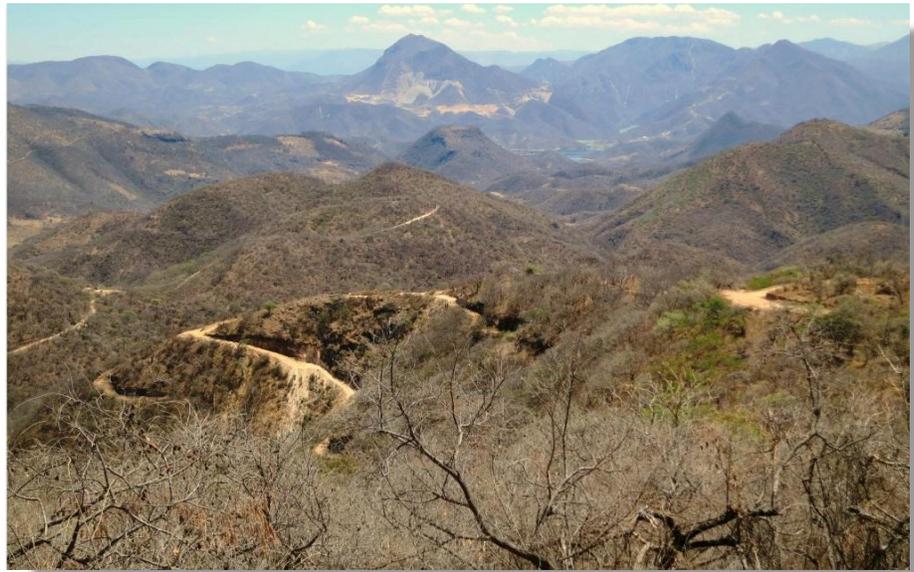


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# Ana Paula Project



## NI 43-101 Technical Report Preliminary Economic Assessment of the Ana Paula Project, Guerrero, Mexico

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**DATE AND SIGNATURES PAGE**

The effective date of this report is November 06, 2025. The issue date of this report is December 15, 2025. See Appendix A, of the NI 43-101 Technical Report titled Preliminary Economic Assessment Contributors and Professional Qualifications, for certificates of qualified persons. These certificates are considered the date and signature of this report in accordance with NI 43-101.

ANA PAULA PROJECT  
 NI 43-101 TECHNICAL REPORT

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APPENDIX	DESCRIPTION
A	PEA Contributors and Professional Qualifications <ul style="list-style-type: none"><li>• Certificate of Qualified Person (“QP”)</li></ul>

## **1 SUMMARY**

This Technical Report presents a Preliminary Economic Assessment (PEA) for the Heliostar Metals Limited (“Heliostar” or “the Company”) wholly owned Ana Paula Gold Project (“Ana Paula” or “the Project”) which is a gold resource development project located in the Guerrero Gold Belt (GGB) 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. 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.

This PEA was developed by M3 Engineering & Technology Corp. (M3), Blue Coast Research Ltd. (BCR), Fort Lowell Consulting PLLC, JDS Energy & Mining (JDS), Hard Rock Consulting (HRC), and Knight Piesold and Co (KP).

The responsibilities of the engineering consultants are as follows:

- M3 was commissioned by Heliostar to manage and coordinate the work related to the PEA and the technical report.
- JDS was commissioned to provide the mining methods for the underground mine.
- Fort Lowell reviewed and used BCR’s description of the mineral processing metallurgical test program and flowsheet development.
- KP provided design for the tailing storage facility.
- HRC provided validation of technical information including but not limited to the drill hole and surface sample database, updates to the geologic model, and updated the Mineral Resource estimate for the Project.

### **1.1 PROPERTY DESCRIPTION**

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 Project centroid is located at UTM Q14N, WGS84, 409,027.8E and 1,997,632.6N or 99° 51’ 34.4 west longitude and 18° 3’ 55.2” north latitude near the municipality of Cuétzala del Progreso and Apaxtla del Castregón. 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 4° to 42° Celsius (°C). Precipitation averages 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.

## **1.2 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-terrane; 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-terrane that comprise the GGB was deformed during the compressive Laramide orogeny and subsequently intruded by a  $\pm 62-66$  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 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.

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

- The Sediment domain is 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. These sedimentary rocks generally strike north-northwesterly, dip steeply to the west, and appear to be part of the Acapetlahuaya formation of the Teloloapan sub-terrane.
- 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, and host the majority of the low grade gold mineralization within the Ana Paula deposit. These occur as stocks, sills and dykes. 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, identified in thin sections, and chalcopyrite are interpreted to be late phase minerals.
- The Skarn-Hornfels domain is found in the upper zones of the deposit along some of the contacts between the Intrusive Domains and host sediments. The Skarn-Hornfels Domain 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 sulfide lenses develop at the contacts between the Skarn-Hornfels and the Intrusive Domains.
- 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. Rock fragments are variably cemented within a matrix of black rock flour, silica and sulfide minerals (mostly arsenopyrite and pyrite/pyrrhotite). 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 200 m in an east-west direction.
- The Monomictic Breccia domain is essentially a brecciated intrusion composed of mostly monolithic fragments in a silica rich matrix with mixed sulfide-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 sulfide (arsenopyrite and/or pyrrhotite later replaced by pyrite) filling the matrix.
2. Exoskarn style sediment replacement and pyrite overprinting along intrusive contacts.
3. Arsenopyrite micro-veinlets that fracture all rock types, but best developed in the feldspar porphyries
4. Disseminated sulfides in the feldspar porphyries, likely related to emplacement of V2 arsenopyrite micro-veinlets.

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.

Low grade gold mineralization at Ana Paula extends 1,150 m roughly north south along strike. The width of mineralization is highly variable, between 100 m and 300 m wide with an average width of approximately 200 m. Mineralization extends down dip approximately 950 m to the west. The high-grade mineralization amenable to underground mining methods strikes 300 m east west, is approximately 150 m wide and extends down dip to the south 600 m. Gold mineralization is still open down dip.

### **1.3 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 170,000 meters 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 and 2024. Table 1-1 shows the drill hole summary by year and company.

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 meters 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.

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

<b>Year</b>	<b>Company</b>	<b>Type</b>	<b>Count</b>	<b>Total Depth (m)</b>
2005	Goldcorp.	Core	21	5,075.3
2006	Goldcorp.	Core	6	2,489.2
2007	Goldcorp.	Core	21	4,513.1
2010	Newstrike	Core	12	5,227.1
2011	Newstrike	Core	57	29,698.1
2012	Newstrike	Core	75	42,352.3
2013	Newstrike	Core	87	38,694.3
2014	Newstrike	Core	15	7,316.4
2015	Alio	Core	10	2,008.3
2016	Alio	Core	31	7,304.3
2017	Alio	Core	32	6,272.3
2017	Alio	RC	26	7,205.9
2018	Alio	Core	8	4,337.0
2023	Heliostar / Minera Aurea	Core	22	4,202.8
2024	Heliostar / Minera Aurea	Core	15	3,355.6
<b>Totals</b>			<b>438</b>	<b>170,051.9</b>

Nine of the 15 drill holes totaling 3,210.1 m completed in 2024 were drilled on north-south sections to optimally test the High Grade Panel using PQ diameter core rods. Six additional vertical bore holes totaling 145.5 m from 15.5 to 29.5 m deep were drilled for use as potential water wells.

#### **1.4 MINERAL PROCESSING AND METALLURGICAL TESTING**

A metallurgical study consisting of flotation, cyanidation and gravity testwork was conducted at Blue Coast Research during 2024 and 2025. Additional biological oxidation testwork was conducted under the direction of Metso in South Africa. Two zone composites were evaluated during this test program. The zones were defined by the ratio of cyanide soluble gold to the total gold determined by fire assay. APLOM-01 represented a “high-recovery” zone at Ana Paula and APLOM-02 represented a “low-recovery” zone. The two composites were selected to represent and test the range of potential outcomes which may be encountered during processing.

Flotation testwork evaluated a bulk sulfide flotation flowsheet. A variety of conditions were explored including primary grind size, pulp density, copper sulfate and potassium amyl xanthate (PAX) dosage. The addition of a co-collector was also evaluated. Ana Paula material responded well to the flotation. Consistent with earlier phases of testing, the primary grind size had limited influence on gold recovery in the 75 µm to 160 µm size range, where a 200 µm grind size resulted in a minor decrease in gold recovery. Based on those results, a primary grind size of 80% passing 160 µm was chosen. Pulp density, up to 38% solids, did not impact the flotation performance. Testing of flotation reagents indicated that moderate amounts (25-50 g/t) of copper sulfate was required to activate sulfide minerals, and a moderate PAX dosage of 50 g/t was appropriate for gold and sulfide recovery. The addition of a monothiophosphate co-collector did not improve the metallurgical performance.

Average gold recovery to the rougher flotation concentrate was 95.2% in APLOM-01 and 96.2% in APLOM-02. Concentrate mass pull was related to the sulfur content in the feed with higher sulfur feeds generating higher mass pulls. Mass pull from APLOM-01 was 17% and APLOM-02 had an average mass pull of 25%.

Sequential gold-arsenopyrite-pyrite flotation was explored as part of a limited flotation program. This sequential flowsheet testwork highlighted some potential to produce separate arsenopyrite and pyrite concentrates, thus enabling some additional control in concentrate grades and mass pull. However, additional testwork is required to improve the arsenopyrite/pyrite separation and fully evaluate the potential economic benefits.

Gravity amenability testwork was conducted on each composite. A total of 2 kg 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 approximately 0.10% of the original feed mass. Gold recovery to the superpanner tip was 43.7% at a grade of 3,045 g/t gold for APLOM24-01. For APLOM24-02 the gold recovery was 16.3% to the superpanner tip, at a grade of 693 g/t gold. Actual gravity recovery obtained from the operating plant will be a function of the primary grind size, and the amount of the mill circulating load treated through the gravity concentrator. Based on the proposed flowsheet and material characteristics, gold recovery to gravity concentrate from Ana Paula is expected to be approximately 15%.

The whole rock cyanidation testwork conducted on each composite consisted of both kinetic and carbon-in-leach (CIL) tests. The APLOM24-01 sample was confirmed to have no preg-robbing effect, while APLOM24-02 showed significant improvement in recovery with CIL, as the presence of activated carbon counter-acted some of the influence of the preg-robbing organic carbon. Whole rock cyanidation of APLOM-01 and APLOM-02 yielded gold extractions of 78% and 39% respectively.

Further cyanidation testwork was conducted on flotation rougher concentrates produced during the flotation testwork program. Key findings of the concentrate cyanidation optimization work are:

- Concentrate leaching is insensitive to:
  - Ultra-fine regrinding down to approximately 5 µm
  - Pre-oxygenation, combined with ultra-fine regrinding
  - Pulp densities between 25% and 40% solids
- Gold extractions from concentrate averaged:
  - 77% from APLOM24-01
  - 39% from APLOM24-02

The balance of unrecoverable gold is very likely to be refractory and would require sulfide oxidation to improve overall gold extractions.

Biological oxidation (BIOX®) was evaluated with the aim of increasing gold recovery from the refractory component of the Ana Paula material. A series of biological oxidation tests were conducted on Ana Paula flotation concentrate, evaluating the extent of sulfur oxidation achieved over the leaching period, and the associated gold recovery of the oxidized product. Biological oxidation periods of 16 days to 39 days were tested, resulting in a sulfide oxidation increasing from 39.4% to 92.1% respectively. Cyanide leaching of these BIOX® test products resulted in gold recoveries ranging from 83.5% to 95.6%. A single larger BIOX® test was conducted with a 30-day residence time, and this resulted in sulfide oxidation of 95.2% and an ultimate gold recovery after cyanidation of 95.6%.

The testwork conducted to date supports a flowsheet consisting of gravity, rougher flotation, BIOX® and cyanidation to maximize the gold recovery from Ana Paula. Over the life of mine, the gold recovery from this process is expected to average 90%. The incorporation of BIOX® for sulfide oxidation represents a significant improvement in overall gold recovery compared cyanidation alone, especially from the more refractory areas represented by APLOM-02.

## **1.5 MINERAL RESOURCE**

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 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 and 2024 drilling recognized improvements in precision that are likely related to the broad scope of historic drilling compared to the focused scope of the 2023 and 2024 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 favorably 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 out from 2010 to 2017 when most drilling was completed. External check assays compared favorably 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.

Richard A. Schwering, RM SME, of Hard Rock Consulting, LLC, (HRC) is responsible for the mineral resource estimate (MRE) presented herein. Mr. Schwering is a Qualified Person (QP) as defined by NI 43-101 and is independent of Heliostar. Mr. Schwering estimated the mineral resource for the Ana Paula Project located in Gurrero, Mexico based on drill hole data constrained by geologic boundaries with an Ordinary Kriging (OK) algorithm. Gold is the metal of interest at the Project. All units are Metric, and all costs are reported in U.S. Dollars unless otherwise specified. All coordinates are presented using WGS1984 UTM Mexico Zone 14N. Elevation is in meters relative to mean sea level.

The mineralization strikes north to south and dips steeply, near vertical, to the west. Dimensions of mineralization for the Project are approximately 1,150 m along strike, and a vertical extent of 950 m. While thickness across the deposit is variable, the portion of the deposit amenable for underground mining methods has an approximate thickness of 150 m.

The Mineral Resource Estimate (MRE) was updated to incorporate 19 drill holes totaling 4,339.6 m drilling completed by Heliostar. Four drill holes were completed in 2023 totaling 984.0 m and 15 drill holes were completed in 2024 totaling 3,355.6 m. The mechanical audit of the database, geologic model, estimation domains, and mineral resource estimate were all completed using Leapfrog Geo® (Leapfrog) software version 2024.1.2 in conjunction with Leapfrog EDGE®, an extension of Leapfrog.

The MRE reported herein was prepared in a manner consistent with the Committee of Mineral Reserves International Reporting Standards, of which both the Canadian Institute of Mining (CIM), Metallurgy and Petroleum and Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, are members. The mineral resources are classified as Measured, Indicated and Inferred in accordance with “CIM Definition Standards for Mineral Resources and Mineral Reserves”, prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council

on May 10, 2014, and Best Practices Guidelines (November 29, 2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.

A target down-hole composite length of 2.0 m by domain was selected as the most appropriate considering sample lengths and mining methodology. Gold composite populations were reviewed by domain to identify high-grade outliers and cap those values to better estimate the true mean of the deposit. Gold variograms were modeled for each estimation domain using capped composite. Maximum ranges along the major axis are between 26 m and 63 m with an average of 41 m. Gold grades were estimated with an OK algorithm using three expanding estimation passes. The first pass is at the approximate average of the variogram range. The second pass is twice the size of the first pass, and the third pass is 1.75 times the size of the second pass. The search ellipse is oriented in the direction of the variogram. The OK gold estimate passed both statistical and visual validation methods.

Densities were estimated into the block model by estimation domain using a single pass inverse distance squared interpolant and 10,265 determinations. The size of the search ellipse was the same as the third pass of the gold estimate and the search ellipse was oriented along strike and down dip of the gross lithologic units. Following estimation, blocks coded as overburden were assigned a density of 2.57 g/cm<sup>3</sup>. Blocks without a density estimate were assigned densities from the lower quartile of the samples.

Blocks were initially classified as Measured, Indicated, and Inferred based on domain, distance from breccias, estimation pass, average distance (AVGD), number of drill holes (NDH), and slope of regression (SoR) from the gold estimate based on the following criteria.

- Blocks were initially classified as Measured if they were estimated in the 1st pass, had an AVGD within 25 m, with the NDH greater than equal to 3, and were inside the BXMAIN: HG domain.
- Blocks were initially classified as Indicated if they were estimated in the 1st or 2nd pass, were within 50 m of the BXMAIN: HG and BXMONO: HG, had an AVGD within 50 m, with the NDH greater than equal to 2, and a SoR greater than equal to 0.1.
- Blocks were initially classified as Inferred if they were estimated in the 1st, 2nd, or 3rd pass, and had an AVGD within 80 m.

Following initial classification, wireframes were created from the classified blocks. Those wireframes were then reviewed to remove small, isolated volumes, volumes supported by a single drill hole, as well as small voids internal to the wireframes to produce the final classification solids.

Mineral Resources are constrained within stopes optimized at a 2.10 g/t gold cut-off grade using Vulcan® software and meet the requirements for reasonable prospects for eventual economic extraction. The cut-off grade was calculated using the input parameters presented in Table 1-2 and assumes a mill throughput rate of 540,000 t/yr. Stopes were variably oriented along strike and down dip of mineralization. Longitudinal stopes, oriented along strike, are 20 m long by 25 m high and transverse stopes, across strike, are 10 m long by 25 m high. Both longitudinal and transverse stopes have a minimum width of 4 m and 5 m after equivalent linear overbreak/slough (ELOS) dilution. Sub-stoping is allowed in both longitudinal and transverse directions. In the transverse direction, the minimum sub-stope is one half the total stope height (back stope), and in the longitudinal direction the minimum sub-stope is one half the stope length. The Mineral Resource presented in Table 1-3 reports all blocks within the optimized stopes. The Mineral Resources are reported insitu, and have an effective date of 30 July, 2025. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. Inferred mineral resources are that part of a mineral resource for which the grade or quality are estimated on the basis of limited geological evidence and sampling. Inferred mineral resources do not have demonstrated economic viability and may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration. There are no other environmental, legal, title, taxation, socioeconomic,

marketing, political or other relevant factors known to the QP that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

**Table 1-2: Cut-off Grade Parameters**

Item	Unit	Value
Revenue, Smelting & Refining		
Gold price	US\$/oz Au	\$2,500
Payable metal	%	99%
Gold Offsite Costs	US\$/oz Au	\$2.50
TC/RC/Transport	US\$/oz Au	\$8.00
Royalty	% NSR	3.00%
OPEX Estimate		
Mining Cost	US\$/t milled	\$72.00
Processing Cost	US\$/t milled	\$43.00
G&A	US\$/t milled	\$8.84
Sustaining CAPEX	US\$/t milled	\$7.54
TOTAL OPEX ESTIMATE	US\$/t milled	\$131.38
Recovery and Dilution		
External Mining Dilution	%	5.0%
Mining Recovery	%	95%
Metallurgical Process Gold Recovery	%	90%
Cut-off Grade	g/t	2.10

**Table 1-3: Mineral Resource Statement**

Classification	kilotonnes (kt)	Gold Grade (g/t)	Contained Gold Ounces
Measured	1,300	7.60	317,000
Indicated	2,970	4.44	424,000
Measured & Indicated	4,270	5.40	742,000
Inferred	4,040	3.96	514,000

Notes:

1. Mineral Resources are reported *in situ*, using 2014 CIM definition standards.
2. Mineral Resources have an effective date of 30 July 2025. The Qualified Person for the estimate is Mr. Richard Schwering, RM SME, a Hard Rock Consulting employee.
3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are reported above a 2.10 g/t gold cut-off grade constrained within optimized stopes using the following input parameters: A gold price of US\$2,500/oz; a gold metallurgy recovery of 90%; an external mining dilution of 5%; a mining cost US\$72.00/t mined; a processing cost of US\$43.00/t processed, general and administrative costs of US\$8.84/t processed; a sustaining CAPEX of US\$7.54/t; a NSR royalty of 3.00%; and finishing and selling costs of US\$2.50/gold ounce processed.
5. Stopes were variably oriented along strike and down dip of mineralization. Longitudinal stopes, oriented along strike, are 20 m long by 25 m high and transverse stopes, across strike, are 10 m long by 25 m high. Both

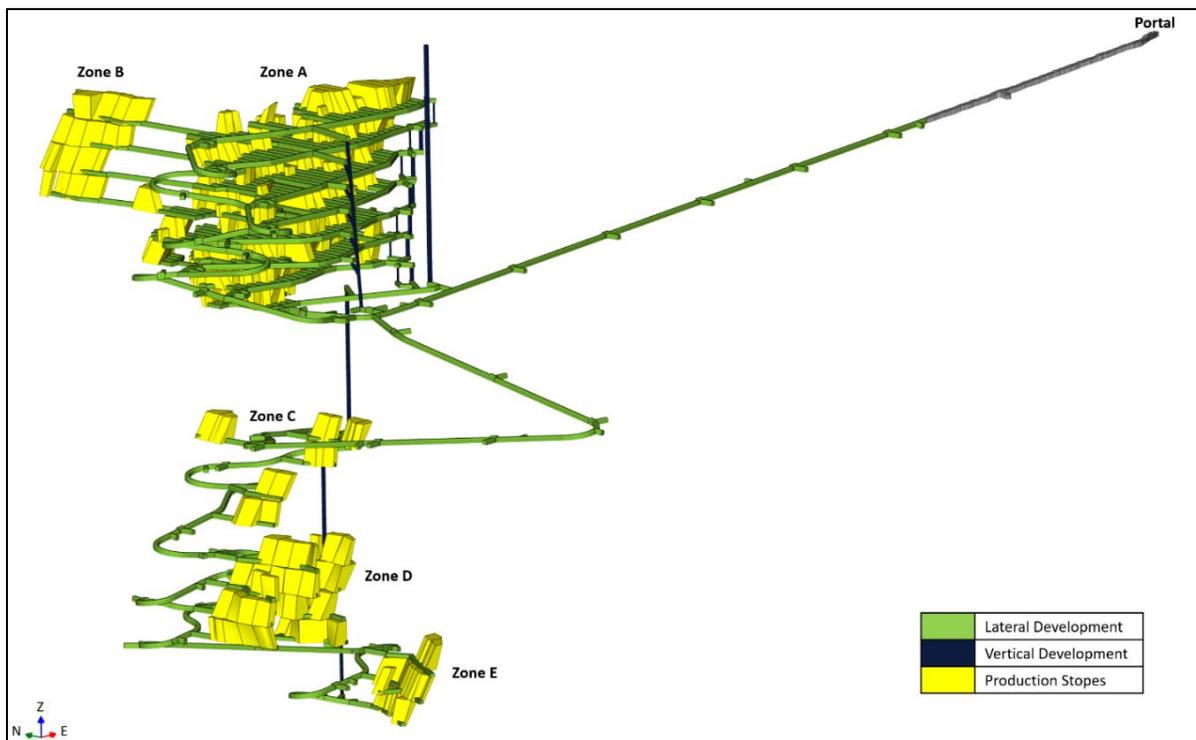
longitudinal and transverse stopes have a minimum width of 4 m and 5 m after ELOS dilution. Sub-stoping is allowed in both longitudinal and transverse directions. In the transverse direction, the minimum sub-stope is one half the total stope height (back stope), and in the longitudinal direction the minimum sub-stope is one half the stope length.

6. Numbers have been rounded.

## 1.6 MINING METHODS

The Ana Paula Project will be mined from underground using transverse and longitudinal longhole open stoping (LHOS) mining methods. Proposed production levels are spaced at 25 m and will be mined in a bottom-up sequence. Cemented paste backfill is utilized in the stopes to increase recovery of the mineralized material. The mineral resources and mining infrastructure considered in the Ana Paula mine plan support a total mining rate of up to 2,500 tpd, including up to 1,800 tpd of mill feed.

Maptek Vulcan™ Stope Optimizer software was used to create stope shapes for mine planning purposes. A cut-off grade of 2.5 g/t was applied during the stope generation process. Unplanned dilution of 0.5 m in the hanging wall and footwall contacts was included in the stope shapes for a total of 1.0 m of overbreak dilution. Additional mining dilution factors of 1 – 6% were applied depending on the stoping method. A mining recovery factor of 95% was applied to all stopes except crown pillar stopes which use a 90% recovery factor.



Source: JDS (2025)

**Figure 1-1: Underground Mine Isometric View**

## 1.7 MINE ROCK MANAGEMENT

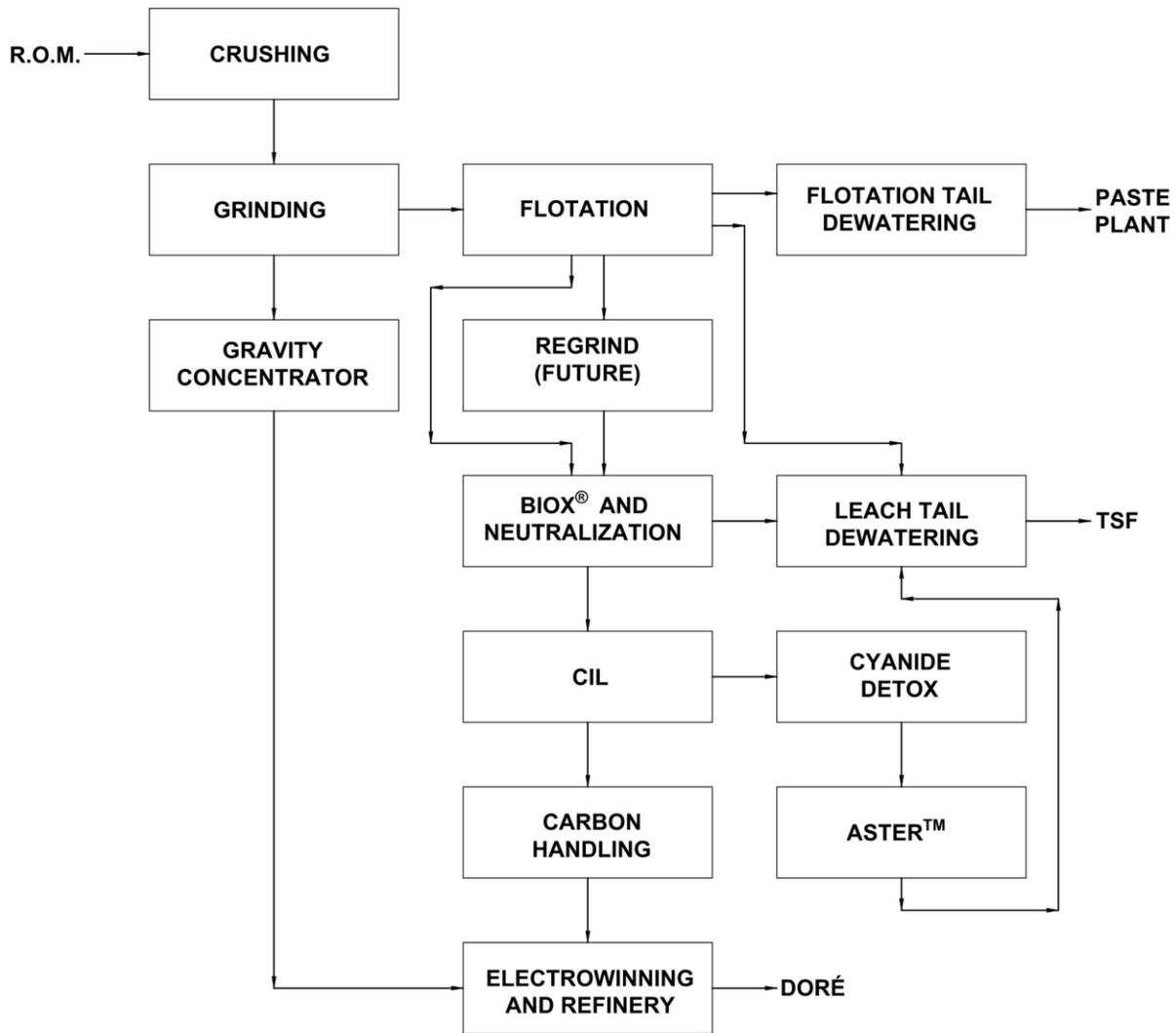
Rock management facilities (RMF) will be constructed during operations in various locations surrounding the underground mine. As required, material mined in year 1 and onwards will also be used for the tailing management

facility (TMF) embankment construction. The various RMF will be designed at later stages to be reclaimed concurrent with operations to reduce ultimate liability upon mine closure.

**1.8 RECOVERY METHODS**

The Ana Paula processing facility will recover gold by gravity concentration, flotation, biological oxidation (biooxidation) of the flotation concentrate using Metso’s patented BIOX® process and cyanidation of the oxidized concentrate by the carbon-in-leach process. The mill is designed at a nominal capacity of 1,800 t/d at 92% availability. Gold adsorbed on activated carbon are desorbed into solution and then recovered by electrowinning. The recovered metals are smelted into doré bars, which are the final product of the operations.

Figure 1-2 is a simplified schematic of the process for the Ana Paula process plant.



**Figure 1-2: General Process Flowsheet**

### **1.8.1 Comminution**

Run-of-Mine material will undergo two stages of crushing by a jaw crusher and a cone crusher, followed by grinding in an overflow-type ball mill. The ball mill will be in a closed circuit with hydrocyclones. The target grind size is 80 percent finer than 160 microns.

### **1.8.2 Gravity Concentration**

A split from the hydrocyclones underflow will be processed for gold recovery by two stages of gravity concentration using centrifugal concentrators. Concentrate from the centrifugal concentrators will undergo final upgrading on a shaking table, which will be operated in batches. The final gravity concentrate will be mixed with the electrowinning sludge for smelting.

### **1.8.3 Flotation**

Sulfides in the mineral material will be floated at the material's natural pH using potassium amyl-xanthate (PAX) as collector, copper sulfate as activator and F131A or equivalent as frother. AERO 3418A may be added as promoter if proven to economically improve gold recovery. The process will be conducted in a single stage, in a bank of five flotation cells.

Flotation tailing will be split into two streams: 47.7% to a thickener that will feed the paste plant and 52.3% to be mixed with the BIOX<sup>®</sup> residues to feed the filter press for filtered tailing production.

Concentrate from the rougher flotation circuit will be dewatered in a high-rate thickener to a pulp density of 55% solids. The thickened slurry is pumped to the BIOX<sup>®</sup> feed surge tank.

### **1.8.4 Biological Oxidation (BIOX<sup>®</sup>)**

The biooxidation section of the Ana Paula plant will consist of four primary reactors operating in parallel followed by four secondary reactors operating in series. Dilute concentrate slurry will be pumped into the feed splitter which will split the stream accurately into four streams. Nutrient solution will also be fed to the feed splitter. Slurry from the four primary reactors will combine to feed the first secondary reactor. The biooxidation reactions are highly exothermic and will require cooling coils to maintain 42°C (107.6°F). Oxygen requirements for sulfide oxidation will be supplied by air that will be injected below the agitator turbines. The slurry pH will be controlled between 1.1 and 1.7 by means of timer-controlled additions of limestone slurry.

Acid, iron, sulfur and arsenic solubilized during BIOX<sup>®</sup> will be washed from the BIOX<sup>®</sup> product in a series of three counter-current decantation (CCD) thickeners. The underflow from the third thickener will be pumped to the pH adjustment tank, where the pH will be adjusted to about 10.5 by milk-of-lime (MOL) addition. The slurry will then proceed to the carbon-in-leach circuit. The acidic solution overflow from the first CCD thickener will be neutralized first by limestone slurry addition followed by MOL addition to pH 7. This will be accomplished in a series of 6 agitated and aerated tanks.

Residue from neutralization process, together with the detoxified cyanidation leach tailing, will be pumped to the larger tailing thickeners, as described earlier.

### **1.8.5 Carbon-in-Leach Cyanidation, Carbon Elution and Electrowinning**

Neutralized slurry from the BIOX<sup>®</sup> circuit will be leached by cyanidation using the carbon-in-leach (CIL) process. This will be achieved in five CIL tanks with a total residence time of 24 hours. After leaching, loaded activated carbon will be sent to the carbon plant for stripping and electrowinning.

Loaded carbon will first be acid washed with a dilute solution of hydrochloric acid to remove scale from the carbon, rinsed, and then pumped to the carbon stripping vessel. Three tonnes of carbon will be stripped per batch, following the pressure Zadra procedure. Pregnant eluate from the strip vessel will undergo electrolysis to plate out gold from solution onto stainless steel cathodes. Finally, gold produced from electrowinning will be filtered, dried and smelted into doré bullions.

### **1.8.6 Cyanide Destruction and ASTER Process**

Residual free and weak-acid dissociable (WAD) cyanides in the leached tailing will be destroyed (detoxified) by oxidation using oxygen (from air) and sodium metabisulfite. This will be followed by Metso's ASTER process to destroy thiocyanate by bacterial action.

### **1.8.7 Mill Power Consumption**

The average annual power consumption in the process plant is 63.1 million kWh, excluding the first and last years of operation. The total estimated life-of-mine consumption is 495.5 million kWh, which translates to about 35.1 kWh/tonne of mineral material processed.

## **1.9 PROJECT INFRASTRUCTURE**

### **1.9.1 Roads**

The current mine access road is off of the main road between Cuétzala del Progreso and Nuevo Balsas. The access road is approximately 4.5 km from the main road to the plant site. The road from Nuevo Balsas to the mine site will need to be improved to provide access for the larger loads required to construct the project.

### **1.9.2 Process Plant Facilities**

The process plant is located east of the underground mine portal and north of the tailing storage facility. Process facilities include the ROM stockpile, primary crusher, crushed material stockpile, secondary crusher and conveyors, mine support buildings, mill area, gravity concentrator, reagents area, flotation, concentrate thickener, Biological oxidation (BIOX<sup>®</sup>) leach tanks, carbon-in-leach (CIL) tanks, carbon plant, refinery, cyanide treatment, tailing thickener, tailing filtering, paste plant, generator area, and electrical substation. Adequate warehouse and office space have been accounted for along with sewage treatment and potable water treatment facilities.

### **1.9.3 Camp and Ancillaries**

Support and ancillary buildings for the site include an equipment maintenance shop, administration office building, fuel storage/dispensing system, truck scale, warehouse, security gate and guard house. The warehouse, permanent laydown area, laboratory, and administration offices are in the southeast corner of the plant area (Figure 18-5). Some additional facilities may be brought in by the contract miner.

Mine support buildings including a warehouse, truck shop, and a mine shop are located in the western end of the plant area, just north of the primary crusher. The mine service area is located to be near the mine portal and is next to the ROM stockpile area.

The mine scenario evaluated in this technical report includes the construction of an on-site camp capable of housing up to approximately 336 people, located near the mine access road and the project property main gate. The site camp area is intended to be developed initially for the construction camp and evolve into the permanent operations camp.

#### **1.9.4 Power**

Line power is available within 2.5 km of the proposed plant site and is supplied via a 115 kV line running generally east-west adjacent to the site property. A 1.5 km power line will be constructed with appropriate tie-ins and switching to deliver power at 115 kV to a substation that will be constructed in close proximity to the plant site. The substation will drop the supply voltage to 13,200 and 4,160 V for general distribution around the site and for distribution to the large motor loads such as the crusher facilities. Design power load has been estimated at approximately 15 megawatts (MW).

#### **1.9.5 Water**

An average of 65.5 m<sup>3</sup>/h of raw water will be required, which includes 63.4 m<sup>3</sup>/h for the process and 2.1 m<sup>3</sup>/h for camp site potable water. Potable water and fire protection water will be derived from well water.

The total raw water requirement will be supplied from the well field.

A wastewater treatment plant will handle sewer discharge. A smaller specialized treatment system will be installed at the food preparation facilities to mitigate oils and food solids entering the wastewater treatment plant.

#### **1.9.6 Tailing Storage Facility**

The filtered tailing storage facility is designed at the PEA-level (conceptual design) to store approximately 5.4 million tonnes of filtered tailing. The facility is located approximately 500 meters south of the plant area and is impounded by a main dam to the east, a north saddle dam to the north, and a minor saddle dam southeast. The main dam elevation is 815 masl, which is approximately 30 meters in height. Filtered tailing will be stacked at an overall exterior slope of 5H:1V, average thickness of 40 meters, and a top elevation of 875 masl. The storage impoundment includes an internal wedge stability buttress that is lined by a soil liner; areas outside the internal buttress limits are lined with geomembrane and soil liner. Impoundment seepage is promoted via a gravel drainage layer, placed on top of the geomembrane extended to the main dam crest elevation of 815 masl, extended to an internal sump, from which seepage will be pumped over the main dam to the collection pond located downstream of the main dam.

#### **1.9.7 Waste Rock Facility**

Two potential waste rock facility (WRF) locations have been identified, and they will be evaluated and defined during the feasibility study.

#### **1.10 MARKET STUDIES**

At this time, no market studies have been completed, as the gold to be produced at Ana Paula can be readily sold in the open market. Gold refining and transport charges were assumed to be US\$2.50/oz gold equivalent and US\$8.00/oz respectively.

#### **1.11 ENVIRONMENTAL CONSIDERATIONS AND PERMITTING**

Mining in Mexico is subject to a well-developed system of environmental regulation that applies from the period of mine exploration to mine development, operation and ultimately through mine closure.

In April 2017, the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) approved the “Manifestación de Impacto Ambiental” (MIA), Environmental Impact Statement, submitted by Minera Aurea for the open pit mining project.

There are presently no known environmental issues that could materially impact Minera Aurea’s ability to extract the mineral resources and process material as an open pit mine.

The only known environmental liabilities are associated with the exploration site activities and access roads. Remediation of surface disturbances and removal of residues is required as part of the exploration environmental permits. Exploration activities are ongoing, and closure will be incorporated into the mine closure plan.

An environmental baseline study has been completed for the Ana Paula Project by MC Terra Emprendimientos Sustentables (Terra, 2016) for the open pit mining project. For the underground mine project, Heliostar has contracted Bioconsultores Soluciones Sustentables, S.C. to perform a risk analysis (ERA) and the environmental impact assessment (MIA). Bioconsultores Soluciones Sustentables is currently performing these activities to submit the environmental impact assessment for approval to Mexican authorities.

## 1.12 CAPITAL COSTS

The PEA capital cost estimate was completed by obtaining budgetary quotations for major equipment and referential costs from recent M3 projects of similar size and type. Installation costs were based on M3's experience building mines in Guerrero State. The estimate is considered a Class 5 estimate which implies a level of accuracy of -30% to +35%. The capital cost estimate summary is shown in Table 1-4. An allowance for working capital is incorporated into the financial model assuming a 15-day receipt delay of revenue and 30-day payment delay of payables. All working capital is recaptured by the end of the project and is not shown in the table below.

**Table 1-4: Capital Cost Estimate**

Area	Initial Capital Cost (US\$M)
<b>Mine Capital</b>	
Mine Development	\$26.5
Mine Pre-Strip	\$3.1
Infrastructure and Equipment	\$13.7
Contingency - Mine Capital	\$10.8
<b>Total Mine Capital</b>	<b>\$54.2</b>
<b>Process Plant Capital</b>	
Process Plant, General, Site Utilities	\$72.8
Filtered Tailing Storage Facilities	\$34.8
Ancillary Buildings and Permanent Camp	\$13.4
<b>Total Direct Process Plant Capital</b>	<b>\$120.9</b>
Freight (equipment & materials)	\$8.1
Contractor & Project Indirects	\$4.4
EPCM	\$16.7
Commissioning, Vendor Support, Spares, First Fills	\$3.9
Contingency - Process Plant Capital	\$46.0
BIOX <sup>®</sup> Capital	\$45.8
<b>Total Process Plant Capital</b>	<b>\$245.8</b>
<b>Total Project Capital</b>	<b>\$300.1</b>

\* Mine capital includes engineering office equipment, dewatering systems, RC rental and mine roads

\*\* Mine Contingency calculated at 25%

\*\*\* Contingency calculated as 30% of Directs + Indirects + EPCM

### 1.13 PROJECT OPERATING COSTS

The operating cost estimates are based on a combination of first-principles build-up, reference projects, budgetary quotes and escalation factors as appropriate for a preliminary study. These costs include direct mining and re-handle by a contractor, processing of the mineralized feed to the process plant, and includes doré produced on-site and transportation and refining charges and shown in Table 1-5.

**Table 1-5: Project Operating Costs Summary**

Cost Elements	LoM Cost US\$M	US\$/tonne Processed
Mine	\$365	\$64.85
Process Plant	\$197	\$34.94
General Administration	\$41	\$7.36
Treatment / Refining Charge	\$9	\$1.63
<b>Cash Operating Cost</b>	<b>\$612</b>	<b>\$108.78</b>
Royalties (Government & Private NSR)	\$185	\$32.89
Profit Sharing	\$2	\$0.39
<b>Total Production Costs</b>	<b>\$799</b>	<b>\$142.06</b>

‡Mining Cost is based on \$65.40/t material mined

### 1.14 ECONOMIC ANALYSIS

The economic analysis was performed assuming an 8% discount rate. The pre-tax NPV discounted at 8% is US\$524.2 million; the internal rate of return (IRR) is 38.0%, and payback period is 2.4 years. On a post-tax basis, the NPV discounted at 8% is US\$333.3 million; the IRR is 28.1%, and the payback period is 2.9 years. Table 1-6 shows the economic results for the project at discounts rates of 5%, 8% and 10%. The summary of project cash flow is shown in Table 1-7.

**Table 1-6: Economic Results Summary**

Discounted Cash Flow	Unit	LoM Value
Before Tax		
NPV @ 5%	\$M	\$643
NPV @ 8%	\$M	\$524
NPV @ 10%	\$M	\$457
IRR	%	38.0%
After Tax		
NPV @ 5%	\$M	\$426
NPV @ 8%	\$M	\$333
NPV @ 10%	\$M	\$281
IRR	%	28.1%
Payback	Years	2.9

**Table 1-7: Cash Flow Summary**

Area	US\$M	US\$/tonne Processed
LoM Revenue	\$2,078	-
Mining	\$365	\$64.85
Process Plant	\$197	\$34.94
General Administration	\$41	\$7.36
Treatment & Refining Charges	\$9	\$1.63
Cash Operating Cost	\$612	\$108.78
Royalties (Government & Private NSR)	\$185	\$32.89
Total Production Costs	\$797	\$141.67
EBITDA	\$1,282	-
Total Capital Expenditures	\$373	\$66.36
Reclamation & Closure	\$3	\$0.53
Profit Sharing	\$2	\$0.39
Net Income Before Tax	\$903	-
Taxes	\$272	\$48.33
After-Tax Free Cash Flow	\$631	-

### 1.15 CONCLUSIONS AND RECOMMENDATIONS

It is the conclusion of the Qualified Persons preparing this technical report that the information contained within adequately supports the positive economic results obtained for the Ana Paula Project. The Project contains 5.625 million tonnes of gold-bearing sulfide mineralization that can be mined by underground stoping method. Gold can be recovered by gravity concentration, flotation of a sulfide concentrate, biological oxidation of the concentrate, and cyanide leaching of the oxidized concentrate.

As demonstrated by the information contained in this technical report, the Project could be economically viable and should proceed to a feasibility level study.

The results of the preliminary economic analysis show economic viability for the Ana Paula Project. The after-tax economic indicators at US\$2,400/oz Au and 8% discount rate are as follows:

- NPV (5%)           US\$ 333 M
- IRR                 28.1%
- Payback           2.9 years

While the QPs have confidence in the level of study completed and the results of the PEA, it is with the understanding that the PEA is preliminary in nature and includes Inferred Mineral Resources, which are considered too speculative geologically to have the economic considerations applied to them to be categorized as Mineral Reserves, and there is no certainty that the preliminary economic assessment will be realized.

It is recommended that the Ana Paula Project be advanced as an underground mine through Feasibility Study (FS). 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.

Detailed discussion of these items is included in Sections 25 and 26 of this report.

## **2 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<sup>2</sup>. The Project was previously owned by Alio Gold, Inc. (Alio Gold), which published a Preliminary 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 26<sup>th</sup>, 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 28, 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 advance the Ana Paula project 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 industrially proven flow sheets indicated the potential viability of Ana Paula as a high-grade underground gold mine.

### **2.1 SOURCES OF INFORMATION**

A prior updated mineral resource estimate was filed on the SEDAR website dated January 11, 2024, for the Ana Paula Project titled “Ana Paula Project NI 43-101 Technical Report Mineral Resource Estimate Update” dated effective November 27, 2023. The resource was updated and then used as the basis for this PEA and the information was vetted by the Qualified Persons (QPs) discussed in Section 2.3. The QPs performed additional work required for providing an initial assessment of the project's viability.

The other 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, and was published prior to the mineral resource update. 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.

An earlier Technical Report on the Project, entitled “Preliminary Economic Assessment on the Ana Paula Project, Guerrero State, Mexico”, was authored by JDS Mining & Energy Inc. and was issued by Timmins Gold Corp. with an effective date of February 2, 2016. That Technical Report was filed on the System for Electronic Document Analysis and Retrieval (SEDAR, [www.sedar.com](http://www.sedar.com)), which is an electronic filing system developed for the Canadian Securities Administrators (CSA), and on its US equivalent, the System for Electronic Data Gathering, Analysis and Retrieval (EDGAR), developed for the US Securities and Exchange Commission.

### **2.2 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:*

- Design project infrastructure, including process and ancillary facilities, access and site roads.
- Estimate Project CAPEX and OPEX.
- Prepare financial model and perform project economical evaluation including sensitivity analysis.
- Coordinate technical report writing including information and data provided other consultants.

*Fort Lowell Consulting's scope of work included:*

- PEA-level design of the process plant, including sizing of equipment, and process design criteria with support from M3.
- With M3, develop the process plant operating cost.
- Develop a preliminary water balance for the process plant.
- Coordinate testing and sample routing between Blue Coast, Metso (BIOX<sup>®</sup>), Paterson & Cooke, T Engineering, and Knight Piésold.

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

- Evaluate the metallurgical properties and process flowsheet options for Ana Paula. Quantify gold recovery using the selected flow sheet.
- Specific metallurgical testing included:
  - CIL and kinetic bottle roll gold leaching at various grind sizes.
  - Gravity recoverable gold testing
  - Extended gravity recoverable gold testing
  - Flotation testwork to evaluate various primary grind sizes and reagent dosages
  - Produce concentrate for Metso BIOX<sup>®</sup> testing
  - Gold deportment and grain size analysis
- Comminution testing included:
  - JK drop-weight testing
  - SMC testing
  - Crusher work index testing

*Hard Rock Consulting's scope of work included:*

- Update the Geologic and Resource model to reflect additional drilling completed by Heliostar Metals in 2024. 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 for the 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 2024 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

*JDS Energy & Mining's scope of work included:*

- Mining Method Selection
- Review applicable underground mining methods
- Select preferred mining method based on geometry, geotechnical, dilution, recovery, and cost.
- Mine Design
- Generate mineable inventory using cut-off grade criteria and geotech constraints
- Lateral level development
- Main access (ramp and decline)
- Vertical development (ventilation, escapeways, rock passes)
- Ventilation design and modeling (airflow requirements, fan sizing)
- Mine Scheduling
- Development and stope sequencing
- Ramp up period
- Sustained mine development and production rate
- Mine Cost Estimate
- Capital Costs
- Mine development access
- Underground fixed infrastructure
- Surface infrastructure
- Mobile equipment
- Operating Costs
- Cost per tonne
- Lateral development costs
- Backfill costs
- Ventilation and pumping
- Contractor costs

*Knight Piésold's scope of work included:*

- Geochemical characterization of the tailing and waste rock to determine environmental requirements for storage facilities
- Design of the filtered tailing storage facility that included:
  - Civil layout and design
  - Geotechnical assessment
  - Surface water management infrastructure design
  - Site-wide water balance analysis
  - Material take-off quantities estimation

### **2.3 QUALIFIED PERSONS AND PERSONAL 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.

Table 2-1 shows the Qualified Persons (QP) for this Technical Report and their associated areas of responsibility.

**Table 2-1: Qualified Persons and Areas of Responsibility**

Name of Qualified Person	Registration	Company	Date of Site Visit	Area of Responsibility
Alberto Bennett	PE	M3	Oct 23, 2025	Sections 1, 1.1, 1.7, 1.9.1 to 1.9.4, 1.9.7, 1.10 to 1.15, 2, 3, 4, 5, 6, 12.1.1, 18 (except 18.2), 19, 20, 21, 22, 23, 24, and corresponding sections of 25, 26, and 27
Art Ibrado	PE	Fort Lowell Consulting	No site visit	Sections 1.8, 1.9.5, 12.1.2, 17, and corresponding sections of 25, 26, and 27
Paul Thornton	P. Eng	JDS Energy & Mining	Sept 25, 2025	Sections 1.6, 12.1.4, 16 (except 16.2), and corresponding sections of 25, 26, and 27
Mike Levy	P. Eng	JDS Energy & Mining	No site visit	Sections 12.1.7, 16.2 and corresponding sections of 25, 26, and 27
Richard Schwering	PG, SME-RM	Hard Rock Consulting	April 10, 2025	Sections 1.2, 1.3, 1.5, 7, 8, 9, 10, 11, 12, 14, and corresponding sections of 25, 26 and 27
Andrew Kelly	P. Eng	Blue Coast Research	No site visit	Sections 1.4, 12.1.3, 13, and corresponding sections of 25, 26 and 27
Gilberto Dominguez	PE	Knight Piésold	June 2016	Sections 1.9.6, 12.1.6, 18.2, and corresponding sections of 25, 26, and 27

Richard Schwering, SME-RM., visited the property on April 10, 2025, Mr. Schwering toured the field office and core logging/storage facility, talked with Heliostar personnel, was shown road cut exposures of the site geology, checked drill hole collar locations, and checked drill hole logs against core.

**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 ton (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**

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

**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).
AuEq	Equivalent gold. calculated as g/t gold + g/t silver/160, with the silver divisor calculated from the cost, price and recovery data listed
ALS Chemex	ALS Chemex, a division of ALS Global Ltd through Chemex De Mexico, S.A. de C.V., the primary analytical laboratory for the Ana Paula Project located in Guadalajara, Mexico.
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 the two contiguous mineral rights concessions known as the Tembo and Apaxtla 3 concessions, accruing 4,238 Ha in total. Referred to also as “Ana Paula” and the “Project”.
ANFO	Ammonium Nitrate and Fuel Oil
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., Alliant Gold Corp.’s wholly owned Mexican operating subsidiary
Aurea Norte Property	Means the contiguous group of claims totaling 46,278 hectares and including the claims named: Tembo Dos (T225486), Tembo Tres (T231106), El Coyote (T222224), Cosmos I (T244793), Cosmos II (T244794), La Morinita (T224383), Don Jesus (T231103), R. Estefania (T244792), Estafania Frac. I (T2331105), R. Coyopancho (T244795), R. Cuétzala (T244796).
Aurea Sur Property	Means the contiguous group of claims totaling 5,819 hectares and including the claims named: Ottawa (T221781), El Consorcio (T222399), R. Coyopancho (T244795), R. Cuétzala (T244796).
BIOX®	Biological Oxidation
Background	A measured or calculated geochemical, geophysical, petrological or other threshold considered representative of an area. The “Normal” or “not anomalous”.
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\$, US\$	Canadian dollars, United States of America dollars
Calc Hd	Calculated head grade
calc-silicate alteration	An alteration consisting mainly of calc-silicate minerals
Constancia de Vigencia	An official “statement of good standing” provided by the Mexican Government as a confirmation to holders of mineral concessions that the mineral rights and concessions are active and in good standing according to Mexican Mining Law as published in the Official Mexican public journal (“Diario Oficial”) dated October 12, 2012

**ANA PAULA PROJECT**  
**NI 43-101 TECHNICAL REPORT – PRELIMINARY ECONOMIC ASSESSMENT**

<b>Term</b>	<b>Description</b>
CRM, SGM	Consejo de Recursos Minerales (also Coremi). The former Mexican Geological Survey, now renamed the Servicio Geológico Mexicana or “SGM”
Consp	Consumption
DCF	Discounted Cash Flow
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 1/1000 <sup>th</sup> 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.
High Grade Breccia Zone	A discrete structurally controlled body of irregular dimensions including a structurally controlled core breccia that trends oblique to the stratigraphic fabric and that is surrounded by a mineralized alteration HALO of sediment, intrusions and other breccia, that is delineated in drill core and tends to host a higher-grade mineralization with a composite average grade of 5.38 grams per tonne gold and 6.49 grams per tonne silver
Higher grade gold/ higher grade mineralization	Averages greater than or equal to 2.0 grams per tonne gold (“High grade”), unless specifically specified
IMC	Independent Mining Consultants Inc. of Tucson, Arizona
JV	Joint venture
l/m	liters per minute
Ltd, Inc	Limited, Incorporated
Low Grade Breccia	A discrete structurally controlled 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 and 5.1 grams per tonne silver.
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 Core	Specifies the diameter of a cylinder of drill core, HQ has a 54mm diameter. NQ has a 45 mm diameter.
NAG	Non-Acid Generating
NI 43-101	National Instrument 43-101 Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators
Nonels	Non-Electric Blasting Cap

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<b>Term</b>	<b>Description</b>
North-South Corridor	A 1.5 by 0.7 kilometer North-South trending corridor of stratigraphic and structurally controlled mineralization that collectively make up a lower grade mineralization with a composite average grade of 1.0 grams per tonne gold and 3.9 grams per tonne silver. Corresponds to the sediment-intrusive domain described in Section 7.3.2.
NSR	Net Smelter Return
nT	Nano Tesla. The international unit for measuring magnetic flux density
PEA	Preliminary Economic Assessment
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
SGS	SGS SA, the secondary laboratory for the Ana Paula Project through SGS de México located in Durango, Mexico.
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.
SRK	Steffen, Roberts & Kirsten Consulting of Denver Colorado
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)
TSF	Tailing Storage Facility
UTM	Universal Transverse Mercator
WGS84	An ellipsoid model of the earth
WRF	Waste Rock Facilities

### **3 RELIANCE ON OTHER EXPERTS**

The QPs have followed standard professional procedures in preparing the content of this preliminary economic assessment 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 Preliminary Economic Assessment 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 on 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.

This report has been prepared by the Qualified Persons (QP) listed in Section 2 for Heliostar. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to the QPs at the time of preparation of this report;
- Assumptions, conditions, and qualifications as set forth in this report; and
- Data, reports, and other information supplied by Heliostar and other third-party sources.

Reports received from other experts who are not QPs of this technical report have been reviewed for factual errors by the QPs. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statements and opinions expressed in these documents are given in good faith and in the belief that such statements and opinions are not false or misleading at the date of this report.

#### **4 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 the Port of Acapulco. The Ana Paula Project centroid is defined by UTM Q14N, WGS84, 409,027.8E and 1,997,632.6N or by 99° 51' 34.4 west longitude and 18° 3' 55.2 north latitude, Figure 4-1 and Figure 4-2.

Figure 4-3 indicates the location of the Ana Paula Project relative to other mines, deposits and mineral tenure in the Guerrero Gold Belt (GGB). Figure 4-4 illustrates Heliostar's GGB surface tenure for the Ana Paula Project.

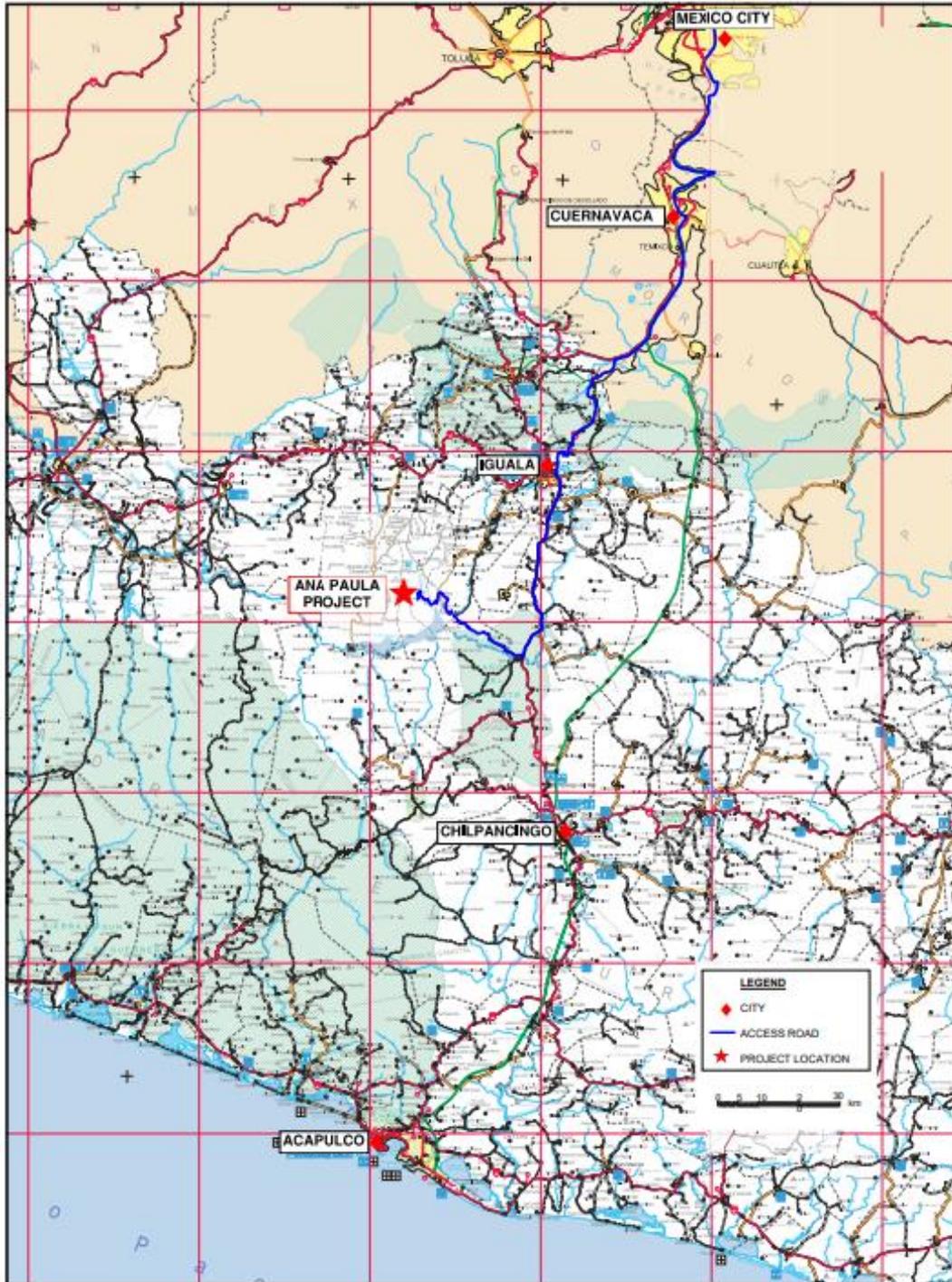


Figure 4-1: Property and Access Map

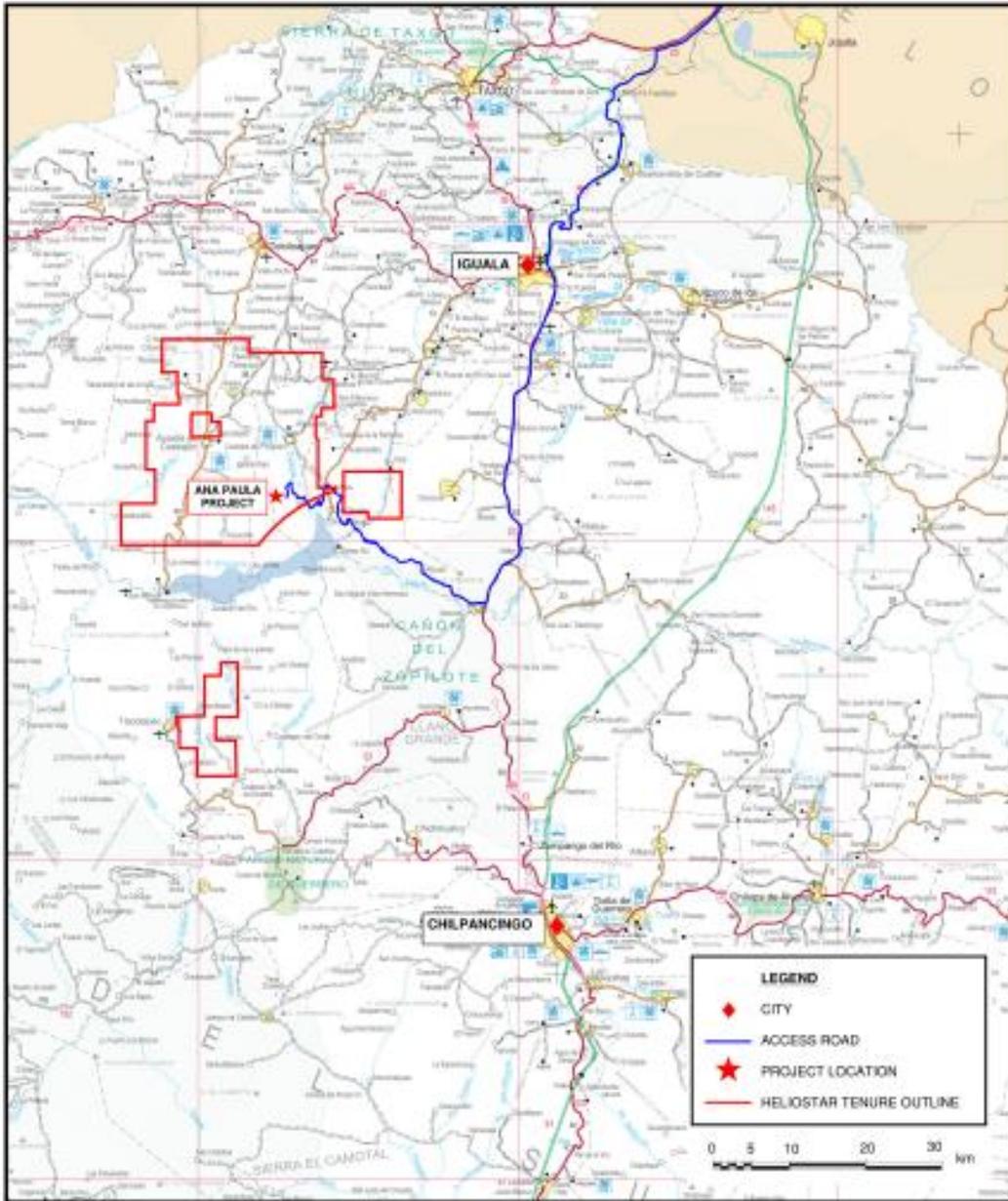


Figure 4-2: Access Roads

#### 4.1 MINERAL TENURE

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 Ottawa and El Consorcio (or 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 4-3.

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 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 30 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 25-year term can be granted if the applicant has abided by all appropriate regulations and makes the application within two 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 25 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.

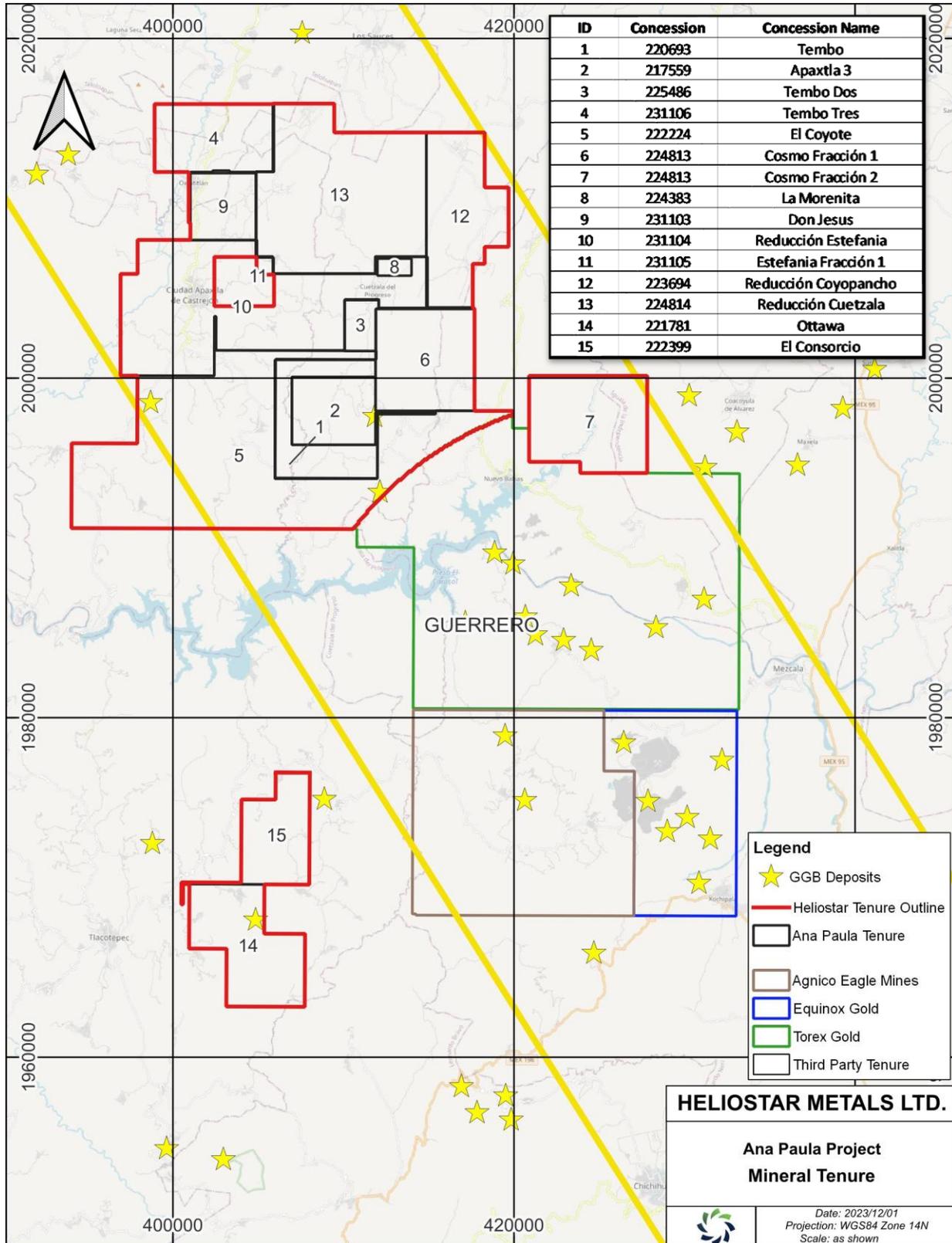


Figure 4-3: Mineral Tenure Map

#### 4.1.1 Nature and Extent of Issuer’s Interest

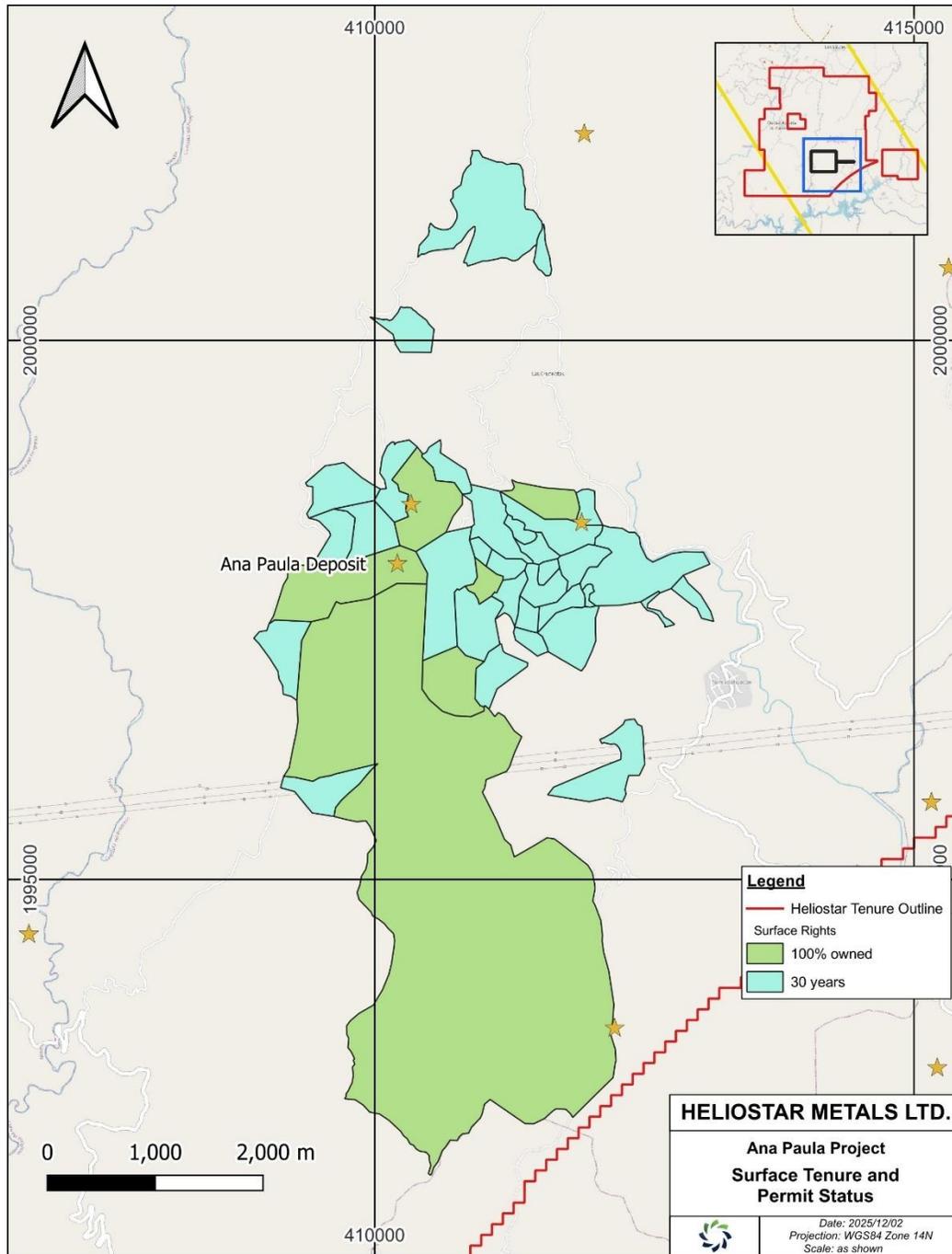
Minera Aurea S.A. de C.V. is 100% owner of the 15 mining concessions. Table 4-1 lists all mining concessions and includes their respective areas, title numbers, expiration dates and ownership details.

**Table 4-1: Minera Aurea Mining Concessions**

Claim	Hectares	Title	Expiration	Owner
<b>Ana Paula Project</b>				
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 Coyopanchó	3,833.8	244795	02/02/2055	Minera Aurea S.A. de C. V.
Reducción Cuéztala	8,282	244796	13/06/2055	Minera Aurea S.A. de C. V.
Sub-total	46,749.7			
<b>Eastern Claim</b>				
Cosmos Fracción 2	3,765.4	244794	13/01/2055	Minera Aurea S.A. de C. V.
<b>Aurea Sur</b>				
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			
<b>Total</b>	<b>56,334</b>			

#### 4.2 SURFACE TENURE

As of December 12, 2025, Minera Aurea S.A. de C.V. controls surface access to 1,934.11 hectares overlying the Ana Paula Project area. A total of 1,373.5 hectares are 100% owned by Minera Aurea, an additional 560.56 hectares are under contract in 30-year access lease agreements. Figure 4-4 is a map of the land positions that Heliostar holds.



**Figure 4-4: Surface Tenure Map**

### 4.3 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.

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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 (C\$13.626 million) 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

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.

Tax Reform changes in Mexico became effective January 1, 2025, and affect operating mining companies in Mexico. The changes include: the corporate income tax remaining at 30%; a new mining royalty fee of 8.5% on income before tax, depreciation and interest; an extraordinary governmental fee on precious metals, including gold and silver, of 1.0% 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 40-45% 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.

#### **4.4 ENVIRONMENTAL LIABILITIES AND PERMITTING**

##### **4.4.1 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.

##### **4.4.2 Required Permits and Status**

Minera Aurea has an approved MIA for the open pit mine option 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. A 5-year extension was granted by SEMARNAT and the Federal Attorney for Environmental Protection (Procuraduria Federal de Proteccion al Ambiente or PROFEPA) that extends the CUS until September 2029.

Heliostar is working on a new MIA and CUS for the UG mine option.

#### **4.5 OTHER SIGNIFICANT FACTORS AND RISKS**

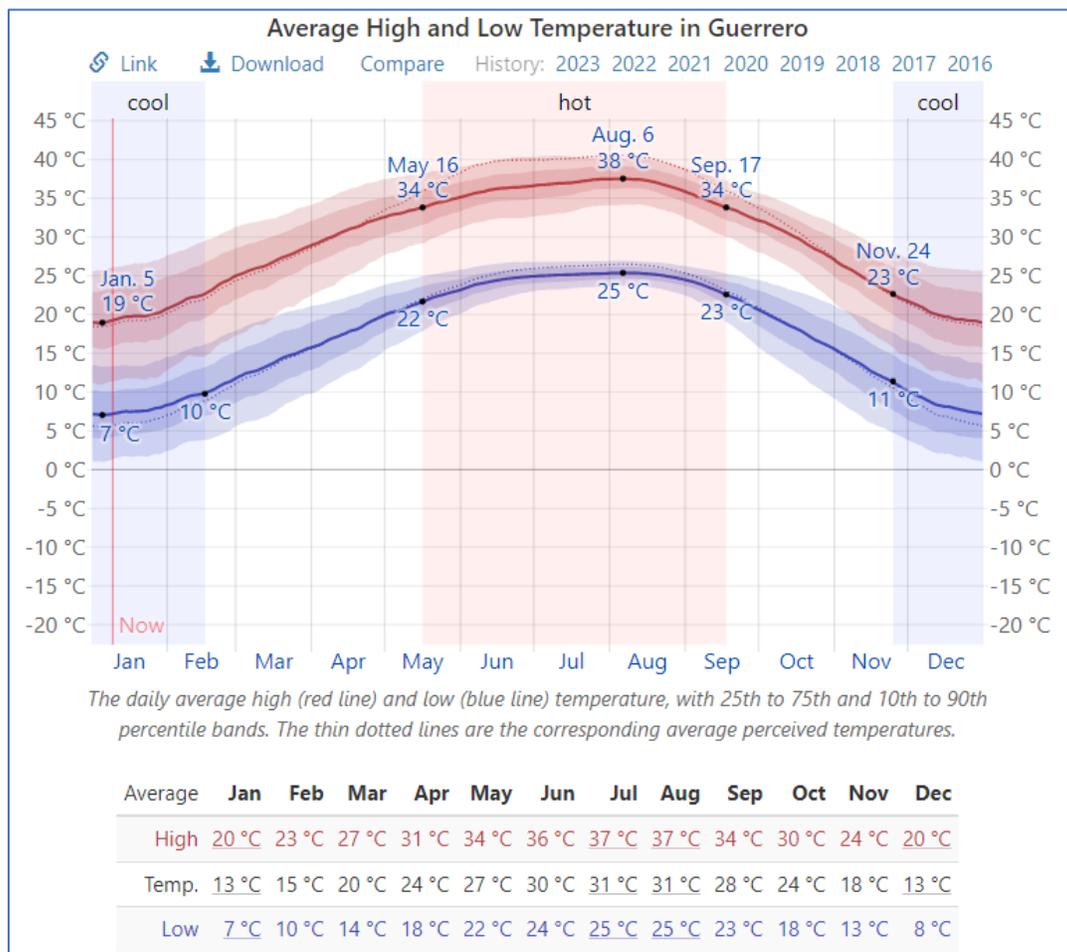
The Ana Paula Project is located in the Guerrero Gold Belt, which includes operating mines including Torex's Morelos Property and Equinox Gold's Los Filos Mine, both located within 40 km of the Project site. The Project site is easily and safely accessed. The Company has good relations with the local 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.



**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 years or longer, or the 84<sup>th</sup> 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 or from Nuevo Balsas via unpaved road. 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 workforce. 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 near 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 and 230 kV high tension lines transect the Ana Paula Project site. The 115 kV power lines are approximately 2.5 km south of the plant site.

The Company has installed a medium voltage 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 Cuéztala 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 37 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 Cuéztala 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 53-person man camp, a powder magazine and mine shop facilities at the site of a 412 m 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 1920s. 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 26<sup>th</sup>, 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 28<sup>th</sup>, 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.

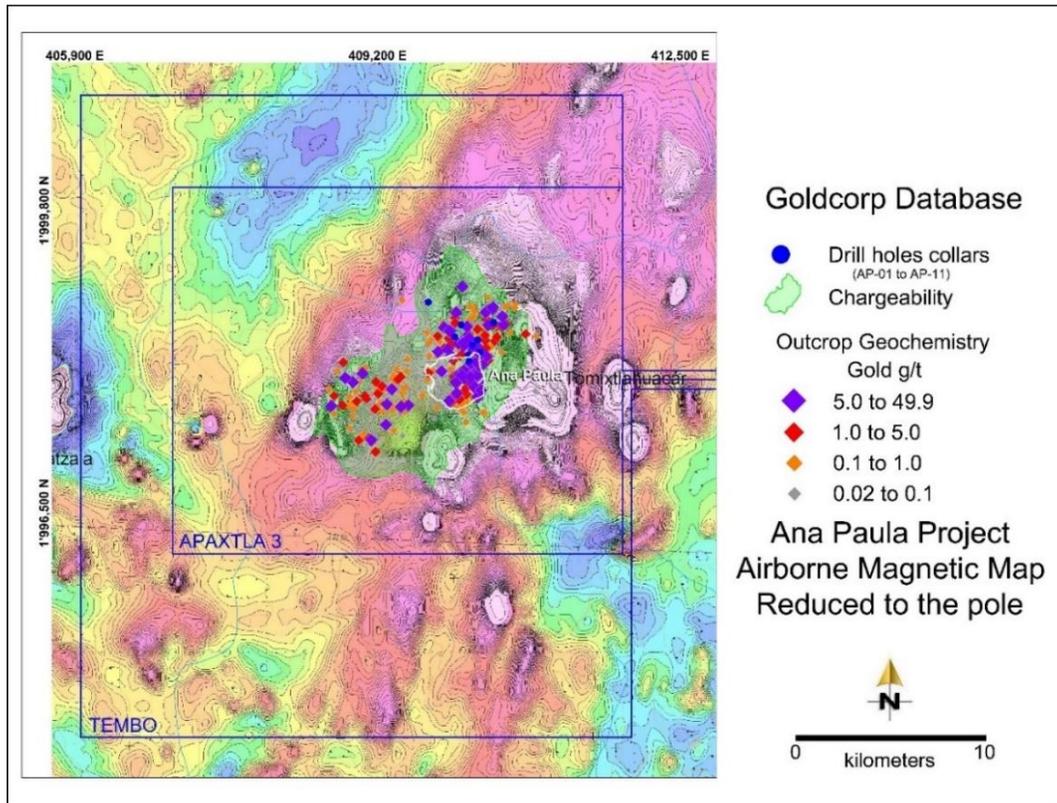
#### **Drilling**

Goldcorp drilled 11 holes for 3,687.3 meters in 2005 in the vicinity of the Ana Paula Deposit and an additional 12 holes for 4,210.51 meters were drilled in the southern claim block. An additional 25 holes for 4,070.1 meters 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).

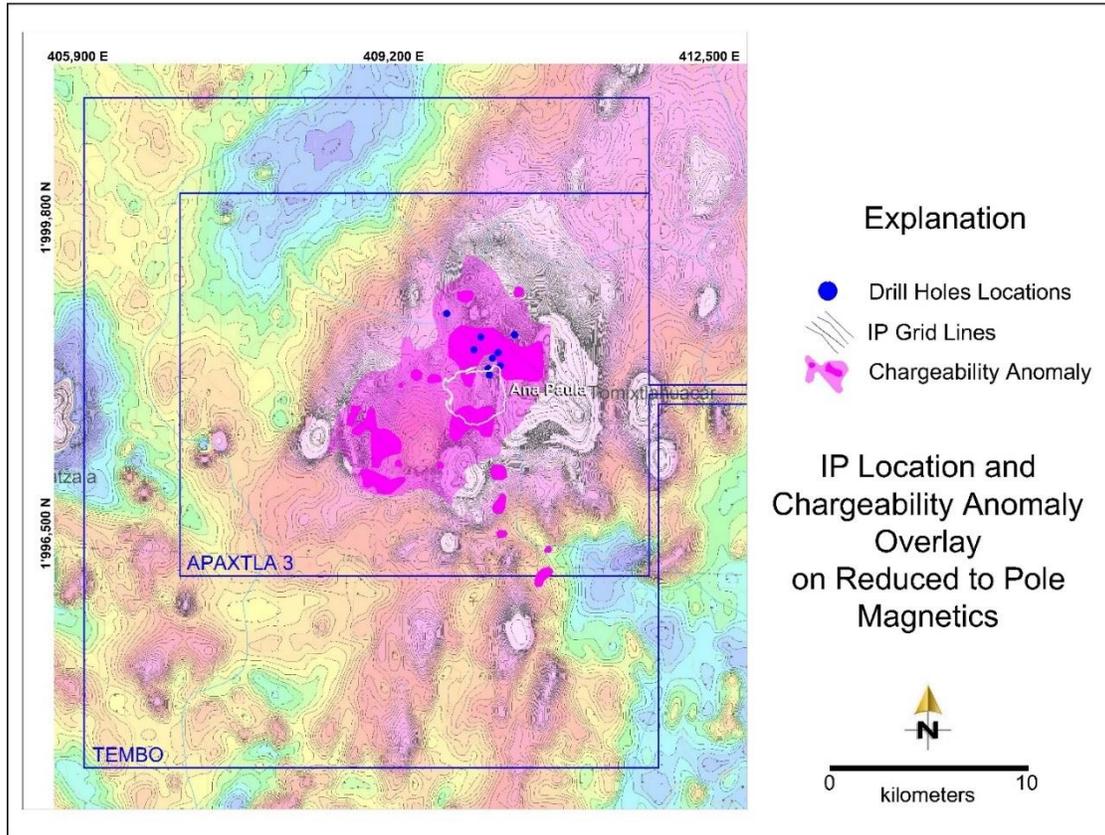


Source: JDS Energy & Mining Inc. (2014) (modified from Welhener et al, 2013)

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

**Studies and Surveys**

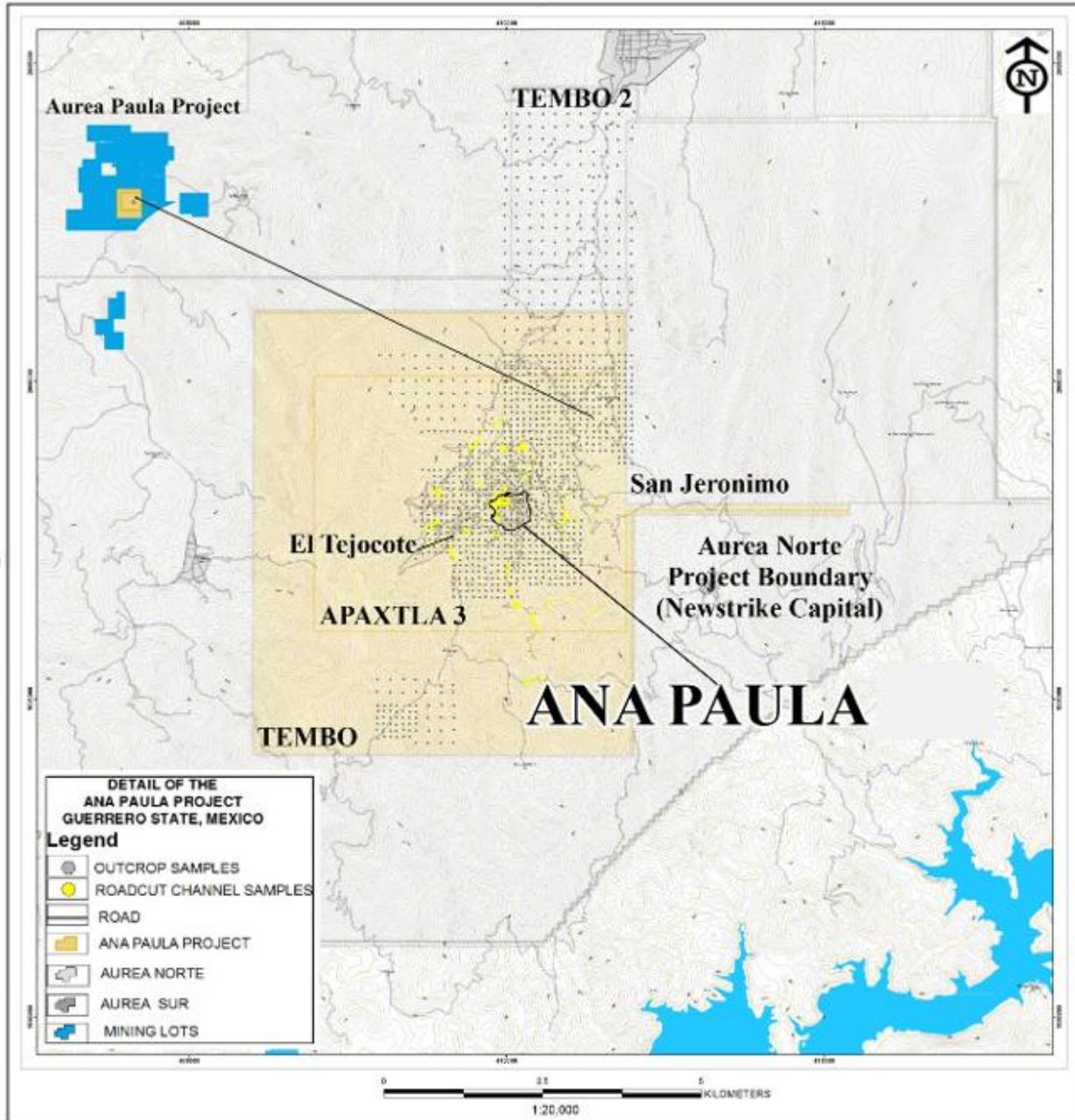
In 2005, 11 rock samples were collected for petrographic study within, just north and west of the Apaxtla 3 concession. The igneous suite was reported to mainly consist of aphanitic rocks with porphyritic textures and was classified as dacite porphyry, granodiorite, and porphyritic basaltic trachyandesite. 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<sup>2</sup> area.



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

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

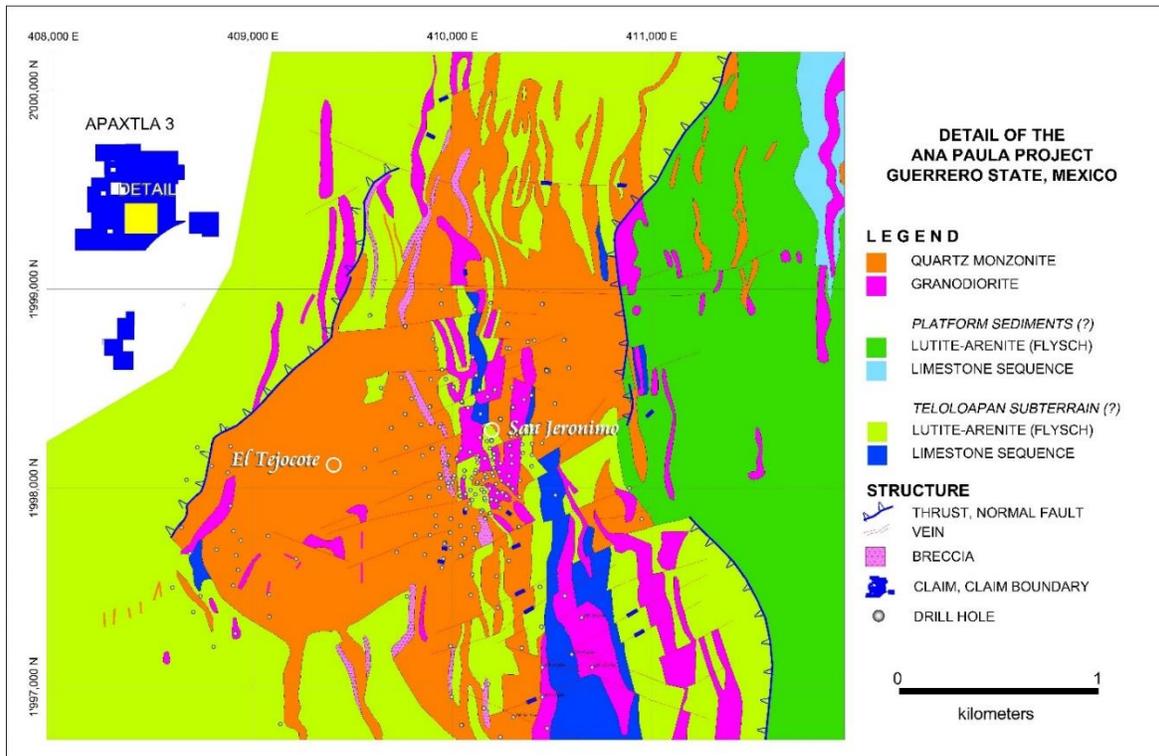
Systematic and expanded litho-geochemical sampling continued in 2006. Additionally, SJ Geophysics Ltd. was contracted to provide an Induced Polarization (3 dimensional) geophysical survey (Figure 6-2). Survey parameters included 3.5 km long lines oriented northwest, with 200 m line-spacings and 100 m 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 ( $\pm 0.7$  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 sulfides 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.

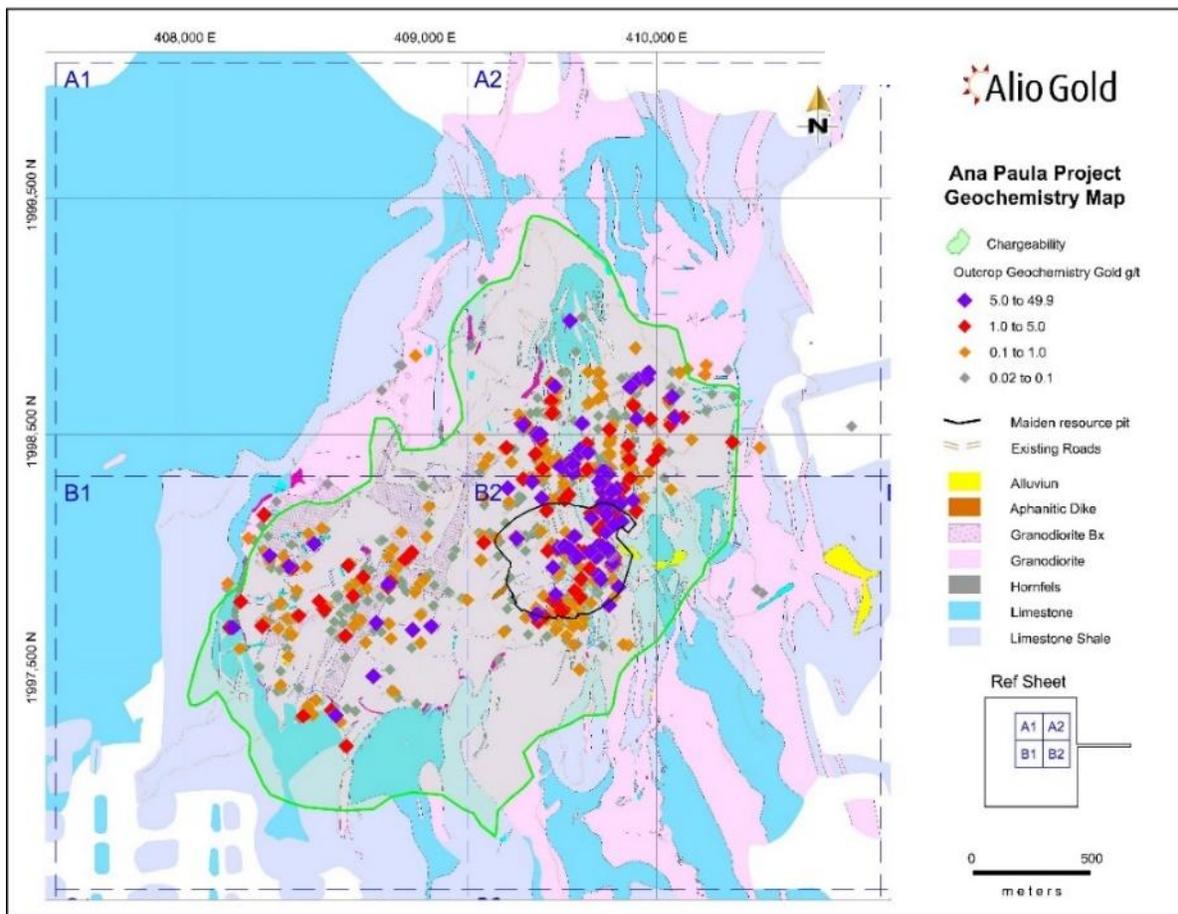
#### **6.2.4 Newstrike (2010-2015)**

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**

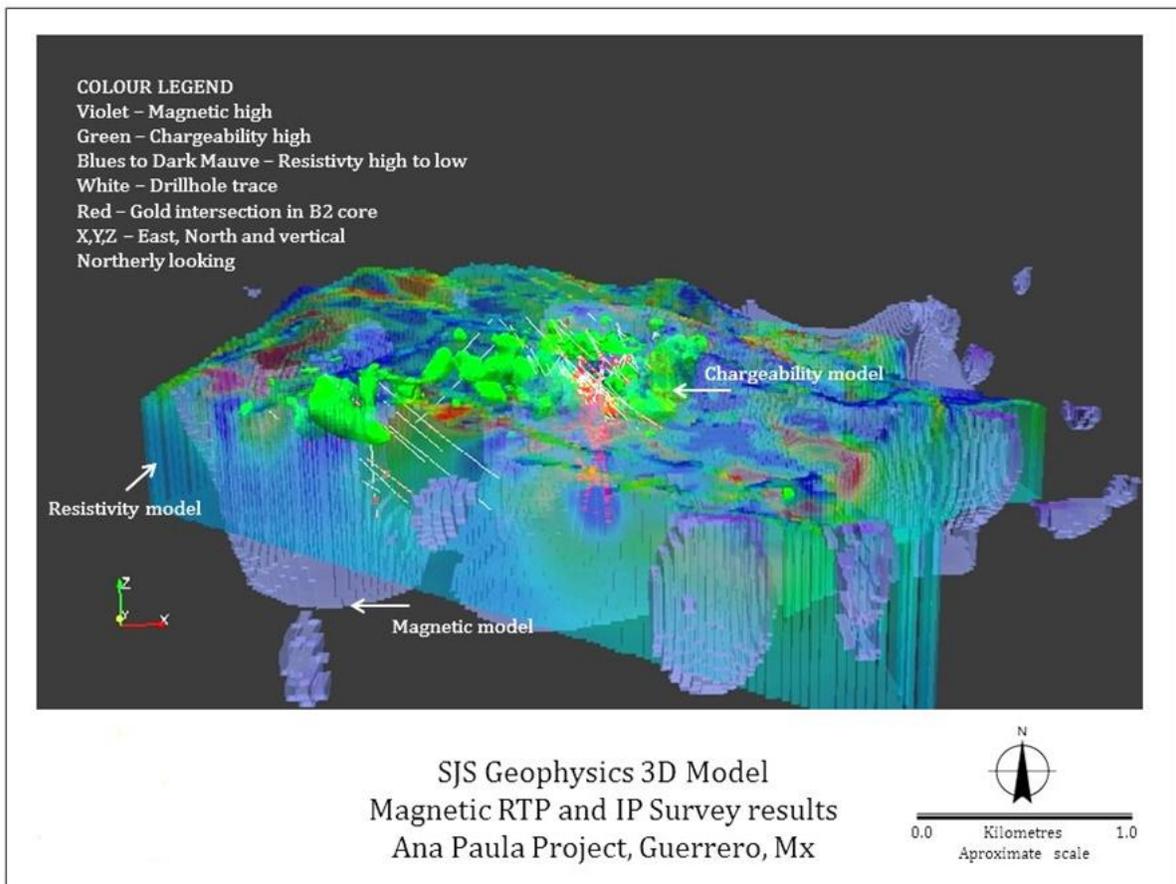
#### 6.2.4.1 Geophysics

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<sup>2</sup> 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).

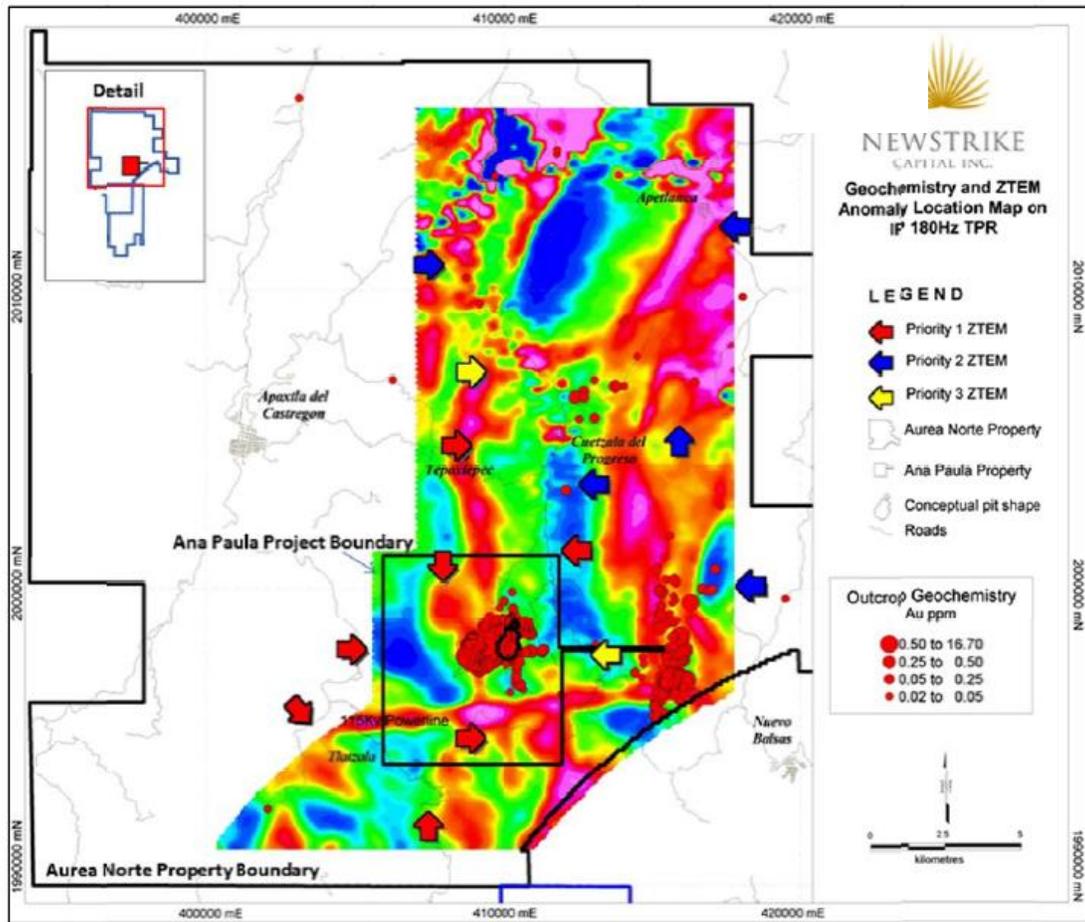
In 2013, Geotech Ltd of Aurora, Ontario, Canada was contracted to complete an approximately 250 km<sup>2</sup> ZTEM survey comprising 1,298 flight line-km at a line spacing of 200 m. The survey area encompassed the Ana Paula Deposit area and extended to the northeast property boundary. The ZTEM survey 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 180 Hz TPR with Priority Target Locations

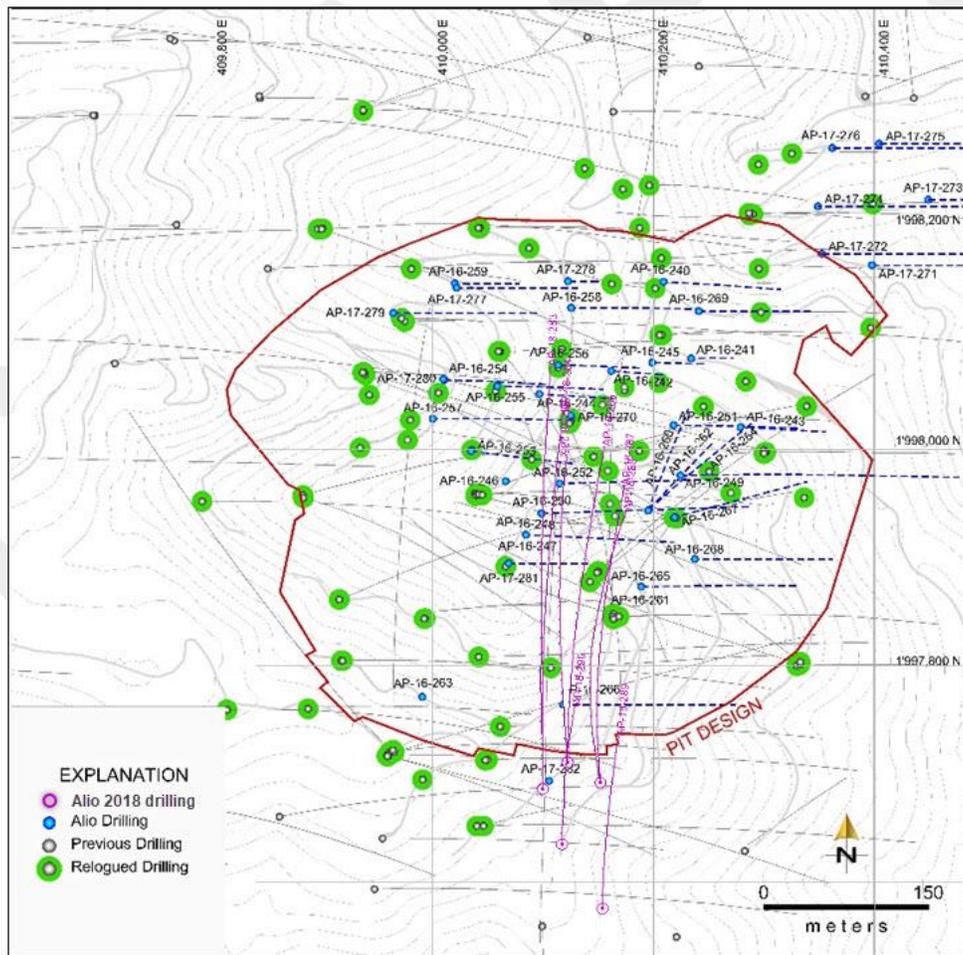
### 6.2.5 Alio Gold (2015-2018)

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 meters. The re-logging was carried out across the entire mineralized system to unify lithological, structural and mineralization criteria (Figure 6-8 and 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 meters) 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 tailing 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 meter drill program that twinned previous drill holes to collect metallurgical testwork samples.

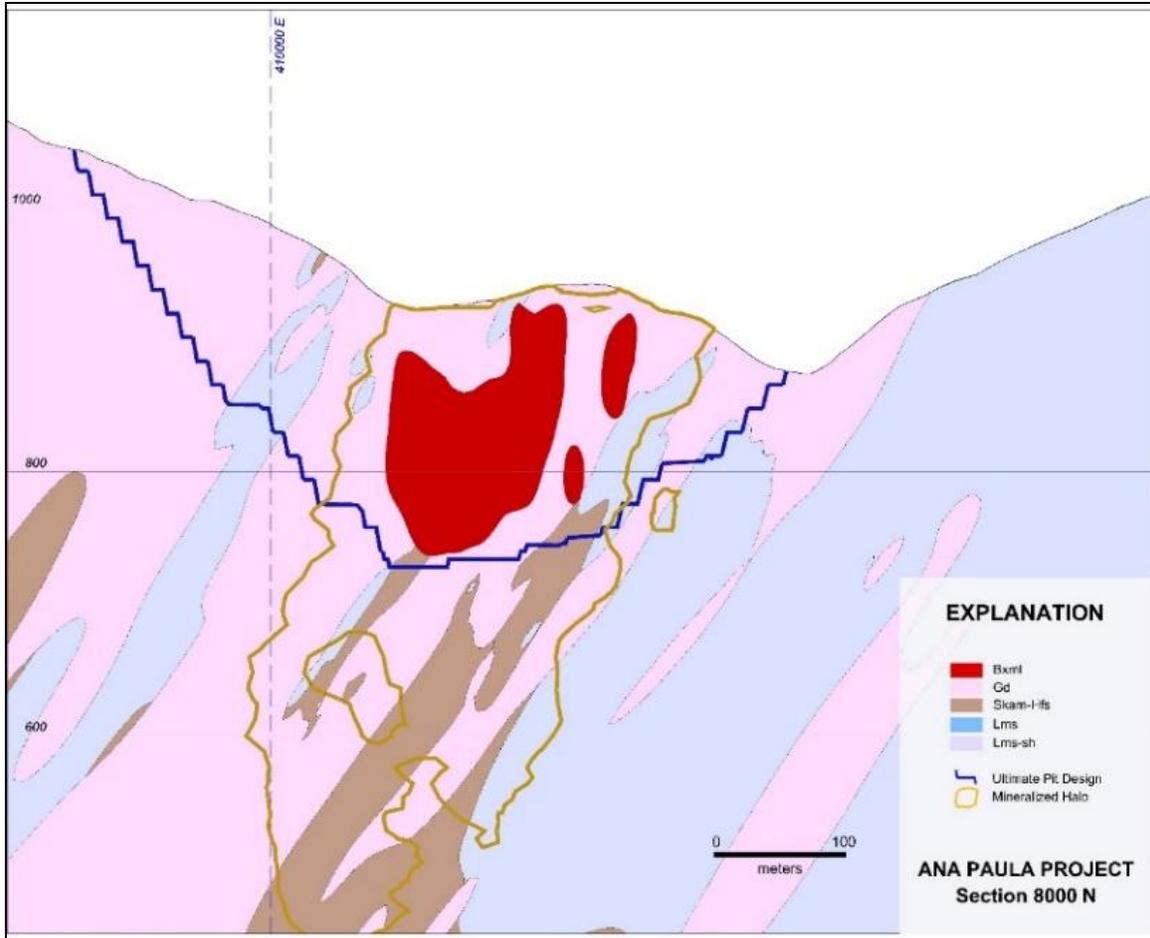
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- From December 2017 to May 2018, Alio Gold completed 4,337 m of infill drilling in eight holes to further define the Polymictic Breccia below the 2017 resource constraining shell.
- Utilizing all of this drilling data, Alio Gold carried out a 3D geological 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 kilometer 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 meters 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 sulfide. 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 $\geq 0.46$ 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.
<b>Costs:</b>		
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 $\geq 0.46$ 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.
<b>Costs:</b>		
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	Tonnes	Au	Gold	Ag	Silver
		(Au g/t)		(g/t)	(ounces)	(g/t)	(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
	<b>Measured &amp; Indicated</b>		<b>18,032,000</b>	<b>2.06</b>	<b>1,195,000</b>	<b>4.9</b>	<b>2,865,000</b>
	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
	<b>Measured &amp; Indicated</b>		<b>2,967,000</b>	<b>2.80</b>	<b>266,700</b>	<b>4.2</b>	<b>404,000</b>
	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
	<b>Measured &amp; Indicated</b>		<b>20,998,000</b>	<b>2.17</b>	<b>1,461,800</b>	<b>4.8</b>	<b>3,269,000</b>
	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

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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.
<b>Costs:</b>		
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	Tonnes	Au	Gold	Ag	Silver
		(Au g/t)		(g/t)	(ounces)	(g/t)	(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
	<b>Measured &amp; Indicated</b>		<b>18,905,000</b>	<b>2.07</b>	<b>1,261,000</b>	<b>5.4</b>	<b>3,306,000</b>
	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
	<b>Measured &amp; Indicated</b>		<b>2,297,000</b>	<b>2.81</b>	<b>207,800</b>	<b>4.0</b>	<b>294,000</b>
	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
	<b>Measured &amp; Indicated</b>		<b>21,202,000</b>	<b>2.16</b>	<b>1,468,800</b>	<b>5.3</b>	<b>3,600,000</b>
	Inferred*		385,000	1.89	23,700	5.2	64,000

**6.3.6 2023 Ana Paula Mineral Resource Estimate (November 2023 MRE)**

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 3.0 m composites. A final grade shell model using 2.0 m composites, 0.2 g/t gold cut-off at 50% probability was selected to delimit the resource model.

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 meter blocks with a minimum sub-block size of 1x1x1 meter. Final grade estimation was based on ordinary kriging using 2.0-meter 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 (Table 6-9).

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 6-9: Ana Paula Project Mineral Resource Estimate (2.5 g/t cutoff grade)**

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

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.

The 2023 Ana Paula mineral resources are no longer current since they have been superseded by the resources presented in Section 14 of this technical report.

### **6.3.7 Previous Production**

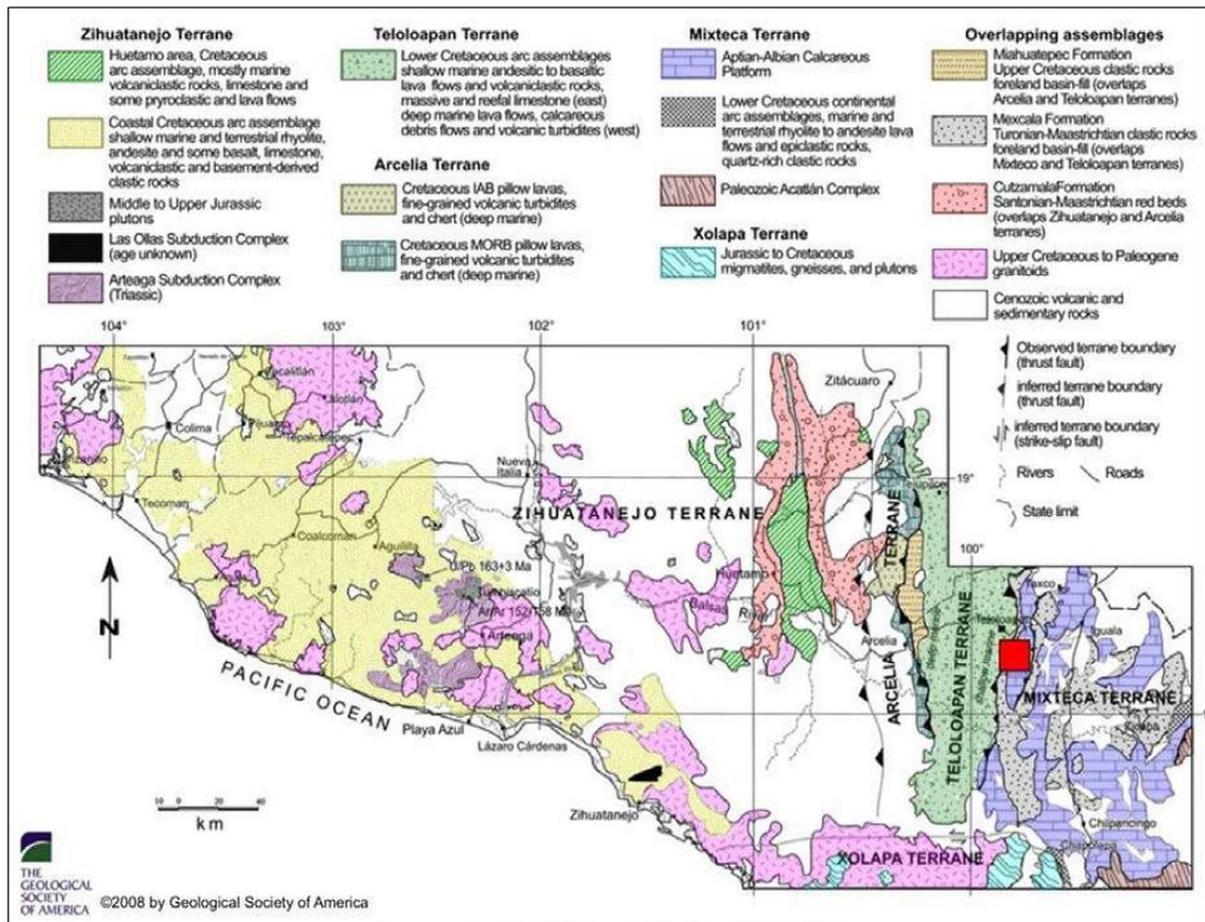
No significant production occurred on the Project site. Some small-scale artisanal extraction took place during the period between 1950–1980.

## 7 GEOLOGICAL SETTING AND MINERALIZATION

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

### 7.1 TECTONIC SETTING

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-terrane 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)

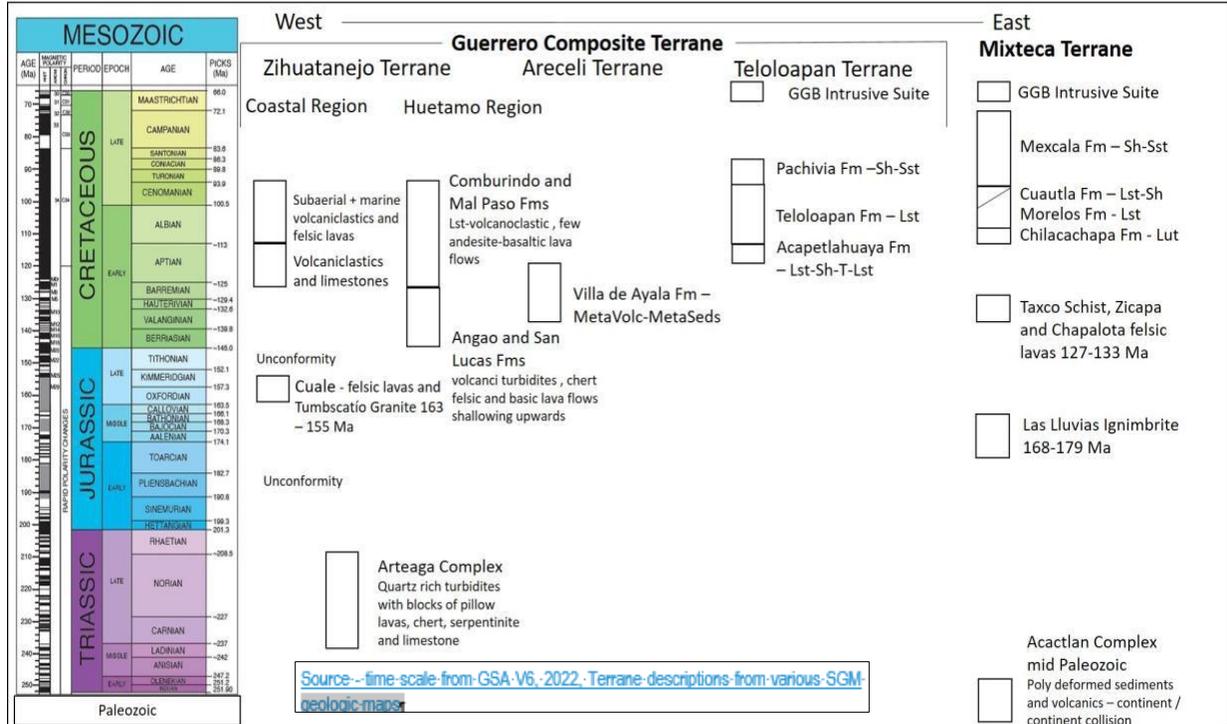
**Figure 7-1: Tectonic Setting of the Guerrero Gold Belt**

A discussion of the nature of the contact between the two sub-terrane 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  $^{206}\text{Pb}/^{204}\text{Pb}$  versus  $^{87}\text{Sr}/^{86}\text{Sr}$  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 post-

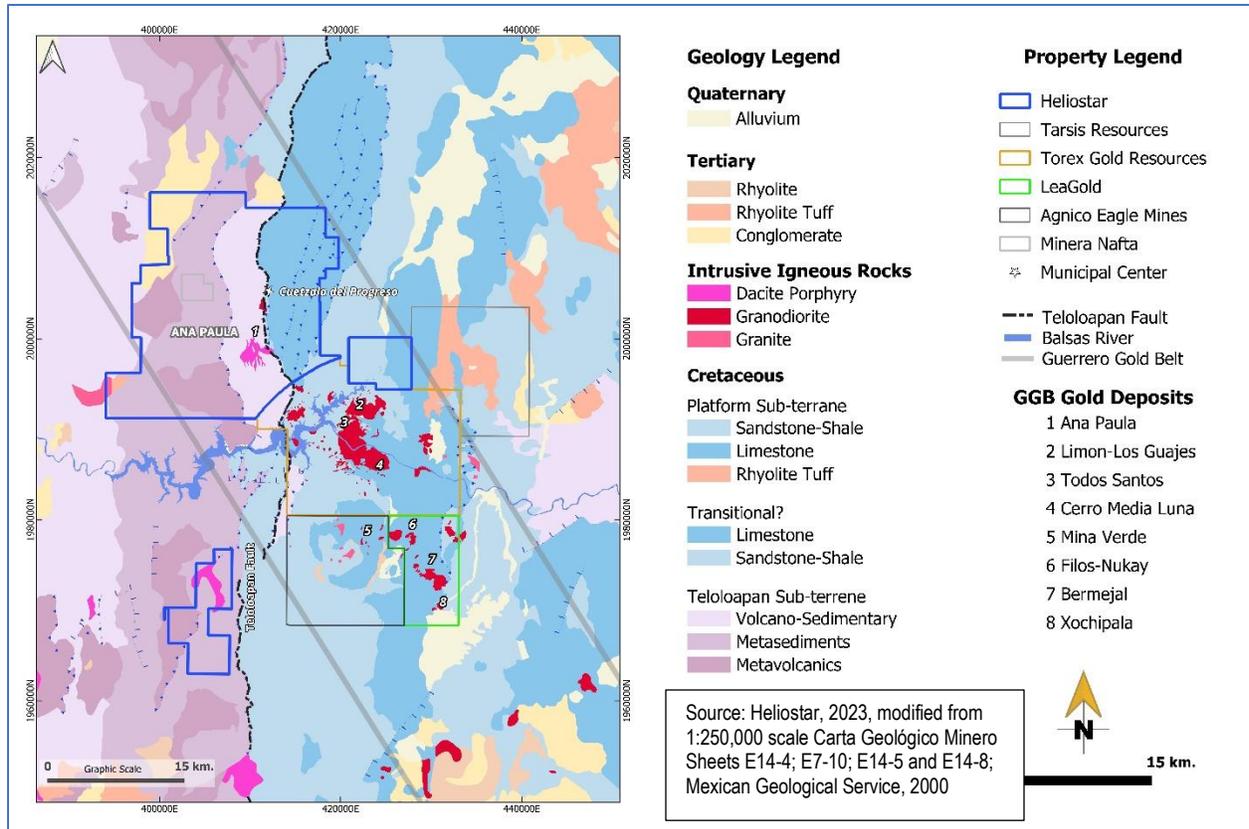
collision tectonic framework of a volcanic arc related to the interaction between the Farallon and North America plates (Gonzalez-Partida et al, 2003, 2004).

**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 and shown in Figure 7-3. The following discussion of regional geology is reliant on; Valencia, 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-terrane. The Teloloapan sub-terrene stratigraphy includes a volcanic-volcaniclastic arc assemblage that overlies a basement schist of the upper Jurassic to lower Cretaceous Guerrero Composite Terrane. The Teloloapan sub-terrene is overlain by an undifferentiated limestone, shale, and sandstone Cretaceous sedimentary sequence. On the scale of the Project, the sequence 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-terrene 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-terrane was intruded by at least two 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 GGB. These intrusive bodies are observed to outcrop for at least 55 kilometers through the district on a northwesterly trend. Zirconium <sup>206</sup>Pb/<sup>238</sup>U 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 gold projects also located within the GGB (Valencia et al., 2001 and Valencia and Ruiz, 2008).

The second intrusive event, 30 Ma, comprises of calc alkalic to alkalic volcanic rocks related to the onset of continental volcanism and 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. A large body of intrusive rocks underlies the Ana Paula deposit as currently defined.

Nef et al (2017) and Lloyd (2023c) recognized five principal geological domains within the Ana Paula deposit Figure 7-4:

1. **Sediments Domain (SEDM LMST/SEDM LS-SH):** 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. These sedimentary rocks generally strike north-northwesterly, dip steeply to the west, and appear to be part of the Acapetlahuaya formation of the Teloloapan sub-terrane.
2. **Intrusive Domain (PORP FDBT/PORP FDPO):** 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 gold mineralization within the Ana Paula deposit. These occur as stocks, sills and dykes. 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, identified in thin sections, and chalcopyrite are interpreted to be late phase minerals.
3. **Skarn-Hornfels Domain (SEDM HRNF):** found in the upper zones of the deposit along some of the contacts between the Intrusive Domains and host sediments. The Skarn-Hornfels Domain 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 sulfide lenses develop at the contacts between the Skarn-Hornfels and the Intrusive Domains.
4. **Polymictic Breccia Domain (BRXXpm):** is core to the High Grade Panel (HGP) of the Ana Paula deposit and appears to be a diatreme breccia. This domain is a sub-vertical plug elongated in the east-west direction and steeply dipping to the south. 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. Rock fragments are variably cemented within a matrix of black rock flour, silica and sulfide 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. 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 200 m in an east-west direction.
5. **Monomictic Breccia Domain (BXHY):** a brecciated intrusion composed of mostly monomictic fragments in a silica-rich matrix with or without a mixed sulfide-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.

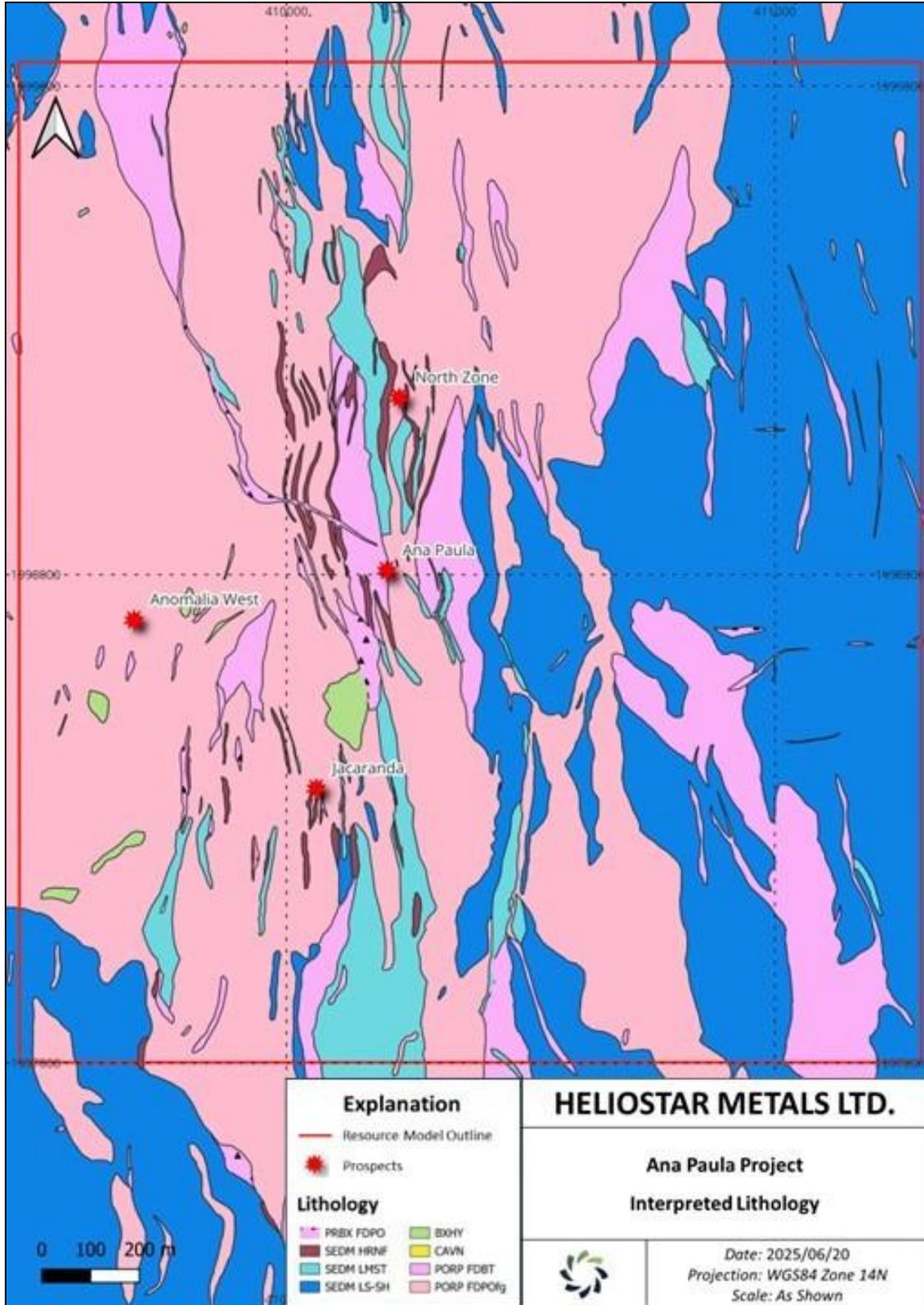


Figure 7-4: Ana Paula Deposit Area Geology Map

Geological sections of the modeled geology from drill hole logs are presented in Figure 7-5 and Figure 7-6.

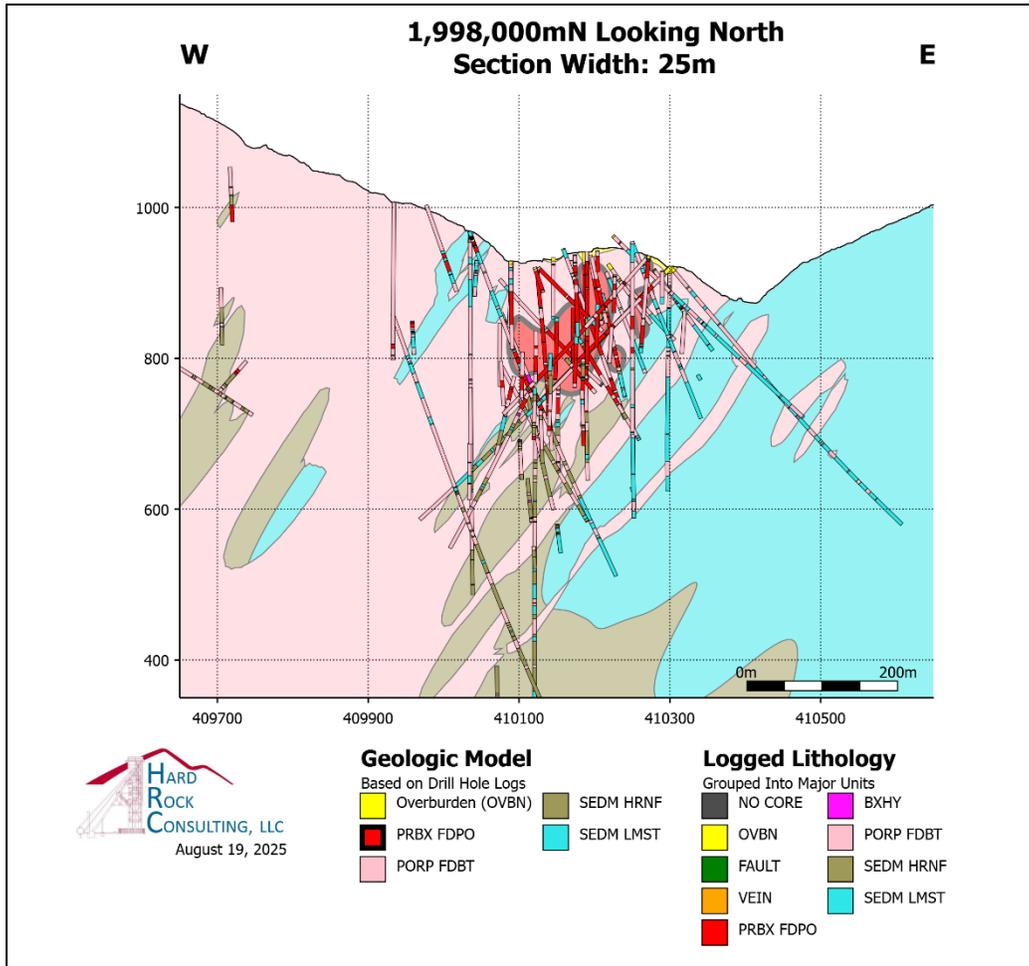


Figure 7-5: West East Geologic Section Looking North

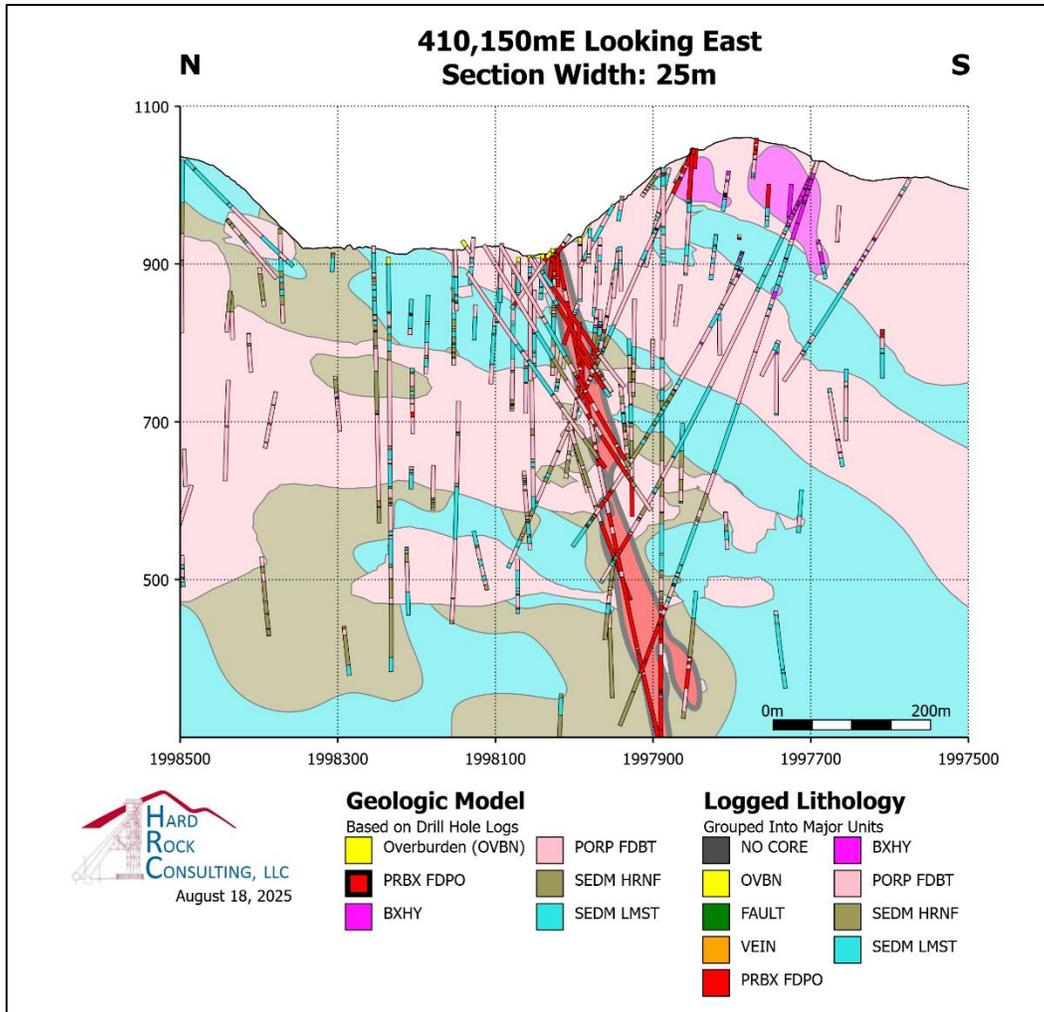


Figure 7-6: North South Geologic Section Looking East

### 7.3.1 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 7-3). 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). The southern projection of the large fold axis is the location of the main intrusive body at Ana Paula.

A number of smaller thrust style 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.

The package of sediments has been intruded by a series of feldspar porphyries, generally along the bedding plane weaknesses, but also as cross-cutting dykes. Contacts between intrusive and sediment domains have become fluid

pathways for ascending mineralized fluids. Local to deposit scale breccias, including the Polymictic Breccia which hosts the HGP, also occur along these contacts.

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 or of narrow breccia zones that are likely healed zones of movement. The movement along these contacts and/or associated nearby shears is the mechanism that has allowed the emplacement of the mineralized arsenopyrite micro-veinlets in the feldspar porphyries and to a lesser extent the other rock types.

On surface and in at least one area of the deposit a series of roughly east – west faults have been noted. The emplacement of the HGP 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. 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 meters into the footwall of the Polymictic Breccia, the 'Parallel Panel'.

### **7.3.2 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) describes 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 GGB by Jones (2017) who interpreted K-feldspar flooding as a retrograde skarn event that introduced the first episode(s) of gold mineralization.

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. At deeper levels, the alteration of the sediments generally becomes more widespread and continuous showing a bleached pale color with bands of medium-brown-colored 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. 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.

Rocks of the Polymictic Breccia comprise of K-feldspar (adularia) altered clasts of feldspar porphyry and sediment domain clasts in a matrix of quartz, iron carbonate (ankerite or siderite) and sulfides, 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. 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-sulfidation epithermal conditions in some of the samples (McComb, 2023). In one example, gold mineralization was associated with a gold-bearing adularia-quartz-calcite arsenopyrite hydraulic breccia. In another sample, AP-11-37, 317.30 m, a contact metamorphic assemblage was characterized as calcite-epidote-andalusite-garnet (Colombo, 2012). 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.

#### **7.4 MINERALIZATION**

Low grade gold mineralization at Ana Paula extends 1,150 m roughly north south along strike. The width of mineralization is highly variable, between 100 m and 300 m wide with an average width of approximately 200 m. Mineralization extends down dip approximately 950 m to the west. The high-grade mineralization amenable to underground mining methods strikes 300 m east west, is approximately 150 m wide and extends down dip to the south 600 m. Gold mineralization is still open down dip.

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. Lloyd (2023c) describes up to eight veining events, 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. Six veining events are described below.

- V1: Quartz-pyrite veinlets are hosted in the sediments, typically 1 to 2 mm in width, and composed of variable amounts of silica and fine-grained pyrite.
- V2: Sulfide micro-veinlets, the main gold mineralizing event at Ana Paula, are hosted in all rock types, but more abundant outside of the Polymictic Breccia in the feldspar porphyries. This generation of micro-veinlets occur as thin breccia veins 3 to 12 mm wide, as mossy patchy halos, as sheeted veins 2 to 5 mm wide, or more commonly as wispy discontinuous micro-veinlets only 1 mm in width or less.
- V3: Quartz-pyrite±ankerite micro-veinlets are contemporaneous and very similar to V2 veinlets. This generation also occurs as medium-grained pyrite in veinlets or as patches, and appears to be responsible for a few distinct intervals that are gold rich but lack arsenic. It is this medium-grained pyrite that also often creates the massive sulfide mineralization in the sediments.
- V4: White quartz and massive sulfide veining usually occurs as 1 to 3 mm wide white massive quartz veinlets with sections of massive sulfides, which is almost always comprised of pyrite. This generation of veinlets appear to be post-mineral.
- V5: Grey quartz veinlets are usually 1 to 10 mm in width and may or not contain fine-grained pyrite or more rarely arsenopyrite. Overall, not very common and possibly a later re-mobilization of the early gold mineralization.
- V6: Epithermal quartz veins which may be quartz, quartz-adularia, quartz-carbonates, or calcite often with calcite crystals growing into open space. Widths are variable between 1 mm and 10 cm and clearly cross-cut all other veinlets and host rocks.

In summary the four sites of gold deposition are:

1. Polymictic Breccia hosted mineralization with mainly sulfide (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 sulfides 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 GGB (Jones, 2017).

## **8 DEPOSIT TYPES**

Economically significant gold deposits of the Guerrero Gold Belt (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. These intrusions are similar in age, 66 to 62 million years old (Ma), related to the Laramide orogeny and marked by a coincident northwest trend of magnetic anomalies (Valencia et al., 2001, and Valencia et al, 2008). The GGB trend of gold deposits and related intrusions extends for over 55 kilometers along strike (Lloyd, 2023c).

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.

Much of the mineralization in the GGB is hosted within skarn settings with their 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. Skarns develop in sedimentary carbonate rocks, calcareous clastic rocks, volcanoclastic rocks, or rarely, volcanic flows. 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 sulfidation conditions in which the skarns developed. 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 (Metheven et al, 2022).

Intrusion-related mineralization with lithologic and structural controls and without significant skarn mineralogy is also common in GGB deposits. At Los Filos, a gold deposit located within the GGB, much of the mineralization extends beyond a skarn setting proximal to a granodiorite stock and hosted in a diorite intrusive body (Jones, 2017).

Gold mineralization at Ana Paula is largely hosted in a north - south trending corridor of intrusive rocks steeply dipping to the west, at the contacts with sedimentary rocks and hornfels, and within important breccia bodies. Gold deposition within the High Grade Panel (HGP) is located at the intersection of a diatreme breccia, which was emplaced along a roughly east – west trending fault, and the contact zones formed by feldspar porphyries intruding host sediments (Lloyd, 2023c). The best analogy for the Ana Paula deposit is the diorite hosted zone at Los Filos where gold mineralization travelled out from a proximal skarn setting, along intrusive / sediment contacts, and then deposited in the brittle body of the diorite intrusive (Jones, 2017). At Ana Paula, the distal brittle bodies are the feldspar porphyry dikes and sills. The breccia initially received gold in its porous matrix before becoming a brittle body late in the mineralizing event. Intrusions at Ana Paula have been dated at 66.0 – 66.7 Ma ± 0.7-1.8 Ma (Valencia et al, 2008), which may also date the earliest onset of mineralization (Lloyd, 2023c).

The QP considers the description of the deposit type as an intrusive related gold skarn is appropriate deposit for the Ana Paula Project and further exploration should follow that model.

## **9 EXPLORATION**

This section summarizes the exploration work carried out by Heliostar Metals. Exploration by previous operators Goldcorp, Newstrike, and Alio Gold is considered historic and described in Section 6 of this report. Argonaut Gold did not conduct any exploration work on the property.

### **9.1 EXPLORATION WORK HELIOSTAR METALS (2023-2025)**

Other than drilling, exploration work conducted by Heliostar has been limited to surface reconnaissance including geologic mapping, rock chip, channel, and soil sampling.

All samples were shipped to ALS Limited Zacatecas, Zacatecas, Mexico for sample preparation. Sample analysis was carried out at ALS Laboratories in North Vancouver. Analytical methods are similar to those described for Heliostar in Section 11.2.1.

A total of 140 grab samples from rock outcrops were collected between January 18, 2024, and May 27, 2025. Grab samples were collected by geologists employed by Heliostar using a geologic hammer. Location and elevation were recorded in WGS84 UTM Zone 14 coordinates using a handheld GPS. Sample length, width, and average perpendicular thickness were recorded as well as geological characteristics. Each sample was given a unique ID and placed into a cloth bag with a corresponding sample tag. The cloth bag was also labelled with the sample ID. No QA/QC samples were incorporated into the sample submissions with the grab samples. The average gold grade from the grab samples was 0.316 ppm. The average gold grade of 24 samples collected at the Guadalupe target was 1.696 ppm with 8 samples exceeding a gold grade of 1.000 ppm. Thirty-nine samples at the Ojo de Agua target returned an average gold grade of 0.042 ppm and 13 samples collected at the Jacaranda target returned an average gold grade of 0.044 ppm.

In February, March, and May of 2025, 125 channel samples were collected using a rock saw and similar methodologies were employed to those described above. The average length for channel samples was 1.16 m, average width was 0.34 m and average perpendicular thickness was 1.16 m. Channel sampling focused on the Core Shack, El Rincon, and San Luis targets. The average gold grade for the Core Shack, 27 samples, was 0.025 ppm with a maximum grade of 0.246 ppm. The average gold grade at El Rincon, 46 samples, was 0.005 ppm with a maximum grade of 0.036 ppm. Thirty-five samples collected at the San Luis target area returned an average gold grade of 0.158 ppm with a maximum gold grade of 0.772 ppm. Of additional significance, three samples collected at the Rey David target averaged 0.211 ppm gold and 3 samples at the Gudalupe target returned an average grade of 0.388 ppm gold.

Six soil samples were collected in April 2024, and an additional 372 samples were collected between November 2024 and January 2025 at the Ana Paula deposit area. Soil samples were collected by geologists employed by Heliostar using shovels. The soil sample grid of 50 m by 50 m was designed around alteration types. A larger 100 m by 100 m grid was designed surrounding the alteration targets. Geologists were instructed to find the location of the soil sample using a handheld GPS. The area was cleared of loose material, and the A soil horizon was removed. Soil samples were collected from the B soil horizon using a shovel and sieve until the desired sample amount was obtained. Location and elevation were recorded in WGS84 UTM Zone 14 coordinates using a handheld GPS. Depth of the sample and soil characteristics were recorded as well. Each sample was given a unique ID and placed into a cloth bag with a corresponding sample tag. The cloth bag was also labelled with the sample ID. Sieves were cleaned prior to sample collection by running soil from the same pit through the sieve to prevent contamination. Samples were placed in a cloth bag along with a corresponding sample tag. Thirteen duplicate samples were collected as well for QA/QC purposes. The duplicates compared well with the original samples with an  $R^2$  value of 0.9996.

The average gold grade for the soil samples was 0.180 ppm with a maximum grade of 15.500 ppm. The program identified potential targets of interest to test with further drilling. Figure 9-1 shows the locations and gold grade of rock, channel, and soil samples.

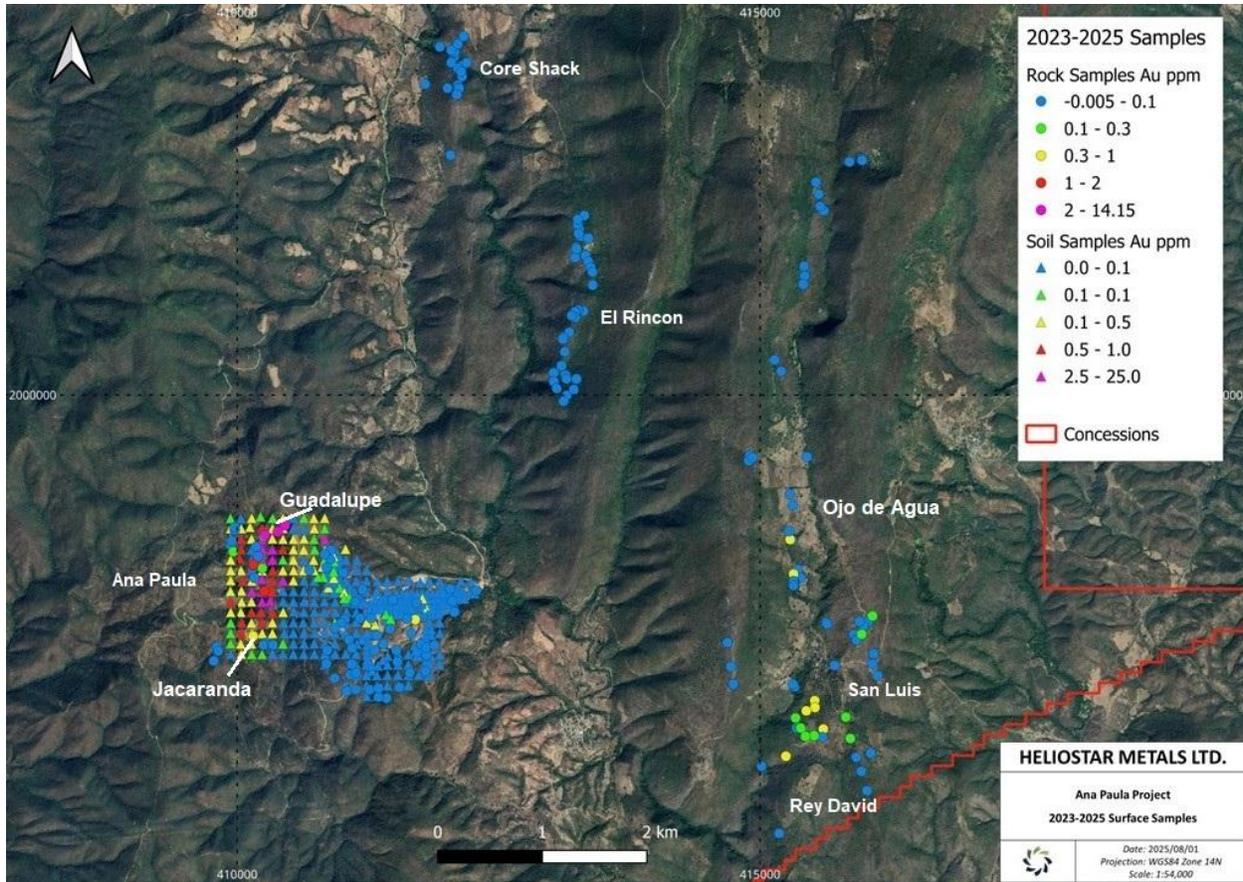


Figure 9-1: Rock Chip/Channel and Soil Sample Locations Showing Gold Grades (ppm)

**10 DRILLING**

Drilling at the Ana Paula Project has been carried out by multiple operators semi-continuously from 2005 through 2024. The updated database includes 170,051.9 total meters in 438 drill holes aggregating results from 115,394 sample intervals with an average length of 1.5 meters. 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. Figure 10-6 shows all drilling completed by year within the concession boundary (inset) as well as drilling located within the geologic model and block model extent. Note, the extent of mineral resources within Ana Paula lies entirely, and well within the existing concessions. Ten drill holes completed in 2005 totaling 1,387.6 m and all drilling completed in 2006 and 2007 are far outside the extents of the mineral resource estimate and are not discussed further in this report.

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

Year	Company	Type	Count	Total Depth (m)
2005	Goldcorp.	Core	21	5,075.3
2006	Goldcorp.	Core	6	2,489.2
2007	Goldcorp.	Core	21	4,513.1
2010	Newstrike	Core	12	5,227.1
2011	Newstrike	Core	57	29,698.1
2012	Newstrike	Core	75	42,352.3
2013	Newstrike	Core	87	38,694.3
2014	Newstrike	Core	15	7,316.4
2015	Alio	Core	10	2,008.3
2016	Alio	Core	31	7,304.3
2017	Alio	Core	32	6,272.3
2017	Alio	RC	26	7,205.9
2018	Alio	Core	8	4,337.0
2023	Heliostar / Minera Aurea	Core	22	4,202.8
2024	Heliostar / Minera Aurea	Core	15	3,355.6
<b>Totals</b>			<b>438</b>	<b>170,051.9</b>

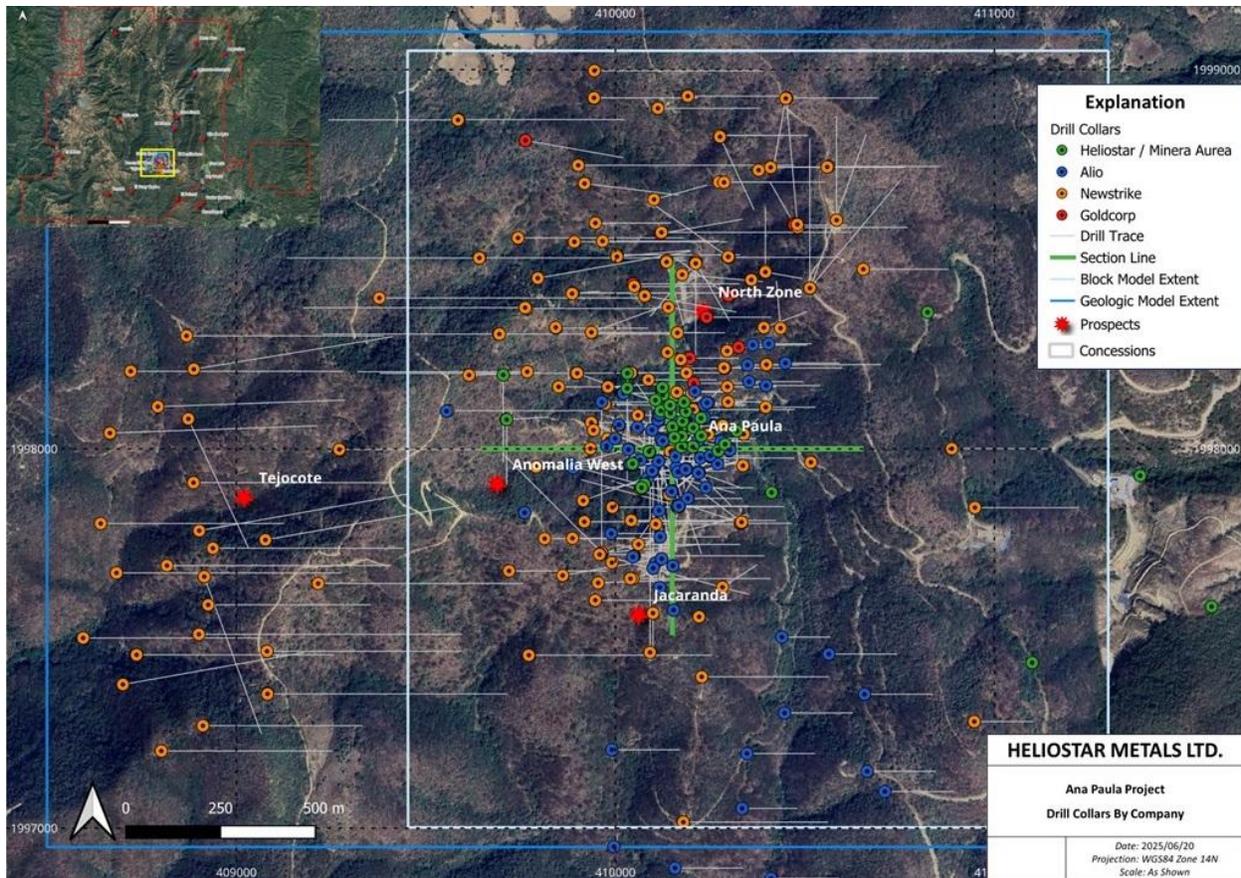


Figure 10-1: Ana Paula Project Drill Collars by Operator (Company)

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.

### 10.1 DRILLING COMPLETED BY OR ON BEHALF OF HELIOSTAR METALS (2023 – 2024)

Heliostar carried out a two-phase drill program from April to October 2023 comprising of 22 holes for 4,202.8 meters. An additional program of 15 holes totaling 3,355.6 meters was carried out from August to November 2024. All drill holes were planned and sited in Leapfrog Geo® software.

Final drill sites were adjusted in the field depending on topography or local conditions to minimize disturbance. Starting drill orientations were established with either a Brunton compass or an Axis Mining Technology Champ Navigator for the remainder of the holes. Following completion of the drill hole, the final 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 meters 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 using Atlas Copco CS-14 (2023) and Boyles C5C (2024) drills mounted on tracks. All drilling was supervised by Heliostar technical staff and industry best practices were followed.

A geologist supervised the start and completion of all drill holes, completed a daily quick log which documented lithology, alteration and mineralization and was compiled with a pXRF instrument for geochemical information. 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.

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 sulfide species, percentages of matrix in breccias and percentages of gangue and sulfides 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 1/4 core duplicates, all samples were half core sawn with electric diamond-toothed blades. The minimum length for samples was 0.3 meters and in homogenous intervals of good recovery, the maximum target sample interval was 1.5 meters. Larger sample intervals could occur, specifically near the start of drilling.

Magnetic susceptibility was recorded by averaging five readings over each one-meter interval. Similarly, pXRF geochemical data was also collected over each one-meter interval. Alteration data was collected using a TerraSpec short wavelength infrared instrument from one point per meter. Selected historic holes were also surveyed using the TerraSpec instrument.

Density measurements were collected on all 2023 and 2024 drill holes at a spacing of one measurement every 10 meters using the Water Displacement Method 4 of Lipton (2001). More detailed density data was collected at 5- and 2.5- meter intervals in zones of mineralization. Data was also collected from selected historic intervals at 5- and 2.5-meter intervals.

A total of 3,658 samples totaling 4,129.9 meters (98% of total drilling length), excluding QA/QC samples and external check samples, were collected from the 2023 drilling. Core recovery was excellent and averaged 99%. Ground conditions were very good in general and poor ground conditions were only encountered near the surface or when holes were drilled sub-parallel to the slope.

Down hole inclination and azimuth were recorded approximately every 30 meters with a REFLEX EZ-shot that also included magnetic measurements.

The first phase of drilling consisting of 17 holes (AP-23-291 to AP-23-307) totaling 3,017.8 meters was drilled with PQ (85.0/122.6 mm) diameter core rods. Core rod dimensions given include inner and outer rod diameters in mm. The first phase of drilling was designed to accomplish the following goals:

- To optimally test a zone of high-grade mineralization termed the High-Grade Panel that is largely hosted within the Polymictic Breccia lithologic units.
- To provide material for metallurgical testwork in support of a preliminary economic assessment or prefeasibility study.
- To collect updated geotechnical data to better quantify the rock mass characteristics of the High Grade Panel and Polymictic Breccia.

Fifteen of the 17 drill holes were oriented north or south and inclined between -45° and -55°. The remaining two drill holes were oriented west along the plunge of the High Grade Panel and inclined at -46° and -85°. Drill holes AP-23-291 to AP-23-307 were drilled with oriented core which utilized a REFLEX ACT III tool. Detailed geotechnical logging and limited packer testing were also carried out on these holes under the direction of Knight Piésold. Geotechnical logging included recovery, RQD, Rock Mass Rating and Q' using the RMR89 and Norwegian Geological Institute Q systems. Hydraulic conductivity was evaluated with hydraulic packer testing carried out on some holes. Optical Televiwer surveying was also carried out on some holes, but the surveys were negatively impacted by ground conditions.

The second phase of exploration drilling was comprised of the five remaining holes (AP-23-308 to AP-23-312) totaling 1,185.0 meters. These holes were designed to test a Parallel Panel of mineralization and an area of limited drilling with anomalous pathfinder elements, arsenic, antimony, bismuth, mercury, and silver, as well as gold in rock chip samples at surface using HQ (63.5/96.9 mm) diameter drill rods. The drill holes were oriented north or south and inclined -44° or -55°.

Significant intercepts from the 2023 drilling are presented in Table 10-2. Figure 10-2 shows a plan view of the 2023 drilling targeting the High Grade Panel. Due to topography, drill holes were oriented both to the north and south across the east-trending, steeply south-dipping, and crudely tabular body. Drilled intersections are interpreted to be approximately 17% to 77% of true widths (Table 10-4). Reported grade intervals are based on the original assay certificates as received from the assay labs.

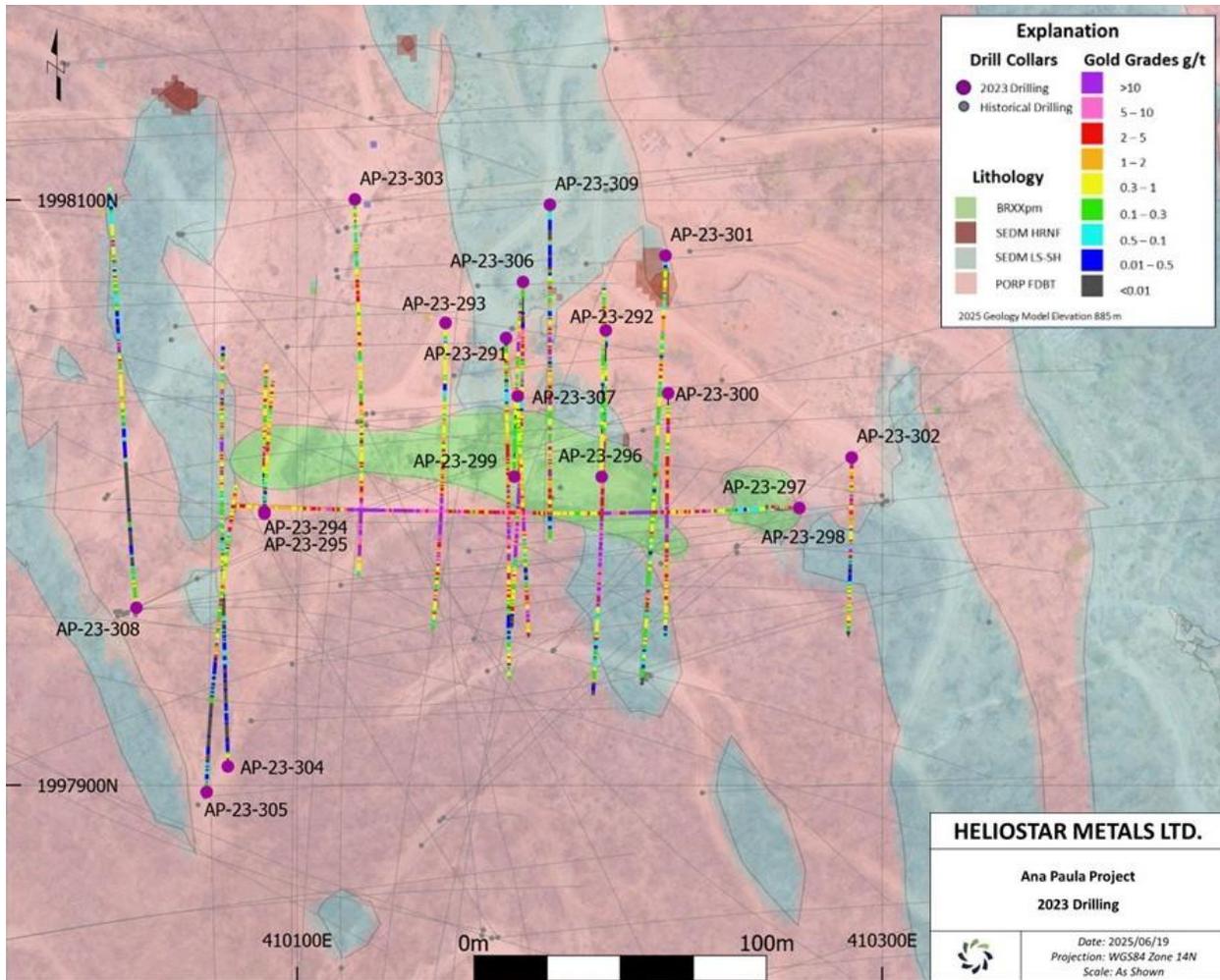


Figure 10-2: Plan View of 2023 Drilling targeting the High Grade Panel

Table 10-2: Significant 2023 Drill Intersections

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-23-291	201.0	180	-55	57.50	159.00	101.50	6.24
including				90.00	134.50	44.50	11.12
AP-23-292	186.0	180	-50	43.88	145.00	101.12	8.60
including				90.00	143.20	53.20	11.15
AP-23-293	202.5	180	-55	55.50	184.70	129.20	6.04
including				117.00	163.00	46.00	13.52
including				118.00	146.50	28.50	17.70
AP-23-294	102.0	0	-60	31.30	98.50	67.20	2.14
including				31.30	45.25	13.95	6.40
AP-23-295	172.8	0	-75	76.50	118.00	41.50	2.58
including				85.50	91.00	5.50	4.88
and including				103.00	111.00	8.00	3.74

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Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-23-296	112.5	0	-55	73.50	99.50	26.00	1.88
including				94.50	96.50	2.00	13.63
AP-23-297	285.0	270	-46	43.05	285.00	241.95	9.09
including				43.05	105.00	61.95	13.97
including				70.50	102.00	31.50	21.63
and including				122.00	285.00	163.00	8.11
and including				97.00	102.00	5.00	51.02
and				194.50	229.70	35.20	23.64
including				212.10	222.00	9.90	42.42
AP-23-298	129.0	270	-85	17.90	122.00	104.10	6.39
including				28.50	48.00	19.50	16.41
AP-23-299	102.0	0	-55	63.00	101.00	38.00	6.95
including				72.50	83.50	11.00	15.79
including				72.50	78.50	6.00	23.33
AP-23-300	118.5	180	-45	15.50	18.20	2.70	32.04
and				30.50	102.50	72.00	8.00
including				55.00	64.50	9.50	32.08
AP-23-301	204.0	180	-45	29.00	37.50	8.50	3.02
including				36.00	37.50	1.50	9.51
and				50.20	59.00	8.80	2.25
including				52.20	53.20	1.00	6.46
and				104.50	106.00	1.50	5.86
AP-23-302	94.0	180	-50	1.50	53.26	51.76	5.06
including				19.50	24.22	4.72	11.62
and				68.95	86.55	17.60	2.63
including				73.14	74.50	1.36	21.36
AP-23-303	219.0	180	-55	44.00	108.00	64.00	1.32
and				118.00	216.00	98.00	6.50
including				174.50	207.50	33.00	16.50
AP-23-304	280.5	0	-60	186.00	271.50	85.50	4.61
including				212.00	221.50	9.50	24.42
AP-23-305	250.5	0	-65	111.00	158.60	47.60	3.22
and				133.30	134.30	1.00	22.90
and				155.80	158.60	2.80	16.15
and				212.00	245.10	33.10	2.17
including				213.40	220.78	7.38	4.88
AP-23-306	208.5	180	-55	27.50	63.40	35.90	8.26
including				51.60	63.40	11.80	13.56
and				82.50	166.10	83.60	8.59
and including				102.20	165.20	63.00	10.44

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Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
including				122.20	134.20	12.00	18.36
AP-23-307	150.0	180	-55	36.00	93.00	57.00	6.04
including				76.75	81.75	5.00	45.44
and				125.00	139.60	14.60	28.94
AP-23-308	201.0	354	-44	112.95	127.70	14.75	5.06
including				122.40	127.70	5.30	11.74
and				157.00	175.10	18.10	2.27
AP-23-309	201.0	180	-55	37.50	184.55	147.05	4.13
including				76.00	92.00	16.00	11.23
and including				112.40	119.40	7.00	14.45
and including				153.50	162.10	8.60	8.70
AP-23-310	297.0	180	-55	65.30	68.00	2.70	0.96
AP-23-312	87.0	0	-55	6.00	13.60	7.60	1.04
and				36.90	41.00	4.10	1.40
and				51.00	74.85	23.85	2.00
including				57.00	60.00	3.00	6.42
and including				73.30	73.85	0.55	9.98

Nine of the 15 drill holes totaling 3,210.1 meters completed in 2024 were drilled to the south with dips between -50° to -60°. These holes were drilled on north-south sections to optimally test the High Grade Panel. Holes AP-24-313 to AP-24-321 were drilled with PQ diameter core rods. Core recovery was very good and averaged 92%. Ground conditions were very good in general and poor ground conditions were only encountered near the surface or when holes were drilled sub-parallel to the slope. A total of 3,143 samples totaling 3,354.1 meters (all but 1.5 meters of total drilling length), excluding QA/QC samples and external check samples, were collected from the 2024 drilling.

Down hole inclination and azimuth were recorded on nominal 30-meter intervals with REFLEX EZ-shot (holes AP-24-313 to AP-24-317) and Axis Champ Navigator (holes AP-24-318 to AP-24-321) downhole survey tools.

Six additional vertical bore holes totaling 145.5 meters from 15.5 to 29.5 meters deep were drilled for use as potential water wells (holes BH-KP-24-11 to BH-KP-24-16). This drilling was not surveyed down-hole.

Significant intercepts from the 2024 drilling are presented in Table 10-3. Figure 10-3 shows a plan view of the 2024 drilling targeting the High Grade panel. Due to topography, drill holes were oriented to the south across the east-trending, steeply south-dipping, and crudely tabular body. Drilled intersections are interpreted to be approximately 17% to 77% of true widths (Table 10-4). Reported grade intervals are based on the original assay certificates as received from the assay labs.

Table 10-3 Significant 2024 Drill Intersections

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-24-313	439.0	180	-55	388.50	394.55	6.05	8.24
and				431.00	436.00	5.00	2.10
AP-24-314	419.0	180	-55	148.00	164.00	16.00	1.74
and				182.00	198.00	16.00	16.73
and				314.50	317.00	2.50	3.57
AP-24-315	329.0	180	-60	104.50	230.35	125.85	4.02
including				157.45	181.00	23.55	12.51
AP-24-316	398.0	180	-60	112.50	116.80	4.30	2.27
and				129.20	136.85	7.65	6.74
and				168.30	229.80	61.50	5.04
including				197.30	223.50	26.20	10.39
and				246.80	362.15	115.35	2.69
and including				274.00	277.70	3.70	12.22
including				289.00	301.00	12.00	9.68
AP-24-317	409.8	180	-55	141.00	228.80	87.80	13.32
including				176.90	193.00	16.10	57.20
and				284.60	290.50	5.90	9.54
AP-24-318	332.0	180	-57	108.00	269.00	161.00	4.26
including				209.00	239.00	30.00	10.09
AP-24-319	394.5	180	-55	111.00	114.00	3.00	21.41
and				189.00	193.60	4.60	7.91
and				349.00	373.00	24.00	5.10
AP-24-320	138.8	180	-50	102.00	103.00	1.00	4.99
AP-24-321	350.0	180	-55	117.15	184.00	66.85	3.11
and including				167.60	183.30	15.70	10.41
including				167.60	168.30	0.70	154.00

Table 10-4: 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

Two sections show drilling by Heliostar and by previous operators targeting the High Grade panel. The first section is from west to east looking north (Figure 10-4) and the second from north to south looking east (Figure 10-5). The locations of these sections are presented in Figure 10-1.

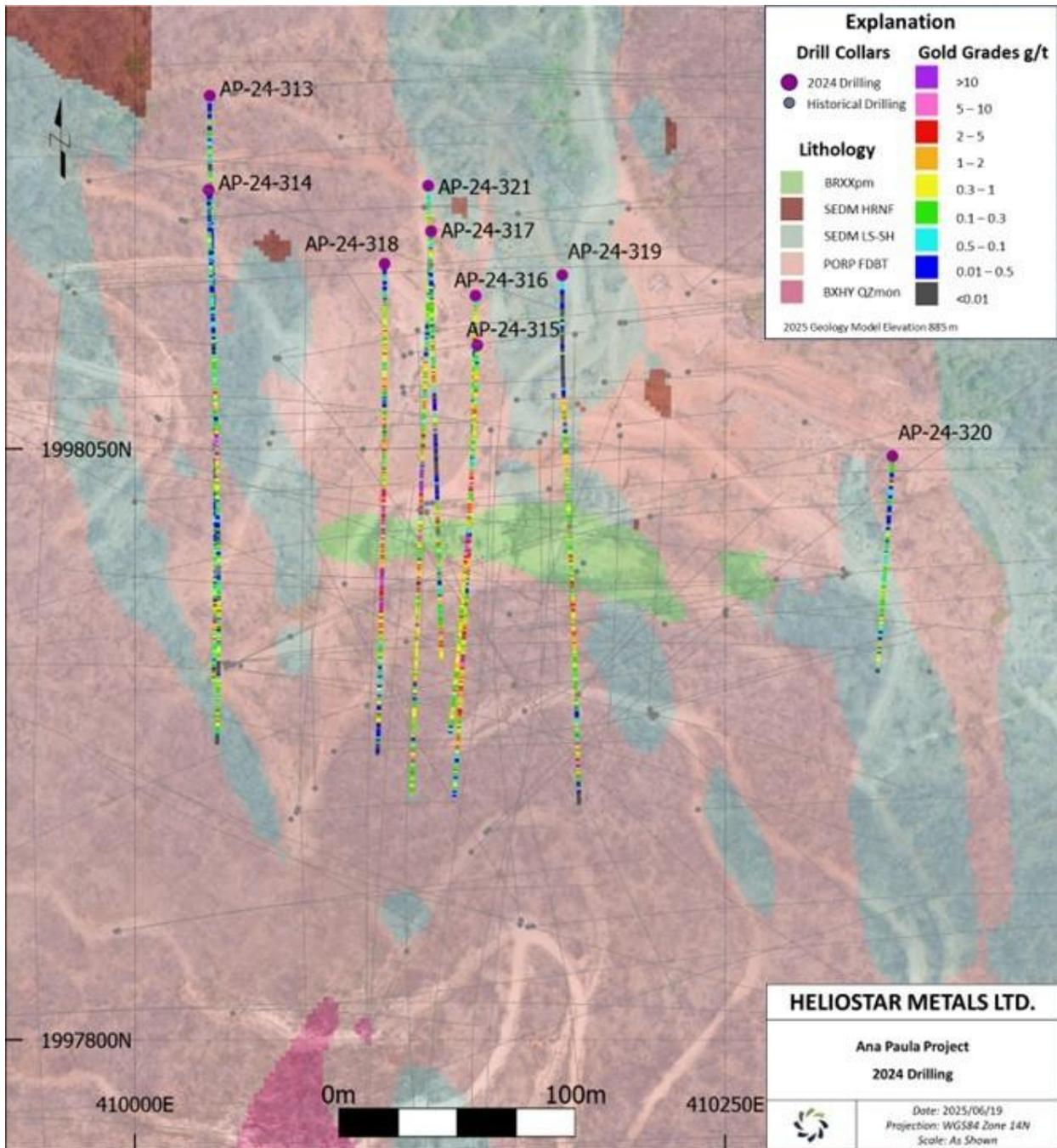


Figure 10-3: Plan View of 2024 Drilling Targeting the High Grade Panel

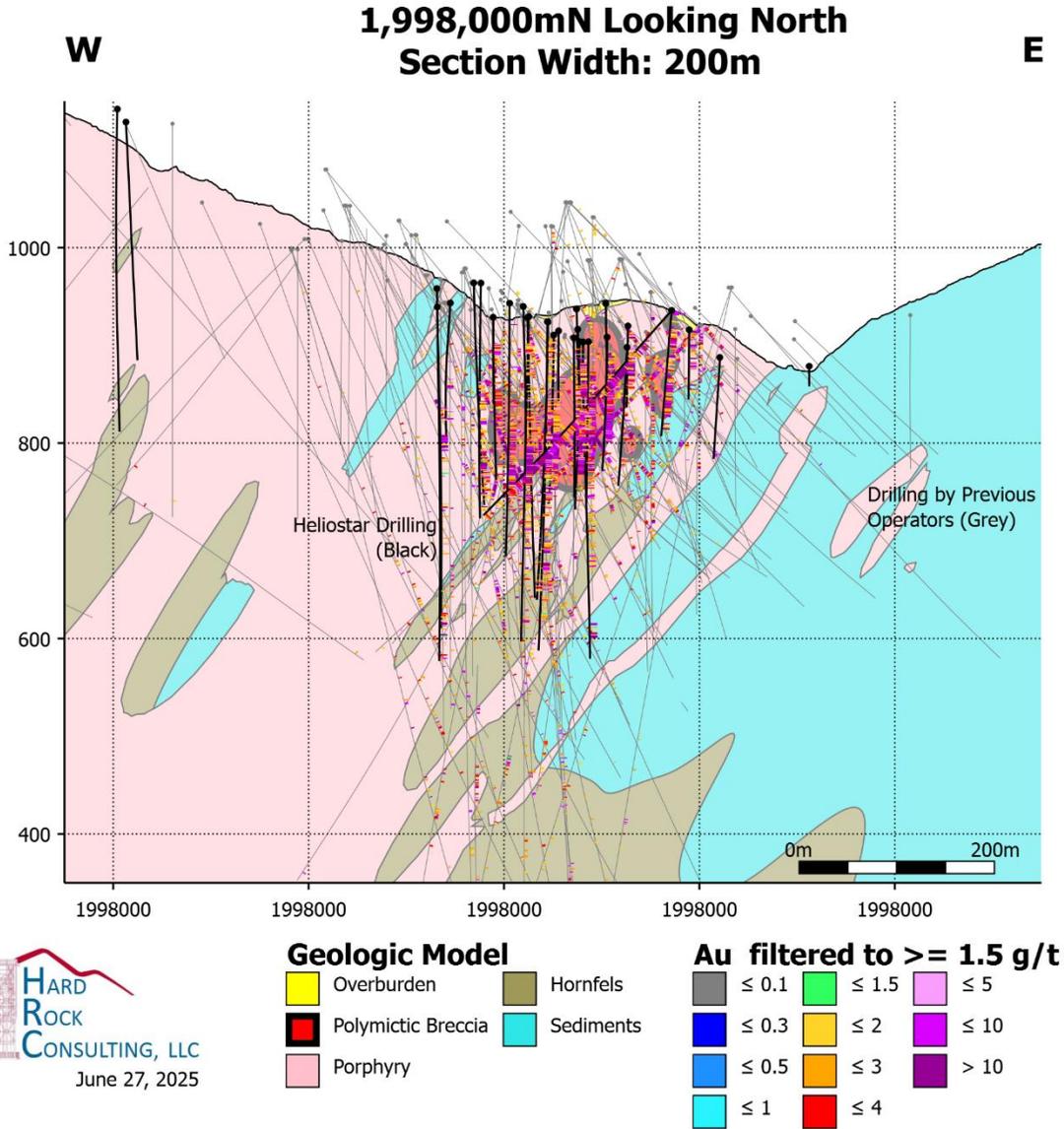
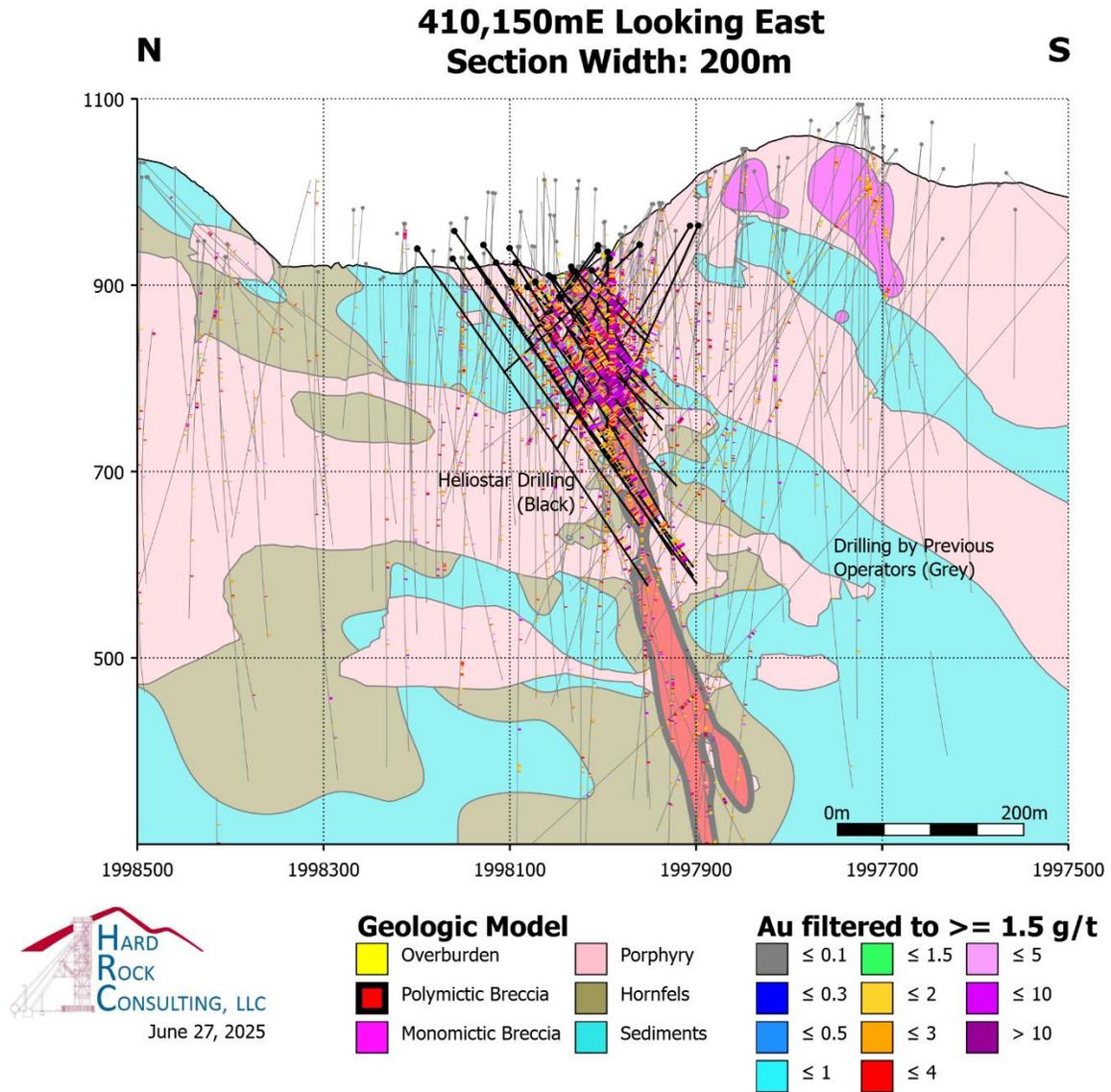


Figure 10-4: High Grade Panel Longitudinal Section 1,998,000 mN Looking North



**Figure 10-5: High Grade Panel Cross Section 410,150 mE Looking East**

## 10.2 DRILLING BY PREVIOUS OPERATORS

The QP notes that the drilling methodology by previous operators relies significantly on older NI43-101 technical reports for the Project. Original source documents describing the drilling methodology are not readily available and are a limitation to the validation. The QP has confirmed the descriptions of drilling methodology are consistent with what was described previously and the technical information such as drilling orientation, purpose, and significant results reflect what can be confirmed from the database, drill hole logs, core photos, and review of the drilling in 3D.

**10.2.1 Goldcorp (2005)**

Goldcorp completed 11 drill holes totaling 3,687.7 meters using HQ and NQ (45.0/75.7 millimeter) diameter drill rods. Nine drill holes were oriented east between 90° and 100° azimuth and inclined either -48° or -65°. The remaining drill holes were oriented northwest at 305° and 330° azimuth and inclined at -65°. Drill holes varied from 185 m to 517 m in depth. Drilling was surveyed down hole on approximately 50-meter intervals. In total 2,853 core samples, 98% of the total drilling length, were submitted for analysis. The drilling focused on the San Jeronimo target which lies within the Ana Paula area, but north of the High Grade Panel, however, the drilling remains relevant to the resource estimate described in Section 14 of this technical report and therefore are considered current. All drill holes intercepted frequently tightly folded, thick, sedimentary sequences invaded by intrusive sills and sill-like bodies. The local stratigraphy and structural controls on mineralization can vary significantly by location and all reported drill intersections are downhole drill lengths that should not be considered true width, which will be less than the reported intersection. 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 10-5 below. Reported grade intervals are based on the original assay certificates as received from the assay labs.

**Table 10-5: Selected Drill Intersections for 2005 Goldcorp Diamond Drill holes**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-05-01	252.1	90	-48	63.10	75.65	12.55	2.14
AP-05-02	300.8	90	-65	92.25	101.15	8.90	1.90
AP-05-03	398.5	90	-65	20.25	24.10	3.85	2.53
AP-05-05	413.3	305	-65	41.70	49.00	7.30	1.58
and				62.40	105.00	42.60	1.90
including				62.40	70.50	8.10	6.86
and				120.00	141.12	21.12	0.97
and				197.45	219.50	22.05	1.67
AP-05-06	416.8	90	-48	142.60	146.60	4.00	2.58
and				234.50	238.10	3.60	2.72
AP-05-09	327.9	90	-65	250.50	264.15	13.65	1.89

**10.2.2 Newstrike (2010-2014)**

Drilling methodology is excerpted from Ana Paula Project 2014 Preliminary Economic Assessment Prepared for Newstrike Capital Inc. with a report date of October 29, 2014 (JDS Energy & Mining Inc., 2014).

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, 1/4 core splits, and in some cases 1/2 core splits to verify Goldcorp’s reported drill results and for QA/QC purposes to serve as check assays on Goldcorp’s drill results.

Newstrike commenced drilling on October 15, 2010, and the discovery hole AP-10-19 was drilled in December of the same year. All drill holes were planned and sited on the basis of cross section and plan projections using a UTM based local grid system with east trending grid lines stepping out every 50 to 100 m to the north. 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 drillhole was assigned a specific sequential number and the location is marked with an azimuth, and

length. The final drill hole location is recorded in the field using a handheld GPS noting UTM location co-ordinates as northing, easting and elevation.

A geologist is always present at the planned completion of the drill hole to avoid, to the extent possible, terminating the hole in a mineralized interval. A geologist supervises the drilling operation, completing a “quick log”, including visible mineralized zones, structures, and lithology units. All drill core is boxed and secured before it is transported at the end of each 12-hour drill shift to the Newstrike’s secure core logging facility for processing by personnel of Newstrike or their contractors.

Between 2010 and 2014, Newstrike completed 246 drill holes totaling 123,288.2 meters. Approximately 25 of those drill holes totaling 11,656 meters were completed with BQ diameter diamond drilling rods. These drill holes start with the prefix AN, and all but two drill holes are beyond the extent of the block model. Those two drill holes did not intersect significant gold mineralization.

The remaining 221 (111,632.2 m) drill holes were completed with HQ diameter diamond core drill core rods, reducing to NQ diameter core barrels if needed. Deeper drill holes (greater than 1,000 m) use PQ diameter core rods reducing to HQ or NQ diameter as necessary. Of the 221 drill holes, 155 drill holes (70%) are inclined east or west at angles between -45° and -85°. Approximately 35 drill holes are oriented vertically. The remaining 31 drill holes are oriented in various directions and inclined between -45° and -85°. Core recovery averages 97%. Ground conditions in general are very good, and few holes were lost or reduced due to poor ground conditions. Following completion of the drillhole, collars are resurveyed using a total station differential GPS. Down hole inclination and azimuth are recorded approximately every 50 m.

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 meters, with 0.5 m samples taken when mineralization characteristics warranted. Quality assurance / quality control samples were also inserted at this stage for Newstrike holes.

Table 10-6 provides a selection of significant intersections from drill holes that crossed the High Grade Panel. Intersections tabulated below use a 1.0 g/t Au cut-off and a maximum internal dilution (grades less than 1.0 g/t Au) of 10.0 meters. Reported grade intervals are based on the original assay certificates as received from the assay labs.

**Table 10-6: Selected Significant 2010 – 2014 Drill Intersections**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-10-16	294.4	90	-65	96.63	102.50	5.87	14.720
including				100.00	101.00	1.00	77.350
AP-10-19	387.1	90	-50	151.00	236.60	85.60	6.473
including				153.00	164.70	11.70	23.688
and including				194.85	207.87	13.02	12.363
and including				217.91	232.60	14.69	4.136

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Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-10-20	603.5	90	-80	287.00	350.22	63.22	3.371
including				289.00	308.73	19.73	6.464
AP-11-29	481.6	90	-65	349.75	359.60	9.85	3.083
AP-11-33	417.6	50	-45	193.37	246.00	52.63	6.898
including				201.50	223.25	21.75	10.291
AP-11-37	472.4	270	-45	3.05	230.00	226.95	7.636
including				117.36	181.00	63.64	17.537
AP-11-52	475.5	70	-65	102.00	160.00	58.00	1.762
and				172.00	222.00	50.00	8.886
including				187.00	203.00	16.00	20.297
and				259.00	282.00	23.00	1.909
and				295.00	312.90	17.90	2.149
AP-12-111	302.8	0	-90	39.15	50.85	11.70	1.297
and				65.25	165.44	100.19	8.954
including				72.25	77.13	4.88	14.288
and including				88.96	102.58	13.62	16.201
and including				114.30	157.85	43.55	11.523
and				179.80	184.45	4.65	2.809
and				193.50	198.80	5.30	3.956
and				208.15	276.60	68.45	1.176
AP-12-137	427.1	330	-60	48.90	51.85	2.95	1.425
and				246.85	368.18	121.33	2.912
including				320.60	368.18	47.58	5.453
including				322.14	342.26	20.12	10.998
AP-13-162	1,407.9	161	-77	4.30	7.85	3.55	1.636
and				23.00	170.00	147.00	4.693
including				98.75	105.50	6.75	9.828
and including				123.00	143.00	20.00	16.921
and				231.74	235.08	3.34	2.368
and				249.43	281.54	32.11	3.212
and				346.50	357.75	11.25	1.555
and				374.10	386.20	12.10	1.140
and				418.32	432.85	14.53	2.528
and				479.40	505.40	26.00	3.810
and				681.25	688.15	6.90	3.944
AP-13-186	297.0	0	-90	0.00	60.30	60.30	4.589
and				134.80	147.76	12.96	2.413

**ANA PAULA PROJECT**  
**NI 43-101 TECHNICAL REPORT – PRELIMINARY ECONOMIC ASSESSMENT**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-13-190	87.5	0	-90	26.79	62.26	35.47	2.712
and				73.83	87.50	13.67	6.819
including				76.35	83.07	6.72	10.343

Holes oriented east and angled at -45° are estimated to cut sedimentary units and intrusive sills at about ninety percent of true width. Holes oriented east angled at -70° may cut down dip of units at less than ninety percent of true width. The local stratigraphy and structural controls on mineralization can vary significantly by location and all reported drill intersections are downhole drill lengths that should not be considered true width, which will be less than the reported intersection. 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.

### 10.2.3 Alio Gold (2015 -2018)

Drilling methodology is excerpted from the NI 43-101 Ana Paula Project Amended Preliminary Feasibility Study Prepared for Alio Gold Inc. with a report date of June 7, 2017 (Neff et al, 2017).

Between 2015 and 2018, Alio Gold completed 107 drill holes totaling 27,127.8 meters. A total of 16,388 samples covering 98% of total drilling length were sent for lab analysis.

All drill holes were 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 10-6 and Figure 10-7. 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 was assigned a specific sequential number, and the location was marked with an azimuth and length. Following completion of the drill hole, the final 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.

Unless specified otherwise, core drilling was completed with HQ diameter drill rods, reducing to NQ diameter core if needed. Deeper drill holes (greater than 1,000 m) used PQ 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 were very good in general and only a few holes were lost or reduced due to poor ground conditions.

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 Alio’s secure core logging facility for processing by personnel of the Alio or their contractors.

#### 10.2.3.1 2015 and 2016 Drilling

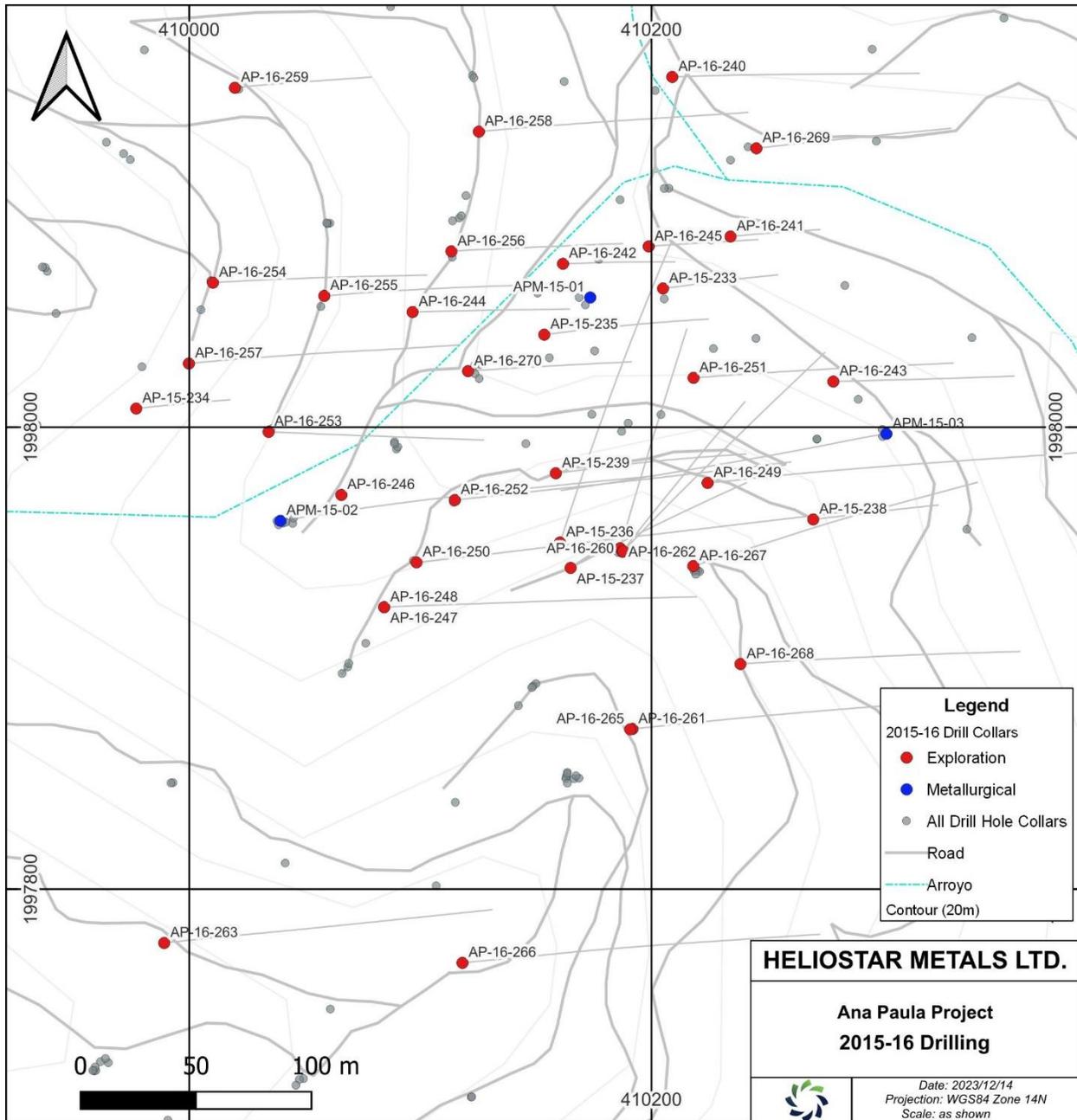
In 2015, shortly after acquiring the Ana Paula Project, Alio Gold carried out confirmation drilling (to verify results of previous programs) and infill drilling. As part of the verification process, Alio Gold twinned three existing core holes.

The core was split with half being sent for analysis and assay verification, and the other half of the core was archived for metallurgical testing. These three twin holes totaling 605.6 m were drilled at the center of the Ana Paula deposit.

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 10-7 and Table 10-8 provide a selection of significant intersections from drill holes that crossed the High Grade Panel. Intersections tabulated below use a 1.0 g/t Au cut-off and a maximum internal dilution (grades less than 1.0 g/t Au) of 10.0 meters. Reported grade intervals are based on the original assay certificates as received from the assay labs.

Approximately 1,402.7 meters 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. These drill holes are depicted in Figure 10-6. An additional 7,304.3 meters of infill drilling from 31 drill holes was completed in 2016 (Figure 10-6).

Thirty-one of the 38 infill drill holes in 2015 and 2016 were oriented east with inclinations between  $-45^{\circ}$  and  $-75^{\circ}$ . Three drill holes were oriented vertically. The remaining four drill holes were oriented northeast and inclined  $-60^{\circ}$  to  $-70^{\circ}$ . Down hole inclination and azimuth were recorded approximately every 25 or 50 meters. Note, the orientation of hole AP-15-237 was designed to test the true thickness of the Polymictic Breccia.



**Figure 10-6: Ana Paula Plan View showing the 2015 and 2016 Drill Programs**

**Table 10-7: Selected Significant 2015 Drill Intersections**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-15-239	240.4	90	-70	52.50	157.50	105.00	6.07
including				98.75	144.00	45.25	11.94
and				178.00	227.50	49.50	1.34
APM-15-02	250.0	88	-50	84.90	96.20	11.30	2.20
and				114.20	223.35	109.15	4.61
including				194.20	199.30	5.10	14.03
and including				208.15	219.35	11.20	11.60
APM-15-03	200.4	268	-45	0.00	200.35	200.35	8.33
including				29.50	42.55	13.05	8.62
including				88.10	91.30	3.20	84.10
including				119.00	185.00	66.00	14.13

**Table 10-8: Selected Significant 2016 Drill Intersections**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-16-252	285.2	90	-50	53.50	61.00	7.50	1.96
and				87.00	184.05	97.05	7.19
including				138.73	164.10	25.37	18.54
and				219.50	223.74	4.24	3.09
and				252.87	272.10	19.23	2.00
AP-16-253	261.6	95	-70	105.00	256.07	151.07	8.99
including				157.35	218.60	61.25	17.23
including				178.40	203.73	25.33	25.43
AP-16-260	200.9	20	-60	107.70	197.00	89.30	4.26
including				126.30	160.00	33.70	8.63
AP-16-264	256.3	50	-60	110.20	139.05	28.85	11.59
including				111.21	118.50	7.29	37.40
and				152.30	188.00	35.70	2.64

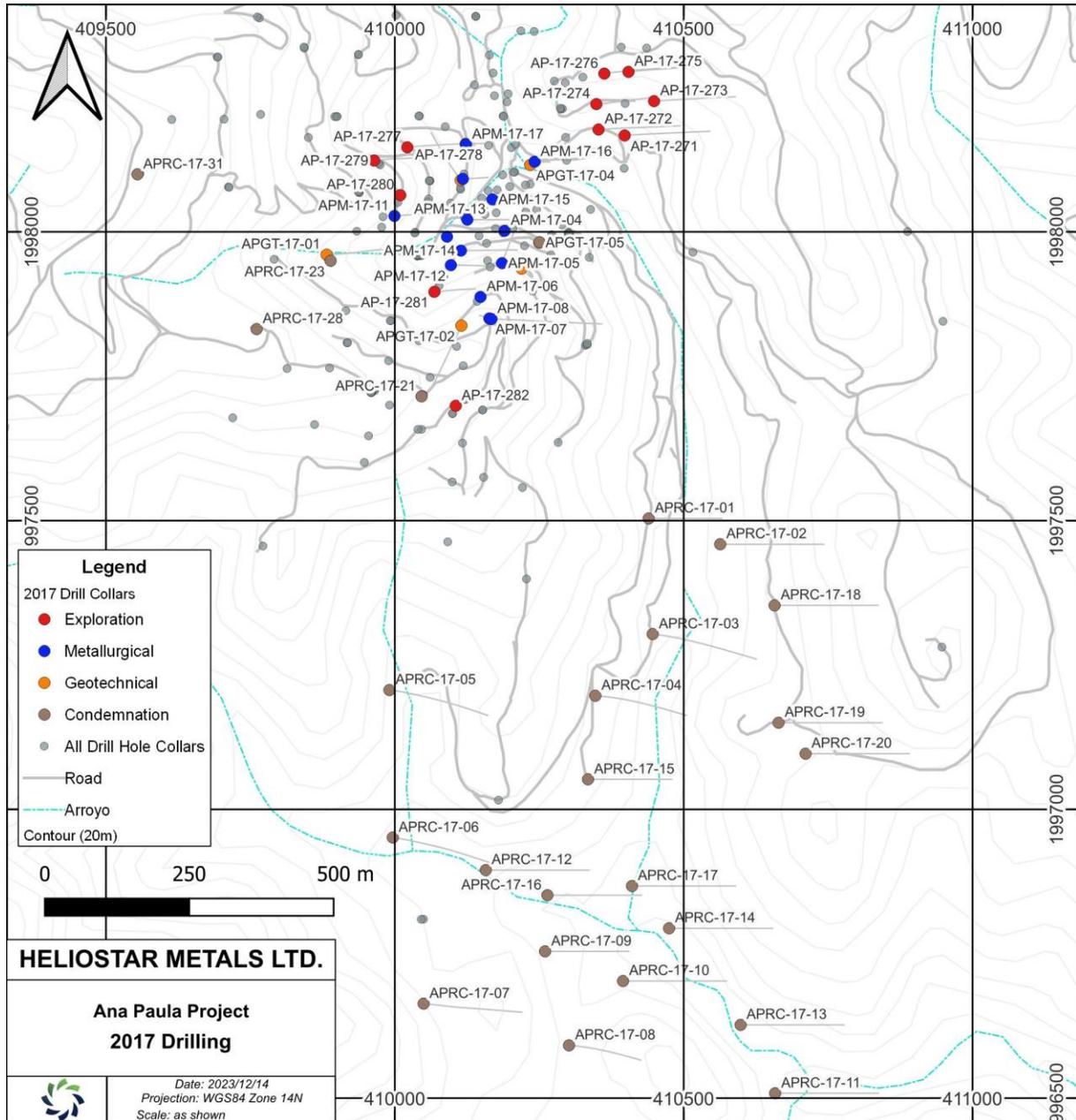
### 10.2.3.2 2017 Drilling

The 2017 drill program as shown in Figure 10-7 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 2,359.1 m of infill drilling was completed in 12 holes at the Ana Paula deposit to upgrade the mineral resource classification model, and to confirm and better delineate the Polymictic Breccia zone.

All but two infill drill holes were oriented east and inclined between  $-45^{\circ}$  and  $-80^{\circ}$ . The remaining two drill holes were oriented vertically. Down hole inclination and azimuth were recorded approximately every 25 or 50 meters.



**Figure 10-7: 2017 Drill Program Plan**

### **Geotechnical Drilling**

Knight Piésold personnel were responsible for the drill hole targeting and design, as well as core logging, transportation, and sampling of the 2017 geotechnical drilling. The 2017 pit slope design analyses were based on field data and 1,895 meters of geotechnical drilling were carried out in six pit sectors. The core-holes 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. The six drill holes were inclined  $-70^\circ$  and oriented in multiple directions. Drill holes were surveyed down-hole on 30 m intervals. Core was geotechnically logged at the drill rig while the core was in the split tubes and transported to the core facility from the drilling locations.

The information logged 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.

The QP notes open pit mining methods are not currently under consideration for this PEA.

### **Condemnation Drilling**

Approximately 7,205.9 meters 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 meters with collar spacings of approximately 150 meters. Twenty drill holes were oriented east with inclinations of  $-45^\circ$  to  $-55^\circ$  and average depths of 250 meters, with the objective of intercepting the contact between the intrusive sill and the sedimentary rocks at approximately 150 meters below the surface. Of those 20 drill holes, 6 were surveyed down-hole on nominal 50 m intervals. Six drill holes were vertically oriented and were not surveyed down-hole. None of the drill holes south of coordinate 1,997,555N intersected any significant mineralization.

### **Metallurgical Testing**

A total of 14 PQ sized drill holes totaling 2,018.2 meters were completed to supply material for metallurgical testing. Nine drill holes were oriented east and inclined between  $-45^\circ$  and  $-80^\circ$ , three drill holes were oriented vertically, one drill hole was oriented west and inclined  $-75^\circ$  and one drill hole was oriented northeast and inclined  $-60^\circ$ . Down-hole surveys were conducted on 20, 30, or 50 meter intervals for all drilling. Table 10-9 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 (Neff et al, 2017). Charted together, the high-grade peaks of the new holes were well represented in the twin hole.

Table 10-9: Selected Significant 2017 Metallurgical Drill Hole Intersections

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)	Twin Hole	Au (g/t) of Twinned Interval
APM-17-04	151.3	0.0	-90.0	7.00	43.40	36.40	1.07	AP-12-111	0.82
and				53.95	151.25	97.30	11.00	and	8.28
including				87.90	115.58	27.68	17.24	including	12.57
and including				124.00	143.60	19.60	19.43	and including	19.60
APM-17-05	200.0	20.0	-60.0	96.00	170.00	74.00	6.17	AP-16-260	4.94
including				128.00	145.55	17.55	15.80	including	8.97
APM-17-06	217.7	0.0	-90.0	6.50	19.05	12.55	2.15	AP-11-35	1.13
and				180.55	204.90	24.35	2.86	and	0.66
APM-17-07	69.7	285.0	-75.0	No Significant Intersections					
APM-17-08	260.4	90.0	-45.0	198.65	200.70	2.05	2.85	AP-11-31	7.03
APM-17-09	88.3	0.0	-90.0	39.20	62.26	23.06	6.54	AP-13-190	1.08
and				75.23	88.30	13.07	4.55	and	7.25
APM-17-10	100.0	90.0	-65.0	28.64	41.81	13.17	1.50	AP-13-172	0.82
APM-17-11	236.5	90.0	-60.0	126.96	134.74	7.78	10.05	AP-16-257	7.65
and				155.10	174.00	18.90	3.48	and	4.05
and				210.00	230.00	20.00	3.61	and	1.57
APM-17-12	201.2	90.0	-50.0	195.00	200.50	5.50	3.76	AP-16-250	2.18
APM-17-13	120.0	90.0	-45.0	8.00	120.00	112.00	3.85	AP-11-47	2.50
APM-17-14	150.0	90.0	-50.0	53.50	79.00	25.50	0.94	AP-16-252	0.84
and				116.95	150.00	33.05	7.07	and	3.87
APM-17-15	92.5	90.0	-75.0	12.65	66.15	53.50	7.32		
APM-17-16	40.9	90.0	-50.0	14.75	34.00	19.25	0.96	AP-16-269	0.68
APM-17-17	89.7	90.0	-80.0	No Significant Intersections					

10.2.3.3 2018 Drilling

A limited infill drill program (8 drill holes totaling 4,337.0 m) targeting the Polymictic Breccia and surrounding lower grade mineralization was completed in 2018. Drill holes are oriented north and inclined between -50° and -72°. The drilling was surveyed down hole on 30 m intervals. 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 10-10 lists the significant intercepts encountered during drilling.

**Table 10-10: Significant 2018 Drill Intersections**

Hole ID	Total Drill Hole Depth (m)	Azimuth (°)	Dip (°)	From (m)	To (m)	Length (m)	Au (g/t)
AP-18-283	600.7	0	-50	57.60	107.30	49.70	1.38
and				341.00	386.23	45.23	3.41
AP-18-284	590.0	0	-55	62.00	106.20	44.20	0.94
and				121.40	135.50	14.10	1.32
and				341.90	363.00	21.10	2.01
and				376.82	379.65	2.83	4.84
and				414.00	423.00	9.00	1.63
and				436.25	438.25	2.00	5.16
and				461.00	497.10	36.10	2.10
and				526.70	545.70	19.00	1.29
AP-18-285	585.6	0	-63	33.90	49.50	15.60	1.17
and				339.65	348.82	9.17	5.36
and				497.65	521.40	23.75	2.33
and				535.65	545.85	10.20	3.39
AP-18-286	599.4	357	-63	32.20	49.00	16.80	1.13
and				320.40	359.05	38.65	1.41
and				415.30	424.20	8.90	1.67
and				499.00	511.00	12.00	1.71
AP-18-287	602.3	355	-65	27.00	66.00	39.00	1.43
and				279.00	306.00	27.00	3.53
and				568.25	572.30	4.05	1.93
AP-18-288	761.3	350	-72	36.05	82.65	46.60	1.45
and				579.30	594.50	15.20	1.78
and				609.60	619.80	10.20	1.61
and				699.96	707.30	7.34	1.86
AP-18-290	296.4	0	-65	141.80	160.10	18.30	1.54

#### **10.2.4 Argonaut Gold (2020 - 2022)**

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

#### **10.3 QUALIFIED PERSON'S COMMENTS**

Heliostar's 2023 and 2024 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 drill spacing 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. Drilling oriented east to west is suitable for testing the broad low-grade mineralization at Ana Paula which strikes north/south and dips to the west. However, the orientation of the 2023 and 2024 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 which strikes east/west and dips steeply to the south.

## **11 SAMPLE PREPARATION, ANALYSES AND SECURITY**

### **11.1 SAMPLING METHODS**

#### **11.1.1 Heliostar Metals (2023-2024)**

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 m 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. Larger sample intervals, specifically near the start of drill holes, could occur but do not represent a significant proportion of the sample database.

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 were 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 Heliostar management were involved in any aspect of sample preparation.

#### **11.1.2 Goldcorp (2005)**

Minimal information is currently available regarding sampling methodology completed by Goldcorp. The QP believes it is reasonable to assume the sampling methodology followed industry standards. Drilling by Goldcorp does not contribute significantly, only 3% by total drilling length, to the Mineral Resource Estimate presented herein. The QP reports the following based on available information. Drill hole logs show sample intervals were selected during logging. The drill hole database shows the nominal sample interval length was 1.5 m. Core photos show core was then sawn in half with half the sample being used for analysis. 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.

#### **11.1.3 Newstrike (2010-2015)**

Sampling methodology for Newstrike is excerpted from JDS Energy & Mining Inc., 2014. Original source documents describing the sampling methodology are not readily available and are a limitation to validation. The QP has confirmed the descriptions of sampling methodology are consistent with what was described in prior technical reports, and the

technical information reflects what can be confirmed from the database, drill hole logs, assay certificates, and core photos.

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 1.0 m to 2.0 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 were 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.

#### **11.1.4 Alio Gold (2015-2018)**

Sampling methodology for Alio Gold is excerpted from Neff et al., 2017. Original source documents describing the sampling methodology are not readily available and are a limitation to validation. The QP has confirmed the descriptions of sampling methodology are consistent with what was described in prior technical reports, and the technical information reflects what can be confirmed from the database, drill hole logs, assay certificates, and core photos.

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 conforming to industry standards 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 m 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 geologists. 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 were 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.

#### **11.1.5 Argonaut Gold (2020-2022)**

Argonaut Gold did not submit any samples to a laboratory.

### **11.2 SAMPLE PREPARATION AND ANALYSIS**

#### **11.2.1 Heliostar Metals (2023-2024)**

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

Samples submitted to ALS in 2023 and 2024 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 ppm) 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 30 g fire assay with gravimetric finish (Au-GRA21).

Select samples were analyzed by screen fire assay (Au-SCR24) in 2023. 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 sulfide 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).

In 2024, in addition to the sample analyses described above, sub-intervals were selected for whole rock cyanidation with LeachWELL tablet (Au-AA15) with fire assay on the residual. Continuous intervals, guided by geology (and not solely by gold grade), that host mineralization were selected for the additional analyses to provide a more complete set of the additional geochemical data.

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 30 g fire assay with gravimetric finish (GO\_FAG30V).

#### **11.2.2 Goldcorp (2005-2010)**

Sample preparation and analysis was completed by ALS Limited. Approximately 90% of individual core samples ranged from 1 to 4 kg in weight, with an average weight of 2.25 kg. All core 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-AA23).

### **11.2.3 Newstrike (2010-2015)**

Sample preparation and analysis for Newstrike is excerpted from JDS Energy & Mining Inc., 2014.

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. BSI Inspectorate was used for the preparation and/or verification of blanks, in-house standards and for check assay work. 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, a 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 ICP-OES analytical method (ME-ICP41). Gold was assayed by fire assay with an AA finish (Au-AA24), using a 50 g aliquot. Mercury was analyzed separately by cold vapor atomic absorption. Coarse rejects were sent to the project's core storage facility in Cuétzala de Progreso.

Samples analyzed at the SGS Laboratory in Durango also utilized fire assay for gold and 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 30 g aliquot (Au-FAG303). Samples were also analyzed with an aqua regia digestion and 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 then re-assayed by fire assay with a gravimetric finish (G6Gr-50).

### **11.2.4 Alio Gold (2015-2018)**

Sampling preparation and analysis for Alio Gold is excerpted from Neff et al, 2017.

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 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 30 g aliquot. Samples were also analyzed with an aqua regia digestion and a combination 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 high 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.

### **11.3 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 2006-2007 and 2010-2018 by previous operators. Quality Assurance/Quality Control (QA/QC) procedures varied with each drill campaign and operator. QA/QC samples comprised a combination of blanks, standards (both in-house and certified reference materials (CRM)), and duplicates. A summary of QA/QC samples from these drill campaigns provided by Heliostar is shown in Table 11-1 below.

Table 11-1: Summary of Ana Paula Project QA/QC Samples (Source Heliostar)

Year	Holes	Type	Holes	Samples	Blanks	Duplicates	Duplicate	Standards	External Checks
	Series			(QA/QC excl.)			Type(s)		
2005	AP-05-	Core	11	2,853	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	1,159	n/a	n/a	n/a	n/a	
2007	AS-	Core(?)	6	907	n/a	n/a	n/a	n/a	
2007	SL-	Core	15	1,039	n/a	n/a	n/a	n/a	
2010	AP-10-	Core	12	3,149	27	173	1/4 core	163	
2011	AP-11-	Core	57	18,866	270	1,010	1/4 core	844	1,196
2012	AP-12-	Core	72	29,471	453	28	1/4 core	1,219	2,112
2012	AN-12-	Core	3	595	n/a	n/a	n/a	31	1,606
2013	AP-13-	Core	78	26,058	369	n/a	n/a	1,068	1,201
2013	AN-13-	Core	9	2,640	10	n/a	n/a	130	
2014	AP-14-	Core	2	1,238	17	n/a	n/a	50	
2014	AN-14-	Core	13	3,331	33	n/a	n/a	119	
2015	AP-15-	Core	7	965	33	33	1/4 core	38	49
2015	APM-15-	Core	3	438	15	14	1/4 core	16	21
2016	AP-16-	Core	31	4,110	128	40	1/4 core	199	205
2017	AP-17-	Core	12	1,267	50	39	1/4 core	43	30
2017	APGT-17-	Core	6	1,232	42	36	1/4 core	42	
2017	APM-17-	Core	14	1,305	50	27	1/4 core	37	
2017	APRC-17-	RC	26	4,727	128	126	RC Split	128	
2018	AP-18-	Core	8	2,571	107	92	1/4 core	94	
2023	AP-23-	Core	22	3,658	98	100	1/4 core, prep	142	105
2024	AP-24	Core	9	3,052	152	80	1/4 core, prep	84	
2024	BH-KP-24	Core	6	91	2	3	1/4 core, prep	2	
<b>Totals</b>			<b>438</b>	<b>115,392</b>	<b>1,984</b>	<b>1,801</b>		<b>4,449</b>	<b>6,525</b>

The frequency of the insertion of QA/QC samples varied significantly with the various drill campaigns. Table 11-2 summarizes the total and percent coverage by QA/QC sample type compared to the total number of routine (non-QA/QC) samples within the project database.

**Table 11-2: QA/QC Sample Insertion Frequencies**

	Number	% of Total	Samples with QA/QC	
			% Coverage	Insertion Rate
Routine Samples	115,392			
Blanks	1,984	1.7%	1.8%	1 in 55
Standards	4,449	3.9%	4.1%	1 in 25
Field Duplicates	1,694	1.5%	1.6%	1 in 60
Preparation Duplicates	107	0.1%	0.1%	
<b>Total QA/QC</b>	<b>8,234</b>	<b>7.1%</b>	<b>7.6%</b>	<b>1 in 15</b>

QA/QC samples were not done for 2005 holes, SL-, AS- and most AN-series holes. Samples without QA/QC make up a small percentage of the total sample dataset. Insertion rates for standards are reasonable. Insertion rates for blanks and duplicates are sufficient. An estimated 94.3% of samples in the database have some form of QA/QC coverage. While the total QA/QC coverage is less than 10% the QP affirms the coverage is sufficient for mineral resource estimation. Of particular importance, QA/QC protocols for drilling completed by Heliostar meet industry standards. Drilling by Heliostar is targeted at the High Grade Panel which is amenable to underground mining methods, and therefore, the QA/QC coverage is suitable for mine planning purposes in that area.

### 11.3.1 Heliostar (2023-2024) QA/QC Results – Contamination

Blank material for 2023 and 2024 drilling was sourced from feldspar-hornblende porphyry (granodiorite according to previous workers) outcrop near the powder magazine facility. Six blanks (6.1%) in 2023 exceeded control limits indicating some degree of contamination. Each were preceded by mineralized samples. One blank sample returned 2.86 g/t gold and a re-assay from a new pulp prepared from the reject sample returned <0.005 g/t gold which confirmed that there was contamination in the original assay. No blanks in 2024 exceeded the control limit. One out of 187 blank samples showed evidence of material contamination (Figure 11-1).

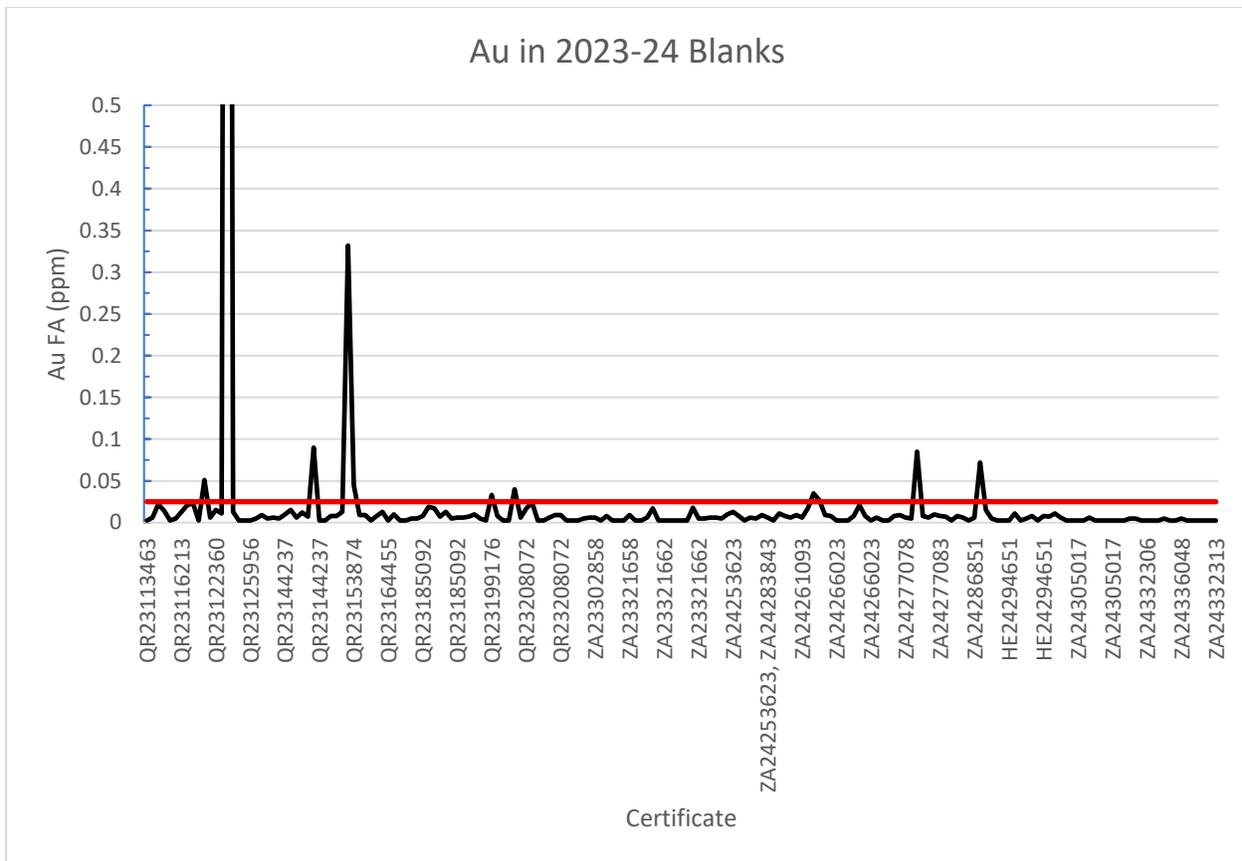


Figure 11-1: 2023-2024 Blank Sample Performance (Au) with Control Limit in Red

In 2024, a total of 66 barren sand washes were inserted into the screen fire analysis sample stream after samples which returned >10 ppm gold in original fire assays. Screen fire assays were carried out on sample material collected from the coarse rejects. Twenty-two (33.3%) of these samples exceeded the 0.025 ppm gold control limit and three of the sand washes exceeded 0.4 ppm gold. These samples returned percentages of contamination ranging from 0.28% to 3.19%.

**Summary:**

Blanks utilized for the 2023-2024 drill programs are appropriate for the Project. Blank failures were directly associated with auriferous mineralization. Analysis of blank samples has confirmed the presence of some contamination, however, it is not deemed to be material. Regular insertion of blank samples, at least 1 in 30, should continue to be a part of the QA/QC program for the Project.

**11.3.2 Heliostar (2023-2024) QA/QC Results – Accuracy**

Four CRMs (Table 11-3) were regularly inserted on a rotating basis into the 2023 sample stream. In 2024, five CRMs (Table 11-4) were regularly inserted into the sample stream. Standards were inserted at a frequency of one CRM for every 30 samples for both programs combined. The CRMs were sourced from CDN Resource Laboratories in Langley, B.C. Canada and Rock labs Reference Materials in Auckland, New Zealand.

**Table 11-3: 2023 Ana Paula Standards Used**

Standard	Quantity	Expected Au Value (g/t)	Std. Dev.	Source
DCN-GS-2Z	36	2.376	0.044	DCN
DCN-GS-7J	55	7.34	0.15	DCN
SP116	40	18.091	0.318	Rocklabs
CDN-GS-20C	11	19.65	0.38	CDN

**Table 11-4 2024 Ana Paula Standards Used**

Standard	Quantity	Expected Au Value (g/t)	Std. Dev.	Source
CDN-GS-2Z	18	2.376	0.044	CDN
CDN-GS-7J	12	7.34	0.15	CDN
SP116	3	18.091	0.318	Rocklabs
CDN-GS-25A	31	27.7	0.5	CDN
CDN-GS-7M	22	7.59	0.19	CDN

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

Utilizing these criteria, there were six failed standards in 2023 and three failures in 2024. These data are displayed graphically in Figure 11-2 and Figure 11-3 respectively, 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 and 2024 drill programs 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 QP affirms the accuracy of the gold assay data collected by Heliostar. The QP recommends CRM's should continue to be inserted at a rate of a least 1 in 30 for future drilling programs.

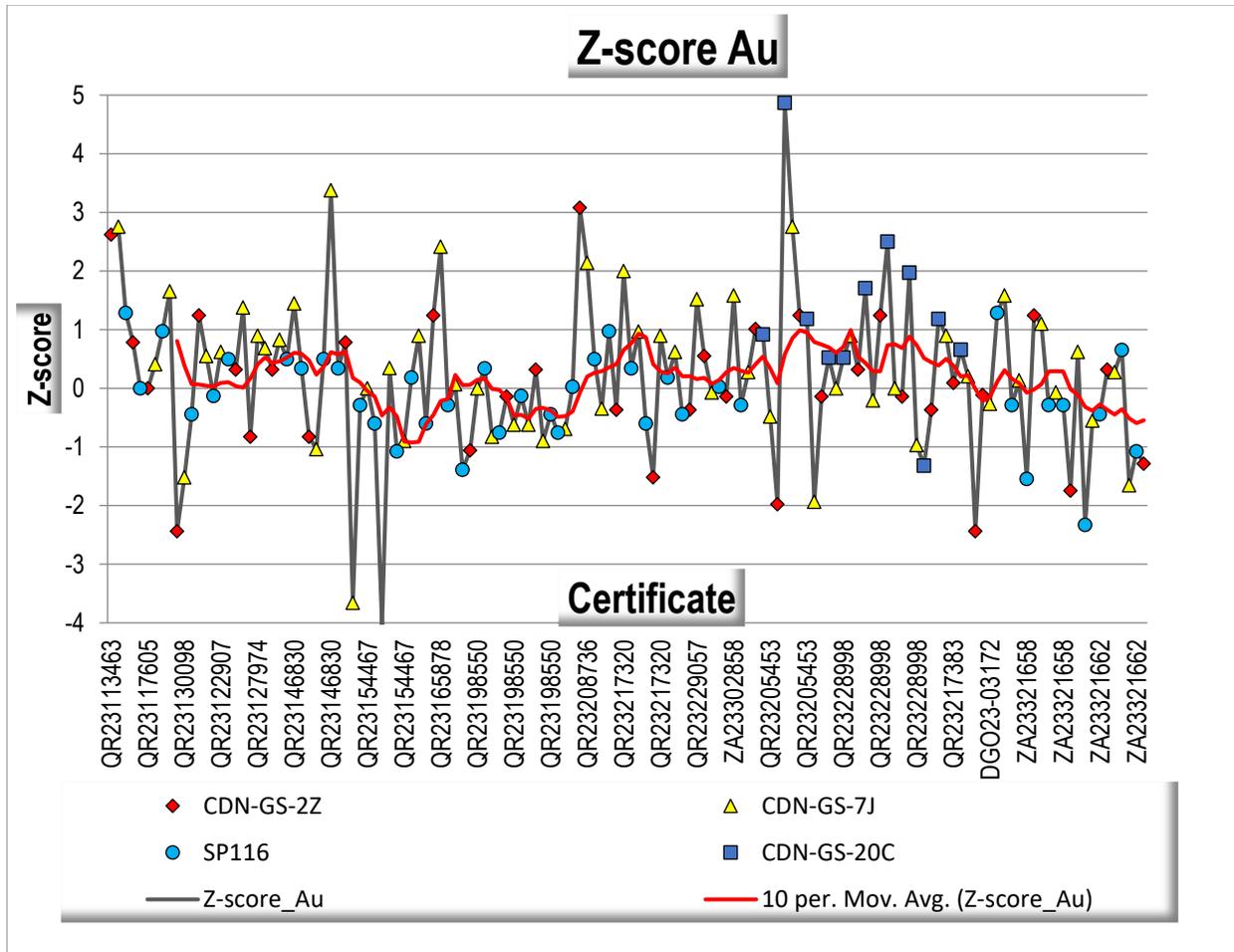


Figure 11-2: 2023 Standard Performance (Au) versus Z-score (multiples of CRM standard deviation)

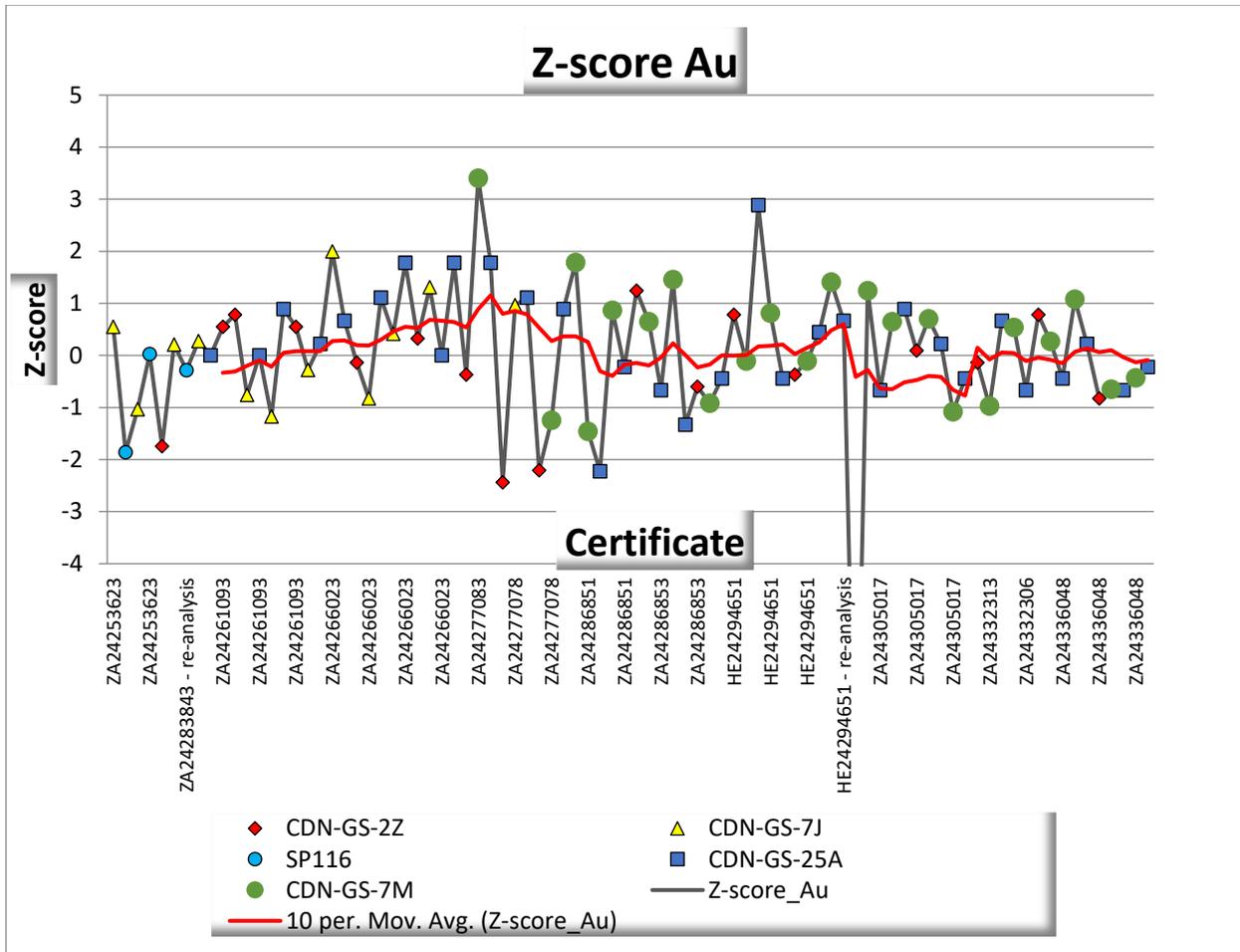


Figure 11-3 2024 Standard Performance (Au) versus Z-score (multiples of CRM standard deviation)

### 11.3.3 Heliostar (2023-2024) QA/QC Results – Duplicates

In 2023 and 2024, duplicate-pairs alternated between ¼ core and preparation duplicates (two pulps prepared from the same reject). A total of 76 field duplicate-pairs were inserted into the sample sequence and submitted for analysis. A total of 107 preparation duplicate-pairs were submitted in 2023 and 2024 for analysis by requesting that the preparation laboratory prepare a second pulp from the same reject and analyze each pulp.

Field duplicate assays compared well with original assays with a coefficient of determination ( $R^2$ ) equal to 0.962 (Figure 11-4). Precision is lowest at gold grades less than 1.0 g/t, however, precision improves at higher grades. Nine duplicate pairs had an absolute relative difference (ARD) greater than 0.2 and a difference in grade greater than +/-0.5 g/t Au, an 88.2% success rate.

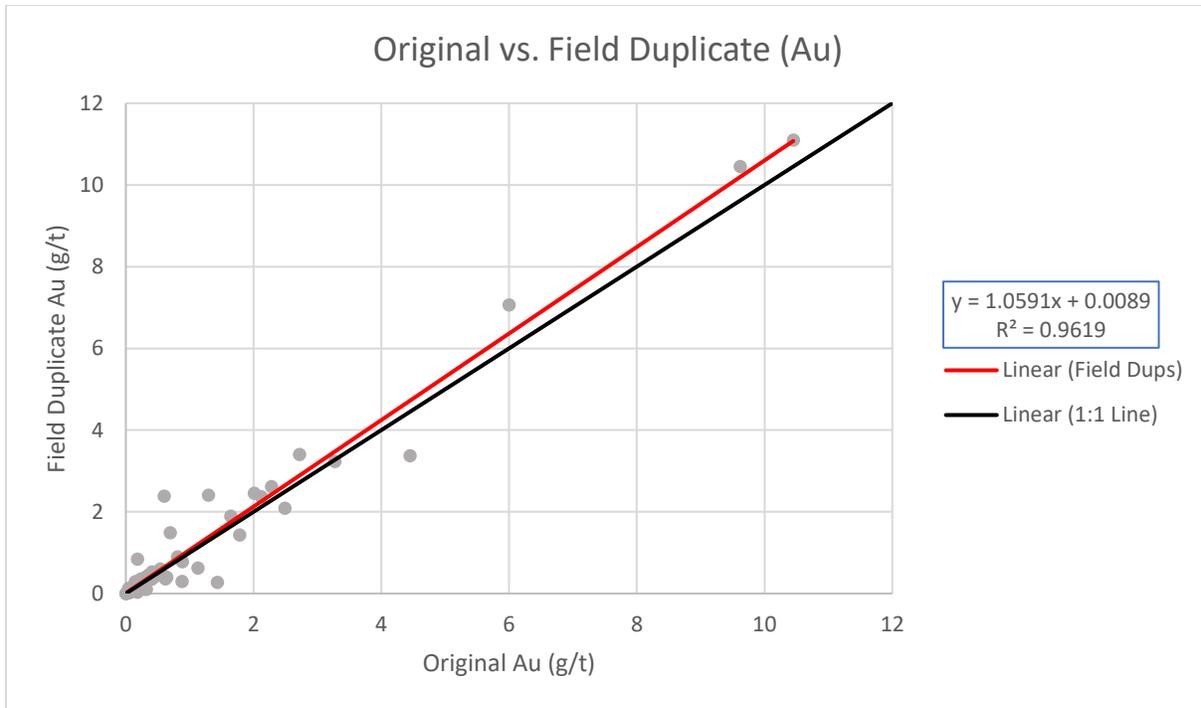


Figure 11-4: 2023-2024 Field (1/4 core) Duplicates

Preparation duplicate assays compared well with original assays with an  $R^2$  equal to 0.997 (Figure 11-5). Six duplicate pairs had an ARD greater than 0.1 and a difference in grade greater than  $\pm 0.5$  g/t Au, a 94.4% success rate.

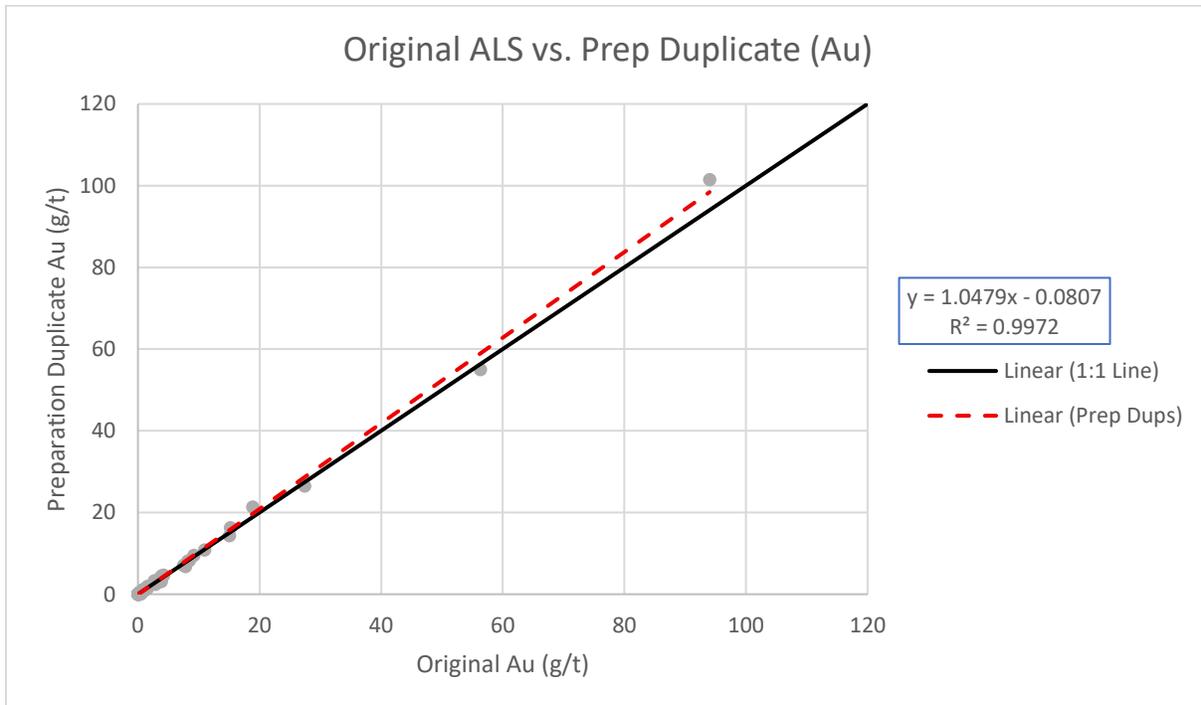


Figure 11-5: 2023-2024 Preparation Duplicates

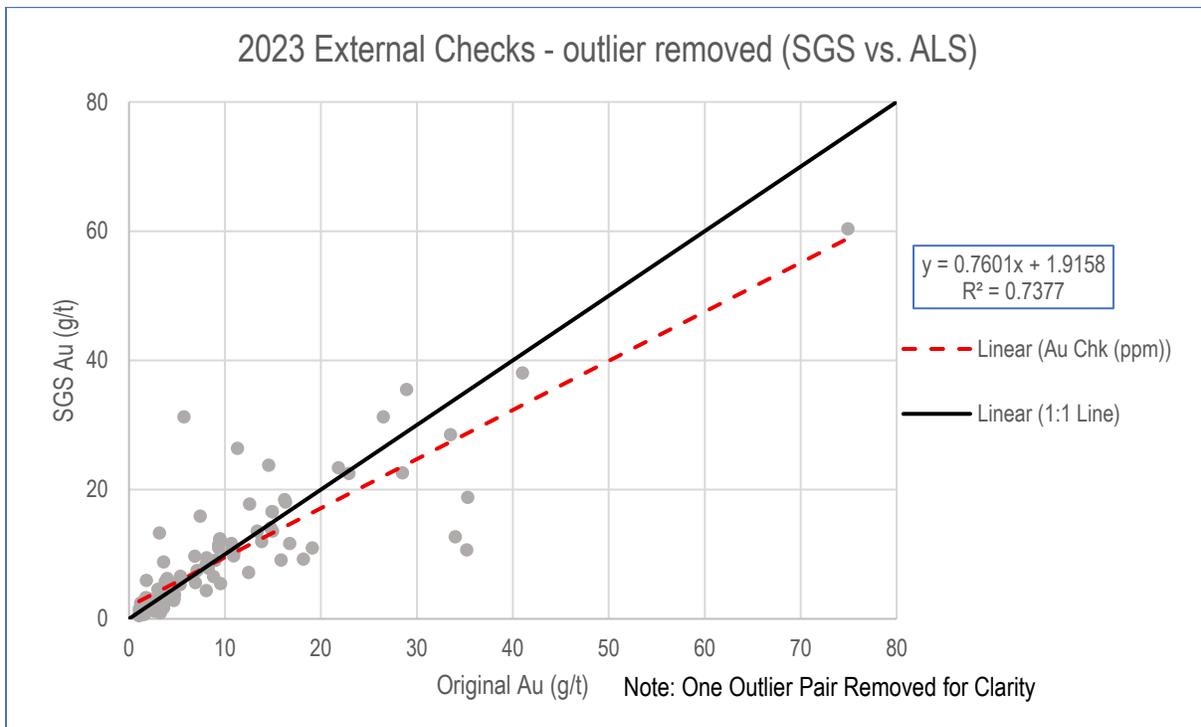
**Summary:**

While the insertion rate of duplicate samples meets industry standards, the inclusion of often overlooked preparation and reject duplicates 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 and 2024 drill programs. Precision for field duplicates is fair, and precision for reject and preparation duplicates is acceptable. Collection of duplicate samples from ¼ core and pulps should continue to gain a better understanding of the repeatability of gold assays. The insertion rate of duplicates should be no less than 1 in 30 for future drilling programs.

**11.3.4 2023 QA/QC Results – External Checks**

A total of 105 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. Additionally, a total of 55 reject samples from the 2023 drilling program 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 and 2024 drilling took place.

External check assays from quartered core have a fair comparison to original assays with an R<sup>2</sup> equal to 0.738, although 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 (Figure 11-6) outlined a weak high bias in original ALS assays, but this bias is influenced in particular by seven high grade data points. The QP identified 20 failed external check pairs, an 80.9% passing rate. Ideally, the results of external checks should be comparable to the field duplicates (Figure 11-4). The QP recommends Heliostar continue submitting field and or preparation duplicates to a secondary laboratory as an external check of the primary laboratory.



**Figure 11-6: 2023 ALS Assays versus External Check Assays from ¼ Core**

Reject duplicate assays comparing ALS Queretaro and ALS Zacatecas assays compared well with original assays with an  $R^2$  equal to 0.973. A simple linear regression determined a high bias in duplicate assays by a factor of 1.167 (duplicate assays = 1.1669 x original assays), although this is influenced by one duplicate-pair. A review of an absolute relative difference versus mean grade plot for reject duplicates indicates their precision overall is good. The precision averages about 15% at grades up 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%. The QP affirms the reject duplicates between ALS labs demonstrate a reasonable level of precision.

### **11.3.5 Goldcorp**

No data is available for analyzing or describing QA/QC methodology for drilling completed by Goldcorp.

### **11.3.6 Newstrike (2005-2015)**

Quality control samples included standards for gold as well as other elements and blanks. CRMs 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.

#### **11.3.6.1 Blanks**

A total of 1,179 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. Two short Newstrike holes did not include a blank, AP-13-183 and AP-13-189.

#### **11.3.6.2 Quarter Core Duplicates**

A total of 1,211 assays exist on duplicate samples from holes AP-10-12 through AP-12-81, representing one duplicate assay approximately every 20th sample for those drill holes. No data was available for holes AP-12-82 through AP-13-230.

#### **11.3.6.3 Standards**

During the Newstrike drill campaign, control samples, comprising of CRM pulps were inserted into the drill sample stream approximately every 20th sample. CRMs were inserted into all Newstrike drill holes.

#### **11.3.6.4 Check Assays from the Umpire Laboratory**

A total of 6,115 check assays from holes AP-10-12 through AP-14-232 were submitted by Newstrike. No check assays were conducted by Goldcorp, but some Goldcorp samples were re-analyzed by Newstrike during its audit program.

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.

### **11.3.7 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 30 approximately for each of the QA/QC sample types amounting to a 10% insertion rate. Four types of QA/QC samples were used by Alio Gold.

#### **11.3.7.1 Blanks**

Blanks consisted of non-mineralized basalt rock chips that are suitable for monitoring cross contamination at the sample preparation step. The blanks were inserted into the sequences approximately every 30 samples. Additionally, blanks were specifically added following zones with expected gold grades. A total of 553 blanks were analyzed during the 2015-2018 drill programs.

#### **11.3.7.2 Quarter Core Duplicate**

Field duplicates consisted of quarter cores directly collected from core boxes. One such field duplicate was collected approximately every 40 samples. A total of 407 duplicates were analyzed during the 2015-2018 drill programs.

#### **11.3.7.3 Standards**

The standards were inserted into the sequences approximately every 30 samples. Additionally, standards were specifically added to zones with expected gold grades. A total of 597 standards were analyzed between 2015-2018.

#### **11.3.7.4 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 the 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 30 g aliquot. Samples were also analyzed with an aqua regia digestion and a combination of ICP-OES to provide multi-element analyses.

### **11.3.8 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.

Control limits for blank samples were 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 79 blank samples exceeding control limits; this amounts to 4.56% of blank samples. The maximum concentration of gold in a historic blank sample was 1.155 g/t.

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.

### 11.3.9 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 11-5.

**Table 11-5: Pre 2023 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	301	0.317	In-house
AP-2	2010, 2011, 2012, 2013	262	0.536	In-house
AP-3	2010, 2011, 2013	190	0.689	In-house
AP-4	2010, 2011, 2013	52	1.283	In-house
AP-5	2011, 2012, 2013	603	0.32	In-house
AP-6	2011, 2012, 2013	693	0.493	In-house
AP-7	2011, 2012, 2013, 2014	261	0.863	In-house
AP-8	2011, 2012, 2013	72	1.225	In-house
CDN-ME-19 (AP-10, AP-12)	2013, 2014	414	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	875	0.564	CRM
CDN-GS-5K	2015, 2016, 2017	41	3.84	CRM
CDN-CM-36	2015	217	0.316	CRM
CDN-GS-1P5K (AP-14)	2013, 2015, 2016, 2017, 2018	73	1.44	CRM
CDN-ME-1311	2018	61	0.839	CRM

Standards used from 2010 to 2014 were a combination of commercial 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 mesh and then pulverized to -150 mesh. 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 by 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 were compiled and reviewed by the QP. Upper warning limits (UWL) were set at between +2 and +3 standard deviations from the expected values while lower warning limits (LWL) were set at between -2 and -3 standard deviations from expected values. Upper and lower control limits (UCL and LCL) were set at  $\pm 3$  standard deviations and such samples exceeding the UCL or LCL were considered failures. Also, consecutive samples exceeding the UWL or LWL were also considered failures.

Utilizing these 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. 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 11-6: 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	844	20.85%
2012	230	33	197	1250	15.76%
2013	139	17	122	1198	10.18%
2014	5	0	5	169	2.96%
2015	2	0	2	38	5.26%
2016	4	0	4	199	2.01%
2017	15	4	11	266	4.14%
2018	5	0	5	94	5.32%

As can be seen in Table 11-6, 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:**

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 QP notes that while the insertion rate of standards is adequate, the types of standards used by Newstrike in particular do not meet current industry standards. 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.

**11.3.10 Pre-2023 QA/QC Duplicate Results**

Table 11-1 shows 1,618 duplicates were submitted between 2010 to 2012 and again between 2015 to 2018. Available results for duplicate pairs are incomplete. The QP was able to review 203 pairs analyzed at SGS for drilling completed by Newstrike between 2010 and 2011, and 408 duplicate pairs for drilling completed by Alio between 2015 and 2018 analyzed at ALS.

203 duplicates analyzed at SGS for Newstrike drilling had a  $R^2$  of 0.459. The removal of one outlier pair (3.750 g/t Au original vs 0.264 g/t Au duplicate) improves the  $R^2$  to 0.702. The subset had six samples with an ARD greater than 0.2 with a difference in grade exceeding 0.5 g/t Au, a success rate of 97%.

An estimated 408 duplicates analyzed at ALS for Alio drill holes had a  $R^2$  of 0.733. Removing one outlier pair (1.125 g/t Au original vs 13.500 g/t Au duplicate) improves the  $R^2$  to 0.854, which is acceptable. The subset had 28 samples with an ARD greater than 0.2 with a difference in grade exceeding 0.5 g/t Au, a success rate of 94%.

The subsets of duplicate data reviewed by the QP show poor reproducibility, however, the low  $R^2$  can be attributed to a few outlier pairs and lower grade gold assays. Any inaccuracy in individual sample results are not likely to materially impact the mineral resource estimate.

**11.3.11 Pre-2023 QA/QC Results – External Checks**

A total of 6,420 (Table 11-7) 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 11-7: External Check Assaying Summary (Source: Heliostar)**

Primary Lab	Checks from Rejects	Checks From Pulps	Unknown Check Source	Total
ALS	2,842	1,088	305	4,235
SGS	1,741	444	n/a	2,185
Total	4,583	1,532	305	6,240

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. 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 and atomic absorption or ICP finish.

The QP reviewed 661 available external check samples submitted to SGS from the 2010 and 2011 Newstrike drilling. SGS external check assays compare well to original ALS results with a  $R^2$  of 0.801. A simple linear regression shows a slight bias towards the SGS results, but the bias is not deemed material. 26 samples had an ARD greater than 0.2 with a difference in grade greater than +/-0.5 g/t Au. The subset of these check samples had a success rate of 96%.

The QP also reviewed 346 available external check samples submitted to ALS from the 2011 – 2012 Newstrike drill holes. ALS external checks show a  $R^2$  value of 0.605 when compared to SGS results. However, when one extreme

pair is removed (0.0025 g/t Au SGS vs. 14.3 g/t Au ALS) the  $R^2$  value increases to 0.837. When the outlier pair is removed, a simple linear regression shows a non-material slight bias towards the ALS results. The complete subset shows 17 samples had an ARD greater than 0.2 with a difference in grade greater than +/-0.5 g/t Au, a success rate of 95%.

The QP does not have results for external checks submitted to Acme Analytical Laboratories and Inspectorate Exploration and Mining Services Ltd. A review of available Newstrike drilling external check pairs does not show a material bias between SGS and ALS gold assay results.

#### **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.

Density data collected in 2023 and 2024 comprised samples every 10 meters for all core with infill samples collected at 5- and 2.5-meter 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. The average of original specific gravity measurements is 3.058 g/cm<sup>3</sup> and the average of duplicate specific gravity measurements is 3.092 g/cm<sup>3</sup>. The average variance ((Duplicate specific gravity – Original specific gravity) / Original specific gravity) is 1.296%.

#### **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<sup>3</sup>,
- 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 mineral resource estimate and mine planning.

#### **11.5 COMMENTS ON SECTION 11**

The QP reviewed the results of the QA/QC program using source files and documentation provided by Heliostar Metals.

The QP is of the opinion that the QA/QC protocols and verification of the results, meet 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 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. 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 concerns. However, review of external check results indicates the issues identified in those standards will not materially impact the mineral resource estimate.
- Standards and protocols for re-assay used in the drilling completed by Heliostar meet industry standards. No bias was observed in the analysis of gold grades from those standards. Drilling by Heliostar is targeted at the High Grade Panel which is amenable to underground mining methods, and therefore, the database is suitable for mine planning purposes in that area.

Pre 2023 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. However, the dataset available for review is incomplete.
- The QP did review the available external check samples from the drill holes completed by Newstrike and did not find any bias between lab results that would indicate a material impact to the mineral resource estimate.
- The QP review of the analysis of external check samples from prior technical reports (JDS, 2015 & Neff et al, 2017) supports the conclusion by the QP.

2023 External Check Assays:

- External check assays from quartered core compare reasonably with original assays.
- 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.
- Reject samples prepared for analysis in Zacatecas compare well with original assays prepared in Queretaro with an  $R^2$  equal to 0.973. 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
- The QP recommends Heliostar continue submitting field and or preparation duplicates to a secondary laboratory as an external check of the primary laboratory.

Duplicates:

- The sub-set of Pre-2023 duplicates reviewed by the QP show poor reproducibility, however, the low  $R^2$  can be attributed to a few outlier pairs and lower grade gold assays. Any inaccuracy in individual sample results are not likely to materially impact the mineral resource estimate.
- Precision in field duplicates is better in the Heliostar drilling with scatter plots showing tighter distribution between the pairs and good ( $>0.9$ )  $R^2$  values.
- 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.

## **12 DATA VERIFICATION**

### **12.1 VERIFICATION BY THE QPs**

#### **12.1.1 Mr. Alberto Bennett**

Section 18, 21 and 22 were prepared under the supervision of Mr. Alberto Bennett, President and CEO of M3 Engineering & Technology Corp in Tucson, Arizona. Mr. Bennett has reviewed the information on these sections and believes the project infrastructure, capital and operating costs and economic analysis are reasonable for a project size and location as the Ana Paula project.

#### **12.1.2 Mr. Art Ibrado**

Section 17 was prepared by Mr. Art Ibrado, President, Fort Lowell Consulting PLLC in Tucson, Arizona. This section was based on metallurgical testing performed at Blue Coast Research Ltd., with inputs from Mr. Ibrado on the planning and conduct of the tests. Biological oxidation testing was performed by Metso at the SGS laboratories in Johannesburg, South Africa. Mr. Ibrado was in regular communication and coordination with both Blue Coast Research and Metso during the conduct of the tests. He is confident the results of the tests used for the design of the process plant were sound based on two life-of-mine composites that were submitted for testing and satisfy the requirements of a preliminary economic assessment study.

#### **12.1.3 Mr. Andrew Kelly**

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.

#### **12.1.4 Mr. Paul Thornton**

Section 16 was prepared under the supervision of Mr. Paul Thornton, Sr. Mine Engineer with JDS Mining & Energy Inc. Mr. Thornton has reviewed the information in this section and believes it is a reasonable summary of mining methods applicable to the Ana Paula project. Mr. Thornton confirms that prior to any mine design work being completed, the block model was imported and validated against the updated mineral resource estimate. Geological wireframes were verified to match the spatial positioning of the block model and the site topography was validated against the geology surfaces provided with the block model.

#### **12.1.5 Mr. Richard Schwering**

The QP conducted an impromptu interview with Jeremy English, Sr. Geologist for Heliostar, discussing the drilling, logging, and sampling procedures. Mr. English was present during drilling operations in 2024, and the interview confirmed the information described in Sections 10 and 11 for Heliostar drilling.

The QP visited the core logging and storage facility. The facility is considered secure and under 24-hour surveillance. The facility consists of four steel frame buildings covered with metal roofs which appeared to be in good condition. One building was used for covered parking and core cutting/sampling using two dedicated saws. Core and pulps are stored

in the other three buildings on metal racks and are well organized. The QP did note some older core boxes were showing signs of deterioration due to sun exposure. The logging area is spacious and in good order.

The QP was shown several road cut exposures of the geology and mineralization at Ana Paula, including an outcrop of the High Grade Panel. Of particular interest was a view looking south from drill hole collar AP-24-315 Figure 12-1. The picture confirms geologic stratigraphy dipping steeply to the west and exposes a mineralized breccia, as evidenced by the historic adit, as well as an east-west trending fault cutting obliquely through the outcrop. While the outcrop in Figure 12-1 is south of the main mineralized breccia, which hosts the majority of the Ana Paula mineral resource, the photo still shows key structural and geologic components at Ana Paula.



**Figure 12-1: Road Cut Exposure from AP-24-315 Looking South**

Drill holes completed by Heliostar are permanently marked with a labeled concrete base and drill pipe stand. The QP noted that historic drilling locations were also marked and could be verified. During his site visit, the QP took six collar readings with his own handheld GPS. Two drill holes share a collar location and were completed in 2023. Additionally, the QP took readings for 5 of the 9 drill holes completed in 2024 targeting the High Grade Panel. However, the GPS often lost signal while readings were being taken due to steep terrain and limited satellite coverage and the results are inconclusive. The QP is of the opinion the procedures used by Heliostar to survey collar locations as described in section 10 to be adequate.

The QP reviewed approximately 100 m of core during the site visit and compared them to the logged lithology as well as the modeled estimation domain. The intervals, presented in Table 12-1, were selected based on location and mineralization style. The review of selected core intervals did not show significant differences from the information contained in the drill hole logs.

**Table 12-1: Drill Hole Log Intervals Checked by the QP**

Hole ID	Easting	Northing	Elevation	TD (m)	Azimuth	Dip	From (m)	To (m)	Length (m)
AP-24-318	410105.7	1998128.3	943.194	332.0	180	-57	198.5	221.2	22.7
AP-24-315	410145.0	1998093.9	924.043	329.0	180	-60	159.5	181.0	21.5
AP-24-316	410144.3	1998114.8	924.235	398.0	180	-60	149.5	172.0	22.5
AP-11-51	410040.5	1997958.4	943.500	417.6	70	-45	189.5	210.5	21.0
AP-16-253	410034.3	1997997.9	968.200	261.6	95	-70	220.1	240.1	20.0
<b>Total Length (m)</b>									<b>107.7</b>

The QP reviewed a memorandum detailing the drill hole database audit by Mine Technical Services, Ltd. (MTS) dated April 14, 2025. Drill hole tables were submitted to MTS for the audit between February 5 and February 17, 2025. 38 drill holes from all operators at Ana Paula were selected for the drill hole audit. Highlights from the memorandum include the following.

- Database [collar] coordinates are sourced from surveys other than those recorded in the lithology logs and that these surveys are not available to Heliostar. Because the differences between the database coordinates and the log coordinates are not large, MTS assumes that the database collar coordinates likely represent high quality total station or differential GPS surveys conducted after the provisional hand-held GPS were collected and that they are acceptable for use in resource estimation. However, MTS strongly recommends that Heliostar perform high quality DGPS surveys of 10% of the drill holes at Ana Paula to confirm the coordinates in the database.
- 345 down-hole surveys were reviewed and while some issues were identified the downhole surveys at Ana Paula are sufficiently accurate to be used in resource estimation. More information from downhole surveys from infill drilling from underground will be required to build confidence in the location of the underground stopes for mine planning.
- The lithology database does not exactly match the original logs. There has been compositing of intervals and undocumented relogging of codes. The lithology logs are sufficiently accurate to support geological modeling and resource estimation; however, MTS recommends that Heliostar correct the lithology database to support future geological modeling and resource estimation. The lithology for the project is complex and a highly precise and accurate geological model will be critical to optimizing the underground resource model and mine plan.
- MTS compared Au, Ag, As, cyanide soluble gold (AuCN), sulfide sulfur (SSul), and organic carbon (COrg) assay values in the Heliostar database against the MTS compiled database for 9,716 samples. Assays for AuCN, SSul, and COrg were limited to Heliostar drill holes and some reassays of legacy drill holes by Heliostar. The assay records in the database match the original assay certificates for Au, Ag, AgCN, SSul, and COrg and the database is acceptable for resource estimation purposes.

The QP completed a mechanical audit of the drill hole database using Leapfrog Geo® (Leapfrog) software version 2024.1.2. The mechanical audit checks for interval overlaps, interval gaps, duplicate intervals, intervals exceeding the maximum collar depth, missing information, non-numeric and negative assay values, etc. The mechanical audit did not

identify significant issues within the drill hole database and the few errors identified were corrected prior to gold grade estimates.

The QP reviewed the results of five check samples collected by Lewis Teal, CPG in January of 2023 Table 12-2. “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 (Teal et al, 2024).” The QP compared the results of check assays recorded in the certificate to the assay values in the database. The database values were also analyzed using the same ALS method. All samples were within an acceptable absolute relative difference (ARD) of 0.2.

**Table 12-2: Independent Check Assay Results by Lewis Teal, CPG in January of 2023**

Hole ID	Easting	Northing	Elevation	From (m)	To (m)	Original		Check		ARD
						Sample ID	Au (g/t)	Sample ID	Au (g/t)	
AP-23-304	410076.3	1997906.4	963.8	215.7	216.5	G447199	17.05	G449869	15.05	0.12
AP-23-304	410076.3	1997906.4	963.8	218.5	220	G447202	8.95	G449870	9.06	0.01
AP-23-291	410171.4	1998052.9	907.8	128.5	129.5	G445132	0.77	G449866	0.84	0.09
AP-23-297	410271.6	1997994.8	935.8	82.1	83	G446006	20.6	G449867	17.15	0.18
AP-23-297	410271.6	1997994.8	935.8	216	217	G446158	68.5	G449868	70.3	0.03

Heliostar routinely submits samples for screen fire assay analysis. Samples with a screen fire assay result for gold supersede the original standard fire assay and fire assay with gravimetric finish in the drill hole database. The QP compared 3,314 screen fire assays to their original fire assay results Figure 12-2. The comparison did show a bias towards the original fire assay results for gold grades less than 3.5 g/t. Grades above 3.5 g/t did not show a significant bias between the assay methods. The QP does not believe the bias observed for gold grades less than 3.5 g/t will have a material effect on the mineral resource estimate Figure 12-2.

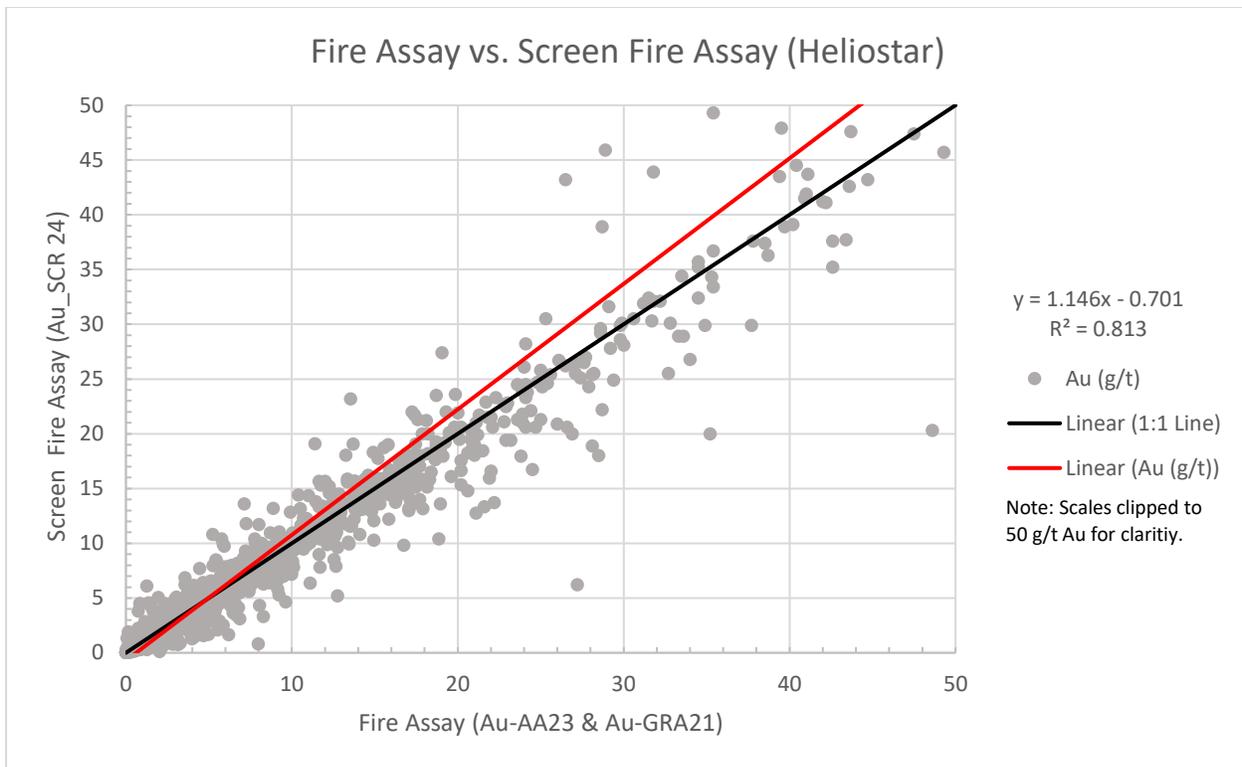


Figure 12-2: Fire Assay vs Screen Fire Assay Results

The QP reviewed descriptive statistics for all gold fire assay methods included in the mineral resource estimate (Table 12-3). The mean gold grade results for most assay methods are similar except for Au-AA23, which has a lower average grade. Those samples account for less than 10% of the total gold assays included in the mineral resource estimate. Gold grades by fire assay with gravimetric finish, overlimit assays, also show a suitably similar mean and median. Gold grades by screen fire assay were not included in the comparison since the method covers a broader range of gold grades compared to fire assay and overlimit assays.

Table 12-3: Comparison of Gold Statistics by Assay Method

Name	Assay Method Code	Count	Length	Mean	Std. Dev	CV	Minimum	Median	Maximum
Fire Assay	G6-50	3,242	4,171.2	0.311	0.886	2.85	0.003	0.050	9.991
Fire Assay	FAA515	22,103	30,989.6	0.229	0.690	3.02	0.003	0.041	9.990
Fire Assay	Au-AA23	6,180	7,578.7	0.196	0.511	2.61	0.003	0.057	9.570
Fire Assay	Au-AA24	51,244	77,951.3	0.286	0.839	2.93	0.003	0.047	9.980
Overlimit Assay	6GR-50	37	34.7	19.205	11.431	0.60	4.200	15.800	64.600
Overlimit Assay	FAG303	108	112.6	28.716	38.108	1.33	10.050	16.840	305.150
Overlimit Assay	Au-GRA21	6	5.8	18.718	11.647	0.62	10.100	16.250	37.400
Overlimit Assay	Au-GRA22	560	703.1	21.470	26.150	1.22	1.190	15.900	715.000

The QP is of the opinion the drill hole database for the Ana Paula project is suitable for mineral resource estimation.

In addition to validation of the drill hole database the QP completed the following to validate other technical information for which he is responsible:

- The QP reviewed cited reports informing the geologic and deposit interpretations presented under Sections 7 and 8 in this report and affirms their conclusions.
- For Section 9, the QP checked 10% of gold assay values in the surface sample database against certificates for rock, channel, and soil samples and found no errors.
- The QP reviewed available supporting documents describing drilling methods and compared descriptions of drilling completed by previous operators to information contained in the drill hole database for Section 10. All significant intercepts reported in Section 10 were confirmed using the gold grades from drill hole database by the QP.
- The QP reviewed all available QA/QC results presented in Section 11 of this report.

#### **12.1.6 Mr. Gilberto Domínguez**

Section 18.2 on project infrastructure for the filtered tailings storage facility was prepared under Senior supervision of Mr. Gilberto Domínguez, Vice President of Knight Piésold and Co. in Denver, Colorado. Knight Piésold has participated in previous studies for the Ana Paula opportunity, including feasibility design of a conventional tailings storage facility (TSF); Mr. Domingueledad this work and signed as QP of the TSF design. As part of Knight Piésold's PEA study level design of the filtered tailings storage facility, site-specific information was reviewed to inform the design of the facility. Primary information reviewed included 2024-2025 geochemical testing on two tailings, existing climatic and hydrological data, geotechnical laboratory index testing on the tailings samples, site investigation results from previous campaigns, existing seismic hazard assessment, and applicable design information from Knight Piésold's previously design work for the project.

In the opinion of the qualified person, the data and information shared with Knight Piésold to date are sufficiently reliable to develop the PEA study (conceptual) design, of the filtered tailings storage facility and develop cost estimates commensurate with the current level of study.

#### **12.1.7 Mr. Mike Levy**

Geotechnical core logging and rock mass characterization were completed for the mine by Knight Piésold Ltd. (KP) (2023). JDS has reviewed the information developed by KP and spot-checked data against respective core photographs to confirm data quality and internal consistency. Laboratory test results and photographs of core samples taken before and after testing by Agapito Associates Inc. were also reviewed to validate test results, to the extent possible. JDS considers the data to be accurate and reliable for a PEA level of 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 2024 - 2025. 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 focused on the metallurgical response of samples to both conventional cyanidation and gravity techniques. Testwork conducted in 2024-2025 further built on the flotation and cyanidation flowsheets, and ultimately resulted in the incorporation of BIOX® on flotation concentrate.

#### **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 (GD), complex breccia (HGB), sediments (LS) and monolithic breccia (LGB)). Samples were selected to ensure that composites represented the average gold grade of each domain. 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 sulfide species in each of the composites. Non sulfide 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 sulfate for pyrite/arsenopyrite activation, potassium amyl xanthate (PAX) as primary sulfide 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 160 µm 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 sulfide oxidation, and gold recoveries by cyanidation were 95%. An Alkaline POX test on whole rock resulted in reduced sulfide 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, O<sub>2</sub> 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 analyzed 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 sulfides, 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.

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 sulfur and total carbon were assayed directly by combustion IR on an ELTRA carbon-sulfur analyzer. Sulfide sulfur 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-sulfur analyzer. This removed any sulfates and carbonates that may be present. Sulfur or carbon remaining in the residues is then attributed as sulfide sulfur 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 15 g pulverized solids shaken with 30 mL of 2.5 g/L NaCN solution for 30 minutes. In the spiked test an aliquot of gold spike solution (equivalent to 3 g/t) replaces a small portion of the cyanide solution. Final solutions are assayed and compared to calculate preg-robbing characteristics.

Composite gold grades ranged from 2.48 g/t (AuBOT23-03) to 18.25 g/t (AuBOT23-08). A range of arsenic and sulfur ranges were also noted. Preg-rob values were all relatively low in these composites. This aligns with the low organic 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 analyzed: 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->128 µm in size and primarily occurred in the 2-32 µm 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 analyzed.
- 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 (75 µm and 45 µm). Carbon in leach (CIL) bottle rolls were conducted as comparison and to help counteract any preg-robbing material present. The CIL tests were conducted at four grind sizes (75 µm, 45 µm, 20 µm and 10 µm).

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).

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. 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 sulfide locking in all samples.
  - One sample (AuBOT23-03) has a significantly higher proportion of sulfide locking and silica locking than the other samples tested.

### **13.3.3 Gravity**

Gravity amenability testwork was conducted on each of the eight bottle roll composites. A 2 kg 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 P<sub>90</sub> of 850 µm, P<sub>80</sub> of 250 µm and P<sub>80</sub> 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%.

- 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 13-4). 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.

### **13.3.4 Comminution**

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.

### **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 10 µm.
- 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% (75 µm grind size) to 32.7%. (10 µm grind size).
  - EGRG content was 21.7%.
  - Diagnostic leaching AuBOT23-03 composite showed a significantly higher proportion of gold locked in sulfides. This sulfide 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 sulfides.

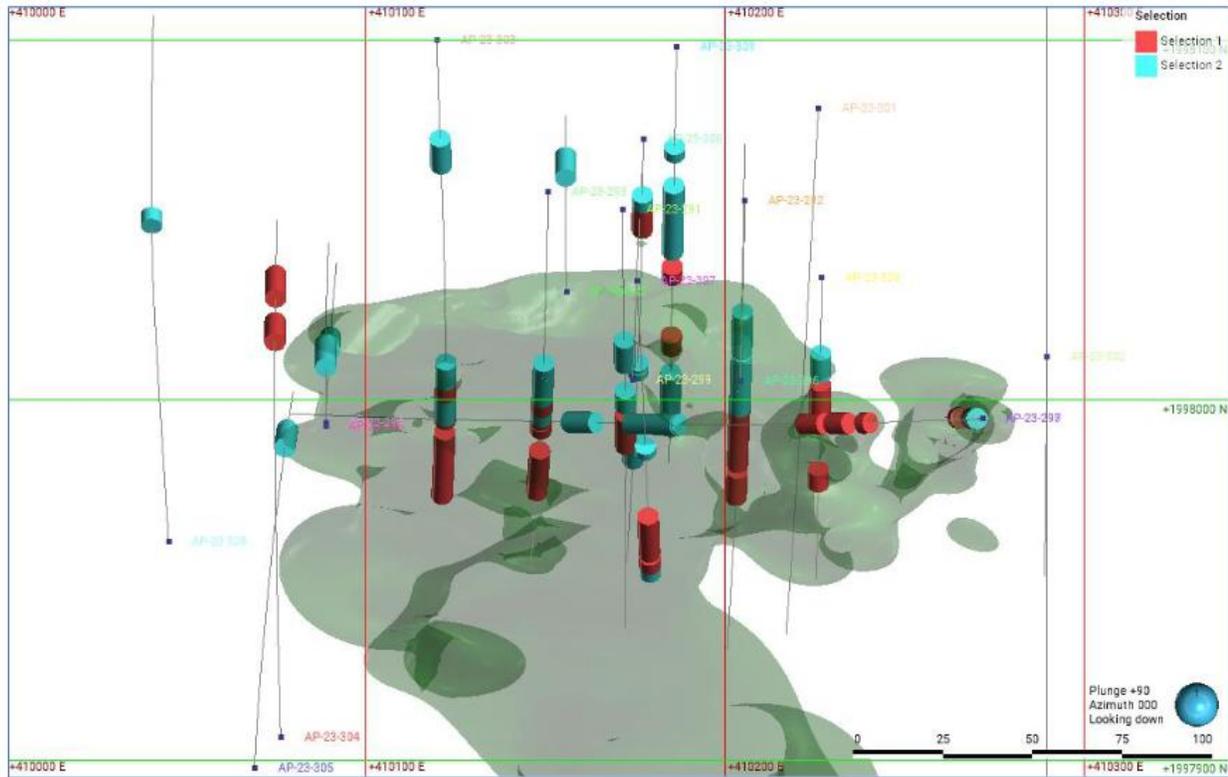
## **13.4 BLUE COAST RESEARCH TESTWORK (2024-2025)**

The 2024-2025 metallurgical testwork program was initiated on core samples, prepared to represent two distinct areas of the deposit. The objectives of the testwork program were to evaluate gold extraction by flotation and cyanidation and support a flowsheet utilizing conventional processing techniques.

### **13.4.1 Sample Origin & Composite Characterization**

Two composites were submitted for flotation and cyanidation testwork by Heliostar. Composites were collected to represent two distinct areas of the deposit. APLOM24-01 represented the “high-recovery” zone, and APLOM24-02

represented the “low-recovery” zone. Heliostar defined the zones using the ratio of cyanide soluble gold (Au-AA15) to total gold by fire assay. A 60% ratio was used as the domain boundary cutoff because it was the highest value that provide a simple and robust solid shape. The two composites were selected to better represent and test the range of potential outcomes which may be encountered. Samples consisted of core from the 2023 drilling campaign.



**Figure 13-1: APLOM24-01 (Selection 1) & APLOM24-02 (Selection 2) Samples**

Chemical characterization of the composites was performed via the methods described in section 13.3.1. A summary of the measured head grades is shown in Table 13-1.

Preg-Rob shake flask testing indicated that APLOM24-01 had low preg robbing potential, while APLOM24-02 had moderate preg-robbing potential.

**Table 13-1: 2024-2025 Ana Paula Composite Head Assays (Source: Blue Coast 2025)**

Composite	Au (g/t)	Ag (g/t)	As (%)	Fe (%)	S <sub>total</sub> (%)	S <sup>2-</sup> (%)	C <sub>total</sub> (%)	C <sub>organic</sub> (%)	Preg Rob (%)
Method	FA-ICP	4AD-ICP	ELTRA			Shake			
APLOM24-01	6.74	7.31	3.09	6.38	3.80	3.82	1.10	<0.03	6
APLOM24-02	4.62	18.92	4.76	10.02	7.59	7.48	1.70	0.05	43
APLOM-BLEND	5.75	14.57	4.21	8.26	6.01	5.94	1.43	0.05	45

A blended life-of-mine composite was prepared to test the BIOX® process. This composite (APLOM24-BLEND) was based on the relative tonnages of material from APLOM24-01 (49%) and APLOM24-02 (51%).

### **13.4.2 Flotation**

A series of flotation tests were conducted on each composite, to optimize the bulk sulfide flowsheet. These tests explored a variety of conditions including primary grind size, pulp density, copper sulfate and potassium amyl xanthate (PAX) dosage, and the use of a co-collector. The key findings of the flotation optimization testwork were:

- The optimized flotation conditions produced gold recoveries of 95.2% (APLOM24-01) to 96.2% (PLOM24-02).
- Mass pull to concentrate was closely tied to sulfur in the mill feed, with higher sulfur feeds resulting in higher mass pulls. Mass pull from APLOM-01 was 17% and mass pull from APLOM-02 was 25%.
- Primary grind size had limited influence on gold recovery in the 75 µm to 160 µm range.
  - A 200 µm grind size resulted in a minor decrease in gold recovery (~1% decrease).
- The addition of a co-collector (Aero 6697; a monothiophosphate) provided no increase in gold recovery.
- Increasing the pulp density to 38% solids (from the baseline 22% solids) showed no negative impact on gold recovery.
- A combination of lower PAX dosages and the elimination of copper sulfate had a negative impact on gold recovery.
  - Copper sulfate dosages of 25 g/t and 50 g/t were required for APLOM24-01 and APLOM24-02 respectively.

The flotation program confirmed that the following flotation conditions were robust for both APLOM-01 and APLOM-02:

- Primary grind size of 80% passing 160 µm
- 50 g/t of Potassium Amyl Xanthate (PAX)
- 25-50 g/t of copper sulfate
- 38% solids

A limited scope of flotation tests was conducted with the purpose of exploring a sequential gold-arsenopyrite-pyrite flowsheet. The sequential flowsheet testwork highlighted that there may be potential to produce separate arsenopyrite and pyrite concentrates, thus enabling some additional control in concentrate grades and mass pull. However, additional testwork is required to improve the arsenopyrite/pyrite separation and fully evaluate the potential economic benefits.

### **13.4.3 Cyanidation**

Whole rock cyanidation testwork consisted of both kinetic and carbon-in-leach (CIL) tests, to establish a baseline gold recovery. The APLOM24-01 sample was confirmed to have no preg-robbing effect, while APLOM24-02 showed significant improvement in recovery with CIL, as the presence of activated carbon counter-acted some of the influence of the preg-robbing organic carbon. Whole rock cyanidation of APLOM-01 and APLOM-02 yielded gold extractions of 78 % and 39% respectively. A whole rock CIL bottle roll on APLOM24-BLEND resulted in a gold recovery of 60%.

Further cyanide optimization was conducted on flotation concentrates produced via bulk sulfide flotation. Key findings of the concentrate cyanidation optimization work were:

- Concentrate leaching was insensitive to:
  - Ultra-fine regrinding down to approximately 5 µm
  - Pre-oxygenation, combined with ultra-fine regrinding
  - Pulp densities between 25% and 40% solids
- Gold extractions from concentrate averaged:
  - 77% from APLOM24-01
  - 39% from APLOM24-02
- The balance of unrecoverable gold is very likely to be refractory and would need sulfide oxidation to improve overall recoveries.

The low overall gold extractions observed in both whole rock cyanidation and leaching of flotation concentrates, especially from APLOM-02, prompted further investigation into BIOX<sup>®</sup> processing as a way of increasing gold recovery from the Ana Paula deposit.

#### 13.4.4 Gravity

Gravity amenability testwork was conducted on each composite. 2 kg 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 approximately 0.10% of the original feed mass. Gold recovery to the superpanner tip was 43.7% at a grade of 3045 g/t gold for APLOM24-01. For APLOM24-02 the gold recovery was 16.3% to the superpanner tip, at a grade of 693 g/t gold.

These tests indicate that a portion of the gold present in both APLOM-01 and APLOM-02 is recoverable by gravity. The results suggest that more gravity recoverable gold is present in APLOM-01, compared to APLOM-02. Actual gravity recovery obtained from the operating plant will be a function of the primary grind size, and amount of the mill circulating load treated through the gravity concentrator. Based on the proposed flowsheet and material characteristics, gold recovery to gravity concentrate from Ana Paula is expected to be approximately 15%.

#### 13.4.5 BIOX<sup>®</sup>

BIOX<sup>®</sup> processing was evaluated with the aim of increasing gold recovery from the refractory component of the Ana Paula material by oxidizing the arsenopyrite and pyrite thus making the associated gold available for cyanidation. A 12 kg homogenous sample of flotation concentrate was shipped to Metso in South Africa, for BIOX<sup>®</sup> testwork, assays conducted at BCR on the concentrate are shown in Table 13-2. Assays conducted at Metso are consistent with these results.

**Table 13-2: Ana Paula Flotation Concentrate Assays**

Composite	Au	Ag	As	Fe	Stot	S2-	Ctot	Corg	Preg Rob
	g/t	g/t	%	%	%	%	%	%	%
APLOM24-BLEND Concentrate	24.02	55.97	15.27	27.03	26.00	25.58	0.68	0.17	13

BIOX<sup>®</sup> testwork was conducted on flotation concentrate produced from a blend of APLOM24-01 and APLOM24-02. A series of bio-oxidation tests were conducted, evaluating the extent of sulfur oxidation achieved over the leaching period, and the associated gold recovery of the oxidized product. Biooxidation periods of 16 days to 39 days were tested, resulting in sulfide oxidation increasing from 39.4% to 92.1% over that period and associated post-BIOX<sup>®</sup> cyanidation recoveries 83.5% to 95.6%. A single larger scale BIOX<sup>®</sup> test was conducted with 30 days residence time, resulting in a sulfide oxidation of 95.2% and an ultimate cyanidation recovery of 95.6%.

**Table 13-3: Sulfide Oxidation and Gold Leach Results**

Biooxidation Period (days)	S <sup>2-</sup> Oxdn. (%)	Gold						
		Feed (g/t)	Tails (g/t)	Carbon (g/t)	Soln. (ppm)	BCH (g/t)	Dissln. <sup>(1)</sup> (%)	Accountably (%)
(0) Concentrate	-	22.53	8.67	173	0.014	22.65	62.1	101
16	39.4	30.85	5.27	324	0.015	33.12	83.5	107
19	46.8	30.94	4.19	322	0.014	29.82	87.2	96
22	62.7	30.40	4.01	340	0.014	32.32	87.4	106
25	66.4	28.10	3.20	322	0.016	29.89	89.5	106
29	74.6	26.40	2.00	288	0.018	26.59	92.6	101
32	79.4	26.80	1.84	312	0.013	27.02	93.4	101
35	88.6	27.40	2.30	330	0.016	29.64	91.6	108
39	92.1	27.70	1.22	337	0.012	28.98	95.6	105
30 (Large Test)	95.2	26.90	1.00	406	0.030	26.91	96.3	100

Metso Heliostar Metals BIOX® Batch Amenableity Test Work Report on the Ana Paula Sample Report, Craig van Buuren, 30 April 2025

The testwork determined that BIOX® could yield sulfide oxidation rates up to 92%, corresponding to post-BIOX® cyanidation gold recovery of 96%.

The cyanide consumption for the large test was determined to be 7.6 kg NaCN/tonne concentrate, and the lime consumption was determined to be 6 kg CaO/tonne concentrate. Neutralization tests on the BIOX® liquor may be achieved by addition of limestone to pH 5, followed by addition of lime to pH 7, or directly to pH 7 with lime alone. This resulted in an arsenic level of <0.06 mg/L in the effluent. TCLP testwork conducted on the residue indicated that the arsenic present in the sample is stable.

#### 13.4.6 Metallurgical Overview

The 2024-2025 metallurgical testwork program consisted of gravity testwork, bulk sulfide and sequential flotation, whole rock and flotation concentrate cyanidation, and BIOX® testwork. The final flowsheet selected from the results of the testwork program was flotation, followed by BIOX® of the flotation concentrate and cyanidation of the BIOX® residue. It is anticipated that gravity recovery will be included on a portion of the cyclone underflow in the final plant flowsheet. The following conclusions may be drawn from the 2024-2025 Ana Paula metallurgical testwork program:

- Whole rock cyanide leaching of two resulted in gold recoveries of 79% for APLOM24-01 and 39% for APLOM24-02. The APLOM24-BLEND recovery was 60%.
- Gravity recoverable gold is present at Ana Paula. Anticipated gold recovery from gravity in the plant is anticipated to be approximately 15% of total gold, utilizing Knelson concentrators with table finish.
- Flotation
  - Bulk sulfide flotation produced gold recoveries of 95% (APLOM24-01) to 96% (PLOM24-02) to the flotation concentrate.
  - Mass pulls to concentrate was 17% for APLOM24-01 and 25% for APLOM-02.
- Gold extractions from concentrate leaches averaged:
  - 77% from APLOM24-01, with the best performance being of 80%. This resulted in an overall gold recovery of 76%
  - 39% from APLOM24-02, resulting in an overall gold recovery of 37%.

- Post-BIOX<sup>®</sup> cyanidation resulted in a leach gold recovery of 95%

Over the Ana Paula life of mine, the following overall gold recoveries may be reasonably considered from each of the evaluated flowsheets tested are:

- Whole Rock Cyanidation: 60%
- Flotation-Concentrate Cyanidation: 55%
- Flotation-Concentrate BIOX<sup>®</sup>-Cyanidation: 90%

The breakdown of recovery to each flowsheet stage is shown in Table 13-4 below. The incorporation of BIOX<sup>®</sup> into the flowsheet represents a significant improvement in overall gold recovery from Ana Paula material, especially from the more refractory areas represented by APLOM-02.

**Table 13-4: Ana Paula Combined Gold Recoveries**

<b>Flowsheet</b>	<b>Flotation Recovery (%)</b>	<b>Cyanidation Recovery (%)</b>	<b>Overall Recovery (%)</b>
Whole Rock Cyanidation	-	60	60
Flotation-Concentrate Leach	95	58*	55
Flotation-Concentrate BIOX <sup>®</sup> -Leach	95	95**	90

\* Calculated from APLOM24-01 and APLOM24-02 Concentrate leaches

\*\* Cyanidation after BIOX<sup>®</sup>

## **14 MINERAL RESOURCE ESTIMATES**

### **14.1 INTRODUCTION AND SCOPE**

Richard A. Schwering, RM SME, of Hard Rock Consulting, LLC, (HRC) is responsible for the Mineral Resource Estimate (MRE) presented herein. Mr. Schwering is a Qualified Person (QP) as defined by NI 43-101 and is independent of Heliostar Metals Ltd. (Heliostar). Mr. Schwering estimated the mineral resource for the Ana Paula Project (the Project) located in Gurrero, Mexico based on drill hole data constrained by geologic boundaries with an Ordinary Kriging (OK) algorithm. Gold is the metal of interest at the Project. All units are Metric, and all costs are reported in U.S. Dollars unless otherwise specified. All coordinates are presented using WGS1984 UTM Mexico Zone 14N. Elevation is in meters relative to mean sea level.

The mineralization strikes north to south and dips steeply, near vertical, to the west. Dimensions of mineralization for the Project are approximately 1,150 m along strike, and a vertical extent of 950 m. While thickness across the deposit is variable, the portion of the deposit amenable for underground mining methods has an approximate thickness of 150 m.

The MRE was updated to incorporate 19 drill holes totaling 4,339.6 m drilling completed by Heliostar. Four drill holes were completed in 2023 totaling 984.0 m and 15 drill holes were completed in 2024 totaling 3,355.6 m. The mechanical audit of the database, geologic model, estimation domains, and mineral resource estimate were all completed using Leapfrog Geo® (Leapfrog) software version 2024.1.2 in conjunction with Leapfrog EDGE®, an extension of Leapfrog.

The MRE reported herein was prepared in a manner consistent with the Committee of Mineral Reserves International Reporting Standards, of which both the Canadian Institute of Mining (CIM), Metallurgy and Petroleum and Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, are members. The mineral resources are classified as Measured, Indicated and Inferred in accordance with “CIM Definition Standards for Mineral Resources and Mineral Reserves”, prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council on May 10, 2014, and Best Practices Guidelines (November 29, 2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.

### **14.2 DATABASE**

The Leapfrog project used to generate the previous MRE was provided to the QP. In addition to the Leapfrog project, the updated drill hole database as .csv files were provided to the QP in February 2025. The updated drill hole database was compared to the drill hole database used previously, and no significant differences were noted.

The updated drill hole database was imported into Leapfrog. The software automatically de-surveys the interval and depth information within the tables and flags inconsistencies in a mechanical audit. The mechanical audit checks for interval overlaps, interval gaps, duplicate intervals, intervals exceeding the maximum collar depth, missing information, non-numeric, negative assay values etc. The mechanical audit did not identify significant issues within the drill hole database and the few errors identified were corrected prior to geologic modeling and grade estimation.

The drill hole database initially contained 438 holes totaling 170,051.9 m. Drill hole locations were reviewed and excluded from the geologic model and MRE for the following reasons:

- 77 drill holes totaling 23,563.8 m were outside the area of interest for the Project and excluded from the geologic model. The remaining 361 drill holes totaling 146,488.2 m representing 86% of the total database were used to update the geologic model.
- An additional 28 drill holes totaling 21,124.4 m were outside the block model extent and excluded from the MRE. The remaining 333 drill holes totaling 125,363.8 m representing 74% of the total database were used to update the MRE.

**ANA PAULA PROJECT**  
**NI 43-101 TECHNICAL REPORT – PRELIMINARY ECONOMIC ASSESSMENT**

Table 14-1 summarizes the drilling contained in the drill hole database by operator, year, type and shows the total included in the geologic model and the MRE. Two drill holes totaling 1,103.4 m do not have a downhole survey and 26 drill holes totaling 9,790.7 m do not have RQD.

The database contains 86,894 valid gold assays totaling 125,006.9 m, 99.7% of the total drill length included in the MRE. Intervals without gold assays were omitted from the database. Assay values at the detection limit were replaced with ½ that value.

**Table 14-1: Ana Paula Drilling Totals**

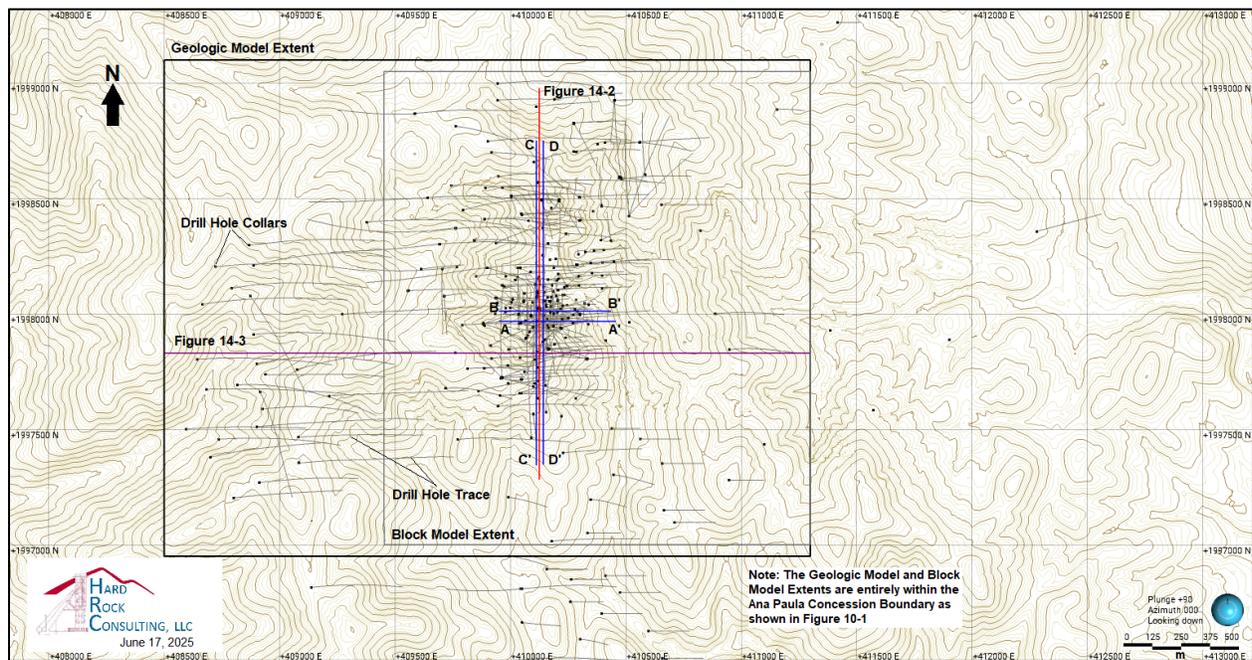
Company	Year	Type/Purpose	Total Database		Included in Geologic Model		Included in MRE	
			Count	Total Depth (m)	Count	Total Depth (m)	Count	Total Depth (m)
Goldcorp	Total		48	12,077.6	11	3,687.7	11	3,687.7
	2005	Core	21	5,075.3	11	3,687.7	11	3,687.7
	2006	Core	6	2,489.2				
	2007	Core	21	4,513.1				
Newstrike	Total		246	123,288.2	220	111,152.0	193	90,280.6
	2010	Core	12	5,227.1	12	5,227.1	12	5,227.1
	2011	Core	57	29,698.1	57	29,698.1	54	27,656.9
	2012	Core	75	42,352.3	68	39,012.3	55	28,808.2
	2013	Core	87	38,694.3	79	34,593.1	70	27,485.0
	2014	Core	15	7,316.4	4	2,621.4	2	1,103.4
Alio	Total		107	27,127.8	96	24,174.1	95	23,921.1
	2015	Total 2015	10	2,008.3	10	2,008.3	10	2,008.3
		Core	7	1,402.7	7	1,402.7	7	1,402.7
		Core/Metallurgical	3	605.6	3	605.6	3	605.6
	2016	Core	31	7,304.3	31	7,304.3	31	7,304.3
	2017	Total 2017	58	13,478.2	47	10,524.5	46	10,271.5
		Core	12	2,359.1	12	2,359.1	12	2,359.1
		Core/Geotechnical	6	1,895.0	6	1,895.0	6	1,895.0
		Core/Metallurgical	14	2,018.2	14	2,018.2	14	2,018.2
	2018	RC	26	7,205.9	15	4,252.2	14	3,999.2
Core		8	4,337.0	8	4,337.0	8	4,337.0	
Heliostar / Minera Aurea	Total		37	7,558.4	34	7,474.4	34	7,474.4
	2023	Core	22	4,202.8	22	4,202.8	22	4,202.8
	2024	Total 2024	15	3,355.6	12	3,271.6	12	3,271.6
		Core	9	3,210.1	9	3,210.1	9	3,210.1
		Core/Geotechnical	6	145.5	3	61.5	3	61.5
Totals			438	170,051.9	361	146,488.2	333	125,363.8

**14.3 GEOLOGIC MODEL**

The geologic model consists of seven lithologic units generated from logged lithology. These units include overburden (OVBN), the main polymictic breccia (BXMAIN), the monomictic breccia (BXMONO), Porphyry (PRPHY), Hornfels (HRNFLS), and sediments (SEDS). As a validation, the lithologic volumes were backtagged to the drill holes. The drill hole lengths from the model were then compared to the drill hole lengths of the logged lithology as shown in Table 14-2. All model units have matching lengths greater than 80%, and the total matching length is approximately 90%. Figure 14-2 and Figure 14-3 show example sections of the lithologic model. Section locations are presented in Figure 14-1.

**Table 14-2: Lithologic Model Validation**

Lithologic Model Unit	Total Length (m) from Lithologic Model	% of Total Length	Matching Length (m) from Drill Hole Logs	Matching %	Non-Matching Length(m)	Non-Matching %
OVBN	742.8	0.5%	607.1	81.7%	135.7	18.3%
BXMAIN	5,219.6	3.6%	4,451.5	85.3%	768.1	14.7%
BXMONO	3,021.3	2.1%	2,670.3	88.4%	351.0	11.6%
HRNFLS	13,770.7	9.4%	11,793.5	85.6%	1,977.3	14.4%
PORPHY	91,599.7	62.5%	83,200.2	90.8%	8,399.5	9.2%
SEDS	31,737.9	21.7%	28,517.8	89.9%	3,220.0	10.1%
Outside Lithologic Model	395.8	0.3%				
<b>Total</b>	<b>146,487.7</b>	<b>100.0%</b>	<b>131,240.5</b>	<b>89.6%</b>	<b>14,851.5</b>	<b>10.1%</b>



**Figure 14-1: Plan View of Section Locations, Geologic Model, and Block Model Extents**

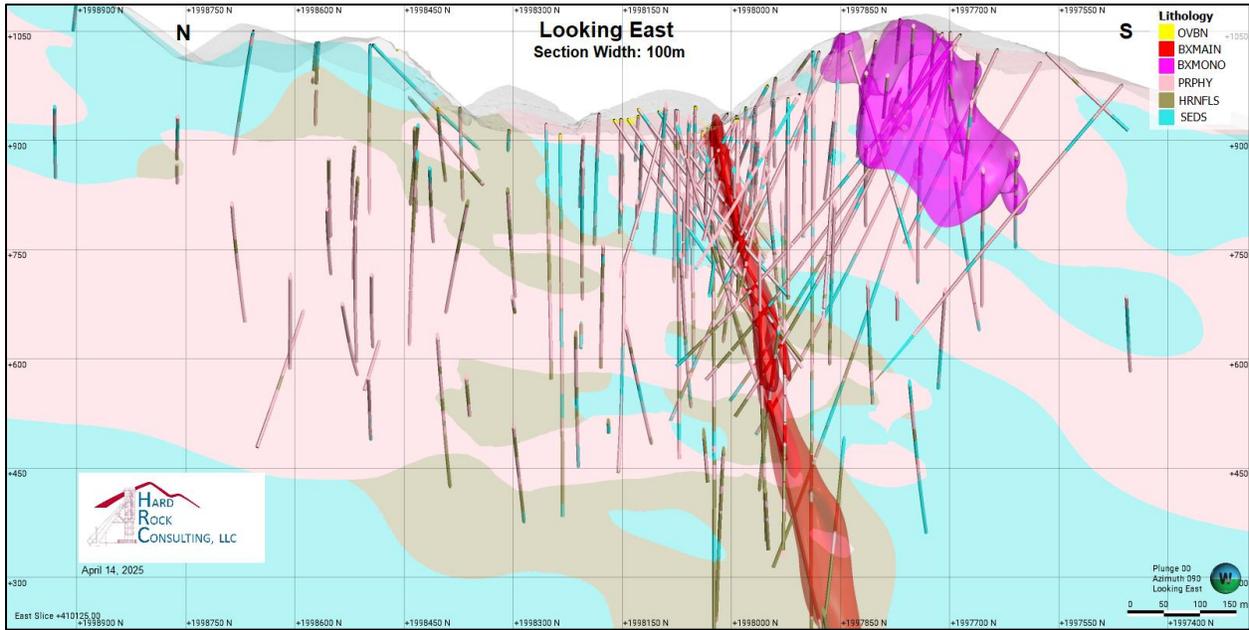


Figure 14-2: North/South Section of Lithologic Model Looking East

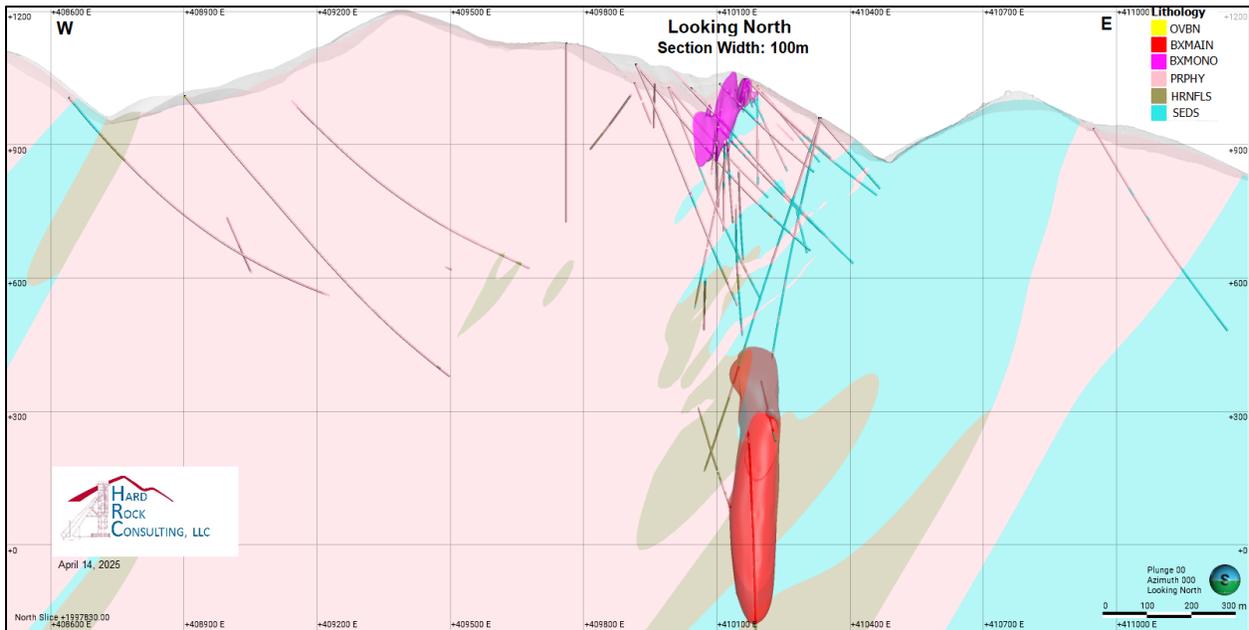


Figure 14-3: West/East Section of Lithologic Model Looking North

To better constrain the gold grades within the geologic model, a 0.2 g/t gold indicator wireframe using 2 m downhole composites and 50% probability was modeled. The additional drilling in 2024 confirmed the appropriateness of the indicator cut-off when compared to the 2023 wireframe. The average grade within the indicator is 1.83 g/t Au which is 0.05 g/t above the composite population at a 0.2 g/t cut-off. Figure 14-4 shows the resulting indicator volume in plan view, looking east, and looking north. The model volume is largely continuous, however, the QP does note some

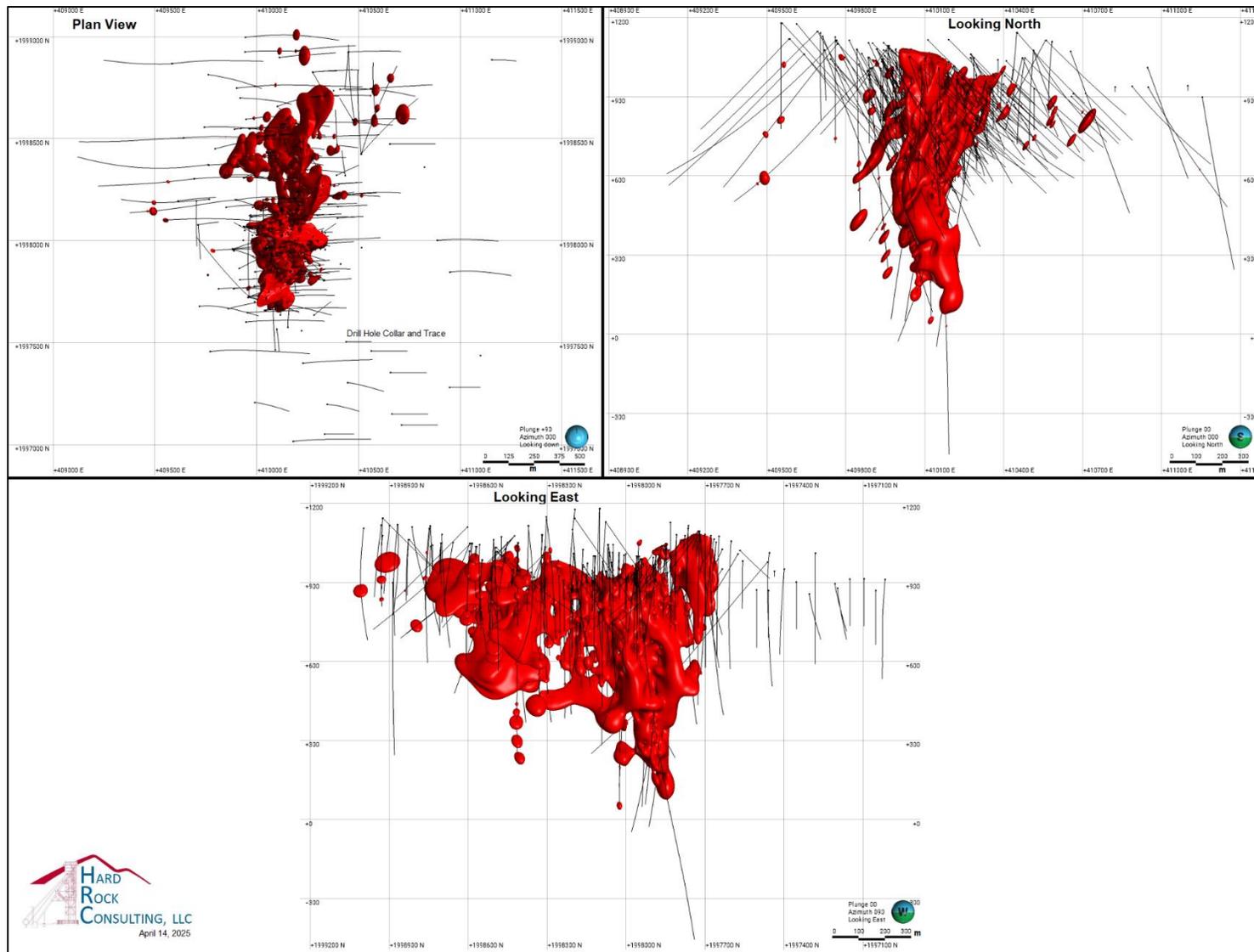
smaller discontinuous volumes supported by single drill holes. Any gold grades within those small volumes are excluded from the MRE.

The lithologic model was then intersected by the indicator model to create the final domains wherein each geologic unit is assigned a high-grade (HG) domain, inside the indicator wireframe, and a low-grade (LG) domain, outside the indicator wireframe. The final estimation domains are the high-grade portions of the BXMAIN, BXMONO, PORPHY, HRNFLS, and SEDS lithologic units. Table 14-3 shows the gold assay statistics for the MRE broken out by the geologic model and by the HG and LG domains. Domains included in the MRE are highlighted and the text is bold. Estimation domains are treated as hard boundaries in the estimate.

**Table 14-3: Length Weighted Gold (g/t) Assay Statistics by Lithology and Domain**

Lithology	Domains	Count	Length (m)	Mean	Std. Dev.	CV	Minimum	Median	Maximum
All Au Assays		86,894	125,006.9	0.534	4.010	7.508	0.003	0.050	715.000
OVBN	All OVBN	257	661.6	0.628	2.529	4.028	0.003	0.090	34.600
	OVBN: HG	73	196.4	1.803	4.393	2.437	0.010	0.678	34.600
	OVBN: LG	184	465.1	0.132	0.476	3.617	0.003	0.054	5.300
BXMAIN	All BXMAIN	4,406	5,209.0	3.913	8.377	2.141	0.003	0.879	158.050
	<b>BXMAIN: HG</b>	<b>3,958</b>	<b>4,622.5</b>	<b>4.392</b>	<b>8.777</b>	<b>1.998</b>	<b>0.016</b>	<b>1.125</b>	<b>158.050</b>
	BXMAIN: LG	448	586.5	0.134	0.280	2.086	0.003	0.071	3.060
BXMONO	All BXMONO	2,032	3,012.7	0.495	0.545	1.099	0.003	0.331	3.740
	<b>BXMONO: HG</b>	<b>1,365</b>	<b>2,039.4</b>	<b>0.665</b>	<b>0.556</b>	<b>0.835</b>	<b>0.003</b>	<b>0.501</b>	<b>3.740</b>
	BXMONO: LG	667	973.3	0.140	0.290	2.076	0.003	0.054	2.920
PORPHY	All PORPHY	53,538	74,079.4	0.412	3.396	8.247	0.003	0.070	715.000
	<b>PORPHY: HG</b>	<b>14,208</b>	<b>19,293.3</b>	<b>1.253</b>	<b>6.472</b>	<b>5.166</b>	<b>0.003</b>	<b>0.365</b>	<b>715.000</b>
	PORPHY: LG	39,330	54,786.1	0.116	0.710	6.145	0.003	0.042	159.500
HRNFLS	All HRNFLS	8,852	12,250.9	0.629	4.271	6.793	0.003	0.096	305.150
	<b>HRNFLS: HG</b>	<b>2,850</b>	<b>3,837.5</b>	<b>1.681</b>	<b>7.458</b>	<b>4.436</b>	<b>0.003</b>	<b>0.388</b>	<b>305.150</b>
	HRNFLS: LG	6,002	8,413.4	0.149	0.682	4.582	0.003	0.051	60.300
SEDS	All SEDS	17,769	29,713.3	0.211	4.095	19.402	0.003	0.003	614.000
	<b>SEDS: HG</b>	<b>1,123</b>	<b>1,501.8</b>	<b>3.399</b>	<b>17.752</b>	<b>5.223</b>	<b>0.003</b>	<b>0.464</b>	<b>614.000</b>
	SEDS: LG	16,646	28,211.4	0.041	0.575	13.895	0.003	0.003	50.410
Outside Model		40	80.1	0.066	0.147	2.217	0.003	0.009	0.954

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**Figure 14-4: Views of the 0.2 g/t Gold Indicator Model**

#### 14.4 BLOCK MODEL PARAMETERS

Estimation domains and the geologic model were coded into a block model for the MRE. The block model parameters are presented in Table 14-4. The origin is located in the lower left corner of the block model. The model is not rotated, and sub-blocks were used to accurately model the wireframe volumes contacts.

**Table 14-4: Ana Paula Block Model Parameters**

Axis	X	Y	Z
Origin	409,450	1,997,000	-500
Block Size (m)	5	5	5
Sub-block Count	5	5	5
Minimum Block Size (m)	1	1	1
Size in Blocks	370	410	380
Boundary Size	1,850	2,050	1,900
Maximum Extent	411,300	1,999,050	1,400

#### 14.5 COMPOSTING AND CAPPING

The most common sample interval length at the Project is 1.0 m followed by 1.5 m and 2.0 m. A target down-hole composite length of 2.0 meters by domain was selected as the most appropriate considering sample lengths and mining methodology. Table 14-5 summarizes descriptive statistics for composites by estimation domain. A comparison to the assay table by the QP found the total lengths and length weighted means are similar, within +/- 1%, while the coefficient of variation (CV), count, and maximums are reduced.

**Table 14-5: Length Weighted Gold (g/t) Composite Statistics by Estimation Domain**

Domain	Count	Length (m)	Mean	Std. Dev.	CV	Minimum	Median	Maximum
All Estimated Domains	16,321	31,259.2	1.831	5.834	3.187	0.003	0.511	311.898
BXMAIN: HG	2,377	4,625.6	4.388	7.444	1.697	0.028	1.288	86.768
BXMONO: HG	1,050	2,044.7	0.665	0.503	0.756	0.003	0.523	3.307
PORPHY: HG	10,026	19,248.3	1.251	4.417	3.530	0.003	0.439	181.742
HRNFLS: HG	2,044	3,838.9	1.675	5.856	3.497	0.003	0.476	159.169
SEDS: HG	824	1,501.8	3.364	13.087	3.890	0.003	0.645	311.898

Estimation of negatively skewed grade distributions, as is present within the Ana Paula estimation domains, can be sensitive to the presence of even a few extreme values resulting in an overestimation of the deposit mean. Histograms and log probability plots of gold composite populations were reviewed by domain to identify high-grade outliers and cap those values to better estimate the true mean of the deposit. Table 14-6 shows the gold capping limit, the number of composites capped, and the percentile of the limit respective of the total population. The selected caps are not overly aggressive. Capped composite statistics by estimation domain are presented in Table 14-7.

**Table 14-6: Gold Capping Limits by Domain**

Estimation Domain	Au Cap (g/t)	No. Capped	Percentile	Metal Reduction
BXMAIN: HG	64	1	99.9	-0.2%
BXMONO: HG	No Cap	0	N/A	0.0%
PORPHY: HG	50	10	99.9	-4.2%
HRNFLS: HG	38	9	99.8	-7.7%
SEDS: HG	47	5	99.7	-11.7%
<b>Total Metal Reduction</b>				<b>-3.7%</b>

**Table 14-7: Length Weighted Gold (g/t) Capped Composite Statistics by Estimation Domain**

Domain	Count	Length (m)	Mean	Std. Dev.	CV	Minimum	Median	Maximum
All Estimated Domains	16,321	31,259.2	1.762	4.325	2.455	0.003	0.511	64.000
BXMAIN: HG	2,377	4,625.6	4.378	7.349	1.679	0.028	1.288	64.000
BXMONO: HG	1,050	2,044.7	0.665	0.503	0.756	0.003	0.523	3.307
PORPHY: HG	10,026	19,248.3	1.199	3.004	2.506	0.003	0.439	50.000
HRNFLS: HG	2,044	3,838.9	1.546	3.778	2.444	0.003	0.476	38.000
SEDS: HG	824	1,501.8	2.971	6.504	2.189	0.003	0.645	47.000

## 14.6 VARIOGRAPHY

Gold variograms were modeled for each estimation domain using capped composites. The variograms for the BXMAIN: HG (Figure 14-5) and BXMONO: HG exhibited the best model continuity. Variogram parameters for all estimation domains are presented in Table 14-8. The orientation of the model dips between 60 and 70 degrees to the west, similar to the orientation of the gold indicator. The nugget for all domains is generally 12% of the total sill and the total sill is equal to the variance for all models. Maximum ranges along the major axis are between 26 m and 63 m with an average of 41 m. The ellipsoid from the models show some anisotropy with an average of 2.0 : 1.5 : 1.0 (Major: Semi-Major: Minor Axis).

**Table 14-8: Gold Variogram Parameters**

Domain	Orientation (°)			C <sub>0</sub>
	Dip	Dip Azi.	Pitch	Normalized Nugget
BXMAIN: HG	71.50	277.50	111.58	0.12
BXMONO: HG	57.70	268.00	131.30	0.10
PORPHY: HG	71.50	277.50	95.61	0.12
HRNFLS: HG	67.91	265.50	105.06	0.12
SEDS: HG	59.41	267.14	49.06	0.12
Domain	Structure 1 (C <sub>1</sub> )			
	Normalized sill	Major (m)	Semi-major (m)	Minor (m)
BXMAIN: HG	0.21	27.42	17.00	8.00
BXMONO: HG	0.32	12.25	11.00	10.50
PORPHY: HG	0.56	4.60	4.00	3.50

Domain	Orientation (°)			C <sub>0</sub>
	Dip	Dip Azi.	Pitch	Normalized Nugget
HRNFLS: HG	0.40	6.75	5.83	3.50
SEDS: HG	0.37	12.25	4.52	1.94
Domain	Structure 2 (C <sub>2</sub> )			
	Normalized sill	Major (m)	Semi-major (m)	Minor (m)
BXMAIN: HG	0.67	41.88	34.22	24.50
BXMONO: HG	0.57	63.16	54.00	42.71
PORPHY: HG	0.32	25.60	18.00	10.00
HRNFLS: HG	0.49	33.30	30.00	20.35
SEDS: HG	0.51	42.05	19.36	7.92
Average Maximum Range (m)		41.20	31.12	21.10

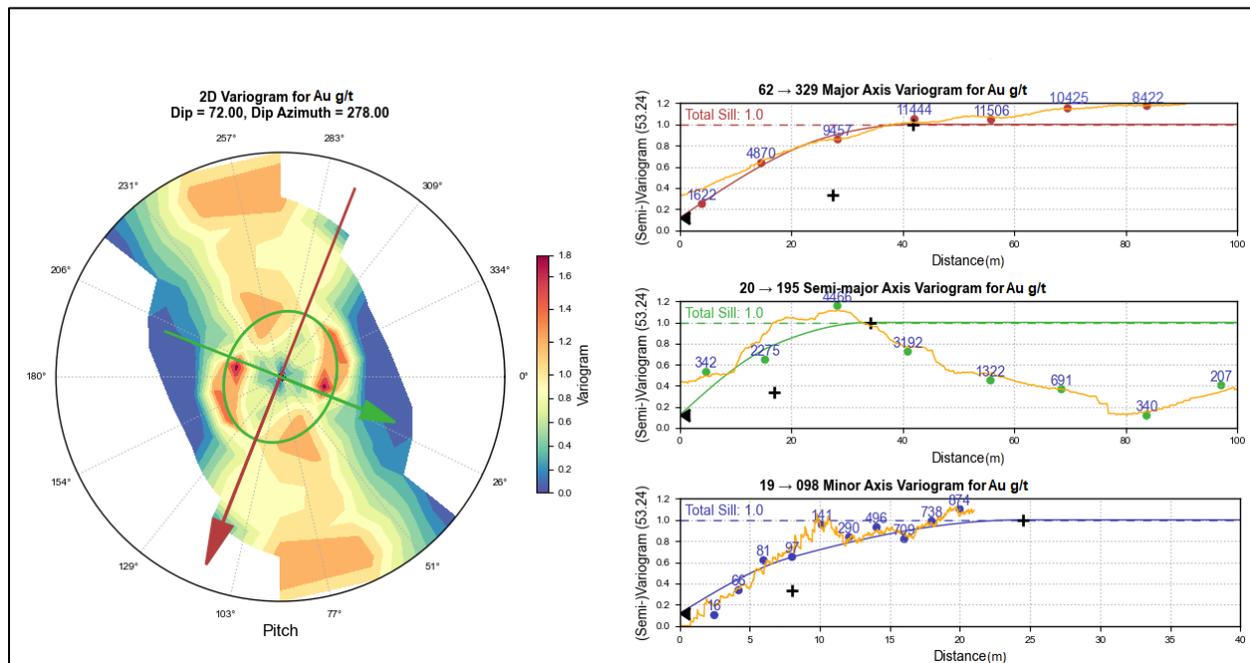


Figure 14-5: Gold Variogram Model for BXMAIN: HD

## 14.7 ESTIMATION PARAMETERS

Gold grades were estimated with an OK algorithm using three expanding estimation passes (Table 14-9). The first pass is at the approximate average of the variogram range. The second pass is twice the size of the first pass, and the third pass is 1.75 times the size of the second pass. The search ellipse is oriented in the direction of the variogram. The composite selection is set up to reduce the amount of smoothing in the estimate, which is suitable for underground mining methods. The first pass requires at least two drill holes, a minimum of three composites and a maximum of ten composites to estimate a block with no more than two composites from a single drill hole. The second pass reduces the minimum number of composites from three to two, allowing for single drill hole estimation. The third estimation pass increases the maximum number of composites from ten to twelve and still allows estimation of grades from a single

drill hole. Grades exceeding 10 g/t Au were restricted to 40% (56 m x 42 m x 28 m) of the of the search ellipse in the third pass of the PORPHY: HG domain.

**Table 14-9: Gold Estimation Parameters**

Domain	Pass	Ellipsoid Ranges (m)			Ellipsoid Directions (°)			Number of Composites			Outlier Restrictions	
		Max.	Int.	Min.	Dip	Dip Azi.	Pitch	Min.	Max.	Max/DH	Distance (%)	Threshold (Au g/t)
BXMMAIN: HG	Pass 1	40	30	20	70	275	110	3	10	2		
	Pass 2	80	60	40				2	10	2		
	Pass 3	140	105	70				2	12	2		
BXMONO: HG	Pass 1	40	30	20	60	270	130	3	10	2		
	Pass 2	80	60	40				2	10	2		
	Pass 3	140	105	70				2	12	2		
PORPHY: HG	Pass 1	40	30	20	70	275	95	3	10	2		
	Pass 2	80	60	40				2	10	2		
	Pass 3	140	105	70				2	12	2	40	10
HRNFLS: HG	Pass 1	40	30	20	70	265	105	3	10	2		
	Pass 2	80	60	40				2	10	2		
	Pass 3	140	105	70				2	12	2		
SEDS: HG	Pass 1	40	30	20	60	265	50	3	10	2		
	Pass 2	80	60	40				2	10	2		
	Pass 3	140	105	70				2	12	2		

## 14.8 VALIDATION

Visual and statistical methods were employed to validate the estimate of gold grades for the Project.

### 14.8.1 Visual Inspection

Gold grade estimates were visually validated against composite grades in cross-section and in long section by comparing estimated grades to composites. The section review show agreement between modeled and composite grades. Modeled blocks display grade continuity along strike and down dip and high-grade blow outs are not present. Figure 14-6 and Figure 14-7 show example cross sections looking North and Figure 14-8 and Figure 14-9 show example long sections looking East. Section locations are presented in Figure 14-1.

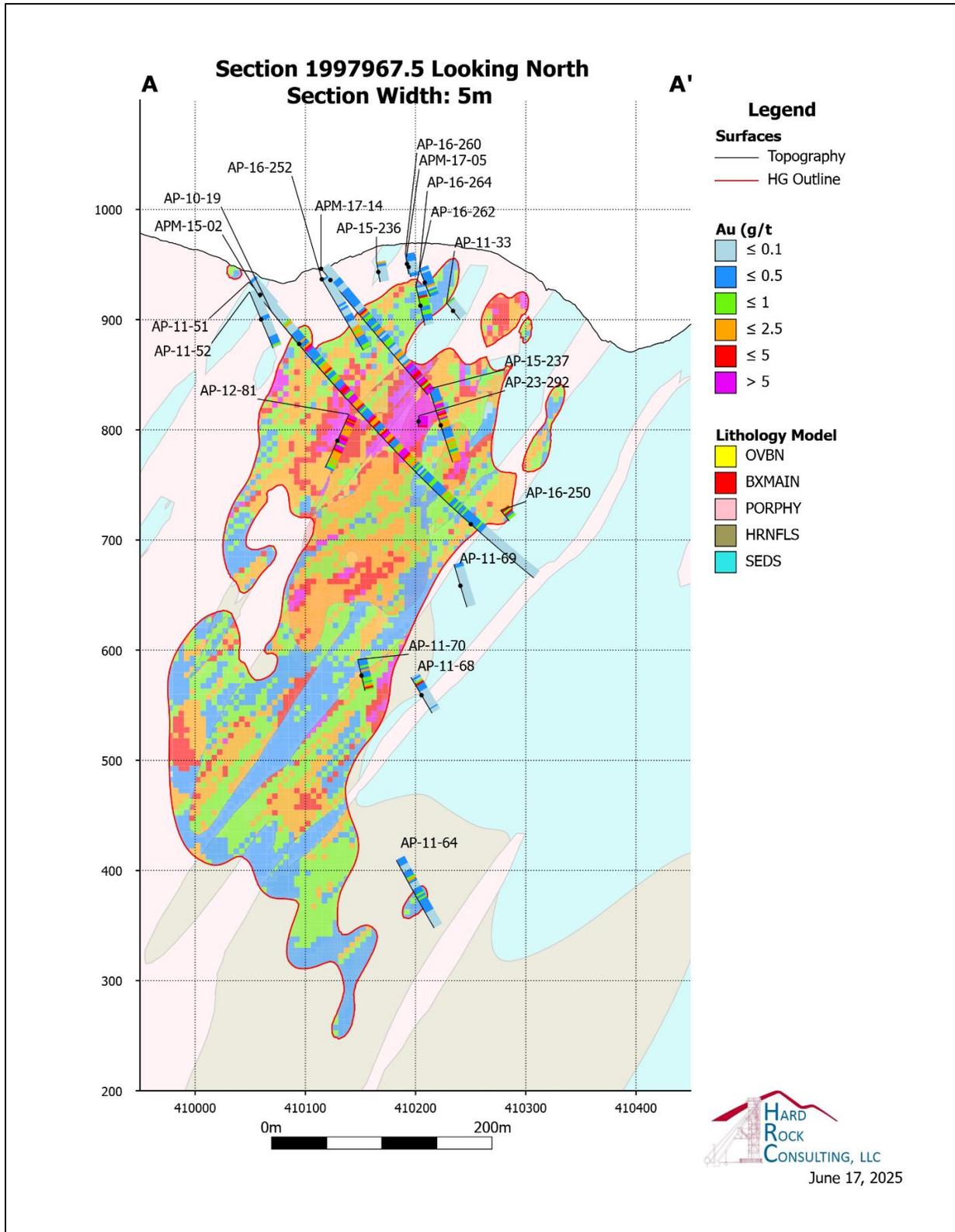


Figure 14-6: Cross Section A-A' showing Estimated Gold Grades and Composites

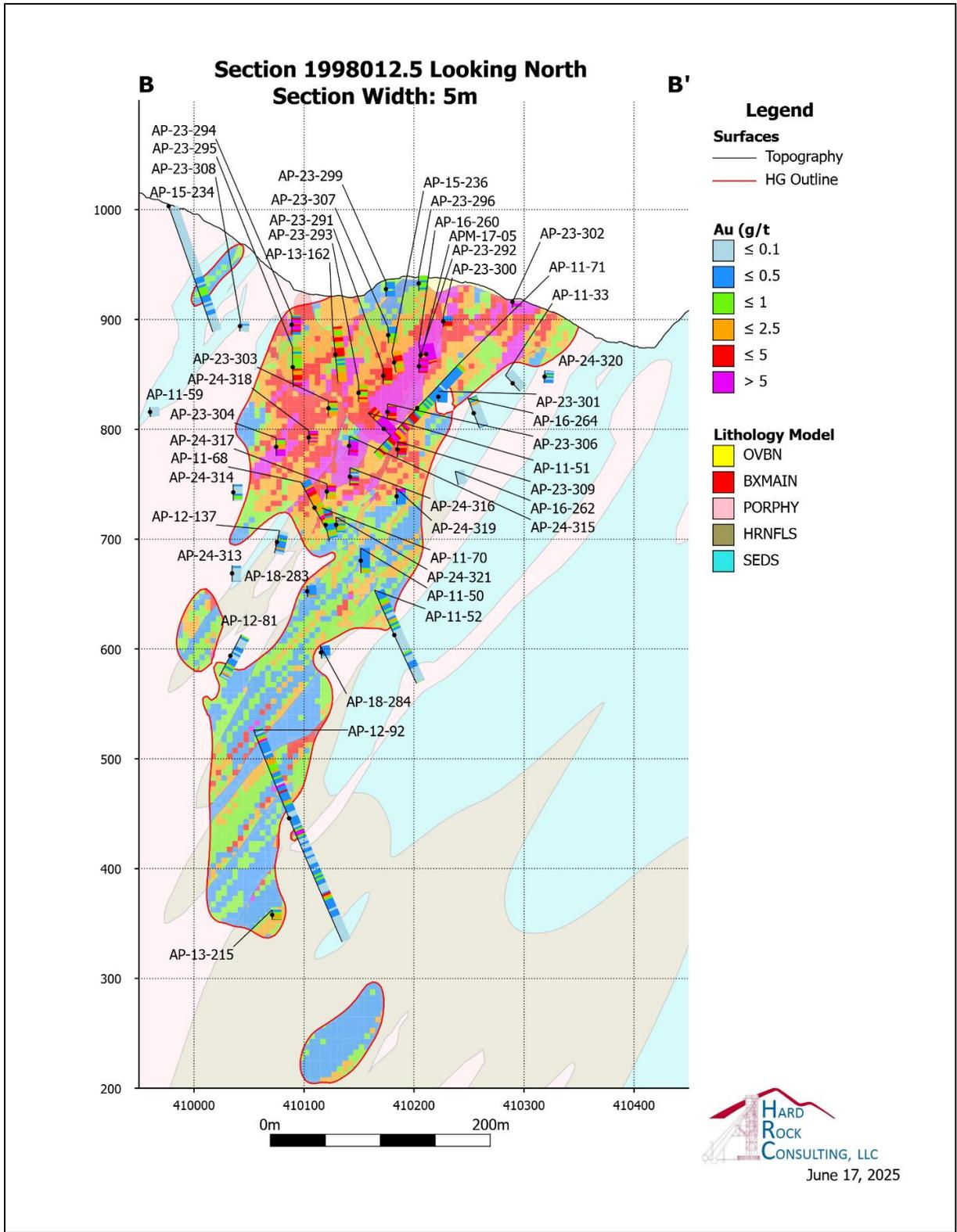


Figure 14-7: Cross Section B-B' showing Estimated Gold Grades and Composites

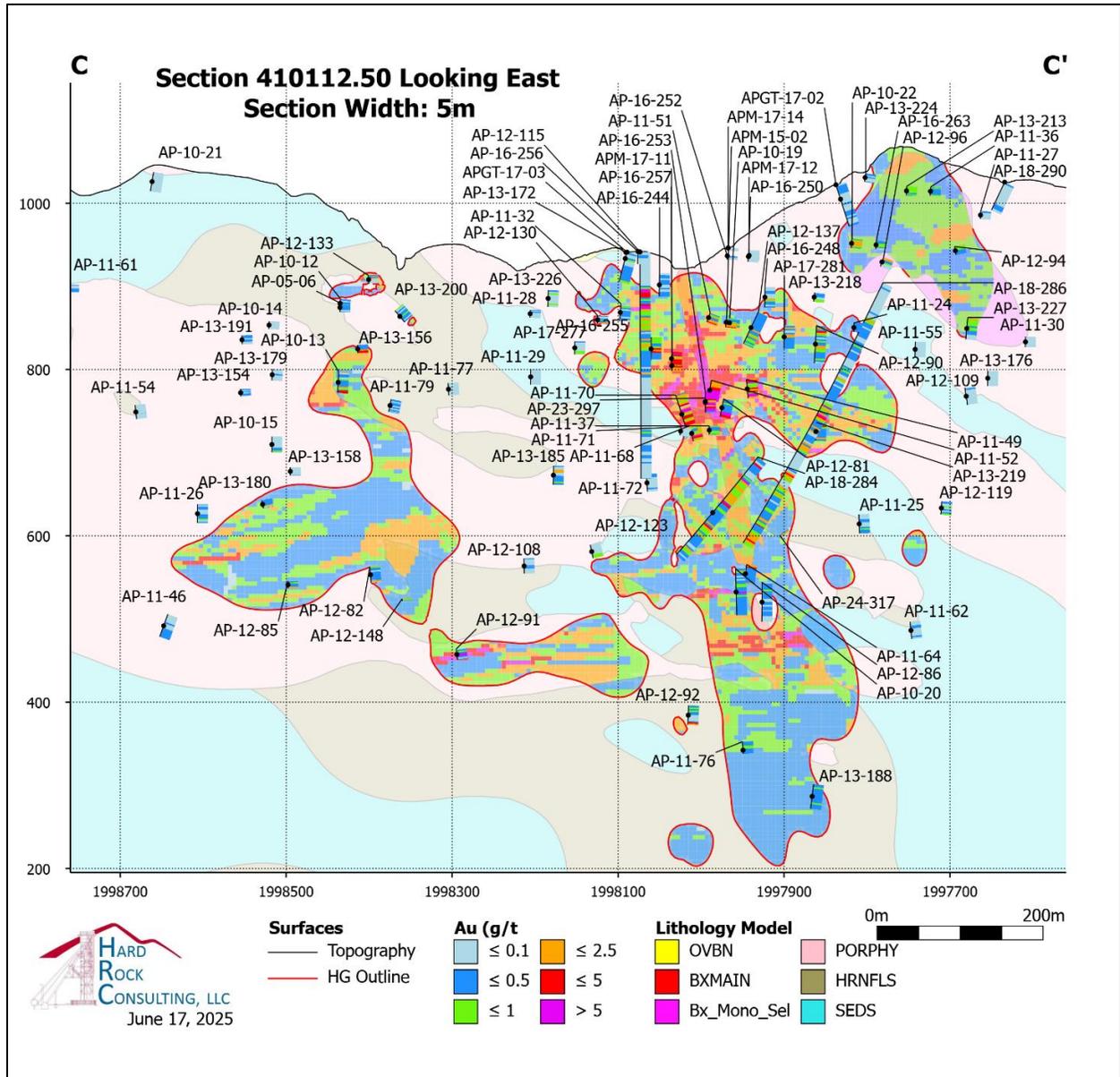


Figure 14-8: Long Section C-C' showing Estimated Gold Grades and Composites

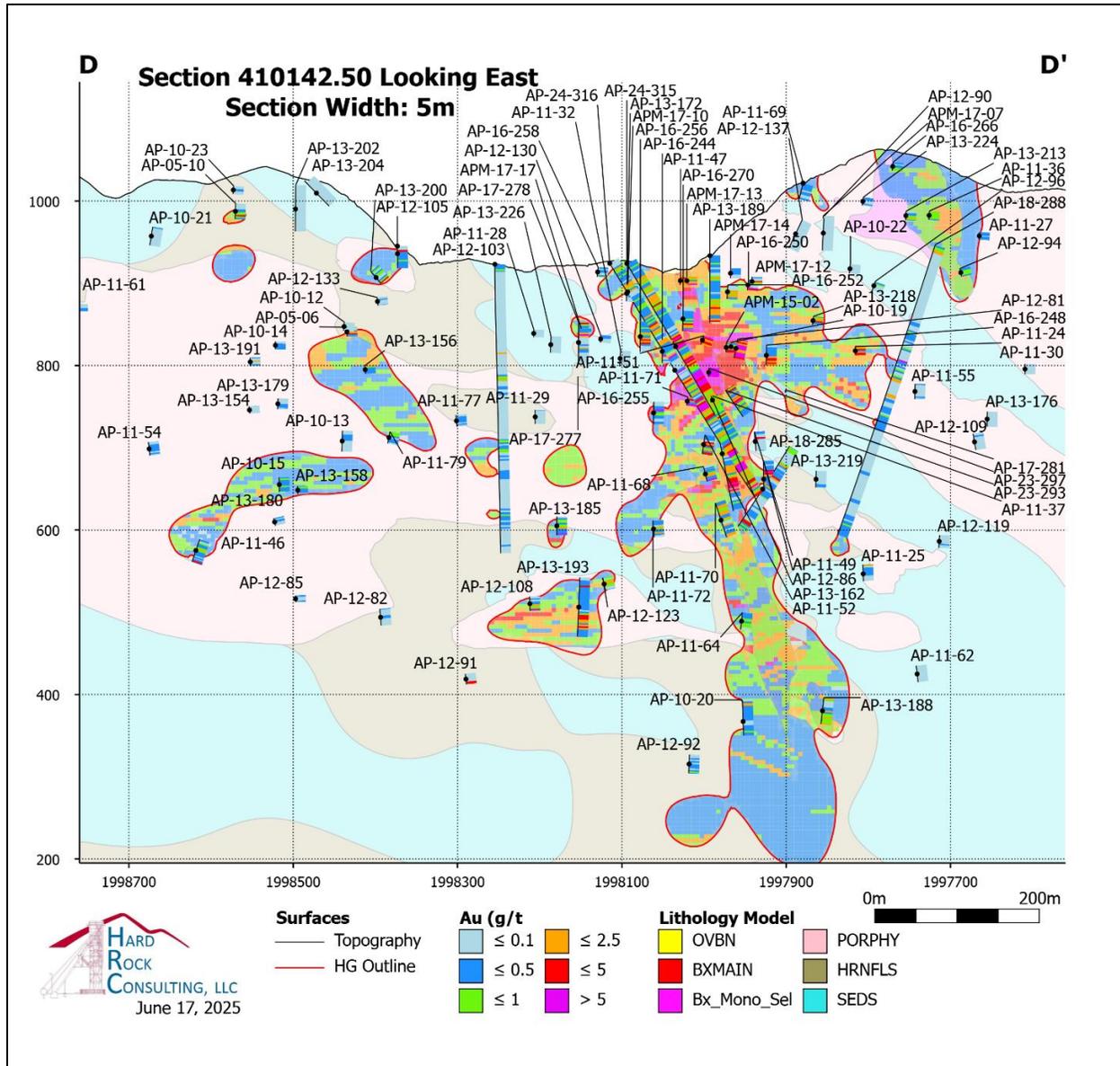


Figure 14-9: Long Section D-D' showing Estimated Gold Grades and Composites

### 14.8.2 Statistical Validation

Inverse distance to the 2.5 power (ID) and nearest neighbor (NN) interpolants were run as a validation of the OK interpolant. Statistical validation of the OK interpolant was completed by individual domain, and for all estimated blocks. A global bias check was performed where the difference in the mean between the NN interpolant to the ID and OK interpolant means is calculated. An interpolant passes the global bias check if the calculated difference is within +/- 5% of the NN mean. Descriptive statistics, global bias checks, and the reduction in CV from the NN model are shown in Table 14-10. Review of the statistics show the OK interpolant passes the global bias check for all estimated domains.

Table 14-10: Volume Weighted Descriptive Statistics for Gold Estimate

Domains	Estimates (Au g/t)	Block Count	Volume (m <sup>3</sup> )	Mean	Std. Dev.	CV	Min.	Med.	Max.	Global Bias Check		Reduction in CV
										Diff.	% Diff	
All Estimated Domains	OK	11,235,143	38,836,303	1.019	1.798	1.764	0.004	0.538	45.113	0.020	2.01%	-37.50%
	ID	11,235,143	38,836,303	1.011	1.984	1.964	0.003	0.508	52.156	0.011	1.12%	-30.41%
	NN	11,235,143	38,836,303	0.999	2.820	2.822	0.003	0.385	64.000			
BXMAIN: HG	OK	727,561	2,727,433	2.310	4.139	1.792	0.070	0.774	45.113	-0.040	-1.70%	-29.53%
	ID	727,561	2,727,433	2.299	4.471	1.945	0.048	0.734	52.156	-0.051	-2.17%	-23.52%
	NN	727,561	2,727,433	2.350	5.975	2.543	0.028	0.565	64.000			
BXMONO: HG	OK	392,552	1,921,472	0.655	0.317	0.484	0.076	0.580	2.812	-0.009	-1.38%	-32.96%
	ID	392,552	1,921,472	0.659	0.356	0.540	0.070	0.573	3.028	-0.005	-0.78%	-25.11%
	NN	392,552	1,921,472	0.664	0.479	0.721	0.003	0.550	3.307			
HRNFLS: HG	OK	2,289,040	7,335,468	0.960	1.316	1.371	0.023	0.553	28.100	0.031	3.33%	-42.77%
	ID	2,289,040	7,335,468	0.939	1.457	1.551	0.023	0.507	37.888	0.010	1.09%	-35.26%
	NN	2,289,040	7,335,468	0.929	2.226	2.395	0.003	0.391	38.000			
PORPHY: HG	OK	7,133,863	25,693,811	0.902	1.434	1.590	0.006	0.514	36.022	0.024	2.72%	-40.66%
	ID	7,133,863	25,693,811	0.895	1.592	1.780	0.006	0.484	48.584	0.016	1.88%	-33.57%
	NN	7,133,863	25,693,811	0.878	2.353	2.680	0.003	0.359	50.000			
SEDS: HG	OK	692,127	1,158,119	1.569	2.557	1.630	0.004	0.608	31.614	0.056	3.72%	-48.55%
	ID	692,127	1,158,119	1.585	3.208	2.025	0.003	0.569	45.683	0.072	4.77%	-36.08%
	NN	692,127	1,158,119	1.512	4.791	3.167	0.003	0.328	47.000			

Swath plots were generated to compare average estimated gold grades from the OK and ID models to the distribution derived from the NN model.

Three swath plots of gold grades were generated and reviewed for each domain. Swath plots for gold are presented for all estimated domains in the following figures: Figure 14-10 shows average gold grade along the block model X-Axis from west to east across strike; Figure 14-11 shows average gold grade along the block model Y-Axis from south to north along strike; and Figure 14-12 shows average gold grade along the block model Z-Axis from top to bottom, approximately down dip. All swath plots show gold grades in g/t for NN (Red line), ID (Blue line), and OK (Green line) models.

On a local scale, the NN model does not provide a reliable estimate of grades. On a much larger scale, it represents an unbiased estimation of the grade distribution based on the total data set. Therefore, if the OK model is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be similar to the distribution of grade from the NN model.

Correlation between the grade estimation methods appears reasonable. Variation between model estimates increases near model edges and is a result of lower drilling density.

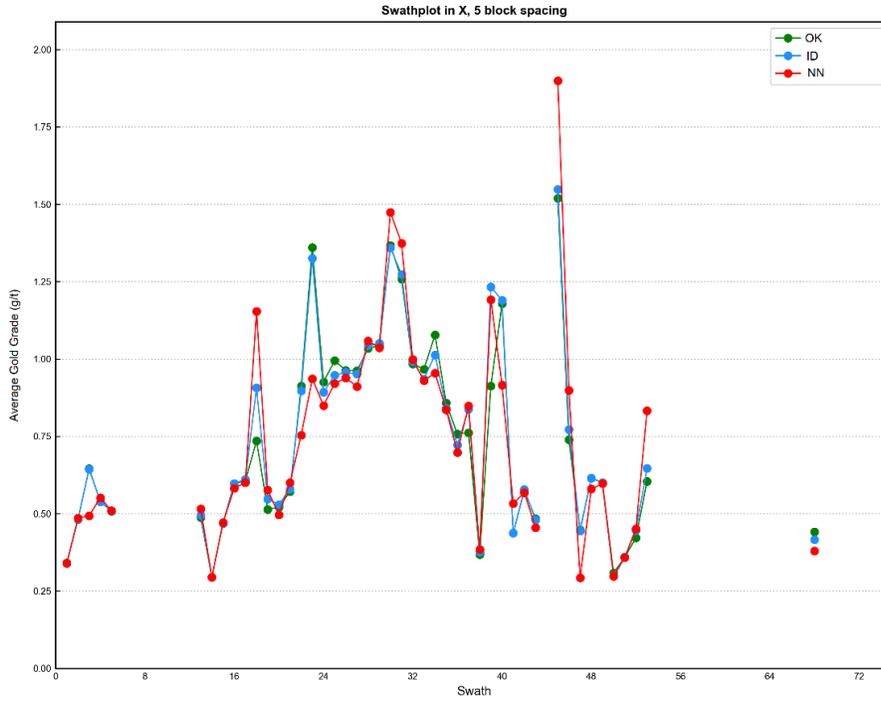


Figure 14-10: Swath Plot of Gold Grades along the X-Axis from West to East, Across Strike

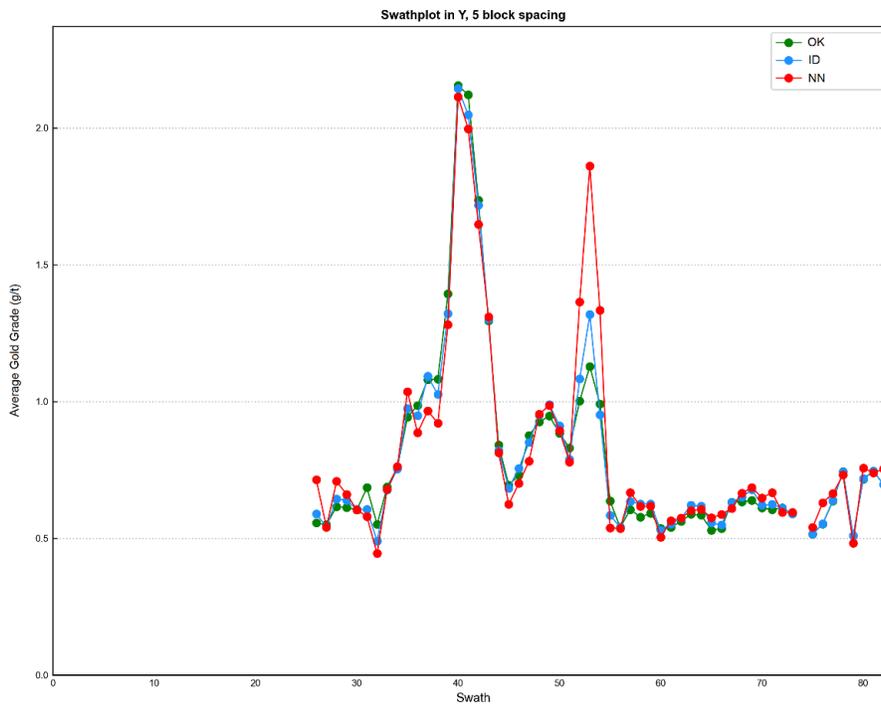


Figure 14-11: Swath Plot of Gold Grades along the Y-Axis from South to North, Along Strike

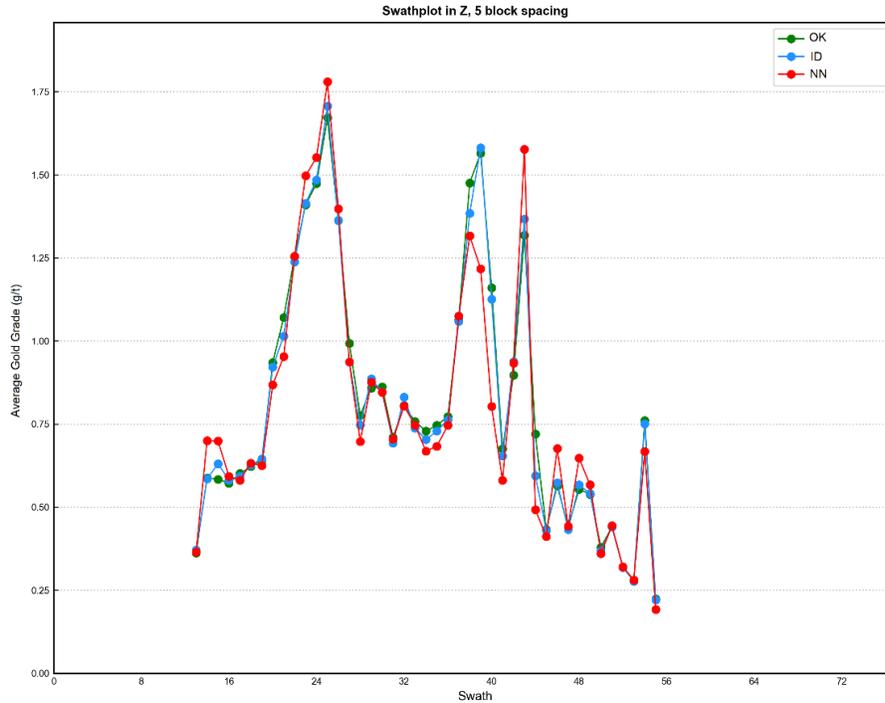


Figure 14-12: Swath Plot of Gold Grades along the Z-Axis from Top to Bottom, Down Dip

14.9 DENSITY

The Project database contains 10,340 density determinations. 8,790 determinations from previous operators are derived by water emersion methods at site from dried, saran wrapped samples. The database includes 239 independent determinations by SGS Laboratories. Heliostar completed an additional 1,311 determinations derived by water emersion methods at site from dried, wax coated samples. The QP’s review of the densities from the different operators found the results to be suitably similar.

Prior to estimation, densities greater than 4.0 g/cm<sup>3</sup> were excluded from the database. The final dataset used to estimate densities contains 10,265 determinations. Density statistics by domain are presented in Table 14-11. Domains included in the density estimate are highlighted and the text is bold.

Table 14-11: Descriptive Statistics by Domain for Density (g/cm<sup>3</sup>)

Domain	Count	Mean	Std. Dev.	CV	Minimum	Lower quartile	Median	Maximum
Total	10,265	2.69	0.21	0.08	1.65	2.60	2.65	4.00
OVBN: HG	2	2.57	0.12	0.05	2.49	2.49	2.49	2.66
<b>BXMAIN: HG</b>	<b>1,360</b>	<b>2.80</b>	<b>0.26</b>	<b>0.09</b>	<b>1.97</b>	<b>2.63</b>	<b>2.73</b>	<b>3.98</b>
BXMAIN: LG	9	2.60	0.03	0.01	2.56	2.59	2.60	2.64
<b>BXMONO: HG</b>	<b>93</b>	<b>2.51</b>	<b>0.16</b>	<b>0.06</b>	<b>2.18</b>	<b>2.40</b>	<b>2.50</b>	<b>3.00</b>
BXMONO: LG	63	2.56	0.13	0.05	2.25	2.48	2.55	3.02
<b>PORPHY: HG</b>	<b>3,131</b>	<b>2.68</b>	<b>0.19</b>	<b>0.07</b>	<b>2.06</b>	<b>2.60</b>	<b>2.64</b>	<b>3.95</b>
PORPHY: LG	2,840	2.61	0.15	0.06	2.08	2.56	2.61	3.99
<b>HRNFLS: HG</b>	<b>689</b>	<b>2.81</b>	<b>0.28</b>	<b>0.10</b>	<b>1.93</b>	<b>2.65</b>	<b>2.70</b>	<b>4.00</b>
HRNFLS: LG	353	2.73	0.15	0.05	2.33	2.65	2.70	3.69

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Domain	Count	Mean	Std. Dev.	CV	Minimum	Lower quartile	Median	Maximum
SEDS: HG	413	2.83	0.33	0.12	1.65	2.66	2.71	3.99
SEDS: LG	1,304	2.66	0.11	0.04	1.97	2.63	2.66	3.73
Outside Model	8	2.53	0.16	0.06	2.23	2.41	2.50	2.72

Densities were estimated into the block model by estimation domain using a single pass inverse distance squared interpolant. The size of the search ellipse was the same as the third pass of the gold estimate using a minimum of 2 samples, and a maximum of 20 samples. The search ellipse was oriented along strike and down dip of the gross lithologic units. The estimation parameters are summarized in Table 14-12.

**Table 14-12: Density Estimation Parameters**

Domain	Ellipsoid Ranges (m)			Ellipsoid Directions			Number of Samples	
	Maximum	Intermediate	Minimum	Dip	Dip Azi.	Pitch	Minimum	Maximum
BXMAIN: HG	140	105	70	80	185	90	2	20
BXMONO: HG	140	105	70	80	270	70	2	20
PORPHY: HG	140	105	70	55	260	90	2	20
HRNFLS: HG	140	105	70	50	260	90	2	20
SEDS: HG	140	105	70	55	260	90	2	20

In addition to visual validation of the estimate, key statistics from the estimated densities were compared to the sample densities and were found to be similar as shown in Table 14-13.

**Table 14-13: Density Validation Statistics**

Estimation Domain	Samples			Estimate			% Difference		
	Mean	Median	Maximum	Mean	Median	Maximum	Mean	Median	Maximum
All Estimated Domains	2.73	2.67	4.00	2.66	2.65	3.96	-2.7%	-0.6%	-0.9%
BXMAIN: HG	2.80	2.73	3.98	2.69	2.65	3.86	-3.9%	-2.8%	-2.9%
BXMONO: HG	2.51	2.50	3.00	2.51	2.50	2.92	0.0%	0.0%	-2.6%
HRNFLS: HG	2.81	2.70	4.00	2.71	2.68	3.96	-3.3%	-0.6%	-0.9%
PORPHY: HG	2.68	2.64	3.95	2.65	2.64	3.87	-1.2%	-0.2%	-2.1%
SEDS: HG	2.83	2.71	3.99	2.81	2.76	3.94	-0.7%	2.0%	-1.3%

Following estimation, blocks coded as overburden were assigned a density of 2.57 g/cm<sup>3</sup>. Blocks without a density estimate were assigned densities from the lower quartile of the samples as shown in Table 14-11.

#### 14.10 CLASSIFICATION

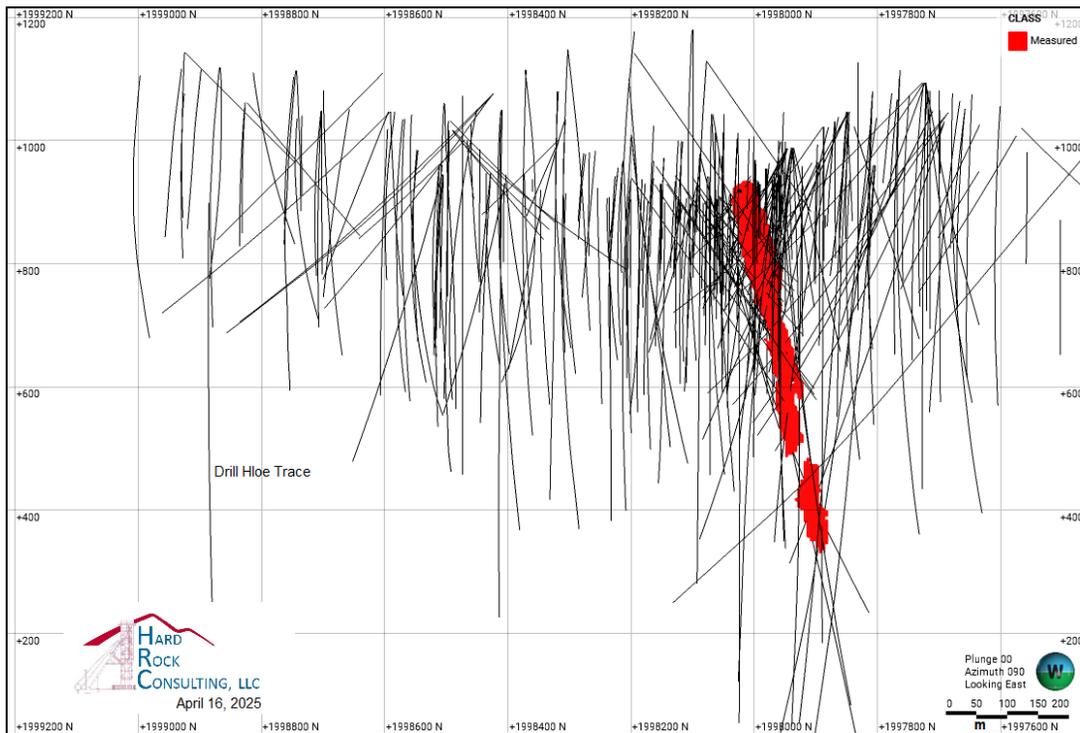
Blocks were initially classified as Measured, Indicated, and Inferred based on domain, distance from breccias, estimation pass, average distance (AVGD), number of drill holes (NDH), and slope of regression (SoR) from the gold estimate based on the following criteria.

- Blocks were initially classified as Measured if they were estimated in the 1<sup>st</sup> pass, had an AVGD within 25 m, with the NDH greater than equal to 3, and were inside the BXMAIN: HG domain.

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- Blocks were initially classified as Indicated if they were estimated in the 1<sup>st</sup> or 2<sup>nd</sup> pass, were within 50 m of the BXMAIN: HG and BXMONO: HG, had an AVGD within 50 m, with the NDH greater than equal to 2, and a SoR greater than equal to 0.1.
- Blocks were initially classified as Inferred if they were estimated in the 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> pass, and had an AVGD within 80 m.

Following initial classification, the block model was regularized to 5 m x 5 m x 5 m blocks and assigned the majority code from the initial classification. Wireframes from the regularized block model were created from the classified blocks. Those wireframes were then reviewed to remove small, isolated volumes, volumes supported by a single drill hole, as well as small voids internal to the wireframes. The smoothed wireframes were then evaluated back onto the original sub-blocked model for the final classification. The final classified blocks are presented in Figure 14-13 through Figure 14-15.



**Figure 14-13: Block Classified as Measured Looking East**

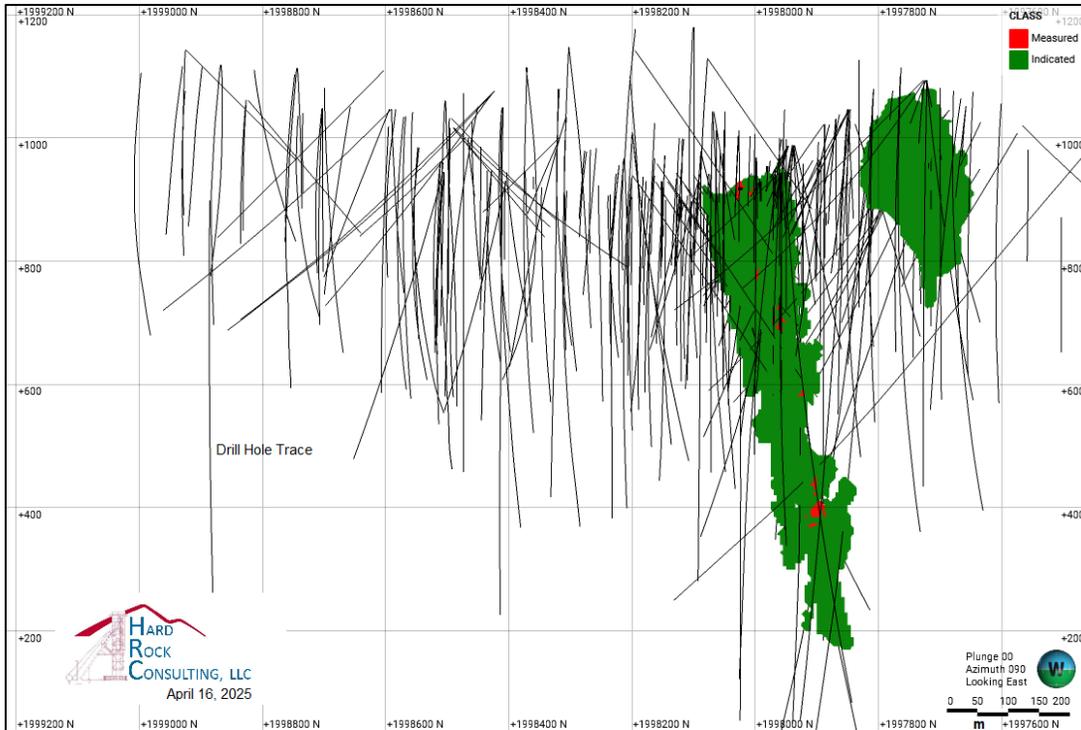


Figure 14-14: Block Classified as Measured and Indicated Looking East

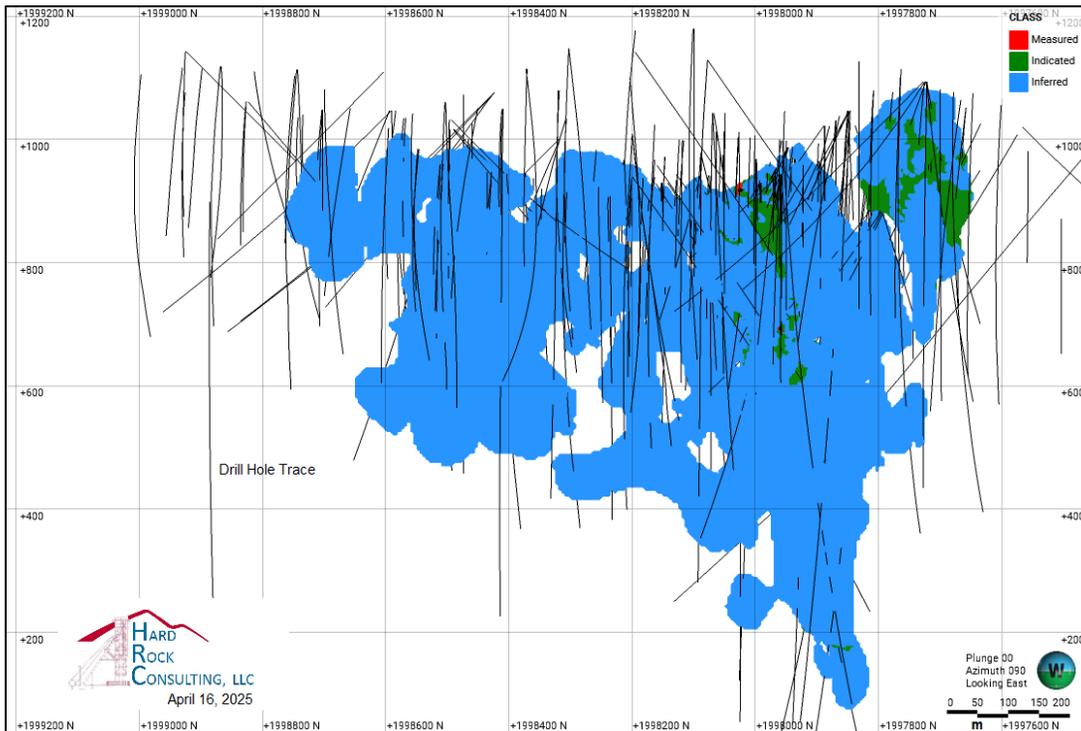


Figure 14-15: Block Classified as Measured, Indicated, and Inferred Looking East

#### **14.11 MINERAL RESOURCE STATEMENT**

The Mineral Resources are reported insitu, using the 2014 CIM Definition Standards. The Mineral Resource estimates have an effective date of 30 July 2025. The Qualified Person for the estimate is Mr. Richard Schwering, RM SME, an employee of Hard Rock Consulting.

Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. Inferred mineral resources are that part of a mineral resource for which the grade or quality are estimated on the basis of limited geological evidence and sampling. Inferred mineral resources do not have demonstrated economic viability and may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration

Mineral Resources are constrained within stopes optimized at a 2.10 g/t gold cut-off grade (Figure 14-16) using Vulcan® software and meet the requirements for reasonable prospects for eventual economic extraction. The cut-off grade was calculated using the input parameters presented in Table 14-14 and assumes a mill throughput rate of 540,000t/yr. Stopes were variably oriented along strike and down dip of mineralization. Longitudinal stopes, oriented along strike, are 20 m long by 25 m high and transverse stopes, across strike, are 10 m long by 25 m high. Both longitudinal and transverse stopes have a minimum width of 4 m and 5 m after equivalent linear overbreak/slough (ELOS) dilution. Sub-stoping is allowed in both longitudinal and transverse directions. In the transverse direction, the minimum sub-stope is one half the total stope height (back stope), and in the longitudinal direction the minimum sub-stope is one half the stope length. The Mineral Resource presented in Table 14-15 reports all blocks within the optimized stopes.

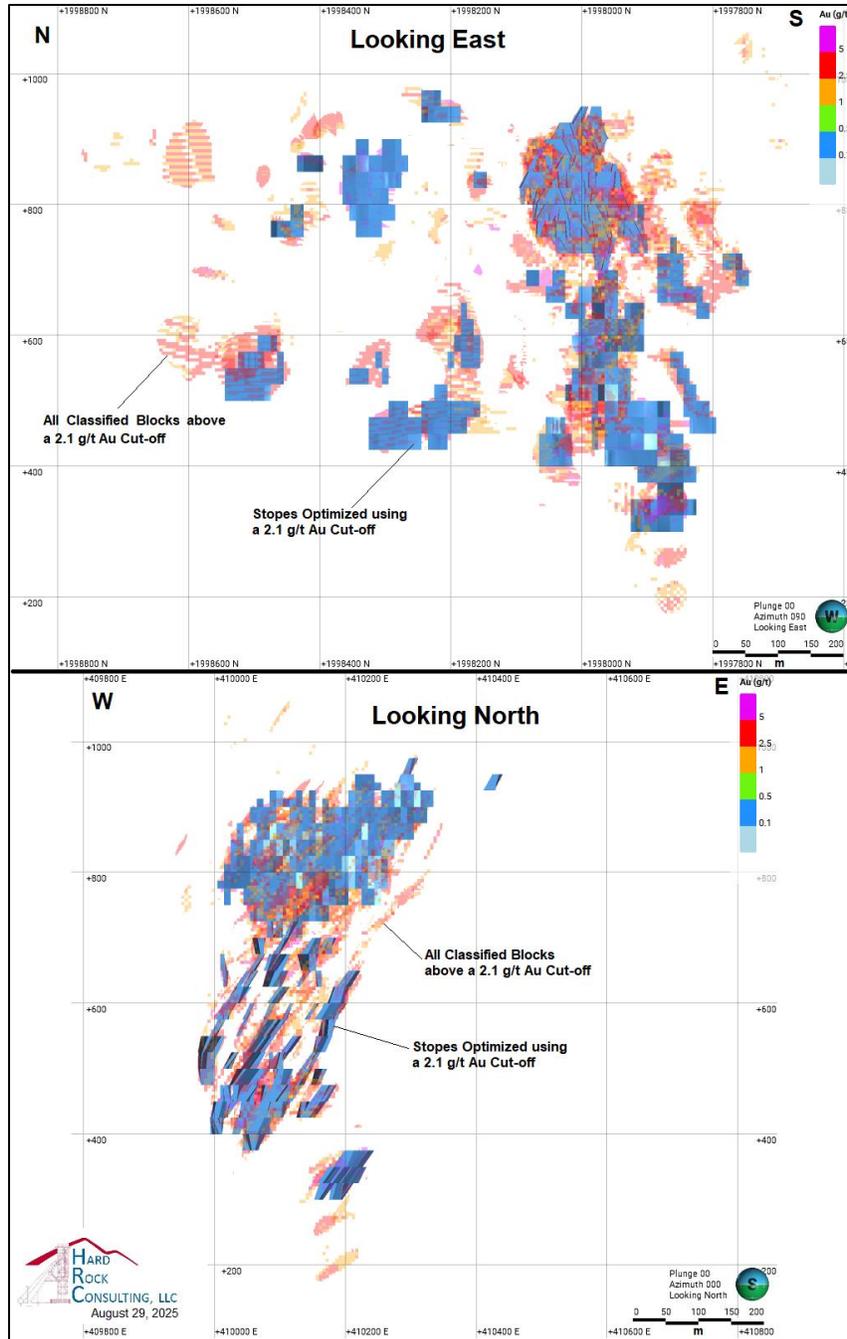


Figure 14-16: Views Looking East and North of the Optimized Stopes

**Table 14-14: Cut-off Grade Parameters**

Item	Unit	Value
<b>Revenue, Smelting &amp; Refining</b>		
Gold price	US\$/oz Au	\$2,500
Payable metal	%	99%
Gold Offsite Costs	US\$/oz Au	\$2.50
TC/RC/Transport	US\$/oz Au	\$8.00
Royalty	% NSR	3.00%
<b>OPEX Estimate</b>		
Mining Cost	US\$/t milled	\$72.00
Processing Cost	US\$/t milled	\$43.00
G&A	US\$/t milled	\$8.84
Sustaining CAPEX	US\$/t milled	\$7.54
<b>TOTAL OPEX ESTIMATE</b>	<b>US\$/t milled</b>	<b>\$131.38</b>
<b>Recovery and Dilution</b>		
External Mining Dilution	%	5.0%
Mining Recovery	%	95%
Metallurgical Process Gold Recovery	%	90%
Cut-off Grade	g/t	2.10

**Table 14-15: Mineral Resource Statement**

Classification	kilotonnes (kt)	Gold Grade (g/t)	Contained Gold Ounces
Measured	1,300	7.60	317,000
Indicated	2,970	4.44	424,000
Measured & Indicated	4,270	5.40	742,000
Inferred	4,040	3.96	514,000

Note:

1. Mineral Resources are reported insitu, using 2014 CIM definition standards.
2. Mineral Resources have an effective date of 30 July 2025. The Qualified Person for the estimate is Mr. Richard Schwering, RM SME, a Hard Rock Consulting employee.
3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are reported above a 2.10 g/t gold cut-off grade constrained within optimized stopes using the following input parameters: A gold price of US\$2,500/oz; a gold metallurgy recovery of 90%; an external mining dilution of 5%; a mining cost US\$72.00/t mined; a processing cost of US\$43.00/t processed, general and administrative costs of US\$8.84/t processed; a sustaining CAPEX of US\$7.54/t; a NSR royalty of 3.00%; and finishing and selling costs of US\$2.50/gold ounce processed.
5. Stopes were variably oriented along strike and down dip of mineralization. Longitudinal stopes, oriented along strike, are 20 m long by 25 m high and transverse stopes, across strike, are 10 m long by 25 m high. Both longitudinal and transverse stopes have a minimum width of 4 m and 5 m after ELOS dilution. Sub-stoping is allowed in both longitudinal and transverse directions. In the transverse direction, the minimum sub-stope is one half the total stope height (back stope), and in the longitudinal direction the minimum sub-stope is one half the stope length.
6. Numbers have been rounded.

#### **14.12 FACTORS THAT MAY AFFECT THE MINERAL RESOURCE ESTIMATE AND QP COMMENTS**

Factors that may affect the Mineral Resource estimate include changes to:

- Metal price and exchange rate assumptions
- Assumptions used to generate the estimation domains
- Local interpretations of mineralization geometry and continuity of mineralized zones
- Geological and mineralization shape and geological and grade continuity assumptions
- Treatment of high-grade gold values
- Density assignments
- Changes to the assumptions used to generate the gold cut-off grades
- Geotechnical assumptions used for assumed optimized stope orientations
- Metallurgical recovery assumptions
- Input and design parameter assumptions that pertain to the optimized stopes used to constrain the estimates
- Assumptions as to the ability to access the site, retain mineral and surface rights titles, obtain environment and other regulatory permits, and obtain the social license to operate

There are no other environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors known to the QP that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

The Mineral Resource Statement presented in Table 14-15 assumes a recovery of 90% across all estimation domains based on a comminution, flotation, BIOX<sup>®</sup>, CIL metallurgical flow sheet. While the QP believes the assumption to be reasonable based on test work described in section 13, 40% of the total gold ounces, approximately 500,000 oz, can be characterized by metallurgical sample LOM-01. 34% of the total gold ounces can be characterized by LOM-02. 26% of the ounces lie outside of the envelope used to define LOM-01 and LOM-02. The QP recommends additional drilling and metallurgical testing in those areas of the Mineral Resource.

The reported mineral resource (Table 14-15) is well supported by drilling. 83% of the tonnes and gold ounces classified as Measured and Indicated are estimated with four or more drill holes. In total, 77% of the tonnes and gold ounces are estimated with three or more drill holes, and only 6% of the total tonnes and gold ounces are supported by a single drill hole and classified as Inferred. There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

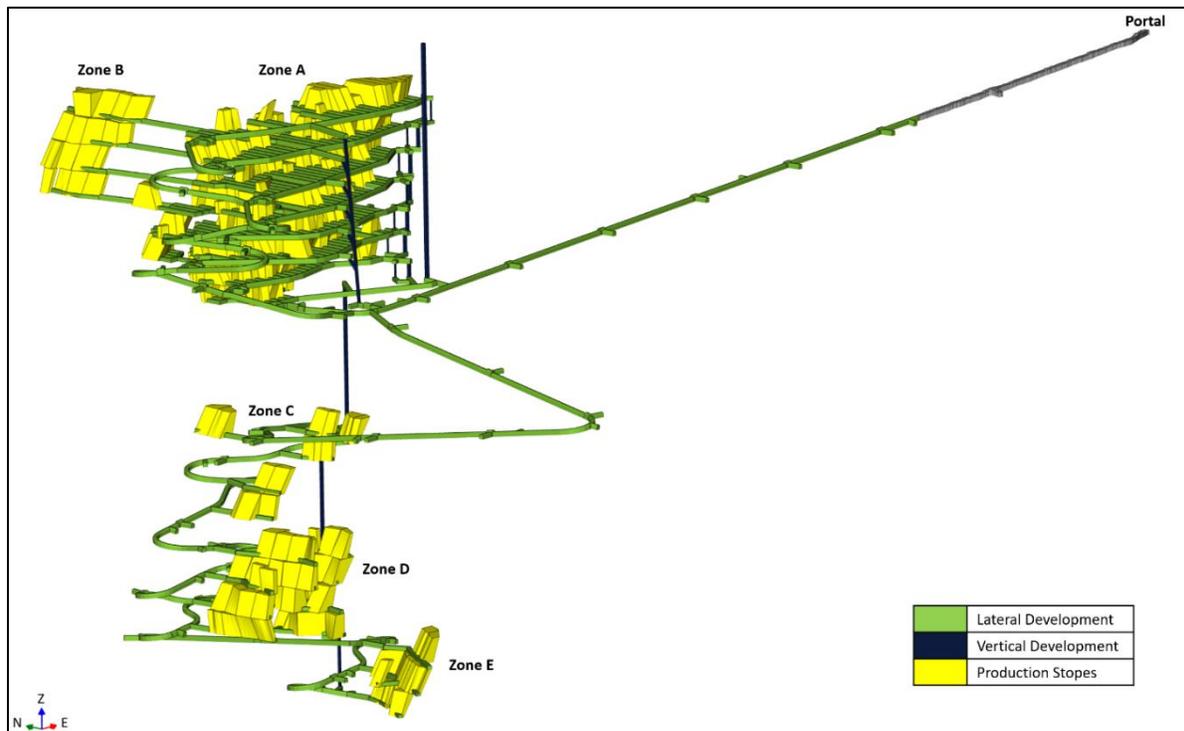
**15 MINERAL RESERVE ESTIMATES**

There are no reserves to report.

## 16 MINING METHODS

### 16.1 INTRODUCTION

The Ana Paula Project is a deposit that extends from near surface to over 675 m in depth. Although some parts of the deposit are near the surface and amenable to surface mining, this deposit has been selected for underground extraction using longhole open stoping (LHOS) mining methods. To maximize recovery of the mineralized material, paste backfill will be utilized for both longitudinal and transverse stoping. There is an existing decline on site measuring 415 m in length and it will be utilized as the starting point for access to the mine. Other mining methods were analyzed, however it was determined that the deposit geometry and characteristics were favorable to stoping. The objective is to develop the mine to maintain a mill throughput of 1,800 t/d.



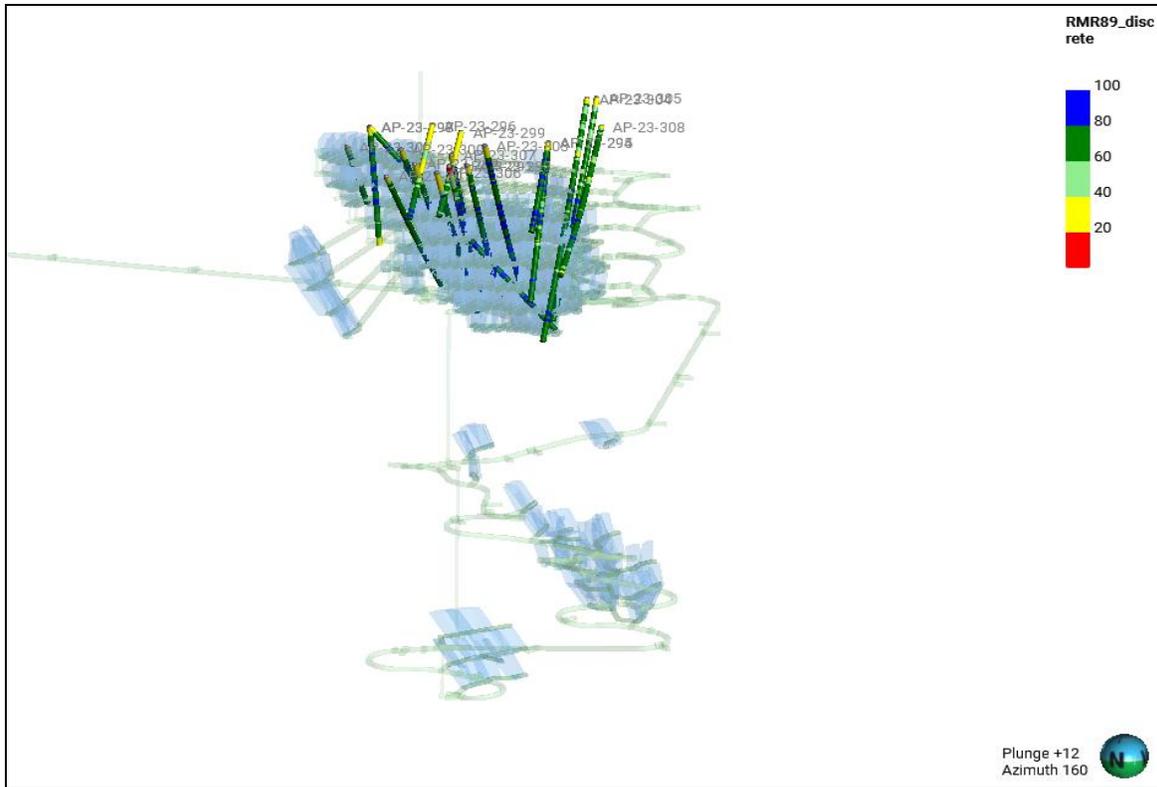
Source: JDS (2025)

Figure 16-1: Isometric View of Mine Design - Looking Northeast

## 16.2 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

### 16.2.1 Geotechnical Data Sources

To support the PEA mine design, geotechnical core logging, core orientation and laboratory strength testing were completed in 2023 for a total of 18 resource drillholes (3,216 m). Core logging and orientation were performed by Heliostar staff after receiving training from Knight Piésold Ltd. (KP) over a series of site visits. KP also performed daily reviews of the data remotely during the logging program. Downhole optical televiewer surveys were completed by DGI Geoscience Inc. for 7 of the geotechnical 18 holes to validate dominant structural conditions determined from the core orientation data. The 18 holes geotechnically logged are shown in Figure 16-2 along with the PEA mine design.



Source: JDS (2025)

**Figure 16-2: Location of 2023 Geotechnical Logging Drillholes**

The final PEA mine plan included additional resources below the main deposit that were not originally anticipated during the 2023 geotechnical core logging and testing programs. Core photographs for several holes within these zones were reviewed by JDS Energy & Mining Inc. (JDS) which generally confirm similar ground conditions as the main mineralization. Geotechnical logging of several additional drillholes from the recent drilling campaign was completed to verify conditions in these areas as well as to address potential data gaps and orientation biases from the 2023 program.

### 16.2.2 Rock Mass Characterization

Geotechnical logging data has been collected based on the Bieniawski (1989) rock mass rating (RMR) and Barton (2014) Q rock mass classification systems. Overall, the rock mass can be considered as ‘Fair’ to ‘Good’ quality according to the RMR and Q classification systems with values typically between 45 and 90 for RMR and 1 to 40 for Q. The upper 10 to 20 m of rock is typically weathered and more heavily fractured.

Core samples were selected from the geotechnical holes for laboratory strength testing including uniaxial compressive strength (UCS), triaxial compressive strength (TCS) and Brazilian in-direct tensile strength (BTS) as well as measurements of density and elastic properties. Table 16-1 contains a summary of the average rock mass quality and laboratory test results for each of the primary lithologies. Additional details of the geotechnical logging and testing programs can be found in the KP (2023) report.

**Table 16-1: Rock Mass Characteristics and Intact Strength by Lithology (Source: JDS (2025))**

Lithology	Intact Rock Properties						Rock Mass Quality	
	UCS (MPa)	BTS (MPa)	mi 1	Density (g/cm <sup>2</sup> )	Poisson's Ratio	Young's Modulus (GPa)	Avg. RMR89	Avg. Q' 2
Porphyry	145	-5.8	20	2.6	0.22	60	69	4.2 (5.3)
Sediments (Limestone & Shale)	85	-5	15	2.7	0.18	90	65	5.2 (6.0)
Breccia	85	-3.3	24	2.8	0.37	35	74	6.6 (8.0)
Hornfels	-	-	-	-	-	-	70	5.6 (5.7)

1 mi = Hoek-Brown (Hoek, et al., 2002) intact material constant calculated using the results of the laboratory UCS and BTS tests.

2 Numbers shown in parentheses exclude the upper, near-surface weathered materials.

Six additional geotechnical drillholes were drilled and logged as part of a 2017 open pit pre-feasibility work program. Results of the 2017 logging and testing data indicate similarly good rock quality as the 2023 drillholes; however, their locations are mostly outside the underground mine area and therefore, were not included in this assessment.

### 16.2.3 Geologic Structure

Oriented core, televiewer surveys and surface mapping indicate consistent dominant structural trends in the deposit which can be summarized as follows:

- Sub-vertical, east-northeast to east-southeast trending joints and normal faulting
- Sub-vertical, north-northwest trending jointing and normal faulting
- Moderately (45 to 75°) west-southwest dipping bedding planes and bedding parallel joints and faulting
- Sub-horizontal jointing

An initial structural model was developed for the project in July 2025 based on surface mapping and drillhole data. A total of 9 faults are identified within the mine area, two of which are considered major, through going structures. These include a steeply southwest dipping fault (SF-1) located on the southwest side of the deposit and a steeply south-southeast dipping fault (SF-HGP) which crosses through the central body of the deposit, parallel to the main breccia unit.

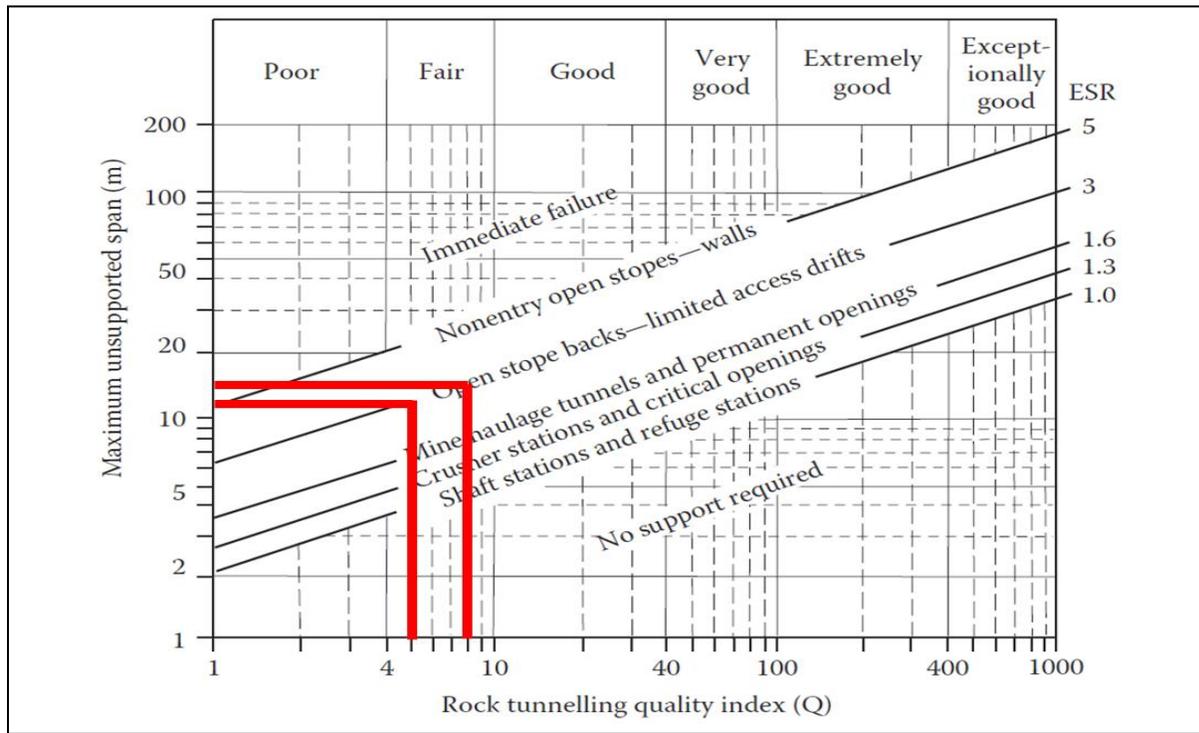
Drillhole intersections with fault SF-1 indicate an approximately 1 to 3 m wide damage zone; however, the fault is only anticipated to be encountered in development on the west side of the deposit, outside the planned stoping areas. The SF-HGP fault appears mostly 'healed' without significant damage or gouge zones associated with it, based on the existing geotechnical logging data. The remaining structures identified in the model appear to be smaller-scale, second order structures and are not anticipated to significantly impact overall mine stability.

The M3 (2023) pre-feasibility study indicates faulting can also be observed commonly at and parallel to sedimentary-intrusive contacts, generally oriented parallel to bedding in the sedimentary rocks.

### 16.2.4 Geotechnical Design Parameters

Transverse longhole stoping mining using a primary/secondary sequence will be the primary mining method. Most areas will target 100% extraction using cemented paste backfill for all stopes. Level spacing will be 25 m, measured sill to sill.

The maximum stable span for stope backs was initially estimated using the Q-system diagram developed by Hutchinson & Diederichs (1996) and shown in Figure 16-3. Unsupported (non-entry) spans of approximately 10 m to 15 m are anticipated to be stable for the anticipated range of Q' values.



Source: JDS (2025)

**Figure 16-3: Unsupported Span Limits (Hutchinson & Diederichs 1996)**

Stability of stope walls was then evaluated using industry standard empirical methods. Empirical stope design analyses are based on stability graphs where the stability number ( $N'$ ) is plotted on the vertical axis against the hydraulic radius (wall area divided by wall perimeter) of the stope face on the horizontal axis. The stability number ( $N'$ ) is calculated based on rock mass quality ( $Q'$ ), and three empirical factors: A (induced stress conditions), B (geologic structure orientation) and C (dip angle of the stope face).

Maximum stable dimensions for stope walls were estimated using the Potvin (2001) method for the anticipated range of rock mass conditions and stope sizes. The Trueman & Mawdesley (2003) 'Stable' line was used as a second check against the Potvin (2001) analysis results. Upper and lower bound estimates of stope face dimensions and rock quality ( $Q'$ ) were analyzed.

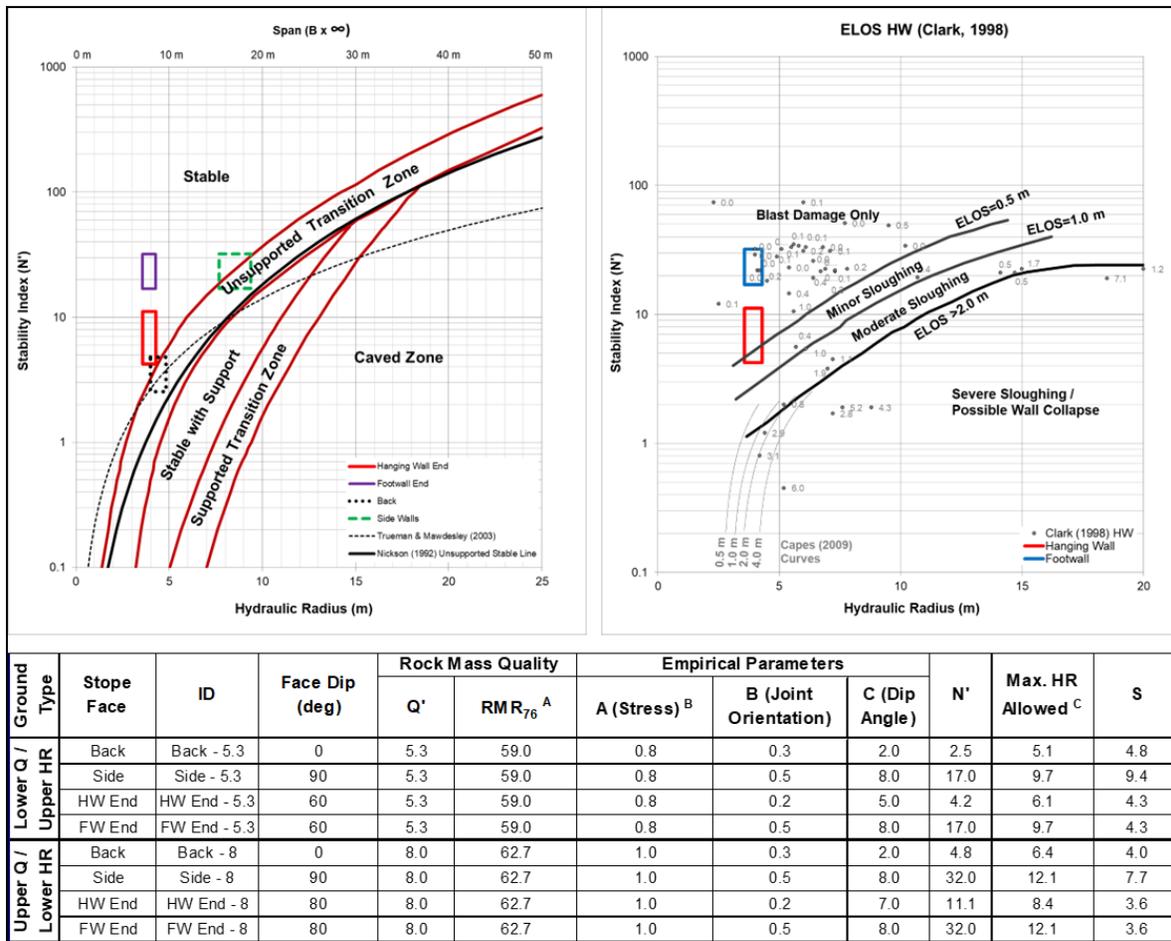
Empirical factors for calculation of the stability number ( $N'$ ) were estimated based on the following assumptions:

- Induced stress parameter (A) equal to 0.8 to 1.0 given the relatively strong estimated UCS (50 to 150 MPa) and low anticipated horizontal stress given the shallow depth of the stoping areas (<250 m bgs) for the main body of mineralization;
- Joint orientation factor (B) equal to 0.3 for the back based on the assumption of a flat joint set being present that will parallel the back. A joint orientation factor of 0.2 was estimated for the hanging wall based on a dominant sub-parallel discontinuity set; and
- Gravity factor (C) equal to 2.0 for the flat back and 5 to 7 for the hanging walls depending on the hanging wall dip angle (60 to 80°).

Based on the 25 m level spacing (30 m maximum slope height), a 10 m slope width is anticipated to be stable without the use of heavy support (i.e. cables), for a 40 m maximum slope length. For the anticipated rock quality, the amount of unplanned dilution for these dimensions is expected to be controlled primarily by blasting practices rather than geotechnical conditions.

Unplanned dilution was estimated for stope hanging walls and footwalls using the equivalent linear overbreak/slough (ELOS) method developed by Clark (1998). The method is similar to the empirical stope stability charts discussed above with the Stability Number (N') and hydraulic radius but rather than showing stable/unstable conditions, the plot contains contours of dilution which approximate the average thickness, spread over the entire hanging wall or footwall. The analysis indicates approximately 0.5 m of dilution should be anticipated for the C veins while dilution for the Y veins will be controlled primarily by blasting practices, but up to 0.5 m.

The results of the empirical stope stability and dilution analyses for transverse long hole stopes within the main body of the deposit are shown in Figure 16-4.



Source: JDS (2025)

**Figure 16-4: Empirical Stope Stability and Dilution Charts for Transverse Stopes**

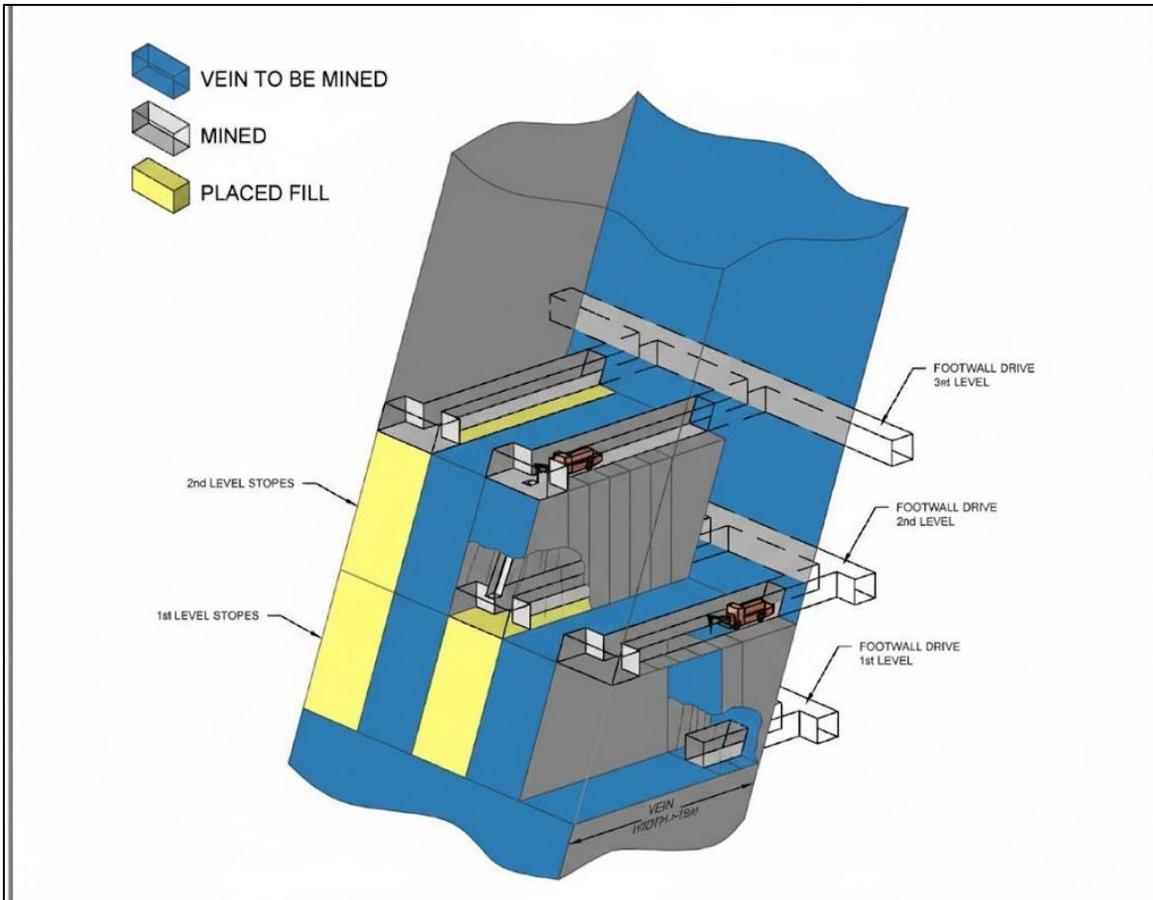
For the PEA, it has been assumed that stopes will be mined to surface without leaving a crown pillar. Stopes will then be backfilled with waste rock from surface. Additional, detailed stope stability and crown pillar analyses will be completed as the project advances to confirm stope – ground surface interaction.

### **16.3 MINING METHODS**

Based on the geotechnical and geological parameters of the deposit, LHOS with paste backfill was selected as the mining method. The project has two distinct mineralization styles. The majority of the mining is concentrated in the core of the deposit where longhole transverse stoping is ideal and the remainder of the deposit is longitudinal longhole stoping. Paste backfill is the primary backfill method for both stoping options. Lateral development is used to support longhole stoping.

#### **16.3.1 Transverse Longhole Stoping**

Transverse Longhole Stoping mining, as shown in Figure 16-5, is applicable where the deposit width exceeds the geotechnical parameters for longitudinal stoping. A footwall drive is developed parallel to the strike of the mineralization and regularly spaced cross-cuts are developed on the top and bottom of the stopes to the economic extent of the hanging wall. Primary stopes are drilled, blasted, mucked, and then backfilled with structural paste backfill. Once the primary stopes on the first and second level are mined, then the secondary stopes on the first level are mined using the same drill, blast, muck, and backfill sequence. Secondary stopes are backfilled with a lightly cemented paste. The secondary stopes do not need the same strength as primary stopes since only the end is exposed as part of the mining sequence compared to the sidewall exposure on the primary stopes. This extraction sequence continues from the lowest level of the mine to the top of the mineralization. Transverse stopes at Ana Paula are 10 m wide, 25 m tall from sill to sill and the length (perpendicular to the strike) varies from 15 m to 100 m+. Stope blocks that are longer than 40 m are mined in smaller lengths for geotechnical stability and controlling dilution.



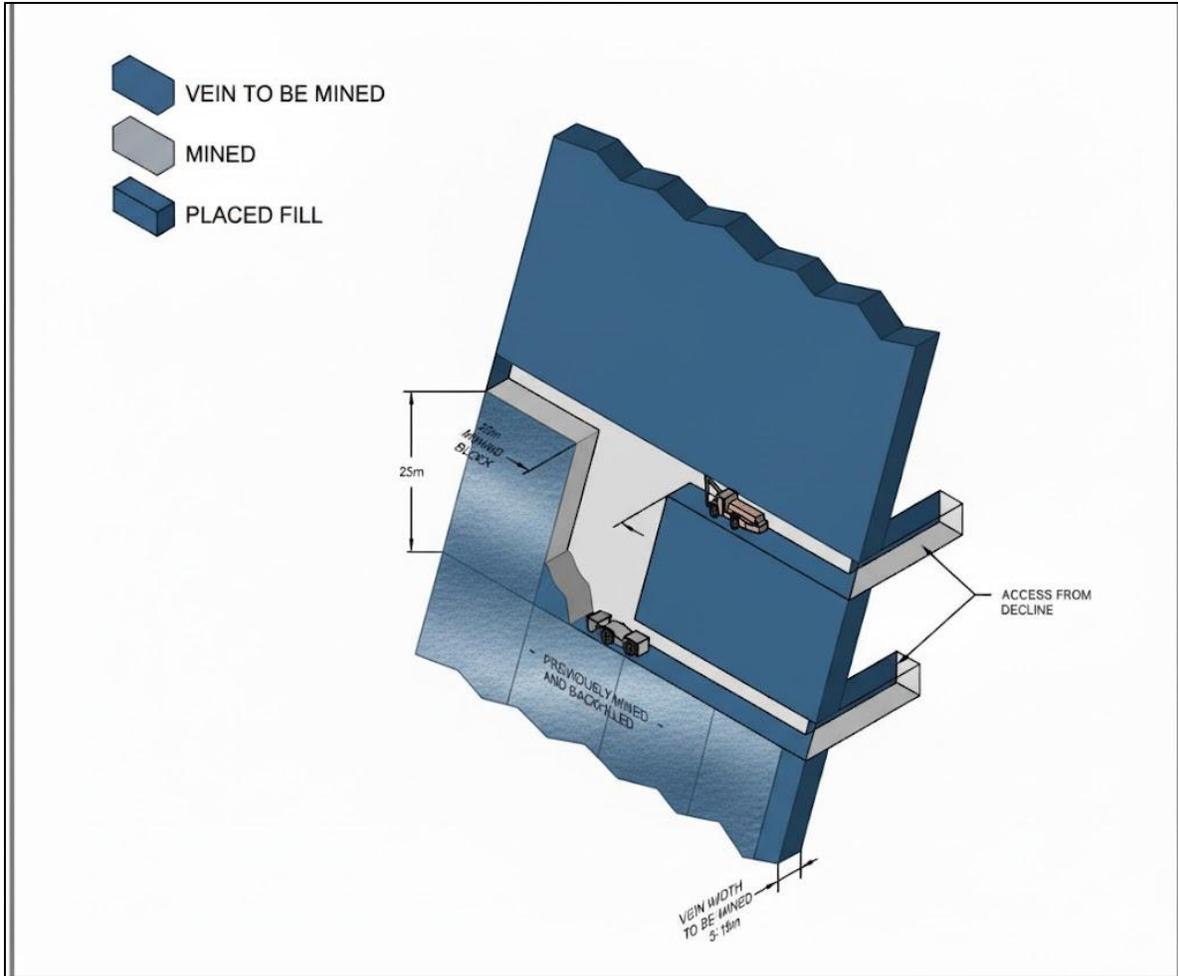
Source: JDS (2025)

**Figure 16-5: Classic Transverse Longhole Stopping Mining Conceptual Schematic**

### 16.3.2 Longitudinal Longhole Stopping

Longitudinal longhole stopping (Figure 16-6) is utilized in steeply dipping narrower deposits. A top and bottom drift delineate the stope extents and blast holes are drilled between the two levels using a Longhole Drill. The stope is blasted, and material is extracted from the bottom drift by conventional remote mucking with load-haul-dump machinery (LHDs).

Stopes are mined in retreat sequence with the furthest stopes being mined first and retreated back to the access on the level. Stopes are backfilled with a cemented paste and the last stope on each level will be backfilled with a lightly cemented paste backfill to reduce mining costs.



Source: JDS (2025)

Figure 16-6: Longitudinal Longhole Stopping Conceptual Schematic

#### 16.4 MINE DESIGN PARAMETERS

To determine mineable shapes, the following design process was utilized:

- Analyze the geologic resource model for geometric properties including mineralized zone width, depth, length, and continuity;
- Select the mining methods best suited for the deposit based on geometry, economics, and geotechnical parameters;
- Determine the economic cut-off grade (COG) based on estimated operating cost, mine recovery, dilution, and commodity price assumptions;
- Identify the blocks within the geologic model that are above COG (including mine dilution and recovery), and produce optimized stope shapes; and
- Develop a mine plan around the economically viable production stope and complete economic analysis.

These steps are discussed in detail in the sections below.

### 16.4.1 Stope Design Parameters

Transverse and Longitudinal LHOS stope optimizations used different design parameters and optimization orientations to generate mineable shapes for the different zones. After generation of the shapes, a preliminary evaluation (orphan analysis) was completed to exclude shapes which would not be profitable due to excessive development requirements. Stope design parameters, including dilution and recovery factors are presented in Table 16-2.

**Table 16-2: Mine Dilution and Recovery Inputs (Source: JDS (2025))**

Parameter		Units	LHOS Mining Method			
			Longitudinal	Transverse – Primary	Transverse – Secondary	Transverse – Crown
Stope Design Parameters	COG	g/t	2.50			
	Length (along strike)	m	20	10		
	Height (sill to sill)	m	25			
	Min. Width	m	4			
	Min. Diluted Width	m	5			
	Min. Pillar Width	m	10			
	Strike (Min/Max/Change)	°	-10/10/5	-45/45/15		
Dip (Min/Max/Change)	°	60/120/20	55/125/20			
Dilution	HW ELOS	m	0.5			
	FW ELOS	m	0.5			
	Mining	%	5%	1%	6%	5%
Recovery	Mining Recovery	%	95%			90%

### 16.4.2 Cut-off Grade

Economic stope material is identified from the 3D block model utilizing Maptek Vulcan™ Stope Optimizer software. Gold cut-off was determined based on parameters contained in Table 16-3.

**Table 16-3: Cut-off Grade Parameters(Source: JDS (2025))**

Cut-Off Grade Criteria	Units	Cost
<b>Revenue, Smelting, &amp; Refining</b>	<b>Units</b>	<b>Value</b>
Gold price	US\$/oz Au	2,200
Payable metal	%	99%
Gold Offsite Costs	US\$/oz Au	2.50
TC/RC/Transport	US\$/oz Au	8.00
Royalty @ 1.0% NSR	US\$/oz Au	21.76
Royalty @ 8.5% on EBITDA	US\$/oz Au	111.12
Private Royalties @ 2.0%	US\$/oz Au	43.51
Net Gold value per ounce	US\$/oz	2,110

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<b>Cut-Off Grade Criteria</b>	<b>Units</b>	<b>Cost</b>
<b>Revenue, Smelting, &amp; Refining</b>	<b>Units</b>	<b>Value</b>
Net Gold value per gram	US\$/g	67.85
Net Au value per gram	US\$/g	61.06
<b>Estimated Operating Cost</b>	<b>Units</b>	<b>Cost</b>
Underground Mining Cost	\$/t	72.00
Processing Cost	\$/t	46.77
G&A Cost	\$/t	8.60
Sustaining Cost	\$/t	10.23
<b>Total</b>	<b>\$/t</b>	<b>137.60</b>
<b>Mine Losses and Dilution</b>		
Mining Recovery	%	95
External Mining Dilution	%	5
<b>Process Plant Recovery</b>		
Flotation Recovery	%	95
Bio Oxidation	%	95
<b>Calculated COG</b>		
In-situ Cut-off Including Dilution	g/t	2.5
Incremental cut-off grade	g/t	1.1

Notes:

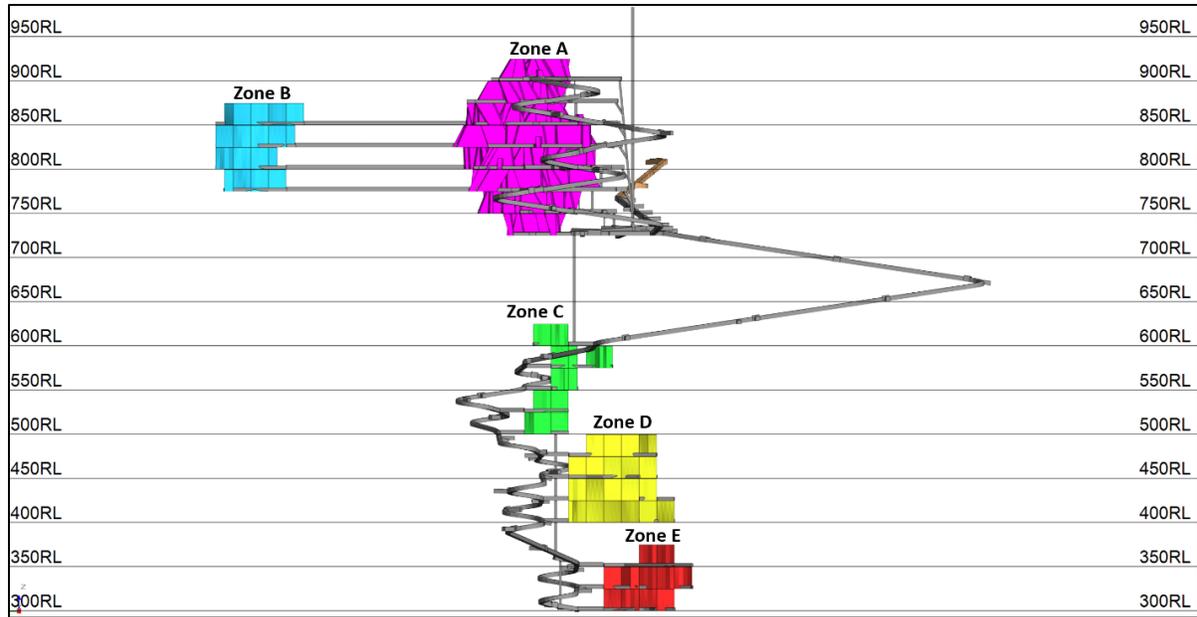
Operating parameters may differ from those used in the economic model due to subsequent, more detailed estimation work. These differences are not considered to have a material impact on PEA results.

## **16.5 UNDERGROUND MINE DESIGN**

Mining begins with the wider Zone A at the 725L. Zone A contains a majority of the mineralized material and is mined from bottom up using transverse LHOS with paste backfill. Zones B, C, D, and E are mined bottom up using longitudinal LHOS with paste backfill.

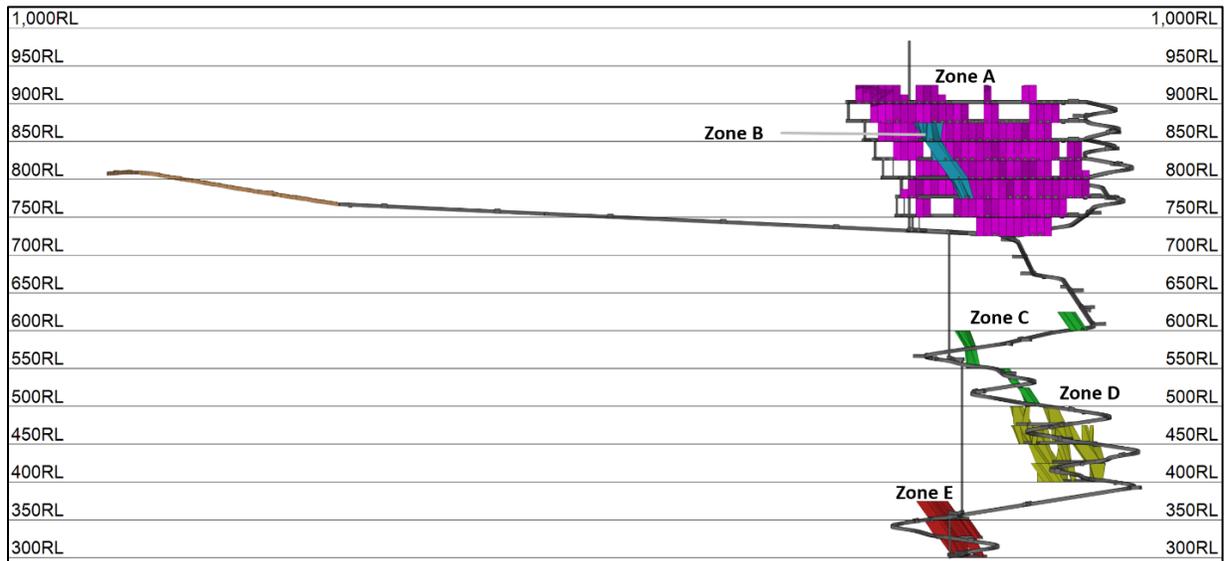
While Zone A is in production, a decline ramp is developed to access zones C, D, and E. Zone B is accessed from the footwall drives of Zone A at the 775L, 800L, 825L, and 850L.

Figure 16-7 and Figure 16-8 illustrate the different mining zones.



Source: JDS (2025)

Figure 16-7: Mining Zone Definition – Looking East



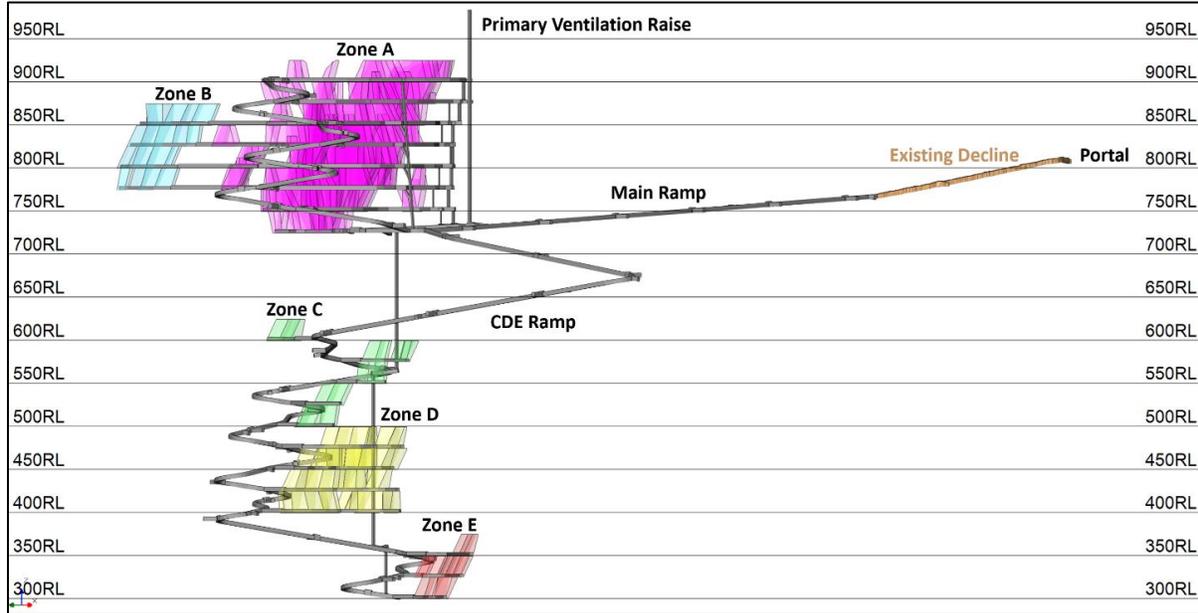
Source: JDS (2025)

Figure 16-8: Mining Zone Definition - Looking South

### 16.5.1 Access

A depiction of the mine access is included in Figure 16-9. The existing mine portal serves as the primary entry and exit for mobile equipment and personnel. The primary vent raise to surface is equipped with ladderways and is intended for emergency egress only.

All mining zones utilize the main ramp for material haulage, mineralized material conveyance, personnel/equipment access, and services. Underground ramps are 5.0 m wide and 5.0 m high, which was chosen to accommodate ventilation ducting, services, and mobile equipment. The main ramp is driven at a gradient of -5% from the existing decline to the bottom of Zone A at 725L. A second ramp (CDE Ramp) is driven at a gradient of -15% from the bottom of the main ramp to access Zones C, D, and E.



Source: JDS (2025)

**Figure 16-9: Mine Access – Looking Northeast**

## 16.5.2 Development

### 16.5.2.1 Lateral Development

The main ramp will be driven from the existing decline face at 765L to the bottom of Zone A at 725L. After establishment of the primary exhaust raise to surface, an incline ramp is driven to access the remaining levels of Zones A and B. A secondary decline ramp (CDE Ramp) is driven from 725L to the 300L that provides access to zones C, D, and E. Re-muck bays are 18 m in length and spaced at 150 m intervals along the ramps. Allowance for sumps and electrical substations has been included at 300 m intervals.

Mining levels are spaced at 25 m vertical intervals. Level accesses are driven from the ramps to the footwall drive of each production level. Level access drives are 40 m long. Each level contains a truck loadout bay, sump, and electrical bay. Footwall drives are located at a minimum offset of 15 m from the production stopes. Cross cuts are spaced at 10 m intervals along the footwall drives. The cross cuts provide access for drilling, blasting, mucking, and backfilling the production stopes.

A summary of lateral development (by type) for all of the zones is included in Table 16-4.

**Table 16-4: Lateral Development Summary (Source: JDS (2025))**

Type	Units	Width	Height	Type	Total Planned
Level Access	m	5	5	CAPEX	1,640
Footwall Drive	m	5	5	CAPEX	1,725
Loadout Bay	m	5	5	CAPEX	400
Raise Access	m	5	5	CAPEX	375
Return Air Drive	m	5	5	CAPEX	660
Remuck	m	5	5	CAPEX	655
Ramp	m	5	5	OPEX	4,825
Sump	m	5	5	OPEX	235
Substation	m	5	5	OPEX	115
Crosscut	m	4	5	OPEX	15,665
Total Lateral Development	m				26,290

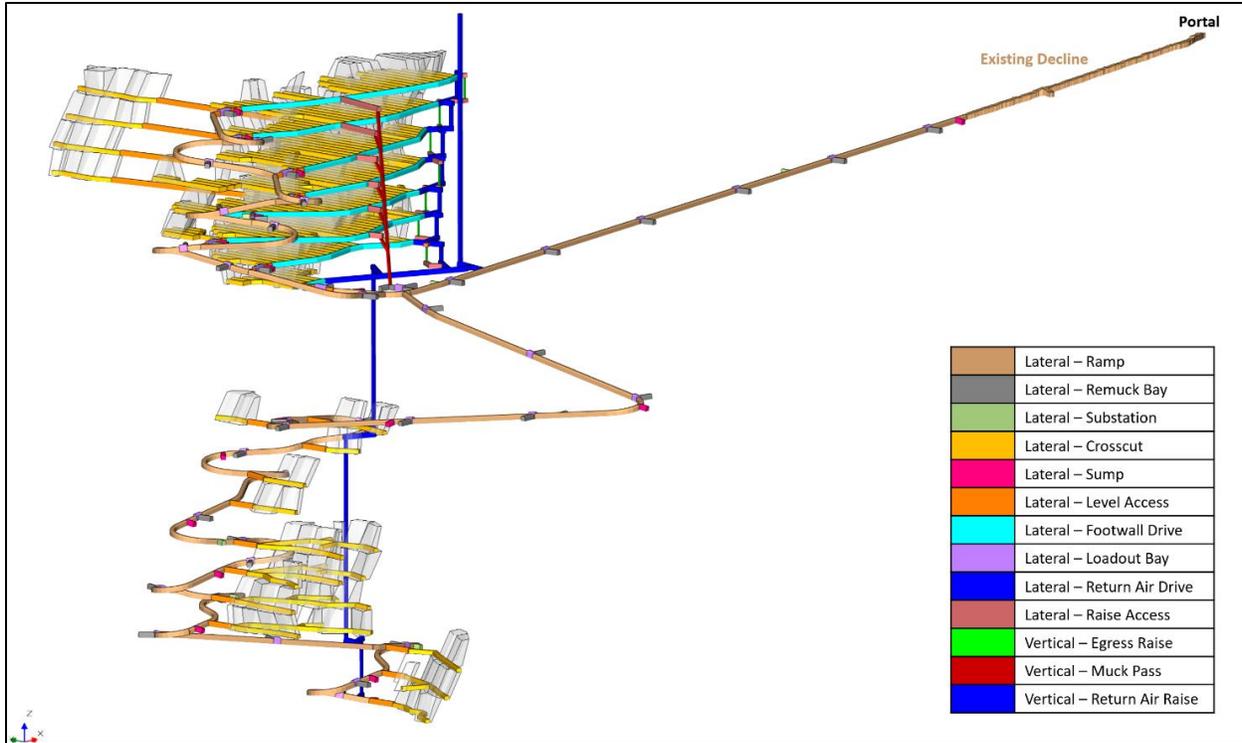
#### 16.5.2.2 Vertical Development

Vertical development is used for ventilation, muck conveyance, and emergency egress. The primary ventilation raise is driven from 730L to surface using an Alimak raise climber. Three secondary return air raises that are also developed via Alimak provide ventilation and secondary egress for Zones C, D, and E. Longhole drop raises are developed between levels in Zone A to enable ventilation and secondary egress in Zones A and B. To facilitate efficient muck conveyance in Zones A and B, a primary muck pass is driven via Alimak from 725L to 900L. Secondary muck passes are drilled and blasted as longhole drop raises into the primary muck pass.

A summary of vertical development (by type) for all of the zones is included in Table 16-5, with Figure 16-10 illustrating both lateral and vertical development.

**Table 16-5: Vertical Development Summary (Source: JDS (2025))**

Type	Units	Width	Height	Type	Total Planned
Return Air Raise - Primary	m	3.5	3.5	CAPEX	246
Return Air Raise - Secondary	m	3.0	3.0	CAPEX	491
Return Air Raise - Secondary	m	2.5	2.5	CAPEX	51
Muck Pass - Primary	m	2.5	2.5	CAPEX	155
Muck Pass - Secondary	m	2.4	2.4	CAPEX	74
Egress Raise	m	1.5	1.5	CAPEX	133
Total Vertical Development	m				1,151



Source: JDS (2025)

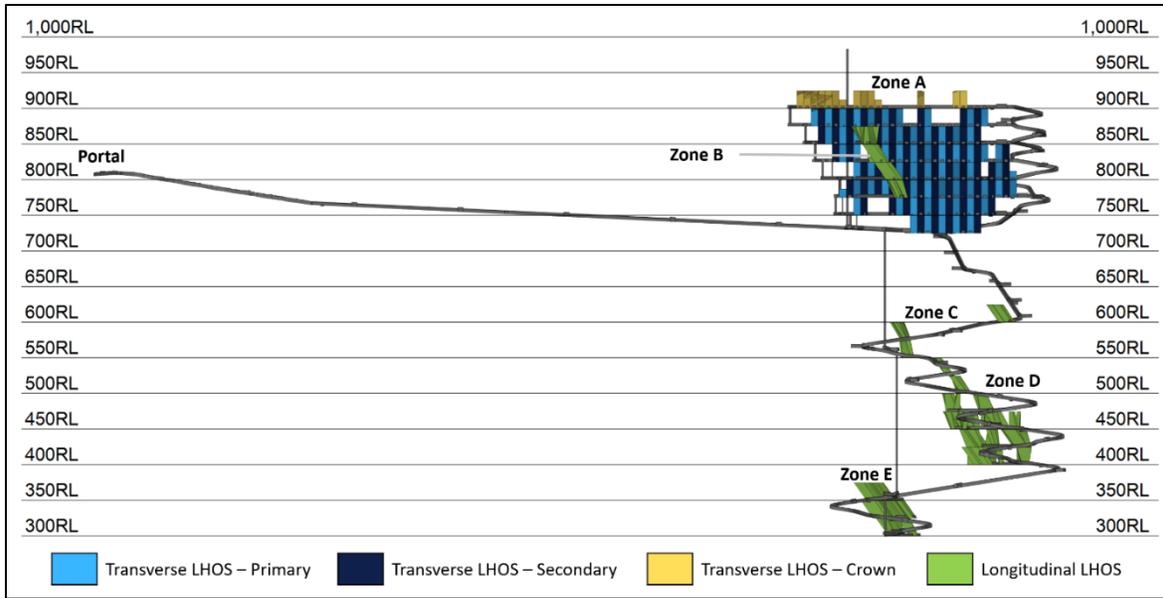
**Figure 16-10: Mine Development – ISO View Looking Northeast**

### 16.5.3 Production

The mining methods selected for the production stopes are based on the geometry of the mineralization in the different zones. Stopping methods are standardized to a single method within each zone. More specifically, the chosen method is:

- Longitudinal LHOS with paste fill where mineralization in the zone is narrow (< ~20 m width); and
- Transverse LHOS with paste fill where mineralization in the zone is wide (> ~20 m width).

Figure 16-11 differentiates the mining zones by mining method.



Source: JDS (2025)

**Figure 16-11: Stopes by Mining Method – Looking Northwest**

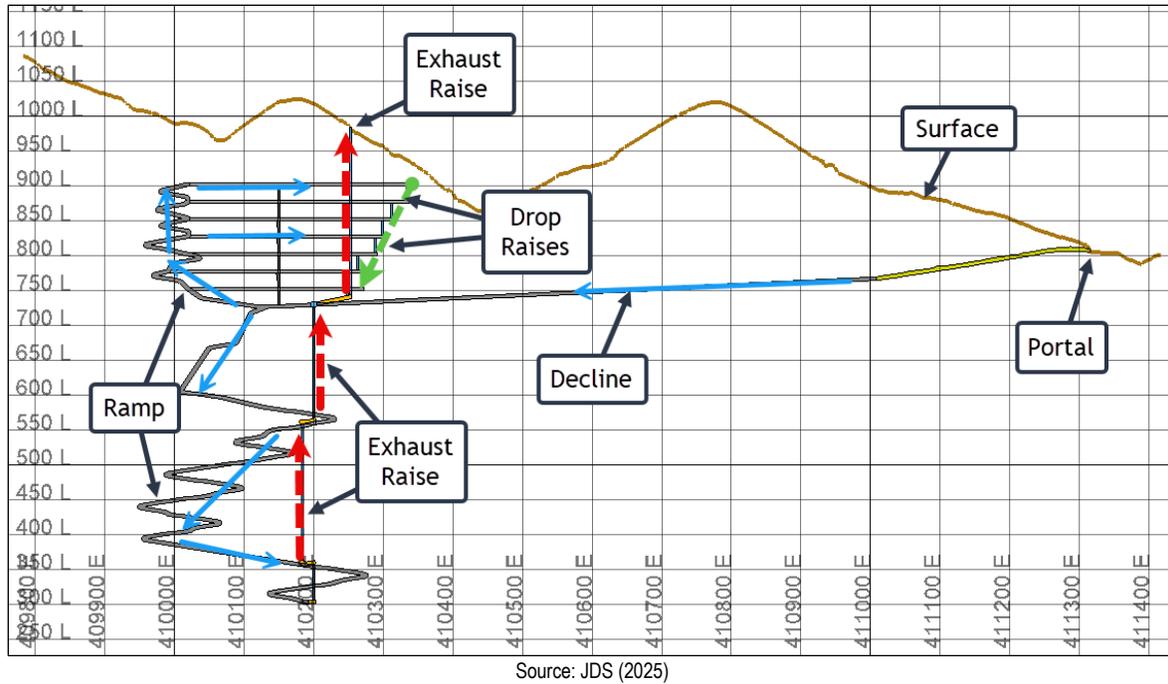
## 16.6 MINE SERVICES

### 16.6.1 Mine Ventilation

The first priority during initial mine development is establishing a flow through ventilation network through the main ramp. The existing decline will be developed to 730L where a raise to surface will be developed. Primary surface ventilation fans are to be installed atop the raise with the portal acting as the fresh air intake for the mine. As the mine continues to develop up from the 725L in Zones A and B, air will flow across the footwall drive on each level to a series of drop raises connected to the main return raise that exhausts to surface. As the mine develops deeper in Zones C, D, and E, fresh air flows down the ramp and is pulled up exhaust raises to the primary vent raise and exhausted to surface. Auxiliary fans are required to ventilate active headings and levels prior to connecting to the main ventilation network.

The ventilation demand was estimated based on Mexican regulations that require a minimum ventilation airflow of 2.13 m<sup>3</sup>/min for each horsepower of nominal diesel engine power of underground machinery and 1.50 m<sup>3</sup>/min for each worker underground. The peak ventilation airflow demand is estimated at 8,580 m<sup>3</sup>/min.

The ventilation design is shown in Figure 16-12.

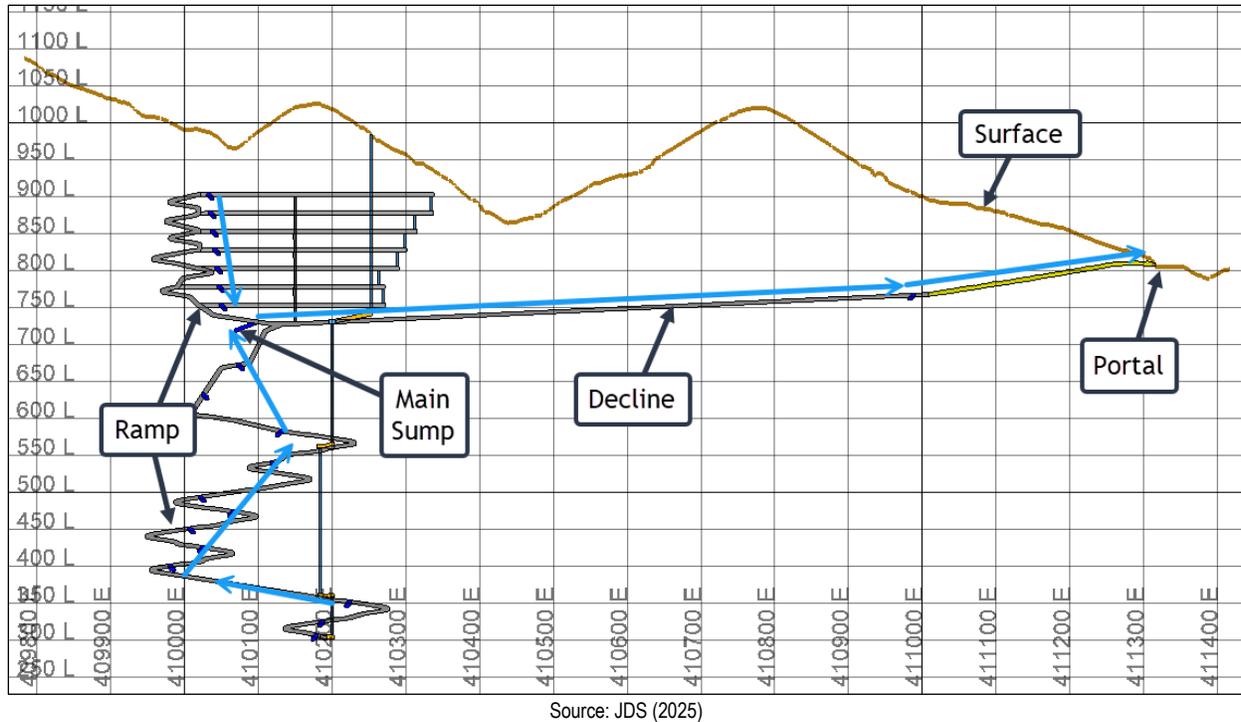


Source: JDS (2025)  
**Figure 16-12: Ventilation Schematic Looking North**

### 16.6.2 Mine Dewatering

On the upper levels of the mine (750 L to 900 L), mine water will be collected in sumps and a series of drain holes will direct the water to the main sump located on 725L. The lower levels (725L and below), will have the mine water collected in sumps located on the main ramp. From there, the water will be pumped up the ramp to the next sump and the process continues until it is in the main sump. The main sump will pump water to surface for use in the process plant or recycled underground for usage (drilling, dust control, etc.).

The mine dewatering design is shown in Figure 16-13.



Source: JDS (2025)  
**Figure 16-13: Mine Dewatering Schematic**

### 16.6.3 Water Supply

To control water inflows, sumps and pumping stations are placed at regular intervals throughout the mine.

Water used for underground operations will be distributed using a combination of steel and polyurethane piping. As much as possible, water will be drawn from collected inflows after solid settlement and filtration. Surface collection may be used to supplement water needs if required.

### 16.6.4 Electrical Distribution

Electrical power consumption from the mine is largely attributed to the following sources:

- Main and auxiliary ventilation fans;
- Mine air compressors;
- Drilling, explosives loading, and ground support equipment;
- Dewatering pumps; and
- Refuge Stations.

High voltage cables will enter the mine via the main portal and will be distributed to electrical sub-stations near the active mining zones. High-voltage power would be supplied at 4160 V and reduced to 480 V at electrical sub-stations. Each working level will include a primary substation and power panel near the ramp entrance where power will be further reduced and distributed to working faces.

**16.7 MATERIAL HANDLING**

**16.7.1 Mineralized Material**

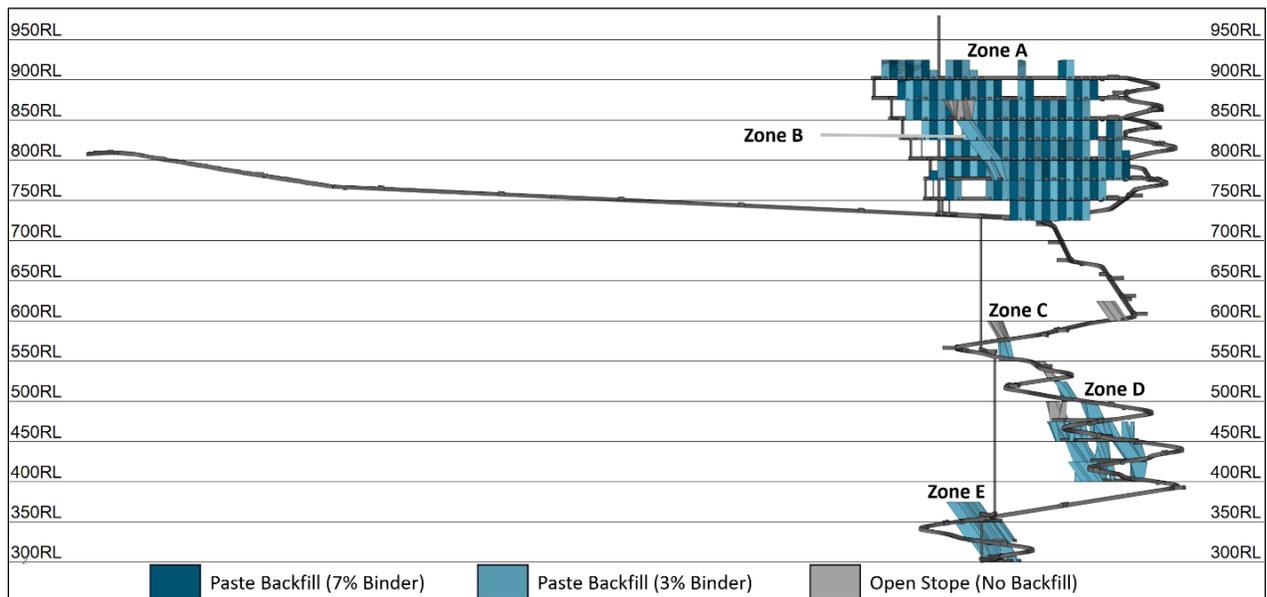
A combination of one 10-t and three 17-t Load haul Drive (LHD) units and four 40-t trucks are used for mineralized material and waste haulage. Blasted mineralized material is mucked by LHD's to muck passes, re-muck bays or directly into trucks. The objective is to develop the mine to maintain a mill throughput of 1,800 t/d.

**16.7.2 Waste Material**

Waste rock will be mucked using the LHD's and hauled to surface using the 40-t trucks. It will then be placed in a stockpile and rehandled into surface haul trucks for placement in the TSF.

**16.8 BACKFILL**

The primary backfill material is paste which is composed of tailing, binder, water, and chemical additives. As part of the mining sequence, the longhole stopes and associated access development will be backfilled using paste. Primary stopes will be backfilled with a higher binder percentage for higher strength. Secondary stopes will be filled with a lower binder percentage paste. For longhole stopes, it is assumed that the mined out voids will be completely filled with paste after they have been drilled, blasted, and mucked. Stopes adjacent to recently backfilled voids cannot be mined until the paste has been allowed sufficient time to cure. Cemented paste will be pumped from the paste plant on surface, through a pipe distribution network underground, and into the empty stopes. Backfill types by zone are shown in Figure 16-14 and the annual backfill placement schedule is shown in Table 16-8.



Source: JDS (2025)

**Figure 16-14: Planned Backfill Types by Zone**

**16.9 MINE EQUIPMENT**

Diesel and electric hydraulic equipment will be employed throughout the mine. The primary haulage fleet will consist of 40-t haul trucks and 17-t LHDs for the mineralized material, waste handling, secondary tasks, and backfill. Development will be conducted using two-boom jumbos. Longhole drilling will be conducted using Sandvik DL311 or equivalent drills. Smaller LHDs will be utilized around the mine for miscellaneous tasks and final stope mucking.

Equipment will be rented on a monthly basis and operated by an underground mining contractor. Table 16-6 summarizes the mine equipment for both pre-production as well as peak requirements.

**Table 16-6: Underground Mine Equipment Fleet (Source: JDS (2025))**

Units in Operation	Pre-Production	Peak
Jumbo - 2 Boom	2	3
Longhole Drill	-	2
Jackleg/Stoper	2	2
Explosives Truck	2	3
LHD (6.7t/3.0 m3)	1	1
LHD (10t/4.0 m3)	1	1
LHD (17t/7.0 m3)	1	3
Truck (40t/18.0 m3)	2	4
Mechanized Bolter	3	4
Scissor Lift	1	1
Shotcrete + Transmixer	1	1
Grout Pump	1	1
Fuel/Lube Truck	1	1
Personnel Carrier	1	1
Boom Truck	1	1
Grader	1	1
Telehandler	2	2
Mechanic Truck	3	4
Crew Van	1	1
Exploration Drill	1	1
Utility Vehicle	1	1
Alimak, Pneumatic	1	1

### 16.10 MINE PERSONNEL

Mining personnel for the Ana Paula project fall into two categories: local and expat employees. The mine relies more on expat employees early in the mine life, but transitions to a more local workforce after the mine is developed and in production. The employees follow a 2 week-in x 2 week-out schedule working 12 hours per day, day and night, with two crews on site, and two crews off at any given time.

A summary of average and peak workforce requirement by category is included below (Table 16-7).

**Table 16-7: Summary of Mine Personnel Requirements (Source: JDS (2025))**

Workforce - Total Employed	Average	Peak
Mining Management	15	15
Mine Operations	57	81
Mine Services	34	36
Mine Maintenance	32	37
Technical Services	17	17
Grand Total UG Mining	156	186

### 16.11 MINE SCHEDULE

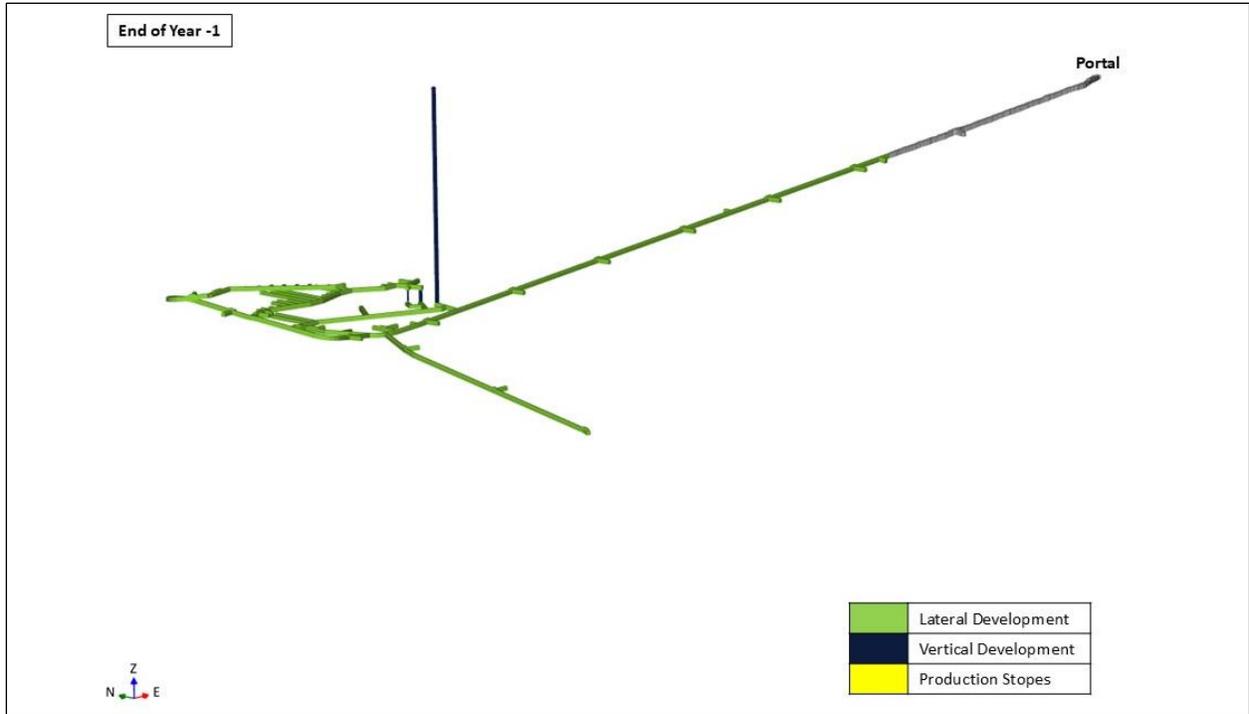
The objective of the mine schedule is to develop the mine to maintain a mill throughput of 1,800 t/d. Zone A is targeted initially due to its high tonnage and proximity to surface. This allows access to mineralized material immediately, while development to remaining zones is established at depth. This also minimizes initial development capital requirement. As LHOS is sequenced from the bottom of the deposits upward, early access to high-grade material is somewhat limited, however this was prioritized where possible. The mine schedule assumes the underground mine will operate 24 hours per day for 360 days per year. The annual material movement and development schedules are presented in Table 16-8 and Table 16-9 below. A visualization of the annual schedule progression is shown in Figure 16-15 to Figure 16-24.

**Table 16-8: Annual Mineralized Material, Waste and Backfill Schedule (Source: JDS (2025))**

Annual Mine Schedule	Units	Total	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Longhole Stoping	kt	5,203	-	339	533	591	603	629	613	615	633	646
Development Mill Feed	kt	422	16	87	115	57	45	19	35	33	15	-
Au Metal Mined	koz	972	3	71	137	153	145	104	112	87	89	72
Mill Feed Au Grade	g/t	5.4	5.08	5.18	6.58	7.33	6.96	4.97	5.36	4.20	4.26	3.48
Mineralized Mill Feed	kt	5,625	16	426	648	648	648	648	648	648	648	646
Production Rate	t/d	1,748	45	1,184	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,795
Waste	kt	1,273	235	281	246	157	61	97	72	82	42	0
Cemented Paste Fill	k m3	1,991	0	126	205	230	228	268	239	235	200	261

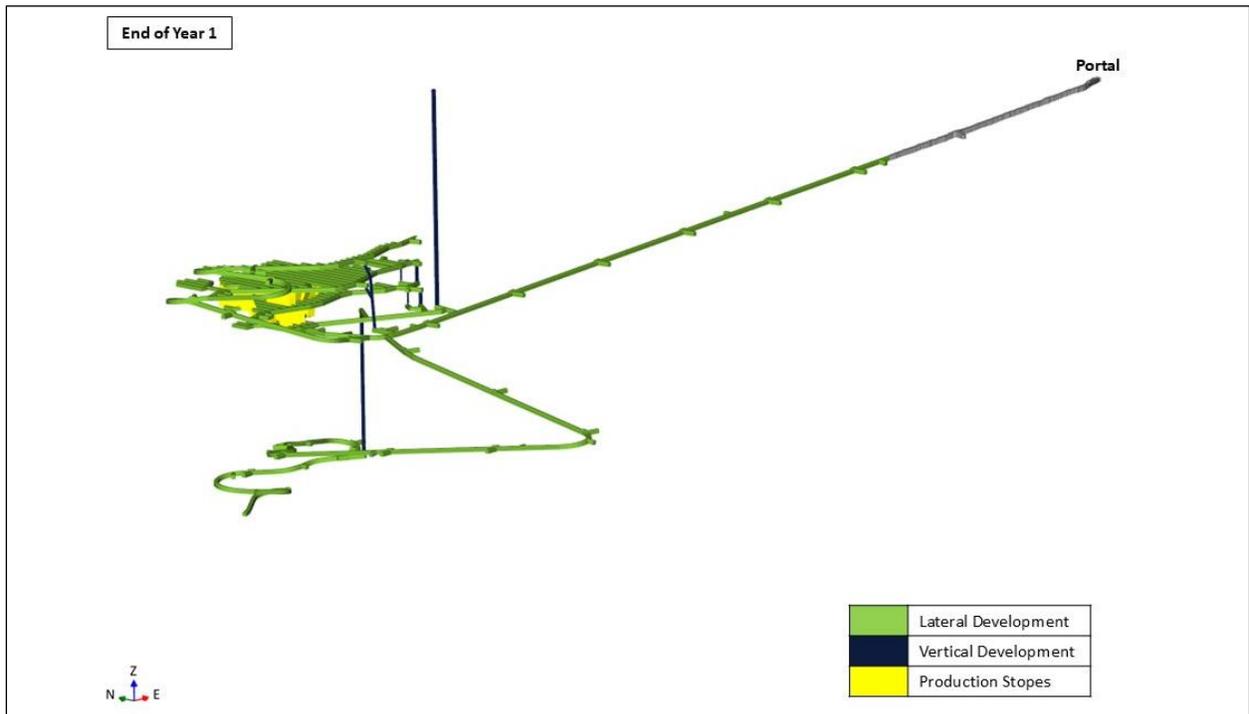
**Table 16-9: Annual Development Schedule (Source: JDS (2025))**

Annual Development Schedule	Units	Total	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Ramp	m	4,823	1,559	1,402	1,069	460	-	171	12	149	-	-
Level Access	m	1,639	70	46	160	204	110	364	76	395	213	-
Footwall Drive	m	1,725	359	390	217	239	-	248	-	270	-	-
Load Out Bay	m	402	151	86	73	47	-	23	-	23	-	-
Raise Access	m	372	57	57	60	46	-	53	28	10	61	-
Return Air Drive	m	659	312	130	97	55	-	11	34	20	-	-
Remuck	m	654	239	156	132	51	-	22	27	-	28	-
Sump	m	235	55	60	60	30	-	10	10	10	-	-
Sub-Station	m	113	30	30	23	8	-	8	8	8	-	-
Crosscut	m	15,663	674	3,303	3,756	2,216	1,690	890	1,605	914	616	-
Lateral Development Total	m	26,286	3,506	5,660	5,647	3,356	1,800	1,800	1,800	1,800	918	-
Egress Raise	m	133	13	20	40	20	-	-	20	20	-	-
Muck Pass	m	229	155	29	15	15	-	15	-	-	-	-
Return Air Raise	m	778	259	184	132	172	-	-	20	20	-	-
Vertical Development Total	m	1,151	428	234	187	207	-	15	40	40	-	-



Source: JDS (2025)

Figure 16-15: Underground Mine Progression End of Year -1



Source: JDS (2025)

Figure 16-16: Underground Mine Progression End of Year 1



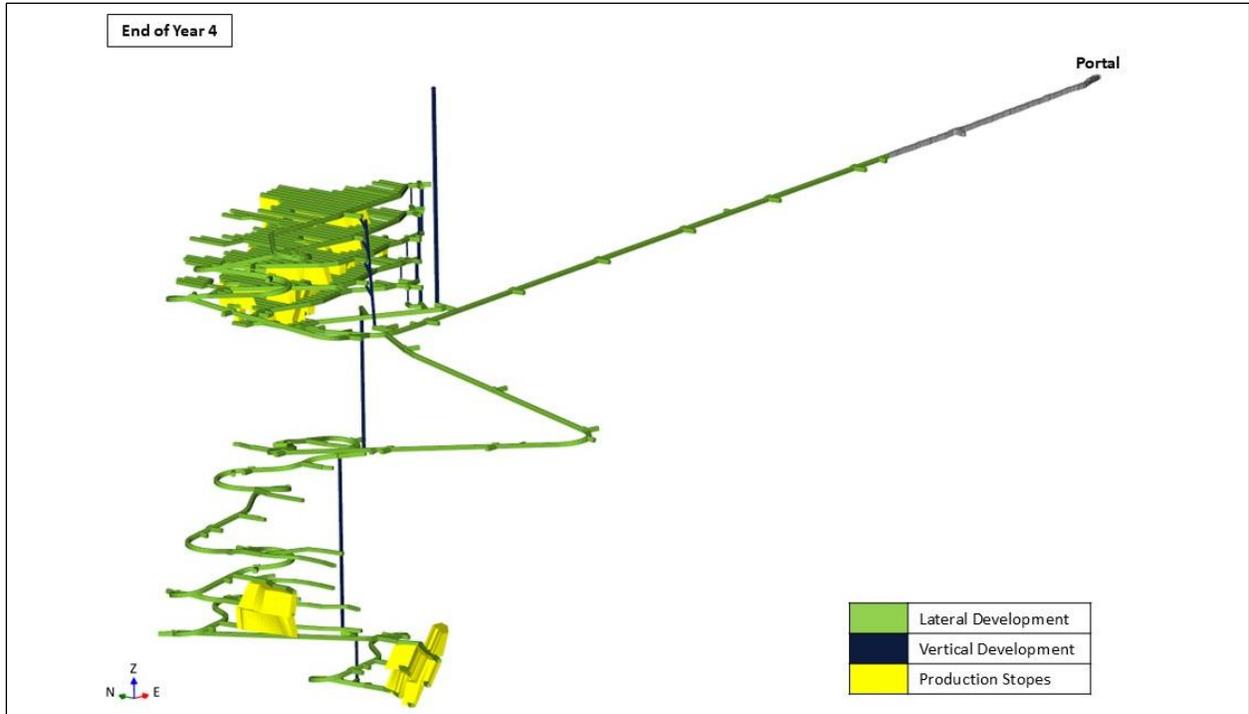
Source: JDS (2025)

Figure 16-17: Underground Mine Progression End of Year 2



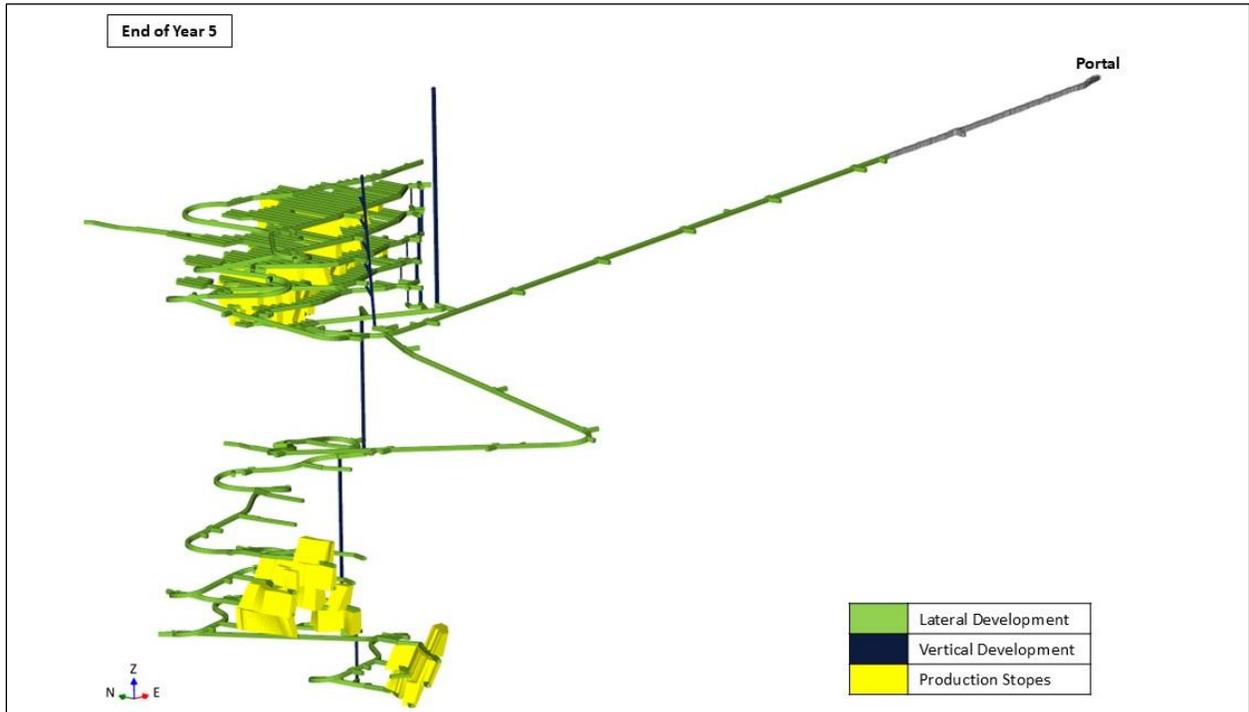
Source: JDS (2025)

Figure 16-18: Underground Mine Progression End of Year 3



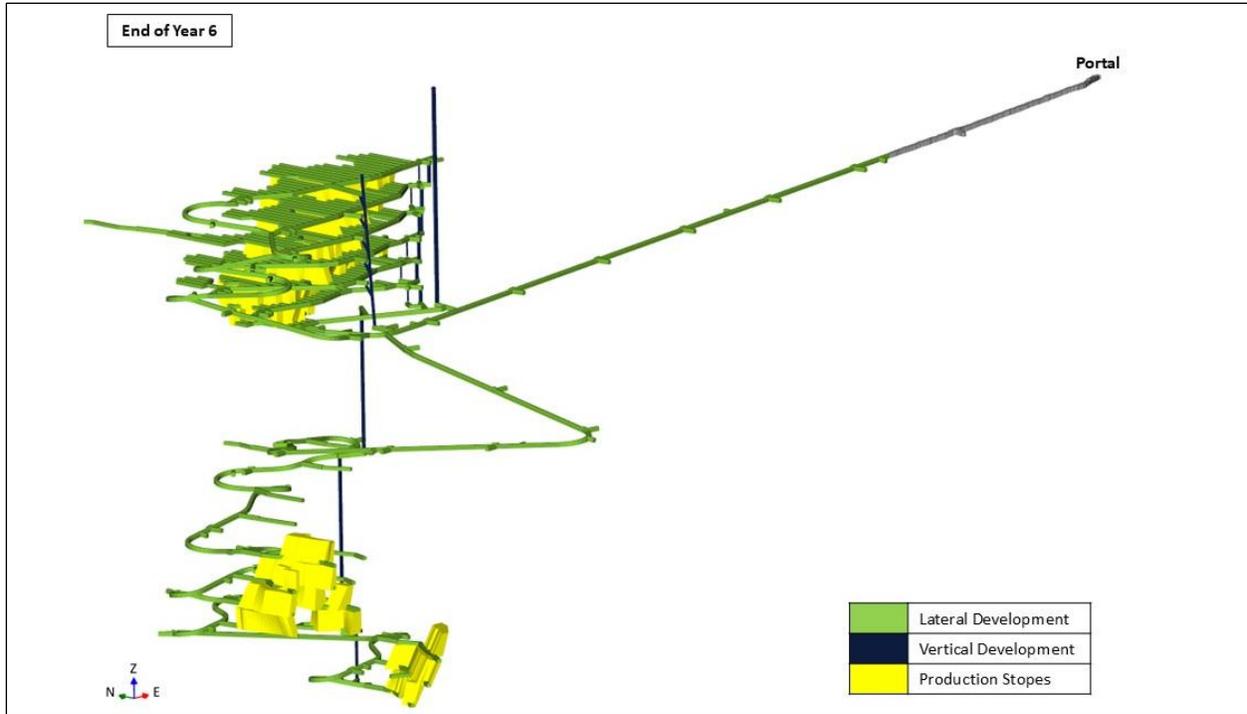
Source: JDS (2025)

Figure 16-19: Underground Mine Progression End of Year 4



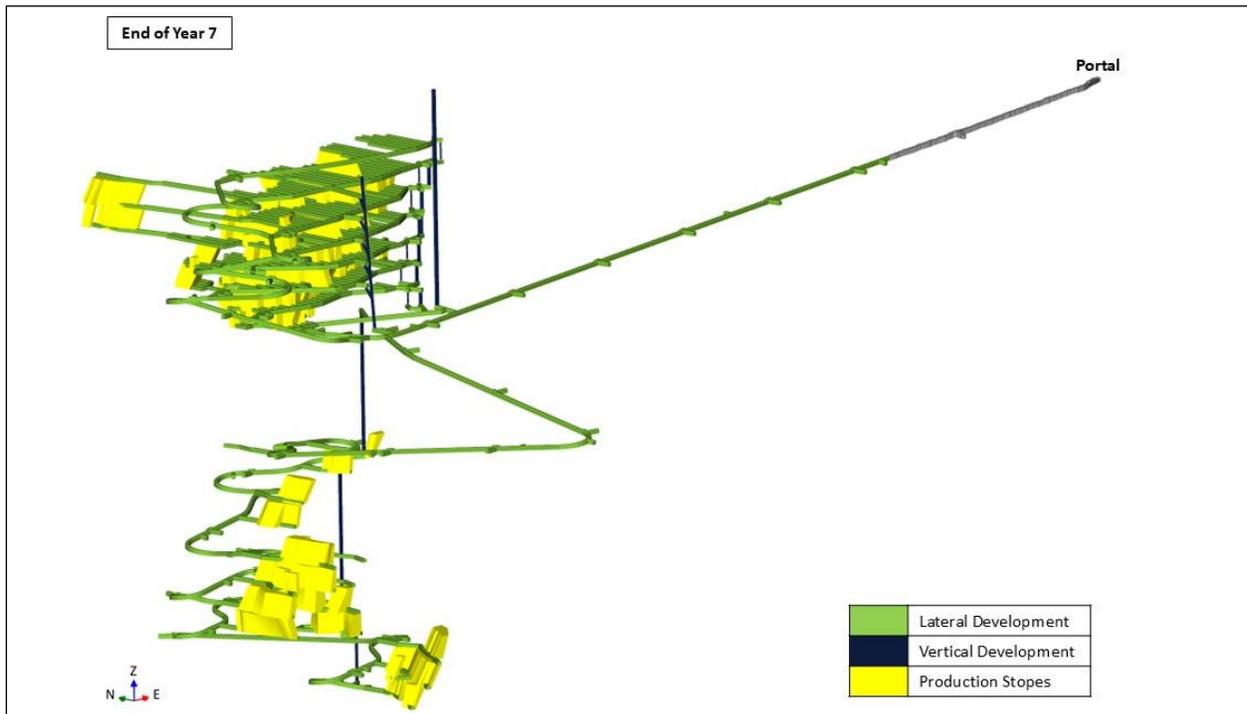
Source: JDS (2025)

Figure 16-20: Underground Mine Progression End of Year 5



Source: JDS (2025)

Figure 16-21: Underground Mine Progression End of Year 6



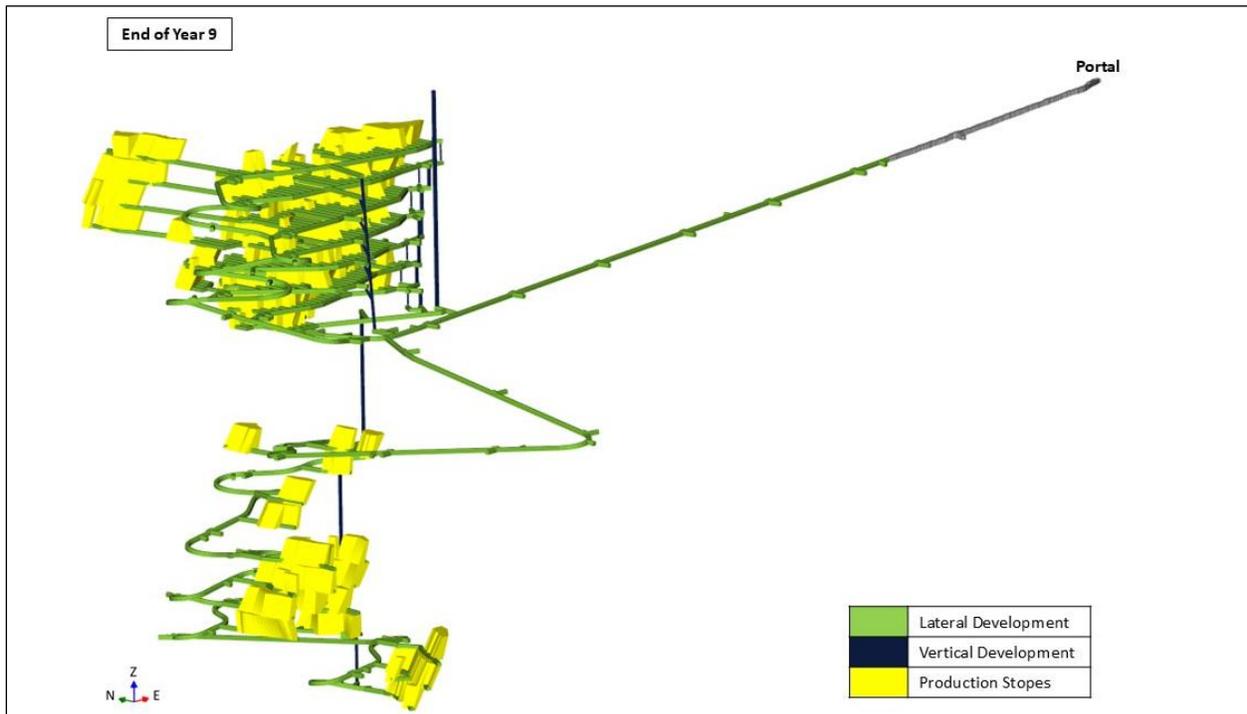
Source: JDS (2025)

Figure 16-22: Underground Mine Progression End of Year 7



Source: JDS (2025)

Figure 16-23: Underground Mine Progression End of Year 8



Source: JDS (2025)

Figure 16-24: Underground Mine Progression End of Year 9

## **17 RECOVERY METHODS**

### **17.1 PROCESS DESCRIPTION**

Metallurgical tests and mineralogical analyses have been performed on two composited samples from the Ana Paula mineral deposit. The results show an average-hardness material. About 38% of the gold content is refractory due to encapsulation in iron sulfides, mainly in arsenopyrite and arsenian pyrite. The rest of the gold can be liberated by grinding and recovered by gravity concentration or direct cyanidation.

A process flowsheet has been developed that is suitable for the mineralogy of the Ana Paula mineral material and its response to metallurgical treatment. Run-of-mine material will be crushed and ground to 80 percent finer than 160 microns, processed by froth flotation to recover sulfides and gold, gravity concentration to recover free gold in the grinding circuit, biological oxidation (BIOX®) of the sulfide concentrate, and cyanide leaching of the oxidized concentrate slurry.

Figure 17-1 is a simplified schematic of the overall process for the Ana Paula plant. This provides the basis for the process description that follows.

### **17.2 PROCESS DESIGN CRITERIA**

The process plant designed for the Ana Paula Project has a nominal capacity of 1,800 t/d. The current mine plan developed for the Project is based on a 360-day mine production year, totaling 5.625 million tonnes of mill feed over 9 years. Production ramps up to 648,000 tonnes of mineral material per year by Year 2, continuing at that rate until Year 9.

For the design, an overall mill availability of 92% is used, except for the primary and secondary crushers, for which the availabilities are 75% and 85%, respectively. These design availabilities are common for current and recent projects and in-line with general vendor specifications. For simplicity, “availability” is defined as the estimated actual run time of equipment. Nomenclature and tracking parameters may vary from operation to operation.

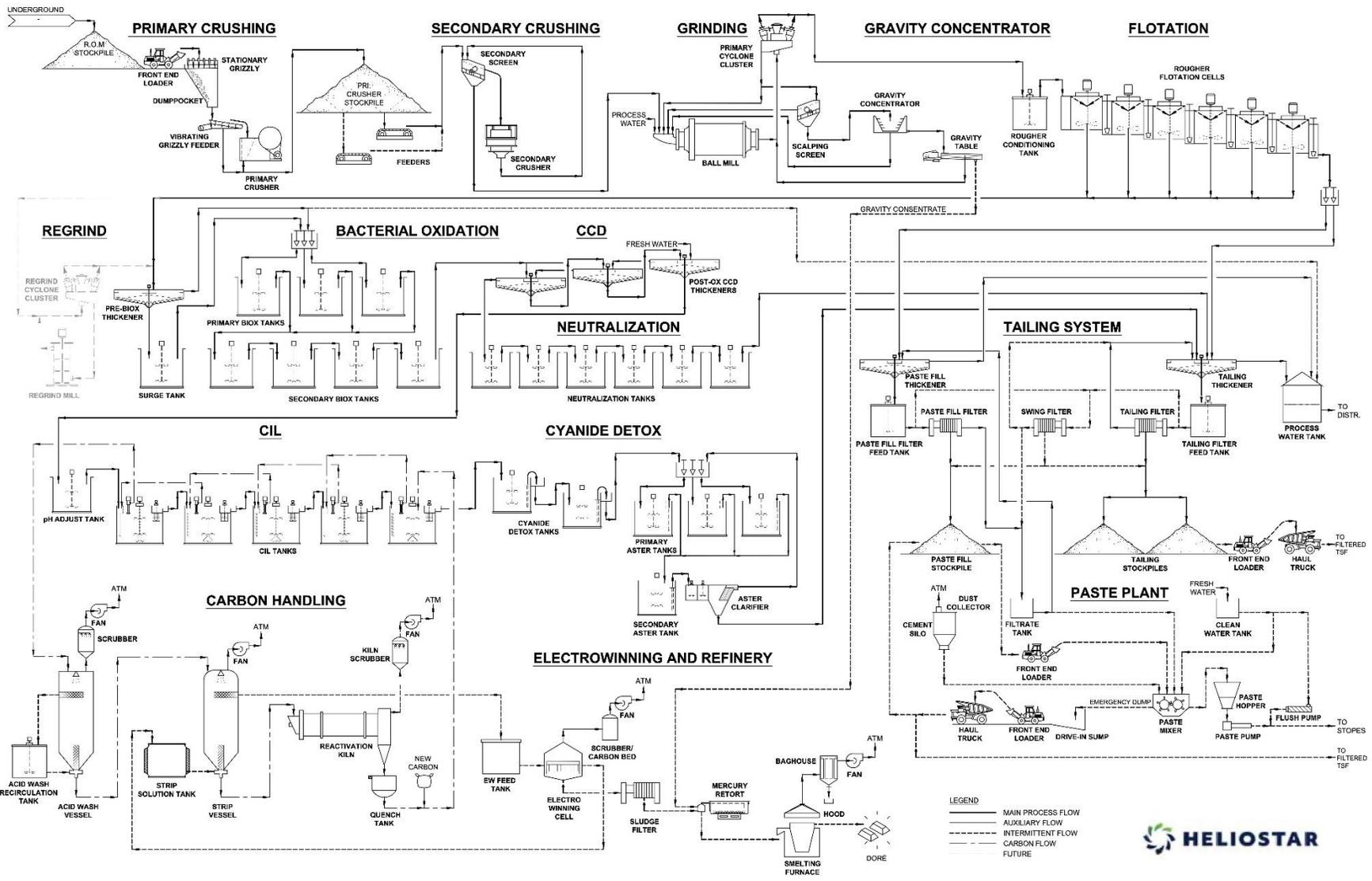
The process plant was designed based on the overall gold grade, sulfide-sulfur content, arsenic content, and mass pull as shown in Table 17-1. Based on the mine schedule, the average flotation mass pull would be 12.7%. The highest yearly average mass pull is expected in Year 3 at 15.5%. These numbers were not available during the design of the plant, so the design mass pull was set at 20%, which was the average of the two composites tested for this study. However, it would be possible that instantaneous or even daily mass pulls could be higher than 15.5%, so the plant should be able to accommodate these surges.

**Table 17-1: Average LOM Head Grades and Recoveries**

<b>Parameter</b>	<b>Head Grade</b>	<b>Flotation Recovery, %</b>	<b>Overall Recovery, %</b>
Gold, g/t	5.4	95	90
Sulfide Sulfur, %	2.59	96.3	
Arsenic, %	1.74	95.6	
Average Flotation Mass Pull, %		12.7	

Table 17-2 is a summary of the main components of the process design criteria used for the study. A detailed process design criteria document has been prepared and is listed as one of the references in Section 27.

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**Figure 17-1: General Process Flowsheet (M3 Engineering, November 2025)**

Table 17-2: Process Design Criteria Highlights

Description	Design
<b>Capacity</b>	
Tonnes per day, nominal	1,800
Tonnes per year	648,000
Mineral Material SG	2.7
<b>Availability/Use of Availability</b>	
General	92%
Primary Crushing	75%
Secondary Crushing	85%
<b>Primary Crushing</b>	
Feed F80, mm	300
Product P80, mm	79
Bond Crushing Work Index, kWh/t	15
<b>Secondary Crushing</b>	
Feed F80, mm	68
Product P80, mm	11.5
Bond Crushing Work Index, kWh/t, Average (80th Percentile)	15.0 (17.3)
<b>Ball Mill Grinding</b>	
Feed F80, mm	11.5
Product P80, microns	160
Bond Ball Mill Work Index, kWh/t, 80th Percentile	18.3
Bond Abrasion Index, g, Average	0.178
<b>Flotation</b>	
Laboratory Flotation Time, min	21.5
Air Hold-up factor	1.15
Scale-up factor	2
Plant Flotation Time, min	43
Design Mass Pull	20%
<b>Biological Oxidation (BIOX®)</b>	
Pulp Density, % Solids	15
Temperature, minimum, °C (°F)	42 (107.6)
Oxidation Time, d	6 - 8
Sulfide-Sulfur Oxidation, %	≥ 90
<b>Cyanidation (Carbon-In-Leach)</b>	
Leach Time, h	24
% Solids	40 - 45

### **17.3 COMMINUTION**

Primary and secondary crushing were designed using Metso's Bruno® Simulator. The ball mill was sized using classical Bond calculations at 80<sup>th</sup> percentile Bond ball mill work index.

#### **17.3.1 Primary and Secondary Crushing**

Mineral material for the underground operation will be delivered to the surface to a Run-of-Mine (ROM) stockpile. The material will then be transferred by a front-end loader from the stockpile to the primary crusher through a stationary grizzly. Primary crushing is achieved by a Metso C80 Jaw Crusher or equivalent, with an 800-mm by 510-mm opening and powered by a 75-kW motor. The crushed material will then be conveyed to the primary crusher stockpile, which has a live capacity of 1,800 tonnes, equivalent to a day's worth of mill feed at the nominal capacity.

The primary-crushed material will be reclaimed via a reclaim tunnel beneath the stockpile, with two reclaim feeders onto the secondary crushing feed conveyor, which will then feed the material to a secondary screen. Oversize from the secondary screens will flow by gravity to a surge bin, which feeds the secondary crusher – a Metso HP100 cone crusher or equivalent. The product of the secondary crusher will be conveyed back to the secondary screen, completing the circuit. Undersize of the secondary screen will be transferred by conveyors to fine material bin (1,800 tonne live capacity).

Dust suppression will be accomplished by water sprays at the crusher dump hopper, jaw crusher, and at the discharge points of the feeders. A belt scale will be included on the ball mill feed conveyor after the feeders.

### **17.4 GRINDING**

The grinding circuit for the Ana Paula Project will comprise one ball-mill and a hydrocyclone cluster, in a closed circuit. Crushed material will be fed from the fine-material bin by conveyor to the ball mill, 4.3-meter diameter by 5.5-meter effective grinding length (EGL), driven by a fixed-speed 1,800 kW (2,400 hp) motor. Also fed to the ball mill will be the hydrocyclone underflow, which will provide most if not all the water required for grinding.

The ball mill will discharge by gravity to a sump, which will function as the cyclone feed pump box. The slurry will be pumped from the sump to a cluster of three 20-inch hydrocyclones (2 operating 1 standby) by one of two 75-kW (100 hp) slurry pumps (1 operating, 1 standby). Both motors will be controlled by medium-voltage variable frequency drives.

The cyclone cluster underflow will flow by gravity to the ball mill. The cyclone overflow will comprise the final product of the grinding circuit and will be fed to the flotation circuit. The target grind size is 80 percent finer than 160 microns.

### **17.5 GRAVITY CONCENTRATION**

A split from the hydrocyclone underflow will be processed for gold recovery with two stages of centrifugal gravity concentrators. The gravity concentrate will be further enriched in the refinery by a shaking table. The final gravity concentrate will be mixed with the electrowinning sludge prior to smelting. Based on test results (Section 13), approximately 15% of the gold will be recovered in the gravity circuit.

The gravity concentrators will be fed from the undersize of a vibrating screen. The machine will be operated in semi-continuous mode, on a set cycle to concentrate and then flush heavy materials to the next treatment stage. Tailing from the gravity operation will be returned to the ball mill feed chute with the cyclone underflow.

## **17.6 FLOTATION**

Sulfides in the mined material will be floated at the mineral material's natural pH using potassium amyl-xanthate (PAX) as collector, copper sulfate as activator, and F131A or similar as frother. AERO 3418A may be used in the future as promoter if proven to enhance gold recovery.

The average laboratory rougher flotation time determined during several bench-scale tests is 21.5 minutes. With a scale-up factor of 2, 15% air holdup, and at 30% solids, this will require 43 minutes of plant residence time and a total volume of 154 m<sup>3</sup>. This calls for 6 units of 30 m<sup>3</sup> flotation cells or, better yet, 5 units of 40-m<sup>3</sup> cells for a scale up of 2.5.

Flotation of sulfides will be accomplished in a single rougher flotation stage. Cyclone overflow is first sent to an 8-m<sup>3</sup> conditioning tank, then to a bank of six 30-m<sup>3</sup> tank flotation cells. Each flotation cell mechanism is driven by a 45 kW (60 hp) motor through a gear reducer. Flotation air is supplied by a 112-kW (150-hp) blower.

The flotation concentrate will be pumped to the concentrate thickener in preparation for bio-oxidation.

## **17.7 TAILING THICKENING AND FILTRATION**

The flotation tailing slurry will be split into two streams and pumped to two separate thickeners. A smaller thickener (10-m diameter high-rate thickener) will dewater 33.5 tph of flotation tailing that will feed the paste plant, while a larger thickener (12-m diameter high-rate thickener) will dewater the rest of the flotation tailing combined with the leach residue and BIOX<sup>®</sup> liquor neutralization residue to about 50 to 55% solids.

The underflows from the two thickeners will be further dewatered by recessed-cavity pressure filters. Three identically sized filter presses will comprise the filter plant, with one dedicated filter press for each thickened stream, and a third filter press in the middle acting as spare for either stream.

Filtered flotation tailing will be transferred to the paste plant feed stockpile. The combined filtered flotation tailing and BIOX<sup>®</sup> residues will be sent to the filtered tailing storage facility for final deposition.

## **17.8 CONCENTRATE THICKENING**

Concentrate from the rougher flotation circuit will be dewatered in the 9-m diameter high-rate thickener to a pulp density of 55% solids. Flocculant will be added to the thickener feed to aid in settling. The withdrawal rate of settled solids will be controlled by one of two underflow pumps (1 operating, 1 standby) to maintain either thickener underflow density or thickener solids loading. Each pump will be driven by a 7.5 kW (10 hp) motor on variable frequency controller to deliver slurry at a nominal maximum rate of 37 m<sup>3</sup>/h.

The concentrate thickener overflow will be pumped to the reclaim solution tank using two fixed-speed horizontal centrifugal pumps, one operating and one standby, each driven by a 7.5 kW (10 hp) motor with a nominal capacity of 35 m<sup>3</sup>/h.

The high-rate concentrate thickener will be mounted on steel legs on foundations. A concrete containment area with slab on grade and cast-in-place walls will contain rain runoff and process spills. The floor will be sloped to sumps that will pump the contained spillage back to the process.

## **17.9 BIOLOGICAL OXIDATION (BIOX<sup>®</sup>) FLOWSHEET**

About 38% of gold in the Ana Paula material is refractory, being encapsulated in pyrite, arsenopyrite, and arsenian pyrite. Without oxidation, only about 62% is recovered by direct cyanidation, even with after fine grinding to 80% finer than 10 microns. A few alternatives are available to liberate encapsulated gold, including roasting, acid pressure

oxidation, atmospheric oxidation, and biological oxidation. The current plant is to use biological oxidation (biooxidation), employing Metso's patented BIOX® technology.

The main consideration for developing the flowsheet of the Ana Paula BIOX® section for treating the refractory sulfide concentrate was to consistently achieve high levels of sulfide sulfur oxidation. A further objective was to obtain good quality process water from the neutralization of the acidic BIOX® liquor to strengthen the water balance.

The batch biooxidation test work showed that both these requirements, namely, achieving a high sulfide oxidation and producing a good quality process water were attainable and to this end, an Ana Paula BIOX® circuit design was mostly drawn from Metso's standard BIOX® design philosophy:

- The biooxidation circuit would have a total of eight BIOX® reactors configured as 4 primary reactors in parallel with the combined oxidized product cascading into 4 secondary reactors operating in series
- The neutralization circuit would have a total of 6 reactors operating in series. This circuit would have the pH control set to a pH of 5 in Tank 3 with a final adjustment to a pH of 7 in Tanks 5 and 6.

The process slurries emanating from the BIOX® process are acidic and corrosive and hence the correct material of construction selection is an important consideration in the design of the circuit. Moreover, related and supporting process equipment pieces such as pumps, piping, valves and instrumentation components therefore need to be carefully considered as well. For the process design philosophy for the Ana Paula BIOX® circuit, a duplex stainless steel was therefore selected. An overview of the BIOX® circuit process description follows hereafter:

#### **17.9.1 BIOX® Feed Section**

Underflow from the flotation concentrate thickener will be pumped to the BIOX® surge tank. A trash screen installed ahead of the flotation circuit will remove all wood chips and detritus contained within the flotation feed slurry. The surge tank will be equipped with an agitator and will have a total retention time of 60 hours at the concentrate design feed rate of 245 tpd. This also allows for maintaining a steady feed to the circuit in the event of an upstream shut down as well as smoothing out concentrate grade variations prior to feeding.

Concentrate will be fed to the primary BIOX® reactors by means of a variable speed BIOX® feed pump. A standby feed pump will be installed. The concentrate will be automatically diluted to a set slurry density by injecting process water into the pump suction line via a water control valve. The mass flow rate to primary reactors will be based on measurements recorded from a magnetic flow meter in combination with a slurry densitometer located in the feed line. The mass flow rate will be controlled to a set point by varying the speed of the BIOX® feed pump. A BIOX® feed spillage pump will be installed with spillage from the concentrate bund area reporting back into the BIOX® surge tank.

#### **17.9.2 BIOX® Reactor Section**

The biooxidation section of the Ana Paula plant will consist of four primary reactors operating in parallel and four secondary reactors operating in series. Dilute concentrate slurry will be pumped by the BIOX® feed pump to a slurry stream sampler where a representative sample will be taken for accounting purposes. The sampler tails will gravitate into the feed splitter which will be designed to split the stream accurately into four streams with the provision for a fifth stream reporting to the first secondary reactor. Nutrient solution will also be fed to the feed splitter from the nutrient dosing tank by the nutrient dosing pump.

The combined slurry will then flow into the four primary reactors operating in parallel. The primary reactors will overflow via riser pipes into launders which will deliver the semi-oxidized concentrate to the first secondary reactor. The slurry will gravity flow from the first secondary reactor through to the second, third and fourth (final) secondary reactors. Bypass launders will enable any one of the reactors to be taken off-line for maintenance. The combined primary launder

will be equipped with pneumatically operated gate valves to direct the slurry flow between the 1st and 2nd secondary reactors.

The BIOX<sup>®</sup> culture will be kept active in the reactors by controlling the slurry conditions within specific ranges. The reactors will be equipped with cooling coil baffles through which cooling water will be circulated. The slurry temperature will be controlled automatically to 42°C (107.6°F) by temperature control valves on the inlet manifolds to the cooling coils in each reactor. The oxidation reactions are highly exothermic, and it will be necessary to cool the slurry.

Oxygen requirements for sulfide oxidation will be via air and low-pressure blower air will be injected into the reactors via sparge rings installed below the agitator turbines. The BIOX<sup>®</sup> reactor agitators are specialized agitators designed for the efficient dispersion of air to deliver high oxygen mass transfer rates.

The slurry pH will be controlled between 1.1 and 1.7 by means of timer-controlled additions of limestone slurry from a limestone ring main. The oxidized BIOX<sup>®</sup> product from the final secondary reactor will gravitate into the first interstage mixing tank of the counter-current decantation (CCD) thickener circuit. The corrosive nature of the BIOX<sup>®</sup> slurry necessitates the installation of safety showers in the biooxidation area. These showers must be situated on the reactor as well as floor level.

A defoamer spray system will be installed to spray dilute defoamer reagents onto the surface of the BIOX<sup>®</sup> reactors. The feed rate of dilute defoamer solution to the system will be controlled by adjusting the addition rate of concentrated defoamer solution as well as the volumetric flow rate of dilute defoamer solution to each reactor.

### **17.9.3 Counter Current Decantation (CCD) Section**

During the biooxidation of flotation concentrates, iron, sulfur and arsenic are solubilized. These substances will be washed from the BIOX<sup>®</sup> product in a series of three CCD thickeners. BIOX<sup>®</sup> product will gravitate into the first interstage mixing tank and will be mixed with overflow from the second CCD thickener. The interstage mixing tanks are equipped with agitators to assist with concentrate washing. Flocculant solution will also be fed to the thickener feed well and / or the thickener interstage mixing tank. The overflow solution from the first thickener will flow into an overflow tank and will then be pumped to the first neutralization tank by the acid solution pumps. The underflow from the first thickener will be pumped by the thickener underflow pumps to the interstage mixing tank ahead of the second CCD thickener.

Wash water will be pumped into the interstage mixing tank ahead of the third thickener. The underflow from the second thickener will be mixed with wash water in the interstage mixing tank of the last CCD thickener. The slurry can again be flocculated before it will flow to the feed well (or in the feed well itself) of the third thickener. The overflow from this thickener will flow via a launder to the interstage mixing tank ahead of the second thickener.

The underflow from the third thickener will be pumped by the thickener underflow pumps to the pH adjustment tank(s) to increase the slurry pH to 11. Safety showers will be installed in the CCD thickener area. Spillage generated in this area will flow to the CCD spillage sump from where it will be pumped to the interstage mixing tanks of either the second or third CCD thickeners by the CCD spillage pump.

### **17.9.4 Neutralization**

The acidic solution from the CCD will be pumped to the first or second neutralization tank (via the neutralization feed box / distributor) by the acid solution pump. The solution will flow through a series of six neutralization tanks. The first limestone addition will be added to the second and / or third neutralization tank and a lime addition will be added to the fifth (and sixth) neutralization tanks such that the slurry exiting the neutralization circuit (Tank 6) will be at a pH of 7. The neutralization tanks will be agitated and aerated. The effluent will flow from one tank to the next via launders. The launders will be arranged so that any tank can be by-passed for maintenance.

A pair of recycle pumps will be installed to allow effluent to be drawn from the third or fourth tank and be recycled back to the first tank. This will allow for efficient limestone utilization across the circuit.

Experience on other BIOX® operations has shown that the recycle also allows for a more progressive and stable pH profile to be formed across the neutralization tanks. The neutralized effluent will flow from the last neutralization tank to the next processing area. Spillage generated in the neutralization area will be washed into the neutralization spillage sump from where it will be pumped to either the first or second neutralization tanks via a distributor box. Safety showers will be installed in the area.

### **17.9.5 Reagents Make-up**

Nutrients are essential for bacterial growth and reproduction. Nitrogen, potassium, and phosphorus (N, P, K) will be added to the BIOX® feed slurry in the feed splitter as a 15% (w/v) solution of ammonium sulfate, potassium phosphate, and mono ammonium phosphate. These reagents can also be received as a pre-mixed fertilizer type powder. The nutrients will be made up in the nutrient make-up tank equipped with an agitator.

A nutrient feed chute (with a bag breaker) will be installed to feed the reagents into the nutrient make-up tank. The nutrient hoist will be used for lifting the reagent bags. Nutrient solution will be pumped from the nutrient make-up tank to the nutrient dosing tank using the nutrient transfer pump. The nutrient solution will be fed into the BIOX® feed splitter by the nutrient dosing pump. A safety shower will be installed in the reagent make-up area. Spillage generated in the area will be pumped into the nutrient make-up tank by the nutrient spillage pump.

Flocculant for the CCD thickeners will be made up in the CCD flocculant make-up unit. Flocculant solution will be pumped from the make-up tank to the flocculant storage tank by the flocculant transfer pump. The flocculant dosing pumps will pump flocculant solution from the storage tank to the CCD thickener feed wells and / or the interstage mixing tanks of the CCD thickeners. One pump will serve as a standby unit. Inline water injection will be used to dilute the concentrated flocculant. Spillage generated in the flocculant make-up area will be pumped to the first CCD thickener overflow tank or the CCD 1 mixing tank by the CCD spillage pump.

Limestone slurry will be pumped to the limestone storage tank from the make-up area. Limestone slurry will be dosed to the BIOX® and neutralization tanks via a ring main system. Lime slurry will be pumped to the lime storage tank from the make-up area. Lime slurry will be dosed to the neutralization tanks via a ring main system. Spillage generated in the limestone and lime storage area will be pumped to the respective storage tank.

### **17.9.6 Services**

Air will be supplied to the BIOX® reactors by high-efficiency variable vane blowers. One of the blowers will be equipped with a variable speed drive. The blowers will be equipped with after coolers to cool the air down to below 60°C before it is injected into the reactors via the sparge rings. The number and configuration of the BIOX® blowers will be confirmed after initial discussions with the blower suppliers to find the optimum configuration taking the standby power requirements into consideration. Cooling water for the blowers and after coolers will be supplied from the blower cooling tower by the blower cooling water pumps.

The slurry temperature in the BIOX® reactors will be maintained in the range 38 to 42°C by cooling water circulating through the cooling coils. Warm water will return to the BIOX® cooling towers. The BIOX® cooling water pumps will pump the coolant from the cooling tower well to the reactors. This cooling water circuit will also be equipped with side stream filters.

The biocide, corrosion inhibitor, and antiscalant will be dosed to the cooling tower well. Blow-down of cooling water will be controlled automatically by the conductivity of the cooling water. pH and conductivity measurements must be included in the cooling tower well. Conductivity measurements will be used for water quality management.

High pressure plant air and dry instrumentation air will be supplied by an air compressor. The compressed air will go through a single stage of drying and moisture removal for the high-pressure plant air and a second stage of drying for the high-pressure instrumentation air.

Emergency back-up power will be sourced from emergency diesel generators.

#### **17.10 CARBON-IN-LEACH (CIL) CYANIDATION**

The oxidized slurry from the BIOX<sup>®</sup> CCD circuit will be sent to a pH-adjust tank where lime is added to increase the pH to 10.5. The slurry will then flow by gravity to the carbon-in-leach (CIL) feed box, to which sodium cyanide will be added, then into the first CIL tank.

Cyanide leaching will be achieved in five agitated CIL tanks. The tanks will be built with epoxy-coated mild steel. Air will be delivered by a pipe under an inverted cone located directly below the agitator.

Based on leaching test results, a residence time of 24 hours will be sufficient to achieve the target gold recovery. After leaching, loaded activated carbon will be sent to the carbon plant for stripping and electrowinning.

#### **17.11 CARBON HANDLING PLANT – CARBON ELUTION AND METAL RECOVERY BY ELECTROWINNING**

Once loaded, three tons of carbon will be collected from the first CIL tank at predetermined intervals based on the amount of gold adsorbed, and transported to the carbon handling plant. First, loaded carbon will be acid washed with a dilute solution of hydrochloric acid to remove scale from the carbon, rinsed, and then pumped to the carbon stripping vessel. The carbon strip vessel will be a pressure vessel, with a capacity to strip 3 tonnes of carbon per batch. The stripping process will follow the pressure Zadra procedure developed by the US Bureau of Mines. It involves contacting a hot solution of cyanide and caustic (0.15 % cyanide, 1.25 % caustic) at a rate of 2 bed volumes per hour. The solution will be introduced at the bottom of the carbon bed to overflow at the top of the vessel through one of more cylindrical Johnson screens. The solution will be preheated to 135°C by heat exchangers. Because of the elevated temperature, the strip vessel will be kept at about 550 kPa to prevent boiling.

During stripping, gold will desorb from activated carbon into the strip solution. This loaded strip solution will then be sent to electrowinning cells through a heat exchanger. In the electrowinning cells, gold will deposit by electrolysis to a stainless-steel cathode. The anode is typically a stainless-steel wire mesh or punched plate. Depending on the electrowinning conditions, part of the gold will slough off the cathodes and gather at the bottom of the cells as sludge.

When fully loaded, the cathodes will be pressure washed to dislodge gold and collected with the sludge at the bottom of the electrowinning cells. The sludge will discharge to a tank and be filtered through a plate-and-frame filter press.

The filtered residue will be dried in retorts. Any mercury present in the sludge will be removed and collected for proper disposal. The dried sludge will then be smelted in a tilting furnace to produce molten gold, which is poured into bar molds to produce the final product of the operations – doré bullion bars.

17.12 REAGENTS AND CONSUMABLES

The process reagents and mill consumables are listed in Table 17-3 below.

**Table 17-3: List of Reagents and Process Consumables**

Reagent or Consumable	Area Used
Potassium Amyl Xanthate (PAX)	Flotation
Copper Sulfate (CuSO <sub>4</sub> )	Flotation
Frother (e.g., Flottec F131a)	Flotation
BIOX <sup>®</sup> Nutrient Media (0K & 9K)	BIOX <sup>®</sup>
Molasses + NH <sub>4</sub> HPO <sub>4</sub>	ASTER Detox Nutrients
Sodium Cyanide (NaCN)	CIL
Flocculants	BIOX <sup>®</sup> CCD, concentrate thickening, tailing thickening
Lime	CIL, BIOX <sup>®</sup> , Tailing Detoxification
Limestone	BIOX <sup>®</sup>
Hydrochloric Acid (HCl)	Carbon Handling
Sodium Hydroxide (NaOH)	Carbon Handling
Activated Carbon	CIL, Carbon Handling
Antiscalant	Carbon Handling
Sodium Metabisulfite (SMBS)	Leach Tailing Detoxification
Cement	Paste Plant for Mine Backfill
Primary Crusher Liners	Crushing
Secondary Crusher Liners	Crushing
Ball Mill Liners	Grinding
Ball Mill Media	Grinding
Filter Cloth	Tailing Filtration

17.13 CYANIDE DESTRUCTION

Residual free and weak-acid dissociable (WAD) cyanide in the leach tailing will be destroyed (detoxified) by oxidation using oxygen (from air) and sodium metabisulfite. Milk-of-lime will be added to maintain a slurry pH in the range of 8.0 to 8.5. The reaction is catalyzed by copper (5 ppm), which will need to be supplied if the mill feed does not contain enough cyanide-soluble copper.

Cyanide will oxidize first to cyanate, which will eventually decompose to carbon dioxide, ammonia, and nitrogen gas. The more stable iron cyanides will be precipitated from solution as insoluble ferrocyanide compounds. The cyanide levels in solution will thereby be reduced to an environmentally acceptable level (< 50 ppm WAD cyanide, per the Cyanide Code). Detoxification will be performed in two agitated tanks, operated in series, for a total residence time of about two hours.

Thiocyanate will be present in the leach tailing and will not be destroyed by the air-metabisulfite process. Since the BIOX<sup>®</sup> process has a low tolerance for thiocyanate, a biological process will be employed (Metso's ASTER process) to decompose thiocyanate and prevent it from entering the process water stream.

Slurry discharged from the detoxification circuits will overflow into a discharge box, from where it is pumped to the combined tailing thickener (12-m diameter) that was previously described.

A concrete containment slab on grade and containment walls will contain rain runoff and process spills. A sump pump will transfer the solution and solids back to the process.

**17.14 WATER BALANCE**

The estimated raw water requirement of the Ana Paula Project is 65.5 m<sup>3</sup>/h (1,572.5 m<sup>3</sup>/d), of which 63.4 m<sup>3</sup>/h is used in the milling operation and 2.1 m<sup>3</sup>/h for potable water use. A typical daily overall water balance is shown in Table 17-4 below.

**Table 17-4: Typical Daily Water Balance**

IN	m <sup>3</sup> /d	OUT	m <sup>3</sup> /d
Ore Moisture, tph	59.7	Paste	361.7
Make Up Water	1,572.5	Combined Tailing to TSF	403.6
		Evaporation Loss - BIOX®	816.0
		Potable Water	50.9
<b>Total In</b>	<b>1,632.2</b>	<b>Total Out</b>	<b>1,632.2</b>

**Process Raw Water Consumption = 0.79 m<sup>3</sup>/tonne**  
**Total Water Consumption = 0.82 m<sup>3</sup>/tonne**

**17.15 MILL POWER CONSUMPTION**

The average annual power consumption in the process plant is 93,386 MWh over production Years 2 through 9. A more detailed accounting of the power consumption is provided in Section 21 of this report.

**17.16 PRODUCTION ESTIMATE**

Production by project year is tabulated in Table 17-5 showing mill feed tonnage and recovered gold. Pre-production materials (mined in Year -1) are assumed to be processed in Year 1.

**Table 17-5: Ana Paula Projected Metal Production**

Production Year	Mill Feed, tonnes	Production Rate, tpd	Gold, kOz
1	442,327	1,229	66.282
2	647,999	1,800	123.326
3	648,000	1,800	137.427
4	648,000	1,800	130.420
5	648,000	1,800	93.180
6	648,000	1,800	100.482
7	648,000	1,800	78.723
8	648,000	1,800	79.859
9	646,199	1,795	65.030
<b>Grand Total</b>	<b>5,624,524</b>		<b>874.729</b>

## **18 PROJECT INFRASTRUCTURE**

### **18.1 SITE ACCESS**

The Ana Paula Project is located in the state of Guerrero, Mexico, approximately 170 km southwest of Mexico City, roughly equidistant between Mexico City and Acapulco. The Project is accessible from Highway 95 along a stretch of gravel roads that will require some improvement to enable access for the larger trucks carrying heavy mine equipment and supply loads for the mine site. The mine site lies approximately 30 km west of Highway 95, and this section of gravel road can be relatively easily upgraded to service the Project. Iguala is the nearest major city and is serviced by direct airline flights from several major Mexican cities.

The current mine access road is off of the main road between Nuevo Balsas and Tomixtlahuacan. The access road is approximately 3 km from the main road to the plant site. A new access road, approximately 2 km, from Tomixtlahuacan to the mine site will need to be built to provide access for the larger loads required to construct the Project and also to minimize traffic thru Tomixtlahuacan.

The mine and process facilities are planned to lie east of the underground mine portal and north of the tailing storage facility and at a higher elevation. A crusher station and conveyor will be placed adjacent to the lower saddle point closer to the mine portal and will deliver the crushed rock to the mill, where further processing will be accomplished.

### **18.2 FILTERED TAILING STORAGE FACILITY (FTSF)**

The Ana Paula Project processing facility will recover gold and silver by gravity concentration, flotation, oxidation of flotation concentrate, and cyanidation of the oxidized concentrate through a carbon-in-leach process. This process will generate both non-acid generating (NAG) and potentially acid generating (PAG) tailings streams to be stored in a lined filtered tailings storage facility (FTSF). Knight Piésold completed the PEA-level design for the FTSF.

#### **18.2.1 Site Description**

The geologic units underlying the Ana Paula Project are primarily sedimentary rocks composed of an interbedded limestone and shale unit and a carbonaceous limestone unit that have been intruded by intermediate sills, dikes, and stocks. Site-specific geology of the FTSF location was not completed for the PEA study.

The climate in the region is warm and humid, with temperatures ranging from 4° to 42° Celsius. Precipitation averages 874.3 millimeters per year, mostly occurring between June and October during the monsoon season, which is influenced by hurricanes from both the Atlantic and Pacific Oceans. Winters are dry with occasional light rains in February.

Knight Piésold performed analyses to generate site-specific climatic/hydrologic data, including discrete storm event depths and long-term monthly records of precipitation, evaporation, and runoff. These data were generated to use in the site-wide water balance analyses and support the design of water management structures associated with the facility, including design flood routing. Detailed descriptions and results of these analyses are presented in the site-wide water balance calculation package.

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, but the site does not seem to be located close to a major fault. A probabilistic seismic hazard analysis (PSHA) was conducted for the site by GeoPentech (2017), which considered earthquakes on active seismic sources within 200 kilometers 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.

### **18.2.2 Geochemical Assessment**

In 2017, Knight Piésold conducted a pre-feasibility study-level geochemical characterization on mine materials including waste rock, flotation tailings, CN-detoxed tailings, and gold ore samples. Based on the results of this geochemical characterization, a lined facility will likely be needed for management of leached tailings. In 2024, additional static testing was conducted on two tailings samples: a low-recovery composite flotation tailings sample and a high-recovery composite flotation tailings sample. Testing of both samples indicates that these samples are non-PAG. However, both samples exceed the NOM-127 limit for arsenic concentration in short-range leach testing; no other constituents exceeded the NOM-127 standard. Kinetic geochemical testing was conducted in 2024 and 2025 on the low-recovery flotation tailings material. In the first week of the test, sulfate, total dissolved solids, hardness, selenium, and manganese exceeded NOM 127 limits. Fluoride exceeded NOM-127 limits for the first five weeks of the test. Since the material continued to leach arsenic in concentrations above Mexican standards; the testing program was terminated at week 36, as it was determined that further testing would not provide additional useful data. Based on the potential to leach high concentrations of arsenic, Knight Piésold recommends that the design for the flotation tailings TSF include a liner system to prevent seepage of elevated arsenic contents into groundwater.

Currently, the Project is reassessing the metallurgical process. The new process will produce three streams: flotation tailings, biological oxidation (BIOX®) leach residue, and BIOX® neutralization residue. Additional geochemical testing is currently in progress to evaluate the potential impacts of the new metallurgical process.

### **18.2.3 Siting Study**

Knight Piésold completed a high-level volumetric siting study to identify potential locations for tailings storage. This high-level study did not consider geochemical, geotechnical, or surface water management criteria. The siting study identified and presented eight potential valley locations for consideration. Ultimately, Alternative 7 location was selected for PEA FTSF development.

### **18.2.4 Design**

The FTSF is conceptually designed as a fully lined facility with a main embankment and two saddle embankments (north and southeast); see Figure 18-1 for TSF site plan view and Figure 18-2 for TSF layout plan. Upstream of the main embankment an internal sump will be installed to collect seepage; which then is pumped over the main embankment to a downstream collection pond. The main embankment incorporates a 10-meter-wide crest at elevation 815 meters above sea level, which is approximately 30 meters directly above existing ground, with an overall fill volume of 108,000 cubic meters.

The collection pond is located at the downstream toe of the main embankment with a capacity of 22,600 cubic meters. The collection pond's conceptual design includes 6-meter-wide crest widths at an elevation of 795 masl, and a liner system consisting of geomembrane on top of geosynthetic clay liner (GCL). The conceptual grading quantities include 17,000 cubic meters of cut and 48,000 cubic meters of fill.

An internal wedge stability buttress of rockfill will be placed between the upstream face of the embankments (main and north saddle) and the filtered tailings body, to elevation 830 masl. This wedge buttress is required to improve stability of the facility by reducing contact areas between geomembrane and prepared subgrade. The wedge buttress material is underlain by a soil liner. The remainder of the tailings basin will be lined with a composite liner system that will consist of a synthetic linear low-density polyethylene (LLDPE) geomembrane on top of a low-permeability soil liner layer. To promote interior drainage towards the sump and reduce potential elevated head retained behind the embankment, a gravel drain layer will be placed on top of the geomembrane, between elevations 790 masl (the sump elevation) and 815 masl (the main embankment crest elevation).

The filtered tailings will be stacked with an overall exterior slope of 5.0H:1V, to a top elevation of 875 masl, which results in a total capacity of 3,283,000 cubic meters (or 5.4 million tonnes at 1.65 tonnes per cubic meter assumed for the PEA), and a maximum stack height of approximately 40 meters.

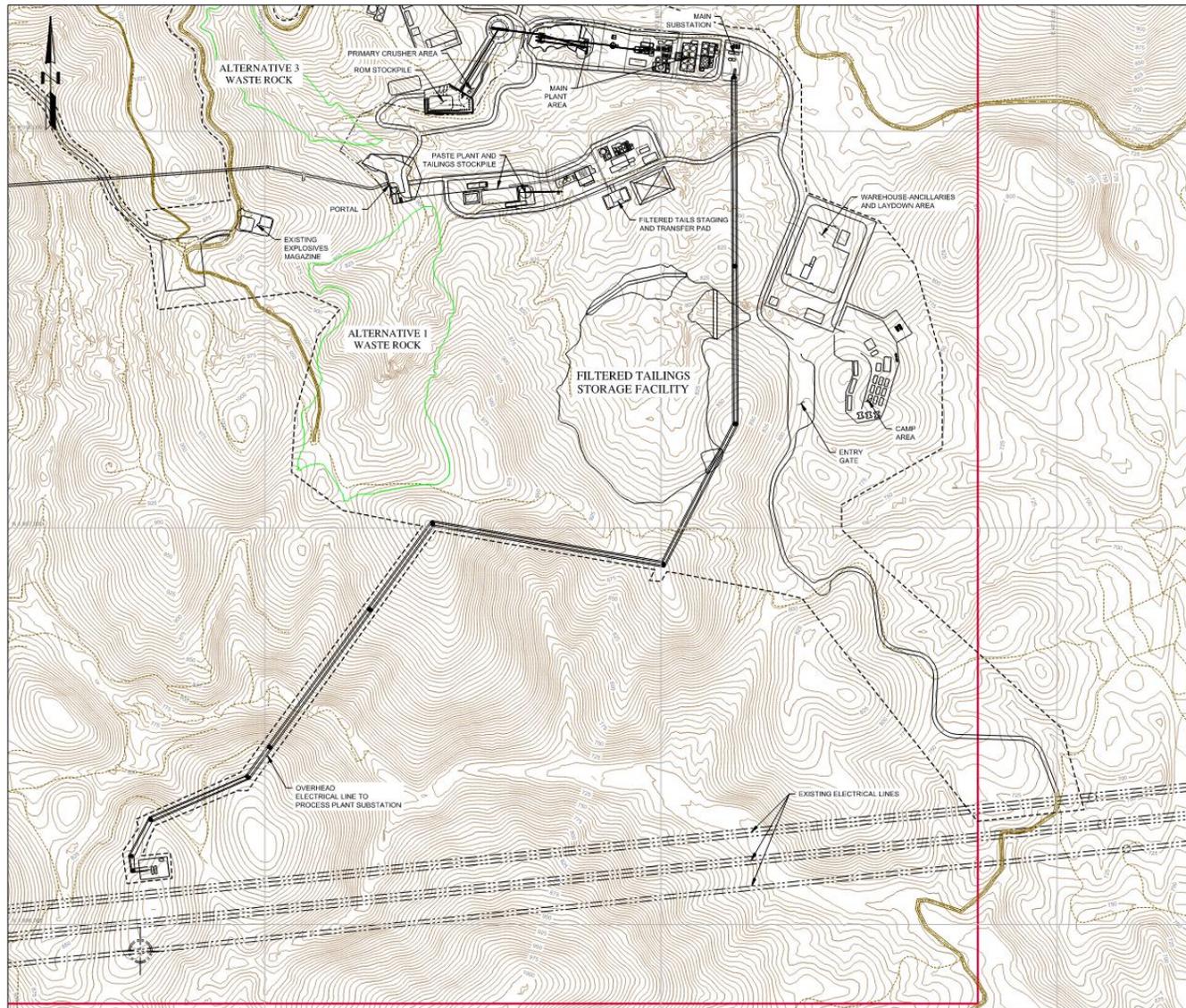


Figure 18-1: FTSF Site Plan View

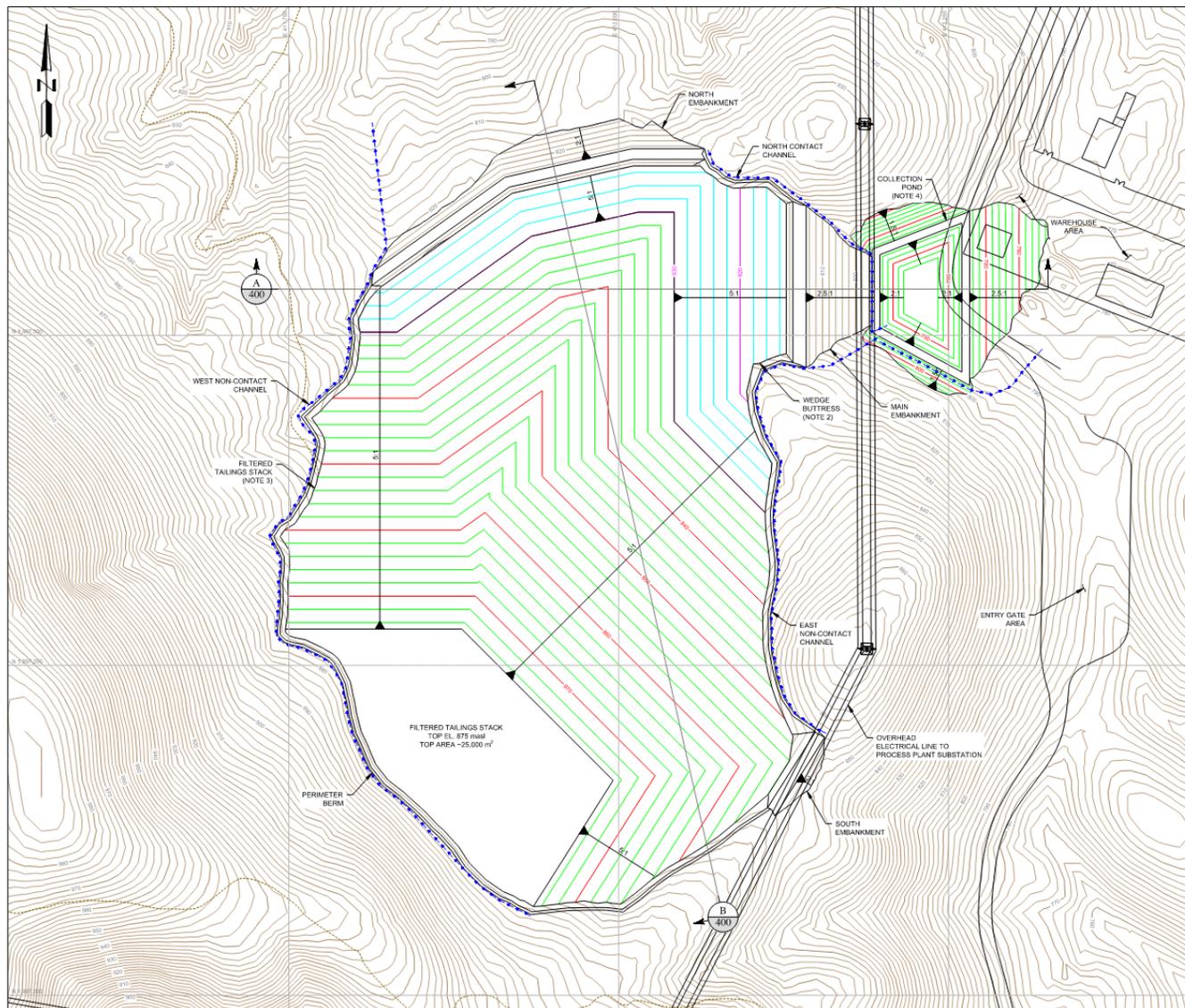
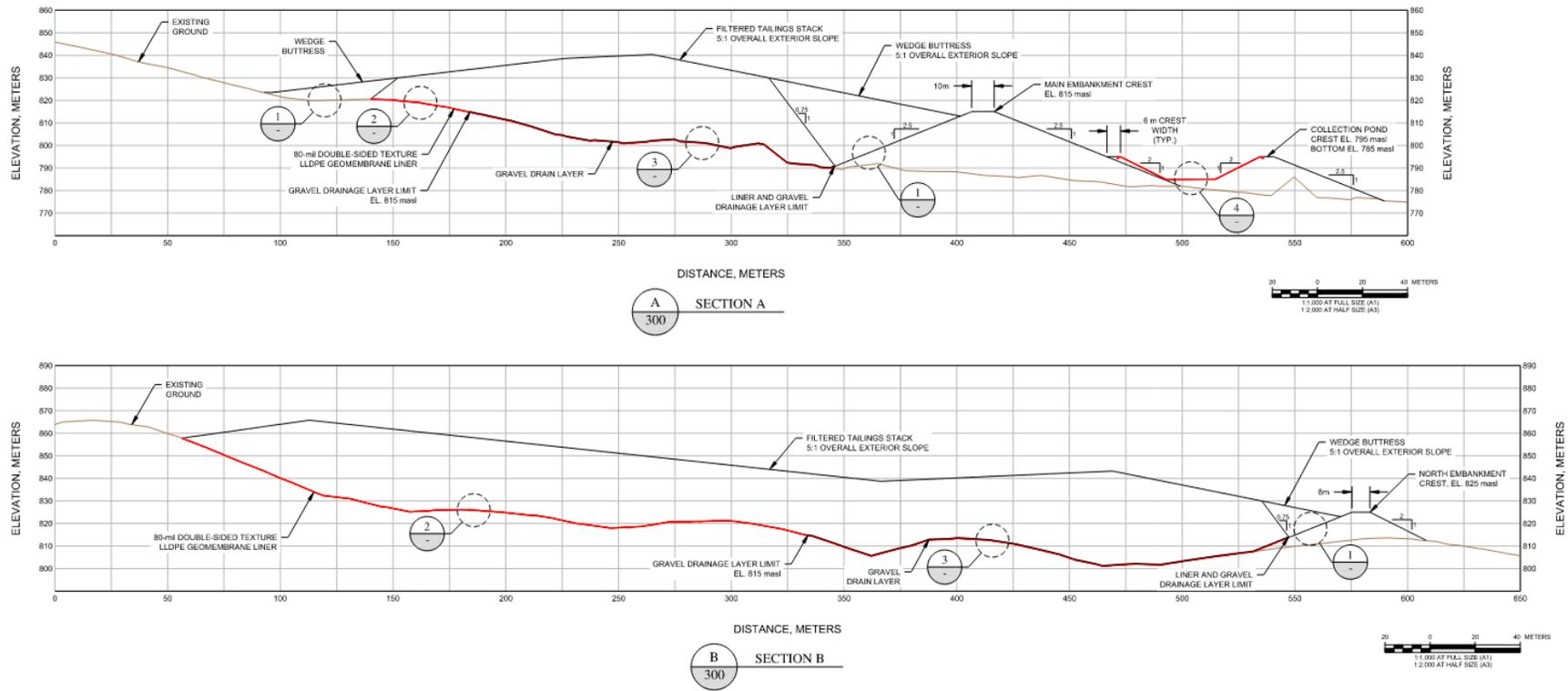


Figure 18-2: FTSF Layout Plan

**ANA PAULA PROJECT**  
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**Figure 18-3: FTSE Sections**

### **18.2.5 Geotechnical Analyses**

Deterministic limit-equilibrium (LE) slope stability analyses were conducted to evaluate static and seismic performance of the Ana Paula FTSF. Sections A and B, as shown in Figure 18-3 above, were analyzed to represent a range of geometry and loading conditions anticipated at full buildout. The analyses considered both global rotational failures through the embankment, tailings, and foundation and block-type failures localized along the composite liner interface. Material shear strength parameters used in the slope stability assessment were selected based on limited existing testing performed on the tailings and foundation materials and—where testing was insufficient—parameters were assigned based on Knight Piésold’s experience with similar materials and projects. Minimum required factors of safety (FOS) were established according to industry practices at 1.5 for long-term drained, 1.3 for long-term undrained conditions involving non-brittle tailings, and 1.0 for pseudo-static loading. For drained and undrained conditions, a conservative phreatic surface was assumed to have built up to elevation 813 masl, assuming failure of drainage systems (the assumed elevation of an emergency spillway inlet). No phreatic surface was imposed in pseudo-static cases to avoid superimposing two low-probability events (i.e., earthquake and extreme water condition).

The slope stability analyses demonstrated that required minimum FOS conditions were achieved for both analyzed sections, except for the pseudo-static loading condition of Section B that produced an FOS of 0.7.

A simplified dynamic deformation analysis was conducted for Section B to quantify potential seismic displacements under the maximum design earthquake (MDE). Deformation estimates were calculated using the Bray and Travasarou method (2007), which predicted a median displacement of 194 mm and an 84th percentile displacement of 388 mm. Both values are below specified thresholds, indicating that the facility would experience minor, recoverable deformations under the MDE.

### **18.2.6 Surface Water Management Plan**

Knight Piésold performed high-level hydrologic and hydraulic analyses to size contact and non-contact surface water diversion channels around the perimeter of the FTSF ultimate configuration and associated collection pond. Two non-contact diversion channels, east and west, are envisioned to collect surface water runoff from the eastern and western perimeters of the proposed FTSF, respectively, and discharge into natural environment. One contact water diversion channel (north contact channel) is envisioned from the east abutment of the north saddle dam to the downstream toe of the main embankment, discharging to the collection pond. Channels are designed to convey (capacity) and withstand (erosion protection) peak flows generated by the 100-year/24-hour storm event. See Figure 18-2 above for plan view of proposed diversion channels.

### **18.2.7 Site-Wide Water Balance**

A conceptual site-wide water balance was completed to evaluate the likelihood of water surplus and deficits, evaluate required pump discharge capacity to maintain appropriate pond volume levels, verify pond size, and estimate probabilities and quantities of water shortfalls at the plant. The criteria to size the collection pond considered water and sediment storage for the environmental design flood (EDF), which resulted in a required storage volume of approximately 22,600 cubic meters below the spillway inlet invert. The mine water circuit evaluated for the anticipated operations phase included the FTSF and its associated collection pond, mine underground workings dewatering, process plant, and additional storage potentially.

The water balance results indicate deficit of water at the plant for all climatic conditions for approximately 91 percent of the time, indicating the need for external makeup water. An additional external storage facility location was evaluated close to the plant, to accumulate excess discharge from the collection pond during wet seasons, to reduce deficits during dry seasons; however, this facility would reduce the average probability of shortfalls by only three percent, indicating the need for additional water sources.

### **18.3 WASTE ROCK FACILITIES**

Two potential waste rock facility locations have been identified and they will be evaluated and defined during the feasibility study. Potential locations for waste rock facilities are shown on Figure 18-4.

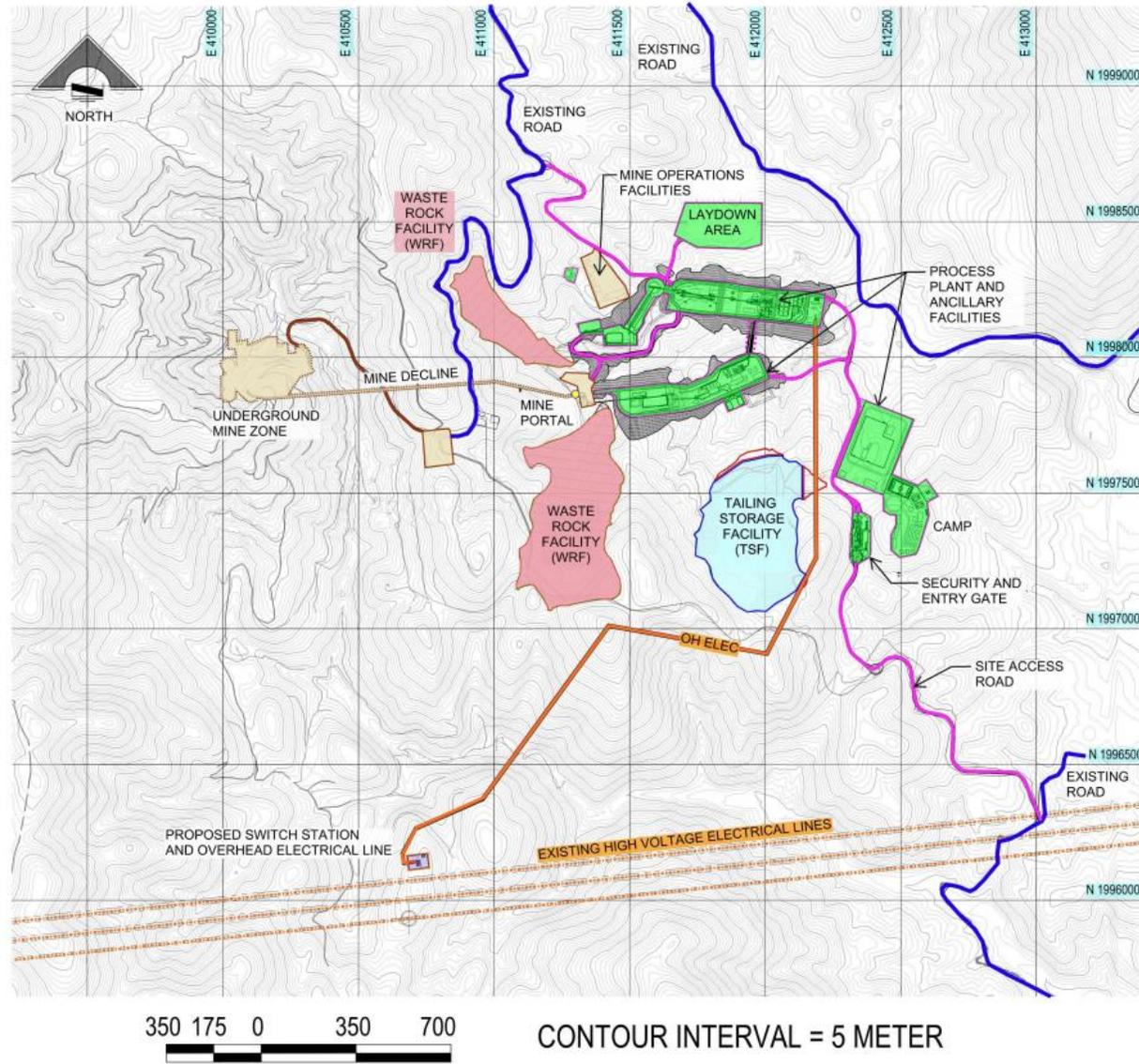
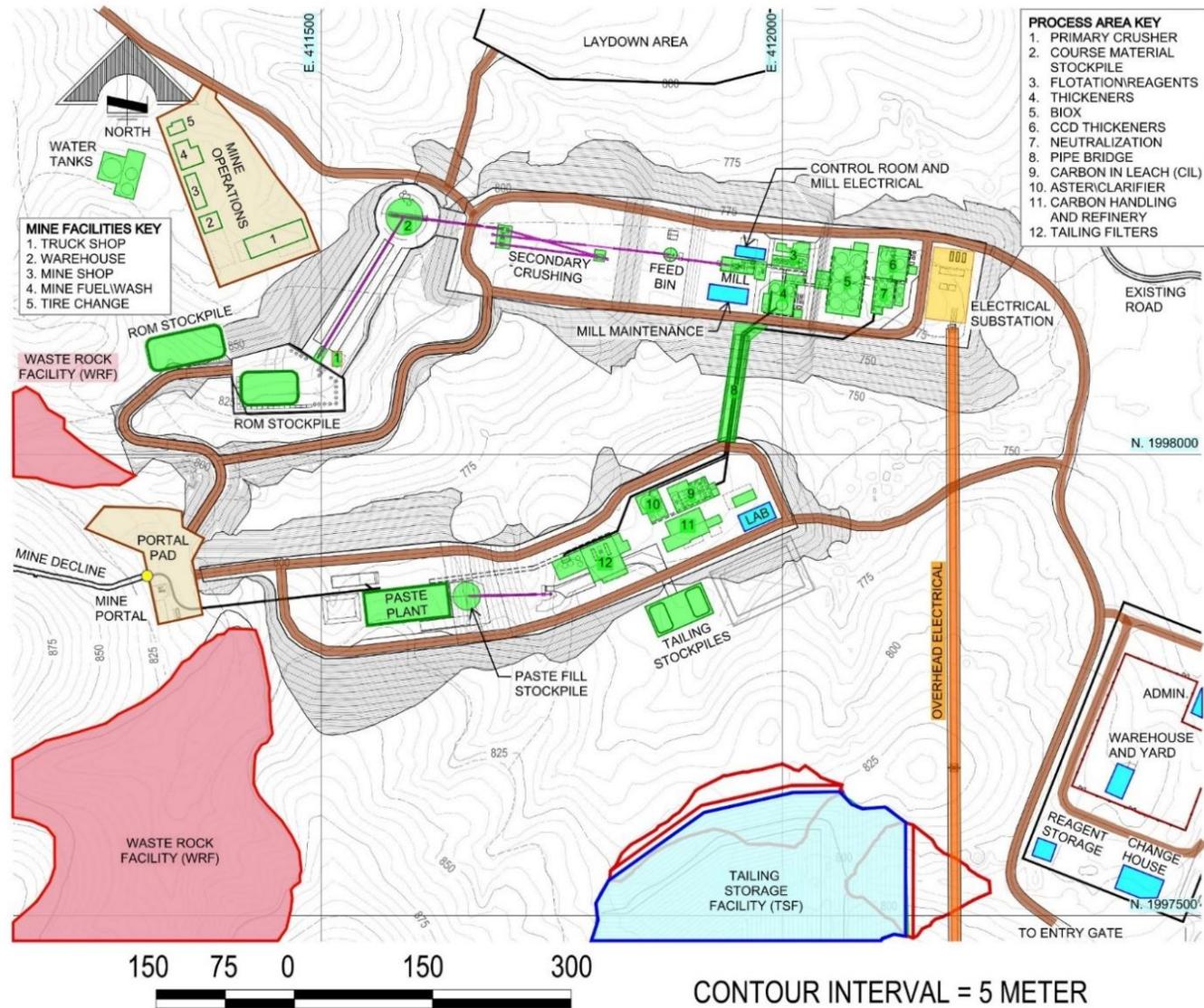


Figure 18-4: Overall Site Plan with WRF and TSF Shown



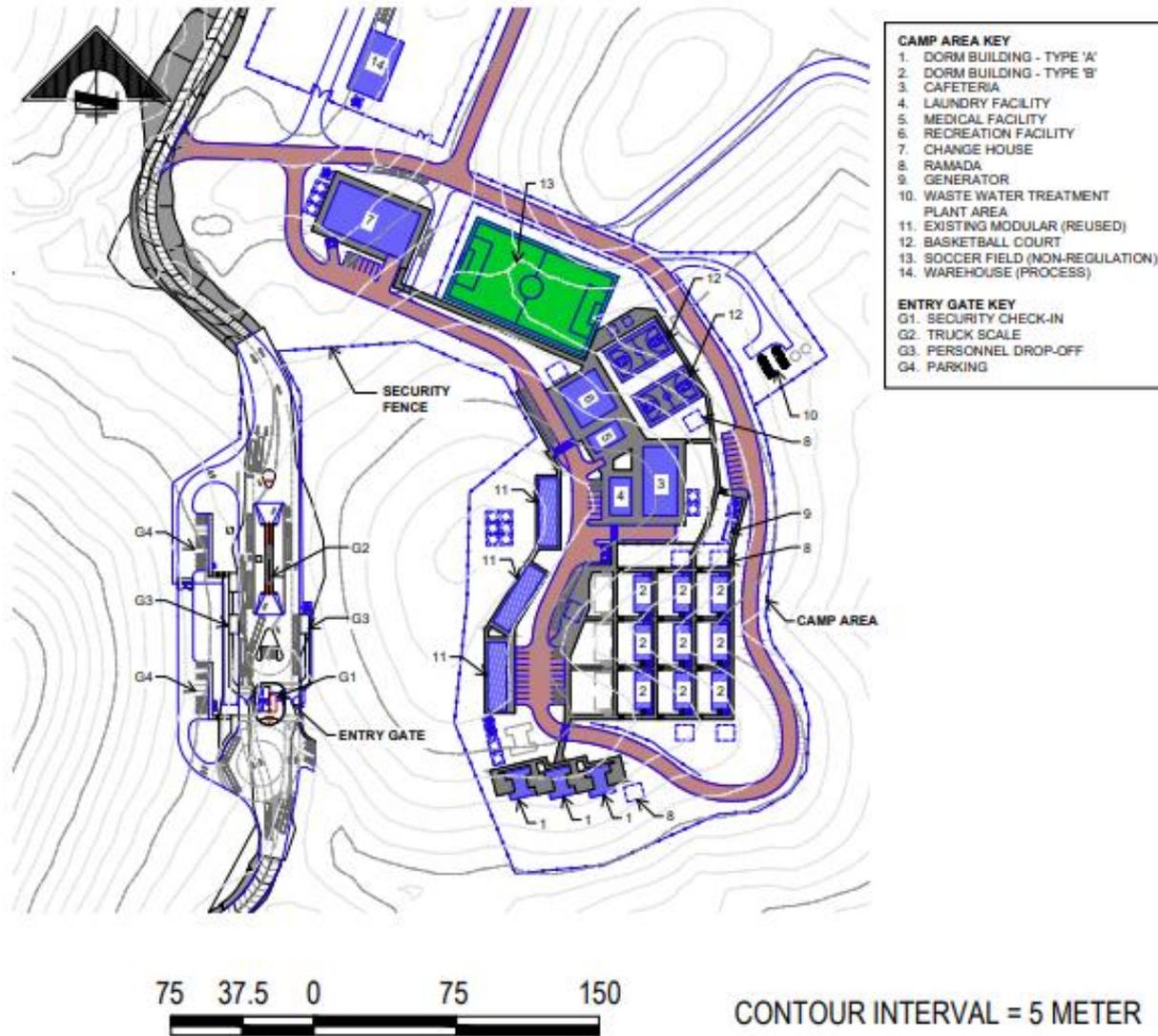


Figure 18-6: Camp Area

## **18.4 PROCESS PLANT**

The process plant is located east of the underground mine portal and north of the tailing storage facility (Figure 18-4). Process facilities include the ROM stockpile, primary crusher, crushed material stockpile, secondary crusher and conveyors, mine support buildings, mill area, gravity concentrator, reagents area, flotation, concentrate thickener, Biological oxidation (BIOX®) leach tanks, carbon-in-leach (CIL) tanks, carbon plant, refinery, cyanide treatment, tailing thickener, tailing filtering, paste plant, generator area, and electrical substation, as shown in Figure 18-5. Adequate warehouse and office space have been accounted for along with sewage treatment and potable water treatment facilities for the camp (Figure 18-6).

## **18.5 MINE SUPPORT AND ANCILLARY BUILDINGS**

Support and ancillary buildings for the site include an equipment maintenance shop, administration office building, fuel storage/dispensing system, truck scale, warehouse, security gate and guard house. The warehouse, permanent laydown area, laboratory, and administration offices are in the southeast corner of the plant area (Figure 18-5). Some additional facilities may be brought in by the contract miner.

Mine support buildings including a warehouse, truck shop, and a mine shop are located in the western end of the plant area, just north of the primary crusher. The mine service area is located to be near the mine portal and is next to the ROM stockpile area (Figure 18-5).

The mine scenario evaluated in this technical report includes the construction of an on-site camp capable of housing up to approximately 336 people, located near the mine access road and the project property main gate (Figure 18-4 and Figure 18-6). The site camp area is intended to be developed initially for the construction camp and evolve into the permanent operations camp.

## **18.6 POWER SUPPLY AND DISTRIBUTION**

Line power is available within 2.5 km of the proposed plant site and is supplied via a 115 kV line running generally east-west adjacent to the site property (Figure 18-4). A 1.5 km power line will be constructed with appropriate tie-ins and switching to deliver power at 115 kV to a substation that will be constructed in close proximity to the plant site. The substation will drop the supply voltage to 13,200 V and 4,160 V for general distribution around the site and for distribution to the large motor loads such as the crusher facilities. Design power load has been estimated at approximately 15 megawatts (MW).

## **18.7 WELL FIELD**

The power supply for the operation of the well system will be carried out by an existing 34.5 kV overhead line that runs parallel to the Tomixtlahuan road.

## **18.8 WATER SYSTEMS**

Details of the water requirements and management are discussed in Section 17. An average of 65.5 m<sup>3</sup>/h of raw water will be required.

Fresh water will be used for camp site potable water, mine dust suppression, gland seal water, and crushing dust suppression. Fire protection water is stored at the same water tank as the fresh water.

### **18.8.1 Fresh and Fire Water**

Heliostar is currently investigating fresh water sources for the project and will be applying to Conagua for its concession.

The Fresh/Fire Water Tank will have grid-based power and a backup diesel generator to supply power to electric distribution pumps. The fresh and fire water are stored in the same tank with fresh water being drawn from the upper portion of the tank and fire water drawn from the bottom portion of tank with a sufficient reserved volume dedicated to fire suppression needs. The fire suppression water pump system will also have a diesel fire pump backup system to provide adequate flow and pressure plant fire hydrants in the event of a fire during a power outage.

Potable water will be produced with use of local chlorination system at the plant site. The potable water supplied to the camp area will have designated water treatment systems for living quarters and food preparation areas. Drinking water is presumed to be imported bottled water.

### **18.8.2 Reclaim Water**

Most of the water used in the process plant will be recycled from the overflows of the concentrate thickener, preleach thickener, tailing thickener, and from the tails filtering. Reclaimed water is pumped to the Reclaim Solution Tank. Make-up water will be added, as needed from the Fresh/Fire Water Tank.

Water which comes into contact with the plant site shall be considered contact water. This water is expected to report to a series of channels, sumps, and drains to a small event pond located south of the processing facility. This pond will be designed to handle the required volume of all plant area watersheds. Contact water will be pumped out of the event pond after the fines settle to the Process Solution Tank.

### **18.8.3 Sewage Treatment**

The sewage discharge at the process plant and ancillary facilities is anticipated to report to a centralized wastewater treatment plant (WWTP) just south of the process facilities. The WWTP is anticipated to have the effluent discharge to the TSF.

The sewage discharge at the construction and permanent camp facilities is anticipated to report to a centralized wastewater treatment plant (WWTP) just north of the campus. A smaller specialized treatment system will be installed at the food preparation facilities to mitigate oils and food solids entering the WWTP.

The WWTP will be designed to meet the demand of the final man-counts and conform to local governing agencies.

## **19 MARKET STUDIES AND CONTRACTS**

### **19.1 MARKET STUDIES**

At this time, no market studies have been completed, as the gold to be produced at Ana Paula can be readily sold in the open market. Gold refining and transport charges were assumed to be US\$2.50/oz gold equivalent and US\$8.00/oz respectively.

### **19.2 CONTRACTS**

No contractual arrangements for concentrate trucking, port usage, shipping, smelting or refining exist at this time. Furthermore, no contractual arrangements have been made for the sale of gold doré at this time.

### **19.3 ROYALTIES**

The Project economic evaluation utilized the following royalties:

- 2.0 percent NSR Royalty to Triple Flag Precious Metals Corp
- 1.0 percent NSR Royalty for Mexican Precious Metals Tax

### **19.4 METAL PRICES**

The base and precious metal markets benefit from terminal markets around the world (London, New York, Tokyo, Hong Kong) and fluctuate on an almost continuous basis. Historical metal prices for gold and silver are shown in Table 19-1 and demonstrate the change in metal price from 2000 to 2024.

Table 19-1: Metal Prices

Year	Gold Price		
	High (US\$)	Low (US\$)	Cumulative Average
2000	312.70	263.80	279.11
2001	278.85	255.95	271.04
2002	349.30	277.75	309.73
2003	416.25	319.90	363.38
2004	454.20	375.00	409.72
2005	536.50	411.10	444.74
2006	725.00	524.75	603.46
2007	841.10	608.30	695.39
2008	1,011.25	712.50	871.96
2009	1,212.50	810.00	972.35
2010	1,421.00	1,058.00	1,224.53
2011	1,895.00	1,319.00	1,571.52
2012	1,791.75	1,540.00	1,668.98
2013	1,693.75	1,192.00	1,411.23
2014	1,385.00	1,142.00	1,266.40
2015	1,295.75	1,049.40	1,160.06
2016	1,366.25	1,077.00	1,250.74
2017	1,346.25	1,151.00	1257.12
2018	1360.30	1178.75	1,269.49
2019	1,549.59	1,270.36	1,392.60
2020	2056.79	1484.64	1,769.64
2021	1943.20	1683.95	1,798.61
2022	2039.05	1628.75	1,800.09
2023	\$2,078.40	\$1,811.07	\$1,940.54
2024	\$2,623.81	\$1,991.83	\$2,386.00

Base Case pricing is based on a gold price of \$2,400/oz gold.

## **20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

Mining in Mexico is subject to a well-developed system of environmental regulation that applies from the period of mine exploration to mine development, operation and ultimately through mine closure.

In April 2017, the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) approved the “Manifestación de Impacto Ambiental” (MIA), Environmental Impact Statement, submitted by Minera Aurea for the open pit mining project.

There are presently no known environmental issues that could materially impact Minera Aurea’s ability to extract the mineral resources and process material as an open pit mine.

The only known environmental liabilities are associated with the exploration site activities and access roads. Remediation of surface disturbances and removal of residues is required as part of the exploration environmental permits. Exploration activities are ongoing, and closure will be incorporated into the mine closure plan.

### **20.1 ENVIRONMENTAL STUDIES**

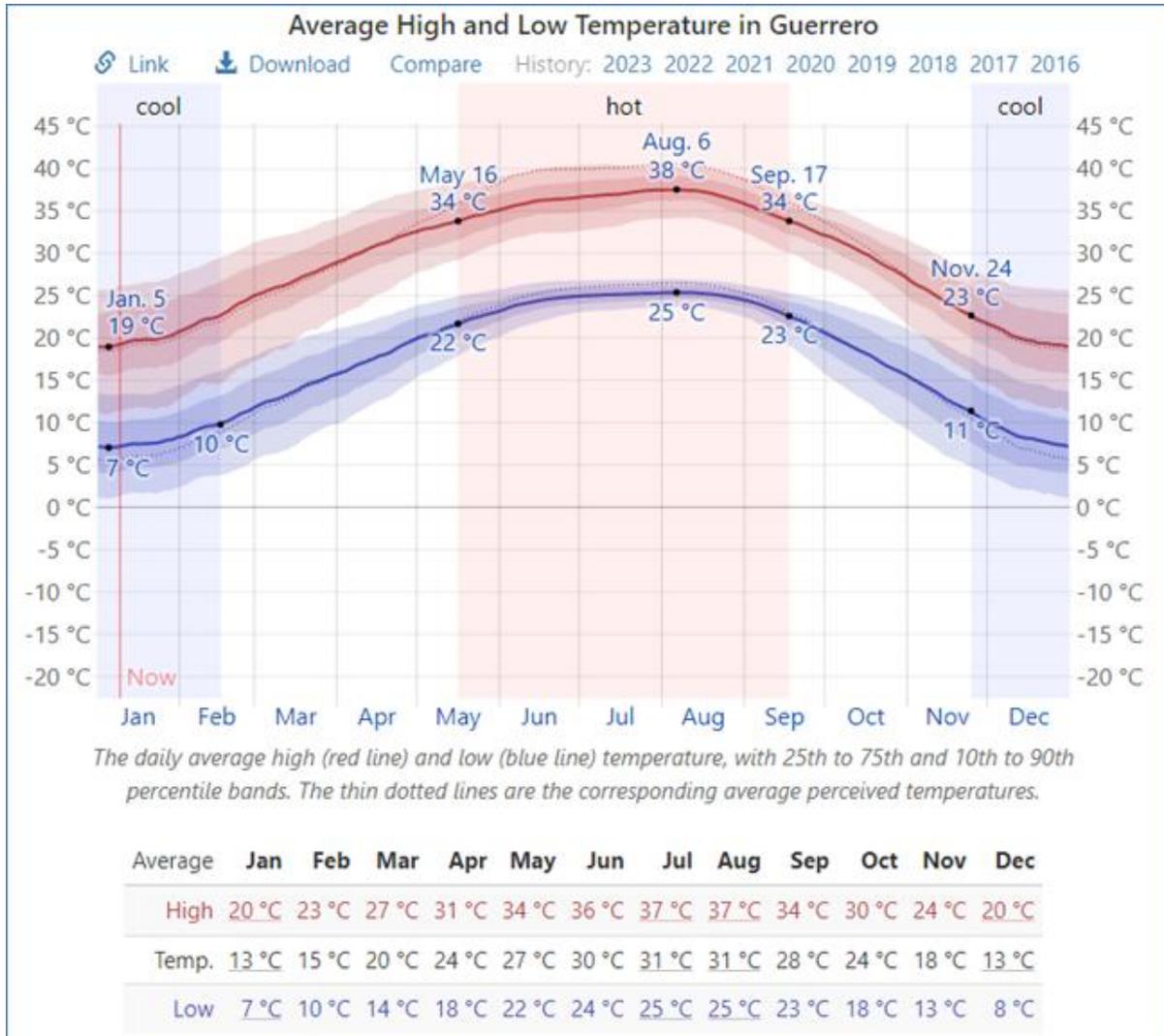
An environmental baseline study has been completed for the Ana Paula Project by MC Terra Emprendimientos Sustentables (Terra, 2016) for the open pit mining project. For the underground mine project, Heliostar has contracted Bioconsultores Soluciones Sustentables, S.C. to perform a risk analysis (ERA) and the environmental impact assessment (MIA).

The Project site is located in a mining district in the Sierra Madre del Sur Mountain range in southern Mexico. Vegetation of the area is primarily tropical deciduous forest. The Project area is not within a known environmental protection area.

Minera Aurea has installed a site-specific weather station at the coordinates W 0411703 N 2004037. Local data for precipitation and temperature have been collected since 2000. Wind speed and direction have been collected since 2012. The area is subject to summer storms and hurricanes.

#### **20.1.1 Climate**

Guerrero has a warm climate characterized by hot and humid summers and warm winters. Clear, warm days and cool nights are common during winter months. Average daily high and low temperatures are summarized in Figure 20-1.



**Figure 20-1: Average High and Low Temperatures in Guerrero**

The historical information values of the climatological station 12177 Cuétzala del Progreso were used to determine the climatic characteristics of the Project area because its area of influence covers the entire basin of interest. This station has records of daily precipitation data from 1980 to 2013 and statistical temperature data for the same period.

The National Weather Service reports the average normal values of the climatological data recorded in the station (Table 20-1).

**Table 20-1: Climate Data Summary**

Item	Cuétzala del Progreso Station	
Average Annual Temperature in °C	23	
Absolute Maximum Temperature in °C	42	April 13, 2000
Extreme Minimum Temperature in °C	4	May 15, 1984
Maximum Average Monthly Temperature during Period, in °C	30.7	May
Minimum Average Monthly Temperature during Period, in °C	16.1	December
Maximum Monthly Temperature during Period, in °C	37.4	May 2000
Minimum Monthly Temperature during Period, in °C	6.1	July 2000
Average Annual Precipitation in mm.	874.3	
Maximum Monthly Precipitation in mm.	816	September 2004
Maximum Precipitation in 24 hours in mm.	147.9	July 18, 1995
Highest Rainfall Month	228.9	August
Lowest Rainfall Month	0.6	March
Days with Average Annual Rainfall	78	
Month with more days with rainfall	18.7	August
Month with fewer days with rainfall	0.1	March
Wettest Year, in mm.	3,058.7	1992
Driest Year, in mm.	102.9	1998
Average Annual Evaporation in mm.	No data	
Year with Maximum Evaporation in mm.	No data	
Year with Minimum Evaporation in mm.	No data	

Source: National Weather Service [Servicio Meteorológico Nacional]

The average annual temperature is 23°C; an absolute maximum temperature of 42°C was recorded on April 13, 2000; the extreme minimum temperature with a value of 4°C was recorded on May 15, 1984; the maximum monthly average temperature occurs in May with a value of 30.7°C; the minimum monthly average temperature is recorded in the month of December with a value of 16.1°C; the maximum average monthly temperature was recorded in May 2000 with 37.4°C; and the minimum average monthly temperature was recorded in July 2000 with a value of 6.1°C (atypical data).

On average, there are 78 days with rainfall per year; the average annual precipitation is 874.3 mm. The highest amount of precipitation was recorded in 1992 with 3,058.7 mm. The maximum monthly rainfall recorded is 816 mm in September 2004; the maximum rainfall recorded in 24 hours was 147.9 mm on July 18, 1995. The month with the highest rainfall was August with 228.9 mm and the driest month was March with only 0.6 mm on average from 1980 to 2013.

The calculation of the maximum and maximum design precipitation that could occur in 24 hours for different return periods was carried out, using the Gumbel method (Table 20-2).

**Table 20-2: 24-hour Precipitation Maximum and Design Maximum by Return Period**

Return Period	I <sub>max</sub> (mm)	Design I <sub>max</sub>
50	160.41	195.18
100	181.55	216.32
500	230.64	265.41
1,000	251.78	286.55

### **20.1.2 Groundwater**

The Ana Paula Mining Project is located within the Tlacotepec aquifer. In general, this aquifer exhibits geological, geophysical and hydrogeological characteristics of a heterogeneous and anisotropic unconfined aquifer. The upper portion is composed of alluvial and fluvial sediments of various grain sizes, including sandstones, polymictic conglomerates, and tuffs, which are several hundred meters thick towards the center of the valleys. The lower portion is hosted by a sequence of marine sedimentary rocks, primarily limestone from the Morelos formation and sandstone from the Mezcala formation, with intrusive and metamorphic igneous rocks also present. The lower portion of the aquifer is dominated by secondary permeability due to fracturing and dissolution of calcareous rocks. Calcareous aquifer units can be confined or semi-confined if they are overlain by less permeable strata, such as shale or siltstone.

In some areas of the mining project, signs of artesian conditions have been found. The aquifer in the Project area can be classified as confined or semi-confined based on geological characteristics and the artesian conditions.

### **20.1.3 Water Quality**

Geochemical characterization of waste rock has resulted in the following conclusions to date.

- Waste rock is unlikely to produce acid, but there is sufficient excess neutralizing capacity to neutralize any acid produced.
- Seepage from the waste rock may contain mobilized metals in concentrations that could pose environmental concern.
- This will be further assessed during the Feasibility Level Engineering stage for the waste rock facility.

Geochemical characterization of flotation tailing has resulted in the following conclusions to date.

- The flotation tailing are non-acid generating and have a net neutralizing potential (NNP).
- Seepage from the flotation and the detoxed leachate concentration tailing may contain metals at levels of concern.
- This will be further assessed during the Feasibility Level Engineering stage.

### **20.1.4 Water Quantity**

Process water will be supplied primarily from the rainwater collected in the tailing facility with a make-up water supply provided by a well field located approximately 2.5 km from the plant site. Potable water for the mining operation is planned to come from the local well field.

A hydrologic study is required to characterize the local groundwater conditions. A permit to take water is required from the Comisión Nacional del Agua (CONAGUA).

## **20.2 PERMITTING**

Guidance for the federal environmental requirements, including conservation of soils, water quality, flora and fauna, noise emissions, air quality, and hazardous waste management, derives primarily from the Ley General del Equilibrio Ecológico y la Protección al Ambiente (“LGEEPA”), the Ley General para la Prevención y Gestión Integral de los Residuos and the Ley de Aguas Nacionales (“LAN”). Article 28 of the LGEEPA specifies that SEMARNAT must issue prior approval to parties intending to develop a mine and mineral processing plant. On June 7, 2013, the Federal Law of Environmental Liability (Ley Federal de Responsabilidad Ambiental) was enacted. Per this law, any person or entity that by its action or omission, directly or indirectly, causes damage to the environment will be liable and obliged to

repair the damage, or to pay compensation in the event that the repair is not possible. This liability is in addition to penalties imposed under any other judicial, administrative, or criminal proceeding.

Environmental permitting in the mining industry in Mexico is mainly administered by SEMARNAT, the federal regulatory agency that establishes the minimum standards for environmental compliance. SEMARNAT has set regulatory standards for air emissions, discharges, biodiversity, noise, mining wastes, tailing, hazardous wastes, and soils. The regulatory standards apply to construction and operation activities.

There are three main SEMARNAT permits required prior to construction and development of a mining project. An Environmental Impact Statement (MIA) must be filed with SEMARNAT for its evaluation. Approval by SEMARNAT is granted through the issuance of an Environmental Impact Authorization. The Ley General de Desarrollo Forestal Sustentable indicates that authorization for land use changes to industrial purposes must be obtained from SEMARNAT. An application for change in land use or Cambio de Uso de Suelo Forestal, must be accompanied by a technical study that supports the environmental permit application (Estudio Técnico Justificativo or “ETJ”). In cases requiring a change in forestry land use, a Land Use Environmental Impact Assessment (Cambio de Uso de Suelo Forestal e Impacto Ambiental) is also required. Mining projects also need to include a risk analysis for the use of regulated substances (Análisis de Riesgo) and an accident prevention program, which are reviewed and authorized by an interministerial governmental body.

Following the receipt of the Change of Land Use Authorization, there are several permits that need to be acquired from various federal agencies. The Land Use Authorization is required by the CONAGUA, an agency within SEMARNAT, to issue water extraction and discharge concessions, and specifies certain requirements to be met by applicants. Mexico recognizes water as a national resource and regulates the use of water through the CONAGUA. The aquifer targeted for supply of the groundwater needed for the Ana Paula Project site will require a new water concession application to be made with the CONAGUA. A water concession will need to be granted by CONAGUA based on a permit application. The permit application will need to be supported by a technical study demonstrating that water availability and sufficient quantity exist in the area. A water discharge and usage must be granted by CONAGUA.

Other key permits include approval from the National Water Commission for construction of the tailing dam in creek basins that are considered to be federal zones. An archaeological release letter is required from the National Institute of Anthropology and History (“INAH”). An explosives permit is required from the Ministry of Defense (“SEDENA”) before construction begins. A project-specific environmental license (Licencia Ambiental Única or “LAU”,) is issued by SEMARNAT when the agency has approved the project operations, which delineates the operational conditions and requirements to be met.

Local permits include a construction permit from the local municipality. Other local permits regarding non-hazardous waste handling and municipal safety and operating authorizations may also be required. The permitting process requires that the mining company has acquired the necessary surface titles, rights, and agreements for the land to be used for the Project.

Hazardous wastes from the mining industry are highly regulated and specific handling requirements must be met once they are generated, such as hazardous waste generator documentation, logbooks, and handling manifests. Hazardous waste storage areas must comply with federal requirements.

Minera Aurea submitted an MIA for the Ana Paula Project for open pit mining in December 2016 with approval granted in April 2017.

**20.3 SOCIAL AND COMMUNITY IMPACT**

The first phase of the socio-economic baseline study was completed in the area of influence defined by the municipality of Cuéztala del Progreso (Minera Aurea, 2017). Metrics measured by field survey included current economic situation, way of life, and family and social environment. The statistical analysis of the survey data has been completed.

The estimated population of the area of influence is about 5,890 inhabitants. The surrounding land supports subsistence-level agriculture, including production of corn, beans, cattle, and mangoes. It is a rural area with small towns that has a high level of social programs for the underprivileged. The largest town in the area is Cuéztala del Progreso with a population of around 2,500 located 7.5 km from the mine site. The populations of the towns located in the Project area are provided in Table 20-3. There are no communities under direct physical impact from the future mine operations.

Various social processes, such as those related to land acquisition and hiring local labor, have not created conflict or opposition from local stakeholders.

**Table 20-3: Towns and Populations in the Ana Paula Project Area**

Municipality	Town	Total Population
Cuéztala del Progreso	Ahuaxotitla	530
Cuéztala del Progreso	Cuaxilotla	540
Cuéztala del Progreso	San Francisco de la Lagunita	266
Cuéztala del Progreso	Tomixtlahuacan	288
Cuéztala del Progreso	San Luis	101
Cuéztala del Progreso	Cuéztala del Progreso	2,319
Cuéztala del Progreso	Tianquizolco	877
Cuéztala del Progreso	Apetlanca	969
	<b>Total</b>	<b>5,890</b>

*Data from INEGI, National Institute of Statistics & Geography Mexico*

Local workers for the prefeasibility stage activities are sourced primarily from Cuéztala del Progreso. Minera Aurea employs 38 workers from the local communities. There is a locally accepted process for labor hiring opportunities in the Project. It is anticipated that about 35 percent of the area’s population is actively working and could be employed in the proposed mining operations as general labor, domestic help, technicians, and office employees.

Minera Aurea has direct ownership and land access agreements in terms of 10- and 30-year leases for 100% of the land required for the Project. Depending on the land, package agreements are negotiated with individual landowners or with community groups.

Minera Aurea interacts directly with the municipal president of Cuéztala del Progreso for local permitting and to provide support to the community.

Minera Aurea maintains a small community relations team on site. Activities carried out as part of the community relations have included economic support and material support to the unions; Christmas holiday parties for the workers; participation and representation in annual sporting events in Cuéztala del Progreso; and support to schools in terms of machinery, materials, sports uniforms, prizes, and donation of medical supplies. Minera Aurea has commenced work on the establishment of a stakeholder engagement system which will be initiated during the feasibility stage of the

Project. Minera Aurea's internal policy for social responsibility and community relations is based on respect, equality, and transparent communication with stakeholders.

#### **20.4 CLOSURE AND RECLAMATION**

A closure and reclamation plan for the underground mining option will be developed on the next study phase.

## **21 CAPITAL AND OPERATING COSTS**

Estimation of capital and operating costs is essential to the evaluation of the economic viability of a prospective project. These factors, combined with revenue and other expense projections, form the basis of the financial analysis presented in Section 22. Initial Capital expenditures (Capex), Sustaining Capital expenditures (Susex) and operating expenditures (Opex) for the Ana Paula project were estimated on the basis of the PEA mine plan, process plant design, and estimates of materials and labor based on that design. Equipment costs were sourced by obtaining budgetary quotations for major equipment and referential costs from recent M3 projects of similar size and type. The costs for each commodity were estimated using percentage factors of the total equipment cost. The factors are based on benchmark data from past projects of similar size and/or type projects.

### **Estimate Classification**

This CAPEX is developed as a Class 5 estimate, defined by AACEI Recommended Practice 47R-11 (Rev. July 2019). This classification designation is based on the project information available as of the date of this document and as described herein at the project's current study level.

The level of accuracy (-30% to +35%) for the PEA aligns with AACEI guidance for this level of study.

### **Estimate Purpose**

To determine and propose the level of capital investment required based on the process design derived from the execution of benchtop testing to identify plausible leaching, separation, and precipitation processes for the project. The primary estimating methodology used for this CAPEX is a combination of budgetary quotations or recent, similar project data for major equipment, historical cost data, and allowances for specific commodities.

### **Estimating Battery Limits & Responsibilities**

The estimate combines the efforts of M3 Engineering, JDS, Heliostar Metals, and Knight Piésold (KP) as follows:

- M3 Engineering – Process Plant and Infrastructure Costs
- JDS Energy & Mining – Mine Production and Development Costs
- Heliostar Metals – Owner's Costs
- Knight Piésold – Filtered Tailing Storage Facility (FTSF)

M3 is responsible for the coordination of all the data being assembled into the estimate.

#### **21.1 CAPITAL COST SUMMARY**

An equipment register was developed by M3's mechanical engineering department based on the block flow diagrams provided by the process department. All major equipment items, including mills, crushers, tanks, thickeners, etc. were calculated based on parameters from test-work results or calculated based on estimated parameters from similar projects. Mining costs were estimated using recent work on similar projects, first principles buildups, and historical data.

No formal quotes were sent out for major equipment at this level of study. Pricing sources for equipment in this estimate were developed from historical cost data and estimates from existing projects and escalated to current cost and/or sizing. When prior project data was not available, an informal budgetary quote for major equipment was requested from a single vendor.

Table 21-1 presents the initial and sustaining capital expenditures by year. Table 21-2 summarizes the initial capital costs. Table 21-3 summarizes the sustaining capital costs.

**Table 21-1: Initial and Sustaining Capital Costs**

Project Year	Initial Capital (US\$ M)	Sustaining Capital (US\$ M)
-2	\$81.1	
-1	\$219.0	
1		\$19.0
2		\$15.2
3		\$11.7
4		\$3.2
5		\$7.8
6		\$4.4
7		\$6.6
8		\$3.4
9		\$1.7
<b>Total Capital Costs</b>	<b>\$300.1</b>	<b>\$73.2</b>

**Table 21-2: Initial Capital Costs**

WBS (Level 1)	Area Name	Initial Capex Costs (US\$ M)
000	General	\$15.0
050	Mining	\$43.4
100	Primary & Secondary Crushing, ROM, & Stockpile	\$10.8
200	Grinding	\$12.5
300	Flotation	\$4.3
400	CIL (Carbon in Leach)	\$6.2
500	Carbon Handling & Electrowinning	\$9.0
600	Tailing System (includes Knight Piésold Costs)	\$34.8
700	Main Electrical Substation & Transmission	\$6.2
800	Reagents	\$8.9
900	Ancillary Buildings	\$13.4
	<b>Subtotal Direct Cost</b>	<b>\$164.5</b>
	Freight (equipment & materials)	\$8.1
	Contractor & Project Indirects	\$4.4
	EPCM	\$16.7
	Commissioning, Vendor Support, Spares, First Fills	\$3.1
	<b>Total Contracted Cost</b>	<b>\$196.8</b>
	Contingency (Contracted Cost + Mining)	\$56.9
	First Fills	\$0.8
	BIOX®	\$45.8
	<b>Total Project Capex Cost</b>	<b>\$300.1</b>

**Table 21-3: Sustaining Capital Costs**

Item	Sustaining Cost (US\$ M)
Mining	\$70.1
Filtered Tailing Storage Facility (FTSF)	\$3.1
<b>Total Sustaining Capital</b>	<b>\$73.2</b>

The CAPEX estimate includes direct costs for underground mining equipment and development, process plant (carbon in leach, EW), and on-site infrastructure such as the Filtered Tailing Storage Facility (FTSF). The initial CAPEX includes indirect costs for detailed design, EPCM, and construction support. The initial CAPEX estimate also includes an estimate of contingency based on the accuracy and level of detail of the cost estimate; the contingency provision is to make allowance for uncertain cost elements that may occur but are not included in the cost estimate. These cost elements include uncertainties concerning completeness, accuracy and characteristics or nature of material takeoffs, accuracy of labor and material rates, accuracy of labor productivity expectations, and accuracy of equipment pricing. The CAPEX estimates are considered to have an accuracy range of -30% to +35%.

The primary assumptions used to develop the CAPEX estimates for the PEA are provided below:

- The estimate is based on 3rd quarter 2025 costs.
- All cost estimates were developed and are reported in United States of America (US) dollars.
- Units of measure for the Project are primarily in metric units.
- Contingency during the pre-production period is specific to each major component of the Project as determined by the various QPs.
- Qualified and experienced construction contractors will be available at the time of Project execution.
- No provision has been made for currency fluctuations.

### 21.1.1 Mine Capital Cost

The underground mining aspect for the PEA Study is based on engaging contractors to perform the mining and maintenance operations at Ana Paula. This approach minimizes Heliostar's mining equipment capital and permanent labor requirements.

The mine capital costs before 25% contingency are summarized in Table 21-4.

**Table 21-4: Capital Cost Summary – Mining**

Capital Category	Preproduction Capital Year -2, -1 US\$M	Sustaining Capital US\$M	Total Capital US\$M
Development – Lateral Capital	24.9	50.1	74.9
Development – Vertical Capital	1.7	5.4	7.1
Underground Mine Infrastructure	13.0	14.0	27.0
Mining Equipment	0.8	0.5	1.2
Capitalized Operating Expenses	3.1	-	3.1
<b>Total Mine Capital</b>	<b>43.5</b>	<b>70.1</b>	<b>113.6</b>

Initial capital requirements (pre-production) excluding contingency are estimated to be US\$43.5 million. The initial capital includes pre-production operating development which is capitalized. The pre-production activities for the contractor include underground lateral development, vertical development, and underground infrastructure

construction. The majority of the mining equipment is rented from the contractor on a monthly basis. Heliostar will be responsible for technical services and will require some auxiliary equipment for personnel transportation.

An estimate of the expected fleet of equipment to be utilized by the Contractor is shown in Table 21-5.

**Table 21-5: Contractor Mining Equipment by Period**

Equipment	Units in Preproduction Year -2, -1	Units Year 1 to 9
Jumbo - 2 Boom	2	3
Longhole Drill	0	2
Jackleg/Stoper	2	2
Explosives Truck	2	3
LHD (6.7t/3.0m3)	1	1
LHD (10t/4.0m3)	1	1
LHD (17t/7.0m3)	1	3
Truck (40t/18.0m3)	2	4
Mechanized Bolter	3	4
Scissor Lift	1	1
Shotcrete + Transmixer	1	1
Grout Pump	1	1
Fuel/Lube Truck	1	1
Personnel Carrier	1	1
Boom Truck	1	1
Grader	1	1
Telehandler	2	2
Mechanic Truck	3	4
Crew Van	1	1
Exploration Drill	1	1
Utility Vehicle	1	1
Alimak, Pneumatic	1	1

#### 21.1.1.1 Underground Mine Infrastructure

The underground mine infrastructure capital includes various separate line items in the costing:

- Dewatering
- Electrical Distribution
- Ventilation
- Paste Backfill Distribution
- Explosives Storage
- Infrastructure Sustaining Capital

Table 21-6 shows the underground mine infrastructure capital costs by category.

**Table 21-6: Underground Mine Infrastructure Capital by Period**

Equipment	Initial Capital Years -2, -1 US\$M	Sustaining US\$M	Total US\$M
Dewatering	0.7	0.1	0.8
Electrical Distribution	1.6	4.5	6.1
Ventilation	1.3	1.2	2.5
Paste Backfill Distribution	8.7	-	8.7
Explosives Storage	0.6	-	0.6
Infrastructure Sustaining Capital	-	8.3	8.3
<b>Total Mine Infrastructure Capital</b>	<b>13.0</b>	<b>14.0</b>	<b>27.0</b>

Dewatering infrastructure includes a range of pumps that will be installed in sumps at regular intervals throughout the underground mine. It also includes an allowance for main sump construction and equipping. Electrical distribution infrastructure includes substations and high voltage cables that will provide power throughout the mine.

Ventilation infrastructure includes the primary fan station installed atop the main ventilation raise on surface, as well as auxiliary fans used to ventilate lateral development and production stopes. Paste backfill distribution infrastructure capital includes all direct and indirect costs associated with construction of the paste plant. All other paste backfill costs are considered operating expenses.

Explosives storage capital includes an allowance for expanding the existing magazine facility on surface, as well as construction of temporary underground magazines. Infrastructure sustaining capital is estimated to account for expected maintenance and replacement costs throughout the life of mine.

### 21.1.2 Quantity Development Methodology

The estimate is developed using a combination of preliminary engineering quantities and M3 benchmark data.

Some costs in each discipline may use M3 benchmarking or pricing escalated from historical database costs if specific quantities are not available at this stage in the study process.

Quantities are organized by area and commodity codes. MTO templates (by WBS) are used by the various engineering disciplines to create the material take-off quantities.

### 21.1.3 Key Quantity Summary and Unit Rates

MTO's for this estimate were developed using reference material such as drawings, sketches, flow sheets, mechanical equipment lists and data sheets. Unit costs are based on current project contracts from ongoing construction projects in Mexico with some of the bulk material such as structural steel being priced from local vendor quote.

## 21.2 DIRECT COSTS – LABOR RATES

### 21.2.1 Labor Rate Sourcing

The labor rates were built up as listed below:

- Labor rates were developed using contract wage rates from a recent nearby Mexico project.
- The rate build up is compliant with Mexican labor law & regulations.

- The developed labor rates by Classification were used in the development of construction crews.
- The labor rates are shown in US dollars (US\$) using a currency exchange rate of MXN 19.0: USD 1.0
- The Crew Rates are used in the Capex to determine the labor hours.

**21.2.2 Labor Rates Base and Burdens**

- The labor rates also considered the following:
- Defined Work Classifications based on the skills required for this project.
- Determined the prevailing base Labor Wages by work classification.
- Application of all burdens & fringes according to the labor law.
- Direct costs include employee base salary.

**Table 21-7: Labor Rates**

Title	Base Salary (US\$)	Allowance for Indirects	Total Base + Indirects (US\$)
General Foreman			\$23.50
Craft Foreman			\$22.50
Lead Man			\$14.00
Carpenter	\$8.71	\$5.79	\$14.50
Cement Mason	\$8.41	\$5.59	\$14.00
Electrician	\$13.51	\$8.99	\$22.50
Ironworker	\$19.93	\$13.25	\$33.18
Laborer	\$6.31	\$4.19	\$10.50
Millwright	\$22.65	\$15.06	\$37.71
Operator	\$12.44	\$8.28	\$20.72
Painter	\$6.91	\$4.59	\$11.50
Pipefitter	\$19.47	\$12.94	\$32.41
Instrumentation	\$14.62	\$9.73	\$24.35
Sheet Metal Worker	\$8.11	\$5.39	\$13.50

**21.2.3 Crew Labor Rates**

Crew compositions were established to form composite labor rates for the various craft disciplines and activities. The composite crew consists of a mix of craft personnel typically required to perform the various tasks needed to complete the project. The craft personnel range from unskilled laborers to supervisors, and include journeymen, helpers, equipment operators, etc. Crew rates include burdened labor rates, contractor indirects (contractor overhead and contractor camp/meals/services & transportation), and contractor profit.

**Table 21-8: Crew Mix (US\$)**

<b>Crew</b>	<b>Average</b>
Civil	\$20.89
EW-Bldg	\$22.03
EW-Exc	\$22.34
Concrete	\$16.00
Architectural	\$17.63
Structural	\$18.44
Millwright	\$22.01
Piping	\$18.92
Electrical	\$22.10
Specialized	\$100.00
Instrumentation	\$27.63

**21.3 DIRECT COSTS – PRODUCTIVITY FACTORS**

At this level of study (PEA), activities estimated using allowances are not assessed by labor hours for installation. Hours are extrapolated from the labor cost (a factor of overall plant equipment cost), divided by the crew rates illustrated above per commodity. For commodities such as civil, concrete, structural steel and process equipment, the labor hour per unit rates were developed by M3 using information included in multiple Mexico construction contracts from past and recent M3 projects and ‘actual’ hours reported for those projects.

**21.4 DIRECT COSTS – CONSTRUCTION EQUIPMENT**

**21.4.1 Construction Equipment**

Construction equipment cost is developed as a factor of plant equipment cost, based on M3 benchmarks from recent past projects.

**21.4.2 Small tools, consumables, and PPE**

Small tools, consumables and personal protective equipment (PPE) are non-reimbursable costs included in Contractor Indirects as part of the labor rate. Man-lifts and generators are included in the construction equipment cost.

**21.5 NEAT VS. ACTUAL QUANTITIES**

**21.5.1 Civil Quantity Factors**

Civil work quantities of general excavation, grading and backfill were taken off the site plot plan, general arrangement drawings and grading plans. In mountainous and hilly areas, in the absence of better information, the top 5 meters of excavation have been assumed to be rippable, and thereafter blasting has been assumed. In alluvial areas, normal excavations were assumed. Takeoff quantities are broken into the categories of alluvial, rippable, and blastable. The civil engineering department performs rough grading takeoffs, and the structural department handles foundation excavations and finish grading. The following factors are used on neat quantities.

- Major Excavations add 5%
- Finish grading add 20%
- “Small” building foundation excavations add 100%
- Roads including sub-base and graveling add 10%

For site preparation mass excavation, 50% is drill and blast rock, 50% is rippable.

## **21.6 FILTERED TAILING STORAGE FACILITY**

The Filtered Tailing Storage Facility (FTSF) cost is included in the Ana Paula estimate as both initial and sustaining capital. The material take-off (MTO) quantities were estimated by Knight Piésold (KP) for earthwork (dam construction and buttressing), composite liner systems, surface water management systems, collection pond, and other design elements in accordance with the PEA (conceptual) design drawings. MTO quantities do not consider foundation grading and construction quantities associated with temporary access roads, water diversion, erosion control, construction dewatering, or other temporary considerations. FTSF costs, by activity, are shown in Table 21-9, and include estimated costs for mobilization and demobilization, crushing and screening, liner installation, and instrumentation. The activity costs shown were estimated using KP MTO quantities and applying M3 benchmark unit costs.

**Table 21-9: Filtered Tailing Storage Capital and Sustaining Capital**

<b>FTSF Activity</b>	<b>Initial (Year 0)*</b>	<b>Sustaining (Year 1 to 9)**</b>	<b>Total FTSF</b>
Mobilization & Demobilization	\$222,103	\$161,166	\$383,269
Major Earthwork	\$1,929,732	\$1,929,396	\$3,859,128
Impoundment Liner System	\$1,366,411	\$811,316	\$2,177,727
Surface Water Management	\$106,445	\$106,445	\$212,890
Collection Pond	\$452,941	\$0	\$452,941
QA/QC & Surveying	\$122,368	\$90,289	\$212,657
<b>Total Cost (US\$)</b>	<b>\$4,200,000</b>	<b>\$3,098,612</b>	<b>\$7,298,612</b>

\*Initial cost (Year 0) timing is assumed to be 40% in Year -2 and 60% in Year -1

\*\*Sustaining cost (Year 1 to 9) timing is assumed to be evenly spread from year 1 through 9

### **21.6.1 Concrete Quantity Factors**

For concrete, general arrangement drawings were used to calculate all volumes for the MTO. A factor of 10% of total volume is added as an allowance for miscellaneous items. An additional allowance of 5 cubic meters of lean concrete is included for unforeseen issues where fill may be required.

### **21.6.2 Structural Steel Quantity Factors**

For steel, general arrangement drawings were the main information source, used to calculate all volumes for the MTO. A factor of 15% of total weight is added as an allowance for connections and an additional 5% of total steel weight is added to account for miscellaneous steel framing (additional bracing, miscellaneous platforms, etc.).

## **21.7 DIRECT COSTS – MECHANICAL EQUIPMENT**

### **21.7.1 Equipment Register**

The equipment register was compiled by the mechanical engineering department based on the block flow diagrams provided by the process department. All equipment is based on prior and recent M3 project cost data. When prior project data was not available, an informal budgetary quote was requested from a single Vendor.

### **21.7.2 Mechanical Equipment Cost Breakdown**

Pricing sources for major equipment in this estimate were developed from historic quotes and estimates from existing projects and escalated to current cost and/or sizing.

## **21.8 DIRECT COSTS – GENERAL**

### **21.8.1 Contractor Access to Site**

It has been assumed that construction work areas would be accessible 24 hours per day, 7 days per week. Allowances are not included in this estimate for productivity decreases due to work stoppages or delays initiated by operations or changes to contractor scope.

### **21.8.2 Quality Assurance Testing Costs**

Quality Assurance testing (e.g., compaction, water permeability, radiographic, etc.) is an essential part of the construction process to help to avoid future repairs and delays in construction. The Capex estimate assumes Quality Assurance testing is conducted in the following commodities: Sitework, Concrete, Structural Steel, Piping, and Electrical. Quality Assurance testing costs are estimated using an allowance of 2% of total direct costs in the commodities listed.

### **21.8.3 Surveying Costs**

Surveying is an integral activity of the construction process and is conducted in the following commodities: Civil, Concrete, and Structural Steel. Surveying costs are estimated using an allowance of 1% of total direct costs in the commodities listed. This allowance includes surveying required for equipment foundations and setting.

### **21.8.4 Spares included as Direct Costs**

Spares are generally defined as major equipment (e.g., crushers, mills, etc.) components and/or ancillary equipment (e.g., pumps, motors, etc.) necessary for operating the process plant equipment and fall into two main categories: the first category is “Installed” (aka “Backup”) spares and are included as Direct Costs within the WBS areas in the Capex estimate. Installed spares included in Direct Costs are identified individually and tagged dependent upon the type of equipment as determined by the engineering disciplines.

The second category of spares are Commissioning (aka “Start-up”) spare wear parts which are wear components for equipment. The spare wear parts are specific to the equipment commissioning (aka start-up) activities only. All Commissioning spares are classified as Indirect costs and were estimated using an allowance of 2.0% of total plant equipment costs.

## **21.9 DIRECT COSTS – FREIGHT, CUSTOMS & DUTIES**

Freight, customs, and duties have been included at 5% for bulk materials and 7.5% for the processing equipment. The factor for bulk materials assumes all will be sourced from within Mexico and the percentage is based on current, ongoing projects. The factor for Process Equipment is based on current, ongoing projects in Mexico.

### **21.9.1 Freight estimate includes:**

- Customs duties for importation
- Freight, to include ocean freight, port charges on both ends, and truck deliveries.
- In-transit warehousing lasting up to 30 days

### **21.9.2 Freight estimate excludes:**

- Packaging or re-packaging charges
- Customs taxes and Value added taxes (VAT)

- Loading at origin
- Offloading at destination (site warehouse costs are under the Construction budget)
- Mine fleet and mine vehicles
- Mine warehousing activities
- Infrastructure improvements of any type

**21.9.3 Bulk materials assumptions:**

- All bulk materials are purchased and shipped from within Mexico.
- All tanks, mechanical chutes, flotation cells, thickeners, building steel, prefabricated buildings, building roofing and siding are purchased and shipped from within Mexico.

**21.9.4 Plant Capital Costs – Indirect Costs**

Indirect costs are considered capital cost items that are not typically attributed to specific project deliverables. These costs are essential for maintaining the organization and supporting project execution, but they don't contribute directly to the production of goods or services within a particular project.

**21.9.5 Temporary Facilities**

This indirect cost item is meant to estimate costs for temporary offices for EPCM and Owners, temporary housing for warehousing and materials, temporary entrances and any safety related facilities associated with construction. Contractor offices are included in the contractor indirect costs.

**21.9.6 Temporary Utilities**

This indirect cost item estimates costs for temporary equipment and the installation of temporary facilities during the construction phase.

**21.9.7 Site Services**

**Maintenance of Roads:**

Plant Roads	Full Time Crew including Equipment
Construction Roads	Water Truck, Blader, Small Haul Truck
Parking Lots	Backhoe, Excavator
Laydown Areas	
Entrances	

**Dust Control:** Included Above in Maintenance.

**Trash Management & Disposal:** Gathers in Containers by Type

Unload at Site Designated Location and Client to Manage	
Construction Waste	By Type, Based on Loads per Week
Hazardous Waste	By Type, Based on Loads per Week
Chemicals, Oils, Liquids	By Type, Based on Loads per Week

## **21.9.8 Plant Acceptance and Initiation of Operations Costs**

Costs are included for plant acceptance and initiation of operations as follows:

- Mechanical Completion – by Contractor/EPCM
- Pre-Commissioning of Unit Operations – by Owner/EPCM
- Commissioning – by Owner/EPCM
- Initial Fills – by Contractor/Owner/EPCM
- Startup – by Owner/EPCM/Contractor
- Ramp Up – by Owner
- Demonstration Test – by Owner

## **21.9.9 Construction Indirect Costs**

### **21.9.9.1 Contractor Labor Indirects**

Contractor labor indirects are included in the estimate and have been included as part of the rate on all direct hours. The total amount has been divided equally into the total direct hours.

### **21.9.9.2 Items Included in the Overhead Rate**

Overhead covers many contractors' costs including direct and indirect overheads, usually referring to local and corporate costs of doing business. Those overheads cover labor components like home office accounting, payroll, IT support, project controls oversight, procurement, QA/QC oversight, safety oversight, construction oversight, human resources, sales and executive management. They also cover non-labor items such as insurance, bonding, general liability, awards, safety incentives, luncheons, and owned equipment maintenance, etc.

### **21.9.9.3 Steel Detailing**

The EPCM will produce all steel detailing in-house to ensure 3-D model accuracy for work by other engineering disciplines. The EPCM performing the detailing allows for late changes by Vendors without incurring significant charges and schedule slippage. Steel detailing is included at US\$0.33/kg for structural steel & rebar steel and included at US\$0.35/kg for mechanical steel detailing.

### **21.9.9.4 Field Engineering**

The EPCM will have field engineering staff (minimum one per trade) on site during construction to promptly respond to contractor requests for information (RFIs).

## **21.10 PROCUREMENT**

### **21.10.1 General**

The EPCM will act as an agent on behalf of the Owner to facilitate bidding and procuring equipment and materials within the scope of the project and the EPCM's responsibilities. The EPCM will conduct bidding and provide a recommendation to the Owner, who will approve and pay for purchases. The EPCM will incorporate the Owner's standard terms and conditions into Purchase Orders (POs) as required.

**21.11 EPCM**

EPCM costs are applied as a standard percentage based on recent projects of a similar size or type.

**Table 21-9: EPCM Totals**

<b>EPCM Description</b>	<b>Total (US\$M)</b>
Management & Accounting	\$1.00
Engineering	\$7.34
Project Services	\$0.67
Project Control	\$0.67
Construction Management	\$6.67
Construction Management	\$0.40
<b>EPCM Subtotal</b>	<b>\$16.75</b>

**21.11.1 Vendor Data**

Major mechanical equipment selection can begin once the material process for the project has been defined. This equipment is integral to the plant layout and structural design. Large mechanical equipment requires the vendor to complete additional design and engineering to meet the process requirements. This equipment often has long lead times for fabrication and delivery; therefore, it is critical to overall engineering progress that Purchase Orders (POs) be placed with the vendors as soon as feasible.

**21.11.2 Vendor Support**

Rates and expected time will be requested from vendors for representatives as part of the budget pricing and that will become the basis for estimating such costs. These representatives will provide expertise and supervision in construction assembly. Vendor support is estimated as:

- Supervision of specialty construction      1.5% of plant equipment costs
- Pre-commissioning                                      0.7% of plant equipment costs
- Commissioning    0.7% of plant equipment costs

**21.11.3 Pre-Commissioning and Commissioning**

Pre-commissioning and Commissioning Support of the plant through to mechanical completion is assumed to be included in the factored commodity cost for Electrical and Instrumentation disciplines.

**21.11.3.1 First Fills**

Allowance for First Fills is based on an approximation based on Reagent and Flotation capacities for the first two weeks of operation.

**21.11.3.2 Escalation**

The Estimate basis date is end of Q3 2025 US dollars (US\$). This date is the point in time at which the Capex price is valid for the given set of conditions contained within this and the attached reference documents.

No 'future' escalation is included in this estimate.

#### 21.11.4 Contingency

Cost Contingency is defined by AACEI as “an amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, and/or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs.” These costs are currently accounted for within the estimate at 30% of the total contracted cost. Typically estimated using statistical analysis or judgment based on past asset or project experience. Contingency excludes:

- Major scope changes such as changes in capacities, government regulations and location of the asset or project (see management reserve)
- Management reserves

Some of the items, conditions, or events for which the state, occurrence, and/or effect is uncertain include, but are not limited to, planning, and estimating errors and omissions, minor price fluctuations (other than general escalation), design developments and changes within the scope, and variations in market and environmental conditions. Contingency is generally included in most estimates and is expected to be expended.

#### 21.12 OPERATING COSTS (OPEX)

The PEA estimates of total life-of-mine (LOM) costs and operating costs per metric tonne (\$/mt) of processed material are summarized in Table 21-10. The PEA operating cost estimates include mine operating, process plant operating, general and administrative costs (G&A) and treatment & refining charges. Total PEA Production Cost adds governmental and private party royalty expenses. The All-In Sustaining Costs (AISC) additionally include sustaining Capex and reclamation & closure cost.

**Table 21-10: Estimated Operating and All-In Sustaining Costs Summary**

Cost Elements	LoM Cost US\$M	US\$/tonne Processed
Mine	\$364.8	\$64.85
Process Plant	\$196.5	\$34.94
General Administration	\$41.4	\$7.36
Treatment / Refining Charge	\$9.2	\$1.63
<b>Cash Operating Cost</b>	<b>\$611.9</b>	<b>\$108.78</b>
Royalties (Government & Private Party)	\$185.0	\$32.89
<b>Total Production Costs</b>	<b>\$796.8</b>	<b>\$141.67</b>
Sustaining Capex	\$73.2	\$13.01
Reclamation & Closure	\$3.0	\$0.53
<b>All-In Sustaining Costs</b>	<b>\$873.0</b>	<b>\$155.21</b>

##### 21.12.1 Underground Mine Operating Costs

The contractor is mobilized to site in Year -2, and the start of underground development occurs in Year -1. Underground production will start in Year 1 and will last over the LOM until Year 9. The estimated LOM underground operating costs and the distribution of the unit cost items are shown in Table 21-11 and Table 21-12.

The mining operating costs include the following functional areas:

- Lateral Operating Development – Costs related to the drilling, blasting, mucking, and hauling of waste development on the level

- Longhole Stoping – Costs relating to the drilling, blasting, mucking, and hauling of longhole production mineralized material (note: does not include sill development)
- Backfill – Costs related to backfill operations, including the paste plant, binder, fill barricades, and waste backfill
- Mine Maintenance – Maintenance labor costs that support all other sectors
- Mine General – Costs related to mine support activities, such as technical services, shared infrastructure (ventilation, dewatering, support equipment, and definition drilling)

Contractor quotations were used for the development, and production costs. Contractor costs cover the labor, consumables, and equipment. All other costs are covered by the owner.

**Table 21-11: Life of Mine Underground Operating Costs**

Underground operating costs	USMA	US\$/mt processed
Lateral Operating Development	53.8	9.56
Longhole Stoping	214.1	41.15
Backfill	50.6	8.99
Mine Maintenance	15.4	2.75
Mine General including power	30.9	5.5
Total	364.8	64.85

Source: JDS, (2025). Numbers may not compute exactly due to rounding.

**Table 21-12: Distribution of Underground Operating Costs (USMA)**

Underground operating costs	Total	Labor	Equipment inc'l Fuel	Materials	Power
Lateral Operating Development	53.8	26.0	14.3	13.5	-
Longhole Stoping	214.1	66.9	103.7	41.5	-
Backfill	50.6	4.1	7.9	35.6	-
Mine Maintenance	15.4	15.4	-	-	-
Mine General	30.9	3.5	6.3	2.8	18.3
Total	364.8	233.1	20.3	76.7	18.3

Source: JDS, (2025). Numbers may not compute exactly due to rounding.

#### 21.12.1.1 Underground Mining Labor

Underground mining staffing levels are built up based on the productivities required for mining activities occurring within a given time period. As such, mining manpower fluctuates throughout the mine life.

Mine labor (including supervision and support) related to development drifting is distributed between capital development (sustaining capital costs) and operating development (operating costs), based on the activities being performed within a given time period. As such, only a portion of the mine staffing is allocated within the mining operating

costs. Labor buildups use a blend of both local and expat rates with a higher percentage of expat labor for the first 2-3 years of the mine life before transitioning to a local contractor workforce.

#### 21.12.1.2 Underground Equipment

Underground mining equipment usage costs are based on the equipment operating hours required to meet the life of mine plan. Equipment costs include monthly rental, usage, maintenance, and wear parts.

Unit costs for the elements above have been obtained from contractor quotes and applied to the mine plan using a first principles buildup. Equipment purchases and rebuilds are part of the contractor costs.

#### 21.12.1.3 Underground Fuel Costs

Underground mining fuel consumption has been built up based on the required equipment operating hours dictated by the mine plan for development and production-based equipment, and annual allowances for support and fixed infrastructure equipment.

#### 21.12.1.4 Materials and Consumables

Materials and consumables were estimated from contractor quotes and applied to the mine design and schedule. Costs include

- Explosives
- Ground Support
- Fuel
- Pumping
- Drilling consumables
- Ventilation consumables
- Services (Pipe, hangars, electrical cable, comms)

### 21.12.2 Process Operating Costs

The process plant operating costs are summarized by the categories of labor, electric power, crushing wear parts, reagents, maintenance parts, and supplies and services, as presented in Table 21-13.

**Table 21-13: Operating & Maintenance Cost Summary**

Operating & Maintenance	LoM Cost US\$M	US\$/tonne Processed	%
Labor	\$24.9	\$4.43	12.7%
Electrical Power	\$81.8	\$14.55	41.6%
Reagents	\$34.8	\$6.19	17.7%
Cyanide	\$18.8	\$3.35	9.6%
Crushing/Mill Wear Parts	\$9.8	\$1.74	5.0%
Maintenance Parts	\$19.1	\$3.40	9.7%
Supplies and Services	\$7.2	\$1.27	3.6%
Total Process Operating Cost	\$196.5	\$34.94	100.0%

21.12.2.1 General and Administrative Costs

General and Administrative (G&A) cost estimates in the PEA include items such as management, accounting, human resources, environmental and safety compliance, laboratory, community relations, communications, insurance, legal, training, and other costs not associated with either mining or processing. The LOM G&A cost has been estimated by M3. The average annual expense is US\$4.6 M or approximately US\$7.36/ore tonne processed.

21.12.2.2 Processing Labor

Labor for the Project was estimated in the PEA based on a staffing plan for the process plant operations and maintenance areas. Labor rates were estimated using benchmark market data for the region and comparable wage rates from other mining operations in the area. The staffing and labor cost for the BIOX® process were provided by Metso. The annual labor cost includes Mexican statutory benefits for both hourly and salaried staff. A breakdown of the process labor staffing, stratified by function (operations, maintenance, BIOX®, and process administration) and G&A is presented in Table 21-14.

**Table 21-14: Estimated Labor Requirements**

Labor Type	Average Staffing	Average Annual Cost (US\$000)	LoM Cost (US\$000)
Process Administration	10	\$1,301.2	\$11,711
Operations	30	\$677.7	\$6,099
Maintenance	20	\$504.4	\$4,540
BIOX®	12	\$288.2	\$2,594
General & Administrative	39	\$1,756.7	\$15,810
Total	111	\$4,528	\$40,753

**Reagents, Wear Parts, and Electricity Costs**

Reagent and wear part costs were estimated using metallurgical test data and established industry practice assumptions and unit prices from similar size and type project benchmarks. The cost for the BIOX® reagents was provided by Metso. Table 21-15 lists the reagents used in this project. Table 21-16 lists the wear part costs.

**Table 21-15: Reagents Costs at Full Plant Capacity**

Reagent	Average Annual Cost (US\$000)	LoM Cost (US\$000)
PAX	\$35.4	\$318.3
Copper Sulfate (CuSO <sub>4</sub> )	\$59.9	\$539.1
F131a (Frother)	\$21.2	\$191.0
Cyanide	\$2,091.0	\$18,818.9
Flocculant	\$57.3	\$515.7
Antiscalant	\$4.8	\$43.6
Lime	\$171.9	\$1,547.2
HCl	\$5.7	\$51.6
Sodium Hydroxide (NaOH)	\$4.9	\$44.3
Carbon	\$44.3	\$398.5
Sodium Metabisulfite (SMBS)	\$3.0	\$27.0
Cement	\$866.2	\$7,795.6
BIOX <sup>®</sup>	\$2,333.5	\$21,001.1
Total	\$5,699	\$51,292

**Table 21-16: Wear Part Costs at Full Plant Capacity**

Wear Items	Average Annual Cost (US\$000)	LoM Cost (US\$000)
Primary Crusher (Jaw)	\$33.2	\$299.1
Secondary Crusher (Cone)	\$8.1	\$73.2
Ball Mill Liner	\$53.0	\$476.6
Ball Mill Media	\$993.2	\$8,938.5
Filter Cloth	\$262.5	\$2,362.3
Total	\$1,350	\$12,150

The total power consumption for the Ana Paula Plant is estimated based on an equipment list developed from the flowsheet with equipment sizing based on a calculated mass balance. Major equipment sizing calculations were performed to provide power associated with crushers, mills, agitators, and pumps. The power consumption for BIOX<sup>®</sup> was provided by Metso. Power is anticipated to be sourced from the local power grid at a rate of US\$0.10/kWh. The LOM power costs are estimated to be US\$81.8 million. Table 21-17 summarizes the average annual power consumption and cost by area.

Table 21-17: Power Usage and Cost (\$0.10/kWh)

Area Number	Area Description	Average Annual MWh (Years 2 to 9)	Average Annual Cost (Years 2 to 9) (US\$000)
000	General	1,717	\$172
050	Mine	15,146	\$1,515
100	Primary Crusher, ROM & Stockpile	764	\$76
110	Coarse Mill Feed Storage and Reclaim	385	\$39
120	Secondary Crushing and Screening	876	\$88
140	Fine Mill Feed Storage and Reclaim	210	\$21
200	Grinding	12,958	\$1,296
230	Gravity Concentration	447	\$45
300	Flotation	3,965	\$397
350	BIOX <sup>®</sup>	29,853	\$2,985
400	Carbon in Leach	3,662	\$366
500	Carbon Handling	6,088	\$609
550	Electrowinning and Refinery	1,998	\$200
610	Flotation Tailing	7,846	\$785
620	Paste Plant	1,553	\$155
630	Cyanide Detoxification	407	\$41
640	Leach Tailing	0	\$0
650	Water System	1,045	\$104
700	Main Electrical Substation	1,183	\$118
800	Reagents	1,183	\$118
900	Ancillary Buildings & Utility System	2,102	\$210
	Total	93,386	\$9,339

### 21.12.3 Maintenance Costs

An allowance is used to estimate the PEA cost of maintenance for the process equipment and facilities. The annual allowance is estimated using a benchmark percentage of 3.5% applied to the direct cost of the capital equipment for each area. The average annual maintenance cost is estimated to be US\$2.1 million, translating to a LOM cost of US\$19.1 million.

### 21.12.4 Operating Supply Costs

An allowance is used to estimate the PEA cost of operating and maintenance supplies that are in addition to the other cost elements discussed above. Operating supplies include such items as personal-protective equipment (PPE), small tools, and lubricants. The average annual supplies cost is estimated to be US\$796.4 thousand, with a LOM cost of US\$7.2 million.

## **22 ECONOMIC ANALYSIS**

### **22.1 CAUTIONARY STATEMENT ON FORWARD-LOOKING INFORMATION**

All statements, other than statements of historical fact, contained in this report, including the results of the economic analyses discussed in this section, constitute “forward-looking statements” and “forward-looking information” (collectively, “forward-looking statements”) within the meaning of applicable Canadian and United States securities legislation. Forward-looking statements, including the results of the PEA, are based on assumptions, estimates, expectations and opinions, which are considered reasonable and represent best judgment based on available facts, as of the date such statements are made and, if proven to be incorrect, actual and future results may be materially different than expressed or implied in the forward-looking statements. Forward-looking statements are also inherently subject to known and unknown risks, uncertainties, contingencies and other factors that may cause actual results to differ materially from those presented in this report. Forward-looking statements, and related assumptions and estimates, include the following:

- Mineral resource and mineral reserve estimates.
- Assumed commodity prices and exchange rates.
- The proposed mine production plan.
- Projected mining and process recovery rates.
- Assumptions as to mining dilution and ability to mine in areas previously exploited using mining methods as envisaged the timing and amount of estimated future production.
- Sustaining costs and proposed operating costs.
- Assumptions as to closure costs and closure requirements.
- Assumptions as to environmental, permitting, and social risks.

Risks unknown risks, uncertainties, contingencies and other factors applicable to the forward-looking statements include:

- Changes to costs of production from what is assumed.
- Unrecognized environmental risks.
- Unanticipated reclamation expenses.
- Unexpected variations in quantity of mineralized material, grade, or recovery rates.
- Accidents, Labor disputes and other risks of the mining industry.
- Geotechnical or hydrogeological considerations during mining are different from what was assumed.
- Failure of mining methods to operate as anticipated.
- Failure of plant, equipment, or processes to operate as anticipated.
- Changes to assumptions as to the availability of electrical power, and the power rates used in the operating cost estimates and financial analysis.
- Ability to maintain the social license to operate.
- Changes to governmental royalty rates.
- Changes to tax rates.

### **22.2 METHODOLOGIES USED**

The project has been evaluated using a discounted cash flow (DCF) analysis based on an 8% discount rate. Cash inflows consist of annual revenue projections. Cash outflows consist of capital expenditures, including pre-production costs, operating costs, taxes, and royalties. These are subtracted from the inflows to arrive at the annual cash flow projections.

Discounted Cash flows are assumed to occur at the mid-point of each period. It must be noted that tax calculations involve complex variables that can only be accurately determined during operations and, as such, the actual post-tax results may differ from those estimated. A sensitivity analysis was performed to assess the impact of variations in gold price, gold recovery, total operating cost, and total capital costs.

The capital and operating cost estimates developed specifically for this project are presented in Section 21. The economic analysis has been run on a constant dollar basis with no inflation

## **22.3 ECONOMIC ANALYSIS**

The economic analysis was performed, assuming an 8% discount rate. The pre-tax NPV discounted at 8% is US\$524.2 million; the internal rate of return (IRR) is 38.0%, and payback period is 2.4 years. On a post-tax basis, the NPV discounted at 8% is US\$333.3 million; the IRR is 28.1%, and the payback period is 2.9 years. Table 22-1 summarizes the economic results. The summary of project cash flow is shown in Table 22-2. The All-In Sustaining Cost (AISC) for the project is presented in Table 22-3. The cash flow by year is presented in Figure 22-1.

**Table 22-1: Economic Results Summary**

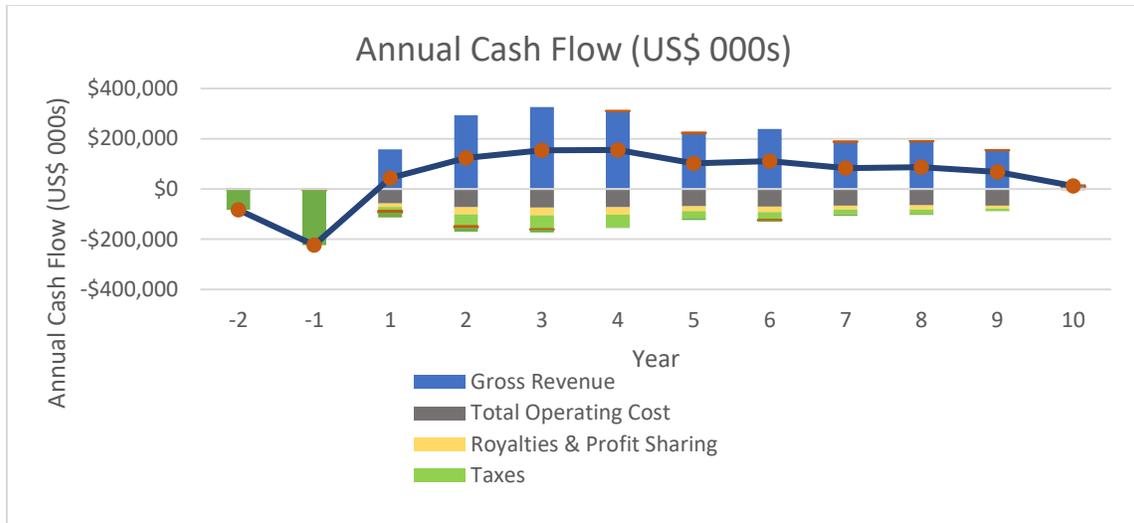
<b>Discounted Cash Flow</b>	<b>Unit</b>	<b>LoM Value</b>
Before Tax		
NPV @ 5%	\$M	\$643
NPV @ 8%	\$M	\$524
NPV @ 10%	\$M	\$457
IRR	%	38.0%
After Tax		
NPV @ 5%	\$M	\$426
NPV @ 8%	\$M	\$333
NPV @ 10%	\$M	\$281
IRR	%	28.1%
Payback	Years	2.9

Table 22-2: LOM Cash Flow Summary

Area	US\$M	US\$/tonne Processed
LoM Revenue	\$2,078	-
Mining	\$365	\$64.85
Process Plant	\$197	\$34.94
General Administration	\$41	\$7.36
Treatment & Refining Charges	\$9	\$1.63
<b>Cash Operating Cost</b>	<b>\$612</b>	<b>\$108.78</b>
Royalties (Government & Private NSR)	\$185	\$32.89
<b>Total Production Costs</b>	<b>\$797</b>	<b>\$141.67</b>
<b>EBITDA</b>	<b>\$1,282</b>	-
Total Capital Expenditures	\$373	\$66.36
Reclamation & Closure	\$3	\$0.53
Profit Sharing	\$2	\$0.39
<b>Net Income Before Tax</b>	<b>\$903</b>	-
Taxes	\$272	\$48.33
<b>After-Tax Free Cash Flow</b>	<b>\$631</b>	-

Table 22-3: Project All-In Sustaining Cost (AISC)

Cost Elements	LoM Cost US\$M	US\$/tonne Processed
Mine	\$365	\$64.85
Process Plant	\$197	\$34.94
General Administration	\$41	\$7.36
Treatment / Refining Charge	\$9	\$1.63
Cash Operating Cost	\$612	\$108.78
Royalties (Government & Private NSR)	\$185	\$32.89
Total Production Costs	\$797	\$141.67
Sustaining Capex	\$73	\$13.01
Reclamation & Closure	\$3	\$0.53
All-In Sustaining Costs	\$873	\$155.21



**Figure 22-1: Project Cash Flow by Year (US\$000)**

## 22.4 FINANCIAL MODEL PARAMETERS

The economic analysis was performed, assuming a gold price of US\$2,400/oz; this price is based on consensus analyst estimates and recently published economic studies. The forecasts used are meant to reflect the average metals price expectation over the life of the Project. No price inflation or escalation factors were considered. Commodity prices can be volatile, and there is the potential for deviation from the forecast.

The economic analysis also used the following assumptions:

- Construction period of two years
- Total mine life (LoM) of 9 years
- Gold price of US\$2,400/oz with no price inflation added
- Cost estimates in constant Q3 2025 US dollars with no inflation or escalation factors considered
- Reclamation & Closure cost of \$3.0 million was considered
- Capital cost funded with 100% equity
- Capital costs depreciated using the 10-year straight-line method
- All cash flows discounted using mid-period discounting convention

## 22.5 REVENUES AND NSR PARAMETERS

Mine revenue is derived from the sale of doré into the international marketplace. No contractual arrangements for refining exist at this time. Details regarding the terms used for the economic analysis can be found in the Market Studies Section (section 19) of this technical report. Table 22-4 lists the NSR parameters that were used in the economic analysis. A total of 875 koz of gold is produced during the mine life.

**Table 22-4: NSR Parameters Used in Economic Analysis:**

Inputs & Assumptions		
Operating Days	days per year	365
Recoveries		
Au Recovery		90.0%
NSR Parameters		
Au Payable		99.0%
Treatment & Refining Charge	US\$/oz	\$2.50
Transportation	US\$/oz	\$8.00
NSR Royalty		2.0%

## 22.6 ROYALTIES AND PROFIT SHARING (MEXICO INCREMENTAL PTU)

The economic analysis for the Project accounts for the following royalties and profit sharing:

- Mexican Government EBITDA Royalty of 8.5%
- Mexican Government Precious Metal NSR Revenue Royalty of 1.0%
- Private Party Gold NSR Royalty of 2.0%
- Profit Sharing (known as Mexico Incremental PTU) of 10.0% with a “PTU Cap”. The PTU payout is capped, per the Mexican statutory decree, based on the highest unionized 3-month salary for the hourly workforce. All non-exempt salaried employees are capped at 1.2 x the highest unionized 3-month salary.

The LoM Mexican governmental royalties amount to US\$143.6 million, while the LoM private party NSR royalty amounts to US\$41.4 million. The LoM PTU amounts to US\$2.2 million.

## 22.7 TAXES

The Project has been evaluated on an after-tax basis in order to provide a more indicative, but still approximate, value of the potential project economics. At the effective date of this report, the Project is assumed to be subject to the 30.0% Mexico Federal Tax rate. The LoM Federal Tax amounts to US\$271.8 million.

## 22.8 SENSITIVITIES

A sensitivity analysis was performed on the Base Case metal pricing scenarios to determine which factors most affected the Project economics. The analysis revealed that the Project is most sensitive to metal price, followed by capital and metal recovery. The Project showed the least sensitivity to operating costs. Table 22-5 along with Figure 22-2 and Figure 22-3 outline the results of the sensitivity tests performed on after-tax NPV at a discount rate of 8% for the base case evaluated.

**Table 22-5: Sensitivity Results for Base Case Scenario**

NPV Sensitivity, after Tax @ 8% (\$M)			
Sensitivity	Metal Price	CAPEX	OPEX
20%	\$508	\$264	\$281
10%	\$421	\$299	\$307
0%	\$333	\$333	\$333
-10%	\$246	\$368	\$359
-20%	\$158	\$403	\$386

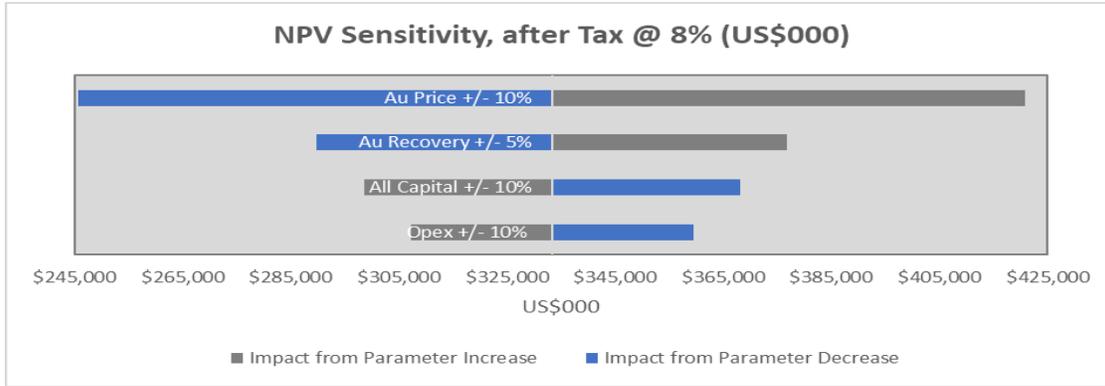


Figure 22-2: NPV Sensitivity Results for Base Case Scenario

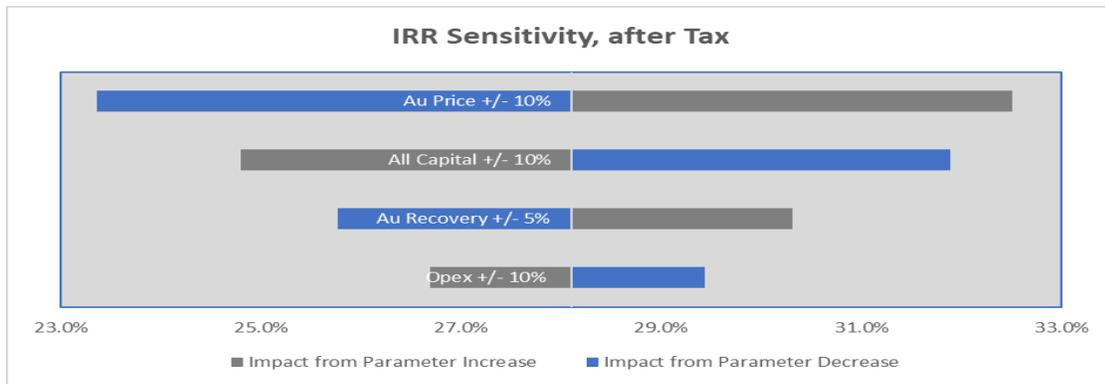


Figure 22-3: IRR Sensitivity Results for Base Case Scenario

In addition, various scenarios were evaluated showing the Project's sensitivity to gold price. Table 22-6 shows the sensitivity results for the Project with various gold prices.

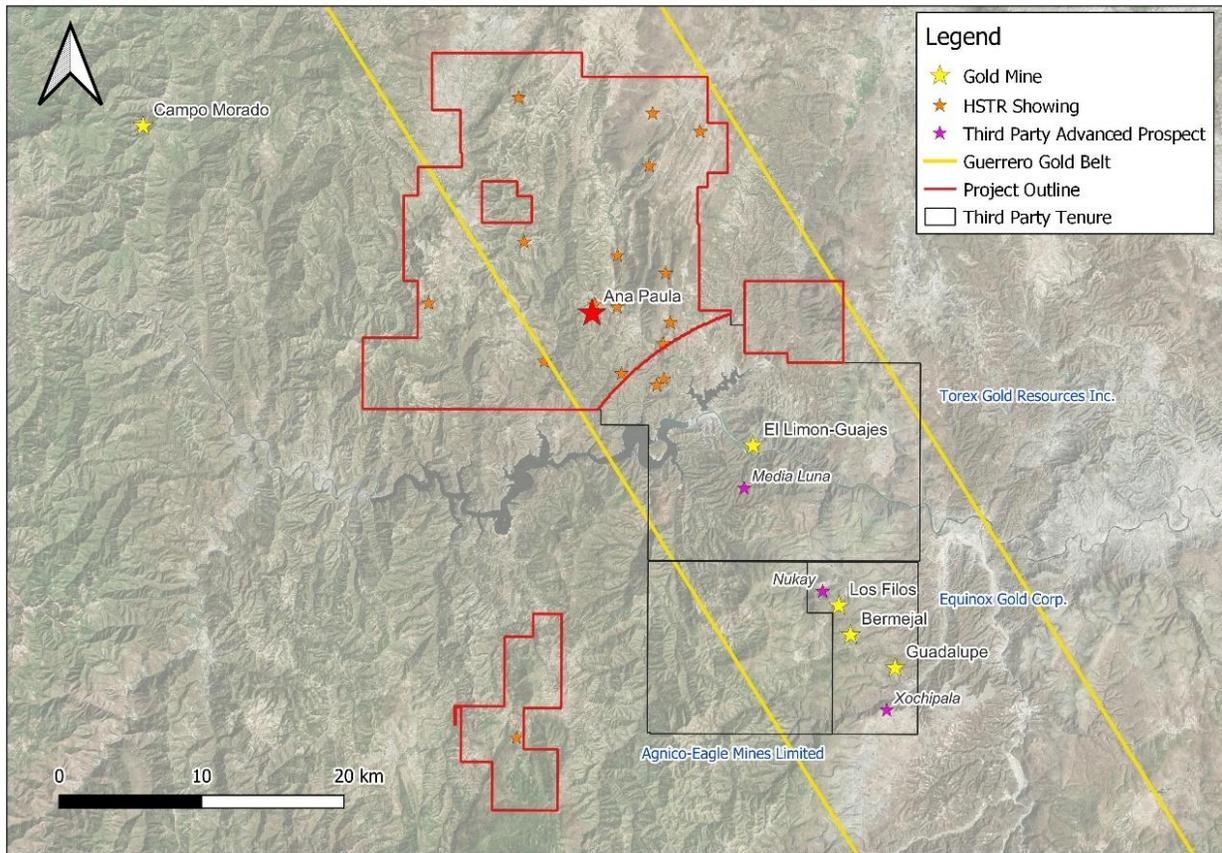
Table 22-6: Project Sensitivity to Metal Prices

Gold Price Sensitivity					
	Gold Price	Revenue (US\$000)	NPV, after tax @ 5% (US\$000)	NPV, after tax @ 8% (US\$000)	IRR, after Tax
<b>Base Case</b>	<b>\$2,400</b>	<b>\$2,078,358</b>	<b>\$425,998</b>	<b>\$333,316</b>	<b>28.1%</b>
57%	\$3,761	\$3,256,787	\$995,611	\$829,585	50.7%
25%	\$3,000	\$2,597,947	\$677,150	\$552,130	38.7%
20%	\$2,880	\$2,494,029	\$626,920	\$508,367	36.7%
10%	\$2,640	\$2,286,194	\$526,459	\$420,842	32.5%
-10%	\$2,160	\$1,870,522	\$325,537	\$245,791	23.4%
-20%	\$1,920	\$1,662,686	\$225,076	\$158,266	18.3%

**23 ADJACENT PROPERTIES**

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, Bermejil, Guadalupe and Xochipala, Figure 23-1).

Los Filos was acquired by Goldcorp in 2005 through the purchase of Wheaton River Minerals Ltd., completed March 1<sup>st</sup>, 2005, and through the purchase of the Bermejil deposit from Minera El Bermejil, S. de R.L. de C.V. (Minera Bermejil), 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 October, 2025, the mineral reserves and mineral resources for Los Filos are shown in Table 23-1.

**Table 23-1: Los Filos Mine Reserves and Resources**

<b>Mineral Reserves</b>			
Class	Tonnes (kt)	Au (g/t)	Au (koz)
Proven & Probable	193,226	0.86	5,354
<b>Mineral Resources</b>			
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**

<b>Los Filos Reserves/Resources &amp; Production - Gold</b>			
<i>Period</i>	<i>Reserves (oz)</i>	<i>Resources (oz)</i>	<i>Production (oz)</i>
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
<b>TOTAL PRODUCTION</b>			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, Table 23-4, and Table 23-5.

**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	.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	Tonnes (kt)	Grade			Contained Metal			Gold Equivalent	
		Au	Ag	Cu	Au	Ag	Cu	AuEq	AuEq
		(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**

<b>Year</b>	<b>Production (Oz)</b>
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	453,778
2024	452,523
<b>Total Production</b>	<b>3,608,941</b>

Source: S&P Capital IQ pro. Effective December 11, 2023. and Torex webpage effective October 17, 2025, for 2023 and 2024 data.

**24 OTHER RELEVANT DATA AND INFORMATION**

There is no other relevant data or information available about 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 positive economic results obtained for the Ana Paula Project. The Project contains 5.625 million tonnes of gold-bearing sulfide mineralization that can be mined by underground stoping method. Gold can be recovered by gravity concentration, flotation of a sulfide concentrate, biological oxidation of the concentrate, and cyanide leaching of the oxidized concentrate.

As demonstrated by the information contained in this technical report, the Project could be economically viable and should proceed to a feasibility level study.

### **25.1 OVERALL RESULTS**

The results of the preliminary economic analysis show economic viability for the Ana Paula Project. The after-tax economic indicators at US\$2,400/oz Au and 5% discount rate are as follows:

- NPV (5%) US\$ 426 M
- IRR 28.1%
- Payback 2.9 years

While the QPs have confidence in the level of study completed and the results of the PEA, it is with the understanding that the PEA is preliminary in nature and includes Inferred Mineral Resources, which are considered too speculative geologically to have the economic considerations applied to them to be categorized as Mineral Reserves, and there is no certainty that the preliminary economic assessment will be realized.

### **25.2 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 most significant potential risks associated with the Project are lower gold recoveries than those projected, unanticipated mining dilution, operating and capital cost escalation, permitting and environmental compliance, unforeseen schedule delays, changes in regulatory requirements, ability to raise 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 achieved. External risks are things such as 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 confidence in the resource estimate and de-risk the Project.
Metallurgical Recoveries - Flotation	Metallurgical tests were performed on two LOM composites that contained higher sulfide sulfur than predicted by the mine plan. Flotation recoveries and flotation time requirements could deviate from current assumptions.	Heliostar has embarked on a new drilling program with PQ cores to obtain variability samples over the mineral deposit and assemble an LOM composite that is consistent with the mine plan.
Metallurgical Recoveries - BIOX®	The biological oxidation tests were batch tests performed on a combined concentrate sample obtained from the two LOM composites. The effects of mineral variability on the process have not been demonstrated. A continuous pilot plant test is also called for to demonstrate industrial-scale sustainability of the process.	Variability batch testing and continuous pilot plant testing are planned for the next study. Drilling for these tests is scheduled to be completed in the first quarter of 2026.
Process Plant - Raw water requirement	The BIOX® process is conducted at low pulp densities (15% solids). It loses a lot of water from the cooling water stream by evaporation in the cooling tower(s). Even with filtered tailing, the raw water consumption for Ana Paula is estimated to be twice as much as a flotation operation with conventional tailing storage.	A complete evaporation loss study over a typical or average year cycle should be part of the mill water balance study. This study should include a more detailed look at the cooling tower losses and at rates of evaporation from several tanks in the plant, particularly hot aerated slurries.
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-base 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 that would be adequate, particularly with the high water requirement of the BIOX® plant.	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.

<b>Risk</b>	<b>Explanation/ Potential Impact</b>	<b>Possible Risk Mitigation</b>
Mining: Not achieving development and/or production rates or mobile equipment productivities	Reduction in production rate and an increase in operating costs.	Consider automation such as tele-remote drilling, mucking and hauling between shifts
Mining	Ramp congestion reduces truck productivity.	Take a tiered approach with a view to reducing total cost impact to the site: <ul style="list-style-type: none"> <li>• Implement a 2-way radio type traffic light system triggered by mobile equipment operators to indicate the presence of equipment on the ramp.</li> </ul> Implement a fleet management or similar vehicle tracking system that would provide more data and have greater effectiveness with ramp traffic management.
Mining: Lower mobile equipment mechanical availability.	Production shortfall resulting in increased operating costs.	Assess effectiveness of the mobile equipment reliability maintenance program and put controls in place to address root causes. Assess capital spare components for mobile equipment should availability of repair parts be a contributing factor to the reduced mechanical availability. If component reliability on either re-build or re-manufactured equipment is found to be a contributing factor, purchase new replacement machines.
Mining: Higher than planned dilution	Reduction in annual gold production and increased tailing generation.	Review drilling and blasting practices, engaging expert professionals as required until the root causal factors are understood and controlled. Should dilution be coming from paste backfilled stopes, assess binder content in addition to drilling and blasting practices. Ensure where possible the drilling control system onboard the Jumbo is utilized to increase drill pattern execution compliance.

### **25.3 POTENTIAL 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	Further testing may provide processing options that could improve the economics of the project. These include flotation variability tests, sequential flotation, use of gold-specific flotation reagents, and alternate oxidation processes, for example, the Albion process or intensive cyanidation.	Potential increase in overall gold recovery or potential improvement in operating cost. Alternate oxidation technologies may result in slightly lower recoveries but with decreased operating costs that may improve the economics.
Optimization of the Process Plant	More testing with variability samples may refine process flow parameters for improved equipment sizing and flowsheet. Water recovery systems from the BIOX® streams could be rationalized more to determine optimal dewatering systems. Availability of detailed geotechnical data for the plant site can optimize foundation design.	May lower capital and operating costs.
Limestone Supply	One of the largest consumables for this project is limestone used to neutralize BIOX® liquor. The next study should survey limestone prices. The best option may be to develop a limestone quarry close to the project.	Potential 50% savings on limestone cost.
Low Grade Material	Mine development may require extracting material classified as low grade that could be stockpiled on surface to be processed at the end of the mine life	Potential to recover some gold ounces toward the end of the project at a lower production cost
Permitting	Project already has an approved permit for open pit mine, amending the permit for an underground mine will reduce the area impacted	Improved public perception of the project and mining company
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.
Conversion of Inferred resources to Measured and/or Indicated	Inferred resources are included in the production schedule; however, a plan to infill drill specific areas could increase Measured and Indicated resources. Operational definition drilling will test Inferred resources as part of the production sequence.	Increased understanding of Mineral Resource and ability to include in a Feasibility Study.
Refinement of stope geometry and development layout	Reviewing geotechnical, economic, and dilution of primary and secondary stope dimensions.	Reducing primary stope dimensions may decrease binder consumption and operating costs

## 25.4 GEOLOGY AND RESOURCE MODEL

The Ana Paula Deposit is consistent with other intrusion related and skarn deposits of the GCB.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization in the different zones is sufficient to support estimation of Mineral Resources. The geological knowledge of the area is also considered sufficiently acceptable to reliably inform mine planning.

The mineralization style and setting are sufficiently well understood and can support declaration of Mineral Resources.

The exploration programs completed to date are appropriate for the deposit style. Opportunities exist to expand the known limits of mineralization at Ana Paula by exploring at depth where mineralization remains open. The majority of the drilling has focused on the areas immediately around the Ana Paula deposit. Surface sampling around the much wider concession limit has identified additional exploration targets which should be followed up with additional exploration.

Sampling methods are acceptable for Mineral Resource estimation.

The sample preparation, security and analysis are appropriate to support Mineral Resource estimation.

The quantity and quality of the lithological, collar and down-hole survey data collected during the exploration and delineation drilling programs are sufficient to support Mineral Resource. The collected sample data adequately reflect deposit dimensions, true widths of mineralization, and the deposit style. Sampling is representative of the gold grades in the deposits, reflecting areas of higher and lower grades.

The data verification programs concluded that the data collected adequately support the geological interpretations and constitute a database of sufficient quality to support the use of the data in Mineral Resource estimation and preliminary technical studies.

Mineral Resources are reported insitu, using the 2014 CIM Definition Standards Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. Inferred mineral resources are that part of a mineral resource for which the grade or quality are estimated on the basis of limited geological evidence and sampling. Inferred mineral resources do not have demonstrated economic viability and may not be converted to mineral reserves. It is reasonably expected, though not guaranteed, that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.

Factors that may affect the Mineral Resource estimate include changes to:

- Metal price and exchange rate assumptions;
- Assumptions used to generate the estimation domains;
- Local interpretations of mineralization geometry and continuity of mineralized zones;
- Geological and mineralization shape and geological and grade continuity assumptions;
- Treatment of high-grade gold values;
- Density assignments;
- Changes to the assumptions used to generate the gold cut-off grades;
- Geotechnical assumptions used for assumed optimized stope orientations;
- Metallurgical recovery assumptions;
- Input and design parameter assumptions that pertain to the optimized stopes used to constrain the estimates;
- Assumptions as to the ability to access the site, retain mineral and surface rights titles, obtain environment and other regulatory permits, and obtain the social license to operate.

There are no other environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors known to the QP that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

The Mineral Resource Statement presented in Table 14-5 assumes a recovery of 90% across all estimation domains based on a comminution, flotation, BIOX®, CIL metallurgical flow sheet. While the QP believes the assumption to be reasonable based on test work described in section 13, 40% of the total gold ounces, approximately 500,000 oz, can be characterized by metallurgical sample LOM-01. 34% of the total gold ounces can be characterized by LOM-02. 26%

of the ounces lie outside of the envelope used to define LOM-01 and LOM-02. The QP recommends additional drilling and metallurgical testing in those areas of the Mineral Resource.

The reported mineral resource is well supported by drilling. 83% of the tonnes and gold ounces classified as Measured and Indicated are estimated with four or more drill holes. In total, 77% of the tonnes and gold ounces are estimated with three or more drill holes, and only 6% of the total tonnes and gold ounces are supported by a single drill hole and classified as Inferred. There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

## **25.5 METALLURGY**

The following conclusions may be drawn from the 2024-2025 Ana Paula metallurgical testwork program:

- Whole rock cyanide leaching of two resulted in gold recoveries of 79% for APLOM24-01 and 39% for APLOM24-02. The APLOM24-BLEND recovery was 60%.
- Gravity recoverable gold is present at Ana Paula. Anticipated gold recovery from gravity in the plant is anticipated to be approximately 15% of total gold, utilizing Knelson concentrators with table finish.
- Flotation
  - Bulk sulfide flotation produced gold recoveries of 95% (APLOM24-01) to 96% (PLOM24-02) to the flotation concentrate.
  - Mass pull to flotation concentrate was 17% for APLOM24-01 and 25% for APLOM-02. Mass pull is influenced by the sulfur content of the material, where higher sulfur feeds result in a larger mass recovery to the flotation concentrate.
- Gold extractions from concentrate leaches averaged:
  - 77% from APLOM24-01, with the best performance being of 80%. This resulted in an overall gold recovery of 76%
  - 39% from APLOM24-02, resulting in an overall gold recovery of 37%.
- Post-BIOX<sup>®</sup> cyanidation resulted in a leach gold recovery of 95%
- Overall gold recovery using flotation- BIOX<sup>®</sup>- cyanidation is 90%.

## **25.6 MINING**

The underground mine design developed for this PEA demonstrates that the Ana Paula Project has the potential to be technically and economically viable, subject to the assumptions and inputs applied. While the design is preliminary and based on limited data, no fatal flaws have been identified that would preclude advancing the Ana Paula Project to the next stage of evaluation.

- Technical Viability:
  - The mineralization can be mined using the selected longhole stoping methods and they are appropriate for the deposit geometry, depth, grade distribution, and geotechnical conditions.
  - The proposed mine design and layout are achievable with conventional underground mining practices.
- Mineability of the Mineral Resource:
  - A portion of the Mineral Resource can be converted to a minable inventory through the understanding and application of reasonable mining constraints.

- The resulting mine design demonstrated that the deposit has sufficient continuity and geometry to support underground mining.
- The design confirms that the Mineral Resource is amenable to longhole stoping with paste backfill.
- Production Rate and Mine Life:
  - The underground design and schedule support a steady state production rate with consistent access development, ventilation, and material handling assumptions.
  - The mine plan demonstrated that the mine life is long enough to justify the required capital investment.
  - Development and production rates are achievable using industry standard rates, benchmarks, and first principles build-ups.

**26 RECOMMENDATIONS**

It is recommended that the Ana Paula Project be advanced as an underground mine through Feasibility Study (FS). 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.

The costs of an FS-level study for an underground mine are estimated to be \$6.9 million USD and are summarized in Table 26-1.

**Table 26-1: Feasibility Study Estimated Costs**

<b>Item</b>	<b>Cost (US\$000)</b>	<b>Description</b>
Metallurgical Testwork Blue Coast Research	315	Metallurgical Core Sampling, Variability flotation testwork, comminution testwork, Analysis and Interpretation.
Metallurgical Testwork METSO	740	BIOX® Pilot Plant Testwork, Analysis and Interpretation
Tailing Management and Waste Rock, Facilities	1,850	Geotechnical and Design Engineering for Tailing Management and Waste Rock Facilities. Hydrogeology and Geochemical Characterization.
Tradeoff studies and Water Supply	230	Tradeoff studies between BIOX®, Albion and intensive cyanidation. Water investigation
Resource modeling	100	Update geologic model and mineral resource estimate with results from the 2025/2026 drilling.
FS Mine Engineering	1,000	FS-Level Mine and Mine Infrastructure Designs.
Process Engineer consultant	100	Metallurgical test work review and process design
FS BIOX® Engineering	450	BIOX® plant design by METSO
FS Process, Infrastructure Engineering & Management Services	2,160	FS-Level Process and Infrastructure Designs.
<b>Total</b>	<b>6,945</b>	<b>Excludes Owner's Costs</b>

**26.1 GEOLOGY AND RESOURCE**

Several additional lines of geologic study are recommended to advance Ana Paula to an underground mining focused FS 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, sulfur, copper, arsenic, and bismuth.
- Assaying current and historic holes for Sulfide Sulfur 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 through 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 FS level study. However, there are several programs that can be undertaken to reduce risk and improve the quality of the resource and geologic understanding. Infill drilling of the High-Grade Panel. Drill spacing optimization will improve estimation and upgrade classification.

- Conduct expansion and near-mine drilling testing targets such as the North Zone, parallel panel, and deep extension zone.
- The total infill and step out drilling could be up to 20,000 m.
- Additional resource modeling work to identify, quantify, and attempt to mitigate potential risks in the mineral resource estimate
- Conduct district level drilling testing targets peripheral to Ana Paula.

## **26.2 METALLURGY AND RECOVERY METHODS**

Based on the metallurgical testwork conducted to date, the following additional testwork is recommended to advance the project to a feasibility study (FS) level:

- Further biological oxidation testing, including a continuous pilot plant and a set of batch variability tests.
- Additional grindability testing on domain and variability composites from the Ana Paula resource.
- Flotation variability testing on samples collected from across the Ana Paula resource.
- Alternate Processing Tests
  - Intensive cyanidation of ultra-fine ground concentrates using oxygen injection or addition of other oxidants.
  - Albion Process testing of concentrates that are representative of the mineral deposit to update a previous study performed in 2013 for Newstrike.

The estimated costs of metallurgical testing for a FS level study is a total of \$1,045,000 excluding any drilling costs that may be required.

The current plan to biologically oxidize flotation concentrate requires a large footprint in a challenging location. In addition, the raw water requirement is about twice as much as is typical even with filtered tailing. It is therefore recommended that the feasibility study include the following:

- Economic tradeoff studies between BIOX<sup>®</sup>, Albion and intensive cyanidation.
- A detailed evaporation loss study over a typical-year weather cycle.
- Define or determine the sources of raw water over the life of mine, to ensure that the requirements of the plant will be met.

The estimated total cost for these studies is \$200,000, excluding costs of metallurgical tests, which are covered in the previous paragraph.

### **26.3 TAILING MANAGEMENT AND WASTE ROCK FACILITIES**

Scope will be to bring forward the FTSF and WRF designs to FS level and contribute to incorporating the designs to the NI 43-101 report.

The following SOW is proposed:

- Trade-off studies
  - Selecting one WRF location
  - Tailings disposal approach (i.e., convention disposal vs filtered tailings)
- Design basis and design criteria
  - Risk register
- Materials characterization
  - Tailing characterization
  - Waste rock characterization
- Site characterization
  - Site investigation
  - Geotechnical laboratory testing
  - Seismic Hazard Assessment update
- Geotechnical engineering and analyses
- Hydrogeological analyses
- Geochemical assessments
- Surface water management plan
- Site wide water balance
- Runout breach study
- FTSF and WRF civil design
  - Containment design
  - Stacking plan
  - Progressive closure considerations
  - Material take-offs and cost estimate support
- Conceptual closure plan
- Reporting
  - FS design report
  - Contribution to NI 43-101

The estimated total cost for these studies is \$1,850,000

## **26.4 MINE ENGINEERING**

- Review and import mineral resource block models into applicable mine planning and optimization software, verify resource model transfer
- Review and update any mining context changes (grade, dip, width, depth, continuity, variability, mineralization, rock mechanics, hydrogeology)
- Conduct FS-level geotechnical analyses based on the data provided
- Select preliminary UG stope optimization and mine design criteria
- Estimate cut-off value (COV)
- Conduct UG stope optimizations and finalize mining method(s)
- Conduct analysis and trade-offs to determine the ultimate production capacity of the deposit
- Conduct paste backfill engineering
- Capital and operating cost input
- Define final detailed UG stope designs
- Complete UG mine development and infrastructure design
- Produce a detailed UG development and production schedule
- Calculate NI 43-101 compliant Mineral Reserve statement
- Coordination with other team members and provide inputs to waste rock and tailings management construction materials and quantities
- Estimate UG mobile equipment requirements
- Estimate labour for UG operations, technical services, maintenance, administration, training

The estimated cost for mine engineering is \$1,000,000

## **26.5 BIOX® ENGINEERING**

BIOX® basic engineering will be carried out to determine the basis for the process and layout design and equipment requirements prior to entering the detailed engineering and equipment delivery phases.

Metso's basic engineering scope will be carried out for process areas within the battery limits of the BIOX® plant

FS BIOX® engineering is estimated at \$450,000

## **26.6 ENGINEERING AND MANAGEMENT SERVICES**

Scope of services includes the following main tasks:

- Develop a set of activities, trade-off studies and deliverables necessary to bring the Ana Paula Project to a Feasibility Study level of definition. The Consultant will identify all necessary studies to be performed during the FS phase. The Consultant will take the current project documentation and will continue the study work to reduce uncertainties and reach the required accuracy level for a Class 3 level of estimate.

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- Review the PEA's outcome for correcting and improving any deficiency of these deliverables during the execution of the FS. This implies that the PEA documentation will be taken as referential
- Timely identification of required surveys to ensure the necessary information to develop a quality FS (Metallurgical, geotechnical, etc.). The Consultant will be responsible for defining all required studies (even when such studies will be provided by others) and review each one when developed to ensure that they are adequate to reach project development.
- Provide engineering to complete capital and operating cost estimates.
- Develop project execution plan and schedule to complete the Feasibility Study
- Provide NI 43-101 Feasibility Study report chapters, providing corresponding Qualified Person (QP) to certify the technical information contained in the selected chapter assigned to the Consultant.

FS engineering and management is estimated at \$2,160,000

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**APPENDIX A – PEA CONTRIBUTORS AND PROFESSIONAL QUALIFICATIONS**

## CERTIFICATE OF QUALIFIED PERSON

**Alberto Bennett**

I, Alberto Bennett, PE, do hereby certify that:

1. I am currently employed as President and CEO of  
M3 Engineering & Technology Corporation  
2051 W. Sunset Road, Ste. 101  
Tucson, Arizona 85704  
U.S.A.
2. I am a graduate of Instituto Tecnológico y de Estudios Superiores de Monterrey CSN in Mexico and received a Bachelor of Science degree in Electro-Mechanical Engineering in 1990.
3. I am a Registered Professional Engineer in the State of Arizona (No. 38810).
4. I have practiced electrical engineering, project engineering, construction management and project management for 35 years. I have worked for the mining and engineering company, M3 Engineering & Technology Corporation, for 27 years, for a construction and manufacturing company for 4 years, an assay lab for 1 year, and engineering consulting companies for 2 years. I have worked on scoping, pre-feasibility and feasibility studies for mining projects in Latin America, as well as worked on the design and construction phases of some of these projects and have been closely involved in the equipment procurement, contract development, construction management and cost control during the development of these mining projects.
5. I have read the definition of “qualified person” set out in National instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I am responsible for Sections 1, 1.1, 1.7, 1.9.1 to 1.9.4, 1.9.7, 1.10 to 1.15, 2, 3, 4, 5, 6, 12.1.1, 18 (except 18.2), 19, 20, 21, 22, 23, 24, and corresponding sections of 25, 26, and 27 in the preparation of the technical report titled “Ana Paula Project, NI 43-101, Preliminary Economic Assessment” (the “Technical Report”), dated effective November 6, 2025, prepared for Heliostar Metals Limited. I visited the Ana Paula site on October 22-23, 2025.
7. I have not had prior involvement with the property that is the subject of the 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 Technical Report for which I am responsible for contain all scientific and technical information that is required to be disclosed to make the report not misleading.
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 those portions of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 15 day of December 2025.

(Signed and Sealed)  
Signature of Qualified Person

Alberto Bennett, PE \_\_\_\_\_  
Print Name of Qualified Person

## CERTIFICATE OF QUALIFIED PERSON

**Art S. Ibrado**

I, Art S. Ibrado, PhD, PE, do hereby certify that:

1. I am a metallurgical engineer with Fort Lowell Consulting PLLC, 1700 E River Rd #64833, Tucson, AZ 85728, USA.
2. I hold the following degrees: Bachelor of Science in Metallurgical Engineering, *cum laude*, University of the Philippines, 1980, Master of Science (Metallurgy), University of California, Berkeley, 1986, and Doctor of Philosophy (Metallurgy), University of California, Berkeley, 1993
3. I am a registered professional engineer in the State of Arizona (No. 58140), the State of Idaho (No. 22492), and the State of Nevada (No. 031704).
4. I have worked as a metallurgist in the academic and research settings for 12 years in the US and Australia, in the mining industry for 15 years in the Philippines and Nevada, and in engineering and consulting for 18 years. I conducted research and published peer-reviewed papers on the adsorption of gold cyanide on activated carbon and the oxidation of refractory gold ores. My industrial experience comprise work in the Philippines and Nevada, for four mining companies, including copper flotation, carbon-in-pulp (CIP) and carbon-in-leach (CIL) processes for gold recovery, and gold smelting. At M3 Engineering, I was project manager or lead process engineer for several studies on the processing of Cu, Au, Pb, Zn ores and took part in the commissioning of the Peñasquito and Cananea process plants. As an independent consultant, I steered the restart of the adsorption, desorption and regeneration (ADR) plant at Çöpler Mine in Türkiye, and I provide metallurgical support for a few studies or optimization of gold and copper processing plants.
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, professional engineer registration, and past relevant experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am a contributing author of “Ana Paula Project, NI 43-101 Preliminary Economic Assessment” (the “Technical Report”), dated effective November 6, 2025, prepared for Heliostar Metals Ltd. I am responsible for Sections 1.8, 1.9.5, 12.1.2, 17, and corresponding sections of 25, 26, and 27. I have not visited the project site.
7. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
8. I am independent of Heliostar Metals Limited, applying all tests in Section 1.5 of NI 43-101. I do not own any Heliostar Metals Ltd. stocks or shares.
9. My prior involvement with the Ana Paula Project includes the preparation of the Preliminary Feasibility Study Technical Report dated May 16, 2017 for Alio Gold Inc., which was updated on February 28, 2023 for Heliostar Metals Ltd.
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.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their website accessible by the public, of the Technical Report.

Signed and dated this 11<sup>th</sup> Day of December 2025.

“Art Ibrado”  
Art S. Ibrado, PhD, PE



## CERTIFICATE OF QUALIFIED PERSON

**Andrew Kelly**

I, Andrew Kelly, P.Eng, do hereby certify that:

1. I am the President and Senior Metallurgist of:

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 over 20 years. My relevant experience includes work on both base and precious metals projects covering plant operations and laboratory settings, with specific experience using flotation and numerous gold processing techniques.
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 Preliminary Economic Assessment” (the “Technical Report”), dated effective November 06, 2025, prepared for Heliostar Metals Ltd.; and am responsible for Sections 1.4, 12.1.3, 13, and corresponding sections of 25, 26 and 27.
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 Mineral Resource Estimate entitled Ana Paula Project NI 43-101 Technical Report Mineral Resource Estimate Update Guerrero, Mexico” dated effective November 27, 2023. Previously, 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”, (the “Technical Report”), dated effective May 16, 2017, prepared for Alio Gold Inc.
9. I am currently managing on-going metallurgical testwork on behalf of Heliostar Metals supporting the continued development of the Ana Paula project.
10. As of the effective date 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.
11. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.

12. 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.
13. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 15 day of December, 2025.

"Andrew Kelly"  
Andrew Kelly, P.Eng.

## CERTIFICATE OF QUALIFIED PERSON

### Richard Schwering

I, Richard Schwering, PG, SME-RM, do hereby certify that:

1. I am the Principal Resource Geologist of:  

Hard Rock Consulting, LLC  
13918 E Mississippi Ave. Suite 474 Auroa, CO 80012
2. I graduated with a with a Bachelor of Arts in Geology, in 2009 from University of Colorado, Boulder and have practiced my profession continuously since 2009.
3. I am a Registered Member of the Society of Mining and Metallurgy and Exploration (No. 4223152RM) in good standing in the areas of Geology and Resource Modeling. I am also registered as Licensed Professional Geologist in the State of Wyoming (PG-4086).
4. I have worked as a geologist for 16 years and as a resource geologist for a total of 11 years since my graduation from university; as an employee of a junior exploration company, as an independent consultant, and as an employee of various consulting firms with experience in structurally-controlled precious and base metal deposits
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 Preliminary Economic Assessment” (the “Technical Report”), dated effective November 06, 2025, prepared for Heliostar Metals Ltd.; and am responsible for Sections 1.2, 1.3, 1.5, 7, 8, 9, 10, 11, 12, 14, and corresponding sections of 25, 26 and 27. I have visited the project site on April 10, 2025.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I was involved in the preparation of part of the technical report for Heliostar Metals Ltd. San Antonio Project titled “San Antonio Project, Baja California Sur, Mexico, NI 43-101 Technical Report on Preliminary Economic Assessment” with an effective date of 30 November, 2024.
9. As of the effective date 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.
12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 15 day of December, 2025.

“signed”  
Signature of Qualified Person

Richard Schwering  
Print Name of Qualified Person

## CERTIFICATE OF QUALIFIED PERSON

**Paul Thornton**

I, Paul Thornton, P.Eng, do hereby certify that:

1. I am a Senior Mining Engineer of:  

JDS Energy & Mining Inc.  
Suite 900 – 999 W Hastings St, Vancouver, BC, Canada V6C 2W2
2. I graduated from the University of British Columbia in 2016 with a B.A.Sc in Mining Engineering. I have practiced my profession consistently since 2017.
3. I am a Registered Professional Engineer (#56236) in good standing in British Columbia.
4. I have worked as an engineer for a total of 8 years. My experience includes mine design and scheduling, field engineering and mine surveying, project management, cost estimation, construction planning and construction management for mining projects.
5. I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am a contributing author for the preparation of the technical report titled “Ana Paula Project, NI 43-101 Preliminary Economic Assessment” (the “Technical Report”), dated effective November 06, 2025, prepared for Heliostar Metals Ltd.; and am responsible for Sections 1.6, 12.1.4, 16 (except 16.2), and corresponding sections of 25, 26, and 27. I have visited the project site on September 25, 2025.
7. I have had no prior involvement with the property that is the subject of the Technical Report.
8. As of the effective date 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.
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.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 15 day of December, 2025.

Paul Thornton  
Paul Thornton, P.Eng

## CERTIFICATE OF QUALIFIED PERSON

### Gilberto Dominguez

I, Gilberto Dominguez, P.E., do hereby certify that:

1. I am Vice-President, Civil Executive Engineer of:

Knight Piésold and Co.  
1999 Broadway, Suite 900  
Denver, CO 80202  
USA

2. I graduated in 1994 from Washington University in St. Louis with a Master of Science in Civil Engineering, in 1992 from the Pennsylvania State University also with a Master of Science in Civil Engineering, and from the Pontificia Universidad Católica del Perú, with a Bachelor of Science in Civil Engineering in 1989.
3. I am a Registered Professional Engineer in good standing in the state of Colorado (registration number 32075). I am also registered as a professional engineer in Peru as a Civil Engineer (registration number 63974).
4. I have worked as a Civil Engineer for a total of 32 years. My experience includes design of heap leach pads, waste and tailings management facilities, dams and reservoirs, geotechnical studies, construction management and quality assurance/control, environmental and permitting processes, and project management.
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 Preliminary Economic Assessment” (the “Technical Report”), dated effective November 06, 2025, prepared for Heliostar Metals Ltd.; and am responsible for Sections 1.9.6, 12.1.6, 18.2, and corresponding sections of 25, 26, and 27. I visited the project site on June 2016.
7. I was a contributing author and Qualified Person of the technical report titled “Ana Paula Project, NI 43-101 Technical Report, Preliminary Feasibility Study Update, Guerrero, Mexico”, dated effective February 28, 2023, prepared for Heliostar Metals Ltd.
8. I was a contributing author and Qualified Person of the technical report titled “Ana Paula Project, NI 43-101 Technical Report, Amended Preliminary Feasibility Study, Guerrero, Mexico”, dated effective May 16, 2017, prepared for Alio Gold Inc.
9. As of the effective date 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 an independent of the issuer applying all of the definitions 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.
12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 16th day of December, 2025.

Gilberto Dominguez  
Gilberto Dominguez, P.E.

## CERTIFICATE OF QUALIFIED PERSON

**Mike Levy**

I, Mike Levy, P.Eng., do hereby certify that:

1. I am employed as Geotechnical Manager with JDS Energy & Mining Inc. with an office at Suite 900 - 999 West Hastings St, Vancouver, BC V6C 2W2.
2. I hold a bachelor's degree (B.Sc.) in Geology from the University of Iowa in 1998 and a Master of Science degree (M.Sc.) in Civil-Geotechnical Engineering from the University of Colorado in 2004.
3. I am a registered Professional Engineer (P.E.) in the states of Colorado (#40268) and registered Professional Engineer (P.Eng.) in the province of British Columbia (#216542). I am a current member of the Society for Mining, Metallurgy & Exploration (SME) and the American Society of Civil Engineers (ASCE).
4. I have practiced my profession continuously for 26 years (since 1999) and have been involved in numerous mining geotechnical projects across the Americas.
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 Preliminary Economic Assessment" (the "Technical Report"), dated effective November 06, 2025, prepared for Heliostar Metals Ltd.; and am responsible for Sections 12.1.7, 16.2, and corresponding sections of 25, 26, and 27. I have not visited the project site.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. As of the effective date 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.
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.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Signed and dated this 15 day of December 2025.

Michael Levy  
Mike Levy P.Eng.