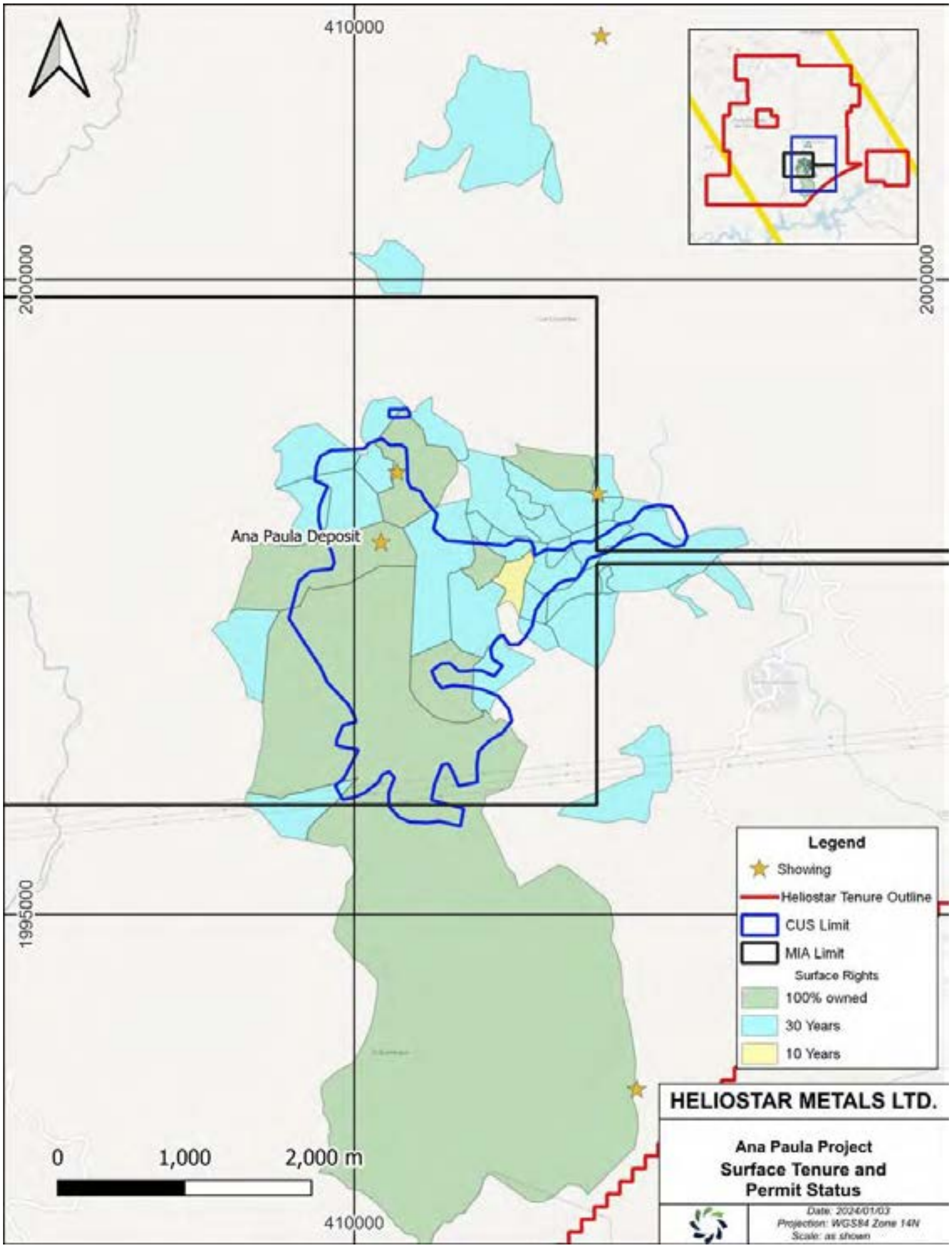


Figure 4-3: Surface Tenure Map

4.4 ROYALTIES, AGREEMENTS AND ENCUMBRANCES

Minera Aurea S.A. de C.V. exercised an agreement, dated May 11, 2010, (held by Newstrike Capital Inc., then Alio Gold) for a 100% interest in the concessions Apaxtla 3, Tembo, Tembo Dos, and Tembo Tres from Desarrollos Mineros

San Luis, S.A. de C.V. and Minera San Luis S.A. de C.V., wholly owned Mexican subsidiaries of Goldcorp Inc.. The final documentation was submitted for registration in Mexico City on June 24, 2010.

Minera Aurea S.A. de C.V. has the obligations set forth below for the maintenance of the four concessions that overlie the Ana Paula Deposit Area.

On October 18, 2017, Goldcorp and Alio executed an agreement for Alio to buy one-third of the 3% NSR royalty on the Apaxtla 3, Tembo, Tembo Dos, and Tembo Tres concessions, arising from the completion of the pre-feasibility study on May 16, 2017. The remaining 2% NSR royalty held by Goldcorp on these four concessions had been acquired by Maverix Metals Inc., as announced in a news release on September 21, 2020. On January 19, 2023, Triple Flag Precious Metals Corp. (Triple Flag) completed the acquisition of the Maverix Metals Inc. 2% NSR royalty.

Minera Aurea S.A. de C.V. has a 2.5% NSR payable to Industrias Miral S.A. de C.V. and others for the remaining mining concessions in the Ana Paula project area. These concessions with the Industrias Miral NSR do not include the Ana Paula Deposit area.

On December 5, 2022, Heliostar entered into a binding agreement with Argonaut for the purchase of all of the issued and outstanding shares of Aurea Mining, a wholly owned subsidiary of Argonaut, which through Aurea Mining's wholly owned subsidiary Minera Aurea, holds a 100% indirect interest in and to the Ana Paula Gold Project (Argonaut press release, December 5, 2022). Purchase consideration includes the following:

1. US$10 million ($13,626,000) payment on closing;
2. On the earlier of (a) receiving an extension to the existing Ana Paula open-pit mining permit and (b) the granting of a new underground mining permit, the issuance to Argonaut of such number of common shares in the capital of Heliostar (each, a "Heliostar Share") as having an aggregate value of US$5.0 million divided by the Volume-Weighted Average Price ("VWAP") of the Heliostar Shares for the ten trading days immediately prior to the date of award of permits;
3. On the earlier of (a) the date of completion of a feasibility study for the Ana Paula project and (b) July 1, 2024, a cash payment to Argonaut of US$2.0 million;
4. On the date that Heliostar announces a construction decision for the Ana Paula project it will pay Argonaut a cash payment of US$3.0 million and US$2.0 million in cash or Heliostar Shares at a price equal to the VWAP of the Heliostar Shares for the ten trading days immediately prior to the announcement of the construction decision; and
5. If Heliostar does not announce mine construction at the Ana Paula Project by July 1, 2025, they must make annual payments of US$300,000 to Argonaut. Alternatively, they can issue Heliostar Shares equal to US$300,000 divided by VWAP of Heliostar Shares. However, if construction is delayed due to permit issues, no payments are required. Any payments made will be credited towards the US$5.0 million payment required on the commencement of commercial production.

On the date that Heliostar commences commercial production at the Ana Paula project, it will pay Argonaut an additional US$5.0 million in cash and US$3.0 million in cash or Heliostar Shares at a price equal to the VWAP of the Heliostar Shares for the ten trading days immediately prior to the announcement of commercial production. Consideration payable is comprised of the US$2.0 million payable due on the earlier of completion of a feasibility study and January 1, 2025.

Tax Reform changes in Mexico became effective January 1, 2014 and affect operating mining companies in Mexico. The changes include: the corporate income tax remaining at 30%; a new mining royalty fee of 7.5% on income before tax, depreciation and interest; an extraordinary governmental fee on precious metals, including gold and silver, of 0.5% of gross revenues; and changes affecting the timing of various expense deductions for tax purposes. This implies an effective combined tax and royalty rate of 35.25% depending on how deductions will be applied. The new rates put Mexico in line with the primary mineral producing nations of the world.

Title to mineral properties involves certain inherent risks due to the difficulties of determining the validity of certain claims as well as the potential for problems arising from the frequently ambiguous conveyance history characteristic of many mineral properties. Minera Aurea S.A. de C.V. has investigated the title to all of its mineral properties and maintains them in accordance with Mexican mining law, which provides for the rights to carry out the works and development required for mining and related activities.

Mexican Mining Law requires mineral rights payments to be paid each January and July. The required amounts are subject to modification as annual fee schedules are released for publication by the Mines Office. An annual minimum exploration work obligation is also required and is filed each May for the preceding year.

Minera Aurea has assumed all environmental liabilities related to the concessions.

Mining concession licenses do not automatically grant surface access rights, which are treated separately under Mexican law. Permission for surface access must be negotiated with the relevant communities and individuals who hold surface titles to the areas affected by the mining concessions. These negotiations typically provide for the purchase or lease of the surface rights. Surface rights in Mexico are held as individually titled parcels or communally owned lands (ejidos) that overlie the mineral rights concessions that are granted separately by the Federal Government. These are separate legal estates where individually titled parcels are governed under Mexican property laws. Ejido surface rights are governed under Mexico's Agrarian Laws while Mineral Rights are administered under established Mining Laws that have precedence over Agrarian laws.

Heliostar recognizes surface access as a potential risk to maintaining unencumbered entry to their mineral exploration properties and cannot guarantee to have continual access. As part of the Company's policy of good corporate citizenship in the communities in which it operates and with the objective of Project sustainability, the Company has reduced potential risk to exploration and development through 10-year and 30-year lease agreements with affected surface owners, in addition to land it owns outright. No communally-owned land will be affected by the Project.

4.5 ENVIRONMENTAL LIABILITIES AND PERMITTING

4.5.1 Environmental Liabilities

All permissions and applications required for the exploration process are being performed in accordance with the applicable Mexican Official Laws and Standards (Normas Oficiales Mexicanas). According to Mexican Federal Law for the Protection of the Environment, existing environmental conditions caused by past operations are not liabilities for the Ana Paula Project or its present owners. Minera Aurea's Ana Paula Project does not fall within any protected area or special jurisdiction and there are no known existing environmental liabilities located on the Project other than those associated with exploration activities.

4.5.2 Required Permits and Status

Minera Aurea has an approved MIA from the Secretariat of Environment and Natural Resources (SEMARNAT), for the operation of the mine, plant and power line. The MIA was approved in April 2017. Minera Aurea also had a Cambio de Uso de Suelos (Change in use of soils or "CUS") for surface disturbance approved in 2017. An application to extend the CUS for an additional 10 years has been submitted, but is still in process with SEMARNAT and the Federal Attorney for Environmental Protection (Procuraduria Federal de Proteccion al Ambiente or PROFEPA).

The major permits required for the Ana Paula Project are shown in Table 4-2.

Table 4-2: Major Permits and Status

Permit	Relevant to	Status
Permit for Change of Land Use in Forested Area issued by the State Delegations of Secretariat of SEMARNAT	Development	Received
Environmental Impact Assessment (Manifestación de Impacto Ambiental)	Development	Received
Risk Analysis (Estudio de Riesgo)	Development	Received
PPA (Accident Prevention Program)	Development	Completed
Explosives Permit (Secretaría de la Defensa Nacional)	Development	Completed
Water Use Permit (Comisión Nacional del Agua)	Development	Pending a development decision
Archaeological land 'liberation' based on authorization by the Instituto Nacional de Antropología e Historia (INAH)	Development	Received

4.6 OTHER SIGNIFICANT FACTORS AND RISKS

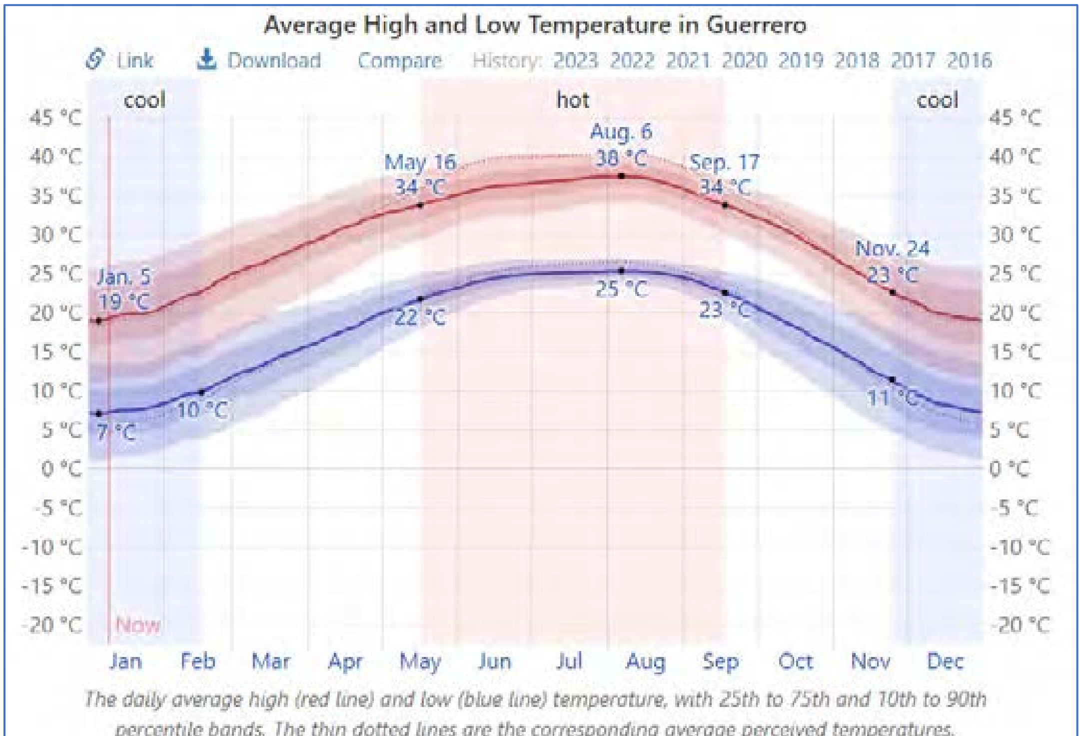
The Ana Paula Project is located in the Guerrero Gold Belt, which includes operating mines including Torex's Morelos Property and Equinox Gold's Los Filos mine both located within 40 km of the Project site. The Project site is easily and safely accessed. The Company has good relations with the local communities and the social license is considered more than adequate for the pre-construction activities. During the feasibility stage, the Company will study alternative access routes, and develop and implement a construction ready community and social relations (CSR) program that includes a trained CSR team.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 TOPOGRAPHY, CLIMATE, PHYSIOGRAPHY

The Ana Paula Project is located in the Sierra Madre del Sur mountain range of southern Mexico where topography can range from moderate to rugged with elevations varying from 900 to over 1,460 meters above sea level (masl). The Company's exploration drilling activities are conducted primarily between 900 to 1,200 masl. The Project is bisected by the Balsas River, which divides the Sierra Madre del Sur Mountains into north and south ranges.

The climate in the region is classified as warm and humid, with an average temperature of 23° Celsius (°C), ranging from 7° to 38° C, and average precipitation of 786.2 mm per year over the last twelve years. Rainfall occurs from June through October during a monsoonal tropical wet season that includes the influence of hurricanes from both the Atlantic and Pacific oceans. Winters are dry with occasional light rains in February. Figure 5-1 below shows the average High and Low temperatures in Guerrero.



Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	20 °C	23 °C	27 °C	31 °C	34 °C	36 °C	37 °C	37 °C	34 °C	30 °C	24 °C	20 °C
Temp.	13 °C	15 °C	20 °C	24 °C	27 °C	30 °C	31 °C	31 °C	28 °C	24 °C	18 °C	13 °C
Low	7 °C	10 °C	14 °C	18 °C	22 °C	24 °C	25 °C	25 °C	23 °C	18 °C	13 °C	8 °C

Figure 5-1: Guerrero Annual Climate Conditions

Knight Piésold (KP) completed a preliminary site-specific seismic hazard assessment for the Project. According to the Mexican norm, NOM-141 SEMARNAT-2003, the Ana Paula site is classified under seismic region D where seismic events are common, including major historical earthquakes (SEMARNAT 2003, Norma Oficial Mexicana, NOM-141). A Probabilistic Seismic Hazard Analysis (PSHA) was conducted for the site by GeoPentech, which considered earthquakes on active seismic sources within 200 km of the site, including subduction interface, deep intraslab, and shallow crustal sources. The results of the PSHA were used to calculate the mean horizontal uniform hazard spectra for the site at various average return periods. The PSHA summarized that it is reasonable to consider uniform hazard spectra for return periods of 2,475 year or longer, or the 84th percentile deep intraslab event for the seismic design basis.

5.2 VEGETATION

Thorny plants and cacti dominate the vegetation at the Project at low elevations, giving way uphill to a patchy oak forest above 1400 masl. Vegetation is barren and desert-like during the dry winter months, with tropical growth during the wet summer season. Vegetation is mixed with no dominant species. The Project area is classified in the neotropical realm. Surface land use in the immediate area of exploration interest within the Ana Paula Project is devoted to cattle grazing and limited agriculture but is primarily non-arable and is uninhabited.

5.3 ACCESSIBILITY

The town of Iguala, with a population of about 135,000, is a three-hour drive from Mexico City and about four hours from the port city of Acapulco (Figure 4-1). The Ana Paula Project concessions are accessible from Iguala via paved highways and good quality all season unpaved roads. Driving time from Iguala is about 1.25 hours to the Ana Paula Project headquarters located at Cuétzala del Progreso. The Company maintains offices, residences, and storage facilities in Cuétzala del Progreso. Access to the Project site, approximately 9 km south of Cuétzala del Progreso, is via a series of secondary unpaved roads, built and maintained by the Company and many are passable by two-wheel drive vehicles year-round. Four-wheel drive vehicles are required on drill access roads during rainy periods. All exploration activities are carried out year-round.

5.4 LOCAL RESOURCES AND INFRASTRUCTURE

The area offers an established infrastructure with a good road network, and an available unskilled and skilled work force. All major supplies and services are available from the cities of Iguala, Cuernavaca (2.5 hours by road), and Chilpancingo, the State capital which is a three-hour drive from the Project (Figure 4-1).

Basic supplies are available from the towns of Nuevo Balsas, Cuétzala del Progreso and Iguala. The nearest available international airport is in Cuernavaca with a landing strip suitable for large aircraft (a 45 by 2,772 m airstrip), with major international airports located at Acapulco and Mexico City. The Mexico City Airport is a four to five hour drive depending on traffic.

A small craft gravel airstrip is located in nearby Apetlanca, 20 minutes from Cuétzala del Progreso. Iguala has a paved airstrip suitable for small aircraft (1,685 m in length). Heliostar employs several semi-technical and non-technical residents of Cuétzala del Progreso, where the Project headquarters and field offices are located, and other local towns. Skilled labor and heavy equipment are available in Iguala and Nuevos Balsas. Local geologists are available from the nearby town of Taxco el Viejo, where the Universidad Autónoma de Guerrero maintains a satellite university within 20 minutes of Iguala devoted to the earth sciences. The economy has been dominated by small scale agriculture and agriculture related services. The local economy is improving as mining projects including Rey de Plata, Campo Morado-G9, Morelos, Los Filos, and Torex became the principal regional employers. The availability of skilled miners has also improved.

5.5 INFRASTRUCTURE AVAILABILITY AND SOURCES

5.5.1 Power

The nearby Balsas River is a source of hydroelectric power and 115 kV high tension lines transect the Ana Paula Project site. The 115 kV power line is approximately 2.5 km from the plant site.

The Company has installed a power line to its facilities on site at the mine location and is connected to the National Grid with permission from the Centro Nacional de Control de Energía (CENACE), the Mexican power Authority.

5.5.2 Water

There is a year round stream about 500 m east of the camp that has water truck access point for drilling operations. Potable water for camp is provided by the municipality of Cuétzala de Progreso.

5.5.3 Mining Personnel

In 2020, Mexico was listed as the eighth largest gold producing country after China, Australia, Russia, United States, Canada, Peru and South Africa. Mine activities in Mexico date back more than 1,000 years. As a result of Mexico's long history of mining activities, skilled mining personnel are available in Mexico.

Minera Aurea currently employs 38 workers from the local communities. There is a locally accepted process for labor hiring opportunities in the Project.

5.5.4 Installations

The Company maintains an office and living quarters for technical personnel in the village of Cuétzala del Progreso. Core storage and handling facilities with 24-hour security are located in a rented area at the edge of the village. Several installations have also been constructed in the vicinity of the deposit, including a gatehouse to restrict access to the area, a 60-room man camp, a powder magazine and mine shop facilities at the site of a 412m long, partially completed decline.

6 HISTORY

The Ana Paula Project is within the Guerrero Gold Belt which has been mined commercially for gold and silver since the early 1920's. Today, the Belt includes producing gold mines, several deposits in various stages of development and exploration, and numerous early-stage exploration prospects. Since modern exploration began 20 years ago in response to changes in Mexican foreign ownership and mining laws, and signing of the North American Free Trade Act (NAFTA), the trend has evolved into one of Mexico's most prolific gold producing belts.

6.1 PRIOR OWNERSHIP AND OWNERSHIP CHANGES

In July 2002, the concession Apaxtla 3 was issued to Nafta S.A. de C.V., a subsidiary of Miranda Mining Corp.

In September 2003, the concession Tembo was issued to Miralpaz S.A. de C.V., a subsidiary of Miranda Mining Corp. Wheaton River Minerals Inc. (Wheaton) purchased 100% of Miranda Mining Corp. in 2003, thereby acquiring a 100% interest in the project's concessions.

Goldcorp's acquisition of Wheaton in 2005 included acquisition and transfer of the concessions to Goldcorp's operating subsidiary Desarrollos Mineros San Luis, S.A. de C.V.

On July 30, 2010, Newstrike Capital Inc., operating through its 100% Canadian owned subsidiary Aurea Mining Inc., through its 100% owned Mexican operating subsidiary Minera Aurea S.A. de C.V. (Minera Aurea), acquired a 100% interest in the concessions from Desarrollos Mineros San Luis, S.A. de C.V. a wholly owned Mexican subsidiary of Goldcorp Inc. Minera Aurea S.A. de C.V. is the current holder of the concessions.

Alio Gold (then Timmins Gold Corp.) acquired Ana Paula through its acquisition of Newstrike Capital Inc. in an arrangement that closed on May 26th, 2015. With the arrangement, Timmins Gold acquired ownership of all of the issued and outstanding common shares of Newstrike Capital Inc., its Canadian subsidiary Aurea Mining Inc. (Aurea Mining), and its Mexican subsidiary Minera Aurea.

The shares of Aurea Mining and Minera Aurea were subsequently acquired by Argonaut Gold Inc. (Argonaut) in a merger with Alio Gold on July 1, 2020. On September 11, 2020, Pinehurst Capital II Inc. (Pinehurst) announced that it has entered into a purchase agreement with Argonaut to acquire the Ana Paula Project. The sale was not completed as Pinehurst did not fulfill its obligations in relation to financing and receipt of certain regulatory and other approvals (Argonaut press release April 1, 2021).

On December 5, 2022, Argonaut entered into a binding agreement with Heliostar for the sale of all of the issued and outstanding shares of Aurea Mining, a wholly owned subsidiary of Argonaut, which through Aurea Mining's wholly owned subsidiary Minera Aurea, holds a 100% indirect interest in and to the Ana Paula Gold Project (Argonaut press release, December 5, 2022). On March 28th, Heliostar announced it closed the transaction with Argonaut Gold and had acquired, indirectly, a 100% interest in the Ana Paula Gold deposit (Heliostar press release, March 28, 2023).

6.2 PREVIOUS EXPLORATION AND DEVELOPMENT RESULTS

6.2.1 SGM (1970-2002)

The Morelos National Mineral Reserve (47,600 ha), which was located to the west and outside of the Project area, was created during the Administration of President Miguel de la Madrid. The Consejo de Recursos Minerales (the "CRM", today known as the "SGM" or Servicio Geológico Mexicano) carried out exploration throughout the Reserve and surrounding areas. The exploration campaign included regional and detailed mapping, airborne and ground geophysics, geochemical sample programs, and drilling. In 1979, SGM built an access road to the artisanal Guadalupana gold mine located on the Ana Paula Project.

6.2.2 Miranda Mining Corp. (2002-2004)

In 1998, Miranda collected 726 regional stream sediment samples west of the Morelos Mineral Reserve, including samples from the Ana Paula Project area. Results from the sampling campaign led to the staking of the claims.

6.2.3 Goldcorp (2005-2010)

Goldcorp conducted the first detailed exploration on the Tembo and Apaxtla 3 concessions, as well as the Tembo Dos and Tembo Tres concessions, between 2005 and 2009. The Goldcorp work represents the first detailed exploration within the Ana Paula Project area.

Work programs included regional and detailed geologic mapping (1:1,000, 1:5,000, and 1:10,000 scale), road building, stream sediment sampling, trench and road cut sampling, age dating of the intrusion, an airborne multispectral and magnetic survey, a ground pole-dipole induced polarization survey, portable infrared mineral analyzer (PIMA) alteration mapping, structural interpretation, petrologic and microprobe studies.

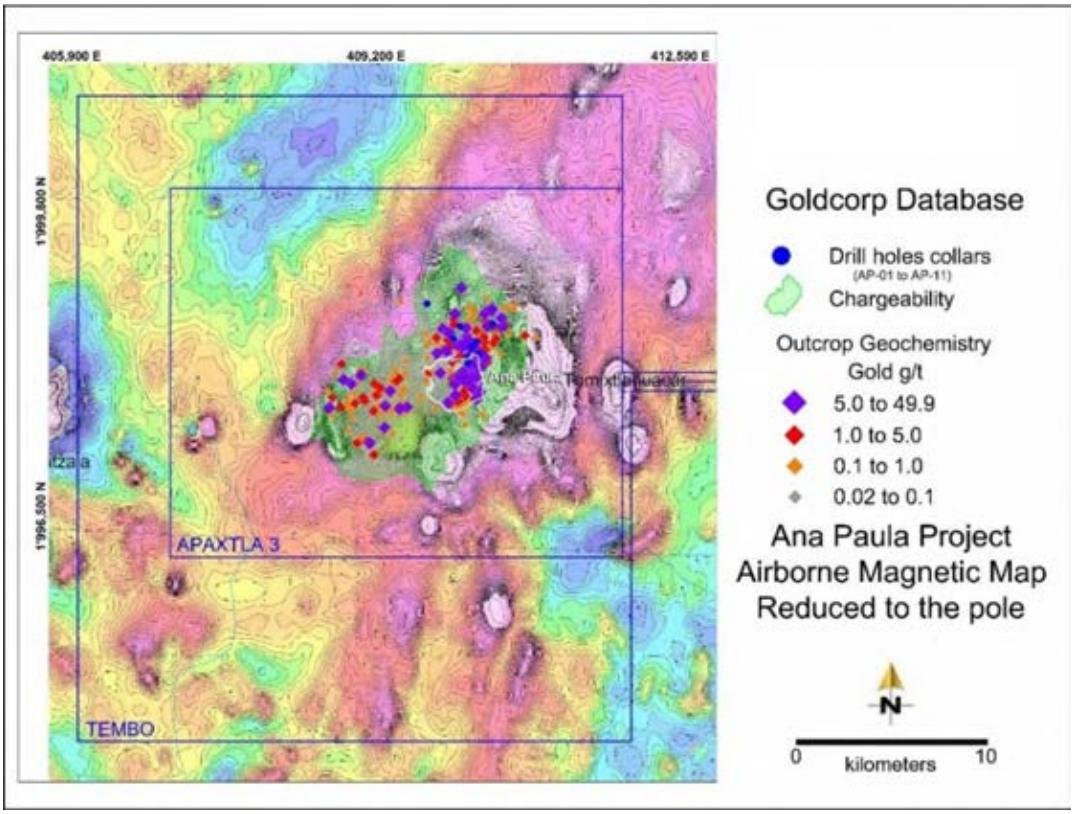
Drilling

Goldcorp drilled 11 holes for 3,687.3 metres in 2005 in the vicinity of the Ana Paula Deposit and an additional 12 holes for 4,210.51 metres were drilled in the southern claim block. An additional 25 holes for 4,070.1 metres were drilled in 2005 and 2007 by Goldcorp at the Rey David and San Luis target areas.

Reconnaissance Exploration and Trenching

Goldcorp conducted trench and road cut sampling during 2005. Goldcorp's work outlined a 1- by 2-km exploration target in the Ana Paula Project area defined by anomalous outcrop gold geochemistry (>0.2 to 49.9 g/t) returned from grid and road-cut samples with coincident underlying geophysical anomalies, as shown in Figure 6-1.

Samples collected from road cuts at San Jerónimo (within Ana Paula) include intervals of up to 70 m of 1.1 g/t Au and 120 m of 2.01 g/t Au (Medina, 2010).

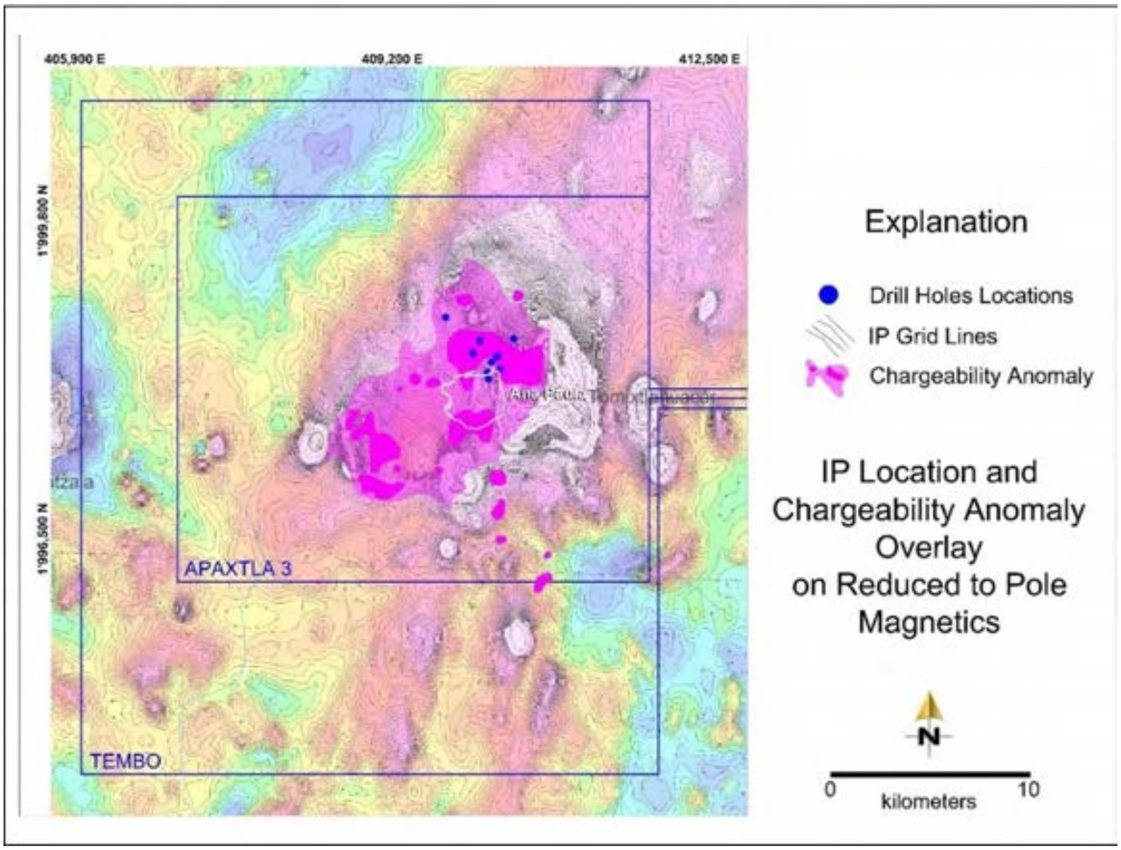


Source: JDS Energy & Mining Inc. (2014) (modified from Welhener et al, 2013)

Figure 6-1: Coincident Geophysical and Geochemical Anomalies as Defined by Goldcorp

Studies and Surveys

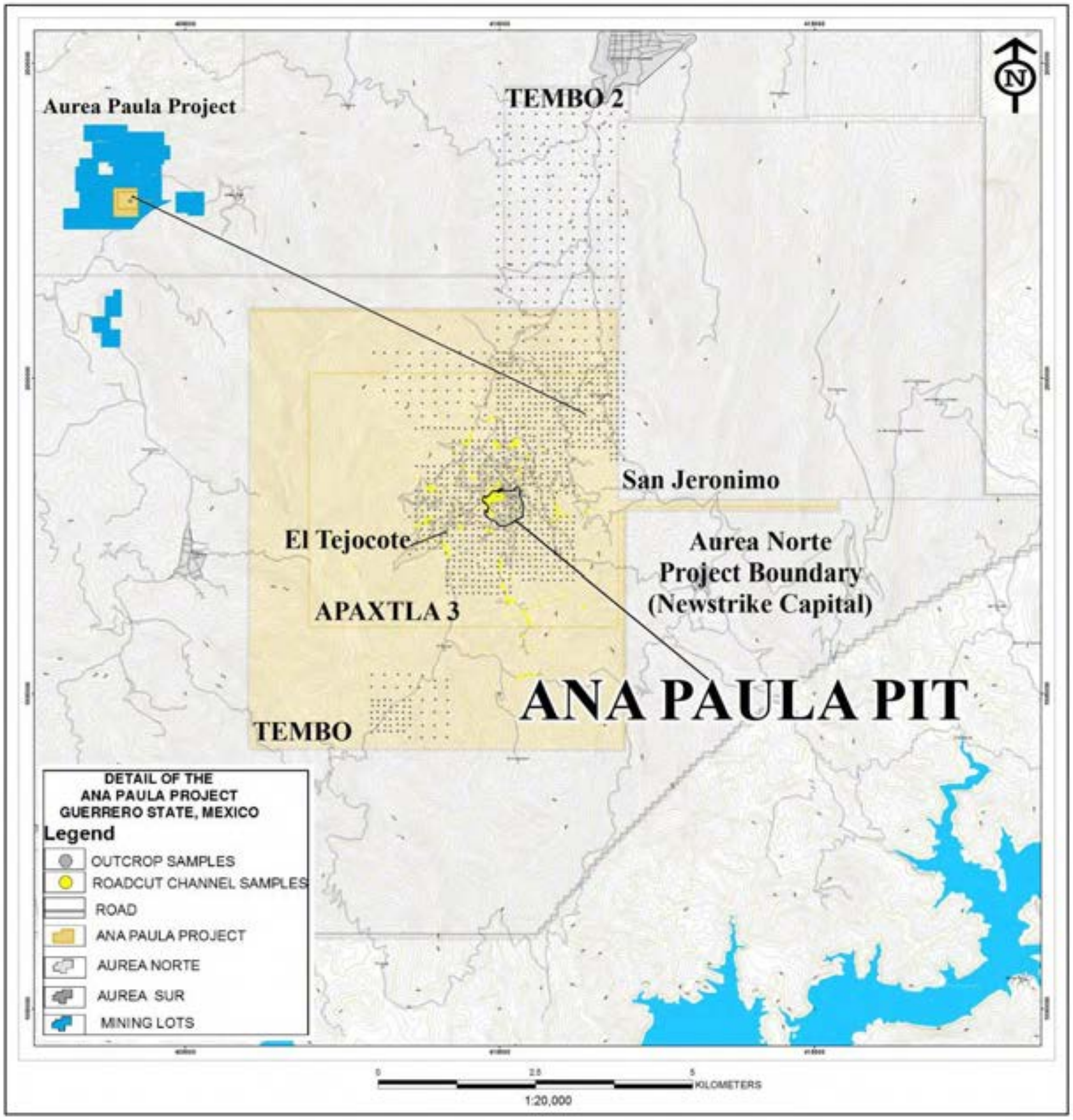
In 2005, 11 rock samples were collected for petrographic study within, just north and west of the Apaxtla 3 concession. The igneous suite was reported to mainly consist of aphanitic rocks with porphyritic textures and was classified as dacite porphyry, granodiorite, and porphyritic basaltic trachyandesite. Porphyritic rocks contain phenocrysts of plagioclase, quartz and biotite, and exhibit potassic alteration. The potassic alteration was described as secondary K-feldspar with replacement of the sample matrix as well as the plagioclase phenocrysts (Petrascience, 2005). McPHAR Geoservices (Phil.), Inc. (based in Manila, Philippines) completed an aeromagnetic and radiometric (K, Th, U) survey (30 m elevation, 100 m lines, 1.5 km in length) covering a 225 km^2 area.



Source: JDS Energy & Mining Inc (2014) (modified from Lunceford 2010)

Figure 6-2: IP Chargeability Anomaly over RTP Magnetic Anomaly

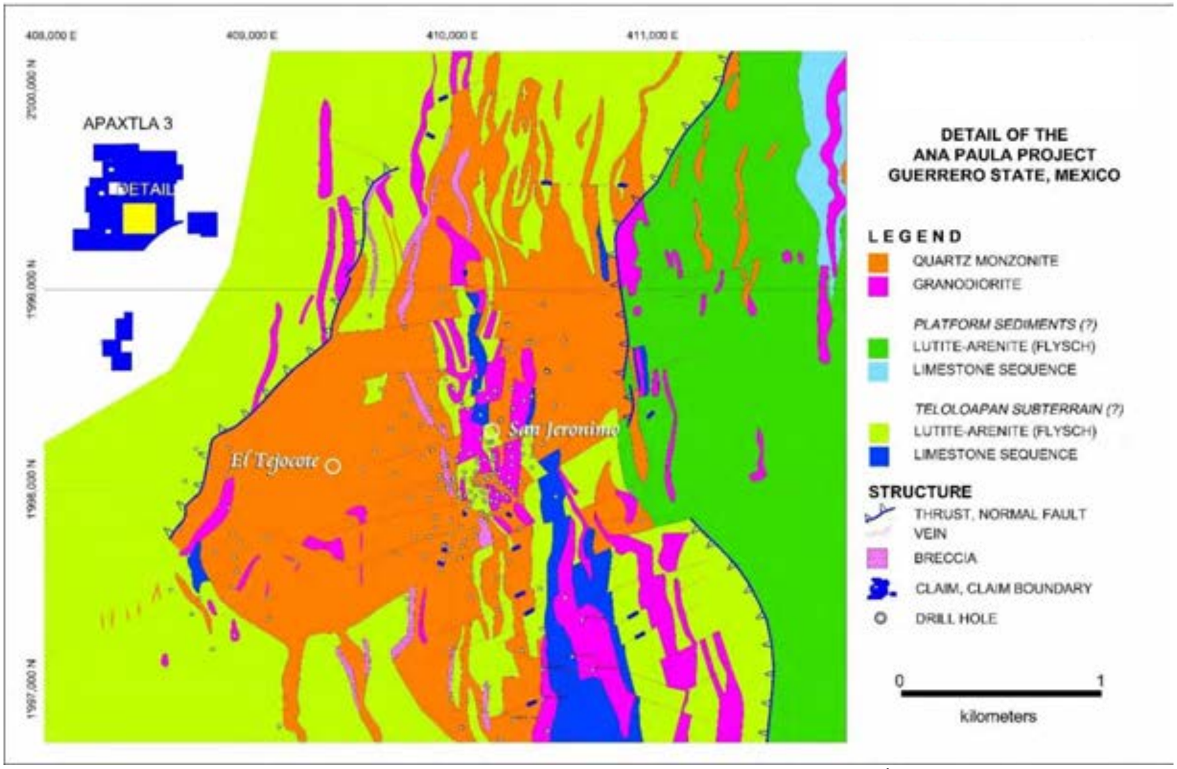
Systematic and expanded litho-geochemical sampling continued in 2006. Additionally, SJ Geophysics Ltd. was contracted to provide an Induced Polarization (3 dimensional) geophysical survey (Figure 6-2). Survey parameters included 3.5 km long lines oriented northwest, with 200 m line-spacings and 100 m dipole spacings. Road construction, road-cut sampling (Figure 6-3), and geologic mapping (1:1000, 1:5000) continued (Figure 6-4) were also carried out. Intrusive samples were submitted for age dating and petrographic and microprobe studies were conducted on a suite of volcanic and intrusive rocks. A structural interpretation utilizing satellite imagery was also completed.



Source: JDS Energy & Mining Inc (2014) (modified from Lunceford 2010)

Figure 6-3: Outcrop Grid, Geochemical Sampling Ana Paula Project

In 2007, Dr. Victor Valencia of the University of Arizona (Tucson) conducted U-Th-Pb age dating on zircons collected from granodiorite exposures in and around the San Jerónimo area. All samples returned age dates ranging from 66.0 to 66.7 Ma (±0.7 to 1.8 Ma) (Valencia and Ruiz, 2008). Geologic mapping indicated linear breccias along contacts within quartz monzonite and monzonite including a large elliptical body up to 150 m in diameter west of San Jerónimo. The breccias exhibited strong argillic alteration, stockworks, disseminated sulphides and elevated gold mineralization (Medina, 2010).



Source: JDS Energy & Mining Inc (2014) (modified from Lunceford 2010). Key Exploration Targets: San Jerónimo and El Tejocote Identified

Figure 6-4: 1:5000 Scale Geological Map

In 2008, work activities were reduced because of protracted negotiations with surface owners. Interpretive schematic cross sections were constructed on a 1:5000 geologic map base to augment drill hole planning. Grid rock sampling (to 100 m) was completed on parts of the Tembo and Tembo Dos concessions. Litho-geochemical and stream sediment sampling continued and additional samples were collected for short wave infrared (SWIR) analysis. Core was re-logged to reconcile alteration nomenclature with geochemical and geologic map bases. Goldcorp suspended work on the Ana Paula Property in June 2008.

In summary, 6,764 geochemical samples were collected, including 5,965 channel chips and regional outcrop litho-geochemical samples, 690 grid geochemical samples of intrusive rocks, and 109 stream sediment samples.

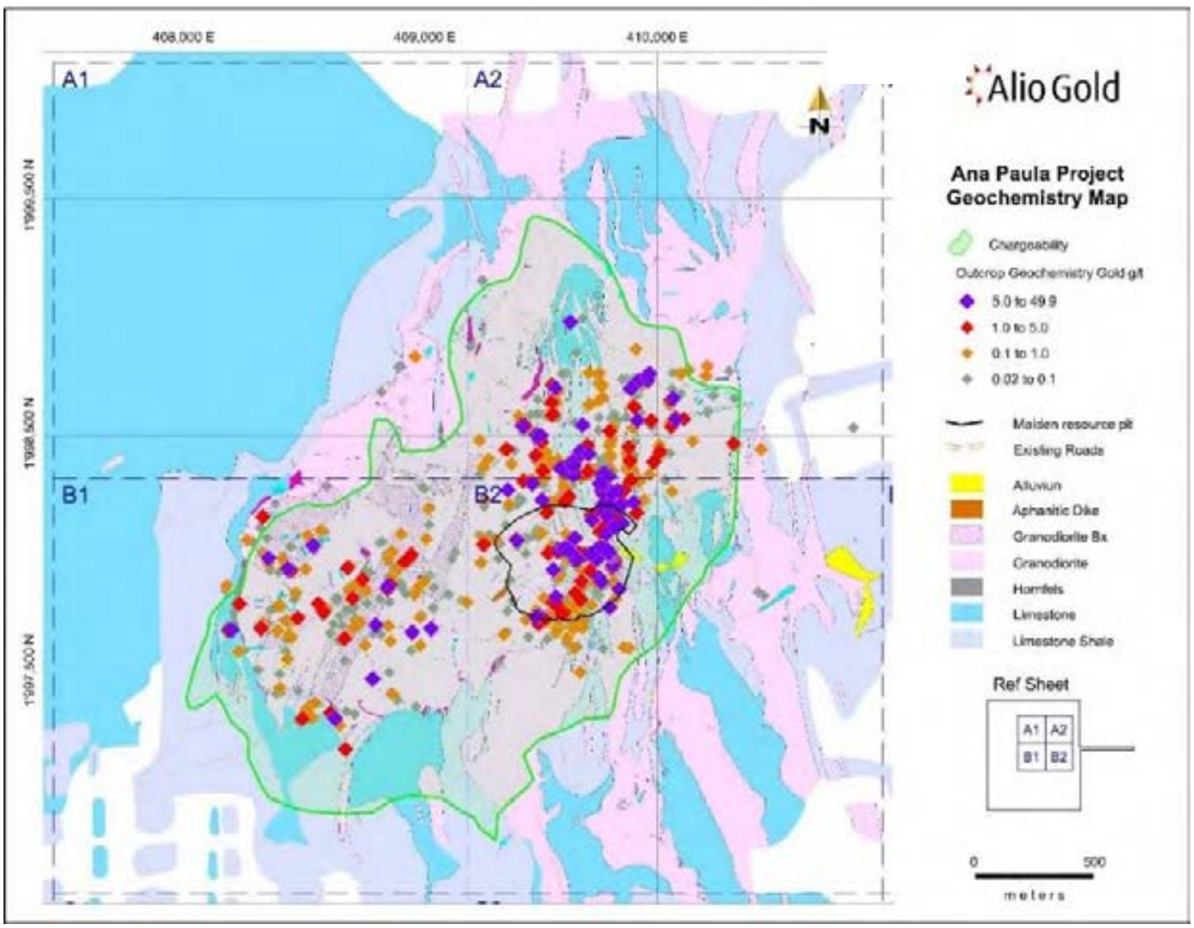
6.2.4 Newstrike (2010-2015)

Newstrike completed multidisciplinary exploration programs on the property from 2010 to 2015. These programs entailed:

- Regional and semi-detailed outcrop mapping and sampling.
- Detailed road cut and outcrop mapping and sampling.
- Airborne Z-axis Tipper Electromagnetic ("ZTEM") and airborne magnetic geophysical surveys, modelling and interpretation.
- 123,288.2 m of core drilling in 246 drill holes, from AP-10-12 through AP-14-232 and AN-12-01 to AN-12-03, AN-13-04 to AN-13-12 and AN-14-14 to AN-14-25.
- 4,370 in-house density measurements have been completed from 123 drill holes.

- 384 stream sediment samples and 16,882 rock geochemical samples from surface and 85,350 geochemical samples from core, not including QA/QC and external check samples.
- Orthophotography and topographic contouring (to 1 m contours).
- Petrographic and short-wave infrared (SWIR) spectroscopic studies of 34 core samples.
- Structural and alteration studies.
- Environmental studies including water quality and weather monitoring.
- Pit slope, metallurgical, process design and other engineering studies.
- Deposit modelling.

Geologic outcrop mapping was conducted continuously from June 2010 to December 2014. A local map sheet grid was devised across the project area that subdivided the Project area into nine 1:2000 scale map sheets, designated from north to south and west to east as A1-A2-A3, B1-B2-B3, and C1-C2-C3. The area covered by these nine map sheets covers an area defined by UTM coordinates 408,000 to 413,000 m East by 1,985,000 to 2,000,000 m northing (WGS84 Zone 14N datum). Almost all sampling, geologic mapping and drilling has been conducted within map sheets A1, A2, B1 and B2. These four map sheets cover the approximately two by two km exploration target area defined in Section 6.2 and illustrated in Figure 6-1, Figure 6-4 and Figure 6-5.



Source: M3 Engineering & Technology Corp. (2017). The A1, B1, A2 and B2 map sheets location within the Ana Paula Project (blue inset).

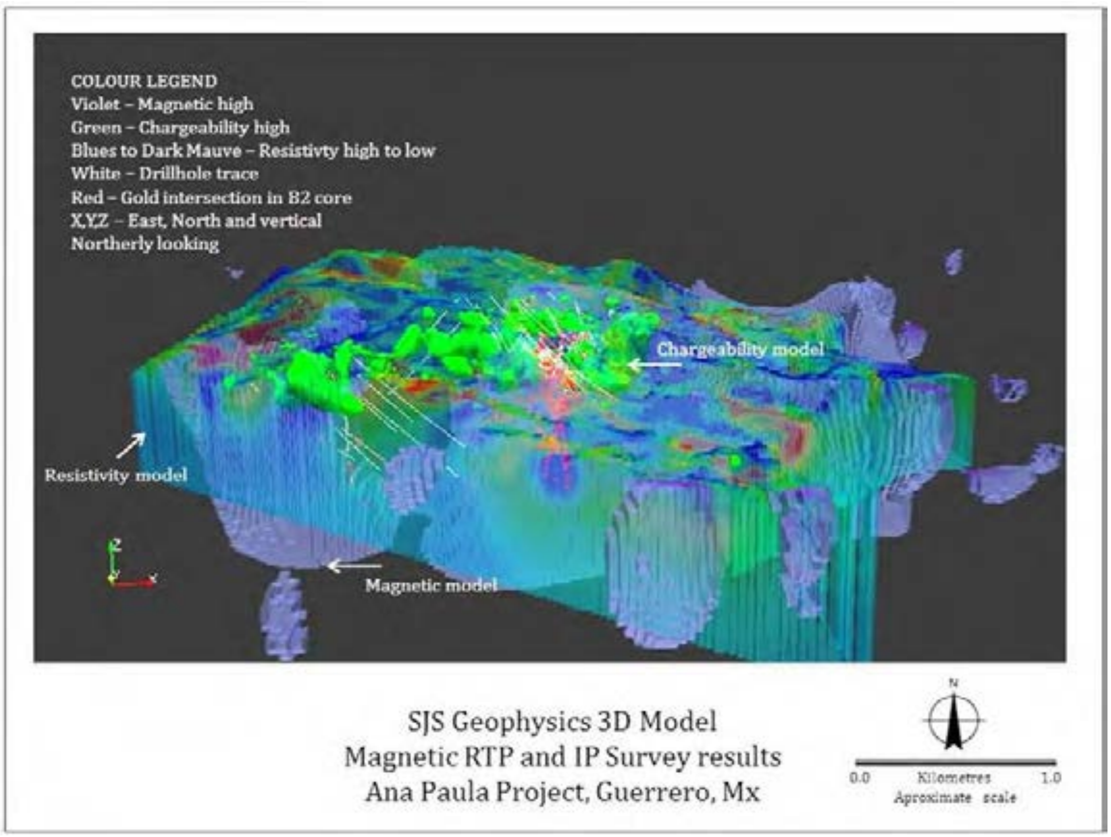
Figure 6-5: Road Cut and Outcrop Sample Map

6.2.4.1 Geophysics

In 2012, Newstrike contracted SJ Geophysics Ltd ("SJ") of Vancouver, Canada to undertake 3 dimensional ("3D") inversion modelling of geophysical data acquired by Goldcorp to compare it with drill results. The Goldcorp data included an 225 km^2 aeromagnetic and radiometric (K, Th, U) survey and a 3D Induced Polarization geophysical survey. Results of this interpretation indicated a strong correlation between mineralization and resistivity and magnetic responses (Figure 6-6).

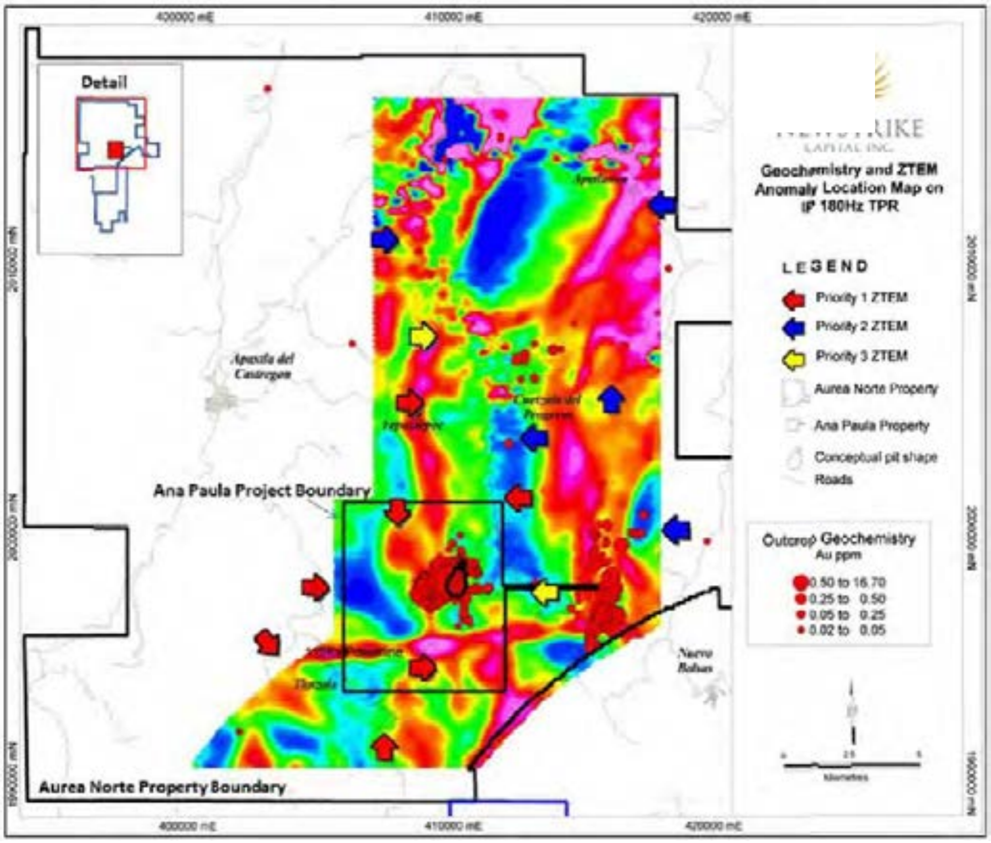
In 2013, Geotech Ltd of Aurora, Ontario, Canada was contracted to complete an approximately 250 km^2 ZTEM survey comprising 1,298 flight line-km at a line spacing of 200 m. The survey area encompassed the Ana Paula Deposit area and extended to the northeast property boundary. The ZTEM survey is recognized for its ability to map resistivity contrasts associated with the structure and alteration typically associated with porphyry-skarn deposits or with structurally controlled epithermal deposits. ZTEM is capable of penetrating to a depth that can exceed 1-2 km and is useful in identifying "blind" or buried exploration targets.

The objective of the 2013 ZTEM survey was to locate potentially buried intrusive bodies associated with the GGB mineralization model and to confirm controlling structures along the mineralized San Luis Trend. New anomalies identified by the ZTEM survey (Figure 6-7) include resistivity contrasts typical of buried silicified intrusions and with alteration commonly associated with skarn-porphyry and epithermal style deposits (Legault, 2013).



Source: M3 Engineering & Technology Corp. (2017).

Figure 6-6: 3D Model Overlay of Resistivity, Chargeability and RTP Magnetic Survey Results



Source: modified from Legault (2013)

Figure 6-7: ZTEM in Phase 180Hz TPR with Priority Target Locations

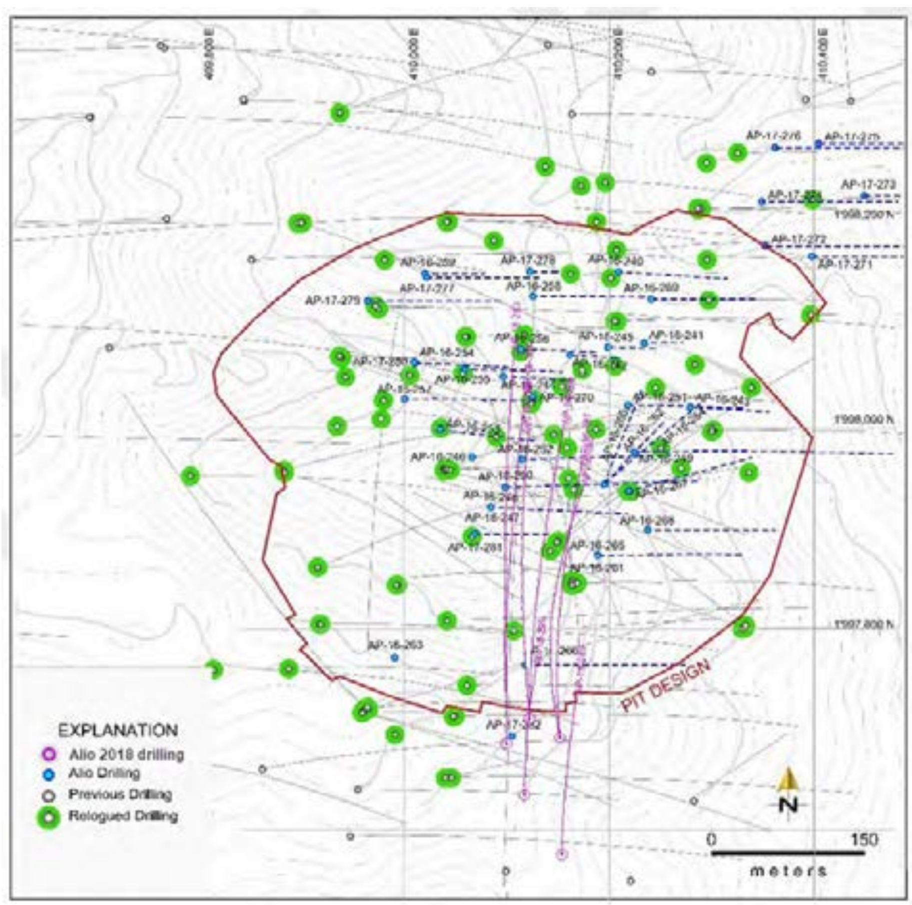
6.2.5 Alio Gold (2015-2018)

Upon acquiring the property in 2015, Alio Gold carried out an extensive review of the data delivered by Newstrike. Alio carried out a field review of existing geological maps and re-logging of 113 drill holes comprising 49,968.89 metres. The re-logging was carried out across the entire mineralized system to unify lithological, structural and mineralization criteria (Figure 6-8 and M3 Engineering & Technology Corp. (2017)

Figure 6-9).

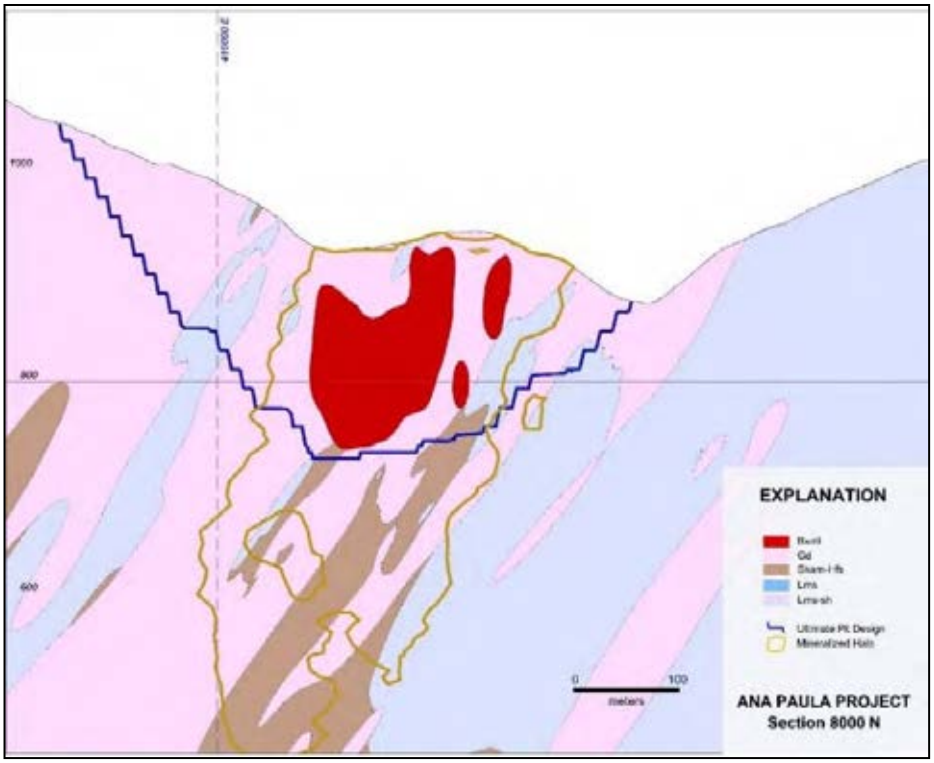
- Geological mapping and rock geochemical sampling of exploration targets along strike from the Ana Paula deposit comprising 775 rock samples.
- Alio Gold conducted two drill programs in 2015 comprising 10 core holes and 2,008.05 m of core. Three of these holes (605.6 metres) were twinned holes drilled to collect material for metallurgical testing.
- From October 2016 to February 2017, Alio Gold completed a second drilling campaign of 9,663.4 m of core in 43 core drill holes. This infill drill program delineated the Polymictic Breccia.
- From March 2017 to April 2017, Alio Gold completed 7,205.86 m of RC drilling in 26 holes which included condemnation drilling in 20 drill holes at the process plant, waste dump and tailings pond areas.
- From March 2017 to April 2017, Alio Gold completed 1,895.00 m of geotechnical drilling in six sectors of the proposed open pit under the direction of Knight Piésold using HQ3 drilling tools.

- From October 2017 to December 2017, Alio Gold completed a 2,018.2 metre drill program that twinned previous drill holes to collect metallurgical testwork samples.
- From December 2017 to May 2018, Alio Gold completed 4,337 m of infill drilling in eight holes to further define the Polymictic Breccia below the 2017 resource constraining shell.
- Utilizing all of this drilling data, Alio Gold carried out a 3D geological re-interpretation of Ana Paula deposit geology in support of the resource model. Wireframes were constructed in LeapFrog™ software using the logged lithologies.
- A total of 16,616 drill samples were collected from all 2015 to 2018 drill programs, not including QA/QC samples and external check samples.
- In 2018, Alio initiated the driving of a 1.2 kilometre decline to access the high grade Polymictic Breccia within the limits of the proposed open pit. The decline was advanced about one third of the planned length. Mapping and rock geochemical sampling were carried out along the decline and comprised 247 rock geochemical samples. Drill results from the Alio Gold exploration program are discussed in Section 10 of this technical report.



M3 Engineering & Technology Corp. (2017)

Figure 6-8: Map Showing the Re-Logged Drill holes at Pit Design Area



M3 Engineering & Technology Corp. (2017)

Figure 6-9: Geological Re-Interpretation Cross-Section Showing the Lithological Domains

6.3 HISTORICAL MINERAL RESOURCE ESTIMATES

The 2013, 2014, 2016, and 2017 mineral resource estimates described in this section are now considered historical in nature. They are provided here for historical context only. Heliostar is not treating these historical estimates as current mineral resources or reserves, and the QP has not undertaken any independent investigation of the mineral resource estimates; therefore, the mineral resource estimates in Table 6-2, Table 6-4, and Table 6-6 should not be relied upon. These historical mineral resource estimates are no longer current and have been superseded by the mineral resource estimate described in Section 14 of this technical report.

6.3.1 2013 Newstrike Resource Estimate

In 2013, H. E. Welhener, R. A. Lunceford, & Winckers, issued a technical report and Initial Resource Estimate for the Ana Paula Project and included an initial resource estimate. The resource estimate was based on 130 diamond core drill holes aggregating 67,943 metres and containing 45,512 assay intervals, of which effectively all were assayed for gold and silver.

The estimated resources were based on an internal cut-off of 0.45 g/t gold equivalent (AuEq). The calculation of AuEq includes the gold and silver prices and recoveries presented in Table 6-1.

The Ana Paula deposit was modeled using an inverse distance to the tenth power (ID10) operator applied to 10 m equal length gold and silver composites. Grade estimation was constrained by lithologic domain boundaries. Model blocks were classified as measured, indicated or inferred based on kriging variance, the number of holes inside the search ellipsoid and distance from the closest hole. Tonnages were estimated using density data supplied by Newstrike.

Table 6-1: Input Parameters to Define the 2013 Mineral Resources in Floating Cone Pit Shape

	Process Recovery	Metal Price
Gold Price	85%	$1450/oz.
Silver Price	27.3%	$28/oz.
Costs:		
Process + General and Administrative	$17.27/t	
Mining	$2.05/t, plus $0.02/t per bench below 900 m elevation	
Pit overall slope angles	45 to 55 degrees depending on aspect	

Source: H. E. Welhener, R. A. Lunceford, & Winckers (2013)

The resources were constrained within a floating cone shell. Parameters for the shell assumed that all of the mineralization at Ana Paula occurs in the form of sulphide. The 2013 resource estimate shown in Table 6-2 was the first published estimate for the Ana Paula Project. The 2013 Newstrike resources are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

Table 6-2: Ana Paula 2013 Historical Resource Estimate

Category	Tonnage & Grades ≥ 0.46 g/t AuEq Cut off			**Contained Ounces (000,000's)**	
	Mtonnes	Au, g/t	Ag, g/t	Gold	Silver
Measured	18.4	2.21	6.2	1.31	3.7
Indicated	24.6	1.13	7.6	0.89	6.0
Sum M&I	43.0	1.59	7.0	2,20	9.7
Inferred	1.8	0.78	18.7	0.05	1.1

Source: H. E. Welhener, R. A. Lunceford, & Winckers (2013)

6.3.2 2014 Newstrike Resource Estimate

In August 2014, JDS Energy and Mining issued an NI-43-101 Technical Report entitled "Preliminary Economic Assessment on the Ana Paula Project, Guerrero State Mexico" and incorporated an estimate of the mineral resource. The mineral resources used for the study had an effective date of August 8, 2014. The estimated resources were based on an internal cut-off of 0.46 g/t gold equivalent (AuEq) based on the gold and silver prices and recoveries presented in Table 6-3. The AuEq is calculated by adding the gold grade to the silver grade multiplied by a factor of 0.011.

Table 6-3: Input Parameters to Define the 2014 Mineral Resource Open Pit Shell Geometry

	Process Recovery	Metal Price
Gold Price	80%	$1450/oz.
Silver Price	55%	$23/oz.
Costs:		
Process	$15.60/t	
General and Administrative	$1.65/t	
Mining	$1.85/t, plus $0.02/t per bench below 900 m elevation	
Pit overall slope angles	55 degrees on west 45 degrees on all others	

Source: H. E. Welhener, R. A. Lunceford, & Winckers (2014)

The resource estimate was based on 113,535 m of drilling aggregating 85,523 assay intervals in 230 diamond core drill holes aggregating 113,535 m and containing 85,523 assay intervals, of which effectively all were assayed for gold and silver. The resource shown in Table 6-4 was constrained within a resource constraining shell using parameters listed in Table 6-3.

Table 6-4: 2014 Ana Paula Measured, Indicated, and Inferred Historical Resource Estimate

Category	Tonnage & Grades ≥ 0.46 g/t AuEq Cut-off			**Contained Ounces (000's)**	
	ktonnes	Au, g/t	Ag, g/t	Gold	Silver
Measured	22,767	1.608	4.9	1,177	3,587
Indicated	18,243	1.163	5.95	682	3,489
Sum M&I	41,010	1.41	5.37	1,859	7,076
Inferred	1,904	1.113	10.85	68	664

Source: JDS (2014)

The 2014 Newstrike resources are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

6.3.3 2016 Timmins Resource Estimate

The 2014 Preliminary Economic Assessment was updated in 2016 to account for CAPEX changes. The published resource remained unchanged from that presented in Section 6.3.2 and are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

6.3.4 2017 Alio Gold Mineral Resource Estimate

In June 2017, M3 prepared an NI 43-101 Technical Report for Alio Gold entitled "Ana Paula Project, NI 43-101 Technical Report, Amended Preliminary Feasibility Study, Guerrero, Mexico" that incorporated a revised mineral resource estimate. The mineral resources used for the study had an effective date of May 16, 2017. The estimated resources were based on an internal cut-off of 0.6 g/t Au for material amenable to open pit extraction and a cut-off of 1.65 g/t Au for the material amenable to underground extraction below the resource constraining shell.

Table 6-5: Input Parameters to Define the 2017 Mineral Resources

	Process Recovery	Metal Price
Gold Price	88%	$1350/oz.
Silver Price	30%	$17/oz.
Costs:		
Process	$19.00/t	
General and Administrative	$2.49/t	
Mining OP/UG	$2.25/t / $36.00/t	
Dilution considered for underground cut-off determination	5%	
Pit overall slope angles	49.5 degree	

Source: M3 (2017)

The Mineral Resources were supported by 276 core holes amounting to 123,268 m of drilling containing 86,013 assay intervals. The mineral resource shown in Table 6-6 was constrained within a resource constraining shell using parameters listed in Table 6-5.

Table 6-6: May 2017 Alio Gold Historical Mineral Resource Statement

Area	Category	Cut-off (Au g/t)	Tonnes	Au (g/t)	Gold (ounces)	Ag (g/t)	Silver (ounces)
Resources amenable to open pit extraction	Measured	0.6	7,541,000	2.43	590,000	5.1	1,236,000
	Indicated		10,491,000	1.79	605,000	4.8	1,629,000
	Measured & Indicated		18,032,000	2.06	1,195,000	4.9	2,865,000
	Inferred*		249,000	1.27	10,000	8.8	70,000
Resources amenable to underground extraction	Measured	1.65	41,000	2.07	2,800	4.3	6,000
	Indicated		2,925,000	2.81	264,000	4.2	398,000
	Measured & Indicated		2,967,000	2.80	266,700	4.2	404,000
	Inferred*		621,000	2.07	41,400	3.9	79,000
Total Resources	Measured	OP 0.6 and UG 1.65	7,582,000	2.43	592,800	5.1	1,242,000
	Indicated		13,416,000	2.01	869,000	4.7	2,027,000
	Measured & Indicated		20,998,000	2.17	1,461,800	4.8	3,269,000
	Inferred*		870,000	1.84	51,400	5.3	149,000

Source: M3 (2017)

The 2017 Alio Gold mineral resources are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

6.3.5 2020 Alio Gold Mineral Resource Estimate (February 2023 Pre-Feasibility Study)

In February 2023, M3 prepared an NI 43-101 Technical Report for Heliostar entitled “Ana Paula Project, NI 43-101 Technical Report, Preliminary Feasibility Study Update, Guerrero, Mexico” that incorporated a revised mineral resource estimate. The mineral resources used for the study had an effective date of February 28, 2023. The estimated resources were based on an internal cut-off of 0.6 g/t Au for material amenable to open pit extraction and a cut-off of 1.60 g/t Au for the material amenable to underground extraction below the resource constraining shell.

Table 6-7: Input Parameters to Define the 2020 Mineral Resources

	Process Recovery	Metal Price
Gold Price	88%	$1400/oz.
Silver Price	30%	$20/oz.
Costs:		
Process	$19.00/t	
General and Administrative	$2.49/t	
Mining OP/UG	$2.25/t / $36.00/t	
Dilution considered for underground cut-off determination	5%	
Pit overall slope angles	49.5 degree	

Source: M3 (2017)

The Mineral Resources were supported by 290 core holes amounting to 129,499 m of drilling containing 89,816 assay intervals. The mineral resource shown in Table 6-8 was constrained within a resource constraining shell using parameters listed in Table 6-7.

Table 6-8: Ana Paula Resource Statement Effective December 30, 2020

Area	Category	Cut-off (Au g/t)	Tonnes	Au (g/t)	Gold (ounces)	Ag (g/t)	Silver (ounces)
Resource Amenable to Open Pit Extraction	Measured	0.6	9,095,000	2.39	698,000	5.6	1,629,000
	Indicated		9,810,000	1.79	563,000	5.3	1,677,000
	Measured & Indicated		18,905,000	2.07	1,261,000	5.4	3,306,000
	Inferred*		63,000	0.86	2,000	10.5	21,000
Resource Amenable to Underground Extraction	Measured	1.6	85,000	2.15	5,800	2.8	8,000
	Indicated		2,212,000	2.84	202,000	4.0	286,000
	Measured & Indicated		2,297,000	2.81	207,800	4.0	294,000
	Inferred*		322,000	2.09	21,700	4.2	43,000
Total Resource	Measured	OP 0.6 and UG 1.6	9,180,000	2.38	703,800	5.5	1,637,000
	Indicated		12,022,000	1.98	765,000	5.1	1,963,000
	Measured & Indicated		21,202,000	2.16	1,468,800	5.3	3,600,000
	Inferred*		385,000	1.89	23,700	5.2	64,000

The 2020 Alio Gold mineral resources are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

6.3.6 Previous Production

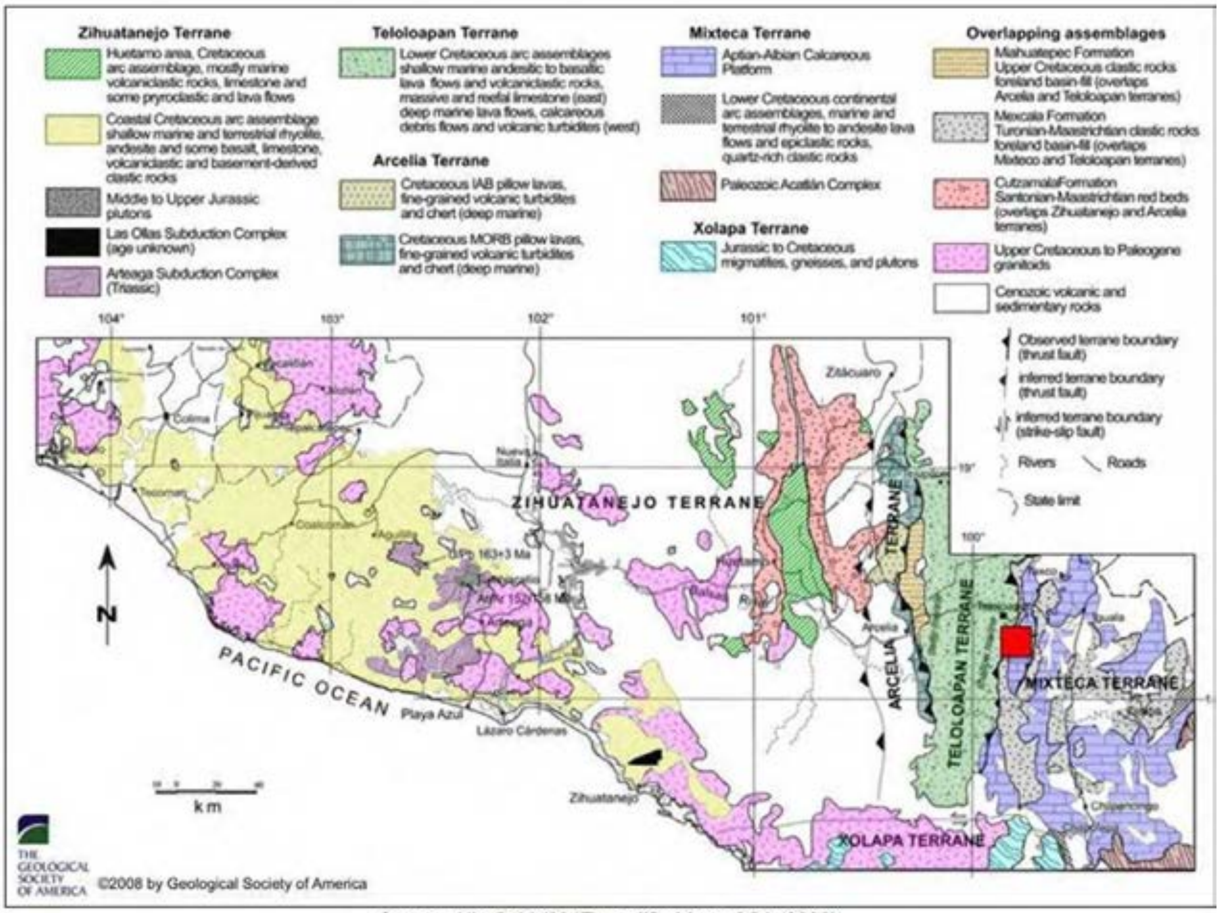
No significant production occurred on the Project site. Some small-scale artisanal extraction took place during the period between 1950–1980.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 TECTONIC SETTING

This section is abridged from Neff et al (2023) with sections updated where new information has become available.

Southern Mexico is underlain by a basement stratigraphy that includes the greenschist facies Early Jurassic Tierra Caliente Metamorphic Complex. This mega-terrane includes two major sub-terranes in the Project area, the Mixteca Terrane comprising the Morelos-Guerrero Platform sediments as a sub-terrane ('Platform'), and the Guerrero Composite Terrane, which includes submarine arc rocks of the Teloloapan Sub-terrane ('Teloloapan'). The eastern boundary of the Teloloapan Sub-terrane is in contact with the western Platform Sub-terrane, as shown in Figure 7-1.



Source: Alio Gold (2017) modified from GSA (2008)

Figure 7-1: Tectonic Setting of Guerrero Gold Belt

A discussion of the nature of the contact between the two sub-terranes is not within the scope of this technical report; however, both are thought to have been highly deformed during Laramide Compressional Orogeny ('Laramide') and share a common basement in the Guerrero Terrane based on 206Pb/204Pb versus 87Sr/86Sr isotopic studies (Valencia and Ruiz, 2008). A series of intrusions and sub-volcanic rocks were emplaced during or following this orogenic event along a northwesterly trend. The intrusions are interpreted to share a common provenance in a deep-seated plutonic body derived from a mixing of two possible magma sources; a depleted mantle and an enriched crust (Valencia and Ruiz, 2008). A trace element study completed in 2003 proposed that the pluton formed within a postcollision tectonic framework of a volcanic arc related to the interaction between the Farallon and North America plates (Gonzalez-Partida et al, 2003, 2004).

7.2 REGIONAL GEOLOGY

The Ana Paula property lies along the northwestern extension of the Guerrero Gold Belt ('GGB') and straddles the proposed tectonic boundary between the Teloloapan and Morelos Guerrero platform Sub-terranes, as described in Figure 7-2: Stratigraphic Column; Mixteca Sub Terrane and Guerrero Composite Terranes

and shown in Figure 7-3. The following discussion of regional geology is reliant on; Valencia-Gomez, et al (2001), Levresse et al (2004), Centeno- García et al (2008), Servicio Geológico Mexicano (2008), Valencia and Ruiz (2008) and Lloyd (2023c).

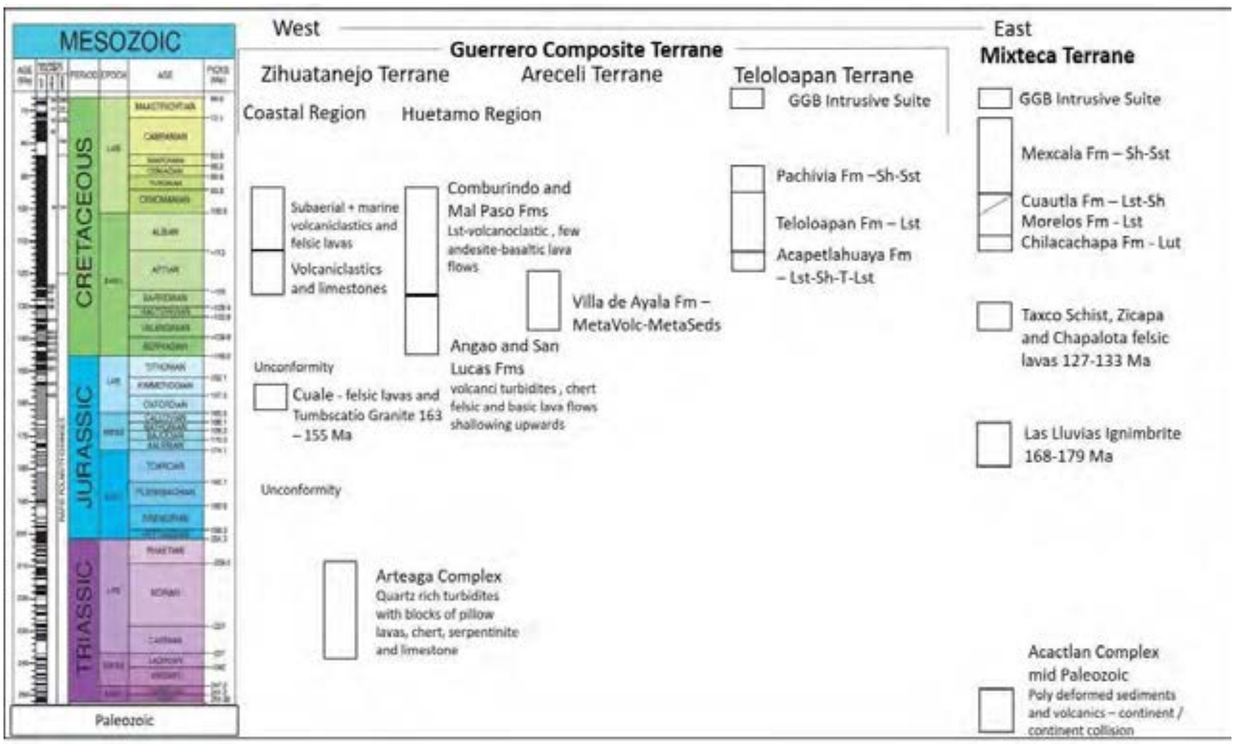


Figure 7-2: Stratigraphic Column; Mixteca Sub Terrane and Guerrero Composite Terranes

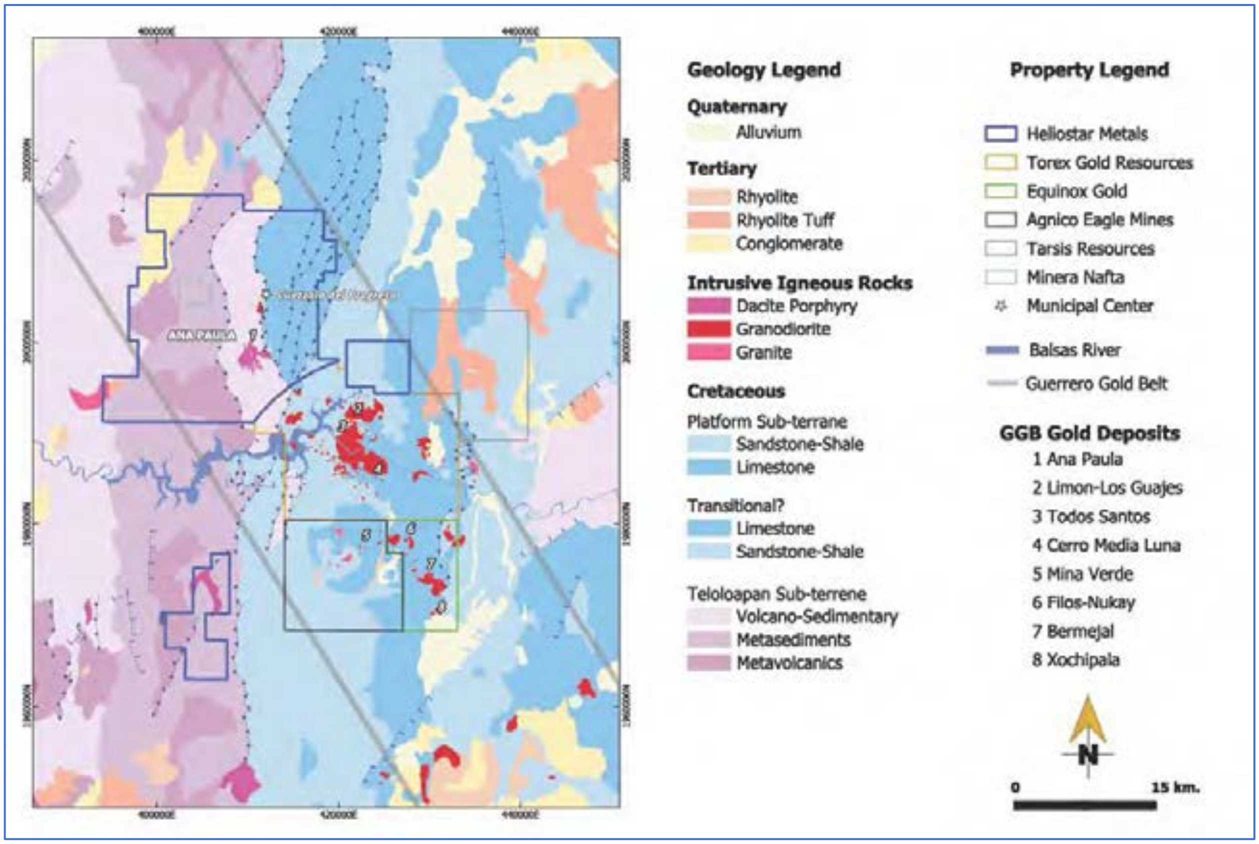


Figure 7-3: Ana Paula Deposit Regional Geology

The regional geology includes stratigraphy belonging to the two proposed tectonic sub-terranes. The Teloloapan Sub-terrane stratigraphy includes a volcanic-volcaniclastic arc assemblage that overlies a basement schist of the Upper Jurassic to Lower Cretaceous Guerrero Composite Terrane. This assemblage is in turn overlain by an undifferentiated limestone, shale, and sandstone Cretaceous sedimentary sequence that, on the scale of the Project, forms a North-South trending corridor separating, in apparent fault contact, the Morelos Guerrero Platform sediments on the east from the Teloloapan volcanic-volcaniclastic belt on the west. The volcaniclastic sequence associated with the Teloloapan Sub-terrane is host to the Ana Paula deposit and continues to the east of the Ana Paula Camp location. The bounding Teloloapan thrust fault is interpreted to outcrop in the valley east of the Ana Paula camp and continue north-northwest past the town of Cuétzala del Progreso. The stratigraphy attributed to the Morelos Guerrero Platform includes a thick sequence of thick- to thin-bedded limestone and dolomite in the Morelos Formation which is overlain by younger thinly-bedded flysch-like deposits of the Mezcala Formation. Outcrops of these formations cover the eastern third of the Ana Paula Property.

The stratigraphy of both sub-terranes was intruded by at least two intrusive events. The earliest is a 62 to 66 million years old (Ma) calc-alkalic intrusive complex that is related to the Laramide Orogeny and the mineralizing event recognized as the Guerrero Gold Belt. These intrusive bodies are observed to outcrop for at least 55 kilometres through the district on a northwesterly trend. Zirconium 206Pb/238U age dating of the intrusions at Ana Paula show they average 66.0 to 66.8 Ma ± 1.8 Ma in age, placing them within the same intrusive event as the Filos, Filos Deep and Morelos projects (Valencia- Gomez et al., 2001 and Valencia-Gomez and Ruiz, 2008).

The second intrusive event [comprises] 30 Ma calc alkalic to alkalic volcanic rocks related to the onset of continental volcanism and that may be associated with overprinting of epithermal style mineralization observed within the Project.

Quaternary volcanic units and lacustrine sediments outcrop regionally as isolated eroded remnants that overlie all older stratigraphy.

7.3 PROJECT GEOLOGY

The geologic units underlying the Ana Paula Deposit are primarily sedimentary rocks composed of a thin bedded, interlayered package of limestone and calcareous mudstone and shale units with occasional fine-grained lapilli tuffs and carbonaceous limestone units that appear to correspond to the Acapetlahuaya Formation which have been intruded by intermediate sills, dykes and stocks, as shown in Figure 7-4. A large body of intrusive rocks underlies the Ana Paula deposit as currently defined.

Five principal geological domains within the Ana Paula Deposit have been recognized:

1. Sediments Domain: characterized by light brown weathering, platy outcrops, with distinct gray and brown calcareous limestone, mudstone, and shale beds which range from a few centimeters to as much as 25 cm thick. Occasionally there are also some thin fine-grained ash to lapilli tuff beds and a thin-bedded laminated carbonaceous limestone. The Sediments Domain is located more in the eastern part of the deposit.
2. Intrusive Domain: a package of several different feldspar porphyry intrusive phases that in a general sense appear to be similar in composition and age and host the majority of the low grade ore of the Ana Paula deposit. These occur as stocks, sills and dykes.
3. Skarn-Hornfels Domain: found along the some of the contacts of the Intrusive Domain dykes and sills with the host sediments in the upper zones and appears more widespread in the deeper zones of the deposit. It shows a down dip / distal zonation from unaltered sedimentary limestone-shale nearest the surface to hornfels then to skarn with increasing depth. Generally localized and narrow semi-massive sulphide lenses develop at the contacts between the Skarn-Hornfels and the Intrusive Domains.
4. Polymictic Breccia Domain: forms the core of the main Ana Paula deposit. This domain is a sub-vertical plug elongated in the east-west direction and steeply dipping to the south. This breccia is core to the High Grade Panel (HGP) and appears to be a diatreme breccia.
5. Monomictic Breccia Domain: a brecciated intrusion composed of mostly monomictic fragments in a silica-rich matrix with or without a mixed sulphide-oxide mineralogy. It is located in the southern and western part of the deposit area and appears to comprise a series of narrow breccia bodies likely ascending along intrusive / sediment contacts.

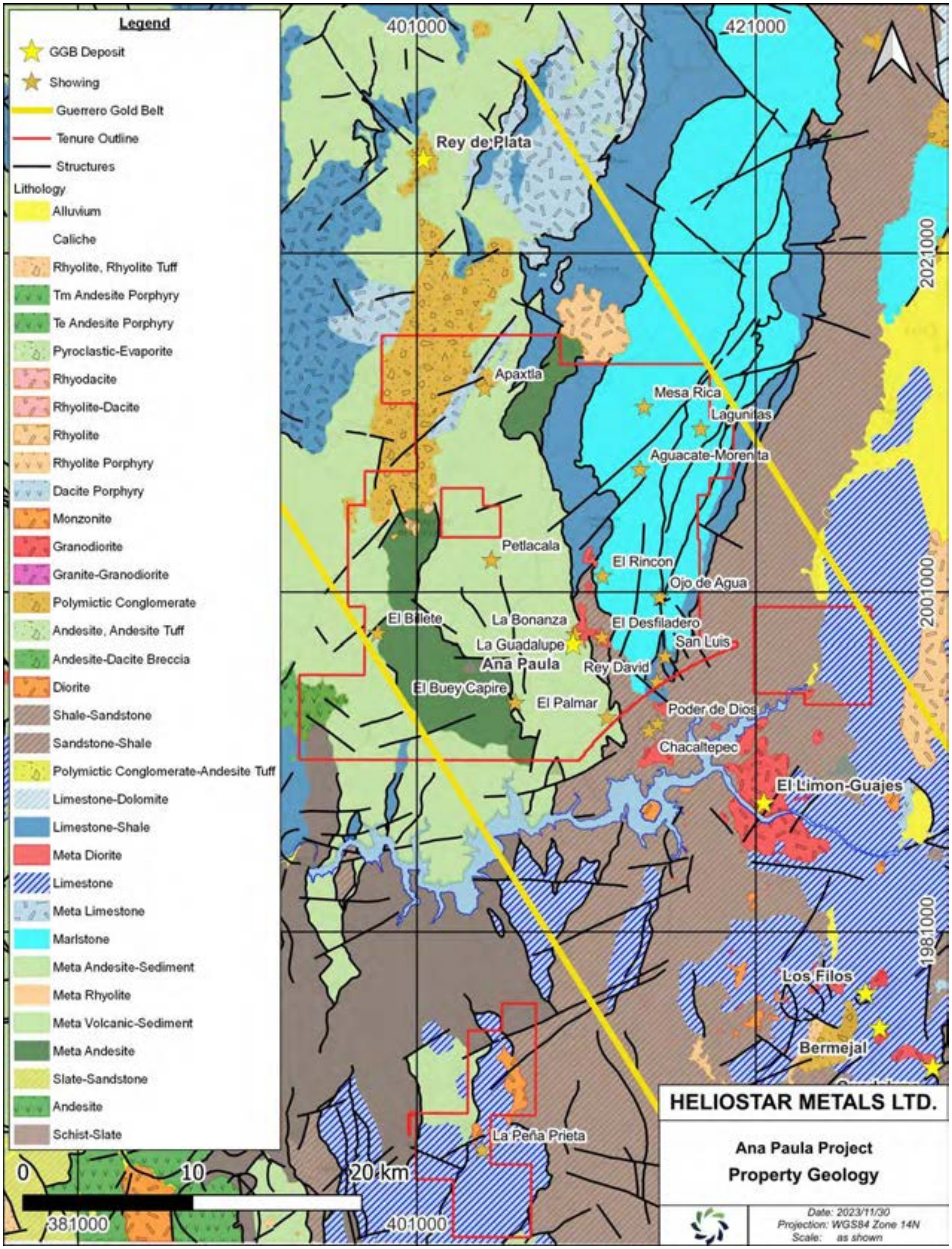


Figure 7-4: Ana Paula Project Geology Map

7.3.1 Sediments Domain

The sedimentary rocks underlying the Ana Paula deposit are dominantly interbedded limestones and calcareous shale and mudstones with lesser fine-grained ash to lapilli tuffs and carbonaceous limestones. These sedimentary rocks generally strike north-northwesterly and dip steeply westerly and appear to be part of the Acapetlahuaya Formation of the Teloloapan Sub-terrane. The Acapetlahuaya Formation was first identified by Campa et al (1974), but named by Ramirez et al (1990) based on a type section in the town of Acapetlahuaya (about 20 km north of the Campo Morado Mine and 57 km northwest of Ana Paula). Campa et al (1974) described these rocks as micaceous phyllites. Ramirez et al (1990) described them as finely laminated shales and siltstones (Figure 7-5a). Cabral (1995) described them as fine-grained micaceous and/or chloritic pelitic schists. Guerrero-Suástegui (2004) describes the type of section near the town of Acapetlahaya as being mainly fine- to medium-grained tuffs with lesser sandstone with limestone at the top. The Servicio Geológico Mexicano (2008) summarize these as interlayered thin-bedded shales with minor limestones or fine-grained tuffs in the upper part and tuffs in the basal portion. Monter (2015), described the section near the Campo Morado Mine as being more greywacke and ash tuffs with lesser thin volcanoclastic beds and cut by basalt dykes. These differences are likely due to the position of these various locales within the back arc basin with the more volcanic rich portions nearer to the volcanic shore and the limestone-shale rich portions farther out into the basin. When the tuff is coarser-grained and has lapilli (Figure 7-5b), some of those lapilli show very convoluted borders indicative of being quenched upon landing in water.

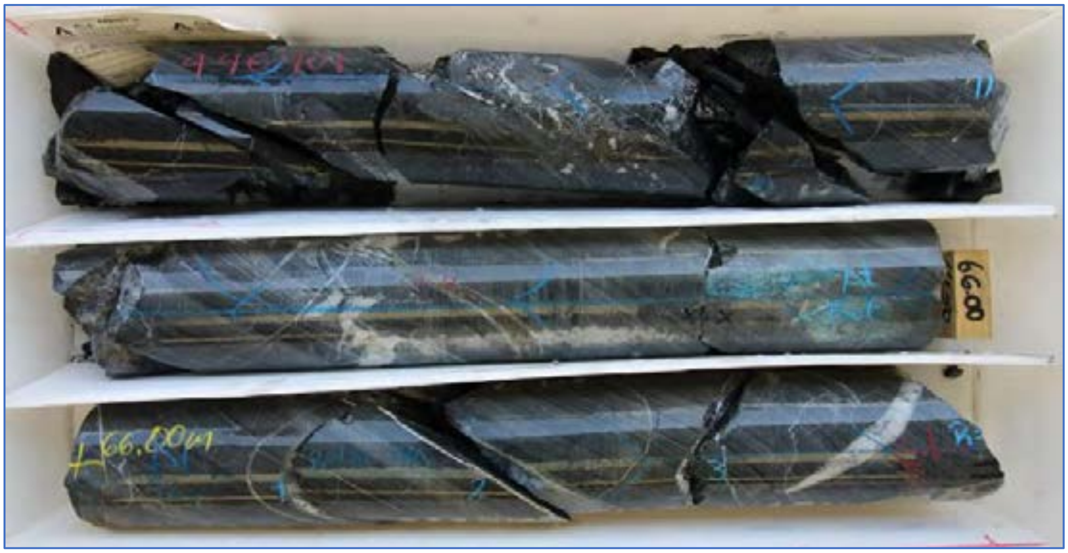
This package is separated from the Morelos Platform sediments by the Teloloapan thrust fault interpreted to outcrop in the valley just east of the Ana Paula Camp.

(a) (left): thin-bedded calcareous limestones and shales and one thin ash tuff (bottom row, center). From AP-15-250 at 140 m depth.
(b) (right): bedded lapilli tuff from AP-13-170 at 31 m depth. HQ core (top to bottom field of view) of approximately 6.35 cm.

Figure 7-5: Thin-Bedded Calcareous Limestones and Shales and Bedded Lapilli Tuff (Photo1 a (left) and b (right))

7.3.1.1 Carbonaceous Limestone

Massive to thin-bedded, fine- to medium-laminated carbonaceous limestone is present in the area of the main Ana Paula deposit where it is minor component of the Sedimentary Domain. In drill core the unit locally presents a phyllitic to schistose deformation that varies from strongly carbonaceous to locally graphitic. This unit is known to include local pockets of breccia, stockwork or contact replacement mineralization but is generally not mineralized (Figure 7-6).



Thin bedded calcareous carbonaceous limestones and shales. From AP-23-299 at 66 m depth; PQ core so core width is approximately 8.5 cm.

Figure 7-6: Thin Bedded Calcareous Carbonaceous Limestones and Shales (Photo 2)

7.3.2 Intrusive Domain

The Intrusive Domain comprises a series of dykes and/or sills that coalesce to form a stock-like body that has been drilled over an area approximately 1.2 km by 1.2 km. Rafts or slivers of sediments and hornfels intersected in drill core do not necessarily outcrop at surface. The main intrusive phase is a feldspar porphyry with plagioclase, hornblende and biotite phenocrysts and locally small amounts of partly resorbed quartz eyes in a fine-grained groundmass (Figure 7-8a). Petrographic work to date has described pervasively altered groundmass such that the original composition could not be determined. Plagioclase phenocrysts are commonly large, as much as 5-7 mm in largest dimension, but a wide range of grain sizes and phenocryst percentages are observed, including a phase with fine grained phenocrysts (Figure 7-8b). A secondary set of smaller potassium feldspar phenocrysts in the 2 to 3 mm range are usually present, but are not as obvious. Both the plagioclase and potassium feldspar phenocrysts are usually at least partially altered to sericite (McComb, 2023 and Petrascience, 2005). Intrusive contacts between finer-grained and coarser-grained phases have been observed, mainly in core, and are usually transitional, but have not been mapped or traced over appreciable distances. A narrow chilled margin on the individual feldspar porphyry pulses is relatively common.

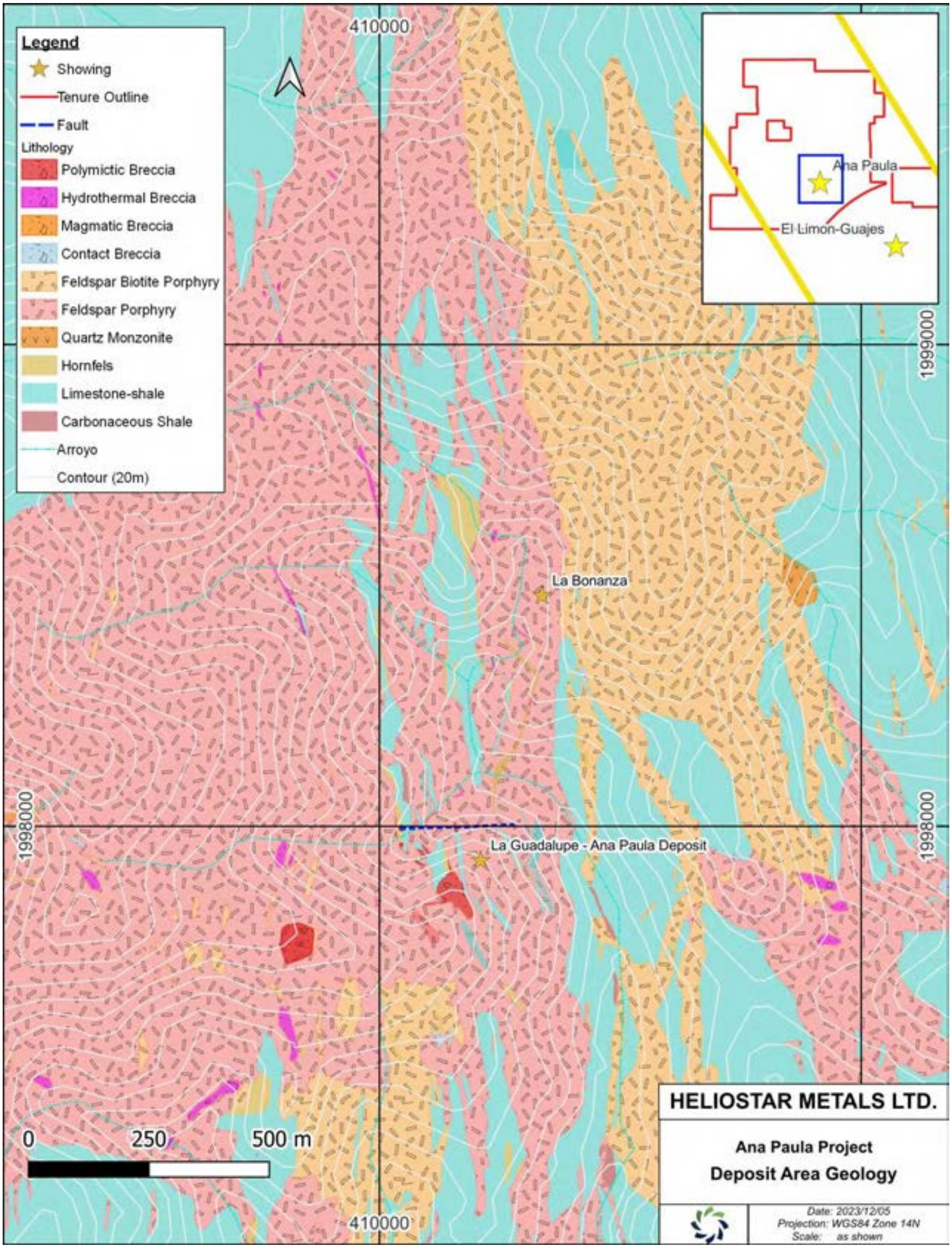
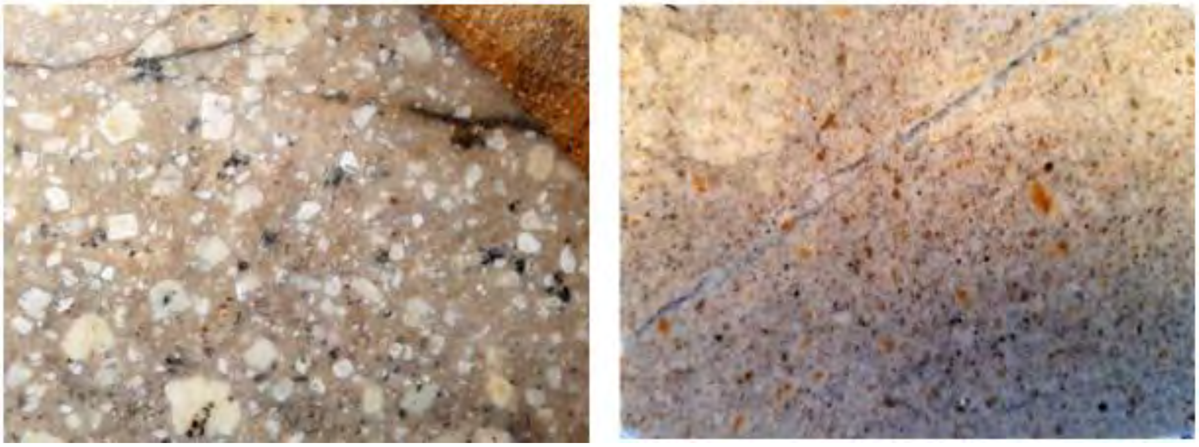


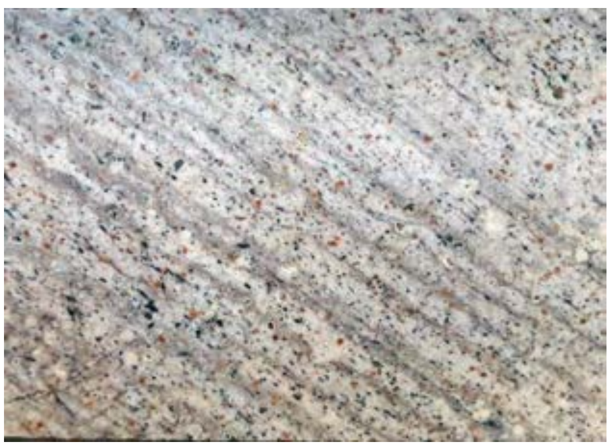
Figure 7-7: Ana Paula Deposit Area Geology Map

On surface in the eastern portion of the area of the stock-like body, a plagioclase-biotite porphyry is common. The plagioclase-biotite porphyry is similar to the plagioclase porphyry, but with the addition of large biotite phenocrysts up to 7 mm across. In addition, several different phases are observed, including a fine-grained intrusive phase that commonly exhibits apparent flow banding, and locally resembles a stratified unit such as a tuff which is likely a rhyolite flow (Figure 7-9).



(a) (left): Feldspar porphyry with large plagioclase phenocrysts and minor disseminated fine grained pyrite from AP-23-291 at 17 m depth.
(b) (right): Feldspar porphyry with small plagioclase phenocrysts and minor disseminated fine grained pyrite from AP-15-238 at 65 m depth.

Figure 7-8: Feldspar Porphyry with Large and Small Phenocrystals (Photo 3 a (left) and b (right))



Flow banded rhyolite from AP-23-298 at 44 m depth.

Figure 7-9: Flow Banded Rhyolite (Photo 4)

Metallic minerals observed in the Intrusive Domain include primarily pyrite and arsenopyrite, with traces of pyrrhotite, sphalerite, and native gold and/or gold tellurides. Magnetite, galena, stibnite, realgar and bismuthinite are observed rarely. Bornite are identified in thin sections and chalcopyrite are interpreted to be late phase minerals.

7.3.3 Skarn-Hornfels Domain

The sediments are locally metamorphosed to hornfels and skarn Figure 7-10 and Figure 7-11, occurring frequently along the sediment-intrusive contacts. More regional scale hornfels crops out to the northeast of the property and is encountered in most drill holes at increasing depth to the southwest. The hornfels and skarn units usually have gradational contacts and termed hornfels where individual mineral grains are not recognizable and termed skarn where they are coarser and garnet and pyroxene are visually identifiable at hand lens scale. The garnet tends to be a medium brown colour and very fine grained. Skarn tends to be more common at depth within the deposit area and to the southwest.

Thin-bedded sediments altered to hornfels at the contact of a feldspar porphyry grading out to almost fresh limestone-shale sediments. From AP-11-80 at 215 m depth; HQ core with width of core of approximately 6.35 cm.

Figure 7-10: Thin Bedded Sediments (Photo 5)

The mineralogy of hornfels and skarn units comprises calc-silicate minerals (garnet, wollastonite, tremolite-actinolite, diopside, and idocrase). In the deeper drill holes below the Ana Paula deposit there are some intervals of white fine-grained marble typical of contact metamorphism / exoskarn development (Figure 7-11).

Thin bedded sediments altered to skarn at the contact of a feldspar porphyry grading out to hornfels altered limestone-shale sediments. From AP-15-250 at 192 m depth; HQ core with width of core of approximately 6.35 cm.

Figure 7-11: Thin Bedded Sediments Altered to Skarn (Photo 6)

Thin bedded sediments altered to white marble flanking a zone of semi massive sulphide skarn mineralization. From AP-13-215 at 676 m depth; photo of HQ core with width of core of approximately 6.35 cm.

Figure 7-12: Thin Bedded Sediments Altered to White Marble (Photo 7)

7.3.4 Breccia Domain

Several breccia types are present at Ana Paula. The principal breccia that is the main host to the high grade core of the deposit appears to be a polymictic diatreme breccia. Isolated polymictic breccias that commonly occur at the contacts of intrusive rocks and sedimentary rocks and are likely small fingers off the main diatreme breccia. Breccias referred to as monomictic breccias are described within intrusive rocks but generally have a small component of other clasts making them technically polymictic breccias as well. Breccia nomenclature was designed to be descriptive of the style and location and not interpretive or genetic (Gibson, 2012). One large discrete polymictic breccia body identified during the 2010-2012 exploration programs (formerly termed the Complex Breccia or High Grade Breccia) hosts high-grade gold mineralization. Other breccia bodies occur close to the main polymictic breccia, but do not appear to be spatially connected and are interpreted as separate bodies and logged as distinct lithologies. The term contact breccia has been used in historic logging, but appears to include units that extend far beyond a contact and likely comprise the isolated polymictic breccias.

7.3.4.1 Polymictic Breccia

The Polymictic Breccia consists of a steeply south-plunging, broadly tabular body (Figure 7-13) enclosed by mineralization and alteration characterized by veins, fracture zones, and massive sulphide contact replacements in country rock that includes limestone, hornfels and intrusive rocks along with other breccia. The Polymictic Breccia consists of angular to rounded plagioclase porphyry and angular fragments of hornfels, limestone, shale and other very fine-grained to aphanitic fragments that range from less than one to over ten cm in size (Figure 7-14). Brecciation appears to be relatively high energy, exhibiting strong fracturing and angular fragmentation (locally crackle) and no obvious fault features such as gouge. Rock fragments are variably cemented within a matrix of black rock flour (Figure 7-15a and Figure 7-15b), silica and sulphide minerals (mostly arsenopyrite and pyrite/pyrrhotite). In some areas, the matrix appears to be finely ground black rock and silica while at deeper drill intersections the matrix comprises more intrusive material (Figure 7-16). This same zonation also occurs from the center portion (with more black rock flour in the matrix) to the periphery at higher levels. At all levels some intrusive clasts with very convoluted boundaries suggestive of quenched juvenile material are present. Sulphide mineralization comprises part of the breccia matrix and also replaces clasts in the breccia, particularly sediment clasts. Sulphides that occur as vein fillings in stockworks in the enclosing altered wallrock also locally cross-cuts the Polymictic Breccia (Figure 7-17). Late quartz and quartz-carbonate veins crosscut all units (Figure 7-18) and represent a late hydrothermal event that may be related to the emplacement of the rhyolite flows.

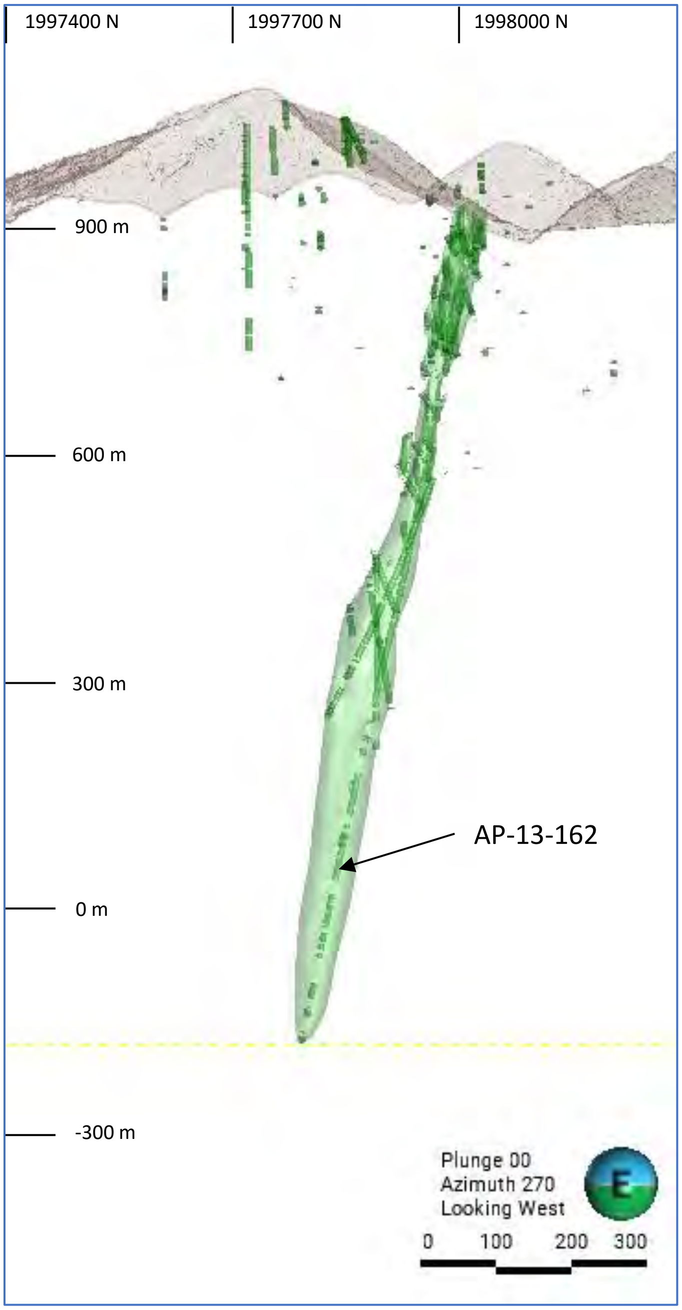
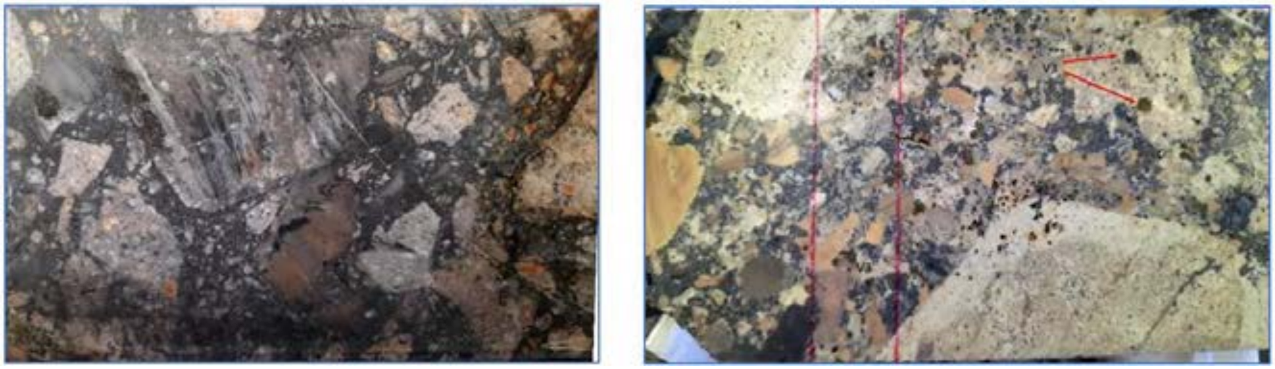


Figure 7-13: 3-dimensional image of Polymictic Breccia looking West showing steep southerly plunge.

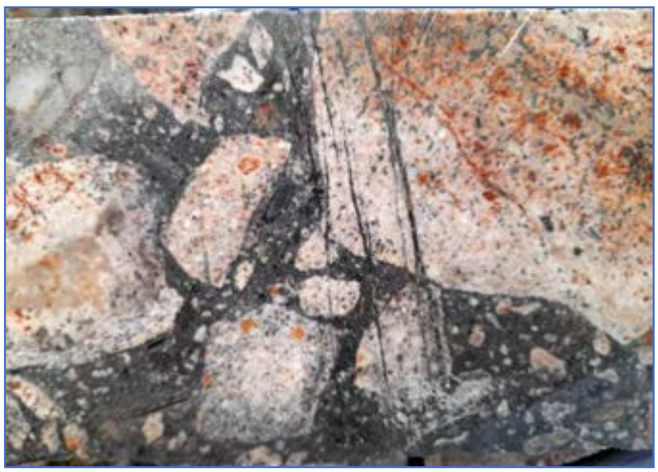
Polymictic Breccia illustrating sections dominated by intrusive clasts and black rock flour matrix to portions richer in sediment clasts and much less matrix. Note intrusive rocks in leftmost row are larger intrusive clasts. From AP-12-90 at 23 to 29 m depth; photo of HQ core with width of core of approximately 6.35 cm.

Figure 7-14: Polymictic Breccia (Photo 8)



(a) (left): Polymictic Breccia illustrating higher amount of matrix (about 20% volume of breccia) with a strong black rock flour component. Note felsic clast in upper right quadrant with irregular borders indicative of juvenile material. From AP-12-162 at 135 m depth.
(b) (right): Polymictic Breccia illustrating lesser amount of matrix (about 10% volume of breccia) with more igneous component. From AP-23-291 at 134 m depth.

Figure 7-15: Polymictic Breccia with Higher and Lesser Amount of Matrix (Photo 9 a (left) and b (right))



Polymictic Breccia illustrating mineralized veinlets (V2) cut across both the clasts and matrix of the breccia. From AP-12-162 at 135 m depth.

Figure 7-16: Polymictic Breccia (Photo 10)

The Polymictic Breccia is oriented along a that outcrops in the center of the deposit area that strikes 078°/78° S. The Polymictic Breccia comes to surface at the center of the proposed open pit from the 2023 prefeasibility study and extends at least 1000 m vertically from surface. The breccia core appears to be tapering at depth however, this could be due to lack of drilling. Insufficient drilling has been completed to fully delineate the breccia and it remains open to depth. The core of the Polymictic Breccia is irregular in its dimensions, but has an average width about 55 to 80 m, and strikes for about 250 m in an east-west direction with a steep southerly plunge.

Polymictic Breccia illustrating late white quartz-calcite veinlets (V6qc) cutting across both clasts and matrix of the breccia. From AP23-297 at 83.4 m depth.

Figure 7-17: Polymictic Breccia with Late White Quartz (Photo 11)

7.3.4.2 Monomictic Breccia

This breccia type (Figure 7-18) comprises largely intrusive clasts in a dense siliceous matrix; clasts of other rock types are locally present but in the minority. The matrix contains locally abundant sulphide minerals that comprise mainly pyrite, pyrrhotite and arsenopyrite and these sulphide minerals rim or react with the breccia clasts. Breccia clasts may be angular or rounded and there is evidence of rock flour and brittle fracturing. These breccias may be autobreccias developed during intrusion emplacement and clast-supported crackle breccia is locally dominant (Gibson, 2012). The alteration style to the southwest of the HGP is distinct from the rest of the mineralization at Ana Paula with strong clay alteration and local advanced argillic mineralogy. This breccia zone requires further delineation as low-grade mineralization associated with it remains open.

Monomictic Breccia with dominantly feldspar porphyry clasts with minor amounts of matrix, but note the polymictic clasts on the left side of the image. From AP-11-51 at 157.7 m depth; photo of HQ core with width of core of approximately 6.35 cm.

Figure 7-18: Monomictic Breccia (Photo 12)

7.3.4.3 Contact Breccia

Contact breccias occur along the contacts between feldspar porphyry phases and the host sediments. The breccias are interpreted to have formed by the forceful intrusion of the feldspar porphyry phases that brecciates the sediments, but the feldspar porphyries are also commonly brecciated. The main clast type may be dominated by one of the two rocks in contact, or be a mix of both rock types. The contact breccias vary between clast-supported crackle breccias (Figure 7-19a) to matrix-supported breccias (Figure 7-19b) that usually have a feldspar porphyry matrix. The contact breccias only occur over a few tens of centimetres, but have commonly been logged by previous workers over tens of metres. The contact breccias are locally cut by later hydrothermal polymictic breccias from two to 20 centimetres wide.

(a) (left): Contact Breccia showing crackle brecciation with feldspar porphyry clasts on the right and sediment clasts on the left. The white quartz veining is late epithermal overprint (V6q). From AP-11-76 at 304 m depth.
(b) (right): Contact Breccia with a matrix of feldspar porphyry supporting sediment clasts. From AP-15- 238 at 28 m depth. Photos of HQ core with width of core of approximately 6.35 cm.

Figure 7-19: Contact Breccia with Crackle Brecciation and with a Matrix of Feldspar (Photo 13 a (left) and b (right))

7.3.5 Structure

The boundary between the Teloloapan and Morelos Platform Terranes underlies the Ana Paula deposit as the Teloloapan Thrust Fault (Campa and Coney, 1983). The surface trace of this thrust is interpreted to lie in the valley just east of the Ana Paula camp and trends north-northwest past the town of Cuétzala del Progreso (Figure 7-4). Cabral-Cano et al. (2000) casts doubt on this fault being a terrane boundary further north of the town of Cuétzala del Progreso, but current mapping in the area of Ana Paula aligns with the view of Campa and Coney (1983).

The sediment package of the Acapetlahuaya Formation is isoclinally-folded and generally trends north-northwest and dips steeply to the southwest. Only one large scale syncline has been mapped in this package near the Ana Paula deposit and the axis of that fold appears to be sheared (Johnson, 2014, Lloyd, 2023b) (Figure 7-20a). A number of smaller thrust style (Figure 7-20b) and normal faults are visible in road cuts through the sediment package that would be secondary structures to the main Teloloapan thrust fault and are striking somewhat parallel to the bedding. These secondary faults have not been well mapped along strike. The southern projection of the large fold axis is the location of the main intrusive body at Ana Paula. The package of sediments has been intruded by a series of feldspar porphyritic intrusions, generally along the bedding plane weaknesses, but also as cross-cutting dykes. These contacts between intrusive and sediment domains have become fluid pathways for ascending mineralized fluids and for narrow fingers of polymictic breccia off the main Polymictic breccia comprising the High Grade Panel or for the smaller hydrothermal breccias and Monomictic Breccias to the south and southwest.

(a) (left): Sheared bedding of sediment domain rocks in the core of the large syncline.
(b) (right): Low angle thrust fault cutting bedding of sediment domain rocks.
(c) (left): Sheared bedding of the sediment domain rocks.
(d) (right): Narrow zone of Complex Breccia (right end of middle row of core) between Polymictic Breccia and sediments.

Figure 7-20: Sheared Bedding (Photo 14 a (top left), b (top right), c (bottom left), and d (bottom right))

Locally, the contact between the feldspar porphyry and the sediments is faulted with minor clay gouge. More commonly, the sediments near these contacts are also sites of shearing (Figure 7-20c) or of narrow breccia zones that are likely healed zones of movement (Figure 7-20d). The movement along these contacts and/or associated nearby shears is the mechanism that has allowed the emplacement of the mineralized V2 arsenopyrite micro-veinlets in the feldspar porphyries and to a lesser extent the other rock types. The micro-veinlets are more abundant in the feldspar porphyries than other rock types due to the more brittle nature of the intrusives compared to the host sediments. The micro-veinlets are less common in the Polymictic Breccia due to the heterolithic nature of the breccia and the initial porous matrix. Once the matrix was replaced by sulphides and quartz it began to behave as a brittle body and was fractured by the V2 event (Figure 7-32, Photo 25). It is this set of micro-fractures / micro-veinlets that created the bulk of the large low grade resource that was the focus of previous workers.

3 cm wide zone of clay-rich fault (bottom of center row of core) with disseminated pyrite within the Polymictic Breccia. From AP23-297 at 98 m depth; photo of PQ core; width of core is approximately 8.65 cm.

Figure 7-21: 3 cm Wide Zone of Clay Rich Fault (Photo 15)

Other narrow, usually clay-filled faults appear to be directly associated with stronger zones of V2 micro-veinlets. These clay-bearing faults are usually very narrow (<1 cm) but occasionally comprise rubble zones 10's of centimetres wide. The orientation of these faults is not well constrained, but their association with high gold grade veinlet zones suggests that they are conduits for gold mineralization in addition to the intrusive / sediment contacts. Figure 7-21 is an example of a 3-centimetre wide clay-rich fault zone within the Polymictic Breccia. It also occurs at the boundary between mid-grade material (6 to 8 g/t Au) and a high-grade interval (24 to 94 g/t Au) that has higher amounts of pyrite than usually present in the Polymictic Breccia.

On surface and in at least one area of the deposit a series of roughly east – west faults have been noted. The emplacement of High Grade Panel and Polymictic Breccia appears to have been controlled by one of these faults striking 078°/78° SE. This fault is exposed in current road cuts in the core of the drilled area and comprises a 1 cm wide fault with a clay fill (Figure 7-22). In the surface outcrop the hanging-wall of the fault is more fractured and clay-altered than the footwall in the area immediately above the top of the Polymictic Breccia body. Another roughly east – west presumed fault that dips almost vertically (Lloyd, 2023a) is seen in the drill data located about 50 metres into the footwall of the Polymictic Breccia (Figure 7-15b); the 'Parallel Panel'.

1 cm wide zone of clay rich fault (center of image diagonal up to the left) which controls the location of Polymictic Breccia. Photo looking East.

Figure 7-22: 1 cm Wide Zone of Clay Rich Fault (Photo 16)

While these two approximately east-west striking faults are known hosts to mineralization, they are difficult to identify as most historic drilling was directed to test the contacts of the sediments with the intrusive porphyries and was oriented sub-parallel to the east-west structures. That historic drill orientation was well designed as the contacts are primary controlling structures for mineralization and for the high-grade set of veins as noted by Johnson (2014) and summarized in Figure 7-23.

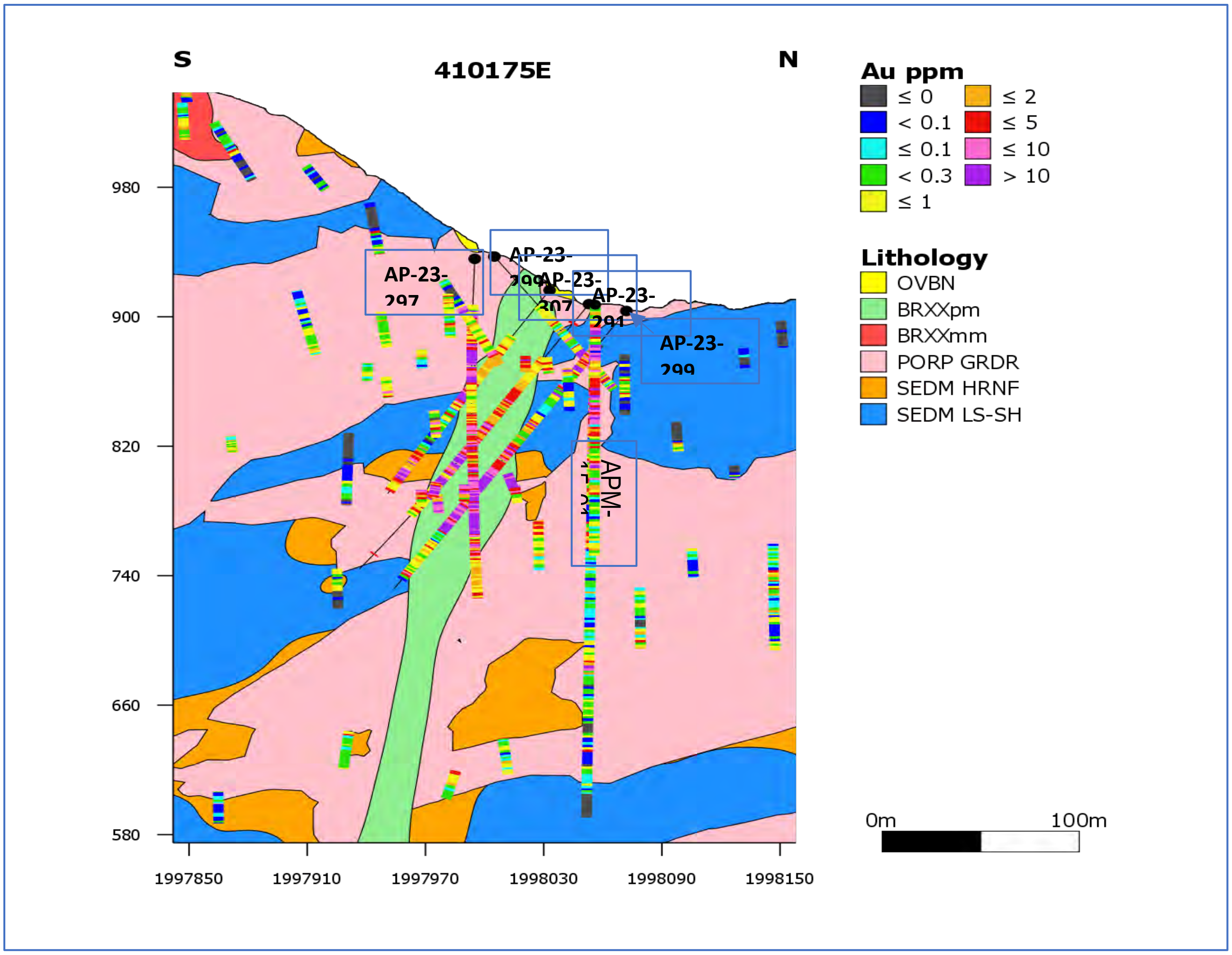
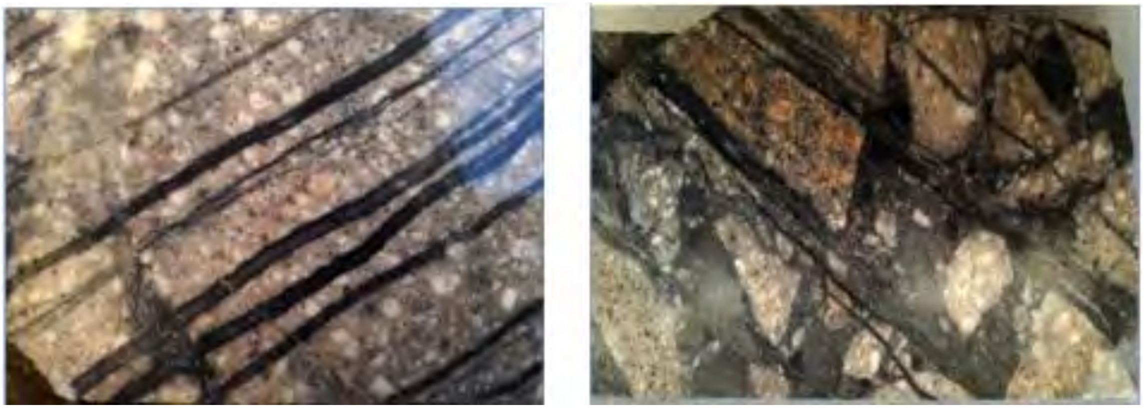


Figure 7-23: Cross-section looking West at a parallel East-**West structure, the 'Parallel Panel' highlighted by** drill hole APM-15-01.

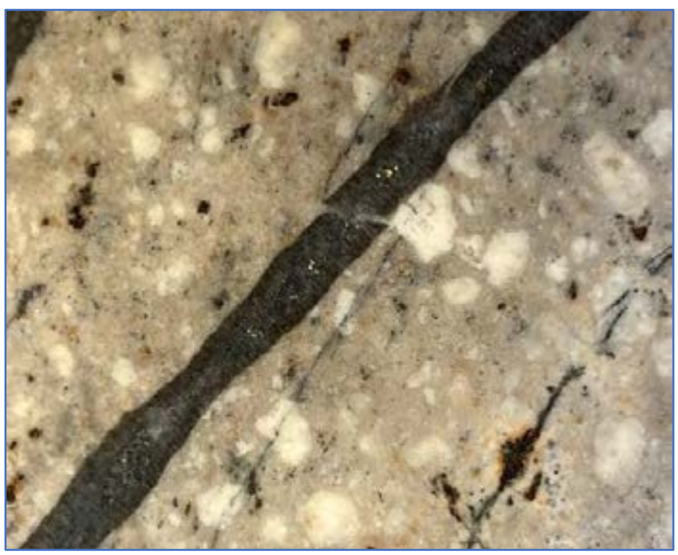
Another set of structures that exert control on high grade gold deposition are sets of sheeted veins as observed in holes AP-23-293, AP-23-297 and AP-23-303. These veins appear to be a sub-set of the V2 arsenopyrite-rich micro-veinlets and are typically only 1 to 3 mm wide and spaced between 1 cm to 20 cm apart. They cut both the feldspar porphyries (Figure 7-24a) and the Polymictic Breccia (Figure 7-24b).



(a) (left): Sheeted 1 to 3 mm wide V2 micro-veinlets cutting the feldspar porphyry in AP-23-297 at 228 m depth.
(b) (right): Sheeted 1 to 3 mm wide V2 micro-veinlets cutting the Polymictic Breccia in AP-23-297 at 222 m depth.

Figure 7-24: Sheeted Micro-Veinlets (Photo 17 a (left) and b (right))

The widest interval of sheeted veining is 8.3 m core length in AP-23-297 which returned a weighted average of 15.7 g/t Au. The veins in that hole are oriented at a strike of 298°/75°N. An interval of sheeted veining in AP-23-303 is present over a couple of meters but multiple flakes of visible gold were observed in one of those veins (Figure 7-25). In general, visible or coarse gold is rare at Ana Paula. More work needs to be done to understand the distribution and extent of the sheeted vein sets.



3 mm wide sheeted V2 micro-veinlet with visible gold flakes down the center and cutting the feldspar porphyry in AP-23-303 at 206 m depth.

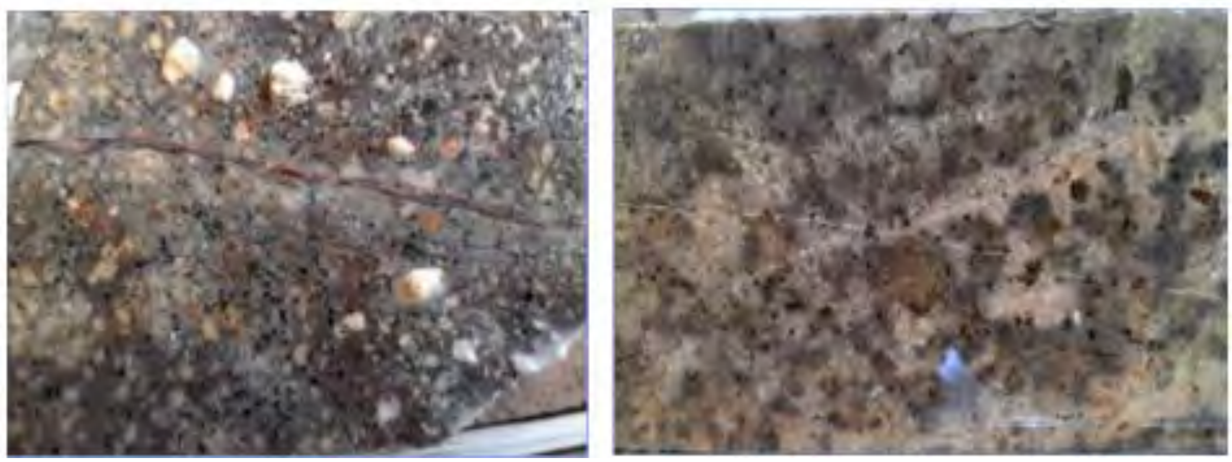
Figure 7-25: Wide Sheeted V2 Micro-Veinlet with Gold Flakes (Photo 18)

7.3.6 Alteration

The most comprehensive studies of alteration have been completed in a series of petrographic studies by Petrascience (2005), Colombo (2012) and McComb (2023).

Petrascience (2005) describe pervasive alteration of the plagioclase phenocrysts and groundmass in intrusive rocks to K-feldspar which McComb further describes as adularia. The K-feldspar alteration is later replaced by iron-carbonate, sericite and clay. Hornblende and biotite phenocrysts are altered to carbonate±chlorite±pyrite±titanite with minor muscovite, clay and rutile. Latest alteration of plagioclase phenocrysts comprises clay alteration which locally consists of swelling clays. The pervasive K-feldspar alteration of the intrusive rocks is a feature recognized elsewhere in the Guerrero Gold Belt by Jones (2017) who interpreted K-feldspar flooding as a retrograde skarn event that introduced the first episode(s) of gold mineralization.

In drill core, argillic alteration of both the plagioclase and potassium feldspar phenocrysts comprises fine-grained clays (presumed to originally have been mainly sericite as per the thin section studies), but more recently converted to kaolinite and white micas including swelling clays (Figure 7-26a). The zones with the stronger swelling clay development were noted as being near more fractured zones that had had access to supergene waters and oxidation.



(a) (left): Swelling clays in the plagioclase phenocrysts from AP-11-76 at 544 m. Photo of HQ core.
(b) (right): Mottled texture of skarn alteration overprinting feldspar porphyry from AP-11-80 at 195m.

Figure 7-26: Swelling Clays and Mottled Texture of Skarn (Photo 19 a (left) and b (right))

Hornfels and skarn alteration are common along sediment / intrusive contacts and have been differentiated based on grain size; aphanitic calc-silicate alteration has been termed hornfels while mesoscopic calc-silicate alteration has been termed skarn. These zones of hornfels were also usually noticeable by the striped alternating style of alteration where individual beds of sediments have been preferentially affected (Figure 7-27b). At deeper levels, the alteration of the sediments becomes more widespread and continuous with the sediments generally a continuous bleached pale colour with bands of a medium-brown-coloured garnets; though they are still very fine-grained. This style of widespread skarn alteration is more indicative of being near a larger heat source, than being directly associated with mineralization like the narrower zones at shallower levels. Another variation of this more pervasive skarn alteration is fine- to medium-grained white marble seen at depth as in Figure 7-12 (Photo 7).

a (left): Sediment domain rocks partially altered to hornfels (lighter grey bands) from AP-11-80 at 330 m. Note how more disseminated pyrite is located in the altered hornfelsed bands compared to the fresher (dark) bands.
b (right): Fresh biotite in the plagioclase porphyry associated with a contact with hornfelsed sediments from AP-11-20 at 418 m.

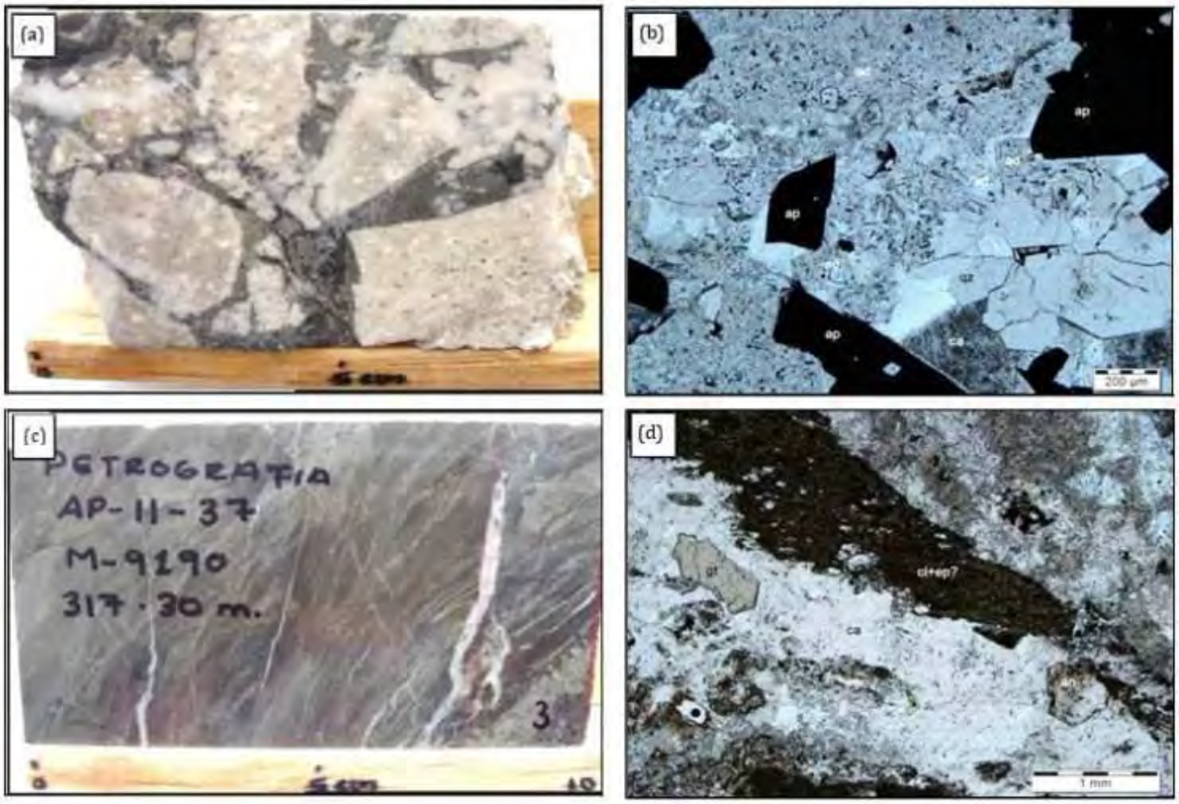
Figure 7-27: Sediment Domain and Fresh Biotite (Photo 20 a(left) and b(right))

In deeper holes or along some intrusive / sediment contacts the intrusives have a greenish colouring and a mottled appearance that may represent an initial prograde pyroxene / olivine skarn alteration event (Figure 7-26b). The alteration of the sediments in the shallower part of the system is directly related to proximity to an intrusive contact (as shown in Figure 7-27b), with the intensity of the alteration decreasing away from the intrusive contact. The mineralization in those same altered zones also decreased rapidly away from those contacts.

Skarn mineralogy in studies to date largely comprises retrograde mineral assemblages with lesser metastable prograde assemblages and mixed prograde-retrograde assemblages. The prograde assemblages comprise garnets, andalusite and pyrrhotite. Petrascience (2005) described retrograde skarn alteration comprising fine-grained, fractured and broken garnet, patchy aggregates of calcite-hematite replacing K-feldspar, and muscovite or chlorite or clay replacing biotite. Colombo (2012) described a contact metamorphic assemblage in sediments comprising calcite, dolomite, epidote, andalusite and garnet.

Rocks of the Polymictic Breccia comprise K-feldspar (adularia) altered clasts of feldspar porphyry and sediment domain clasts in a matrix of quartz, iron carbonate (ankerite or siderite) and sulphides, which include arsenopyrite, pyrrhotite and pyrite. Work by Petrascience (2005), Colombo (2012) and more recent work by McComb (2023) have identified gold associated with arsenopyrite as free grains on or around the grains of arsenopyrite (Figure 7-29, Photo 22). In the Monomictic Breccia short wave infrared (SWIR) spectroscopy confirmed an overprinting assemblage dominated by illite and other white micas and clays including the advanced argillic phase dickite.

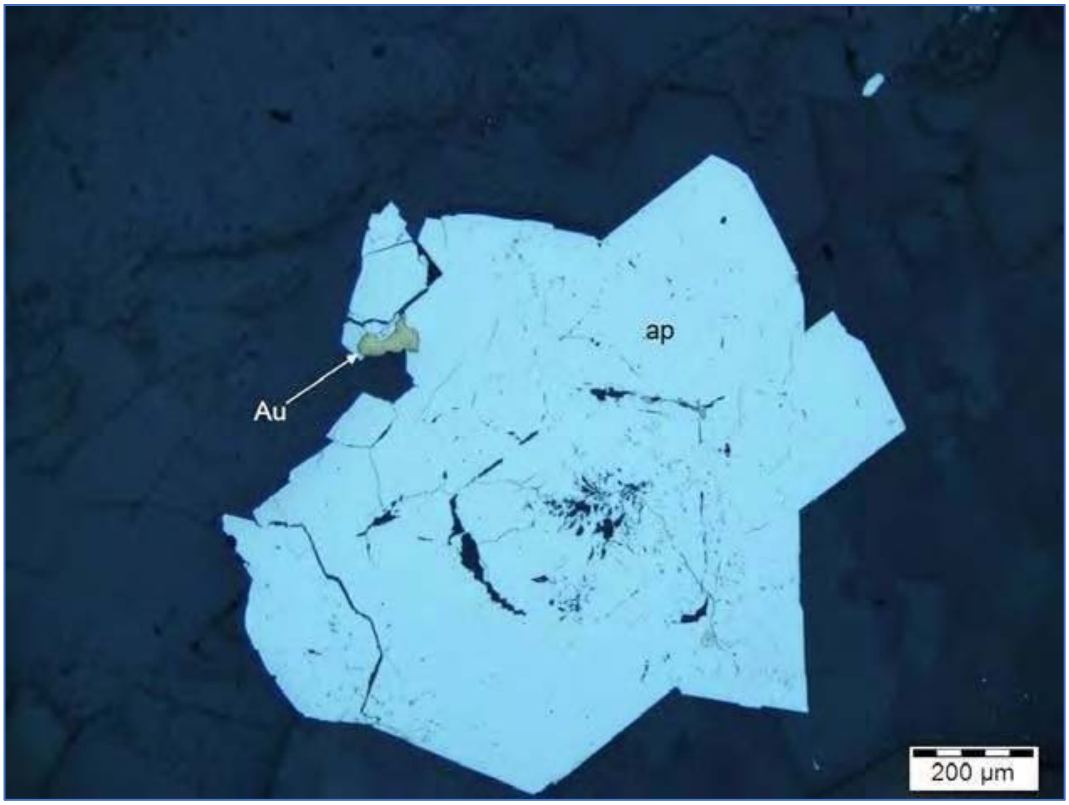
The alteration paragenesis suggested low-sulphidation epithermal conditions in some of the samples. In one example, gold mineralization was associated with a gold-bearing adularia-quartz-calcite arsenopyrite hydraulic breccia (AP-11-37, 121.30 m) (Figure 7-28a and Figure 7-28b). If this adularia-quartz-calcite is indeed epithermal, it would be a later overprint associated with the broader V6 epithermal vein event. In another sample, a contact metamorphic assemblage was characterized as calcite-epidote-andalusite-garnet (AP-11-37, 317.30 m) (Figure 7-28c and Figure 7-28d). In some cases, the alteration was overprinted by adularia-bearing assemblages (adularia-calcite-quartz±pyrite±arsenopyrite). In one of the samples affected by this alteration, gold was spatially associated with arsenopyrite which in most of its occurrences tends to replace pre-existing pyrite (Figure 7-29).



(a) (top left): High grade breccia longitudinal split core hand specimen, AP-11-37, 121.30 m, 18.6 g/t Au and 17.5 g/t Ag, Sample #9063.

(b) (top right): Photomicrograph of (a) shows the contact between the intensely-altered rock fragment and the quartz-calcite-arsenopyrite infill (qz, ca, and ap) is populated by rhombic adularia (ad). Plane polarized transmitted light.
(c) (bottom left): Hornfels, AP-11-37, 317.30 m, longitudinal split core hand specimen; 0.192 g/t Au, 0.2 g/t Ag, Sample #9190.
(d) (bottom right): Photomicrograph of (c) shows that clay- epidote(?)-rich septa occurs within the calcite-rich vein (ca) which crosscuts the clay-rich schist and hosts andalusite (an) and garnet (gt) crystals. Plane polarized transmitted light. (Colombo 2012).

Figure 7-28: Breccia (Photo 21 a(left) and b(right)



Gold Grain (Au) Located Between Euhedral Arsenopyrite (ap) and Quartz (Colombo, 2012).

Figure 7-29: Gold Grain (Photo 22)

7.4 MINERALIZATION

Mineralization at the Ana Paula deposit is structurally-controlled. Re-logging of historic and current drill holes has resulted in the differentiation of a suite of mineralized and barren veins and their cross-cutting relationships have enabled paragenetic sequence to be established. Up to eight veining events have been identified, of which two or three are gold mineralizing events. While two of the veining events are related to gold deposition, the same mineralized fluids responsible for the mineralized veins also deposited gold as matrix fillings and clast replacements in the Polymictic Breccia and mineralized skarn style replacement bodies along feldspar porphyry and sediment contacts.

7.4.1 V0 – White calcite veinlets

White calcite veinlets are hosted in the deformed sediment domain rocks and are 1 to 25 mm wide. They have no consistent orientation and are likely the result of the deformation of the sediments during thrust faulting. These are the earliest set of veins and not mineralized (Figure 7-30).

Early white calcite veinlets.

Figure 7-30: Calcite Veinlets (Photo 23)

7.4.2 V1 – Quartz-pyrite veinlets

Quartz-pyrite veinlets (Figure 7-31) are hosted in the sediments. These veinlets are typically 1 to 2 mm in width and composed of variable amounts of silica and fine- grained pyrite, but usually more sulphides than silica. These veinlets also occur in the clasts of the polymictic breccia and therefore interpreted to be from deeper sediments in the fluid pathway that created the main polymictic breccia.

V1 - Quartz-pyrite veinlet in early sediment clast (lower left).

Figure 7-31: Quartz-pyrite Veinlet (Photo 24)

7.4.3 V2 – Sulphide Micro-veinlets

Sulphide micro-veinlets are hosted in all rock types, but more abundant outside of the Polymictic Breccia in the feldspar porphyries. These are typically only 1 mm in width or less and often appear discontinuous (Figure 7-32). They typically host arsenopyrite in addition to a thin black very fine-grained smudge. Wider veinlets include white quartz and/or pyrite. This generation of micro-veinlets also occur as thin breccia veins 3 to 12 mm wide (Figure 7-33a), mossy patchy halos, sheeted veins 2 to 5 mm wide (Figure 7-33b), or as wispy discontinuous micro-veinlets. This is the main gold mineralizing event at Ana Paula.

V2 micro-veinlets fractures (narrow diagonal veinlets) cut by V3 and V4 veinlets. From AP-23-291 at 147 m depth.

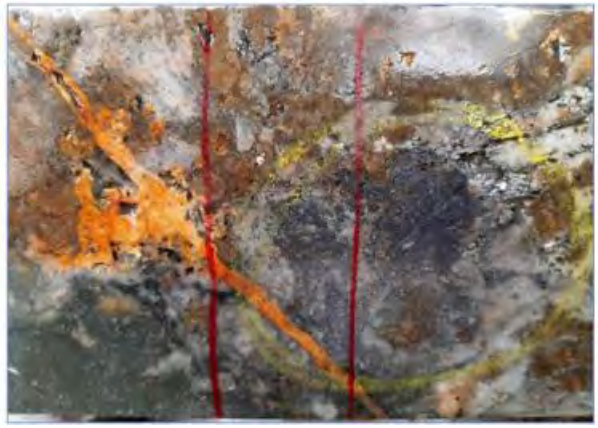
Figure 7-32: V2 – Sulphide Micro-veinlets (Photo 25)

(a) (left): V2bx micro-veinlets dilating to form a local breccia zone. From AP-23-303 at 30 m depth.
(b) (right): V2s sheeted veins cutting and cut by V2h veinlet. From AP-23-297 at 228 m depth.

Figure 7-33: V2bx Micro Veinlets and V2s Sheeted Veins (Photo 26 a(left) and b(right))

7.4.4 V3 – Quartz-pyrite±ankerite veinlets

Quartz-pyrite±ankerite micro-veinlets very similar to and cross-cutting or cut by the V2 veinlets (Figure 7-34a). This generation also occurs as medium-grained pyrite in veinlets or as patches (Figure 7-34b). The medium-grained pyrite is interpreted as related to a later retrograde skarn event and the pyrite is likely replacing early pyrrhotite. It is this medium-grained pyrite that also often creates the massive sulphide mineralization (Figure 7-35) in the sediments. This V3 event appears to be responsible for a few distinct intervals that are gold rich but lack arsenic.



(a) (left): V3 quartz+pyrite+ankerite veinlets cutting a feldspar porphyry clast. From AP-23-297 at 207 m depth.
(b) (right): V3 patchy medium-grained pyrite overprinting the matrix and clasts of the Polymictic Breccia. From AP-23-293 at 102 m depth.

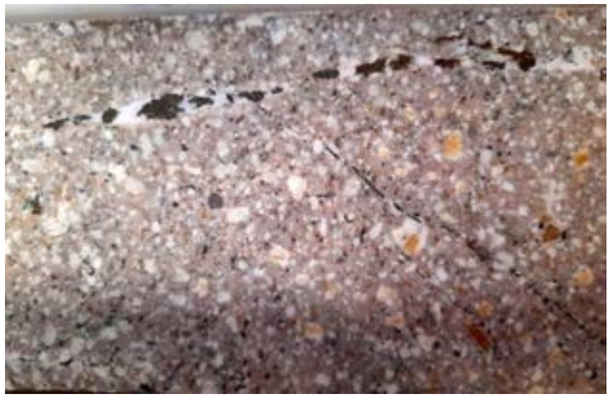
Figure 7-34: V3 quartz+pyrite+ankerite Veinlets and V3 Patchy Medium-grained Pyrite (Photo 27 a(left) and b(right))

V3 patchy medium-grained pyrite overprinting the bedding of the sediments. From AP-15-238 at 33 m depth.

Figure 7-35: V3 Patchy Medium-grained Pyrite (Photo 28)

7.4.5 V4 – White quartz-massive sulphide

White quartz and massive sulphide veining usually occurs as 1 to 3 mm wide white massive quartz veinlets with sections of massive sulphides, which is almost always comprises pyrite. The sulphides fill the width of the veinlet for short distances with the remainder as quartz. Occasionally this generation of veining presents as white quartz bordered by fine-grained pyrite. This generation of veinlets appear to be post-mineral.



V4 white quartz veinlet with sections of massive pyrite cutting a narrow diagonal V2 veinlet. From AP-23-303 at 21 m depth.

Figure 7-36: V4 White Quartz Veinlet (Photo 29)

7.4.6 V5 – Grey quartz veinlets

Grey quartz veinlets are usually 1 to 10 mm in width and may or not contain fine-grained pyrite or more rarely arsenopyrite. The sulphides often occur as borders to the veinlet or as discontinuous lines of sulphide down the center or some part of the veinlet. Overall, not very common and possibly a later re-mobilization of the early gold mineralization.

V5 grey quartz veinlet with some flakes of visible gold. From AP-23-300 at 94.4 m.

Figure 7-37: V5 Grey Quartz Veinlet (Photo 30)

7.4.7 V6 – Epithermal quartz veins

Epithermal quartz veins which may be quartz, quartz-adularia, quartz-carbonates, or calcite often with calcite crystals growing into open space. These veinlets are often banded and may or not have bands of fine-grained sulphides; typically pyrite. Widths are variable between 1 mm and 10 cm and clearly cross-cut all other veinlets and host rocks. These veins also frequently use the same fractures as earlier veinlets. This generation of veining may be related to later rhyolite flow domes. See Figure 7-38b.

Photo 31a (left): Black matrix (probably sulphide-rich) supporting small clasts in a narrow breccia vein filling the open space of a late epithermal V6qc veinlet. From AP-23-291 at 128 m depth.
Photo 31b (right): V6qa quartz–adularia veinlet with bands of sulphides and local open space with quartz crystals. From AP23- 291 at 126 m depth.

Figure 7-38: Black Matrix and V6qa Quartz-adularia Veinlet (Photo 31 a(left) and b(right))

In addition to the above seven veining events there are fracture fillings that are widespread but not very common, so their timing relationship to the other vein events is still not clear. Some of these comprise chalcedonic silica that are likely related to the later epithermal event (V6).

7.5 SUMMARY:

Four styles of mineralization are interpreted for the Ana Paula Project; i) Polymictic Breccia-hosted, ii) exoskarn-style, iii) arsenopyrite micro-veinlets and iv) disseminated sulphides.

The Polymictic Breccia-hosted mineralization at Ana Paula is principally structurally controlled. The highest grade mineralization is mainly hosted in a polymictic diatreme breccia (referred to as the Polymictic Breccia that was emplaced along an east – west (078/78S) fault and which has been drilled to over 1000 metres depth. The mineralization occurs mainly as sulphides (arsenopyrite >> pyrite > pyrrhotite) that has replaced a porous rock flour matrix and replaced bedding in the sediment clasts. Gold mineralization also occurs as 1-2 mm micro-veinlets of arsenopyrite±pyrite (V2 event) and by patchy, medium-grained pyrite (V3 event) that is interpreted as replacing early pyrrhotite. The gold mineralization is interpreted as intersecting the diatreme breccia at various levels and migrating along contacts between the feldspar porphyry sills/dykes and sediments. These contacts and structures acted as conduits for mineralized fluids to intersect the Polymictic Breccia at about 450m below surface and emplace sulphide mineralization and gold from that level upwards. The structural controls are evident in the plunge of the highest grade gold zone that mimics the plunge of the intersection of the east-west trending Polymictic Breccia with the southwest-dipping sediment / intrusive contacts. The matrix of the Polymictic Breccia also exerts control on gold mineralization. Lower levels of the Polymictic Breccia have a more intrusive-dominated matrix and upper, better mineralized portions of the Polymictic Breccia have a rock flour-dominated matrix that is more easily replaced by sulphide and gold mineralization.

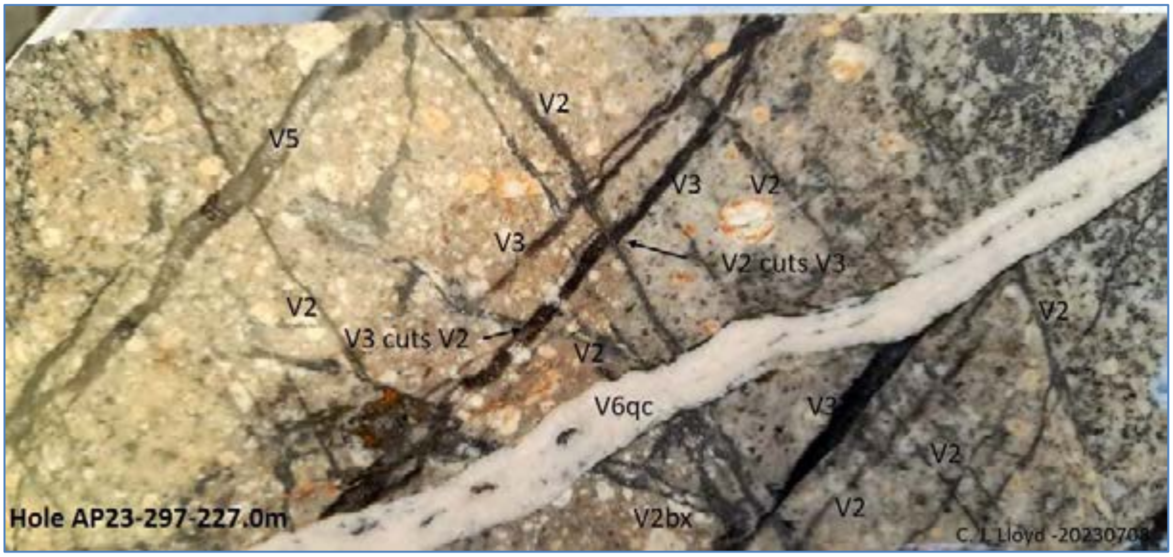


Photo 32: Illustrating the cross-cutting relationships of four of the vein sets. Note that the V2 and V3 cut each other so overlap in time, with V2 having As-Au and V3 with only Au. From AP-23-291 at 107 m depth.

Figure 7-39: Cross-cutting Relationships (Photo 32)

The sediment / intrusive and Polymictic Breccia contact pathways also allowed the same mineralizing fluids to create local exoskarn replacement sulphide mineralization along bedding planes. Fine-grained pyrite or pyrrhotite are subsequently overprinted by medium-grained pyrite skarn style mineralization (Figure 7-40). This skarn-style mineralization is commonly overprinted by the arsenopyrite micro-veinlets (V2). These exoskarn zones locally comprise semi-massive sulphides and are usually rich in gold.

The third style of mineralization comprises the arsenopyrite micro-veinlets (V2 event) that overprinting all of the rock types, though they are more prominent in the feldspar porphyries, likely due to their tendency for brittle fracturing than the other rock types.

The fourth style of mineralization is disseminated sulphides in the feldspar porphyries. This style is less well studied than the veining and due to the very fine-grained nature of the mineralization. This finely disseminated mineralization is likely why some intervals with relatively weak micro-veinlet development host significant gold grades. These sulphides may be a disseminated manifestation of the V2 micro-veinlet event (Figure 7-41).

Sulphide-rich bedding planes near a feldspar porphyry / sediment contact. Note that at the contact is a zone of Polymictic Breccia that has been completely overprinted by later pyrite. From AP-11-80 at 257 m depth; photo of HQ core with width of core of approximately 6.35 cm.

Figure 7-40: Sulphide-rich Bedding Planes (Photo 33)

Fine-grained feldspar porphyry cut by V2 and V3 veinlets with a halo of fine-grained disseminated arsenopyrite. From AP-11-80 at 174 m depth.

Figure 7-41: Fine-grained Feldspar Porphyry Cut (Photo 34)

In summary the four sites of gold deposition are:

1. Polymictic Breccia hosted mineralization with mainly sulphide (arsenopyrite and/or pyrrhotite or later replaced by pyrite) filling the matrix.

2. Exoskarn style pyrite replacement sediments along intrusive contacts.

3. Arsenopyrite micro-veinlets that fracture all rock types, but best developed in the feldspar porphyries.

4. Disseminated sulphides in the feldspar porphyries, likely a different manifestation of the V2 arsenopyrite micro-veinlets.

All four styles of mineralization have been developed by mineralizing fluids that exploited the contact zones between the feldspar porphyries and host thin-bedded sediments and deposited arsenopyrite, pyrrhotite and gold. Petrographic work suggests that pyrite has overprinted an earlier pyrrhotite phase of mineralization and this suggests that the mineralizing fluids have evolved with time. It is interpreted that this event represents a retrograde skarn event as seen at other deposits in the Guerrero Gold Belt (Jones, 2017).

Preliminary gold deportment studies of four composite samples from the HGP at Ana Paula have determined that 75% of the gold is free gold and that greater than 95% of that is native gold (PMC Laboratory Ltd., 2023). The balance of the gold is mainly in electrum, with some lesser amounts in maldonite (a Bi mineral). The size of the gold grains is mainly very fine with a significant cluster of grain sizes between 32 and 64 µm, though there is still a large size range in some samples and more work is needed to better characterize the size ranges. There is also 9.5 to 16.6% of gold that was unobservable that will be the subject of further studies to characterize.

8 DEPOSIT TYPES

Economically significant gold deposits of the GGB are controlled by a variety of structural and lithologic settings and largely occur in clusters directly associated with a northwest-trending suite of calc-alkalic intrusions of similar age. This northwest-trending suite of calc-alkalic are 66 to 62 million years old (Ma) and are related to the Laramide Orogeny and are marked by a coincident northwest trend of magnetic anomalies. The trend of gold deposits and related intrusions extends for over 55 kilometres along strike and comprises the Guerrero Gold Belt.

Most of the known deposits of the GGB are intrusion-related and more specifically related to skarn mineralization, however, there is significant variability in how the mineralization is manifested. Gold skarns typically form in orogenic belts at convergent plate margins and are related to plutonism associated with the development of oceanic island arcs or back arcs.

Skarns develop in sedimentary carbonate rocks, calcareous clastic rocks, volcaniclastic rocks, or (rarely) volcanic flows. They are commonly related to intrusion of the sediments by high- to intermediate-level stocks, sills, and dykes of gabbro, diorite, quartz diorite, or granodiorite composition. Skarns are classified as calcic or magnesian types; the calcic subtype is further subdivided into pyroxene, epidote, or garnet-rich members. These contrasting mineral assemblages reflect differences in the host rock lithologies, as well as the oxidation and sulphidation conditions in which the skarns developed.

Mineralization frequently displays strong stratigraphic and structural controls. Deposits can form along sill - dyke intersections, sill - fault contacts, bedding - fault intersections, fold axes, and permeable faults or tension zones. In the pyroxene-rich and epidote-rich types, mineralization commonly develops in the more distal portions of the alteration envelopes. In some districts, assemblages of reduced, Fe-rich intrusions can be spatially related to gold skarn mineralization. Mineralization in the garnet-rich gold skarns tends to lie more proximal to the intrusions.

Significant variability in controls on mineralization are evident throughout the GGB. Much of the mineralization in the GGB is hosted within skarn settings with their strong stratigraphic and structural controls. However, intrusion-related mineralization with lithologic and structural controls without significant skarn mineralogy is also common. At Los Filos, much of the mineralization extends beyond a skarn setting proximal to a granodiorite stock and hosted in a diorite intrusive body.

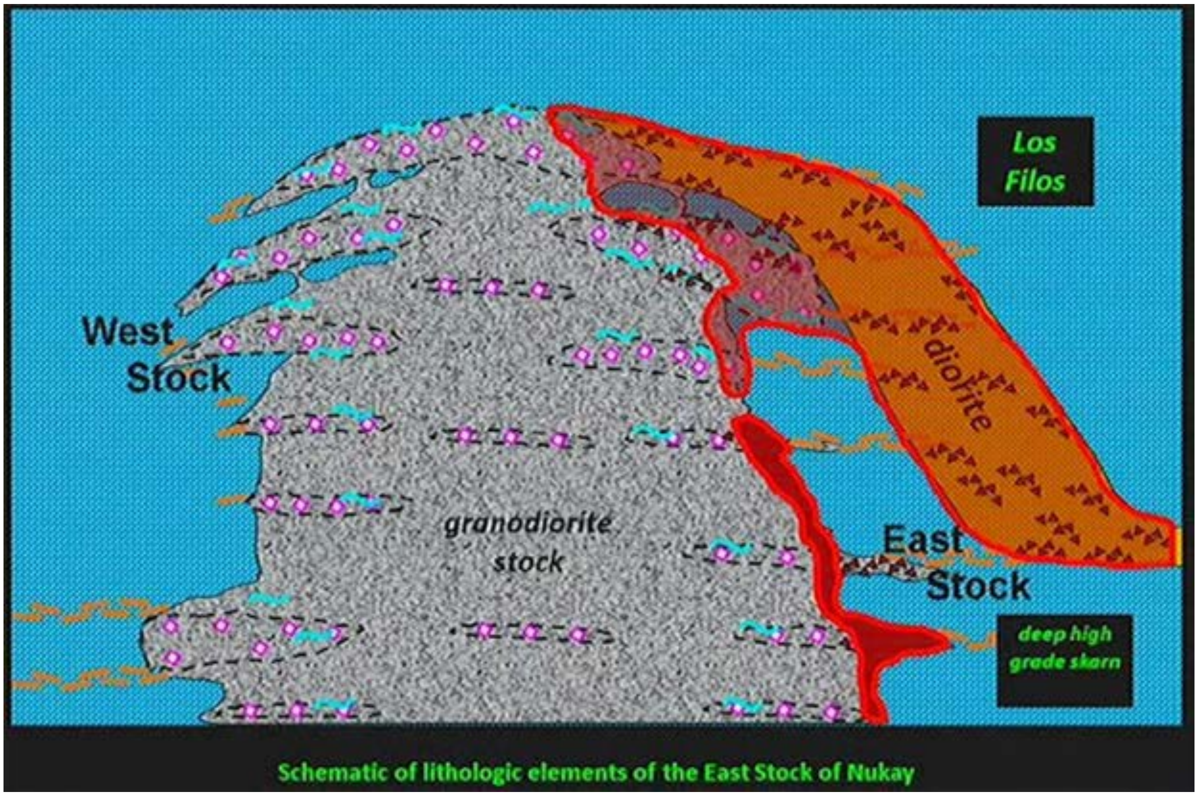


Figure 8-1: Schematic Geologic Cross-Section of the Los Filos Au Deposit

Figure 8-1 above Illustrates a granodiorite stock and associated contact skarn and granodiorite sills extending into the host sediments to intersect with a more distal diorite with fracture-controlled mineralization (Jones, 2017).

9 EXPLORATION

9.1 EXPLORATION WORK ARGONAUT GOLD (2020-2022)

No exploration work was carried out by Argonaut Gold from 2020 to 2022.

9.2 EXPLORATION WORK HELIOSTAR METALS (2023)

Heliostar carried out a two-phase drill program from April to October 2023 that comprised 22 holes for 4,202.8 metres. The first 17 holes (3,017.8 metres) were drilled with PQ tools to facilitate metallurgical sampling. These holes were designed to more optimally test the mineralization hosted within and about the Polymictic Breccia. Detailed geotechnical logging and limited packer testing were also carried out on these holes under the direction of Knight Piésold. The second phase of drilling comprised five holes (1,185.0 metres) that were exploration holes designed to test a Parallel Panel of mineralization and an area of limited drilling with anomalous pathfinder elements and gold in rock chip samples at surface.

Exploration targets identified by previous workers were also reviewed in order to prioritize the targets for follow-up drilling. These comprised the West Breccia, Rey David and San Luis.

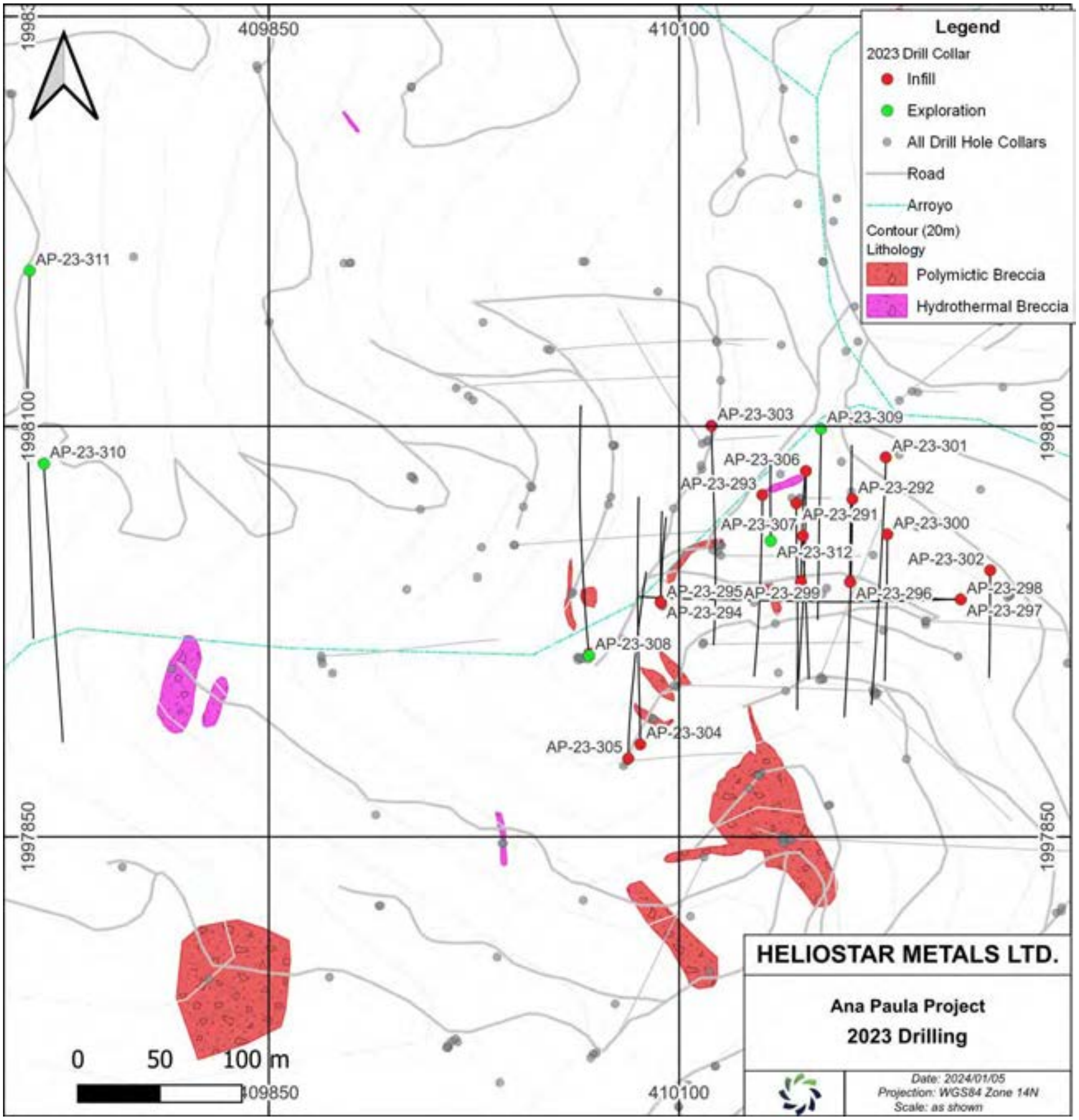


Figure 9-1: 2023 Drill Plan

10 DRILLING

Heliostar carried out a two-phase drill program from April to October 2023 that comprised 22 holes for 4,202.8 metres. The first 17 holes (3,017.8 metres) were drilled with PQ tools to facilitate metallurgical sampling. These holes were designed to more optimally test the mineralization hosted within and about the Polymictic Breccia. Detailed geotechnical logging and limited packer testing were also carried out on these holes under the direction of Knight Piésold. The second phase of drilling comprised five holes (1,185.0 metres) that were exploration holes designed to test a Parallel Panel of mineralization and an area of limited drilling with anomalous pathfinder elements and gold in rock chip samples at surface. Not including QA/QC samples and external check samples, 3,659 samples were collected from 2023 drilling.

10.1 DRILL SUMMARY

The updated database that forms the basis of this resource estimate includes 166,587.1 total metres in 423 diamond drill hole aggregating results from 112,179 sample intervals with an average length of 1.5 metres. All samples were assayed for gold and silver. This includes drill holes from Goldcorp, Newstrike, Alio Gold (Timmins Gold) and Heliostar Metals (Table 10-1).

Table 10-1: Drill Hole Summary by Year and Company

Year	Company	Number of holes	Total length (m)
2005	Goldcorp	21	4,966.0
2006	Goldcorp	6	2489.2
2007	Goldcorp	6	1721.3
2010	Newstrike	12	5,227.1
2011	Newstrike	57	29,698.1
2012	Newstrike	75	42,352.3
2013	Newstrike	87	38,694.3
2014	Newstrike	15	7,316.4
2015	Alio	10	2,008.3
2016	Alio	31	7,304.3
2017	Alio	58	13,478.2
2018	Alio	8	4,337.0
2023	Heliostar	22	4,202.8
	Total:	423	166,587.1

10.2 DRILL METHODOLOGY

Drill hole nomenclature initiated by Goldcorp and has continued in the same fashion consecutively between subsequent operators. The hole naming convention used four prefixes; AP for the Ana Paula deposit area, AN generally but not exclusively for holes drilled in the northern part of the claim block, AS for holes drilled in the southern claim block and SL for holes drilled in the San Luis / Rey David area. For Ana Paula area holes, the prefix APM referred to metallurgical holes, the APGT prefix referred to geotechnical holes and the APRC prefix referred to reverse circulation drill holes. The letter prefixes (in most cases) were followed by two digits for the year and two or more digits for the consecutive drill hole number. For example, AP-05-11, indicates that it was drilled in 2005, and would have been the 11th hole drilled on the Project; AP-10-12 was drilled in 2010 and would have been the 12th hole drilled on the Project. All core is stored at the core logging facility along with pulps and coarse laboratory rejects. The facility is locked and monitored 24/7 by a security guard.

Goldcorp and Newstrike (2005-2015)

The drill holes were cored with HQ diameter core rods with a 77.8 mm inner diameter, reducing to NQ diameter core rods, a 60.3 mm inner diameter, only if downhole conditions warranted.

After the core was pulled from the drill rod, it was boxed and transported via flatbed truck to a secure core logging facility. Top boxes were secured with strong rubber retention straps to prevent spillage. At the logging facility, the core was geologically described, and recovery (percentage) and rock quality designation (RQD) were recorded. Geological logging was conducted at a graphical scale of 1:100. The core was then marked for sampling with wax crayons and sample characteristics (lithology, alteration, structures, mineralization, gangue, etc.) were coded for later digital compilation. Samples were marked during the core logging procedure and samples were divided based on geologic features. Within homogeneous zones, samples were divided into relatively equivalent lengths of 1 to 2 metres, with 0.5 m samples taken when mineralization characteristics warranted. Quality assurance / quality control samples were also inserted at this stage for Newstrike holes.

Prior to initiating a drill campaign at Ana Paula, an audit of historic drill results was completed by Newstrike in 2010 on all drill and surface data collected prior to 2010 by Goldcorp. The audit included statistically proportional re-sampling of selected pulps, rejects, ¼ core splits, and in some cases ½ core splits to verify Goldcorp's reported drill results and for QA/QC purposes to serve as check assays on Goldcorp's drill results.

Alio Gold (2015 -2018)

All drill holes are planned and sited based on cross section and plan projections using a UTM based grid system with east trending grid lines stepping out every 50 to 100 m to the north as shown on Figure 10-1, Figure 10-2, and Figure 10-3. The final drill site was adjusted in the field depending on topography or local conditions and paint was used to mark the specific collar location in the field. Each drill hole is assigned a specific sequential number and the location is marked with an azimuth and length. Following completion of the drill hole, the final drill hole location is recorded in the field using a Trimble GPS R6 Model 1 noting UTM location coordinates as northerly, easterly, and elevation.

The drilling programs were carried out using drill contractor AP Explore Drilling for infill drilling and Globexplore for condemnation drilling. All drilling was supervised by Alio Gold technical staff and general industry standards in all matters were followed.

Drill holes are mostly inclined east at angles of -45° or -60° varying to a maximum of -90° (vertical). All core drilling was completed with HQ (63.5/96.9 mm) diameter drill rods, reducing to NQ (45.0/75.7 mm) diameter core if needed. Deeper drill holes (greater than 1,000 m) used PQ (85.0/122.6 mm) diameter core rods and reduced to HQ or NQ diameter, as necessary. Core rod dimensions given include inner and outer rod diameters in millimeters. Core recovery averaged 97%. Ground conditions are very good in general and only a few holes were lost or reduced due to poor ground conditions.

Down hole inclination and azimuth were recorded every 50 metres with a REFLEX EZ-shot that also includes temperature and magnetic measurements. A geologist supervised the drilling operation, completed a "quick log", including visible mineralized zones, structures, and lithology units. A geologist was always present at the planned completion of the drill hole to avoid terminating the hole in a mineralized interval. Drill core was boxed and secured before it was transported at the end of each 12-hour drill shift to the Company's secure core logging facility for processing by personnel of the Company or their contractors.

Argonaut Gold (2020 - 2022)

No drill programs were carried out by Argonaut Gold from 2020 to 2022.

Heliostar Metals (2023)

All drill holes were planned and sited in LeapFrog™ to optimally test a mineralized zone termed the High Grade Panel which dominantly comprises the Polymictic Breccia. Drill holes were designed to test strike extensions, up- and down-dip extensions of the High Grade Panel and limited exploration drilling. Final drill sites were adjusted in the field depending on topography or local conditions to minimize disturbance. Following completion of the drill hole, the final drill hole location was recorded in the field using a Trimble TSC3 that recorded the location coordinates in datum WGS84 Zone 14N. A correction of -8.77 metres was applied to the GGM10 INEGI geoid to match surveyed elevations and a 2017 LiDAR ("Laser Imaging, Detection and Ranging") survey.

Bylsa Drilling S.A. de C.V. based in Hermosillo, Sonora, Mexico carried out all drilling. All drilling was supervised by Heliostar Metals technical staff and industry best practices were followed.

All drill holes, with the exception of one were drilled either to the north or south with most dips at -45° to -60° to a maximum of -85°. These holes were drilled on north-south section to more optimally test the High Grade Panel and one hole was drilled along the plunge of the High Grade Panel at an azimuth of 270° and a dip of -46°. Holes AP-23-291 to AP-23-307 were drilled with PQ (85.0/122.6 mm) diameter core rods and holes AP-23-308 to AP-23-312 were drilled with HQ (63.5/96.9 mm) diameter drill rods. Core recovery was excellent and averaged 99%. Ground conditions were very good in general and poor ground conditions were only encountered near surface or when holes were drilled sub-parallel to the slope.

Down hole inclination and azimuth were recorded every 30 metres with a REFLEX EZ-shot that also included magnetic measurements. A geologist supervised the drilling operation, completed a daily quick log which documented lithology, alteration and mineralization and was compiled with a pXRF instrument for geochemical information. Geologists supervised the start and completion of all drill holes. Drill core was boxed and secured before it was transported during each 12-hour drill shift to the Company's secure core logging facility for processing by personnel of the Company.

Drill holes AP-23-291 to AP-23-308 were drilled with oriented core which comprised a REFLEX ACT III tool. Detailed geotechnical logging was carried out at the drill for these 18 drill holes under the training and supervision of Knight Piésold. Geotechnical logging included recovery, RQD, Rock Mass Rating and Q' using the RMR_{89} and Norwegian Geological Institute Q systems. Hydraulic conductivity was evaluated with hydraulic packer testing carried out on some holes. Optical Televiewer surveying was also carried out on some holes, but the surveys were negatively impacted by ground conditions which blocked some holes.

Geological logging was conducted on a digital logging platform. Core lithology, intensity and style of alteration and structures were logged. Mineralization was logged as percentages of sulphide species, percentages of matrix in breccias and percentages of gangue and sulphides species in breccia matrices. All core was sampled and samples were demarcated by changes in lithology, mineralization or significant alteration. Quality assurance / quality control samples comprising blanks, standards, field (1/4 core) and preparation duplicates were inserted into the sample stream. With the exception of ¼ core duplicates, all samples were half core sawn with electric diamond-toothed blades. The minimum length for samples was 0.3 metres and in homogenous intervals of good recovery, the maximum sample interval was 1.5 metres.

Magnetic susceptibility was recorded by averaging five readings over each one metre interval. Similarly, pXRF geochemical data was also collected over each one metre interval. Alteration data was collected using a TerraSpec short wavelength infrared instrument from one point per metre. Selected historic holes were also surveyed using the TerraSpec instrument. Density measurements were collected on all 2023 drill holes at a spacing of one measurement every 10 metres using the Water Displacement Method 4 of Lipton (2001). More detailed density data was collected at 5- and 2.5-metre intervals in mineralized intervals. Data was also collected from selected historic intervals at 5- and 2.5-metre intervals.

10.3 DRILL RESULTS

10.3.1 2005 Drilling

In 2005, Goldcorp completed 3,687 m of diamond core drilling in 11 holes focusing on the San Jeronimo target which lies within the Ana Paula area. These drill holes remain relevant to the resource estimate described in Section 14 of this technical report and therefore are considered current. Drill holes varied from 184.25 m to 520.25 m in depth; in total 2,854 core samples were submitted for analysis. All drill holes intercepted are frequently tightly folded, thick, sedimentary sequences invaded by intrusive sills and sill-like bodies. Significant intervals with weighted averages greater than 1.0 g/t gold over downhole intervals of 5.0 m or greater (>1.0 g/t Au and >5.0 m) are summarized in Table 10-2 below.

Table 10-2: Selected Drill Intersections for 2005 Goldcorp Diamond Drill holes

Drill hole	Depth (m)	Dip (°)	Az (°)	Mineral Drill Intersections			
				From (m)	To (m)	Interval (m)	Au (g/t)
AP-05-01	252.1	-48	090	63.1	75.65	12.55	2.144
AP-05-02	300.76	-65	090	92.25	101.15	8.9	1.903
AP-05-03	398.5	-65	090	20.25	24.1	3.85	2.535
AP-05-05	413.3	-65	305	41.7	49.0	7.3	1.579
and				62.4	105.0	42.6	1.905
including				62.4	70.5	8.1	6.857
and				120.0	141.12	21.12	0.973
and				197.45	219.5	22.05	1.674
AP-05-06	416.8	-48	090	142.6	146.6	4.0	2.577
and				234.5	238.1	3.6	2.722
AP-05-09	327.85	-65	90	250.5	264.15	13.65	1.886

In addition, another 10 BQ diameter holes totaling 1,278.3 metres were drilled in the San Luis target area. Geologic information for these holes is restricted to summary logs. Significant intervals are summarized in Table 10-3 below.

Table 10-3: Selected Drill Intersections for 2006 and 2007 Goldcorp Diamond Drill holes

Drill hole	Depth (m)	Dip (°)	Az (°)	Mineral Drill Intersections			
				From (m)	To (m)	Interval (m)	Au (g/t)
SL-03	70.8	-60	270	39.65	54.9	15.25	1.18
including				53.351	54.9	1.55	1.77
SL-07	91.15	-45	90	63.8	65.6	1.8	1.14

10.3.2 2010-2014 Drilling

Newstrike commenced drilling on October 15, 2010, and discovery hole AP-10-19 was drilled in December of the same year. Table 10-4 provides a selection of significant intersections from drill holes that crossed the High Grade Panel. Intersections reported below exceed a weighted average exceeding 1 g/t gold and with internal dilution less than 10 metres.

Table 10-4: Selected Significant 2010 – 2014 Drill Intersections

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-10-16	294.44	090	-65	96.63	102.5	5.87	14.72
including				100.0	101.0	1.0	77.35
AP-10-19	387.1	090	-50	151.0	236.6	85.6	6.473
including				153.0	164.7	11.7	23.69
and including				194.85	207.87	13.02	12.36
and including				217.91	232.6	14.69	4.136
AP-10-20	603.5	090	-80	287.0	350.22	63.22	3.371
including				289.0	308.73	19.73	6.464
AP-11-29	481.6	090	-65	349.75	359.6	9.85	3.083
AP-11-33	417.6	050	-45	193.37	246.0	52.63	6.898
including				201.5	223.25	21.75	10.29
AP-11-37	472.44	270	-45	3.05	230.0	226.95	7.636
including				117.36	181.0	63.64	17.54
AP-11-52	475.5	070	-65	102.0	160.0	58.0	1.760
and				172.0	222.0	50.0	8.886
including				187.0	203.0	16.0	20.30
and				259.0	282.0	23.0	1.909
and				295.0	312.9	17.9	2.149
AP-12-111	302.8	n/a	-90	39.15	50.85	11.7	1.297
and				65.25	165.44	100.19	8.967
including				72.25	77.13	4.88	14.29
and including				88.96	102.58	13.62	16.20
and including				114.3	157.85	43.55	11.55
and				179.8	184.45	4.65	2.809
and				193.5	198.8	5.3	3.956
and				208.15	276.6	68.45	1.176
AP-12.137	427.1	330	-60	48.9	51.85	2.95	1.425
and				246.85	368.18	121.33	2.912
including				320.6	368.18	47.58	5.453
including				322.14	342.26	20.12	11.00
AP-13-162	1407.9	161	-77	4.3	7.85	3.55	1.636
and				23.0	170.0	147.0	4.693
including				98.75	105.5	6.75	9.828
and including				123.0	143.0	20.0	16.92

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
and				231.74	235.08	3.34	1.368
and				249.43	281.54	32.11	3.212
and				346.5	357.75	11.25	1.555
and				374.1	386.2	12.1	1.140
and				418.32	432.85	14.53	2.528
and				479.4	505.4	26.0	3.810
and				681.25	688.15	6.9	3.944
AP-13-186	297.0	n/a	-90	0.0	60.3	60.3	4.589
and				134.8	147.76	12.96	2.413
AP-13-190	87.5	n/a	-90	26.79	62.26	35.47	2.712
and				73.83	87.5	13.67	6.819
including				76.35	83.07	6.72	10.34

The reported mineralized intervals in core tend to be separated by barren intervals that may or may not contain narrow anomalous sections and local high-grade spikes that are not included in the calculations of mineralized intervals. Intersections tabulated above use a 1.0 g/t Au cut-off and a maximum internal dilution of 10.0 metres. Reported grade intervals are based on the original uncut assay certificates as received from the assay labs.

10.3.3 2015 Drilling

In 2015, shortly after acquiring the Ana Paula Project, Alio Gold carried out confirmation drilling (to verify results of previous programs) and infill drilling. As part of the verification process, Alio Gold twinned three existing core holes. Half of the length of the core was sent for analysis and assay verification, and the other half length of the core was archived for metallurgical testing. These three twin holes totaling 606 m were drilled at the center of the Ana Paula deposit and were representative of the life-of-mine plan as described in the 2014 Preliminary Economic Assessment (Years 1 to 8) (JDS Energy & Mining Inc., 2014).

Hole APM-15-01 twinned hole AP-12-101, hole APM-15-02 twinned hole AP-10-19 and hole APM-15-03 twinned hole AP-11-37. Results from this limited twinned drill hole program indicated that the twinned hole replicated the grade seen in the original hole reasonably well. Table 10-4,Table 10-5, and Table 10-6 provide a selection of significant intersections from drill holes that crossed the High Grade Panel. Intersections reported below exceed a weighted average exceeding 1 g/t gold and with internal dilution (grades less than 1 g/t gold) less than 10 metres.

Approximately 1,403 m of infill drilling was conducted in 2015 in seven holes at the Ana Paula deposit with the goal of upgrading Inferred resources to Indicated (and Indicated to Measured), and to confirm the approximate dimensions of the high-grade breccia zone. Table 10-5 shows the significant gold intercepts from both the twin and infill drilling, above an internal cut-off grade of 0.63 g/t Au. These drill holes are depicted in Figure 10-1. An additional 7,304.3 metres of infill drilling was completed in 2016 (Figure 10-1) and selected significant intersections are tabulated in Table 10-6.

All drilling was completed with HQ (63.5/96.9 mm) diameter diamond core. Core recovery averaged greater than 95%. In general, ground conditions are very good to excellent, and collars were surveyed using GPS Trimble R6 Model 1. To note, the orientation of the hole AP-15-237 was designed to test the true thickness of the Polymictic Breccia.

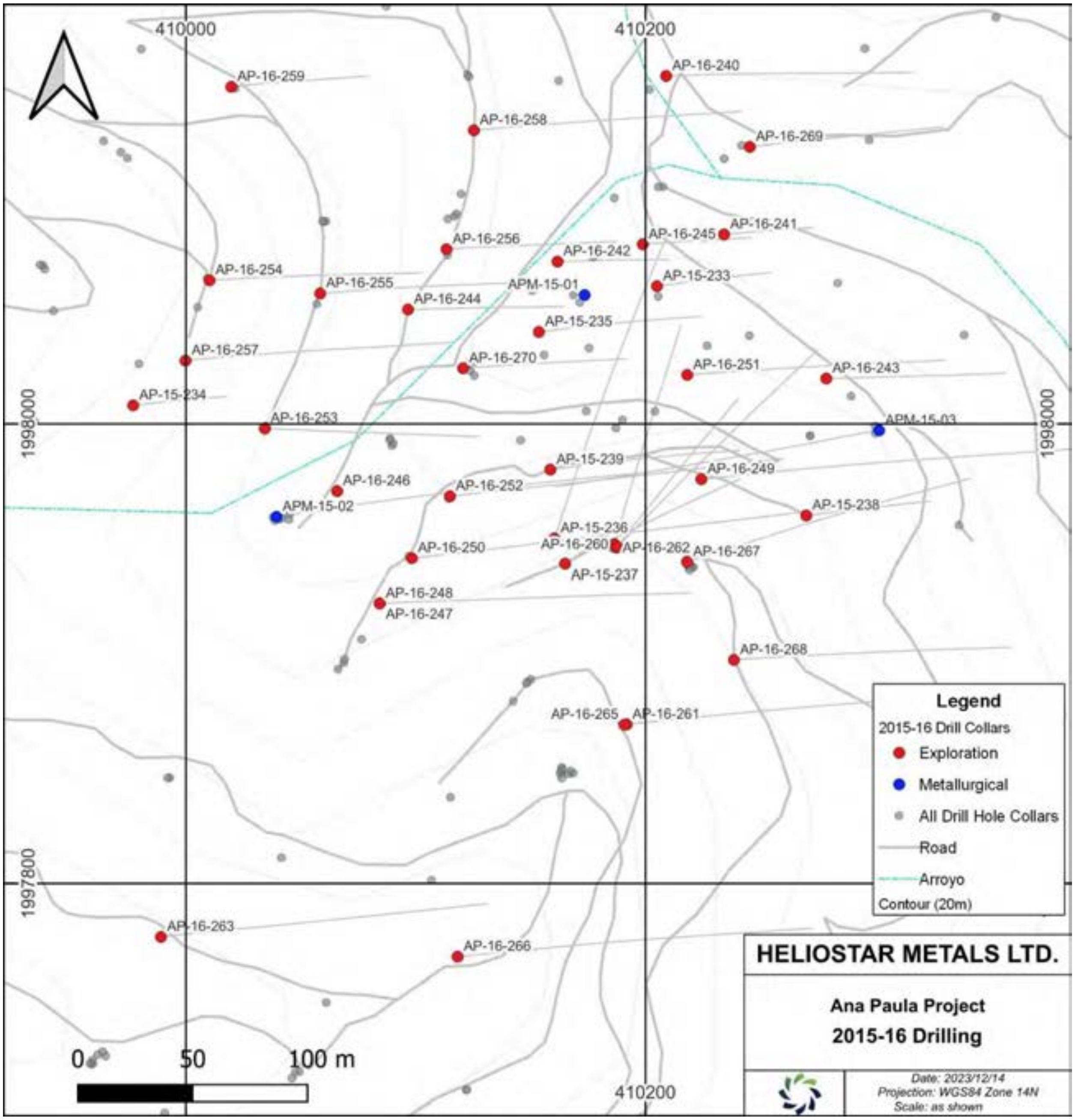


Figure 10-1: Ana Paula Plan View showing the 2015 and 2016 Drill Programs

Table 10-5: Selected Significant 2015 Drill Intersections

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-15-239	240.4	090	-70	52.5	157.5	105.0	6.075
				98.75	144.0	45.25	11.94
				178.0	277.5	49.5	1.340
APM-15-02	250.0	088	-50	84.9	96.2	11.3	2.200
and				114.2	223.35	109.15	4.608
including				194.2	199.3	5.1	14.03
and including				208.15	219.35	11.20	11.60
APM-15-03	200.35	268	-45	0.0	200.35	200.35	8.332
including				29.5	42.55	13.05	8.619
including				88.1	91.3	3.2	84.10
including				119.0	185.0	66.0	14.13

Table 10-6: Selected Significant 2016 Drill Intersections

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-16-252	285.2	090	-50	53.5	61.0	7.5	1.959
and				87.0	184.05	97.05	7.193
including				138.73	164.1	25.37	18.54
and				219.5	223.74	4.24	3.092
and				252.87	272.1	19.23	2.002
AP-16-253	261.6	095	-70	105.0	256.07	151.07	8.991
including				157.35	218.6	61.25	17.23
including				178.4	203.73	25.33	25.43
AP-16-260	200.9	020	-60	107.7	197.0	89.3	4.261
including				126.3	160.0	33.7	8.627
AP-16-264	256.3	050	-60	110.2	139.05	28.85	11.59
including				111.21	118.5	7.29	37.40
and				152.3	188.0	35.7	2.642

10.3.4 2017 Drilling

The 2017 drill program had four main components: (1) Infill Drilling (2) Geotechnical Drilling, (3) Condemnation Drilling, and (4) Twinning of existing holes for the collection of metallurgical testing material.

Infill Drilling

Infill drilling was carried out to support an updated resource estimate. The infill drilling program significantly increased the delineation of the mineralization associated with the Polymictic Breccia and the surrounding lower grade mineralization. Approximately 9,663 m of infill drilling was completed in 37 holes at the Ana Paula deposit to upgrade the mineral resource classification model, and to confirm and better delineate the Polymictic Breccia zone.

Table 10-7 provides a selection of significant intersections from drill holes that crossed the High Grade Panel. Intersections reported below exceed a weighted average exceeding 1 g/t gold and with internal dilution (grades less than 1 g/t gold) less than 10 metres.

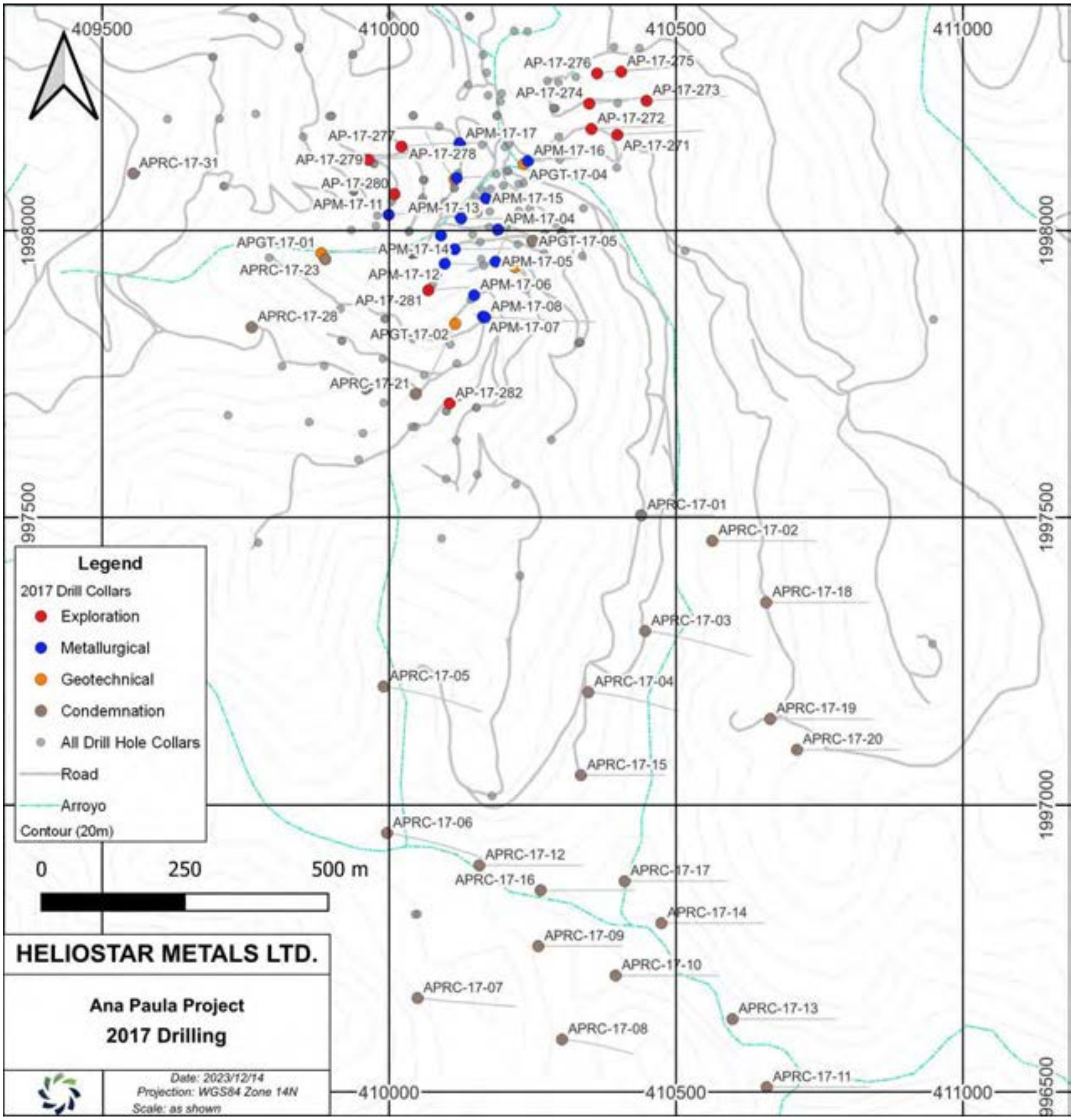


Figure 10-2: 2017 Drill Program Plan

Geotechnical Drilling

The 2017 Pit slope design analyses were based on field data collected by Knight Piésold personnel and 1,895 m of geotechnical drilling were carried out in six pit sectors defined by Knight Piésold. The figure below includes collar locations and horizontal traces of the geotechnical core holes drilled that were logged and sampled by Knight Piésold personnel. Figure 10-2 shows the location of the geotechnical drilling.

The core-holes logged by Knight Piésold personnel were drilled using HQ3-size drilling tools including a 1.5 m long, triple tube core barrel. Oriented core was utilized for logging including a Reflex Act II core orientation tool.

Core was transported to the core facility from the drilling locations by Knight Piésold personnel and core was geotechnically logged at the drill rig while the core was in the split tubes.

The information logged by Knight Piésold personnel included rock type, alteration type and intensity, rock strength, and discontinuity spacing. The geotechnical data was used by Knight Piésold to facilitate rock mass characterization in support of the development of a geotechnical model suitable for a pit slope evaluation.

Condemnation Drilling

Approximately 5,060 m of condemnation drilling was conducted in 26 RC drill holes at the Ana Paula Project. Drill holes were planned on east-west cross-sections spaced every 100 metres with collar spacings of approximately 150 metres. Drill holes were primarily oriented at an 090° azimuth with inclinations of 45° to 55° and average depths of 250 metres, with the objective of intercepting the contact between the intrusive sill and the sedimentary rocks at approximately 150 metres below the surface. None of the drill holes south of coordinate 1,997,555N intersected any significant mineralization.

Metallurgical Testing

A total of 14 PQ sized (85 mm core diameter) drill holes were completed to supply material for metallurgical testing. Table 10-7 lists the significant intercepts encountered during this drill program. The gold grade of the new holes, while different from their twin, were generally within reasonable limits when considering the nugget effect seen at Ana Paula (M3 2017). Charted together, the high-grade peaks of the new holes were well represented in the twin hole. Table 10-8 provides a selection of significant intersections from metallurgical drill holes that crossed the High Grade Panel. Intersections reported below have weighted averages exceeding 1 g/t gold and with internal dilution (grades less than 1 g/t gold) less than 10 metres.

Table 10-7: Selected Significant 2017 Metallurgical Drill Hole Intersections

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)	Twinned Hole	Au of Twinned Interval
									(g/t)
APM-17-04	151.3	n/a	-90	7.0	43.4	36.4	1.069		1.13
and				53.95	151.25	97.3	11.00		0.65
including				87.9	115.58	27.68	17.24		1.24
and including				124.0	143.6	19.6	19.43		0.01
APM-17-05	200.0	020	-60	96.0	170.0	74.0	6.171		1.04
including				128.0	145.55	17.55	15.80		7.25
APM-17-06	217.7	0	-90	6.5	19.05	12.55	2.155	AP-11-35	1.130
and				180.55	204.9	24.35	2.857		0.659
APM-17-07	69.7	285	-75	No significant intersections					
APM-17-08	260.4	90	-45	198.65	200.7	2.05	2.845	AP-11-31	7.026
APM-17-09	88.3	0	-90	39.2	62.26	23.06	6.542	AP-13-190	1.078
and				75.23	88.3	13.07	4.545		7.247
APM-17-10	100	90	-65	28.64	41.81	13.17	1.502	AP-13-172	0.825
APM-17-11	236.5	90	-60	126.96	134.74	7.78	10.05	AP-16-257	7.645
and				155.1	174.0	18.9	3.479		4.053
and				210.0	230.0	20.0	3.614		1.569
APM-17-12	201.2	90	-50	195.0	200.5	5.5	3.764	AP-16-250	2.182
APM-17-13	120	90	-45	8.0	120.0	112.0	3.850	AP-11-47	2.502
APM-17-14	150	90	-50	53.5	79.0	25.5	0.943	AP-16-252	0.844
				116.95	150.0	33.05	7.068		3.870
APM-17-15	92.5	90	-75	12.65	66.15	53.5	7.321		
APM-17-16	40.9	90	-50	14.75	34.0	19.25	0.962	AP-16-269	0.678
APM-17-17	89.7	90	-80	No significant intersections					

10.3.5 2018 Drilling

The 2018 drilling consisted of a limited infill drill program targeting the Polymictic Breccia and surrounding lower grade mineralization below the 2017 resource constraining shell. The infill drilling confirmed the presence of the Polymictic Breccia and contacts with the adjacent lithologic units varied little compared to the existing geologic model. Gold grades correlated well with the existing drilling. Table 10-8 lists the significant intercepts encountered during drilling.

Table 10-8: Significant 2018 Drill Intersections

Drill Hole	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-18-283	600.7	000	-50	57.60	107.30	49.70	1.377
and				341.00	386.23	45.23	3.410
AP-18-284	590.0	000	-55	62.00	106.20	44.20	0.936
and				121.40	135.50	14.10	1.325
and				341.90	363.00	21.10	2.010
and				376.82	379.65	2.83	4.840
and				414.00	423.00	9.00	1.632
and				436.25	438.25	2.00	5.158
and				461.00	497.10	36.10	2.096
and				526.70	545.70	19.00	1.293
AP-18-285	585.6	000	-63	33.90	49.50	15.60	1.169
and				339.65	348.82	9.17	5.362
and				497.65	521.40	23.75	2.333
and				535.65	545.85	10.20	3.392
AP-18-286	599.4	357	-63	32.20	49.00	16.80	1.127
and				320.40	359.05	38.65	1.405
and				415.30	424.20	8.90	1.668
and				499.00	511.00	12.00	1.709
AP-18-287	602.3	355	-65	27.00	66.00	39.00	1.428
and				279.00	306.00	27.00	3.531
and				568.25	572.30	4.05	1.932
AP-18-288	761.3	350	-72	36.05	82.65	46.60	1.454
and				579.30	594.50	15.20	1.779
and				609.60	619.80	10.20	1.615
and				699.96	707.30	7.34	1.860
AP-18-290	296.4	000	-65	141.80	160.10	18.30	1.539

10.4 2023 DRILLING

The 2023 Heliostar drill program was designed to accomplish four goals. The first goal was to more optimally test a zone of high grade mineralization termed the High Grade Panel that is largely hosted within the Polymictic Breccia lithologic unit and to support the updated mineral resource estimate that is the subject of this technical report (Figure 10-3). Most drill holes were oriented north or south and at inclinations of -55° to -70° to accomplish this goal. The second goal was to provide material for metallurgical testwork in support of a preliminary economic assessment or prefeasibility study and a larger PQ core diameter was used for most 2023 drilling to facilitate this goal. The third focus of the 2023 drill program was to collect updated geotechnical data to better quantify the rock mass characteristics of the High Grade Panel and Polymictic Breccia. Oriented PQ diameter core and logging and testing under the direction of Knight Piésold helped meet this goal (Table 10-9). Finally, the last five holes of the 2023 drill program were HQ diameter holes designed to test exploration targets.

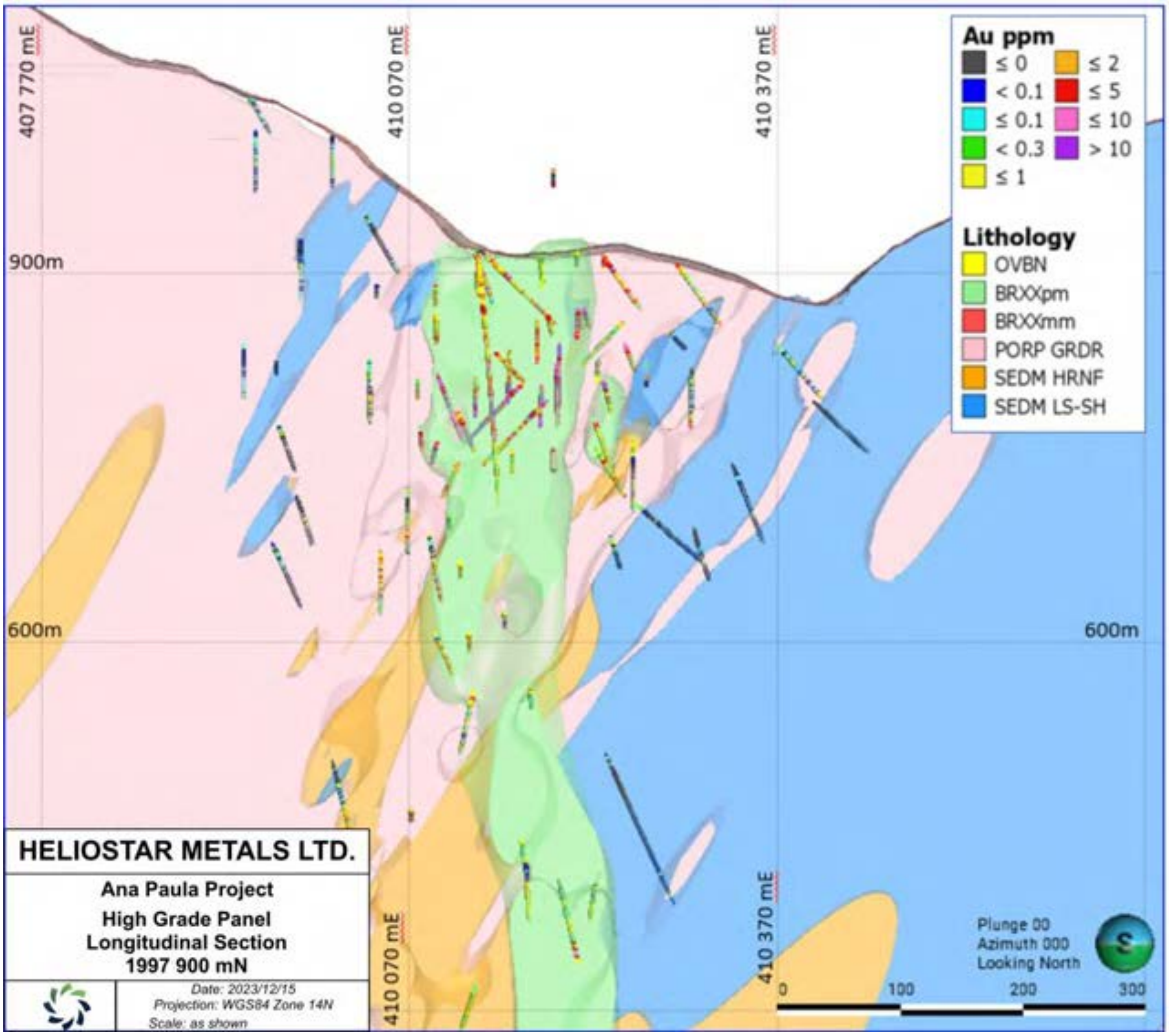


Figure 10-3: High Grade Panel Longitudinal Section 1997 900 mN Looking North

Table 10-9: Significant 2023 Drill Intersections

HoleID	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-23-291	201.0	180	-55	57.5	159.0	101.5	6.201
including				90.0	134.5	44.5	11.02
AP-23-292	186.0	180	-50	43.88	145.0	101.12	8.346
including				90.0	143.2	53.2	11.05
AP-23-293	202.5	180	-55	55.5	184.7	129.2	5.998
including				117.0	163.0	46.0	13.37
including				118.0	146.5	28.5	17.44
AP-23-294	102.0	000	-60	31.3	98.5	67.2	2.139
including				31.3	45.25	13.95	6.395
AP-23-295	172.8	000	-75	76.5	118.0	41.5	2.566
including				85.5	91.0	5.5	4.877
and including				103.0	111.0	8.0	3.738
AP-23-296	112.5	000	-55	73.5	99.5	26.0	1.882
including				94.5	96.5	2.0	13.63
AP-23-297	285.0	270	-46	43.05	285.0	241.95	9.058
including				43.05	105.0	61.95	13.88
including				70.5	102.0	31.5	21.46
and including				122.0	285.0	224.95	5.865
and including				97.0	102.0	5.0	51.02
including				194.5	229.7	35.2	23.64
including				212.1	222.0	9.9	42.42
AP-23-298	129.0	270	-85	17.9	122.0	104.1	6.138
including				28.5	48.0	19.5	15.11
AP-23-299	102.0	000	-55	63.0	101.0	38.0	6.950
including				72.5	83.5	11.0	15.82
including				72.5	78.5	6.0	23.33
AP-23-300	118.5	180	-45	15.5	18.2	2.7	32.10
including				30.5	102.5	72.0	7.955
including				55.0	64.5	9.5	31.76
AP-23-301	204.0	180	-45	29.0	37.5	8.5	3.021
including				36.0	37.5	1.5	9.510
and				50.2	59.0	8.8	2.247
including				52.2	53.2	1.0	6.460
and				104.5	106.0	1.5	5.860
AP-23-302	94.0	180	-50	1.5	53.26	51.76	5.014
including				19.5	24.22	4.72	11.62
and				68.95	86.55	17.6	2.632
including				73.14	74.5	1.36	21.36
AP-23-303	219.0	180	-55	44.0	108.0	64.0	1.313
and				118.0	216.0	98.0	6.463
including				174.5	207.5	33.0	16.39

HoleID	Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Interval (m)	Au (g/t)
AP-23-304	280.5	000	-60	186.0	271.5	85.5	4.732
including				212.0	221.5	9.5	25.56
AP-23-305	250.5	000	-65	111.0	158.6	47.6	3.204
and				133.3	134.3	1.0	22.90
and				155.8	158.6	2.8	16.15
and				212.0	245.1	33.1	2.139
including				213.4	220.78	7.38	4.769
AP-23-306	208.5	180	-55	27.5	63.4	35.9	8.171
and including				51.6	63.4	11.8	13.55
and				82.5	166.1	83.6	8.569
and including				102.2	165.2	63.0	10.41
including				122.2	134.2	12.0	18.36
AP-23-307	150.0	180	-55	36.0	93.0	57.0	6.031
including				76.75	81.75	5.0	45.44
including				125.0	139.6	14.6	32.98
AP-23-308	201.0	354	-44	112.95	127.7	14.75	5.060
and including				122.4	127.7	5.3	11.74
and				157.0	175.1	18.1	2.271
AP-23-309	201.0	180	-55	37.5	184.55	147.05	4.130
including				76.0	92.0	16.0	11.23
and including				112.4	119.4	7.0	14.5
and including				153.5	162.1	8.6	8.701
AP-23-310	297.0	180	-55	65.3	68.0	2.7	0.957
AP-23-312	87.0	000	-55	6.0	13.6	7.6	1.036
and				36.9	41.0	4.1	1.401
and				51.0	74.85	23.85	1.997
including				57.0	60.0	3.0	6.417
and including				73.3	73.85	0.55	9.980

The majority of 2023 drilling was designed to cross the High Grade Panel and Polymictic Breccia at azimuths perpendicular to the strike of the High Grade Panel and Polymictic Breccia. Due to topography, drill holes were drilled both to the north and south across the east-trending and steeply south-dipping and crudely tabular body. Drilled intersections are interpreted to be approximately 17% to 77% of true widths (Table 10-10).

Table 10-10: True Width Factors for High Grade Panel Drill Holes

Drill Hole Azimuth (°)	Drill Hole Dip (°)	Intersection Angle (°)	% of True Width
000	-75	30	0.500
000	-65	40	0.643
000	-60	45	0.707
000	-55	50	0.766
180	-55	10	0.174
180	-50	15	0.258
180	-45	20	0.342

10.5 QUALIFIED PERSON'S COMMENTS

Heliostar's 2023 drilling was designed to improve drill spacing within the High Grade Panel, a cohesive high-grade zone of gold mineralization at the core of the Ana Paula deposit. The program was designed to advance an underground mining scenario option. In contrast, pre-2023 drilling was carried out to explore and define mineralization to be exploited as an open-pit operation. This was undertaken in various stages that resulted in four primary drill orientations creating variable drill spacing. In the core area of Ana Paula drilling ranges from less than 25 meters and up to 40 meters. External to the main zone, drill spacing increases along the margins to more than 50 meters. Drill spacing is deemed sufficient to adequately define the grade and spatial grade distribution of the mineralization defined in this resource model. The orientation of the 2023 drilling is appropriate for validating the geologic model and resource delineation of mineralization associated with the Polymictic, 'Main', Breccia and hosted within the High Grade Panel.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 SAMPLING METHODS

11.1.1 Goldcorp and Newstrike (2005-2015)

All core samples marked during the logging procedure and sample divisions were based on geologic features. Within homogeneous zones, samples were divided into relative lengths of 1 to 2 m, with 0.5 m samples taken when mineralization characteristics warranted. Quality control samples were also inserted at this stage.

After logging and sample marking was completed, the core was photographed in groups of three in the core boxes and then sawed longitudinally in half according to the sample intervals marked by the geologist. A one-half split was double bagged in plastic sample bags and secured with plastic ties. The remaining half core split was retained in the original core box, ordered by drill hole number and stored in the enclosed core facility in metal storage racks.

Quality control samples were inserted into the sample stream, and the samples were bagged in rice sacks labelled with the company name, project name, drill hole number, and sample numbers. A laboratory transmittal sheet was prepared listing the number of bags and samples included.

ProDeMin geologists, on behalf of Newstrike, were responsible for the collection and preparation of all core prior to pick up. Core was collected directly from the Ana Paula core logging facility by the analytical laboratory who then transported the samples directly to their sample preparation facilities. The analytical laboratory was responsible for sample security following collection from site.

11.1.2 Alio Gold (2015-2018)

The sampling methodology from 2015 to 2018 was similar for the core processed by Newstrike. All samples collected by Alio Gold staff during drill programs were subjected to a quality control procedure that ensured a best practice in the handling, sampling, analysis and storage of the drill core. All drill core was sampled and collected on a timely basis. Sample intervals were selected by the field geologist and most typically varied between 1.0 and 2.0 m in length. Sample intervals were not less than 0.50 m on specific, narrow geological features, and not greater than 2.0 m on wide intervals of barren granodiorite and/or limestone-shale.

Samples of drill core were cut by a diamond blade rock saw, with half of the sawn core placed in individual sealed plastic bags with a zip tie with the remaining half placed back in the original core box. Samples were prepared by local contract workers trained and supervised by Alio Gold personnel at Cuétzala del Progreso. Once logged and split, the core was stored on racks in a secure storage facility at Cuétzala del Progreso.

Condemnation RC chip samples were collected at the drill site and then sealed in plastic bags. The RC drill samples were collected continuously at 1.5 m intervals. The splitter was cleaned between each sample with a compressed air hose. The RC drill samples were taken by Alio Gold personnel with supervision of Alio Gold geologist. A portion of the material generated for each RC sample interval was retained in a plastic specimen tray created specifically for the reverse circulation program. The samples in specimen trays constitute the primary reference for the hole. The specimen tray was marked with the drill hole number and each compartment within the tray was marked with both the interval and number for the respective sequential sample. Chip trays for RC holes are stored at Cuétzala del Progreso in a secure building.

Company geologists and technicians were responsible for collection and shipment preparation of the drill samples to the laboratories. Similar to the Newstrike program, core sample shipment bags were collected directly from the Ana Paula core logging facility by the analytical laboratory who then transported the samples directly to their sample preparation facilities. The analytical laboratory was responsible for sample security following collection from site.

ALS shipped the collected core to their preparation laboratories in Guadalajara, Jalisco, Mexico. After these samples were processed, the pulps were sent to ALS' North Vancouver, Canada laboratory for analysis. Rejects and pulps are returned to the Project site and stored at the Alio Gold, Cuétzala del Progreso core logging facility. Notification of receipt of sample shipments by the laboratory was confirmed by electronic mail.

11.1.3 Argonaut Gold (2020-2022)

Argonaut Gold did not submit any samples to a laboratory.

11.1.4 Heliostar Metals (2023)

All sampling conducted by Heliostar followed a secure protocol which included a rigorous sample chain of custody. All drill core was sampled and collected on a timely basis. Sample intervals were selected by the field geologist and most typically varied between 1.0 and 1.5 m in length. Sample intervals were not less than 0.30 m on specific, narrow geological features, and not greater than 1.5 m on wide intervals of homogenous mineralization.

Samples were sawn in half with a diamond saw for both PQ and HQ core with one half forwarded to the laboratory for analysis and half retained as a physical record. Samples were double-bagged in poly sample bags inscribed with the alphanumeric sample number and one portion of the sample tag was included in the sample bag. Sample bags were secured with nylon zip-ties and placed in labelled rice sacks for transport. Samples were prepared by local workers trained and supervised by Heliostar personnel at Cuétzala del Progreso. Once logged and split, the core was stored on racks in the secure storage facility at Cuétzala del Progreso.

Company geologists and technicians prepared drill samples for shipment to the laboratories. Labelled rice sacks were secured with uniquely-numbered, tamper-evident seals. Core sample shipment bags were collected directly from the Ana Paula core logging facility by ALS Laboratories who then transported the samples directly to their sample preparation facilities. The analytical laboratory was responsible for sample security following collection from site. One shipment was forwarded to SGS de Mexico S.A. de C.V. by a third party freight forwarder.

Core samples were shipped to ALS Limited in Santiago Queretaro, Queretaro and Zacatecas, Zacatecas, Mexico for sample preparation. One shipment was forwarded to SGS in Victoria de Durango, Durango, Mexico. After the samples were prepared, pulps were sent to ALS' North Vancouver, Canada laboratory for analysis. Samples submitted to SGS were prepared and analyzed at their Durango laboratory. Rejects and pulps are returned to the Project site and stored at the Cuétzala del Progreso core logging facility. A documented sample chain of custody was used to track samples from the Cuétzala del Progreso core logging facility to the laboratory and the receipt of sample shipments by the laboratories were confirmed by electronic mail.

No Company management were involved in any aspect of sample preparation.

11.2 SAMPLE PREPARATION AND ANALYSIS

11.2.1 Goldcorp and Newstrike (2005-2015)

ALS Limited was the primary analytical laboratory for the Ana Paula Project. Acme Analytical Laboratories (now Bureau Veritas) in Guadalajara, Mexico was used as a primary laboratory for 11 holes during the 2013 drill campaign. SGS de Mexico S.A. de C.V. in Durango, Mexico was the secondary laboratory for the Ana Paula Project in Durango, Mexico.

BSI Inspectorate was used for the preparation and/or verification of blanks, standards and for check assay works. All laboratories are internationally recognized and accredited to ISO 17025 or ISO 9001:2008 or better.

ALS prepared samples at its facility in Guadalajara, Mexico. Individual core samples typically ranged from 4 to 8 kg in weight and the entire sample was crushed to 2 mm size. Subsequently, an approximately 250 g split was pulverized. Coarse rejects were sent to the project's core storage facility in Cuétzala de Progreso and sample pulps were shipped by air to ALS' North Vancouver laboratory for analysis.

All core samples and rock geochemical samples were analyzed via multi-element inductively coupled plasma-optical emission spectroscopy (ICP-OES) analytical method (ME-ICP41). Gold was assayed by fire assay with an AA finish (Au-AA24), using a 50 gram aliquot. Mercury was analyzed separately by cold vapour atomic absorption.

Individual core samples typically ranged from 4 to 8 kg in weight and the entire sample was crushed to 2 mm size. Subsequently, an approximately 250 g split was pulverized. Coarse rejects were sent to the project's core storage facility in Cuétzala de Progreso. Samples were analyzed at the SGS Laboratory in Durango.

SGS also utilized a fire assay for gold and an ICP-OES analysis to determine multi-element values. The 50 g aliquots were analyzed by fire assay with an atomic absorption finish (Au-FAA515). Assays grading over 10 g/t were re-assayed by fire assay with a gravimetric finish using a 30g aliquot (Au-FAG303). Samples were also analyzed with an aqua regia digestion and a combination of inductively coupled plasma emission spectrometry (ICP-OES) to provide a multi-element analysis.

A small number of samples were also prepared at Acme Laboratories at Guadalajara, Mexico and Inspectorate Exploration and Mining Services Ltd. (both labs are now Bureau Veritas). Acme Laboratory used 50 g aliquots analyzed by fire assay with an atomic absorption finish (G6-50) with samples assaying greater than 10 g/t Au and then re-assayed by fire assay with a gravimetric finish (G6Gr-50).

11.2.2 Alio Gold (2015-2018)

ALS Limited was the primary analytical laboratory for the Ana Paula Project. Acme Analytical Laboratories (now Bureau Veritas) in Guadalajara, Mexico, was utilized for check samples.

ALS prepared samples at its facility in Guadalajara, Mexico. Individual core samples typically ranged from 4 to 8 kg in weight, while RC chip samples ranged from 4 kg to 10 kg. Samples were crushed to 2 mm size and an approximately 250 g split was pulverized. Coarse rejects were sent to the project's core storage facility in Cuétzala de Progreso. From Guadalajara, prepared sample pulps were shipped by air to ALS' North Vancouver laboratory for analysis.

At ALS, 50 g aliquots were analyzed by fire assay with an atomic absorption finish (Au-AA24) and samples assaying greater than 10 g/t Au were re-assayed by fire assay with a gravimetric finish (Au-GRAV22) using a 30g aliquot). Samples were also analyzed with an aqua regia digestion and a combination of inductively coupled plasma emission spectrometry (ICP-OES) and/or inductively coupled plasma mass spectrometry (ICP-MS) to provide a multi-element analysis. Overlimits in As, Cu, Pb, and Zn (>10,000 ppm) were determined by ore grade assay. Final certificates were issued electronically and delivered to Alio Gold via email. These assay certificates arrived in Excel™ or as comma-separated text (.csv) format and were merged electronically into the database and verified for accuracy. A hard copy of all certified assay certificates was delivered by courier to the company office where they are kept on file for review.

11.2.3 Heliostar Metals (2023)

ALS Limited was the primary analytical laboratory for the Ana Paula Project and samples were were shipped to ALS Limited Santiago Queretaro, Queretaro and Zacatecas, Zacatecas, Mexico for sample preparation. Sample analysis was carried out at ALS Laboratories in North Vancouver. The North Vancouver and Zacatecas ALS facilities are ISO/IEC 17025 certified.

Samples were crushed to 70% passing <2 mm and subsequently pulverized to 85% passing <75 µm. Samples were analyzed for 35 elements by aqua regia digestion and ICP-Atomic Emission Spectroscopy (AES). Overlimits in As, Cu, Pb and Zn (<10,000) were re-assayed by aqua regia digest with ICP finish (ME-ICP41). Samples were assayed for gold by 30 g fire assay with atomic absorption finish (Au-AA23) and overlimits (> 10 ppm Au) were analyzed by 30g fire assay with gravimetric finish (Au-GRA21).

Select samples were analyzed by screen fire assay (Au-SCR24). In addition, select samples were analyzed for gold and copper by cyanide leach (Au-AA13 and/or Au-AA15 and Cu-AA13). Select samples were also analyzed for potential preg-robbing gold using techniques Au-AA31 and Au-AA31a. Select samples were analyzed for sulphide S by HCl leach and induction furnace (S-IR-06a). Select samples were analyzed for organic C by HCl leach and induction furnace (C-IR06a).

One shipment was forwarded to SGS de Mexico S.A. de C.V. in Victoria de Durango, Durango, Mexico for check assays. The SGS laboratory in Durango is ISO/IEC 17025 certified. Samples were crushed to 75% passing <2 mm and then pulverized to 85% passing <75 µm. Samples were analyzed for gold by 30 g fire assay with atomic absorption finish (GE_FAA30V5) and overlimits (>10 g/t Au) were analyzed by 30g fire assay with gravimetric finish (GO_FAG30V).

11.3 QUALITY ASSURANCE AND QUALITY CONTROL

The Ana Paula Deposit, in Guerrero Mexico, was first drilled in 2005 and subsequent drill campaigns were carried out in 2006-07, 2010-2018 by previous operators. Quality Assurance / Quality Control ('QA/QC') procedures varied with each drill campaign and operator. Quality Assurance / Quality Control samples comprised a combination of blanks, standards and duplicates. Basic statistics of QA/QC samples are tabulated in Table 11-1 below.

Table 11-1: Summary of Ana Paula Project QA/QC Samples

Year	Holes Series	Type	Holes	Samples (QA/QC excl.)	Blanks	Duplicates	Duplicate Type(s)	Standards	External Checks
2005	AP-05-	Core	11	2834	n/a	n/a	n/a	n/a	
2005	SL-	Core	10	670	n/a	n/a	n/a	n/a	
2006	AS-	Core(?)	6	1017	n/a	n/a	n/a	n/a	
2007	AS-	Core(?)	6	604	n/a	n/a	n/a	n/a	
2007	SL-	Core	15	1039	n/a	n/a	n/a	n/a	
2010	AP-10-	Core	12	3149	27	174	1/4 core	163	914
2011	AP-11-	Core	57	18865	269	1015	1/4 core	844	1965
2012	AP-12-	Core	72	29472	453	28	1/4 core	1222	111
2012	AN-12-	Core	3	595	n/a	n/a	n/a	31	
2013	AP-13-	Core	78	26059	367	n/a	n/a	1068	
2013	AN-13-	Core	9	2640	10	n/a	n/a	130	
2014	AP-14-	Core	2	1238	17	n/a	n/a	50	
2014	AN-14-	Core	13	3331	33	n/a	n/a	119	
2015	AP-15-	Core	7	965	33	33	1/4 core	38	
2015	APM-15-	Core	3	438	15	14	1/4 core	16	
2016	AP-16-	Core	31	4110	128	117	1/4 core	199	
2017	AP-17-	Core	12	1267	50	39	1/4 core	43	
2017	APGT-17-	Core	6	1232	42	36	1/4 core	42	
2017	APM-17-	Core	14	1305	50	32	1/4 core	37	
2017	APRC-17-	RC	26	4728	173	142	1/4 core	143	
2018	AP-18-	Core	8	2571	107	92	1/4 core	94	
2023	AP-23-	Core	18	2762	73	74	1/4 core, prep	75	

The frequency of the insertion of QA/QC samples varied significantly with the various drill campaigns as tabulated below in Table 11-2.

Table 11-2: QA/QC Sample Insertion Frequencies

	Number	%
Routine Samples	112,179	
Blanks	1,847	1.6
Standards	4,314	3.9
Field Duplicates	1,823	1.5
Preparation Duplicates	58	0.05
Screen Fire Assay Duplicates	1,773	1.47
Total QA/QC	8,834	7.38

Quality Assurance/Quality Control samples are not available for 2005 holes, SL-, AS- and most AN-series holes, but only 2005 and some AN-series holes may be material for the Ana Paula Deposit. With the exception of 2005 holes, blank samples were inserted at a frequency of 1 per 70 or 1 per 30 samples; these frequencies are deemed sufficient. With the exception of 2005 and 2012 holes duplicates were inserted at a frequency of approximately 1 per 35; these frequencies are deemed sufficient. Standard samples were inserted at a frequency of 1 per 20-30 and these frequencies are deemed sufficient.

11.3.1 Goldcorp and Newstrike (2005-2015)

Quality control samples included standards for gold and other elements and blanks. Certified reference materials ("CRM") originated from pulps and were from two sources: (1) commercially prepared and certified samples from CDN Resource Laboratories; and (2) those provided by ProDeMin which is a geological services contractor engaged by Newstrike. ProDeMin provided two types of CRM: (1) in-house CRMs prepared from material obtained from unrelated projects; and (2) in-house CRMs prepared from Ana Paula mineralized rock and analyzed by a number of certified laboratories.

11.3.1.1 Blank

A total of 1,176 blank samples were inserted during the Newstrike drilling program, representing the insertion of a blank into the sample stream approximately once every 70th sample. The protocol for blank insertion included alternating blanks and standards every 20th sample, as well as insertion of a blank within or immediately after mineralized zones. The blanks were numbered sequentially, and samples of quartered or half core with low or below detection limit values were used so that the preparation facility could not identify the sample as a blank. No data were available for Goldcorp holes AP-05-01 through AP-05-11 or for two short Newstrike holes that did not include a blank, AP-13-183 and AP-13-189.

11.3.1.2 Quarter Core Duplicate

A total of 1,218 assays on duplicate samples from holes AP-10-12 through AP-12-81, representing one duplicate assay approximately every 20th sample. No data were available for Goldcorp holes AP-05-01 through AP-05-11 or for Newstrike holes AP-12-82 through AP-13-230.

11.3.1.3 Standards

During the Newstrike drill campaign, control samples, comprising of CRM pulps and blanks, were inserted into the drill sample stream approximately every 20th sample. Standards (CRMs) were inserted into all Newstrike drill holes, but no data were available for Goldcorp holes (AP-05-01 through AP-05-11).

11.3.1.4 Check Assays from the Umpire Laboratory

A total of 6,115 check assays from holes AP-10-12 through AP-14-232. No check assays were available for the Goldcorp, although some samples were re-analyzed by Newstrike during its audit program. Check assays were also missing for drill holes AP-11-41, AP-13-162, AP-13-168, AP-13-171, AP-13-172, AP-13-174, AP-13-176, AP-13-177, AP-13-182, AP-13-187, AP-13-189, AP-13-190 and AP-13-221.

Gold and silver check assays were run by ALS. Inspectorate, and SGS on pulps or rejects supplied by SGS when SGS was the primary laboratory and by SGS, Inspectorate, ACME and ALS on pulps or rejects supplied by ALS when ALS was the primary laboratory.

11.3.2 Alio Gold (2015 – 2018)

Alio Gold routinely inserted quality control/quality assurance samples in the sampling chain to monitor cross contamination, precision and repeatability of the assays. The QA/QC samples were generally inserted at a rate of 1 sample in 20 approximately for each of the QA/QC sample types amounting to a 5% insertion rate. Four types of QA/QC samples were used by Alio Gold.

11.3.2.1 Blank

Blanks consist of non-mineralized basalt rock chip that are suitable for monitoring cross contamination at the sample preparation step. The blanks were inserted into the sequences approximately every 20 samples. Additionally, blanks were specifically added following zones with expected gold grades. A total of 598 blanks were analyzed during the 2015-2018 drill programs.

11.3.2.2 Quarter Core Duplicate

Field duplicates consisted of quarter cores duplicate directly collected from core boxes. One such field duplicate was collected approximately every 25 samples. A total of 505 duplicates were analyzed during the 2015-2018 drill programs.

11.3.2.3 Standard

The standards were inserted into the sequences approximately every 20 samples. Additionally, standards were specifically added to zones with expected gold grades. A total of 612 standards were analyzed between 2015-2018.

11.3.2.4 Check Assays from the Umpire Laboratory

Additional pulp samples were sent to a secondary laboratory as a check on the primary laboratory. Samples assayed at ALS lab were sent to a Bureau Veritas laboratory. Samples for check assaying program were selected randomly and were analyzed by fire assay with an atomic absorption finish. Assays grading over 10 g/t were re-assayed by fire assay with a gravimetric finish using a 30g aliquot. Samples were also analyzed with an aqua regia digestion and a combination of ICP-OES to provide multi-element analyses.

11.3.3 Pre-2023 QA/QC Results – Blanks - Contamination

Records regarding historic (2005 to 2018) blank samples are incomplete. Blank samples for AN-series were collected from low-grade intervals of earlier AN-series holes. Drill holes from 2010 to 2014 used low-grade intervals from 2005, AN-series and SL-series holes. Many of these blank samples included barren limestone or calcareous sediments for blank samples. While such samples make sample switches clear, the softer limestones and calcareous sediments are less effective at cleaning crushers and pulverizers and, as a result, less effective at picking up and identifying potential contamination.

It is unknown what material was used for blank samples from 2015 to 2018, but at least some were limestone and the majority were barren granodiorite Figure 11-1.

Control limits for blank samples have been set at five times the lower detection limit for gold or 0.025 g/t. Numerous outliers (greater than the 0.025 g/t control limit) were present throughout historic drilling, especially from 2010 to 2013 and in 2016. Overall, from 2010 to 2018, there were 77 blank samples exceeding control limits; this amounts to 4.56% of blank samples. The maximum concentration of gold in a historic blank sample was 0.882 g/t gold.

The majority of samples exceeding the control limit directly followed mineralized samples indicating the presence of contamination. A minority of samples exceeding the control limit did not follow mineralization likely reflecting variability in the blank material selected. The absolute values of some of the outlier blank samples would have been material for a low-grade bulk tonnage target. However, taking into account the number of samples which exceeded control limits, the degree of contamination is not deemed to be material.

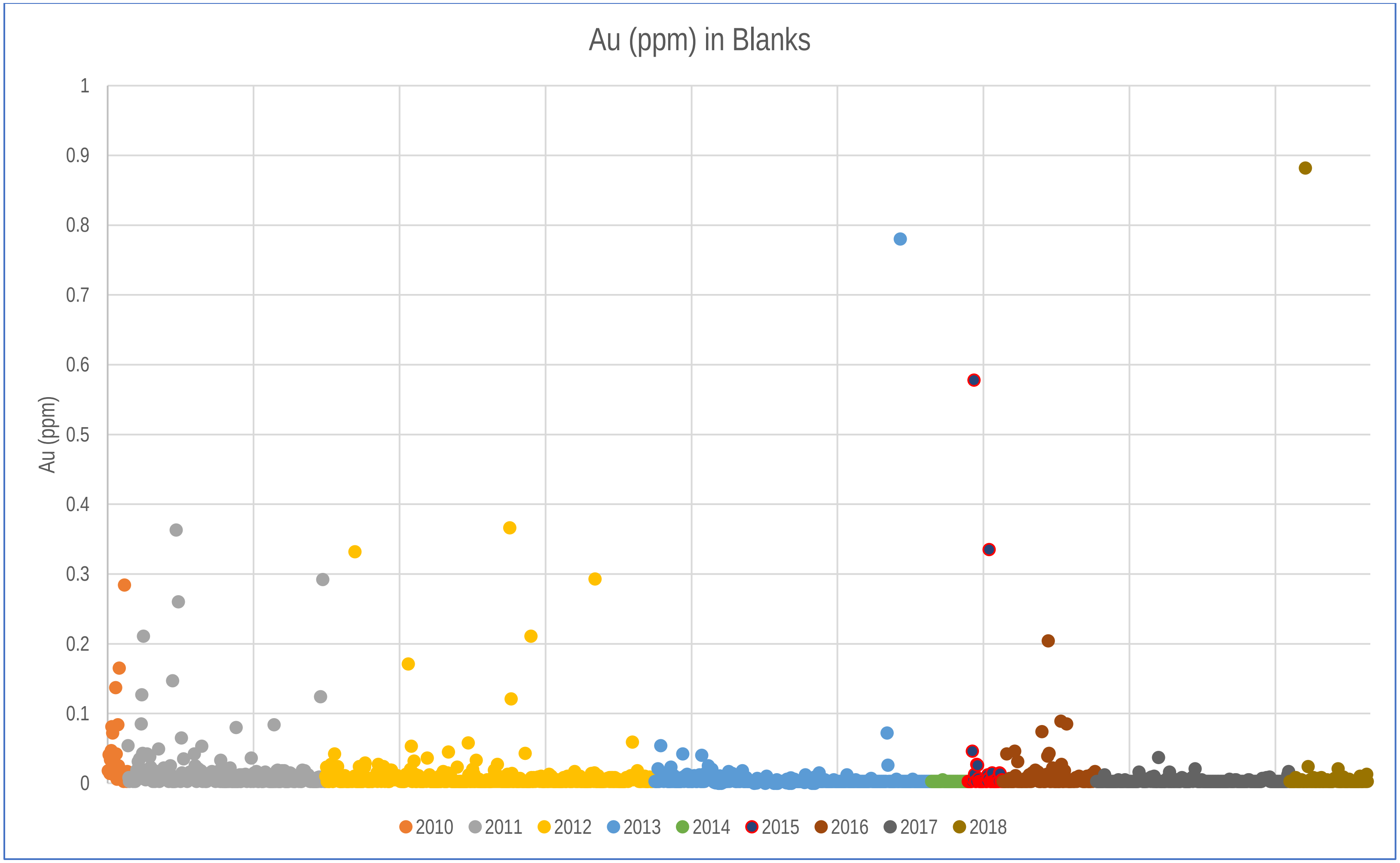


Figure 11-1: Pre-2023 Blank Sample Performance (Au)

11.3.4 Pre-2023 QA/QC Results – Standards - Accuracy

Standards were routinely inserted into the sample stream during most drill programs. No standards were utilized in the 2005 holes nor in the AS- or SL-series holes. A wide variety of standards were utilized during the history of the project and are tabulated below in Table 11-3.

Table 11-3: Ana Paula Standards Used

Standard	Year(s)	Quantity	Expected Au Value (g/t)	Source
CDN-GS-1F (EXM-STD-1)	2010	31	1.16	CRM
EXM-STD-2	2010	15	0.76	3rd party
EXM-STD-3	2010	18	0.34	3rd party
CDN-GS-P2	2010	7	0.214	CRM
CDN-GS-P7B	2010	8	0.71	CRM
AP-1	2010, 2011	303	0.317	In-house
AP-2	2010, 2011, 2012, 2013	262	0.536	In-house
AP-3	2010, 2011, 2013	191	0.689	In-house
AP-4	2010, 2011, 2013	60	1.283	In-house
AP-5	2011, 2012, 2013	601	0.32	In-house
AP-6	2011, 2012, 2013	692	0.493	In-house
AP-7	2011, 2012, 2013, 2014	260	0.863	In-house
AP-8	2011, 2012, 2013	72	1.225	In-house
CDN-ME-19 (AP-10, AP-12)	2013, 2014	413	0.62	CRM
CDN-GS-P7H (AP-13)	2013, 2014	27	0.799	CRM
CDN-ME-1101 (AP-9, AP-11)	2013, 2014, 2015, 2016, 2017	873	0.564	CRM
CDN-GS-5K	2015, 2016, 2017	40	3.84	CRM
CDN-CM-36	2015	215	0.316	CRM
CDN-GS-1P5K	2015, 2016, 2017, 2018	63	1.44	CRM
CDN-ME-1311	2018	61	0.839	CRM
CDN-GS-2Z	2023	16	2.376	CRM
CDN-GS-7J	2023	29	7.34	CRM
SP116	2023	30	18.09	CRM

Standards used from 2010 to 2014 were a combination of commercial certified reference materials (CRMs) and in-house standards. BSi Inspectorate Precious Metals prepared the in-house standards from surface rock sample material. Material selected for the first four in-house standards (AP-1 through AP-4) were crushed to -10# and then pulverized to -150#. Samples were then homogenized and then forwarded to four laboratories, including Inspectorate, for a total of 40 round-robin analyses per standard. The material selected for the preparation of in-house standards AP-5 through AP-8 also comprised material from surface rock sampling but it is not known, but presumed that, the standard preparation procedures were the same. Material for this second set of in-house standards was also sent to four laboratories for round-robin analyses and also comprised 40 analyses per standard. Commercial CRMs began to be used in 2013 and comprised all standards used from 2015 to 2018. Most standards utilized historically were low-grade standards and only five had expected values exceeding 1.0 g/t gold. All commercial CRMs were certified for gold but not all were certified for silver. The EXM-STD-2 and EXM-STD-3 standards were in-house standards prepared for a third party. Sample preparation procedures are not known, but 95 samples were submitted to two laboratories for round-robin analysis of the two standards.

All historic standard data was compiled and reviewed. Upper warning limits (UWL) are set at between +2 and +3 standard deviations from the expected values while lower warning limits (LWL) are set at between -2 and -3 standard deviations from expected values. Upper and lower control limits (UCL and LCL) are set at ±3 standard deviations and such samples exceeding the UCL or LCL are considered failures. Also, consecutive samples exceeding the UWL or LWL are also considered failures.

Utilizing this criteria, there were 633 failed standards, although 92 of these samples are likely switched standards or data entry errors for a total of 541 failures. Failures rates were highest during the 2010 to 2014 drill campaigns. No re-assaying of batches with failed standards was carried out during the 2010 to 2014 drill campaigns. It is not known, but there is no evidence of any re-assaying of batches with failed standards during the 2015 to 2018 drill campaigns.

Table 11-4: Failed Standards by Year

Year	Number of Failures	Probable Switches	Net Failures	Number of standards	Failure %
2010:	18	3	15	163	9.20
2011:	210	34	176	843	20.88
2012:	230	33	197	1250	15.76
2013:	139	17	122	1195	10.21
2014:	5	0	5	169	2.96
2015:	2	0	2	54	3.70
2016:	4	0	4	199	2.01
2017:	15	4	11	245	4.49
2018:	5	0	5	94	5.32

As can be seen in Table 11-4, the failure rate for standards was highest during the 2010 through 2014 drill campaigns. The in-house standards generally had higher failure rates, in particular standards AP-3, AP-5, AP-6, AP-7 and AP-8. The commercial CRMs performed generally better although failure rates were higher for CRMs CDN-ME-19, CDN-GS-P7H and CDN-ME-1101. The high failure rates for these CRMs and some of the in-house standards may also be due to some unrecognized sample switches or data entry errors.

Summary:

The use and frequency of standards to verify the accuracy of the drill geochemical database meets industry standards. However, 2005 drilling did not utilize any standards. A significant number of standards exceeded control limits. No re-assaying of batches with failed standards was carried out during the 2010 to 2014 drill campaigns. It is not known, but there is no evidence of any re-assaying of batches with failed standards during the 2015 to 2018 drill campaigns. The most significant number of failures were from in-house standards, suggesting that these standards were not sufficiently homogenized or an insufficient number of round-robin assays were completed to establish expected values and confidence intervals. Some commercial CRMs also had high failure rates. The failure rates are almost certainly inflated due to un-recognized samples switches or data entry errors.

A temporal high bias in standards is present in the latter portion of 2011 standards. Aside from these standards there is no systematic low or high biases in standard assaying.

11.3.5 Pre-2023 QA/QC Results – External Checks

A total of 6,420 samples from 251 drill holes from 2010-2013 and 2015-2017 drill campaigns were submitted as external checks on original assays. Available records for external check assaying are incomplete, however, samples submitted for external check assays comprised rejects and pulps. Samples were originally submitted to SGS Laboratories and ALS Laboratories. External check samples were reported to have been selected from mineralized zones, as opposed to regularly-spaced samples.

Table 11-5: External Check Assaying Summary

Primary Lab	Checks from Rejects	Checks From Pulps	Unknown Check Source	Total
ALS	2842	1088	305	4235
SGS	1741	444	n/a	2185
Total	4583	1532	305	

External check assays were submitted to ALS Laboratories, SGS Laboratories, Acme Analytical Laboratories (now Bureau Veritas) and Inspectorate Exploration and Mining Services Ltd. (now Bureau Veritas). Check assays were run by ALS Laboratories, Inspectorate Exploration and Mining Services Ltd., and SGS Laboratories on pulps or rejects supplied by SGS when SGS was the primary laboratory. Check assays were run by SGS, Inspectorate, Acme and ALS on pulps or rejects supplied by ALS when ALS was the primary laboratory (Table 11-5). Check assays comprised gold check assays by fire assay with gravimetric finish for fire assay overlimits. Some samples were also assayed for silver or multi-elements with aqua regia digest by and atomic absorption or ICP finish.

External Checks of ALS Original Assays:

External check assays from ALS rejects (N = 2842) compare favourably with original assays with a coefficient of variation (r^2) equal to 0.9824. A simple linear regression determined a very slight low bias in original ALS assays by a factor of 1.0135 (external check assays = 1.0135 x original assays). Higher grade samples, greater than about 20 g/t gold appear to be biased higher in original assays and in particular by outliers. Unpaired Q- Q' plots illustrate similar features; good reproducibility and a high bias at grades exceeding 35 g/t gold.

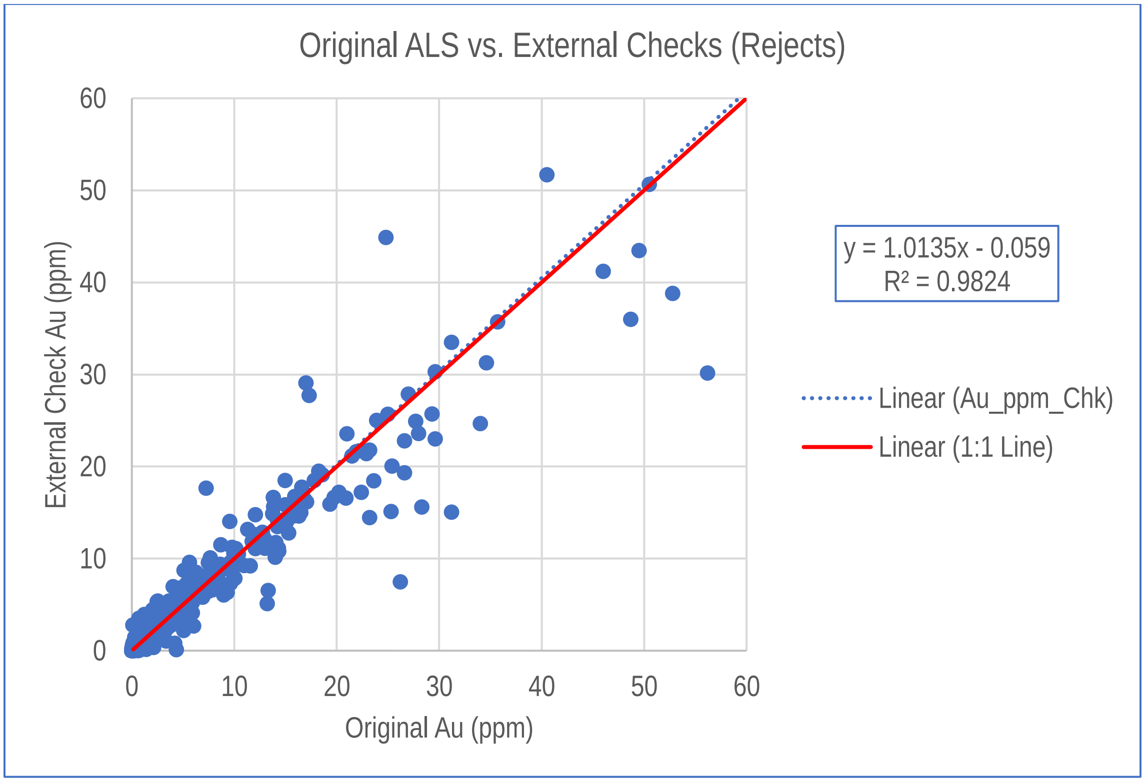


Figure 11-2: Original ALS Assays versus External Check Assays from Rejects – Gold (g/t) Data truncated to 60 g/t for clarity

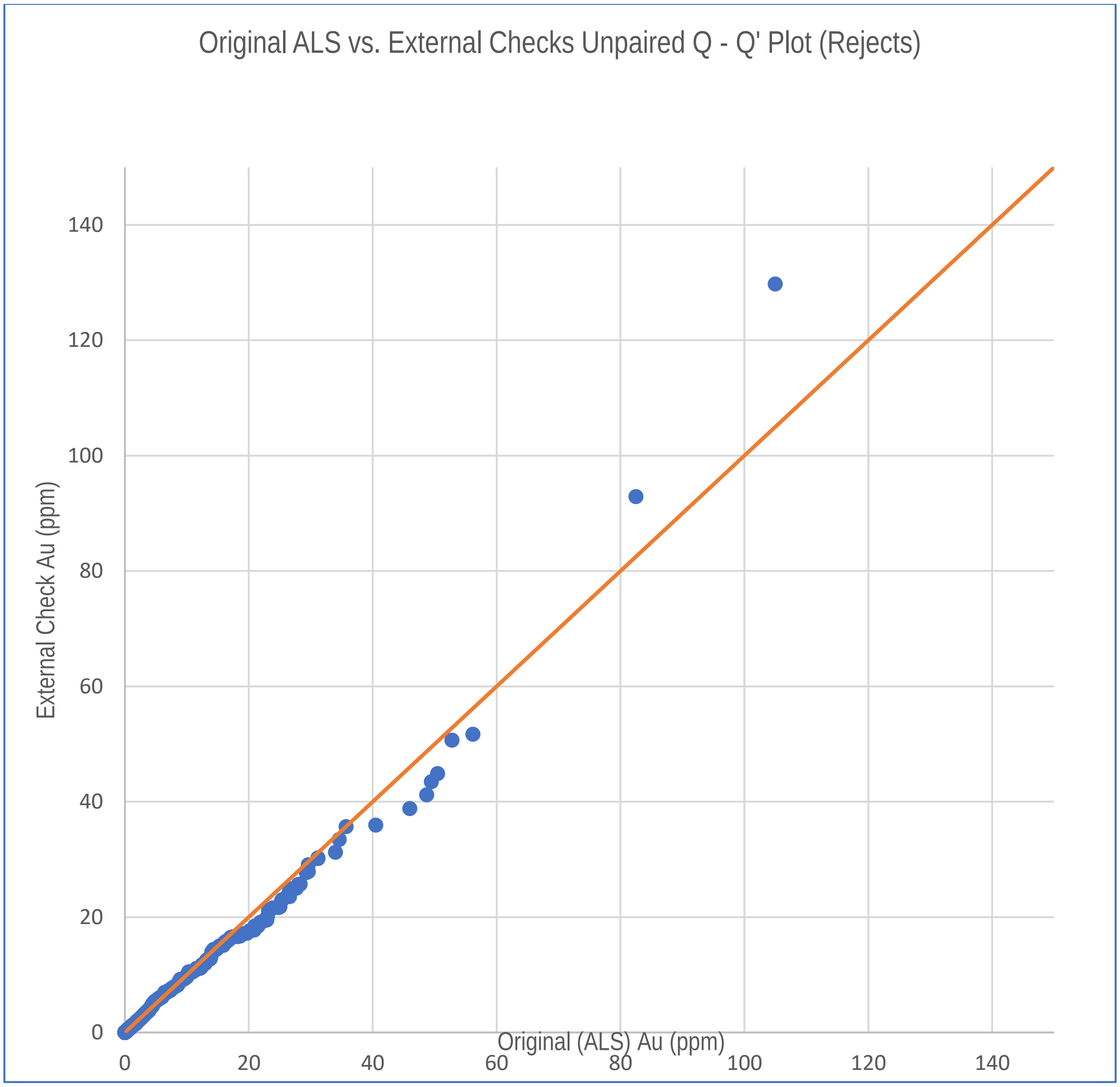


Figure 11-3: Unpaired Q **– Q' Plot for External Checks fro**m Rejects and Original ALS Assays; truncated to 150 g/t

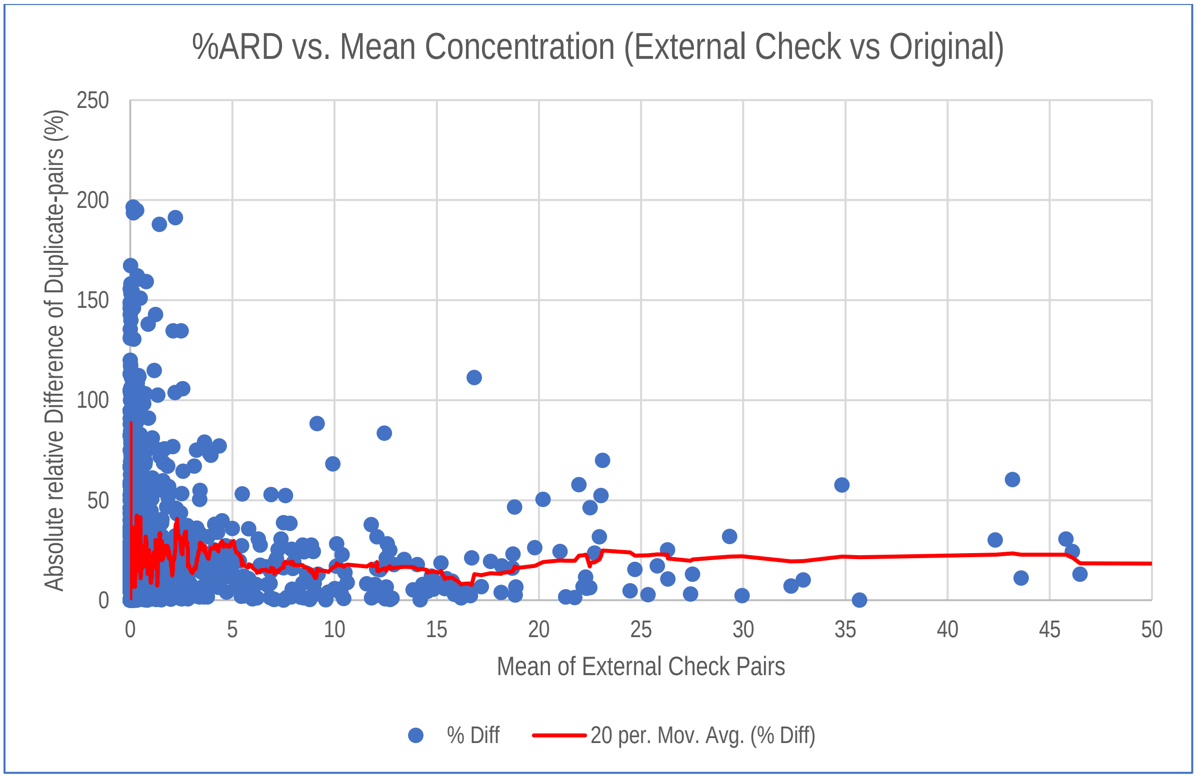


Figure 11-4: Absolute Relative Difference vs. Mean Grade for External Checks from Rejects and Original ALS Assays; data truncated to 50 g/t for clarity

Absolute relative difference, or precision, versus mean grade plots indicate that the precision between original ALS assays and external checks from rejects is poorest near the lower detection limit at up to 200% (Figure 11-4). Precision improves at mean grades from 3 to 5 g/t gold where it averages 26%. At gold grades higher than 5 g/t, precision improves and averages 17%. The influence of higher grade outliers is also apparent with precision diminishing to 15-25% at mean grades greater than 20 g/t gold.

External checks were also carried out on 2010, 2011 and 2012 pulps from original ALS assays. There may also have been external checks from 2015, 2016 and 2017 original ALS pulps (N = 305) by Bureau Veritas, but the sample type used has not been unequivocally confirmed and these samples have not been included in the following analysis.

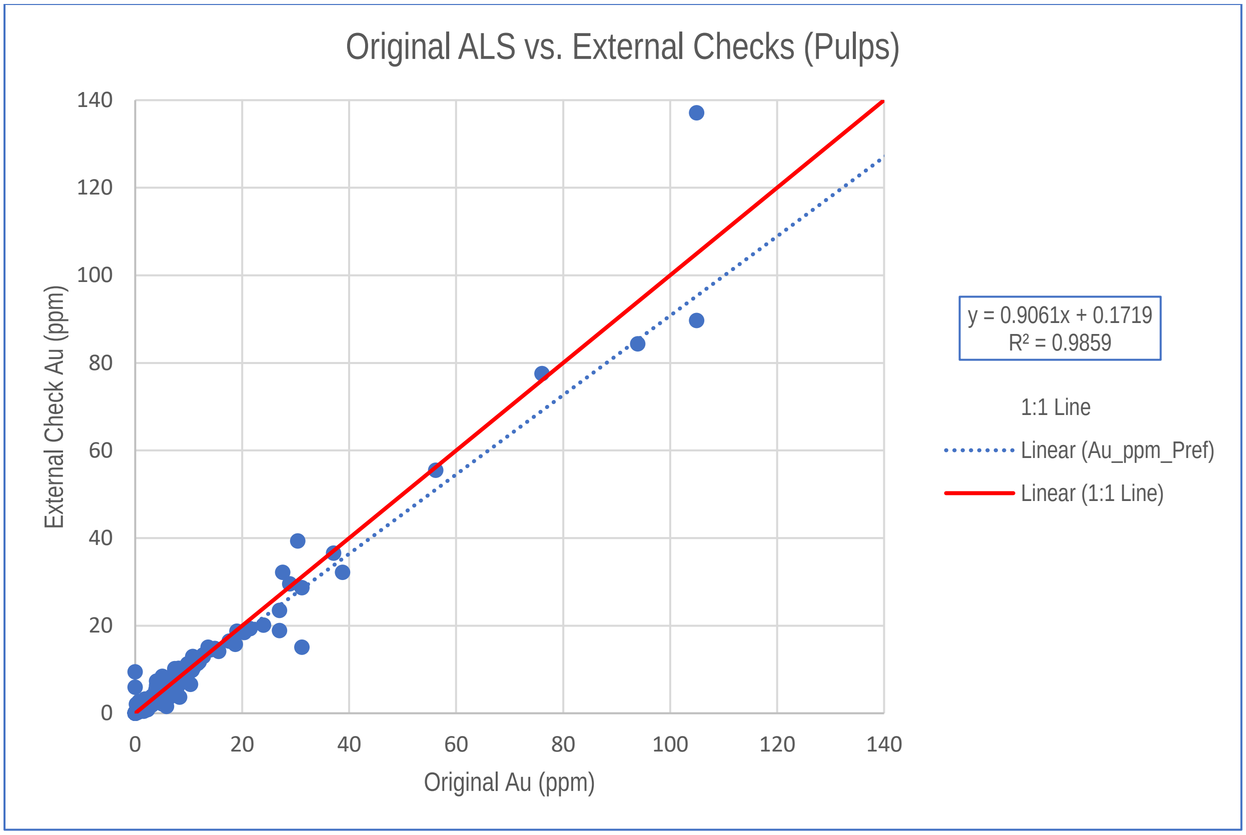


Figure 11-5: Original ALS Assays versus External Check Assays from Pulps - Gold (g/t) Data truncated to 140 g/t for clarity.

External check assays from ALS rejects (N = 1087) compare favourably with original assays with a coefficient of variation (r^2) equal to 0.9859. A simple linear regression determined a very slight high bias in original ALS assays by a factor of 0.9061 (external check assays = 0.9061 x original assays). Higher grade samples, greater than about 20 g/t gold are generally biased higher in original assays. Unpaired Q- Q' plots illustrate the same good reproducibility.

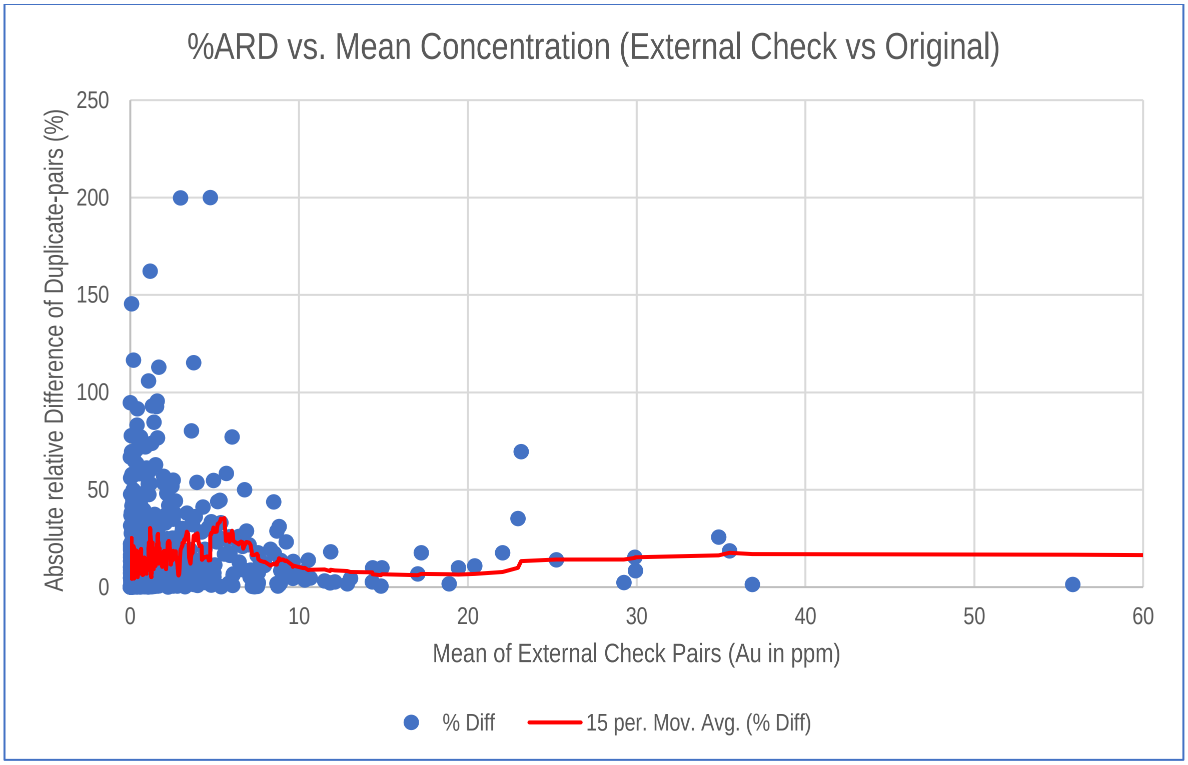


Figure 11-6: Absolute Relative Difference vs. Mean Grade for External Checks from Pulps and Original ALS Assays; data truncated to 60 g/t for clarity.

Absolute relative difference, or precision, versus mean grade plots indicate that the precision between original ALS assays and external checks from pulps is poorest near the lower detection limit. Precision improves at mean grades greater than 7 g/t gold where it averages 10-15%.

Gold is the main element of interest at Ana Paula. Generally speaking, good levels of precision for precious metals in reject duplicates of drill core would be 90% of samples having a precision better than 40% precision. In respect of preparation duplicates acceptable levels of precision for precious metals would be 90% of samples with better than 30% precision. Reject external check duplicates from ALS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of better than 52%, as illustrated in Figure 11-7 below. Pulp external check duplicates from ALS original assays also exhibit reasonable reproducibility or precision in pulp duplicates with 90% of field duplicates exhibiting a precision of better than 33%.

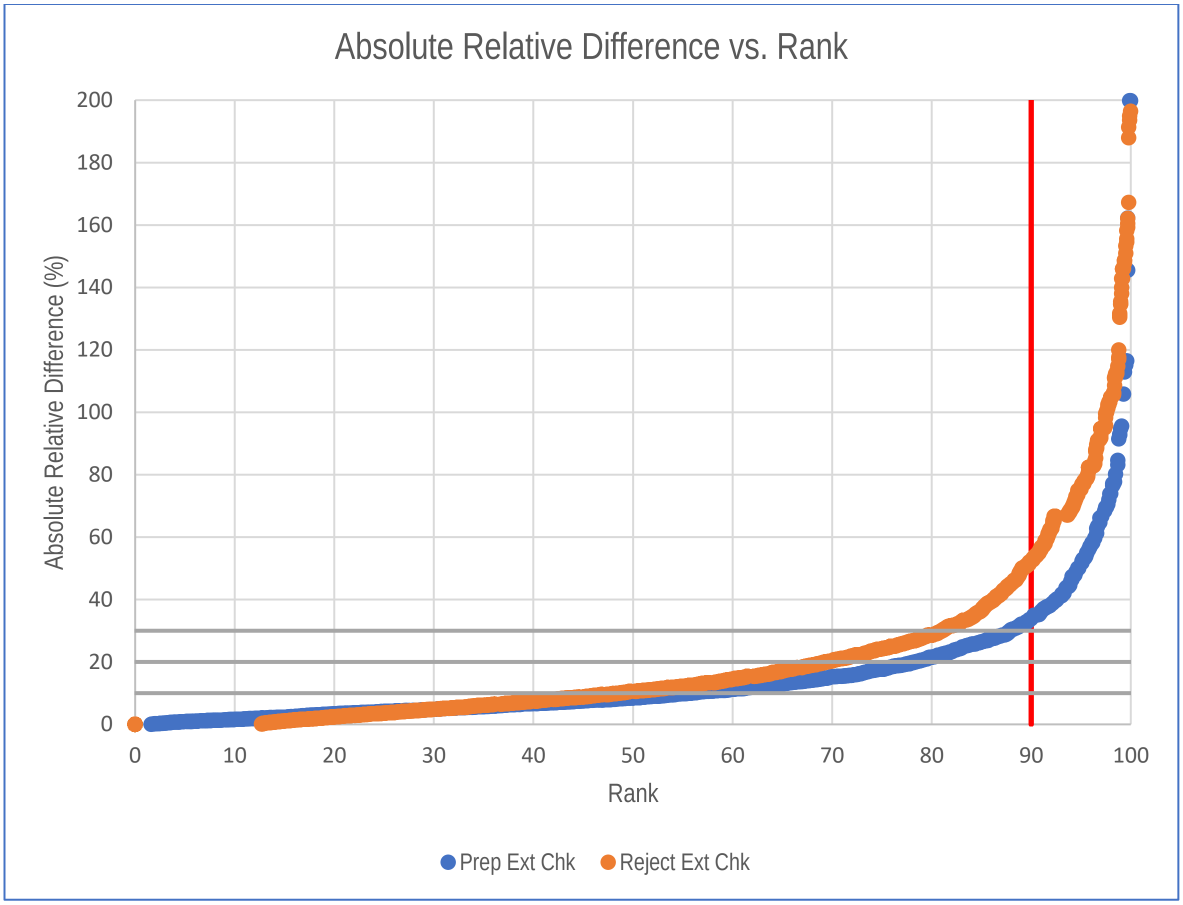


Figure 11-7: Graph of Precision for External Check and Original ALS Assays for Gold

External Checks of SGS Original Assays:

External check assays from SGS rejects (N = 1741) compare favourably with original assays with an r^2 equal to 0.9285. A simple linear regression determined a slight high bias in original SGS assays by a factor of 0.9287 (external check assays = 0.9287 x original assays). The high bias is most heavily influenced by higher grade samples greater than about 10 g/t gold.

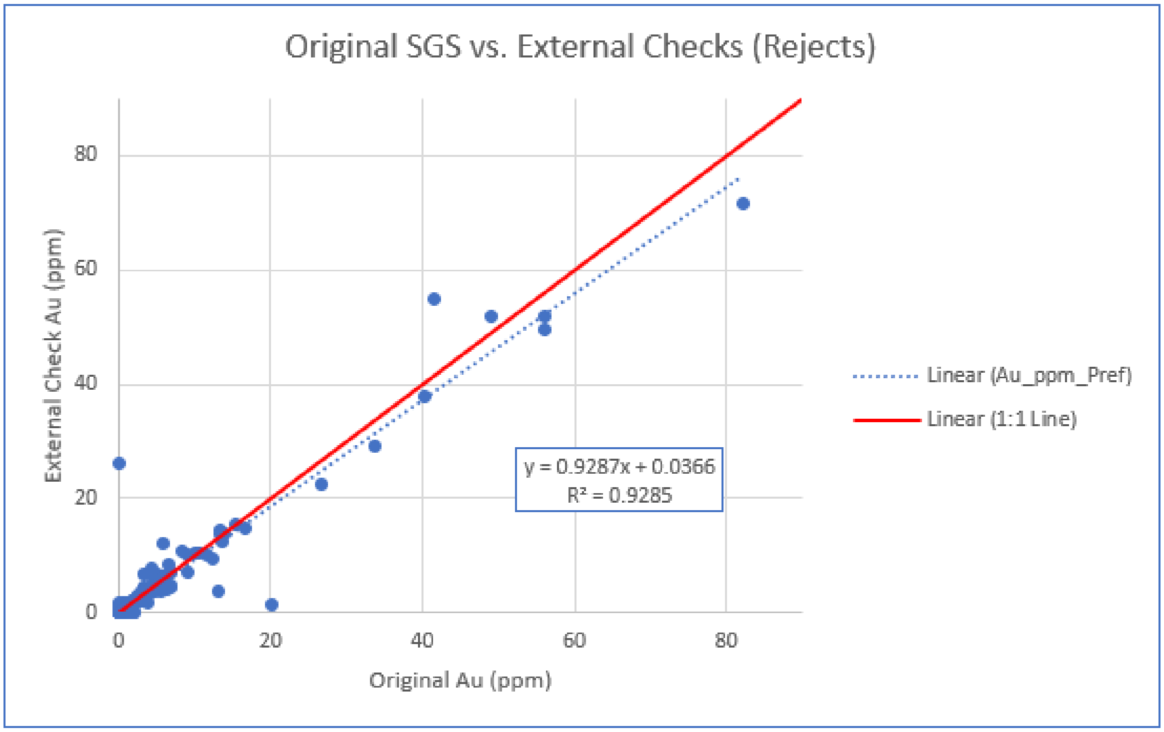


Figure 11-8: Original SGS Assays versus External Check Assays from Rejects - Gold (g/t)

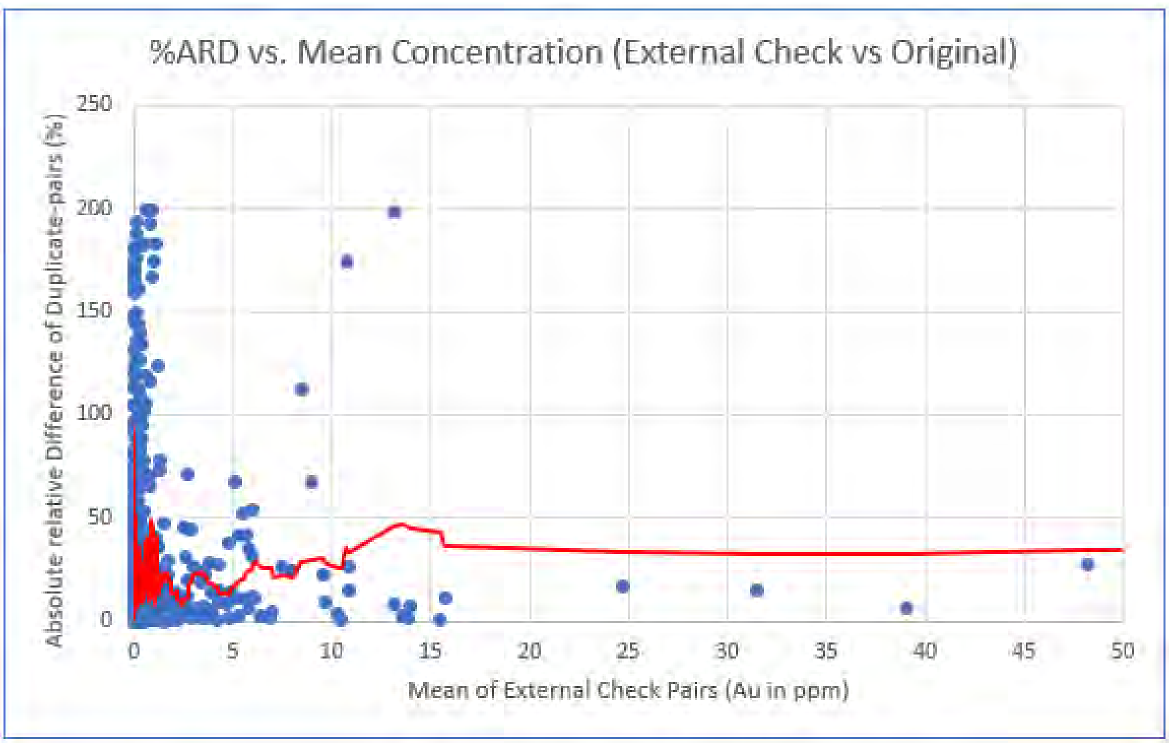


Figure 11-9: Absolute Relative Difference vs. Mean Grade for External Checks from Rejects and Original SGS Assays; data truncated to 50 g/t Au for clarity

The absolute relative difference versus grade plot in Figure 11-9 indicates that the poorest precision between original SGS assays and external checks from rejects is near the lower detection limit where precision is up to 200%. At gold grades between 1.5 and 5 g/t, precision improves to 15% to 20%. At gold grades higher than 5 g/t, precision is about 25% to 30% and is influenced by higher grade samples.

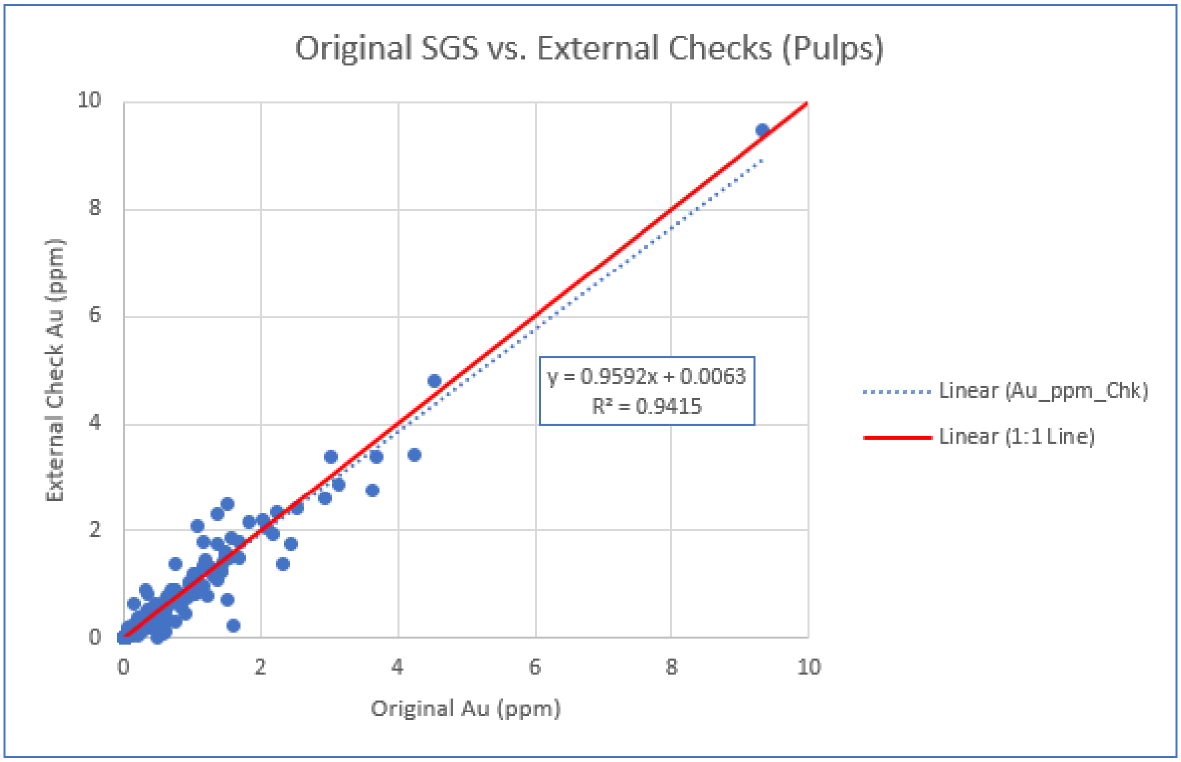


Figure 11-10: Original SGS Assays versus External Check Assays from Pulps - Gold (g/t)

External check assays from SGS pulps (N = 444) compare favourably with original assays with an r^2 equal to 0.9592. A simple linear regression determined a slight high bias in original SGS assays by a factor of 0.9592 (external check assays = 0.9592 x original assays). Samples greater than 3 g/t appear to skew higher in original assays, but these comprise less than 10 data points.

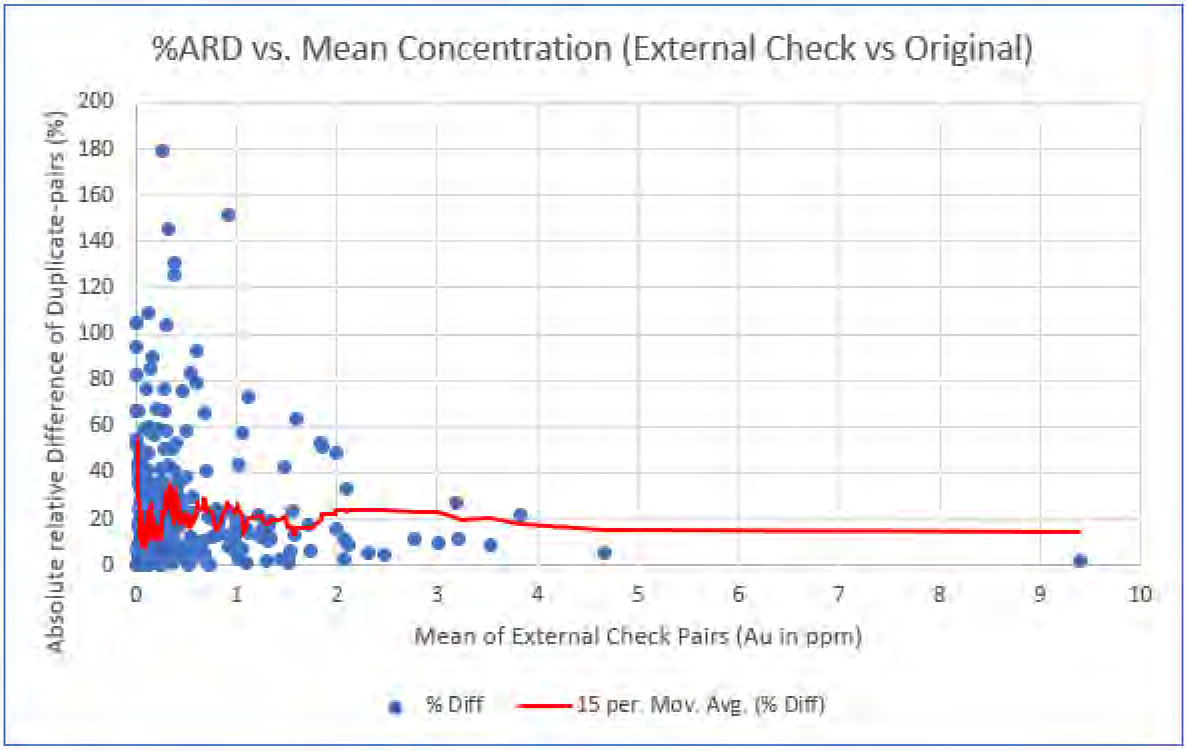


Figure 11-11: Absolute Relative Difference vs. Mean Grade for External Checks from Pulps and Original SGS Assays

The absolute relative difference versus grade plot in Figure 11-11 indicates that the poorest precision between original SGS assays and external checks from pulps is near the lower detection limit. At mean gold grades exceeding 0.1 g/t, precision improves and averages 18%.

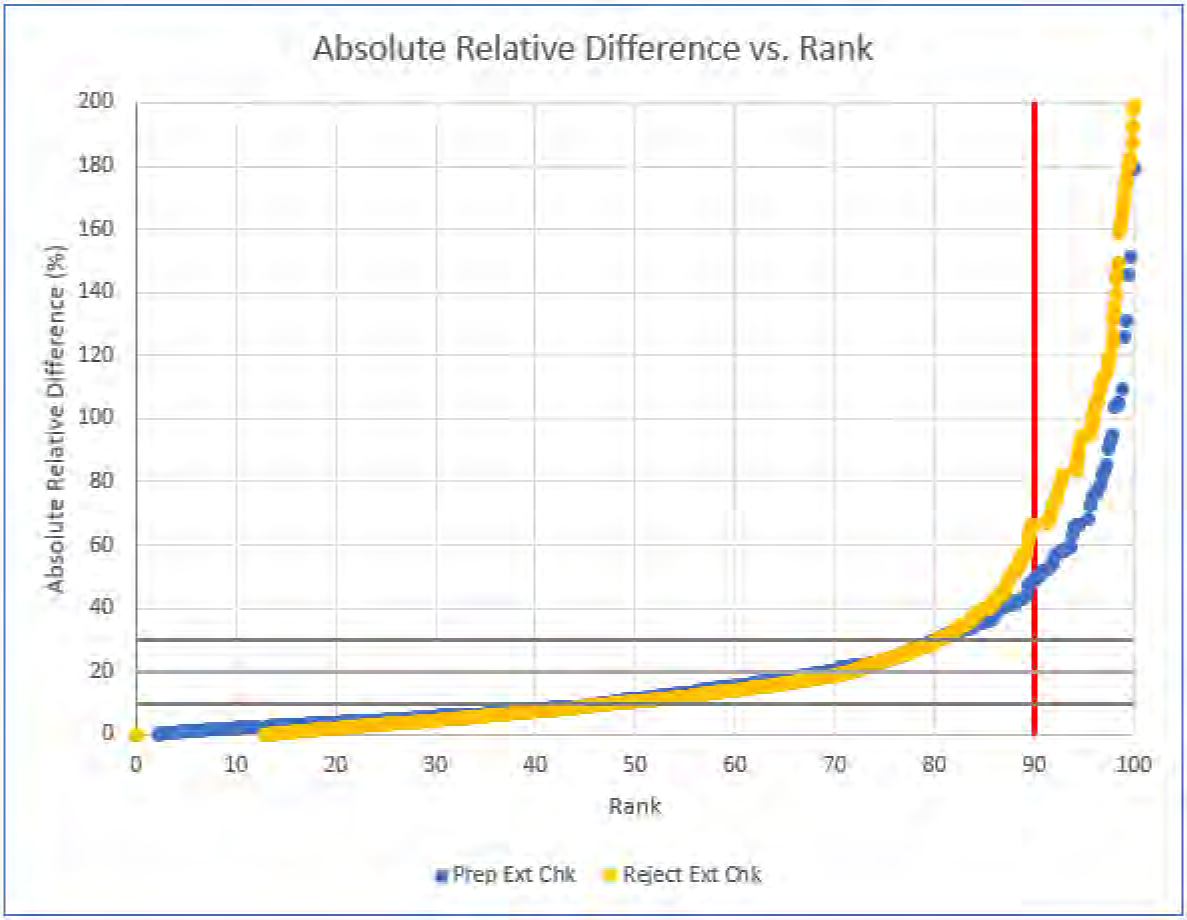


Figure 11-12: Graph of Precision for External Check and Original SGS Assays for Gold

Reject external check duplicates from SGS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of better than 67%, as illustrated in Figure 11-12 above. Pulp external check duplicates from SGS original assays exhibit fair reproducibility or precision in pulp duplicates with 90% of field duplicates exhibiting a precision of better than 49%.

Summary:

External Check on Original ALS Assays:

External check assays from ALS rejects compare favourably with original assays with an r^2 equal to 0.9824 and a linear regression determined a slight low bias in original ALS assays. Higher grade samples (>20 g/t gold) appear to be biased higher in original assays.

Absolute relative difference versus mean grade plots indicate that the precision between original ALS assays and external checks from rejects is poorest near the lower detection limit. Precision improves at mean grades from 3 to 5 g/t gold where it averages 26%. At gold grades higher than 5 g/t, precision improves and averages 17%. The influence of higher grade outliers is also apparent with precision diminishing to 15-25% at mean grades greater than 20 g/t gold.

Reject external check duplicates from ALS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of about 52%, while pulp external check duplicates from ALS original assays exhibit reasonable reproducibility or precision in pulp duplicates with 90% of field duplicates exhibiting a precision of about 33%.

External Check on Original SGS Assays:

External check assays from SGS rejects compare favourably with original assays with an r^2 equal to 0.9285 and a linear regression determined a slight high bias in original SGS assays. The high bias is most heavily influenced by higher grade samples greater than about 10 g/t gold.

Absolute relative difference versus mean grade plots indicate that precision between original SGS assays and external checks from rejects is poorest near the lower detection limit at up to 200%. Precision improves at mean grades from 1.5 to 5 g/t gold where it averages 16%. At gold grades higher than 5 g/t, precision averages 29% and influenced by higher grade (>10 g/t gold) samples.

External check assays from SGS pulps compare favourably with original assays with an r^2 equal to 0.9592 and a linear regression determined a slight high bias in original SGS assays. The skew to a higher bias is driven by samples greater than 3 g/t, but these comprise less than 10 data points.

Absolute relative difference versus mean grade plots indicate that the poorest precision between original SGS assays and external checks from pulps is near the lower detection limit where precision is up to 180%. At mean gold grades exceeding 0.1 g/t, precision averages 18%.

Reject external check duplicates from SGS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of about 67%, while pulp external check duplicates from SGS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of about 49%. The precision of both reject and pulp external check duplicates is heavily influenced by large numbers of external checks near the lower detection limits.

11.3.6 Pre-2023 QA/QC Results – Precision

Records regarding historic duplicate samples are incomplete and no duplicate samples were collected from the 2005, 2013, 2014 and AN- and SL-series holes. Duplicate samples comprised ¼ core for 2010, 2011, 2015 to 2018 and limited 2012 holes and sample weights, where available, and core in storage are consistent with each being a ¼ core sample. There is no record of any preparation duplicates from pre-2023 drill core.

In the case of core samples, the split half of the core was quartered and both quarter samples were submitted as field duplicates. A total of 1,618 field duplicate-pairs were inserted into the sample sequence and submitted for analysis.

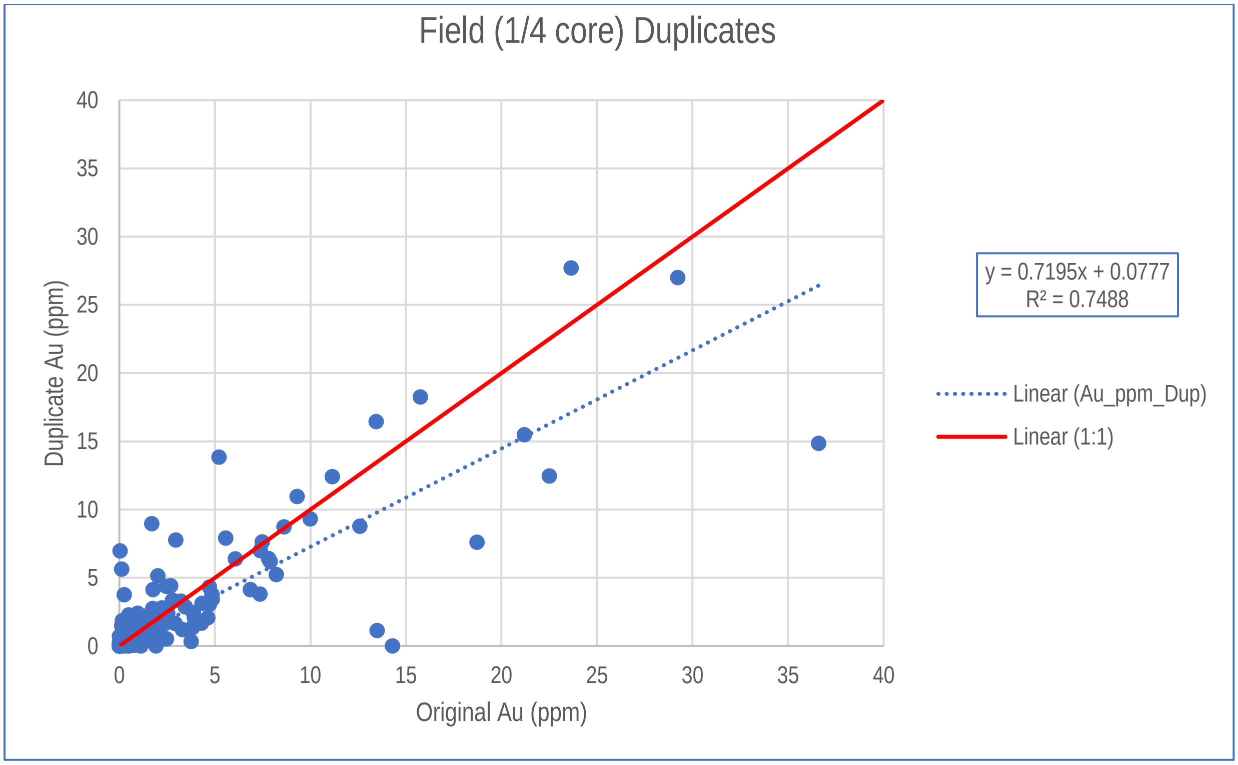


Figure 11-13: Pre-2023 Field (1/4 core) Duplicates - Gold (g/t)

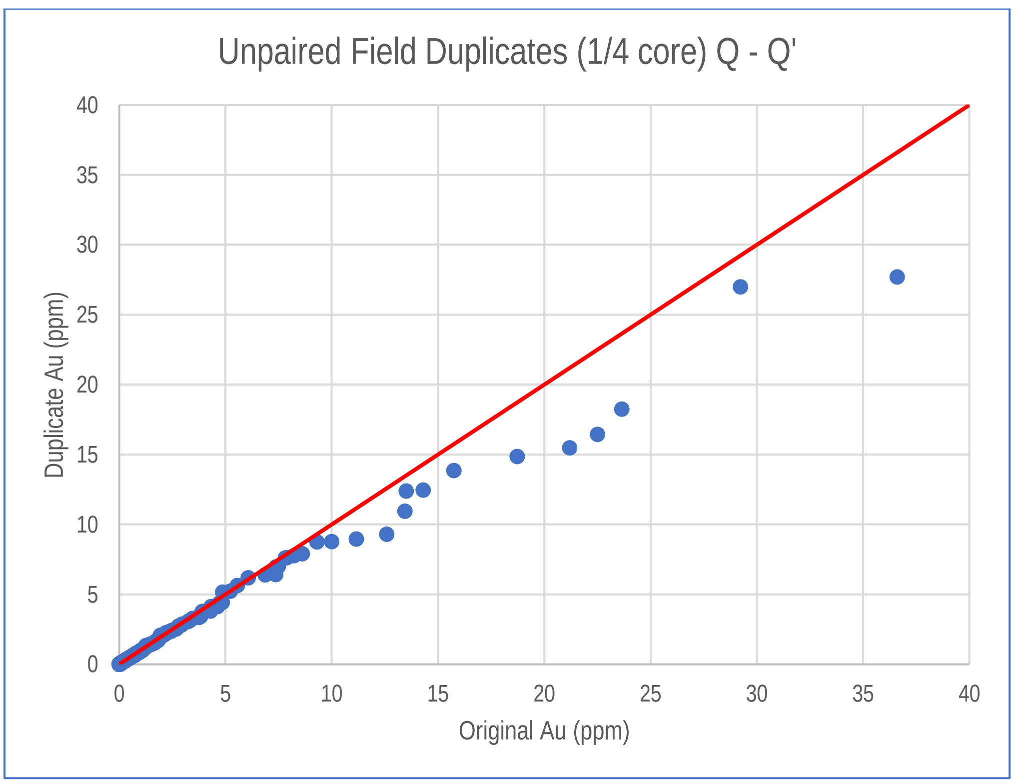


Figure 11-14: Unpaired Q-Q' Plot for Pre-2023 Field (1/4 core) Duplicates - Gold (g/t)

Field duplicate assays compare poorly with original assays with an r^2 equal to 0.7488. A simple linear regression determined a high bias in original assays by a factor of 0.7195 (duplicate assays = 0.7195 x original assays). Original assays bias higher particularly at grades exceeding 10 g/t gold, but these comprise only 12 data points.

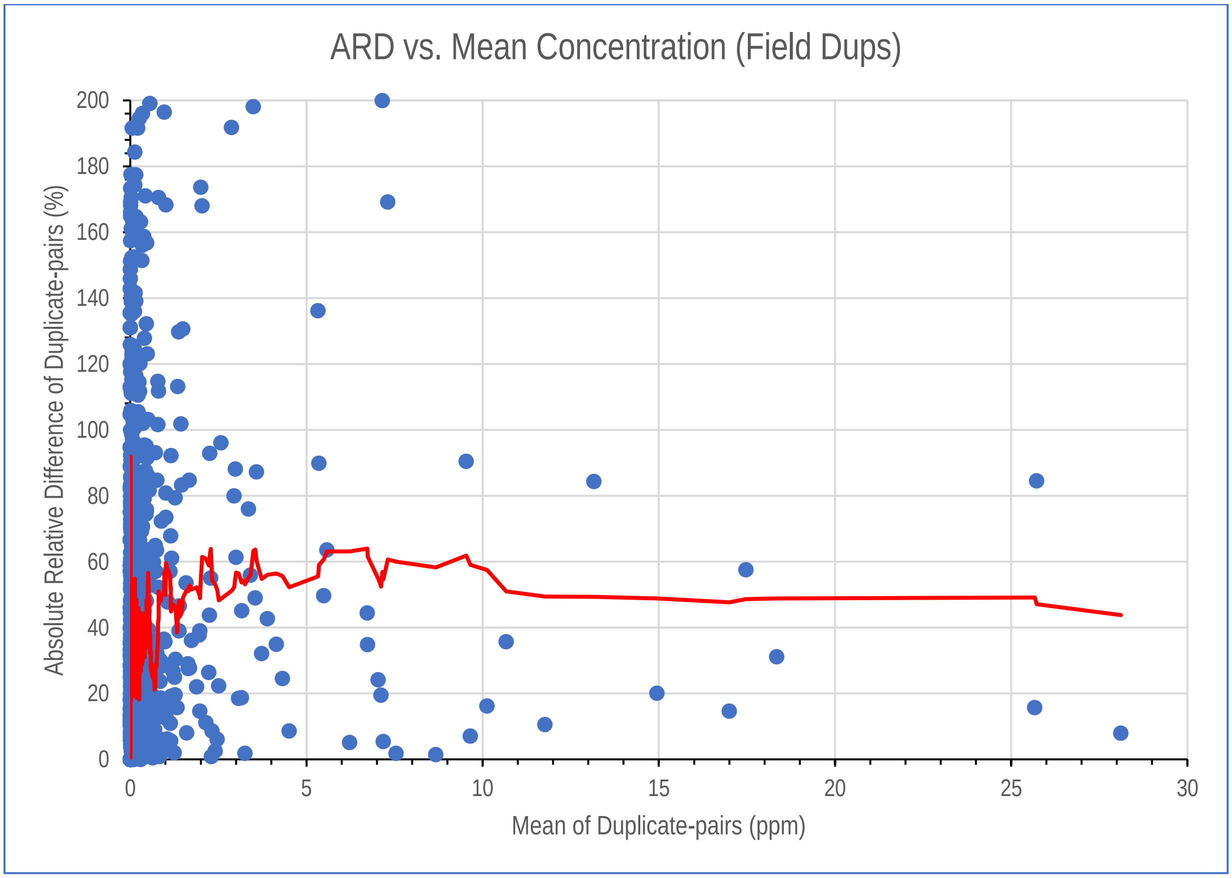


Figure 11-15: Absolute Relative Difference vs. Mean Grade for Pre-2023 Field Duplicates – Gold (g/t)

The absolute relative difference versus mean grade plot (Figure 11-15) indicates that precision in field duplicates is particularly poor at low concentrations of gold (<0.02 g/t), and improves somewhat with increasing grade. At grades exceeding 2 g/t gold the precision is about 50-55%. Unpaired Q – Q' plots for field duplicates, though still suggest poor reproducibility at grades exceeding 10 g/t gold.

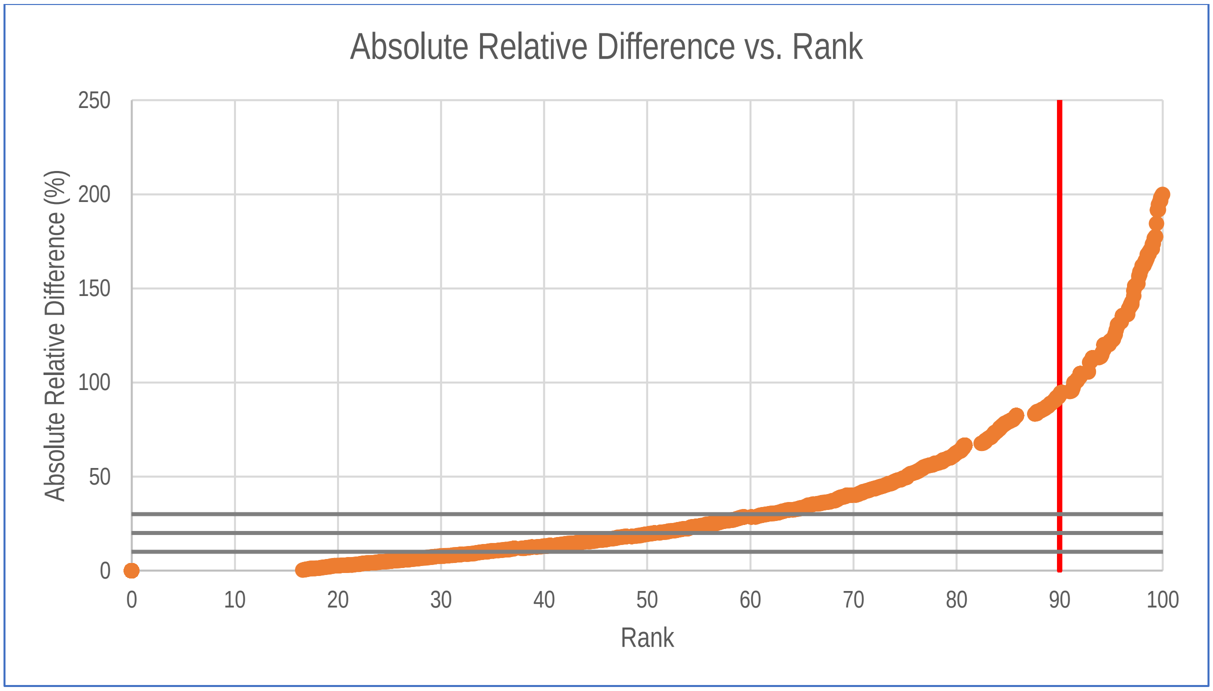


Figure 11-16: Absolute Relative Difference vs. Rank for Field Duplicates – Gold (g/t)

Overall gold exhibited poor reproducibility or precision in field duplicates with 90% of field duplicates exhibiting a precision better than only 93%, as illustrated in Figure 11-16 above.

11.3.7 2023 QA/QC Results – Contamination

Blank material for 2023 drilling comprised feldspar-hornblende porphyry (granodiorite according to previous workers) from an outcrop near the powder magazine facility. Six 2023 blanks exceeded control limits and each were preceded by mineralized samples; this comprises 6.1% of blanks samples that returned some degree of contamination. One blank sample returned 2.86 g/t gold and a re-assay from a new sample prepared from the reject sample returned <0.005 g/t gold which confirmed that there was contamination in the original assay. One of 99 blank Figure 11-17 samples showed evidence of material contamination.

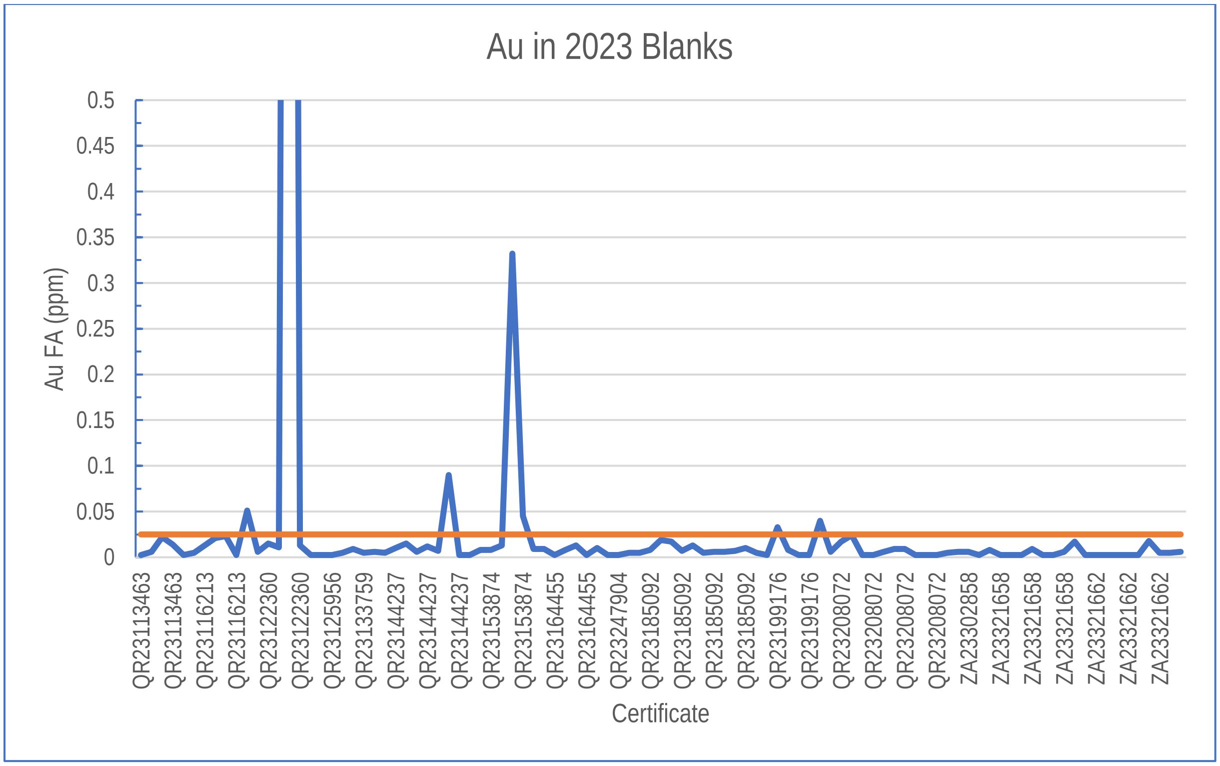


Figure 11-17: 2023 Blank Sample Performance (Au) with Control Limit in red

Summary:

Blanks utilized for the 2023 drill program are appropriate for the project. Blank failures were directly associated with auriferous mineralization. The degree of contamination observed is reasonable and not deemed to be material. Only one blank sample returned a material level of contamination. Regular insertion of blank samples should continue to be a part of the project QA/QC program.

11.3.8 2023 QA/QC Results – Accuracy

Four CRMs were regularly inserted on a rotating basis into the 2023 sample stream and they were inserted at a frequency of one CRM every 40 samples. The CRMs were sourced from CDN Resource Laboratories in Langley, B.C. Canada and Rocklabs Reference Materials in Auckland, New Zealand (Table 11-6):

Table 11-6: 2023 Ana Paula Standards Used

Standard	Year(s)	Quantity	Expected Au Value (g/t)	Source
CDN-GS-2Z	2023	36	2.376	CDN
CDN-GS-7J	2023	55	7.34	CDN
SP116	2023	40	18.09	Rocklabs
CDN-GS-20C	2023	11	19.65	CDN

Upper warning limits (UWL) were set at between +2 and +3 standard deviations from the expected values while lower warning limits (LWL) are set at between -2 and -3 standard deviations from expected values. Upper and lower control limits (UCL and LCL) are set at ±3 standard deviations and such samples exceeding the UCL or LCL are considered failures. Also, consecutive samples in the same workorder exceeding the UWL or LWL are also considered failures.

Utilizing this criteria, there were six failed standards which were tabulated in a failure table. This data is displayed graphically in Figure 11-18 below where the z-score represents multiples of the standard deviation for the CRMs established by the provider of the CRMs. Batches containing these failed standards were re-assayed and subsequent re-assayed standards passed warning or control limits. Re-assayed values replaced original values in the database. No significant bias in the values of standards was observed.

Summary:

Certified reference materials utilized for the 2023 drill program are appropriate for the project, in particular with respect to grade. Standard failures were appropriately re-assayed and the re-assayed values replaced original values in the database. The 2023 assay data is deemed accurate.

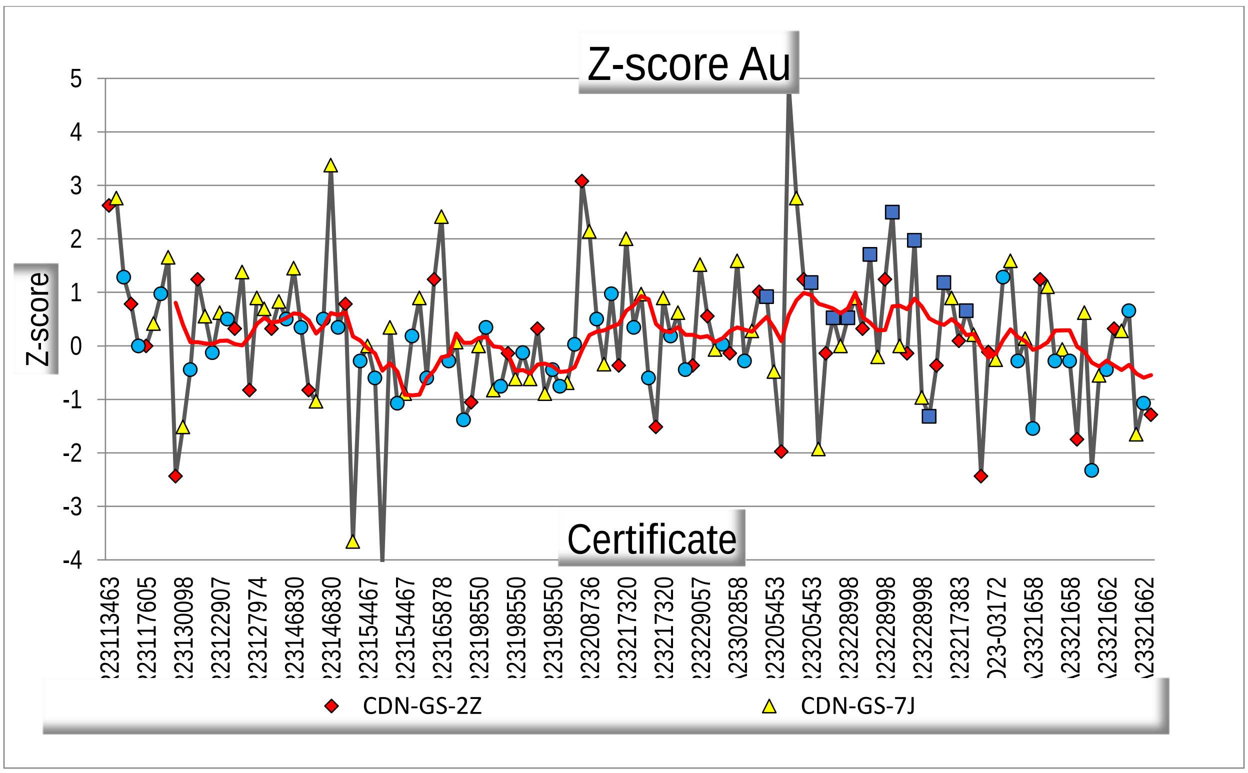


Figure 11-18: 2023 Standard Performance (Au) versus Z-score (multiples of CRM standard deviation)

11.3.9 2023 QA/QC Results – Precision

In 2023, duplicate-pairs alternated between ¼ core and preparation duplicates (two pulps prepared from the same reject). A total of 42 field duplicate-pairs were inserted into the sample sequence and submitted for analysis. A total of 58 preparation duplicate-pairs were submitted in 2023 for analysis by requesting that the preparation lab prepare a second pulp from the same reject and analyze each pulp. Finally, a total of 107 reject samples were forwarded to the ALS laboratory in Zacatecas for pulverizing and analysis. In general, the size of the data sets are limited in scope, but can be taken as reasonably instructive for the High Grade Panel where most 2023 drilling took place.

Field duplicate assays compared well with original assays with an r^2 equal to 0.9754. A simple linear regression determined a slight high bias in duplicate assays by a factor of 1.0617 (duplicate assays = 1.0617 x original assays). The good precision in field duplicates is also presented in the unpaired Q – Q' plot.

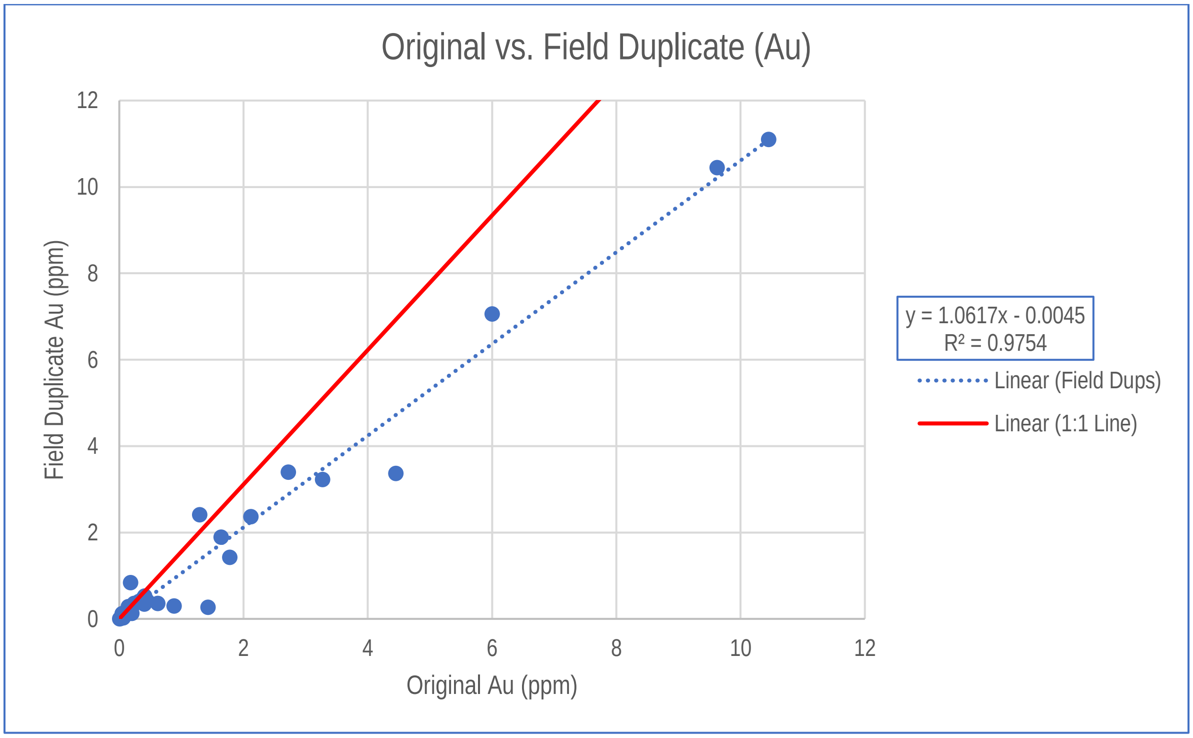


Figure 11-19: 2023 Field (1/4 core) Duplicates - Gold (g/t)

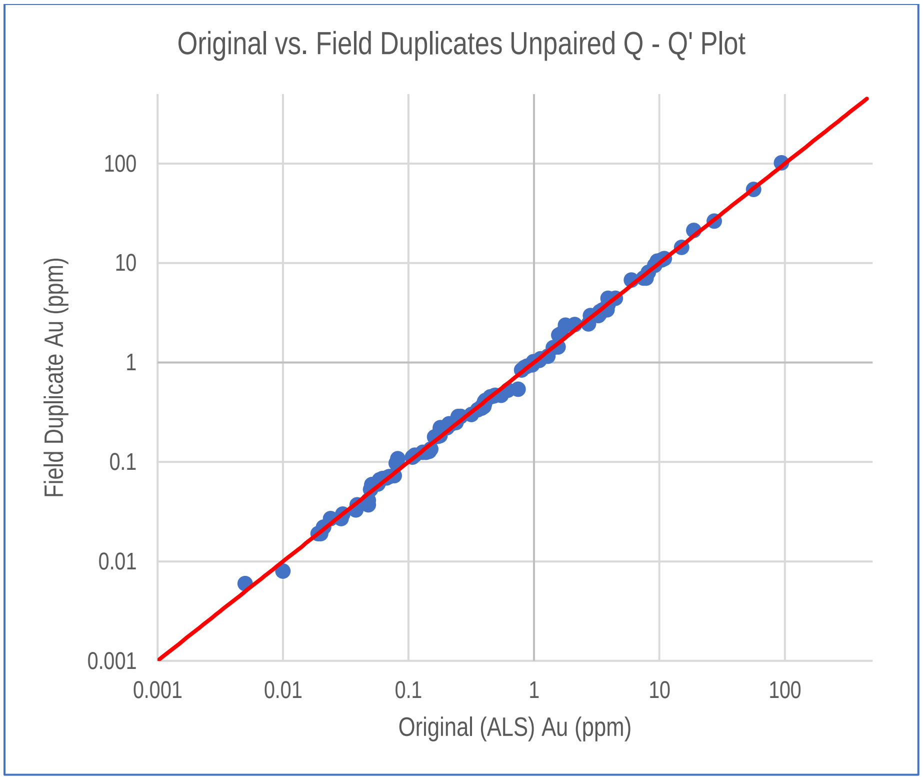


Figure 11-20: Unpaired Q-**Q' Plot for 2023 Field** (1/4 core) Duplicates - Gold (g/t), log plot

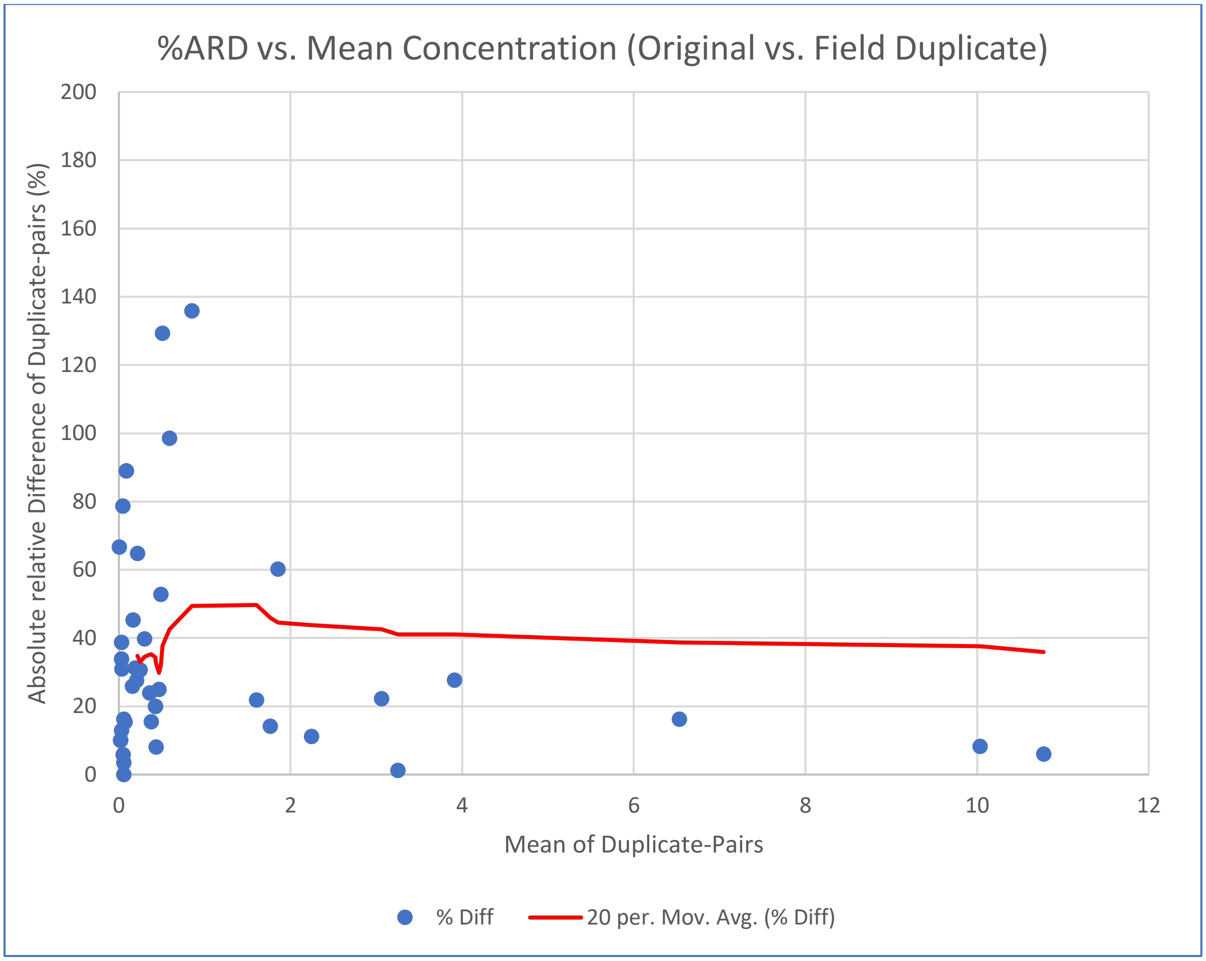


Figure 11-21: Absolute Relative Difference vs. Mean Grade for 2023 Field Duplicates – Gold (g/t

The absolute relative difference versus mean grade plot (Figure 11-21) for field duplicates indicates that precision in field duplicates is poor at low concentrations of gold (<0.5 g/t), and improves with increasing grade. At grades exceeding 2 g/t gold precision is good and acceptable at about 20%.

Preparation duplicate assays compared well with original assays with an r^2 equal to 0.9971. A simple linear regression determined a slight high bias in duplicate assays by a factor of 1.049 (duplicate assays = 1.049 x original assays).

The absolute relative difference versus mean grade plot (Figure 11-22) for preparation duplicates indicates that precision in preparation duplicates is poor near the lower detection limit, and improves with increasing grade. At grades exceeding 1 g/t gold precision is good and acceptable at about 10%.

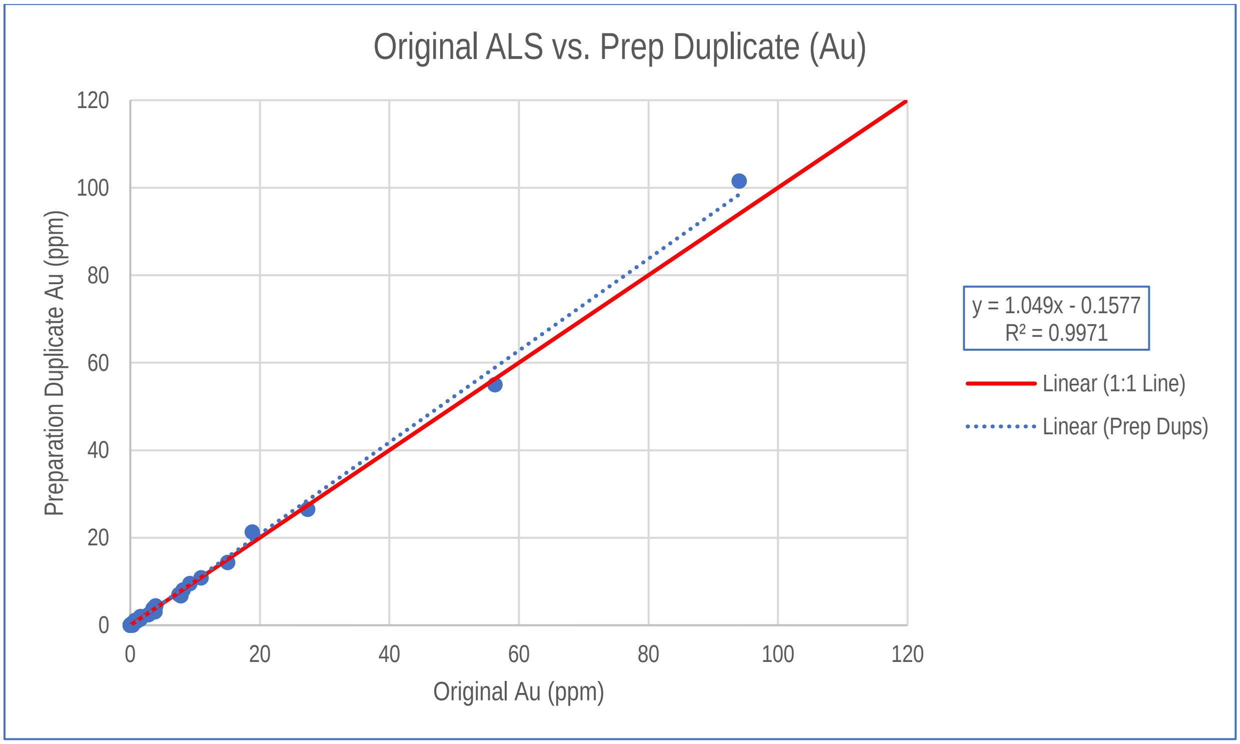


Figure 11-22: 2023 Preparation Duplicates - Gold (g/t)

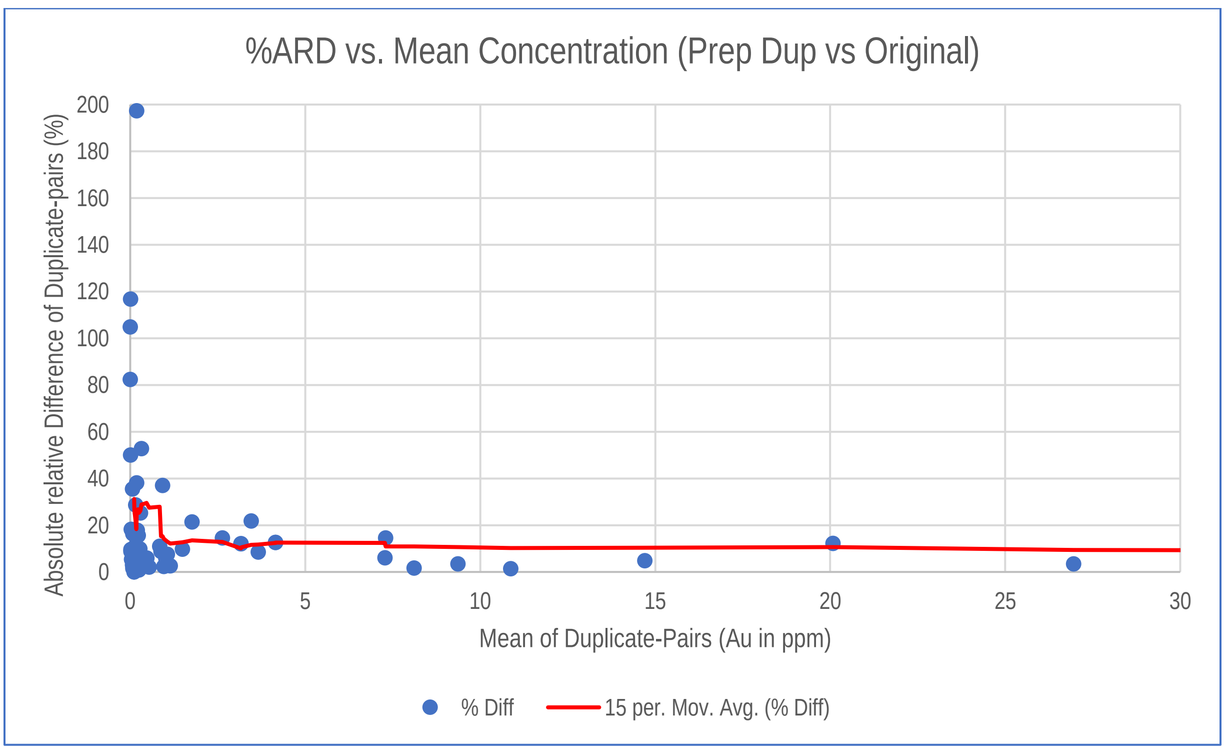


Figure 11-23: Absolute Relative Difference vs. Mean Grade for 2023 Preparation Duplicates – Gold (g/t)

Reject duplicate assays comparing ALS Queretaro and ALS Zacatecas assays compared well with original assays with an r2 equal to 0.9734. A simple linear regression determined a high bias in duplicate assays by a factor of 1.1669 (duplicate assays = 1.1669 x original assays), although this is influenced by one duplicate-pair. The influence of the one sample is demonstrated in the unpaired Q – Q' plot (Figure 11-24).

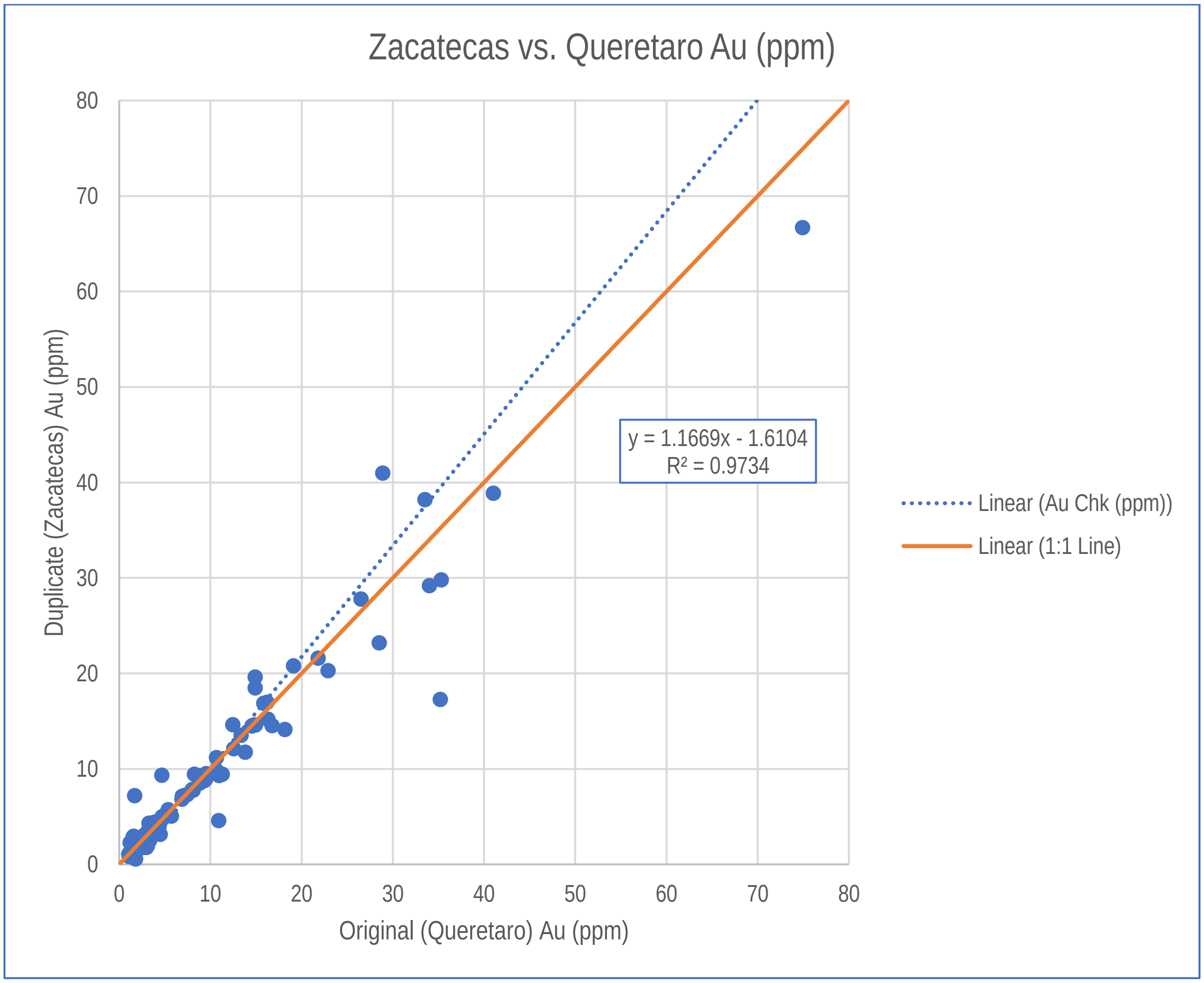


Figure 11-24: 2023 Reject Duplicates (ALS Queretaro vs. ALS Zacatecas) - Gold (g/t), truncated to 80 g/t for clarity

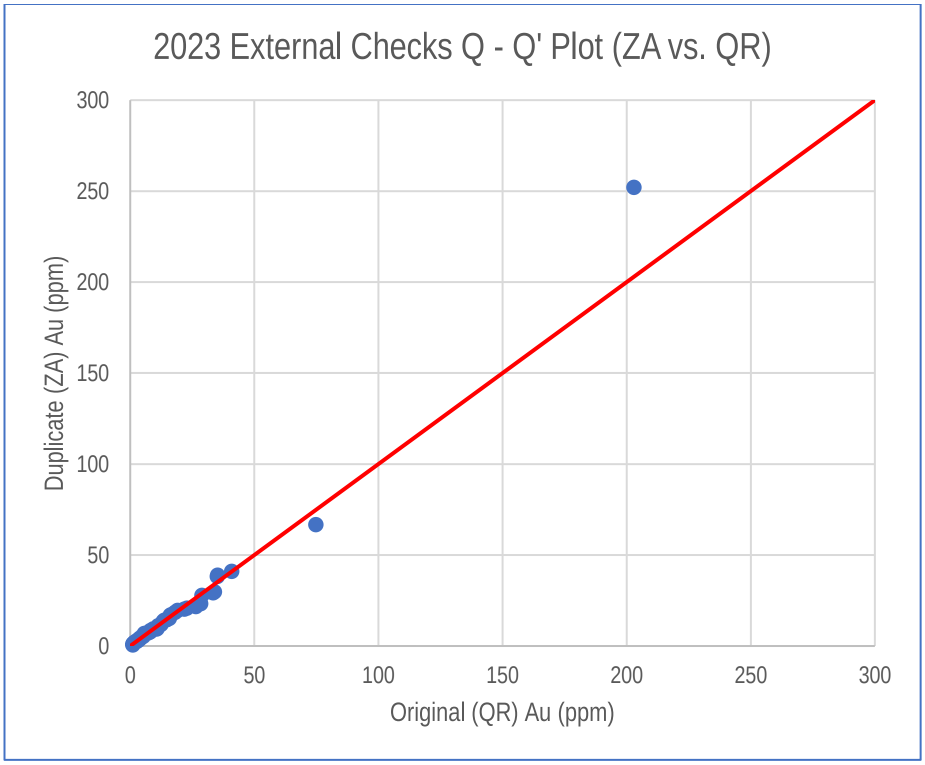


Figure 11-25: Unpaired Q-**Q' Plot for 2023 Reject Duplicates (ALS Queretaro vs. ALS Zacatecas)** - Gold (g/t)

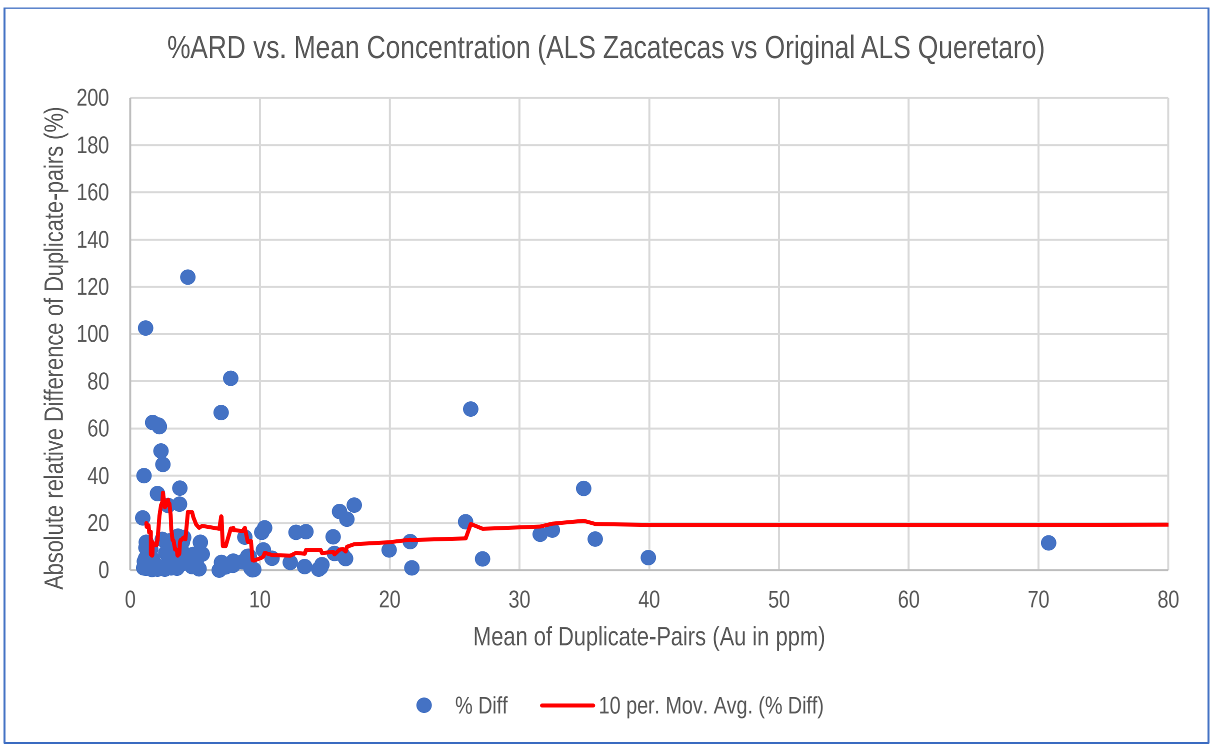


Figure 11-26: Absolute Relative Difference vs. Mean Grade for 2023 Reject Duplicates (ALS Queretaro vs. ALS Zacatecas) – Gold (g/t), truncated to 80 g/t for clarity

The absolute relative difference versus mean grade plot (Figure 11-26) for reject duplicates indicates that precision in reject duplicates overall is good. The precision averages about 15% at grades to 10 g/t gold, and improves to about 10% from 10 g/t to 25 g/t gold. At grades exceeding 25 g/t gold precision decreases but only to about 20%.

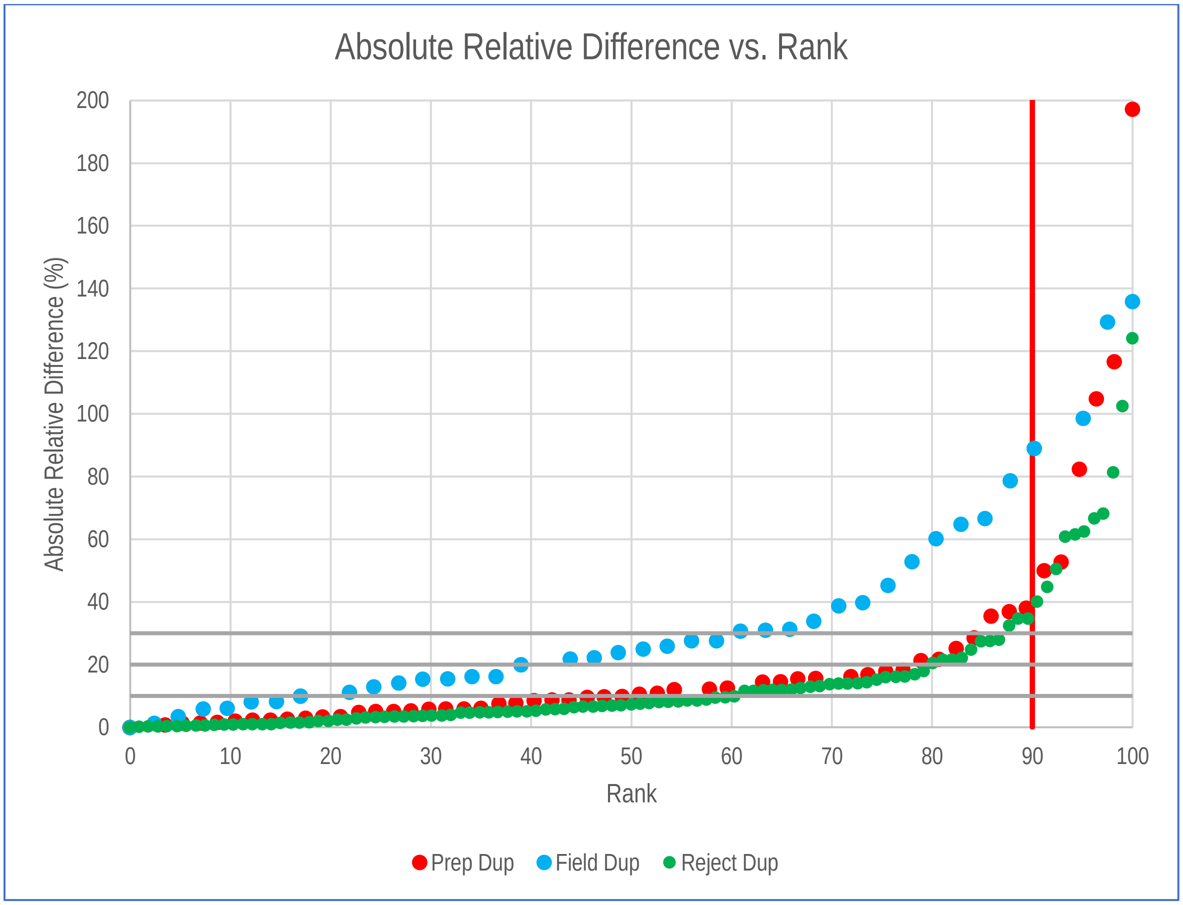


Figure 11-27: Absolute Relative Difference vs. Rank for All 2023 Duplicates

Gold exhibits acceptable reproducibility or precision in field, reject and preparation duplicates, as illustrated in Figure 11-27 above. Field duplicates exhibit fair precision with 90% of field duplicates exhibited a precision of better than 83%. Reject duplicates exhibit acceptable precision with 90% of reject duplicates exhibited a precision of better than 37%. Preparation duplicates also exhibit acceptable precision, 90% of preparation duplicates exhibited a precision of better than 44%.

Summary:

Insertion of samples for the estimation of precision exceeds industry standards. The size of the datasets for field (1/4 core) duplicates and preparation duplicates, and to a lesser extent reject duplicates, are not large, but they are instructive for an appraisal of precision in the High Grade Panel. This is due to the limited scope of the 2023 drill program. Precision for field duplicates is fair and precision for reject and preparation duplicates are acceptable. Collection of duplicate samples from ¼ core and pulps should continue to gain a better understanding of the repeatability of gold assays.

11.3.10 2023 QA/QC Results – External Checks

A total of 107 samples from 17 drill holes completed in 2023 were submitted to SGS de Mexico S.A. de C.V. in Durango, Mexico as external checks on original ALS assays submitted to Santiago de Queretaro, Mexico. These samples submitted to SGS comprised quartered core samples.

External check assays from quartered core compare reasonably with original assays with an r^2 equal to 0.7377, although note that this does not include one outlier sample-pair (original assay of 203 g/t gold and external check of 7.26 g/t gold). A simple linear regression outlined a weak high bias in original ALS assays, but this bias is influenced in particular by seven high grade data points. The unpaired Q – Q' plot in Figure 11-28 also illustrates good reproducibility at lower grades and a high bias in original assays at grades exceeding 20 g/t gold.

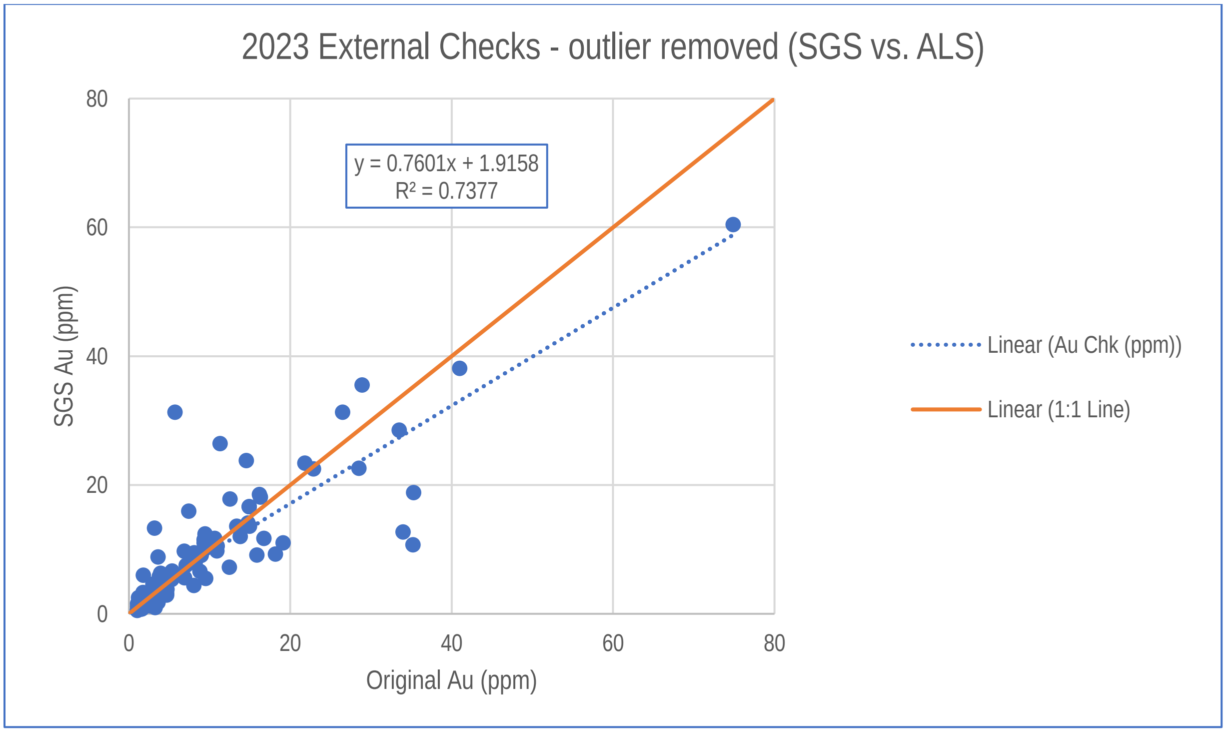


Figure 11-28: 2023 ALS Assays versus External Check Assays from ¼ Core - Gold (g/t), one outlier removed for clarity

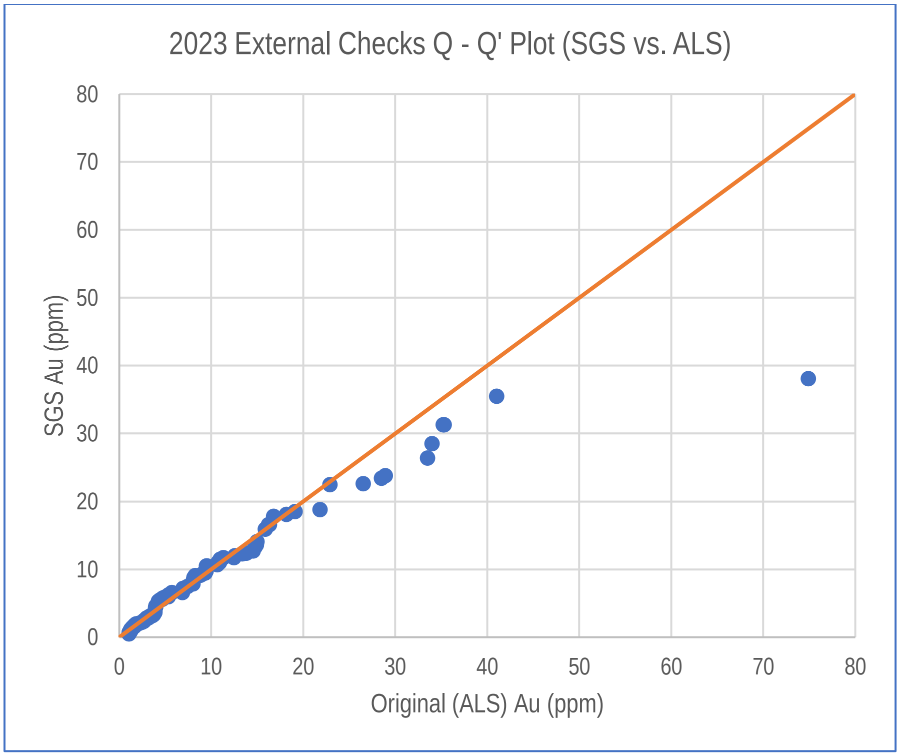


Figure 11-29: Unpaired Q **– Q' Plot for External Checks Assays from ¼ Core** - Gold (g/t) one outlier removed for clarity

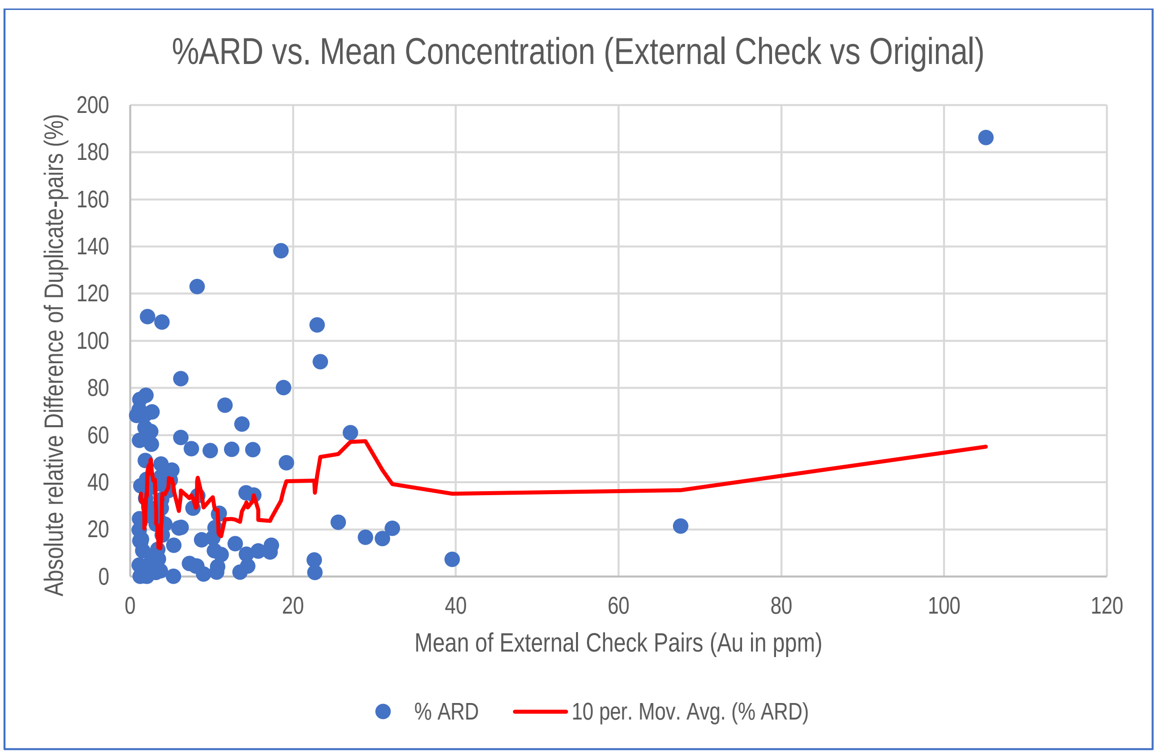


Figure 11-30: Absolute Relative Difference vs. Mean Grade for External Checks from ¼ Core - Gold (g/t)

The ARD versus grade plot in Figure 11-30 indicates that the poorest precision between original ALS assays and external checks from quartered core is poorest at grades less than 3 g/t gold where precision is up to 80%. Precision improves to an average of about 40% at grades between 3 and 20 g/t gold and deteriorates again at grades exceeding 20 g/t gold to 50-60%. Quartered core external check duplicates exhibit fair reproducibility or precision with 90% of field duplicates exhibiting a precision of better than 74%, as illustrated in Figure 11-31 below.

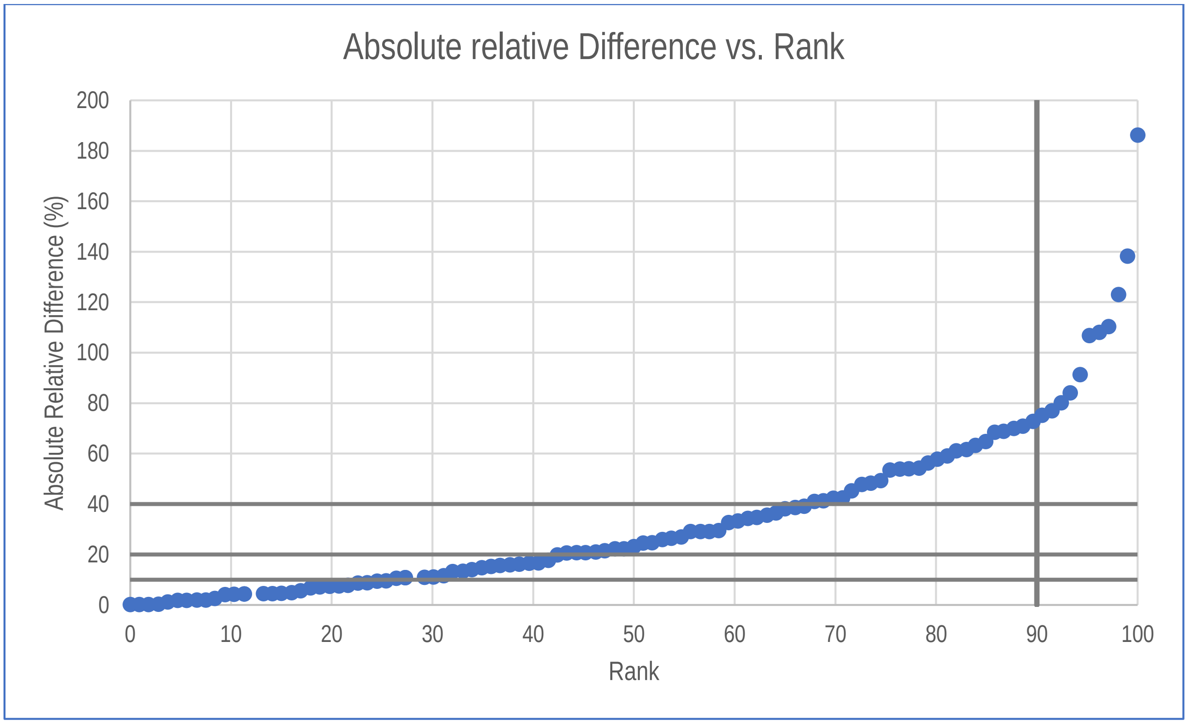


Figure 11-31: Graph of Absolute Relative Difference versus Rank for External Checks from ¼ Core - Gold (g/t)

Summary:

External check assays from quartered core compare reasonably with original assays with an r^2 equal to 0.7377, although this does not include one outlier sample-pair. A simple linear regression outlined a weak high bias in original ALS assays but the bias is influenced in particular by seven high grade data points.

The ARD versus grade plot indicates that the poorest precision between original ALS assays and external checks from quartered core is poorest at grades less than 3 g/t gold where precision is up to 80%. Precision improves to acceptable levels at higher grades at 40%-60% precision. Overall, quartered core external check duplicates exhibit fair reproducibility or precision with 90% of field duplicates exhibiting a precision of better than 74%.

11.4 DENSITY QA/QC

For historic density determinations, bulk density samples were measured on a regular basis and consist of approximately one density sample every 10 m in mineralized sections and one density sample every 20 m in un-mineralized wall rock. The drill core sample was cut to a length of 10-15 cm. The sample was dried in an oven for about 15 minutes (230°F) then after cooling is wrapped in plastic. The sample was weighed dry and wet on a scale and both measurements are registered on a spreadsheet (Figure 11-32 - Figure 11-34).

Density data collected in 2023 comprised samples every 10 metres for all core with infill samples collected at 5- and 2.5-metre spacings. Samples from historic holes within the volume of interest enclosing the High Grade Panel were also collected at similar sample spacings. Specific gravity data includes from and to depths and the mid-point was calculated as the downhole depth. Specific gravity data was not corrected to the density of water at 4°C.

Specific gravity data measured in 2023 also included duplicates of a selected set of historic specific gravity measurements. Historic specific gravity samples were largely well-demarcated and, in most cases, the same pieces of core were available and used. Specific gravity data was collected for 62 such duplicate-pairs.

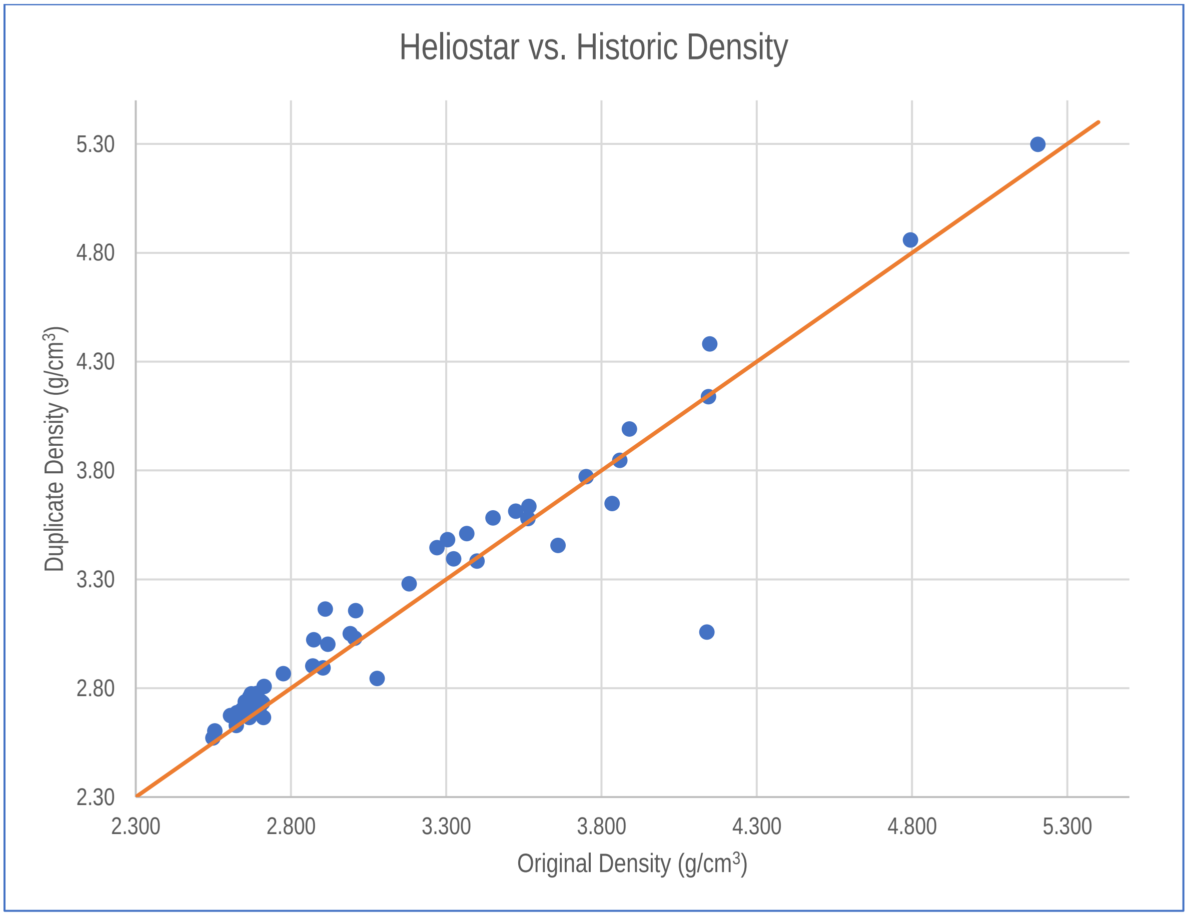


Figure 11-32: Ana Paula Duplicate Specific Gravity Chart

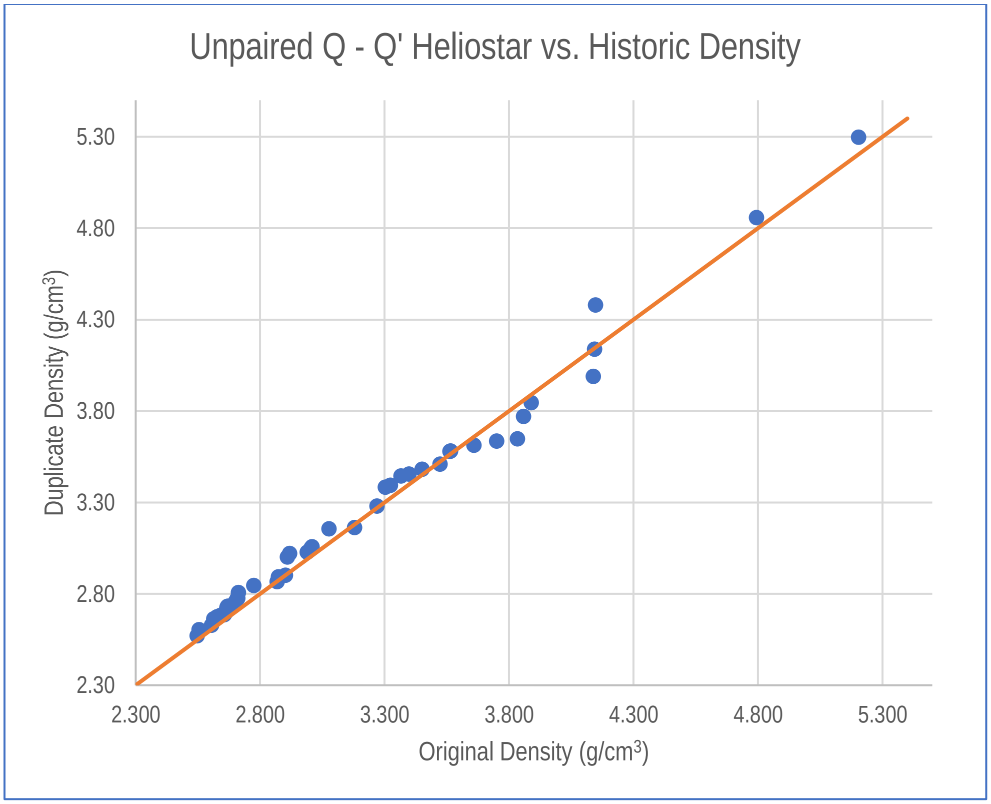


Figure 11-33: Ana Paula Project Duplicate Specific Gravity Unpaired Q **– Q' Plot**

The average of original specific gravity measurements is 3.058 g/cm^3 and the average of duplicate specific gravity measurements is 3.092 g/cm^3. The average variance ((Duplicate specific gravity – Original specific gravity) / Original specific gravity) is 1.296%.

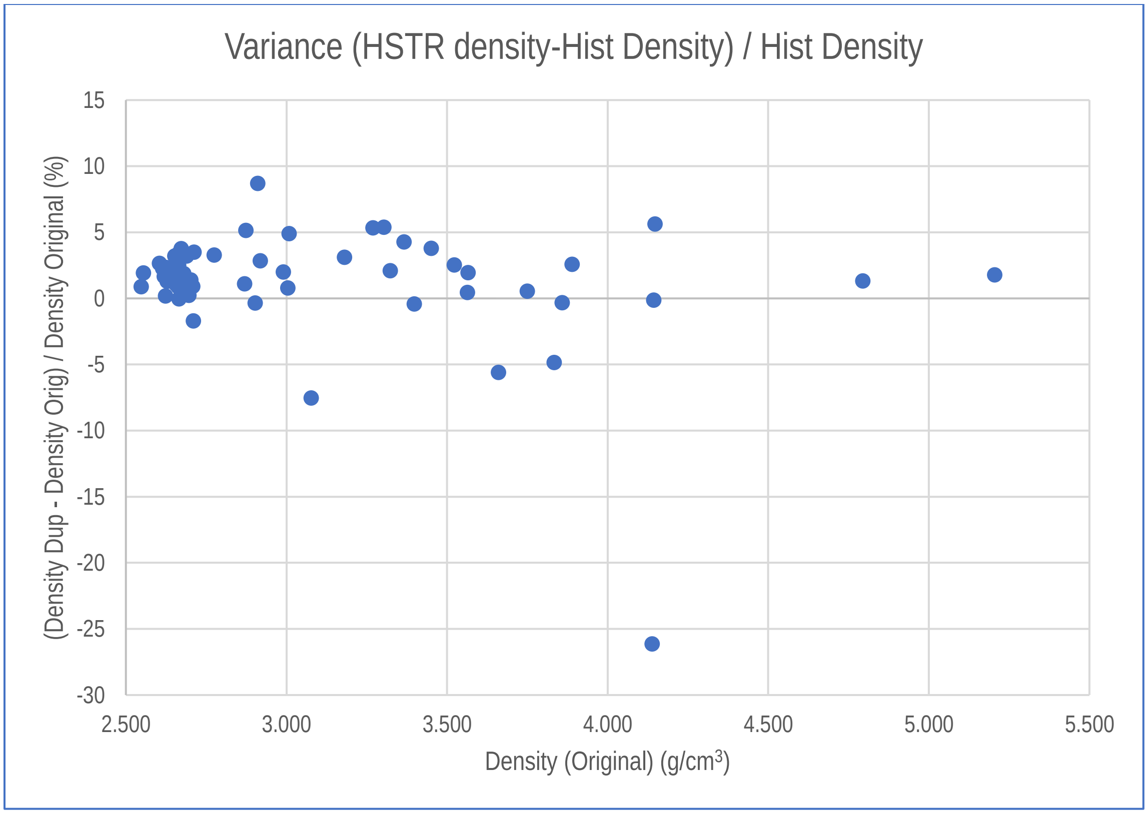


Figure 11-34: Ana Paula Project Duplicate Specific Gravity Variance vs. Original Specific Gravity

Summary:

The key findings of the analysis of the duplicate specific gravity data are:

- The number of 2023 specific gravity duplicate measurements is sufficient for a comparison with historic data,
- The 2023 specific gravity data aligns well with historic data with a variance of 1.296% or approximately 0.032 to 0.069 g/cm^3,
- There is a slight bias of 2023 specific gravity measurements higher than historic measurements, but this is not deemed material, and
- The historic and 2023 specific gravity data is adequate for use in a resource model.

11.5 COMMENTS ON SECTION 11

Prior to the resource estimate, the QP reviewed the results of the QA/QC program provided by Heliostar Metals.

The QP is of the opinion that the QA/QC protocols and verification of the results, meet or exceed industry norms and believe the data verification is adequate for this type of deposit.

The key findings of the analysis of project quality assurance / quality control data are:

- Quality Assurance/Quality Control samples are not available for 2005 holes, SL-, AS- and most AN-series holes, but only 2005 and some AN-series holes may be material for the Ana Paula Deposit.

Blanks and Contamination:

- Numerous blank samples throughout drilling exceeded the greater than the 0.025 g/t control limit), especially from 2010 to 2013 and in 2016. A minority of blank samples exceeding the control limit did not follow mineralization likely reflecting variability in the blank material selected.
- Most blank failures directly followed mineralized samples indicating the presence of contamination. The absolute values of some of the outlier blank samples would have been material for a low-grade bulk tonnage target.
- However, taking into account the number of samples which exceeded control limits, the degree of contamination is not deemed to be material.

Accuracy and Standards:

- The use and frequency of standards to verify the accuracy of the drill geochemical database meets industry standards.
- Drilling in 2005 drilling did not utilize any standards and a significant number of standards from subsequent programs exceeded control limits. The most significant number of failures were from in-house standards, suggesting that these standards were not sufficiently homogenized or an insufficient number of round-robin assays were completed to establish expected values and confidence intervals. The failure rates are likely inflated due to un-recognized sample switches or data entry errors.
- No re-assaying of batches with failed standards was carried out during the 2010 to 2014 drill campaigns. It is not known, but there is no evidence of any re-assaying of batches with failed standards during the 2015 to 2018 drill campaigns. Some commercial CRMs also had high failure rates.
- A temporal high bias in standards is present in the latter portion of 2011 standards. Aside from these standards there is no systematic low or high biases in standard assaying.
- The lack of standards utilized in 2005, the high failure rates of standards, particularly during the 2010 to 2013 campaigns and the apparent lack of re-assaying of failed batches are significant concerns. However, external check assaying was carried out on rejects and pulps from 2010 to 2017 when most drilling was carried out. External check assays compared favourably between original and check assay laboratories. The precision of external check assays versus original assays was generally better than the precision of within-lab precision. If there were significant accuracy issues related to failed standards, this should have been reflected in poor precision between decreased reproducibility or poorer precision between external check assays and original assays. Therefore, the database is deemed to be sufficiently accurate for use in resource calculations.

External Check Assays:

- Historic external check assaying was carried out on a broad selection of 251 drill holes from 2010 to 2013 and from 2015 to 2017 using reject and pulp materials.
- The precision of both reject and pulp external check duplicates is heavily influenced by large numbers of external checks near the lower detection limits. Absolute relative difference versus mean grade plots indicate that for both primary labs (ALS and SGS) and external check material (reject and pulp), the precision between original assays and external checks is poorest near the lower detection limit.
- External check assays from ALS rejects compare favourably with original assays with a coefficient of variation (r^2) equal to 0.9824 and a linear regression determined a slight low bias in original ALS assays. ARD versus mean grade plots indicate that the precision between original ALS assays and external checks from rejects improves from poor precision at lower mean grades to better than 26% at gold grades higher than 3 g/t.

- External check assays from ALS pulps compare favourably with original assays with a coefficient of variation (r^2) equal to 0.9859 and a very slight high bias in original ALS assays. ARD versus mean grade plots indicate that the precision between original ALS assays and external checks from pulps is poorest near the lower detection limit but improves at mean grades greater than 7 g/t gold where it averages 10-15%.
- Reject external check duplicates from ALS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of better than 52%, while pulp external check duplicates from ALS original assays exhibit reasonable reproducibility or precision in pulp duplicates with 90% of field duplicates exhibiting a precision of better than 33%.
- External check assays from SGS rejects compare favourably with original assays with an r^2 equal to 0.9285 and a linear regression determined a slight high bias in original SGS assays. ARD versus mean grade plots indicate that precision between original SGS assays and external checks from rejects improves from poor precision at lower grades to better than 29% at grades exceeding 1.5 g/t gold.
- External check assays from SGS pulps compare favourably with original assays with an r^2 equal to 0.9592 and a linear regression determined a slight high bias in original SGS assays. ARD versus mean grade plots indicate that the precision between original SGS assays and external checks from pulps improves from poor precision at lower grades to an average of 18% at mean gold grades exceeding 0.1 g/t.
- Reject external check duplicates from SGS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of reject duplicates exhibiting a precision of better than 67%, while pulp external check duplicates from SGS original assays exhibit fair reproducibility or precision in reject duplicates with 90% of field duplicates exhibiting a precision of better than 49%.

2023 External Check Assays:

- External check assays from quartered core compare reasonably with original assays with an r^2 equal to 0.7377, although this does not include one outlier sample-pair.
- The ARD versus grade plot indicates that the poorest precision between original ALS assays and external checks from quartered core is poorest at grades less than 3 g/t gold where precision is up to 80%. Precision improves to acceptable levels at higher grades at 40%-60% precision. Overall, quartered core external check duplicates exhibit fair reproducibility or precision with 90% of field duplicates exhibiting a precision of better than 74%.
- This degree of reproducibility, or total sampling error, is not unreasonable when taking into consideration the difference in sample sizes (half-volume versus quarter-diameter PQ core), the disparate hosts and styles of mineralization (breccia-hosted, fracture-controlled and disseminated intrusion-hosted and replacement-style sediment-hosted) and the noted presence of visible gold.

Precision:

- In total, field duplicates exhibit poor reproducibility with 90% of field duplicates exhibiting a precision of about 90% in respect of gold. Preparation duplicate sample-pairs showed fair precision for gold with 90% of samples exhibiting better than 40% precision.
- Significant scatter, or poor reproducibility can be seen at all grades in duplicate – original scatter plots.
- ARD versus mean grade plots show that precision is particularly poor at low concentrations of gold but improves with increasing grade. At grades from 1 to 2 g/t gold precision improves to about 35%, and precision at grades exceeding 2 g/t gold is about 50%.

- Preparation duplicates exhibit a similar precision – grade relationship as field duplicates with poor precision at lower grades, but acceptable levels of precision at higher grades. The reduction in grain size of the sample by the sample preparation process resulted in improved precision for the preparation duplicates. It should be noted that interpretation of preparation duplicates is limited by the small size of the dataset.
- The marked difference in precision in field and preparation duplicates suggests that the mineralization at Ana Paula is heterogeneous. Mineralization is hosted in at least three disparate lithologies and visible gold has been noted in logging and confirmed in screen metallics fire assays. Varying styles of mineralization within disparate lithologic units and the presence of coarse gold are likely contributing to the poor precision in field duplicates and the difference in precision between field and preparation duplicates.
- Reject samples prepared for analysis in Zacatecas compare well with original assays prepared in Queretaro with an r^2 equal to 0.9734. ARD versus grade plots indicate good to very good precision between original ALS Queretaro assays and ALS Zacatecas reject re-assays at all grades. Overall, very good reproducibility or precision of these reject duplicate-pairs (90% of duplicate-pairs exhibiting a precision of about 37%.) is what one could expect for the sampling error from the pulverization stage onwards.

12 DATA VERIFICATION

12.1 FIELD INSPECTION – JANUARY 2023

Mr. Lewis Teal, CPG., visited the Ana Paula Project site on the 10th and 11th of January, 2023. The site visit included an inspection of the Ana Paula deposit, core logging, sampling, and storage facilities, and reviewing drill core geology, mineralization, and logging.

12.1.1 Drill Core Logging, Sampling, and Storage Facilities

Drill core for the Ana Paula Project was logged, sampled, and stored at a dedicated facility situated approximately 2 km south of Cuétzala del Progreso. The facility consists of four steel frame buildings covered with metal roofs. One building serves as the principal logging facility in one half, with steel racks for core box storage in the other half (Figure 12-1). Another building houses two dedicated, operational electric core saws and also provides covered parking and equipment storage. The two remaining buildings provide additional core storage.

The sample pulps are stored inside the core box storage buildings and are in good condition.

The facility is well maintained and in a safe condition. The facility is fenced, under 24-hour surveillance and considered secure.

Figure 12-1: Core Logging Area and Core Storage

12.1.2 Mine Camp Facilities

The previous operators built a 55-person camp situated approximately 1.5 km, straight line, east of the Ana Paula deposit. Heliostar extensively used the camp for the 2023 drill and work programs. The camp is well maintained in a safe condition Figure 12-2 shows the mine camp facilities at Ana Paula.

Figure 12-2: Mine Camp Facilities

Additionally, the previous owners advanced 412 metres of a 4.5x5m underground decline representing approximately 30% of the distance needed to intersect the High Grade Panel of the Ana Paula deposit. The portal is situated roughly 1.1 km east of the Ana Paula deposit, in the next valley to the east. Figure 12-3 shows the decline portal.

Figure 12-3: Ana Paula Decline Portal

12.1.3 Drill Hole Collars

Drill hole collars are marked by a PVC pipe placed in the bore hole and cemented in a square base. The cement block is etched with the drill hole number, azimuth and dip of the hole, and total depth in metres (Figure 12-4).

The QP located seven drill hole collars for validation of location. The locations of diamond drill hole collars were recorded in the field using a hand-held Global Positioning System (GPS) device (Garmin) using WGS84 datum, the same datum used for the Ana Paula Project.

The collar coordinates measured by the QP fell within a 7 m tolerance of those in the Ana Paula database. It is the QP's opinion the coordinates are acceptable, given the accuracy of the handheld GPS. Table 12-1 presents the comparison of the database locations to field survey locations.

Figure 12-4: Drill Collar Validation; drill hole AP-23-297

Table 12-1: Collar Coordinate Field Validation

	Database Location			Field Validation location			Delta		
HoleID	East	North	Elev	East	North	Elev	Delta East	Delta North	Delta Elevation
AP-23-291	410,171.4	1,998,052.9	907.8	410,175.2	1,998,058.4	925.3	3.8	5.5	17.5
AP-23-294	410,088.8	1,997,993.6	928.7	410,089.5	1,997,999.0	944.7	0.7	5.5	16.0
AP-23-297	410,271.6	1,997,994.8	935.8	410,272.6	1,997,998.2	947.2	0.9	3.4	11.4
AP-23-299	410,174.2	1,998,005.5	937.2	410,176.6	1,998,012.2	954.8	2.4	6.8	17.6
AP-23-302	410,289.5	1,998,012.0	916.0	410,285.5	1,998,013.9	926.9	4.0	1.9	10.9
AP-23-304	410,076.3	1,997,906.4	963.8	410,069.3	1,997,901.2	976.5	7.0	5.2	12.7
AP-23-308	410,045.0	1,997,960.7	943.4	410,051.6	1,997,963.8	956.5	6.6	3.2	13.0

12.1.4 Drill Core Log Review

The site visit included a review of the drill core geology and logging procedures. Key drill holes and intervals from the 2023 drill program were selected for review. These intervals were important in the 2023 geologic and resource model update. Table 12-2 lists the selected drill core intervals examined during the site visit.

The lithologic, alteration, and mineralization descriptions and sample intervals observed in core were consistent with the drill logs. Furthermore, geologic observations and logging were consistent with gold and trace element assay values.

The geologic logging system properly supports the geologic and resource models.

Table 12-2: Drill Core Logging and Geologic Review

Hole ID	From (m)	To (m)	Interval (m)	Au (g/t)
AP-23-291	90.00	134.50	44.50	11.02
AP-23-292	43.88	145	101.12	8.35
AP-23-293	117	163	46	13.37
AP-23-297	43.05	285	241.95	9.06
AP-23-300	43	80.5	37.5	13.44
AP-23-303	174.5	207.5	33	16.39
AP-23-304	212	227	15	25.56
AP-23-306	27.5	63.4	35.9	8.17
AP-23-306	82.5	166.1	83.6	8.57
AP-23-307	116.5	148.5	32	16.21

12.1.5 Independent Samples

The QP selected five independent samples during this site inspection. The samples were selected from mineralized intervals that are important to the resource model. They were collected to independently validate gold assays provided by Heliostar and that were used in the updated resource estimate. These samples were provided by the ALS laboratory in the city of Queretaro, Queretaro, Mexico from Heliostar coarse rejects. These are being assayed by Screen Fire Analysis, ALS method: Au_SCR24 (Table 12-3).

Results are pending.

Table 12-3: Independent Samples

Hole ID	From (m)	To (m)	Interval (m)	Original Sample ID	Original Au (g/t)	Check Assay Sample ID	Check Assay Au (g/t)
AP-23-304	215.70	216.50	0.80	G447199	17.70	G449869	Pending
AP-23-304	218.5	220	1.50	G447202	9.53	G449870	Pending
AP-23-291	128.5	129.5	1.00	G445132	0.44	G449866	Pending
AP-23-297	82.1	83	0.90	G446006	22.10	G449867	Pending
AP-23-297	216	217	1.00	G446158	74.90	G449868	Pending

12.2 DATABASE VALIDATION

The QP carried out a validation of the drill holes in the drill database as the initial phase of geologic and resource model update. This included validation of drill hole information using software-based tools available in Leapfrog-Geo. This was followed with a visual inspection of drill holes in three dimensions to ensure conformity when compared against what was used in the previous model.

12.2.1 Down-hole Survey Data

Down hole inclination and azimuth were recorded every 30 metres with a REFLEX EZ-shot that also included magnetic measurements for 2023 drill holes. The 2023 drill holes, the magnetic declination used is 4.6167° East at the project centre. Downhole azimuth and inclination data were screened for erroneous readings which were subsequently quarantined for use in the resource estimate.

With the corrected data, the QP reviewed the down-hole deviation data comparing each entry with the previous ones. There was no obvious erroneous entry noted on the holes inspected.

12.2.2 Assay Certificate Validation

In 2023, upon acquiring the Ana Paula project, Heliostar rebuilt the drill hole database, ensuring that all assay data was supported by original assay laboratory certificates. Initially, all sample IDs, hole IDs, sample intervals, and QA/QC samples were compiled from historic logging and imported into an Access database by a third-party, independent database manager for Heliostar. Then, digital analytical certificates in comma delimited format (CSV) for all samples were imported into the database and merged with sample information.

All analytical procedures and assay results are now stored in separated data fields. The specific analytical methods used are currently stored in the digital database. Analytical laboratory metadata including, but not limited to, sample weights and certificate numbers are also stored. For elements of interest, assay preference lists were created for use in the model, which allows the most representative analysis to be used in modeling. This is important when there are multiple analyses for the same element. For example, if an analysis exceeds the limits for that procedure, then an additional overlimit analysis is conducted (e.g. gravimetric gold fire assay). It is then required that the over limit analysis is used when modeling. For gold the assays the preference list is as follows: screen fire assay over gravimetric assay over and fire assay.

12.2.3 Opinion

The Ana Paula digital database used for the updated (November 2023) geologic and resource estimate models meets or exceeds industry standards and is adequate for public disclosure of a gold mineral resource estimate.

Core logging field procedures observed during the site visit meet or exceed industry standard and validated the requirements for completion of the updated (Nov. 2023) geologic model.

There are no other material issues related to sampling and assaying that were identified during the review. The QP finds the data that was collected by Heliostar, and previous operators adequately represents mineralization present on the Ana Paula property.

12.3 MINERAL PROCESSING AND METALLURGICAL TESTING

Section 13 was prepared under the supervision of Mr. Andrew Kelly, who is President and Senior Metallurgist with Blue Coast Research Ltd., in Parksville, British Columbia. Mr. Kelly has reviewed the information in this section and believes it is a reasonable summary of the mineral processing, metal recoveries, and metallurgical testing for the Ana Paula Project. Mr. Kelly planned, designed and supervised the metallurgical testing at Blue Coast Research and performed daily quality control and data analysis. Mr. Kelly attended the regular meetings with the clients and their representatives during the preparation of the study.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgical characterization of composite samples from the Ana Paula deposit was carried out by Blue Coast Research Ltd. (BCR) of Parksville, BC. The most recent phase of testwork was conducted at BCR in 2023. Flowsheet development from 2016-2017 focused primarily on comminution, gravity concentration, flotation, regrinding of flotation concentrate and atmospheric oxidation (AOX) of flotation concentrate ahead of CIL to recover gold and silver. The 2023 testwork focussed on the metallurgical response of samples to both conventional cyanidation and gravity techniques.

13.1 PRIOR METALLURGICAL TESTWORK (BLUE COAST RESEARCH, 2016-2017)

In 2016 a metallurgical testwork program was conducted on Ana Paula composite samples. A total of four composites were tested, representing the four main lithological domains present within the deposit (granodiorite, complex breccia, sediments & monolithic breccia). Samples were selected to ensure that composites represented the average gold grade of each domain. Table 13-1 describes the domain composites and their sample ID codes.

Table 13-1: 2016 Domain Composites and Sample ID Codes

Domain composite	Metallurgical Sample Code
Intrusive suite (Granodiorite)	GD (Granodiorite)
Complex Breccia (High-grade Breccia)	HGB (Polymictic Breccia)
Sediments (Limestone-Shale) + Skarn/Hornfels	LS (Sediments)
Monolithic Breccia (Low-grade Breccia)	LGB

Gold head grades for the composites ranged from 0.92 g/t Au to 4.78 g/t Au. Mineralogical characterization of three composites was conducted by Process Mineralogical Consultants (PMC) of Maple Ridge, BC. Modal mineralogy identified arsenopyrite and pyrite as the major sulphide species in each of the composites. Non sulphide gangue consisted primarily of feldspars and quartz. Carbonates were noted in each composite, however composed a significantly higher fraction of the LS sample compared to GD and HGB.

Flotation concentrates were provided to Surface Science Western Ltd. for analysis by Dynamic SIMS for colloidal and submicroscopic gold content. Key findings of this analysis are:

- Visible gold grains were identified by optical microscopy and colloidal gold inclusions in both pyrite and arsenopyrite were identified in D-SIMS analysis.
- Pyrite and arsenopyrite were both identified as carriers of submicroscopic gold. Each may be categorized into coarse, porous, and microcrystalline, and each containing various grades of gold. Arsenopyrite contained higher concentrations of sub-microscopic gold than pyrite.
- Combining modal mineralogy and submicroscopic gold content, results indicate that 61%-71% of the gold in the flotation concentrates may be cyanide soluble, with the balance present as refractory gold.

Comminution testwork consisted of JK RBT Lite, Bond Ball Mill Work Index, Abrasion Index and SMC tests. Results from the JK RBT Lite, Bond Ball Mill Work index and SMC tests indicate that the material is moderately hard to hard. JK RBT Lite Axb results ranged from 39.6 to 55.6, and SMC Axb results ranged from 33.8-34.8. BWI test results ranged from 15.1 to 19.4 kWh/tonne. Abrasion index test results indicate that the material is mildly abrasive (ranging from 0.08-0.20 g).

A comprehensive flotation optimization testwork program was conducted on the three predominate domains (GD, HGB, and LS). Flotation gold recovery was not affected by grind size in the 75 µm to 160 µm range evaluated and the 160 µm primary grind size was used. The reagent scheme selected was copper sulphate for pyrite/arsenopyrite activation, potassium amyl xanthate (PAX) as primary sulphide collector and Aerophine 3418A as secondary collector, and F-131A as preferred frother. Final flotation gold recoveries achieved were 96% (GD, HGB) to 93% (LS)

Extended gravity recoverable gold (EGRG) tests were conducted on each domain composite, with measured gravity gold content of 53% (GD), 49% (HGB), 40% (LS) and 12% (LGB). One may expect that gold recovery to a plant gravity circuit would be lower than the EGRG test result based on the target primary grind size and the configuration of the gravity circuit. Modelled gravity performance at a primary grind size of 160µm suggests that recovery of gold to the gravity circuit may range from 9% to 30% depending on the lithology and ultimate circuit configuration.

Whole rock cyanidation testwork resulted in overall gold recoveries ranging from 59-70% for GD (1.59 g/t gold head grade) and HGB (4.78 g/t gold head grade) domains. The LS domain (3.29 g/t gold head grade) contained preg-robbing carbon and gold recoveries ranged from 6-50%. Results of the whole rock leach program highlight that gold recovery is limited by the refractory gold content in the material.

In order to improve the overall gold recovery two pre-oxidation methods were investigated: Pressure oxidation (POX) and atmospheric oxidation (AOX). In both processes the pyrite/arsenopyrite matrix is oxidized to expose the gold and allow recovery through subsequent cyanidation. Testwork was conducted on blended composite that represented the resource average of the various domains.

POX testwork (high temperature/high pressure/oxygen feed), and subsequent cyanidation, was conducted at Autec Innovative Extractive Solutions in Vancouver, BC. Each test was conducted in a laboratory autoclave. Acidic POX tests on whole rock and flotation concentrate resulted in high sulphide oxidation, and gold recoveries by cyanidation were 95%. An Alkaline POX test on whole rock resulted in reduced sulphide oxidation, and a cyanidation gold recovery of 75%.

AOX testwork (moderate temperature/atmospheric pressure/oxygen feed), and subsequent cyanidation, was conducted at BCR. Each test was conducted in a stirred reactor, with a non-calcium neutralizing agent, O2 sparging, and temperature maintained by heating jacket. Calcium was avoided to minimize the gypsum formation which may limit the overall gold extraction. Soda ash was identified as the preferred neutralizing agent. Cyanidation gold recoveries of oxidized concentrate ranged from 49-90%.

13.2 PROCESS MINERALOGICAL CONSULTANTS - MINERALOGY TESTWORK (2023)

Mineralogical characterization of four samples was conducted by Process Mineralogical Consultants (PMC) of Maple Ridge, BC. The samples were selected from pre-Heliostar drilling and represented various grade ranges and spatially diverse locations from across the High-Grade Panel at Ana Paula. Key findings of this mineralogical analysis are:

- Four samples were analysed by Automated Scanning Electron Microscopy, AuDep2023-01, AuDep2023-03, AuDep2023-04, and AuDep2023-05.
- Head grades of the samples ranged from 1.75 g/t Au to 41.8 g/t Au.
- Gold grains found are predominantly free, and as native gold. Lesser amounts of electrum were found and traces of bismuth bearing gold minerals.
- Gold bearing grains ranged from 2-64 µm in size.
- Gold bearing minerals were associated with sulphides, including arsenopyrite, pyrite and arsenian pyrite.

13.3 BLUE COAST RESEARCH TESTWORK (2023)

A new metallurgical test program on assay rejects was initiated at BCR in July 2023, with specific focus on the High-Grade Panel of the Ana Paula deposit. The objectives of the program were to evaluate gold extraction by cyanidation and gravity techniques. The composites and testwork were designed to give preliminary insights into the potential for gold recovery using conventional processing techniques.

13.3.1 Sample Origin & Composite Characterization

Eight composites were submitted for cyanide and gravity testwork by Heliostar. Composites were collected to represent a range of gold grades. They were generally selected from continuous intervals of similar grade and lithologies from spatially diverse areas of the deposit, primarily representing the High-Grade Panel. However, sample AuBOT23-03/AuEGRG23-02 was located in the footwall of the High-Grade Panel. Samples consisted of assay rejects from a 2023 drilling and assay campaign, and were shipped from ALS laboratories in Queretaro, Mexico. Another ten comminution samples were collected from drill core across the deposit. The location of the composites is shown in Figure 13-1, Figure 13-2, and Figure 13-3.

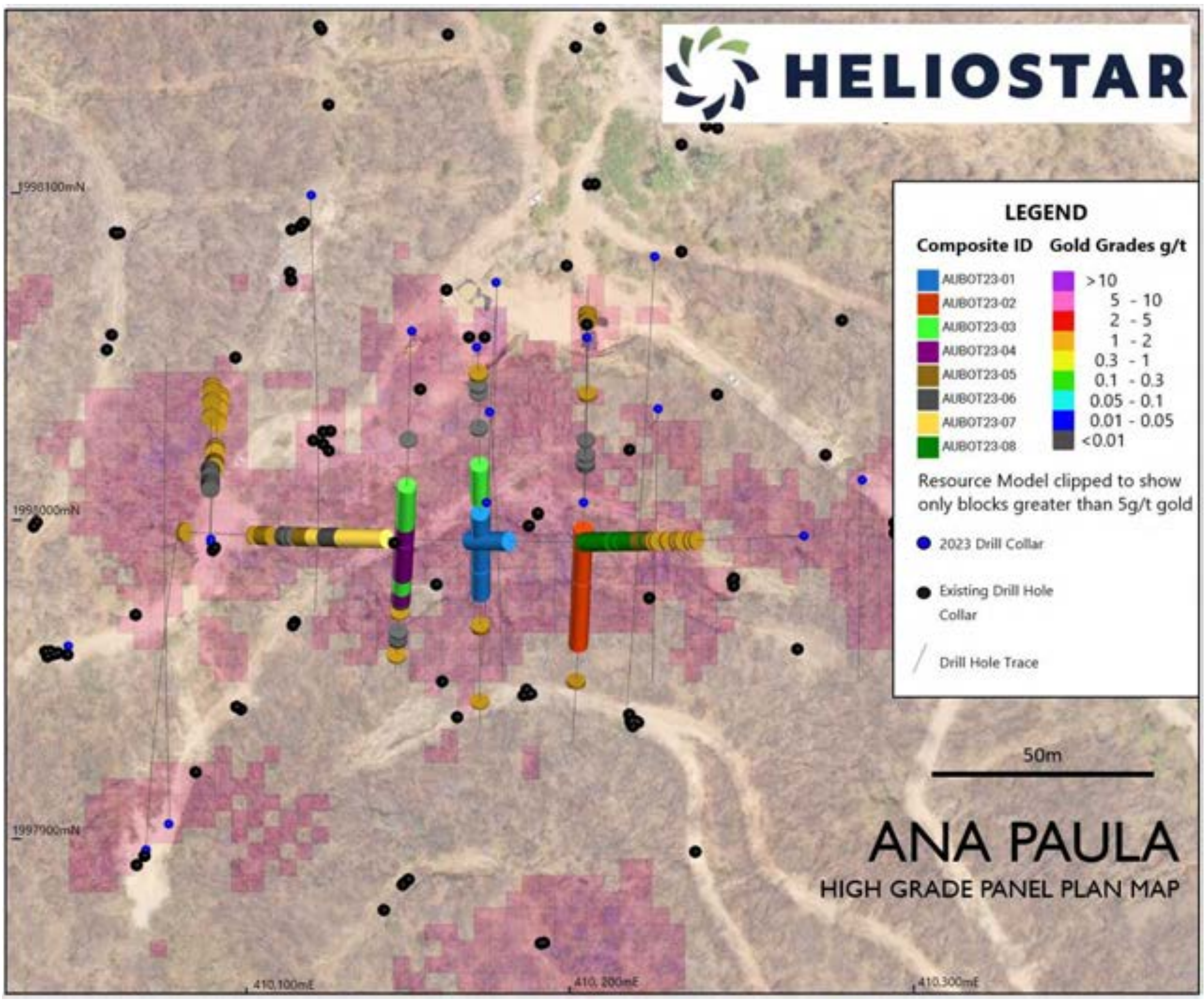


Figure 13-1: Ana Paula Deposit and Bottle Roll Composites

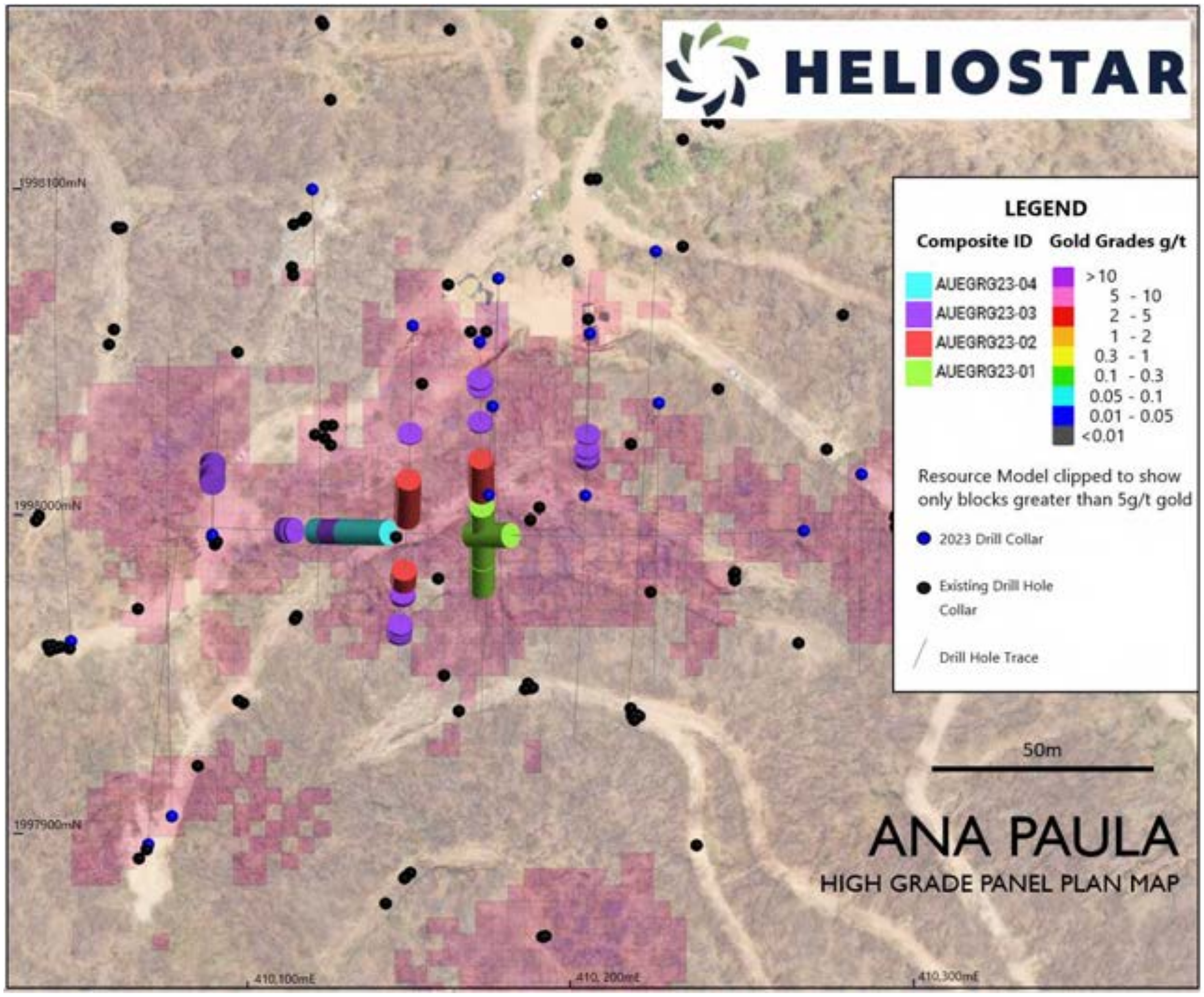


Figure 13-2: Ana Paula Deposit and Bottle Roll Composites

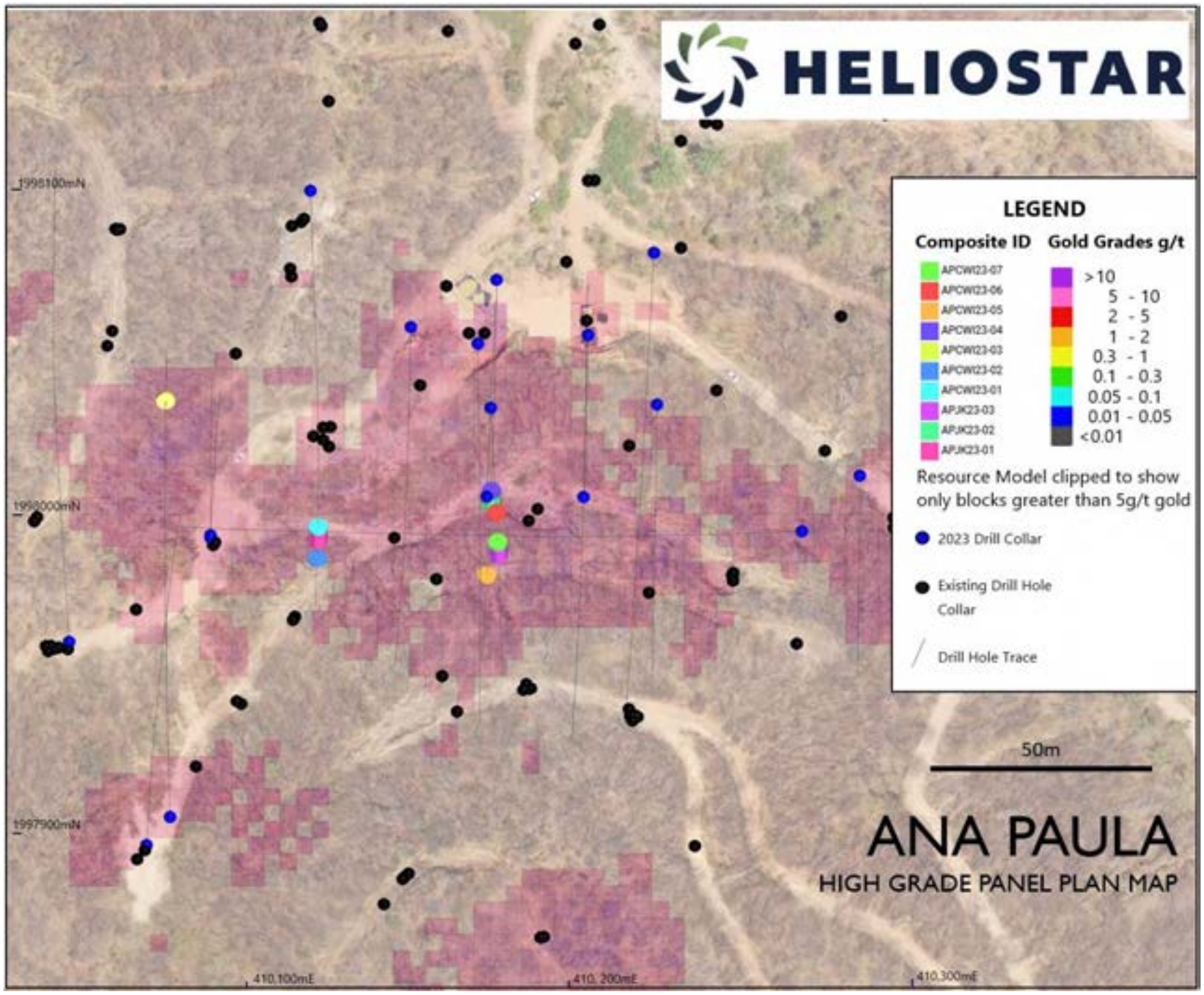


Figure 13-3: Ana Paula Comminution Composites

Chemical characterization of the composites was performed on head assay subsamples. Gold was measured in triplicate by fire assay with ICP finish. Silver was measured in triplicate, by four-acid digest (4AD) with ICP finish. Arsenic and iron were measured by 4AD with ICP finish. Total sulphur and total carbon were assayed directly by combustion IR on an ELTRA carbon-sulphur analyzer. Sulphide sulphur and organic carbon were determined by first pre-treating the sample with 20% HCl for 1 hour at 75°C, then assaying the resulting residue on an ELTRA carbon-sulphur analyzer. This removed any sulphates and carbonates that may be present. Sulphur or carbon remaining in the residues is then attributed as sulphide sulphur and organic carbon. The Preg-Rob shake test involves two replicate shake flasks, one baseline and one with a gold spike. Each test consists of 15g pulverized solids shaken with 30mL of 2.5g/L NaCN solution for 30 minutes. In the spiked test an aliquot of gold spike solution (equivalent to 3g/t) replaces a small portion of the cyanide solution. Final solutions are assayed and compared to calculate preg-robbing characteristics. A summary of the measured head grades is shown in Table 13-2.

Composite gold grades ranged from 2.48 g/t (AuBOT23-03) to 18.25 g/t (AuBOT23-08). A range of arsenic and sulphur ranges was also noted. Preg-rob values were all relatively low in these composites. This aligns with the low organic carbon content and suggests that potential for gold losses due to preg robbing effects may be low from these samples.

Table 13-2: Ana Paula Composite Head Assays

Composite	Lithology	Au (g/t)	Ag (g/t)	As (%)	Fe (%)	S_{total} (%)	S^{2-} (%)	C_{total} (%)	$C_{organic}$ (%)	Preg Rob (%)
Method		FA-ICP	4AD-ICP			ELTRA				Shake
AuBOT23-01	Polymictic Breccia	6.51	10.43	5.86	9.70	6.82	6.51	1.25	<0.03	8
AuBOT23-02	Polymictic Breccia	8.54	14.15	4.22	6.03	4.03	3.95	0.70	<0.03	7
AuBOT23-03	Polymictic Breccia	2.48	10.31	4.39	7.85	5.65	5.44	1.54	0.03	11
AuBOT23-04	Polymictic Breccia	13.69	8.12	4.53	9.89	6.30	6.18	1.12	0.03	NIL
AuBOT23-05	Granodiorite	11.29	9.22	1.86	3.73	2.21	2.17	1.05	<0.03	NIL
AuBOT23-06	Sediments	13.53	23.01	5.90	17.33	14.51	13.64	1.83	0.04	NIL
AuBOT23-07	Polymictic Breccia	14.78	10.24	5.48	7.20	4.56	4.41	0.70	<0.03	NIL
AuBOT23-08	Polymictic Breccia	18.25	23.28	6.53	8.57	6.89	6.75	2.37	<0.03	8
AuEGRG23-01	Polymictic Breccia	6.71	10.19	6.19	9.76	7.07	6.91	1.21	<0.03	12
AuEGRG23-02	Polymictic Breccia	2.50	9.60	4.53	7.57	5.63	5.42	1.57	<0.03	8
AuEGRG23-03	Sediments	14.08	24.65	7.00	18.45	15.29	14.31	1.93	0.07	14
AuEGRG23-04	Polymictic Breccia	15.54	6.52	5.95	7.50	4.61	4.46	0.71	<0.03	NIL

Mineralogical characterization of four of these composites was conducted by Process Mineralogical Consultants (PMC) of Maple Ridge, BC. Key findings of this mineralogical analysis are:

- Four samples were analysed: AuBOT23-01, AuBOT23-03, AuBOT23-06 and AuBOT23-07.
- Native gold was the predominant gold bearing species identified, with trace to minor amounts of electrum and bismuth-bearing gold minerals.
- Gold grains identified ranged from 2->128µm in size, and primarily occurred in the 2-32µm size range.
- Elemental gold grains observed were predominantly free/liberated, ranging from 63-81% liberated.
- Pyrite and arsenopyrite are the primary minerals noted in the dense phases analysed.
- The frequency of gold grains detected in AuBOT23-03 was below statistical representativity, indicating that the majority of the gold may be refractory in this composite.

13.3.2 Cyanidation

A matrix of cyanidation tests was conducted on each sample. Kinetic bottle rolls were conducted to determine the leaching rates of the samples at two grind sizes (75µm and 45µm). Carbon in leach (CIL) bottle rolls were conducted as comparison and to help counteract any preg-robbing material is present. The CIL tests were conducted at four grind sizes (75µm, 45µm, 20µm and 10µm).

Each cyanidation test was conducted with the following parameters:

- Sodium cyanide (NaCN) concentration maintained at 1.0 g/L.
- 40% solids.

- pH maintained between 10.5 and 11 with lime.
- Kinetic samples taken at time 2, 6, 24, 48 hours (for kinetic bottle rolls only).
- Carbon addition rate of 20 g/L pulp (for CIL tests only).

A summary of cyanidation gold recoveries is shown in Table 13-3.

Table 13-3: Summary of Gold Recovery

Composite	Average of 20-75µm Au Recovery (%)	10µm CIL Au Recovery (%)
AuBOT23-01	77.7	86.9
AuBOT23-02	79.0	76.8
AuBOT23-03	29.5	32.7
AuBOT23-04	76.3	78.2
AuBOT23-05	86.4	85.8
AuBOT23-06	74.8	83.5
AuBOT23-07	87.5	86.6
AuBOT23-08	79.1	75.4
Average	73.8	75.8
Average (excluding AuBOT23-03)	80.1	81.9

Key findings of the cyanidation optimization program are:

- The CIL and Kinetic tests achieved similar final recoveries, indicating that there is no preg-robbing effect.
- Average gold recovery ranged from 29.5% to 87.5%.
  - AuBOT23-03 (located in the footwall of the High-Grade Panel) was a notable outlier, with an average gold recovery of 30.0%.
  - The remaining seven samples representing the High-Grade Panel had an average gold recovery of 80.1% (range: 70.2% to 88.5%) across the 20-75 µm CIL and kinetic leach testwork.
- Negligible to minor improvements in gold recovery are observed in most samples at the sub-10 µm grind size.
  - However, select samples (AuBOT23-01 and AuBOT23-06) show an approximately 9% improvement in gold recovery.

Diagnostic leaching and mineralogical analysis were conducted on leach residues from five samples; AuBOT23-03 was selected for investigation into the lower recovery and four additional samples (AuBOT23-02, AuBOT23-06, AuBOT23-07, AuBOT23-08) were selected for comparison. Subsamples from the 75 µm CIL tests for the selected composites were submitted for diagnostic leaching and sized for mineralogical analysis. A summary of the diagnostic leaching results in shown in Table 13-4, key findings from both analyses are summarized below:

- Mineralogical analysis of cyanide leach residues from five samples showed that:
  - Gold grains were observed in all five residues, across all size fractions.
  - Average grain sizes ranged from 1.7 µm to 3 µm.
  - The grain sizes found support the requirement for fine grinding (~10 µm grind size) to liberate these grains and increase recovery.
  - The gold grains observed are primarily associated with arsenopyrite and pyrite, with a few grains locked in quartz or other minerals.

- No free gold grains were observed, which indicates that all available grains were successfully leached.
- No large/free grains which would benefit from additional leach residence time were found.

- Diagnostic leaching of five samples found that:
  - The majority of the non-free gold is attributed to sulphide locking in all samples.
  - AuBOT23-03 has a significantly higher proportion of sulphide locking and silica locking than the other samples tested.

Table 13-4: Diagnostic Leaching Gold Deportment

Composite ID	Au Distribution					Cumulative Au Distribution			
	Free (%)	Carbonate Locked (%)	Sulphide Locked (%)	Silica Locked (%)	Sum (%)	Free (%)	Free & Carbonate Locked (%)	Free, Carbonate & Sulphide Locked (%)	Total (%)
AuBOT23-02	81.2	0.8	13.4	4.5	100.0	81.2	82.0	95.5	100.0
AuBOT23-03	31.7	2.1	51.9	14.3	100.0	31.7	33.8	85.7	100.0
AuBOT23-06	75.0	1.7	16.3	7.0	100.0	75.0	76.7	93.0	100.0
AuBOT23-07	88.3	0.7	8.5	2.6	100.0	88.3	89.0	97.4	100.0
AuBOT23-08	80.7	0.6	13.8	4.9	100.0	80.7	81.3	95.1	100.0

13.3.3 Gravity

Gravity amenability testwork was conducted on each of the eight bottle roll composites. A 2kg of sample was ground to a primary grind size of approximately 80% passing 75 µm, and passed through a laboratory scale Knelson concentrator. The Knelson concentrate was subsequently upgraded on a superpanner until the pan tip represented 0.02-0.05% of the original feed mass. Gold recovery to a super-panner tip ranged from 19% to 69%. These test results indicate the potential for gravity recovery on select samples. Based on these results additional material was submitted for Extended Gravity Recoverable Gold (EGRG) testwork.

EGRG testwork was conducted on four samples. During the EGRG test a 20 kg sample is passed through the Knelson MD-3, with the tails of each subsequent gravity pass being ground successively finer. Target grind sizes for each pass are P90 of 850 µm, P80 of 250 µm and P80 75 µm. Extended gravity recoverable gold testwork resulted in high gravity recoverable gold content on the three samples from the High-Grade Panel. Gravity recoverable gold content ranged from 21.7% to 63.8%. The uncorrected cumulative GRG for all four samples is shown in Figure 13-4.

- AuEGRG23-02 showed notably lower GRG content than the other three samples tested.
- AuEGRG23-01 had a higher proportion of coarse gold particles, compared to AuEGRG23-03 and AuEGRG23-04. All three of these samples reached similar final EGRG values, averaging 62.9%
- The high GRG content of these samples supports the inclusion of a gravity recovery stage in the flowsheet.

EGRG content represents the amenability of a sample to gold recovery by gravity (Table 13-5). The high mass pull and fine grind size at the final stage may over-state the gold recovery. A lower proportion of the gold is expected to be recovered in practice, depending on gravity installation parameters such as grind size, circulating load and throughput.

Table 13-5: Gravity Test Results Summary

Composite	Superpanner Tip Au Recovery (%)	EGRG Number (%)
AuBOT23-01/AuEGRG23-01	50.6	63.8
AuBOT23-02	35.0	
AuBOT23-03/AuEGRG23-02	16.1	21.7
AuBOT23-04	30.5	
AuBOT23-05	69.0	
AuBOT23-06/AuEGRG23-03	53.3	61.8
AuBOT23-07/ AuEGRG23-04	51.2	63.1
AuBOT23-08	39.6	
Average	43.2	52.6
High Grade Panel Average	47.0	62.9

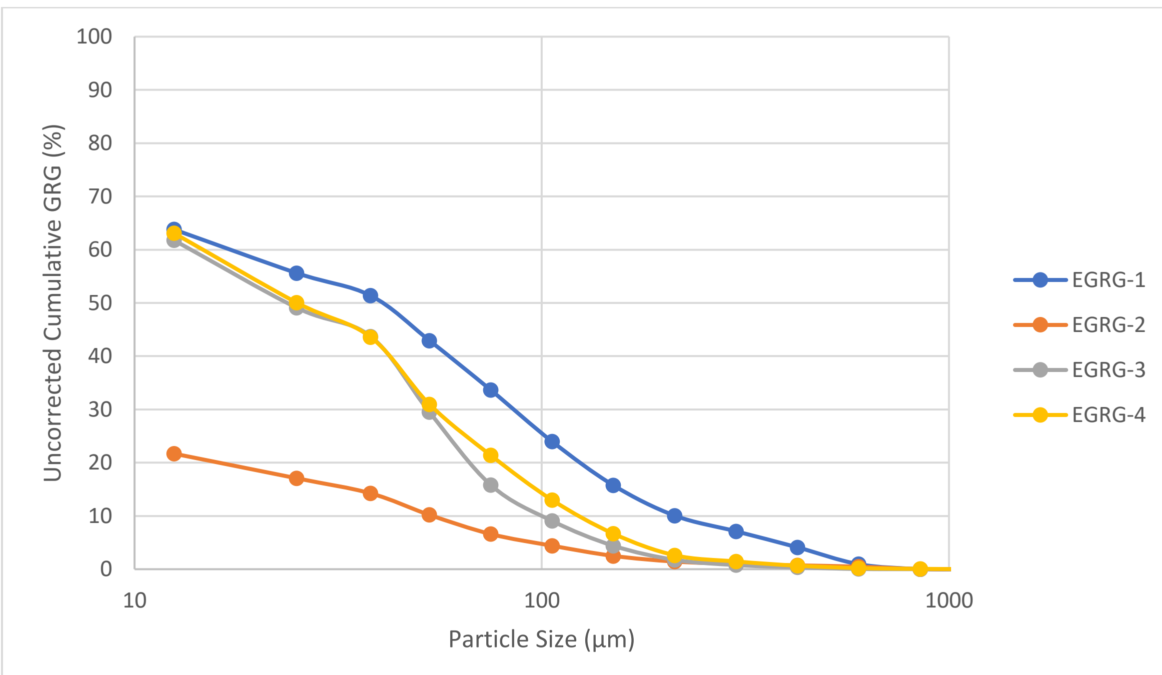


Figure 13-4: Ana Paula Cumulative GRG

13.3.4 Comminution

A number of comminution samples were collected by Heliostar in 2023. JK Drop Weight tests and integrated SMC tests were conducted on three comminution composites. JK DWT Axb values ranged from 51.8 to 55.0, and SMC Axb values ranged from 47.4 to 51.0. Both the JK DWT and SMC results are categorized as moderate resistance to impact breakage. Bond Low Energy Impact tests (CWI) were conducted on seven comminution composites. Test results ranged from moderately soft to very hard, with an average CWI of 15.0 kWh/tonne (Table 13-6).

Table 13-6: Comminution Test Results Summary

Composite	JK DWT Axb	SMC Axb	CWI (kWh/t)
APJK23-01	55.0	51.0	
APJK23-02	51.8	50.0	
APJK23-03	54.1	47.4	
APCWI23-01			17.4
APCWI23-02			16.7
APCWI23-03			21.8
APCWI23-04			10.3
APCWI23-05			15.6
APCWI23-06			8.5
APCWI23-07			14.8
Average	53.6	49.5	15.0

13.3.5 Conclusions

The following conclusions may be drawn from the 2023 Ana Paula metallurgical testwork program:

- Cyanide leaching of eight composites resulted in an average gold recovery of 73.8%, based on a 75 µm primary grind and CIL.
- Negligible to minor improvements in gold recovery were observed in most samples at the 10 µm grind size, compared to the average recovery observed across the 20-75 µm grind sizes.
- Select samples (AuBOT23-01 and AuBOT23-06) show an approximately 9% improvement in gold recovery when ground to 10µm.
- EGRG testwork on three samples representing the High-Grade Panel resulted in an average EGRG number of 62.9%.
  - EGRG recovery represents amenability to gold recovery by gravity, but may somewhat overstate recovery due to the high mass pull and fine grind size at the final stage. A lower proportion of the gold is expected to be recovered in practice, depending on gravity installation parameters such as grind size.
- The results from the cyanidation and gravity testwork indicate that the High-Grade Panel material has potential for processing using conventional recovery techniques.
- AuBOT23-03/AuEGRG23-02, which is located in the footwall of the High-Grade Panel, showed significantly lower gold recovery compared to the remaining samples.
  - Cyanidation gold recoveries ranged from 27.7% (75µm grind size) to 32.7% (10µm grind size).
  - EGRG content was 21.7%.
  - Diagnostic leaching AuBOT23-03 composite showed a significantly higher proportion of gold locked in sulphides. This sulphide locking (51.9%) accounts for the low cyanidation and gravity recovery observed.
  - Gold recovery from this composite is likely limited by refractory gold associated with sulphides.

13.3.6 Recommendations

Based on the work conducted to date, the following additional testwork is recommended:

- Additional grindability testing on domain and variability composites from the Ana Paula resource.
- Additional cyanidation variability testing on samples collected from across the Ana Paula resource.
- Flotation testwork with the purpose of recovering gold to a sulphide concentrate. Potential flowsheet options to be evaluated include the regrind and cyanide leaching of flotation concentrates, and cyanide leaching of flotation tails (without regrind).
- Cyanidation optimization testwork on the reground sulphide concentrate. Parameters that should be studied include:
    - Regrind particle size
    - Sodium Cyanide dosage
    - Benefits of lead nitrate and oxygen addition.
    - Retention time

14 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION AND SCOPE

The Ana Paula Project is located in the State of Guerrero, Mexico. An updated Ana Paula project, gold-only resource estimate was undertaken in late-August 2023 and completed in late-November 2023 using Seequent's Leapfrog-Geo and Edge software platform, version 2023.1.1.

The purpose for this updated resource estimate was to:

1. Incorporate the most recent results from Heliostar Metal's 2023 core drilling campaign that were not available in the earlier March 2023 43-101 estimate.
2. Re-scope the March 2023 43-101 study, from an open pit mining scenario using a lower average gold grade cut-off, to that of an underground mining scenario requiring a higher average gold grade mining cut-off.

14.2 DATA PROVIDED

In August 2023, Heliostar Metals provided a database consisting of the following data sets:

- 3D geologic model used in the March 2023 resource estimate
- DH (drill hole) collar data and downhole surveys, incorporating Heliostar's 2023 drill hole results
- Digital DH Au and Ag assays and accompanying multi-element geochemistry
- DH logged lithologies, alteration types, and associated mineralization
- DH quality assurance / quality control assays, including 2023 DH's
- Specific density measurements, including 2023 DH's
- 3D wireframes for all modeled lithologies
- Updated 3D topography

During the initial data validation process, issues related to certain DH collars projecting above the 3D surface topography were corrected.

All data, including 2023 DH's, were reviewed prior to undertaking the updated resource estimation. No further data additions were included after September 30, 2023.

Table 14-1: Summary of DH Composite Assays Used in November 2023 Gold Resource Estimate.

	Weighted Value
Count	60,430
Length	120,832.4
Mean	0.50516
SD	2.67632
CV	5.29796
Variance	7.16269
Minimum	0.0025
Q1	0.01065
Q2	0.058345
Q3	0.229
Maximum	181.701

Table 14-2: Summary of DH Types Used in November 2023 Gold Resource Estimate.

	In Database within block model area			In Resource within Au02 Wireframe	
Project	**Type**	**Number of Holes**	**Meters**	**Number of holes**	**meters**
Ana Paula	DDH	281	112590.2	224	92,484.9
	RC	14	3999.2	3	1,043.90
	MET	17	2623.8	17	2,623.80
	GT	6	1895	5	1,556.00
Total		**317**	121,108.20	**249**	97,708.6

DDH: Diamond Drill Hole, RC: Reverse Circulation, MET: Metallurgical, GT: Geotechnical

14.3 DRILL HOLE SAMPLING LENGTHS

DH assays throughout the Ana Paul deposit were dominantly sampled in intervals ranging from 1.0, 1.5 and 2.0 meters, with 82,194 total sample intervals yielding a mean sample length of 1.45m. The majority of samples are multiples of 1.0 and 2.0 meters (Figure 14-1 and Figure 14-2).

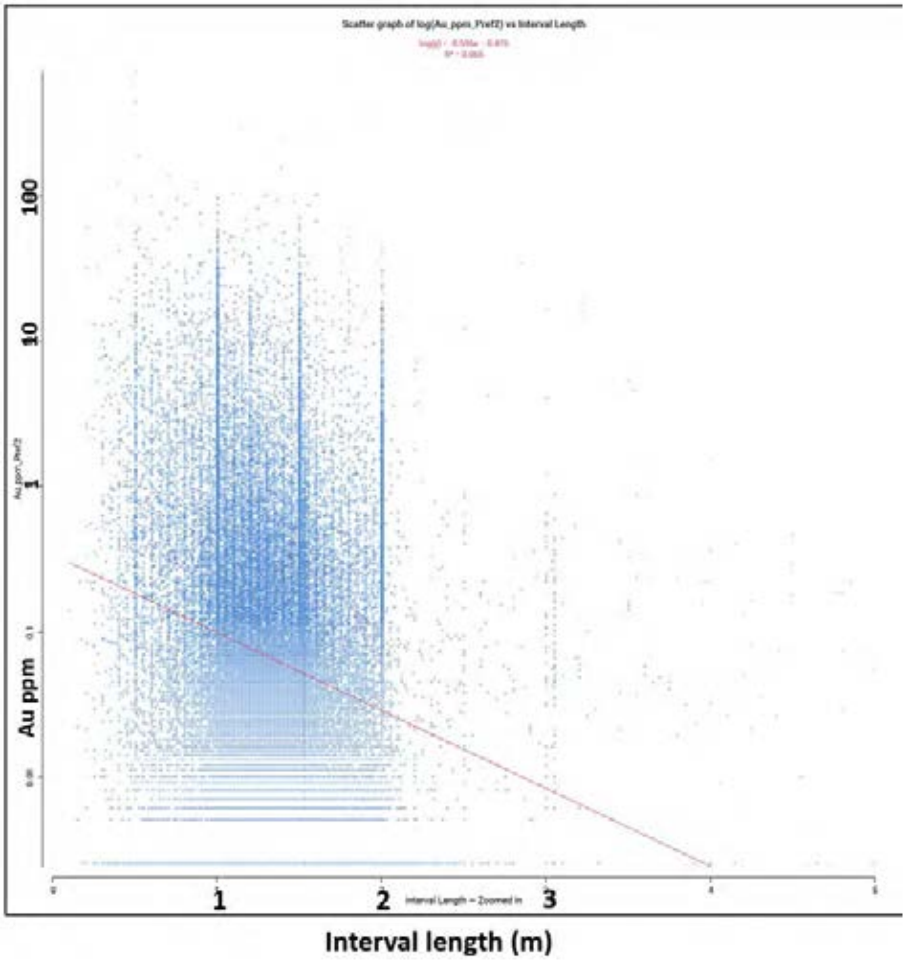


Figure 14-1: Ana Paula Project **– Scatter plot of gold (ppm) in DH's: raw data vs. interval lengths**. Three dominant trends reflect 1.0, ~1.5 and 2.0m sample composite intervals.

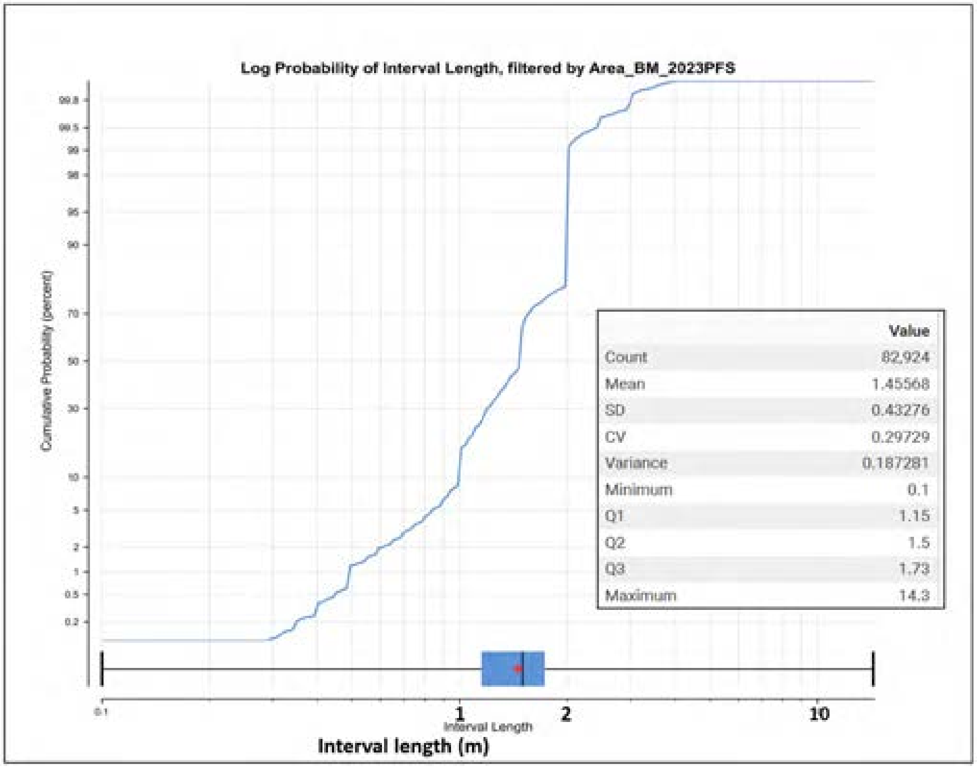


Figure 14-2: Ana Paula Project – Log Probability Plot of DH composite sampling intervals illustrating 1.0-, 1.5- and 2.0-meter breaks.

14.4 DRILL HOLE COLLAR TOPOGRAPHIC CORRECTIONS

Inconsistencies in the previous Ana Paula 3D topographic elevation model resulted in the surface collars of nine historical DH's projecting above the model surface. A minor, local measurement adjustment for each DH was corrected to the elevation model by Heliostar (highlighted in red) to reflect the true elevation datum from the original surveyed DH collars (Table 14-3; Figure 14-3a, and Figure 14-3b).

Table 14-3: Ana Paula Project – Drill Hole Modifications Within the Corrected Digital Topo Model.

holeid	x	y	z	Z corrected	maxdepth	Depth_ft	Type	Year
AP-16-266	410118.2	1997768.0	1067.1	1066.5	221.2	725.72	Core	2016
AP-18-283	410099.7	1997685.1	1054.0	1045.2	600.7	1970.8	Core	2018
AP-18-284	410099.6	1997685.4	1054.0	1045.2	590.0	1935.7	Core	2018
AP-18-285	410122.0	1997709.9	1056.4	1047.7	585.6	1921.26	Core	2018
AP-18-286	410122.2	1997710.0	1056.0	1047.7	599.4	1966.54	Core	2018
AP-18-287	410151.8	1997691.4	1039.4	1030.6	602.3	1976.05	Core	2018
AP-18-288	410152.0	1997691.4	1039.4	1030.6	761.3	2497.7	Core	2018
AP-18-289	410153.6	1997574.8	1016.0	1007.2	301.3	988.52	Core	2018
AP-18-290	410117.0	1997634.2	1034.0	1025.3	296.4	972.44	Core	2018

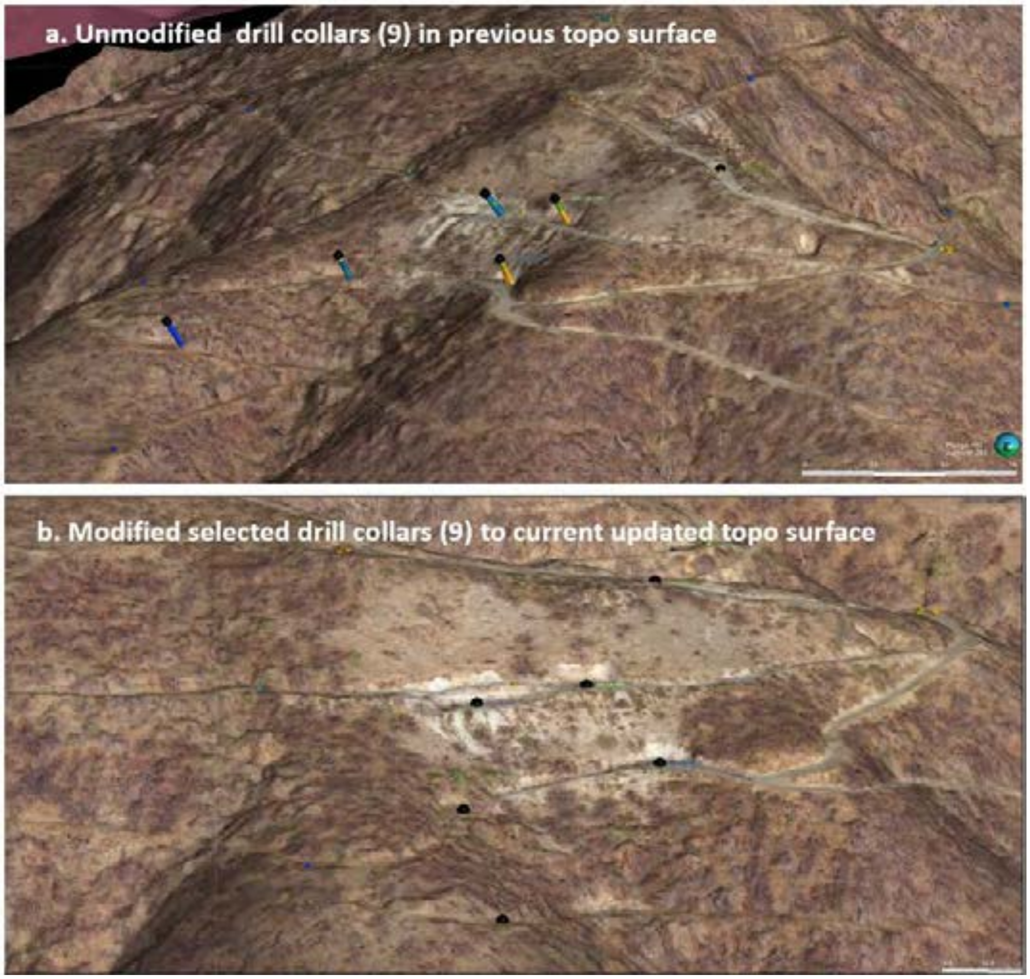


Figure 14-3: Plan DH Surface Collars, Before and After, Digital Topographic Corrections ((a)Top - Unmodified Drill Collars, (b)Bottom - Modified Selected Drill Collars)

14.5 GEOLOGIC MODEL

As documented in the previous March 2023 Ana Paula 43-101 report (Neff et al, 2023), the dominant percentage of higher-grade gold (> 2.5 g/t Au) at Anna Paula is concentrated within and along the immediate margins of a steep, southerly plunging, multi-lithic, sulfide-bearing breccia pipe complex. Referred to previously as the Complex Breccia (CBX) lithology domain, in the current model this unit is referred to as the 'Main Brecca' lithologic domain. This pipe intrudes a pre-mineral protolithic sedimentary sequence of interbedded calcareous limestones, shales and carbonaceous limestones that has been intruded by an intermediate, monzonitic to dacitic composition sequence of sills and dikes. As a result, intrusion pathways formed metamorphic halos of skarn and hornfels within the adjoining contact zones of the older sedimentary sequence. Importantly, the dominant intrusive geometries are interpreted as sill-like bodies that intruded along contact bedding planes horizons in the older, predominantly westerly dipping, sedimentary sequence.

An initial stage involving a detailed review of both the logged drill hole lithologies, and the previous geologic model were undertaken prior to modifications in the updated model. These focused on delineating intrusive rock contact geometries, intruded along dominantly westerly dipping, older sedimentary sequences. Effort was made to honor Heliostar's drill hole lithology grouping codes (Figure 14-4). Using the same lithology parameters from the previous model, the updated model grouped logged drill hole lithologies into six principal domains. From youngest to oldest these include:1) Overburden; 2) Main Breccia (Polymictic Breccia); 3) Monolithic Breccia; 4) Porphyry (intrusive rock types); 5) Hornfels (+sulfide-bearing, metamorphic skarn); 6) Sedimentary (rock types) (Table 14-4a, Table 14-4b, Table 14-5a, Table 14-5b, Table 14-6, Figure 14-4, Figure 14-6, and Figure 14-7).

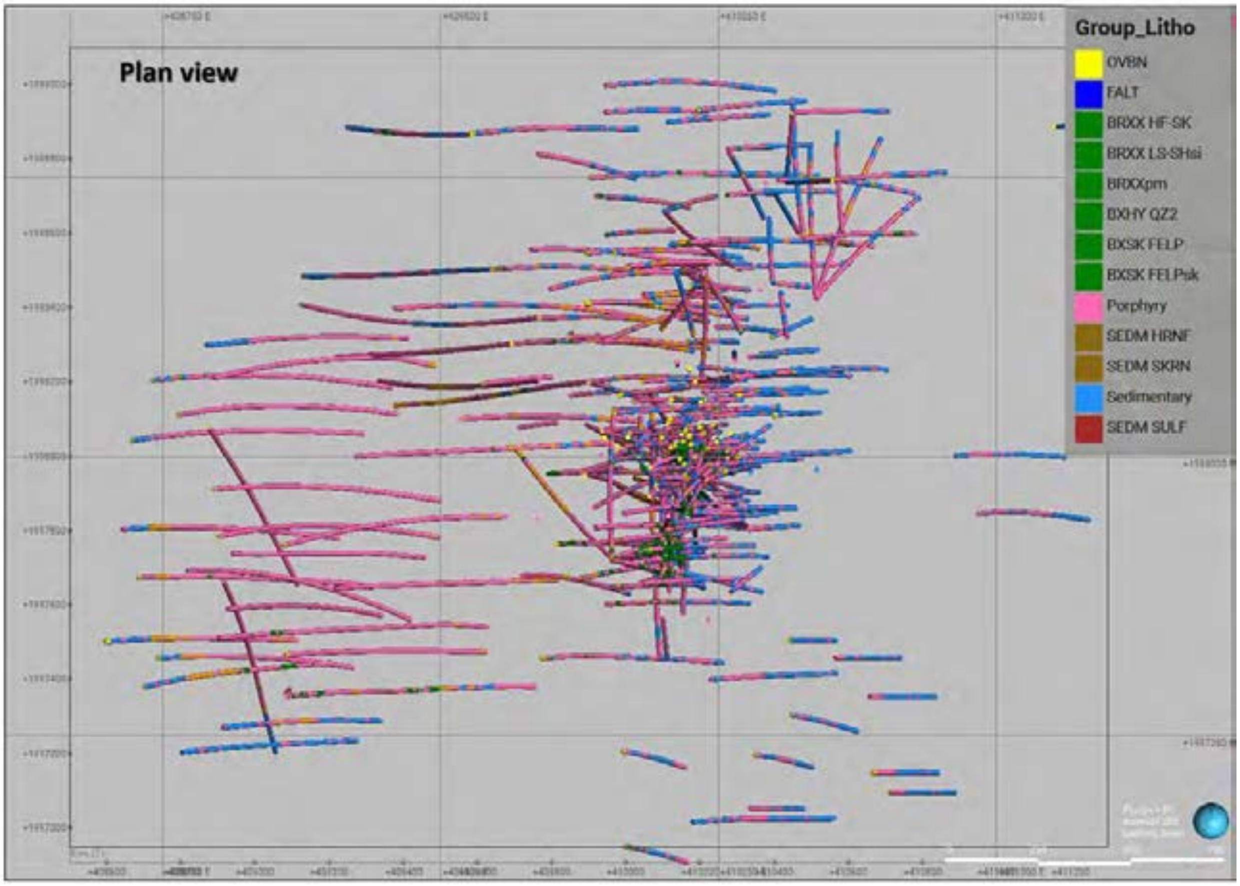


Figure 14-4: Plan view of lithology units after grouping and before using LF-Geo Selection Tool.

Table 14-4: (a) Logged Lithology within Modeled Domains – Cumulative Entries; (b) Logged Lithologies within Modeled Domains – Cumulative DH Meters.

Lithology logged HSTR codes	Domains																							
	Main Breccia Domain				Monolithic Breccia Domain				Porphyry Domain				Sediment Domain				Hornfels Domain				OVBN Domain			
	# entries	% entries	meters	% meters	# entries	% entries	meters	% meters	# entries	% entries	meters	% meters	# entries	% entries	meters	% meters	# entries	% entries	meters	% meters	# entries	% entries	meters	% meters
Breccias	1982	79%	4121	85%	808	80%	2670	88%	921	2%	1302	1%	52	0%	81	0%	67	1%	80.2	1%	10	5%	16.4	3%
Porphyry-Intrusive	361	14%	508.1	10%	184	18%	323.3	11%	49125	92%	80874	92%	1213	9%	1882	6%	1142	12%	1548.4	12%	45	22%	100	15%
Sediment	31	1%	51.1	1%	9	1%	13.2	0%	2076	4%	4111	5%	12515	89%	28102	93%	1060	12%	1445.7	11%	2	1%	1.1	0%
Sediment Hornfels	134	5%	169.8	3%	0	0%	0	0%	1251	2%	1605	2%	247	2%	241	1%	6806	74%	10297	77%	0	0%	0	0%
Sed sulfide	1	0%	1	0%	12	1%	14.4	0%	257	0%	213	0%	69	0%	45	0%	88	1%	65.3	0%	0	0%	0	0%
OVBN	0	0%	0	0%	0	0%	0	0%	13	0%	41	0%	0	0%	0	0%	0	0%	0	0	138	68%	516.5	79%
other	6	0%	6	0%	0	0%	0	0%	40	0%	110	0%	5	0%	17	0%	1	0%	1.5	0%	8	4%	19.5	3%
Total	2515		4857		1013		3020.9		53683		88255		14101		30367.1		9164		13438.1		203		653.5	

Table 14-5: (a) Logged Lithology within Modeled Domains – by % Entries Per Domain; (b) Logged Lithology within Modeled Domains – by % Cumulative Meters per Domain.

Lithology logged HSTR codes	Domains											
	Main Breccia		Monolithic Breccia		Porphyry Domain		Sediment Domain		Hornfels Domain		OVBN Domain	
	% entries	% meters	% entries	% meters	% entries	% meters	% entries	% meters	% entries	% meters	% entries	% meters
Breccias	79%	85%	80%	88%	2%	1%	0%	0%	1%	1%	5%	3%
Porphyry-Intrusive	14%	10%	18%	11%	92%	92%	9%	6%	12%	12%	22%	15%
Sediment	1%	1%	1%	0%	4%	5%	89%	93%	12%	11%	1%	0%
Sediment Hornfels	5%	3%	0%	0%	2%	2%	2%	1%	74%	77%	0%	0%
Sed sulfide	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%
OVBN	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	68%	79%
other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	3%

Table 14-6: Geologic model- raw Au DH assay metrics by geologic domain.

	Count	Length	Mean	Std. dev.	Coeff. var.	Variance	Minimum	L. quartile	Median	U. quartile	Maximum
Au_ppm_Pref2	83,763	120,711.1	0.502909	3.47602	6.91182	12.0827	0.0025	0.009	0.048	0.197	715
OVBN	242	545.6	0.70094	2.53102	3.61089	6.40606	0.0025	0.034	0.09	0.36	34.6
Breccia_Main_Sel	4,038	4,842.3	4.08977	8.69422	2.12585	75.5895	0.0025	0.288	0.92	3.97	158.05
Bx_Mono_Sel	2,054	3,015.3	0.495262	0.544321	1.09906	0.296285	0.0025	0.112	0.329	0.679	3.74
Porphyry_Sel	51,328	71,488.3	0.386595	2.81817	7.28974	7.94211	0.0025	0.021	0.067	0.209	439
Hornfels_Sel	8,639	11,918.9	0.601493	5.55042	9.22774	30.8071	0.0025	0.029	0.095	0.281	715
Sed_sel	17,283	28,783.7	0.146228	1.73077	11.8361	2.99555	0.0025	0.0025	0.0025	0.013	101

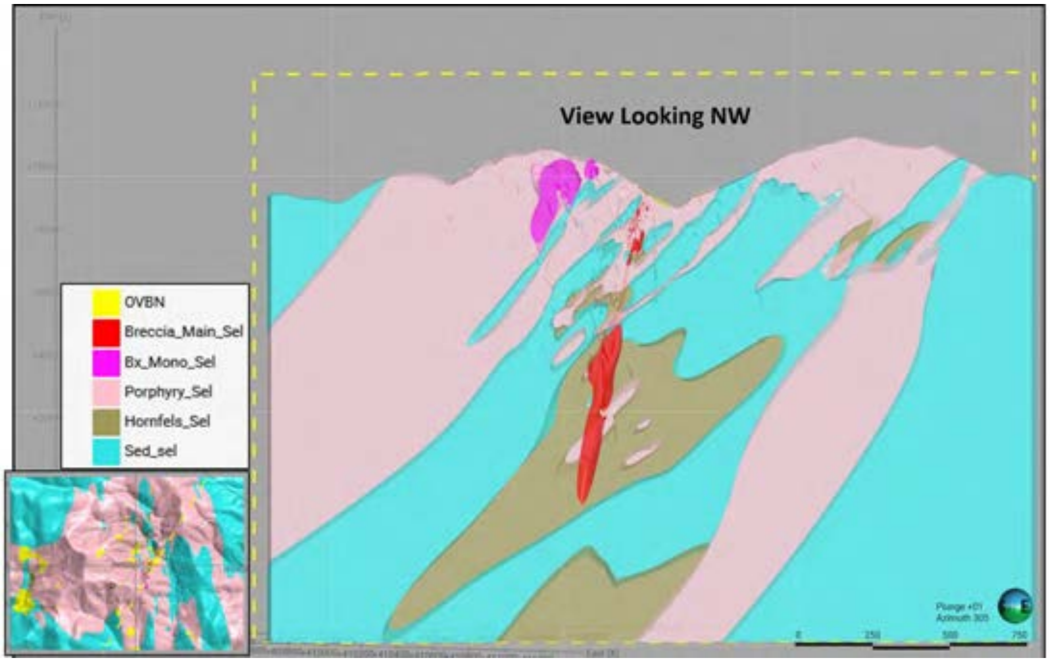


Figure 14-5: Cross Section View Showing Main Breccia (red) and Monolithic Brecca (magenta) Domains – Looking Northwest.

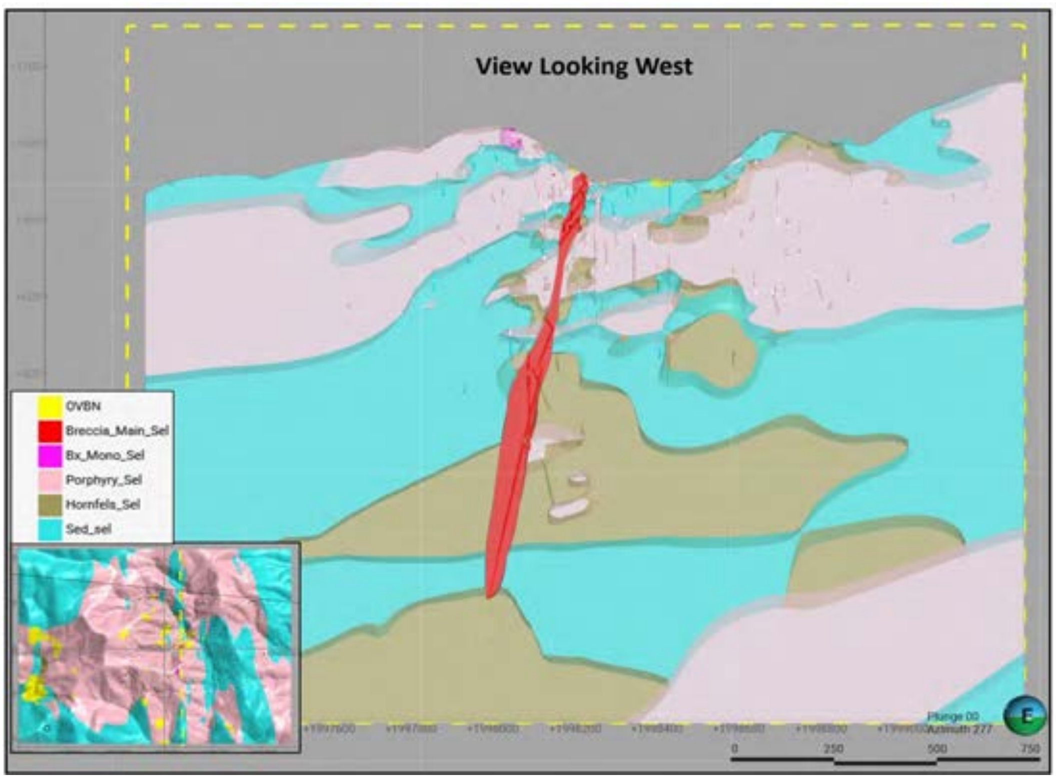


Figure 14-6: Cross Section View Showing Main Breccia Domain Geometry – Looking West.

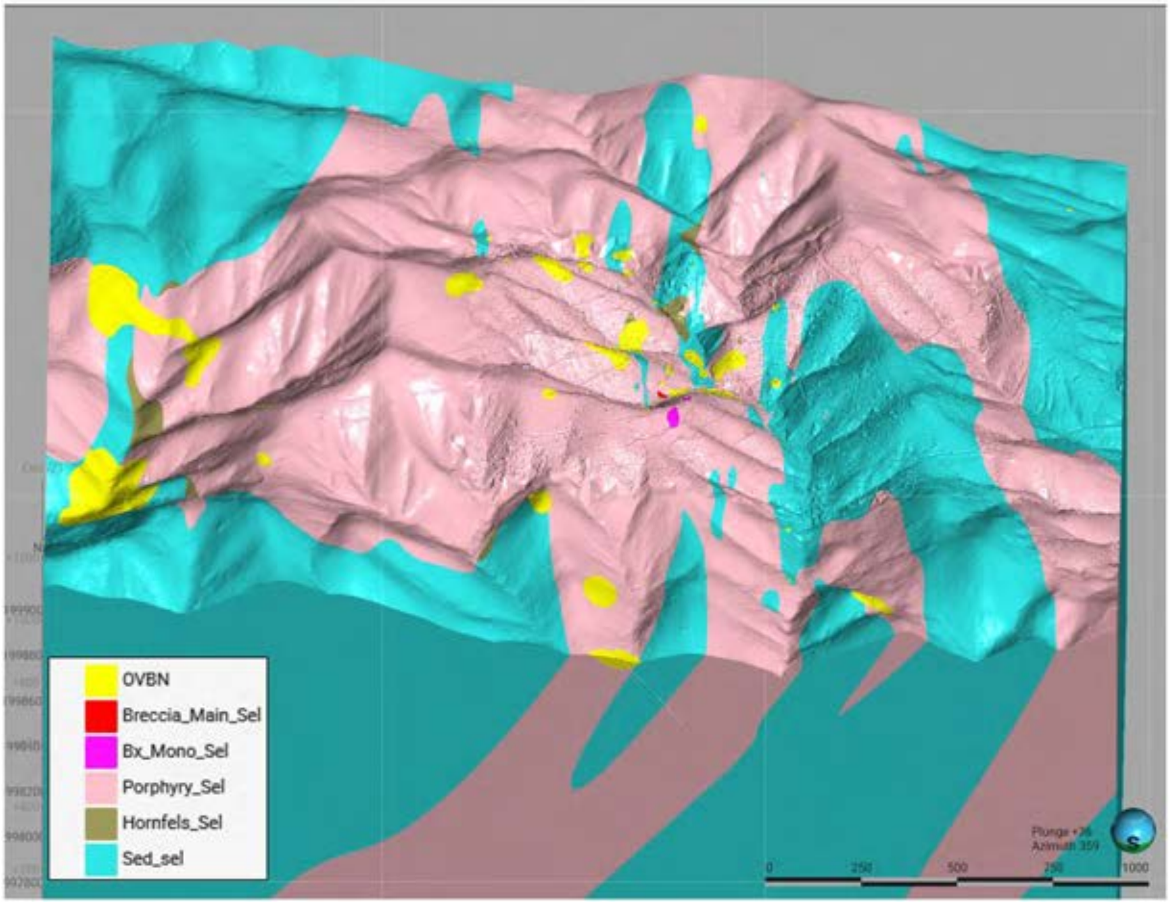


Figure 14-7: Oblique View of 3D Geology – View Looking North.

Analysis of structural fabric related to controls of mineralization at Anna Paula indicates a general, regional-scale, N-S structural trend reflected in sedimentary bedding patterns, intrusive sill and/or dike geometries and the alignment of known gold deposits in the greater Guerrero Gold Belt. At a deposit-scale, the Main Breccia domain is interpreted to occur along a secondary, E-W structural intersection within the greater regional N-S structural alignment. Both trends are reflected in the Leapfrog-Geo strain ellipsoid analysis diagram (Figure 14-8).

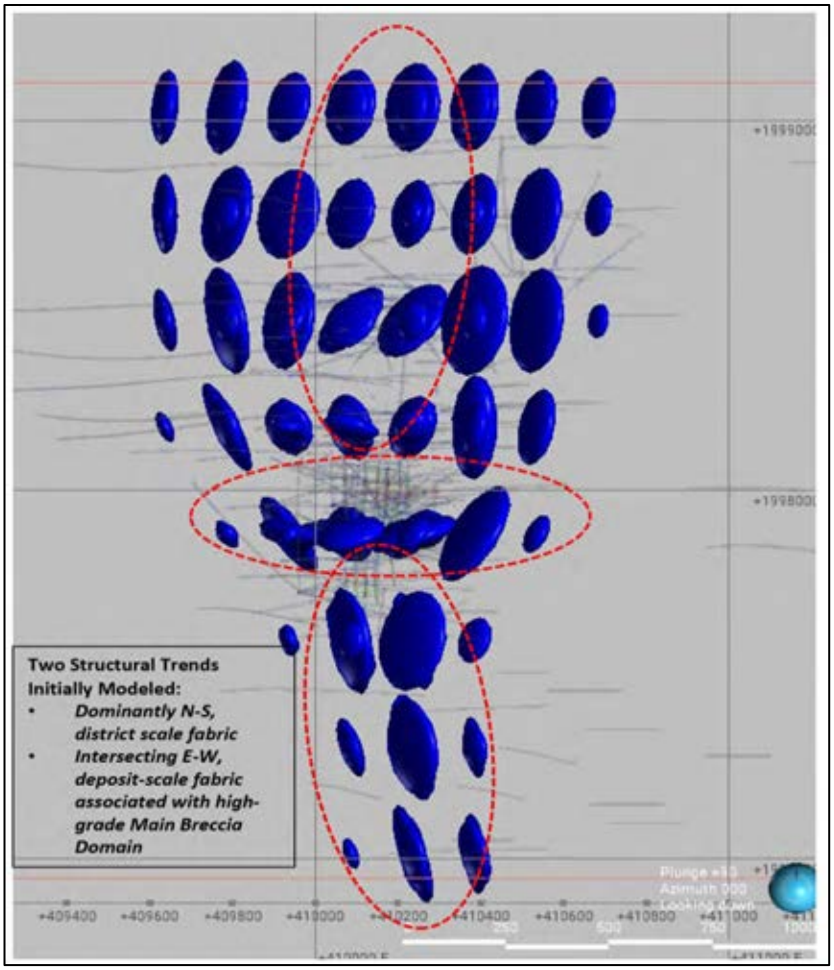


Figure 14-8: Ana Paula Geologic Model – plan view of Leapfrog-Geo

Figure 14-8 shows strain ellipsoid models comprising localized structural domains reflecting primary regional N-S and secondary intersecting E-W structural fabric. This structural intersection (Figure 14-8) is interpreted to have formed the Main Breccia (Polymictic Breccia) domain and to have served as a channel-way for later stage, gold-bearing mineralizing fluids.

14.6 GRADE SHELL STUDY

Determination and final reconciliation of grade shell cutoffs can be highly subjective. The Radial Basis Function (RBF) is grade-sensitive, which can result in high-grade outliers significantly altering the shell boundaries creating unrealistic bubble effects in the 3D model boundaries. An indicator model tends to smooth grade shell fluctuations to reconcile high-grade DH intervals. As it pertains to Ana Paula, the grade shell reflects geological controls, such as breccia geometries and intrusive porphyry directional planes. Note that mineralization controls and geometries outside the Main Breccia domain remains erratic in nature.

An indicator gold grade shell sensitivity analysis was performed comparing 0.2 g/t Au and 0.3 g/t Au using 2.0m and also 3.0m composite with models at different probabilities. While highlighted results indicate only low-level differences in comparing average grade, standard deviation, and coefficient of variance, a 2.0m composite model was used, to reflect grade blocks supporting an underground mining scenario. An indicator gold grade shell model of 2m composite and 0.2g/t Au cutoff at 50% probability was used to limit the estimation (Table 14-7, Figure 14-9, Figure 14-10, Figure 14-11a, Figure 14-11b, Figure 14-12).

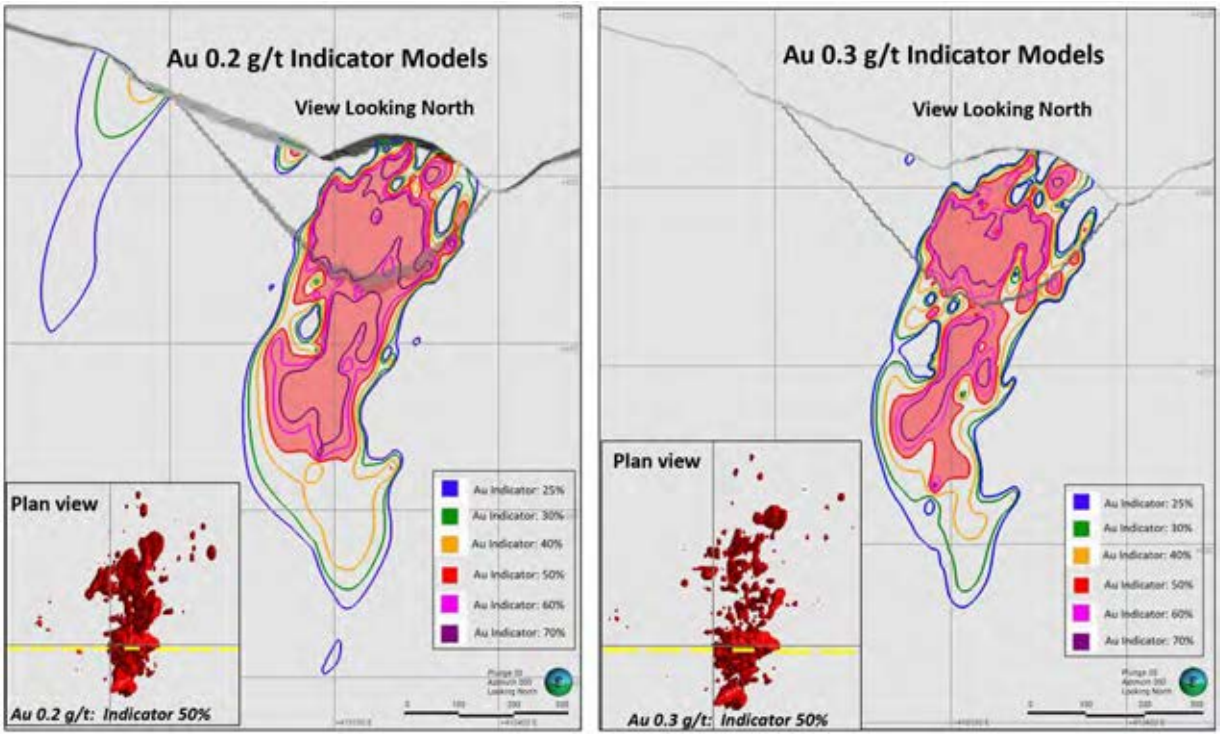


Figure 14-9: Cross Section Comparisons of 0.2 vs. 0.3 g/t Au Grade Indicator Shells –Looking North.

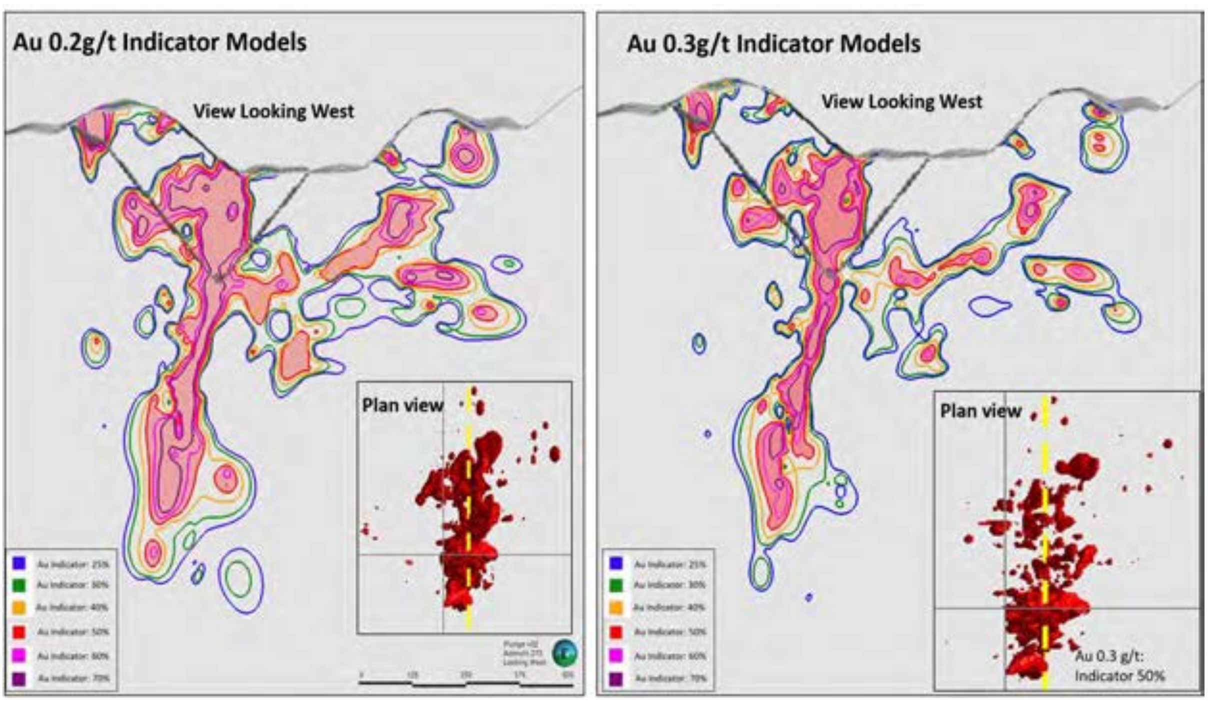


Figure 14-10: Cross Section Comparisons of 0.2 vs. 0.3 g/t Au Grade Indicator Shells – Looking West.

Table 14-7: Grade Shell Study – Gold 0.2 g/t and 0.3 g/t comparison summary using increasing probability factors (Iso).

Grade Shell Sensitivity Study 0.2 and 0.3 Wireframes (Gold g/t)

Area: block Model area

Indicator Iso-Value	Probability Factors	Iso=0.25	Iso=0.3	Iso=0.4	Include edits: Iso=0.5	Iso=0.6	Iso=0.7
Au 0.2 Wireframe	% of Dilution	34%	30%	22%	**16%**	10%	5%
	Mean	1.216	1.320	1.546	**1.784**	2.093	2.464
	CV	3.42	3.30	3.08	**2.90**	2.71	2.57
	Volume	176,320,000	133,800,000	77,736,000	**39,816,000**	20,621,000	11,419,000
	Samples >= cutoff	15536	15032	13781	**12328**	10468	8524
	Samples <= cutoff	8086	6413	3916	**2289**	1144	496
	Total	23622	21445	17697	**14617**	11612	9020
Indicator Iso-Value		**Iso=0.25**	**Iso=0.3**	**Iso=0.4**	**Iso=0.5**	**Iso=0.6**	**Iso=0.7**
Au 0.3 Wireframe	% of Dilution	36%	31%	22%	15%	9%	4%
	Mean	1.527	1.671	1.987	2.342	2.791	3.305
	CV	3.08	2.95	2.74	2.55	2.38	2.19
	Volume	88,189,000	58,750,000	29,553,000	16,195,000	8,901,200	4,975,800
	Samples >= cutoff	11666	11275	10192	8857	7288	5751
	Samples <= cutoff	6506	5062	2889	1519	697	253
	Total	18172	16337	13081	10376	7985	6004

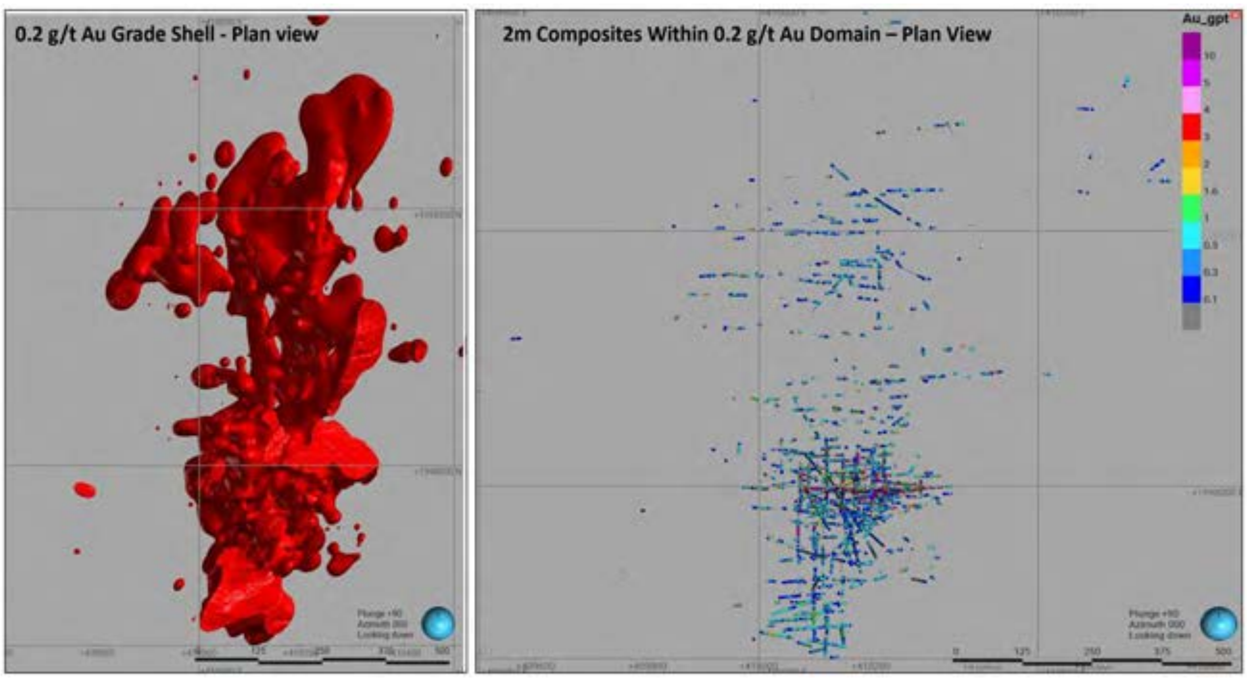


Figure 14-11: (a)left - Plan View of 0.2 g/t Au grade shell (red), and (b)right - 2m DH Composites Within the 0.2 g/t Au Wireframe.

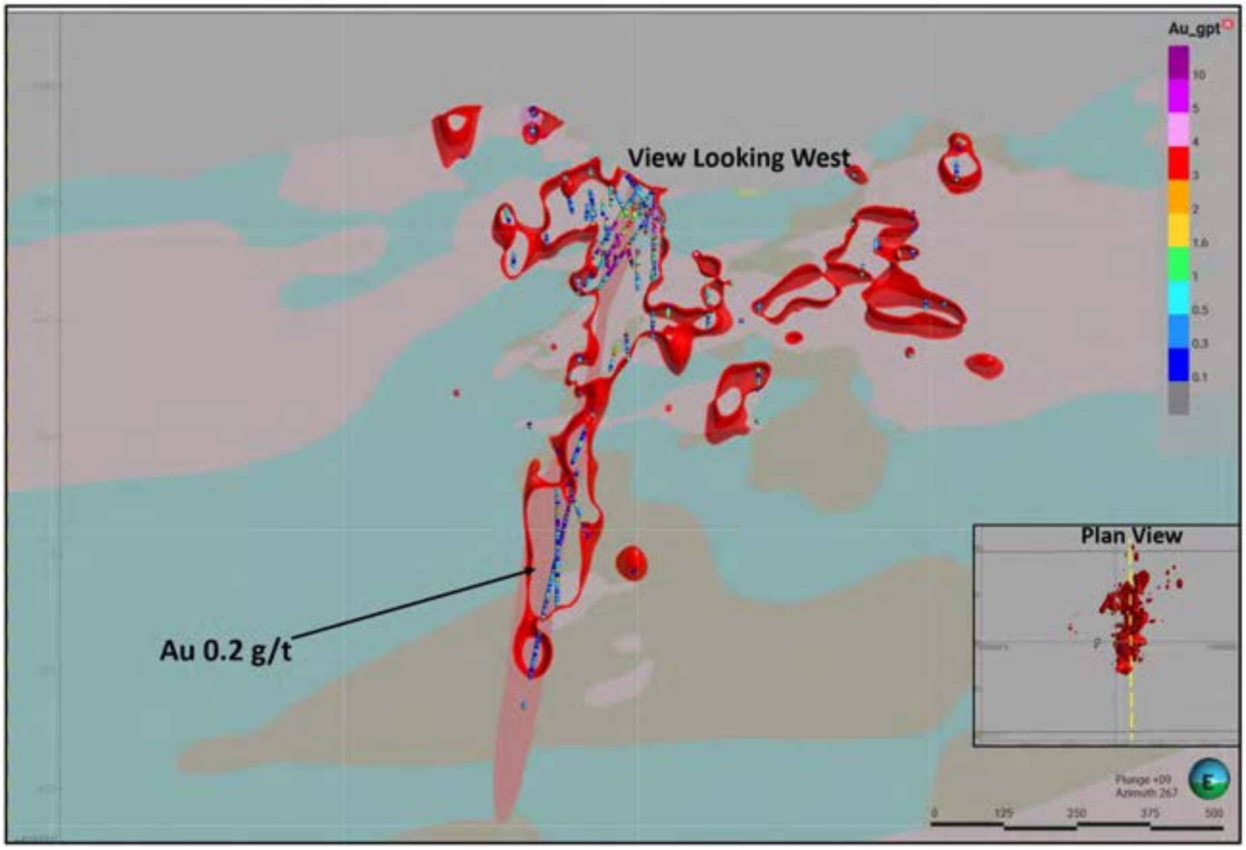


Figure 14-12: Geology model cross section, looking North, containing 0.2 g/t Au Wireframe Model.

14.7 EXPLORATION DATA ANALYSIS

The accepted method of ensuring equal support of all drill hole samples within modeled domains is to composite the samples into equal lengths. It is not recommended that assay intervals be split into smaller composite lengths, as this results in artificially lower variance resulting from adjacent assay composites with potentially identical values. Increasing composite lengths can be used as a tool to reduce variability seen in variograms. This effect however results directly in grade smoothing.

For underground mining operations, the maximum drill hole composite length should be a function of vein and/or mineralized stope widths, original sample length, ore/waste dilution, and other related factors. Drill hole composites should maintain a high resolution of the data. Likewise, avoiding too small of composite is critical for modeling to minimize the screen effect (Table 14-8a and Table 14-8b).

Table 14-8:-(a), -(b) Ana Paula project – Comparisons of 2m vs. 3m DH composites. A 2m composite was used for the grade shell model to support a higher resolution, underground mining scenario.

2m composites (Au g/t)

	Composited	Uncomposited
Count	78,531	107,548
Length	157,025.8	156,864.3
Mean	0.407355	0.406913
SD	2.35682	3.06977
CV	5.78568	7.54405
Variance	5.55462	9.42347
Minimum	0.0025	0.0025
Q1	0.006	0.005
Q2	0.04685	0.039
Q3	0.18125	0.158
Maximum	181.701	715

3m composites (Au g/t)

	Composited	Uncomposited
Count	52,429	107,548
Length	157,071.8	156,864.3
Mean	0.407749	0.406913
SD	2.17596	3.06977
CV	5.33653	7.54405
Variance	4.73481	9.42347
Minimum	0.0025	0.0025
Q1	0.0064	0.005
Q2	0.0505	0.039
Q3	0.190933	0.158
Maximum	144.668	715

Table 14-9: Ana Paula DH sample length summary statistics.

Name	Count	Length	Mean	Std. dev.	Coeff. var.	Variance	Minimum	L. quartile	Median	U. quartile	Maximum
length	83,696	121,108.2	1.59625	0.691482	0.433191	0.478147	0.002	1.3	1.5	2	17.45
equal 1.5m	13,727	20,590.5	1.5	0	0	0	1.5	1.5	1.5	1.5	1.5
equal 1m	6,558	6,558.0	1	0	0	0	1	1	1	1	1
equal 2m	16,087	32,174.0	2	0	0	0	2	2	2	2	2
greater than 2m	948	2,760.2	3.96411	3.08588	0.778454	9.52263	2	2.15	2.6	4.06	17.45
length between 1.10 to 1.4m	21,623	27,815.9	1.29566	0.109083	0.0841907	0.011899	1.1	1.2	1.3	1.4	1.5
length between 1.51 to 1.9m	12,781	21,197.1	1.66998	0.142016	0.0850407	0.0201685	1.5	1.53	1.63	1.78	2
less than 1	7,737	5,516.9	0.792369	0.180536	0.227843	0.0325931	0.002	0.7	0.85	0.94	1
other	4,235	4,495.5	1.06224	0.0275815	0.0259655	0.000760738	1	1.05	1.05	1.09	1.1

The drillhole two-metre composited data was flagged using the indicator 0.2g/t grade shell and the geological model domains to then perform statistics and determine the final estimation domains.

Figure 14-13 illustrates gold assay box plot summaries of Ana Paula modeled domains where the Main Breccia, which represents the primary host gold-bearing domain, contains a mean value of 4.6 g/t Au.

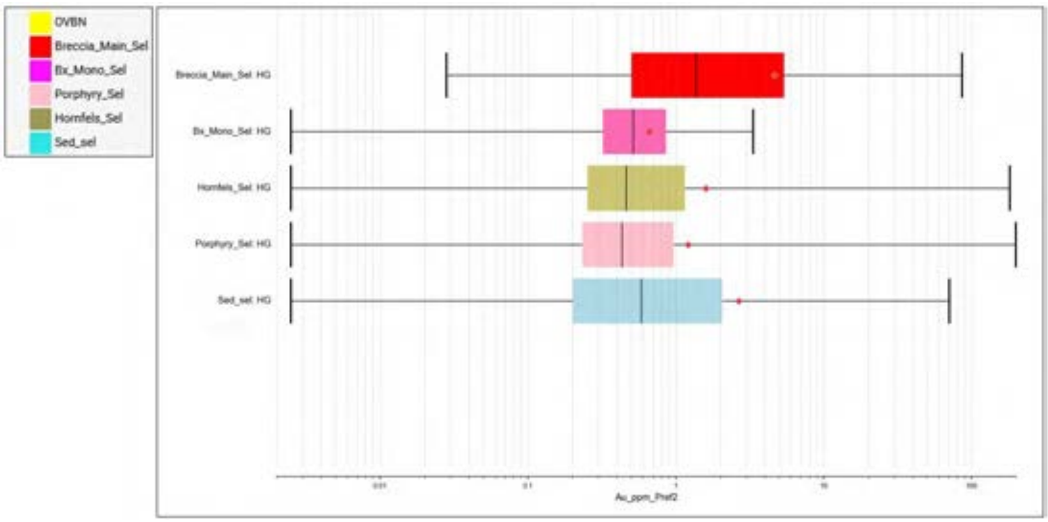


Figure 14-13: Au assay 2m composite box Plots within estimation domains.

14.8 CAPPING ANALYSIS

A Parrish capping and separate log probability plots were performed on both, all raw gold assays and composited drill hole gold assays for all domains, in order to compare the effect of capping of composite data before and after compositing, prior to modeling. Table 14-10 summarizes Parrish results for the Main Breccia domain in decile and centile. Highlighted in red illustrates where capping was recommended in the 99th percentile. The log-normal probability plot of all gold assays in the Main Breccia domain is highlighted in Figure 14-14. This illustrates a subtle break at approximately 64 g/t Au, which was used as an upper limit capping value for modeling purposes.

Table 14-10 summarizes capping comparisons in the Main Breccia Domain between: 1) raw drill hole gold assays; 2) capped gold assay data before compositing, and; 3) capped gold assay data after compositing. From these comparisons, it was determined the most favorable approach was to apply capped gold assays after compositing, given its average grade was nearest to the raw assay average gold grade. Table 14-11 compares raw uncapped vs. composited capped gold assays for all Ana Paula Project modeled domains and Table 14-12 compares raw Uncapped vs. Composited capped gold assays for all modeled domains. The percentage capping removal at various cutoff ranges in both Measured + Indicated categories in the updated Nov. 2023 model is shown in Table 14-13.

Table 14-10: Parrish Analysis Capping Ranges – Main Breccia, Au Raw Data.

SUMMARY STATISTICS:

Number of data	= 3605
Average Value	= 4.8460
Variance	= 86.7353
Maximum Value	= 158.0500
Third Quartile	= 5.2771
Second Quartile (median)	= 1.3574
First Quartile	= 0.4465
Minimum Value	= 0.0160

Parrish Statistics Deciles:

Decile	Avg g/t	Min g/t	Max g/t	Number	Metal g	Percent Metal
10	0.128	0.016	0.208	361.0	46.	0.3
20	0.284	0.209	0.355	360.0	102.	0.6
30	0.447	0.356	0.550	362.0	162.	0.9
40	0.684	0.551	0.850	359.0	245.	1.4
50	1.079	0.855	1.360	366.0	395.	2.3
60	1.709	1.365	2.160	357.0	610.	3.5
70	2.970	2.177	3.980	359.0	1066.	6.1
80	5.382	4.000	7.150	360.0	1938.	11.1
90	9.903	7.170	13.800	361.0	3575.	20.5
100	25.918	13.850	158.050	360.0	9330.	53.4

Parrish Statistics Centiles:

Centile	Avg g/t	Min g/t	Max g/t	Number	Metal g	Percent Metal
91	14.279	13.850	14.560	36.0	514.	2.9
92	15.028	14.600	15.400	36.0	541.	3.1
93	15.858	15.420	16.450	36.0	571.	3.3
94	17.352	16.500	18.500	36.0	625.	3.6
95	19.659	18.550	20.600	40.0	786.	4.5
96	22.029	20.800	23.000	34.0	749.	4.3
97	24.517	23.200	26.000	34.0	834.	4.8
98	28.283	26.100	30.100	36.0	1018.	5.8
99	35.557	30.200	42.600	36.0	1280.	7.3
100	67.015	43.300	158.050	36.0	2413.	13.8

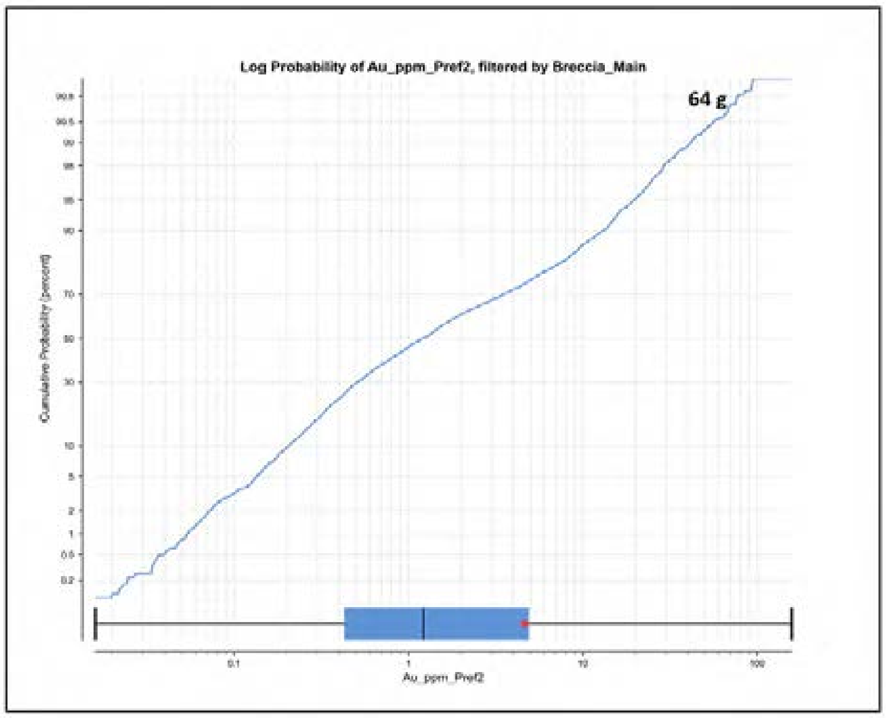


Figure 14-14: Main Breccia Domain - probability plot of all raw gold assays in drill holes. Note break at approximately 64 g/t Au, which was applied as a capping value in the Nov. 2023 Model.

Table 14-11: Main Breccia Domain - comparisons of: 1) raw uncapped, 2) capping before, and 3) capping after compositing.

	Raw Uncapped						Capping Before Composites		Capping After Composites		Mean differences %	Mean differences %	# of capped samples	% of total composites capped
	Number of samples	Length	Mean	Max	CV	# Composites	Mean	CV	Mean	CV	Before vs Raw	After vs Raw		
Cap 64 g/t Au	3605	4254.2	4.846	158.1	1.92	2189	4.516	1.60	4.598	1.66	-6.8%	-5.1%	17	0.8%

Table 14-12: Comparisons of Raw Uncapped vs. Composited Capped gold assays for all modeled domains.

Domain	Cap grade	Raw Uncapped					Composites capped			Mean differences %	# of capped samples	% of total composites capped
		Number of samples	Length	Mean	Max	CV	# Composites	Mean	CV			
Main Breccia	64 g/t Au	3605	4254.2	4.846	158.1	1.92	2189	4.598	1.66	-5.1%	17	0.8%
Mono Breccia	No cap	1402	2043.7	0.658	3.74	0.86	1051	0.665	0.76	No capping		
Porphyry	50 g/t Au	13294	17853.1	1.401	715	6.55	9308	1.175	2.53	-16.1%	25	0.3%
Hornfels	38 g/t Au	2810	3676.5	1.799	123	3.42	1952	1.462	2.52	-18.7%	17	0.9%
Sedimentary	47 g/t Au	967	1187.8	3.005	101	2.84	653	2.575	2.28	-14.3%	4	0.6%

Table 14-13: Gold Measured + Indicated categories capping loss estimate: updated Nov. 2023 resource model.

Measured and Indicated	
Au g/t Grade cutt off	Gold Ounces removed %
0.5	-2.59%
1.5	-3.29%
2.5	-3.82%
4	-4.75%

14.9 BULK DENSITY ANALYSIS

Table 14-14 summarizes the original 43-101 average bulk densities collected from ten separate sub-domains. Table 14-15 is a statistical summary of the 7,177 total density measurement samples used for the Nov. 2023 resource estimate. Figure 14-15 compares density measurement locations in drill hole plan view projections from the previous resource estimate and the additional 935 density measurements collected primarily within the Main Breccia (Polymictic Breccia) domain in 2023 also using a 4 g/cm^3 cap. These were added into the updated Nov. 2023 model. The final interpolated bulk density was performed using inverse distance squared (ID2) method per domain to honor local variations and use for the final estimation report (Figure 14-16).

Table 14-14: Original 43-101 bulk density averages by sub-domain, based on 5,946 total measurements.

Domain (Domain Code)	Bulk Density (g/cm³)
INTRS (2000)	2.60
MBX (6100)	2.52
SED (1200)	2.66
SKNHF (4000)	2.79
SULPH (6500)	3.31
CBX_HALO (6050)	2.78
INTRS_HALO (2050)	2.61
SED_HALO (1250)	2.70
SKNHF_HALO (4050)	2.74
SULPH_HALO (6550)	3.31

Table 14-15: Final density summary statistics, including all historical, plus 2023 measurement data included in the updated Nov. 2023 Model.

Name	Count	Mean	Std. dev.	Coeff. var.	Minimum	L. quartile	Median	U. quartile	Maximum
Density	7,177	2.67312	0.212999	0.0796819	1.06	2.59	2.64	2.69	4
Densidad_Aug24_2023	935	2.75379	0.213557	0.0775502	1.93	2.66	2.7	2.77	4
Density_GEMS_Table	6,242	2.66104	0.210285	0.0790235	1.06	2.58	2.63	2.68	4

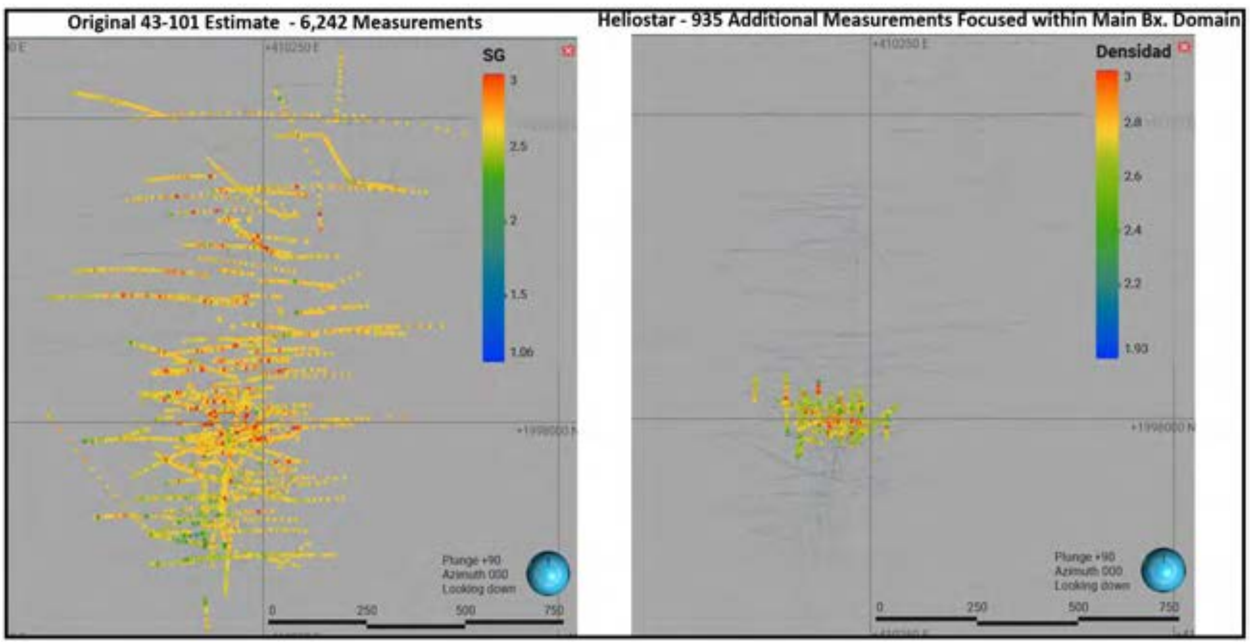


Figure 14-15: Plan view of 7,177 drill hole density measurements used for the updated Nov. 2023 resource estimate.

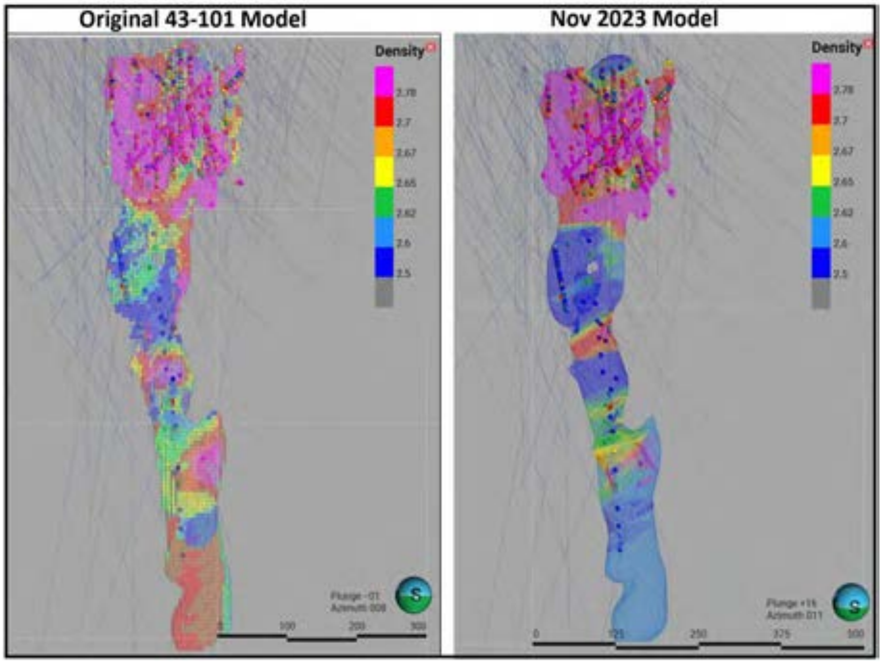


Figure 14-16: Block profile comparisons of density blocks from the previous 43-101 model (left) and updated Nov. 2023 model (right).

14.10 VARIOGRAPHY

Three-dimensional gold grade variograms were computed by estimation domain. Traditional variograms were modeled with a nugget and two spherical structures for each estimation domain. Estimated nugget values were derived from the downhole variogram, using a 2-metre lag spacing that corresponds to the length of the composites. The variograms showed reasonable structure and provided reasonable generated models. Variogram parameters applied for grade interpolation are provided in Table 14-16.

Table 14-16: Ana Paula – Three-pass search ellipsoids, dimension, and parameters per modeled domain.

General				Structure 1										Structure 2										
Variogram Name	Variance	Nugget	Normalised Nugget	Sill	Normalised sill	Structure	Major	Semi-major	Minor	Dip	Dip Azi.	Pitch	Sill	Normalised sill	Structure	Major	Semi-major	Minor	Dip	Dip Azi.	Pitch
Au_Breccia_Main	58.44	7.01	0.12	12.44	0.213	Spherical	27.4	17.0	8	71.5	277.5	111.6	38.99	0.67	Spherical	41.9	34.2	24.5	71.5	277.5	111.6
Au_Bx_Mono	0.25	0.03	0.10	0.081	0.324	Spherical	12.3	11.0	10.5	57.7	268.0	131.3	0.14	0.57	Spherical	63.2	54.0	42.7	57.7	268.0	131.3
Au_Porphyry	8.96	1.07	0.12	5.025	0.561	Spherical	4.6	4.0	3.5	71.5	277.5	95.6	2.86	0.32	Spherical	25.6	18.0	10.0	71.5	277.5	95.6
Au_Hornfels	15.70	1.86	0.12	6.217	0.396	Spherical	6.8	5.8	3.5	67.9	265.5	105.1	7.62	0.49	Spherical	33.3	30.0	20.4	67.9	265.5	105.1
Au_Sed: HG	44.22	5.31	0.12	16.15	0.365	Spherical	12.3	4.5	1.94	59.4	267.1	49.1	22.76	0.51	Spherical	42.1	19.4	7.9	59.4	267.1	49.1

As anticipated, anisotropy was most pronounced along strike. In general, the continuity ranges are similar in the along-strike and down-dip directions for most domains. The exception was the porphyry domain, which has a shorter continuity range in comparison to the other modeled domains. The anisotropy conforms to the search ellipsoids derived from the variogram models.

14.11 BLOCK MODEL CODING

To accommodate the projected location of the planned entry location of the service decline adit, the block model resource boundary was extended eastward. Table 14-17 summarizes the updated resource block model boundary coordinates and parameters. The updated coordinate boundary modifications for both the updated geologic model (red) and the resource block model (blue) are also shown in Figure 14-17.

Table 14-17: Modified Resource Boundary Coordinates and Block dimension parameters.

Number of blocks:	370 × 410 × 380 = 57,646,000
Base point coordinates:	409450, 1997000, 1400
Block size:	5m x 5m x 5m
	Sub-blocks: 1m x 1m x 1m
Boundary size:	1850, 2050, 1900
Bounding box:	
Minimum Easting	409450
Minimum Northing	1997000
Minimum Elevation	-500
Maximum Easting	411300
Maximum Northing	1999050
Maximum Elevation	1400

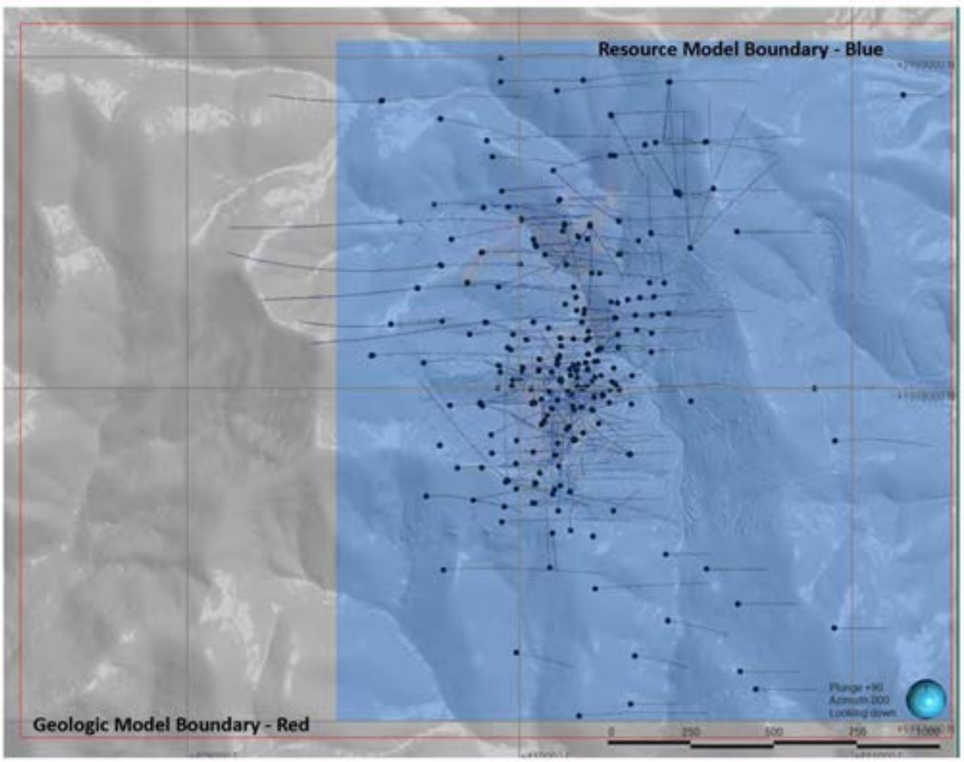


Figure 14-17: Plan view of resource estimate boundary modifications.

14.12 GRADE ESTIMATION

The updated, Nov. 2023 resource model was constrained within a 0.2 g/t gold grade shell, using an indicator radial basis function (RBF) numerical model at a 50% probability. It consists of 5x5x5 meter blocks with a minimum sub-block size of 1x1x1 meter.

Final grade estimation was based on ordinary kriging using 2.0-metre composites. Nearest neighbor (NN) and inverse distance squared (ID2) were applied as model interpolations for validation. This was undertaken as a three-pass approach using increasing search parameters with each pass (Table 14-18).

Table 14-18: Parameters used for each three-pass interpolation per modeled domain, including: ellipsoid ranges (meters); ellipsoid direction; number of samples; drill hole limits; outlier restrictions.

General	Ellipsoid Ranges			Ellipsoid Directions			Number of Samples		Drill Hole Limit	Outlier Restrictions		
Interpolant Name	Maximum	Intermediate	Minimum	Dip	Dip Azi.	Pitch	Minimum	Maximum	Max Samples per Hole	Method	Distance %	Threshold
Kr, Au_Breccia_Main: HG_pass1	40	34	24	71.5	277.5	111.58	7	15	3	None		
Kr, Au_Breccia_Main: HG_pass2	80	68	45	71.5	277.5	111.58	5	15	3	None		
Kr, Au_Breccia_Main: HG_pass3	140	140	120	71.5	277.5	111.58	4	18	3	None		
Kr, Au_Bx_Mono: HG_pass1	55	28	23	57.7	268	131.3	7	15	3	None		
Kr, Au_Bx_Mono: HG_pass2	100	50	45	57.7	268	131.3	5	15	3	None		
Kr, Au_Bx_Mono: HG_pass3	200	100	90	57.7	268	131.3	4	18	3	None		
Kr, Au_Hornfels: HG_pass1	40	30	18	67.91	265.5	105.05	7	15	3	None		
Kr, Au_Hornfels: HG_pass2	80	60	30	67.91	265.5	105.05	5	15	3	None		
Kr, Au_Hornfels: HG_pass3	135	120	60	67.91	265.5	105.5	4	10	3	None		
Kr, Au_Porphry: HG_pass1	25	18	10	71.5	277.5	95.61	7	15	3	None		
Kr, Au_Porphyry: HG_pass2	50	36	20	71.5	277.5	95.61	5	15	3	None		
Kr, Au_Porphyry: HG_pass3	120	70	45	71.5	277.5	95.61	4	10	3	Clamp	0.4	10
Kr, Au_Sed: HG_pass1	40	17	8	59.41	267.14	49.05	7	15	3	None		
Kr, Au_Sed: HG_pass2	70	34	15	59.41	267.14	49.05	7	15	3	None		
Kr, Au_Sed: HG_pass3	100	55	25	59.41	267.14	49.05	4	18	3	None		

14.13 MINERAL RESOURCE ESTIMATE CLASSIFICATION

Parameters considered in the Ana Paula updated resource estimate classification are outlined in Table 14-19. In summary, specific modeling factors included:

1. Canadian Inst. of Mining (CIM) guideline classifications for Measured, Indicated, and Inferred resource estimation (v. 2014)
2. Updated geological model controls and constraints on gold mineralization
3. Spatial continuity manifest from drill holes
4. Previous experience in modeling similar styles of lode gold deposits

Table 14-19: Classification parameters applied for the Nov. 2023 Ana Paula mineral resource classification.

Parameter	Measured	Indicated	Inferred
Estimation Domain	Main Breccia	Any	Any
Sample spacing	<=25m	<=60m	<=100m
Kriging slope of regression	>=0.6	>=0.4	>=0.1
Search pass	In pass 1	In pass 1 or 2	In pass 2 or >2

The initial classification involved using a numeric-based categorization method. Upon completion, a manual review was performed on the block outcomes. This was followed by a manual wireframe approach to smooth the boundaries between the categories and eliminate any inconsistencies, such as "spotted dog" aberrations. These tend to arise in areas where separate or disconnected blocks of one category appear within another block category.

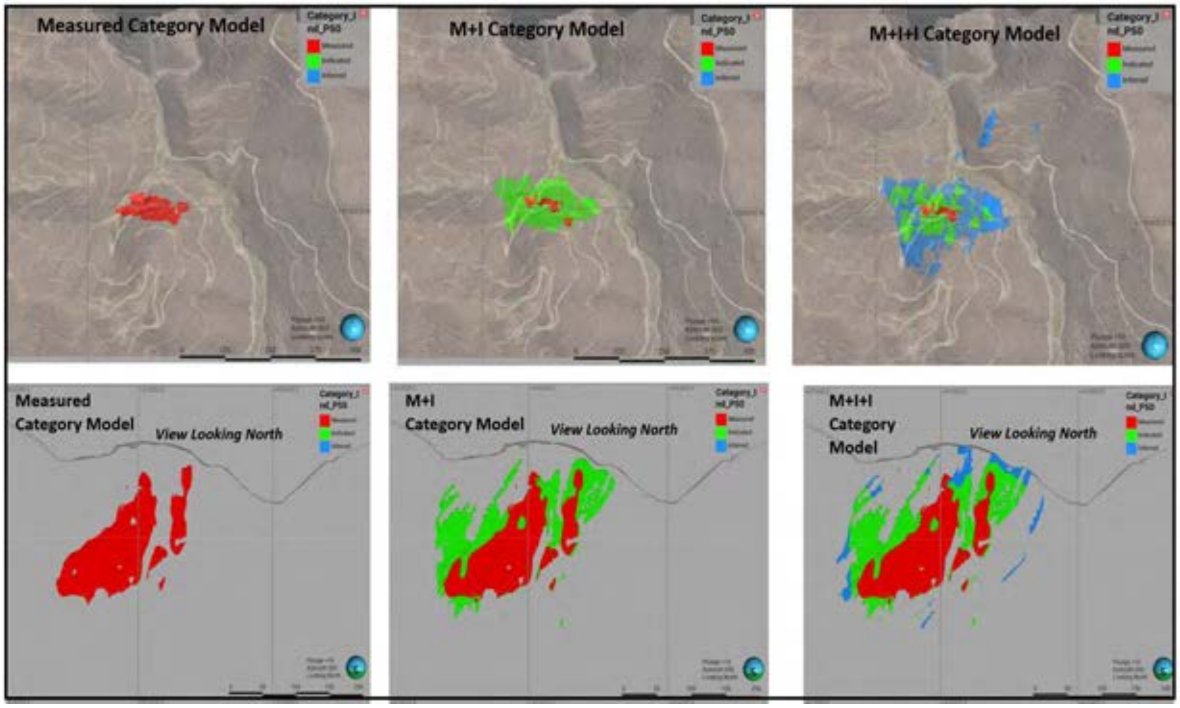


Figure: 14-18: Ana Paula gold model category classifications- view showing near-surface Measured, Indicated, and Inferred in plan and cross-sectional views @ 2.5 g/t Au cutoff.

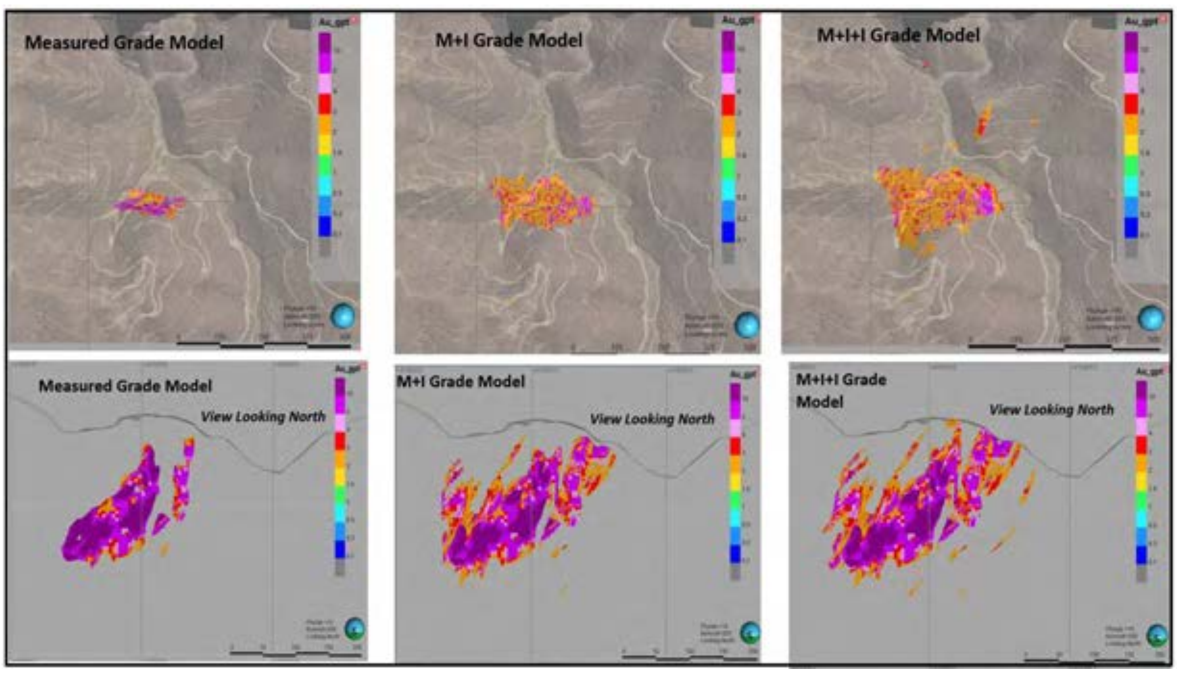


Figure: 14-19: Ana Paula gold model grades - view showing near-surface, Measured, Indicated, and Inferred in plan and cross-sectional views @ 2.5 g/t cutoff.

14.14 BLOCK MODEL VALIDATION

The updated, Nov. 2023 grade model was validated using the following methodology:

1. Visual comparisons of block model grades with composite grades in plan and section views.
2. Comparisons of Global Bias in mean gold grades for OK, NN, and ID2 models per modeled domain (Table 14-20).
3. Comparisons of Local Bias using swath plot profiles (grade profiles) per domain to evaluate potential local bias in the estimate.

Table 14-20: Global Bias – comparisons of mean block model grades applying Ordinary Kriging, Nearest Neighbor, and Inverse Distance-squared methods.

Global mean	Main Breccia	Mono Breccia	Hornfels	Porphyry	Sedimentary
OK	2.420	0.651	1.134	0.875	2.024
NN	2.419	0.678	1.130	0.894	2.253
ID2	2.368	0.669	1.114	0.892	2.054
OK vs NN	0.03%	-4.04%	0.34%	-2.10%	-10.16%
ID vs NN	-2.08%	-1.34%	-1.41%	-0.15%	-8.83%

The presence of a local bias was checked and validated by generating global (all domains), and individual domain Swath plots in X, Y, and Z directions to compare OK and ID2 vs. NN estimate profiles. Resulting Swath plot comparisons show good convergence in the X (width) and Z (breath) directions, and a strong convergence in the Y (vertical) direction (Figure 14-20 and Figure 14-21).

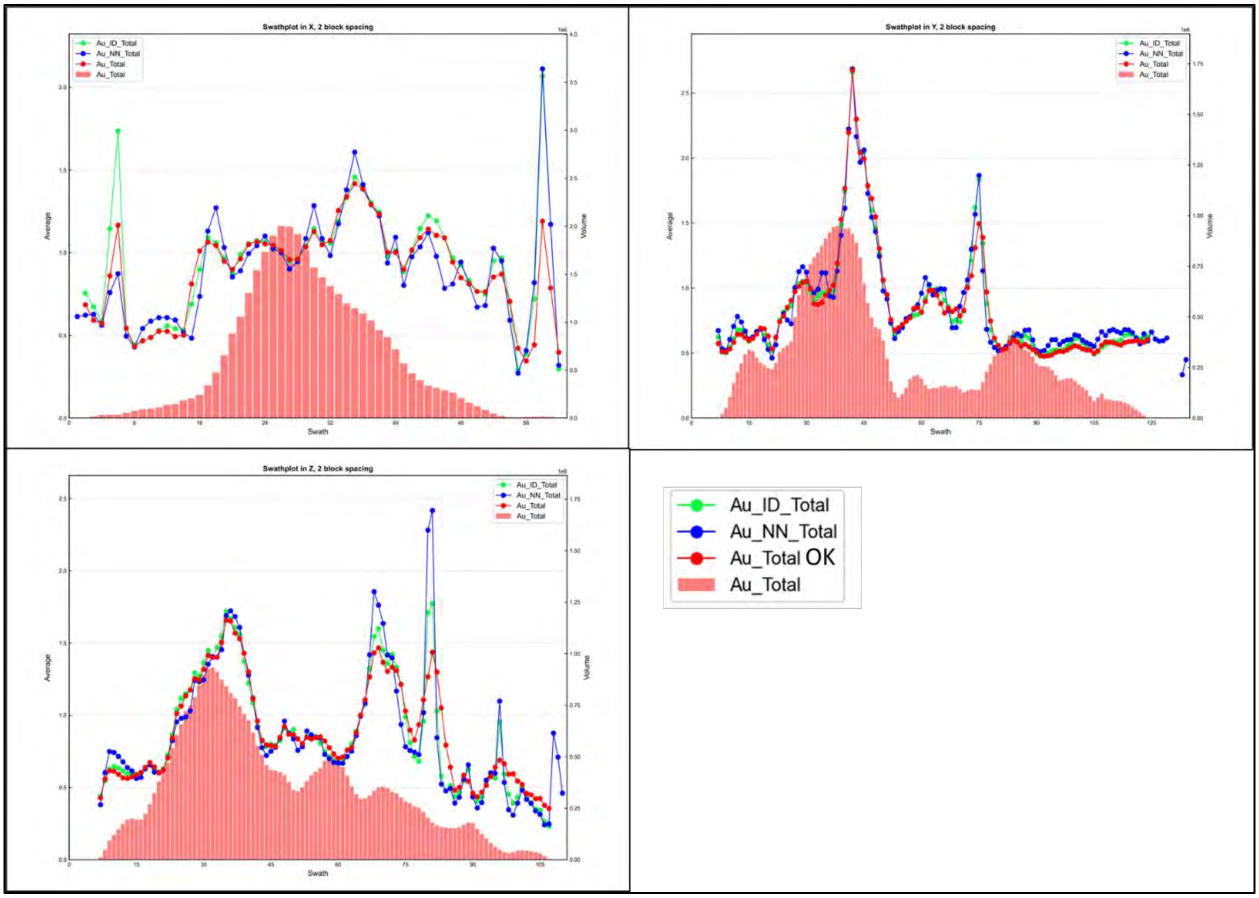


Figure 14-20: Ana Paula Swath plots – all domains.

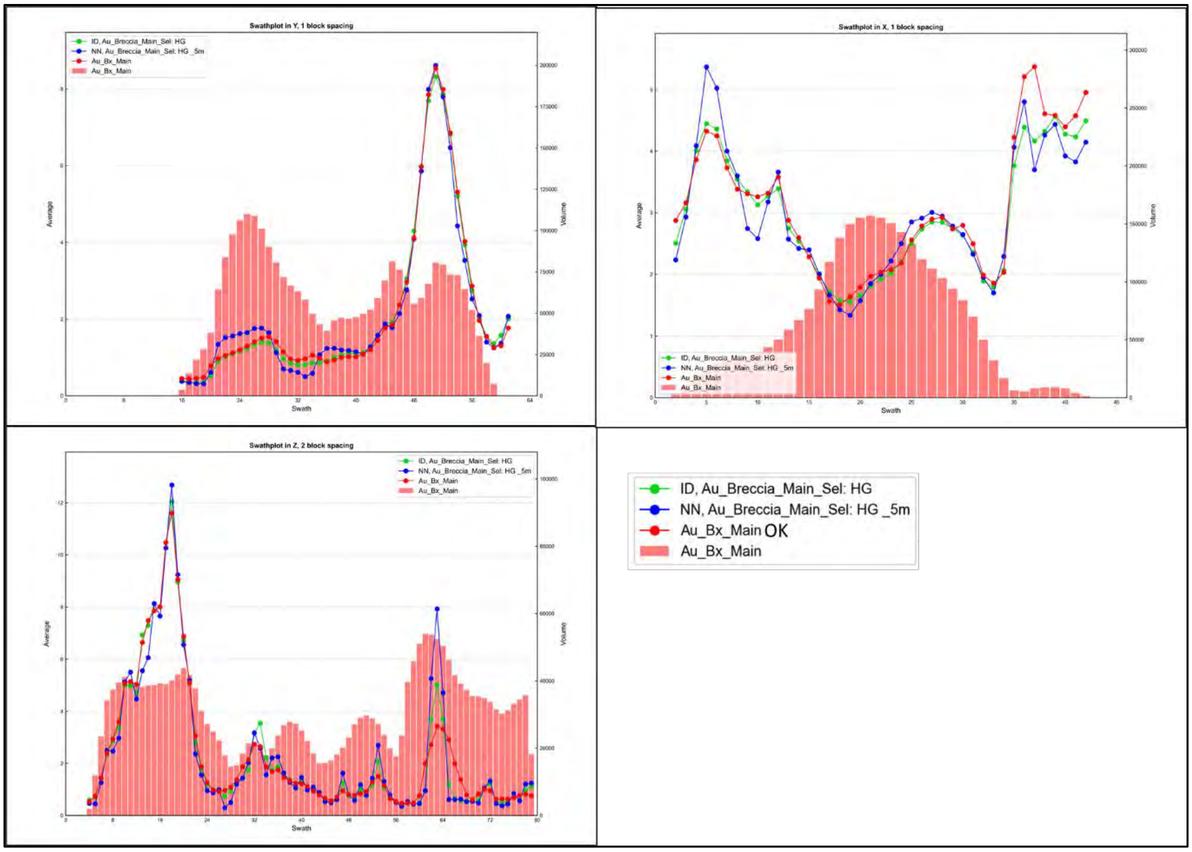


Figure 14-21: Ana Paula Swath plots – Main Breccia domain.

14.15 MINERAL RESOURCE ESTIMATE RESULTS

The updated, Nov. 2023 gold resource model was generated using Seequent's Leapfrog-Geo and Leapfrog-Edge software platforms, v2023.1.1. The model is classified as Measured, Indicated, or Inferred, using search pass parameters shown in Table 14-18, and modeled geologic parameters. The estimate was based on 249 core holes totaling 97,708.6 meters completed between 2005-2023 (Table 14-2) and constrained within a 0.2 g/t gold grade shell. The highest average gold grade contained in the estimate is concentrated principally within and along the contact margins of the Main Breccia (Polymictic Breccia) domain (Figure 14-22; also see Figure 14-6 and Figure 14-7).

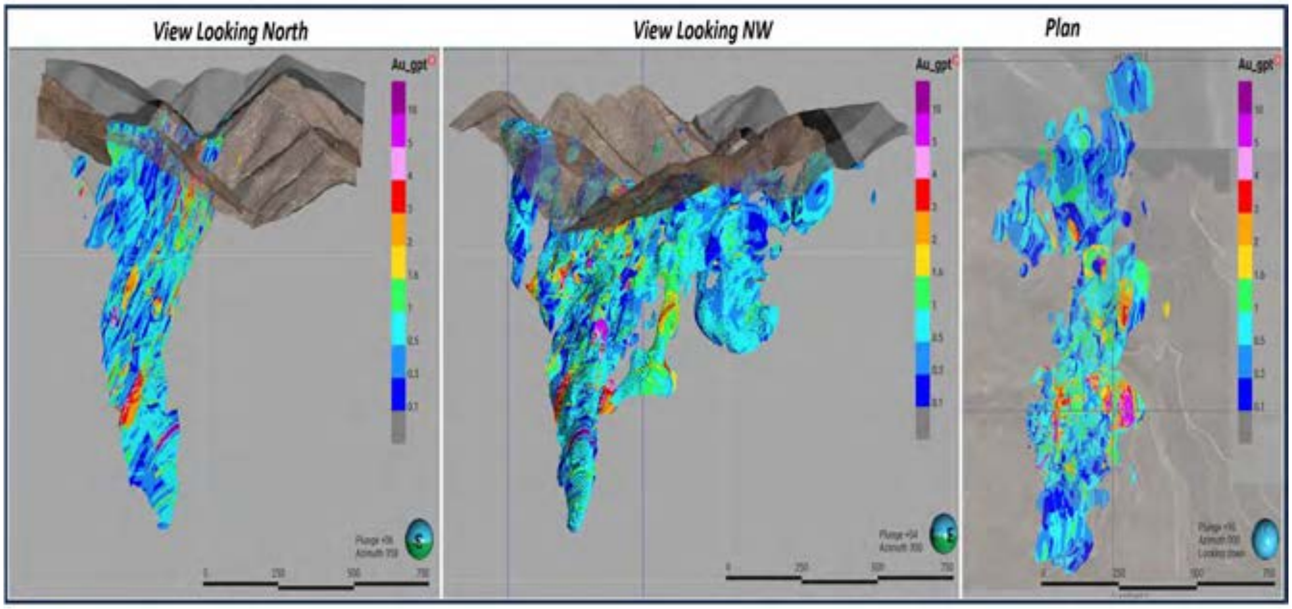


Figure 14-22: Ana Paula updated Nov. 2023 Gold Block Model: Measured + Indicated + Inferred Block Model Resource Estimate, showing full cross-sectional and plan views @ 0.00 g/t Au cutoff.

Table 14-21 summarizes results from the updated, Nov. 2023 gold resource estimate sub-categories of Measured, Indicated, and Inferred. This includes categorical breakouts for tonnage, average grades, and cumulative ounces at various grade cutoffs ranging from 0.6 – 10.0 g/t gold, within the constraining 0.2 g/t gold shell. Results from the 1.0 g/t cutoff and the proposed 2.5 g/t gold underground mining cutoff are highlighted.

Table 14-21: Summary of Results from Nov 2023 Gold Resource Estimate Sub-categories

Classification Cutoff Grade (g/t)	Tonnes (Mt)	Gold Grade (g/t)	Contained Metal (Ounces)
Measured:			
>=0.6	1.99	5.57	357,157
>=1.0	1.68	6.48	349,048
>=2.0	1.23	8.33	328,516
>=2.5	**1.11**	**8.97**	**320,204**
>=5.0	0.79	11.12	283,597
>=7.5	0.57	13.01	239,747
>=10.0	0.38	15.27	184,509
Indicated:			
>=0.6	10.10	2.08	674,085
>=1.0	5.89	3.01	569,708
>=2.0	2.87	4.72	436,143
>=2.5	**2.24**	**5.42**	**390,716**
>=5.0	0.87	8.45	236,564
>=7.5	0.39	11.47	142,387
>=10.0	0.19	14.52	87,449
Inferred:			
>=0.6	29.23	1.43	1,339,575
>=1.0	14.29	2.12	974,192
>=2.0	4.71	3.63	549,800
>=2.5	**3.28**	**4.24**	**447,512**
>=5.0	0.66	7.68	162,308
>=7.5	0.21	11.49	75,983
>=10.0	0.10	14.63	47,352

Table 14-22 summarizes from the updated, Nov. 2023 gold resource estimate for cumulative Measured + Indicated results for total tonnages, weighted average grades, and total ounces at various cutoffs ranging from 0.6 – 20.0 g/t gold, within the 0.2 g/t constraining gold shell. Results from the proposed 2.5 g/t gold underground mining cutoff are outlined in red.

Table 14-22: Summary of Results from Nov 2023 Gold Resource Estimate for Cumulative

Cut-off grade (g/t)	Tonnes ≥ cut-off (millions)	Average grade ≥ cut-off (g/t)	Material Content (grade × tonnage)	Au ounces
0	17.7576	1.944	34515600	1,109,701
0.6	12.0947	2.652	32075200	1,031,241
1	7.56338	3.778	28576500	918,755
1.6	4.95943	5.106	25320300	814,066
2	4.09931	5.802	23783500	764,657
2.5	3.35111	6.598	22112100	710,920
3	2.83375	7.304	20697200	665,430
3.5	2.44485	7.950	19436300	624,891
4	2.13022	8.572	18259500	587,056
4.5	1.87641	9.157	17182500	552,430
5	1.66454	9.720	16178800	520,160
6	1.31723	10.839	14276800	459,009
7	1.05819	11.908	12601200	405,138
8	0.8593	12.930	11111000	357,227
9	0.702437	13.924	9780940	314,464
10	0.563254	15.018	8458840	271,958
12.5	0.353667	17.327	6128110	197,023
15	0.211216	19.781	4178100	134,329
20	0.0673396	25.757	1734430	55,763

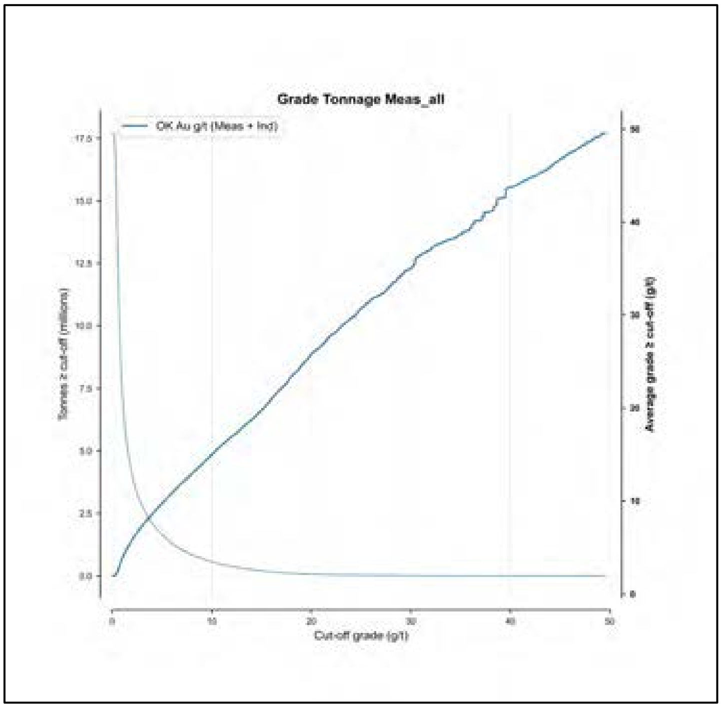


Figure 14-23: Updated Nov. 2023 resource estimate, grade-tonnage curve for cumulative Measured + Indicated categories.

14.16 COMPARISON TO PREVIOUS ESTIMATE

Comparison of the previous (March 2023) resource estimate with the updated Nov. 2023 estimate is summarized in Table 14-23. This common 2.5 g/t gold cutoff is based on comparisons reflecting the proposed Ana Paula underground cutoff. In particular, the current results highlighted in green, have yielded positive total percentage adjustments in average gold grade for each Measured, Indicated, Measured+Indicated, and Inferred categories. As the Ana Paula project focus shifts from a previous open pit design to an underground mining scenario, increase in average minable gold grade is a notably positive outcome. Furthermore, optimized capping methodologies reduce the percentage of contained metal reductions from capped gold ounces removed from the updated model (Table 14-24).

Table 14-23: Measured-Indicated-Inferred resource estimate comparisons of previous March 2023 (left) and updated Nov. 2023 estimate (right) @ 2.5 g/t Au grade cutoff.

Classification	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Change in Grade	Change in Ounces
	March 2023 MRE				Updated November 2023 MRE					
Measured	2.5	2.51	5.68	457,943	2.5	1.11	8.97	320,204	58%	-30%
Indicated	2.5	3.00	4.18	402,576	2.5	2.24	5.42	390,716	30%	-3%
Total Measured & Indicated	2.5	5.51	4.86	860,519	2.5	3.35	6.60	710,920	36%	-17%
Inferred	2.5	0.05	3.72	5,564	2.5	3.28	4.24	447,512	14%	7,943%

Table 14-24: Ana Paula Measured + Indicated categories capping metal loss percentage estimate comparisons: Original 43-101 (left) vs. updated Nov. 2023 (right) resource models.

Measured and Indicated	
Grade Cut-off Bins Au (g/t)	Gold Ounces Removed % Change
>1.50	-22.2%
>0.80	-16.4%
>0.5	-12.9%
>0.1	-8.8%
43-101 Original Model (Feb. 2023)	

Measured and Indicated	
Au g/t Grade Cutoff	Gold Ounces removed %
0.5	-2.59%
1.5	-3.29%
2.5	-3.82%
4	-4.75%
Nov. 2023 Updated Model	

15 MINERAL RESERVE ESTIMATES

Not applicable at the current stage of the Project

16 MINING METHODS

Not applicable at the current stage of the Project

17 RECOVERY METHODS

Not applicable at the current stage of the Project

18 PROJECT INFRASTRUCTURE

Not applicable at the current stage of the Project

19 MARKET STUDIES AND CONTRACTS

Not applicable at the current stage of the Project

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Not applicable at the current stage of the Project

21 CAPITAL AND OPERATING COSTS

Not applicable at the current stage of the Project

22 ECONOMIC ANALYSIS

Not applicable at the current stage of the Project

23 ADJACENT PROPERTIES

The Figure 23-1 below provides a property location map including known mines, deposits and showings for the area surrounding the Heliostar Ana Paula Project located in the Guerrero Gold Belt.

The information presented in this section is from publicly available information referenced below. No information is available to the authors to permit verification of this data. The information below is not necessarily indicative of the mineralization on the Ana Paula Project and surrounding concessions.

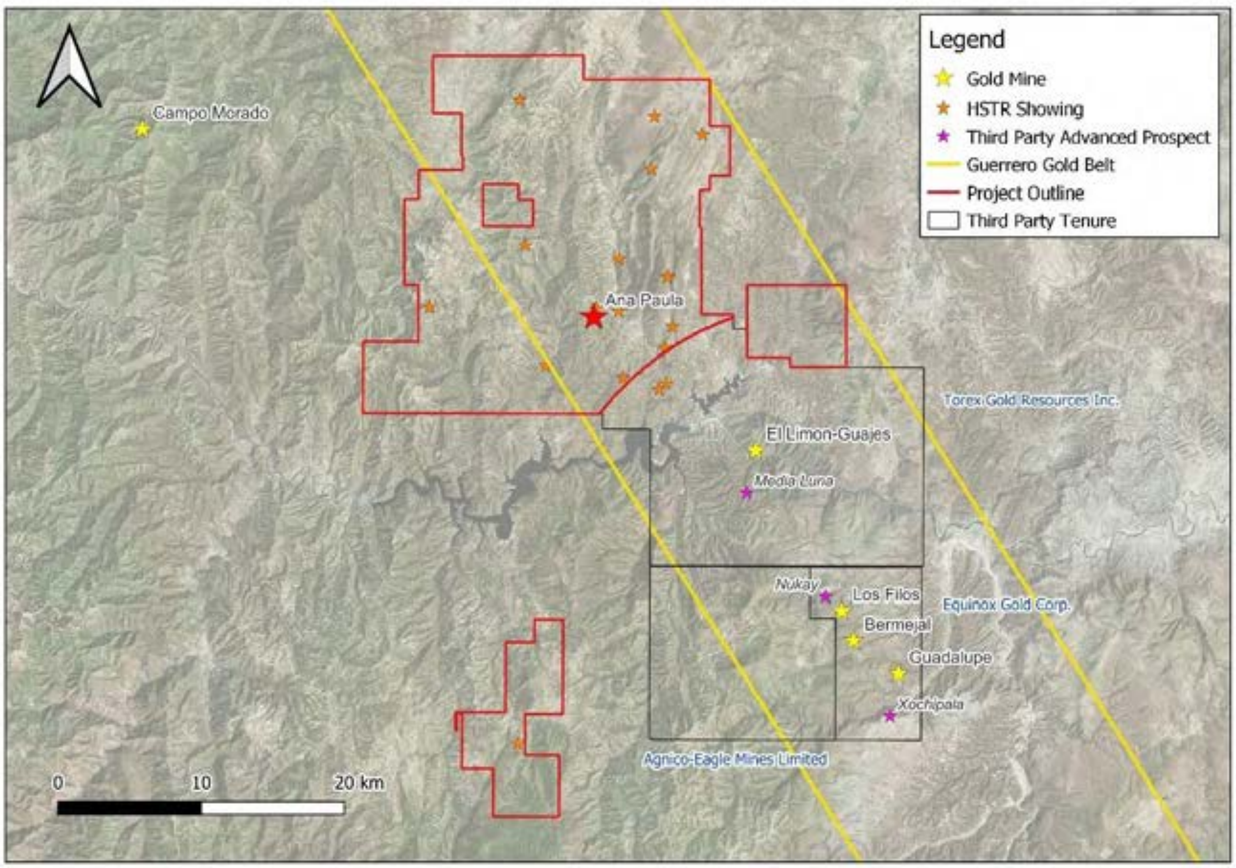


Figure 23-1: Adjacent Properties, Projects, and Mineral Deposits

The Los Filos mine is located on the trend of the Guerrero Gold Belt about 20 km southeasterly of Ana Paula (Nukay, Los Filos, Bermejal, Guadalupe and Xochipala, Figure 23-1).

Los Filos was acquired by Goldcorp in 2005 through the purchase of Wheaton River Minerals Ltd., completed March 1st, 2005, and through the purchase of the Bermejal deposit from Minera El Bermejal, S. de R.L. de C.V. (Minera Bermejal), a joint venture of Industrias Peñoles S.A. de C.V. ("Peñoles") and Newmont Mining Corporation announced March 22, 2005. The two acquisitions became the Filos Project with a combined inferred resource of 4.92 million ounces that became the Filos Mine when Goldcorp Inc. ("Goldcorp"), put it into production three years later in 2008. In 2016, Goldcorp sold Los Filos to Leagold Mining Corporation ("Leagold"). Equinox Gold is the current owner of the property after it merged with Leagold in March 2020.

As of November 9, 2020, the mineral reserves and mineral resources for Los Filos are shown in Table 23-1.

Table 23-1: Los Filos Mine Reserves and Resources

MINERAL RESERVES			
Class	Tonnes (kt)	Au (g/t)	Au (koz)
Proven & Probable	193,226	0.86	5,354
MINERAL RESOURCES			
Measured and Indicated	325,326	0.75	7,897
Inferred	135,935	0.74	3,237

Source: Equinox website. Effective date December 6, 2023.

The Los Filos mine is currently still operating. Table 23-2 shows the annual gold production from 2014 through 2023.

Table 23-2: Annual Gold Production at Los Filos

LOS FILOS RESERVES/RESOURCES & PRODUCTION - GOLD			
PERIOD	*Reserves (oz)*	*Resources (oz)*	*Production (oz)*
2014	6,770,000	8,770,000	258,700
2015	1,460,000	13,270,000	272,900
2016	1,707,000	14,009,000	231,000
2017	2,715,000	14,699,000	191,195
2018	4,395,000	8,010,000	195,362
2019	4,395,000	8,010,000	200,856
2020	4,395,000	8,010,000	58,500
2021	4,395,000	8,010,000	144,096
2022	5,354,000	11,134,000	133,723
2023	5,354,000	11,134,000	170,000
TOTAL PRODUCTION			1,686,332

Source: S&P Capital IQ pro. Effective December 11, 2023 (2023 totals are based off of mid-point guidance)

The Morelos Project owned by Torex Gold Resources Inc. ("Torex") was acquired in 2009 as a 3.2 million ounce inferred gold resource within the Limón and Los Guajes deposits and located about eight kilometers southeast of Ana Paula, (El Limon - -Guajes, Media Luna, Figure 23-1). The Morelos Project shares the southeastern boundary with Heliostar's Ana Paula Project (Figure 23-1). In 2012, Torex completed a bankable feasibility study for the El Limón Guajes open-pit mine and completed construction in 2015. The first gold was poured in December 2015 and commercial production was declared in March 2016. Additionally, in 2022 Torex released a life of mine plan for the El Limón Guajes Mine Complex (ELG Mine Complex) and Feasibility Study for the Media Luna Project, a nearby underground deposit. The latest mineral resources and mineral reserves for Torex's projects were published in 2022 and are shown in Table 23-3 and Table 23-4

Table 23-3: Morelos Property Mineral Resources

Mineral Resources	Tonnes (kt)	Grade			Contained Metal			Gold Equivalent	
		Au (g/t)	Ag (g/t)	Cu (%)	Au (koz)	Ag (koz)	Cu (Mlb)	AuEq (g/t)	AuEq (koz)
ELG Open Pits									
Measured	3,161	4.67	5.7	0.16	475	576	11	4.76	484
Indicated	8,143	2.35	4.1	0.15	615	1,073	26	2.42	635
Measured & Indicated	11,304	3.00	4.5	0.15	1,090	1,650	37	3.08	1,119
Inferred	1,385	1.92	2.2	0.06	85	100	2	1.95	87
ELG Underground									
Measured	1,741	5.94	8.0	0.34	332	450	12	6.58	369
Indicated	3,274	5.54	8.1	0.28	583	854	20	6.08	640
Measured & Indicated	5,016	5.68	8.1	0.30	916	1,304	33	6.296	1,009
Inferred	1,480	5.45	10.2	0.30	259	485	10	6.05	288
Media Luna Underground									
Measured	1,823	5.29	42.0	1.38	310	2,460	55	8.06	473
Indicated	25,567	3.02	30.9	1.05	2,486	24,708	589	5.11	4,196
Measured & Indicated	27,390	3.17	30.9	1.07	2,796	27,168	645	5.30	4,669
Inferred	7,322	2.54	23.0	.88	598	5,422	143	4.27	1,006
EPO Underground									
Measured									
Indicated	4,050	2.37	34.8	1.48	3087	4,528	132	5.16	671
Measured & Indicated	4,050	2.37	34.8	1.48	3087	4,528	132	5.16	671
Inferred	5,634	1.79	31.3	1.17	324	5,668	145	4.04	732
Total									
Measured	6,725	5.17	16.1	0.54	1,117	3,486	80	6.13	1,325
Indicated	41,035	3.03	23.6	.0.85	3,992	31,164	767	4.66	6,143
Measured & Indicated	47,760	3.33	22.6	0.80	5,110	34,650	847	4.86	7,468
Inferred	15,821	2.49	23.0	0.86	1,267	11,675	299	4.15	2,112

Source: Torex Gold website. Effective December 6, 2023

Notes to accompany the Mineral Resource Table:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are depleted above a mining surface or to the as-mined solids as of December 31, 2022.
3. Mineral Resources are reported using a gold ("Au") price of US$1,550/oz, silver ("Ag") price of US$20/oz, and copper ("Cu") price of US$3.50/lb.
4. Gold equivalent ("AuEq") of Total Mineral Resources is established from combined contributions of the various deposits.
5. Mineral Resources are inclusive of Mineral Reserves.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Numbers may not add due to rounding.
8. The estimate was prepared by Ms. Carolina Milla, P.Eng. (Alberta), Principal, Mineral Resources

Notes to accompany Media Luna Underground Mineral Resources:

9. The effective date of the estimate is December 31, 2022.
10. Mineral Resources are reported above a 2.0 g/t AuEq cut-off grade.
11. Metallurgical recoveries at Media Luna average 85% for Au, 79% for Ag, and 91% for Cu.
12. Media Luna Underground AuEq = Au (g/t) + (Ag (g/t) * 0.0119) + (Cu (%) * 1.6483). AuEq calculations consider both metal prices and metallurgical recoveries.
13. The assumed mining method is from underground methods, using a combination of long hole stoping and cut and fill.

Notes to accompany the ELG Open Pit Mineral Resources:

14. The effective date of the estimate is December 31, 2022.
15. Average metallurgical recoveries are 89% for Au, 30% for Ag and 23% for Cu.
16. ELG Open Pit AuEq = Au (g/t) + (Ag (g/t) * 0.0043) + (Cu (%) * 0.4001). AuEq calculations consider both metal prices and metallurgical recoveries.
17. Mineral Resources are reported above an in-situ cut-off grade of 0.78 g/t Au.
18. Mineral Resources are reported inside an optimized pit shell. Underground Mineral Reserves at ELD within the El Limón shell have been excluded from the open pit Mineral Resources.

Notes to accompany ELG Underground Mineral Resources:

19. The effective date of the estimate is December 31, 2022.
20. Average metallurgical recoveries are 90% for Au, 86% for Ag and 93% for Cu, accounting for the planned copper concentrator.
21. ELG Underground AuEq = Au (g/t) + (Ag (g/t) * 0.0123) + (Cu (%) * 1.600). AuEq calculations consider both metal prices and metallurgical recoveries.
22. Mineral Resources are reported above a cut-off grade of 3.0 g/t AuEq.
23. The assumed mining method is underground cut and fill.

Notes to accompany EPO Underground Mineral Resources:

24. The effective date of the estimate is December 31, 2022.
25. Mineral Resources are reported above a 2.0 g/t AuEq cut-off grade.
26. Metallurgical recoveries at EPO average 85% for Au, 75% for Ag, and 89% for Cu.
27. EPO Underground AuEq = Au (g/t) + Ag (g/t) * (0.0114) + Cu % * (1.6212). AuEq calculations consider both metal prices and metallurgical recoveries.
28. The assumed mining method is from underground methods using a long hole stoping.

Table 23-4: Morelos Property Mineral Reserves

Mineral Reserves		Grade			Contained Metal			Gold Equivalent	
		Au	Ag	Cu	Au	Ag	Cu	AuEq	AuEq
	Tonnes (kt)	(g/t)	(g/t)	(%)	(koz)	(koz)	(Mlb)	(g/t)	(koz)
ELG Open Pit									
Proven	2,821	4.65	5.5	0.15	421	495	9	4.73	429
Probable	5,582	2.46	3.9	0.15	442	699	18	2.54	456
Proven & Probable	8,4023	3.20	4.4	0.15	863	1,195	27	3.27	885
ELG Underground									
Proven	829	6.22	7.7	0.28	166	204	5	6.60	176
Probable	1,734	5.64	7.1	0.24	314	393	9	5.96	332
Proven & Probable	2,563	5.83	7.3	0.25	480	598	14	6.14	508
Media Luna Underground									
Proven	-	-	-	-	-	-	-	-	-
Probable	23,017	2.81	25.6	0.88	2,077	18,944	444	4.54	3,360
Proven & Probable	23,017	2.81	25.6	0.88	2,077	18,944	444	4.54	3,360
Surface Stockpiles									
Proven	4,655	1.26	3.1	0.07	188	470	7	1.30	195
Probable	-	-	-	-	-	-	-	-	-
Proven & Probable	4,655	1.26	3.1	0.07	188	470	7	1.30	195
Total									
Proven	8,306	2.90	4.4	0.12	776	1,170	22	2.99	800
Probable	30,332	2.91	20.5	0.70	2,833	20,037	471	4.25	4,148
Proven & Probable	38,636	2.91	17.1	0.58	3,609	21,206	493	3.98	4,947

Source: Torex Gold website. Effective December 6, 2023

Notes to accompany Mineral Reserve table:

1. Mineral Reserves were developed in accordance with CIM (2014) guidelines.
2. Rounding may result in apparent summation differences between tonnes, grade, and contained metal content. Surface Stockpile Mineral Reserves are estimated using production and survey data and apply the same gold equivalent ("AuEq") formula as ELG Open Pits.
3. AuEq of Total Reserves is established from combined contributions of the various deposits.
4. The qualified person for the Mineral Reserve estimate is Johannes (Gertjan) Bekkers, P. Eng., VP of Mines Technical Services.
5. The qualified person is not aware of mining, metallurgical, infrastructure, permitting, or other factors that materially affect the Mineral Reserve estimates.

Notes to accompany the Media Luna Underground Mineral Reserves:

6. Mineral Reserves are based on Media Luna Indicated Mineral Resources with an effective date of October 31, 2021.
7. Media Luna Underground Mineral Reserves are reported above a diluted ore cut-off grade of 2.2 g/t AuEq.
8. Media Luna Underground cut-off grades and mining shapes are considered appropriate for a metal price of $1,400/oz gold ("Au"), $17/oz silver ("Ag") and $3.25/lb copper ("Cu") and metal recoveries of 85% Au, 79% Ag, and 91% Cu.
9. Mineral Reserves within designed mine shapes assume long-hole open stoping, supplemented with mechanized cut-and-fill mining and includes estimates for dilution and mining losses.
10. Media Luna Underground AuEq = Au (g/t) + Ag (g/t) * (0.0112) + Cu (%) * (1.6946), accounting for metal prices and metallurgical recoveries.

Notes to accompany the ELG Open Pit Mineral Reserves:

11. Mineral Reserves are founded on Measured and Indicated Mineral Resources, with an effective date of December 31, 2022, for ELG Open Pits (including El Limón, El Limón Sur and Guajes deposits).
12. ELG Open Pit Mineral Reserves are reported above an in-situ cut-off grade of 1.2 g/t Au.
13. ELG Low Grade Mineral Reserves are reported above an in-situ cut-off grade of 0.88 g/t Au.
14. It is planned that ELG Low Grade Mineral Reserves within the designed pits will be stockpiled during pit operation and processed during pit closure.
15. Mineral Reserves within the designed pits include assumed estimates for dilution and ore losses.
16. Cut-off grades and designed pits are considered appropriate for a metal price of $1,400/oz Au and metal recovery of 89% Au.

17. Mineral Reserves are reported using a Au price of US$1,400/oz, Ag price of US$17/oz, and Cu price of US$3.25/lb.
18. Average metallurgical recoveries of 89% for Au, 30% for Ag, and 23% for Cu.
19. ELG Open Pit (including surface stockpiles) AuEq = Au (g/t) + Ag (g/t) * (0.0041) + Cu (%) * (0.4114), accounting for metal prices and metallurgical recoveries.

Notes to accompany the ELG Underground Mineral Reserves:

20. Mineral Reserves are founded on Measured and Indicated Mineral Resources, with an effective date of December 31, 2022, for ELG Underground (including Sub-Sill, ELD, Sub-Sill South and El Limón Sur Deep deposits).
21. Mineral Reserves were developed in accordance with CIM guidelines.
22. El Limón Underground Mineral Reserves are reported above an in-situ ore cut-off grade of 3.2 g/t AuEq and an in-situ incremental cut-off grade of 1.05 g/t Au.
23. Cut-off grades and mining shapes are considered appropriate for a metal price of $1,400/oz Au and metal recovery of 90% Au.
24. Mineral Reserves within designed mine shapes assume mechanized cut and fill mining method and include estimates for dilution and mining losses.
25. Mineral Reserves are reported using a Au price of US$1,400/oz, Ag price of US$17/oz, and Cu price of US$3.25/lb.
26. Average metallurgical recoveries of 90% for Au, 62% for Ag, and 63% for Cu, accounting for the planned copper concentrator.
27. ELG Underground AuEq = Au (g/t) + Ag (g/t) * (0.0083) + Cu (%) * (1.1202), accounting for metal prices and metallurgical recoveries.

Table 23-5: Morelos Property Production

YEAR	*PRODUCTION (oz)*
2014	
2015	350
2016	279,937
2017	240,873
2018	353,947
2019	454,811
2020	430,484
2021	468,203
2022	474,035
2023	455,000
Total Production	2,702,640

Source: S&P Capital IQ pro. Effective December 11, 2023. (2023 totals are based off of mid-point guidance)

24 OTHER RELEVANT DATA AND INFORMATION

None applicable to the Ana Paula Project.

25 INTERPRETATION AND CONCLUSIONS

It is the conclusion of the Qualified Persons preparing this technical report that the information contained within adequately supports the Mineral Resource Estimate Update. Ana Paula Mineral Resource was calculated at a 2.5 g/t gold cutoff grade and includes:

- Total measured and indicated mineral resources of 710,920 gold ounces grading 6.60 g/t gold
- Total inferred mineral resources of 447,512 gold ounces grading 4.24 g/t gold

Furthermore, metallurgical work conducted for this study indicates that High Grade Panel material has the potential to be amenable to processing using a conventional flow sheet.

This study was designed to evaluate the potential of Ana Paula as an underground mine at a higher cutoff, using a conventional process flow sheet. Previous prefeasibility level studies had evaluated Ana Paula as an open pit using atmospheric oxidation to improve gold recovery. Work to date supports the evaluation of Ana Paula as an underground mine using a conventional processing circuit. As demonstrated by the information contained in this technical report, the Project has a lower risk profile of economic viability and should proceed to the next level of evaluation, specifically a Preliminary Economic Assessment.

25.1 PROJECT RISKS

As with any mining project, there are risks that could affect the economic viability of the Project. Many of these risks are based on lack of detailed knowledge and can be managed as more sampling, testing, design, and engineering are conducted at the next study stages. Table 25-1 identifies what are currently deemed to be the most significant internal project risks, potential impacts, and possible mitigation approaches.

The currently identified potential risks associated with the Project are: uncertainties around specific metallurgical gold recovery types and the possibility for lower recoveries than those projected, permitting and environmental compliance, changes in regulatory requirements, ability to raise market financing, and metal price. These risks are common to most mining projects, many of which can be mitigated with adequate engineering, planning and proactive management.

External risks are, to a certain extent, beyond the control of the Project proponents and are much more difficult to anticipate and mitigate, although, in many instances, some risk reduction can be further achieved. External risks include the political situation in the Project region, metal prices, exchange rates and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions made in the economic model would reduce the profitability of the mine and the mineral resource and reserve estimates.

Table 25-1: Potential Risk Impacts and Mitigation

Risk	Explanation/ Potential Impact	Possible Risk Mitigation
Resource Modeling	All mineral resource estimates carry some risk and are one of the most common issues with project success	Targeted infill drilling is recommended in order to provide a greater level of confidence in the resource. The program will also be used to increase the confidence in the resource estimate and de-risk the Project.
Metallurgical Recoveries	Changes to metallurgical assumptions could lead to reduced metal recovery, increased processing costs, and/or changes to the processing circuit design. If life-of-mine (LOM) gold recovery is lower than assumed, the	Additional sampling and testwork should be conducted as applicable, including testwork on potential process flowsheets and comminution.

Risk	Explanation/ Potential Impact	Possible Risk Mitigation
	Project economics would be negatively impacted.	
Permit Acquisition	The ability to secure all of the permits to build and operate the Project is of paramount importance. Failure to secure the necessary permits could stop or delay the Project.	The development of close relationships with the local communities and government and a project design that gives appropriate consideration to the environment and local people is required.
Geochemistry and Water Management	Potentially Acid-Generating (PAG) material is not currently defined in 3D geological block model. Acid- based accounting (ABA) testing needs to be completed. If PAG material is present it will result in increased handling costs.	Further test work should be conducted to determine how much, if any, PAG material exists. Should PAG exist, remediation plans, if implemented early, can reduce the associated costs. Further hydrology work may also be needed to determine water management and treatment plans.
Water Source	Further hydrogeological studies may be needed to determine the best supply.	Following baseline studies, water could be sourced from the nearby Balsas reservoir if groundwater supplies are insufficient.
Water Supply	Industrial water use permits may be required. It is not currently a standing obligation.	Incorporate this requirement into mine design and planning.
Geotechnical	The geotechnical nature of the underground rock conditions, including the nature and orientation of faults and secondary geological structures, could impact mine design.	Improve geotechnical baseline knowledge and incorporate into future deposit modeling and planning.

25.2 OPPORTUNITIES

There are also significant opportunities that could improve the economics, timing, and/or permitting potential of the Project. The major opportunities that have been identified at this time are summarized in Table 25-2, excluding those typical to all mining projects, such as changes in metal prices, exchange rates, etcetera. However, further information and assessments are needed before these opportunities should be included in the Project economics.

Table 25-2: Potential Opportunities

Opportunity	Explanation	Potential Benefit
Metallurgical Recovery Increases	Further testing may show that an increase is possible as flowsheet options are refined. Optimization of flowsheet criteria for recovery of gold have potential to improve overall gold recovery.	Potential increase in overall gold recovery. Potential improvement in OPEX.
Exploration Potential	Given the large project land holdings within the northwestern extension of the GGB, additional exploration has potential to increase resources.	Potential to increase the mineral resource, extending the mine life.
Project Strategy and Optimization	Additional detailed planning and a series of strategic option reviews.	May add value to the Project.

25.3 GEOLOGY AND RESOURCE MODEL

The Ana Paula Deposit is hosted primarily within Acapetlahuaya Formation limestone, calcareous mudstone and shale units, occasional fine-grained lapilli tuffs and carbonaceous limestone units that have been intruded by intermediate sills, dykes and stocks. Five principal geological domains within Ana Paula Deposit have been recognized. The Sediment domain is characterized by light brown weathering, platy outcrops, with distinct gray shale and brown limestone and tuff beds which range from a few centimeters to as much as 25 centimeters thick. Also included is a massive to thin bedded laminated carbonaceous limestone that is present in this domain. The sediment domain is located in the eastern part of the deposit. The Intrusive Suite domain is a package of several different feldspar porphyry intrusive phases that, in a general sense, appear to be similar in composition and age. The Skarn-Hornfels domain is located along some of the contacts of the intrusive domain dykes and sills with the host sediments at upper elevations and appears more widespread in the deeper zones of the deposit. It shows a down-dip and distal zonation from unaltered sedimentary limestone-shale nearest the surface to hornfels then to skarn with increasing depth. The Polymictic Breccia domain resides in the core of the main Ana Paula deposit and is a steeply dipping sub-vertical diatreme breccia that is elongated in an east-west direction and plunges steeply to the south. The Monomictic Breccia domain is essentially a brecciated intrusion composed of mostly monomictic fragments in a silica-rich matrix with mixed sulphide-oxide mineralogy. It is located in the southern part of the deposit. The Monomictic and Polymictic Breccia domains are likely contemporaneous with the emplacement of the feldspar-porphyritic intrusives are important hosts to mineralization.

In general, four gold depositional settings are recognized at Ana Paula, including:

1. Polymictic Breccia hosted mineralization with mainly sulphide (arsenopyrite and/or pyrrhotite later replaced by pyrite and minor base metal sulphides) and quartz filling the matrix.
2. Exoskarn style sediment replacement and pyrite overprinting along intrusive contacts.
3. Micro-fractures with arsenopyrite fracturing all rock types, but best developed in the feldspar porphyries.
4. Disseminated sulphides in the feldspar porphyries, likely related to emplacement of V2 gold bearing arsenopyrite micro-veinlets.

The veinlets, stockwork, clots and disseminated mineralization, along with the contact replacement textures, (settings 1, 3 and 4 above) are commonly observed within the intrusive and sediment domains and collectively comprise a corridor of structurally-controlled, northerly-trending, and west-dipping marine sediments and intrusive sill / dyke stratigraphy that is host to widespread lower grade mineralization.

Based on the review of the QA/QC, data validation, and statistical analysis, the QP is of the opinion that the QA/QC protocols and verification of the results, meet or exceed industry norms and believe the data verification is adequate for this type of deposit.

Reputable, independent ISO-accredited laboratories were utilized in all analytical results and no Company management nor officers were involved in sample preparation. The rate of insertion of QA/QC samples has met industry standards. Although some contamination of blank samples is evident, the degree of contamination is not deemed to be material. Precision of historic drilling was poor in respect of gold, however, 2023 drilling recognized improvements in precision that are likely related to the broad scope of historic drilling compared to the focused scope of the 2023 drilling. Varying styles of mineralization within disparate lithologic units and the presence of coarse gold are likely contributing to some of the poor precision observed, particularly in historic drilling.

Extensive external check assaying has been undertaken on the project using drill hole reject and pulp materials. Although the precision of external checks was generally poor near the lower detection limits, overall external checks compared favourably with original assays, particularly at potentially mineable grades. The use and frequency of standards to verify the accuracy of the drill geochemical database meets industry standards, however a significant number of standards failed QA/QC control limits. Many of these comprised historic, in-house standards that may not have been sufficiently homogenized or characterized. Notably, little corrective action was taken with the historic standards. However, external check assaying was carried from 2010 to 2017 when most drilling was completed. External check assays compared favourably between original and check assay laboratories. The precision of external check assays versus original assays was generally better than the precision of within-lab precision. If there were significant accuracy issues related to failed standards, this should have been reflected in poor precision between decreased reproducibility or poorer precision between external check assays and original assays. Therefore, the database is deemed to be sufficiently accurate for use in resource calculations.

Based on the above conclusions and effective November 27, 2023, the Ana Paula updated Mineral Resource Estimate (MRE) was developed in conformance with the CIM Mineral Resource definitions referred to in the NI 43-101 Standards of Disclosure for Mineral Projects. This mineral resource estimate is a new estimate and not dependent on previous estimates.

The estimate was completed based on the concept of a high-grade underground gold mine. As such, model specifications were changed from previous estimates.

The Ana Paula Resource model database was closed and locked on September 30, 2023. The database included 317 drillholes totaling 121,108 metres. The resource model area included 249 drillholes totaling 97,708 metres. The drill data was validated visually and using leapfrog validation tools. Six drill collars, surveyed in 2018, were noted as high and were resurveyed correcting the issue.

The Ana Paula geologic model was updated to include 2023 geologic logging. The geologic model includes six principal domains. 1) Overburden; 2) Main Breccia; 3) Monolithic Breccia; 4) Porphyry (intrusive rock types); 5) Hornfels (+sulfide-bearing, metamorphic skarn); 6) Sedimentary (rock types). Once domains were updated, these were validated by comparing the domain to the original logging based on both number of meters and entries. Results were found to be satisfactory.

A Leapfrog-Geo strain ellipsoid model comprising localized structural domains was generated to reflect the primary north south regional fabric and local east-west fabric.

An indicator model gold grade shell was created to restrict the resource block model, and a gold grade shell sensitivity analysis was performed at 0.2 and 0.3 g/t gold grades using 2.0 and 3.0m composites. A final grade shell model using 2.0m composites, 0.2g/t gold cutoff at 50% probability was selected to delimit the resource model.

Exploratory data analysis was conducted to select and validate composite lengths and validate domaining. Analysis supports the selected domaining using two-metre composites.

A Parrish capping analysis was performed to determine the effects of capping methodology. It was determined the most favorable approach was to apply capped gold assays after compositing. Capping grades were selected by domain. The Main Breccia (polymictic breccia) cap was set at 64g/t gold and is most important as the key host of mineralization. The effect of capping on measured and indicated resources was measured. At a 2.5g/t gold cutoff grade, capping removes 3.82% of gold ounces.

Bulk density of the models was calculated based on 7,177 samples collected. The upper limit of density was capped at 4 g/cm3. The final interpolated bulk density was performed using inverse distance squared (ID2) method per domain to honor local variations and use for the final estimation report. As such, bulk density was built into the resource model and reported as such as opposed to by domain.

Three-dimensional gold grade variograms were computed by estimation domain. Traditional variograms were modeled with a nugget and two spherical structures for each estimation domain. Estimated nugget values were derived from the downhole variogram, using a 2-metre lag spacing that corresponds to the length of the composites. The variograms showed reasonable structure and provided reasonable generated models.

The updated, Nov. 2023 gold resource model was generated using Seequent's Leapfrog-Geo and Leapfrog-Edge software platforms, v2023.1.1. The resource model was constrained within a 0.2 g/t gold grade shell, using an indicator radial basis function (RBF) numerical model at a 50% probability. It consists of 5x5x5 metre blocks with a minimum sub-block size of 1x1x1 metre. Final grade estimation was based on ordinary kriging using 2.0-metre composites. Nearest neighbor (NN) and inverse distance squared (ID2) were applied as model interpolations for validation. This was undertaken as a three-pass approach using increasing search parameters with each pass. The model is classified as Measured, Indicated, or Inferred, using search pass parameters and modeled geologic parameters. The estimate was based on 249 core holes totaling 97,708.6 meters completed between 2005-2023.

Results of the Mineral Resource estimate at a 2.5 g/t gold cutoff grade include:

- Total measured and indicated mineral resources of 710,920 gold ounces grading 6.60 g/t gold
- Total inferred mineral resources of 447,512 gold ounces grading 4.24 g/t gold

Table 25-3: Ana Paula Project Mineral Resource Estimate (2.5 g/t cutoff grade)

Classification	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)
Measured	2.5	1.11	8.97	320,204
Indicated	2.5	2.24	5.42	390,716
Total Measured & Indicated	2.5	3.35	6.60	710,920
Inferred	2.5	3.28	4.24	447,512

Comparison of the previous, March 2023, resource estimate with the updated November 2023 estimate has yielded positive total percentage adjustments in average gold grade for each Measured, Indicated, Measured+Indicated, and Inferred categories. This was done at a 2.5 g/t gold cutoff based on comparisons reflecting the proposed Ana Paula underground cutoff. As the Ana Paula project focus shifts from a previous open pit design to an underground mining scenario, positive adjustments in average minable gold grade is a notably positive outcome.

Table 25-4: Comparison Between November 2023 and March 2023 Resource Estimates at 2.5g/t cutoff

Classification	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Cutoff Gold Grade (g/t)	Tonnes (Mt)	Average Gold Grade (g/t)	Contained Gold (Ounces)	Change in Grade	Change in Ounces
	March 2023 MRE				Updated November 2023 MRE					
Measured	2.5	2.51	5.68	457,943	2.5	1.11	8.97	320,204	58%	-30%
Indicated	2.5	3.00	4.18	402,576	2.5	2.24	5.42	390,716	30%	-3%
Total Measured & Indicated	2.5	5.51	4.86	860,519	2.5	3.35	6.60	710,920	36%	-17%
Inferred	2.5	0.05	3.72	5,564	2.5	3.28	4.24	447,512	14%	7,943%

25.4 METALLURGY

The following conclusions may be drawn from the 2023 Ana Paula metallurgical testwork program:

- Cyanide leaching of eight composites resulted in an average gold recovery of 73.8%, based on a 75 µm primary grind and carbon-in-leach (CIL) processing.
- Negligible to minor improvements in gold recovery were observed in most samples at the 10 µm grind size, compared to the average recovery observed across the 20-75 µm grind sizes.
- Select samples (AuBOT23-01 and AuBOT23-06) show an approximately 9% improvement in gold recovery when ground to 10µm.
- EGRG testwork on three samples representing the High-Grade Panel resulted in an average EGRG number of 62.9%.
    - EGRG recovery represents amenability to gold recovery by gravity, but may somewhat overstate recovery due to the high mass pull and fine grind size at the final stage. A lower proportion of the gold is expected to be recovered in practice, depending on gravity installation parameters such as grind size.
- The results from the cyanidation and gravity testwork indicate that the High-Grade Panel material has potential for processing using conventional recovery techniques.
- AuBOT23-03/AuEGRG23-02, which is located in the footwall of the High-Grade Panel, showed significantly lower gold recovery compared to the remaining samples.
    - Cyanidation gold recoveries ranged from 27.7% (75µm grind size) to 32.7% (10µm grind size).
    - EGRG content was 21.7%.
    - Diagnostic leaching of the AuBOT23-03 composite showed a significantly higher proportion of gold locked in sulphides. This sulphide locking (51.9%) accounts for the low cyanidation and gravity recovery observed.
    - Gold recovery from this composite is likely limited by refractory gold associated with sulphides.

26 RECOMMENDATIONS

It is recommended that the Ana Paula Project be advanced as an underground mine through Preliminary Economic Assessment (PEA) studies. Work completed to date including resource growth, increases in average grade, a modeled spatial coherence to high grade mineralization, and metallurgical recoveries using conventional flow sheets indicate the potential viability of Ana Paula as a high-grade underground gold mine. Furthermore, the previous PFS level work provides an additional baseline of information. Much of that work remains relevant and thus reduces the overall cost of such a study.

PEA results from an underground mining scenario should be compared to March 2023 PFS open pit mining outcomes. These should be measured and benchmarked using the following metrics:

- Capital efficiency- determining what combination of mining and milling options provides the best return on capital on an NPV and IRR basis
- Initial capital expenditures- improving return for existing shareholders by reducing CAPEX requirements and shareholder dilution
- Operational and technical risk- using conventional and established benchmark methods of mining and milling- selecting options that demonstrate lesser sensitivities to inputs or that limit downside risk
- Development timelines- minimizing the build time to bring cash flows as far forward to the degree possible
- Environmental impact and social acceptability

As engineering, metallurgical and process, geotechnical, water management, and environmental options for underground mining are developed and applied, these as well should be compared to the equivalent open pit options on an individual basis. Once the Ana Paula underground PEA is completed, these can be compared to the PFS level open pit evaluation completed as part of the 2023 prefeasibility study update. It is expected that a comparison of capital efficiency and operational risk will provide a clear guide.

Costs of a PEA level study for underground mine are estimated to be $1,130,000 USD and are summarized in table 26-1.

Table 26-1: Preliminary Economic Assessment Study Estimated Costs

Item	Cost ($000)	Description
Metallurgical Testwork	80	Metallurgical Core Sampling, Pilot Plant Testwork, Analysis and Interpretation.
Tailing Management and Waste Rock, Facilities and Water Supply	100	Geotechnical and Design Engineering for Tailings Management and Waste Rock Facilities. Hydrogeology and Geochemical Characterization.
PEA Mine Engineering & Management Services	298	PEA-Level Mine, Infrastructure and Designs.
PEA Process Engineering & Management Services	120	PEA-Level Process Designs.
Geological Studies	275	Assaying, Geomet model additions, Geology & Peer Review.
Geotechnical Studies	30	Additional Geotech studies.
Local Infrastructure Engineering	20	Access Roads, Power Line corridor.
Environmental studies	60	Compliance and permitting.
Subtotal Contingency (15%)	938 148	
Total	1,130	Excludes Owner's Costs

26.1 GEOLOGY AND RESOURCE

Several additional lines of geologic study are recommended to advance Ana Paula to an underground mining focused PEA level study. These are focusing on building out a geometallurgical model based on the resource model presented in this report. It is recommended that the geometallurgical model include several key factors that will likely be important under various milling and process flowsheet scenarios. These recommendations include:

- Assaying historic core for over limits of metallurgically relevant elements. In cases where the pulps or rejects are available, these can be used for assaying. In other cases, returning to core may be necessary. Relevant elements include, sulphur, copper, arsenic, and bismuth.
- Assaying current and historic holes for Sulphide Sulphur as a predictive factor in flotation.
- Assaying current and historic holes for metallurgically predictive factors such as cyanide-soluble gold.
- Improving the understanding of the gold deportment across the deposit though a variety of methods.
- Determining other geometallurgical factors as required from metallurgical studies to be undertaken.
- Continued density sampling.
- Augmenting the resource model to include the factors listed above.
- Continue to compile historic geologic mapping and incorporate it for future modeling and to improve metallurgical understanding.

The current gold resource model is sufficient to advance Ana Paula to an underground mining focused PEA level study. However, there are several programs that can be undertaken to reduce risk and improve the quality of the resource and geologic understanding. These recommendations are not included in the PEA level budget since they are not required programs. Optional work programs include:

- Infill drilling of the High Grade Panel. Drill spacing optimization will improve estimation. Furthermore, it has the potential to improve grade and grow the resource in the same way the 2023 drill program did. The scope of the program could range from 3,000m to 15,000m.
- Conduct expansion and near-mine drilling testing targets such as the parallel panel and deep extension target. Drill program size could range up to 10,000m meters for optimal drill spacing.
- Conduct district level drilling testing targets peripheral to Ana Paula.

26.2 METALLURGY

Based on the metallurgical testwork conducted to date, the following additional testwork is recommended to advance the project to a PEA:

- Additional grindability testing on domain and variability composites from the Ana Paula resource.
- Additional cyanidation variability testing on samples collected from across the Ana Paula resource.
- Flotation testwork with the purpose of recovering gold to a sulphide concentrate. Potential flowsheet options to be evaluated include the regrind and cyanide leaching of flotation concentrates, and cyanide leaching of flotation tails (without regrind).
- Cyanidation optimization testwork on the reground sulphide concentrate. Parameters that should be studied include:
    - Regrind particle size

- Sodium Cyanide dosage
- Benefits of lead nitrate and oxygen addition.
- Retention time

Estimated *metallurgical testwork* costs for a PEA level study specific to the Project total $80,000 USD excluding any drilling costs that may be required.

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APPENDIX A – QUALIFIED PERSONS' CERTIFICATES

CERTIFICATE OF QUALIFIED PERSON

Lewis Teal

I, Lewis Teal, CPG., do hereby certify that:

1. I am Owner-Operator and a Principal Geologist with Teal CPG, Inc., with a business location address:

6324 Bobcat Hill PL, NE, Albuquerque, New Mexico, USA 87111

2. I am a graduate of the University of Texas at El Paso, El Paso Texas, USA (M.S.- Geology) 1979
3. I am currently a member in good standing with the American Institute of Professional Geologists with the Title of Certified Professional Geologist (CPG), certificate # 06932
4. I have been engaged in the mining industry continuously since 1979. My relevant experience includes +44 years in the mining industry that includes regional greenfield exploration, near-mine exploration and development in the U.S., South America, the Caribbean Region, with additional assignments in Mexico, Turkey, Indonesia, Southern China, Sweden, and Saudi Arabia. During my career I have been involved in multiple discoveries of gold and copper deposits including the *Black Hills, South Dakota* and *Carlin Trend, Nevada, USA*; and in *Peru* and *Suriname*. Upon retiring after 28 years from Newmont Mining Corporation in 2015, and since 2016, I have been engaged as a private consultant based out of Albuquerque, N.M. I have continued to consult for multiple companies in exploration evaluations and early to advanced stage development projects internationally, including: Nevada, USA, Arizona, USA, Alaska, USA, Chile, Mexico, Sweden, Finland, and Saudi Arabia.
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. I was a contributing author and Qualified Person of the technical report titled "Ana Paula Project, NI 43-101 Technical Report, Mineral Resource Estimate Update, Guerrero, Mexico", (the "Technical Report"), dated effective November 27, 2023, prepared for Heliostar Metals Limited and I am responsible for Sections 1.1, 1.2, 1.3, 1.4, 1.6, 1.7, 1.8, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.1, 12.2, 14, 23, 24, 25.1, 25.2, 25.3, 26.1 and 27.
7. I have not had any prior involvement with the property that is the subject of the Technical Report.
8. I visited the Ana Paula Site from January 10 and 11, 2024.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the NI 43-101 technical report for which I am responsible contain all scientific and technical information required for disclosure to produce a factual, transparent and non-misleading document.
10. I am independent of the issuer applying all the tests in Section 1.5 of National Instrument 43-101.
11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Signed and dated this day of: January 11, 2024

"signed"

Lewis Teal, C P G

CERTIFICATE OF QUALIFIED PERSON

Rita M. Teal

I, Rita M. Teal, CPG., do hereby certify that:

1. I am a Principal Geologist with Teal CPG, Inc., with a business location address:
6324Bobcat Hill PL, NE, Albuquerque, New Mexico, USA 87111

2. I am a graduate of: Universidad Nacional Mayor de San Marcos, Lima, Peru, **B.S.- Geological Engineering**,1995; Universidad Nacional Mayor de San Marcos, Lima, Perú, Graduate Degree: Geological Engineer Title, 2002; University of Arizona, Tucson Arizona, USA, M.S. Economic Geology, 2006; Edith Cowan University, Perth, Australia, Masters Certificate Geostatistics (*Honors*); New Mexico Institute of Technology and Mining, Socorro, New Mexico, USA, PhD Candidate, Geostatistics (Multivariate Simulation within Non-Stationary Domains) 2021- present

3. I am currently a member in good standing with the American Institute of Professional Geologists with the Title of: Certified Professional Geologist (CPG), certificate # 12006

4. More than 25 years of professional experience in mineral exploration, development resource modeling. 2017- present Exploration to Development stage project database reviews; Geochemical data analysis in ioGas; generation of 3D geological models using Leapfrog Geo; Geostatistics and Block Model estimation (*Leapfrog Edge, Isatis, RMSP, Python, Vulcan,*). Multiple projects work experience including North America, Mexico, and Saudi Arabia regions. 2010 to 2015: Advance 3D modeling, resource estimation and data analysis experience in high and low sulphidation gold deposits, porphyry Cu-Au, skarn and orogenic deposits in South America including Perú, Chile, Colombia, Argentina, Ecuador, Brazil, Guyana Shield: (Suriname, Guyana, French Guyana), Caribbean (Haiti and Dominican Republic). Modeling and data analysis include Africa (Ethiopia) opportunities. 2010 to 2015: Early exploration opportunity development and business case analysis mineral. Including third party property site evaluations in SA countries (Peru, Ecuador, Chile, Colombia, and Argentina); 2007 to 2009: Managing/ executing exploration and development of regional generative gold projects in Perú and Bolivia.

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. I was a contributing author and Qualified Person of the technical report titled "Ana Paula Project, NI 43-101 Technical Report, Mineral Resource Estimate Update, Guerrero, Mexico", (the "Technical Report"), dated effective November 27, 2023, prepared for Heliostar Metals Limited and I am responsible for Section 14.

7. I have not had any prior involvement with the property that is the subject of the NI 43-101 technical report.

8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the 43-101 technical report, for which I am responsible for Section 14, contain all scientific and technical information required for disclosure in order to produce a factual, transparent and non-misleading document.

9. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Signed and dated – January 11, 2024

"signed"

Rita M. Teal, C P G

CERTIFICATE OF QUALIFIED PERSON

Andrew Kelly

I, Andrew Kelly, P.Eng., do hereby certify that:

1. I am employed as President and Senior Metallurgist with:

   Blue Coast Research Ltd.
   2-1020 Herring Gull Way
   Parksville, BC V9P 1R2

2. I am a graduate of the University of New Brunswick and obtained a Bachelor of Science in Engineering (Chemical) degree in 2003.
3. I am a licensed Professional Engineer with the Association of Professional Engineers and Geoscientists of British Columbia (License No. 39900) and with the Association of Professional Engineers of Ontario (License No.100073664).
4. I have worked as a metallurgist for a total of 20 years. My experience includes both plant operations and laboratory settings and covers base and precious metals.
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. I am a contributing author for the preparation of the technical report titled "Ana Paula Project, NI 43-101 Technical Report, Mineral Resource Update, Guerrero, Mexico", (the "Technical Report"), dated effective November 27, 2023, prepared for Heliostar Metals Limited; and am responsible for Sections 1.5, 12.3, 13, 25.4, and 26.2.
7. I have not visited the property.
8. I have prior involvement with the property that is the subject of the Technical Report. I was involved in the preparation of the 2023 Prefeasibility Study titled entitled "Ana Paula Project NI 43-101 Technical Report Preliminary Feasibility Study Update" with an effective date of February 28, 2023 prepared for Heliostar Metals Limited. Earlier, I was involved in the preparation of the 2017 Prefeasibility Study titled "Ana Paula Project, NI 43-101 Technical Report, Amended Preliminary Feasibility Study", dated effective May 16, 2017, prepared for Alio Gold Inc.
9. As of the effective date (November 27, 2023) of the Technical Report, 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.
10. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Signed and dated this 11th day of January 2024.

(Signed and Sealed)
Andrew Kelly, P.Eng.