MINERAL RESOURCE ESTIMATE UPDATE AND NI 43-101 TECHNICAL REPORT FOR THE SANTA CRUZ, TEXACO, AND EAST RIDGE DEPOSITS, ARIZONA, USA

PREPARED FOR: IVANHOE ELECTRIC INC.

TECHNICAL REPORT ISSUE DATE: MARCH 14, 2023

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Prepared for:

Ivanhoe Electric Inc.

Project # 2-01

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PREPARED AND SIGNED BY

The undersigned prepared this Technical Report titled "Mineral Resource Estimate Update and NI 43-101 Technical Report for the Santa Cruz, Texaco, and East Ridge Deposits, Arizona, USA" and dated March 14, 2023. The format and content of this Technical Report conforms to National Instrument 43-101 of the Canadian Securities Administrators.

Nordmin Engineering Ltd.

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REVISION HISTORY

REV. NO	ISSUE DATE	PREPARED BY	REVIEWED BY	APPROVED BY	DESCRIPTION OF REVISION
	February 24, 2023	Nordmin	IE		Initial Draft
	March 1, 2023	Nordmin	IE		Draft
	March 14, 2023	Nordmin	QPs	QPs	Final Issue

FORWARD-LOOKING STATEMENT

This document includes certain “forward-looking” information and "forward-looking statements" within the meaning of applicable securities legislation, together, forward-looking statements. All statements, other than statements of historical facts constitute forward-looking statements. Forward-looking statements estimates and statements that describe the Company's future plans, objectives or goals, including words to the effect that the Company or management expects a stated condition or result to occur. Forward-looking statements may be identified by such terms as "believes", "anticipates", "expects", "estimates", "may", "will", "could", "would", "if", "yet", "potential", "undetermined", "objective", "plan" or similar expressions. Since forward-looking statements are based on assumptions and estimates and address future events and conditions, by their very nature, they involve inherent risk, and uncertainties. Although these statements are based on information currently available to the authors of this Technical Report and the Company, the authors provide no assurance that actual results will meet the expectations set forth herein. Risks, uncertainties, and other factors, known and unknown, involved with forward-looking statements could cause actual events, results, performance, prospects, and opportunities to differ materially from those expressed or implied by such forward-looking statements. Forward-looking statements in this Technical Report include, but are not limited to, the Company's objectives, goals, future plans, statements, exploration results, potential mineralization, estimation of Mineral Resources, exploration, and mine development plans, the timing of the commencement of operations and estimates of market conditions. Furthermore, forward-looking statements include disclosure regarding the project parameters, including, without limitation, costs, and possible events, conditions, or financial performance that is based on assumptions about future economic conditions and courses of action; the timing and costs of future development and exploration activities on the Company's projects; success of development and exploration activities; permitting time lines and requirements; time lines for further studies; planned exploration and development of properties and the results thereof; and planned expenditures and budgets and the execution thereof. Factors that could cause actual results to differ materially from such forward-looking statements include, but are not limited to the failure to identify Mineral Resources, failure to convert estimated Mineral Resources to reserves, the inability to complete a feasibility study which recommends a production decision, the preliminary nature of a prefeasibility study and the metallurgical test results, geotechnical challenges, delays in obtaining or failures to obtain required governmental, environmental, or other project approvals, political risks, inability to fulfill the duty to accommodate First Nations and other Indigenous Peoples, uncertainties relating to epidemics, pandemics and other public health crises, including COVID-19, or similar such viruses, uncertainties relating to the availability and costs of financing needed in the future, changes in equity markets, inflation, changes in foreign currency exchange rates, fluctuations in commodity prices, delays in the development of projects, capital and operating costs varying significantly from estimates and the other risks involved in the mineral exploration and development industry, and those risks set out in the Company's public documents filed on the System for Electronic Document Analysis and Retrieval ("SEDAR"). Although the authors believes that the assumptions and factors used in preparing the forward-looking statements in this Technical Report are reasonable, undue reliance should not be placed on such forward-looking statements, which only apply as of the date of this Technical Report, and no assurance can be given that such events will occur in the disclosed time frames or at all. The authors disclaim any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, other than as required by applicable law.

CAUTIONARY NOTE TO US READERS REGARDING ESTIMATES OF MEASURED, INDICATED AND INFERRED RESOURCES

This Technical Report uses the terms "Measured" and "Indicated" Mineral Resources and "Inferred" Mineral Resources. The Company advises US investors that, while these terms are recognized by the US Securities and Exchange Commission (SEC) under Regulation S-K subpart 1300, there are differences between the definitions ascribed to such terms under Regulation S-K subpart 1300 and the Canadian Institute of Mining (CIM) Standards.

The estimation of "Measured" and "Indicated" Mineral Resources involves greater uncertainty as to their existence and economic feasibility than the estimation of proven and probable reserves. The estimation of "Inferred" resources involves far greater uncertainty as to their existence and economic viability than the estimation of other categories of resources. It cannot be assumed that all or any part of a "Measured," "Indicated," or "Inferred" Mineral Resource will ever be upgraded to a higher category.

Under Canadian rules, estimates of "Inferred Mineral Resources" may not form the basis of feasibility studies, prefeasibility studies, or other economic studies, except in prescribed cases, such as in a preliminary economic assessment under certain circumstances. Under SEC rules, estimates of “Inferred Mineral Resources” may not be considered when assessing the economic viability of a mining project, and may not be converted to a mineral reserve. Under US standards, mineralization may not be classified as a "mineral reserve" unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. US investors are cautioned not to assume that any part or all of a "Measured," "Indicated," or "Inferred" Mineral Resource exists or is economically or legally mineable. Information concerning descriptions of mineralization and resources contained herein may not be comparable to information made public by US companies subject to the reporting and disclosure requirements under the SEC’s Regulation S-K subpart 1300.

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1 SUMMARY

Nordmin Engineering Ltd. (Nordmin) was retained by Ivanhoe Electric Inc. (IE or "the Company") to prepare a Canadian National Instrument 43-101 (NI 43-101) Technical Report (Technical Report) and Mineral Resource Estimate for the Santa Cruz Project ("the Project") located in Arizona, USA.

All measurement units used in this Technical Report are metric unless otherwise noted. Currency is expressed in United States of America (US$) dollars. The Technical Report uses Canadian English.

Mineral Resources are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019; 2019 CIM Best Practice Guidelines).

Nordmin completed several data verification checks throughout the duration of the Mineral Resource Estimate. The verification process included two site visits to the Santa Cruz Project by Nordmin to review surface geology, drill core geology, geological procedures, QA/QC procedures, chain of custody of drill core, and the collection of independent samples for assay verification. The site visits occurred from March 2nd to 6th, 2022 and November 7th to 10th, 2022. Multiple lab audits were completed in 2021 and 2022 by Nordmin and IE personnel. The analytical laboratories used for legacy and current assaying are well known in the industry, produce reliable data, are properly accredited, and are widely used within the industry.

1.0 Principal Outcomes

For the combined Santa Cruz, East Ridge and Texaco Deposits, Indicated and Inferred Mineral Resources are estimated to total 2.8 and 1.8 Mt total contained copper respectively. Cut-offs are provided in Section 1.6.1.

- Indicated Mineral Resources: 226.7 Mt at 1.24% TCu with 2.81 Mt contained TCu (1.30 Mt contained acid soluble Cu and 0.56 Mt contained cyanide soluble Cu)
- Inferred Mineral Resources: 149.0 Mt at 1.24% TCu with 1.85 Mt contained TCu (0.76 Mt contained acid soluble Cu and 0.47 Mt contained cyanide soluble Cu)

1.1 Property Description, Ownership and Location

The Santa Cruz Project is located 11 kilometers (km) west of the town of Casa Grande, Arizona, and is approximately one hour's drive south of the capital Phoenix and covers a cluster of deposits about 11 km long and 1.6 km wide. The Santa Cruz Project centroid is approximately -111.88212, 32.89319 (WGS84) in Township 6 S, Range 4E, Section 13, Quarter C.

The property and rights owned by IE, through its fully owned subsidiary Mesa Cobre Holding Corp., are described in Appendix A. IE has provided these rights and title to Nordmin. Nordmin has not researched property title or mineral rights for the Santa Cruz Project and considers it reasonable to rely on IEs legal counsel and Land Manager, who responsibility is the maintenance of this information.

1.1.1 Mineral Tenure, Surface Rights, Royalties, Agreements, and Permits

In 2021, IE executed an agreement with Central Arizona Resources (CAR) for the right to acquire 100% of CAR's option over the DRHE mineral title and CAR's Surface Use Agreement (SUA) with Legend Property Group. The

Santa Cruz exploration area covers 47.71 km^2, including 25.79 km^2 of private land, 2.6 km^2 of Stockraising Homestead Act (SRHA) lands, and 238 unpatented claims, or 19.32 km^2 of BLM land.

The Santa Cruz Project lies primarily on private land, which is dominantly fee simple. IE holds an option on the purchase of the mineral estate, while holding an exclusive agreement on surface use. Additional lands and rights were acquired by IE as options on private parcels and staking unpatented federal lode mining claims.

DRHE Option

The agreement with DR Horton Energy (DRHE) provides that IE, by way of assignment from CAR, has the right, but not the obligation, to earn 100% of the mineral title in the fee simple mineral estate, 39 Federal Unpatented mining claims, and three small approximately 10-acre surface parcels, in cash or IE shares at DRHE election. The agreement with DRHE also provides IE with a Right of First Refusal (ROFR) on certain surface parcels owned by Legend. This ROFR reserved by DRHE when the property was sold to Legend in 2007, and is now part of the rights being sold to IE, affords a great deal of control on the future outcome of the surface estate overlying the Santa Cruz Project.

Legend Surface Use Agreement

The SUA with Legend Property Group allows for the exclusive use of the property for the purposes of drilling and geophysical testing, as well as granting a Right of First Offer (ROFO) on the sale of the property.

Federal Unpatented Claims

By way of assignment and deed from CAR, IE holds 238 Federal unpatented mining claims. DRHE also holds 39 Federal unpatented mining claims in T06S R04E in N/2 Section 12, W/2 Section 23 and W/2 Section 24, which are subject to the Option.

Royalties

Noted royalties on future mineral development of the Project are summarized here:

- Royalty interests in favor of the royalty holders of a 5% net smelter return royalty interest for minerals derived from all portions of the property pursuant to terms contained therein recorded in the royalty document.
- Royalty interests in favor of the royalty holder of a 10% net smelter return royalty interest in section 13, 18, 19, and 24, Township 6 South, Range 4 East, for minerals derived from the property pursuant to terms contained therein recorded in the royalty document.
- Rights conveyed to the royalty holder in Sections 13, 18, 19, 24, Township 6 South, Range 4 East, consisting of 10% of one eight-hundredth of Fair Market Value and interest in the Cu and other associated minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Rights granted to the royalty holders, as joint tenants with right of survivorship, a royalty in sections 13, 18, 19, and 24, Township 6 South, Range 4 East, consisting of 30% of five tenths of one percent of the net smelter return from all minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Royalty interest of a 2.25% in favor of the royalty holder in Section 1, Township 6 South, Range 4 East, and Sections 6, 7, 8, and 17, Township 6 South, Range 5 East, for net smelter return royalty interest in minerals derived from the property pursuant to terms contained therein recorded in the royalty document.

- Rights conveyed to the royalty holder in Sections 13, 23, 24, 25, and 26, Township 6 South, Range 4 East and Sections 5, 6, 17, 18, 19, and 30, Township 6 South, Range 5 East, consisting of 60% of one eighth-hundredth of Fair Market Value and interest in the Cu and other minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Reservation of a 1% royalty interest in favor of the royalty holder recorded in the royalty document, for $E^1/_2$ of Section 5, Township 6 South, Range 5 East, south and west of Southern Pacific RR, "that when mined or extracted therefrom shall be equal in value to 1% of the net smelter returns on all ores, concentrated, and precipitates mined, and shipped from said property."
- Reservation of a royalty interest in favor of the royalty holders in the $SW^1/_4$ of Section 17, Township 6 South, Range 5 East, for an amount equal to one half of 1% net smelter returns in the sale and disposal of all ores, minerals, and other products mined and removed from the above described parcel and sold to a commercial smelter or chemical hydrometallurgical plant or one half of 1% of 60% of the sales price if the mine product is disposed of other than to a commercial smelter, additional provisions contained therein, recorded in the royalty documents.

1.2 Geological Setting, Deposit and Mineralization Types

The Santa Cruz Project is located within the northwest to southeast trending metallogenic belt known as the Southwestern Porphyry Copper Belt, which extends from northern Mexico into the southwestern United States. The belt includes many productive copper deposits in Arizona such as Mineral Park, Bagdad, Resolution, Miami-Globe, San Manuel-Kalamazoo, Ray, Morenci, and the neighbouring historical Sacaton Mine. These deposits lie within a broader physiographic region known as the Basin and Range province that covers and defines most of the southwestern United States and northwestern Mexico.

The porphyry copper deposits within the Southwestern Porphyry Copper Belt are the genetic product of igneous activity during the Laramide Orogeny (80 Ma to 50 Ma) when northeast-directed subduction of the Farallon Tectonic Plate beneath the North American Tectonic Plate produced a northwest-southeast-striking magmatic arc and associated porphyry copper systems.

The Santa Cruz Project is comprised of five separate areas along a southwest-northeast corridor. These areas from southwest to northeast are known as the Southwest Exploration Area, the Santa Cruz Deposit, the East Ridge Deposit, the Texaco Ridge Exploration Area, and the Texaco Deposit, all of which represent portions of one or more large porphyry copper systems separated by extensional Basin and Range normal faults. Each area has experienced variable periods of erosion, supergene enrichment, fault displacement, and tilting into their present positions.

Mineralization at the Santa Cruz Project is divided into three main groups:

- *Primary hypogene sulphide mineralization* consists of chalcopyrite, pyrite, and molybdenite hosted within quartz-sulphide stringers, veinlets, veins, vein breccias, and breccias and alteration related to Laramide-aged porphyritic dykes (75 Ma).
- *Secondary supergene sulphide mineralization* is dominantly chalcocite which rims primary hypogene sulphide and completely replaces hypogene disseminated and vein-hosted sulphides.
- *Supergene copper oxide mineralization* is comprised dominantly by chrysocolla (copper silicate) with subordinate dioptase, tenorite, cuprite, copper wad, and native copper, and as copper-bearing smectite

group clays. Superimposed in-situ within the copper oxide zone is atacamite (copper chloride) and copper sulphates (e.g., antlerite, chalcanthite).

1.3 Exploration

Copper mineralization was first discovered in the region in the 1960s and led to extensive drill programs across the Santa Cruz Project area. Exploration programs by several companies and joint ventures included diamond drilling and several geophysical surveys between the 1960s through the 1990s. IE completed a twin hole program in 2021 to validate the historical drill data and produce an initial Mineral Resource Estimate in 2021 (December 8, 2021) and accompanying Technical Report Summary (June 7, 2022).

IE exploration in 2021 – 2022 included:

- Geophysical surveys – ground gravity, ground magnetics, Typhoon™ three-dimensional Perpendicular Pole Dipole Induced Polarization (3D PPD IP), refraction, and passive seismic.
- Drilling – a combination of diamond drill and rotary drilling totaling 88 holes and approximately 55,291 m.

Combined with the historical exploration, there are over 170 drill holes totaling over 133 km within the Santa Cruz Project area.

1.4 Sample Analysis and Security

From September 2021 to December 2022, IE samples were sent to one of four laboratories: Skyline Laboratories facility located in Tucson, SGS Laboratories located in Burnaby, BC, Canada, SGS Lakefield, ON, Canada for SEQ Copper Analysis, or Arizona, American Assay Laboratories located in Sparks, Nevada. All samples sent to SGS Laboratories were prepared at SGS Burnaby, BC, Canada. At the time, all assay labs were well established and recognized assay and geochemical analytical services companies and are independent of IE.

All four laboratories are recognized by the International Standard demonstrating technical competence for a defined scope and the operation of a laboratory quality management system (ISO 17025). Additionally, Skyline Laboratories is recognized by ISO 9001, indicating that the quality management system conforms to the requirements of the international standard. SGS Canada Minerals Burnaby conforms to requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation. American Assay Laboratories carries approval from the State of Nevada Department of Conservation and Natural Resources Division of Environmental Protection. Due to QA/QC failures at American Assay Laboratories, IE discontinued work with this lab.

Specific gravity (SG) measurements for the Santa Cruz, Texaco, and East Ridge Deposits were provided during 2021-2022 on site drill core measurements. SG measurements were taken from representative core sample intervals and measured using a water dispersion method.

The Santa Cruz, Texaco, and East Ridge core is stored in wax impregnated core boxes and transported to the core logging shack. After being logged, the core boxes are palletized, weatherized, and stored in IE's core storage facilities. The core storage is locked behind bay doors or chain link fencing for security purposes. All samples for analyses are transported by courier to the laboratory in Tucson, Arizona, or Burnaby, BC, Canada.

1.5 Metallurgy and Processing Testwork

Metallurgy and processing testwork were directed by Met Engineering LLC and conducted at McClelland Labs in Sparks, Nevada. McClelland Labs is recognized by the International Accreditation Service (IAS) for its technical competence and quality of service and has proven that it meets recognized standards. The studies are ongoing. Study focus has been on:

- Confirming total copper recovery of the leach-float flow sheet proposed by historical operator, CGCC, circa 1980, on Exotic, Oxide and Chalcocite mineral domains.
- Investigating heap leaching of Exotic, Oxide and Chalcocite mineral domains. The test program for heap leaching is at an early stage and will not be reported on until a later stage of the Project.

Agitation leach tests undertaken in mid-2022 verified historical test results and after adjusting the particle size distribution, acid-soluble copper recovery of 92% was achieved. IE subsequently conducted a leach-float test program in which the same mill composite sample used in prior testing was subjected to the standard leach procedure developed earlier in the year. Three standard leach tests were conducted, each subjected to different grind sizes. Ivanhoe Electric successfully confirmed that up to 94% total copper recovery with the leach-float circuit was achievable at the Santa Cruz Deposit.

There are no processing factors or deleterious elements that could have a significant effect on economic extraction.

1.6 Mineral Resource Estimate

The December 31, 2022 Mineral Resource Estimate (MRE) includes a detailed geological and structural re-examination of the Santa Cruz, East Ridge, and Texaco Deposits.

The Santa Cruz Deposit MRE benefits from approximately 116,388 m of diamond drilling in 129 drill holes, the East Ridge Deposit MRE has 18 holes totaling 15,448 m, and the Texaco Deposit MRE has 23 drill holes totaling 21,289 m (Table 1-1). All drill holes were completed from 1964 to 2022.

Diamond drill hole samples were analyzed for total Cu and acid soluble Cu using AAS. A decade after initial drilling, ASARCO re-analyzed select samples for cyanide soluble Cu (AAS) and molybdenum (multi-element ICP). The Company currently analyzes all samples for total Cu, acid soluble Cu, cyanide soluble Cu, and molybdenum. Due to the re-analyses to determine cyanide soluble Cu within historic samples, there are instances where cyanide soluble Cu is greater than total Cu. It has been determined that the historic cyanide soluble assays are valid as they align with recent assays in 2022 drill holes.

Table 1-1: Drill Hole Summary

	Total Drilling			Ivanhoe Electric Drilling		
Deposit	Number of Drill Holes	Meters	Meters Intersecting the Deposit	Number of Drill Holes	Meters	Meters Intersecting the Deposit
Santa Cruz	129	116,388	57,326	41	34,769	14,172
East Ridge	18	15,448	1,501	0	0	0
Texaco	23	21,289	2,661	3	3,286	685
Total	**170**	**153,125**	**61,488**	**44**	**38,055**	**14,857**

Geological domains were developed within the Santa Cruz Project based upon geographical, lithological, and mineralogical characteristics, along with incorporating both regional and local structural information. Several extensional fault systems are recognised at Santa Cruz with a transport direction towards the south-west of which D1 is the oldest, followed by D2 faulting. Local D2 fault structures separate the mineralization at the adjacent Santa Cruz, Texaco, and East Ridge Deposits. The Santa Cruz, Texaco, and East Ridge Deposits were divided into four main geological domains based upon their type of Cu speciation, including primarily acid soluble (Oxide Domain), cyanide soluble (Chalcocite Enriched Domain), primary Cu sulphide (Primary Domain), and exotic Cu (Cu oxides in overlying Tertiary sediments). All four domains are present within the Santa Cruz Deposit, whereas all mineralization at East Ridge is within a copper Oxide Domain, and Texaco is comprised of all but an Exotic Domain.

Mineralization wireframes were initially created to reflect the known controls on each mineralization type. Once a geologic interpretation was established, wireframes were created. When not cut-off by drilling, the wireframes terminate at either the contact of the Cu-oxide boundary layer, the Tertiary sediments/Oracle Granite contact, or the D2 fault structure. There is an overlap of the Chalcocite Enriched Domain with both the Oxide Domain in the weathered supergene and with the Primary Domain in the primary hypogene mineralization. Otherwise, no wireframe overlapping exists within a given grade domain. Implicit modelling was completed in Leapfrog Geo™ which produced reasonable mineral domains that appropriately represent the known controls on grade mineralization.

A block model for each deposit was created that incorporated lithological, structural, and mineralization trends and selection of the block modelling parameters. Each block model validation process included visual comparisons between block estimates and composite grades in plan and section views, local versus global estimates for NN, ID2, ID3, and OK when available, and swath plots. The Santa Cruz Deposit block model was estimated using Nearest Neighbour (NN), inverse distance squared (ID2), inverse distance cubed (ID3), and ordinary kriging (OK) interpolation methods for global comparisons and validation purposes. The OK method was used for the Mineral Resource Estimate; it was selected over ID2, ID3, and NN as the OK method was the most representative approach to controlling the smoothing of grades. The Santa Cruz Deposit was estimated using NN, ID2, ID3, OK, and the OK method was used for the Mineral Resource Estimate. The Texaco and East Ridge block models were estimated using NN, ID2, and ID3, and the ID3 method was used for the mineral estimate for the Texaco and East Ridge Deposits.

Nordmin considers that the interpreted geological and mineralization domains produced accurately represents the deposit style of the Santa Cruz, Texaco, and East Ridge Deposits.

The Mineral Resource Estimate for the Project conforms to industry best practices and is reported using the 2014. CIM Definition Standard for Mineral Resources and Mineral Reserves and 2019 CIM Best Practice Guidelines. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.

Mineral Resource Classification was assigned to regions of the block model based on the Nordmin QP's confidence and judgment related to geological understanding, continuity of mineralization in conjunction with data quality, spatial continuity based on variography, estimation pass, data density, and block model representativeness.

The areas of greatest uncertainty are attributed to Inferred Resources, which are areas with limited drilling and/or large drill spacing (>100 m). Indicated Resources are resources derived from adequately detailed and reliable exploration, sampling, and testing, and are sufficient to assume geological and grade or quality continuity between points of observation. In the Santa Cruz Deposit, the drill spacing that supports the Indicated Resource classification constitutes approximately 80 m to 100 m. There is the possibility for Indicated Resources to be upgraded to Measured Resources via additional infill drilling that would reduce the drill spacing to <25 m. Currently none of the deposits have a Measured Resource.

The 2021 twin drilling program conducted by IE, outlined in Sections 10.1.3 and 12.2, has demonstrated overall grade continuity, location, and continuity between intercepts. There is the potential for unknown errors within the database which could affect the size and quantity of Measured, Indicated, and Inferred Mineral Resources.

While most of the Texaco Deposit is classified as Inferred, there is a small portion of Indicated Resource. The East Ridge Deposit is currently classed as Inferred, as the area is defined by historic drilling which has yet to be validated with modern drilling. This work is forthcoming and will help to improve resource class confidence in subsequent iterations.

To demonstrate reasonable prospects for economic extraction for the Santa Cruz, Texaco, and East Ridge Mineral Resource Estimates, representational minimum mining unit shapes were created using Deswik's minimum mining unit shape optimizer (MSO) tool.

1.6.1 Mineral Resource Estimate

The Santa Cruz Project Mineral Resource Estimate is presented in Table 1-2.

Table 1-2: Santa Cruz Project Mineral Resource Estimates at 0.70% Cu cut-off for Santa Cruz, 0.80% Cu cut-off for Texaco, and 0.90% Cu cut-off for East Ridge.

Classification	Deposit	Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Indicated	Santa Cruz (0.70% COG)	223,155	245,987	1.24	0.82	0.58	0.24	2,759	1,824	1,292	533	6,083
	Texaco (0.80% COG)	3,560	3,924	1.33	0.97	0.25	0.73	47	35	9	26	104
	East Ridge (0.90% COG)	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
Inferred	Santa Cruz (0.70% COG)	62,709	69,125	1.23	0.92	0.74	0.18	768	576	462	114	1,694
	Texaco (0.80% COG)	62,311	68,687	1.21	0.56	0.21	0.35	753	348	132	215	1,660
	East Ridge (0.90% COG)	23,978	26,431	1.36	1.26	0.69	0.57	326	302	164	137	718
TOTAL												
Indicated	**All Deposits**	**226,715**	**249,910**	**1.24**	**0.82**	**0.57**	**0.25**	**2,807**	**1,859**	**1,300**	**558**	**6,188**
Inferred	**All Deposits**	**148,998**	**164,242**	**1.24**	**0.82**	**0.51**	**0.31**	**1,847**	**1,225**	**759**	**466**	**4,072**

Notes on Mineral Resources

1. The Mineral Resources in this estimate were independently prepared by Christian Ballard, P.Geo. of Nordmin Engineering Ltd and the Mineral Resources were prepared in accordance with NI 43-101 and the CIM Definition Standards for Mineral Resources and Mineral Reserves (2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019).
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.
3. Verification included multiple site visits to inspect drilling, logging, density measurement procedures and sampling procedures, and a review of the control sample results used to assess laboratory assay quality. In addition, a random selection of the drill hole database results was compared with the original records.
4. The Mineral Resources in this estimate for the Santa Cruz, East Ridge, and Texaco Deposits used Datamine Studio RM™ software to create the block models.
5. The Mineral Resources are current to December 31, 2022.
6. Underground-constrained Mineral Resources for the Santa Cruz Deposit are reported at a cut-off grade of 0.70% total copper, Texaco Deposit are reported at a cut-off grade of 0.80% total copper and East Ridge Deposit are reported at a cut-off grade of 0.90% total copper. The cut-off grade reflects total operating costs to define reasonable prospects for eventual economic extracted by conventional underground mining methods with a maximum production rate of 15,000 tonnes/day. All material within mineable shape-optimized wireframes has been included in the Mineral Resource.

7. Underground mineable shape optimization parameters include a long-term copper price of $3.70/lb, process recovery of 94%, direct mining costs between $24.50-$40.00/processed tonne reflecting various mining method costs (long hole or room and pillar), mining general and administration cost of $4.00/tonne processed, onsite processing and SX/EW costs between $13.40-$14.47/tonne processed, offsite costs between $3.29 – $4.67/tonne processed, along with variable royalties between 5.00-6.96% NSR and a mining recovery of 100%.
8. Specific Gravity was applied using weighted averages by Deposit Sub-Domain.
9. All figures are rounded to reflect the relative accuracy of the estimates, and totals may not add correctly.
10. Excludes unclassified mineralization located along edges of the Santa Cruz, East Ridge, and Texaco Deposits where drill density is poor.
11. Report from within a mineralization envelope accounting for mineral continuity.
12. Total soluble copper means the addition of sequential acid soluble copper and sequential cyanide soluble copper assays. Total soluble copper is not reported for the Primary Domain.

Areas of uncertainty that may materially impact the Mineral Resource Estimate include:

- Changes to long term metal price assumptions.
- Changes to the input values for mining, processing, and G&A costs to constrain the estimate.
- Changes to local interpretations of mineralization geometry and continuity of mineralized zones.
- Changes to the density values applied to the mineralized zones.
- Changes to metallurgical recovery assumptions.
- Changes in assumption of marketability of the final product.
- Variations in geotechnical, hydrogeological, and mining assumptions.
- Changes to assumptions with an existing agreement or new agreements.
- Changes to environmental, permitting, and social license assumptions.
- Logistics of securing and moving adequate services, labor, and supplies could be affected by epidemics, pandemics and other public health crises including COVID-19 or similar viruses.

These risks and uncertainties may cause delays in economic resource extraction and/or cause the resource to become economically non-viable.

1.6.2 Comparison to Previous Mineral Resource Estimates

1.7 Comparison to Previous Mineral Resource Estimates

A previous Mineral Resource Estimate was completed for the Santa Cruz Deposit on December 8, 2021. This 2021 MRE did not include resource estimates for the Texaco and East Ridge Deposits. The total Cu cut-off grade from the 2022 Santa Cruz Deposit MRE was increased from 0.39% to 0.70%, resulting in a drop in Indicated Resources from 274,000 ktonnes to 223,155 ktonnes. Inferred resources for Santa Cruz decreased from 248,754 ktonnes at a TCu cut-off of 0.39% to 62,709 ktonnes at a TCu cut-off of 0.70%. The updated Santa Cruz Project MRE is the result of a significant ongoing drilling program at each of the Santa Cruz, East Ridge, and Texaco Deposits. The drilling program was focused on the following:

- Targeting the higher-grade areas (greater than 1.2% total copper) to confirm outlined copper grade within the December 2021 Mineral Resource.

- Expanding the higher-grade copper areas with a strong focus on the Exotic, Oxide, and Chalcocite Enriched domains.
- Targeting the structural controls that influence the higher-grade copper domains.
- Completion of various "twin holes" in proximity to historical drilling which can be compared (geologically, structurally, geochemically, etc.) to each other to determine if significant geological and sampling bias exists.
- Upgrade of high-grade Inferred Mineral Resources into the Indicated category.

At East Ridge and Texaco, confirmation of the higher-grade historical intercepts and determine if the higher-grade areas could be expanded.

Figure 1-1 below outlines the differences between the December 8, 2021 Mineral Resource Estimate and the December 31, 2022 Mineral Resource Estimate.

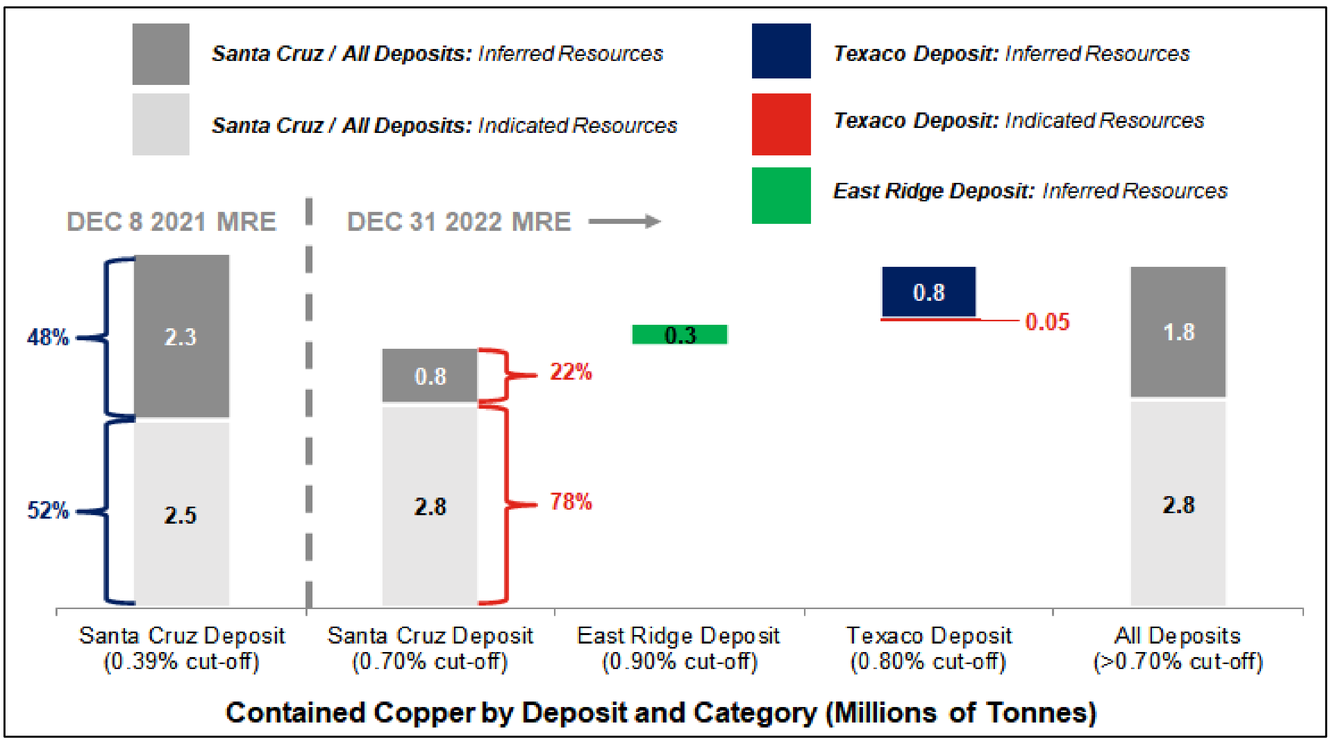

Figure 1-1: Santa Cruz Project comparing the December 8, 2021 Mineral Resource Estimate and the December 31, 2022 Mineral Resource Estimate

1.8 Conclusions and Recommendations

Under the assumptions presented in this Technical Report Summary, and based on the available data, the Mineral Resource Estimates show reasonable prospects of economic extraction. Exploration activities have shown that the Santa Cruz Deposit retains significant potential.

The recommended program is for the company to complete a Preliminary Economic Assessment (PEA) of the project before the end of 2023. The work program required to complete a PEA will consist of associated infill and exploration drilling, analytical and metallurgical testwork, hydrogeological and geotechnical drilling, geological modelling, and environmental baseline studies to support permitting efforts.

The recommendations are estimated to require a budget of approximately $26 million.

2 INTRODUCTION

2.1 Terms of Reference

This Technical Report was prepared in accordance with disclosure and reporting requirements set forth in the Canadian Securities Administrations' National Instrument 43-101 "Standards of Disclosure for Mineral Projects" ("NI 43-101") for Ivanhoe Electric Inc. ("IE") by Nordmin Engineering Inc. ("Nordmin") on the Santa Cruz Project ("Santa Cruz" or the "Project").

Ivanhoe Electric is an American technology and mineral exploration company that is re-inventing mining for the electrification of everything by combining advanced mineral exploration technologies, renewable energy storage solutions and electric metals projects predominantly located in the United States. Ivanhoe Electric uses its Typhoon™ transmitter, an accurate and powerful geophysical survey system, together with advanced data analytics provided by its subsidiary, Computational Geosciences, to accelerate and de-risk the mineral exploration process as well as to potentially discover deposits of critical metals that may otherwise be undetectable by traditional exploration technologies. Through its controlling interest in VRB Energy, Ivanhoe Electric also develops and manufactures advanced grid-scale vanadium redox battery storage systems. Finally, through advancing its portfolio of electric metals projects located primarily in the United States, headlined by the Santa Cruz Copper Project in Arizona and the Tintic Copper-Gold Project in Utah, as well as projects in Montana, Oregon and North Carolina, Ivanhoe Electric is also well positioned to support American supply chain independence by delivering the critical metals necessary for electrification of the economy.

The Technical Report is effective as of March 6, 2023. This Technical Report supersedes all prior technical reports prepared for the Santa Cruz Project and was created for the purpose of defining a 43-101 compliant mineral resource estimate within the Santa Cruz Project located in Arizona, USA.

IE is a public company, with their corporate office located at:

606 – 999 Canada Place
Vancouver, BC V6C 3E1
Canada

The quality of information, conclusions, and recommendations contained herein are consistent with the level of effort involved in Nordmin's services, based on i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications outlined in this Technical Report.

The user of this document should ensure that this is the most recent Technical Report for the Santa Cruz Project, as it is not valid if a new Technical Report has been issued.

This Technical Report provides a Mineral Resource Estimate and a classification of the Mineral Resource prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves: Definitions and Guidelines, May 10, 2014 (CIM, 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019; 2019 CIM Best Practice Guidelines).

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

2.2 Qualified Persons

The Consultants preparing this Technical Report are specialists in the fields of geology, exploration, Mineral Resource Estimation and classification, and metallurgy. Mr. Christian Ballard, P.Geo., performed an inspection of the property. This included:

- Review of the geological and geographical setting of the Santa Cruz Project.
- Review and inspection of the site geology, mineralization, and structural controls on mineralization.
- Review of the drilling, logging, sampling, analytical and QA/QC procedures.
- Review of the chain of custody of samples from the field to the assay lab.
- Review of the drill logs, drill core, storage facilities, and independent assay verification on selected core samples.
- Confirmation of several drill hole collar locations.
- Review of the structural measurements recorded within the drill logs and how they are utilized within the 3D structural model.
- Validation of a portion of the drill hole database.

None of the Consultants, nor any associates employed in the preparation of this Technical Report, are insiders, associates, affiliates, or have any beneficial interest in IE. The results of this Technical Report are not dependent upon any prior agreements concerning the conclusions to be reached between IE and the Consultants. The Consultants are being paid a fee for the work in accordance with reasonable professional consulting practices.

This Technical Report was prepared by Mr. Christian Ballard, P.Geo. and Mr. James J. Moore, P.E., who by virtue of their education, experience, and professional association, are considered a QP as defined in the NI 43-101 standard, for this Technical Report, and are members in good standing of a relevant professional institution. The QP Certificates of the Authors are provided in Appendix A of this Technical Report.

2.3 Effective Dates

The issue and effective date of the Technical Report is March 14, 2023. The database cut-off date of the Mineral Resource Estimate is December 31, 2022.

2.4 Information Sources and References

This Technical Report has been prepared by an independent Consultant who is a QP under NI 43-101 and prepared in accordance with NI 43-101, Form 43-101F1, and Companion Policy 43-101CP. Subject to the conditions and limitations set forth herein, the independent Consultant believes that the qualifications, assumptions, and information used by him are reliable, and efforts have been made to confirm this to the extent practicable.

This Technical Report is based, in part, on internal Company documents, published government reports, Company letters and memoranda, and public information as listed in Section 27.

Any statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Technical Report.

The authors of this report have taken all steps in their professional judgment to verify and confirm the accuracy of the information contained in this Technical Report, and other than with respect to these matters set forth in Section 3 hereof, do not disclaim any responsibility for this Technical Report.

2.5 Previous Reporting

This is the second NI 43-101 Mineral Resource Estimate and Technical Report Summary prepared for IE on the Santa Cruz Project.

- Nordmin Engineering Inc., 2022. NI 43-101 Technical Report and Mineral Resource Estimate for the Santa Cruz Project, Arizona, USA.

2.5.1 Previous Exploration Reports

- Watts Griffis McOuat Ltd. (WGM), 1982. Non-compliant ore and mining reserve for Hanna Mining in 1982.
- In-situ Joint Venture, 1999.
- Independent Mining Consultants, Inc. (IMC), 2013. Non-compliant block model for the Texaco Deposit.
- IMC, 2013. Non-compliant block model for the Parks-Salyer deposit.
- IMC, 2013. Non-compliant Mineral Resource for the Santa Cruz South deposit.
- Stantec, 2013. Non-compliant conceptual study of geologic resource and reserve.
- Physical Resource Engineering, 2014. Non-compliant conceptual study of geologic resource and reserve.

2.6 Acknowledgements

Nordmin and IE would like to thank and acknowledge the following people who have contributed to the preparation of this Technical Report under the supervision of the QPs, including Annika Van Kessel, P.Geo. - Geologist with Nordmin and IE staff: Taylor Melvin – President and CEO, Eric Finlayson – Chief of Global Exploration, Mark Gibson, P.Geo. – COO, Jordan Neeser – CFO, Quentin Markin – Executive VP, Business Development and Strategy Execution, Charlie Forster, P.Geo. – Senior VP, Exploration, Glen Kuntz – Senior VP, Mine Development, Graham Boyd – Senior VP, US Projects, Cassandra Joseph – VP, General Council and Corporate Secretary, Evan Young – VP Corporate Development, Andrea Cade, P.Geo. – Reporting Geologist, Joe Ruffini, RM SME – Principal Resource Geologist, Denise Robinson – Database Manager, Hannah Cayes – Senior Geologist, QA/QC Supervisor, Christopher Seligman, MAusIMM CP(Geo) – Manager Geology, Santa Cruz, Arron Jergenson – Exploration Manager, Santa Cruz, Eric Castleberry, PG – US Operations Manager, Kami Ballard – Manager, Permitting and Social Responsibility, Shawn Vandekerkhove, P.Geo. – Principal Geologist, New Opportunities, Lucas Heape – Principal Geophysicist, Tom White – Senior Hydrogeologist, and Zachary Oberling – Senior Engineering Geologist.

2.7 Units of Measure

The following measurement units, formats, and systems are used throughout this Technical Report.

- Measurement Units: all references to measurement units use the System International (SI, or metric) for measurement. The primary linear distance unit, unless otherwise noted, is meters (m).
- General Orientation: all references to orientation and coordinates in this Technical Report Summary are presented as Universal Transverse Mercator (UTM) in meters unless otherwise noted.
- Currencies outlined in the Technical Report are stated in US$ unless otherwise noted.

3 RELIANCE ON OTHER EXPERTS

This Technical Report Summary has been prepared by Nordmin for IE. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to Nordmin 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 IE.

For the purpose of the Summary and Section 3 of this report, Nordmin has relied on ownership information provided in an internal Title Opinion and Reliance letter by Marian Lalonde dated February 10, 2023, of Fennemore Law, Tucson, Arizona.

Nordmin has not researched property title or mineral rights for the Santa Cruz Project and consider it reasonable to rely on IEs legal counsel and Land Manager whose responsibility is the maintenance of this information.

Nordmin has taken all appropriate steps, in their professional opinion, to ensure that the above information from IE is accurate.

Except for the purposes legislated under US federal securities laws and the Canadian provincial securities laws, any use of this Technical Report Summary by any third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Legal Description of Real Property

The property and rights owned by IE, through IE's fully-owned subsidiary Mesa Cobre Holding Corp., are described in Appendix A. These rights and titles have been provided by IE and have not been independently verified by Nordmin. The Title Opinion and Reliance letter by Marian Lalonde dated February 10, 2023, of Fennemore Law, Tucson, Arizona, has been relied upon by the Nordmin QP for this section of the Technical Report.

4.2 Property Location

The Santa Cruz Project is located 11 km west of Casa Grande, Arizona, which is approximately a one-hour drive south of the capital, Phoenix (Figure 4-1). It is approximately 9 km southwest of the Sacaton deposit which was previously mined by ASARCO. The Santa Cruz Project covers a cluster of deposits and exploration areas approximately 11 km long and 1.6 km wide. The Santa Cruz Project centroid is approximately -111.88212, 32.89319 (WGS84) in Township 6 S, Range 4E, Section 13, Quarter C.

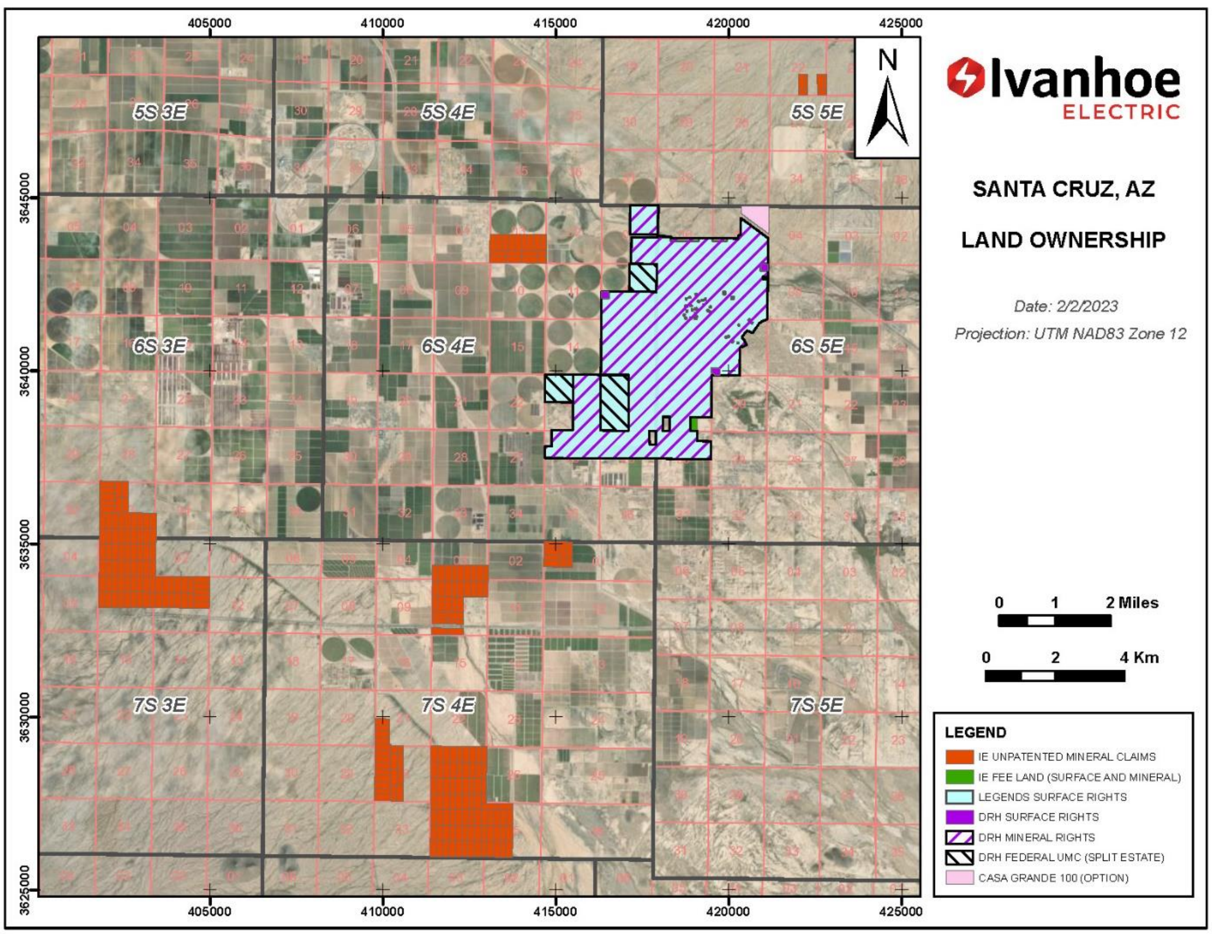

Figure 4-1: Land ownership

4.3 Land Tenure and Underlying Agreements

In 2021, IE executed an agreement with Central Arizona Resources (CAR) for the right to acquire 100% of CAR's option over the DR Horton Energy (DRHE) mineral title and CAR's Surface Use Agreement (SUA) with Legend Property Group (Legend). The Santa Cruz exploration area covers 47.71 km^{2,} including 25.79 km^2 of private land, 2.6 km^2 of Stockraising Homestead Act (SRHA) lands, and 238 unpatented claims, or 19.32 km^2 of BLM land (Figure 4-1).

4.3.1 Private Parcels

The Santa Cruz Project lies primarily on private land, which is dominantly fee simple. IE holds an option on the purchase of the mineral estate, while holding an exclusive agreement on surface use. Additional lands and rights were acquired by IE as options on private parcels and staking unpatented federal lode mining claims.

DRHE Option

The agreement with DRHE provides that IE, by way of assignment from CAR, has the right, but not the obligation, to earn 100% of the mineral title in the fee simple mineral estate, 39 Federal Unpatented mining claims, and three small approximately 10-acre surface parcels (Figure 4-1), in cash or IE shares at DRHE election, over the course of three years as follows:

- On the Effective Date, IE shall pay the "***Initial Payment***" [paid]; and
- Within five (5) days following of the expiration of the Due Diligence Period, IE shall pay "***Due Diligence Payment***" [paid]; and
- On or before the first anniversary of the Effective Date, IE shall pay "***First Payment***" [paid]; and
- On or before the second anniversary of the Effective Date, IE shall pay collectively with the Initial Payment, the Due Diligence Payment, and the First Payment, the "***Option Payments***".
- Following the exercise of the Option and upon the Closing Date, IE shall pay the "***Closing Payment***".

The agreement with DRHE also provides IE with a Right of First Refusal (ROFR) on certain surface parcels owned by Legend. This ROFR reserved by DRHE when the property was sold to Legend in 2007, and this right is now part of the rights being sold to IE and affords a great deal of control on the destiny of the surface estate overlying the Santa Cruz Project.

Legend SUA

The SUA with Legend Property Group allows for the exclusive use of the property for the purposes of drilling and geophysical testing, as well as granting a Right of First Offer (ROFO) on the sale of the property. Legend has granted these rights to IE (by way of assignment from CAR) for up to four years under the following conditions:

- Year 1 Payment –to be paid as follows:
    - Initial payment within five (5) days following the Effective Date [paid].
    - Trigger payment within five (5) days following the Trigger Date [paid].
- Year 2 Payment – due on, or before the first anniversary of the Trigger Date [paid].
- Year 3 Payment –due on, or before the second anniversary of the Trigger Date.
- Extension Period ("Fourth Year Payment"):
    - providing written notice to Legend of its intent to extend the term of this Agreement for an additional 12 months, for a total term of 48 months; and

- paying to Legend the Fourth Year Payment

4.3.2 Federal Unpatented Mineral Claims

IE, by way of assignment and deed from CAR, holds 238 unpatented Federal Mining claims (Appendix A).

DRHE also holds 39 Federal unpatented mining claims in T06S R04E in N/2 Section 12, W/2 Section 23 and W/2 Section 24, which are subject to the option described in Section 4.1.1.

4.3.3 Royalties

Noted royalties on future mineral development of the Project are summarized here:

- Royalty interests in favor of the royalty holders of a 5% net smelter return royalty interest for minerals derived from all portions of the property pursuant to terms contained therein recorded in the royalty document.
- Royalty interests in favor of the royalty holder of a 10% net smelter return royalty interest in section 13, 18, 19, and 24, Township 6 South, Range 4 East, for minerals derived from the property pursuant to terms contained therein recorded in the royalty document.
- Rights conveyed to the royalty holder in Sections 13, 18, 19, 24, Township 6 South, Range 4 East, consisting of 10% of one eight-hundredth of Fair Market Value and interest in the Cu and other associated minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Rights granted to the royalty holders, as joint tenants with right of survivorship, a royalty in sections 13, 18, 19, and 24, Township 6 South, Range 4 East, consisting of 30% of five tenths of one percent of the net smelter return from all minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Royalty interest of a 2.25% in favor of the royalty holder in Section 1, Township 6 South, Range 4 East, and Sections 6, 7, 8, and 17, Township 6 South, Range 5 East, for net smelter return royalty interest in minerals derived from the property pursuant to terms contained therein recorded in the royalty document.
- Rights conveyed to the royalty holder in Sections 13, 23, 24, 25, and 26, Township 6 South, Range 4 East and Sections 5, 6, 17, 18, 19, and 30, Township 6 South, Range 5 East, consisting of 60% of one eighth-hundredth of Fair Market Value and interest in the Cu and other minerals with additional terms, conditions, and matters contained therein, recorded in the royalty documents.
- Reservation of a 1% royalty interest in favor of the royalty holder recorded in the royalty document, for E$^1/_2$ of Section 5, Township 6 South, Range 5 East, south and west of Southern Pacific RR, “that when mined or extracted therefrom shall be equal in value to 1% of the net smelter returns on all ores, concentrated, and precipitates mined, and shipped from said property.”
- Reservation of a royalty interest in favor of the royalty holders in the SW$^1/_4$ of Section 17, Township 6 South, Range 5 East, for an amount equal to one half of 1% net smelter returns in the sale and disposal of all ores, minerals, and other products mined and removed from the above described parcel and sold to a commercial smelter or chemical hydrometallurgical plant or one half of 1% of 60% of the sales price if the mine product is disposed of other than to a commercial smelter, additional provisions contained therein, recorded in the royalty documents.

4.4 Permits and Authorization

Current exploration is conducted on private land under the SUA with Legend. Current permits are listed in Table 4-1.

Table 4-1: Permit requirements for exploration work required on Private Land under SUA agreement.

Permit Name	Agency	Status	Renewal Date	Requirements	Violations
Dust Control Permit DUSTW-22-0292	Pinal County Air Quality Control District	Approved	03/01/2023	Bi-weekly inspections; limit vehicle access to work areas; reduce vehicle speeds; water disturbed areas; apply stabilizers as needed; concurrent reclamation; install track-out devices as needed	No Violations
NOI AZPDES Stormwater General Construction Permit AZCN96111	Arizona Dept. of Environmental Quality	Approved	06/30/2025	Stormwater Pollution Prevention Plan in place; monthly inspections	No Violations
Temporary Use Permit DSA-22-00200	City of Casa Grande	Approved	11/08/2025	Submit SFHA Permit and Non-SFHA Temporary Use Permit	No Violations
Floodplain Use Permit FUP2206-165	Pinal County	Approved	N/A	Existing grades within the area of disturbance shall be restored per the reclamation plan.	No Violations
Exploration Drilling Reclamation Plan	Arizona State Mine Inspector	In Review	TBD	Maximum extent of surface disturbance to be left unreclaimed at any one time during exploration operations is 20.0 acres.	N/A
Special Flood Hazar Area Permit – Exploration Drilling	City of Casa Grande	In Review	TBD	TBD	N/A
Temporary Use Permit – Non-SFHA	City of Casa Grande	In Prep	TBD	TBD	N/A
Floodplain Use Permit	Pinal County	In Prep	TBD	TBD	N/A

The Migratory Bird Treaty Act prohibits “Take” without prior authorization by the U.S. Fish and Wildlife Service (USFWS). This includes “Incidental Take” which is harming or killing that results from, but is not the purpose of, carrying out an otherwise lawful act. Santa Cruz has implemented beneficial practices in accordance with USFWS Nationwide Standard Conservation Measures which include employee education, preconstruction surveys, nest monitoring, and avoidance of active nests. This may affect access points and the ability to perform work on the property.

Existing and past land uses in the Project area and immediately surrounding areas include agriculture, residential home development, light industrial facilities, and mineral exploration and development. Some dispersed recreation occurs in the area. The climate is dry, and most of the Project area is flat, sandy, and sparsely vegetated. Portions of the Project area are in the 100-year flood plain of the North Branch of Santa Cruz Wash. Within the Project area, approximately 85 acres of land located 1.2 km north of the intersection of N. Spike Road and W. Clayton Road was used during an in situ leaching project in 1991. A Phase 1 Environmental Site Audit (ESA) was conducted on the Project area (Civil & Environmental Consultants 2021).

There is a large private land package covering the Project area and area of known mineralization. This private land position could result in reduced permitting time relative to projects required to undergo the National Environmental Policy Act (NEPA) process. The precise list of permits required to authorize the construction and operation of this Project will be determined as the mining and processing methods are designed. If NEPA and other federal permitting are avoided, required permits would be administered by Arizona State, Pinal County, and Casa Grande authorities.

The permit approval process for some permits includes review and approval of the process design. Thus, the project design must be substantially advanced to support the application for those permits. These technical permits typically represent the "longest lead" permits. Technical permits with substantial technical design are needed as part of the applications. The anticipated issuing agencies include:

- Reclamation Plan approval (Arizona State Mine Inspector)
- Water permits
- Aquifer Protection Permit (ADEQ)
- Air Quality Operating Permit (Pinal County)

4.5 Environmental Liabilities

The 2021 Phase 1 ESA study found no previously unmitigated environmental liabilities associated with the Santa Cruz Project.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility and Infrastructure

The Santa Cruz Project is located 60 km south-southwest of the Greater Phoenix metropolitan area and is accessed from the Gila Bend Highway, 9 km from the City of Casa Grande (population of 57,699 persons). The Santa Cruz Project, as shown in Figure 5-1, is surrounded by current and past-producing Cu mines and processing facilities. The Greater Phoenix area is a major population center (approximately 4.8 million persons) with a major international airport (Phoenix Sky Harbour International Airport), and well-developed infrastructure and services that support the mining industry. The cities of Casa Grande, Maricopa, and Phoenix can supply sufficient electricity, water, skilled labor, and supplies for the Santa Cruz Project.

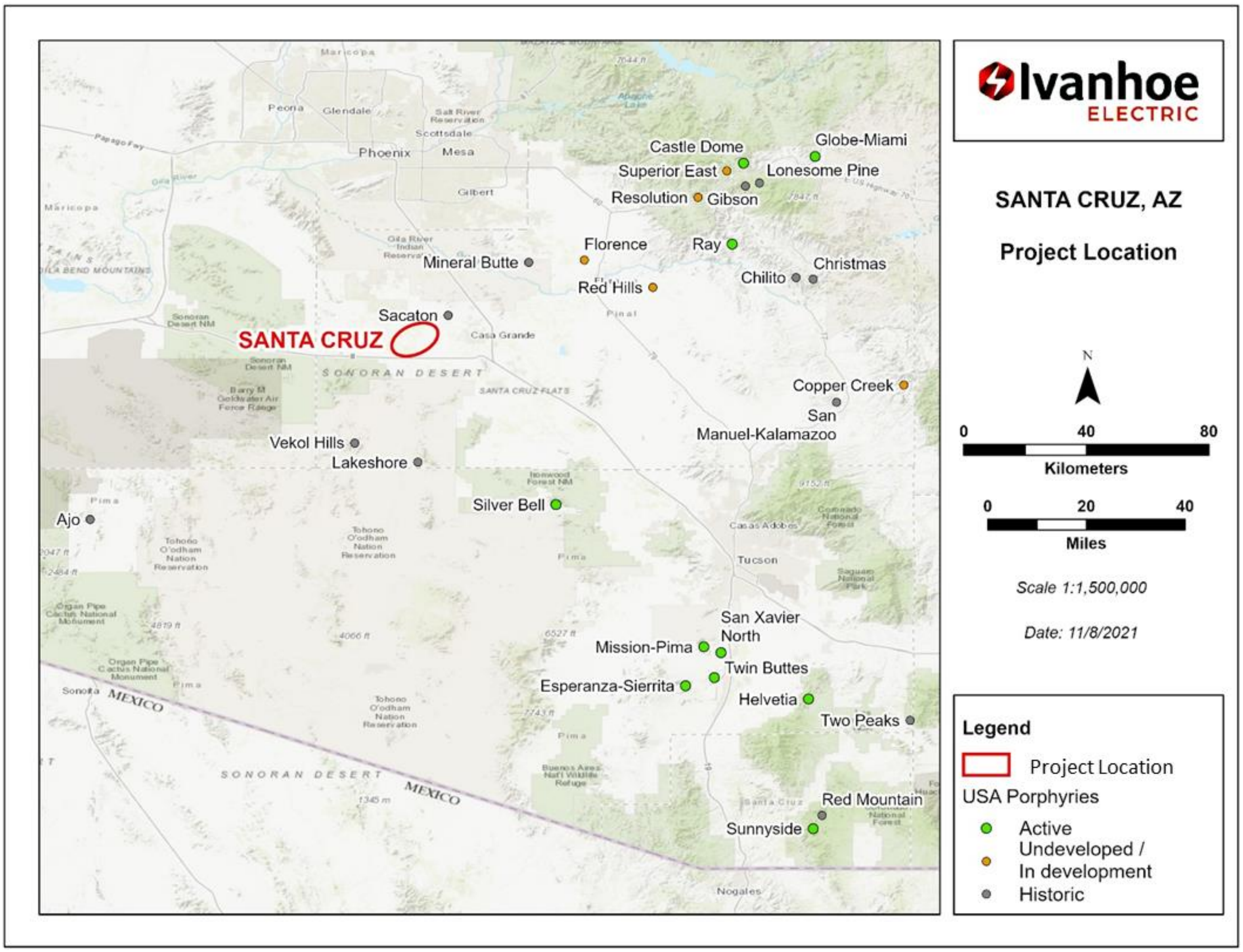

Figure 5-1: Location map

5.2 Climate

The climate at the Santa Cruz Project is typical of the Sonoran Desert, with temperatures ranging from -7 °C (19 °F) to 47 °C (117 °F) and average annual precipitation ranging from 76 – 500 mm (3 – 30 in) per year. Precipitation occurs as frequent low-intensity winter (December/January) rains and violent summer (July/August) "monsoon" thunderstorms (Figure 5-2). The Santa Cruz Project site contains no surface water resources. Storm runoff waters from the site are drained toward the Santa Cruz River by minor tributaries to the Santa Rosa and North Santa Cruz washes. Operations at the Santa Cruz Project site can continue year-round as there are no limiting weather or accessibility factors.

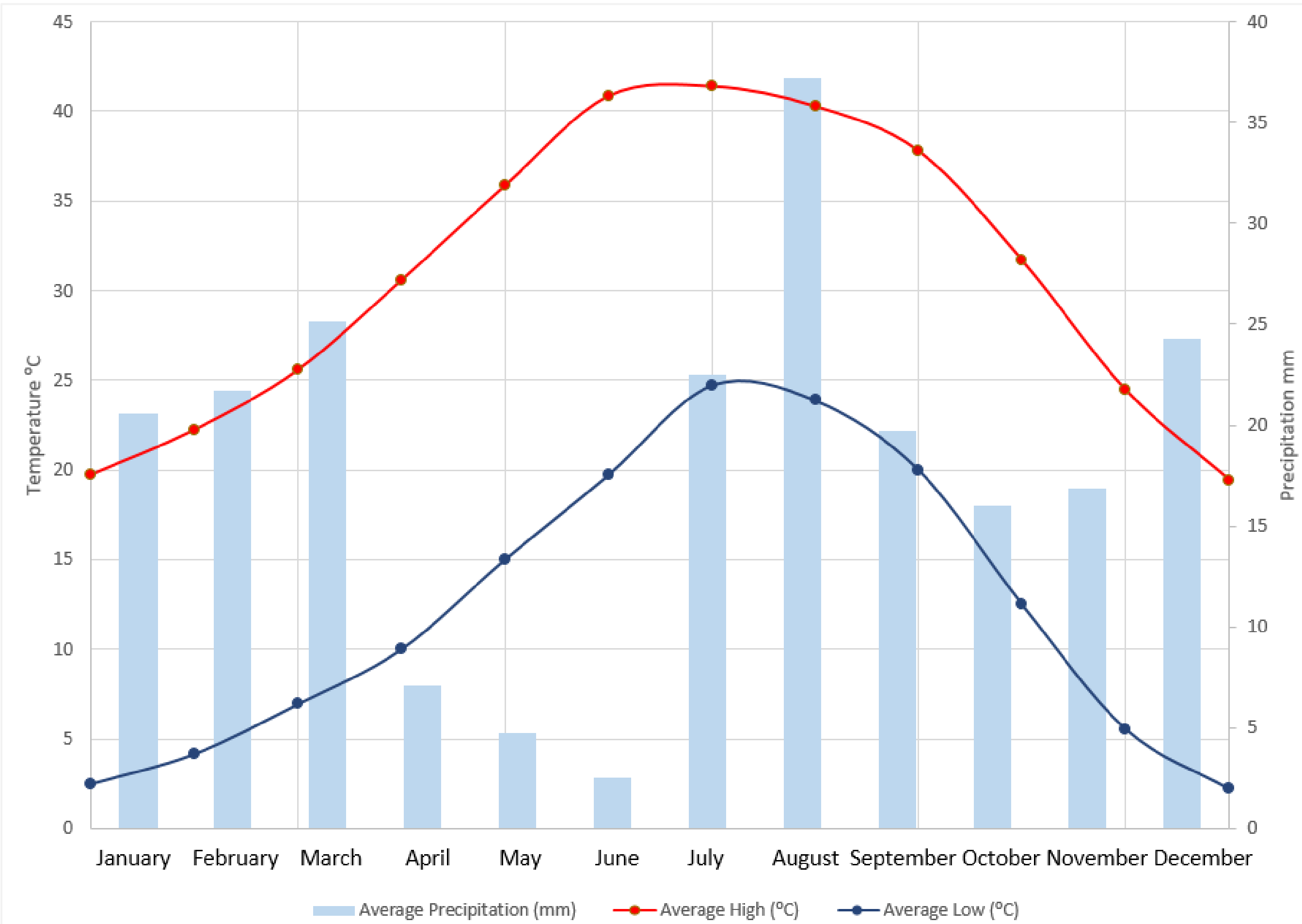

Figure 5-2: Average temperatures and precipitation

The wind is usually calm. The windiest month is May, followed by April and July. May's average wind speed of around 5.5 knots (6.4 mph or 10.3 km/h) is considered a light breeze. IE has instituted measures to reduce dust that could be produced at the Santa Cruz Project site.

5.3 Local Resources

Water rights to the property are held by Legend Property, LLC. Water for exploration drilling has been sourced from the City of Casa Grande.

Electrical power is available along Midway Road with a high voltage line along the Maricopa-Casa Grande Highway along the northern edges of the Santa Cruz Project area. Also, an east-west rail line parallels the Highway and passes through Casa Grande. A natural Gas line is available along Clayton Road on the southern side of the Project area.

IE is securing water rights and additional lands surrounding the Santa Cruz and Texaco Deposits to allow for future mine development activities including potential tailings storage, potential waste disposal, and processing plant areas, as well as space for ramps for underground development.

5.4 Physiography

The Santa Cruz Project is in the Middle Gila Basin, entirely within the Sonoran Desert Ecoregion of Basin and Range Physiographic Province. The area is characterized by low, jagged mountain ranges separated by broad alluvial-filled basins. This portion of the Sonoran Desert is sparsely vegetated with greater variability near washes and in areas that have long lain fallow. Near washes and longer abandoned areas, catclaw acacia, mesquite, creosote bush, bursage, and salt cedar are common. The Santa Cruz Project area is flat and featureless with an elevation of 403±5 masl and sloping gently to the northwest. Much of the Santa Cruz Project area has been used for irrigated agriculture, with decaying remnants of an extensive system of wells and concrete lined ditches still present. The alignments of furrows are still visible despite decades of lying fallow. Efforts at real estate development in the 1990s and 2000s have also left visible remnants with preliminary roadworks and some planting (palm trees) overlying the previous agricultural remains. Soils proximal to washes tend to be more sand and gravel-rich, while soils in old agricultural areas are more silt and clay-rich. The physiography is further described in Table 5-1.

Table 5-1: Description of Physiography of the Casa Grande Area, Santa Cruz Exploration Property

General Physiographic Area	Intermontane Plateaus
Physiographic Province	Basin and Range
Physiographic Section	Sonoran Desert
Alteration	Potassic, Phyllic, and Argillic – more intense in mineralized areas
Associated Rocks	Breccia Conglomerate Schist Porphyry Granite Diabase
Rock Unit Names	Gila Conglomerate Laramide Porphyry Oracle Granite Pinal Schist

6 HISTORY

6.1 Introduction

Historically, there were three main deposit areas that are part of the current Santa Cruz Project: Texaco (to the northeast), Santa Cruz North (southwest of Texaco), and Casa Grande West/Santa Cruz South which is the southernmost deposit (Figure 6-1). ASARCO owned and drilled the Texaco and Santa Cruz North deposits. Hanna-Getty owned and drilled the Casa Grande/ Santa Cruz South deposit. In 1990, ASARCO entered a joint venture with Freeport McMoRan Copper & Gold Inc. on the Texaco land position. Hanna-Getty continued to own and operate the Casa Grande West/Santa Cruz South deposit.

The first discovery of copper mineralization in the area occurred in February 1961 by geologists from ASARCO. They discovered a small outcrop of leached capping composed of granite cut by a thin monzonite porphyry dyke. The outcrop was altered to quartz-sericite-clay with weak but pervasive jarosite-goethite and a few specks of hematite after chalcocite, particularly in the dyke.

ASARCO proceeded with preliminary geophysical surveys that same year, including IP, resistivity, seismic reflection, and magnetics. Upon positive results from the geophysical surveys, a small drill program of six holes was funded, with the last hole being the first to intersect the significant mineralization that became known as the West Orebody and, in time, the Sacaton open pit mine.

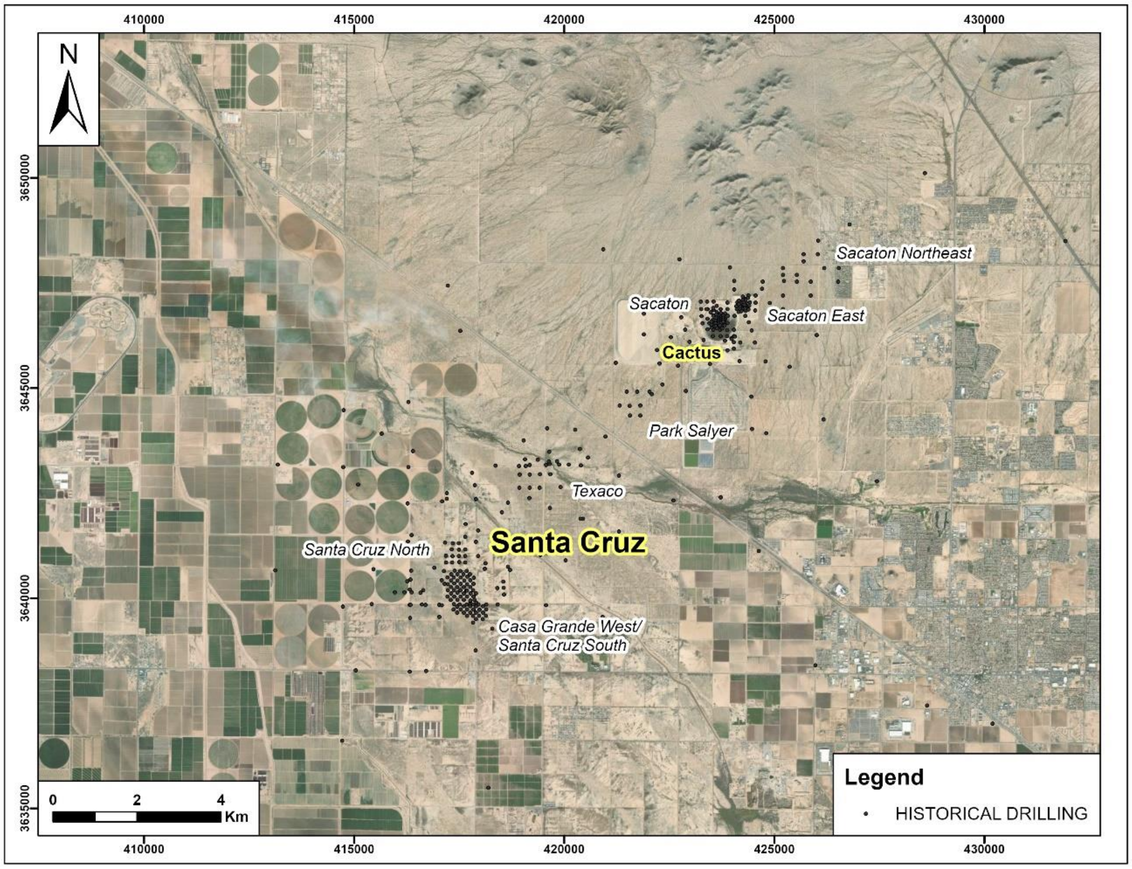

Figure 6-1: Historical drill collars, deposit, and exploration target names (white) as well as current project names for IE and neighbouring project (in yellow).

Encouraged by the discovery at Sacaton, ASARCO expanded exploration efforts across the Casa Grande Valley and in 1964 the first hole was drilled on the Santa Cruz Project. By May 1965, seventeen drill holes were completed without similar success, and ASARCO reduced its land position. Subsequent reviews in 1970-1971 deemed the Santa Cruz Project worth renewed exploration activity. Following the initiation of the Santa Cruz Joint Venture (SCJV) between ASARCO Santa Cruz, Inc. and Freeport McMoRan Copper & Gold Inc. in 1974, additional ground was acquired around the Santa Cruz North deposit. By this time, various joint ventures, as below, had staked considerable ground over and around what would eventually be the Casa Grande West (now Santa Cruz) deposit.

In 1973, David Lowell put together an exploration program called “the Covered Area Project” (CAP) that was funded first by Newmont Mining, then, in succession, by a joint venture between Newmont and Hanna Mining, then Hanna with Getty Oil Corp. and Quintana Corp.; though both Quintana and Newmont would pull out of the project before any discoveries were made. In 1974, after having systematically drilled over 120 holes at 20 projects across Southwestern Arizona, David Lowell and his team focused their attention on the Santa Cruz system (which Lowell and his team called “the Casa Grande Project”). ASARCO had just put the Sacaton operation into production and Lowell and associates were aware of the evidence for shallow angle faulting and potential for dissected porphyry mineralization that might have been displaced undercover in the Casa Grande Valley (Lowell, unpublished personal communication). Furthermore, the CAP program had compiled historic data of the area that indicated several water wells drilled had returned pebbles of Cu-oxide mineralization. Careful stream mapping and drainage analysis revealed that the Santa Cruz River had reversed flow directions at least twice in recent history, and it was this revelation that allowed Lowell to trace the exogenous oxide-Cu pebbles back to the Santa Cruz Deposit area. They discovered evidence for porphyry mineralization in their first drill hole, which intersected leached capping, and by their seventh hole (CG-7), they had intersected significant supergene enriched Cu mineralization at what they called the Casa Grande West deposit. Drilling under the CAP program continued through to 1977, at which point Hanna Mining took over as operator under a joint venture with operation funding from Getty Oil Corp. Between 1977 and 1982, Hanna-Getty advanced a tight spaced drill program that delineated an estimated 500 million tonnes of 1% Cu at Casa Grande West, and countless exploration holes in the surrounding Casa Grande Valley (Lowell unpublished personal communication). The decision to go underground and mine the Casa Grande West deposit was never made, and the combination of encroaching real estate, the growing environmental movement, and potential mismanagement by Hanna-Getty followed by the fall of Cu commodity prices all resulted in the Casa Grande West project becoming inactive in the early 80s.

6.2 Previous Exploration

6.2.1 Sacaton Mine

ASARCO went on to mine the Sacaton deposit from 1974 to 1984. The Sacaton deposit was mined using open pit methods with the beginnings of underground workings initiated but depressed Cu prices resulted in the halt of all mining at Sacaton. Table 6-1 shows the historical mine production from Sacaton.

Table 6-1: Sacaton Historical Mine Production (Fiscal Years Ended December 31)

Year	Ore Milled Short Tons	Mill Grade Cu%	Cu Short Tons	Au Troy Oz.	Ag Troy Oz.
1974	2,020,000	0.63	9,516	N/A	N/A
1975	3,630,000	0.74	21,918	3,153	N/A
1976	3,782,000	0.71	22,021	3,151	N/A
1977	3,471,000	0.70	19,872	3,103	N/A
1978	4,153,000	0.67	23,042	3,691	N/A
1979	4,006,000	0.65	21,367	3,558	142,000
1980	3,819,000	-	16,097	2,504	124,000
1981	4,103,000	-	21,015	3,334	172,000
1982	4,165,000	-	20,892	2,499	154,000
1983	4,003,000	-	18,794	1,983	134,000
1984	1,000,000	-	4,496	479	33,000
Total	**38,152,000**	**0.69**	**199,030**	**27,455**	**759,000**

6.2.2 Santa Cruz and Texaco Deposits

Several deposits, including Santa Cruz South (also known as Casa Grande West), Santa Cruz North (Santa Cruz North and South are collectively referred to as “Santa Cruz”), Texaco, and Parks-Salyer were identified during ASARCO drilling in the 1960s and subsequent drilling in the 1970s and 1980s by numerous exploration companies including Newmont Mining, Hanna, Hanna-Getty, and a joint venture between ASARCO Santa Cruz Inc. and

Freeport McMoRan Copper & Gold Company (SCJV). In total, 362 drill holes totaling 229,577 m have been drilled by previous owners delineating the cluster of deposits. Table 6-2 presents a summarized history of exploration on the property. There are no records of work by Texaco, but the company held land over what is now called the Texaco Deposit.

Table 6-2: History of Exploration Activities Across the Santa Cruz and Texaco Deposits

Dates	Activities	Company(s)	Description	Notes
1961	Prospecting and discovery	ASARCO	ASARCO geologists Kinnison and Blucher identify *Sacaton Discovery Outcrop*	An outcrop of granite with a thin dyke of porphyry was discovered.
1961	Geophysical Surveying	ASARCO	ASARCO Geophysical Dept. report	Geophysical surveys including IP, resistivity, magnetics.
1962	Drilling	ASARCO	Six exploration drill holes at Sacaton	The first five holes cut sulphides, but only a few short runs of ore grade rock. The sixth hole was the first hole within the West Orebody.
1964	Drilling	ASARCO	Five holes were drilled near the Santa Cruz Deposit by ASARCO (SC-2 to SC-6)	These were exploration drill holes, none of which intersected the main mineralization at Santa Cruz. SC-5 was drilled nearly 3 km SW of the main deposit.
1965	Drilling	ASARCO	11 holes were drilled near the Santa Cruz Deposit by ASARCO (SC-7 to SC-17)	These were exploration drill holes, SC-1 was drilled along the western margin of the subsequent Independent Mining Consultants, Inc. (IMC) block model. And SC-16 was just to the East of the future Santa Cruz North deposit. SC-17 was drilled approximately 4 km SW of the Casa Grande deposit (furthest step out exploration hole in the database).
1974	Drilling and Discovery	Hanna-Getty	Five holes were drilled around Santa Cruz North and one at Casa Grande by Hanna-Getty (CG-1 to CG-6)	Six holes drilled by Hanna-Getty under the CAP led by Lowell, one of which (CG-3) intersected near ore grade mineralization along the western boundary of what would become the Santa Cruz North and Casa Grande deposits.
1974	Drilling and Discovery	ASARCO	SC-18,19 and 20 are drilled at Santa Cruz North by ASARCO	Following the initiation of exploration in the Santa Cruz area by the CAP initiative, led by Lowell, ASARCO re-initiated exploration drilling in the area. All three holes intersected porphyry-style mineralization at what would be called the Santa Cruz North deposit.
1975	Drilling	Hanna-Getty	Two holes were drilled at Casa Grande, two holes drilled at Santa Cruz North and one hole drilled at Texaco by Hanna-Getty (CG-7 to CG-11)	Hole CG-7 was the first intersection of ore grade mineralization, as reported by Lowell.

Dates	Activities	Company(s)	Description	Notes
1975	Drilling and Discovery	ASARCO	Four holes were drilled at Santa Cruz North and one at Texaco by ASARCO (SC-21 to SC-24)	ASARCO drilled five holes, three nearby 1974 drilling that intersected mineralization at Santa Cruz North, and two exploration step out holes each 1.5 km to the NE of the Santa Cruz North area, SC-21, and SC-23 which intersected the Texaco Deposit mineralization.
1976	Drilling and land position expansion	Hanna-Getty	Two holes were drilled at Santa Cruz North and 14 holes were drilled at Casa Grande by Hanna-Getty (CG-12 to CG-33)	Bolstered by success in CG-7, and led by Lowell, key ground over what would eventually be the Casa Grande deposit was picked up, and exploration drilling advanced through 1976.
1976	Drilling	ASARCO	One hole was drilled approximately 1 km NE of the Casa Grande deposit (SC-25), and six holes were drilled at Texaco (SC-27, -28, -29, -30, -31, and -34)	
1977	Drilling and Operatorship change	Hanna-Getty	One hole was drilled at Texaco (CG-48), and 45 holes were drilled at Casa Grande (CG-34-CG-79)	Hanna-Getty took over operatorship from Lowell and the CAP team and began a close-spaced drill program to delineate the ore body at Casa Grande.
1977	Drilling	ASARCO	Six holes were drilled at Texaco and 12 holes were drilled at Santa Cruz North by ASARCO (SC-35 to SC-52)	
1978	Drilling	Hanna-Getty	One hole was drilled north of Santa Cruz North and 31 holes drilled at Casa Grande by Hanna-Getty (CG-80 to CG-122)	
1979	Drilling	Hanna-Getty	Six holes drilled by Hanna-Getty approximately 1 km west of the Casa Grande and Santa Cruz North deposits	
1979	Drilling	ASARCO	Four holes were drilled at Santa Cruz North by ASARCO (SC-55 to SC-58)	
1980	Drilling	ASARCO	Six holes were drilled at Santa Cruz North by ASARCO (SC-59 to SC-64)	
1981	Drilling	Hanna-Getty	Two holes were drilled north and west of Santa Cruz North	
1982	Drilling	Hanna-Getty	Two holes were drilled north and west of Santa Cruz North	

Dates	Activities	Company(s)	Description	Notes
1990-1991	Land Consolidation	SCJV (ASARCO, Santa Cruz Inc., and Freeport McMoRan Copper & Gold Inc.) – Texaco	Texaco approached SCJV (ASARCO-Freeport) regarding the sale of the Texaco land position	A series of internal memos from SCJV discussed the opportunity and holding costs and why they should acquire the lands from Texaco.
1994	In situ Cu Mining Research Project	US Bureau of Reclamation (USBR) and SCJV		Permits received to begin injection of sulfuric acid.
1995	In situ Cu Mining Research Project	USBR – SCJV		Pilot plant completed.
1996	Drilling	SCJV	11 holes drilled at and around Texaco by ASARCO (SC-65 to SC-74)	
1996	In situ Cu Mining Research Project	USBR-SCJV		Mining test started In February.
1997	Drilling	SCJV	Four holes were drilled by ASARCO at Texaco (SC-75 to SC-78)	
1997	In situ Cu Mining Research Project	USBR-SCJV	Lost funding – closure started	USBR lost Congressional funding in October. Injection continued until December.
1998	In situ CU Mining Research Project	USBR-SCJV	State required closure activities – final report to Bureau of Reclamation	Pumping continued until the end of February. Plant to care and maintenance. The final research report was never made public.

6.3 Previous Reporting

6.3.1 Hanna 1982

Watts Griffis McOuat Ltd. calculated a historical mineral inventory for Hanna Mining in 1982. Mineralization was determined from sections by calculating areas from drill hole intercepts and distance between holes, and by assigning the weighted average grade of the neighbouring holes to each area. In the case of a single hole in a section, the grade of that hole was assigned to that area.

Watts Griffis McOuat recommended additional consideration be given to a more flexible mining method such as sublevel caving.

6.3.2 In Situ Joint Venture 1997

In 1986, the Bureau of Mines obtained Congressional approval and funding to study in situ copper mining. In 1988, the Santa Cruz Deposit was selected for this research project sponsored by a joint venture program between landowners ASARCO Santa Cruz Inc. and Freeport McMoRan Copper & Gold Inc., and the US Department of the Interior, Bureau of Reclamation, who funded most of the program.

Field testing began in 1988, and the test wells were constructed in 1989 in a 5-point pattern with one injection well centered between four extraction wells. Salt tracer tests were conducted in 1991, permits for the use of sulfuric acid were received in 1994, and the solvent extraction-electrowinning (SX-EW) pilot plant was completed in 1995.

The in-situ testing began in February 1996, but research funding was halted in October 1997 due to a change from Congress. Utilizing the carryover funds from previous years of the program, injections continued until December 1997 and pumping until mid-February 1998. At this point, the remaining fluids in the leach zone were less acidic, and metals remaining in the solution were redeposited into the ore body through precipitation. A final report was not made publicly available. However, a newsletter from the project was circulated in March 1998 and noted that 35,000 lbs. of Cu were extracted.

6.3.3 IMC 2013

IMC constructed a block model for the Santa Cruz South deposit, the Texaco Deposit, and the Parks-Salyer deposit for Russell Mining and Minerals in 2013. The block model for the Santa Cruz South deposit was based on 116 drill holes with 18,034 assay intervals for a total of approximately 342,338 ft (104,344 m) of drilling, in which 90.7% of the intervals were assayed for Cu. Forty percent of the drill intervals were assayed for acid soluble Cu and 5% for cyanide soluble Cu.

The block model for the Texaco Deposit was based on all Cu drilling data available as of April 5, 2013. The block model was based on 29 drill holes with 2,281 assay intervals for a total of approximately 82,696 ft (25,205 m) of drilling, in which 92.5% of the intervals were assayed for Cu. Less than 9% of the drill intervals were assayed for acid soluble Cu or cyanide soluble Cu.

The block model for the Parks-Salyer deposit was based on seven drill holes with 7,398 ft (2,254 m) of drilling. The model incorporated the topography, the bottom of the conglomerate, and the top of the bedrock, as well drill hole collars, and downhole information, plus additional drill hole data from outside the model limits. These surfaces are a rough approximation based on the limited amount of information available.

6.3.4 Stantec-Mining 2013

Stantec completed a conceptual study for Presidio Capital in August 2013 on the Santa Cruz South, Texaco, and Sacaton exploration properties.

6.3.5 Physical Resource Engineering 2014

In 2014 Physical Resource Engineering completed a conceptual study, “Mining Study Exploitation of the Santa Cruz South Deposit by Undercut Caving” for Casa Grande Resources LLC.

6.4 Ivanhoe Electric Mineral Resource Estimate 2021

Nordmin Engineering Ltd. produced a Mineral Resource Estimate for IE dated December 8, 2021 included within the Technical Report Summary dated June 8, 2022 (Table 6-3).

Table 6-3: December 8, 2021 Santa Cruz Deposit Mineral Resource Estimate, 0.39% Total Cu CoG

Domain	Resource Category	Kilo-tonnes kt	Total Cu %	Total Soluble Cu %	Acid Soluble Cu %	Cyanide Soluble Cu %	Total Cu kt	Total Soluble Cu kt	Acid Soluble Cu kt	Cyanide Soluble Cu kt
Exotic	Indicated	6,989	1.05	0.80	0.73	0.07	73	56	51	5
	Inferred	11,680	1.28	1.00	0.98	0.02	149	118	115	3
Oxide	Indicated	52,990	1.34	1.27	0.98	0.29	708	669	518	151
	Inferred	126,138	1.06	1.00	0.71	0.29	1,336	1,253	892	361
Chalcocite Enriched	Indicated	29,145	1.25	1.13	0.40	0.73	364	328	115	213
	Inferred	14,838	1.36	1.28	0.52	0.76	202	191	78	113
Primary	Indicated	184,877	0.75	n/a	n/a	n/a	1,394	n/a	n/a	n/a
	Inferred	96,098	0.59	n/a	n/a	n/a	568	n/a	n/a	n/a
TOTAL										
	Indicated	274,000	0.93	0.38	0.25	0.13	2,539	1,053	684	369
	Inferred	248,754	0.91	0.63	0.44	0.19	2,255	1,563	1,085	478

Notes on Mineral Resources

1. The Mineral Resources in this estimate were independently prepared by Christian Ballard, P.Geo. of Nordmin Engineering Ltd and the Mineral Resources were prepared in accordance with NI 43-101 and the CIM Definition Standards for Mineral Resources and Mineral Reserves (2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019). Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. No environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues are known that may affect this estimate of Mineral Resources.
2. Verification included multiple site visits to inspect drilling, logging, density measurement procedures and sampling procedures, and a review of the control sample results used to assess laboratory assay quality. In addition, a random selection of the drill hole database results was compared with original records.
3. The Mineral Resources in this estimate for the Santa Cruz deposit used Datamine Studio RM™ software to create the block models.
4. The Mineral Resources have an effective date of December 8, 2021.
5. Underground Mineral Resources are reported at a CoG of 0.39% Total Cu, which is based upon a Cu price of US$$3.70/lb and a Cu recovery factor of 80%.
6. SG was applied using weighted averages by lithology.
7. All figures are rounded to reflect the relative accuracy of the estimates, and totals may not add correctly.
8. Excludes unclassified mineralization located along edges of the Santa Cruz deposit where drill density is poor.
9. Report from within a mineralization envelope accounting for mineral continuity.
10. Acid soluble Cu and cyanide soluble Cu are not reported for the Primary Domain.

6.5 Historical Production

No historical production has been carried out on the property.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Santa Cruz Project is located within an approximately 600 km long northwest to southeast trending metallogenic belt known as the Southwestern Porphyry Copper Belt, which extends from northern Mexico into the southwestern United States. The belt includes many productive copper deposits in Arizona such as Mineral Park, Bagdad, Resolution, Miami-Globe, San Manuel-Kalamazoo, Ray, Morenci, and the neighbouring Sacaton Mine (Figure 7-1). These deposits lie within a broader physiographic region known as the Basin and Range province that covers and defines most of the southwestern United States and northwestern Mexico. This region is characterized by linear sub-parallel mountain chains separated by broad flat valleys formed by regional tectonic extension during the mid- to late-Cenozoic Period

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Figure 7-1: Regional geology of the Southwestern Porphyry Copper Belt and the Cu porphyry deposits in the area around the Santa Cruz Project.

Basement geologic units of Arizona consist of formations developed during the Paleoproterozoic collisional orogeny that were subsequently stitched together by anorogenic granitic plutonic suites within the Mesoproterozoic. Basement Proterozoic lithologies at the Santa Cruz Project are represented by three primary units: Pinal Schist, Oracle Granite, and Diabase dykes.

The Pinal Schist is a metasedimentary to metavolcanic basal schist which spans much of southern Arizona. Proterozoic anorogenic granitic complexes were emplaced into the schist between 1450-1350 Ma. Continental rifting in the Mesoproterozoic brought both Paleo- and early Mesoproterozoic granitic complexes to the surface where they were subsequently buried beneath early Neoproterozoic rocks of the Apache Group, which represents a very shallow intracontinental basin. Around 1100 Ma, these rocks were intruded by Diabase intrusions related to the break-up of the Rodinia supercontinent. Throughout the Paleozoic Era, Arizona was located within a craton with major disconformities in the stratigraphy interpreted to represent relative sea level changes. Continental shortening throughout the Cretaceous period is contemporaneous with diachronous magmatism within the same location (Tosdal and Wooden, 2015). Cessation of magmatic activity in the Paleocene Period marked the onset of erosion of the uplifted arc, which lay southwest of the Colorado Plateau.

7.2 Metallogenic Setting

The porphyry copper deposits within the Southwestern Porphyry Copper Belt are the genetic product of igneous activity during the Laramide Orogeny (80 Ma to 50 Ma) (Figure 7-2). Laramide porphyry systems near the Santa Cruz Project define a southwest to northeast linear array orthogonal to the trend of magmatic arc environment.

During the tectonic extension of the mid-Cenozoic Period, the Laramide arc and related porphyry copper systems were variably dismembered, tilted, and buried beneath basin alluvium and conglomeratic deposits that fill the Casa Grande Valley. Prior to concealment , many of the Laramide porphyry systems of Arizona experienced supergene enrichment events that make them such economically significant deposits.

Supergene alunite from the Sacaton porphyry copper deposit, located approximately 8.5 km from the Santa Cruz Deposit, was K-Ar dated at 41 Ma (Cook, 1994). At the Santa Cruz Project, evidence for multiple cycles of supergene enrichment is represented by multiple chalcocite and oxide-copper “blankets”. These “blankets” were developed oblique to each other as a result of rotation and subsequent overprinting by new supergene blankets. This enrichment has been shown to occur throughout the Tertiary Period and ceased with the deposition of overlying sedimentary packages, comprised predominantly of conglomerates, which changed the hydrology near the deposits. The earliest supergene enrichment is interpreted to have occurred in the Eocene Epoch (Tosdal and Wooden, 2015).

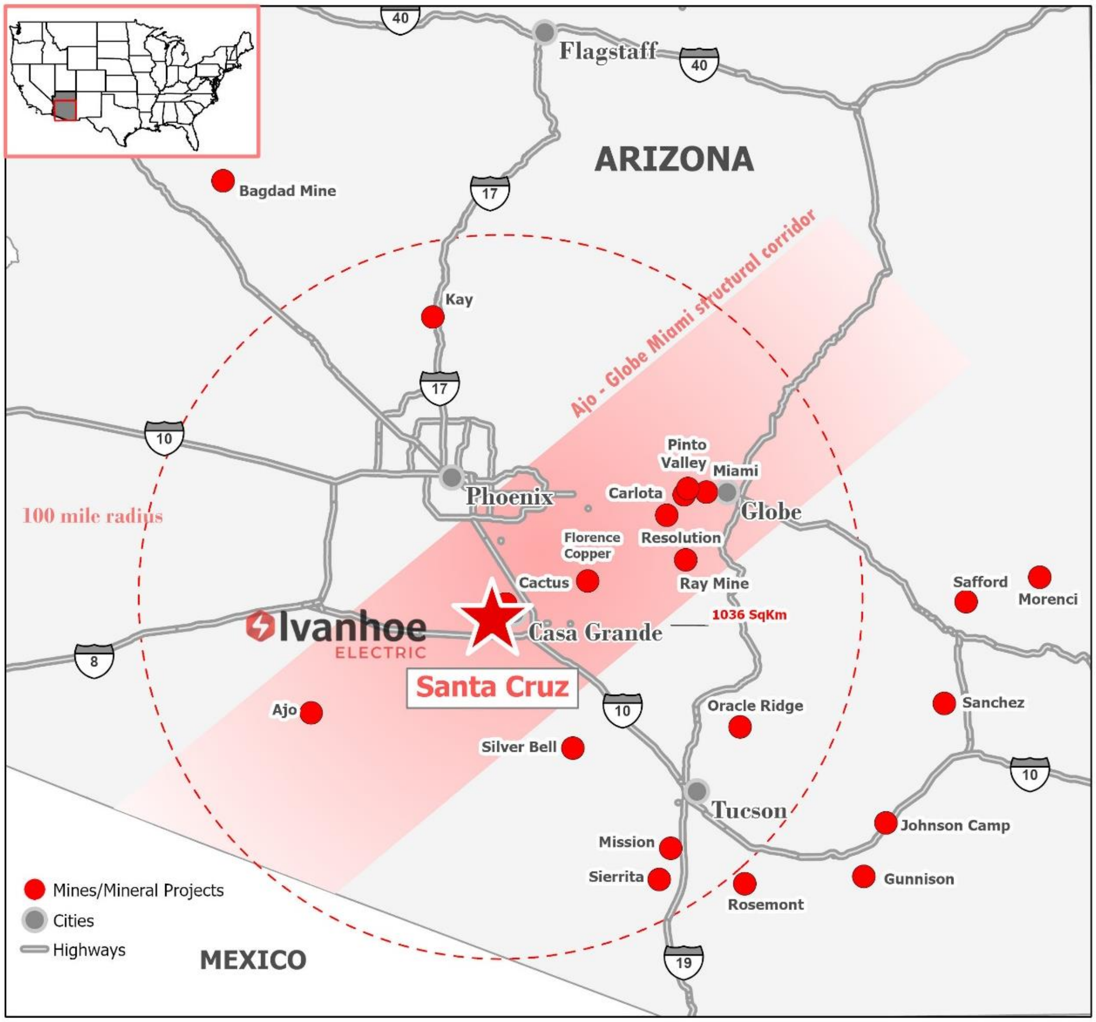


Figure 7-2: Location of Santa Cruz Project in relation to other associated copper porphyry systems.

7.3 Santa Cruz Project Geology

The Santa Cruz Project is comprised of five separate areas along a southwest-northeast corridor. These areas from southwest to northeast are known as the Southwest Exploration Area, the Santa Cruz Deposit, the East Ridge Deposit, the Texaco Ridge Exploration Area, and the Texaco Deposit. Each of these deposits represent portions of one or more large porphyry copper systems separated by extensional Basin and Range normal faults. Each area has variably experienced periods of erosion, supergene enrichment, fault displacement and tilting into their present positions due to Basin and range extensional faulting (Figure 7-3).

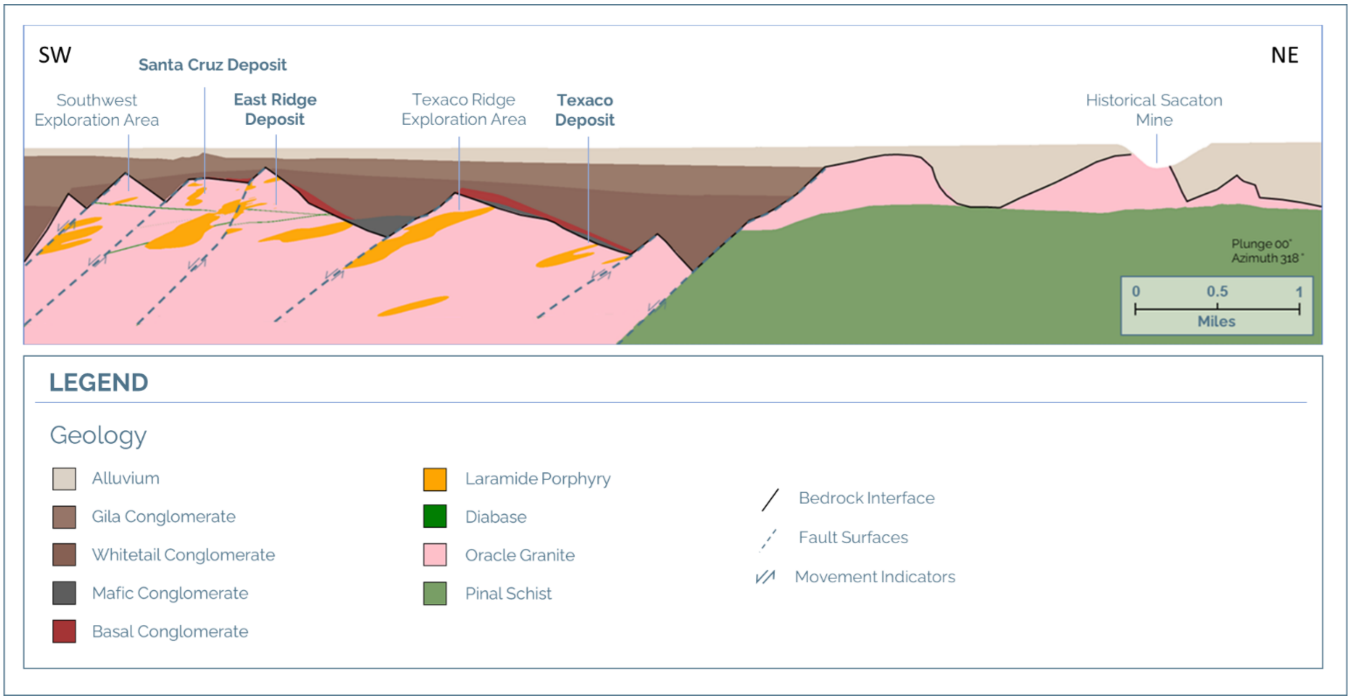


Figure 7-3: Generalised cross-section of the Santa Cruz - Sacaton system.

7.3.1 Santa Cruz Project Lithologies

The bedrock geology at the Santa Cruz Project is dominated by Oracle Granite (1450 to 1350 Ma) with lesser proportions of Proterozoic Diabase intrusions (1100 Ma), dipping at ~40 to 50 degrees to the south-southwest, and Laramide porphyry intrusions (75 Ma), dipping at ~30-40 degrees to the southwest.

The Oracle Granite is prevailingly a coarse-grained hypidiomorphic biotite granite with large pink or salmon-coloured orthoclase feldspars 32 mm to 38 mm across that gives rock a pink or gray mottled appearance on fresh surfaces. Groundmass composed of uniformly sized, 5 mm, grains of clear white feldspar and glassy quartz with greenish-black masses of biotite and magnetite. Composition suggests that rock should be classed as quartz monzonite rather than granite. Surface exposures of light-buff colour. Age is interpreted to be 1450 Ma to 1350 Ma (Tosdal and Wooden, 2015). Alteration minerals are dominated by secondary orthoclase and sericite.

Proterozoic diabase is Holocrystalline, medium- to coarse-grained ophitic to subophitic textures with plagioclase and clinopyroxene (augite) as the dominant primary phases. Magnetite, oligoclase, sulphide (pyrite and chacopyrite) mineralization are reported as minor phases within the diabase. These diabase intrusions were dominantly emplaced as horizontal to sub-horizontal sills, though rare dykes are recognized. These dykes are associated with local discrete increases in observed hypogene sulphide mineralization – interpreted as being a more reactive and receptive host rock for hydrothermal fluid deposition of sulphide mineralization. Historic petrographic thin section analysis indicates diabase is dominantly associated with hydrothermal biotite and epidote.

Laramide porphyry intrusions are strongly associated with primary hypogene mineralization. The porphyry has a quartz monzonite composition (35% quartz, 6% biotite, 29% feldspar, 30% K-feldspar, and plagioclase) with 40% phenocrysts averaging 1.5 mm and 60% aplitic to aphanitic groundmass. Quartz phenocrysts are less than 10 mm, sub-spherical, and comprise approximately 25% of the phenocrysts. Biotite makes up 15% of the phenocrysts and are less than 5 mm. Subhedral plagioclase phenocrysts, 60%, are generally less than 7 mm. There are two distinct groups of Laramide-aged porphyry intrusions. On contains quartz phenocrysts <5% by volume, and is generally associated with increased biotite phenocrysts as well as increased biotite content in the groundmass, typically giving this unit a darker colour. The other variant contains more quartz phenocrysts (>5%), and is often described as being more siliceous and lighter in colour.

A later late biotite-quartz feldspar monzonite porphyry is composed of 15% biotite, 25% K-feldspar, 40% plagioclase and 20% quartz with 15% phenocrysts consisting of 20% biotite, 70% plagioclase and 10% quartz in an aphanitic 15% biotite, 30% K-feldspar, 35% plagioclase, 20% and quartz groundmass with 0.06 mm average crystal size.

Alteration minerals in mineralized Laramide dykes are dominated by hydrothermal biotite, sericite, and lesser orthoclase feldspar.

Directly overlying the erosional surface of the basement rocks is a series of sedimentary and volcanic units. These consist of predominantly syn-extensional sediments and conglomerates, airfall volcanic tuffs, and andesitic basalts associated with dykes or flows. Sediments and conglomerate units include the Alluvium, Gila Conglomerate, Whitetail Conglomerate, and Basal Conglomerate. The Gila Conglomerate and Whitetail Conglomerate are separated stratigraphically and conformably by a thin marker bed of rhyolitic Apache Leap Tuff (20 Ma) usually of no greater thickness than one meter. Basaltic dykes or flows include the Mafic Conglomerate unit which exists variably above, below, or intercalated within the Basal Conglomerate.

The syn-extensional sedimentary and volcanic units are well understood across the Santa Cruz Project and have all been intersected in numerous drilling intersections through coring from surface. A general stratigraphic cross-section can be viewed in Figure 7-4. Quaternary alluvium consists of poorly sorted silt and sand spread out in a thin veneer across the entirety of the Casa Grande Valley, reaching up to 70 m thick near the Santa Cruz River and displays a conformable relationship with underlying Gila Conglomerate. Dissected alluvial fans flank the Tabletop Mountain area to the southwest of the Santa Cruz Project and are largely comprised of volcanic rubble.

The Tertiary Gila Conglomerate consists of alternating valley beds most of which are sub-rounded to sub-angular cobble to boulder conglomerates with periodically interbedded layers of moderately sorted sand and gravel, collectively averaging 150 to 300 m thick across the Santa Cruz Project, reaching thickest intersections over paleo-valleys controlled by buried extensional structural block configurations and displays a conformable relationship with the underlying Apache Leap Tuff.

The Tertiary Apache Leap Tuff is defined as a single rhyolitic airfall tuff layer. The tuff layer consists primarily of devitrified quartzofeldspathic cryptocrystalline groundmass and displays a conformable relationship with the underlying Whitetail Conglomerate.

The Tertiary Whitetail Conglomerate is temporally and characteristically regarded as the stratigraphically lower and older equivalent of Gila Conglomerate. It consists of alternating valley beds of mostly angular to subangular cobble to boulder conglomerates with periodically interbedded layers of moderately to poorly sorted sand and gravel. It is interpreted to represent a period of higher intensity erosion. The unit collectively averages 100 m to 400 m thick across the Santa Cruz Project. The thickest intersections are found over paleo-valleys controlled by extensional structural block configurations. It displays a conformable relationship with the underlying Basal Conglomerate or Mafic Conglomerate.

Tertiary Mafic Conglomerate consists of tightly compacted monomictic conglomerate composed of angular cobble to boulder sized clasts of andesitic to basaltic composition and is distinguished by the abrupt change in clast composition and colouration. The unit collectively averages 10 to 50 m thickness across the Santa Cruz Project but displays layers at the edges of occurrences as narrow as < 1 m. The unit displays a conformable relationship with the underlying Basal Conglomerate or Whitetail Conglomerate or an unconformable relationship with the underlying Oracle Granite or Laramide Porphyry.

Tertiary Basal Conglomerate is characterized as a tightly compacted, monomictic conglomerate consisting of angular cobble to boulder sized clasts of Oracle Granite. The unit is also distinguished by a sharp and significant introduction or increase in total hematitic iron oxidation throughout the rock mass. The unit averages 25 m to 100 m thickness across the Santa Cruz Project, reaching the thickest intersections at the base of paleo-valleys due to slope erosion and sedimentation. The unit displays a conformable relationship with the underlying Mafic Conglomerate or an unconformable relationship with the underlying Oracle Granite.

The Santa Cruz Project lithologies are shown in the simplified stratigraphic column below (Figure 7-4).

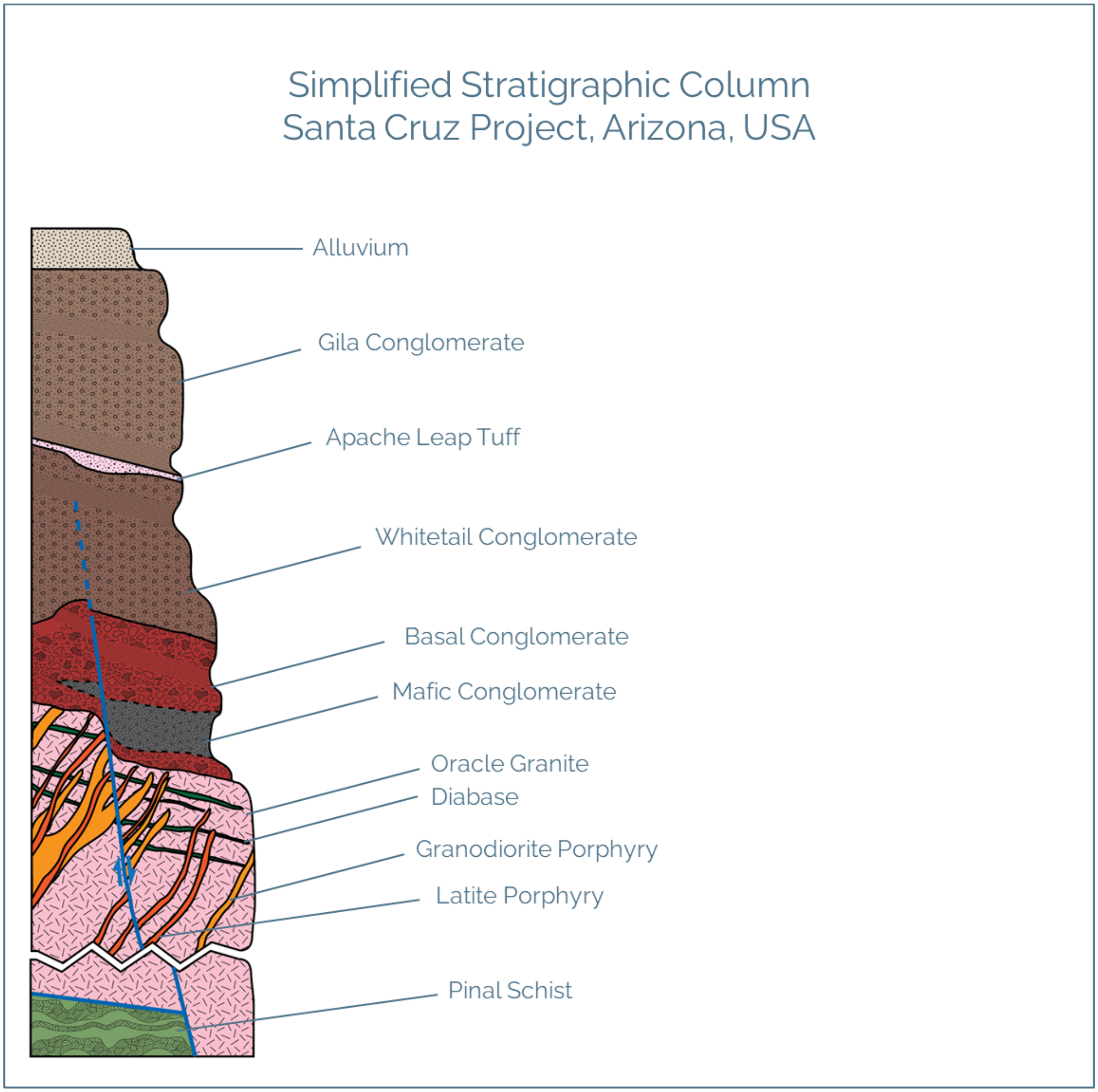


Figure 7-4: Simplified stratigraphic section of Santa Cruz Project (source: IE, 2023).

7.3.2 Alteration

Alteration at the Santa Cruz Project is variable across the property based on host lithology and mineralization type. Hypogene hydrothermal alteration assemblages consist predominantly of quartz, secondary biotite, orthoclase, magnetite, sericite, phengite. Low-temperature broad overprints are present consisting of illite and smectite, lesser kaolinite (which occurs primarily in the Oracle Granite), and late low-temperature chlorite and calcite. Rare subordinate phases such as epidote, albite, and tremolite may also occur. Supergene alteration related to the weathering and oxidation of primary hypogene sulphides. It is also important to note it can be difficult to discriminate from retrograde intermediate-argillic hypogene alteration. Supergene clays occur dominantly in the weathering environment where the breakdown of primary hypogene sulphides results in sulfuric acid and the formation of limonites, alunite, jarosite, and kaolinite-bearing assemblages. Supergene alteration also includes alteration due to heated meteoric groundwater resulting from Miocene igneous activity. This includes late propylitic overprints, smectite clay alteration of mafic to intermediate-composition igneous rocks, smectite alteration along Miocene Basin-and-Range faults, and broad pervasive illite-smectite alteration overprints.

7.3.3 Structural Geology

The Santa Cruz Project lies within the Basin and Range Province, within a domain that has experienced some of the greatest degrees of extensional tectonism Figure 7-2. The Santa Cruz Project, including the Southwest Exploration Area, Santa Cruz Deposit, East Ridge Deposit, Texaco Ridge Exploration Area, and Texaco Deposit represents portions of one or more large porphyry copper systems that have been dismembered and displaced during Tertiary extensional faulting. As such, faulting at the Santa Cruz Project is intimately associated with mineralization and the current deposit configuration in several ways. The extensional fault systems are recognised at Santa Cruz with a transport direction towards the south-west of which D1 is the oldest, followed by D2 faulting.

Firstly, major deep-seated NE-SW striking basement structures that run from Colorado to Mexico (i.e., The Jemez Lineament) likely controlled or constrained Laramide age intrusive emplacement and metal endowment during transpressional arc magmatism. These structures have been reactivated multiple times, potentially serving as transfer faults for dextral offset during Basin and Range extension. Secondly, post-mineral faulting is recognized at Santa Cruz Project, and it is evident that at least three different generations of approximately NW-SE striking normal faulting have developed during Basin and Range extension. This has resulted in significant rotation and offset of fault blocks with the earliest generation of D1 faults exhibiting a sub-horizontal configuration. This rotation and offset of faults and fault blocks during Basin and Range extension is well documented in Arizona.

Additionally, it is evident within the Santa Cruz Project that post emplacement faulting has controlled and affected groundwater dynamics and the subsequent mobilization and deposition of copper in supergene enrichment processes. These faults also played a role in shaping the paleotopographic landscape and had a controlling influence on the development and distribution of exotic copper mineralization in paleodrainages that are recognized at the Santa Cruz Project.

7.3.4 Property Mineralization

The Santa Cruz Project is comprised of five separate areas known as the Southwest Exploration Area, Santa Cruz Deposit, East Ridge Deposit, Texaco Ridge Exploration Area, and Texaco Deposit which represent portions of one or more large porphyry copper systems. Each deposit contains porphyry-style hypogene sulphide mineralization and subsequent Tertiary-supergene oxide copper and chalcocite enrichment. Intensity varies by deposit along with speciation, and characteristics depending on spatial and vertical positions and the timing and total amount of overlying post-mineral Tertiary sediment deposition.

Mineralization at the Santa Cruz Project is generally divided into three main groups:

1. *Primary hypogene sulphide mineralization:* chalcopyrite, pyrite, and molybdenite hosted within quartz-sulphide stringers, veinlets, veins, vein breccias, and breccias as well as fine to coarse disseminations within vein envelopes associated with hydrothermal porphyry-style mineralization. Hypogene mineralization appears to be the most concentrated within the Southwest Exploration Area, Texaco Ridge Exploration Area, and Texaco Deposit areas based on IE drill holes. Hypogene mineralization at these locations is defined by elevated amounts of pyrite and chalcopyrite mineralization compared to the other project areas with equal or lesser amounts of molybdenite mineralization.

2. *Secondary supergene sulphide mineralization*: dominantly chalcocite which rims primary hypogene sulphides and completely replaces hypogene mineralization. Other sulphides that fall within this category include lesser bornite and covellite as well as djurleite and digenite which have been identified by historic XRD analyses. Supergene sulphide mineralization developed as sub-horizontal domains, known as "chalcocite blankets", within the phreatic zone (below the paleo water table). They result from the weathering, oxidation, and leaching of sulphides under oxidizing conditions in the vadose zone (above the water table) and the transport and re-precipitation of copper sulphides in a more reducing environment below the water table. Basin and Range extension dissected and tilted older chalcocite blankets to the southeast, younger chalcocite blankets may have formed after the bulk of Miocene tilting.

3. *Supergene copper oxide mineralization:* Supergene oxide mineralization is dominantly comprised of chrysocolla (copper silicate) with lesser dioptase, tenorite, cuprite, copper wad, and native copper, and as copper-bearing smectite group clays. This mineralization style resides immediately above supergene sulphide mineralization near the paleo water table. Superimposed in-situ within the copper oxide zone is atacamite (copper chloride) and copper sulphates (e.g., antlerite, chalcanthite). Atacamite accounts for much of the copper grades within the oxide zone and requires formation of a brine to precipitate. The timing and mechanism for brine formation and atacamite precipitation remains poorly understood. One possibility is that atacamite may reconstitute copper from supergene copper oxides. As a consequence of this model, atacamite distribution may be controlled by the distribution of readily leachable copper oxides and permeability generated by Miocene faulting. Exogenous, or "exotic" copper occurrences also occur, including copper-oxide cemented gravels, sediments, and conglomerates; copper incorporation into ferricrete and smectite-group clays in the volcaniclastic tephra of the mafic conglomerate and in diabase sills; and finally, reworked clasts containing copper oxide mineralization.

7.3.5 Mineralization at the Santa Cruz Deposit

7.3.5.1 Hypogene Mineralization

Lithologies hosting hypogene mineralization in and around the Santa Cruz Deposit include Precambrian Oracle Granite, Laramide Porphyry, and Precambrian Diabase.

Primary hypogene sulphide mineralization consists of chalcopyrite, pyrite, molybdenite, and minor bornite hosted within quartz-sulphide stringers, veinlets, veins, vein breccias, and breccias as well as fine to coarse disseminations within vein envelopes associated with hydrothermal porphyry-style mineralization. Lateral and vertical continuity of highest hypogene grades locally varies within the deposit due to clustering of Laramide Porphyry dike intrusions.

7.3.5.2 Supergene Mineralization

Prior to burial by Tertiary sediments, hypogene sulphide mineralization near the paleo ground surface was subjected to multiple cycles of oxidation and enrichment resulting in locally abundant atacamite, chrysocolla, and chalcocite mineralization that form a supergene zone with complex geometries up to 600 m thick in vertical drill holes. Supergene mineralization is generally subdivided into supergene sulphide and copper-oxide mineralization with minor quantities of exotic copper mineralization. Atacamite and associated copper sulphate mineralization occurs dominantly within the copper oxide zone, although the relative timing and mechanism for formation is less well understood. The exotic Cu mineralization is dominantly hosted in the overlying clastic and volcanic rocks at the Santa Cruz Deposit. Supergene mineralization at the Santa Cruz Deposit reflects a mature, long lived supergene system (nearly complete chalcocite replacement of hypogene sulphides) with a well-developed supergene stratigraphy consisting of distinctly zoned mineralization with chrysocolla overlying chrysocolla-atacamite, overlying atacamite, overlying chalcocite. There is also abundant evidence for post rotational development of multiple supergene enrichment horizons that shows two or more distinct supergene sulphide events. During the Tertiary (no later than 15 Ma), the rapid burial of the Santa Cruz Deposit led to the cessation of supergene enrichment processes.

7.3.6 Mineralization at the Texaco Deposit

7.3.6.1 Hypogene Mineralization

Hypogene mineralization at the Texaco Deposit has been intersected with over a dozen widely spaced drill holes, historical and modern. However, the hypogene system has not been systematically tested and remains open in several directions. Hypogene mineral assemblages consist of chalcopyrite, pyrite, and molybdenite hosted within sulphide and quartz-sulphide veins, veinlets, vein breccias, and breccias, as well as fine to coarse disseminations within vein envelopes (dominantly replacing mafic minerals biotite and hornblende). Chalcopyrite and pyrite mineralization also occur locally as chemical cements in breccias similar to those found in the Southwest Exploration Area that occur with quartz and gypsum minerals. Hypogene mineralization is related to Laramide-aged quartz-biotite-feldspar granodiorite and latite porphyry dikes. At the Texaco Deposit these sulphide minerals are interpreted to exhibit a distinct zoning pattern with a core zone of chalcopyrite-molybdenite, a chalcopyrite zone, and a pyrite zone. The core and chalcopyrite zone host rocks are altered by biotite-orthoclase-sericite and represent a potassic core transitionally overprinted by retrograde phyllic-style veins and alteration. Host rocks in the outer chalcopyrite zone and pyrite zone are altered by quartz-sericite (Kreis, 1978).

7.3.6.2 Supergene Mineralization

Drilling by ASARCO at Texaco Deposit delineated supergene copper mineralization that remains open in several directions. The supergene mineralization at the Texaco Deposit consists of a similar geochemical stratigraphy to that observed at the Santa Cruz Deposit. Supergene mineralization contains a well-developed leached cap with abundant limonite consisting of hematite over goethite and minor jarosite. The limonite leached cap zone overlies a chalcocite enrichment blanket of variable thickness. However, supergene mineralization at the Texaco Deposit contains much less copper-oxide and copper-chloride mineralization compared to the Santa Cruz Deposit. Brochantite (copper sulphate) was also noted as the dominant copper-bearing phase in historic hole SC-23, where it is overprinting chalcocite (Kreis, 1978). Chalcocite mineralization was historically interpreted by previous operators as having been developed in an originally thick sub-horizontal blanket and subsequently thinned due to faulting and extension.

7.3.7 Mineralization at the Texaco Ridge Exploration Area

Recent drilling of the Texaco Ridge Exploration Area has identified some of the highest quartz-sulphide vein densities within the various deposits which may reflect proximity to one of the main hypogene hydrothermal centers. Hypogene mineralization includes quartz vein-hosted and disseminated chalcopyrite, pyrite, and molybdenite. Hypogene mineralization is associated with Laramide-aged biotite granodiorite porphyries, biotite latite porphyries, and rare amphibole-biotite latite porphyry dikes.

As with the Santa Cruz and East Ridge Deposits, the Texaco Ridge Exploration Area contains a laterally extensive Mafic Conglomerate sequence within the Basal Conglomerates. Classic supergene chalcocite, chrysocolla, and atacamite are absent from the Texaco Ridge Exploration Area either due to erosion or poor development well below the paleo water table. Exogeneous copper mineralization, however, occurs as narrow bands of copper-bearing vermiculite and smectite-group clays within finely laminated lacustrine sediments above the Mafic Conglomerate and at the upper contact of the Mafic Conglomerate. Calcite and siderite occur commonly throughout the Mafic Conglomerate. The interior and basal sections of the Mafic Conglomerate are relatively unaltered or weakly altered by low-temperature weathering clays. Below the bedrock contact, the only noteworthy supergene mineralization identified is chalcocite rimming and partial replacement of primary hypogene chalcopyrite. The relatively thick sequence of Mafic Conglomerates in this exploration area may have acted as a significant reductant diminishing the weathering of hypogene sulphides and/or the supergene enrichment may have been eroded away by denudation prior to the deposition of the Mafic Conglomerate locally. It is important to note that supergene enrichment does occur within the Texaco Deposit, located immediately east of the Texaco Ridge Exploration Area, at lower elevations of the paleotopography. If supergene enrichment of the Texaco Ridge Exploration Area was eroded, then there is still potential for supergene enrichment to exist laterally or at lower elevations to the east within the same structural block.

7.3.8 Mineralization at the East Ridge Deposit

7.3.8.1 Hypogene Mineralization

Hypogene mineralization in the East Ridge Deposit is correlative and displaced from the Santa Cruz Deposit. Hypogene mineralization includes broad zones of low to moderate-density quartz-sulphide veins consisting of pyrite, chalcopyrite, molybdenite, and rare bornite mineralization. Lithologies hosting hypogene mineralization in and around the East Ridge Deposit include Precambrian Oracle Granite, Laramide Porphyry, and Precambrian Diabase.

7.3.8.2 Supergene Mineralization

Supergene mineralization in the East Ridge Deposit is also correlative and partially displaced from the Santa Cruz Deposit. Supergene sulphides are present as thin, stacked intervals displaced from those in the Santa Cruz Deposit by D2 faulting. Chrysocolla and atacamite mineralization is more broadly distributed, especially near the fault-controlled paleo-valley formed between the Santa Cruz Deposit and the East Ridge Deposit. Supergene mineralization tends to thin to the east and south within the East Ridge Deposit.

7.3.9 Mineralization at the Southwest Exploration Area

7.3.9.1 Hypogene Mineralization

Hypogene mineralization within the Southwest Exploration Area is characterized by a single drill intercept that encountered bedrock at approximately 1000 m depth. The hypogene sulphides include pyrite and chalcopyrite that occur dominantly as a chemical cement within a magmatic-hydrothermal breccia. The breccia may resemble collapse breccias observed as late-stage features in many porphyry copper deposits. The breccia clasts are dominated by a Laramide-aged porphyritic diorite with lesser Oracle Granite and Laramide-age aplite, each with sparse quartz-sulphide veining; the clasts have been moderately to intensely potassically altered. Gangue minerals within the breccia cement include quartz, gypsum, and locally, anhydrite.

7.3.9.2 Supergene Mineralization

Supergene mineralization has not been encountered in the Southwest Exploration Area with diamond drilling. The bedrock contact was a faulted contact, and thus any supergene mineralization was displaced. Supergene mineralization may occur higher within the structural block.

8 DEPOSIT TYPES

The Santa Cruz Project consists of a series of porphyry copper systems exhibiting typical features of porphyry copper deposits. Porphyry copper deposits form in areas of shallow magmatism within subduction-related tectonic environments (Sillitoe, 2010). The Santa Cruz Project has typical characteristics of a porphyry copper deposit defined by Berger et al. (2008) as follows (Figure 8-1):

- Copper-bearing sulphides are localized in a network of fracture-controlled stockwork veinlets and as disseminated grains in the adjacent altered rock matrix.
- Alteration and mineralization at 1 km to 4 km depth are genetically related to magma reservoirs emplaced into the shallow crust (6 km to over 8 km), predominantly intermediate to silicic in composition, in magmatic arcs above subduction zones.
- Intrusive rock complexes associated with porphyry Cu mineralization and alteration are predominantly in the form of upright-vertical cylindrical stocks and/or complexes of dykes.
- Zones of phyllic-argillic and marginal propylitic alteration overlap or surround a potassic alteration assemblage.
- Cu may also be introduced during overprinting phyllic-argillic alteration events.

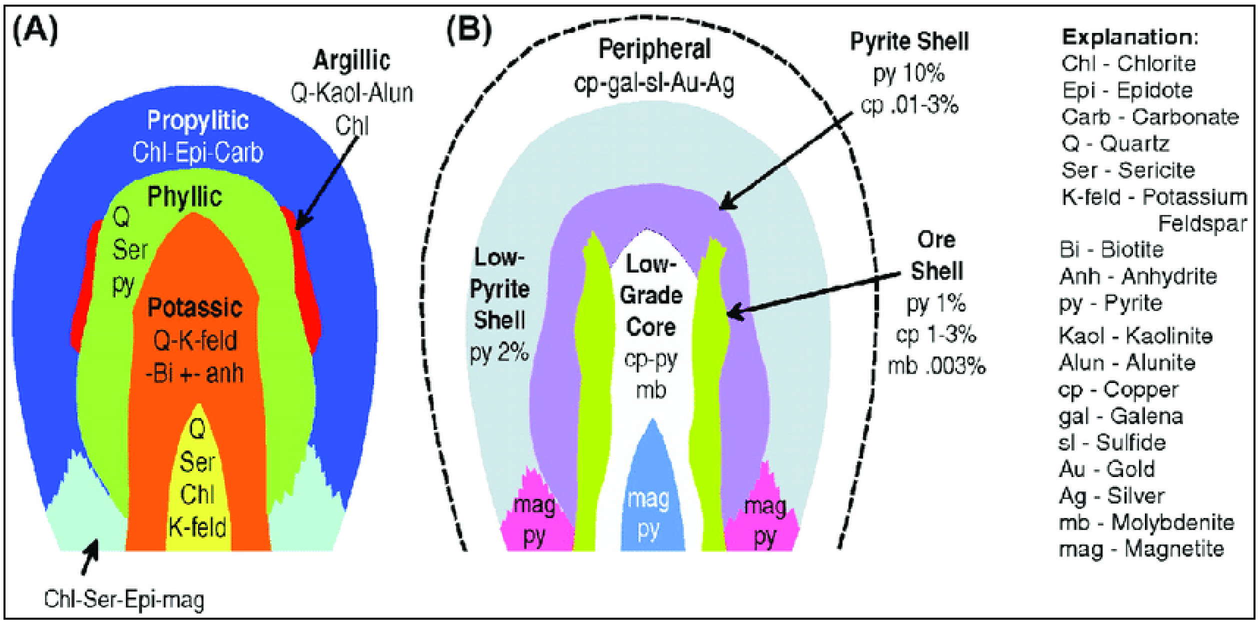


Figure 8-1: Simplified alteration and mineralization zonation model of a porphyry Cu deposit, after Lowell and Guilbert, 1970.

Hypogene (or primary) mineralization occurs as disseminations and in stockworks of veins, in hydrothermally altered, shallow intrusive complexes and their adjacent country rocks (Berger, Ayuso, Wynn, & Seal, 2008). Sulphides of the hypogene zone are dominantly chalcopyrite and pyrite, with minor bornite. The hydrothermal alteration zones and vein paragenesis of porphyry copper deposits is well known and provide an excellent tool for advancing exploration. Schematic cross sections of typical alteration zonations and associated minerals are presented in Figure 8-2.

Supergene enrichment processes are a common feature of many porphyry copper systems located in certain physiogeographical regions (semi-arid). It can result in upgrading of low-grade porphyry copper sulphide mineralization into economically significant accumulations of supergene copper species (copper oxides, halides, carbonates, etc.). This is particularly important in the southwestern United States. Supergene enrichment occurs when a porphyry system is uplifted to shallow depths and is exposed to surface oxidation processes. This leads to the copper being leached from the hypogene mineralization during weathering of primarily pyrite, which generates significant sulfuric acid in oxidizing conditions, and redeposits the copper below the water table as supergene copper sulphides such as chalcocite and covellite. Figure 8-2 illustrates a schematic section through a secondary enriched porphyry copper deposit, identifying the main mineral zones formed as an overprint from weathering of the hypogene system.

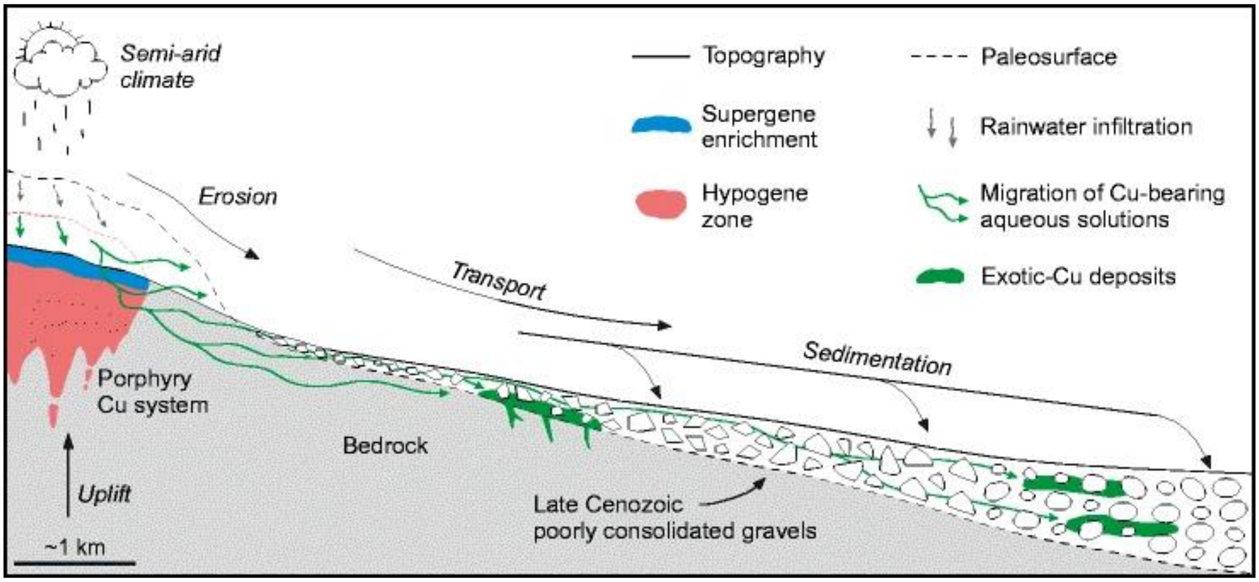


Figure 8-2: Schematic representation of an exotic Cu deposit and its relative position to an exposed porphyry Cu system (Fernandez-Mote et al., 2018; modified after Münchmeyer 1996; Sillitoe 2005).

The Santa Cruz Project has a history of oxidation and leaching that resulted in the formation of enriched chalcocite horizons, and later stages of oxidation and leaching, which modified the supergene Cu mineralization by oxidizing portions of it in place and mobilizing some of the chalcocite to a greater depth (Figure 8-3). This process is associated with descending water tables and or erosion and uplift of the system, or changes in climate, or hydrogeological systematics.

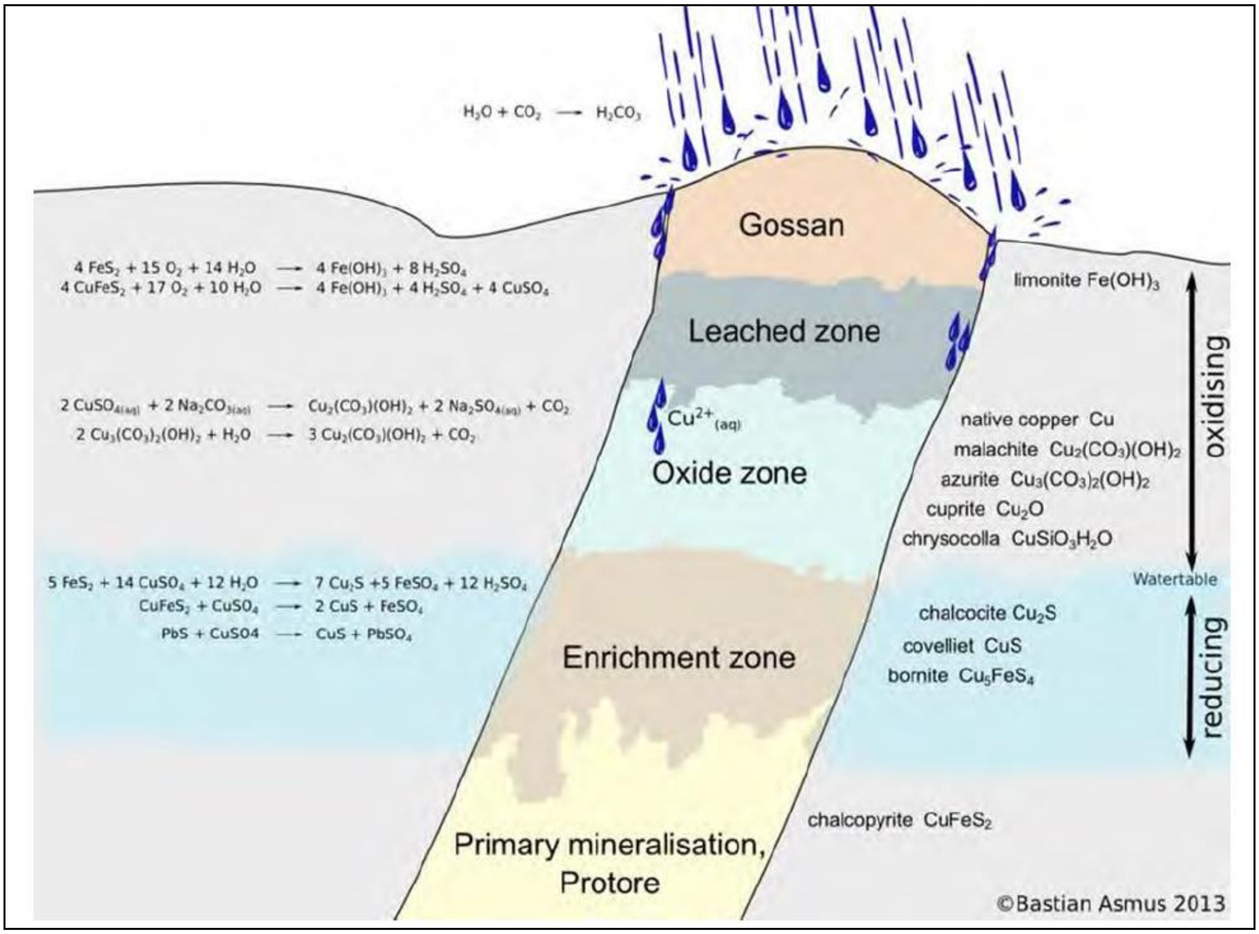


Figure 8-3: Typical Cu porphyry cross-section displaying hypogene and supergene mineralization processes and associated minerals (modified from Asmus, B., 2013)

These processes are also known to be associated with the generation of exotic copper deposits. Exotic copper mineralization is a complex hydrochemical process linking supergene enrichment, lateral copper transport, and precipitation of copper-oxide minerals in the drainage network of a porphyry copper deposit (Mote et al., 2001).

9 EXPLORATION

IE has completed several geophysical exploration surveys over the Santa Cruz Project area including ground gravity, ground magnetics, seismic, and proprietary Typhoon™ 3D PPD IP.

9.1 Geophysics

9.1.1 Historical Geophysical Exploration

IE has historical documents that detail historical geophysical exploration efforts and results over the Santa Cruz – Sacaton system (Table 9-1). To date, none of the original data has been located, but historic interpretations, and results remain valuable.

Table 9-1: Summary of Historical Exploration on the Santa Cruz Project and Surrounding Area.

Year	Activities	Company(s)	Prospect/ Deposit	Description	Notes
1961	Prospecting and discovery	ASARCO	Sacaton	ASARCO geologists Kinnison and Blucher identify *Sacaton Discovery Outcrop,* consisting of weak Cu-oxide mineralization on what will eventually be the margin of the Sacaton pit.	Based on Asarco's recognition that porphyry Cu deposits often have little or no associated Cu staining and on information from surrounding porphyry Cu deposits, Asarco's geologists were looking for other prospects in the area by driving and walking around. There was a faint trace of Cu-stain but not enough to have attracted previous exploration or prospecting. The outcrop was granite with a thin dyke of porphyry – both altered to quartz-sericite-clay with weak but pervasive jarosite-goethite and a few specks of hematite after chalcocite, particularly in the dyke. The outcrop was expected to have originally contained about 2% sulphides as pyrite/chalcocite/chalcopyrite.
1961	Geophysical Surveying	ASARCO	Sacaton	ASARCO Geophysical Dept. report.	Geophysical survey results were used to improve the interpretations of bedrock depth in the Sacaton area.
1967	Ground IP geophysics	ASARCO		1967 Internal report indicates eight holes were drilled over a large 13.2 mv/v IP anomaly around 15 miles SW of Sacaton.	None of the drill holes intersected primary sulphides, and the chargeability response was interpreted to have been caused by water-saturated clays in the overlying conglomerate.
1988-1991	Borehole Geophysics	SCJV	Santa Cruz	Downhole geophysical data was collected during the in situ leach test program.	During the SCJV In Situ leach tests (approximately 1988-1991), an undisclosed number of holes were subjected to downhole/borehole geophysical surveying that implemented the collection of caliper, density, resistivity, gamma-ray spectrometer, neutron activation spectrometry, dipmeter, sonic waveform, IP, and magnetic susceptibility data collection methods.
1988	In situ Cu Mining Research Project	USBR, SCJV (ASARCO Santa Cruz Inc., and Freeport McMoRan Copper & Gold Inc.)	Santa Cruz	Santa Cruz selected over other deposits for research site; Field testing begins.	The Santa Cruz Deposit was 1,250 ft to 3,200 ft below the surface and contains 1.0 billion tons of potentially leachable grading 0.55% total Cu. The joint venture owns 7,000 surface acres, with the Cu mineralization under approximately 250 acres.

Historical ASARCO documents detail multiple IP surveys over the Sacaton and Santa Cruz Deposits, as well as the historic Santa Rosa Prospect. Historic IP survey reports indicate that extraneous responses in IP surveys at Sacaton and Santa Cruz resulted from groundwater present in the valley fill conglomerates (i.e., W.G. Farley "ASARCO, 1967, Induced Polarization Pinal County" report documents IP response correlating with the water table at Santa Cruz and Sacaton, within the overlying gravels, and well above the basement contact). In 1991, the ASARCO-Hanna-Getty-Bureau of Mines joint venture contracted Zonge Geophysical to implement Controlled Source Audio-frequency Magnetotelluric (CSAMT) tests evaluating the potential to use the application to non-invasively monitor in situ leachate plume activity during in situ leach tests. Results from phase one and two testing from May 1990 through June 1991 were considered promising for tracking leachate detectability with salt doping/tracing. Historic airborne and ground magnetic interpretations are also available, though of lesser value than modern magnetic datasets (Figure 9-1).

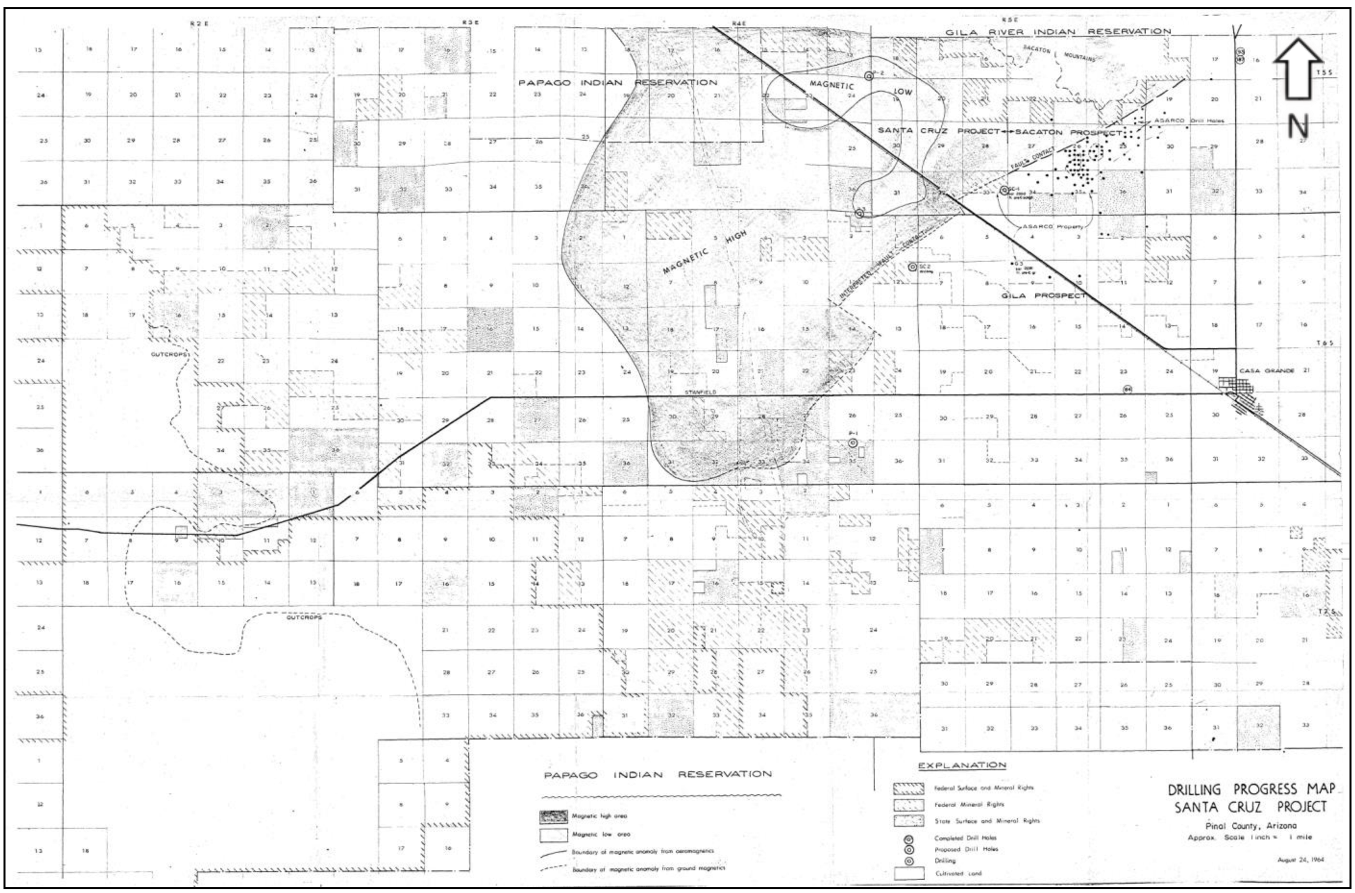


Figure 9-1: ASARCO map illustrating interpreted ground and aeromagnetic data detailed in historic report "Recommended Drilling Santa Cruz Project," M.A.970 Pinal County, Arizona, August 21, 1964, by W.E. Saegart

9.1.2 Ground Gravity Survey

Phase 1 of the Santa Cruz ground gravity survey was completed in January 2022. 615 stations were collected within the property boundaries. Phase 2 of the survey was done in August 2022 with 307 more gravity stations collected (Figure 9-2).

Topographic surveying was performed simultaneously with gravity data acquisition. The gravity stations were surveyed in WGS84 UTM Zone 12 North coordinates in meters. The GEOID18 geoid model was used to calculate North American Vertical Datum of 1988 (NAVD88) elevations from ellipsoid heights. The coordinate system parameters used on this survey are summarized in Table 9-2.

Table 9-2: Ground gravity topographic survey coordinate system parameters.

Coordinate System Parameters	
Datum Name	**WGS84**
Ellipsoid	World Geodetic System 1984
Semi-Major Axis	6378137.000 m
Inverse Flattening	298.257223563
Transformation	None
Projection Type	Universal Transverse Mercator
Zone	UTM 12 North
Origin Latitude	00º 00' 00.00000" N
Central Meridian	111º 00' 00.00000" W
Scale Factor	0.9996
False Northing	0
False Easting	500000 m
Geoid Model	GEOID18 (CONUS)

Relative gravity measurements were made with Scintrex CG-5 Autograv gravity meters. Topographic surveying was performed with Trimble Real-Time Kinematic (RTK) and Fast-Static GPS. The gravity survey is tied to a gravity base established in January 2022 and was designated "CASA". The CASA base is tied to the U.S. Department of Defense gravity base in Florence, AZ; designated "FLORENCE" (DoD reference number 3213-1). The integer value 9999 was used in the CG-5 gravity meters as the identifier for CASA and 8888 was used for FLORENCE. The coordinates in WGS84/NAVD88 on these bases is in Table 9-3.

Table 9-3: Ground gravity base information

Base ID	**CG5 ID**	**Absolute Gravity**	**Latitude**	**Longitude**	**Elevation (m)**
FLORENCE	8888	979 393.50 mGal	33.03114	-111.37930	459.3
CASA	9999	979 393.522 mGal	32.87787	-111.70788	399.59

Gravity data processing was performed with the *Gravity and Terrain Correction* module of Seequent's Oasis montaj (Version 2021.2 [20211201.32]) The raw ASCII text files were edited to remove unwanted records prior to data processing in Oasis montaj. Editing consisted of:

1. Removal of incomplete integration records (i.e. <90 sec)
2. Removal of assumed additional low frequency noise likely associated with elastic relaxation, instabilities in the sensor and/or high tilt susceptibility introduced during transport between stations.

Local slope measurements were also entered into the *Line* column of the ASCII text file during this stage. A residual drift correction was then applied to produce observed gravity. Gravity data were then processed to Complete

Bouguer Anomaly (CBA) over a range of densities from 2.00 g/cc through 3.00 g/cc at steps of 0.05 g/cc using standard procedures and formulas.

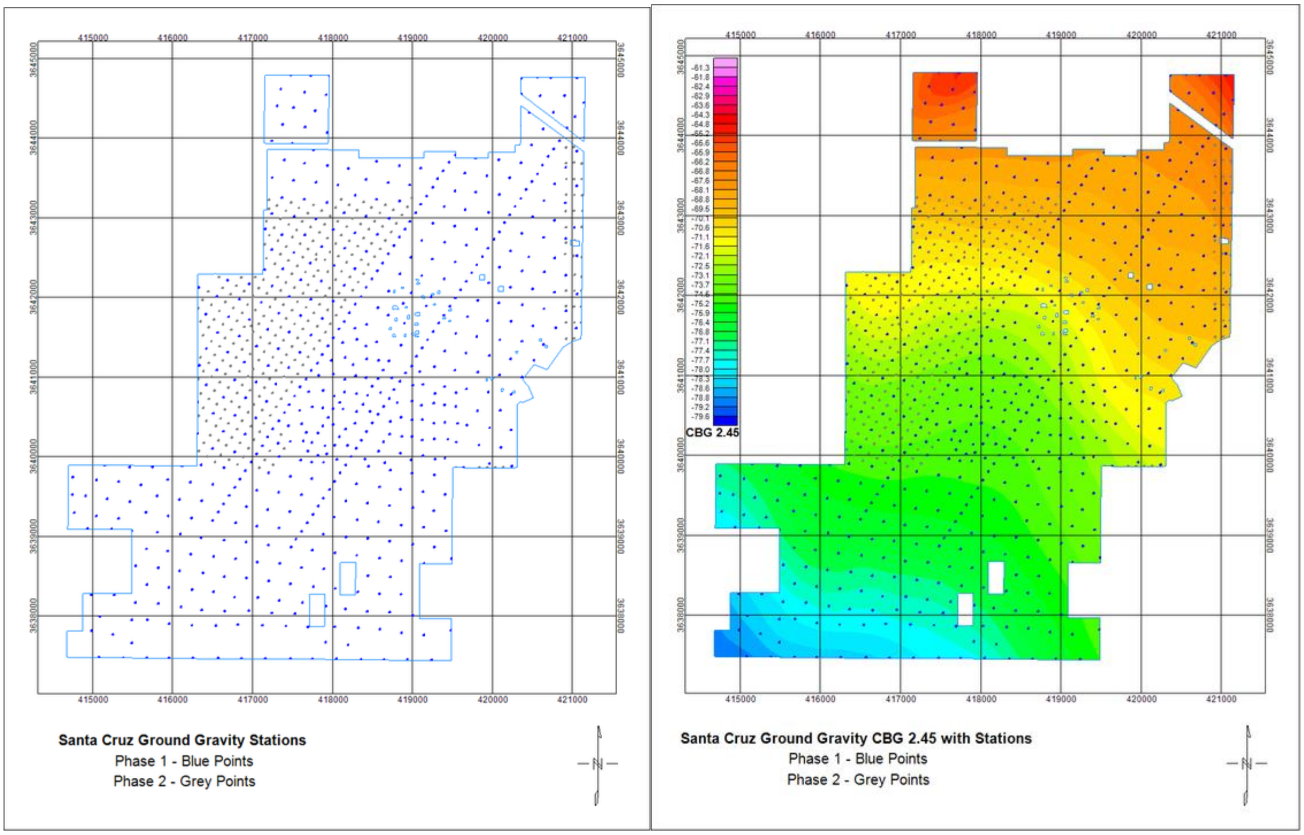


Figure 9-2: Gravity survey stations (left), and complete gravity survey results(right).

9.1.3 Ground Magnetics Survey

A 243 line-kilometer (line-km) ground magnet survey was carried out between January 22-27, 2022. Data was collected on lines spaced 50 m apart with an orientation of 33 degrees from true north. Results and lines used can be seen in Figure 9-3. The survey was completed by Magee Geophysical services of Reno, Nevada, using geometrics G858 Cesium vapor magnetometers for both base station and rover data collection. G858 magnetometers can sample the earth's magnetic field at a 10Hz frequency. GPS data is collected synchronously during data acquisition at a rate of 1Hz and is embedded in the data for accurate positioning of the transects. Data from the rover and base were downloaded daily and diurnal variations were corrected for in Geometric’s own MagMap software. Final data processing was completed in Seequent’s Oasis montaj software. Artifacts from cultural noise were removed and a narrow non-linear filter was used to smooth very short wavelength near surface features.

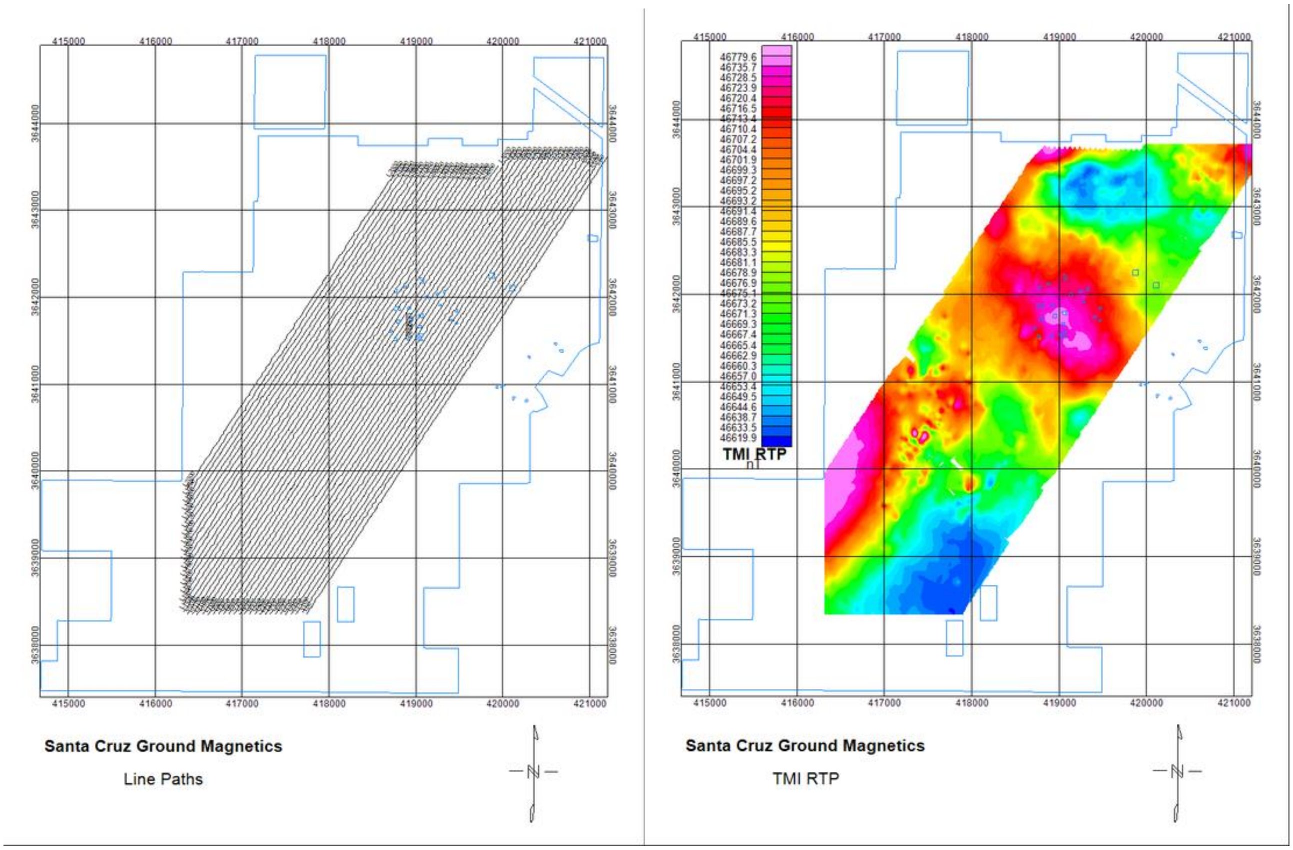


Figure 9-3: Ground magnetics survey lines (left), and ground TMI RTP ground magnetics results (right).

9.1.4 Typhoon™ Survey

The Santa Cruz Project Typhoon™ 3D PPD IP survey was conducted by IE using the Typhoon™ 2 high power geophysical system. Acquisition of 50 line-km of 3D PPD time domain IP data was completed over an area of 27 km^2 from May to July 2022 (Figure 9-4).

The survey was designed as a 3D PPD array with 32 East-West receiver lines spaced 200 m apart with electrodes spaced at 100 m intervals along the lines. Current injections were performed at 136 transmitter pits spaced 500 m apart East-West and 400 m apart North-South (Figure 9-4). The remote electrode was installed approximately 4 km south of the center of the grid for the first half of the survey and then moved to a pit at the Northwest corner of the survey for receiver lines south of Clayton Road.

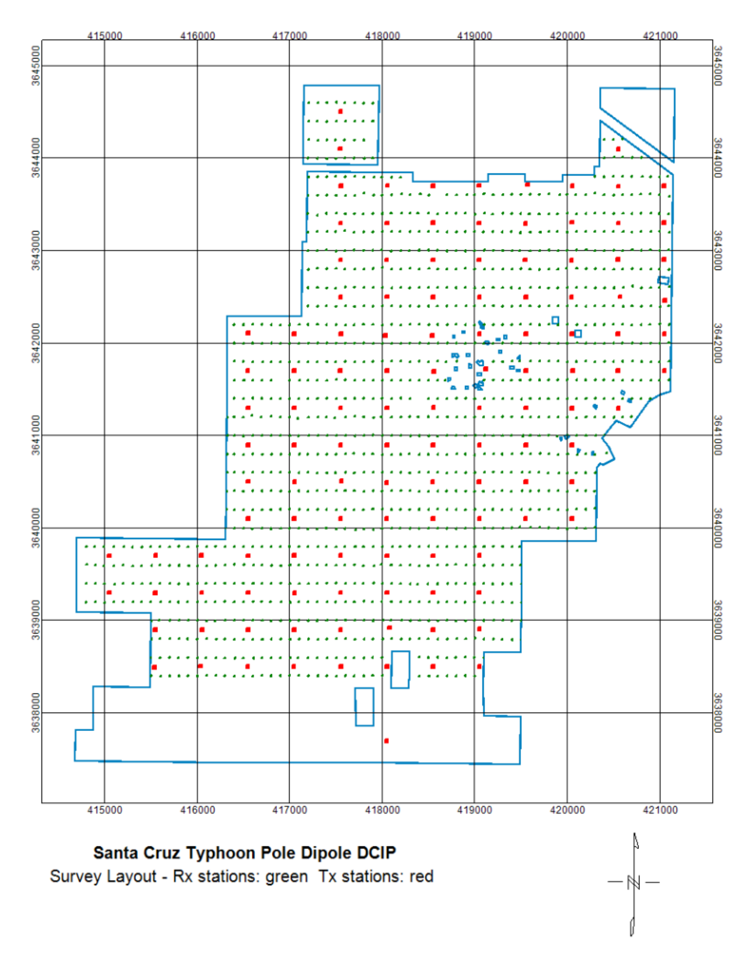


Figure 9-4: Layout of the Santa Cruz 3D IP survey. Green dots are receiver electrodes and red dots are transmitter points.

Table 9-4: Santa Cruz Typhoon™ 3D PPD IP survey specifications.

Survey type	Time domain 3D IP
Survey design	Pole-dipole IP 200m receiver line spacing; 100m electrode spacing
Survey area	27 km^2
Transmitter	Typhoon™ 2
Planned number of Tx poles	154
Transmit frequencies	1/12 Hz (= 0.0833 Hz)
Injected current	8-26 Amps
Receiver sampling rate	150 Hz
Recording time	12 minutes
Number of cycles for stacking	100
Receiver Type	DIAS 32
Number of receiver dipoles	5,000-7,000 unique dipoles per injection, 1011000 total dipole recordings
Line km	128.6 line-km of receivers
Receiver dipole lengths	100 m to 1,000 m
Receiver electrode station spacing	Grid: 200 m north-south, 100 m east-west
Recovered frequency range	0.0833 Hz
IP integration window	450 -2,940 ms
IP conversion factor	None applied
Sensor	N/A
GPS datum	WGS84
GPS projection	UTM Zone 12N
GPS heights	WGS84

9.1.5 2D Seismic Refraction Tomography

Two-dimensional (2D) surface seismic refraction tomography surveys were conducted at the Santa Cruz Project. The purpose of the survey was to determine bedrock depth and topography. Surface seismic data were acquired along four lines by Bird Seismic Services, Inc., Globe, Arizona, in a manner suitable for 2D tomographic analyses using a Seistronix EX-6 seismograph, configured with sufficient channels to extend the entire length of each line, in 32-bit floating-point format data, 2 second record length and 0.5 ms sample rate. Geospace SM24 geophones (one per takeout) with 10-Hz natural frequencies were placed at intervals of 12.2 meters along each line and source points were located between geophones at intervals of 36.6 meters. A United Service Alliance AF-450 nitrogen gas accelerated weight-drop seismic source with a 450 lb weight was used. For this project, the seismic data were stacked nominally five to ten times at each source point to increase the signal-to-noise ratio. Stacking, or signal enhancement, involved repeated source impacts at the same point into the same set of geophones.

The seismic tomography data for this project were processed using the Rayfract (version 3.36) computer software program developed by Intelligent Resources Inc. of Vancouver, BC, Canada. The models produced by the Rayfract tomography program use multiple signal propagation paths (e.g., refraction, reflection, transmission, and diffusion) that comprise a first break.

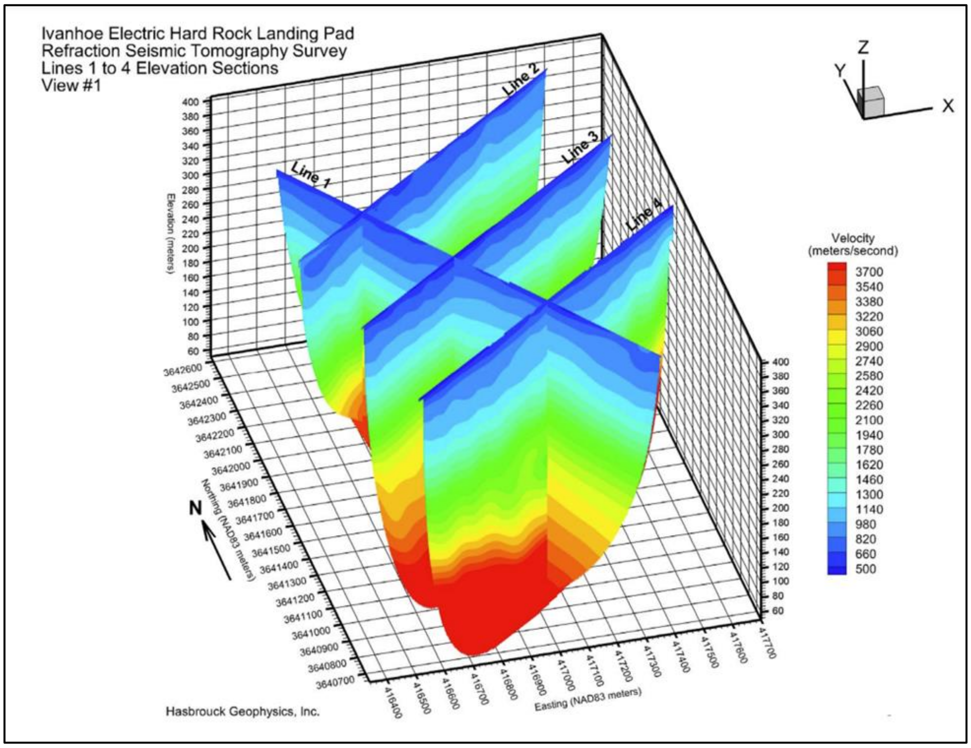


Figure 9-5: Refraction seismic tomography survey results.

9.2 Geotechnical Data

IE has used 83 historical and 69 modern drill holes as the basis for analysis supporting geotechnical characterization of the Santa Cruz and East Ridge Deposit. Historical drill holes were selected based on availability of Rock Quality Designation (RQD) data which was validated, processed, and subsequently used to infer Q-prime (Q') data values. Drill core and drill core photos are not available for any of the historical drill holes.

Sixty-four diamond core drill holes were used to collect and process RQD data, Q' data, rock hardness, fracture statistics, and laboratory strength testing. Laboratory strength testing by Call & Nichols Inc., geotechnical consultants, included Point Load Testing, Uniaxial Compressive Strength, Triaxial, Compressive Strength, Small Scale Direct Shear, and Brazilian Disc Tension testing.

Five sonic drill holes were used to assess and characterize the surficial alluvium and sediments through sampling, sediment logging, and Atterburg Limits for clay behavior under the Unified Soils Classification System.

Acoustic borehole image logs from televiewer surveys were also utilized from 23 of the diamond core holes to orient and identify the dominant joint fabric in the overburden and bedrock rock masses.

Geotechnical characterization also included a small-scale seismic survey as above in Section 9.1.5

9.3 Hydrogeological Data

IE has utilized a total of seven drill holes from the 2021-2022 drill program to characterize the hydrogeology of the Santa Cruz Project in conjunction our hydrogeological consultants Montgomery & Associates Inc. Of Tucson, AZ, USA.

The seven drill holes were fitted with up to six vibrating wire piezometers (VWP) to identify hydraulic responses from proximal packer tests and serve as long-term hydrologic monitoring points. The vibrating wire piezometers will provide ongoing water levels and serve as monitoring points for further aquifer testing.

Packer testing was conducted in two of the seven diamond core holes, resulting in data to be used with other characterization work and to inform ongoing groundwater numerical modelling.

There is currently no final delivered hydrogeological data with vibrating wire piezometer and packer testing active and ongoing at the Santa Cruz Project.

9.4 Historical Data Compilation

IE has obtained geological information in the form of historical maps, sections, drill reports, drill logs, and assay result reports. As a significant component of the exploration program, the historical drill logs were interpreted and used to create a 3D (Leapfrog Geo™) geologic model of the Santa Cruz Project. Three-dimensional geological interpretations were derived from historical drill logs and 2D sections containing geologic interpretations. The drill core data was compiled by IE geologists.

The historical drilling within the Project area can be separated into several series: CG (Hanna-Getty), SC (ASARCO), and T and HC drilling (related to the In Situ program described in Section 6.3.2). A plan view map of collar locations is in Figure 9-6 and a summary is provided in Table 9-5.

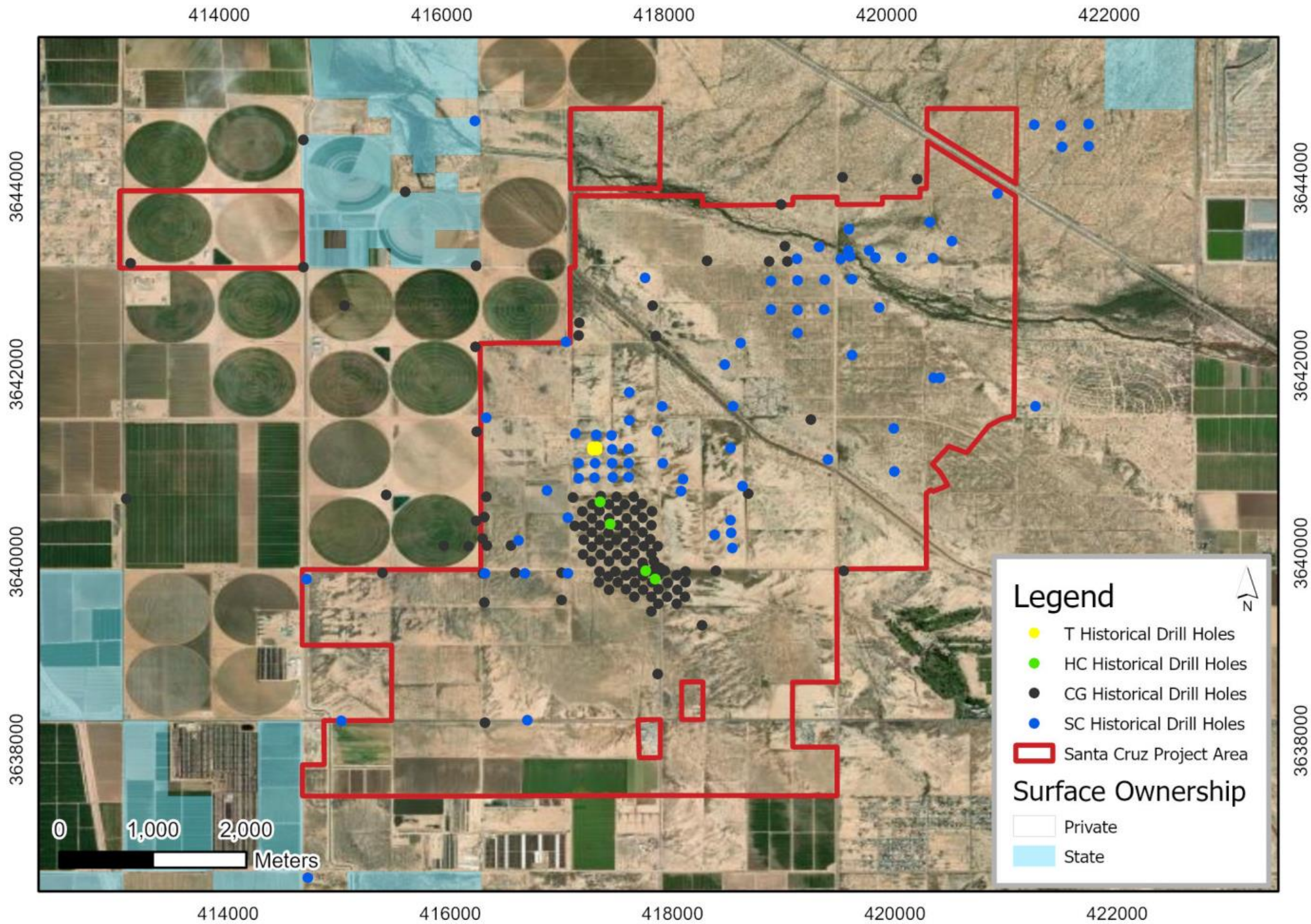


Figure 9-6: Plan map of historical drill hole collars.

The CG series drilling comprised 122 drill holes (CG-001 to CG-122) with 102,563 m drilled. Twenty-nine original drill cross-sections from 1978 to 1980 covering 92 holes were digitized. Information collected included elevation, total and rotary depths, basic lithology, assays from the three most predominant Cu minerals (total Cu, acid soluble Cu, and molybdenum), and survey depth. The archived data was originally recorded using a series of numerical codes documented in the "*Casa Grande Copper Company Ore Reserves Study*" for the Hanna Mining Company (Watts Griffis McOuat, 1982).

The SC series drilling, by ASARCO, comprised 80 drill holes (SC-001 to SC-078) with 62,754 m drilled. The archived data was originally logged using a series of numerical codes documented in the Casa Grande Copper Company Ore Reserves Study for the Hanna Mining Company (Watts Griffis McOuat, 1982).

The T and HC drilling were related to the In Situ testing in the 1990's described in *Section 6.3.2*. The T series drilling comprised five holes (T-1 to T-5) with 2,295 m drilled. The HC series drillings comprised five holes (HC-1 to HC-5) with 3,622 m drilled.

Table 9-5: Summary of Available Data by Region

	Dataset Region				Total
	CG	SC	HC	T	
Total number of holes	121	80	5	5	211
Total meters drilled	102,563	62,754	3,622	2,295	165,317
% Collar Survey (holes)	100	100	0	0	100
% Downhole Survey (m drilled)	62.1	65.9			63.4
% Assay (m drilled)	96.5	34.4			73.0

10 DRILLING

10.1.1 Historical Drilling – Santa Cruz and East Ridge Deposits

Santa Cruz Deposit diamond drilling consists of 108,301 m of core from 126 NQ drill holes completed between 1965 to 1996. Historically, these two deposits were undifferentiated, thus drilling totals are cumulative for both deposits. The historic diamond drill core is currently unavailable for review. Table 10-1 provides a summary of the drill campaigns by year and operator.

Table 10-1: Drilling History Within the Santa Cruz Deposit and East Ridge Deposit area

Year	Operator	Total Meters
Unknown	Casa Grande Copper Company, Hanna-Getty Mining	9,083
	ASARCO/Freeport McMoRan Gold Co. JV	744
1965	ASARCO/Freeport McMoRan Gold Co. JV	2,698
1974		2,068
1975	Casa Grande Copper Company, Hanna-Getty Mining	2,348
	ASARCO/Freeport McMoRan Gold Co. JV	682
1976	Casa Grande Copper Company, Hanna-Getty Mining	16,633
	ASARCO/Freeport McMoRan Gold Co. JV	513
1977	Casa Grande Copper Company, Hanna-Getty Mining	28,147
	ASARCO/Freeport McMoRan Gold Co. JV	9,184
1978	Casa Grande Copper Company, Hanna-Getty Mining	22,301
1979	ASARCO/Freeport McMoRan Gold Co. JV	2,468
1980		5,516
1989	In Situ Testing	2,630
1996		3,286

During the initial site assessment, it was determined that historical collar coordinates had variable errors. A program was conducted to check the collar locations of a selection from the drill hole database using a professionally licensed surveying company, D2 land surveying. Based on the transformation for these spot-checked drill holes, nearby hole collar locations were adjusted. All historical drilling is conducted with a vertical dip. For the Santa Cruz Deposit, the drilling has been completed along 100 m spaced section lines with drill holes spaced 90-100 m apart on each section line.

Holes are reverse circulation (RC) drilled through Tertiary sediments until the approximate depth of the Oracle Granite is reached by Major Drilling. Drilling is then switched to diamond drilling through the crystalline basement rocks, and again drilling is executed by Major Drilling.

10.1.2 Historic Drilling – Texaco Deposit

The historic Texaco Deposit diamond drilling consists of 23,848 m of core from 27 diamond NQ drill holes completed between 1975 to 1997. The drill holes in this deposit area consist of the SC drill hole series. The historic diamond drill core is currently unavailable for review. Table 10-2 provides a summary of the drill campaigns by year and operator.

Table 10-2: Drilling History Within the Texaco Deposit

Year	Operator	Total Meters
1975	ASARCO and Freeport McMoRan Gold JV	1,719
1976	ASARCO and Freeport McMoRan Gold JV	5,207
1977	Casa Grande Copper Co., Hanna-Getty Mining	2,883
	ASARCO and Freeport McMoRan Gold JV	5,906
1996	ASARCO and Freeport McMoRan Gold JV	5,086
1997		3,043

During the initial site assessment, it was determined that historical collar coordinates had variable errors. A program was conducted to check the collar locations of a selection from the drill hole database using a professionally licensed surveying company, D2 land surveying. Based on the transformation for these spot-checked drill holes, nearby hole collar locations were adjusted. All historical drilling is conducted with a vertical dip. For the Texaco Deposit, historical drilling has been completed along 100 m to 200 m spaced section lines with drill holes spaced 200 m apart on each section line. The average drill section and spacing in the Texaco Deposit is approximately 200 m and varies between approximately 90 m and 250 m.

10.1.3 2021 Twin Hole Drilling – IE

The company completed five diamond drill holes totaling 4,739 m within the Santa Cruz Deposit at the time of this Technical Report (Table 10-3). The five diamond drill holes were twins of the historical drill holes. All drilling was a mix of rotary and diamond drilling where the first 300 m to 500 m of drilling was rotary to get past the barren tertiary sediments. All samples from within the interpreted mineralized zone were assayed for total Cu (%), acid soluble Cu (%), cyanide soluble Cu (%), and molybdenum (ppm). The collar locations, downhole surveys, logging (lithology, alteration, and mineralization), sampling and assaying between the two sets of drill holes were used to determine if the historical holes had valid information and would not be introducing a bias within the geological model or Mineral Resource Estimate. The comparison included a QA/QC analysis of the historical drill holes (Section 9.2). Plans for infill drilling and drilling of angled holes have been made to test the continuity of mineralization and gain more information.

Table 10-3: IE 2021 Twin Hole Drilling on the Santa Cruz Deposit

Year	Operator	Total Meters
2021	IE	4,739

A total of five historical holes were reviewed with the following outcomes (Figure 10-1):

- All five historical hole assays aligned with the 2021 diamond drilling assays.
- The 2021 diamond drilling assays were of higher resolution due to smaller sample sizes.
- The recent drilling validated the ASARCO cyanide soluble assays.

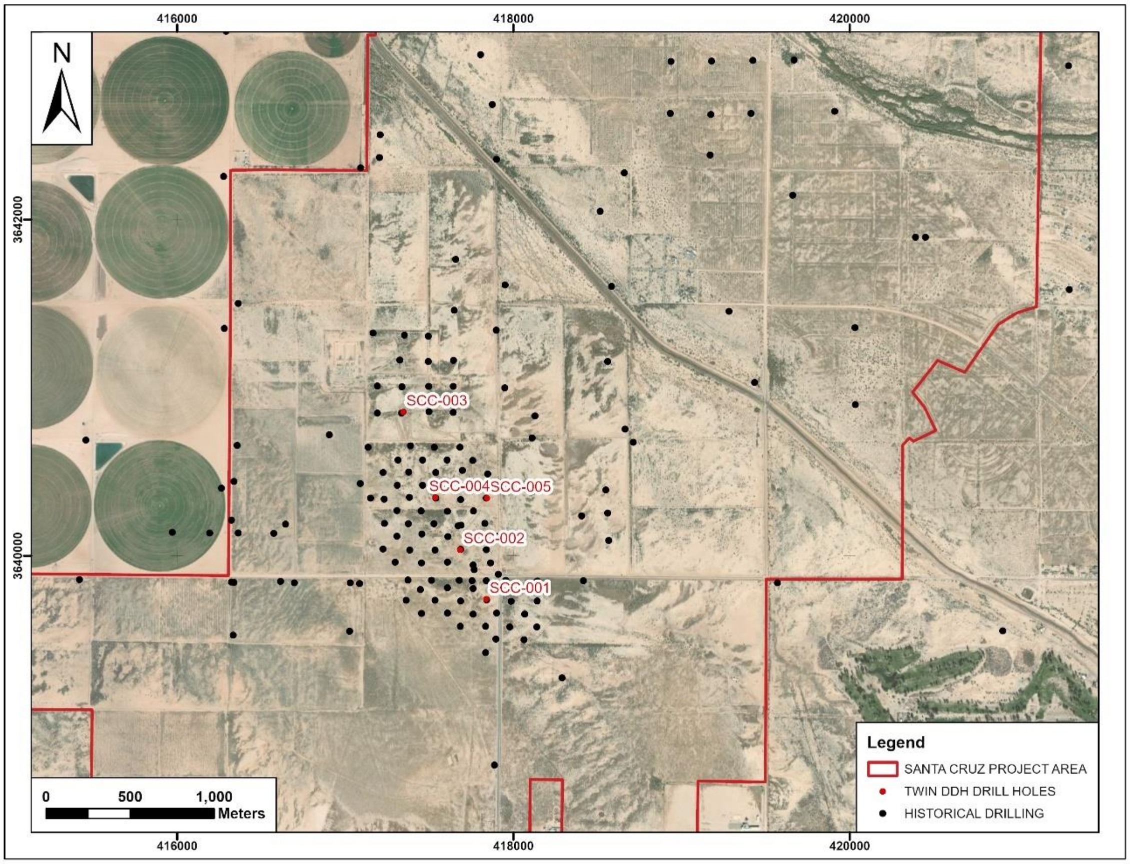


Figure 10-1: Plan map of the twinned drill holes and historical drill hole collars.

10.1.4 2021-2022 Drilling Program – IE

10.1.4.1 Core Logging

Initially, IE Geologists enter information into several tabs within MX Deposit™ while logging, including lithology, alteration, veining, structural zone, structure point, and mineralization. Optional characterizers, including colour and grain size, are available for further identification.

The current database has five major rock types, including 47 major lithologies in line with historically logged lithologies, 21 lithological textures, 17 alteration types, and 15 lithological structures. There are 28 unique economic minerals recorded in the current database, including chalcocite, chrysocolla, chalcopyrite, cuprite, molybdenum, and atacamite. X-ray fluorescence (XRF) measurements are taken by IE wherever mineralization of interest is present for internal use.

10.1.4.2 Surveying

During 2021-2022 drilling, downhole surveying was conducted using an EZ Gyro single shot taken from the collar and every 30 m afterwards as the tool is being pulled from the hole.

After hole completion, all drill holes were surveyed using borehole geophysics and video through Southwest Exploration Service, LLC. Each borehole was surveyed for 4RX Sonic-Gamma (sampled every 0.06 m), Acoustic Televiewer (sampled every 0.003 m), E-Logs-Gamma (sampled every 0.06 m), and a Gamma Caliper test for fluid temperature conduction (sampled every 0.06 m). This downhole surveying allowed for the calibration of drill hole information post-drilling to ensure that surveying was correct and lithological and mineralogical contacts were logged properly. The downhole surveying has collected very accurate structural measurements.

10.1.4.3 Specific Gravity

At both the Santa Cruz and Texaco Deposits, no specific gravity (SG) measurements were taken from historical diamond drill core. The 2021 diamond drilling was aimed at twinning CG historical drilling to confirm the historical logging and assays. The 2022 diamond drilling program was aimed at expanding and defining the mineral resource. IE collected 2,639 SG measurements over 74 diamond drill holes across the Santa Cruz Project (Table 10-4). SG measurements are taken every 3 m or at each new lithology to ensure a well-established database of measurements for each rock type. Measurements are taken using a water dispersion method. The samples are weighed in air, and then the uncoated sample is placed in a basket suspended in water and weighed again.

Table 10-4: Santa Cruz Project SG Measurements

Lithology	Average SG
Alluvium	1.88
Whitetail Conglomerate	2.28
Apache Leap Tuff	2.25
Gila Conglomerate	2.29
Mafic Conglomerate	2.37
Basal Conglomerate	2.43
Diabase	2.61
Laramide Porphyry	2.56
Oracle Granite	2.52
Pinal Schist	2.65
Unspecified	2.36

Due to the overall low SG values, multiple styles of SG measurement were tested, all of which indicated that these values are correct. The low SG values are interpreted to be due to the high porosity from leaching, faulting, and brecciation throughout the mineralized rock.

10.1.4.4 2021-2022 Drilling Program Summary

Drilling performed by Ivanhoe Electric over the 2021-2022 calendar years included 6005.18 m from 6 completed drill holes in 2021 and 60,116.54 m from 106 completed drill holes completed in 2022. Drilling during the 2021-2022 drilling campaigns was focused on multiple areas at the Santa Cruz Project including the Southwest Exploration Area, Santa Cruz Deposit, East Ridge Deposit, Texaco Ridge Exploration Area, and Texaco Deposit. Much of the drilling was focused on mineral resource definition within the Santa Cruz Deposit with secondary exploration drilling in the other Project Areas.

Drilling was performed using a variety of drilling equipment and methodologies including reverse circulation, diamond coring, tricone rotary, and shallow sonic boring. Drilling methodology varied across the Santa Cruz Project depending on objective and target depth. The majority of drilling was standard PQ diamond coring from surface to maximize the amount of core sample recovered for use in multiple sampling and testing programs. Nonresource related drilling, particularly focused outside the Santa Cruz Deposit itself was performed using tricone rotary surface as pre-collar parent holes for subsequent HQ size coring at target depths. Tricone rotary with HQ tails was utilized when targets did not require large-diameter coring from surface, allowing for this more cost-efficient technique.

Reverse circulation and sonic drilling were also used in 2022 for rapid characterization of: bedrock interface underneath sedimentary cover, soil and clay, and overburden sediments and conglomerate units, respectively.

Abandonment procedures for all drilling performed during the 2021 and 2022 campaigns were designed and held to meet or exceed State mandated requirements. The majority of drilling reaching or exceeding depths over 100 m utilized borehole abandonment of State approved methods involving: abandonite to approximately 20 m below the geological contact between bedrock and overburden sediments, if present, then the installation of appropriately sized Bradley plugs, labeled with the associated borehole ID, as the base for pumping and curing State approved cement across the geological contact to seal the interface, followed by additional abandonite to approximately 20 meters below the topographic surface, with an approximately 20 m cement cap, with the hole tagged and labeled for collar demarcation. Shallow drill holes, particularly those drilled utilizing only reverse circulation or sonic drilling methods, were abandoned using cement from total depth to surface with cap, with the hole tagged and labeled for collar demarcation.

A drill hole summary complete to December 31st, 2022 can be seen in Table 10-5. A map of drill hole collar locations can be seen in Figure 10-2.

Table 10-5: 2021-2022 Drilling Summary

Drill Hole	Depth (m)	Azimuth (˚)	Dip (˚)	Assay Status/Comment
SCC-001	1274.98	0	-90	All Assays Received
SCC-002	965.30	0	-90	All Assays Received
SCC-003	778.46	0	-90	All Assays Received
SCC-004	926.91	0	-90	All Assays Received
SCC-005	793.70	0	-90	All Assays Received
SCC-006	1344.17	235	-50	All Assays Received
SCC-007	1220.27	0	-90	All Assays Received
SCC-008	945.79	225	-75	All Assays Received
SCC-009	664.46	0	-90	All Assays Received
SCC-010	1099.41	225	-90	All Assays Received
SCC-011	379.78	0	-90	All Assays Received
SCC-012	855.27	0	-90	Hole Abandoned, No Assays Taken
SCC-013	1023.52	190	-84	All Assays Received
SCC-014	548.94	0	-90	All Assays Received
SCC-015	931.16	0	-90	Hole Abandoned, No Assays Taken
SCC-016	1139.34	0	-90	All Assays Received
SCC-017	848.87	0	-90	All Assays Received
SCC-018	1123.34	0	-90	All Assays Received
SCC-019	284.07	0	-90	All Assays Received
SCC-020	822.35	230	-80	All Assays Received
SCC-021	446.83	241	-80	All Assays Received
SCC-022	446.80	241	-80	All Assays Received

Drill Hole	Depth (m)	Azimuth (˚)	Dip (˚)	Assay Status/Comment
SCC-022A	406.50	241	-80	All Assays Received
SCC-023	897.94	207	-75	All Assays Received
SCC-024	309.82	0	-90	All Assays Received
SCC-025	858.77	228	-82	In Lab, Assays Pending for 494-570;739.5-858.77 m
SCC-026	741.88	209	-80	In Lab, Assays Pending for 396-688 m
SCC-027	550.47	259	-82	All Assays Received
SCC-028	369.72	230	-75	All Assays Received
SCC-029	917.91	227	-78	In Lab, Assays Pending for 402-453.69; 855-906 m
SCC-030	280.26	230	-75	All Assays Received
SCC-031	904.34	222	-85	In Lab, Assays Pending for 749-900 m
SCC-032	811.68	220	-78	In Lab, Assays Pending for 557.63-811.68
SCC-033	455.07	230	-60	All Assays Received
SCC-034	201.17	230	-60	All Assays Received
SCC-035	161.54	230	-75	All Assays Received
SCC-036	181.36	230	-60	All Assays Received
SCC-037	379.78	230	-80	All Assays Received
SCC-038	311.81	230	-75	All Assays Received
SCC-039	252.98	230	-60	All Assays Received
SCC-040	292.60	230	-75	All Assays Received
SCC-041	323.09	230	-60	All Assays Received
SCC-042	360.58	230	-60	All Assays Received
SCC-043	127.10	230	-60	Hole Abandoned, No Assays Taken
SCC-044	304.80	230	-60	All Assays Received
SCC-045	883.76	225	-73	All Assays Received
SCC-046	210.31	230	-60	All Assays Received
SCC-047	474.57	230	-60	All Assays Received
SCC-048	915.47	259	-82	In Lab, Assays Pending for 587-781; 808-829; 869-915.47 m
SCC-049	274.32	230	-60	All Assays Received
SCC-050	398.22	230	-60	All Assays Received
SCC-051	114.30	230	-60	All Assays Received
SCC-052	880.87	224	-75	All Assays Received
SCC-053	1041.80	224	-85	In Lab, Assays Pending for 471-656; 756-951 m
SCC-054	686.71	248	-85	In Lab, All Assays Pending
SCC-055	304.80	224	-85	RC pre-collar, No Assays Taken
SCC-056	846.73	224	-78	In Lab, Assays Pending for 561-846.73 m
SCC-057	996.70	221	-74	In Lab, All Assays Pending
SCC-058	889.25	226	-69	In Lab, All Assays Pending
SCC-059	977.18	212	-80	In Lab, All Assays Pending
SCC-060	304.80	224	-75	RC pre-collar, No Assays Taken
SCC-061	304.80	238	-75	RC pre-collar, No Assays Taken

Drill Hole	Depth (m)	Azimuth (˚)	Dip (˚)	Assay Status/Comment
SCC-062	304.80	250	-82	RC pre-collar, No Assays Taken
SCC-063	932.99	200	-80	In Lab, Assays Pending for 390.31-405; 475-932.99 m
SCC-064	204.22	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-065	577.90	0	-90	In lab, Assays Pending for 576-577.9 m
SCC-066	228.60	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-067	243.84	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-068	1019.09	231	-75	In Lab, Assays Pending 487-556; 807-890; 917-1,019.1 m
SCC-069	228.65	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-070	246.89	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-071	243.84	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-072	274.32	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-073	916.38	0	-90	In Lab, All Assays Pending
SCC-074	259.08	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-075	280.41	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-076	152.40	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-077	320.04	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-078	100.00	0	-90	Sonic Hole - Not Sampled, No Assays Taken
SCC-079	454.15	232	-75	RC pre-collar, No Assays Taken
SCC-080	759.56	205	-85	In Lab, Assays Pending
SCC-081	525.17	0	-90	In Lab, All Assays Pending
SCC-082	112.70	0	-90	Sonic Hole - Not Sampled, No Assays Taken
SCC-083	399.28	222	-85	RC pre-collar, No Assays Taken
SCC-084	915.92	214	-80	All Assays Received
SCC-085	388.00	254	-78	RC pre-collar, No Assays Taken
SCC-086	149.96	0	-90	Sonic Hole - Not Sampled, No Assays Taken
SCC-087	426.72	234	-80	RC pre-collar, No Assays Taken
SCC-088	579.73	0	-90	In Lab, All Assays Pending
SCC-089	100.28	0	-90	Sonic Hole - Not Sampled, No Assays Taken
SCC-090	712.01	0	-90	Currently Sampling, All Assays Pending
SCC-091	457.20	0	-90	All Assays Received
SCC-092	666.60	0	-90	In Lab, All Assays Pending
SCC-093	546.81	0	-90	In Lab, All Assays Pending
SCC-093A	959.20	0	-90	In Lab, All Assays Pending
SCC-094	99.06	0	-90	Sonic Hole - Not Sampled, No Assays Taken
SCC-095	457.20	0	-90	All Assays Received
SCC-096	981.76	0	-90	Currently Sampling, All Assays Pending
SCC-097	457.20	0	-90	All Assays Received
SCC-098	ACTIVE	0	-90	Actively Drilling

Drill Hole	Depth (m)	Azimuth (˚)	Dip (˚)	Assay Status/Comment
SCC-099	884.38	0	-90	In Lab, All Assays Pending
SCC-100	259.08	0	-90	RC Hole - Not Sampled, No Assays Taken
SCC-101	413.00	0	-90	In Lab, All Assays Pending
SCC-102	827.37	0	-90	In Lab, Assays Pending for 270-468; 638.5-827.38m
SCC-103	60.96	0	-90	Hole Abandoned, No Assays Taken
SCC-105	1029.30	0	-90	In Lab, Assays Pending for 554-637; 756-1,029.31 m
SCC-106	583.84	0	-90	Currently Sampling, All Assays Pending
SCC-107	1074.12	0	-90	In Lab, All Assays Pending
SCC-108	858.62	0	-90	Currently Sampling, All Assays Pending
SCC-109	859.08	0	-90	Currently Sampling, All Assays Pending
SCC-110	864.71	0	-90	Currently Sampling, All Assays Pending
SCC-111	ACTIVE	270	-80	Actively Drilling
SCC-112	ACTIVE	0	-90	Actively Drilling

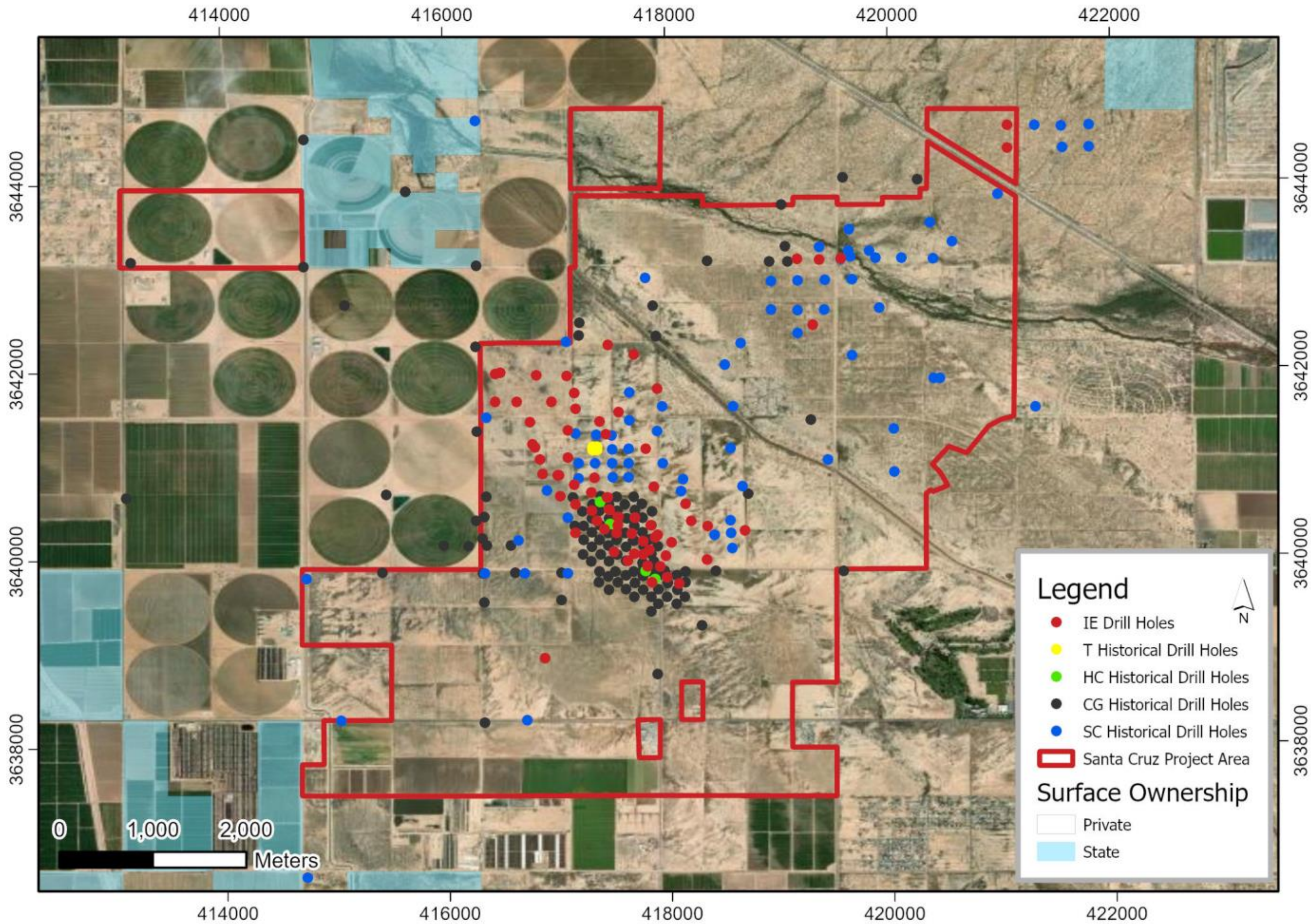


Figure 10-2: Plan map of IE and historical drill hole collars.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Assay Sample Preparation and Analysis

From September 2021 to December 2022, IE samples were sent to one of four laboratories: Skyline Laboratories located in Tucson, AZ, USA; SGS Laboratories located in Burnaby, BC, Canada, SGS Lakefield, ON, Canada for SEQ Copper Analysis; or American Assay Laboratories located in Sparks, NV, USA. All samples sent through SGS Laboratories were prepped at SGS Burnaby, BC, Canada. At the time, all assay labs were well established and recognized assay and geochemical analytical services companies and are independent of IE.

All five laboratories are recognized by the International Standard demonstrating technical competence for a defined scope and the operation of a laboratory quality management system (ISO 17025). Additionally, Skyline Laboratories is recognized by ISO 9001, indicating that the quality management system conforms to the requirements of the international standard. SGS Canada Minerals Burnaby conforms to requirements of ISO/IEC 17025 for specific tests as listed on their scope of accreditation. American Assay Laboratories carries approval from the State of Nevada Department of Conservation and Natural Resources Division of Environmental Protection. Due to QA/QC failures at American Assay Laboratories, IE discontinued work with this lab.

11.1.1 IE Core Sample Preparation and Analysis – 2021-2022

The diamond drill core from the Santa Cruz and Texaco Deposits were sampled by IE in 2021 under the direct supervision of Santa Cruz Geology Manager Christopher Seligman, MAusIMM CP(Geo) and Eric Castleberry, PG, US Operations Manager. Diamond drill core from the Santa Cruz, East Ridge, and Texaco Deposits sampled by IE in 2022 were completed under the direct supervision of Santa Cruz Geology Manager Christopher Seligman and Santa Cruz Exploration Manager Arron Jergenson.

Samples were cut lengthwise, either in half or in four quarters, using an NTT brand diamond bladed saw or a Husqvarna table saw (Figure 11-1). The sample consisted of one half or one quarter of the core which was placed in a plastic sample bag labeled with the sample number and the sample bag was sealed with a zip tie. That bag was then placed in a burlap sample bag labeled with the sample number and a sample tag added between the plastic and burlap bags. The sample tag corresponded with the tag stapled to the core box where the remaining half or three-quarters of the core was placed for catalog and storage (Figure 11-2). The burlap sample bags were then placed in labeled large plastic bags in batches of 25, that bag was sealed with a zip tie, and those bags were placed in large fold-out plastic bins for transport to the lab facility (Figure 11-3).

Figure 11-1: NTT diamond bladed automatic core saw used for cutting diamond drill core for sampling.

Figure 11-2: T-street core storage facility.

Figure 11-3: (Left) samples placed in burlap and inner plastic bags labeled with sample numbers; (Right) sample batches placed in large plastic bags and bins for shipping to lab

11.1.1.1 Skyline Laboratories

Half of the total drill core samples taken during the 2021 and 2022 diamond drilling program were prepared and analyzed at Skyline Laboratories, Tucson, Arizona. The samples were crushed from the split core to prepare a total sample of up to 5 kg at 75% passing 6 mm. Samples were then riffle split, and a 250 g sample was pulverized with a standard steel to plus 95% passing at 150 µm. After sample pulp preparation, the samples were analyzed in the following manner:

- All samples were analyzed for total Cu using multi-acid digestions with an atomic absorption spectrometry (AAS) finish. The lower limit of detection is 0.01% for total Cu, with an upper detection limit of 10%.
- Sequential Analysis for cyanide soluble and acid soluble Cu were conducted via multi-acid leaching with an AAS finish. For sequential acid leaching (SEQ) Cu analyses, the lower limit of detection is 0.005%, with an upper detection limit of 10%.
- Molybdenum was prepared using multi-acid digestion and analyzed using inductively coupled plasma optical emission spectrometry (ICP-OES). This analysis has a lower detection limit of 0.001%.
- Samples greater than 10% Cu, with a 20% threshold, were analyzed again using a Long Iodine method.

11.1.1.2 SGS Laboratories

Half of the total drill core samples taken during the 2022 diamond drilling program were prepared and analyzed at SGS Laboratories in Burnaby, BC, Canada or SGS Lakefield, ON, Canada. The samples were crushed from the split core to prepare a total sample of up to 5 kg at 6 mm. Samples were then riffle split, and a 250 g sample was crushed to 75% passing at 2 mm. The sample was then pulverized with a standard steel to plus 85% passing at 75 µm. After sample pulp preparation, the samples were analyzed in the following manner:

- All samples were analyzed for total Cu using a sodium peroxide fusion with an inductively coupled plasma atomic emission spectroscopy (ICP-AES) finish. The lower limit of detection is 0.001% for total Cu, with an upper detection limit of 5%.
- Sequential analysis for cyanide soluble and acid soluble Cu were conducted via multi-acid leaching with an AAS finish. For SEQ Cu analyses, the lower limit of detection is 0.005%, with an upper detection limit of 100%.
- Molybdenum was prepared using multi-acid digestion and analyzed using ICP-OES. This analysis has a lower detection limit of 0.05 ppm and an upper detection of 10,000 ppm.
- Samples greater than 5% Cu, with a 30% threshold, were analyzed again using sodium peroxide fusion overlimit with an ICP-OES finish.

11.1.1.3 American Assay Laboratories

A single drill hole from the 2021 drill campaign was prepared and analyzed at American Assay Laboratories in Sparks, Nevada. The samples were crushed from the split core to prepare a total sample of up to 5 kg at 75% passing 10 mm. Samples were then riffle split and pulverized with a standard steel to plus 95% passing at 150 µm. After sample pulp preparation, the samples were analyzed in the following manner:

- All samples were analyzed for total Cu using AAS, total molybdenum with an inductively coupled plasma mass spectrometer (ICP-MS), and acid soluble and cyanide soluble Cu with sequential leaching with an AAS finish. A measurement for residual Cu was also taken; this is essentially the Cu that is measured that cannot be attributed to cyanide soluble, acid soluble, or total Cu. The lower detection limit is 0.001%, with an upper limit of 10%. Samples greater than or equal to 10% were alternatively measured using Long Iodine analysis, which has an upper detection limit of 20%.

- The detection limit at American Assay Laboratories is an order of magnitude less than at Skyline Laboratories; therefore, there is a lower resolution, but during a comparison between the two labs, it was found that the results were similar.
- Due to QA/QC failures at American Assay Laboratories, IE discontinued work with this lab.

11.1.2 Historical Core Assay Sample and Analysis

Historically, samples for both the Texaco and Santa Cruz Deposit drilling were sent to Skyline Laboratories to be assayed for standard total Cu and non-sulphide Cu methods. Samples were crushed and split; a 250-500 mg sample was then prepared in the following ways:

- Total Cu analysis samples were dissolved using a mixture of hydrochloric acid (HCl), nitric acid (HNO_3) and perchloric acid ($HClO_4$) over low heat. The mixture was then measured using AAS.
- Non-sulphide Cu was dissolved using a mixture of sulfuric acid (H_2SO_4) and sulfurous acid (H_2SO_3) over moderate to high heat. This mixture was then filtered, diluted, and measured using AAS.

11.2 Specific Gravity Sampling

A combined total of 2,637 specific gravity (SG) measurements for the Santa Cruz, East Ridge, and Texaco Deposits were provided during 2021-2022 on site drill core measurements. SG measurements were taken from representative core sample intervals (approximately 0.1 m to 0.2 m long). SG was measured using a water dispersion method. The samples were weighed in air, and then the uncoated sample was placed in a basket suspended in water and weighed again. SG is calculated by using the weight in air versus the weight in water method (Archimedes), by applying the following formula:

$$Specific\ Gravity = \frac{Weight\ in\ Air}{(Weight\ in\ Air - Weight\ in\ Water)}$$

11.3 Quality Assurance/Quality Control Programs

Quality assurance and quality control (QA/QC) measures were set in place to ensure the reliability and trustworthiness of exploration data. These measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling, assaying, data management, and database integrity. Appropriate documentation of QC measures and regular analysis of QC data is essential as a safeguard for Project data and form the basis for the QA program implemented during exploration.

Analytical QC measures involve internal and external laboratory procedures implemented to monitor the precision and accuracy of the sample preparation and assay data. These measures are also important to identify potential sample sequencing errors and to monitor for contamination of samples.

The Company submitted a blank, standard, or duplicate sample on every seventh sample. Sampling and analytical QA/QC protocols typically involve taking duplicate samples and inserting QC samples (certified reference material [CRM] and blanks) to monitor the assay results' reliability throughout the drill program.

11.3.1 IE Santa Cruz Sampling

11.3.1.1 Standards

During the 2022 drilling campaign, IE submitted eight different CRMs as a part of their QA/QC protocol across the Santa Cruz, East Ridge, and Texaco Deposits. OREAS 905 was archived by OREAS and was replaced with OREAS 901 by the Company as the new low-grade copper standard. The review of the CRM results identified no laboratory failures at Skyline Laboratories or SGS Laboratories. Table 11-1 shows the eight standards submitted to Skyline by IE and their mean measured values. At the time of writing, not enough results for CRMs measured at SGS Laboratories had been returned to adequately track their progress. Table 11-2 shows the seven internal standards used by Skyline as quality control and tracking of their average results. Figure 11-4 to Figure 11-8 are charts which track the progress of CRM measurements over time. Few measurements go above or below three standard deviations, which is followed by a recalibration at the lab and a re-analysis of the sample.

Table 11-1: IE submitted standards measured at Skyline Laboratories

Standard	Count	Best Cu Total	Mean Value Cu Total (%)	Bias (%)	Best Value CuAs-SEQ (%)	Mean Value CuAS-SEQ (%)	Bias (%)	Best Value CuCN-SEQ (%)	Mean Value CuCN-SEQ(%)	Bias (%)
OREAS 908	64	1.26	1.25	0.01	1.078	1.08	-0.002	0.023	0.023	0.002
OREAS 907	28	0.6	0.649	0.049	0.531	0.55	0.019	0.018	0.012	0.006
OREAS 906	19	0.31	0.322	0.012	-	-	-	-	-	-
OREAS 905	21	0.155	0.159	0.004	-	-	-	-	-	-
OREAS 901	55	0.141	0.140	-0.71	-	-	-	-	-	-
OREAS 501d	51	0.27	0.273	0.003	-	-	-	-	-	-
OREAS 503d	35	0.53	0.528	0.002	-	-	-	-	-	-
OREAS 504c	44	1.13	1.108	0.022	-	-	-	-	-	-

Table 11-2: Skyline internal QAQC CRM samples and their results

Standard	Count	Best Value CuT (%)	Mean Value CuT (%)	Bias (%)	Best Value Cu-AS-SEQ (%)	Mean Value	Bias (%)	Best Value Cu-CN-SEQ (%)	Mean Value	Bias (%)
SKY5	801	-	-	-	0.18	0.18	0.0	0.155	0.153	0.658
SKY6	783	-	-	-	0.42	0.4	-4.1	0.076	0.083	6.410
CDN-CM-21	221	0.54	0.53	0	-	-	-	-	-	-
CDN-CM-14	442	1.06	1.06	0	-	-	-	-	-	-
CDN-CM-29	187	0.74	0.74	0	-	-	-	-	-	-
CDN-CM-33	185	0.35	0.35	0	-	-	-	-	-	-
CDN-W-4	220	0.14	0.14	0.00	-	-	-	-	-	-

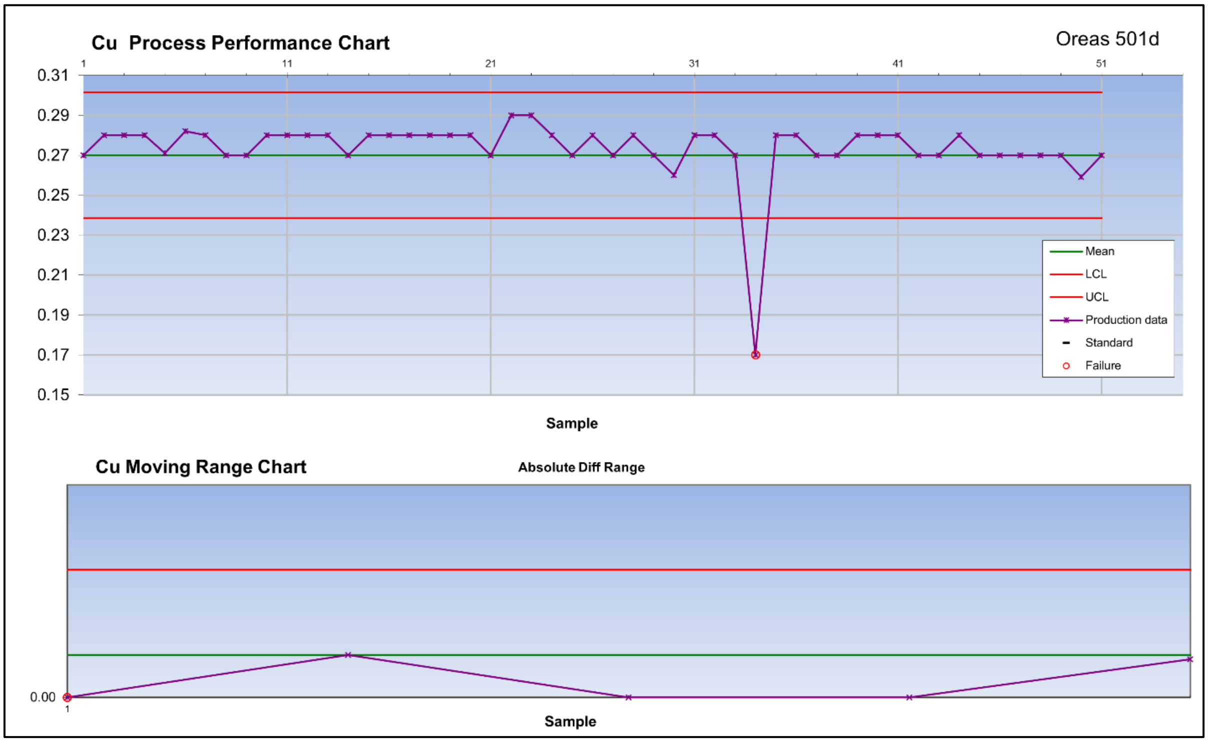


Figure 11-4: Santa Cruz Deposit, OREAS 501d standard total Cu (g/t), assayed at Skyline Laboratories

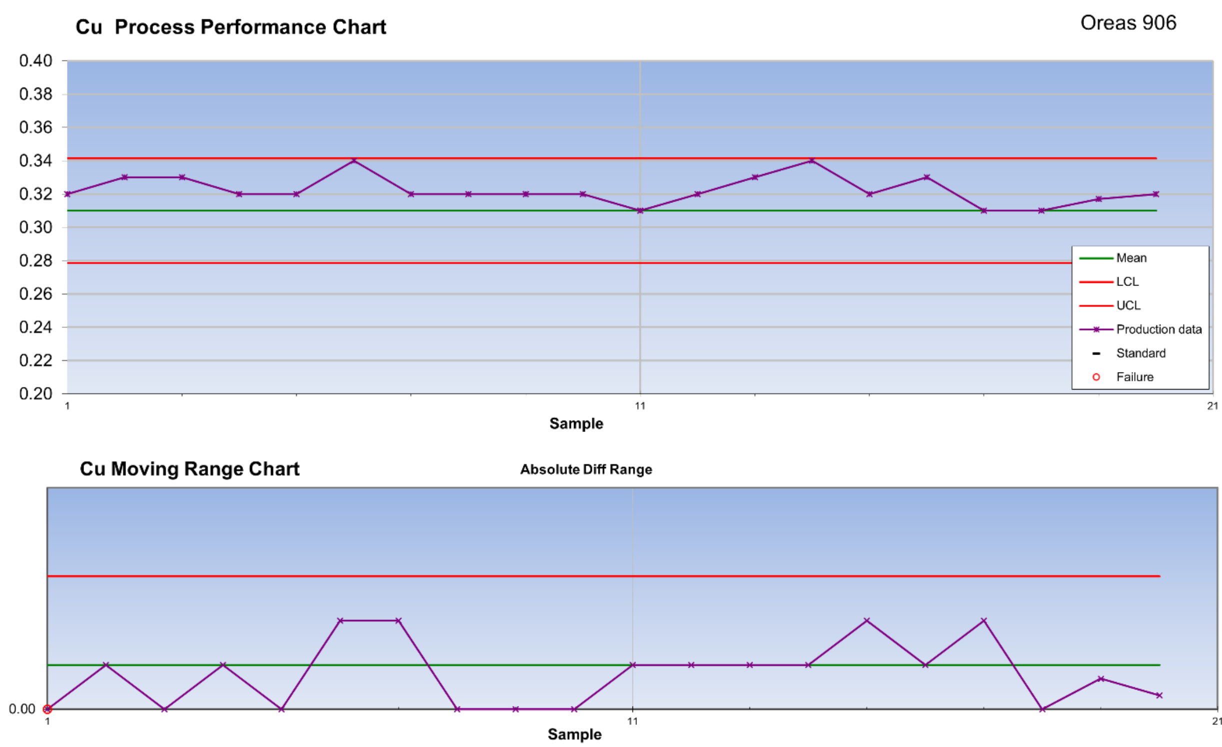


Figure 11-5: Santa Cruz Deposit, OREAS 906 standard total Cu (g/t), assayed at Skyline Laboratories

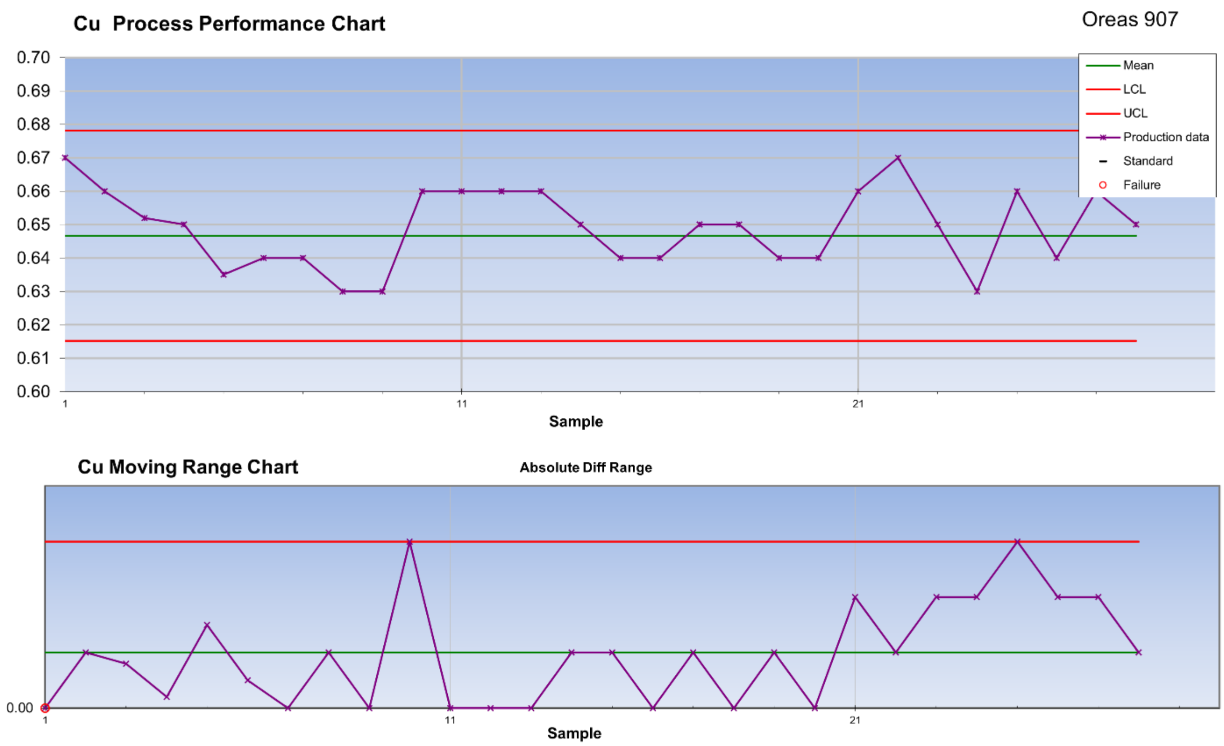


Figure 11-6: Santa Cruz Deposit, OREAS 907 standard total Cu (g/t), assayed at Skyline Laboratories

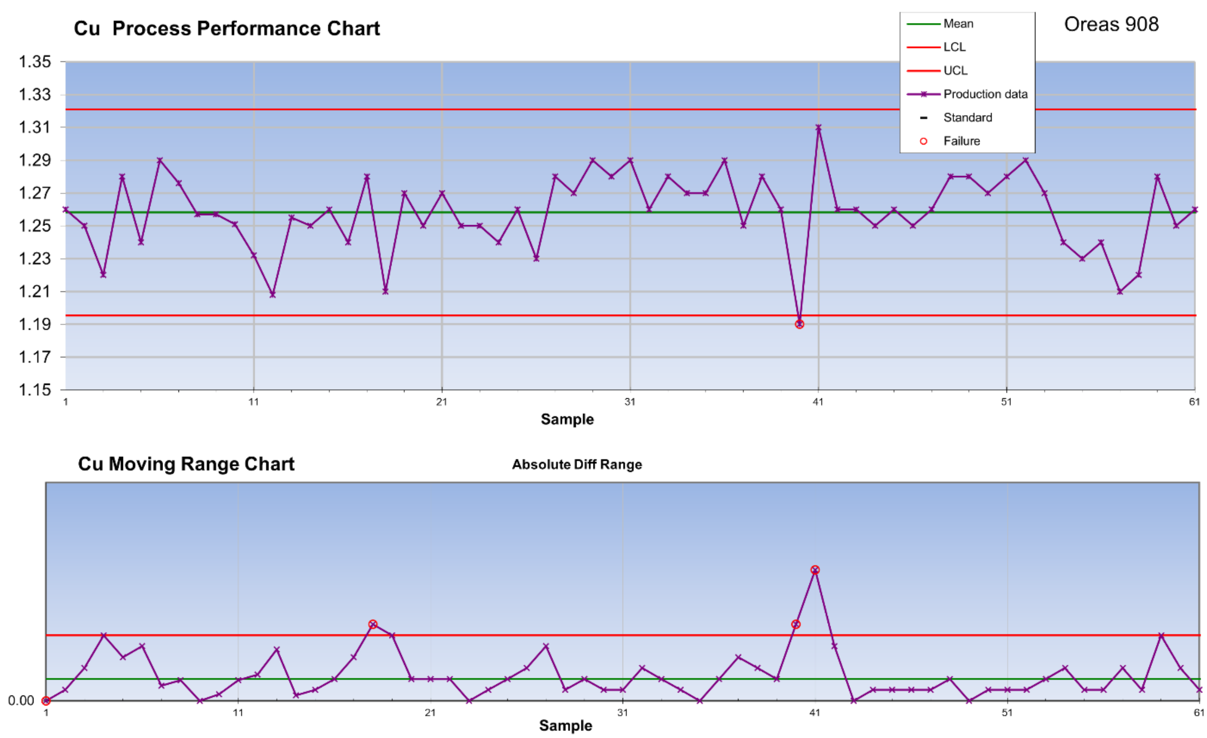


Figure 11-7: Santa Cruz Deposit, OREAS 908 standard total Cu (g/t), assayed at Skyline Laboratories

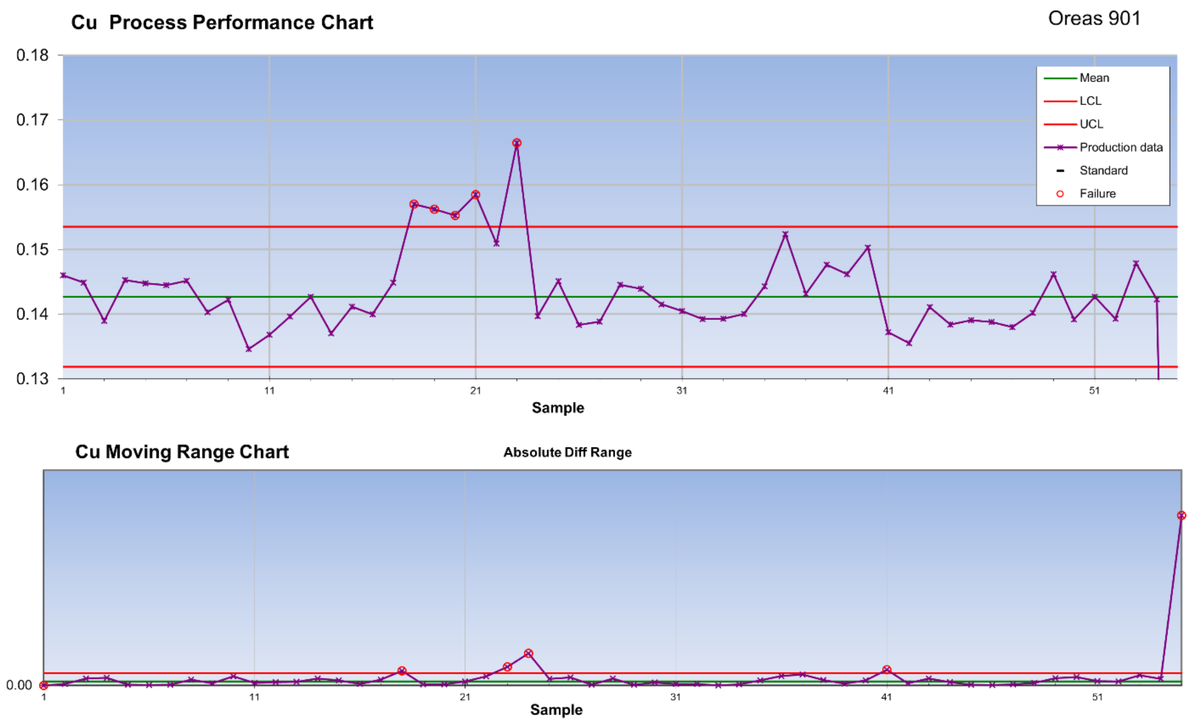


Figure 11-8: Santa Cruz Deposit, OREAS 901 standard total Cu (g/t), assayed at Skyline Laboratories

11.3.1.2 Blanks

The Company submitted 725 coarse granite blanks to Skyline Laboratories and 147 coarse granite blanks to SGS Laboratories for the Santa Cruz Deposit drilling in 2022 as part of its QA/QC process. No significant carryover of elevated metals is evident in blanks measured at Skyline Laboratories nor SGS Laboratories. A threshold of +/- 0.02% Cu was accepted for blank samples, if samples did not initially pass. Samples which failed were reanalyzed. Figure 11-9 illustrates the blank performance of Skyline and Figure 11-10 displays the performance of SGS.

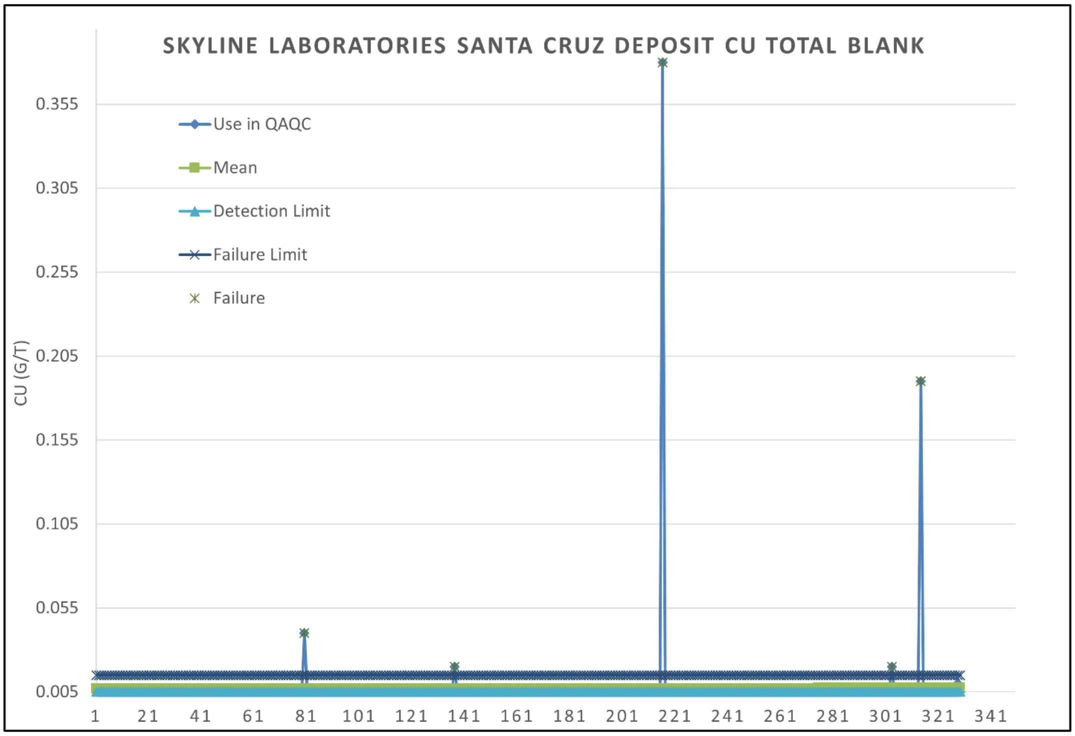


Figure 11-9: Blank results from Skyline laboratory analyses from the 2021, 2022 drill program.

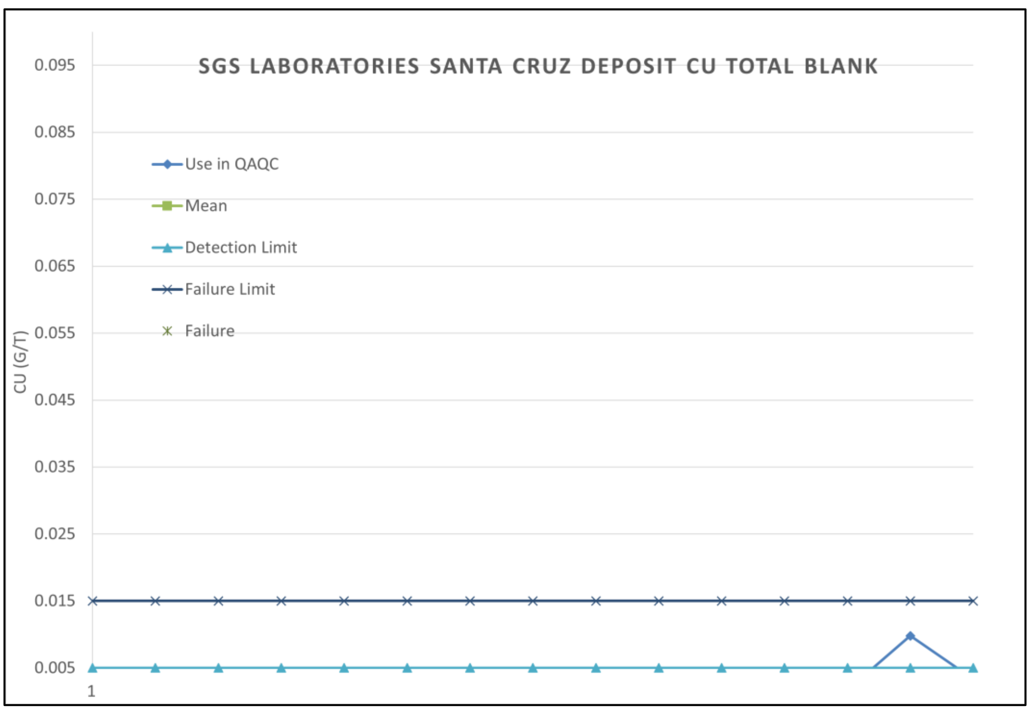


Figure 11-10: SGS blank results from the 2022 drill program

11.3.1.3 Duplicates

The Company submitted 737 field duplicates to Skyline Laboratories during the 2021 and 2022 drill campaigns as a part of its QA/QC process. Duplicates were also submitted to SGS Laboratories for the 2022 drill program but not enough samples had been returned to track results at the time of writing. Original versus duplicate sample results for total Cu (%) are present in Figure 11-11. The results of the field duplicates are in good agreement for total Cu (%), acid soluble Cu (%) and cyanide soluble Cu (%).

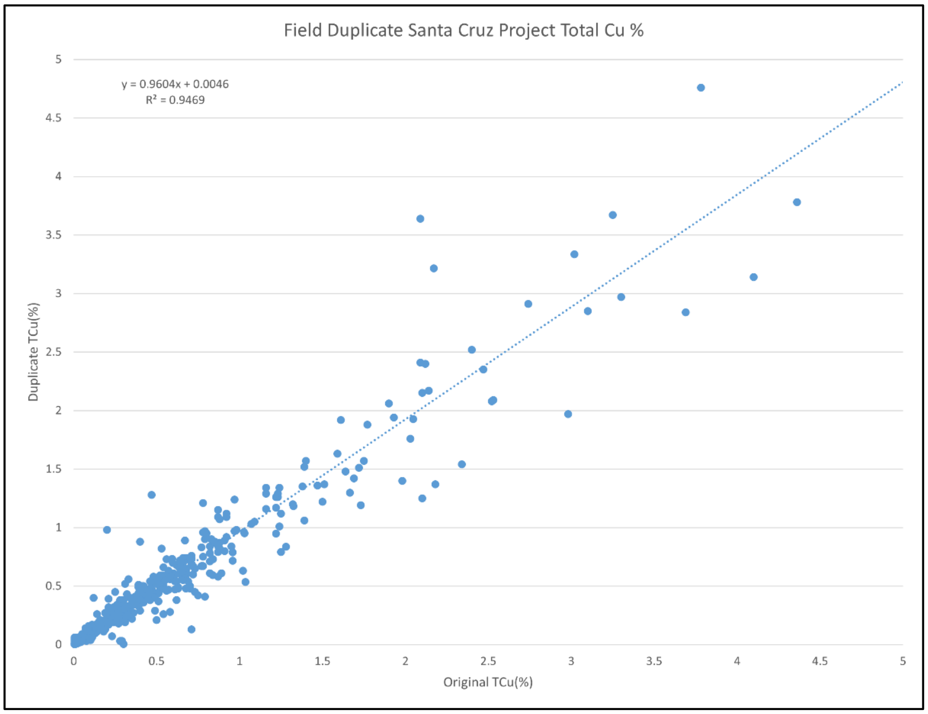


Figure 11-11: Field duplicate results, in Cu (%), measured at Skyline Laboratories for the Santa Cruz Deposit.

11.3.2 2022 East Ridge and Texaco Sampling

11.3.2.1 Standards

During the 2022 drilling campaign IE submitted 5 CRMs for drilling conducted within the Texaco exploration property and 5 CRMs for the drilling within East Ridge. Results for two submitted CRMs were available for East Ridge at the time of writing. A review of the CRM results identified no failures from Skyline Laboratories or SGS laboratories for samples submitted from either deposit. Table 11-3 and Table 11-4 show the CRMs submitted to Skyline and a comparison of the average grade for different measured elements for Texaco and East Ridge, respectively. Figure 11-12 to Figure 11-14 are charts tracking submitted standard results to Skyline Laboratories for the Texaco Deposit. Table 11-5 and Figure 11-16 show the CRM results submitted to SGS Laboratories for East Ridge drilling. Not enough assays were received for standard OREAS 906 or OREAS 503d to create a chart tracking progress. In the rare instance of failure (outside three standard deviations), the lab re-calibrated equipment and re-analyzed the batch.

Table 11-5 contains Skyline internal CRM measurements and their results.

Table 11-3: IE inserted CRMs for Texaco Drilling 2022, available at the time of writing.

Standard	Count	Best Value Cu (%)	Mean Value Cu (%)	Bias (%)
Oreas 906	3	0.32	0.31	0.00
Oreas 501d	12	0.27	0.27	0.18
Oreas 503d	3	0.53	0.53	1.32
Oreas 504c	28	1.13	1.082	-2.54
OREAS 151a	12	0.166	0.171	2.91

Table 11-4: IE inserted CRMs for East Ridge Drilling 2022, measured at Skyline Laboratories

Standard	Count	Best Value Cu (%)	Mean Value Cu (%)	Bias (%)	Best Value SEQ (%)	Mean Value SEQ (%)	Bias (%)
OREAS 901	9	0.141	0.144	2.13	-	-	-
OREAS 906	2	0.31	0.31	-0.13	0.259	0.263	1.54

Table 11-5: IE inserted CRMs for East Ridge Drilling 2022, measured at SGS Laboratories

Standard	Count	Best Value CuT (%)	Mean Value CuT (%)	Bias (%)	Best Value SEQ Cu (%)	Mean Value	Bias (%)
OREAS 906	3	0.31	0.309	0.32	0.259	0.266	-2.63

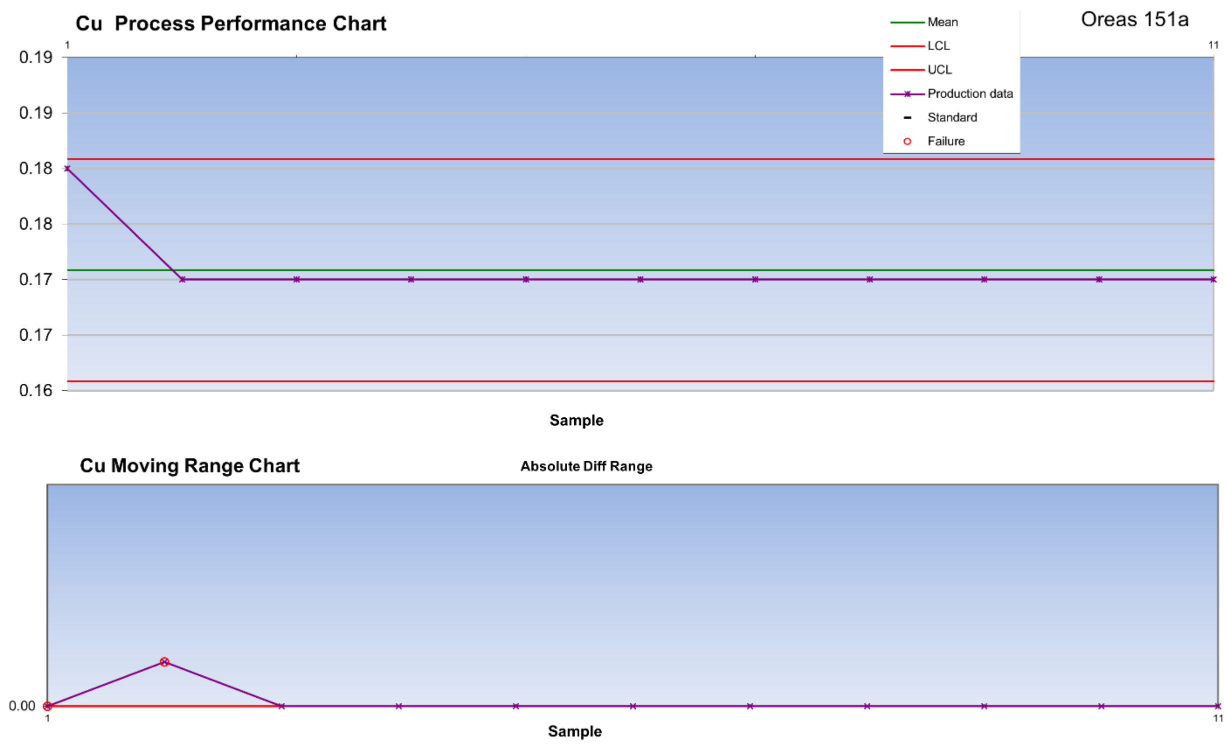


Figure 11-12: Texaco Deposit, OREAS 151a standard total Cu (g/t), assayed at Skyline Laboratories

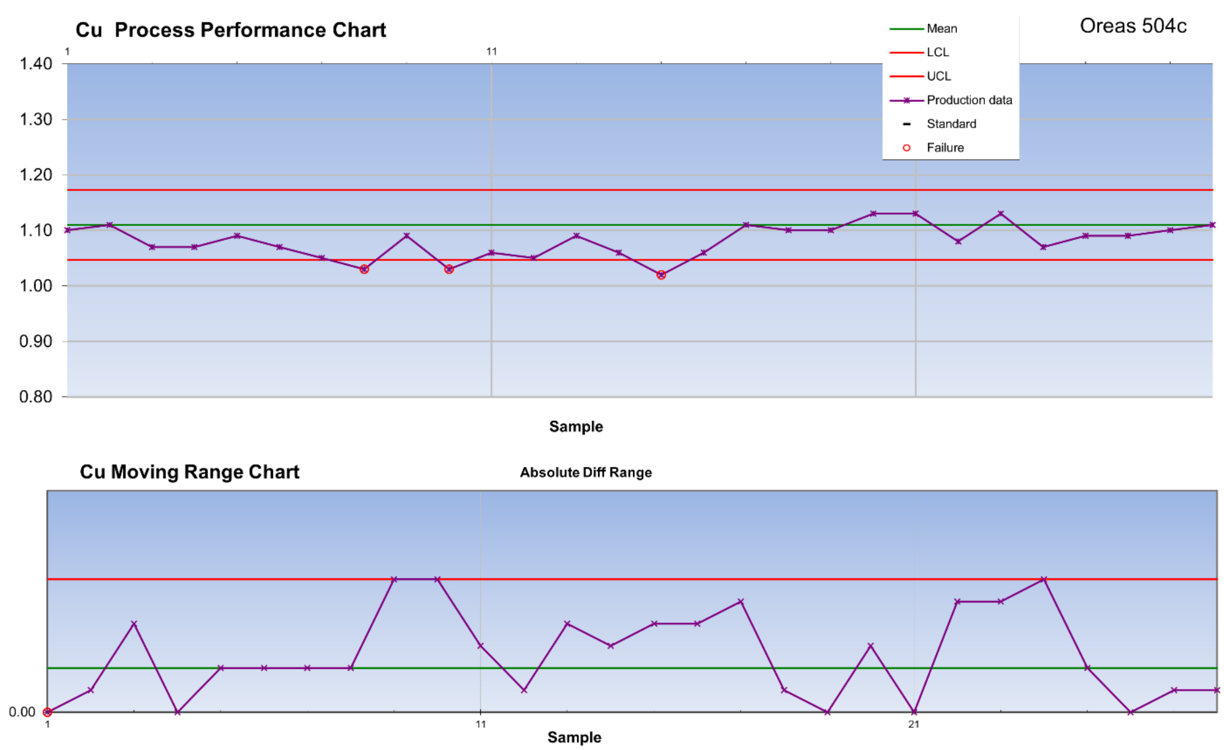


Figure 11-13: Texaco Deposit, OREAS 504c standard total Cu (%), assayed at Skyline Laboratories

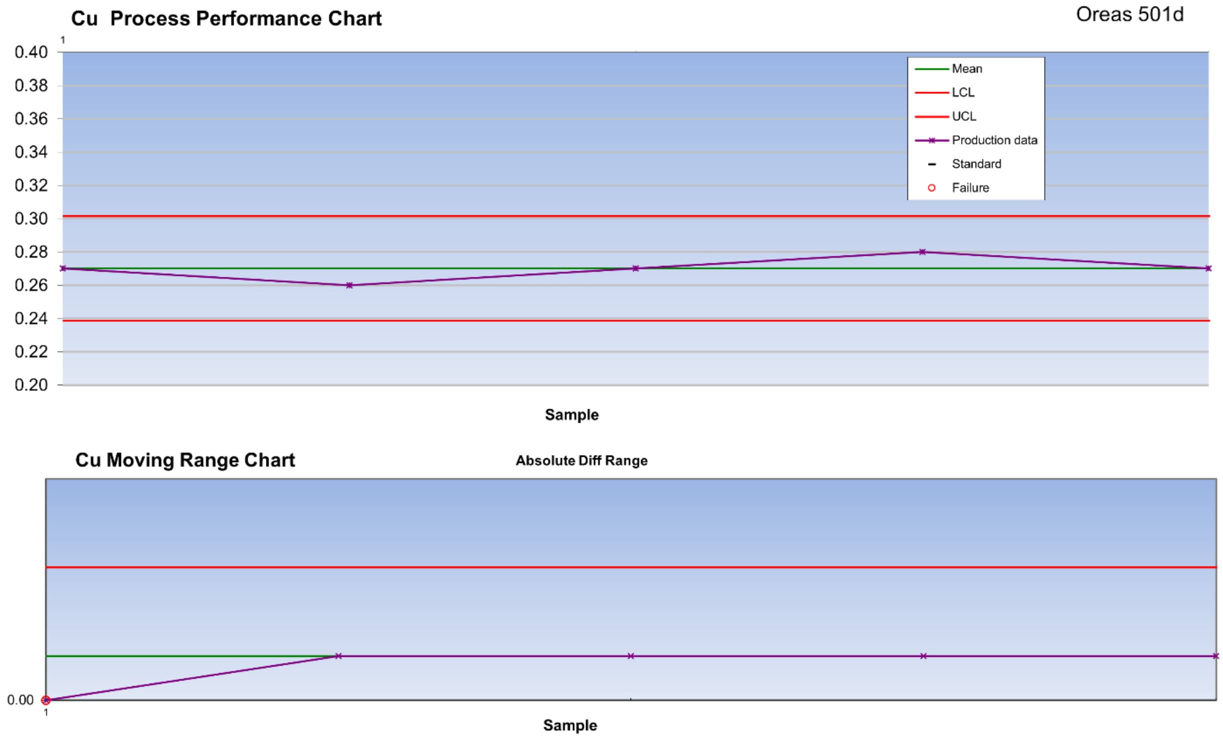


Figure 11-14: Texaco Deposit, OREAS 501d standard total Cu (%), assayed at Skyline Laboratories

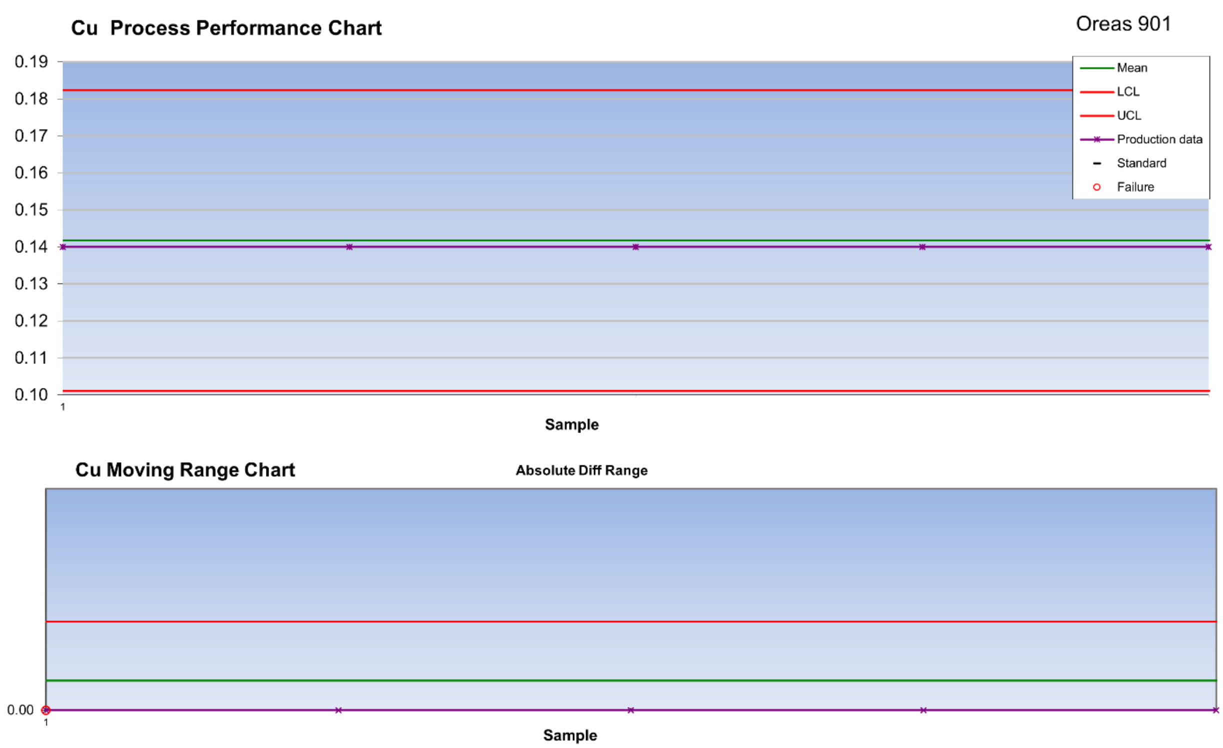


Figure 11-15 East Ridge Deposit, OREAS 901 standard total Cu (%), assayed at Skyline Laboratories.

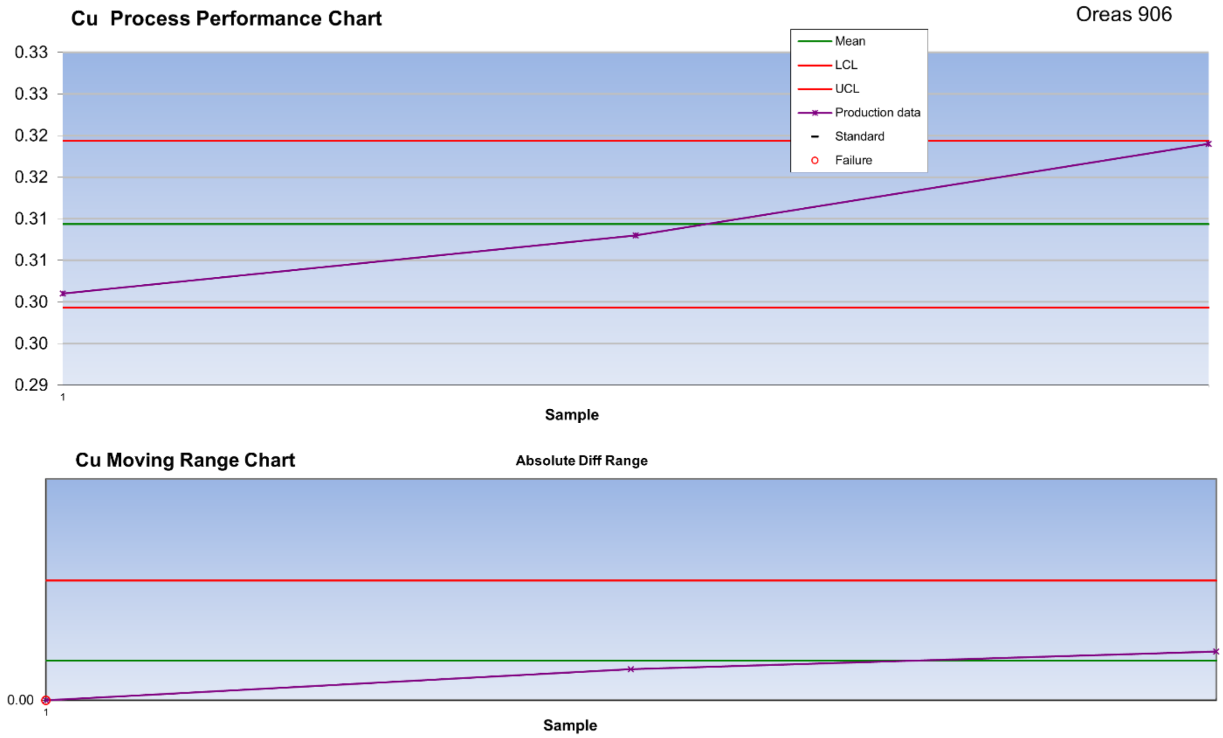


Figure 11-16: East Ridge Deposit, OREAS 906 standard total Cu (%), assayed at SGS Laboratories

11.3.2.2 Blanks

The Company submitted 70 coarse granite blanks for the Texaco Deposit drilling and 13 for East Ridge during the 2022 drill campaign to Skyline Laboratories, at the time of this report, as part of its QA/QC process. Additionally, four blanks were sent to SGS Laboratories for the East Ridge Deposit during the 2022 drill campaign. No significant carryover of elevated metals is evident in blanks measured at Skyline Laboratories. A threshold of +/- 0.02% Cu was accepted for blank samples, if samples did not initially pass. Samples which failed were reanalyzed. Figure 11-17 and Figure 11-18 are charts for blanks inserted into Texaco and East Ridge drilling measured at Skyline Laboratories. Figure 11-19 is a chart for blanks inserted into East Ridge drilling, measured by SGS Laboratories.

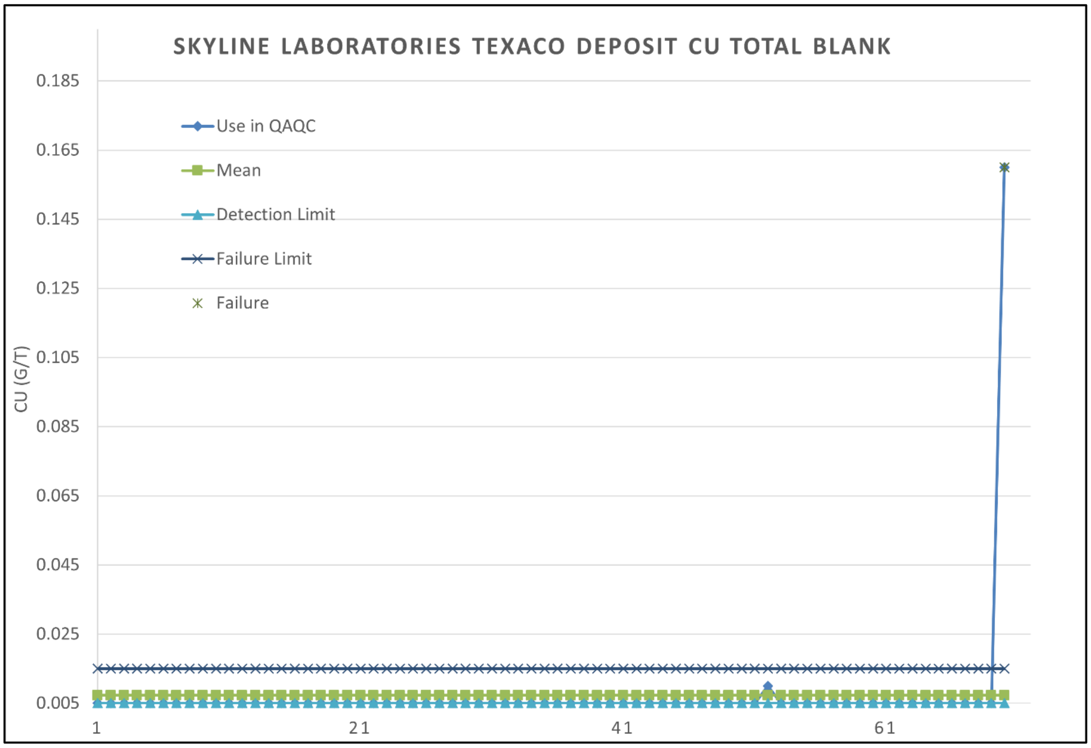


Figure 11-17: Texaco Blanks for Total Cu

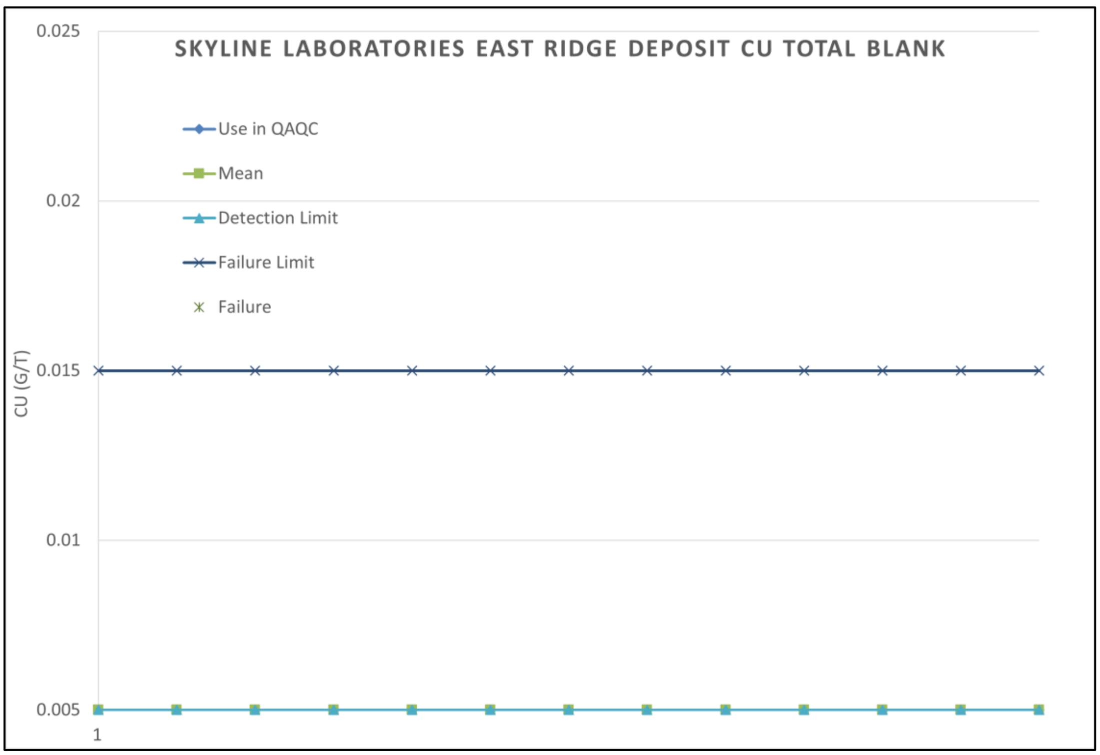


Figure 11-18: East Ridge Blanks, total Cu

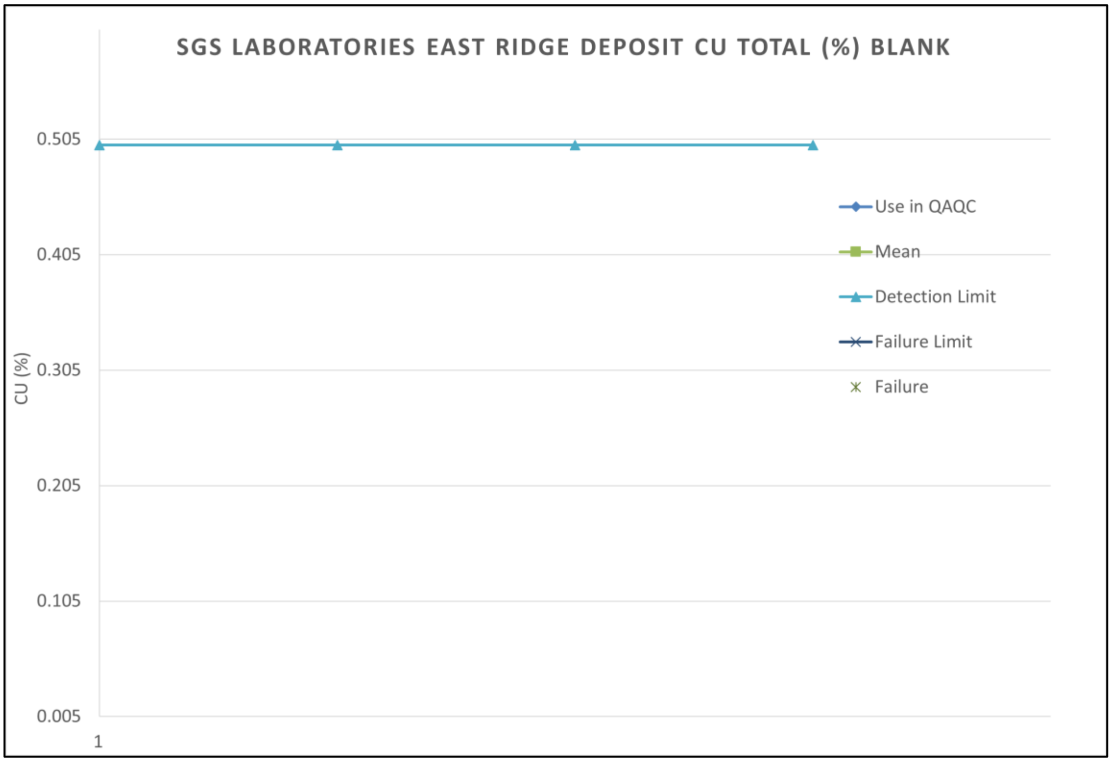


Figure 11-19: East Ridge SGS Laboratories Blanks, total Cu (%)

11.3.2.3 Duplicates

The Company submitted 14 field duplicates to Skyline Laboratories and five to SGS Laboratories for East Ridge and 74 to Skyline Laboratories for Texaco during the 2022 drilling campaign, at the time of this report, as a part of its QA/QC process. Original versus duplicate sample results for total Cu (%) are present in Figure 11-20 to Figure 11-22. All samples appear to be in reasonable agreement. Slight to moderate differences can be explained by a “nugget” effect and geological inconsistencies in mineralization.

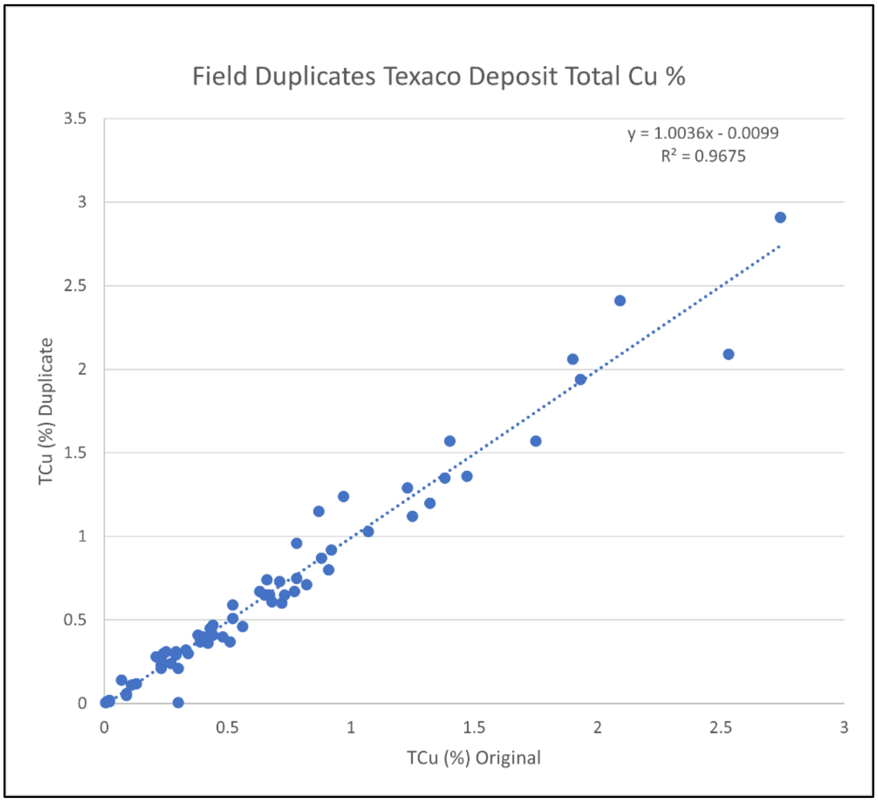


Figure 11-20: Original versus field duplicate sample results for the Texaco Deposit as total Cu (%) from samples submitted to Skyline Laboratories

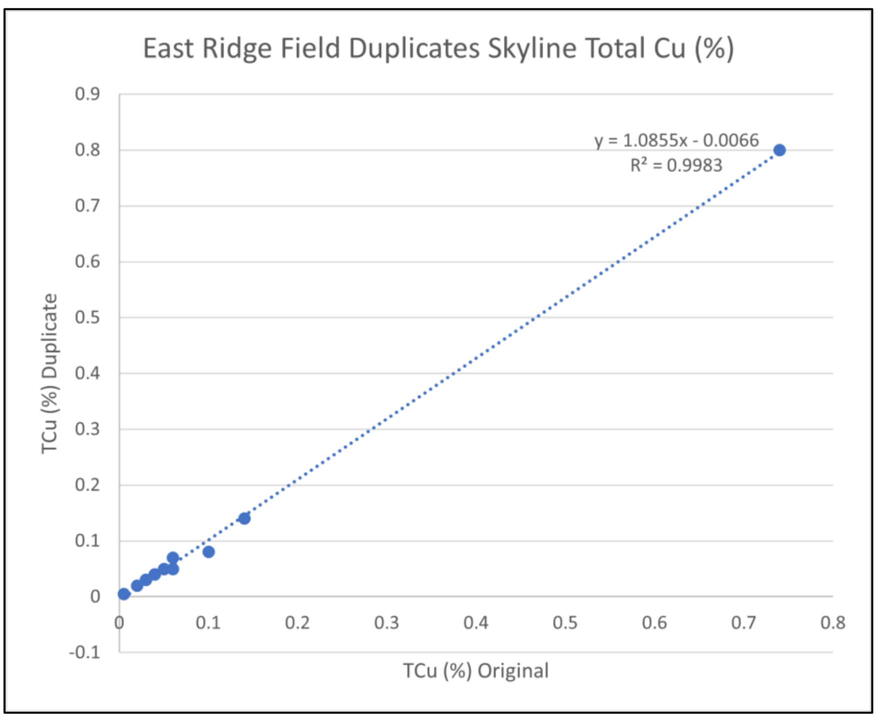


Figure 11-21: Original versus field duplicate sample results for the East Ridge Deposit as total Cu (%) from samples submitted to Skyline Laboratories

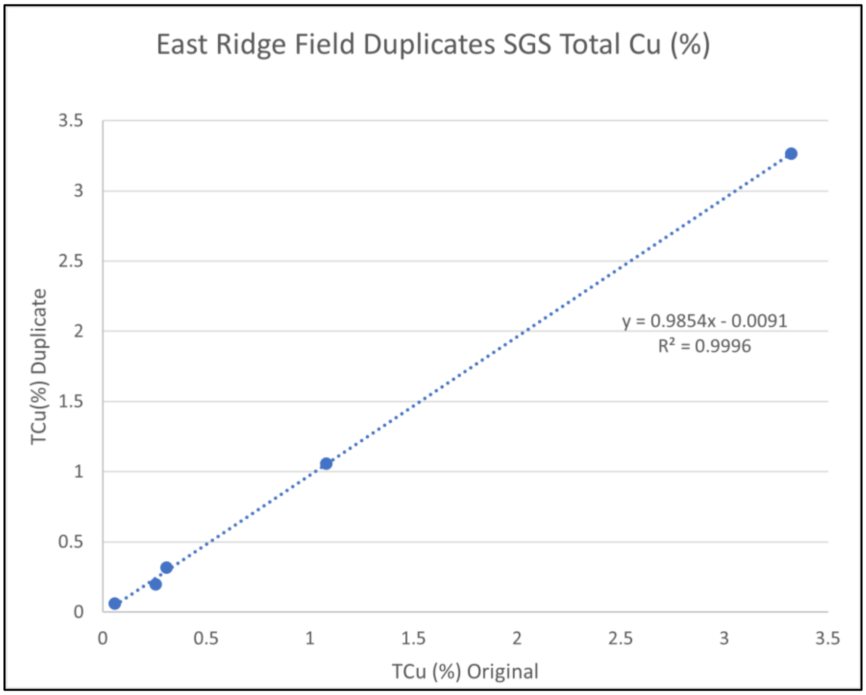


Figure 11-22: Original versus Field Duplicate sample results for East Ridge Deposit as total Cu (%) from samples submitted to SGS Laboratories.

11.3.3 2021 IE Sampling

11.3.3.1 Standards

During the 2021 drilling campaign IE submitted six different CRMs as a part of their QA/QC protocol, with 33 submitted in total. The review of the CRM results identified no laboratory failures at Skyline Laboratories and seven failures at American Assay Laboratories. OREAS 908 falls within the range of +/- two standard deviations for Cu Total (%) and acid soluble Cu (%) (Table 11-6 and Table 11-7 and Figure 11-23 to Figure 11-28). Skyline Laboratories submitted seven different CRMs, including two inhouse CRMs, as a part of their QA/QC process (Table 11-8), and American Assay Laboratories submitted three different CRMs as a part of their QA/QC process (Table 11-9).

Table 11-6: CRMs Inserted by IE into Sample Batches Sent to Skyline Laboratories

Standard	Count	Best Value Cu (%)	Mean Value Cu (%)	Bias (%)	Best Value Cu-AS-SEQ (%)	Mean Value Cu-AS-SEQ (%)	Bias (%)	Best Value CuCN-SEQ (%)	Mean Value CuCN-SEQ (%)	Bias (%)
OREAS 908	9	1.26	1.256	0.004	1.078	1.067	0.011	0.022	0.024	0.002
OREAS 907	6	0.6	0.652	0.052	0.531	0.54	0.009	0.018	0.015	0.003
OREAS 906	4	0.31	0.31	0	0.269	1.126	-0.86	0.01	0.019-	-0.009
OREAS 501 d	6	0.27	0.27	0	-	-	-	-	-	-
OREAS 503 d	4	0.53	0.524	0.006	-	-	-	-	-	-
OREAS 504c	1	1.13	1.09	0.04	-	-	-	-	-	-

Table 11-7: CRMs Inserted by IE into Sample Batches Sent to American Assay Laboratories

Standard	Count	Best Value Cu (%)	Mean Value Cu (%)	Bias (%)	Best Value CuAS-SEQ (%)	Mean Value CuAS-SEQ (%)	Bias (%)	Best Value CuCN-SEQ (%)	Mean Value CuCN-SEQ (%)	Bias (%)
OREAS 908	10	1.26	1.299	0.039	1.078	1.067	0.64	0.022	0.023	0.001
OREAS 907	5	0.6	0.643	0.043	0.531	0.54	1.31	0.018	0.009	0.009
OREAS 906	2	0.31	0.33	0.02	-	-	-	-	-	-
OREAS 503c	1	0.27	0.545	0.275	-	-	-	-	-	-
OREAS 504c	3	1.13	1.11	0.02	-	-	-	-	-	-

Table 11-8: Skyline Laboratory Submitted CRMs

Standard	Count	Best Value CuT (%)	Mean Value CuT (%)	Bias (%)	Best Value Cu-AS-SEQ (%)	Mean Value	Bias (%)	Best Value Cu-CN-SEQ (%)	Mean Value	Bias (%)
SKY5	48	-	-	-	0.18	0.18	0.00	0.155	0.156	0.00
SKY6	48	-	-	-	0.42	0.41	0.01	0.076	0.077	0.00
CDN-CM-21	14	0.54	0.54	0.00	-	-	-	-	-	-
CDN-CM-14	34	1.06	1.07	-0.01	-	-	-	-	-	-
CDN-CM-29	12	0.74	0.74	0.00	-	-	-	-	-	-
CDN-CM-33	12	0.35	0.36	-0.01	-	-	-	-	-	-
CDN-W-4	20	0.14	0.14	0.00	-	-	-	-	-	-

Table 11-9: American Assay Laboratory Submitted CRMs

Standard	Count	Best Value Cu (%)	Mean Value Cu (%)	Bias (%)	Best Value Cu-AS-SEQ (%)	Mean Value Cu-AS-SEQ (%)	Bias (%)
OREAS 600b	3	0.05	0.051	0.00	-	-	-
OREAS 602b	3	0.494	0.495	0.00	-	-	-
OREAS 905	3	0.157	0.158	0.00	0.128	0.127	0.001

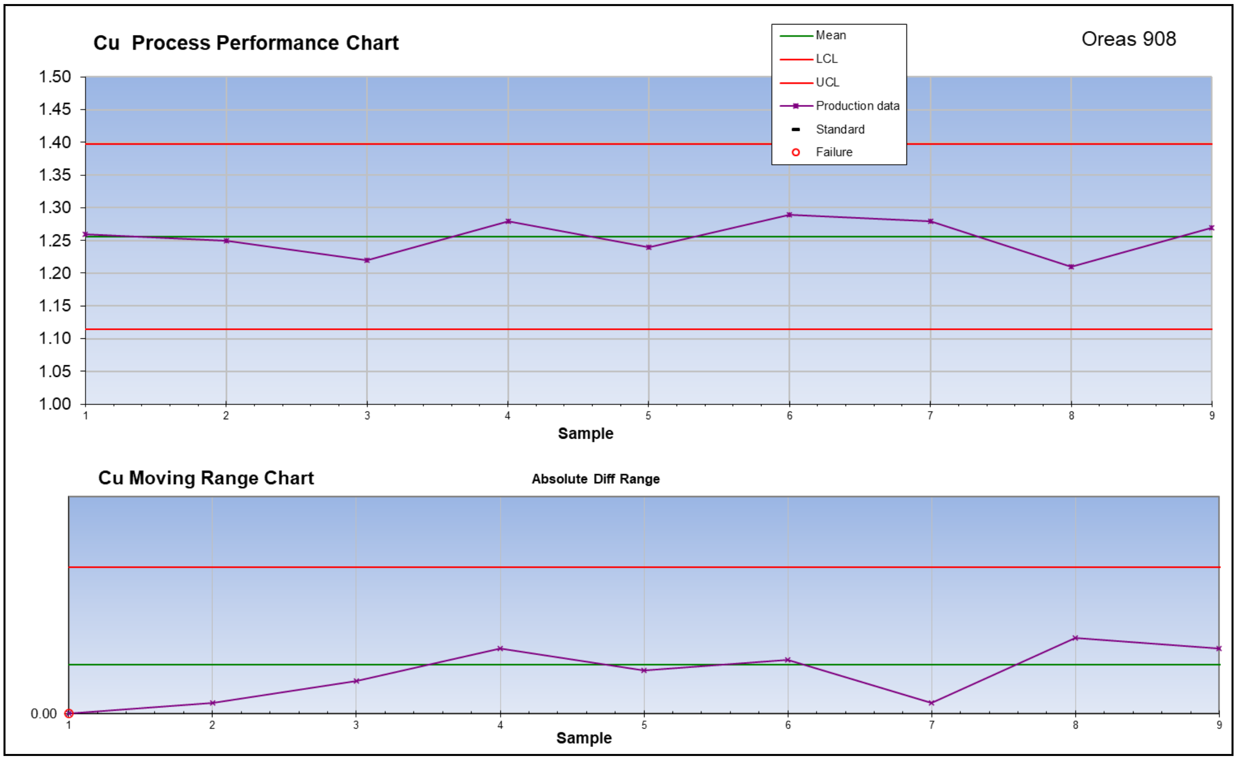


Figure 11-23: Santa Cruz Deposit, OREAS 908 standard total Cu (g/t), assayed at Skyline Laboratories

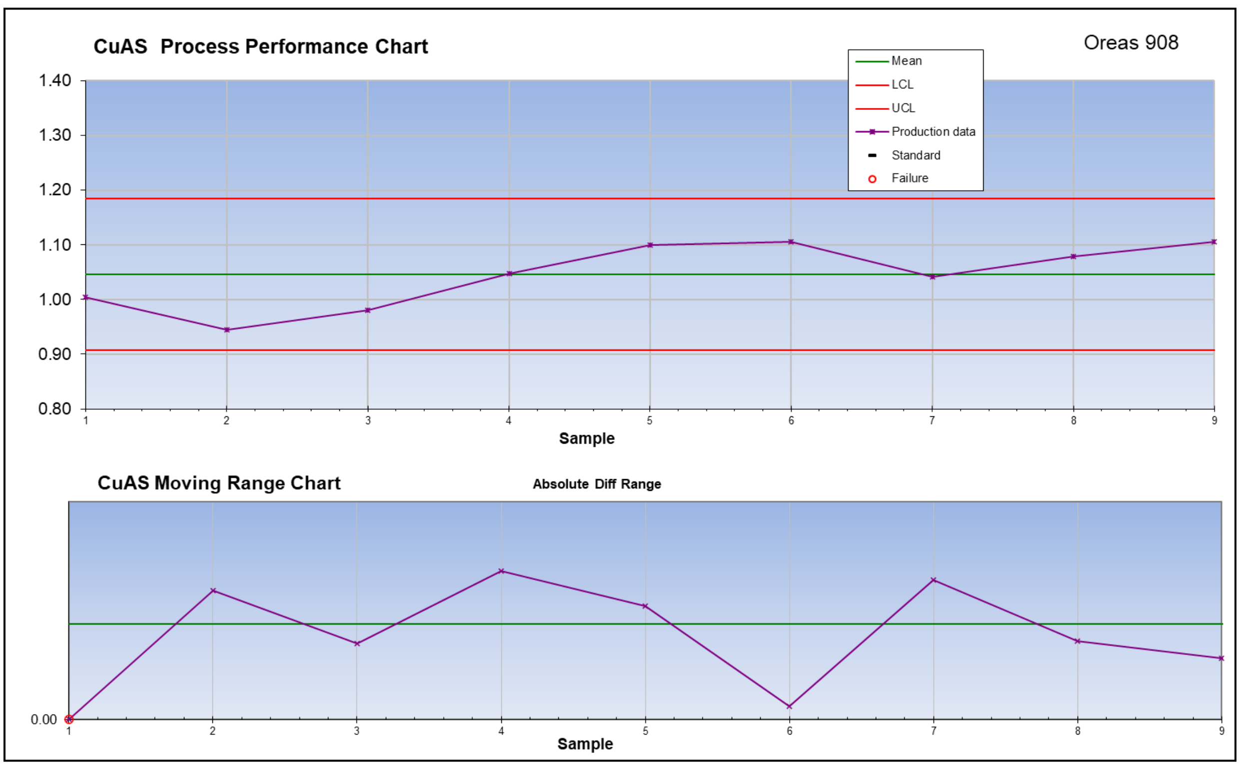


Figure 11-24: Santa Cruz Deposit, OREAS 908 standard cyanide soluble Cu (g/t), assayed at Skyline Laboratories

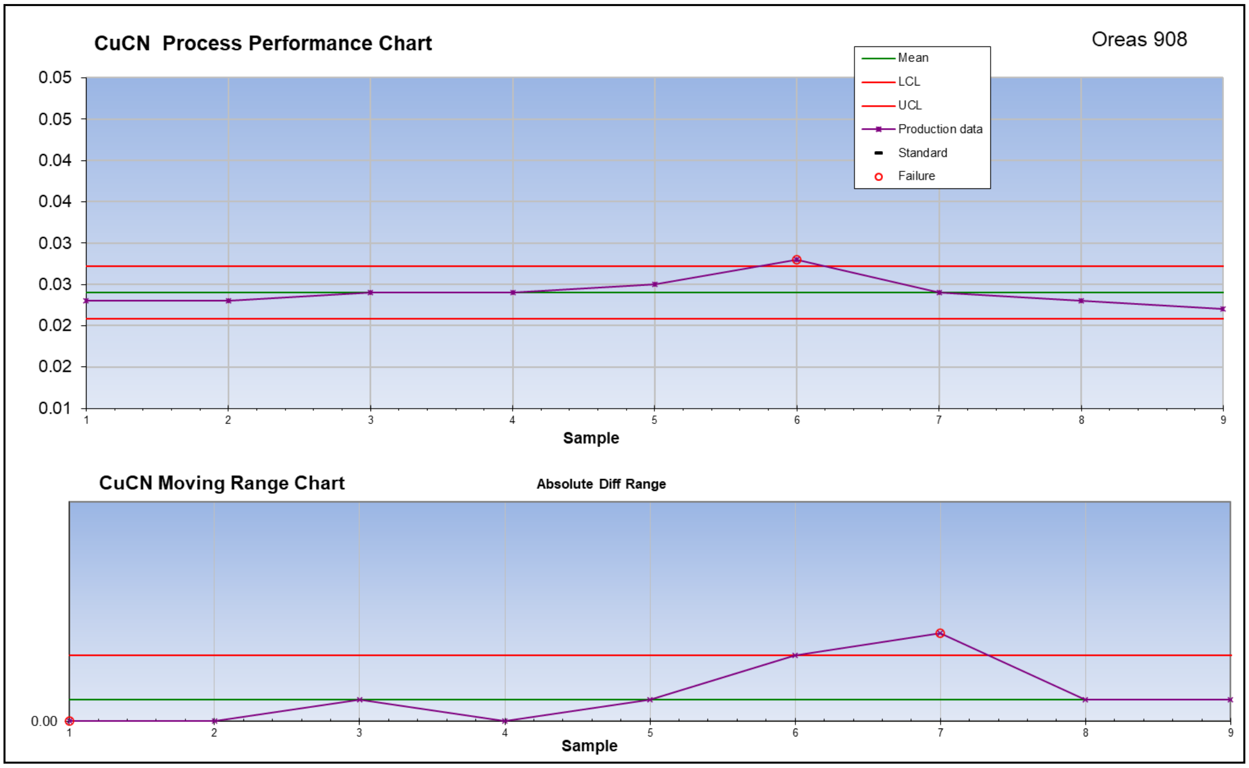


Figure 11-25: Santa Cruz Deposit, OREAS 908 standard cyanide soluble Cu (g/t), assayed at Skyline Laboratories

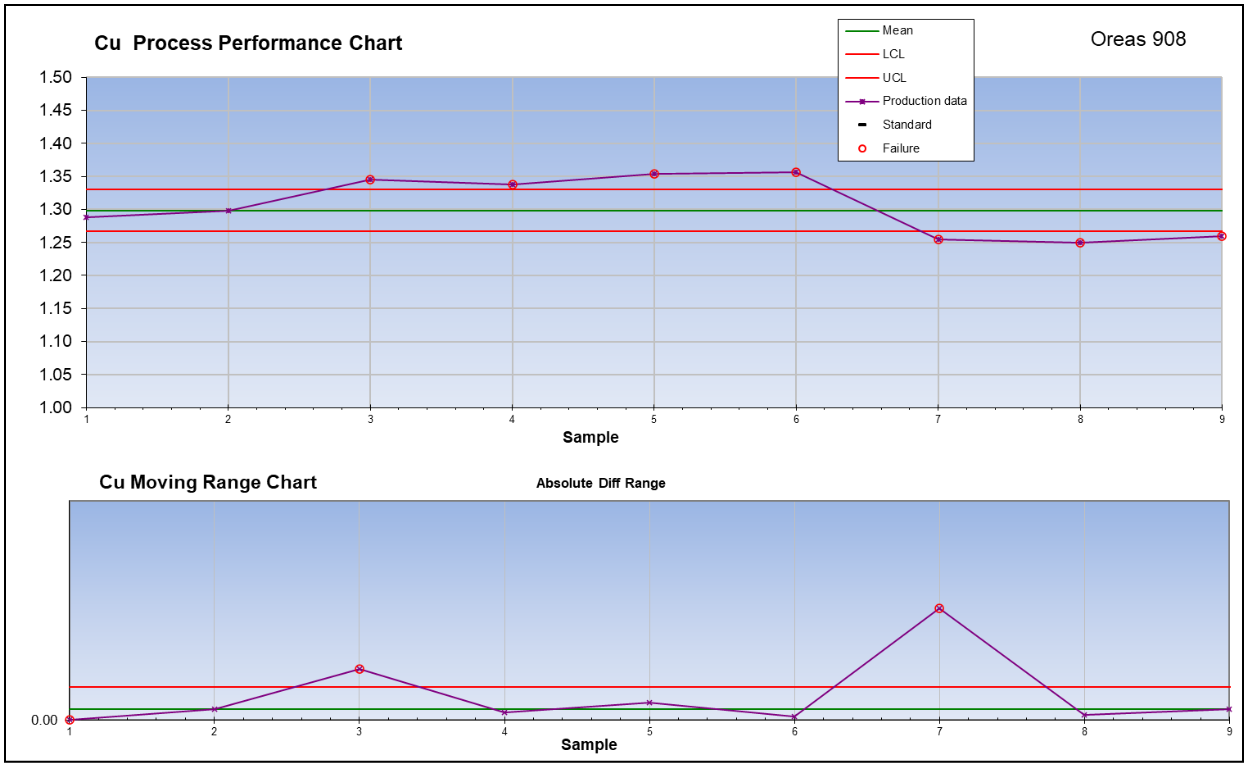


Figure 11-26: Santa Cruz Deposit, OREAS 908 standard total Cu (g/t), assayed at American Assay Laboratories

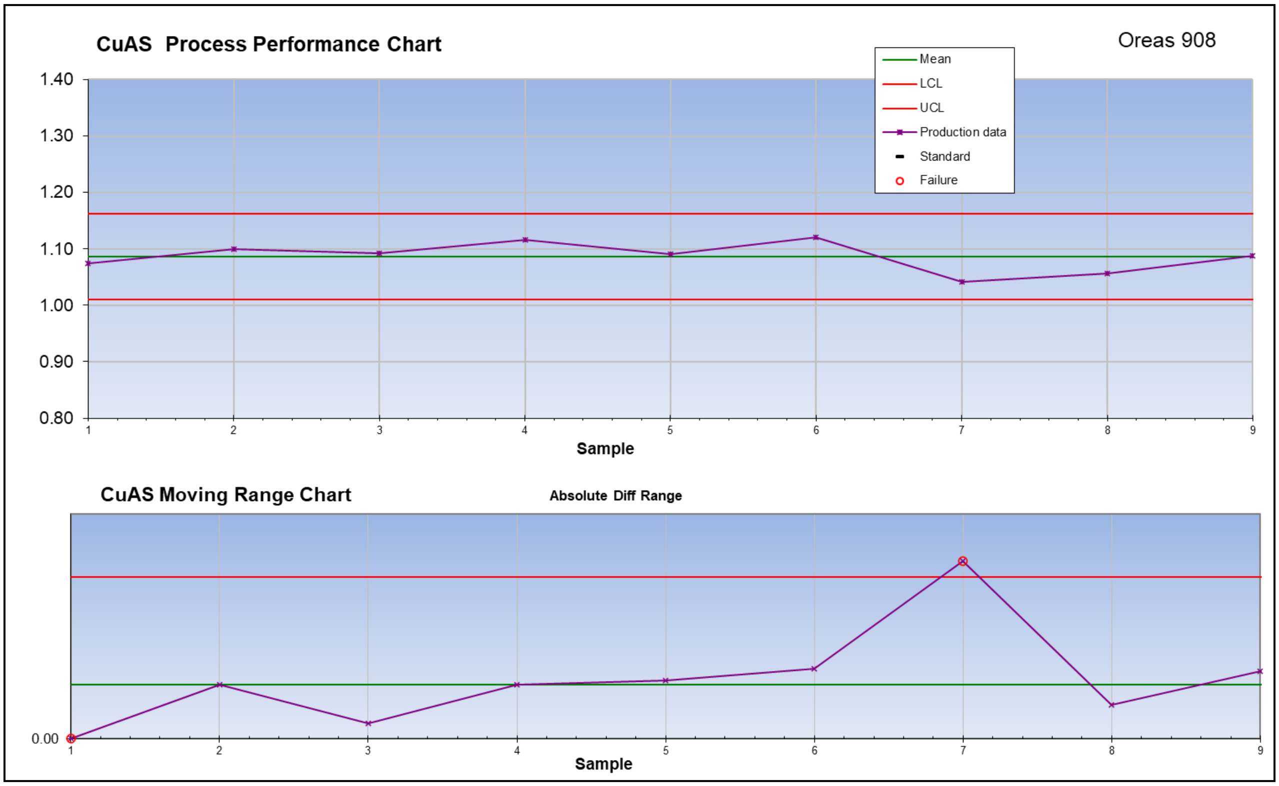


Figure 11-27: Santa Cruz Deposit, OREAS 908 standard acid soluble Cu (g/t), assayed at American Assay Laboratories

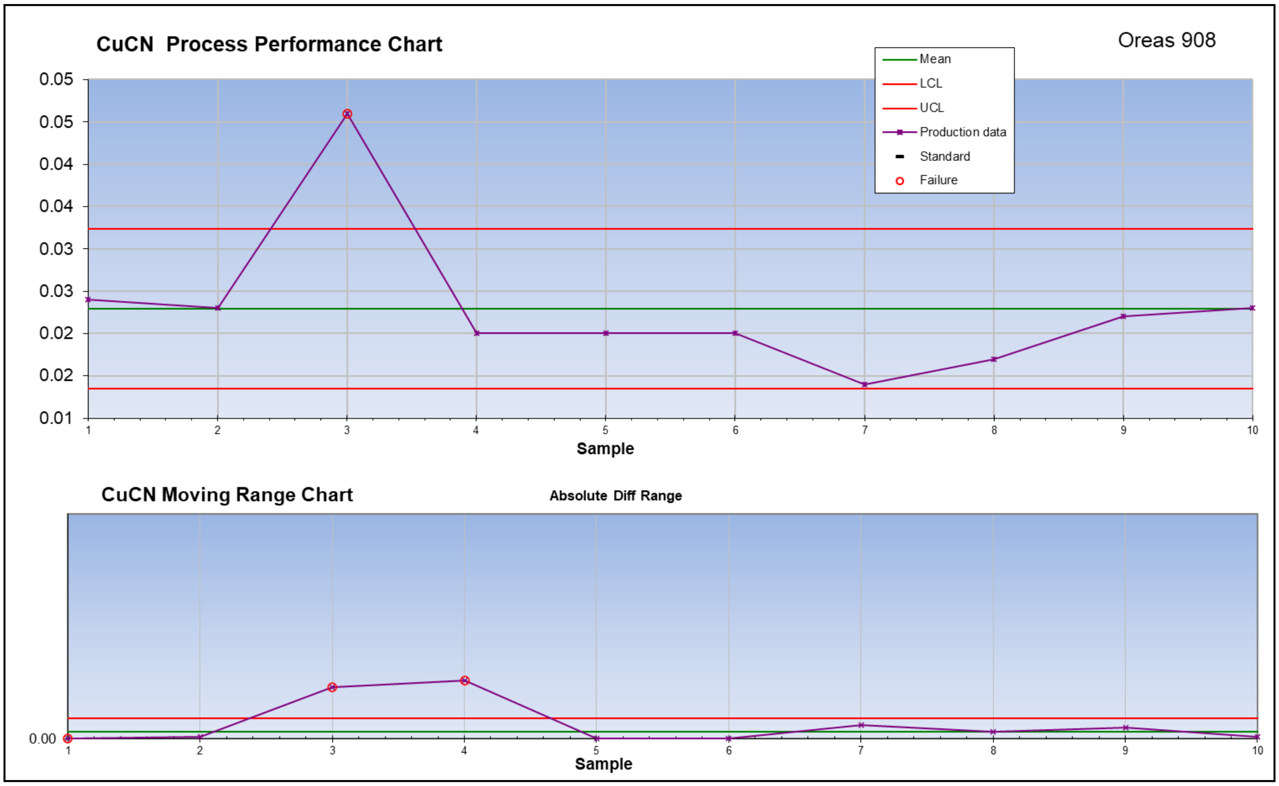


Figure 11-28: Santa Cruz Deposit, OREAS 908 standard cyanide soluble Cu (g/t), assayed at American Assay Laboratories

11.3.3.2 Blanks

The Company submitted 50 coarse blanks during the 2021 drill campaign, at the time of this report, as part of its QA/QC process. The Company used local granite blanks during the 2021 drill campaign as part of its QA/QC process. One blank was used labeled as Blank. The blank has been tested by Skyline Laboratories to ensure that there is no trace of Cu present. The charts not presented in this section are available in Appendix B. No significant carryover of elevated metals is evident in blanks measured at Skyline Laboratories (Figure 11-29). There is a carryover of metals evident in blanks measured at American Assay Laboratories related to dust control issues at this lab (Figure 11-30). The samples from these batches were re-analyzed by the lab, as set out in the QA/QC protocol.

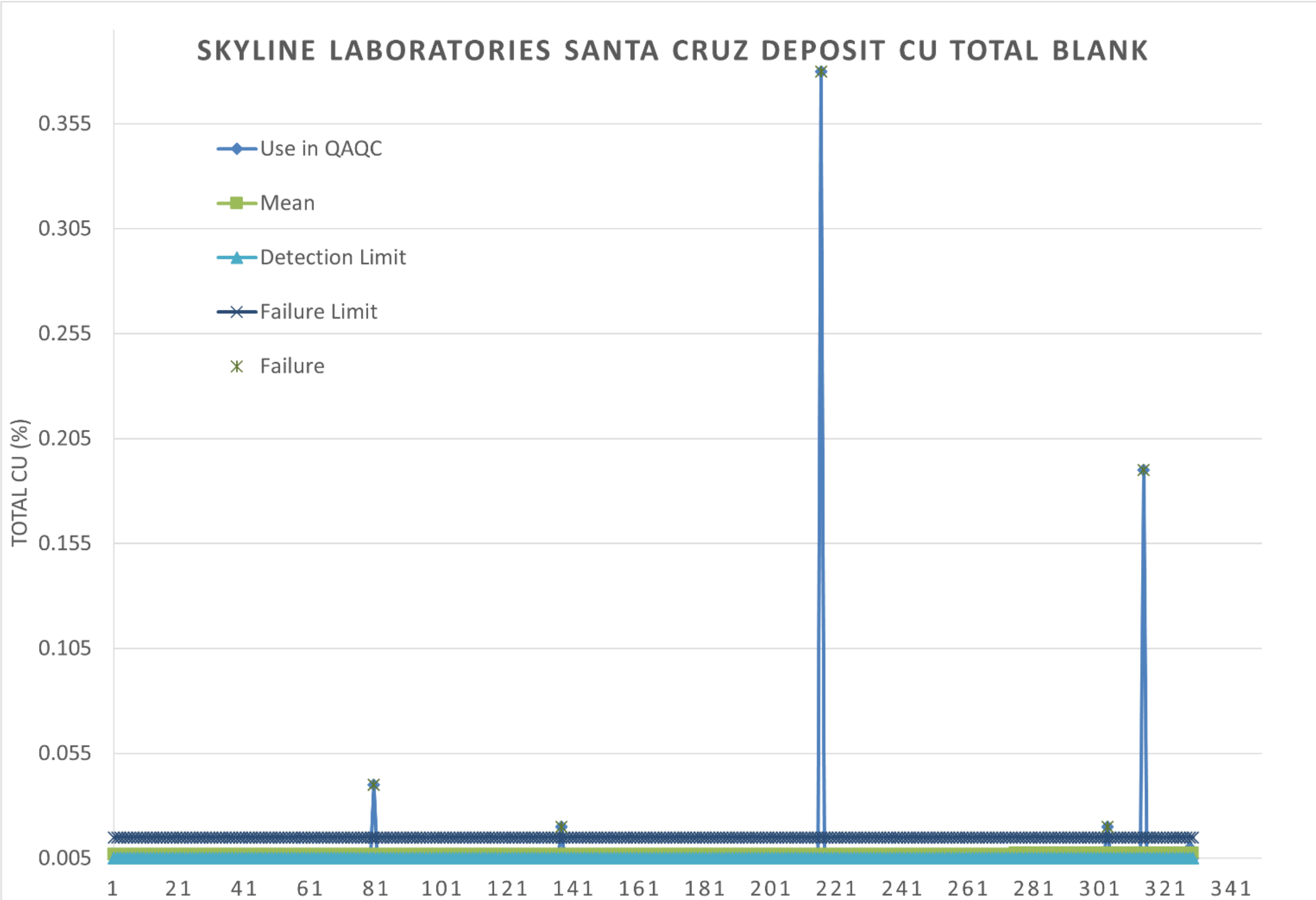


Figure 11-29: Blanks submitted by IE to Skyline Laboratories as a part of their QA/QC process.

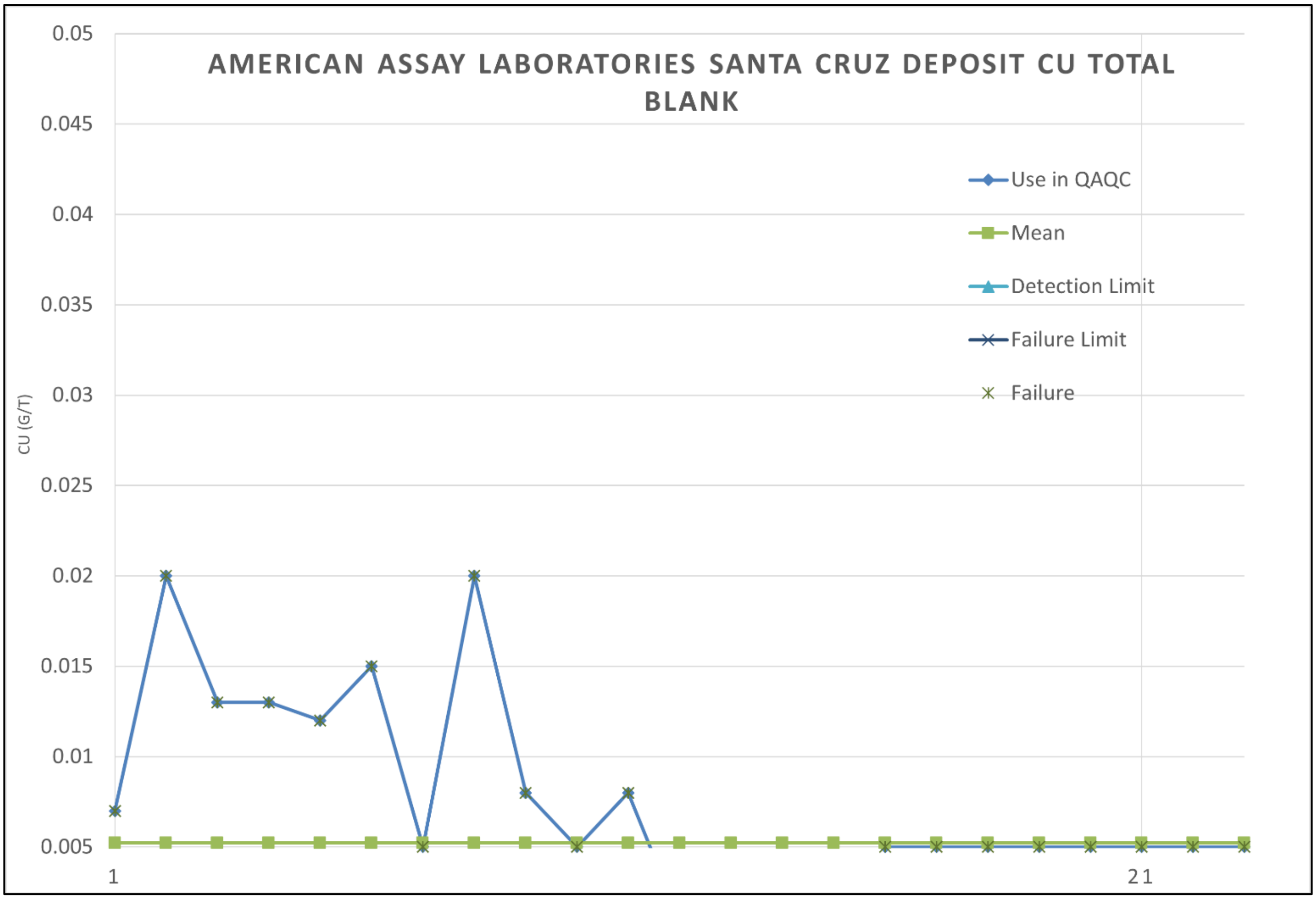


Figure 11-30: Blanks submitted by IE to American Assay Laboratories as a part of their QA/QC process.

11.3.3.3 Duplicates

The Company submitted 64 field duplicates during the 2021 drill campaign, at the time of this report, as a part of its QA/QC process. Original versus duplicate sample results for total Cu (%) are present in Figure 11-31 and Figure 11-32. The results of the field duplicates are in good agreement for total Cu (%), acid soluble Cu (%) and cyanide soluble Cu (%). Skyline Laboratories submitted 175 lab duplicates (119 total Cu, 125 Acid Soluble, 125 Cyanide Soluble and 119 Mo) during the 2021 drill campaign as a part of their QA/QC process. The results of the laboratory duplicates versus the original sample measurements for total Cu (%) are presented in Figure 11-33. The results of the laboratory duplicates are in good agreement for total Cu (%), acid soluble Cu (%) and cyanide soluble Cu (%). American Assay Laboratories submitted 21 Lab duplicates (all measured for total Cu, acid soluble Cu, cyanide soluble Cu and molybdenum) during the 2021 drill campaign as a part of their QA/QC process. The results of the laboratory duplicates are in good agreement for total Cu (%), acid soluble Cu (%) and cyanide soluble Cu (%) and molybdenum (ppm). The results of the duplicates versus the original sample measurements for total Cu (%) can be viewed in Figure 11-34.

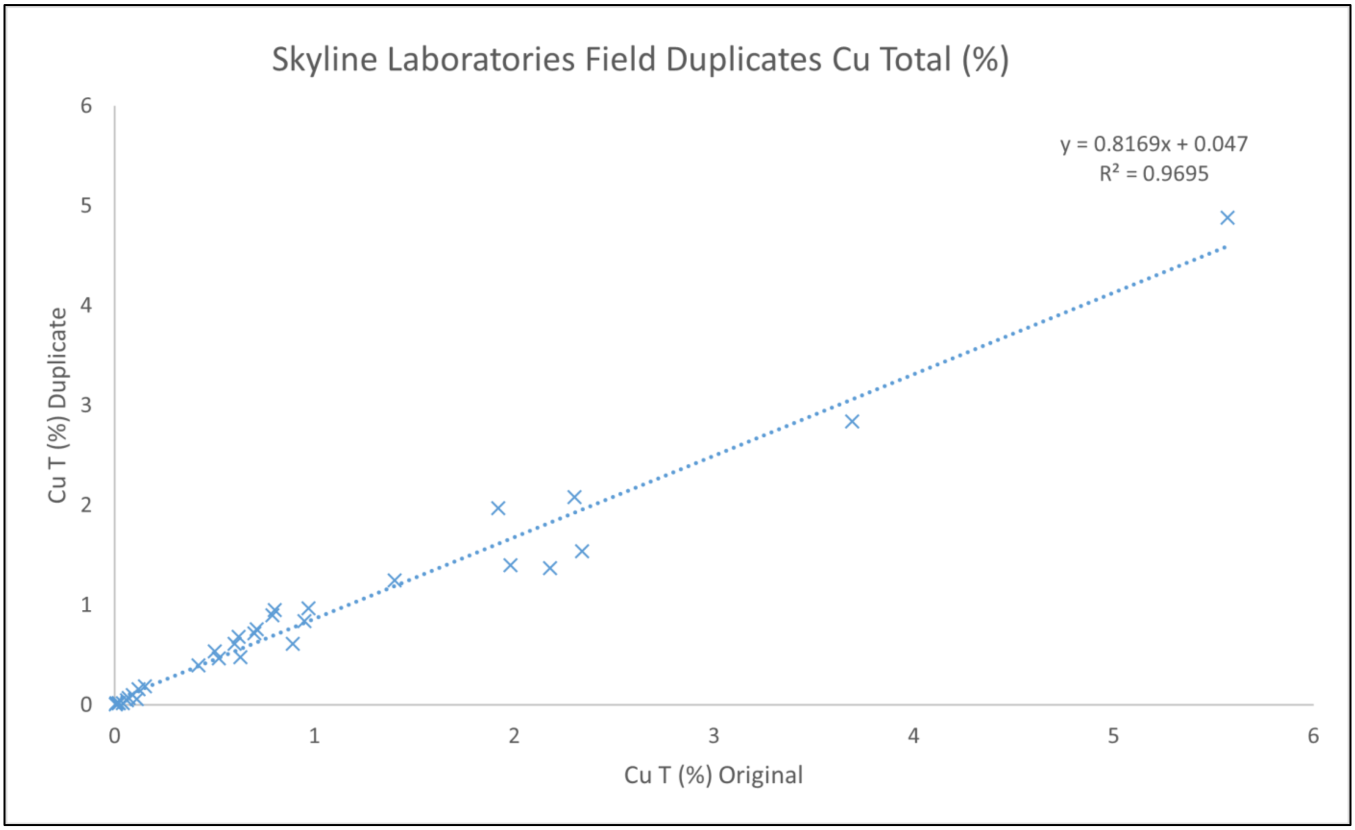


Figure 11-31: Original versus field duplicate sample results as total Cu (%) from samples submitted to Skyline Laboratories

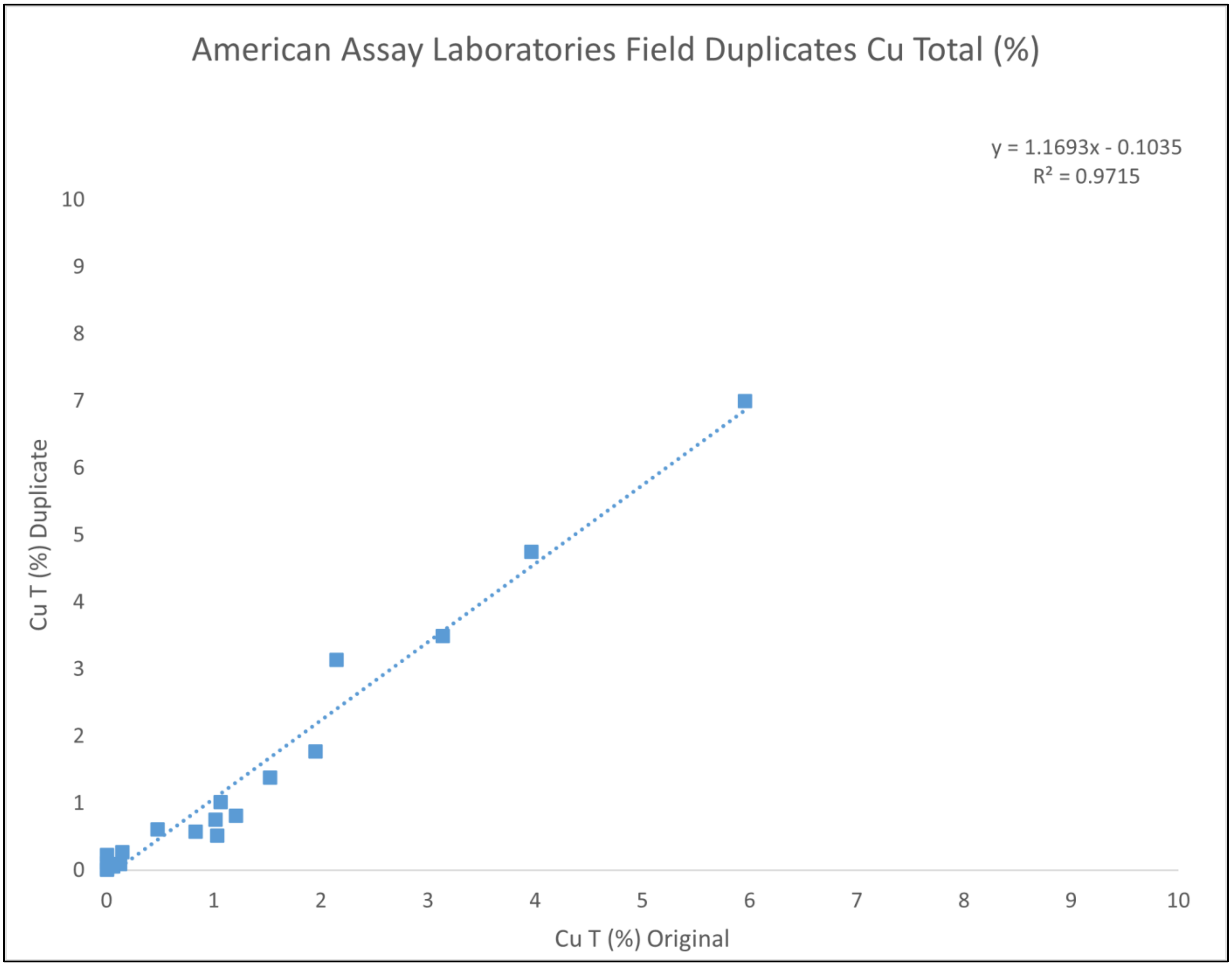


Figure 11-32: Original versus field duplicate sample results as total Cu (%) from samples submitted to American Assay Laboratories

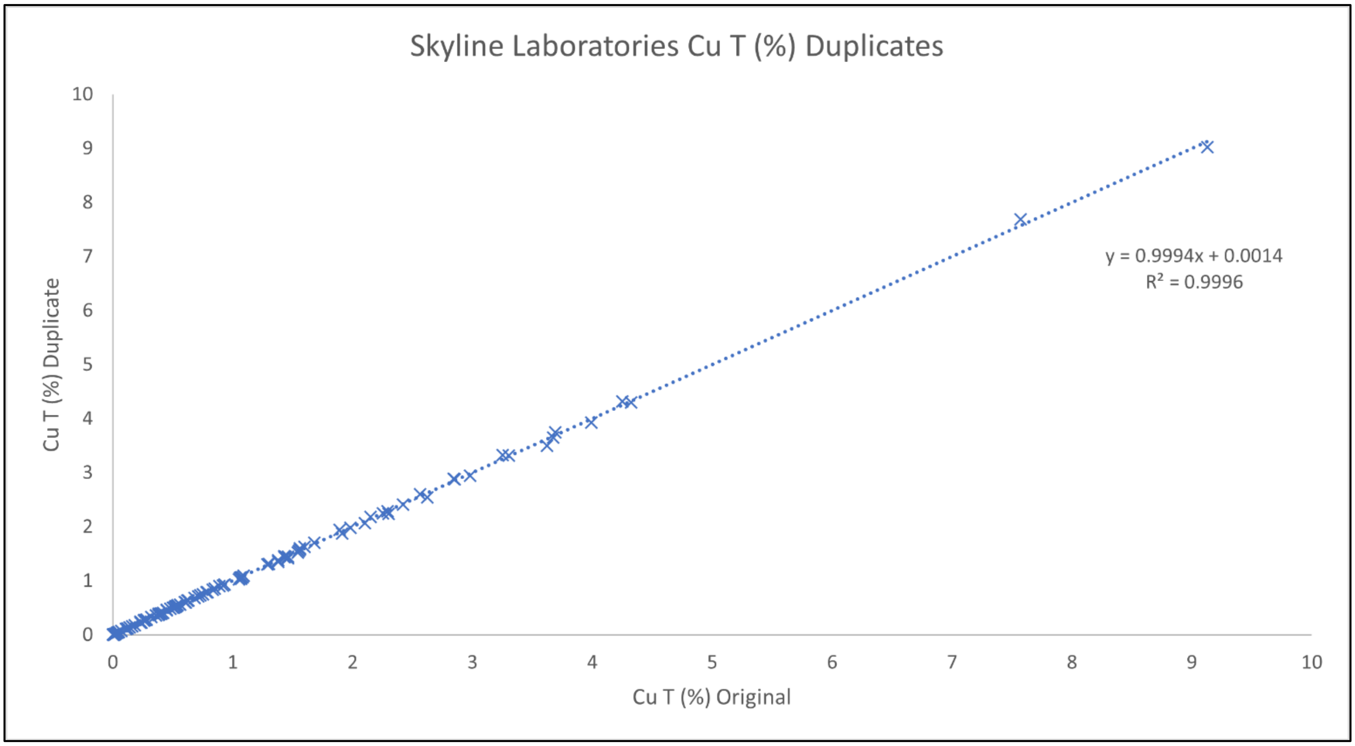


Figure 11-33: Duplicates completed by Skyline Laboratories as a part of their QA/QC process

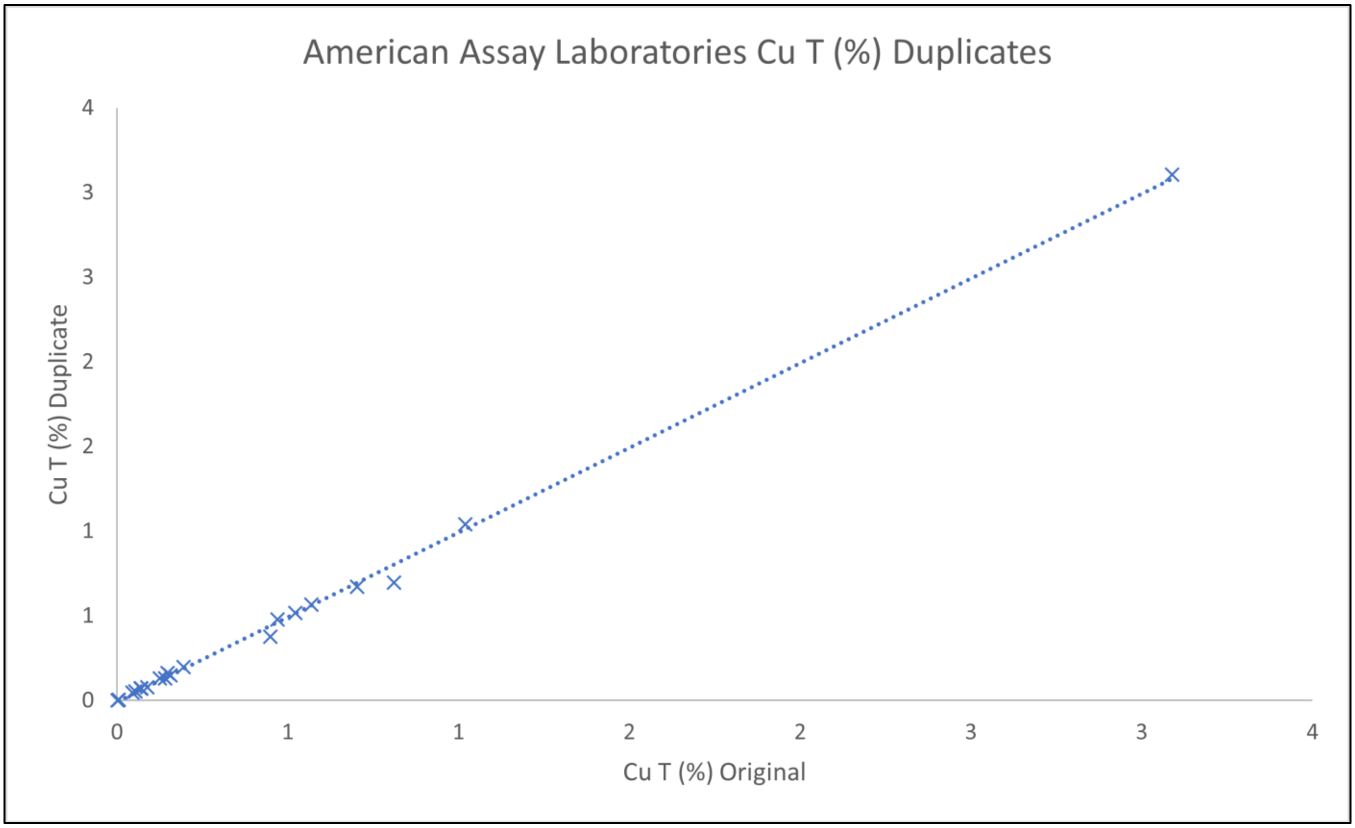


Figure 11-34: Duplicates completed by American Assay Laboratories as a part of their QA/QC process

11.4 Security and Storage

The Santa Cruz East Ridge, and Texaco core is stored in wax impregnated core boxes and transported to the core logging shack. After being logged, the core boxes are palletized, weatherized, and stored in IE's core storage facilities. The core storage is locked behind bay doors or chain link fencing for security purposes. All samples for analyses are transported by courier to the laboratory in Tucson, Arizona, or Burnaby, BC, Canada.

12 DATA VERIFICATION

Nordmin completed several data verification checks throughout the duration of the Mineral Resource Estimate. The verification process included two site visits to the Santa Cruz Project by Nordmin to review surface geology, drill core geology, geological procedures, QA/QC procedures, chain of custody of drill core, and the collection of independent samples for assay verification. The site visits occurred from March 2nd to 6th, 2022 and November 7th to 10th, 2022. The data verification included:

- survey spot check of drill collars;
- spot check comparison of assays from the drill hole database against original assay records (lab certificates);
- spot check of drill core lithologies recorded in the database versus the core located in the core processing and storage facilities;
- spot check of drill core lithologies in the database versus the lithological model; and,
- review of the QA/QC performance of the drill programs.

Nordmin has also completed additional data analysis and validation, as outlined in Section 11.

12.1 Nordmin Site Visits 2022

Nordmin completed a site visit to the Santa Cruz Project from March 2nd to March 6th, 2022. Nordmin was accompanied by IE management team members and project geologists. Additionally, Nordmin also visited the site on November 7th through November 10th, 2022.

Activities during the site visits included:

- review of the geological and geographical setting of the Santa Cruz Project;
- review and inspection of the site geology, mineralization, and structural controls on mineralization;
- review of the drilling, logging, sampling, analytical, and QA/QC procedures;
- review of the chain of custody of samples from the field to the assay lab;
- review of the drill logs, drill core, storage facilities, and independent assay verification on selected core samples;
- confirmation of several drill hole collar locations;
- review of the structural measurements recorded within the drill logs and how they are utilized within the 3D structural model; and,
- verification of a portion of the drill hole database.

IE geologists completed the geological mapping, core logging, and sampling associated with each drill location, therefore, Nordmin relied on IE's database to review the core logging procedures, collection of samples, and chain of custody associated with the drilling programs. IE provided Nordmin with digital copies of the logging and assay reports; all drilling data, including collars, logs, and assay results, prior to the site visit.

No significant issues were identified during the site visit.

IE employs a rigorous QA/QC protocol, including the routine insertion of field duplicates, blanks, and certified reference standards. Nordmin was provided with an excerpt from the database for review.

Currently, IE's core logging scope includes measured sections of fractures, faults, shears, and other structures. Downhole televiewer data is collected and compiled with the logging information. This allows for the accurate measurement of structures.

The geological data collection procedures and the chain of custody were found to be consistent with industry standards and following IE's internal procedural documentation. Nordmin was able to verify the quality of geological and sampling information and develop an interpretation of Cu (primary, acid soluble and cyanide soluble) grade distributions appropriate for the MRE.

12.1.1 Field Collar Validation

Nordmin and a senior IE geologist verified several collar locations during the November site visit using a Garmin GPSMAP 64sx handheld GPS unit. The collars taken by Nordmin are very similar, if not exact, to what IE had for collar locations. Table 12-1 and Figure 12-1 demonstrate the comparison between the collected collar locations for select historical and 2021/2022 IE drill holes to the IE collar locations used in the MRE.

Photos of drill hole collars for historic holes CG-091 and CG-030 can be seen in Figure 12-2.

Table 12-1: Check Coordinates for Drilling Within the Santa Cruz, East Ridge, and Texaco Deposits November 9, 2022. *Drill holes beginning with "SCC" are recent holes drilled by IE. All other hole ID's represent historical drill holes throughout the property.*

	Original Coordinates		Check Coordinates	
Hole ID	**Easting**	**Northing**	**Easting**	**Northing**
CG-021	417,681.0	3,640,646.1	417,692.2	3,640,646.4
CG-030	417,838.1	3,640,036.4	417,838.5	3,640,036.4
CG-047	419,086.6	3,643,143.5	419,086.5	3,643,144.2
CG-055	417,832.8	3,639,424.9	417,833.4	3,639,420.8
CG-061	417,833.9	3,639,581.1	417,834.5	3,639,579.8
CG-065	417,844.7	3,640,488.8	417,844.1	3,640,490.1
CG-068	417,894.1	3,639,506.3	417,893.1	3,639,504.3
CG-083	417,897.0	3,640,118.5	417,898.2	3,640,118.6
CG-091	417,861.4	3,639,958.8	417,862.3	3,639,957.2
CG-092	417,768.0	3,640,117.3	417,768.7	3,640,117.6
CG-099	417,898.7	3,639,661.0	417,898.5	3,639,660.8
CG-100	417,758.8	3,639,654.9	417,758.3	3,639,654.3
CG-101	417,759.1	3,640,427.4	417,758.4	3,640,427.4
SC-024	417,494.1	3,641,007.9	417,496.6	3,641,006.9
SC-029	419,648.6	3,643,194.8	419,648.0	3,643,196.2
SC-036	417,491.3	3,641,157.6	417,492.9	3,641,149.2
SC-039	417,640.6	3,640,854.2	417,645.0	3,640,860.3
SC-041	419,369.7	3,643,301.1	419,369.7	3,643,302.5
SC-042	419,636.1	3,643,254.0	419,638.0	3,643,246.7
SC-043	419,174.8	3,643,173.9	419,176.4	3,643,173.8
SC-067	419,422.9	3,642,948.3	419,420.1	3,642,947.9
SCC-001	417,838.0	3,639,741.0	417,837.1	3,639,741.1
SCC-002	417,683.0	3,640,043.0	417,696.1	3,640,053.3
SCC-004	417,536.0	3,640,350.0	417,534.6	3,640,348.6
SCC-005	417,837.7	3,640,344.0	417,840.7	3,640,342.8
SCC-006	417,863.6	3,640,199.8	417,864.8	3,640,201.7
SCC-007	418,341.0	3,639,977.0	418,342.3	3,639,974.7
SCC-008	417,937.0	3,639,914.0	417,937.4	3,639,914.4
SCC-012	419,564.0	3,643,172.0	419,562.1	3,643,175.6
SCC-014	419,175.1	3,643,173.6	419,176.4	3,643,173.8
SCC-015	419,378.5	3,643,167.5	419,379.2	3,643,169.5
SCC-017	419,378.0	3,643,172.7	419,378.2	3,643,174.1

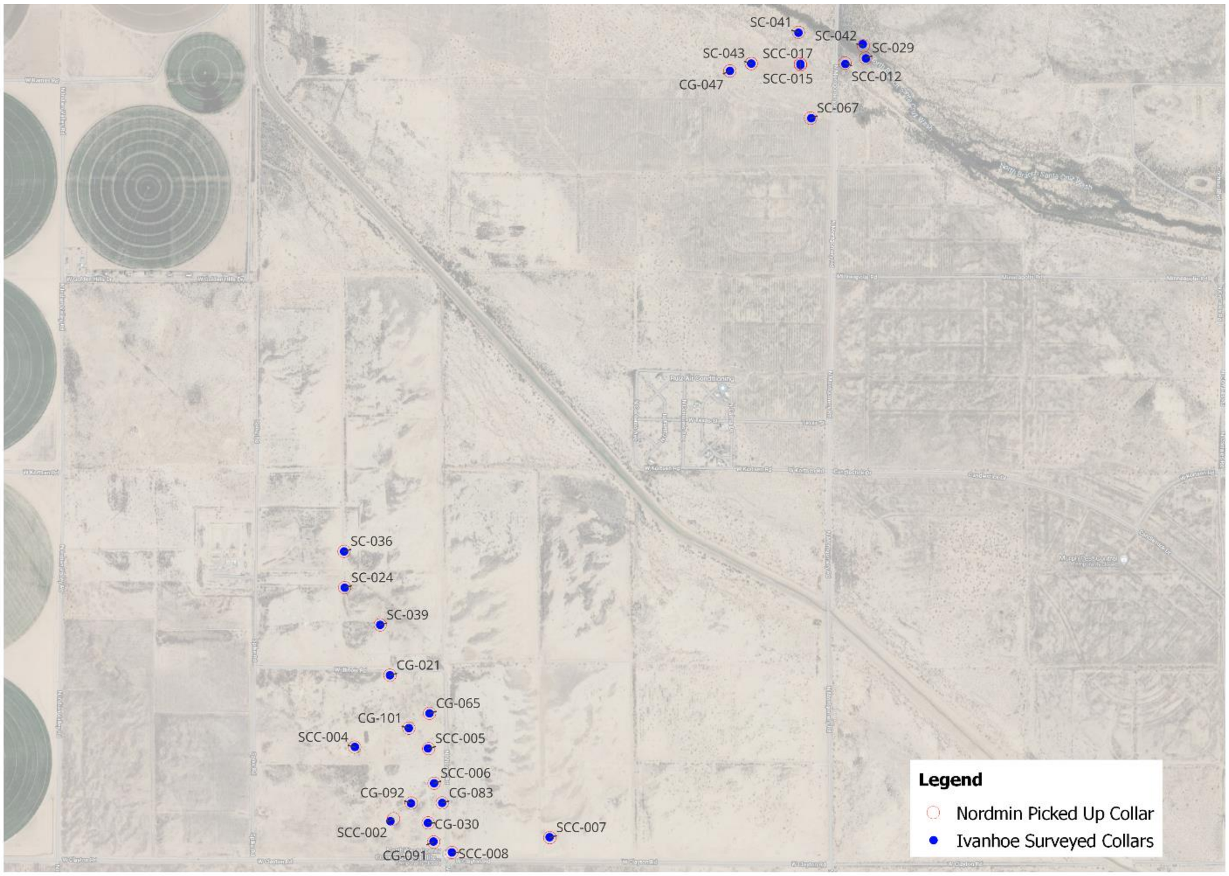


Figure 12-1: Map of check drill hole collar locations from the November 2022 site visit

Figure 12-2: Collars for historic diamond drill holes CG-091 and CG-030

12.1.2 Core Logging, Sampling, and Storage Facilities

The Company drill holes are logged, photographed, and sampled on site at the core logging facility (Figure 12-3 and Figure 12-4). No historical core is available. Recently drilled core is palletized, winterized, stored at IE's core storage facilities (Figure 12-5. The core samples, pulps, and coarse rejects are kept at the core logging facility or at IE's core storage facilities.

Figure 12-3: IE core logging facility located in Casa Grande, Arizona

Figure 12-4: Core photography station at the IE core logging facility

Figure 12-5: IE's core storage facilities. Core is predominantly stored outside, winterized and on pallets. Further core storage is available with Buildings 1 and 2.

MX Deposit^{TM} logging software is used for the drill program. The software has been extensively customized, and all core loggers have been very well trained. As a result, the QP found great consistency of logging across all personnel, a rarity in the industry. Geotechnical measurements are also taken in MX Deposit and are equally robust and consistent across personnel.

Documented drilling, logging, and sampling SOPs, including a standardized drill inspection checklist are used to standardize and enforce procedures. QA/QC samples, including blanks, duplicates, and standards, are appropriately selected and applied to the assaying.

Prior to the November site visit by the QP, anomalous SG values were observed in database exports. This included negative values and values less than or close to the SG of water (1.0). Upon inspection of the SG station (Figure 12-6), it was noted that the vessel used for weight in water was not of adequate size and the water contained large amounts of sediment, likely causing erroneous measurements. The QP discussed how to rectify these issues with the on-site team and will be closely monitoring SG values going forward. All suggested changes have since been implemented. The existing SG database was subsequently corrected and validated to the satisfaction of the QP, all incoming SG measurements have been reviewed and were acceptable.

Figure 12-6 Specific gravity measuring station within core logging facility.

Historical drill core has not been preserved; several core dumps can be found around the property, but it is not available for review.

12.1.3 Independent Sampling

Nordmin selected intervals from two Santa Cruz Deposit holes. A total of 14 verification samples were collected (Table 12-2) from the Santa Cruz available diamond drill holes. During the November 2022 site visit an additional 50 samples were selected for verification from the Texaco Deposit diamond drill holes (Table 12-3). Diamond drill core previously sampled (halved) was re-sampled by having the labs re-analyze the coarse reject material. Two assay laboratories were used during the 2021 drill campaign; therefore, the decision was made by Nordmin to send the independent samples to both laboratories to check for any lab bias.

Table 12-2: Original Assay Values Versus Nordmin Check Sample Assay Values from the March 2022 Site Visit

			Original Sample				Check Sample			
Sample Number	From	To	TCu (%)	ASCu-SEQ	CNCu-SEQ	Mo (%)	TCu (%)	ASCu-SEQ	CNCu-SEQ	Mo (%)
SKY5022508	582.35	583.70	0.12	0.041	0.005	0.013	0.12	0.045	0.007	0.011
SKY5022513	587.70	588.70	6.05	4.535	0.014	0.012	6.03	5.544	0.012	0.012
SKY5022517	590.70	591.70	2.02	1.756	0.007	0.008	2.17	2.134	0.007	0.007
SKY5022525	591.70	600.70	1.2	1.069	0.011	0.009	1.23	1.207	0.012	0.006
SKY5022601	600.70	687.23	3.99	3.803	0.039	0.005	4.05	3.947	0.039	0.005
SKY5022604	600.70	690.23	6.89	1.472	3.742	0.011	6.95	1.527	5.31	0.01
SKY5022585	664.23	666.23	1.98	1.818	0.007	0.012	1.99	1.98	0.007	0.011
SKY5022565	666.23	642.10	2.63	2.348	0.012	0.007	2.62	2.621	0.014	0.005
SKY5022730	816.00	817.00	0.61	0.0025	0.068	0.005	0.62	0.005	0.075	0.003
SKY5022754	836.00	837.00	1.99	0.0025	0.204	0.012	2.05	0.0025	0.214	0.011
SKY5022823	939.00	941.00	0.62	0.007	0.064	0.002	0.64	0.009	0.066	0.002
SKY5022824	941.00	943.00	0.55	0.0025	0.031	0.006	0.55	0.005	0.031	0.006
SKY5022823	939.00	941.00	0.62	0.007	0.064	0.002	0.65	0.0025	0.06	0.002
SKY5022824	941.00	943.00	0.55	0.0025	0.031	0.006	0.55	0.0025	0.032	0.002

Table 12-3 Original Assay Values versus Nordmin Check Sample Assay Values from the November 2022 Site Visit.

			Original Sample				Check Sample			
Sample Number	From	To	TCu %	ASCu %	CNCu %	Mo %	TCu %	ASCu %	CNCu %	Mo %
695481	774.4	775	0.91	0.901	0.005	0.001	1.18	1.169	0.009	0.001
695482	775	776	2.72	2.686	0.016	0.006	2.74	2.684	0.022	0.007
695483	776	777	0.74	0.707	0.032	0.005	0.74	0.702	0.038	0.005
695484	777	778	1.61	1.576	0.026	0.006	1.66	1.618	0.03	0.007
695514	802	803	3.55	0.164	3.189	0.015	3.33	0.228	3.048	0.013
695517	805	806	3.08	0.148	2.876	0.029	3.14	0.167	2.833	0.032
695518	806	807	2.15	0.058	1.89	0.012	2.09	0.084	1.822	0.011
695670	937	938	0.98	0.013	0.191	0.003	0.99	0.02	0.223	0.003
695671	938	939	1.13	0.005	0.092	0.015	1.31	0.014	0.142	0.018
695672	939	940	1.66	0.0025	0.403	0.009	1.71	0.019	0.418	0.01
695673	940	941	1.34	0.005	0.21	0.009	1.36	0.013	0.254	0.009
695687	952	953	0.25	0.0025	0.01	0.017	0.22	<0.005	0.017	0.013
695689	953	954	0.29	0.0025	0.017	0.004	0.31	0.008	0.03	0.004
695690	954	955	0.37	0.0025	0.014	0.003	0.39	0.008	0.025	0.003
695691	955	956	0.18	0.0025	0.009	0.003	0.16	0.005	0.017	0.002
695692	956	957	0.2	0.0025	0.009	0.002	0.2	<0.005	0.016	0.003
694625	793	794	0.95	0.029	0.799	0.02	0.95	0.04	0.844	0.02
694626	794	795	0.65	0.019	0.494	0.033	0.66	0.038	0.515	0.03
694627	795	796	1.1	0.028	0.957	0.067	1.15	0.04	0.916	0.066

			Original Sample				Check Sample			
Sample Number	From	To	TCu %	ASCu %	CNCu %	Mo %	TCu %	ASCu %	CNCu %	Mo %
694629	796	797	0.58	0.035	0.441	0.007	0.58	0.038	0.452	0.006
694630	797	798	0.99	0.027	0.736	0.045	0.98	0.043	0.824	0.045
694631	798	799	1.55	0.026	1.018	0.035	1.46	0.042	1.171	0.034
694639	805	806	1.05	0.013	0.383	0.022	1.06	0.023	0.41	0.023
694640	806	807	1.37	0.033	0.828	0.016	1.42	0.036	0.831	0.019
694641	807	808	0.97	0.025	0.546	0.036	0.99	0.032	0.571	0.039
694643	808	809	0.87	0.015	0.512	0.028	0.89	0.032	0.524	0.03
694644	809	810	0.8	0.025	0.453	0.01	0.81	0.028	0.454	0.009
694645	810	811	1.06	0.021	0.474	0.011	1.13	0.02	0.475	0.011
694646	811	812	1.28	0.014	0.72	0.032	1.25	0.022	0.73	0.027
694647	812	813	1.21	0.024	0.707	0.026	1.14	0.032	0.706	0.023
694648	813	814	0.85	0.016	0.498	0.031	0.89	0.023	0.582	0.032
694650	814	815	0.72	0.019	0.408	0.051	0.54	0.01	0.03	0.003
694651	815	815.9	1.13	0.022	0.467	0.037	1.15	0.025	0.448	0.036
694712	867	868	0.82	0.006	0.038	0.074	0.82	0.012	0.034	0.061
694713	868	869	0.41	0.0025	0.016	0.006	0.39	0.01	0.016	0.005
694714	869	870	0.72	0.007	0.033	0.014	0.77	0.013	0.036	0.017
694715	870	871	1.31	0.026	0.104	0.126	1.45	0.027	0.107	0.105
694716	871	872	1	0.038	0.178	0.053	1.13	0.043	0.203	0.048
694717	872	873	1.22	0.016	0.38	0.019	1.29	0.018	0.384	0.017
694718	873	874	3.07	0.008	0.44	0.168	3.13	0.021	0.462	0.163
694720	874	875	1.67	0.015	0.386	0.033	1.72	0.026	0.381	0.026
694721	875	876	2.01	0.017	0.514	0.054	1.96	0.02	0.502	0.047
694722	876	877	1.59	0.022	0.702	0.046	1.68	0.026	0.702	0.046
694723	877	878	2.15	0.023	1.015	0.017	2.09	0.034	0.871	0.014
694724	878	879	2.12	0.026	0.855	0.044	2	0.028	0.812	0.042
694949	1070	1071	1.25	0.0025	0.091	0.008	1.26	0.007	0.075	0.007
694950	1071	1072	0.59	0.006	0.041	0.003	0.74	0.029	0.421	0.056
694952	1072	1073	0.25	0.0025	0.022	0.001	0.24	0.006	0.02	0.001
694953	1073	1074	0.25	0.006	0.046	0.004	0.22	0.006	0.023	0.003
694954	1074	1075	0.5	0.005	0.028	0.003	0.44	0.008	0.026	0.002

IE uses unmineralized material (an alkaline granite from the area), where values of ore minerals are below detection limits or quartz gravel as sample blanks. The blank material was analyzed at Skyline Laboratories to ensure that there was no significant amount of Cu present. Coarse blanks are crushed as normal samples within the sample stream so that contamination during sample preparation can be detected. Blanks are used to assess proper instrument cleaning and instrument detection limits and contaminations within the lab.

The Nordmin assay results for verification samples from the Santa Cruz Deposit were compared to IE's database and summarized in the scatter plots for total Cu (%), acid soluble Cu (%), and cyanide soluble Cu (%) (Figure 12-7, Figure 12-8 and Figure 12-9). Assay results for verification samples from the Texaco Deposit are summarized in Figure 12-10: to Figure 12-12:. Despite some significant sample variances in a few samples, most assays compared within reasonable tolerances for the deposit type and no material bias was evident. No bias was evident among lab analyses.

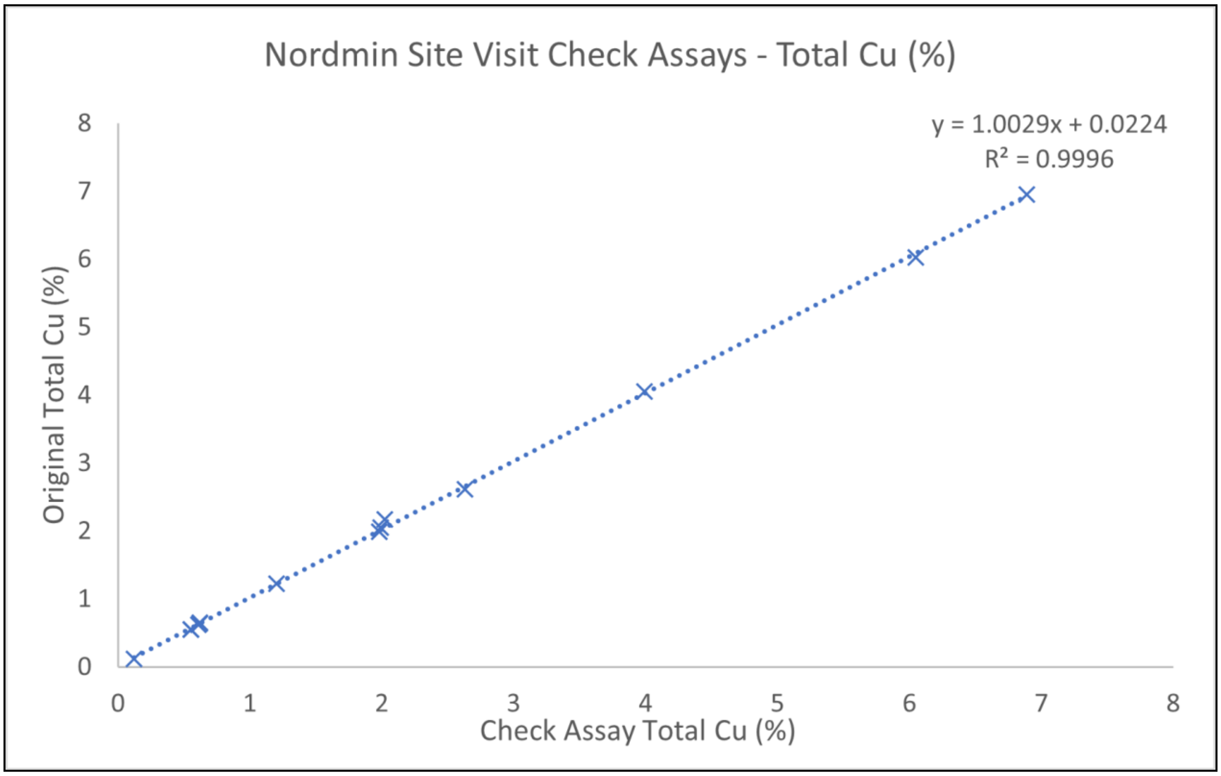


Figure 12-7: Nordmin independent sampling total Cu (%) assays from Skyline Laboratories, Santa Cruz Deposit

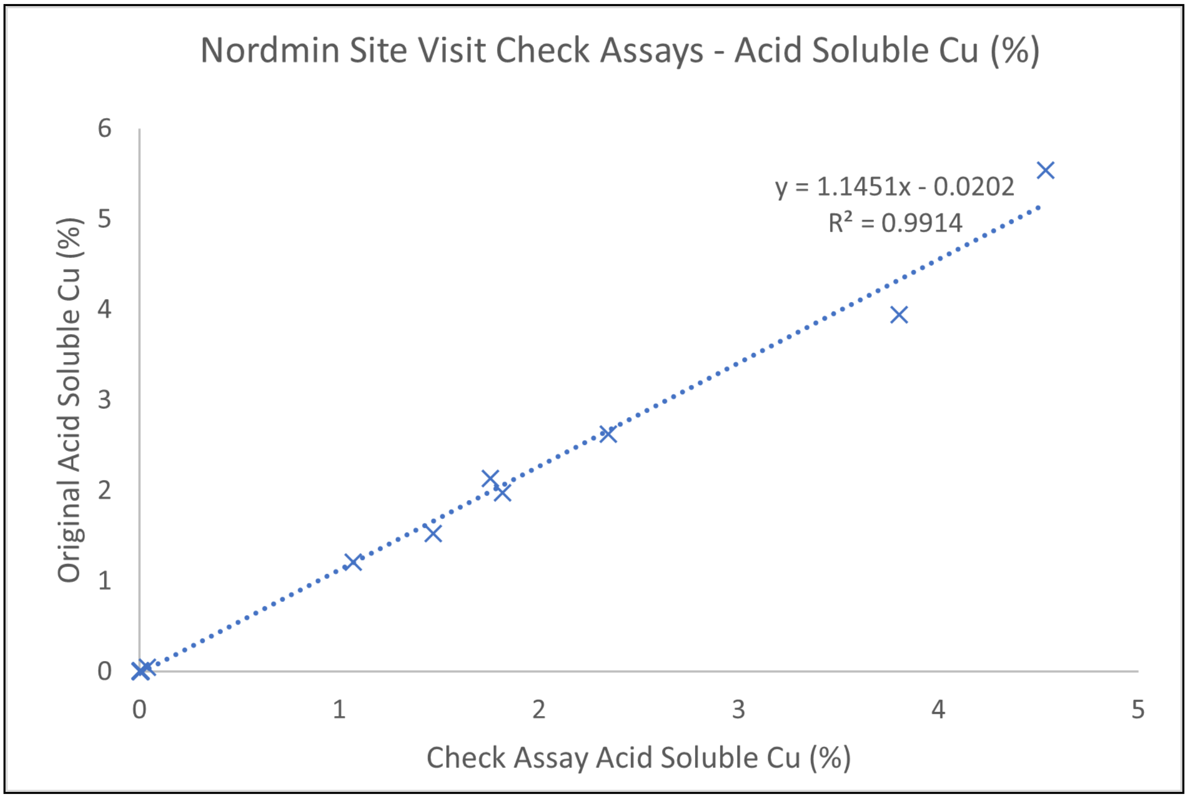


Figure 12-8: Nordmin independent sampling acid soluble Cu (%) assays from Skyline Laboratories, Santa Cruz Deposit

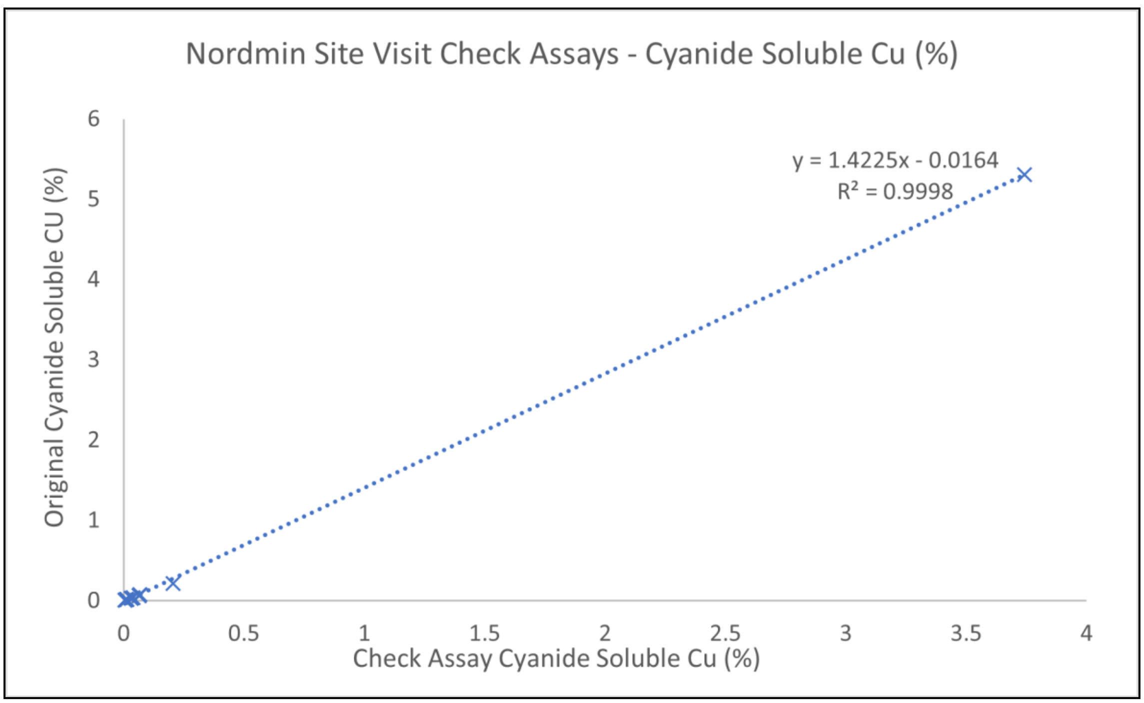


Figure 12-9: Nordmin independent sampling of cyanide soluble (%) assays from Skyline Laboratories, Santa Cruz Deposit

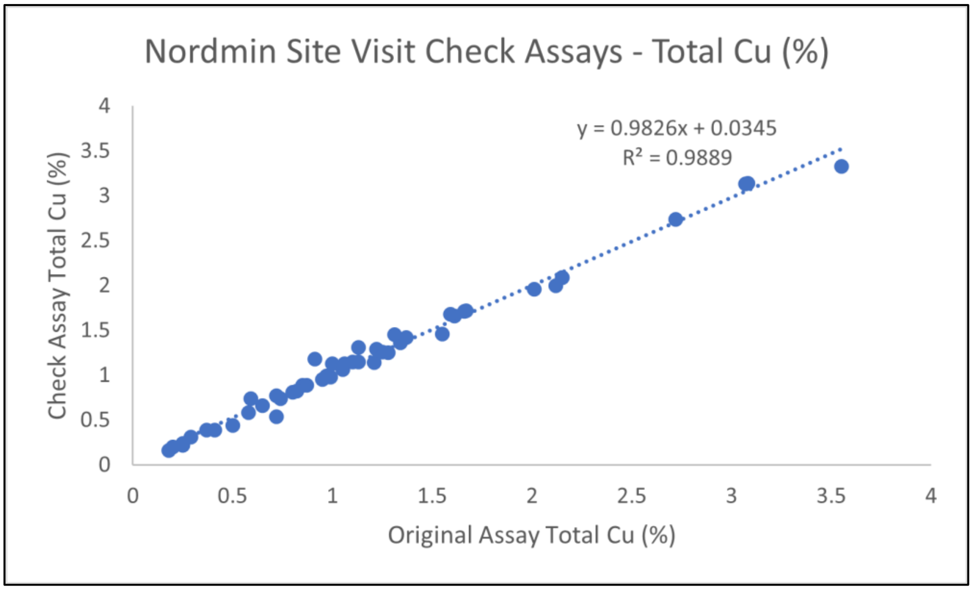


Figure 12-10: Nordmin independent sampling of total Copper (%) assays from Skyline Laboratories, Texaco Deposit

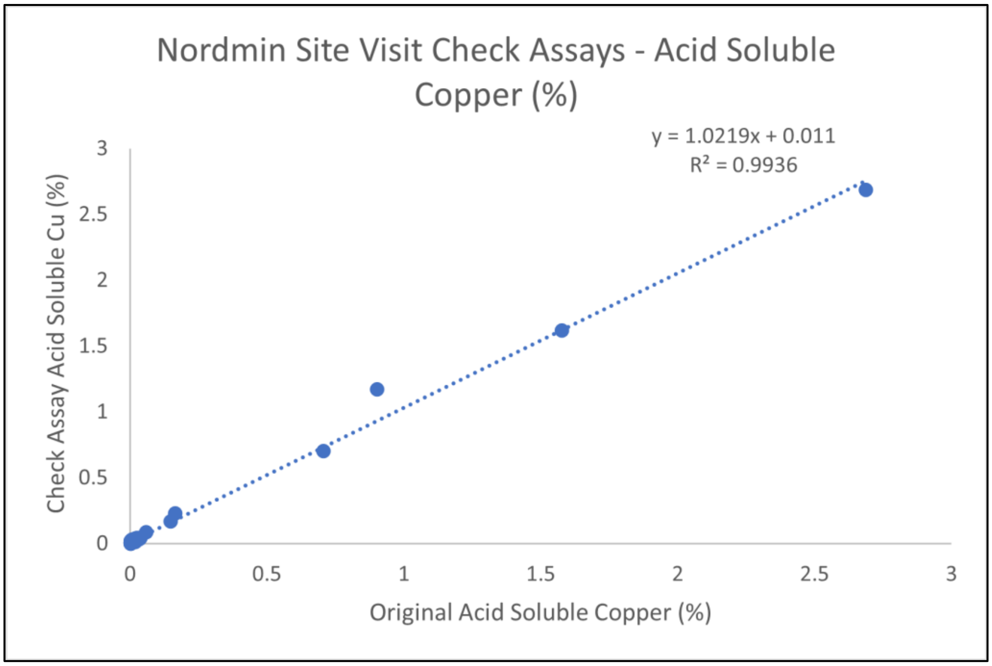


Figure 12-11: Nordmin independent sampling of acid soluble Copper (%) assays from Skyline Laboratories, Texaco Deposit

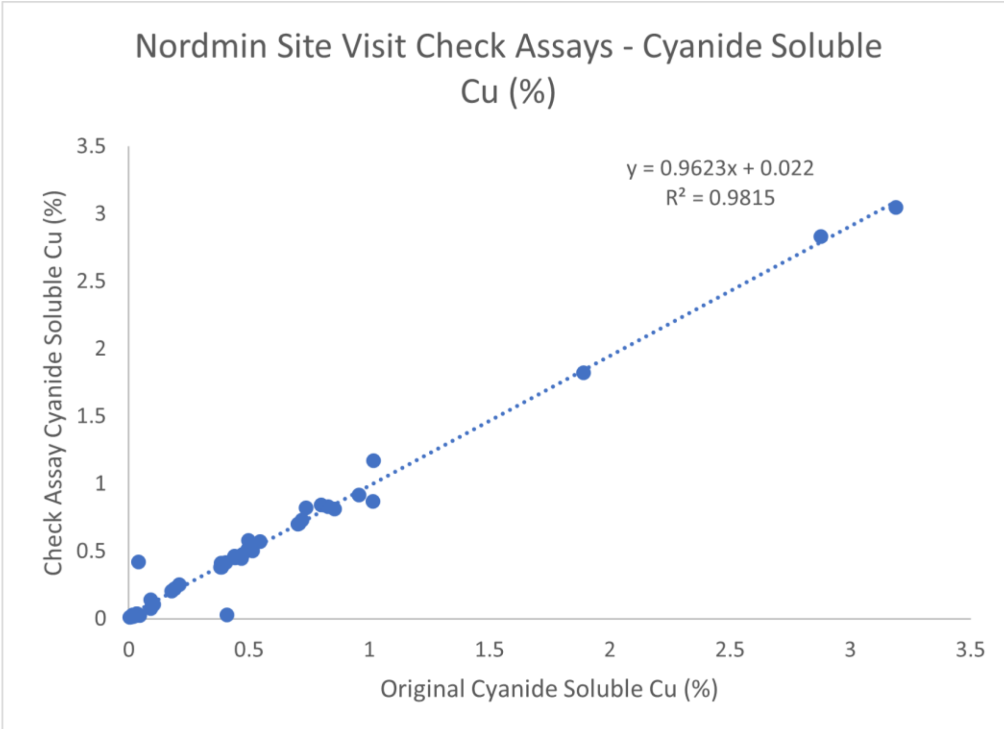


Figure 12-12: Nordmin independent sampling of cyanide soluble Copper (%) assays from Skyline Laboratories, Texaco Deposit

12.1.4 Audit of Analytical Laboratory

On September 17, 2021, the Nordmin QP and representatives from IE audited the sample preparation and analysis facilities of Skyline Laboratories in Tucson, Arizona. Recommendations from the audit were provided to Skyline Laboratories and follow up was completed by IE representatives to ensure that the recommendations were implemented. An additional audit of Skyline Laboratories, Tuscon, AZ was conducted on June 29, 2022 by members of IE. Recommendations from the 2021 visit were found to have improved (i.e. dust control, air quality). Overall, the lab was found to be clean and organized for sample preparation and analysis. Recommendations from the audit were shared with the lab, follow up audits by IE representatives will be completed to ensure that recommendations were implemented. Another audit of Skyline is planned for 2023.

12.2 Twin Hole Analysis

In the 2021 MRE, Nordmin completed a twin hole analysis between the historical Hanna-Getty and ASARCO diamond drilling versus the 2021 IE drilling to determine if the historical information could be used in the geologic model and Resource Estimate. The analysis compared the collar locations, downhole surveys, logging (lithology, alteration, and mineralization), sampling and assaying between the two groups to determine if the historical holes had valid information and would not be introducing a bias within the geological model or Resource Estimate. The comparison included a QA/QC analysis of the historical drill holes.

A total of five historical holes were reviewed with the following outcomes:

- all five historical hole assays aligned with 2021 diamond drilling assays;
- 2021 diamond drilling assays were of higher resolution due to smaller sample sizes; and,

- recent drilling validated the ASARCO cyanide soluble assays.

Figure 12-13 demonstrates that grade variability and location were insignificant between CG-027 and SCC-001 and demonstrated overall grade continuity between the intercepts. Resolution is higher in SCC-001 downhole due to smaller sample sizes compared to historic drilling. Table 12-4 demonstrates good agreement between historic logging and current logging using the same regional lithology types. This provides confidence in the accuracy of the geologic model and that associations made between mineralization and lithology are valid. Similar patterns are observed within the other three historical drill holes used within the Resource Estimate, which included reliable QA/QC data.

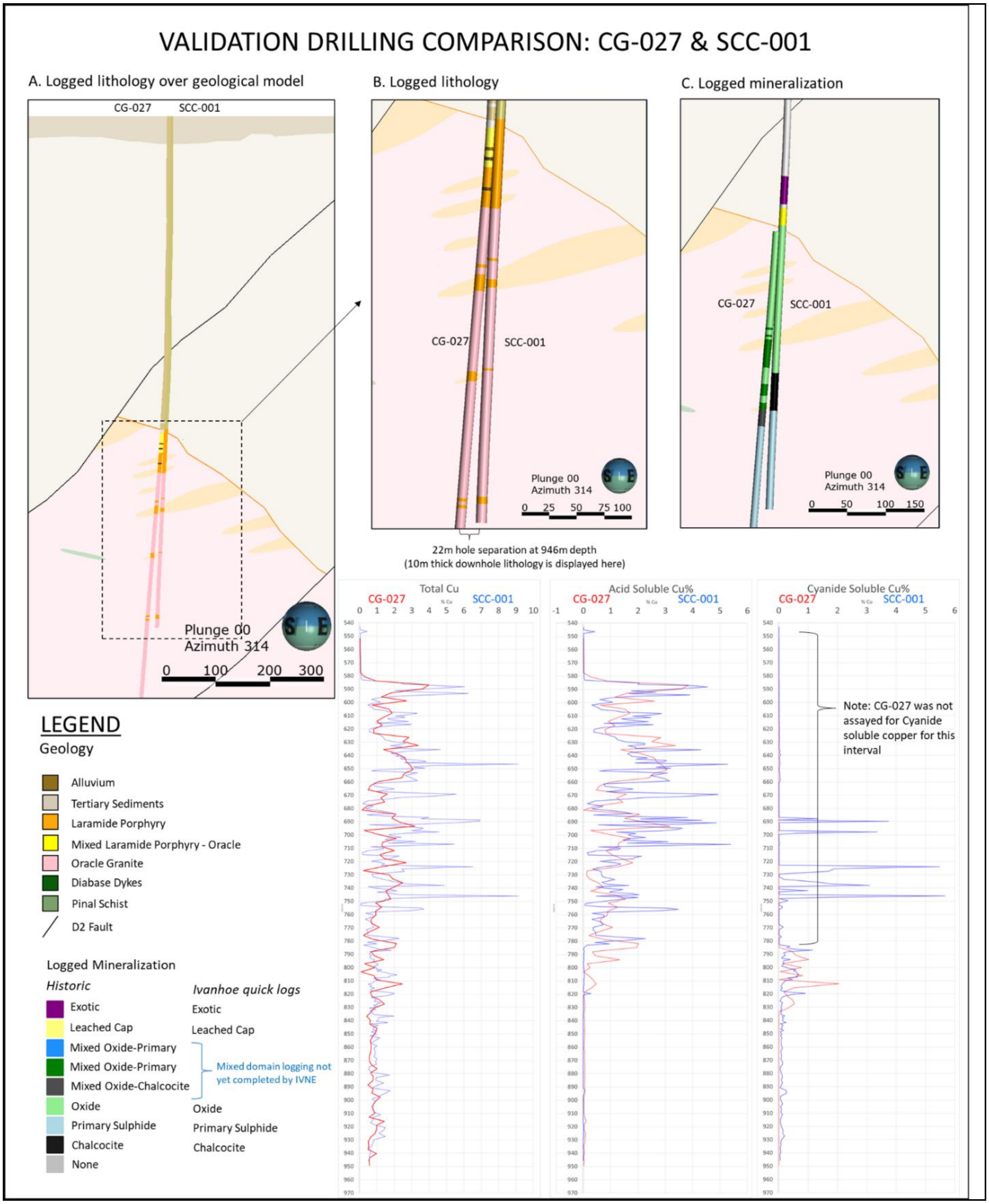


Figure 12-13: Comparison of assays from SCC-001 versus CG-027. A) shows the direct comparison of total Cu assays as Cu (%). B) SCC-001 and CG-027 showing downhole charts of acid soluble Cu assays (%) on the left and total Cu (%) assays on the right.

Table 12-4: Downhole Lithology Logging Comparison of CG-027 versus SCC-001

TgcU = Tertiary unconsolidated sediments, TgcL = Tertiary Lithified Sediments, Mixed = breccias, LI = Laramide Intrusives, pC = Precambrian Granites/Diabase Dykes and Aplites

Hole ID	FROM (m)	TO (m)	Lithology	Hole ID	FROM (m)	TO (m)	Lithology
CG-027	0	24.38	Tert. Sediments	SCC-001	0	514.78	Conglomerate
	24.38	85.34	Tert. Sediments				Conglomerate
	85.34	195.07	Tert. Sediments				Conglomerate
	195.07	347.47	Tert. Sediments				Conglomerate
	347.47	542.54	Tert. Sediments		514.78	544.03	Conglomerate
	542.54	563.88	Tert. Sediments		544.03	551.28	Conglomerate
	563.88	566.92	No data		551.28	556.26	Fault
	566.92	576.07	Tert. Sediments		556.26	578.76	Breccia
	576.07	579.12	Tert. Sediments		578.76	600.93	Quartz Monzonite
	579.12	585.52	No data		600.93	603.35	Quartz Monzonite
	585.52	603.5	Mixed				
	603.5	606.55	Tert. Sediments		603.35	615.03	Quartz Monzonite
	606.55	612.64	Mixed				
	612.64	615.69	Tert. Sediments				
	615.69	621.79	Mixed		615.03	660.24	Granodiorite
	621.79	640.08	Laramide Int.				
	640.08	643.12	Tert. Sediments				
	643.12	658.36	Laramide Int.				
	658.36	694.94	Granite		660.24	705.39	Granite
	694.94	697.99	Granite		705.39	707.83	Granodiorite
	697.99	710.18	Granite				
	710.18	713.23	Laramide Int.		707.83	724.47	Granite
	713.23	719.32	Granite		724.47	732.03	Granodiorite
	719.32	731.52	Laramide Int.				
	731.52	734.56	Laramide Int.		732.03	751.71	Granite
	734.56	807.72	Granite		751.71	769.62	Granite
					769.62	802.66	Granite
					802.66	807.511	Gabbro
	807.72	816.86	Laramide Int.		807.511	818.39	Granite
	816.86	923.54	Granite		818.39	820.23	Fault
					820.23	845.75	Granite
					845.75	849.17	Fault
					849.17	891.7	Granite
					891.7	897.94	Granite
					897.94	910	Granite
					910	921.22	Fault
	923.54	926.59	Laramide Int.		921.22	928.75	Granodiorite
	926.59	929.64	Granite		928.75	946.09	Fault

Several holes have been twinned over the course of the exploration work conducted on the Santa Cruz Deposit. Nordmin was able to match most of the intervals for each of the pairs and plotted the grades for Cu, Cu-SEQ, and Mo. In Nordmin's opinion, for most of the pairs, the assay results compared reasonably well; the high-grade (HG) and low-grade (LG) zones were similar, and the grades tended to cluster in the same ranges. In Nordmin's opinion, the twinning has provided a reasonably consistent verification of the earlier Hanna-Getty and ASARCO drill results, particularly considering the differences in the assay, survey methods and QA/QC protocols.

12.3 Database Validation

The Nordmin QP completed a spot check verification of the following drill holes:

- Santa Cruz Deposit – 5 drill holes which included 89 lithology entries (19%), 388 geotechnical measurements (55%), and 328 assay entries (70%).
- Texaco Deposit – 2 drill holes were checked which included 78 lithology entries (47%), 441 geotechnical measurements (44%), and 1059 assays (56%).
- East Ridge Deposit – 1 drill hole was checked which included 27 lithology entries (12.7%), 176 geotechnical measurements (11%), and 306 assays (23%).

The historical geology was validated for lithological units from handwritten logs transcribed into excel tables and historical logs compiled into a database. Lithological units being implemented in current logging were based on the historical description. Detail and interpretation of the lithologic units have developed along with the 2021-2022 drilling and are more robust than earlier descriptions. The geological contacts and lithology aligned with the core contacts and lithology and are acceptable for use. Two assay depth errors from 2021 drilling were brought to the attention of the on-site geologists. These errors were rectified, and the database was updated. The entire database was run through the QGIS validity check to look for errors. No significant errors were found in the database.

Within the database, a portion of historic drill holes is missing the downhole survey and assay data. Holes drilled by Casa Grande Copper Co. have 62.1% of the survey data and 96.5% of the assay data. Holes drilled by ASARCO have 65.9% of the downhole survey data and only 34.4% of the assay data available. Missing data has been well documented by IE, and vertical twins of historic drill holes have been and continue to be drilled to confirm lithology, assay, and geotechnical data (Section 12.1.4).

12.4 Review of Company's QA/QC

The Company has a robust QA/QC process in place, as previously described in Section 11.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgy and processing testwork were directed by Met Engineering LLC and conducted at McClelland Labs in Sparks, Nevada. The studies are ongoing. Study focus has been on:

- Confirming total copper recovery of the leach-float flow sheet proposed by historical operator, Casa Grande Copper Corp., circa 1980, on Exotic, Oxide, and Chalcocite mineral domains.
- Investigating heap leaching of Exotic, Oxide, and Chalcocite mineral domains. The test program for heap leaching is at an early stage and will not be reported on until a later stage of the project.

13.1 CGCC Studies (1976-1982)

The Casa Grande Copper Corp. (CGCC) studies were conducted by the Hanna Mining Company Research Centre, Minnesota, USA. They evaluated the three distinct processing routes listed below. Detailed reports were prepared for each process. There is a fourth process, heap leach, that was investigated with conceptual studies, but no detailed study was pursued for this process. Approximately 90 mineral processing and metallurgical test programs were conducted. The number of tests conducted in each program ranged from 6 to 40. Three different processes were considered by CGCC:

- All Agitated Tank Leach Approach (91% total Cu recovery to cathodes).
- All-Float Approach (92% total Cu recovery to cathodes or a mixture of cathodes and saleable Cu concentrates).
- Leach – Float Process (94% Cu recovery to cathodes or to a mixture of cathodes and saleable Cu concentrates).

CGCC selected to move forward with the Leach – Float Process.

13.1.1 Sample Selection

Historical testing in 1979-1980 was performed on drill core coarse rejects. Grinding tests, open cycle and closed cycle bench level flotation tests, and bottle roll leach tests were performed.

Composite samples of seven “ore” types (listed below) were prepared from drill core intervals based on the estimate of mineralized material in the Santa Cruz Deposit developed by Hanna, dated November 15, 1978. The purpose of these ore type composites was to have material readily available for blending to represent different mine plans for various flow sheet development.

- High-grade Supergene
- Supergene Dilution
- Low-grade Supergene
- Mixed Chalcocite/Chalcopyrite
- Primary Chalcopyrite
- Exotic Ore
- Exotic Dilution Ore

Mineral processing and metallurgical tests were conducted on blends of each ore type representing the ore expected in each mine plan related to the three flow sheets mentioned in Section 13.1.

Table 13-1 through Table 13-19 below are the drill holes, intervals, and sample quantities blended for each ore type composite along with the analyses and copper mineralization. Note that some of the tables lack section data as these were not present in the historical data source. The QP is of the opinion that industry accepted practices were applied in regard to preparing sample blends for each ore type composite, and that the composite samples represent the ore type indicated.

Table 13-1: Analyses of High-grade Supergene Composite No.79-88 (A&B).

	Analyses		
Composite No.	**Total Cu (%)**	**ASCu (%)**	**Chloride (%)**
79-88A (-3/8")	1.50	1.14	0.191
79-88B (-10 Mesh)	1.47	1.14	0.185

Table 13-2: Mineralogy of High-grade Supergene Composite No.79-88.

	Mineralogy	
Mineral	**% Cu**	**% Cu Dist.**
Atacamite	0.62	41.6
Chrysocolla, Cuprite	0.45	30.2
Copper Clay	0.07	4.7
Copper Sulphides	0.35	23.5
Total	**1.49**	**100.0**

Table 13-3: Drill Holes, Intervals and Sample Weights of High-grade Supergene Composite No. 79-88 (A&B).

	High-grade supergene composite No.79-88	Feet			Meters			Sample Weight (g)	
Section	**Drill Hole ID**	**From**	**To**	**Feet**	**From**	**To**	**Metres**	**-3/8 inch**	**-10 Mesh**
14500	11	1,620	2,010	390	494	613	119	15,080	15,077
14500	12	1,965	2,075	110	599	632	34	6,260	6,260
14250	81	1,934	2,068	134	589	630	41	9,782	9,782
14250	96	1,537	1,801	264	468	549	80	11,129	11,129
14250	96	1,640	1,801	161	500	549	49		
14250	106	1,937	2,127	190	590	648	58	7,810	7,810
14000	13	1,960	2,450	490	597	747	149	17,760	17,760
14000	29	1,520	1,570	50	463	479	15	795	795
14000	40	2,006	2,049	43	611	625	13	366	366
13750	98	1,633	1,805	172	498	550	52	8,186	8,186
13750	84	1,827	2,118	291	557	646	89	15,128	15,128
13750	77	2,041	2,150	109	622	655	33	9,392	9,392
13750	77	2,199	2,279	80	670	695	24		
13500	20	1,680	1,860	180	512	567	55	10,433	10,437

	High-grade supergene composite No.79-88	Feet			Meters			Sample Weight (g)	
13500	18	2,000	2,190	190	610	667	58	5,371	5,378
13500	60	1,592	1,638	46	485	499	14	1,894	1,894
13250	78	1,802	1,927	125	549	587	38	8,913	8,913
12750	93	1,712	1,820	108	522	555	33	5,095	5,095
12750	90	1,682	1,877	195	513	572	59	14,657	14,657
12750	82	1,472	1,566	94	449	477	29	19,725	19,725
12750	82	1,807	1,947	140	551	593	43		
12400	23	1,840	2,010	170	561	613	52	10,948	10,936
12400	37	1,710	2,270	560	521	692	171	25,922	25,933
12400	38	2,050	2,646	596	625	806	182	24,132	24,063
12400	16	2,410	2,550	140	735	777	43	12,898	12,799
12400	16	2,770	3,170	400	844	966	122		
12250	88	1,867	2,178	311	569	664	95	13,350	13,350
12250	94	2,225	2,342	117	678	714	36	10,447	10,447
12250	94	2,565	2,758	193	782	841	59		
12250	87	1,899	1,977	78	579	603	24	874	874
12000	27A	1,953	2,667	714	595	813	218	47,272	47,269
12000	57	2,219	2,336	117	676	712	36	14,833	14,833
12000	57	2,582	2,627	45	787	801	14		
12000	57	2,753	2,870	117	839	875	36		
12000	24	1,990	2,060	70	607	628	21	2,548	2,548
12000	62	1,972	2,021	49	601	616	15	3,402	3,402
11750	89	2,051	2,104	53	625	641	16	3,494	3,494
11500	31	2,420	2,440	20	738	744	6	1,296	1,296
11500	61	2,484	2,609	125	757	795	38	10,574	1,0574
	32 drill holes			**7,437**			**2267**	**349,766**	**349,602**

Table 13-4: Analyses of Supergene Dilution Composite No.79-99.

Composite No.	Analyses				
	Total Cu (%)	ASCu (%)	Chloride (%)	Sulfur (%)	Total Iron (%)
79-99	0.31	0.278	0.037	0.22	2.71

Table 13-5: Mineralogy of Supergene Dilution Composite No.79-99.

	Mineralogy	
Mineral	**% Cu**	**% Cu Dist.**
Atacamite	0.079	25.5
Chrysocolla, Cuprite	0.136	44.1
Copper Clay	0.063	20.4
Copper Sulphides	0.031	10.0
Total	**0.309**	**100.0**

Table 13-6: Drill Holes, Intervals and Sample Weights of Supergene Dilution Composite No.79-99.

	Supergene dilution composite No. 79-99	Feet			Meters			Sample Weight (g)	
Section	**Drill Hole ID**	**From**	**To**	**Feet**	**From**	**To**	**Meters**	**-3/8 inch**	**-10 Mesh**
14500N	11	1,550	1,620	70	472	494	21	10,150	10,155
14250N	76	1,876	1,893	17	572	577	5	2,465	2,470
14250N	106	1,916	1,937	21	584	590	6	3,045	3,050
14250N	81	1,919	1,934	15	585	589	5	2,175	2,177
14000N	13	1,910	1,953	43	582	595	13	6,235	6,250
13750N	98	1,605	1,633	28	489	498	9	4,060	4,080
13750N	84	1,798	1,827	29	548	557	9	4,205	4,205
13750N	77	2,011	2,041	30	613	622	9	4,350	4,355
13500N	20	1,670	1,700	30	509	518	9	4,350	4,355
13500N	18	1,970	2,000	30	600	610	9	4,350	4,365
13500N	18A	1,970	2,000	30	600	610	9	4,350	4,359
13250N	78	1,772	1,802	30	540	549	9	4,350	4,352
12750N	93	1,697	1,712	15	517	522	5	2,175	2,078
12750N	82	1,446	1,472	26	441	449	8	3,770	3,777
12750N	82	1,781	1,807	26	543	551	8	3,770	3,770
12400N	23	1,800	1,840	40	549	561	12	5,800	5,800
12400N	37	1,590	1,710	120	485	521	37	17,400	17,596
12400N	38	2,004	2,050	46	611	625	14	6,670	6,668
12400N	16	2,380	2,410	30	725	735	9	4,350	4,352
12400N	16	2,700	2,770	70	823	844	21	10,150	4,601
12250N	88	1,747	1,867	120	532	569	37	17,400	17,397
12250N	94	2,198	2,225	27	670	678	8	3,915	3,910
12250N	94	2,504	2,565	61	763	782	19	8,845	8,830
12000N	57	2,168	2,219	51	661	676	16	7,395	7,385
11500N	61	2,464	2,484	20	751	757	6	2,900	2,915
	22 drill holes			1,025			312	148,625	143,252

Table 13-7: Analyses of Low-grade Supergene Composite No.79-128

	Analyses					
Composite No.	Total Cu (%)	ASCu (%)	Mo(%)	Chloride (%)	Sulfur (%)	Total Iron (%)
79-128	0.486	0.140	0.011	0.020	0.24	1.45

Table 13-8: Mineralogy of Low-grade Supergene Composite No.79-128

	Mineralogy	
Mineral	% Cu	% Cu Dist.
Atacamite	0.018	3.7
Chrysocolla, Cuprite	0.091	18.7
Copper Clay	0.031	6.4
Copper Sulphides	0.346	71.2
Total	**0.486**	**100.0**

Table 13-9: Drill Holes, Intervals and Sample Weights of Low-grade Supergene Composite No.79-128

Low-grade Supergene composite No. 79-128	Feet			Meters			Sample Weight (g)
Drill Hole ID	From	To	Feet	From	To	Meters	-3/8 inch
12	2,075	2,185	110	632	666	34	12,720
78	1,927	1,954	27	587	596	8	3,140
80	1,925	2,173	248	587	662	76	28,710
98	1,797	2,041	244	548	622	74	28,190
13	2,500	2,670	170	762	814	52	18,520
96	1,801	2,061	260	549	628	79	29,770
81	2,068	2,411	343	630	735	105	39,560
11	2,010	2,260	250	613	689	76	28,920
23	2,010	2,310	300	613	704	91	34,690
16	2,550	2,770	220	777	844	67	11,370
90	1,877	1,917	40	572	584	12	12,670
90	1,956	2,025	69	596	617	21	
82	1,947	2,084	137	593	635	42	15,910
109	2,505	2,598	93	763	792	28	10,810
91	2,691	2,781	90	820	848	27	21,975
91	2,896	2,995	99	883	913	30	
61	2,609	2,679	70	795	817	21	6,605
100	2,338	2,463	125	713	751	38	14,540

Low-grade Supergene composite No. 79-128	Feet			Meters			Sample Weight (g)
57	2,486	2,582	96	758	787	29	37,625
57	2,666	2,733	67	813	833	20	
57	2,907	3,064	157	886	934	48	
88	2,178	2,236	58	664	681	18	6,740
94	2,342	2,565	223	714	782	68	25,225
19 drill holes			**3,496**			**1,066**	**387,690**

Table 13-10: Analyses of Mixed Chalcocite / Chalcopyrite Composite No.79-109

	Analyses					
Composite No.	Total Cu (%)	ASCu (%)	Mo(%)	Chloride (%)	Sulfur (%)	Total Iron (%)
79-109	0.824	0.073	0.024	0.024	0.94	1.73

Table 13-11: Mineralogy of Mixed Chalcocite / Chalcopyrite Composite No.79-109

	Mineralogy	
Mineral	% Cu	% Cu Dist.
Atacamite	0.032	3.9
Chrysocolla, Cuprite	0.009	1.1
Copper Clay	0.032	3.9
Copper Sulphides	0.751	91.1
Total	**0.824**	**100.0**

Table 13-12: Drill Holes, Intervals and Sample Weights of Mixed Chalcocite / Chalcopyrite Composite No.79-109

Mixed chalcocite / chalcopyrite Composite No. 79-109	Feet			Meters			Sample Weight (g)
Drill Hole ID	From	To	Feet	From	To	Meters	-3/8 inch
81	2,411	2,663	252	735	812	77	22,750
78	1,954	2,225	271	596	678	83	24,495
80	2,284	2,355	71	696	718	22	6,435
20	2,020	2,080	60	616	634	18	5,440
84	2,118	2,681	563	646	817	172	50,950
37	2,270	2,699	429	692	823	131	17,180
38	2,646	3,041	395	806	927	120	13,840
90	2,025	2,287	262	617	697	80	23,725

Mixed chalcocite / chalcopyrite Composite No. 79-109	Feet			Meters			Sample Weight (g)
Drill Hole ID	**From**	**To**	**Feet**	**From**	**To**	**Meters**	**-3/8 inch**
82	2,084	2,277	193	635	694	59	17,440
109	2,598	3,003	405	792	915	123	36,585
91	2,995	3,043	48	913	927	15	4,350
61	2,679	2,808	129	817	856	39	11,650
100	2,463	2,702	239	751	824	73	21,585
99	3,079	3,143	64	938	958	20	5,805
27A	2,667	2,715	48	813	827	15	4,325
57	3,123	3,180	57	952	969	17	5,170
88	2,236	2,306	70	681	703	21	6,360
94	2,832	3,030	198	863	923	60	17,915
18 drill holes			**3,754**			**1,144**	**296,000**

Table 13-13: Analyses of Chalcopyrite Composite No.79-118

	Analyses					
Composite No.	**Total Cu (%)**	**ASCu (%)**	**Mo(%)**	**Chloride (%)**	**Sulfur (%)**	**Total Iron (%)**
79-118	0.740	0.020	0.01	0.015	1.23	2.34

Table 13-14: Mineralogy of Chalcopyrite Composite No.79-118

	Mineralogy	
Mineral	**% Cu**	**% Cu Dist.**
Atacamite	0.0	0.0
Chrysocolla, Cuprite	0.012	1.6
Copper Clay	0.008	1.1
Copper Sulphides	0.720	97.3
Total	**0.74**	**100.0**

Table 13-15: Drill Holes, Intervals and Sample Weights of Chalcopyrite Composite No.79-118

Primary chalcopyrite Composite No. 79-118	Feet			Meters			Sample Weight (g)
Drill Hole ID	**From**	**To**	**Feet**	**From**	**To**	**Meters**	**-3/8 inch**
20	2,080	2,570	490	634	783	149	27,600
98	2,118	2,390	272	646	728	83	16,320
78	2,225	2,987	762	678	910	232	45,720
80	2,355	3,147	792	718	959	241	46,980
38	3,041	3,193	152	927	973	46	6,080
90	2,287	3,119	832	697	951	254	49,920
82	2,227	2,908	681	679	886	208	37,860
91	3,043	3,215	172	927	980	52	10,320
57	3,180	3,419	239	969	1,042	73	14,340
88	2,306	2,607	301	703	795	92	18,060
87	2,275	2,636	361	693	803	110	21,660
94	3,030	3,389	359	923	1,033	109	21,540
61	2,808	3,577	769	856	1,090	234	46,140
100	2,702	3,250	548	824	991	167	32,340
99	3,143	3,437	294	958	1,048	90	17,640
50	2,915	3,459	544	888	1,054	166	32,280
16 drill holes			**7,568**			**2,307**	**444,800**

Table 13-16: Analyses of Exotic Ore and Exotic Dilution Ore Composites Nos. 79-101 and 79-102

	Analyses		
Composite	**Total Cu (%)**	**ASCu (%)**	**Chloride (%)**
Exotic Ore composite No. 79-101	2.210	1.980	0.365
Exotic Dilution Ore composite No. 79-102	0.379	0.227	0.015

Table 13-17: Mineralogy of Exotic Ore and Exotic Dilution Ore Composites Nos. 79-101 and 79-102

	Mineralogy			
	Exotic Ore No. 79-101		Exotic Dilution Ore No.79-102	
Mineral	**% Cu**	**% Cu Dist.**	**% Cu**	**% Cu Dist.**
Atacamite	1.25	54.3	0.0	0.0
Chrysocolla, Cuprite	0.73	31.4	0.23	59.9
Copper Clay	0.23	10.0	0.11	28.8
Copper Sulphides	0.10	4.3	0.04	11.3
Total	**2.31**	**100.0**	**0.38**	**100.0**

Table 13-18:Drill Holes, Intervals and Sample Weights of Exotic Ore Composite No. 79-101

	Exotic Ore composite No. 79-101	Feet			Meters			Sample Weight (g)
Section	**Drill Hole ID**	**From**	**To**	**Feet**	**From**	**To**	**Meters**	**-3/8 inch**
13500N	52	2,101	2,230	129	640	680	39	11,665
13500N	18	1,830	1,930	100	558	588	30	9,060
13750N	77	1,677	1,740	63	511	530	19	5,700
13750N	85	1,971	2,095	124	601	639	38	11,225
14000N	22	1,970	2,270	300	600	692	91	27,155
	5 drill holes			716			218	64,805

Table 13-19: Drill Holes, Intervals and Sample Weights of Exotic Dilution Ore Composite No. 79-102

	Exotic Dilution Ore composite No. 79-102	Feet			Meters			Sample Weight (grams)
Section	**Drill Hole ID**	**From**	**To**	**Feet**	**From**	**To**	**Meters**	**-3/8 inch**
13500N	52	2,088	2,101	13	636	640	4	2,610
13500N	18A	1,820	1,840	20	555	561	6	4,010
13750N	77	1,658	1,677	19	505	511	6	3,810
13750N	85	1,952	1,971	19	595	601	6	3,805
	4 drill holes			71			22	14,235

Figure 13-1 below is a surface map of the locations of 43 drill holes used in the ore type composites and their relative positions in the projected outline of the Mineral Resource of the Santa Cruz Deposit. The distribution of drill holes indicates that the holes selected represent the current defined resource.

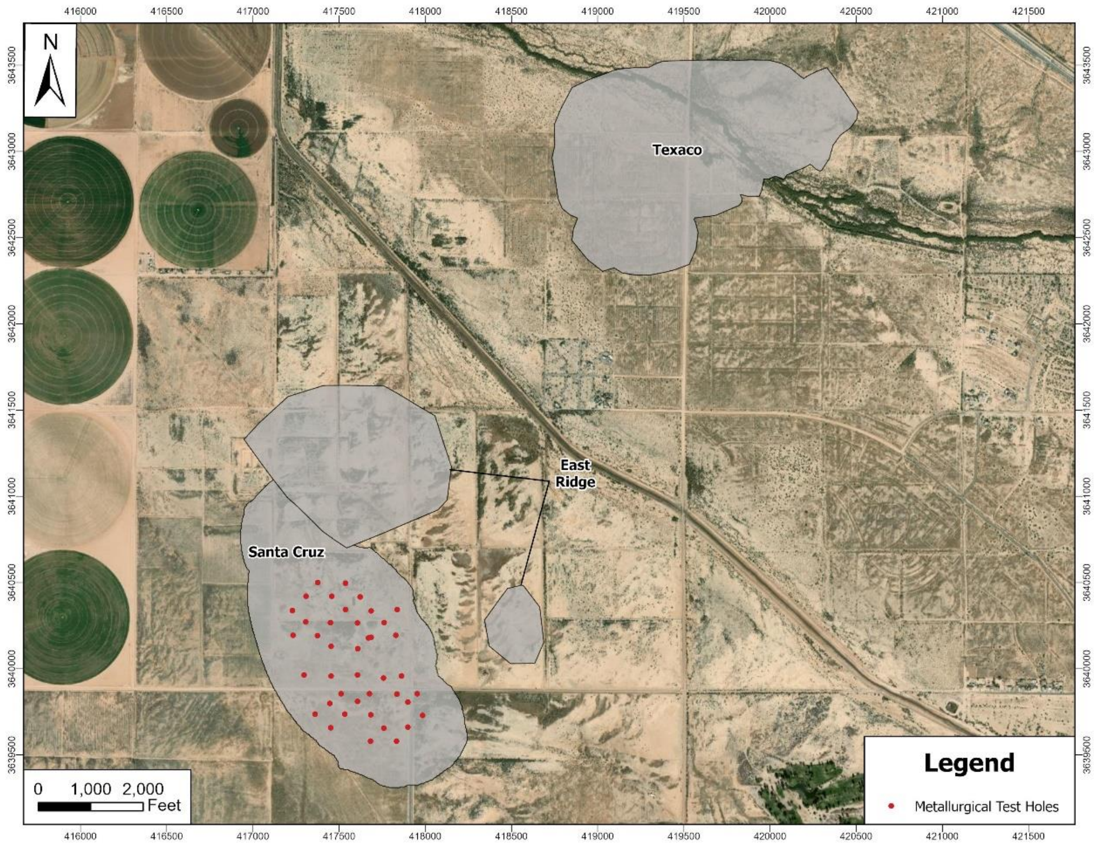


Figure 13-1: Surface Map of the Drill Holes Used in the Ore Type Composites

13.1.2 Grinding Studies

Grinding studies were conducted using laboratory size rod mills on 1000 g samples. The initial sample types from the early drilling programs were tested, as were the major composite samples of the Santa Cruz Deposit. Grinding for leaching was investigated separately from grinding for flotation purposes.

Ground samples for flotation were subjected to rougher flotation and standard Cu recovery (non-acid soluble Cu) and concentrate grade relationships were developed to determine the best primary grind P_{80}. Ground samples for leaching were subjected to bottle roll leaching with sulfuric acid or sulfuric acid and ferric sulphate as lixiviant.

The results of the grinding studies (leaching and flotation) on the major composite sample representing the entire deposit were used to test later blended composites of the listed ore types, to develop a flow sheet. The optimum grind size for whole ore agitated tank leaching, with either type lixiviant mixture, was determined to P_{80} 800 µ. The optimum primary grinding size for rougher Cu sulphide flotation was P80 212 µ. The optimum primary grinding size for rougher Cu sulphide flotation was found to be P_{80} 212 µ. The estimated SAG mill, ball mill (for leach) and ball mill (for flotation) energy consumption of 7.15 kWh/tonne.

These grinding studies were applied to blended composites for flow sheet development of ore types listed under Sample Selection. There was no variability testing conducted, therefore the test results would be acceptable for a

PEA level study program under NI 43-101. A prefeasibility level study would require 30 to 40 variability tests of selected drill holes and drill intervals and a feasibility level study would require 100 intervals or more.

13.1.3 Flotation Studies

The flotation equipment described is still in use today. All tests were documented as they would be today, with such information as: P_{80}'s, float times, reagent names, and consumptions, notes on froth appearance, etc. The regrind test program for the cleaner circuit flotation was vague. However, Cu sulphide concentrate grade and overall Cu recovery (non-acid soluble Cu) results were typical based on the rougher flotation recoveries reported in the mid-90% range, so, the regrind was performed correctly. Cu recovery after cleaning was in the low 90% range and the concentrate grade varied from 25% to 50% Cu depending on Cu sulphide ore mineralogy.

Flotation of atacamite together with Cu sulphides was evaluated and found to be successful in producing a 12% concentrate at recoveries in the mid 90% range for atacamite and Cu sulphide minerals. The chloride in this concentrate was leached out almost completely with a patented NaOH leach leaving behind Cu sulphides and Cu hydroxide. The Cu hydroxide was leached out with weak sulfuric acid solution producing a pregnant leach solution (PLS) for solvent extraction-electrowinning (SX-EW), and remaining Cu sulphides were pH adjusted, reground, and upgraded in a cleaner flotation circuit. Cu recovery of the Cu oxides (excluding atacamite) was poor. Thus, total Cu recovery was in the mid 80% range. An all-float process was developed later where the Cu oxides were economically recovered, and total Cu recovery was raised to the low 90% range in the flow sheet.

Flotation test programs were applied to all the composite blends samples for flow sheet development as described in Sample Selection. The test programs would be acceptable for a PEA level program today but not for a PFS or FS level study due to the lack of any significant variability flotation testing of the Santa Cruz Deposit.

13.1.4 Leaching Studies

Leaching test programs were applied to a composite sample blend representing the whole resource, from the samples of the ore types described above under Sample Selection. They were also applied to another ore deposit composite blend that represented mineralization containing principally acid soluble Cu minerals and secondary sulphide Cu minerals.

Industry accepted practices for bottle roll tests were used where PLS samples were withdrawn at timed intervals, and Cu, acid, ferric, and pH levels were measured. Acid was added to maintain pH. Optimum leach time, ferric level, and pH were determined based on plots of Cu extraction rate, acid consumption rate, and ferric consumption rate.

Acid leach test results on the tested composites were generally consistent. Acid soluble Cu recovery was in the mid 90% range for a four hour leach time. Acid consumption ranged from 18.5 to 23 kg of acid per tonne of ore without the SX-EW acid credit on Cu electrowon. The best pH was 1.5.

Acidic ferric sulphate leaching on a composite of acid soluble Cu minerals and secondary sulphide minerals was successful. The best agitated tank leach conditions were determined to be:

- 24-hour leach time
- 40^{o}C leach temperature
- 10 grams per liter (gpl) ferric concentration

Acid soluble Cu recovery was 95%. Non-acid soluble Cu recovery was 90%. Total Cu recovery was 90-91%.

Test procedures described meet current industry accepted practices for determining the leachability of an ore with sulfuric acid or acidic ferric sulphate at the PEA level. Once again, lack of any variability test program prevents use for PFS and FS levels.

Sulfuric acid heap leaching was evaluated on one hole, 27 A, across most of its length using the column cell test method. Nine column cell tests were conducted from selected intervals of core. The calculated head grade was 1.4% total Cu and 1.2% acid soluble Cu. Total Cu extraction was 77% and acid soluble Cu was 89%. Gangue acid consumption (including SX-EW acid credit) was 9.2 kg/tonne ore. The QP is of the opinion that procedures applied during the tests were acceptable industry practices.

13.1.5 Copper Measurement

An important aspect of the test programs described above are the analytical techniques used for measuring total Cu and acid soluble Cu in ores, and total Cu in concentrates. The sequential Cu assaying method had yet to be developed for the CGCC test programs from 1976 to 1982. Thus, secondary sulphide concentrations in the test composite samples were estimated from mineralogy studies on the composites and from drill core mineral logging records. The analytical methods used by CGCC for total copper assaying are still in use today. The method used digestion by aqua regia and measurement after dilution with DI-water with atomic adsorption. The method described by Hanna for “oxide copper” determination is in use today minus the addition of 10 ml of sulfurous acid (digestion at boiling temperature for 5 minutes with 100 ml of 5% sulfuric acid and 10 ml of sulfurous acid) and is considered satisfactory for determination of acid soluble copper content of the sample.

13.1.6 ASARCO Study by Mountain States Engineering (1980)

This study evaluated leaching in place of fragmented acid soluble Cu ore from block cave mining. There were no mineral processing and metallurgical tests associated with this study. Cu recovery factor and column of ore caving factors are used from nearby underground block cave mines and/or that were leaching block cave rubblized ore with dilute sulfuric acid. This study could not be used today at an IA level study due the lack of testwork. This work can be considered conceptual and is referenced as such.

13.1.7 Santa Cruz In Situ Study

As discussed in Section 6.3.2the Santa Cruz In Situ project was a research project between the Department of the Interior Bureau of Mines (subsequently Bureau of Reclamation) and the landowners, the SCJV between ASARCO Santa Cruz Inc. and Freemont McMoRan Copper & Gold Inc.

Metallurgical studies of core (2-inch diameter by 2.5-inch-long), from the proposed in situ leach zone in the pilot program reported Cu recoveries ranging from 57% to 90%. Total Cu ranged from 2.3% to 9%. Tests were run for 3,000 hours to 3,800 hours (125 days to 158 days), and no extraction rate versus time data was reported, which is unusual because it is critical for the process design and for the well development schedule. Flow volumes varied from two milliliters per day to several liters per day, and pressures ranged from 0 psi to 1000 psi. The studies reported the acid consumption would be 1.2 lbs per 1.0 lb of Cu recovered on atacamite samples and ranged between three to eight pounds per pound of Cu for chrysocolla samples (with some very high consumption rates initially of, 10+ lbs/lb Cu). The initial acid concentration in the feed solution varied from 5 to 40 gpl H_2SO_4.

Leach tests on the core showed that initial permeability rates were very low when the solution initially contacted the core in the test apparatus. Later, as Cu-oxide minerals dissolved from the filled fractures acceptable permeability rates were achieved.

The In Situ leach test program used industry accepted practices. Total Cu and acid soluble analytical methods were satisfactory for the measurement of the core samples. Identification of the core sample by drill hole and interval was performed. Cross sections of the sample location in the proposed ore area for the five-spot injection and test well design was provided. Samples were representative of the proposed test region.

13.2 2022 Testwork Studies

The IE studies were directed by Met Engineering LLC and conducted at McClelland Labs in Sparks, Nevada. McClelland Labs is recognized by the International Accreditation Service (IAS) for its technical competence and quality of service and has proven that it meets recognized standards. The studies are in progress currently at an IA level. Study focus has been on:

- Confirming total copper recovery of the leach-float flow sheet proposed by CGCC in circa 1980 on Exotic, Oxide, and Chalcocite mineral domains.
- Investigating heap leaching of Exotic, Oxide and Chalcocite mineral domains. The test program for heap leaching is at an early stage and will not be reported on until later in the project.

13.2.1 Sample Selection

Testing was performed on a composite of drill core (1/2 core) samples from the 2021 - 2022 drilling program, designated as the mill composite. Details of the mill composite are listed Table 13-21 below. The composite generally characterizes minerals found in the Oxide and Chalcocite mineral domains. A separate composite of Exotic domain mineralization was collected and has just begun testing. Therefore, testing on the Exotic sample will not be reported now.

Table 13-20: Drill Holes, Intervals and Sample Lengths of the Mill Composite

Drill Hole ID	From (m)	To (m)	Sample Length (m)	Mineral Domain
SCC-002	615	616	1	Mixed Oxide - Chalcocite
SCC-002	616	617	1	Mixed Oxide - Chalcocite
SCC-002	617	618	1	Mixed Oxide - Chalcocite
SCC-002	618	619	1	Mixed Oxide - Chalcocite
SCC-002	619	620	1	Mixed Oxide - Chalcocite
SCC-002	620	621	1	Mixed Oxide - Chalcocite
SCC-002	621	622	1	Mixed Oxide - Chalcocite
SCC-002	622	623	1	Mixed Oxide - Chalcocite
SCC-002	623	624	1	Mixed Oxide - Chalcocite
SCC-002	625	626	1	Mixed Oxide - Chalcocite
SCC-002	626	627	1	Mixed Oxide - Chalcocite
SCC-002	627	628	1	Mixed Oxide - Chalcocite
SCC-002	628	629	1	Mixed Oxide - Chalcocite
SCC-002	629	630	1	Mixed Oxide - Chalcocite
SCC-002	630	631	1	Mixed Oxide - Chalcocite
SCC-002	631	632	1	Mixed Oxide - Chalcocite

Drill Hole ID	From (m)	To (m)	Sample Length (m)	Mineral Domain
SCC-002	632	633	1	Mixed Oxide - Chalcocite
SCC-002	639	640	1	Mixed Oxide - Chalcocite
SCC-002	640	641	1	Mixed Oxide - Chalcocite
SCC-002	641	642	1	Mixed Oxide - Chalcocite
SCC-002	642	643	1	Mixed Oxide - Chalcocite
SCC-002	643	644	1	Mixed Oxide - Chalcocite
SCC-002	644	645	1	Mixed Oxide - Chalcocite
SCC-002	709	711	2	Mixed Chalcocite - Oxide
SCC-002	721	722.4	1.41	Mixed Chalcocite - Oxide
SCC-002	722.4	723	0.59	Mixed Chalcocite - Oxide
SCC-002	723	724	1	Mixed Chalcocite - Oxide
SCC-002	724	725	1	Mixed Chalcocite - Oxide
SCC-002	725	726	1	Mixed Chalcocite - Oxide
SCC-002	726	727	1	Mixed Chalcocite - Oxide
SCC-002	727	728	1	Mixed Chalcocite - Oxide
SCC-002	728	729	1	Mixed Chalcocite - Oxide
SCC-002	729	730	1	Mixed Chalcocite - Oxide
SCC-002	733	734	1	Mixed Chalcocite - Oxide
SCC-002	737	738	1	Mixed Chalcocite - Oxide
SCC-002	738	739	1	Mixed Chalcocite - Oxide
SCC-002	739	740	1	Mixed Chalcocite - Oxide
SCC-002	740	741	1	Mixed Chalcocite - Oxide
SCC-002	741	742	1	Mixed Chalcocite - Oxide
SCC-002	742	743	1	Mixed Chalcocite - Oxide
SCC-002	743	744	1	Mixed Chalcocite - Oxide
SCC-002	744	745	1	Mixed Chalcocite - Oxide
SCC-002	745	746	1	Mixed Chalcocite - Oxide
SCC-002	746	747	1	Mixed Chalcocite - Oxide
SCC-002	747	748	1	Mixed Chalcocite - Oxide
SCC-002	748	749	1	Mixed Chalcocite - Oxide
SCC-002	749	750	1	Mixed Chalcocite - Oxide
SCC-002	750	751	1	Mixed Chalcocite - Oxide
SCC-002	751	752	1	Mixed Chalcocite - Oxide
SCC-002	752	753	1	Mixed Chalcocite - Oxide
SCC-002	753	754	1	Mixed Chalcocite - Oxide
SCC-002	754	756	2	Mixed Chalcocite - Oxide
SCC-002	756	757	1	Mixed Chalcocite - Oxide
SCC-002	757	758	1	Mixed Chalcocite - Oxide
SCC-002	758	759	1	Mixed Chalcocite - Oxide

Drill Hole ID	From (m)	To (m)	Sample Length (m)	Mineral Domain
SCC-002	759	760	1	Mixed Chalcocite - Oxide
SCC-002	760	761	1	Mixed Chalcocite - Oxide
SCC-002	761	762	1	Mixed Chalcocite - Oxide
SCC-002	762	763	1	Mixed Chalcocite - Oxide
SCC-002	763	765	2	Mixed Chalcocite - Oxide
SCC-004	595	596	1	Mixed Oxide - Chalcocite
SCC-004	596	597	1	Mixed Oxide - Chalcocite
SCC-004	598	599	1	Mixed Oxide - Chalcocite
SCC-004	599	600	1	Mixed Oxide - Chalcocite
SCC-004	600	601	1	Mixed Oxide - Chalcocite
SCC-004	601	602	1	Mixed Oxide - Chalcocite
SCC-004	602	603	1	Mixed Oxide - Chalcocite
SCC-004	605	606	1	Mixed Oxide - Chalcocite
SCC-004	606	607	1	Mixed Oxide - Chalcocite
SCC-004	607	608	1	Mixed Oxide - Chalcocite
SCC-004	608	609	1	Mixed Oxide - Chalcocite
SCC-004	609	610	1	Mixed Oxide - Chalcocite
SCC-004	613	614	1	Mixed Oxide - Chalcocite
SCC-004	614	615	1	Mixed Oxide - Chalcocite
SCC-004	615	616	1	Mixed Oxide - Chalcocite
SCC-004	616	617	1	Mixed Oxide - Chalcocite
SCC-004	617	618	1	Mixed Oxide - Chalcocite
SCC-004	619	620	1	Mixed Oxide - Chalcocite
SCC-004	620	621	1	Mixed Oxide - Chalcocite
SCC-004	621	622	1	Mixed Oxide - Chalcocite
SCC-004	622	623	1	Mixed Oxide - Chalcocite
SCC-004	623	624	1	Mixed Oxide - Chalcocite
SCC-004	624	625	1	Mixed Oxide - Chalcocite
SCC-004	625	626	1	Mixed Oxide - Chalcocite
SCC-004	626	627	1	Mixed Oxide - Chalcocite
SCC-004	627	628	1	Mixed Oxide - Chalcocite
SCC-004	628	629.1	1.1	Mixed Oxide - Chalcocite
SCC-004	629.1	630	0.9	Mixed Oxide - Chalcocite
SCC-004	630	631	1	Mixed Oxide - Chalcocite
SCC-004	631	632	1	Mixed Oxide - Chalcocite
SCC-004	632	633	1	Mixed Oxide - Chalcocite
SCC-004	635	636	1	Mixed Oxide - Chalcocite
SCC-004	636	637	1	Mixed Oxide - Chalcocite
SCC-006	665	666	1	Mixed Oxide - Chalcocite

Drill Hole ID	From (m)	To (m)	Sample Length (m)	Mineral Domain
SCC-006	666	667	1	Mixed Oxide - Chalcocite
SCC-006	667	668	1	Mixed Oxide - Chalcocite
SCC-006	668	669	1	Mixed Oxide - Chalcocite
SCC-006	669	670	1	Mixed Oxide - Chalcocite
SCC-006	670	671	1	Mixed Oxide - Chalcocite
SCC-006	673	674	1	Mixed Oxide - Chalcocite
SCC-006	674	675	1	Mixed Oxide - Chalcocite
SCC-006	675	676	1	Mixed Oxide - Chalcocite
SCC-006	676	677	1	Mixed Oxide - Chalcocite
SCC-006	677	678	1	Mixed Oxide - Chalcocite
SCC-006	678	679	1	Mixed Oxide - Chalcocite
SCC-006	680	681	1	Mixed Oxide - Chalcocite

Table 13-21: Analyses of Mill Composite

Analysis	Unit	Value
Total Cu	%	1.41
Sequential Cu		
ASCu	%	0.79
CN-Cu	%	0.40
Residual Cu	%	0.18
Calculated Head Cu	%	1.37
Sulfur (S) LECO	%	0.35
Chloride (Cl)	mg/kg	1,520
Fluoride (F)	mg/kg	640
ICP		
Ag	mg/kg	1.46
Al	%	6.46
As	mg/kg	1.3
Ba	mg/kg	430
Be	mg/kg	1.25
Bi	mg/kg	0.53
Ca	%	0.08
Cd	mg/kg	0.47
Ce	mg/kg	99.3
Co	mg/kg	6.6
Cr	mg/kg	36

Analysis	Unit	Value
Cs	mg/kg	2.54
Cu	%	1.4501)
Dy	mg/kg	2.82
Er	mg/kg	1.19
Eu	mg/kg	1.04
Fe	%	1.22
Ga	mg/kg	13.7
Gd	mg/kg	4.64
Ge	mg/kg	0.19
Hf	mg/kg	0.6
Ho	mg/kg	0.47
In	mg/kg	0.141
K	%	4.79
La	mg/kg	49.7
Li	mg/kg	13.4
Lu	mg/kg	0.17
Mg	%	0.18
Mn	mg/kg	36
Mo	mg/kg	251
Na	%	0.25
Nb	mg/kg	4.4
Nd	mg/kg	36.3
Ni	mg/kg	5.4
P	mg/kg	370
Pb	mg/kg	20.4
Pr	mg/kg	11.15
Rb	mg/kg	158
Re	mg/kg	0.219
S	%	0.33
Sb	mg/kg	0.27
Sc	mg/kg	7
Se	mg/kg	12
Sm	mg/kg	6.82
Sn	mg/kg	8.3
Sr	mg/kg	304
Ta	mg/kg	0.39
Tb	mg/kg	0.58
Te	mg/kg	0.13

Analysis	Unit	Value
Th	mg/kg	35.8
Ti	%	0.088
Tl	mg/kg	0.66
Tm	mg/kg	0.17
U	mg/kg	6.1
V	mg/kg	31
W	mg/kg	5.9
Y	mg/kg	14
Yb	mg/kg	1.09
Zn	mg/kg	11
Zr	mg/kg	14.1
PGM		
Au	ppb	24
Ir	ppb	1
Os	ppb	<2
Pd	ppb	6
Pt	ppb	2
Rh	ppb	<2
Ru	ppb	<3

13.2.2 Grinding Studies

The Bond Mill Work Index (8.0 kWh/short ton) estimated for the upper body of mineralized material in 1980 by CGCC was applied for predicting the energy consumption per tonne of ore for the flow sheet proposed. The proposed flow sheet employs a SAG and ball mill to grind ore for agitation leaching purposes, followed by a second ball mill to grind the leach residue in preparation for copper sulphide flotation. Finer grinds were determined from the IE studies on the mill composite described above compared to the CGCC studies to achieve the same total copper recovery for the leach-float process flow sheet. The grinding flow sheet reduces primary crushed product at a P_{80} of 150,000 µ to P_{80} 300 µ for leaching, requiring an estimated 5.4 kWh/tonne. Leached residue needs to be reduced from P_{80} 300 µ to P_{80} 106 µ to achieve optimal rougher flotation recovery, requiring 3.5 kWh/tonne. Combined grinding circuit energy requirements are 8.9 kWh/tonne.

13.2.3 Leaching Studies

Testing was conducted in the summer of 2022 to confirm that high ASCu recovery (plus 93% recovery) achieved in the circa 1980 test programs by the Case Grande Copper Corporation (CGCC) were achievable on the mill composite described above. After some experimentation with particle size distribution, similar results were achieved to those reported by CCGC. ASCu recovery of 92% was achieved consistently at a grind size of P_{80} 300 µ and leach conditions of pH 1.6, ambient temperature and five hours of residence time. The next step was to confirm that 94% total copper recovery was achievable by the leach – float circuit.

13.2.4 Flotation Studies

In December 2022, the same mill composite sample as used above was subjected to the standard leach procedure developed in the summer of 2022 (leach after P_{80} 300 µ grind). Neutralized residue was then subjected to conventional froth floatation (rougher flotation stage, only) utilizing parameters and reagents utilized in the CGCC studies. However, because some experimentation on particle size distribution was needed earlier in the leach phase of testing, three standard leach tests was run and the neutralized residue from each was subject to different grind sizes. The results are illustrated in Figure 13-2 below that shows total copper recovery for each test. These test results are also shown in more detail Table 13-22 below.

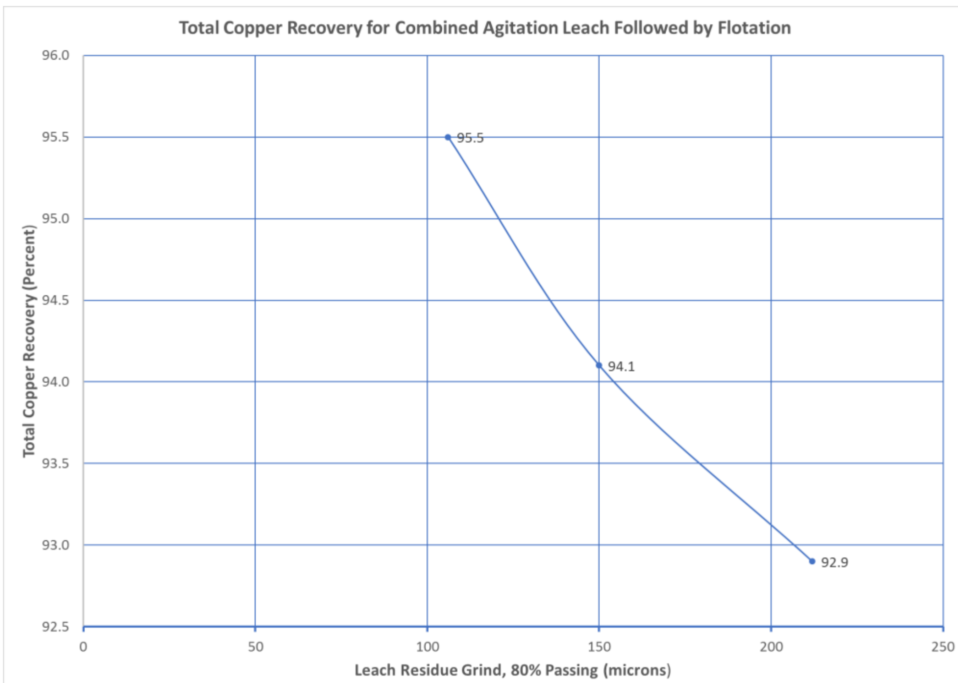


Figure 13-2: Leach – float testing results at different leach residue grinds

Table 13-22: Results of Leach – Float Tests at Different Leach Residue Grinds

Test Description	Head Grade (%Cu)	Calculated Head Grade (%Cu)	Leach Recovery (%)	Flotation Recovery (%)	Total Copper Recovery (%)	Rougher Con %Cu	Rougher Con %S
Test 1, standard leach, grind residue to P_{80} 212 microns	1.43	1.38	54.3	38.6	**92.9**	9.91	4.71
Test 2, standard leach, grind residue to P_{80} 150 microns	1.43	1.36	59.7	34.4	**94.1**	10.00	5.36
Test 3, standard leach, grind residue to P_{80} 106 microns	1.43	1.38	58.8	36.7	**95.5**	6.83	3.09

The test program demonstrated that total copper recovery increases with finer grinding of the leach residue. Grinding the leach residue to P_{80} 106 µ seems optimal with the current data, producing a total copper recovery of 95.5%. Total copper recovery in the flotation test improved to 89.1% for the P_{80} 106 µ grind from 85.3% for the P_{80} 150 µ grind. Recovery of non-ASCu copper in the P_{80} 106 µm grind was the highest at approximately 93.9%.

Factoring in process losses a total copper recovery of 94% is probable. This total copper recovery at the P_{80} 106 µ grind confirms the total copper recovery results predicted by the CGCC test programs.

More testing regarding cleaner flotation grade and recovery is in progress and will be reported later.

13.2.5 Copper Measurement

McClelland Labs used modern copper measurement methods on ore grade material for total copper and sequential copper assays that are acceptable in the QP's opinion.

13.3 Process Factors and Deleterious Elements

There are no processing factors or deleterious elements that could have a significant effect on economic extraction. The processes proposed in the CGCC, ASARCO, and Santa Cruz In Situ studies for extraction of Cu from the ore are all conventional in design and have been used economically for many decades. There have been significant advances in most of these technologies since 1980, when most of the studies were conducted, which have improved the economics of these processes. Some examples are:

- Materials for construction of SX plants are cheaper and more resistant to chlorides in solution from leaching atacamite. SX wash circuits and/or organic coalescers eliminate the concern of chloride carryover to the EW.
- SX reagents are much more selective for Cu extraction, react faster, separate faster from the aqueous media they are mixed with and are more robust today.
- SAG and ball mill grinding circuits are designed much more efficiently today and the liner and grinding media used last much longer than in 1980.
- Flotation cell designs are more efficient now and have raised recovery and concentrate grades.
- Environmental controls for dust, volatile organic compounds (VOC), and aerosol mists are much more efficient compared to 1980.

14 MINERAL RESOURCE ESTIMATES

14.1 Drill Hole Database

The work on the Mineral Resource Estimates included a detailed geological and structural re-examination of the Santa Cruz Deposit along with the East Ridge and Texaco Deposits.

The Santa Cruz Deposit Mineral Resource Estimate benefits from approximately 116,388 m of diamond drilling in 129 drill holes, while Texaco has 23 drill holes totaling 21,289 m, and East Ridge has 18 holes totaling 15,448 m. All holes were drilled between 1964 to 2022 (Table 14-1, Figure 14-1).

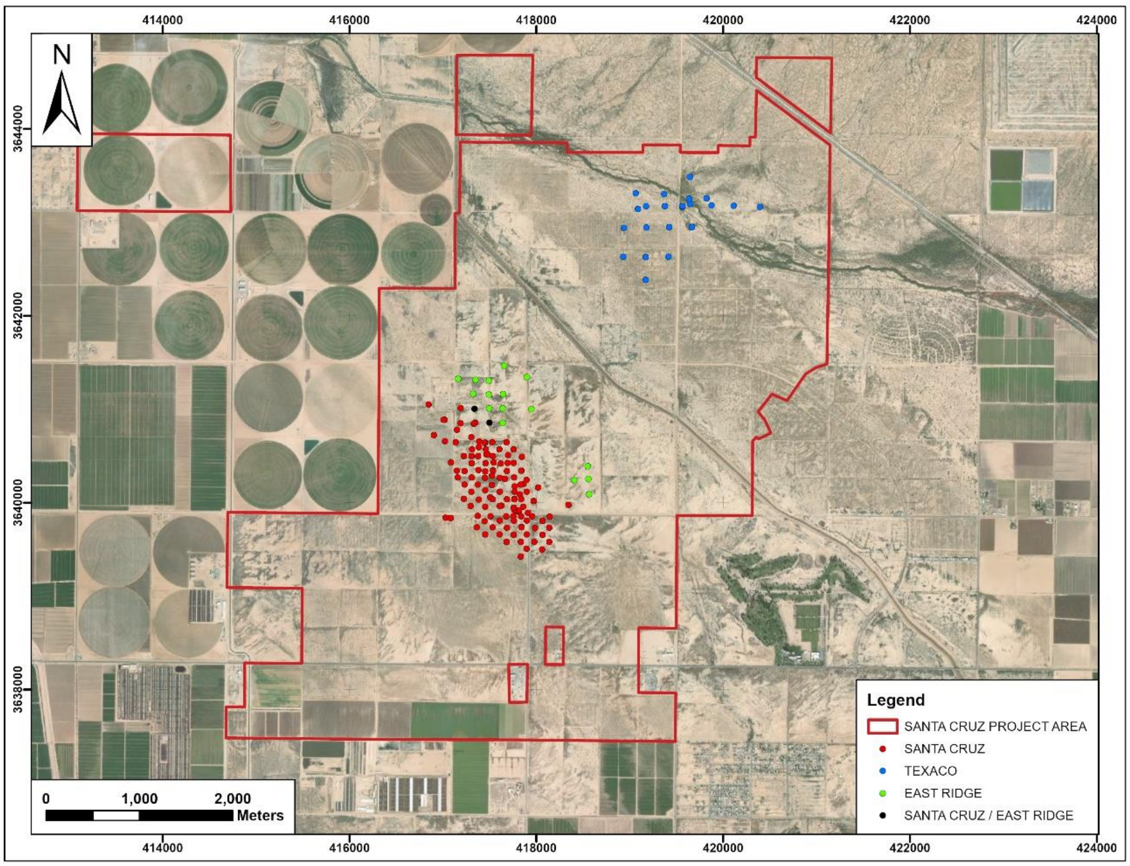


Figure 14-1: Plan view of Santa Cruz Project diamond drilling by deposit

Diamond drill hole samples were analyzed for total Cu and acid soluble Cu using AAS. A decade after initial drilling, ASARCO re-analyzed select samples for cyanide soluble Cu (AAS) and molybdenum (ICP). The Company currently analyzes all samples for total Cu, acid soluble Cu, cyanide soluble Cu, and molybdenum. Due to the re-analyses to determine cyanide soluble Cu within the historic samples, there are instances where cyanide soluble Cu is greater than total Cu. It has been determined that the historic cyanide soluble assays are valid as they align with recent assays in 2022 drill holes. Therefore, a cap has been applied to historic cyanide soluble assays such that they must be equal to or less than the associated total Cu value for each sample. A breakdown of the drill hole summary is in Table 14-1, and the number of assays used within each Mineral Resource Estimate is provided in Table 14-2.

Table 14-1: Drill Hole Summary

	Total Drilling			Ivanhoe Electric Drilling		
Deposit	**Number of Drill Holes**	**Meters**	**Meters Intersecting the Deposit**	**Number of Drill Holes**	**Meters**	**Meters Intersecting the Deposit**
Santa Cruz	129	116,388	57,326	41	34,769	14,172
East Ridge	18	15,448	1,501	0	0	0
Texaco	23	21,289	2,661	3	3,286	685
Total	**170**	**153,125**	**61,488**	**44**	**38,055**	**14,857**

Table 14-2: Mineral Resource Estimate Number of Assays by Assay Type

Assay Type	Santa Cruz Deposit Assays	Texaco Deposit Assays	East Ridge Deposit Assays
Total Cu	21,898	1,403	1,389
Acid Soluble Cu	15,859	787	0
Cyanide Soluble Cu	10,278	893	0
Molybdenum	13,193	712	86

14.2 Domaining

14.2.1 Geological Domaining

Geological domains were developed within the Santa Cruz Project based upon geographical, lithological, and mineralogical characteristics, along with incorporating both regional and local structural information. Local D2 fault structures separate the mineralization at the Santa Cruz, Texaco, and East Ridge Deposits. Local fault zones were created and/or extrapolated by Rogue Consulting using Seequent's Leapfrog Geo™ ("Leapfrog") geological software. The three Deposits were divided into two main geological domains consisting of the weathered supergene enrichment and the primary hypogene mineralization domain, each of which were further subdivided based upon their type of Cu speciation, specifically acid soluble-rich (Oxide Domain), cyanide soluble-rich (Chalcocite Enriched Domain), primary Cu sulphide (Primary Domain), and Cu oxides in overlying Tertiary sediments (Exotic Domain). Collectively, each of these domains was further Sub-Domained based upon their individual grade profiles. A schematic for Santa Cruz, Texaco, and East Ridge Deposit hierarchies is outlined in Figure 14-2 and Table 14-3. The following terms are assigned to the Sub-Domains; these represent a local definition of the grade profile: high-grade ("HG"), medium grade ("MG"), and low grade ("LG").

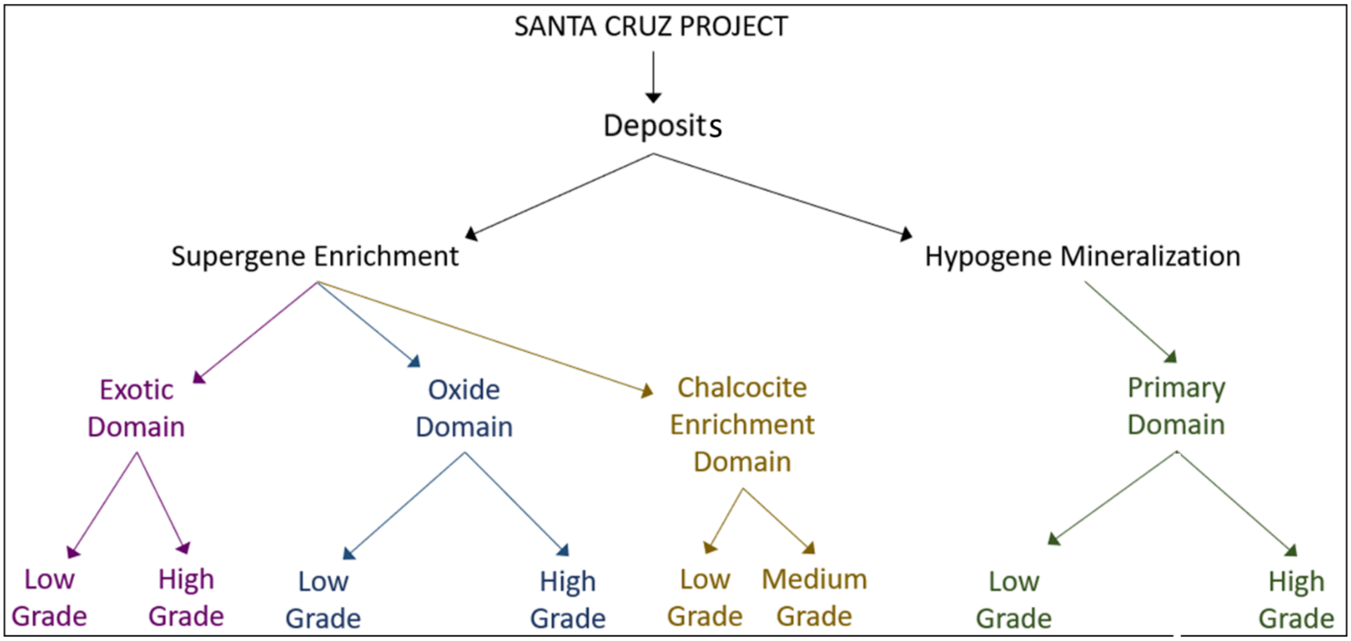


Figure 14-2: Santa Cruz, Texaco, and East Ridge Geological Domains.

Table 14-3: Santa Cruz, Texaco, and East Ridge Geological Domains

Santa Cruz Deposit	
Weathered Supergene Enrichment	Oxide Domain (Primarily Acid Soluble Cu)
	Chalcocite Enriched Domain (Primarily Cyanide Soluble Cu)
	Exotic Domain (Tertiary-Hosted "Exotic" Cu)
Hypogene Mineralization	Primary Domain (Primary Sulphide Cu)
Texaco Deposit	
Weathered Supergene Enrichment	Oxide Domain (Primarily Acid Soluble Cu)
	Chalcocite Enriched Domain (Primarily Cyanide Soluble Cu)
Hypogene Mineralization	Primary Domain (Primary Sulphide Cu)
East Ridge Deposit	
Weathered Supergene Enrichment	Oxide Domain (Primarily Acid Soluble Cu)

Exotic Cu is primarily present within the CG2 and CG3 D2 fault structures. All other Cu styles of mineralization hosted within the Oracle Granite lithology terminate at the contact of the Tertiary sediments. The current drilling indicates that the Cu mineralization is truncated at depth by the basal faults within the region.

The Oracle Granite hosts both the Laramide Porphyry and Diabase dykes, both of which are associated with brecciation and Cu mineralization. Secondary supergene Cu mineralization is separated from the primary hypogene mineralization by a Cu-oxide boundary layer called the Chalcocite Enriched Domain. This domain is defined by a 2:1 relationship of acid soluble to total Cu and follows the dip of the contact of the Oracle Granite-Tertiary sediments contact. The Chalcocite Enriched Domain was formed by two different enrichment events. High-grade ("HG") Cu oxides follow the trend of the Laramide porphyries closely and likely contain significant amounts of primary mineralization. Cyanide soluble Cu can be found within both the supergene Cu and hypogene

Cu domains as a form of secondary enrichment of chalcocite. Figure 14-3 is a conceptual example of the Santa Cruz Deposit domaining. Figure 14-4 and Figure 14-5 are examples of Texaco and East Ridge domaining.

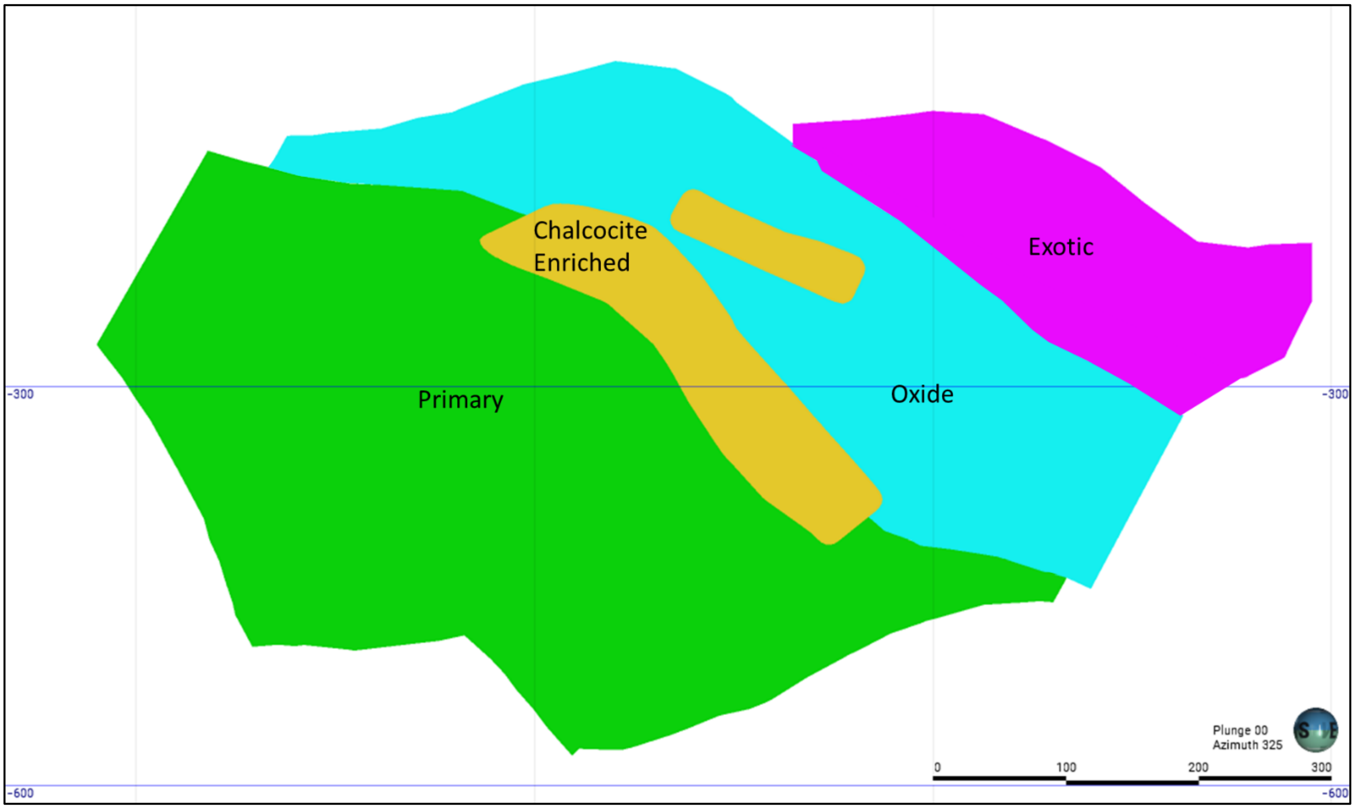


Figure 14-3: Santa Cruz Deposit domain idealized cross-section.

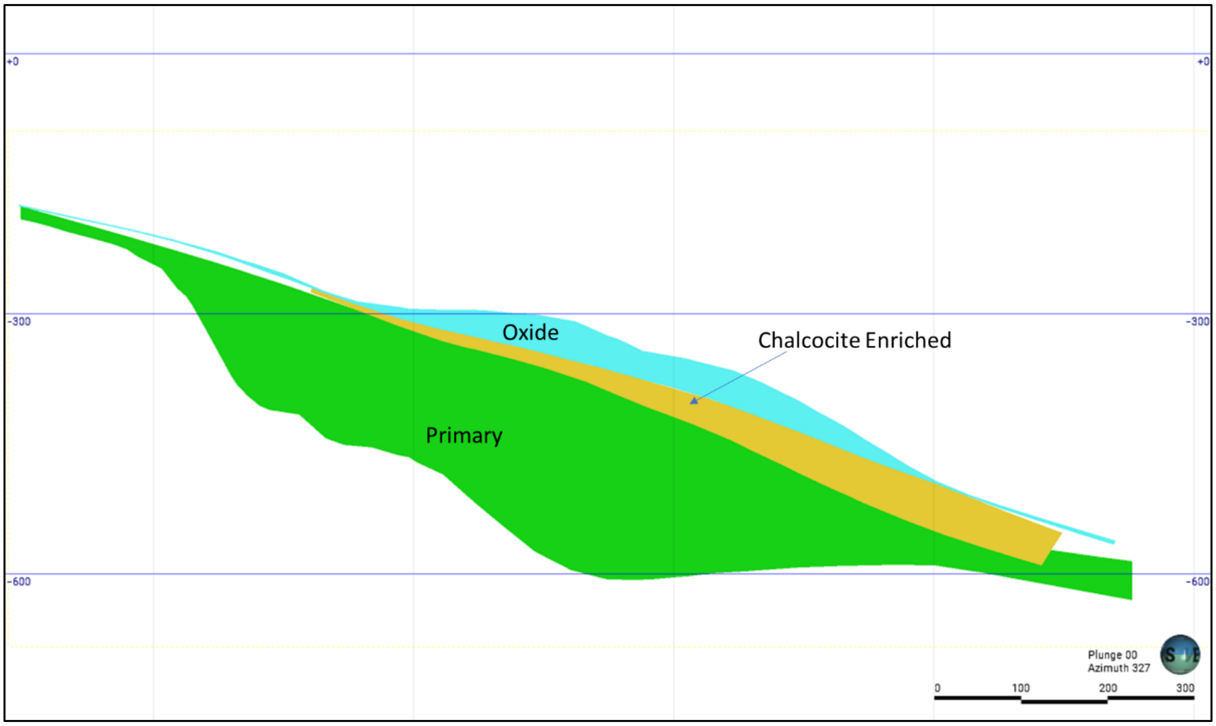


Figure 14-4: Texaco Deposit domain idealized cross-section.

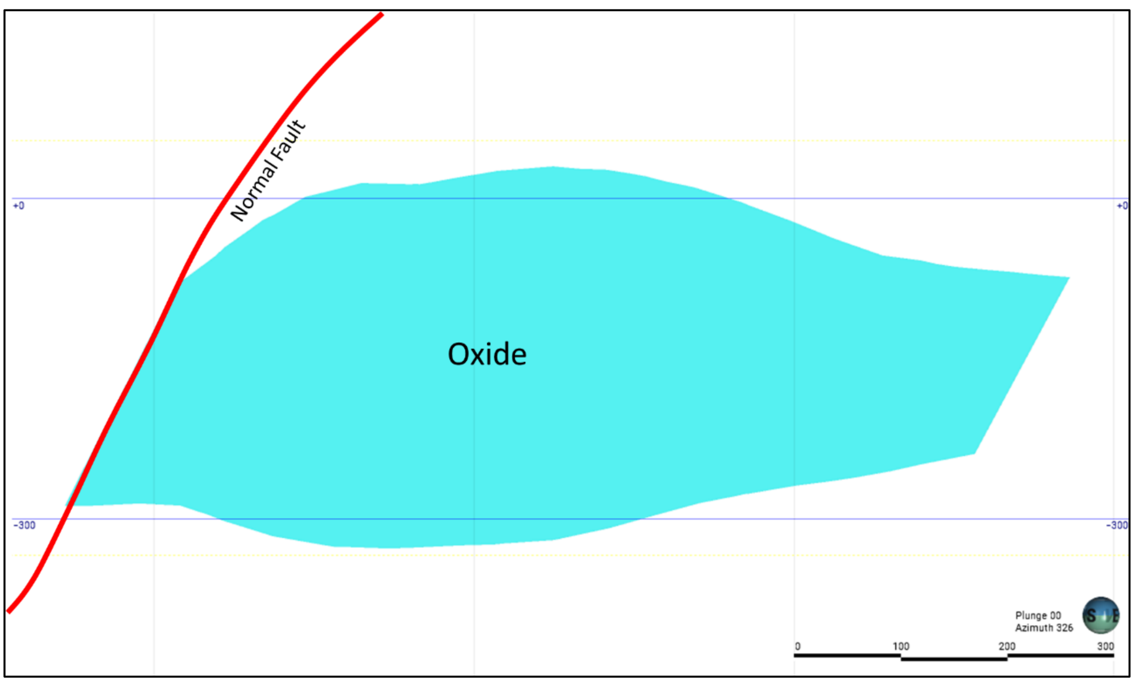


Figure 14-5: East Ridge Deposit domain idealized cross-section with structural control, comprised solely of oxide mineralization. Another discrete oxide domain exists to the south but has little interpretation due to lack of data.

The current mineral domains have been significantly revised based on improved understanding of the deposition mechanisms for each mineral type. The high-grade oxide domain has been revised to better reflect the supergene enrichment process. Subsequent drilling has confirmed the new interpretation, as in Figure 14-6 and Figure 14-7.

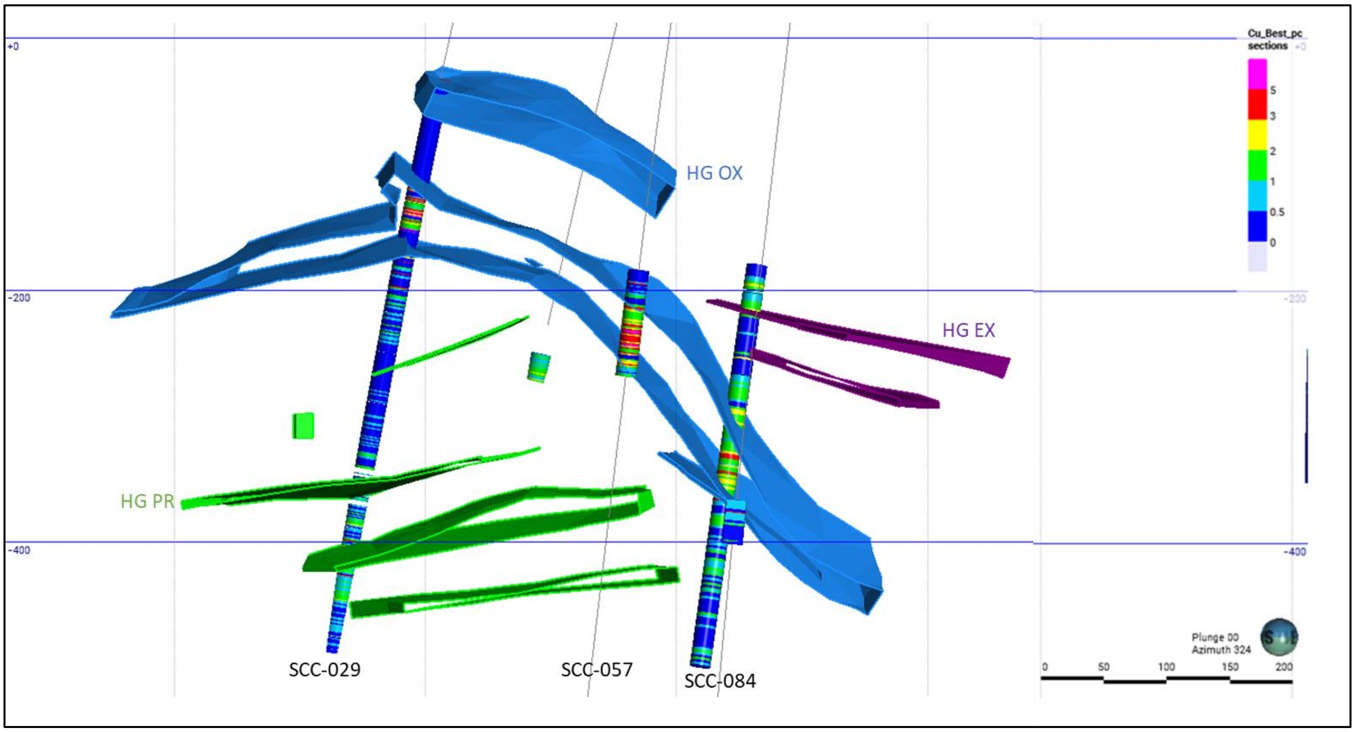


Figure 14-6: Revised Santa Cruz high-grade domains for Exotic, Oxide, and Primary mineralization. The three displayed drill holes were completed after the revision in interpretation and confirm the new wireframes as they intersected high grade copper mineralization

The oxide domains consider the acid soluble copper assay to total copper assay ratio, while the chalcocite zone considers the cyanide soluble assay to total copper assay ratio. This is important as an additional level of interpretation considers possible ore type mixing and gradational zones between oxide, chalcocite, and primary ore types.

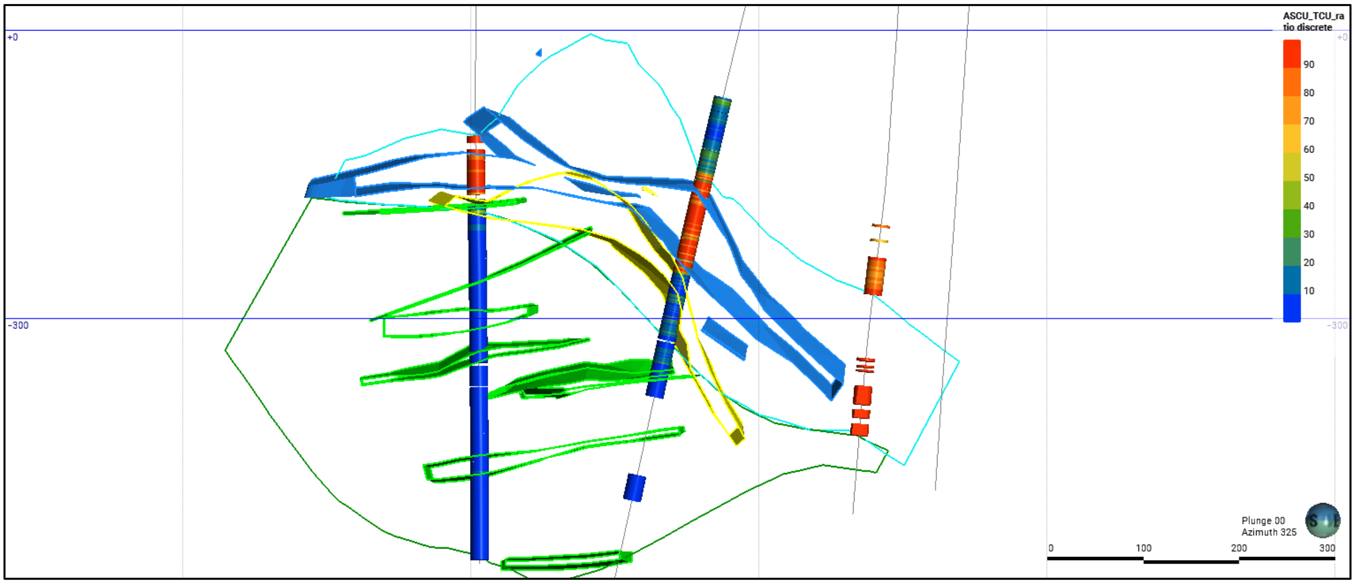


Figure 14-7: Santa Cruz cross section showing acid soluble copper assay to total copper assay ratio, confirming that the oxide domains are based not only on high acid soluble copper assays but also a high ratio, which aids in understanding ore types and mixing.

14.2.2 Regression

Cyanide soluble and acid soluble assays were measured approximately a decade after initial diamond drilling by ASARCO, therefore assay data is not available for all sample intervals within the drill holes. A regression analysis was conducted to infill the downhole intervals that are missing relevant acid soluble and cyanide soluble data. The analysis used the relationships between all applicable data available to determine the most appropriate regression calculations using Orange Data Mining™ Software (version 3.34) and Microsoft Excel™. Regression formulas were created and applied in a recursive manner to the assays for all three Deposits using the total Cu assays, flagged Sub-Domains, and lithology to calculate acid soluble and/or cyanide soluble values. Because internal correlations differ for all Domains, Sub-Domains, and lithologies, regression contains formulas up to five levels deep to allow the most accurate correlation formula to be applied. All further references to acid soluble and cyanide soluble Cu grades apply to the full regression-applied values (Table 14-4: Regression Analysis for Acid Soluble Cu.

Table 14-4: Regression Analysis for Acid Soluble Cu

Sub-characterization	ID	Linear Formula *(y=mx+b)*	Formula m	Formula b
General				
All	AA	(0.4868 * TCu) – 0.0619	0.4868	0.0619
STEP 1 – Domain				
Exotic	1EA	(0.5502 * TCu) + 0.2338	0.5502	0.2338
Oxide	1OA	(0.5895 * TCu) + 0.0958	0.5895	0.0958
Chalcocite	1CA	(0.2285 * TCu) + 0.0532	0.2285	0.0532
Primary	1PA	(0.0912 * TCu) + 0.116	0.0912	0.116
Background	1BA	(0.5823 * TCu) – 0.0551	0.5823	-0.0551
STEP 2 – Sub-Domain				
Exotic LG	2ELA	(0.7962 * TCu) – 0.0358	0.7962	-0.0358
Exotic HG	2EHA	(0.4261 * TCu) + 1.0446	0.4261	1.0446
Oxide LG	2PLA	(0.1186 * TCu) – 0.0022	0.1186	-0.0022
Oxide HG	2OHA	(0.629 * TCu) + 0.3405	0.629	0.3405
Chalcocite LG	2CLA	(0.4529 * TCu) – 0.0642	0.4529	-0.0642
Chalcocite MG	2CHA	(0.1625 * TCu + 0.0703	0.1625	0.0703
Background	2BGA	1BA	1BA	1BA
STEP 3 – Lithology				
Alluvium	3MA1	(0.9458 * TCu) – 0.0275	0.9458	-0.0275
Igneous	3MA2	(0.4594 * TCu) – 0.0611	0.4594	-0.0611
Conglomerates	3MA3	(0.8871 * TCu) – 0.0329	0.8871	-0.0329
Diabase	3MA4	AA	AA	AA
Mafic Conglomerate	3MA5	(0.8073 * TCu + 0.0666	0.8073	0.0666
Pinal Schist	3MA6	AA	AA	AA
Porphyries	3MA7	(0.5782 * TCu) – 0.0557	0.5782	-0.0557
STEP 4 – Individual Lithology				
Background Porphyries	4MBA1	(0.7503 * TCu) – 0.066	0.7503	-0.066

Table 14-5: Regression Analysis for Cyanide Soluble Cu

Characterization	ID	Formula *(y=mx+b)*	Formula m	Formula b
General				
All	AC	(0.4408 * TCu) – 0.0337	0.4408	-0.0337
STEP 1 – Domain				
Exotic	1EC	(0.3154 * TCu) – 0.2166	0.3154	-0.2166
Oxide	1OC	(0.4369 * TCu) – 0.0722	0.4369	-0.0722
Chalcocite	1CC	(0.8295 * TCu) – 0.1311	0.8295	-0.1311
Primary	1PC	(0.7766 * TCu) – 0.2052	0.7766	-0.2052
Background	1BC	(0.0565 * TCu) + 0.0047	0.0565	0.0047
STEP 2 – Sub-Domain				
Exotic LG	2ELC	(0.0475 * TCu) + 0.0026	0.0475	0.0026
Exotic HG	2EHC	(0.398 * TCu) – 0.787	0.398	-0.787
Oxide LG	2OLC	(0.7541 * TCu) – 0.1051	0.7541	-0.1051
Oxide HG	2OHC	(0.3682 * TCu) – 0.3011	0.3682	-0.3011
Chalcocite LG	2CLC	(0.591 * TCu) – 0.0551	0.591	-0.0551
Chalcocite MG	2CHC	(0.8391 * TCu) – 0.0549	0.8391	-0.0549
Primary LG	2PLC	(0.6232 * TCu) – 0.1344	0.6232	-0.1344
Primary HG	2PHC	(1.0344 * TCu) – 0.3695	1.0344	-0.3695
Background	2BGC	1BC	BC	1BC
Step 3 – Lithology				
Alluvium	3MC1	(0.229 * TCu + 0.008	0.229	0.008
Igneous	3MC2	(0.5312 * TCu) – 0.0631	0.5312	-0.0631
Conglomerates	3MC3	AC	AC	AC
Diabase	3MC4	(0.826 * TCu) – 0.2475	0.826	-0.2475
Mafic Conglomerate	3MC5	(0.0467 * TCu + 0.0049	0.0467	0.0049
Pinal Schist	3MC6	AC	AC	AC
Porphyries	3MC7	(0.3385 * TCu) – 0.0221	0.3385	-0.0221
STEP 4 – Individual Lithology				
Background Conglomerates	4MBC1	(0.0211 * TCu + 0.0038	0.0211	0.0038

14.2.3 Mineralization Domaining

Mineralization within the Santa Cruz, Texaco, and East Ridge Deposits is hosted within crystalline basement rocks, including the Oracle Granite, Laramide Porphyry, and Diabase Dykes.

Nordmin and IE examined and modelled the grade distributions for the hypogene and supergene Cu domains and their corresponding Domains. Each Domain was further domained into Sub-Domains based upon their Cu grade distribution, with grade distributions created for the Exotic, Oxides, Chalcocite Enriched, and Primary Domains. Analysis confirmed that the changes in mineralization and corresponding grade are associated with the type of Cu mineralization. The higher-grade mineralization is a result of secondary supergene enrichment and is near the contact between the Oracle Granite and Tertiary sediments. While the Primary Domain consists of moderate grade hypogene Cu that is predominately hosted within the Laramide porphyry, Diabase dykes, and associated breccias at greater depth. As such, Nordmin and IE created grade shells for each of the Cu types at multiple grade cut-offs to reflect the mineralogical and geochemical differences.

Mineralization wireframes were initially created to honor the known controls on each mineralization type, such as paleowater table for Cu-oxide mineralization and dike orientation for primary mineralization. When not cut-off by drilling, the wireframes terminate at either the contact of the Cu-oxide boundary layer, the Tertiary sediments/Oracle Granite contact, or the D2 fault structure. There is overlap of the Chalcocite Enriched Domain with the Oxide Domain in the weathered supergene or with the Primary Domain in the primary hypogene mineralization; no wireframe overlapping exists within a given Sub-Domain and no other Sub-Domain or Domain wireframe overlapping exists. Implicit modelling was completed in Leapfrog which produced reasonable mineral domains that represent the known controls on high-grade and low-grade mineralization. Leapfrog performs implicit modelling via their proprietary FastRBF™ technology, which is a mathematical algorithm developed from radial basis functions allowing the use of variables provided to create wireframes.

Grade domain wireframes were modelled for four domains: Oxide, Primary, Chalcocite Enriched, and Exotic Domains. Each Domain consists of Sub-Domains, that are based on the following grade distributions outlined in Table 14-6.

Table 14-6: Santa Cruz, East Ridge, and Texaco Deposit Domain Wireframes

Santa Cruz Domains	**Sub-Domain**	**Grade Bin**
Exotic	LG	Total Cu 0.5-2.0%
	HG	Total Cu >= 2.0%
Oxide	LG	Acid Soluble Cu 0.5-2.0%
	HG	Acid Soluble Cu >= 2.0%
Chalcocite Enriched	LG	Cyanide Soluble Cu 0.5-1.0%
	MG	Cyanide Soluble Cu >= 1.0%
Primary	LG	Total Cu 0.5-1.0%
	HG	Total Cu >= 1.5%
Texaco Domains	**Sub-Domain**	**Grade Bin**
Oxide	LG	Total Cu 0.5-1.0%
	MG	Total Cu >= 1.0%
Chalcocite Enriched	MG	Total Cu >= 1.0%
Primary	LG	Total Cu 0.5-1.0%
East Ridge Domains	**Sub-Domain**	**Grade Bin**
Oxide	LG	Total Cu 0.5-1.0%
	MG	Total Cu >= 1.0%

14.3 Exploratory Data Analysis

The exploratory data analysis was conducted on raw drill hole data to determine the nature of the element distribution, correlation of grades within individual lithologic units, and the identification of high-grade outlier samples. Nordmin used a combination of descriptive statistics, histograms, probability plots, and XY scatter plots to analyze the grade population data using X10 Geo™ (V1.4.18). The findings of the exploratory data analysis were used to help define modelling procedures and parameters used in the Mineral Resource Estimate.

Descriptive statistics were used to analyze the grade distribution and continuity of each sample population, determine the presence of outliers, and identify correlations between grade and rock types for each mineral Sub-Domain.

The following are some data errors which were identified and rectified:

- One drill hole, SC-013, contained assay interval errors. The interval from 0 m to 696.77 m was removed from the flagging process and was not used in the estimate.
- CG-018 had historical collar and survey errors. This drill hole was historically re-drilled and named CG-018A. Relevant data for CG-018 can be found in CG-018A. Because all appropriate drilling data can be found in the re-drilled hole, CG-018 was removed from the database and was not used in the estimate.

Individual drill hole tables (collar, survey, assay, etc.) were merged to create one single master de-surveyed drill hole file in Datamine Studio RM™. The processing to create this file splits assay intervals to allow for all records in all drilling tables to be included in one single file. Values in Table 14-7 are based on analysis of this master file; counts will differ when compared with the original data due to these splits.

Table 14-7: Santa Cruz Deposit Domain, Assays by Cu Grade Sub-Domain

Santa Cruz Domain	Sub-Domain	Sample Count	Total Cu	Acid Soluble Cu	Cyanide Soluble Cu	Mo
Exotic	LG (0.5%)	555	555	322	211	292
	HG (2.0%)	136	136	136	78	106
Oxide	LG (0.5%)	4,765	4,765	3,588	2,662	2,949
	HG (2.0%)	1,315	1,315	1,301	835	913
Chalcocite Enriched	LG (0.5%)	828	828	770	692	609
	MG (1.0%)	751	751	746	704	491
Primary	LG (0.5%)	5,988	5,988	5,208	2,817	3,370
	HG (1.5%)	351	351	351	209	184
Background		8,783	8,783	4,920	3,423	5,349
Total		23,472	23,472	17,342	11,631	14,263
Texaco Domain	**Sub-Domain**	**Sample Count**	**Total Cu**	**Acid Soluble Cu**	**Cyanide Soluble Cu**	**Mo**
Oxide	LG (0.5%)	190	190	106	98	86
	MG (1.0%)	32	32	11	4	4
Chalcocite Enriched	MG (1.0%)	194	194	75	122	60
Primary	LG (0.5%)	842	842	463	454	427
	MG (1.0%)	150	150	135	128	135
Total		1,408	1,408	790	806	712
East Ridge Domain	**Sub-Domain**	**Sample Count**	**Total Cu**	**Acid Soluble Cu**	**Cyanide Soluble Cu**	**Mo**
Oxide	LG (0.5%)	1,078	1,078	n/a	n/a	67
	MG (1.0%)	310	310	n/a	n/a	18
Total		1,388	1,388	n/a	n/a	n/a

Figure 14-8 to Figure 14-13 provide the data analysis for the total Cu for all low-grade (LG) domains at Santa Cruz, the primary LG domain at Texaco, and the oxide LG domain at East Ridge.

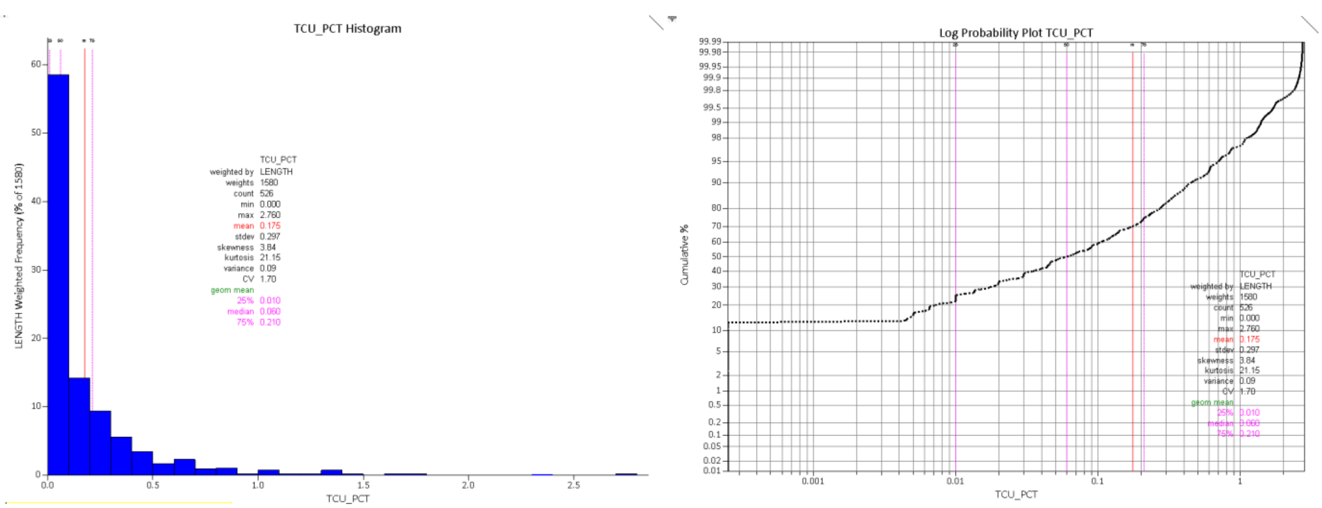


Figure 14-8: Histogram and log probability plots for Santa Cruz Exotic Cu LG Sub-Domain

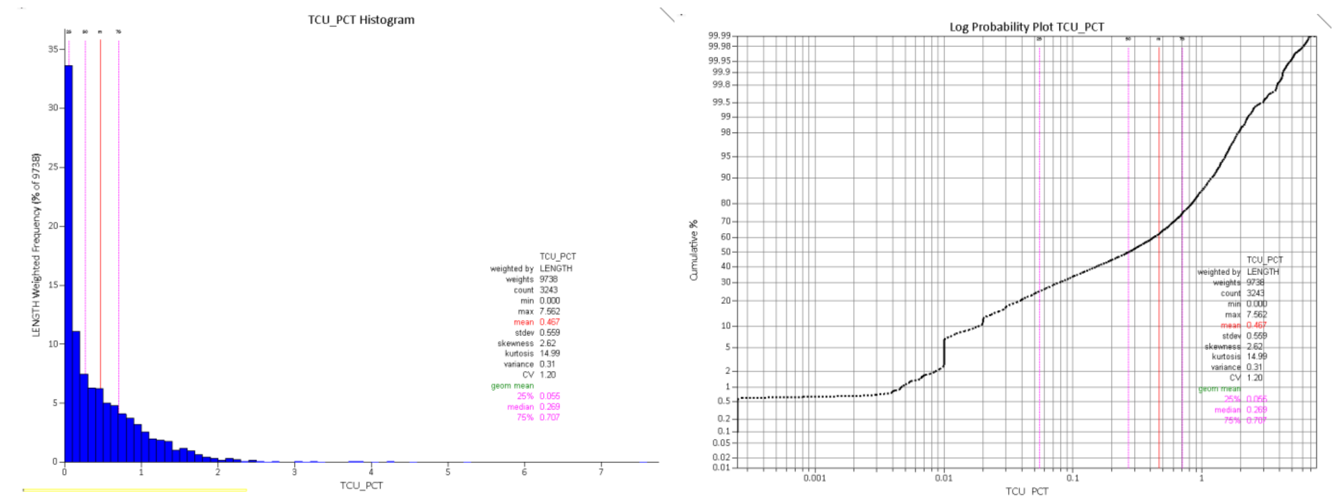


Figure 14-9: Histogram and log probability plots for Santa Cruz Oxide Cu LG Sub-Domain

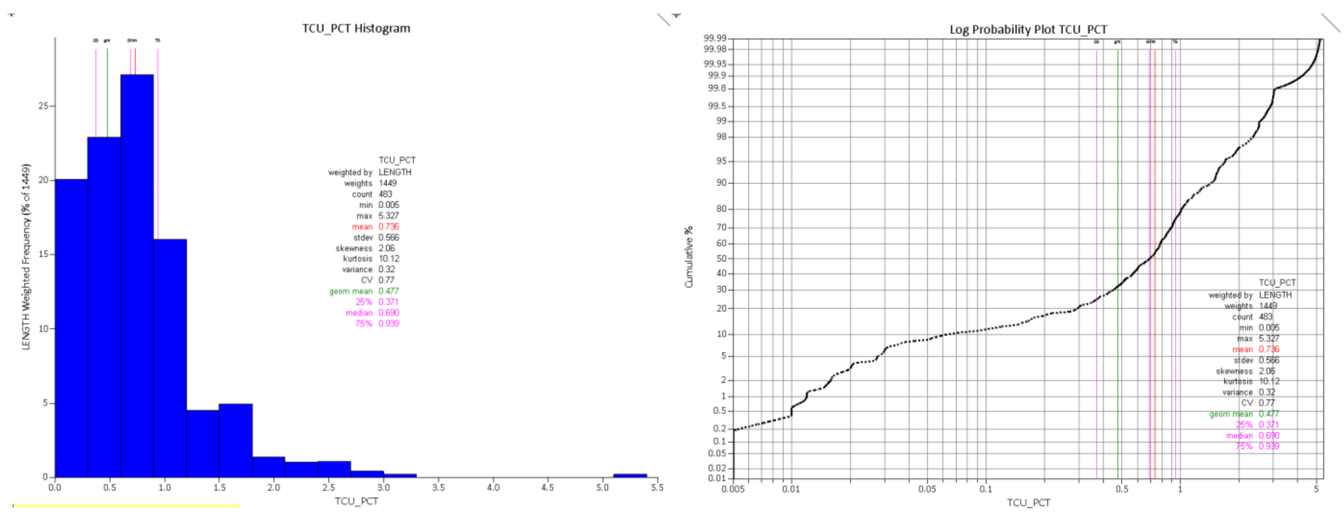


Figure 14-10: Histogram and log probability plots for Santa Cruz Chalcocite Enriched Cu LG Sub-Domain

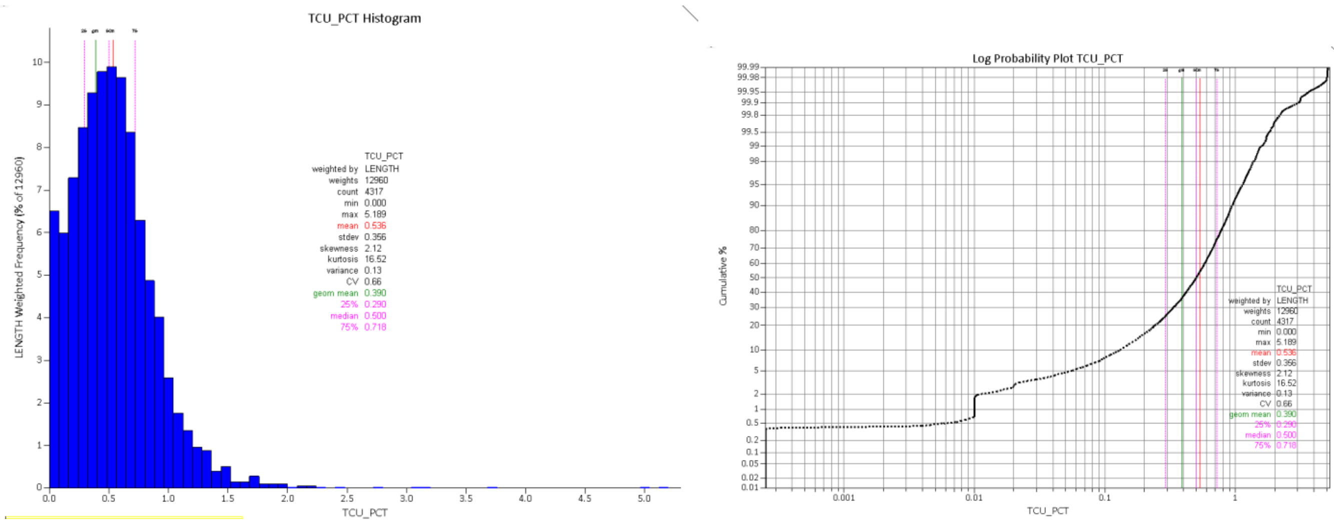


Figure 14-11: Histogram and log probability plots for Santa Cruz Primary Cu LG Sub-Domain

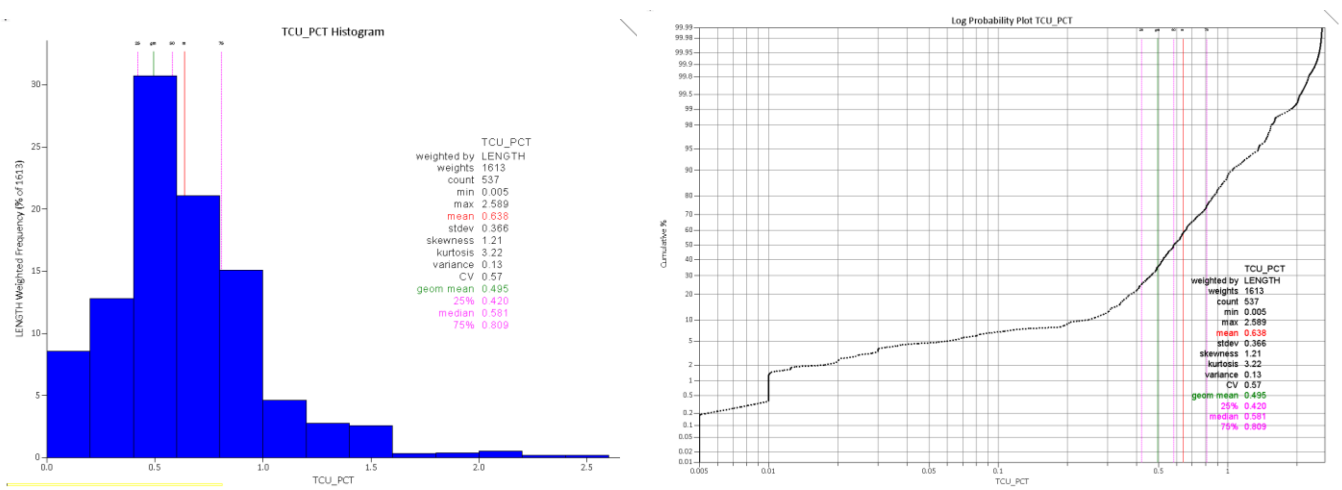


Figure 14-12: Histogram and log probability plots for Texaco Primary Cu LG Sub-Domain

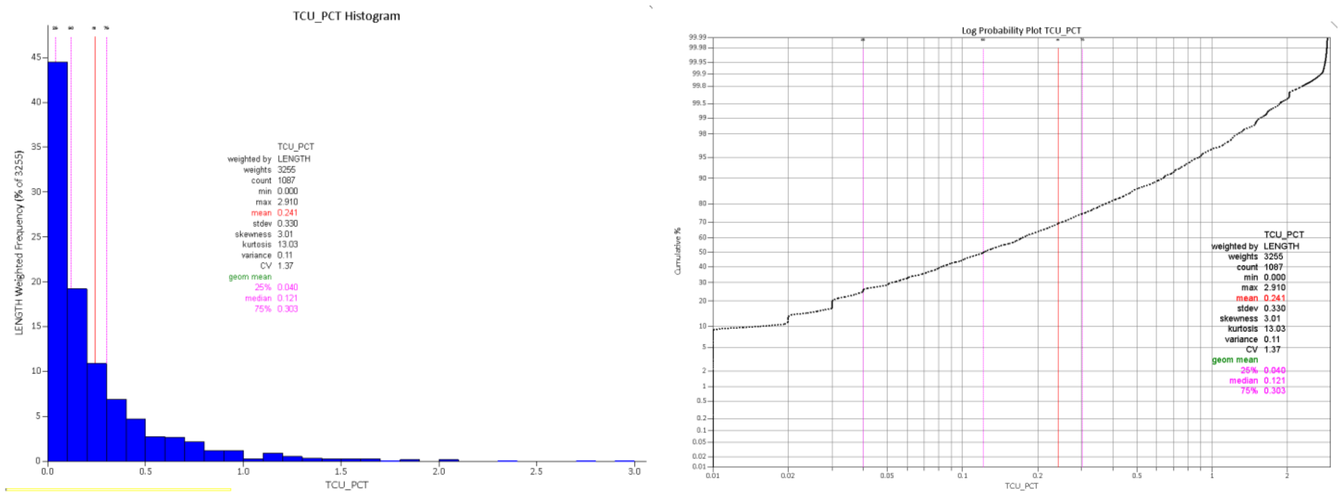


Figure 14-13: Histogram and log probability plots for East Ridge Oxide Cu LG Sub-Domain

14.4 Data Preparation

Prior to grade estimation, the data was prepared in the following matter:

- All drill hole assays that intersected a wireframe within each domain were assigned a set of codes representative of the domain, wireframe number, and mineralization type.
- The drill hole assay data was combined by Datamine Studio RM^{TM} to a single static drill hole file, which was then "flagged" to intersecting Cu mineralization Sub-Domains outlined by the wireframe coding process.
- HG outlier assays in each domain were reviewed, and top cutting (capping) was applied where necessary and applicable.

14.4.1 Assay Intervals at Minimum Detection Limits

Table 14-8 summarizes the assays at minimum detection in the drill hole database. The assay database provided to Nordmin by IE contained appropriately substituted half-minimum detection assay values for the current lab and analytical method.

Table 14-8: Assays at Minimum Detection

Field	Count	Minimum Detection Limit	Count at Minimum Detection Limit	% at Minimum Detection Limit
Santa Cruz Deposit				
Cu Total (%)	21,898	0.0005/0.0025	8	0.04%
Acid Soluble Cu (%)	15,859	0.0005	155	0.98%
Cyanide Soluble Cu (%)	10,278	0.0005	343	3.34%
Mo (%)	13,193	0.0002	566	4.29%
East Ridge and Texaco Deposit				
Cu Total (%)	1,792	0.0002/0.0005	11	0.61%
Acid Soluble Cu (%)	787	0.0025	171	21.72%
Cyanide Soluble Cu (%)	893	0.0025	20	2.24%
Mo (%)	798	0.0002/0.0005	9	1.13%

14.4.2 Outlier Analysis and Capping

Grade outliers that are much higher than the general population of assays have the potential to bias (inflate) the quantity of metal estimated in a block model. Geostatistical analysis using X-Y scatter plots, cumulative probability plots, and decile analysis was used by Nordmin to analyze the raw drill hole assay data for each domain to determine appropriate grade capping. Statistical analysis was performed independently on all Sub-Domains. After capping, the resulting change to the overall mean grades is insignificant at the Santa Cruz Deposit. Cap values for each deposit are described in Table 14-9.

Table 14-9: Santa Cruz, Texaco, and East Ridge Capping Values.

Santa Cruz Deposit					
Domains	**Zone**	**Total Copper %**	**Acid-Soluble Cu %**	**Cyanide-Soluble Cu %**	**Mo**
Exotic	**LG**	10.00	No cap	No cap	No cap
	HG	2.50	No cap	No cap	No cap
Oxide	**LG**	No cap	No cap	No cap	No cap
	HG	11.00	No cap	No cap	No cap
Chalcocite Enriched	**LG**	No cap	No cap	No cap	No cap
	MG	No cap	No cap	No cap	No cap
Primary	**LG**	No cap	4.00	No cap	No cap
	HG	No cap	No cap	No cap	No cap
Background		2.50	1.00	2.00	0.11
Texaco Deposit					
Domains	**Zone**	**Total Copper %**	**Acid-Soluble Cu %**	**Cyanide-Soluble Cu %**	**Mo**
Oxide	**LG**	4.00	No cap	9.00	0.10
	MG	No cap	No cap	No cap	No cap
Chalcocite	**MG**	No cap	No cap	No cap	No cap
Primary	**LG**	No cap	3.50	No cap	No cap
	MG	No cap	No cap	No cap	No cap
East Ridge Deposit					
Domains	**Zone**	**Total Copper %**	**Acid-Soluble Cu %**	**Cyanide-Soluble Cu %**	**Mo**
Oxide	**LG1**	No cap	No cap	No cap	No cap
	LG2	8.00	5.00	5.00	No cap
	LG3	No cap	No cap	No cap	No cap
Background		3.00	1.00	2.00	No cap

14.4.3 Compositing

Compositing of assays is a technique used to give each assay a relatively equal length and therefore reduce the potential for bias due to uneven assay lengths; it prevents the potential loss of assay data and reduces the potential for grade bias due to the possible creation of short and potentially high-grade composites that tend to be situated along the edge of a wireframe contact when using a fixed length.

The raw assay data was found to have a relatively narrow range of assay lengths. Assays captured within all wireframes were composited to 3.0 m regular intervals based on the observed modal distribution of assay lengths, which supports a 5.0 m x 5.0 m x 5.0 m block model (with sub-blocking). An option to use a slightly variable composite length was chosen to allow for backstitching shorter composites that are located along the edges of the composited interval. All composite assays were generated within each mineral lens with no overlaps along boundaries. The composite assays were validated statistically to ensure there was no loss of data or change to the mean grade of each assay population (Table 14-10).

Table 14-10: Santa Cruz Deposit Composite Analysis

Santa Cruz Domains	Sub-Domain	Number of Composites
Exotic	LG	526
	HG	83
Oxide	LG	4,064

Santa Cruz Domains	Sub-Domain	Number of Composites
	HG	821
Chalcocite Enriched	LG	483
	MG	493
Primary	LG	4,332
	HG	251
Background	n/a	9,883
Texaco Domains	**Sub-Domain**	**Number of Composites**
Oxide	LG	141
	MG	29
Chalcocite Enriched	MG	147
Primary	LG	598
	MG	69
East Ridge Domains	**Sub-Domain**	**Number of Composites**
Oxide	LG	1,087
	MG	309

14.4.4 Specific Gravity

A total of 2,639 SG measurements from seventy-four diamond drill holes exist from the Santa Cruz Deposit (Table 14-11: SG values measured for the Santa Cruz Deposit by geologic domain. Measurements were calculated using the weight in air versus the weight in water method (Archimedes), by applying the following formula:

$$Specific\ Gravity = \frac{Weight\ in\ Air}{(Weight\ in\ Air - Weight\ in\ Water)}$$

Nordmin determined that the required amount and distribution of SG measurements for direct estimation within the block model was not met. SG values were assigned to blocks based on Sub-Domains as seen in East Ridge and Texaco employ SG values from Santa Cruz as the two deposits lacked sufficient samples to calculate a local average.

Table 14-11: SG values measured for the Santa Cruz Deposit by geologic domain

Santa Cruz Domain	Sub-Domain	Average SG
Exotic	LG	2.52
	HG	2.38
Oxide	LG	2.48
	HG	2.53
Chalcocite Enriched	LG	2.49
	MG	2.54
Primary	LG	2.53
	HG	2.51
Background		2.50

14.4.5 Block Model Strategy and Analysis

A series of upfront test modelling was completed to define an estimation methodology to meet the following criteria:

- Representative of the Santa Cruz Deposit geological and structural controls.
- Accounts for the variability of grade, orientation, and continuity of mineralization.
- Controls the smoothing (grade spreading) or grades and the influence of outliers.
- Accounts for most of the mineralization within the Santa Cruz Deposit.
- Is robust and repeatable within the mineral domains.
- Supports multiple domains.

Multiple test scenarios were evaluated to determine the optimum processes and parameters to use to achieve the stated criteria. Each scenario was based on Nearest Neighbour (NN), inverse distance squared (ID2), inverse distance cubed (ID3), and ordinary kriging (OK) interpolation methods (only for the Santa Cruz Deposit). All test scenarios were evaluated based on global statistical comparisons, visual comparisons of composite assays versus block grades, and the assessment of overall smoothing. Based on the results of the testing, it was determined that the final resource estimation methodology would constrain the mineralization by using hard wireframe boundaries to control the spread of mineralization. OK was selected as the best and most applicable interpolation method for the Santa Cruz Deposit, and ID3 was selected as the best and most applicable interpolation method for the East Ridge and Texaco Deposits.

14.4.6 Assessment of Spatial Grade Continuity

Datamine, Leapfrog Geo™, and Leapfrog Edge™ were used to determine the geostatistical relationships of the Santa Cruz Deposit. Texaco and East Ridge Deposits did not have sufficient data density to perform variography. Independent variography was performed on composite data for each domain. Experimental grade variograms were calculated from the capped/composited assay data for each element to determine the approximate search ellipse dimensions and orientations.

The following was considered for each analysis:

- Downhole variograms were created and modelled to define the nugget effect.
- Experimental semi-variograms were calculated to determine directional variograms for the strike and down dip orientations.
- Variograms were modelled using an exponential model with practical range.
- Directional variograms were modelled using the nugget defined in the downhole variography, and the ranges for the along strike, perpendicular to strike, and down dip directions.
- Variograms outputs were re-oriented to reflect the orientation of the mineralization.

Six search ellipsoids were applied to estimation, one for each type of Cu mineralization (primary supergene, secondary Cu-oxide (HG, LG), exotic Cu, chalcocite, and background). The search parameters used for the estimation are provided in Table 14-14 (Santa Cruz Deposit), Table 14-15 (Texaco Deposit), and Table 14-16 (East Ridge Deposit). Some domains share variography parameters due to similar behavior. The variography used for Santa Cruz is provided in Table 14-12. Semi-variograms for several Cu domains are provided in Figure 14-14 to Figure 14-18.

Table 14-12: Santa Cruz Deposit Variography Parameters

Domain	Type	Rotation Angles				Nugget	C1	Structure 1			C2	Structure 2		
		1	2	3	Axes			Range 1	Range 2	Range 3		Range 1	Range 2	Range 3
Exotic	TCu	30	90	140	Z-Y-Z	0.2	0.26	130	90	35	0.54	300	130	50
	ASCu	30	90	140	Z-Y-Z	0.2	0.26	190	100	20	0.54	233	125	44
	CNCu	30	90	140	Z-Y-Z	0.25	0.75	290	125	35	0	n/a		
Oxide	TCu	90	40	60	Z-Y-Z	0.15	0.52	15	126	60	0.33	175	200	95
	ASCu	90	40	30	Z-Y-Z	0.15	0.5	40	30	40	0.35	145	100	100
	CNCu	90	30	20	Z-Y-Z	0.13	0.32	150	30	10	0.55	150	230	70
Chalcocite Enriched	TCu	35	60	75	Z-Y-Z	0.25	0.75	210	200	45	0	n/a		
	ASCu	35	60	135	Z-Y-Z	0.13	0.87	250	245	35	0	n/a		
	CNCu	35	60	80	Z-Y-Z	0.2	0.8	295	225	21	0	n/a		
Primary	TCu	30	180	45	Z-Y-Z	0.2	0.37	130	160	80	0.43	470	195	200
	ASCu	30	0	120	Z-Y-Z	0.2	0.37	200	100	50	0.43	420	200	100
	CNCu	20	150	135	Z-Y-Z	0.12	0.45	100	55	45	0.43	370	310	265
Background	TCu	90	30	150	Z-Y-Z	0.12	0.35	20	133	35	0.53	780	800	430
	ASCu	90	30	150	Z-Y-Z	0.13	0.87	330	195	45	0	n/a		
	CNCu	90	30	20	Z-Y-Z	0.11	0.89	355	220	32	0.53	n/a		

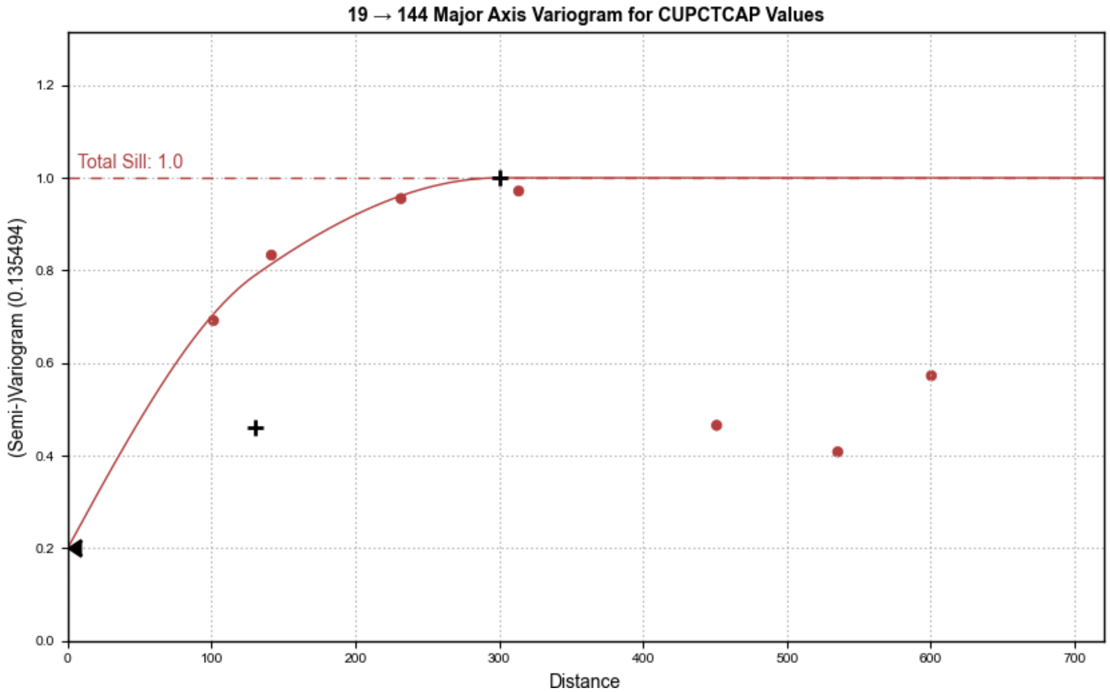


Figure 14-14: Exotic Domain total Cu variogram

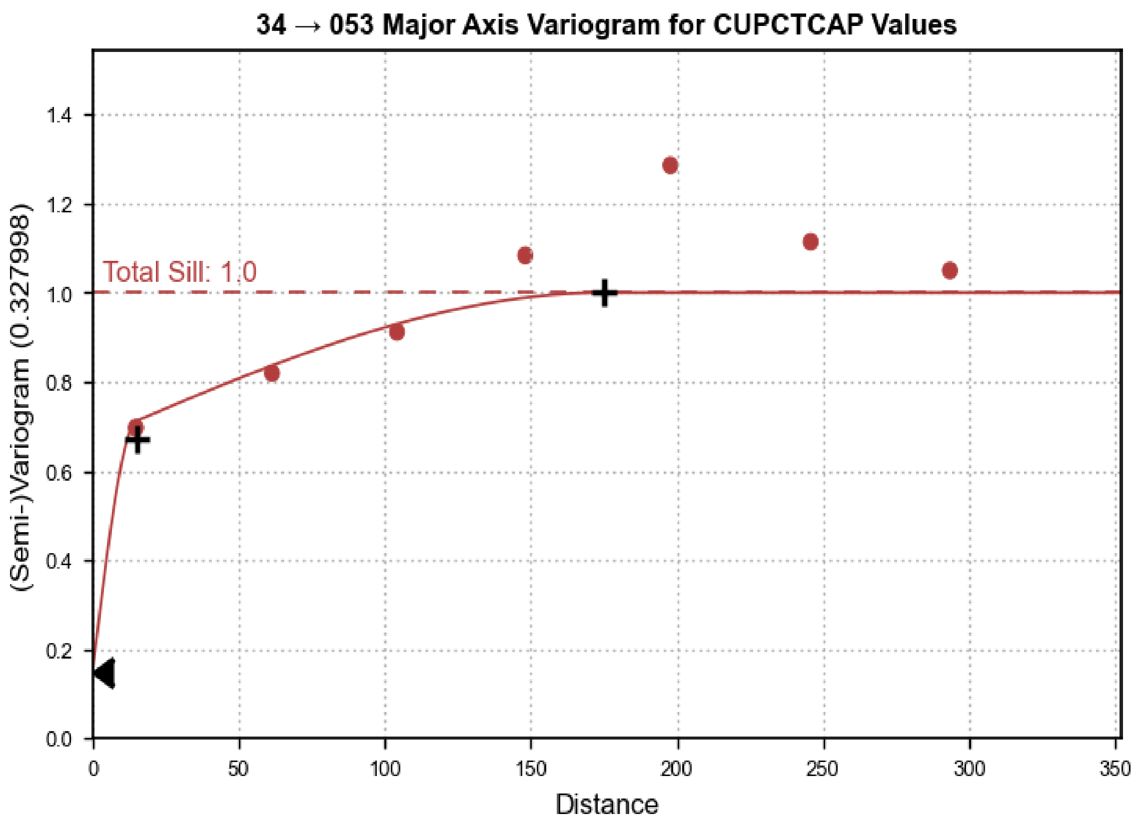


Figure 14-15: Oxide Domain total Cu variogram

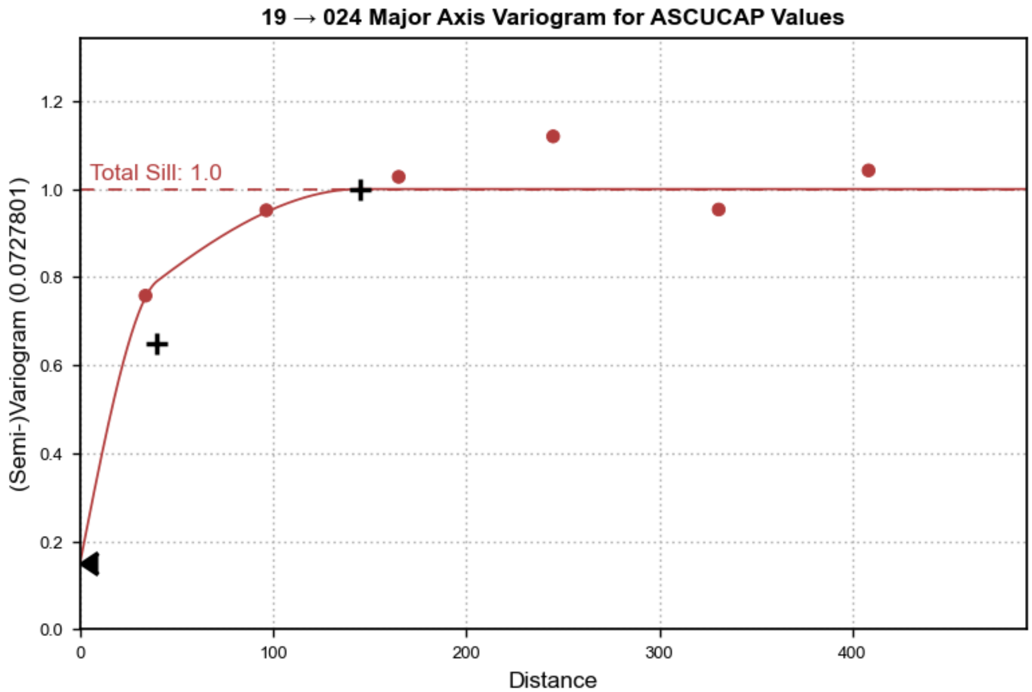


Figure 14-16: Oxide Domain acid soluble Cu variogram

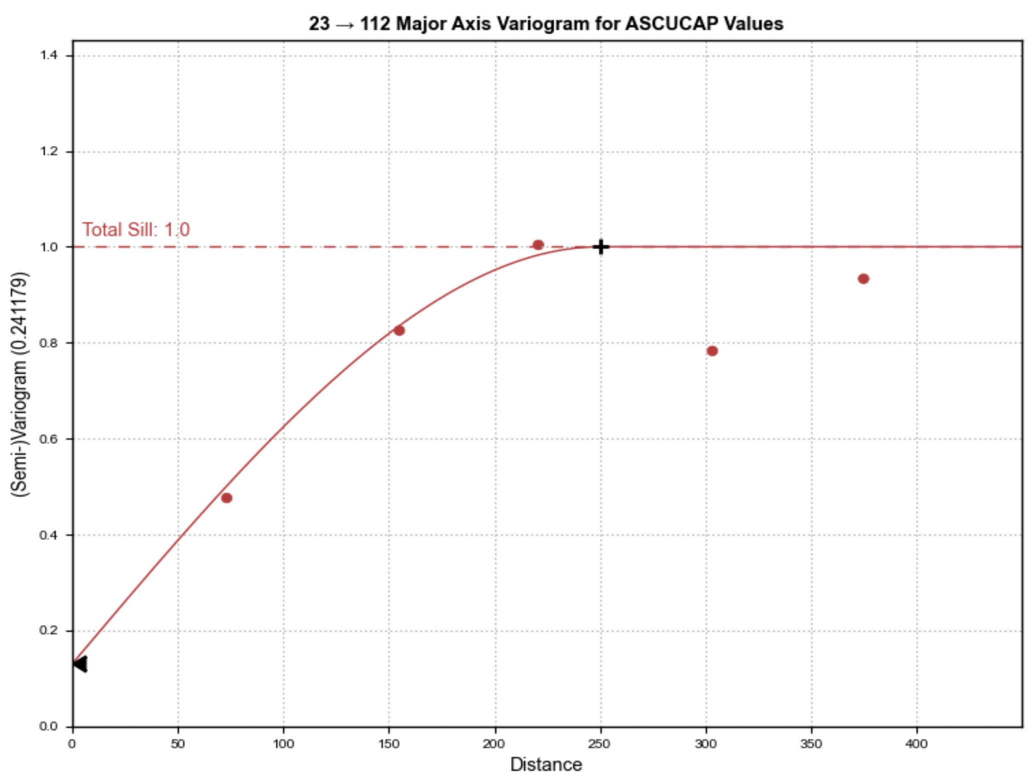


Figure 14-17: Chalcocite Enriched Domain Acid Soluble Cu Variogram

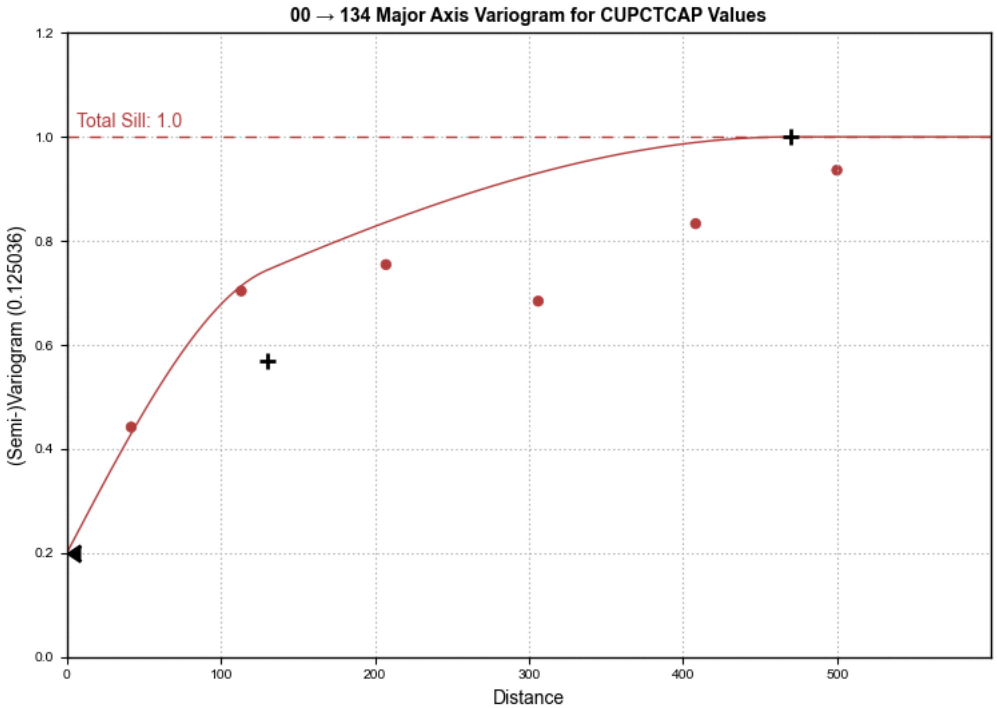


Figure 14-18: Primary Domain Total Cu Variogram

14.4.7 Block Model Definition

The block model shape and size are typically a function of the geometry of the deposit, the density of assay data, drill hole spacing, and the selected mining unit. Taking this into consideration, the block model was defined with parent blocks at 5.0 m x 5.0 m x 5.0 m (N-S x E-W x Elevation). All three deposits use the same model definition parameters. The block model prototype parameters are listed in Table 14-13. All three deposits employed the same prototype parameters.

Table 14-13: Santa Cruz, Texaco, and East Ridge Block Model Definition Parameters

Item	Block Origin (m)	Block Max (m)	Block Dimension (m)	Number of Parent Blocks	Minimum Sub-Block (m)
Easting	414,200	421,500	5	1,460	1.25
Northing	3,637,800	3,644,800	5	1,400	1.25
Elevation	-1,200	500	5	340	1.25

All mineral Sub-Domain wireframe volumes were filled with blocks using the parameters described in Table 14-13. Block volumes were compared to the mineral Sub-Domain wireframe volumes to confirm there were no significant differences. Block volumes for all Sub-Domains were found to be within reasonable tolerance limits for all mineral Sub-Domain volumes. Sub-blocking was allowed to maintain the geological interpretation and accommodate the Sub-Domain wireframes, the lithological SG, and the category application. Sub-blocking has been allowed to the following minimums:

- 5.0 m x 5.0 m x 5.0 m blocks are sub-blocked two-fold to 1.25 m x 1.25 m in the N to S and E to W directions with a variable elevation calculated based on the other sizes.

The block models were not rotated, and it was not necessary to clip them to topography due to their depth. The resource estimation was conducted using Datamine Studio RM™ version 1.12.113.0 within the NAD 83 UTM Zone 12 N projection grid.

14.4.8 Interpolation Method

The Santa Cruz Deposit block model was estimated using NN, ID2, ID3, and OK interpolation methods for global comparisons and validation purposes. The OK method was used for the Mineral Resource Estimate; it was selected over ID2, ID3, and NN as the OK method was the most representative approach to controlling the smoothing of grades. The Santa Cruz Deposit was estimated using NN, ID2, ID3, OK, and the OK method was used for the Mineral Resource Estimate. The Texaco and East Ridge block models were estimated using NN, ID2, and ID3, and the ID3 method was used for the mineral estimate for the Texaco and East Ridge Deposits.

14.4.9 Search Strategy

Zonal controls for all three deposits were used to constrain the grade estimates to within each LG, MG, and HG wireframe. These controls prevented the assays from individual domain wireframes from influencing the block grades of one another, acting as a “hard boundary” between the Sub-Domains. For instance, the composites identified within the Background total Cu wireframe were used to estimate the Background total Cu, and all other composites were ignored during the estimation. A “soft boundary” was used in the LG Oxide Sub-Domain, where composites from the HG model were included with the LG composites for the purposes of LG Oxide Sub-Domain estimation.

Search orientations for each deposit were used for estimation of the block model and were based on the shape of the modelled mineral domains; see Table 14-14 (Santa Cruz Deposit), Table 14-15 (Texaco Deposit), and Table 14-16 (East Ridge Deposit). A total of three nested searches were performed on all Sub-Domains. Table 14-14 to Table 14-16 display search parameters used in the estimation of the Santa Cruz, Texaco, and East Ridge Deposit mineral resource estimates. The search distances were based upon the variography ranges outlined in Table 14-12. The search radius of the first search was based upon the first structure of the variogram, the second search is generally two times the first search pass, and the third search pass is 8 times the initial search for the purposes of block model filling – note that this third-pass material was not considered for anything other than Inferred Categorization. Search strategies used an ellipsoidal search with a defined overall minimum and maximum number of composites as well as a maximum number of composites per hole for each block. Blocks which did not meet these criteria did not estimate and do not appear in the MRE.

Table 14-14: Santa Cruz Block Model Search Parameters

SANTA CRUZ DEPOSIT																								
TOTAL COPPER																								
							Pass 1						**Pass 2**						**Pass 3**					
	Search Rotation			**Search Axes**			**Search Distances**			**Comps**			**Search Distances**			**Comps**			**Search Distances**			**Comps**		
Domain	**Rot 1**	**Rot 2**	**Rot 3**	**Axis 1**	**Axis 2**	**Axis 3**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**
Exotic (LG/HG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Oxide LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	2	8	2	400	640	240	2	8	2
Oxide HG	-12	-11	-5	3	2	3	50	80	30	3	10	2	100	160	60	3	8	2	400	640	240	2	8	2
Chalcocite (LG/MG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Primary LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Primary HG	-12	12	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Background	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
ACID SOLUBLE COPPER																								
							Pass 1						**Pass 2**						**Pass 3**					
	Search Rotation			**Search Axes**			**Search Distances**			**Comps**			**Search Distances**			**Comps**			**Search Distances**			**Comps**		
Domain	**Rot 1**	**Rot 2**	**Rot 3**	**Axis 1**	**Axis 2**	**Axis 3**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**
Exotic (LG/HG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Oxide LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	2	8	2	400	640	240	2	8	2
Oxide HG	-12	-11	-5	3	2	3	50	80	30	3	10	2	100	160	60	3	8	2	400	640	240	2	8	2
Chalcocite (LG/MG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	300	480	180	2	8	2
Primary LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Primary HG	-12	12	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Background	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	300	480	180	2	8	2
CYANIDE SOLUBLE COPPER																								
							Pass 1						**Pass 2**						**Pass 3**					
	Search Rotation			**Search Axes**			**Search Distances**			**Comps**			**Search Distances**			**Comps**			**Search Distances**			**Comps**		
Domain	**Rot 1**	**Rot 2**	**Rot 3**	**Axis 1**	**Axis 2**	**Axis 3**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**	**Dist 1**	**Dist 2**	**Dist 3**	**Min**	**Max**	**Max Per Hole**
Exotic (LG/HG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Oxide LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Oxide HG	-12	-11	-5	3	2	3	50	80	30	3	10	2	100	160	60	2	8	2	400	640	240	2	8	2
Chalcocite (LG/MG)	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Primary LG	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Primary HG	-12	12	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2
Background	-12	-11	-5	3	2	3	50	80	30	3	8	2	100	160	60	3	8	2	400	640	240	2	8	2

Table 14-15: Texaco Block Model Search Parameters

TEXACO DEPOSIT																								
TOTAL COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Chalcocite (LG/MG)	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Primary LG	60	8	15	3	2	1	50	80	30	3	8	2	87.5	140	52.5	3	8	2	150	240	90	3	8	2
Primary MG	85	17	-8	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Background	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
ACID SOLUBLE COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	60	8	15	3	2	1	50	80	30	2	10	2	100	160	60	2	8	2	350	480	180	3	8	2
Chalcocite (LG/MG)	60	8	15	3	2	1	60	45	30	3	8	2	120	90	60	3	8	2	360	270	180	3	8	2
Primary LG	60	8	15	3	2	1	50	80	30	3	8	2	75	120	45	3	8	2	100	160	60	3	8	2
Primary MG	75	12	10	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Background	60	8	15	3	2	1	60	45	30	3	8	2	120	90	60	3	8	2	360	270	180	3	8	2
CYANIDE SOLUBLE COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Chalcocite (LG/MG)	60	8	15	3	2	1	40	50	20	3	8	2	60	75	30	3	8	2	240	350	120	3	8	2
Primary LG	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	-	-	-	-	-	-
Primary MG	60	12	10	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Background	60	8	15	3	2	1	40	50	20	3	8	2	75	120	30	3	8	2	240	350	120	3	8	2

Table 14-16: East Ridge Block Model Search Parameters

EAST RIDGE DEPOSIT																								
TOTAL COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	-40	10	-9	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	450	640	240	3	8	2
Background	-40	10	-9	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	600	960	360	3	8	2

ACID SOLUBLE COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Background	60	8	15	3	2	1	60	45	30	3	8	2	120	90	60	3	8	2	360	270	180	3	8	2
CYANIDE SOLUBLE COPPER																								
							Pass 1						Pass 2						Pass 3					
	Search Rotation			Search Axes			Search Distances			Comps			Search Distances			Comps			Search Distances			Comps		
Domain	Rot 1	Rot 2	Rot 3	Axis 1	Axis 2	Axis 3	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole	Dist 1	Dist 2	Dist 3	Min	Max	Max Per Hole
Oxide (LG/MG)	60	8	15	3	2	1	50	80	30	3	8	2	100	160	60	3	8	2	350	480	180	3	8	2
Background	60	8	15	3	2	1	40	50	20	3	8	2	60	75	30	3	8	2	240	350	120	3	8	2

14.5 Block Model Validation

The Santa Cruz Deposit block model was estimated using NN, ID2, ID3, and OK interpolation methods for global comparisons and validation purposes. The OK method was used for the MRE; it was selected over ID2, ID3, and NN as the OK method was the most representative approach to controlling the smoothing of grades. The Texaco and East Ridge Deposit block models were estimated using NN, ID2, and ID3. The ID3 method was used for the mineral estimate for the Texaco and East Ridge Deposits and was used in the MRE.

14.5.1 Visual Comparison

The validation of the interpolated block model was assessed by using visual assessments and validation plots of block grades versus capped assay grades and composites. The review demonstrated a good comparison between local block estimates and nearby samples without excessive smoothing in the block model.

Figure 14-19 through Figure 14-35 are the block model validation images, displaying total Cu, acid soluble Cu, or cyanide soluble Cu grades in the block model and drill holes for Santa Cruz, Texaco, and East Ridge.

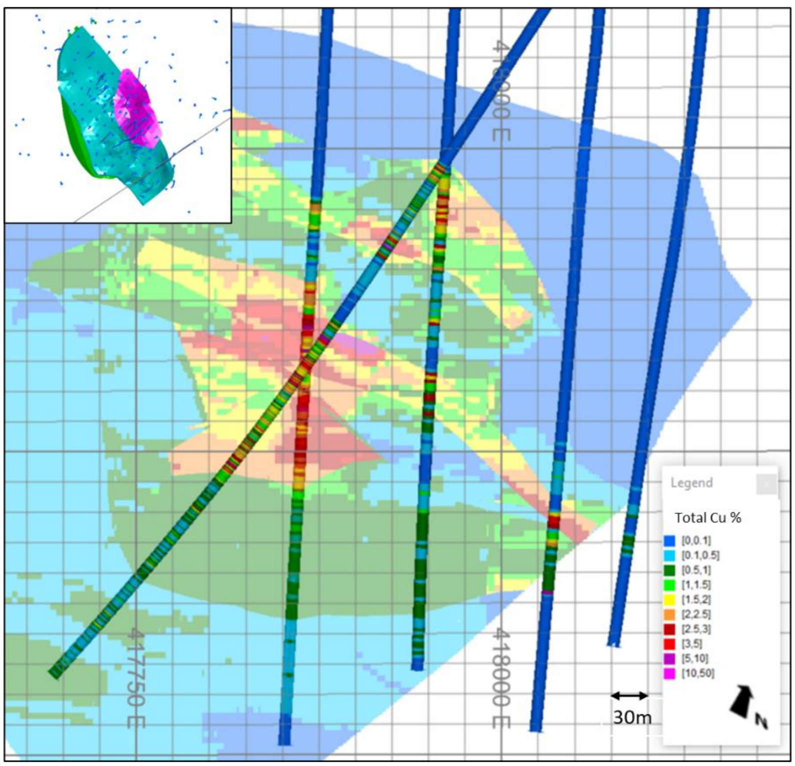


Figure 14-19: Santa Cruz block model validation, total Cu, cross-section.

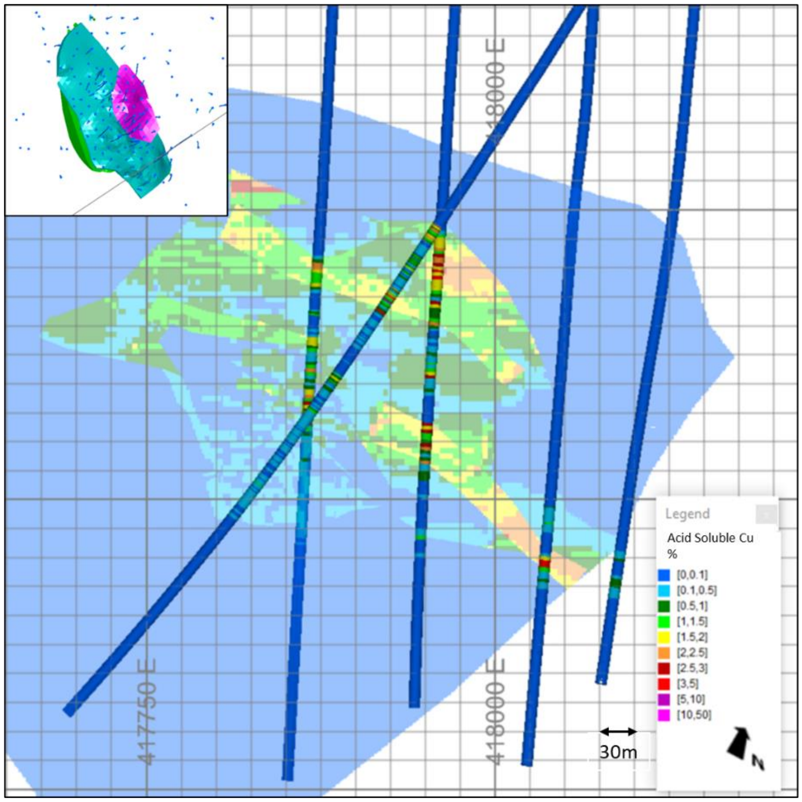


Figure 14-20: Santa Cruz block model validation, acid soluble Cu, cross-section, +/-50m width.

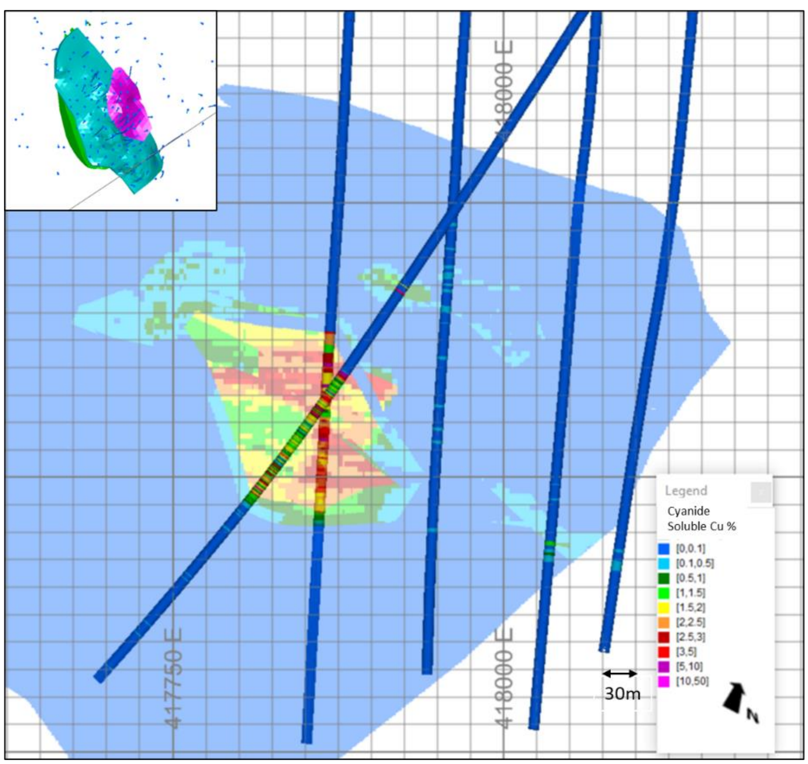


Figure 14-21: Santa Cruz block model validation, cyanide soluble Cu, cross-section +/-50m width.

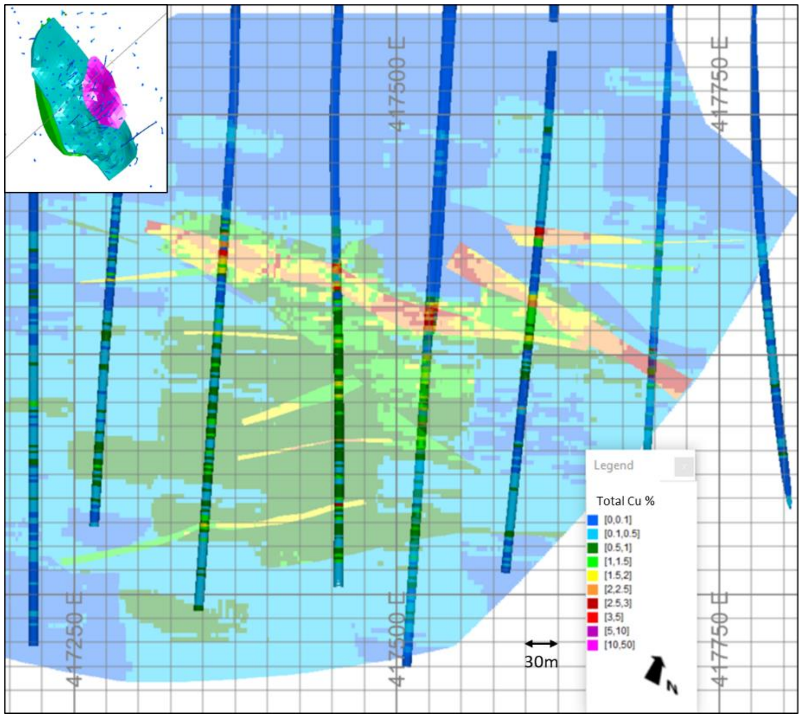


Figure 14-22: Santa Cruz block model validation, total Cu, cross-section +-/50m width

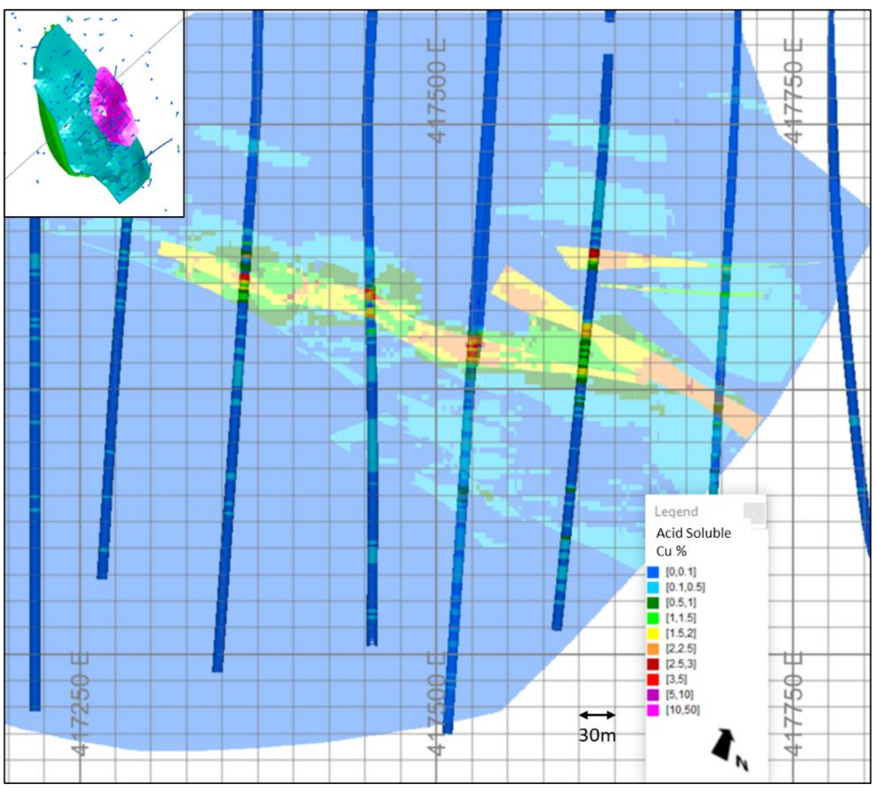


Figure 14-23: Santa Cruz block model validation, acid soluble Cu, cross-section +/-50m width.

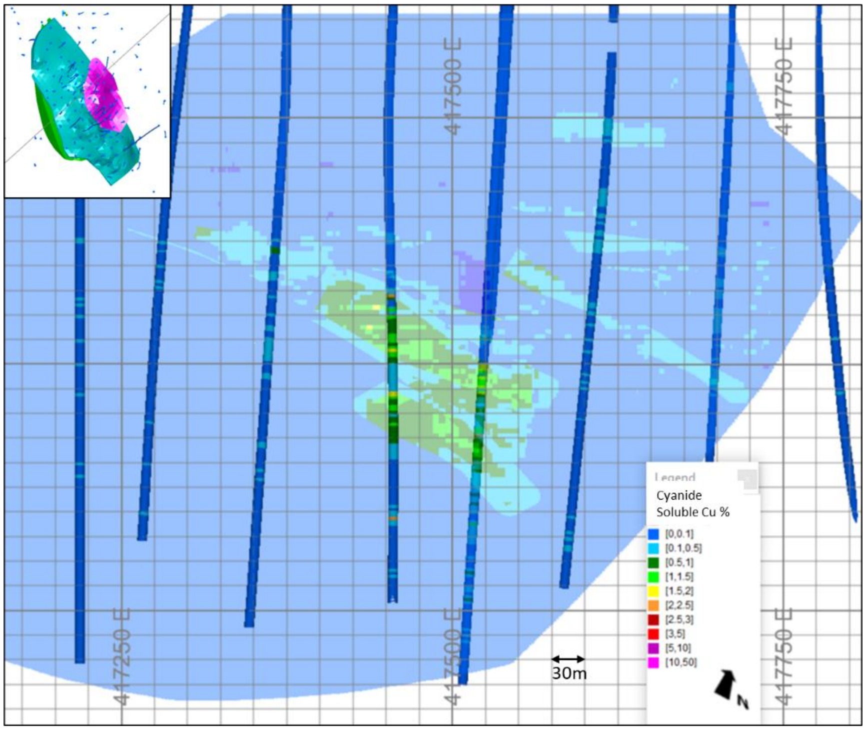


Figure 14-24: Santa Cruz block model validation, cyanide soluble Cu, cross-section +/-50m width.

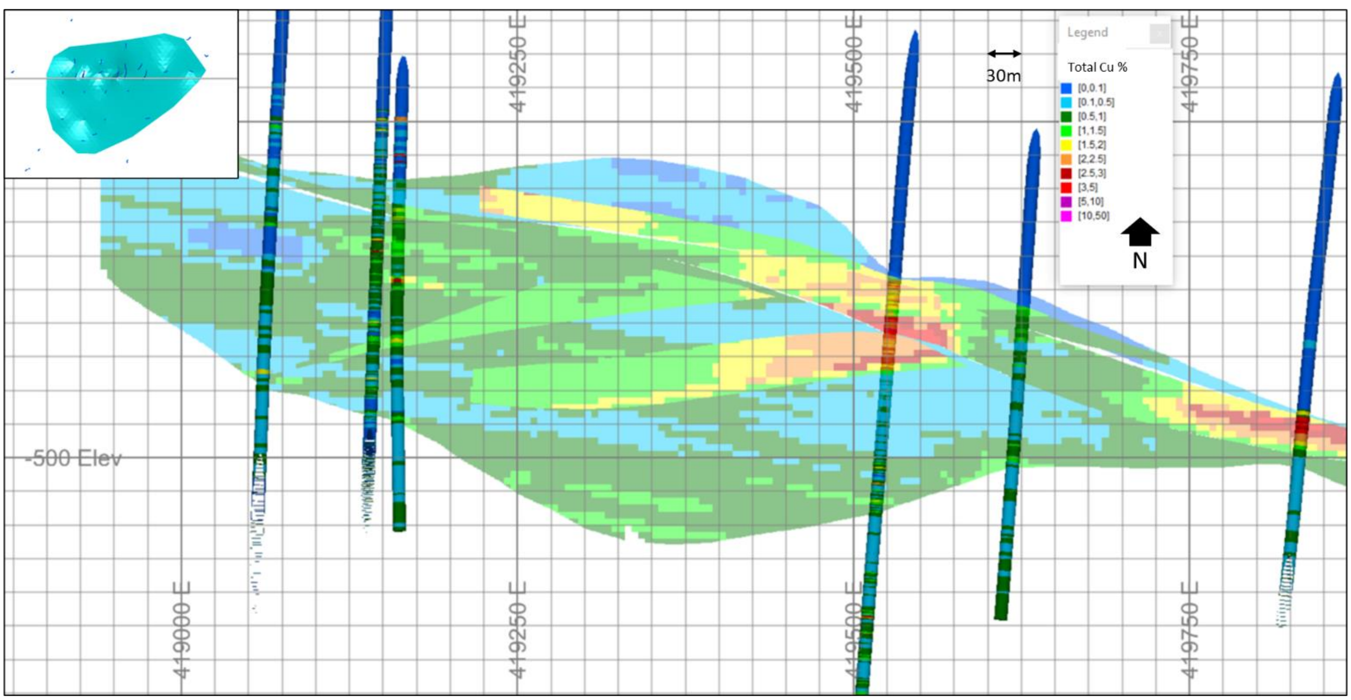


Figure 14-25: Texaco block model validation, total Cu, cross-section +/-50m width.

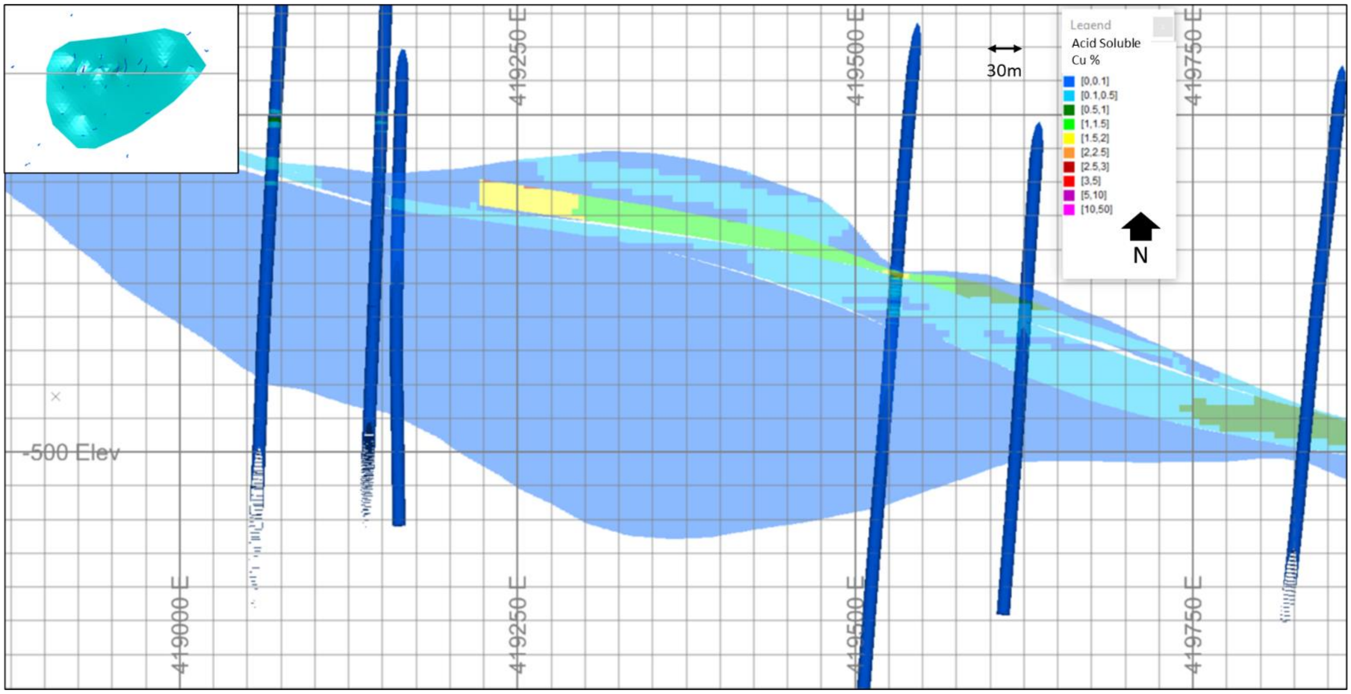


Figure 14-26: Texaco block model validation, acid soluble Cu, cross-section +/-50m width.

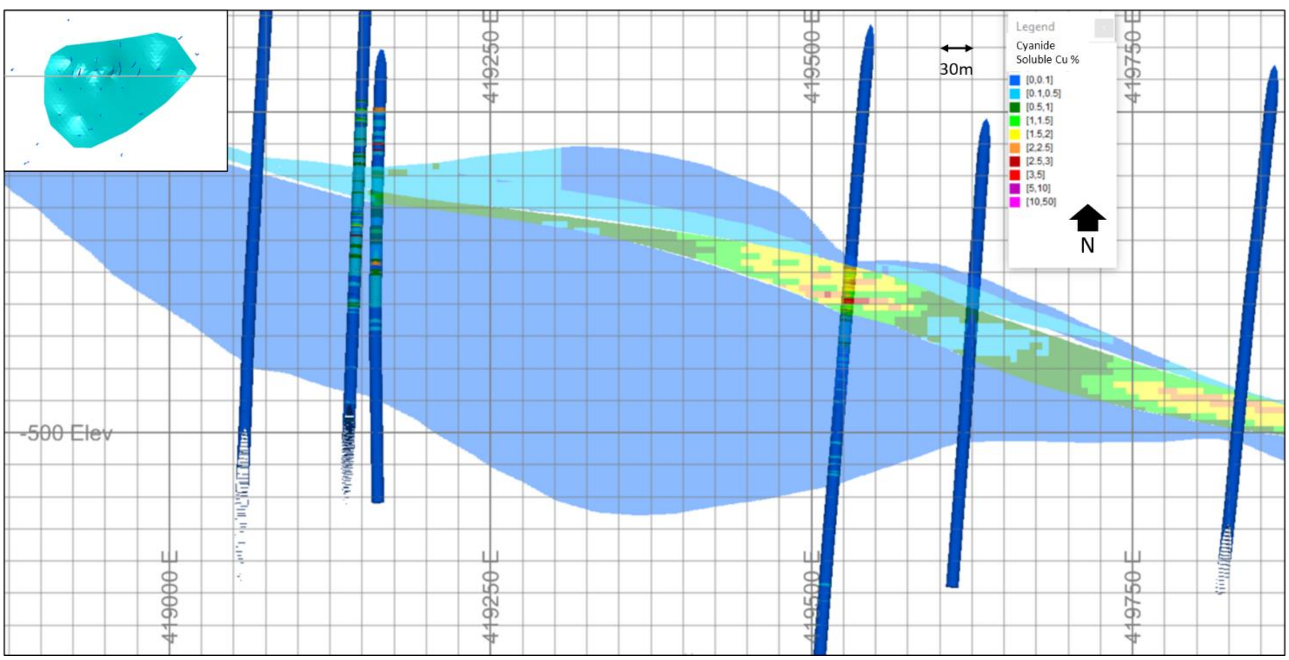


Figure 14-27: Texaco block model validation, cyanide soluble Cu, cross-section +/-50m width.

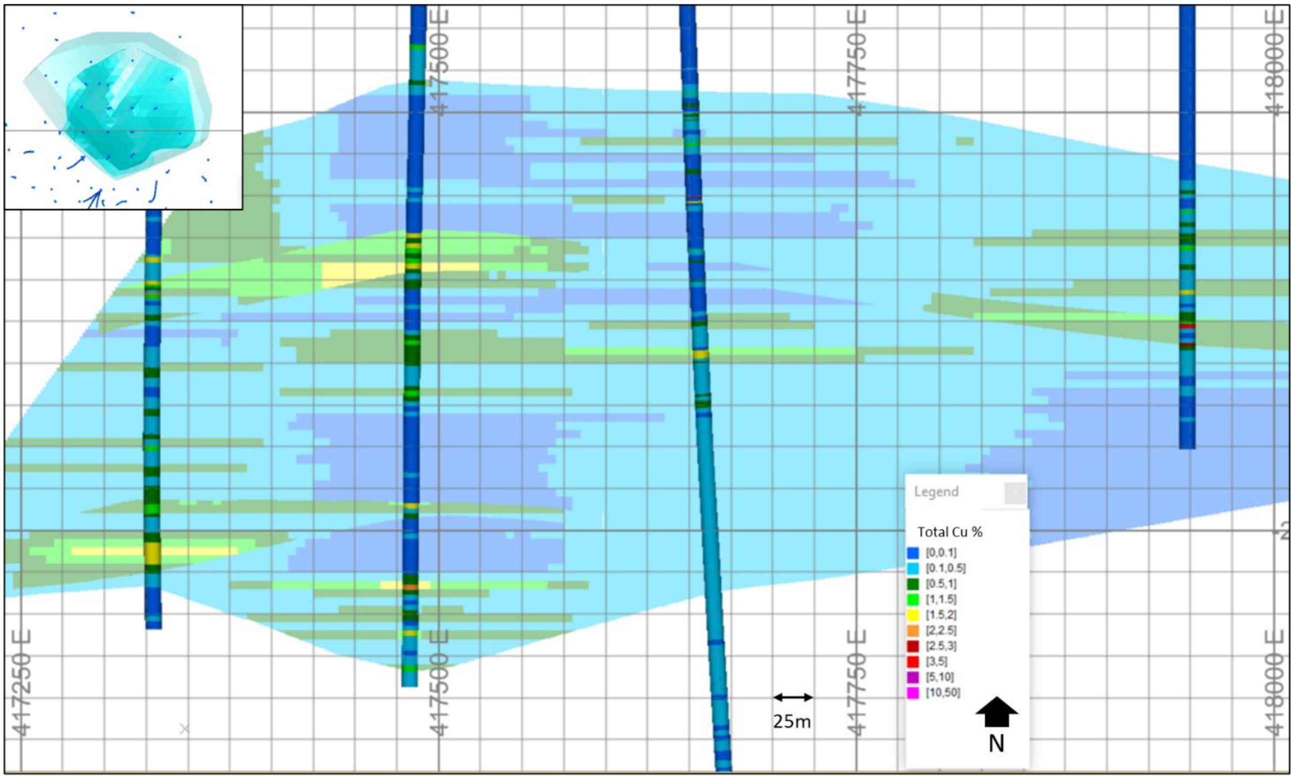


Figure 14-28: East Ridge block model validation, total Cu, cross-section +/-50m width.

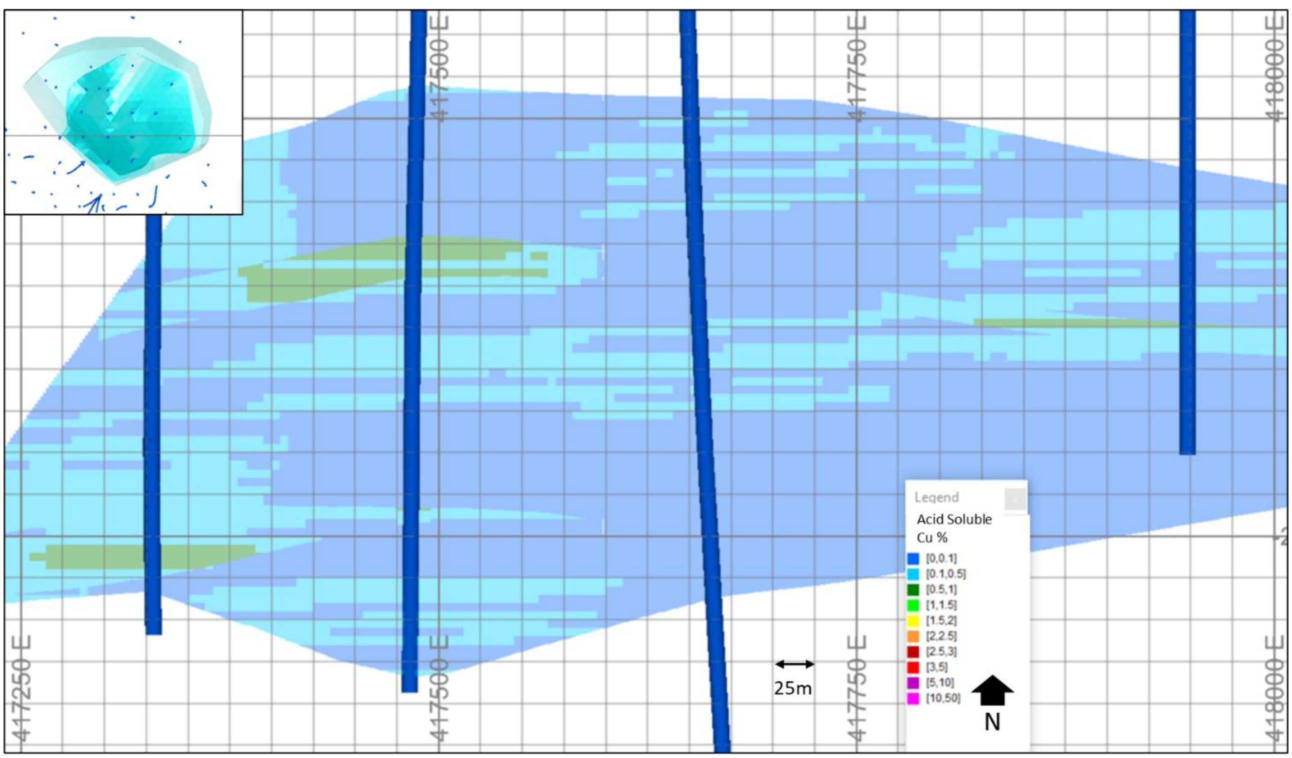


Figure 14-29: East Ridge block model validation, acid soluble Cu, cross-section +/-50m width.

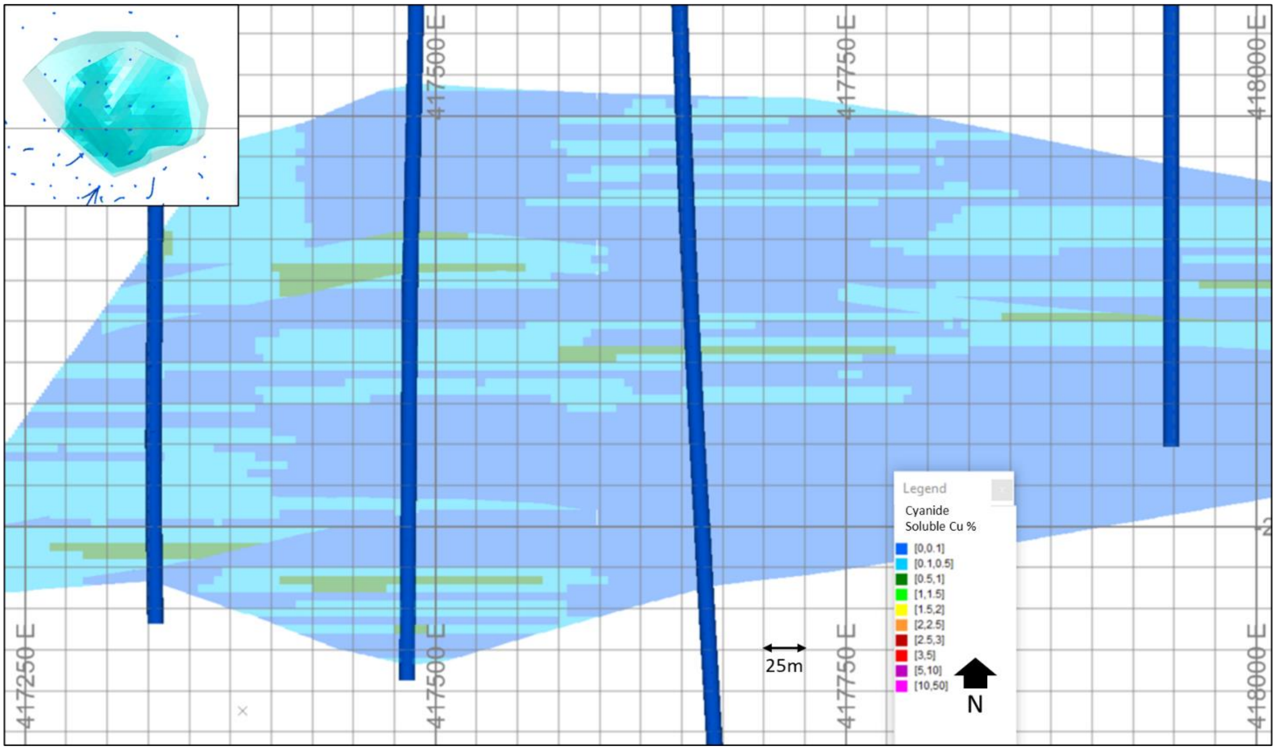


Figure 14-30: East Ridge block model validation, cyanide soluble Cu, cross-section +/- 50m width.

14.5.2 Swath Plots

A series of swath plots were generated for total Cu, acid soluble Cu, and cyanide soluble Cu from slices throughout each deposit for various domains. They compare the block model grades for NN, ID2, ID3, and OK to the drill hole composite grades to evaluate any potential local grade bias. A review of the swath plots did not identify bias in the model that is material to the Mineral Resource Estimate, as there was a strong overall correlation between the block model grade and the capped composites used in the Mineral Resource Estimate. Figure 14-31 and Figure 14-26 are the swath plots for Santa Cruz Deposit total Cu, acid soluble Cu, and cyanide soluble Cu, Figure 14-27 is for the Texaco Deposit, and Figure 14-28 is for the East Ridge Deposit.

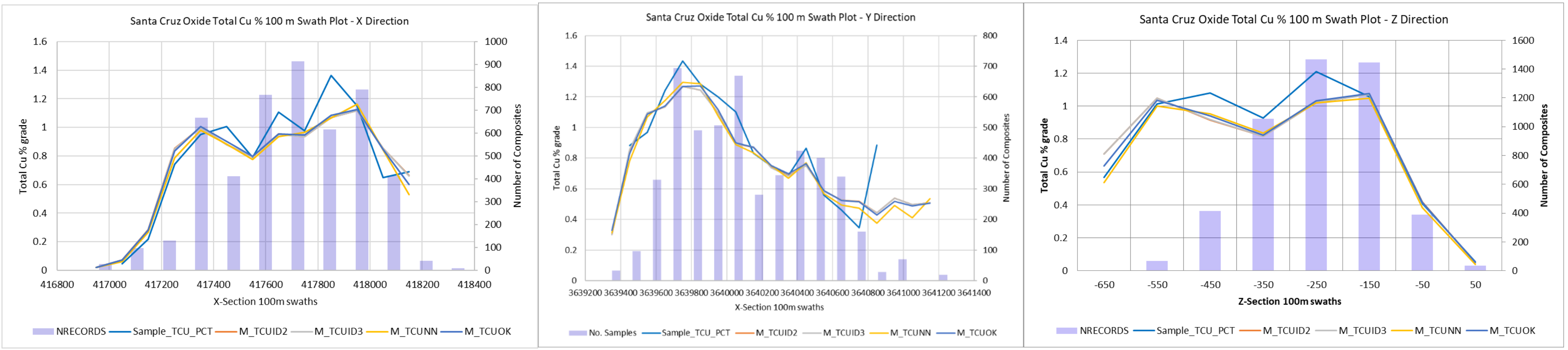


Figure 14-31: Santa Cruz Oxide domain swath plots, total Cu % in X, Y, and Z directions.

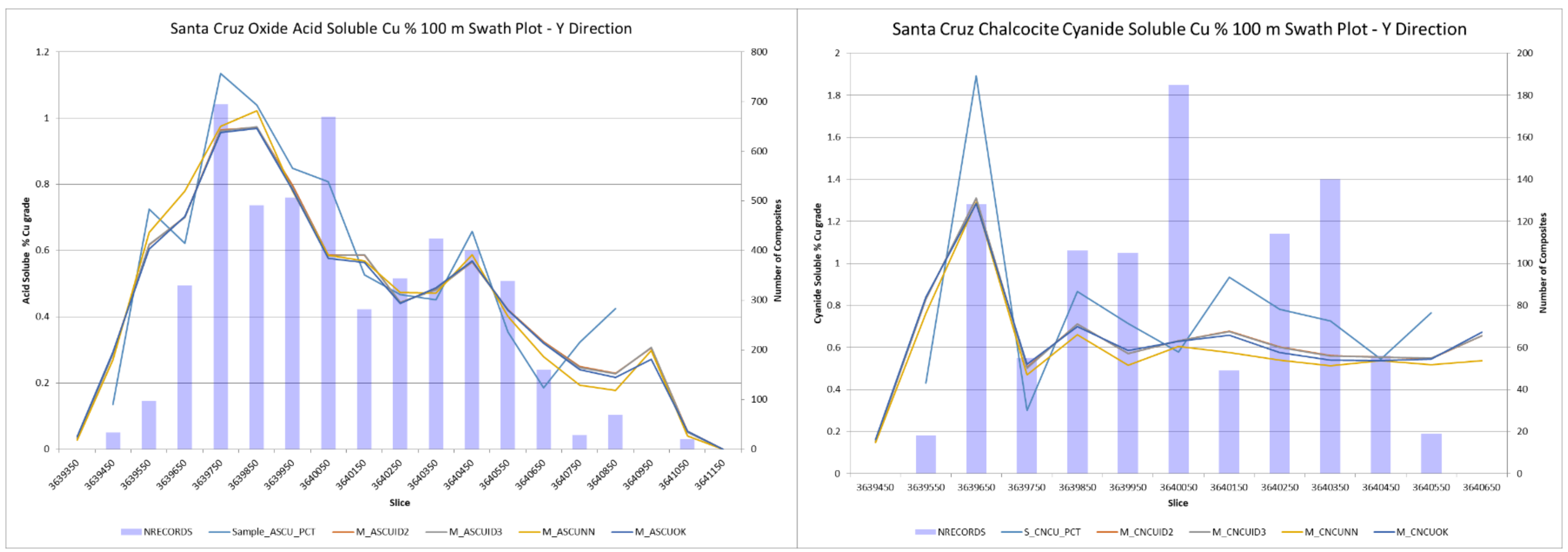


Figure 14-32: Santa Cruz Oxide and Chalcocite domain swath plots, acid soluble and cyanide soluble Cu %.

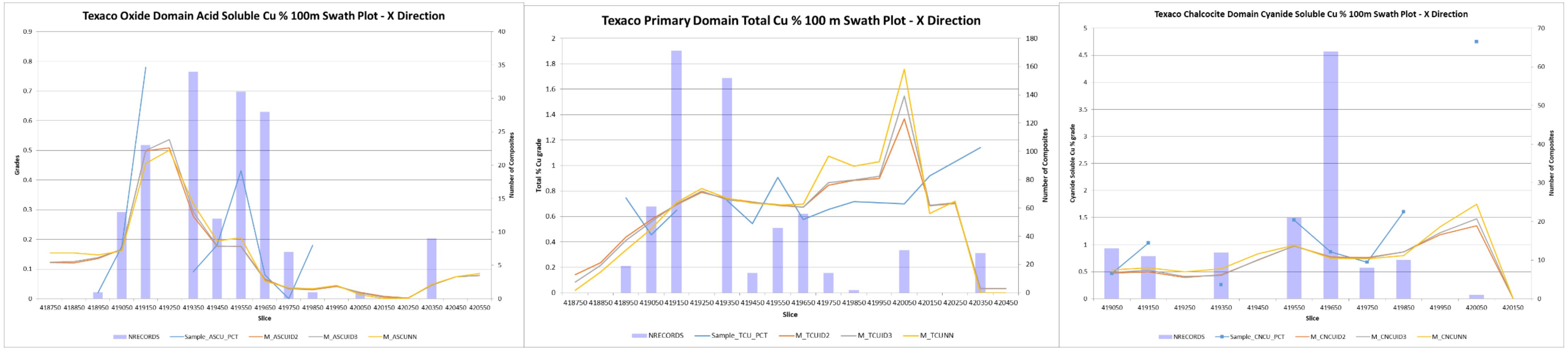


Figure 14-33: Texaco Primary Domain Swath plot, Total Cu %.

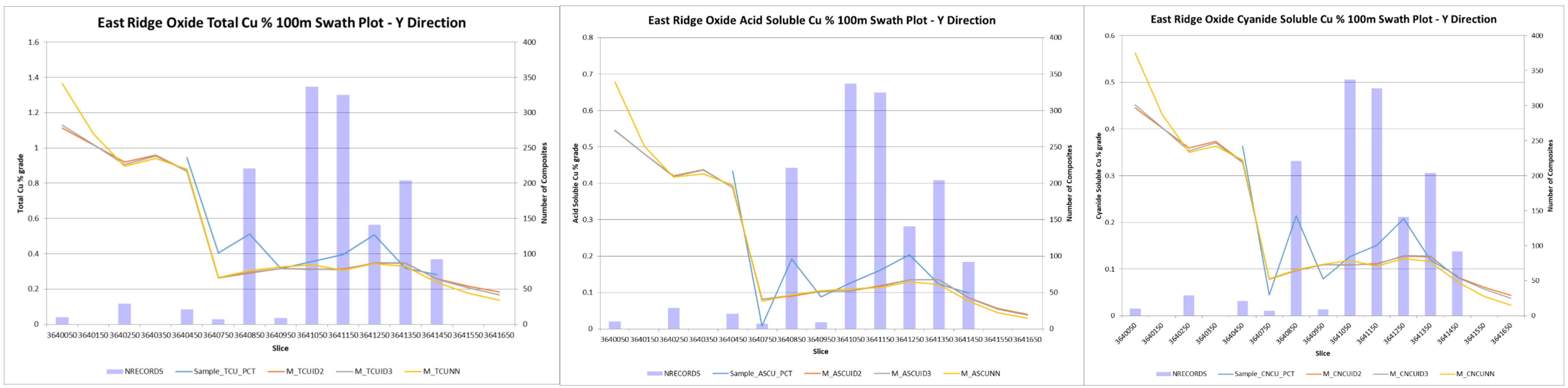


Figure 14-34: East Ridge Oxide Domain Total Cu, Acid Soluble, and Cyanide Soluble Swath Plots.

14.6 Mineral Resource Classification

The Mineral Resource Estimate was classified in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019). Mineral Resource classifications were assigned to broad regions of the block model based on the Nordmin QP's confidence and judgment related to geological understanding, continuity of mineralization in conjunction with data quality, spatial continuity based on variography, estimation parameters, data density, and block model representativeness.

Classification (Indicated and Inferred) was applied to the Santa Cruz, Texaco, and East Ridge Deposits based on a full review that included the examination of drill spacing, visual comparison, kriging variance, distance to nearest composite, and search volume estimation (the estimation pass in which each block was populated) along with the search ellipsoid ranges. Collectively this information was used to produce an initial classification script followed by manual wireframes application to further limit the mineral resource classification.

Figure 14-35 and Figure 14-36 demonstrate the resource classification in section throughout the Santa Cruz, Texaco, and East Ridge Deposits.

The areas of greatest uncertainty are attributed to Inferred Resources. These are areas with limited drilling or very large drill spacing (greater than 100 m). Due to lack of drilling density it is difficult to be confident in the continuity of mineralization and is therefore classified as Inferred and may be upgraded via infill drilling to support mineralization continuity. Indicated Resources are resources that have consistent drill spacing, low to moderate kriging variance and a visual comparison. In the Santa Cruz Deposit the drill spacing that supports the Indicated Resource classification constitutes approximately 80 m to 100 m. There is the possibility for Indicated Resources to be upgraded to Measured Resources via additional infill drilling that would reduce the drill spacing to < 25 m. Currently, none of the deposits have a Measured Resource. Additional uncertainty lies in the historical drill measurements including logging, assaying, and surveying. The 2021 twin drilling program conducted by IE outlined in Section 10.1.3 and 12.2 has demonstrated overall grade continuity, location, and continuity between intercepts. There is the potential for unknown errors within the database which could affect the size and quantity of Indicated, and Inferred Mineral Resources.

While most of the Texaco Deposit is classified as Inferred, there is a small portion of Indicated Resource. There are three IE drilled holes in Texaco which have served to prove depth, continuity, and grade of the historic drilling. The East Ridge Deposit is currently classified as Inferred as the area is defined by historical drilling which has yet to be validated with modern drilling. This work is forthcoming and will help to improve resource class confidence in subsequent iterations.

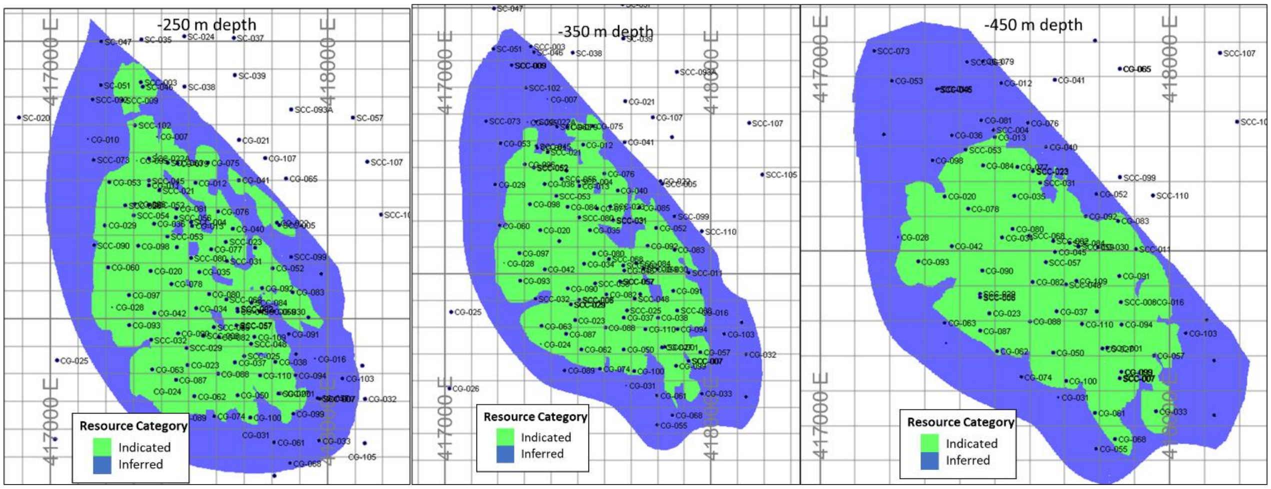


Figure 14-35: Plan section demonstrating resource classification,-250 m, -350 m, and -450 m depth, with north upward

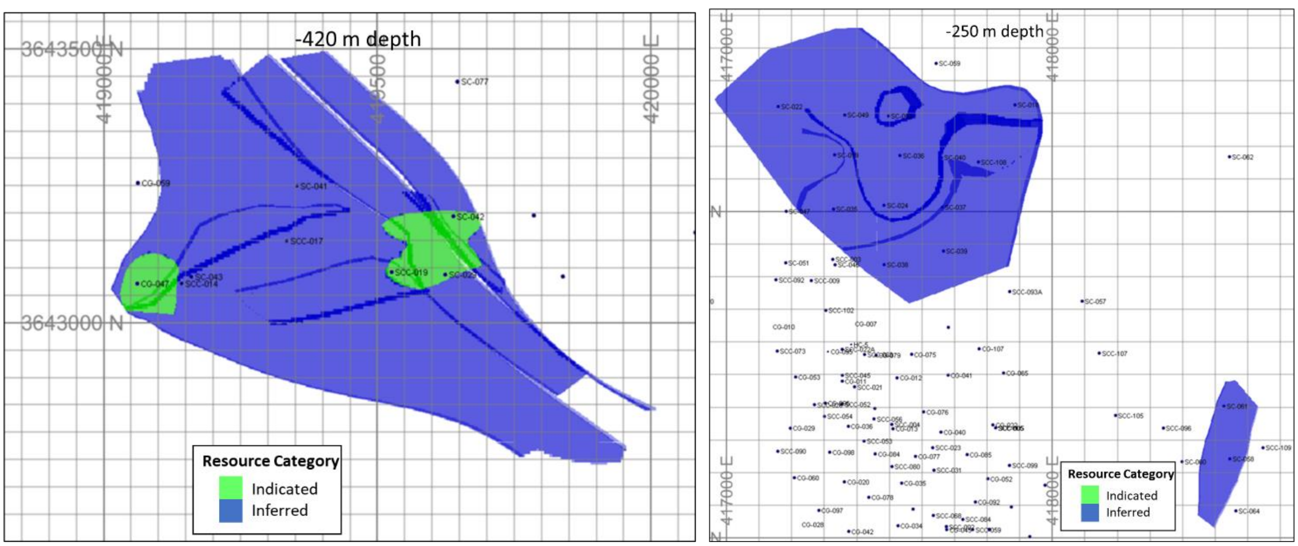


Figure 14-36: Texaco (left) and East Ridge (right) plan sections demonstrating resources classification, with north upward.

14.7 Copper Pricing

14.7.1 Energy Transition and the Global Demand for Copper

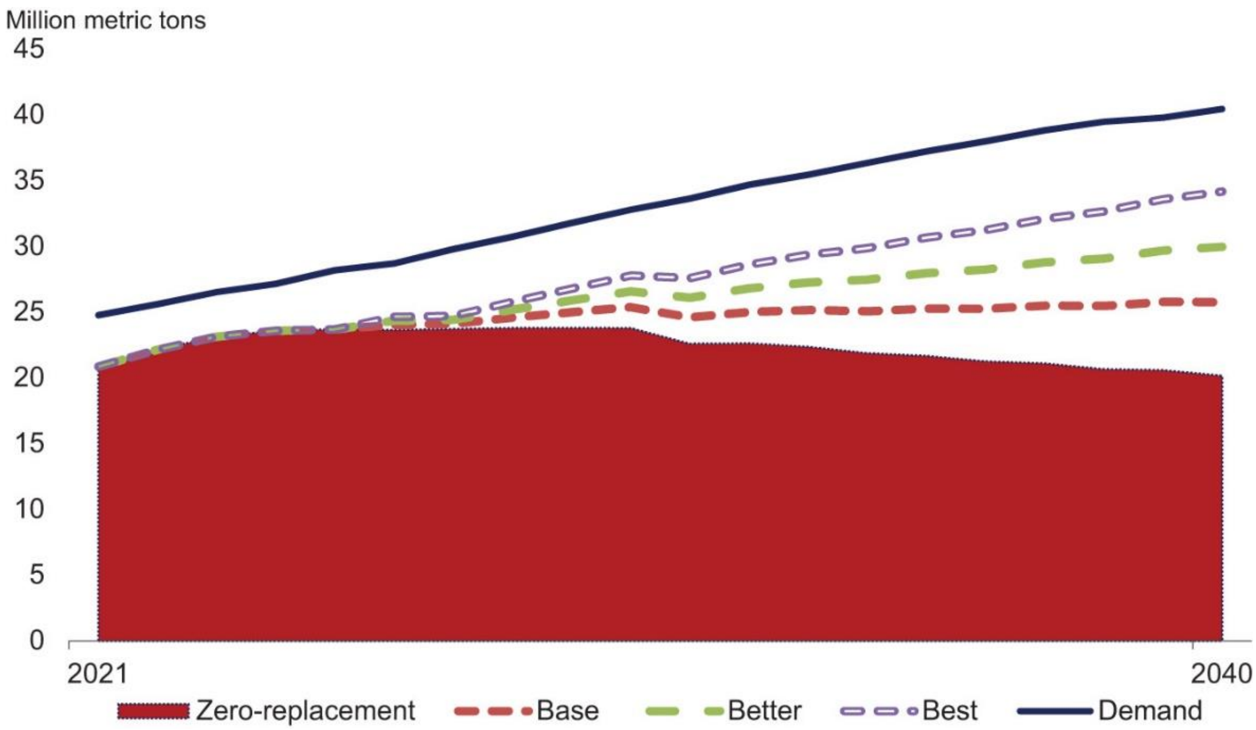
Driven by the demands of consumers, corporations, governments, investors and regulatory agencies, there is a global shift and increasing momentum away from fossil fuel-based systems of energy production to renewable energy sources to reduce global greenhouse gas emissions.

According to BloombergNEF's "Global Copper Outlook — 2022-2040", October 11, 2022 (the "October Copper Outlook Report"), the green energy transition is the key driver for future copper demand. BloombergNEF sees significant demand growth for this critical metal, increasing by 58% from 2022 to 2040, to 40 million tonnes.

14.7.2 Global Copper Supply

BloombergNEF projects a copper mine supply deficit of over 20 million tonnes by 2040, driven by a lack of near-term, large-scale permitted copper projects and growing demand (Figure 14-37).

BloombergNEF's best-case scenario, the "Best primary supply forecast scenario", forecasts that mined copper production will need to increase by 1 million tonnes annually to keep up with growing demand and grade declines at existing copper operations. The long lead times associated with new mine development contributes to the challenging outlook for copper supply growth.



Source: The October Copper Outlook Report.

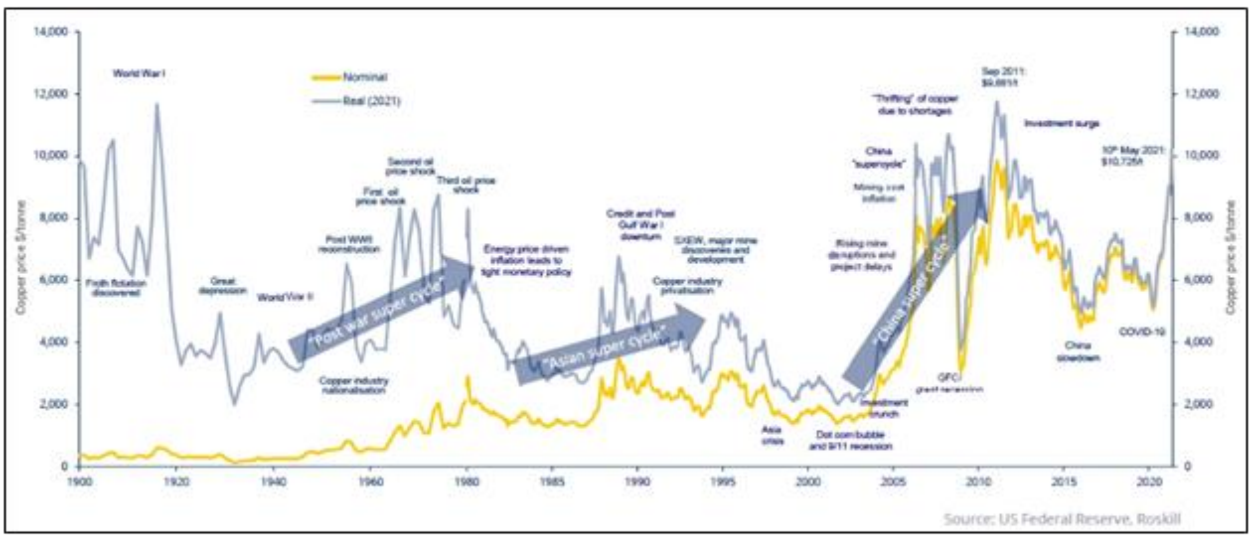
Figure 14-37: Estimated Long-Term Copper Supply and Demand

14.7.3 Copper Markets and Pricing

Copper trades on global metals exchanges, such as the London Metal Exchange ("LME") and COMEX (a division of the Chicago Mercantile Exchange). Most copper is produced in either copper cathode or copper concentrate. Copper cathodes are sheets made of 99.99% pure copper. Copper concentrates are powder containing 25-40% copper metal and sold to smelters or refiners that refine the concentrate into saleable products. Concentrates are often transported across the globe from miners to countries with smelting capacity that can refine the concentrate into cathode.

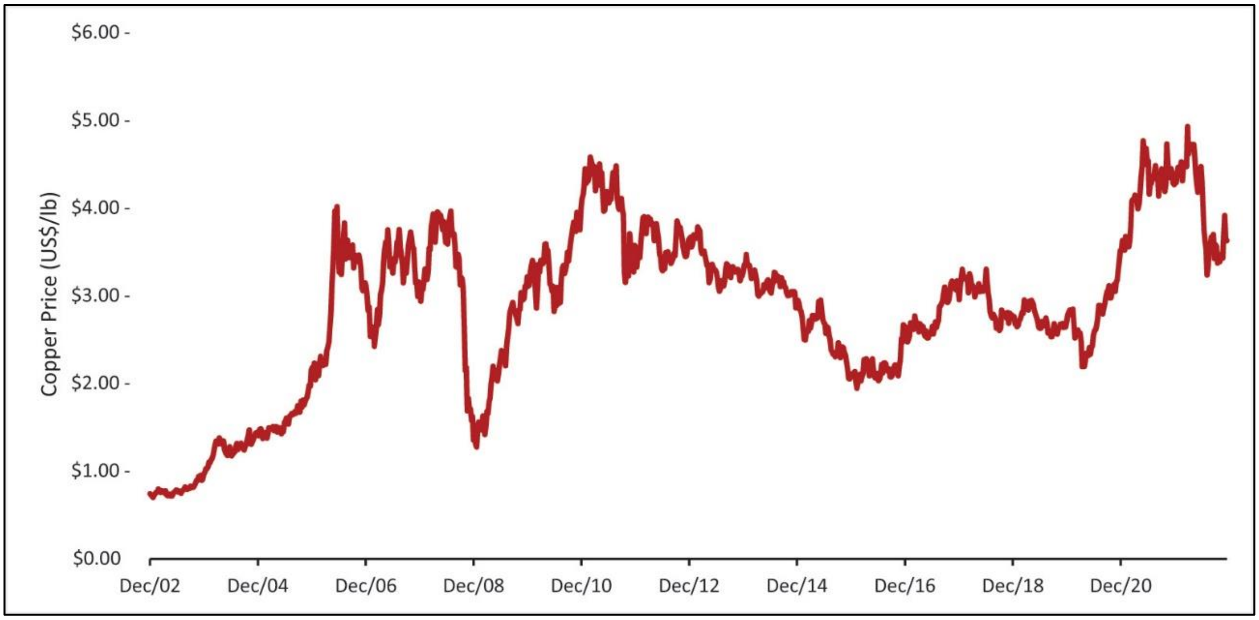
Copper prices have increased from a COVID-19 pandemic low of $2.12/lb on March 23, 2020, reaching a high of $4.93/lb in March 2022. The price of copper was $3.81/lb as on December 30, 2022. Copper prices are volatile and are affected by several factors. Copper prices are seen as a proxy for global economic activity and more recently have been influenced by prospects for new demand supporting a global transition to clean energy and enhanced electrification.

The graph in Figure 14-38 demonstrates the variability of the copper price over the last century, while Figure 14-39 shows the price over the past ten years.



Source: US Federal Reserve, Roskill.

Figure 14-38: A century of copper prices



Source: Copper prices from HG1 Commodity Quote reported by Bloomberg.

Figure 14-39: December 2002 — December 2022 Copper Price ($/lb).

Research analysts apply various assumptions on what the future holds when performing their copper price forecast analysis. Analysts consensus copper price forecast is shown in Table 14-17 below, noting their long-term forecasts range from $3.15/lb to $4.25/lb with a median of $3.75/lb.

Table 14-17: Consensus Copper Pricing 2023-2028 and Long Term.

Source: Bank of Montreal

STREET CONSENSUS COPPER PRICE ESTIMATES

Broker Name	2023	2024	2025	2026	2027	2028	LT
	(US$/lb)	(US$/lb)	(US$/lb)	(US$/lb)	(US$/lb)	(US$/lb)	(US$/lb)
Bank of America Merrill Lynch	$3.29	$4.03	$3.88	$3.73	$3.59	n.a.	$3.59
Barclays	3.03	3.00	3.10	n.a.	n.a.	n.a.	3.15
BMO Capital Markets	3.28	3.40	3.63	3.97	3.75	3.75	3.75
Canaccord Genuity	3.94	4.25	4.50	4.50	4.25	n.a.	4.25
CIBC World Markets	3.95	3.75	3.75	3.75	3.75	3.75	3.75
Cormark Securities	3.85	3.75	3.75	3.75	3.75	3.75	3.75
Credit Suisse	3.00	3.00	3.50	3.49	n.a.	n.a.	3.50
Desjardins Securities	3.50	3.80	n.a.	n.a.	n.a.	n.a.	n.a.
Deutsche Bank	3.31	3.99	4.22	n.a.	n.a.	n.a.	3.95
Echelon	3.90	3.90	n.a.	n.a.	n.a.	n.a.	n.a.
Eight Capital	4.00	4.25	4.50	4.25	3.75	n.a.	3.75

Haywood Securities	3.75	4.00	4.00	4.00	4.00	4.00	4.00
HSBC Securities	3.45	3.40	3.50	n.a.	n.a.	n.a.	3.15
Jefferies	3.29	4.31	5.00	5.50	5.50	n.a.	4.00
JP Morgan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.50
Laurentian Bank Securities	3.88	4.25	3.75	3.75	3.75	3.75	3.75
Macquarie Research	3.28	3.45	3.61	3.88	n.a.	n.a.	3.49
Morgan Stanley	3.35	3.97	4.08	4.08	4.08	4.08	4.08
National Bank Financial	3.40	3.50	3.60	3.50	3.50	3.50	3.50
Paradigm Capital	4.00	4.00	n.a.	n.a.	n.a.	n.a.	3.50
PI Financial	3.75	n.a.	n.a.	n.a.	n.a.	n.a.	3.75
Raymond James	4.25	3.50	3.50	3.50	3.50	3.50	3.50
RBC Capital Markets	3.75	3.75	4.00	4.00	3.50	3.50	3.50
Scotia Capital	3.75	4.00	4.50	5.00	n.a.	n.a.	3.50
Societe Generale	3.40	4.54	5.67	n.a.	n.a.	n.a.	n.a.
Stifel Canada	4.00	4.50	4.00	4.00	4.00	4.00	4.00
TD Securities	3.75	4.00	4.25	4.50	3.75	3.75	3.75
UBS	3.75	3.75	3.75	3.90	3.50	3.50	3.50
High	$4.25	$4.54	$5.67	$5.50	$5.50	$4.08	$4.25
Median	**3.75**	**3.94**	**3.88**	**3.97**	**3.75**	**3.75**	**3.75**
Average	3.62	3.85	4.00	4.06	3.87	3.74	3.68
Low	3.00	3.00	3.10	3.49	3.50	3.50	3.15

14.7.4 Commodity Price Projections

Mineral Resources were estimated based on a long-term copper price of $3.70/lb.

14.8 Reasonable Prospects of Economic Extraction

The Mineral Resource was created using Datamine Studio RMTM version 1.7.100.0 software to create the block models for the Santa Cruz, Texaco, and East Ridge Deposits, and Deswik.CADTM 2022.1 and Deswik.SOTM 4.1 for stope optimization.

To demonstrate reasonable prospects for economic extraction for the Santa Cruz, Texaco, and East Ridge Mineral Resource Estimates, representational minimum mining unit shapes were created using Deswik's minimum mining unit shape optimizer (MSO) tool. This MSO tool constrains and evaluates the block model based on economic and geometric parameters, shown in Table 14-18, generating potentially mineable shapes. The Santa Cruz Deposit was assumed to be developed as a long-life operation consisting of an underground longhole stoping plan, with an initial mining rate of 15,000 tonnes/day to produce a Cu concentrate. The Texaco Deposit was assumed to be a longhole stoping plan at 7,000 tonnes/day, while East Ridge was assumed to be a room & pillar plan at 3,500 tonnes/day. The Mineral Resource Estimate comprises of all material found within the MSO wireframes generated at a cut-off of 0.70% Cu for Santa Cruz, 0.80% Cu cut-off for Texaco, and 0.90% Cu cut-off for East Ridge, including material below cut-off.

Table 14-18: Input Parameter Assumptions

[1] See Section 14.7 for Copper Pricing Assumptions and Justification

* All prices in US$	Units	December 2022 MRE Santa Cruz 30m Longhole Flotation	Texaco 20m Longhole Flotation	East Ridge Room & Pillar Flotation
Key Criteria and Inputs				
Assumed Production	tonnes/day	15,000	7,000	3,500
Annual Tonnage	tonnes/year	5,250,000	2,450,000	1,225,000
Annual Cathode Production	tonnes Cu/year	30,104	4,836	7,945
	lbs Cu/year	66,366,176	10,662,107	17,516,319
% of Total	%	49.6%	17.4%	50.7%
Annual Copper in Concentrate	tonnes Cu/year	30,597	23,030	7,715
	lbs Cu/year	67,454,146	50,771,938	17,008,599
% of Total	%	50.4%	82.6%	49.3%
Copper Price	US$/lb	$ 3.70	$ 3.70	$ 3.70
Payable Copper	%	96.0%	96.0%	96.0%
On-site Costs				
Mining Costs - Direct	$/tonne Proc.	$24.50	$31.50	$40.00
Mining Costs - G&A	$/tonne Proc.	$4.00	$4.00	$4.00
Processing - Concentrator	$/tonne Proc.	$8.40	$8.40	$8.40
Refining - SX-EW	$/lb Cu Cath	$0.180	$0.180	$0.180
	$/tonne Proc.	$2.28	$1.50	$2.57
Processing - Laboratory/Water Treatment	$/tonne Proc.	$0.50	$0.50	$0.50
Processing - G&A Costs	$/tonne Proc.	$3.00	$3.00	$3.00
Total On-site Costs	**$/tonne Proc.**	**$42.68**	**$48.90**	**$58.47**
Off-site and Downstream Costs				
Cathode Shipping	$/tonne Proc.	$0.51	$0.17	$0.57
Concentrate Shipping	$/tonne Proc.	$1.259	$2.031	$1.361
Concentrate Smelting & Refining	$/tonne Proc.	$1.529	$2.466	$1.652
Total Off-site and Downstream Costs	**$/tonne Proc.**	**$3.29**	**$4.67**	**$3.58**
Royalties				
Average Royalties	**%NSR**	**6.96%**	**6.06%**	**5.00%**
	$/tonne Proc.	**$ 5.95**	**$ 5.08**	**$ 4.72**
Recoveries/Dilution				
Mining Dilution	%	0.0%	0.0%	0.0%
Mining Recovery	%	100.0%	100.0%	100.0%
Processing Recovery	%	94.0%	94.0%	94.0%
MRE Selected Copper Insitu Cut-off	**%**	**0.70%**	**0.80%**	**0.90%**

14.9 Mineral Resource Estimate

Due to a lack of sample data as well as a bias in sampling for acid soluble Cu and cyanide soluble Cu within the Primary Domain, it was determined that the acid soluble Cu and cyanide soluble Cu estimation within the Primary Domain was not representative of the actual cyanide soluble Cu within the domain and has been removed from all reports and totals. Acid soluble Cu and cyanide soluble Cu was determined to be accurate within the Exotic Domain, Oxide Domain, and Chalcocite Enriched Domain. The Mineral Resource Estimate can be found in Table 14-19.

14.9.1 Mineral Resource Estimate

Table 14-19: Mineral Resource Estimate

Classification	Deposit	Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Indicated	Santa Cruz (0.70% COG)	223,155	245,987	1.24	0.82	0.58	0.24	2,759	1,824	1,292	533	6,083
	Texaco (0.80% COG)	3,560	3,924	1.33	0.97	0.25	0.73	47	35	9	26	104
	East Ridge (0.90% COG)	0	0	0.00	0	0.00	0.00	0	0	0	0	0
Inferred	Santa Cruz (0.70% COG)	62,709	69,125	1.23	0.92	0.74	0.18	768	576	462	114	1,694
	Texaco (0.80% COG)	62,311	68,687	1.21	0.56	0.21	0.35	753	348	132	215	1,660
	East Ridge (0.90% COG)	23,978	26,431	1.36	1.26	0.69	0.57	326	302	164	137	718
TOTAL												
Indicated	**All Deposits**	**226,715**	**249,910**	**1.24**	**0.82**	**0.57**	**0.25**	**2,807**	**1,859**	**1,300**	**558**	**6,188**
Inferred	**All Deposits**	**148,998**	**164,242**	**1.24**	**0.82**	**0.51**	**0.31**	**1,847**	**1,225**	**759**	**466**	**4,072**

Notes on Mineral Resources

1. The Mineral Resources in this estimate were independently prepared by Christian Ballard, P.Geo. of Nordmin Engineering Ltd and the Mineral Resources were prepared in accordance with NI 43-101 and the CIM Definition Standards for Mineral Resources and Mineral Reserves (2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019).
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.
3. Verification included multiple site visits to inspect drilling, logging, density measurement procedures and sampling procedures, and a review of the control sample results used to assess laboratory assay quality. In addition, a random selection of the drill hole database results was compared with the original records.
4. The Mineral Resources in this estimate for the Santa Cruz, East Ridge, and Texaco Deposits used Datamine Studio RM™ software to create the block models.
5. The Mineral Resources are current to December 31, 2022.
6. Underground-constrained Mineral Resources for the Santa Cruz Deposit are reported at a cut-off grade of 0.70% total copper, Texaco Deposit are reported at a cut-off grade of 0.80% total copper and East Ridge Deposit are reported at a cut-off grade of 0.90% total copper. The cut-off grade reflects total operating costs to define reasonable prospects for eventual economic extracted by conventional underground mining methods with a maximum production rate of 15,000 tonnes/day. All material within mineable shape-optimized wireframes has been included in the Mineral Resource.

7. Underground mineable shape optimization parameters include a long-term copper price of $3.70/lb, process recovery of 94%, direct mining costs between $24.50-$40.00/processed tonne reflecting various mining method costs (long hole or room and pillar), mining general and administration cost of $4.00/tonne processed, onsite processing and SX/EW costs between $13.40-$14.47/tonne processed, offsite costs between $3.29 – $4.67/tonne processed, along with variable royalties between 5.00-6.96% NSR and a mining recovery of 100%.
8. Specific Gravity was applied using weighted averages by Deposit Sub-Domain.
9. All figures are rounded to reflect the relative accuracy of the estimates, and totals may not add correctly.
10. Excludes unclassified mineralization located along edges of the Santa Cruz, East Ridge, and Texaco Deposits where drill density is poor.
11. Report from within a mineralization envelope accounting for mineral continuity.
12. Total soluble copper means the addition of sequential acid soluble copper and sequential cyanide soluble copper assays. Total soluble copper is not reported for the Primary Domain.

14.9.2 Santa Cruz Mineral Resource Estimate

The Santa Cruz Deposit Mineral Resource Estimate is presented in Table 14-20.

Table 14-20: Santa Cruz Deposit Mineral Resource Estimate, 0.70% Total Cu CoG

Santa Cruz Deposit 0.70% Cu COG		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	**Domain**											
Indicated	Exotic	4,993	5,504	1.79	1.59	1.46	0.13	90	79	73	6	198
	Oxide	96,746	106,644	1.44	1.29	1.10	0.19	1,388	1,244	1,064	179	3,061
	Chalcocite Enriched	45,247	49,877	1.34	1.11	0.34	0.77	608	501	154	347	1,341
	Primary	76,169	83,962	0.88	N/A	N/A	N/A	673	N/A	N/A	N/A	1,484
Inferred	Exotic	5,690	6,273	1.61	1.28	1.17	0.11	91	73	67	6	201
	Oxide	43,252	47,678	1.23	1.02	0.88	0.14	532	411	379	62	1,172
	Chalcocite Enriched	5,779	6,371	1.25	1.07	0.28	0.79	72	62	16	46	159
	Primary	7,987	8,804	0.92	N/A	N/A	N/A	73	N/A	N/A	N/A	161
TOTAL												
Indicated	**All Domains**	**223,155**	**245,987**	**1.24**	**0.82**	**0.58**	**0.24**	**2,759**	**1,824**	**1,292**	**533**	**6,083**
Inferred	**All Domains**	**62,709**	**69,125**	**1.23**	**0.92**	**0.74**	**0.18**	**768**	**576**	**462**	**114**	**1,694**

Notes on Mineral Resources

1. Refer to notes on Table 14-19

14.9.3 Texaco Mineral Resource Estimate

The Texaco Deposit Mineral Resource Estimate is presented in Table 14-21.

Table 14-21: Texaco Deposit Mineral Resource Estimate, 0.80% Total Cu CoG

Texaco Deposit 0.80% Cu COG		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	Domain											
Indicated	Exotic	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Oxide	747	823	1.09	1.00	0.62	0.38	8	7	5	3	18
	Chalcocite Enriched	1,944	2,143	1.55	1.40	0.21	1.18	30	27	4	23	66
	Primary	869	958	1.05	N/A	N/A	N/A	9	N/A	N/A	N/A	20
Inferred	Exotic	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Oxide	7,536	8,307	1.27	1.24	1.09	0.14	96	93	82	11	211
	Chalcocite Enriched	19,763	21,785	1.44	1.29	0.25	1.03	285	254	50	204	628
	Primary	35,012	38,594	1.06	N/A	N/A	N/A	372	N/A	N/A	N/A	821
TOTAL												
Indicated	**All Domains**	**3,560**	**3,924**	**1.33**	**0.97**	**0.25**	**0.73**	**47**	**35**	**9**	**26**	**104**
Inferred	**All Domains**	**62,311**	**68,687**	**1.21**	**0.56**	**0.21**	**0.35**	**753**	**348**	**132**	**215**	**1,660**

Notes on Mineral Resources

1. Refer to notes on Table 14-19

14.9.4 East Ridge Mineral Resource Estimate

The East Ridge Deposit Mineral Resource Estimate is presented in Table 14-22.

Table 14-22 East Ridge Deposit Mineral Resource Estimate, 0.90% Total Cu CoG

East Ridge Deposit 0.90% Cu COG		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	Domain											
Indicated	Exotic	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Oxide	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Chalcocite Enriched	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Primary	0	0	0.00	N/A	N/A	N/A	0	N/A	N/A	N/A	0
Inferred	Exotic	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Oxide	23,978	26,431	1.36	1.26	0.69	0.57	326	302	164	137	718
	Chalcocite Enriched	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
	Primary	0	0	0.00	N/A	N/A	N/A	0	N/A	N/A	N/A	0
TOTAL												
Indicated	**All Domains**	**0**	**0**	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0**	**0**	**0**	**0**
Inferred	**All Domains**	**23,978**	**26,431**	**1.36**	**1.26**	**0.69**	**0.57**	**326**	**164**	**164**	**137**	**718**

Notes on Mineral Resources

1. Refer to notes on Table 14-19

14.10 Mineral Resource Sensitivity to Reporting Cut-off

The updated Santa Cruz, Texaco, and East Ridge Mineral Resource Estimates to a Cu (%) cut-off are summarized in Table 14-23, Table 14-24, and Table 14-25 across all interpolation methods.

Table 14-23: Mineral Resource Sensitivity for Santa Cruz Total Cu

Santa Cruz Deposit		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	**COG**									
Indicated	0.30%	438,378	483,228	0.88	0.34	0.14	3,862	1,483	608	8,514
Inferred	0.30%	277,102	305,452	0.60	0.22	0.06	1,659	613	154	3,658
Indicated	0.40%	387,905	427,592	0.95	0.37	0.15	3,682	1,448	598	8,118
Inferred	0.40%	169,542	186,888	0.76	0.34	0.08	1,288	572	143	2,839
Indicated	0.50%	338,866	373,536	1.02	0.41	0.17	3,458	1,404	583	7,623
Inferred	0.50%	104,653	115,360	0.96	0.51	0.13	1,005	534	133	2,215
Indicated	0.60%	279,596	308,201	1.12	0.48	0.20	3,126	1,353	562	6,892
Inferred	0.60%	78,033	86,016	1.11	0.64	0.16	864	498	124	1,904
Indicated	**0.70%**	**223,155**	**245,987**	**1.24**	**0.58**	**0.24**	**2,759**	**1,292**	**533**	**6,083**
Inferred	**0.70%**	**62,709**	**69,125**	**1.23**	**0.74**	**0.18**	**768**	**462**	**114**	**1,694**
Indicated	0.80%	179,905	198,312	1.35	0.69	0.27	2,432	1,233	491	5,362
Inferred	0.80%	51,794	57,093	1.33	0.82	0.20	689	426	101	1,519
Indicated	0.90%	144,115	158,860	1.48	0.81	0.30	2,128	1,171	436	4,692
Inferred	0.90%	42,840	47,223	1.43	0.91	0.21	614	389	88	1,355
Indicated	1.00%	119,293	131,497	1.59	0.93	0.32	1,892	1,106	386	4,172
Inferred	1.00%	36,856	40,627	1.52	0.97	0.22	559	357	79	1,232
Indicated	1.20%	83,837	92,415	1.79	1.14	0.37	1,502	958	310	3,312
Inferred	1.20%	26,055	28,721	1.70	1.10	0.24	443	287	61	977
Indicated	1.50%	53,218	58,663	2.05	1.33	0.45	1,089	705	241	2,401
Inferred	1.50%	14,892	16,416	1.99	1.29	0.30	296	193	44	652
Indicated	2.00%	21,736	23,960	2.51	1.53	0.65	547	332	142	1,205
Inferred	2.00%	5,935	6,542	2.43	1.59	0.37	144	95	22	318

Table 14-24: Mineral Resource Sensitivity for Texaco Total Cu

Texaco Deposit		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	COG									
Indicated	0.30%	9,609	10,592	0.83	0.12	0.31	80	11	30	177
Inferred	0.30%	182,697	201,389	0.77	0.10	0.17	1,411	176	303	3,111
Indicated	0.40%	8,564	9,440	0.89	0.12	0.34	77	11	29	169
Inferred	0.40%	162,879	179,543	0.82	0.10	0.18	1,342	167	290	2,958
Indicated	0.50%	7,441	8,202	0.96	0.14	0.39	71	10	29	158
Inferred	0.50%	135,652	149,530	0.90	0.12	0.20	1,218	158	273	2,685
Indicated	0.60%	5,688	6,270	1.09	0.17	0.49	62	10	28	136
Inferred	0.60%	105,215	115,979	1.00	0.14	0.24	1,051	147	249	2,317
Indicated	0.70%	4,297	4,737	1.23	0.22	0.62	53	9	27	117
Inferred	0.70%	82,390	90,819	1.10	0.17	0.28	903	140	232	1,991
Indicated	**0.80%**	**3,560**	**3,924**	**1.33**	**0.25**	**0.73**	**47**	**9**	**26**	**104**
Inferred	**0.80%**	**62,311**	**68,687**	**1.21**	**0.21**	**0.35**	**753**	**132**	**215**	**1,660**
Indicated	0.90%	3,106	3,423	1.40	0.26	0.80	44	8	25	96
Inferred	0.90%	47,899	52,799	1.32	0.26	0.41	631	124	198	1,391
Indicated	1.00%	2,705	2,982	1.47	0.28	0.87	40	7	24	88
Inferred	1.00%	37,071	40,863	1.43	0.31	0.48	528	115	179	1,165
Indicated	1.20%	2,037	2,246	1.59	0.28	1.00	32	6	20	71
Inferred	1.20%	22,788	25,119	1.63	0.42	0.61	372	96	138	821
Indicated	1.50%	932	1,027	1.88	0.20	1.26	18	2	12	39
Inferred	1.50%	12,162	13,406	1.90	0.54	0.65	231	65	79	509
Indicated	2.00%	251	276	2.26	0.08	1.21	6	0	3	13
Inferred	2.00%	4,239	4,672	2.25	0.74	0.65	95	32	27	210

Table 14-25: Mineral Resource Sensitivity for East Ridge Total Cu

East Ridge Deposit		Mineralized Material (ktonne)	Mineralized Material (kton)	Total Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Classification	COG									
Indicated	0.30%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.30%	159,015	175,284	0.62	0.25	0.25	987	392	397	2,175
Indicated	0.40%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.40%	107,999	119,049	0.75	0.31	0.31	809	338	334	1,785
Indicated	0.50%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.50%	75,452	83,172	0.88	0.39	0.37	664	292	277	1,464
Indicated	0.60%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.60%	56,069	61,806	1.00	0.46	0.42	558	255	234	1,230
Indicated	0.70%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.70%	41,496	45,741	1.12	0.53	0.47	464	221	195	1,023
Indicated	0.80%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	0.80%	31,172	34,361	1.24	0.61	0.52	387	190	163	852
Indicated	**0.90%**	**0**	**0**	**0.00**	**0.00**	**0.00**	**0**	**0**	**0**	**0**
Inferred	**0.90%**	**23,978**	**26,431**	**1.36**	**0.69**	**0.57**	**326**	**164**	**137**	**718**
Indicated	1.00%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	1.00%	18,886	20,818	1.47	0.76	0.62	277	143	117	612
Indicated	1.20%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	1.20%	11,995	13,223	1.69	0.90	0.71	202	108	86	446
Indicated	1.50%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	1.50%	6,142	6,771	2.02	1.11	0.87	124	68	53	274
Indicated	2.00%	0	0	0.00	0.00	0.00	0	0	0	0
Inferred	2.00%	2,223	2,450	2.58	1.44	1.12	57	32	25	127

14.11 Interpolation Comparison

Global statistical comparisons between the composite samples, NN estimates, ID2 estimates, ID3 estimates, and OK for various cut-off grades were compared to assess global bias, where the NN model estimates represent de-clustered composite data. Clustering of the drill hole data can result in differences between the global means of the composites and NN estimates. The OK method was used as the reporting estimation interpolation method for the Santa Cruz Deposit and the ID3 method was used for the East Ridge and Texaco Deposits. NN, ID2, ID3, and OK were estimated for validation purposes for all block models, as described in Section 14.4.8.

Table 14-26 (Santa Cruz Deposit), Table 14-27 (Texaco Deposit), Table 14-28 (East Ridge Deposit) demonstrate the total Cu interpolation comparison across ID2, ID3, NN, and OK (in the Santa Cruz Deposit) interpolation methods.

Table 14-26: Santa Cruz Interpolation Comparison

Cut-Off Total Cu %	Total Cu OK	Total Cu ID2	Total Cu ID3	Total Cu NN	Acid Soluble Cu OK	Acid Soluble Cu ID2	Acid Soluble Cu ID3	Acid Soluble Cu NN	Cyanide Soluble Cu OK	Cyanide Soluble Cu ID2	Cyanide Soluble Cu ID3	Cyanide Soluble Cu NN
0.30	0.82	0.81	0.81	0.82	0.31	0.31	0.31	0.35	0.11	0.12	0.12	0.16
0.60	1.26	1.24	1.25	1.27	0.59	0.60	0.60	0.63	0.21	0.22	0.22	0.27
0.70	1.45	1.42	1.42	1.45	0.74	0.74	0.74	0.77	0.26	0.27	0.27	0.32
0.80	1.61	1.58	1.58	1.61	0.87	0.88	0.88	0.91	0.29	0.31	0.31	0.35
1.00	1.90	1.85	1.85	1.90	1.13	1.14	1.13	1.16	0.33	0.35	0.35	0.39
1.50	2.27	2.21	2.21	2.28	1.41	1.41	1.41	1.44	0.38	0.39	0.39	0.44
2.00	2.66	2.57	2.58	2.62	1.70	1.70	1.70	1.71	0.47	0.48	0.48	0.53

Table 14-27: Texaco Interpolation Comparison

Cut-Off Total Cu %	Total Cu ID2	Total Cu ID3	Total Cu NN	Acid Soluble Cu ID2	Acid Soluble Cu ID3	Acid Soluble Cu NN	Cyanide Soluble Cu ID2	Cyanide Soluble Cu ID3	Cyanide Soluble Cu NN
0.30	0.84	0.84	0.86	0.11	0.11	0.11	0.19	0.19	0.20
0.50	0.96	0.97	1.01	0.12	0.13	0.13	0.23	0.23	0.24
0.70	1.21	1.23	1.31	0.18	0.19	0.19	0.34	0.34	0.36
0.80	1.34	1.37	1.47	0.22	0.23	0.23	0.41	0.41	0.44
0.90	1.45	1.50	1.61	0.26	0.27	0.28	0.47	0.48	0.52
1.00	1.57	1.63	1.77	0.31	0.32	0.32	0.54	0.55	0.59
1.50	2.19	2.34	2.73	0.56	0.58	0.57	0.86	0.90	1.05
2.00	2.69	2.94	3.70	0.76	0.79	0.79	0.95	1.01	1.26

Table 14-28: East Ridge Deposit Interpolation Comparison

Cut-Off Total Cu %	Total Cu ID2	Total Cu ID3	Total Cu NN	Acid Soluble Cu ID2	Acid Soluble Cu ID3	Acid Soluble Cu NN	Cyanide Soluble Cu ID2	Cyanide Soluble Cu ID3	Cyanide Soluble Cu NN
0.30	0.69	0.71	0.73	0.27	0.27	0.27	0.28	0.29	0.29
0.50	0.97	1.00	1.05	0.42	0.42	0.43	0.41	0.43	0.45
0.70	1.20	1.24	1.29	0.56	0.57	0.58	0.51	0.53	0.56
0.80	1.31	1.35	1.40	0.64	0.64	0.65	0.56	0.58	0.60
0.90	1.42	1.47	1.52	0.71	0.72	0.72	0.60	0.63	0.65
1.00	1.51	1.56	1.63	0.77	0.78	0.79	0.64	0.67	0.70
1.50	2.04	2.15	2.17	1.16	1.17	1.13	0.88	0.93	0.94
2.00	2.59	2.75	2.71	1.53	1.55	1.43	1.13	1.20	1.18

14.12 Factors That May Affect the Mineral Resources

Areas of uncertainty that may materially impact the Mineral Resource Estimates include:

- changes to long term metal price assumptions;
- changes to the input values for mining, processing, and G&A costs to constrain the estimate;
- changes to local interpretations of mineralization geometry and continuity of mineralized Sub-Domains;
- changes to the density values applied to the mineralized zones;
- changes to metallurgical recovery assumptions;
- changes in assumptions of marketability of the final product;
- variations in geotechnical, hydrogeological and mining assumptions;
- changes to assumptions with an existing agreement or new agreements;
- changes to environmental, permitting, and social license assumptions; and
- Logistics of securing and moving adequate services, labor, and supplies could be affected by epidemics, pandemics and other public health crises, including COVID-19, or similar such viruses.

14.13 Comparison to Previous Mineral Resource Estimates

A previous Mineral resource estimate was completed for the Santa Cruz Deposit on December 8, 2021. This mineral resource estimate did not include resource estimates for the East Ridge and Texaco Deposit. The updated Santa Cruz project mineral resource estimate is the result of a significant ongoing drilling program at each of the Santa Cruz, East Ridge, and Texaco Deposits. The drilling program was focused on the following:

- Target the higher-grade areas (greater than 1.2% copper) to confirm copper grades outlined within the 2021 Mineral Resource
- Expand the higher-grade copper areas with a strong focus on the Exotic, Oxide and Chalcocite domains.
- Target the structural controls that influence the higher-grade copper domains.
- Complete various "twin holes" in proximity to historical drilling which can be compared (geologically, structurally, geochemically, etc.) to each other to determine if significant geological and sampling bias exists.
- Upgrade high-grade Inferred Mineral Resources to the Indicated category.
- At East Ridge and Texaco, confirm the higher-grade historical intercepts and determine if the higher-grade areas could be expanded.

Figure 14-40 below outlines the differences between the December 8, 2021, mineral resource estimate and the December 31, 2022 Mineral Resource Estimate.

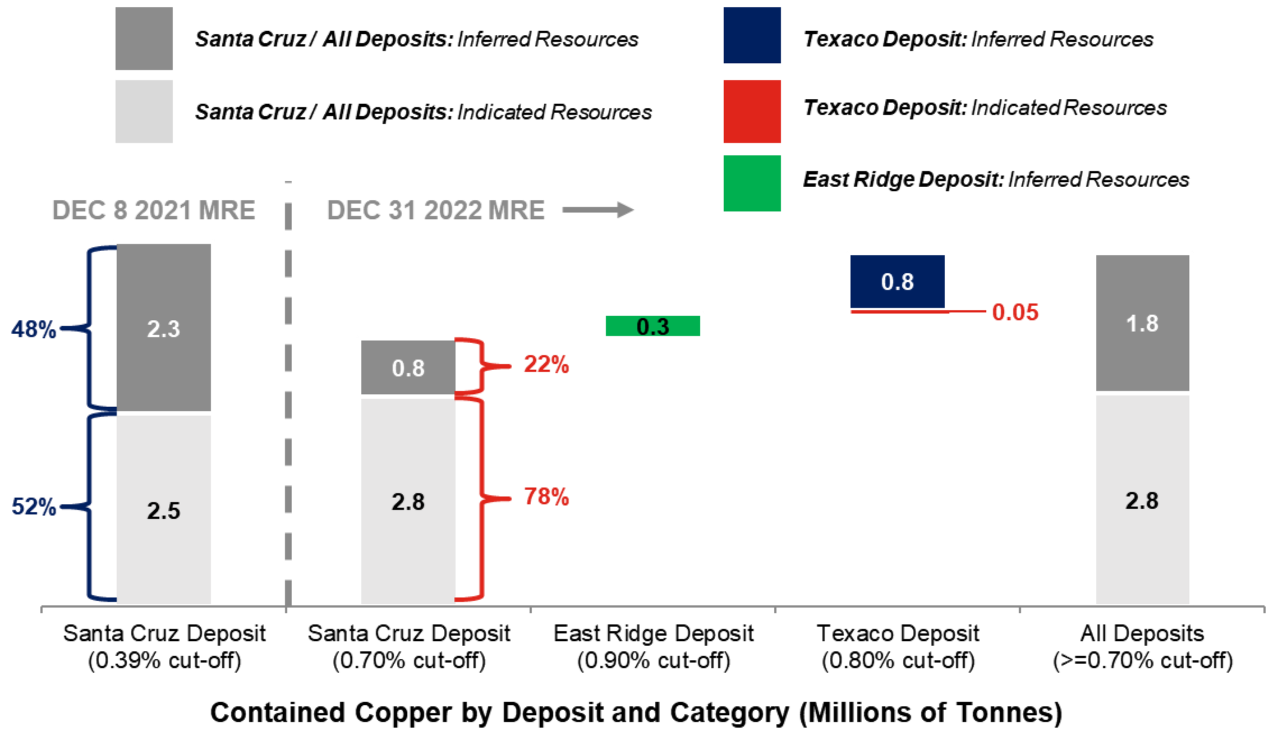


Figure 14-40: Santa Cruz Project comparing the December 8, 2021 Mineral resource estimate and the December 31, 2022 Mineral Resource Estimate.

14.14 Nordmin's QP Opinion

The QP is not aware of any environmental, legal, title, taxation, socio to economic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Resources that are not discussed in this Technical Report.

The QP is of the opinion that the Mineral Resources were estimated using industry accepted practices and conforms to the 2014 CIM Definition Standards and 2019 CIM Best Practice Guidelines. Technical and economic parameters and assumptions applied to the Mineral Resource Estimate are based on parameters received from IE and reviewed within the Nordmin technical team to determine if they were appropriate.

15 MINERAL RESERVE ESTIMATE

This section is not relevant to this Technical Report.

16 MINING METHODS

This section is not relevant to this Technical Report.

17 RECOVERY METHODS

This section is not relevant to this Technical Report.

18 PROJECT INFRASTRUCTURE

This section is not relevant to this Technical Report.

19 MARKET STUDIES AND CONTRACTS

This section is not relevant to this Technical Report.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section is not relevant to this Technical Report.

21 CAPITAL AND OPERATING COSTS

This section is not relevant to this Technical Report.

22 ECONOMIC ANALYSIS

This section is not relevant to this Technical Report.

23 ADJACENT PROPERTIES

The Cactus Project in Pinal County, Arizona, is owned by the Arizona Sonoran Copper Company (ASCU). The Project includes the past producing Sacaton open pit mine and stockpile and further land holdings. The Cactus Project is located approximately 9.4 km northeast of IE's Santa Cruz Project.

The QP has been unable to verify the geology and mineralization on the adjacent Cactus Project.

24 OTHER RELEVANT DATA AND INFORMATION

This section is not relevant to this Technical Report.

25 INTERPRETATION AND CONCLUSIONS

25.1 Introduction

Nordmin notes the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Technical Report.

25.2 Mineral Tenure, Surface Rights, Royalties, and Agreements

The Santa Cruz Project is located 11 km west of the town of Casa Grande, Arizona, and is approximately a one hour drive south of the capital city, Phoenix. The centroid is approximately -111.88212, 32.89319 (WGS84) in Township 6 S, Range 4E, Section 13, Quarter C.

The Santa Cruz exploration area covers 47.71 $km^{2,}$ including 25.79 km^2 of private land, 2.6 km^2 of Stockraising Homestead Act (SRHA) lands, and 238 unpatented claims, or 19.32 km^2 of BLM land.

The Santa Cruz Project lies primarily on private land, which is dominantly split estate surface and minerals. IE holds an option on the purchase of the mineral estate, while holding an exclusive agreement on surface use. Additional lands and rights were acquired by IE as options on private parcels and staking unpatented federal lode mining claims.

The agreement with DRHE provides that IE (by way of assignment from CAR) has the right, but not the obligation, to earn 100% of the mineral title in the fee simple mineral estate, 39 Federal Unpatented mining claims, and three small approximately 10-acre surface parcels, in cash or IE shares at DRHE election, over the course of three years, and is subject to the stipulations outlined in Section 4.3.

The agreement with DRHE also provides IE with a Right of First Refusal (ROFR) on certain surface parcels owned by Legend. This ROFR, reserved by DRHE when the property was sold to Legend in 2007, and this right is now part of the rights being sold to IE and affords a great deal of control on the destiny of the surface estate overlying the Santa Cruz Project.

The SUA with Legend Property Group allows for the exclusive use of the property for the purposes of drilling and geophysical testing, as well as granting a Right of First Offer (ROFO) on the sale of the property. Legend has granted these rights to IE (by way of assignment from CAR) for up to four years.

IE, by way of assignment and deed from CAR, holds 238 unpatented Federal Mining claims (Appendix A).
DRHE also holds 39 Federal unpatented mining claims in T06S R04E in N/2 Section 12, W/2 Section 23 and W/2 Section 24, which are subject to the option described in Section 4.1.1.

Royalties on future mineral development of the project are summarized in Section 4.3.

Current exploration is conducted on private land under the SUA with Legend. Disturbance to date has been minimal and permitting has consisted of filing Notices of Intent to Drill and to Abandon with the Arizona Department of Water Resources for each section of land on which drilling takes place. IE will obtain additional permits as required. Specific permits to construct and operate mine facilities would be determined as the design of the Project advances.

Existing and past land uses in the Project area and immediately surrounding areas include agriculture, residential home development, light industrial facilities, and mineral exploration, and development. Some dispersed recreation occurs in the area. The climate is dry and most of the Project area is flat, sandy, and sparsely vegetated. Portions of the Project area are in the 100-year flood plain of the North Branch of Santa Cruz Wash. Within the Project area, approximately 85 acres of land located approximately ¾ mile north of the intersection of N. Spike Road and W. Clayton Road was used during an in situ leaching project in 1991. A Phase 1 ESA was conducted on the Project area (Civil & Environmental Consultants 2021).

There is a large private land package covering the Project area and area of known mineralization. This private land position could result in reduced permitting time relative to projects that are required to undergo the NEPA process. The precise list of permits required to authorize construction and operation of this Project will be determined as the mining and processing methods are designed. If NEPA and other federal permitting is avoided, required permits would be administered by Arizona State, Pinal County, and Casa Grande authorities.

The permit approval process for some permits includes review and approval of the process design. Thus, the project design must be substantially advanced to support application for those permits. These technical permits typically represent the “longest lead” permits. Technical permits with substantial technical design needed as part of their applications, and the issuing agencies are anticipated to include:

- Reclamation Plan approval (Arizona State Mine Inspector)
- Water permits
- Aquifer Protection Permit (ADEQ)
- Air Quality Operating Permit (Pinal County)

The 2021 Phase 1 ESA study found no previously unmitigated environmental liabilities associated with the Santa Cruz Project. At the effective date of this Technical Report, IE held access agreements for diamond drilling. Further permitting will be acquired as necessary.

25.3 Geology and Mineral Resource Modelling

The Santa Cruz Project is comprised of five separate areas along a southwest-northeast corridor. These areas from southwest to northeast are known as the Southwest Exploration Area, the Santa Cruz Deposit, the East Ridge Deposit, the Texaco Ridge Exploration Area, and the Texaco Deposit, all of which represent a portion of a large porphyry copper system separated by extensional Basin and Range normal faults. Each area has experienced variable periods of erosion, supergene enrichment, fault displacement, and tilting into their present positions.

The bedrock geology at the Santa Cruz Project is dominated by Oracle Granite with lesser Proterozoic Diabase intrusions and Laramide porphyry intrusions. There are three main types of copper mineralization found within the Santa Cruz Project: primary hypogene sulphide mineralization which consists of primary cu-sulphide minerals; secondary supergene sulphide mineralization which consists of dominantly chalcocite; and secondary supergene oxide mineralization which consists of mainly atacamite and chrysocolla. Modelling of the Santa Cruz Deposit was divided into four main Cu domains which represent different subcategories of Cu mineralization: the Exotic Domain, Oxide Domain, Chalcocite Enriched Domain, and Primary Domain. The Santa Cruz Deposit contains all 4 domains, whereas the Texaco Deposit contains no exotic copper, and the East Ridge Deposit only consists of the Oxide Domain (primarily acid soluble Cu).

The Santa Cruz Deposit Mineral Resource Estimate was created from the main drill hole database containing 116,388 m of diamond drilling in 129 drill holes, while the Texaco MRE was created from 23 drill holes totaling 21,289 m, and the East Ridge MRE comprises of 18 holes totaling 15,448 m. All drill holes were drilled between 1964 and 2022. Table 25-1 displays the total drilling by deposit. Historic diamond drill hole samples were analyzed for total Cu and acid soluble Cu using AAS. Later samples were re-analyzed for cyanide soluble Cu (AAS) and molybdenum (ICP). The Company currently analyzes all samples for total Cu, acid soluble Cu, cyanide soluble Cu, and molybdenum. Due to the re-analyses to determine cyanide soluble Cu within historic samples, there are instances where cyanide soluble Cu is greater than total Cu. It has been determined that the historic cyanide soluble assays are valid as they align with recent assays in 2022 drill holes.

Table 25-1: Drill Hole Summary

	Total Drilling			Ivanhoe Electric Drilling		
Deposit	Number of Drill Holes	Meters	Meters Intersecting the Deposit	Number of Drill Holes	Meters	Meters Intersecting the Deposit
Santa Cruz	129	116,388	57,326	41	34,769	14,172
East Ridge	18	15,448	1,501	0	0	0
Texaco	23	21,289	2,661	3	3,286	685
Total	**170**	**153,125**	**61,488**	**44**	**38,055**	**14,857**

Geological domains were developed within the Santa Cruz project based upon geographical, lithological, and mineralogical characteristics, along with incorporating both regional and local structural information; local D2 fault structures separate the mineralization at the adjacent Santa Cruz and Texaco Deposits. The Santa Cruz, Texaco, and East Ridge Deposits were divided into four main geological domains based upon their type of Cu speciation, specifically acid soluble (Oxide Domain), cyanide soluble (Chalcocite Enriched Domain), primary Cu sulphide (Primary Domain), and exotic Cu (Cu oxides in overlying Tertiary sediments).

Once a geologic interpretation was established, wireframes were created. When not cut-off by drilling, the wireframes terminate at either the contact of the Cu-oxide boundary layer, the Tertiary sediments/Oracle Granite contact, or the D2 fault. There is an overlap of the Chalcocite Enriched Domain with both the Oxide Domain in the weathered supergene and with the Primary Domain in the primary hypogene mineralization. Otherwise, no wireframe overlapping exists within a given grade domain. Implicit modelling was completed in Leapfrog Geo™ which produced reasonable mineral domains that appropriately represent the known controls on grade mineralization.

A block model for each deposit was created that incorporated lithological, structural, and mineralization trends. Each block model was fully validated.

Nordmin feels that the interpreted geological and mineralization domains produced accurately represents the deposit style of the Santa Cruz, Texaco, and East Ridge Deposits.

The Mineral Resource Estimate for the Project conforms to industry best practices and is reported using the 2014 CIM Definition Standard for Mineral Resources and Mineral Reserves and 2019 CIM Best Practice Guidelines. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

This estimate of Mineral Resources may be materially affected by environmental permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.

25.4 Exploration, Drilling, and Analytical Data Collection in Support of Mineral Resource Estimation

The exploration programs completed by IE, and previous operators are appropriate for the deposit style. The programs delineated the Santa Cruz, Texaco, and East Ridge Deposits. Diamond drilling indicates the potential to further define and potentially expand on known exploration targets.

The quantity and the quality of lithological, collar, and downhole survey data collected in the various exploration programs by various operators are sufficient to support the Mineral Resource Estimate. The sampling is representative of total Cu, acid soluble Cu, cyanide soluble Cu, and molybdenum data in the Santa Cruz, Texaco, and East Ridge Deposits reflecting areas of higher and lower grades, which has been confirmed by 2021 and 2022 diamond drill hole twinning of historic, high-grade drill holes. The twin-hole analysis compared the collar locations, downhole surveys, logging (lithology, alteration, and mineralization), sampling, and assaying between the two groups to determine if the historical holes had valid information and would not be introducing a bias within the geological model or Resource Estimate. Nordmin was able to match most of the intervals for each of the pairs and plotted the grades for Cu, Cu-SEQ, and Mo. In Nordmin's opinion, for most of the pairs, the assay results compared very well; the high-grade (HG) and low-grade (LG) zones were similar, and the grades tended to cluster in the same local ranges. In Nordmin's opinion, the twinning has provided a reasonably consistent verification of the earlier Hanna-Getty and ASARCO drill results across all deposits, particularly considering the differences in the assay, survey methods, and QA/QC protocols. Nordmin considered the QA/QC protocols in place for the Project to be acceptable and in line with standard industry practice. Based on the data validation and results of standard, blank, and duplicate analyses, Nordmin is of the opinion that the assay and SG databases are of sufficient quality for the creation of a Mineral Resource Estimate for the Project.

Nordmin is not aware of any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results. In Nordmin's opinion the drilling, core handling, logging, and sampling procedures meet or exceed industry standards, and are adequate for the purpose of Mineral Resource Estimation.

25.5 Metallurgy and Processing

Mineralized material from the Santa Cruz Deposit was evaluated by the CGCC Hanna-Getty JV, by the SCJV in conjunction with the Department of the Interior Bureau of Mines (subsequently Bureau of Reclamation). Currently and by IE in 2022/2023.

The Hanna Mining Company, a large miner of iron ore and coking coal, began feasibility studies on the Santa Cruz Deposit in 1976. Their studies continued until 1982 and consisted of flotation, grinding, and leaching studies. Tests consisted of all agitated tank leach approach (91% total Cu recovery to cathodes), all-float approach (92% total Cu recovery to cathodes or a mixture of cathodes and saleable Cu concentrates), and a leach float process (94% Cu recovery to cathodes or to a mixture of cathodes and saleable Cu concentrates). Hanna Mining selected to move forward with the latter of these methods. This flow sheet was evaluated using a blended composite sample based on the developed mine plan. The blended composite was produced from composite samples of the major ore types in the resource that represented the resource at the time (high-grade supergene, supergene dilution, low-grade supergene, mixed chalcocite/chalcopyrite, primary chalcopyrite, exotic ore, and exotic ore dilution types.)

Leach-float testing was performed on this composite and design parameters estimating operating and capital costs were produced. The test programs would be acceptable for a PEA level program, but not for a PFS or FS level study due to lack of significant variability flotation testing of the Santa Cruz Deposit.

BLM, ASARCO, and Freeport McMoRan conducted an in situ sulphuric acid leach study with 2-inch diameter by 2.5-inch-long pieces of diamond drill core from the proposed in situ leach zone in the pilot program. Reported Cu recoveries ranged from 57% to 90%. Total Cu ranged from 2.3% to 9%. The conclusion from this program, that was completed in 1996-1997, demonstrated that in situ leaching was not economically practical using the Cu price in 1996 for this type of mineralization. With the increased geological and geochemical understanding of the mineralization, further in situ leaching studies are warranted with Project progression.

IE is performing testing at a PEA level to investigate the leach-float and heap leach flow sheets. Progress has been made on the leach-float flow sheet. A composite sample of new drill core from Oxide and Chalcocite Mineral Domains was collected. Testing on this composite in 2022-2023 has confirmed the 94% total copper recovery from the leach-float flow sheet developed in 1980 is practical with some minor changes in the material grind sizes for leaching and flotation from the 1980 flow sheet. A heap leach testing program was developed; heap leach column cell composite samples (2) of material from the Oxide and Chalcocite mineral domains have been collected and some preliminary bottle roll testing has been conducted to establish potential parameters to test in the column cells.

There are no processing factors or deleterious elements that could significantly affect economic extraction. Current and historically proposed processes for the extraction of Cu ore are all conventional in design and have been used economically for many decades. Advances in most technology since the 1980s when these studies were conducted has improved the economics of the proposed methods.

25.6 Mineral Resource Estimate

The Mineral Resource Estimate for the Project conforms to industry best practices and is reported using the 2014 CIM Definition Standard for Mineral Resources and Mineral Reserves and 2019 CIM Best Practice Guidelines. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.

Mineral Resource Classification was assigned to broad regions of the Santa Cruz, Texaco, and East Ridge Deposit block models based on the Nordmin QP's confidence and judgment related to several factors as defined in Section 11.

To demonstrate reasonable prospects for eventual economic extraction for the Santa Cruz, Texaco, and East Ridge Mineral Resource Estimates, representational minimum mining unit shapes were created using Deswik's minimum mining unit shape optimizer (MSO) tool.

The Santa Cruz Project Mineral Resource Estimate is presented in Table 25-2.

Table 25-2: Mineral Resource Estimate for Santa Cruz, Texaco, and East Ridge Deposits.

Classification	Deposit	Mineralized Material (ktonne)	Mineralized Material (ktonne)	Total Cu (%)	Total Soluble Cu (%)	Acid Soluble Cu (%)	Cyanide Soluble Cu (%)	Total Cu (ktonne)	Total Soluble Cu (ktonne)	Acid Soluble Cu (ktonne)	Cyanide Soluble Cu (ktonne)	Total Cu (Mlb)
Indicated	Santa Cruz (0.70% COG)	223,155	245,987	1.24	0.82	0.58	0.24	2,759	1,824	1,292	533	6,083
	Texaco (0.80% COG)	3,560	3,924	1.33	0.97	0.25	0.73	47	35	9	26	104
	East Ridge (0.90% COG)	0	0	0.00	0.00	0.00	0.00	0	0	0	0	0
Inferred	Santa Cruz (0.70% COG)	62,709	69,125	1.23	0.92	0.74	0.18	768	576	462	114	1,694
	Texaco (0.80% COG)	62,311	68,687	1.21	0.56	0.21	0.35	753	348	132	215	1,660
	East Ridge (0.90% COG)	23,978	26,431	1.36	1.26	0.69	0.57	326	302	164	137	718
TOTAL												
Indicated	**All Deposits**	**226,715**	**249,910**	**1.24**	**0.82**	**0.57**	**0.25**	**2,807**	**1,859**	**1,300**	**558**	**6,188**
Inferred	**All Deposits**	**148,998**	**164,242**	**1.24**	**0.82**	**0.51**	**0.31**	**1,847**	**1,225**	**759**	**466**	**4,072**

Notes on Mineral Resources

1. The Mineral Resources in this estimate were independently prepared by Christian Ballard, P.Geo. of Nordmin Engineering Ltd and the Mineral Resources were prepared in accordance with NI 43-101 and the CIM Definition Standards for Mineral Resources and Mineral Reserves (2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019).
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. This estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.
3. Verification included multiple site visits to inspect drilling, logging, density measurement procedures and sampling procedures, and a review of the control sample results used to assess laboratory assay quality. In addition, a random selection of the drill hole database results was compared with the original records.
4. The Mineral Resources in this estimate for the Santa Cruz, East Ridge, and Texaco Deposits used Datamine Studio RM™ software to create the block models.
5. The Mineral Resources are current to December 31, 2022.
6. Underground-constrained Mineral Resources for the Santa Cruz Deposit are reported at a cut-off grade of 0.70% total copper, Texaco Deposit are reported at a cut-off grade of 0.80% total copper and East Ridge Deposit are reported at a cut-off grade of 0.90% total copper. The cut-off grade reflects total operating costs to define reasonable prospects for eventual economic extracted by conventional underground mining methods with a maximum production rate of 15,000 tonnes/day. All material within mineable shape-optimized wireframes has been included in the Mineral Resource.

7. Underground mineable shape optimization parameters include a long-term copper price of $3.70/lb, process recovery of 94%, direct mining costs between $24.50-$40.00/processed tonne reflecting various mining method costs (long hole or room and pillar), mining general and administration cost of $4.00/tonne processed, onsite processing and SX/EW costs between $13.40-$14.47/tonne processed, offsite costs between $3.29 – $4.67/tonne processed, along with variable royalties between 5.00-6.96% NSR and a mining recovery of 100%.
8. Specific Gravity was applied using weighted averages by Deposit Sub-Domain.
9. All figures are rounded to reflect the relative accuracy of the estimates, and totals may not add correctly.
10. Excludes unclassified mineralization located along edges of the Santa Cruz, East Ridge, and Texaco Deposits where drill density is poor.
11. Report from within a mineralization envelope accounting for mineral continuity.
12. Total soluble copper means the addition of sequential acid soluble copper and sequential cyanide soluble copper assays. Total soluble copper is not reported for the Primary Domain.

There is a potential to increase the Mineral Resource by using infill drilling to expand and increase the Mineral Resource category.

Areas of uncertainty that may materially impact the Mineral Resource Estimate include:

- Changes to long term metal price assumptions.
- Changes to the input values for mining, processing, and G&A costs to constrain the estimate.
- Changes to local interpretations of mineralization geometry and continuity of mineralized zones.
- Changes to the density values applied to the mineralized zones.
- Changes to metallurgical recovery assumptions.
- Changes in assumption of marketability of the final product.
- Variations in geotechnical, hydrogeological, and mining assumptions.
- Changes to assumptions with an existing agreement or new agreements.
- Changes to environmental, permitting, and social license assumptions.
- Logistics of securing and moving adequate services, labor, and supplies could be affected by epidemics, pandemics and other public health crises including COVID-19 or similar viruses.

These risks and uncertainties may cause delays in economic resource extraction and/or cause the resource to become economically non-viable.

25.7 Comparison to Previous Mineral Resource Estimates

A previous Mineral resource estimate was completed for the Santa Cruz Deposit on December 8, 2021. This mineral resource estimate did not include resource estimates for the Texaco and East Ridge Deposits. The cut-off grade from the 2021 Santa Cruz Deposit MRE was raised from 0.39% to 0.70%, resulting in a drop in indicated resources from 274,000 ktonnes to 223,155 ktonnes. Inferred resources for Santa Cruz went from 248,754 ktonnes at 0.39% to 62,709 ktonnes at 0.70%. The updated Santa Cruz project mineral resource estimate is the result of a significant ongoing drilling program at each of the Santa Cruz, Texaco, and East Ridge Deposits. The drilling program was focused on the following:

- Target the higher-grade areas (greater than 1.2% copper) to confirm copper grades outlined within the December 2021 Mineral resource.
- Expand the higher-grade copper areas with a strong focus on the Exotic, Oxide, and Chalcocite domains.
- Target the structural controls that influence the higher-grade copper domains.

- Complete various twin holes in proximity to historical drilling which can be compared (geologically, structurally, geochemically, etc.) to each other to determine if significant geological and sampling bias exists.
- Upgrade high-grade Inferred Mineral Resources into the Indicated category.
- At the Texaco and East Ridge Deposits, confirm the higher-grade historical intercepts and determine if the higher-grade areas could be expanded.

25.8 Conclusions

Under the assumptions presented in this Technical Report, and based on the available data, the Mineral Resource shows reasonable prospects of economic extraction. Exploration activities have shown that the Santa Cruz project (Santa Cruz, Texaco, and East Ridge Deposits) retains significant potential.

A recommended work program focused on infill and step out drilling, analytical, metallurgical testwork, geological modelling, resource estimation, and environmental baseline studies to support the permitting efforts is recommended.

26 RECOMMENDATIONS

The recommended program is for the company to complete a PEA of the project before the end of 2023. The work program required to complete a PEA will consist of associated infill and exploration drilling, analytical and metallurgical testwork, hydrogeological and geotechnical drilling, geological modelling, and environmental baseline studies to support permitting efforts.

The recommendations are estimated to require a budget of approximately $26 million.

The budget to achieve the recommendations is presented in Table 26-1.

Table 26-1: Preliminary Economic Assessment Budget

Item	**Budget (US$ Millions)**
External Consultants for Preliminary Economic Assessment	$2.0
Drilling and Assays	$20.0
Geophysics	$2.0
Preliminary Economic Assessment Study work	$2.0
Total	**$26**

Advancing to subsequent phases of exploration or development is contingent on the results of the Preliminary Economic Assessment.

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28 SYMBOLS, ABBREVIATIONS AND ACRONYMS

Table 28-1: Symbols, Abbreviations and Acronyms Used in this Technical Report

Abbreviation	Unit or Term
%	percent
°	degree
<	less than
>	greater than
µ	microns
AAS	atomic-absorption spectroscopy
ADEQ	Arizona Department of Environmental Quality
Ag	silver
ASARCO	Arizona Smelting and Refining Company Inc.
ASCu	Acid soluble copper
Au	gold
BLM	Bureau of Land Management
CAP	Covered Area Project
CAR	Central Arizona Resources
CGCC	Casa Grande Copper Corporation
CoG	cut-off grade
COMEX	a division of the Chicago Mercantile Exchange
CRM	certified reference material
CSAMT	controlled source audio-frequency magnetotelluric
Cu	copper
DRHE	DR Horton Energy
ESA	environmental site audit
FS	Feasibility Study
ft	foot/feet
g	grams
Ga	giga annum
gpl	grams per liter
g/t	grams per tonne
HG	high-grade
ICP	inductively coupled plasma
ICP-MS	inductively coupled plasma mass spectrometry
ICP-OES	inductively coupled plasma optical emission spectrometry
IMC	Independent Mining Consultants, Inc.
IP	induced polarization
IRR	internal rate of return
IE	Ivanhoe Electric Inc.
km	kilometer
ktonnes	thousand tonnes
ktonnes/a	thousand tonnes per annum
lb	pounds
Legend	Legend Property Group
LG	Low-grade
LME	London Metal Exchange
m	metre
Ma	million years

Abbreviation	Unit or Term
masl	Meters above sea level
MASW	multichannel analysis of surface waves
Mlb	million pounds
MRE	Mineral Resource Estimate
Mt	million tonnes
NEPA	National Environmental Policy Act
NPV	net present value
PEA	Preliminary Economic Assessment
PFS	Prefeasibility Study
PLS	pregnant leach solution
psi	pounds per square inch
QA	quality assurance
QA/QC	quality assurance/quality control
QC	quality control
QP	Qualified Person
RC	reverse circulation
ROFO	right of first offer
ROFR	right of first refusal
RTP	reduced to pole
SCJV	Santa Cruz Joint Venture
SEC	Securities and Exchange Commission
SEQ	sequential acid leaching
SG	specific gravity
SRHA	Stockraising Homestead Act
SUA	surface use agreement
SX-EW	solvent extraction-electrowinning
TMI	total magnetic intensity
UIC	underground injection control
USBR	US Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
USGS	US Geological Survey
XRF	x-ray fluorescence

APPENDIX A: CERTIFICATES OF QUALIFIED PERSONS

CERTIFICATE OF QUALIFIED PERSON

I, James Moore, P. E., of Mesa, Arizona USA do hereby certify:

1. I am the President of Met Engineering LLC with a business address at 802 S. Reseda, Mesa, Arizona USA.
2. This certificate applies to the technical report titled "NI 43-101 Technical Report and Mineral Resource Estimate for the Santa Cruz Project, Arizona, USA, with an Effective Date of December 31, 2022 (the "Technical Report").
3. I am a graduate of the Colorado School of Mines, 1978, with a Bachelor of Science in Metallurgical Engineering.
4. I am a professional member in good standing of the Society of Mining Engineers (SME, member No. 04163163) and a registered Professional Engineer in the state of Colorado, license number 0024529.
5. My relevant experience includes 22 years of experience in mineral processing and metallurgical operations, 4 years in mineral processing equipment testing and sales, and 17 years in exploration and mineral resource project development. I am a "Qualified Person" for the purposes of Canadian National Instrument 43-101– Standards of Disclosure for Mineral Projects ("NI 43-101" or the "Instrument").
6. I inspected the property in February 23, 2023 and evaluated the drill hole surface area and adjacent areas for the purposes of locating future surface processing facilities.
7. I am responsible for the Section titled Mineral Processing and Metallurgical Testing.
8. I am independent of the issuer, as defined by Section 1.5 of the Instrument.
9. I have read the NI 43-101 reporting requirements and the Relevant Section of the Technical Report, for which I am responsible, it has been prepared in accordance with the Instrument and Form 43-101F1.
10. As of the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Relevant Section of the Technical Report that I am responsible for, contains all scientific and technical information relating to the Project that is required to be disclosed to make the Technical Report not misleading.
11. I was involved in an earlier evaluation of this property, the Santa Cruz mineral deposit, in 2014 that is the subject of the Technical Report.

Signed, sealed (the Mineral Processing and Metallurgical Testing Section) and dated this 14th day of March 2023, at Mesa, Arizona USA.

COLORADO LICENSED
JAMES J MOORE
24529
PROFESSIONAL ENGINEER

James J. Moore

James J. Moore, P. E.
President of Met Engineering LLC

APPENDIX B: PROPERTY AND RIGHTS

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 1	AMC460163	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 2	AMC460164	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 3	AMC460165	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 4	AMC460166	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 5	AMC460167	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 6	AMC460168	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 7	AMC460169	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 8	AMC460170	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 9	AMC460171	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 10	AMC460172	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 004	SE	AMC460163
Central Arizona Resources LLC	SCX 11	AMC460173	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 12	AMC460174	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 003	SW	AMC460163
Central Arizona Resources LLC	SCX 13	AMC460175	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 010	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 14	AMC460176	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 15	AMC460177	ACTIVE	LODE	2020	2020-03-01	12.4	14 0060S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 16	AMC460178	ACTIVE	LODE	2020	2020-03-01	20.66	14 0060S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 17	AMC460179	ACTIVE	LODE	2020	2020-03-01	12.4	14 0060S 0040E 002	SW	AMC460163
Central Arizona Resources LLC	SCX 18	AMC460180	ACTIVE	LODE	2020	2020-02-26	20.66	14 0060S 0040E 034	SE	AMC460163
Central Arizona Resources LLC	SCX 19	AMC460181	ACTIVE	LODE	2020	2020-02-26	20.66	14 0070S 0040E 002	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 20	AMC460182	ACTIVE	LODE	2020	2020-02-26	20.66	14 0070S 0040E 002	SE	AMC460163
Central Arizona Resources LLC	SCX 21	AMC460183	ACTIVE	LODE	2020	2020-02-26	20.66	14 0070S 0040E 001	SW	AMC460163
Central Arizona Resources LLC	SCX 22	AMC460184	ACTIVE	LODE	2020	2020-02-26	20.66	14 0070S 0040E 001	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 23	AMC460185	ACTIVE	LODE	2020	2020-02-26	12.4	14 0070S 0040E 001	SW	AMC460163
Central Arizona Resources LLC	SCX 24	AMC460186	ACTIVE	LODE	2020	2020-02-26	20.66	14 0070S 0040E 001	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 25	AMC460187	ACTIVE	LODE	2020	2020-02-26	12.4	14 0070S 0040E 001	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 26	AMC460188	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NW	AMC460163
Central Arizona Resources LLC	SCX 27	AMC460189	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 032	NE	AMC460163
Central Arizona Resources LLC	SCX 28	AMC460190	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NW	AMC460163
Central Arizona Resources LLC	SCX 29	AMC460191	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NW	AMC460163
Central Arizona Resources LLC	SCX 30	AMC460192	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 032	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 31	AMC460193	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NW	AMC460163
Central Arizona Resources LLC	SCX 32	AMC460194	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 33	AMC460195	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 34	AMC460196	ACTIVE	LODE	2020	2020-03-08	20.66	14 0060S 0030E 033	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 35	AMC460197	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 032	SE	AMC460163
Central Arizona Resources LLC	SCX 36	AMC460198	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NW	AMC460163
Central Arizona Resources LLC	SCX 37	AMC460199	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SW	AMC460163
Central Arizona Resources LLC	SCX 38	AMC460200	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NW	AMC460163
Central Arizona Resources LLC	SCX 39	AMC460201	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SW	AMC460163
Central Arizona Resources LLC	SCX 40	AMC460202	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NW	AMC460163
Central Arizona Resources LLC	SCX 41	AMC460203	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SW	AMC460163
Central Arizona Resources LLC	SCX 42	AMC460204	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SW	AMC460163
Central Arizona Resources LLC	SCX 43	AMC460205	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 44	AMC460206	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 45	AMC460207	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SE	AMC460163

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 46	AMC460208	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NE	AMC460163
Central Arizona Resources LLC	SCX 47	AMC460209	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SE	AMC460163
Central Arizona Resources LLC	SCX 48	AMC460210	ACTIVE	LODE	2020	2020-03-09	20.66	14 0070S 0030E 003	NE	AMC460163
Central Arizona Resources LLC	SCX 49	AMC460211	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SE	AMC460163
Central Arizona Resources LLC	SCX 50	AMC460212	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SE	AMC460163
Central Arizona Resources LLC	SCX 51	AMC460213	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 034	SW	AMC460163
Central Arizona Resources LLC	SCX 52	AMC460214	ACTIVE	LODE	2020	2020-03-09	20.66	14 0060S 0030E 033	SE	AMC460163
Central Arizona Resources LLC	SCX 53	AMC460215	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 54	AMC460216	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 55	AMC460217	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 56	AMC460218	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 57	AMC460219	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 58	AMC460220	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 59	AMC460221	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 60	AMC460222	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	SW	AMC460163
Central Arizona Resources LLC	SCX 61	AMC460223	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 62	AMC460224	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 63	AMC460225	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 64	AMC460226	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 65	AMC460227	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 66	AMC460228	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 67	AMC460229	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 68	AMC460230	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 69	AMC460231	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 003	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 70	AMC460232	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0030E 002	SW	AMC460163
Central Arizona Resources LLC	SCX 71	AMC460233	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 72	AMC460234	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 73	AMC460235	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 74	AMC460236	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 75	AMC460237	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 76	AMC460238	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 77	AMC460239	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 78	AMC460240	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 79	AMC460241	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 80	AMC460242	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 81	AMC460243	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 82	AMC460244	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 83	AMC460245	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 84	AMC460246	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 85	AMC460247	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 86	AMC460248	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 87	AMC460249	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 88	AMC460250	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 89	AMC460251	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW	AMC460163
Central Arizona Resources LLC	SCX 90	AMC460252	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW,SW	AMC460163

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 91	AMC460253	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW	AMC460163
Central Arizona Resources LLC	SCX 92	AMC460254	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 93	AMC460255	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW	AMC460163
Central Arizona Resources LLC	SCX 94	AMC460256	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 95	AMC460257	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW	AMC460163
Central Arizona Resources LLC	SCX 96	AMC460258	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 97	AMC460259	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 98	AMC460260	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 99	AMC460261	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE	AMC460163
Central Arizona Resources LLC	SCX 100	AMC460262	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 101	AMC460263	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE	AMC460163
Central Arizona Resources LLC	SCX 102	AMC460264	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE	AMC460163
Central Arizona Resources LLC	SCX 103	AMC460265	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE	AMC460163
Central Arizona Resources LLC	SCX 104	AMC460266	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE	AMC460163
Central Arizona Resources LLC	SCX 105	AMC460267	ACTIVE	LODE	2020	2020-02-29	20.66	14 0070S 0030E 011	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 106	AMC460268	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SW	AMC460163
Central Arizona Resources LLC	SCX 107	AMC460269	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 108	AMC460270	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 109	AMC460271	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 110	AMC460272	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SW	AMC460163
Central Arizona Resources LLC	SCX 111	AMC460273	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 112	AMC460274	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 113	AMC460275	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW	AMC460163
Central Arizona Resources LLC	SCX 114	AMC460276	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 118	AMC460277	ACTIVE	LODE	2020	2020-03-06	18.6	14 0070S 0040E 021	SW	AMC460163
Central Arizona Resources LLC	SCX 119	AMC460278	ACTIVE	LODE	2020	2020-03-06	18.6	14 0070S 0040E 021	SW	AMC460163
Central Arizona Resources LLC	SCX 120	AMC460279	ACTIVE	LODE	2020	2020-03-06	18.6	14 0070S 0040E 020	SE	AMC460163
Central Arizona Resources LLC	SCX 121	AMC460280	ACTIVE	LODE	2020	2020-03-06	18.6	14 0070S 0040E 021	SW	AMC460163
Central Arizona Resources LLC	SCX 122	AMC460281	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 020	SE	AMC460163
Central Arizona Resources LLC	SCX 123	AMC460282	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 029	NE	AMC460163
Central Arizona Resources LLC	SCX 124	AMC460283	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 029	NE	AMC460163
Central Arizona Resources LLC	SCX 125	AMC460284	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NW	AMC460163
Central Arizona Resources LLC	SCX 126	AMC460285	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 127	AMC460286	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW	AMC460163
Central Arizona Resources LLC	SCX 128	AMC460287	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW	AMC460163
Central Arizona Resources LLC	SCX 129	AMC460288	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW	AMC460163
Central Arizona Resources LLC	SCX 130	AMC460289	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW	AMC460163
Central Arizona Resources LLC	SCX 131	AMC460290	ACTIVE	LODE	2020	2020-03-06	9.99	14 0070S 0040E 028	NW	AMC460163
Central Arizona Resources LLC	SCX 132	AMC460291	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NW	AMC460163
Central Arizona Resources LLC	SCX 133	AMC460292	ACTIVE	LODE	2020	2020-03-06	9.99	14 0070S 0040E 028	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 134	AMC460293	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 135	AMC460294	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 136	AMC460295	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW	AMC460163
Central Arizona Resources LLC	SCX 137	AMC460296	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 138	AMC460297	ACTIVE	LODE	2020	2020-03-06	20.66	14 0070S 0040E 028	SW,SE	AMC460163

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 139	AMC460298	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW	AMC460163
Central Arizona Resources LLC	SCX 140	AMC460299	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 141	AMC460300	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW	AMC460163
Central Arizona Resources LLC	SCX 142	AMC460301	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 143	AMC460302	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW	AMC460163
Central Arizona Resources LLC	SCX 144	AMC460303	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 145	AMC460304	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW	AMC460163
Central Arizona Resources LLC	SCX 146	AMC460305	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 147	AMC460306	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 148	AMC460307	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 149	AMC460308	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE	AMC460163
Central Arizona Resources LLC	SCX 150	AMC460309	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 151	AMC460310	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE	AMC460163
Central Arizona Resources LLC	SCX 152	AMC460311	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 153	AMC460312	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE	AMC460163
Central Arizona Resources LLC	SCX 154	AMC460313	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 155	AMC460314	ACTIVE	LODE	2020	2020-03-03	16.7	14 0070S 0040E 026	NW	AMC460163
Central Arizona Resources LLC	SCX 156	AMC460315	ACTIVE	LODE	2020	2020-03-03	16.7	14 0070S 0040E 027	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 157	AMC460316	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 158	AMC460317	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 159	AMC460318	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 160	AMC460319	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163
Central Arizona Resources LLC	SCX 161	AMC460320	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 162	AMC460321	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 163	AMC460322	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW	AMC460163
Central Arizona Resources LLC	SCX 164	AMC460323	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163
Central Arizona Resources LLC	SCX 165	AMC460324	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 166	AMC460325	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 167	AMC460326	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 168	AMC460327	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 169	AMC460328	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 170	AMC460329	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE	AMC460163
Central Arizona Resources LLC	SCX 171	AMC460330	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 172	AMC460331	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 173	AMC460332	ACTIVE	LODE	2020	2020-03-03	16.7	14 0070S 0040E 027	SE	AMC460163
Central Arizona Resources LLC	SCX 174	AMC460333	ACTIVE	LODE	2020	2020-03-03	10.02	14 0070S 0040E 026	SW	AMC460163
Central Arizona Resources LLC	SCX 175	AMC460334	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 176	AMC460335	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 177	AMC460336	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163
Central Arizona Resources LLC	SCX 178	AMC460337	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 179	AMC460338	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163
Central Arizona Resources LLC	SCX 180	AMC460339	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 181	AMC460340	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163
Central Arizona Resources LLC	SCX 182	AMC460341	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 183	AMC460342	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW	AMC460163

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 184	AMC460343	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 185	AMC460344	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 186	AMC460345	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 187	AMC460346	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE	AMC460163
Central Arizona Resources LLC	SCX 188	AMC460347	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 189	AMC460348	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE	AMC460163
Central Arizona Resources LLC	SCX 190	AMC460349	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 191	AMC460350	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE	AMC460163
Central Arizona Resources LLC	SCX 192	AMC460351	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE,SE	AMC460163
Central Arizona Resources LLC	SCX 193	AMC460352	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 034	NE	AMC460163
Central Arizona Resources LLC	SCX 194	AMC460353	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 035	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 195	AMC460354	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 196	AMC460355	ACTIVE	LODE	2020	2020-03-04	20.66	14 0070S 0040E 035	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 197	AMC460356	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 198	AMC460357	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 199	AMC460358	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 200	AMC460359	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 201	AMC460360	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW	AMC460163
Central Arizona Resources LLC	SCX 202	AMC460361	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 203	AMC460362	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SW	AMC460163
Central Arizona Resources LLC	SCX 204	AMC460363	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SW	AMC460163
Central Arizona Resources LLC	SCX 205	AMC460364	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SW	AMC460163
Central Arizona Resources LLC	SCX 206	AMC460365	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SW	AMC460163
Central Arizona Resources LLC	SCX 207	AMC460366	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 208	AMC460367	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SE	AMC460163
Central Arizona Resources LLC	SCX 209	AMC460368	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SE	AMC460163
Central Arizona Resources LLC	SCX 210	AMC460369	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 034	SE	AMC460163
Central Arizona Resources LLC	SCX 211	AMC460370	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 035	SW	AMC460163
Central Arizona Resources LLC	SCX 212	AMC460371	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 035	SW	AMC460163
Central Arizona Resources LLC	SCX 213	AMC460372	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 035	SW	AMC460163
Central Arizona Resources LLC	SCX 214	AMC460373	ACTIVE	LODE	2020	2020-03-05	20.66	14 0070S 0040E 035	SW	AMC460163
Central Arizona Resources LLC	SCX 215	AMC460374	ACTIVE	LODE	2020	2020-03-03	20.66	14 0070S 0040E 035	SW	AMC460163
Central Arizona Resources LLC	SCX 216	AMC460375	ACTIVE	LODE	2020	2020-04-06	20.66	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 217	AMC460376	ACTIVE	LODE	2020	2020-04-06	9.64	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 218	AMC460377	ACTIVE	LODE	2020	2020-04-06	9.7	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 219	AMC460378	ACTIVE	LODE	2020	2020-03-01	20.66	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 220	AMC460379	ACTIVE	LODE	2020	2020-03-01	9.64	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 221	AMC460380	ACTIVE	LODE	2020	2020-03-01	9.7	14 0050S 0050E 022	SE	AMC460163
Central Arizona Resources LLC	SCX 222	AMC460381	ACTIVE	LODE	2020	2020-04-06	16.53	14 0070S 0040E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 223	AMC460382	ACTIVE	LODE	2020	2020-03-08	17.22	14 0070S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 224	AMC460383	ACTIVE	LODE	2020	2020-04-06	13.77	14 0070S 0040E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 225	AMC460384	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 226	AMC460385	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 227	AMC460386	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW,SW	AMC460163
Central Arizona Resources LLC	SCX 228	AMC460387	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 010	NW,SW	AMC460163

Owner	Claim Name	Serial Number	Dispostion	Case Type	Last Assmt Year	Location Date	Acreage	Meridian Township Range Section	Subdiv	Lead Case Serial Number
Central Arizona Resources LLC	SCX 229	AMC460388	ACTIVE	LODE	2020	2020-03-31	8.61	14 0070S 0040E 010	NE,NW,SW,SE	AMC460163
Central Arizona Resources LLC	SCX 230	AMC460389	ACTIVE	LODE	2020	2020-03-31	20.66	14 0070S 0040E 009	SE	AMC460163
Central Arizona Resources LLC	SCX 231	AMC460390	ACTIVE	LODE	2020	2020-03-31	15.84	14 0070S 0040E 010	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 232	AMC460391	ACTIVE	LODE	2020	2020-03-31	17.22	14 0070S 0040E 010	SW	AMC460163
Central Arizona Resources LLC	SCX 233	AMC460392	ACTIVE	LODE	2020	2020-03-31	13.2	14 0070S 0040E 010	SW,SE	AMC460163
Central Arizona Resources LLC	SCX 244	AMC460393	ACTIVE	LODE	2020	2020-04-07	20.66	14 0070S 0040E 010	SW	AMC460163
Central Arizona Resources LLC	SCX 245	AMC460394	ACTIVE	LODE	2020	2020-04-07	15.84	14 0070S 0040E 010	SW	AMC460163
Central Arizona Resources LLC	SCX 246	AMC460395	ACTIVE	LODE	2020	2020-04-06	20.66	14 0070S 0040E 010	NE,NW	AMC460163
Central Arizona Resources LLC	SCX 247	AMC460396	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 248	AMC460397	ACTIVE	LODE	2020	2020-04-06	16.53	14 0070S 0040E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 249	AMC460398	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SE	AMC460163
Central Arizona Resources LLC	SCX 250	AMC460399	ACTIVE	LODE	2020	2020-04-06	16.53	14 0070S 0040E 010	NE	AMC460163
Central Arizona Resources LLC	SCX 251	AMC460400	ACTIVE	LODE	2020	2020-03-08	20.66	14 0070S 0040E 003	SE	AMC460163

Township	Range	Section	Serial No.	Name	Book/Page	Loc. Date
6S	4E	12	47328	CHAVO NO. 55	785/414	1975-04-01
6S	4E	23	47333	NIK NO. 5	761/131	1974-07-02
6S	4E	23	47334	NIK NO. 6	761/132	1974-07-02
6S	4E	23	47335	NIK NO. 7	761/133	1974-07-02
6S	4E	23	47336	NIK NO. 8	761/134	1974-07-02
6S	4E	23	47337	NIK NO. 9	761/135	1974-07-02
6S	4E	23	47338	NIK NO. 10	761/136	1974-07-02
6S	4E	23	47339	NIK NO. 11	761/137	1974-07-02
6S	4E	23	47340	NIK NO. 12	761/138	1974-07-02
6S	4E	23	47341	NIK NO. 13	761/139	1974-07-02
6S	4E	23	47342	NIK NO. 14	761/140	1974-07-02
6S	4E	24	47347	NIK NO. 19	761/145	1974-07-02
6S	4E	24	47348	NIK NO. 20	761/146	1974-07-02
6S	4E	24	47349	NIK NO. 21	761/147	1974-07-02
6S	4E	24	47350	NIK NO. 22	761/148	1974-07-02
6S	4E	24	47351	NIK NO. 23	761/149	1974-07-02
6S	4E	24	47352	NIK NO. 24	761/150	1974-07-02
6S	4E	24	47353	NIK NO. 25	761/151	1974-07-02
6S	4E	24	47354	NIK NO. 26	761/152	1974-07-02
6S	4E	24	47355	NIK NO. 27	761/153	1974-07-02
6S	4E	24	47356	NIK NO. 28	761/154	1974-07-02
6S	4E	24	47357	NIK NO. 29	761/155	1974-07-02
6S	4E	24	47358	NIK NO. 30	761/156	1974-07-02
6S	4E	24	47359	NIK NO. 31	761/157	1974-07-02
6S	4E	24	47360	NIK NO. 32	761/158	1974-07-02
6S	4E	24	47361	NIK NO. 33	761/159	1974-07-02
6S	4E	24	47362	NIK NO. 34	761/160	1974-07-02
6S	4E	24	47363	NIK NO. 35	761/161	1974-07-02
6S	4E	24	47364	NIK NO. 36	761/162	1974-07-02
6S	4E	12	47365	NIK NO. 37	761/163	1974-07-02
6S	4E	12	47366	NIK NO. 38	761/164	1974-07-02
6S	4E	12	47367	NIK NO. 39	761/165	1974-07-02
6S	4E	12	47368	NIK NO. 40	761/166	1974-07-02
6S	4E	12	47369	NIK NO. 41	761/167	1974-07-02
6S	4E	12	47370	NIK NO. 50	761/176	1974-07-02
6S	4E	12	47371	NIK NO. 51	761/177	1974-07-02
6S	4E	12	47372	NIK NO. 52	761/178	1974-07-02
6S	4E	12	47373	NIK NO. 53	761/179	1974-07-02
6S	4E	12	47374	NIK NO. 54	761/180	1974-07-02